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*THIS FORM IS SUBJECT TO CHANGE. CONTACT THE RPF FOR LATEST VERSION. (JUNE 1997)*

30865

Clark

MGC

March 11, 1998

Received by EH-RPF
JAN 13 2000

Mr. Alan C. Funk
ERM Program Management Company
2237 Trinity Drive, Bldg.2
Los Alamos, NM 87544

Dear Alan:

This letter report summarizes the results of geophysical surveys performed by MicroGeophysics Corporation (MGC) for ERM Program Management Company at Technical Area 49 (ta-49) on LANL property (Figure 1). The geophysical surveys were conducted on March 3, 4, and 5, 1998.

## OBJECTIVES

The geophysical survey objective is to identify un-reinforced concrete and metal structures/debris in the subsurface to a depth of 8 to 10 feet. The TA-49 survey area encompasses approximately 60,000 square feet (about 200 by 300 feet square). The ground surface at the site is relatively free of any debris which would affect the data and obscure any subsurface anomaly. Cultural interference is present in the form of chain link fences, pipe laying on the surface, exposed well casings, and old building foundations. All sources of interference which could not be removed from the grid area were mapped and are presented on the accompanying culture map (Figure 5).

## METHODS

Methods used for this survey were total field magnetics and electromagnetics (EM). Method appendices outlining the basics of each method are included with this report. Equipment used for the magnetics measurements consisted of a Geometrics G-858 cesium magnetometer. A Geonics EM 61 was used for the electromagnetic measurements conducted on the asphalt pad only. The remainder of the geophysical survey area, excluding the asphalt pad, was cluttered with weeds, bushes and trees; therefore most of the survey area was not conducive to performing a EM 61 survey. A Geonics EM 31 was used for electromagnetics measurements on the complete survey area including the asphalt pad.

The survey area was gridded relative to ERM survey points using a measured tape. MGC station 0 North, 0 East is located at ERM survey stake numbered 75. MGC station 300 North, 0 East is located at ERM survey stake numbered 87. Geophysical lines were established at 12 foot intervals incrementing to the east.

MICROGEOPHYSICS CORPORATION • 10900 WEST 44th AVENUE • WHEAT RIDGE, COLORADO 80033
PH: (303) 424-0499 FAX: (303) 424-0807

Stations increment to the north along each geophysical line at intervals determined by the particular geophysical method. Fiducial marks were placed at 100-foot increments along each line.

EM 31 data were collected at 6-foot line spacings with station spacings of 5 feet along each line. EM 61 data were acquired (on the asphalt pad only) at 3-foot line spacings with stations at 0.65 feet along each line. The magnetic data were acquired at 3-foot line spacings with stations at 0.33 feet along each line.

**RESULTS**

There are 21 geophysical anomalies indicated by the magnetic and EM data. Anomalous areas identified as 1A through 13A are located on the asphalt pad and are evident in both the magnetic and EM 61 data. The data indicates the objects in this area are relatively shallow, as the EM 61 depth of investigation is typically about 6 feet.

Anomalous areas 16, 18, 19 and 21 are evident in both the total field magnetic data and EM 31 data and again are interpreted to be relatively shallow as indicated by the geophysical signatures. The depth of investigation of the EM 31 is approximately 18 feet dependent on the soil conductivity. The G-858 magnetometer depth of investigation is dependent on the size and orientation of the buried ferrous objects over which data are collected.

Anomalous area 20 is evident in the EM 31 data only. This linear feature is the signature which can be expected from underground cable(s) or small-diameter conductive pipes. This feature is not present in the magnetic data indicating that the EM anomaly is not caused by ferrous material.

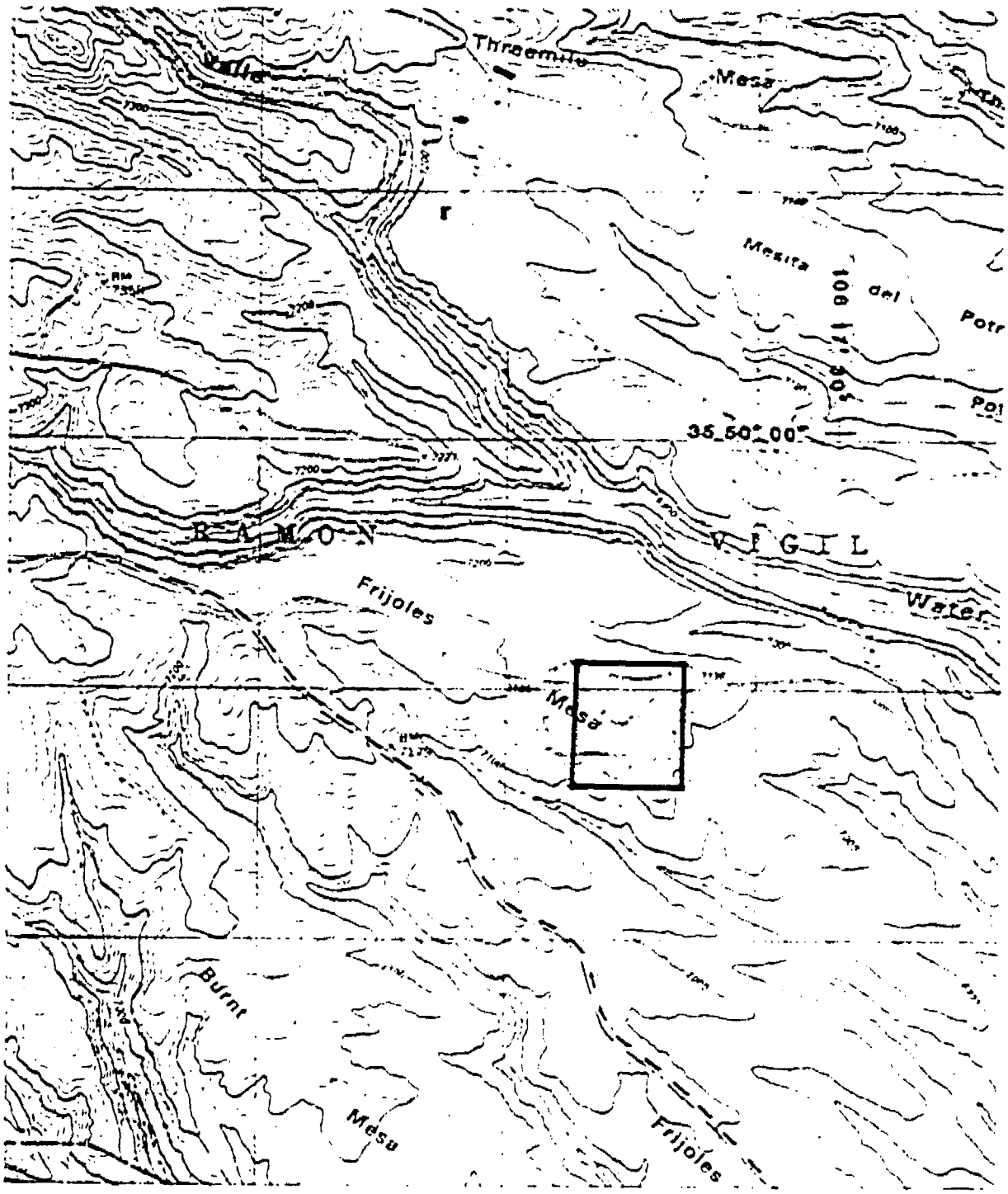
Results of the EM 31 surveys are presented in Figure 2 (north-south orientation) and Figure 3 (east-west orientation). The results of the EM 61 survey are presented, along with the total field magnetics results, in Figure 4. Cultural features, and interpreted geophysical anomalies are presented in Figure 5. Interpretation of anomalous areas, wherein buried objects are suspected to exist, is based upon consideration of all of the geophysical data and the surface cultural features present. The most probable areas where buried objects may be present are indicated on Figure 5.

If you have any questions regarding the geophysical survey methods, results or interpretations presented herein, contact either Don Hansen, David Butler or myself. We look forward to working with you and ERM again.

Very truly yours,

Phil Sirles
Senior Geophysicist

MGC




NOTES:
1) 7.5 minute topo, dated 1984, titled Frijoles, NM.
2) Survey area is located in R6E,T18N
3) Survey area

NEW MEXICO

QUADRANGLE LOCATION

SAFETY FIRST

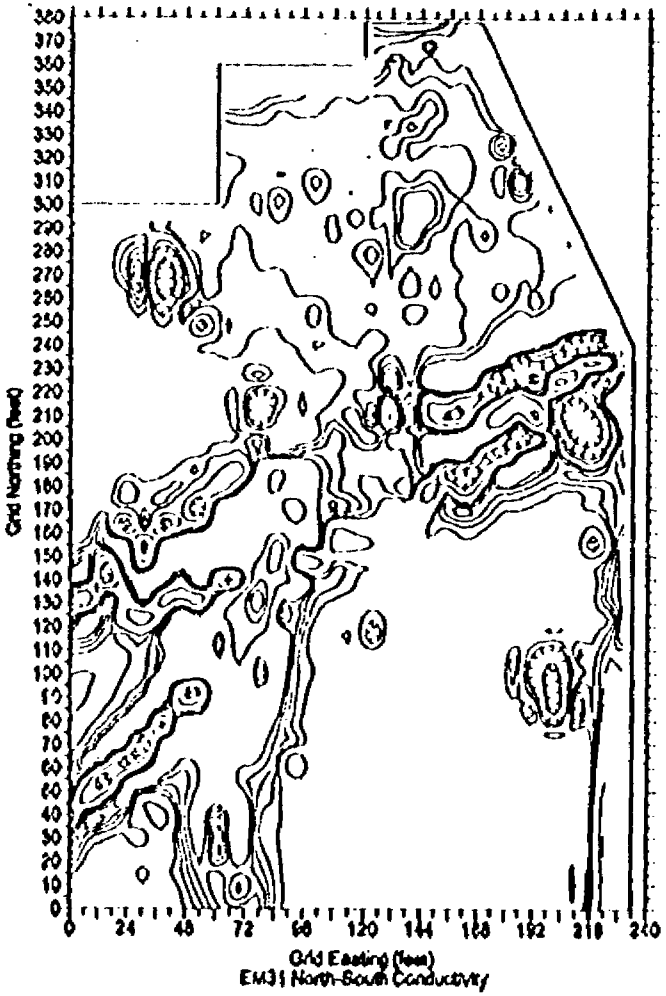
ENVIRONMENTAL RESOURCES MANAGEMENT
PROGRAM MANAGEMENT COMPANY

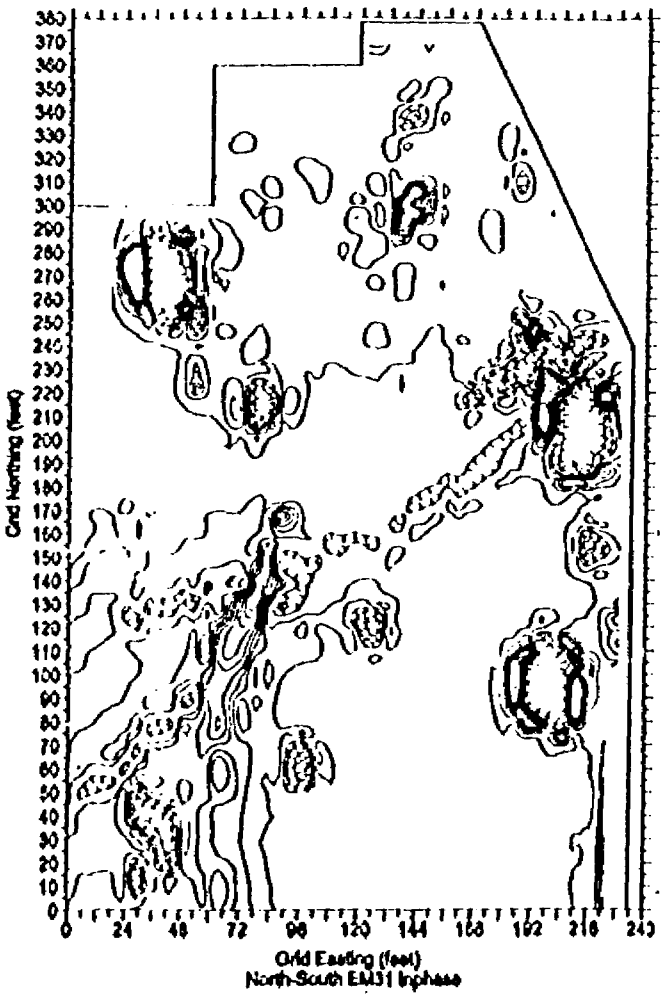
LANL TECH AREA 49
LOS ALAMOS, NEW MEXICO

**LOCATION AND INDEX MAP**
**GEOPHYSICAL SURVEY AREA**

MARCH 1996 | FIGURE 1

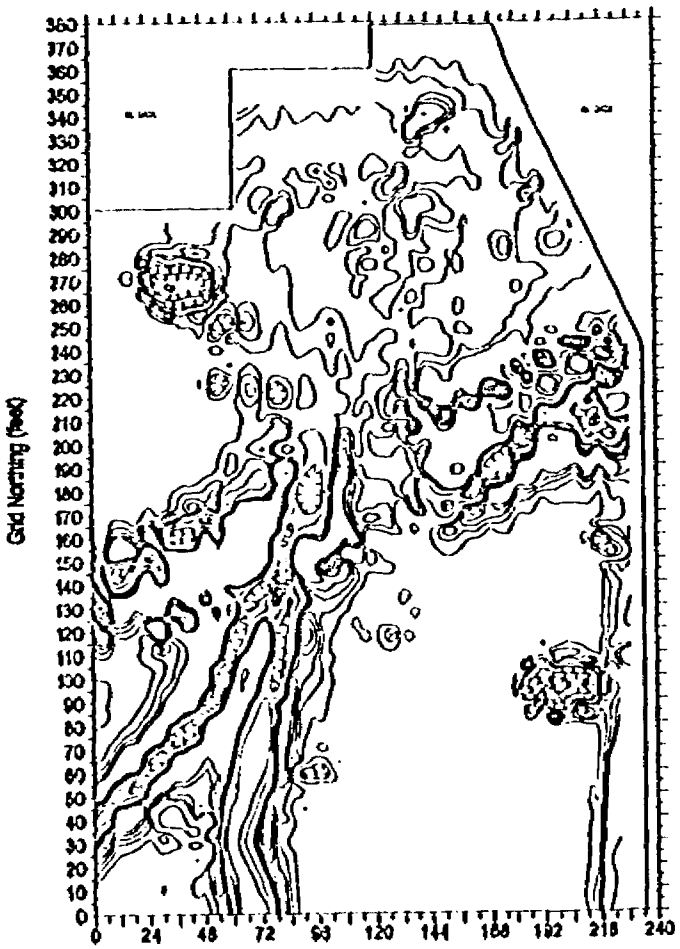
3



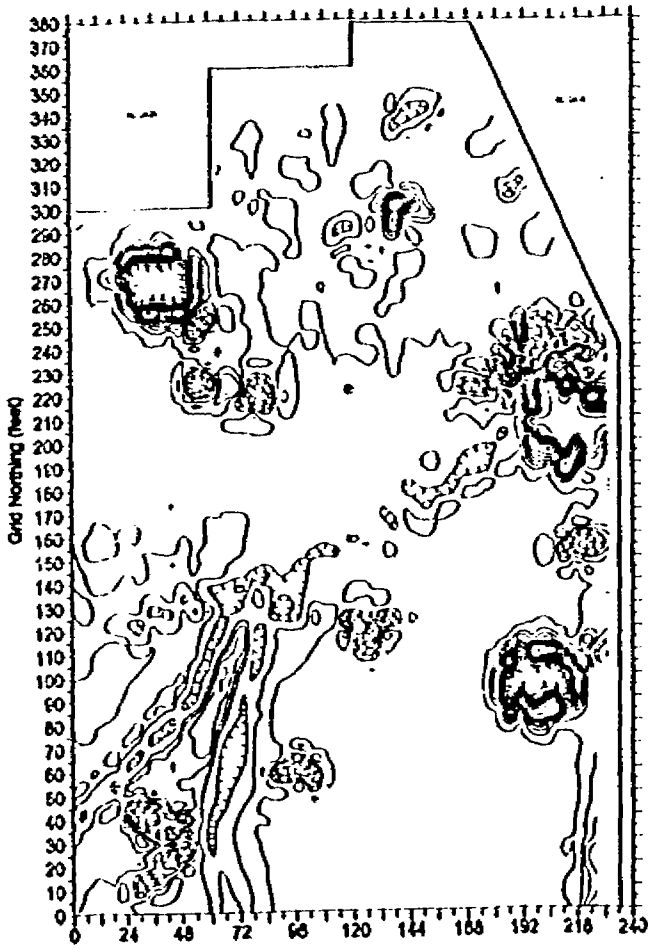



SAFETY FIRST

EM31 NORTH-SOUTH DETECTION
COLLECTIVITY AND
RELEASE CONTOUR MAPS




EM31 East-West Conductivity

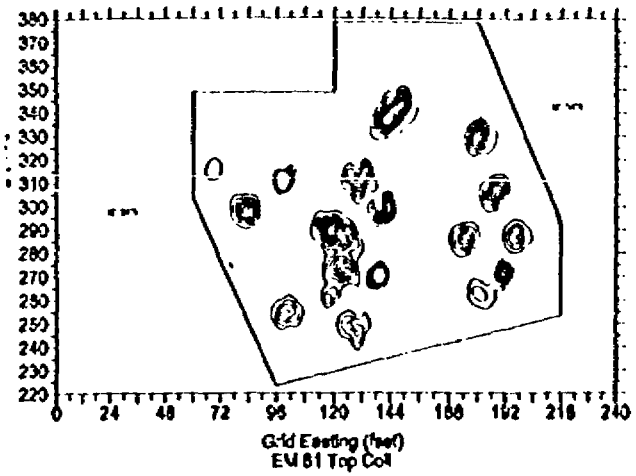


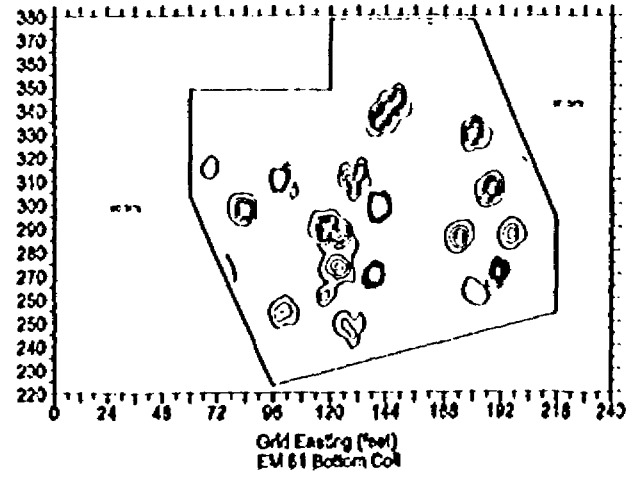

EM31 East- West Inphase

(APPROXIMATE)

SAFETY FIRST

EM31 EAST-WEST DETECTION COLLECTIVITY AND INPHASE CONTOUR MAPS

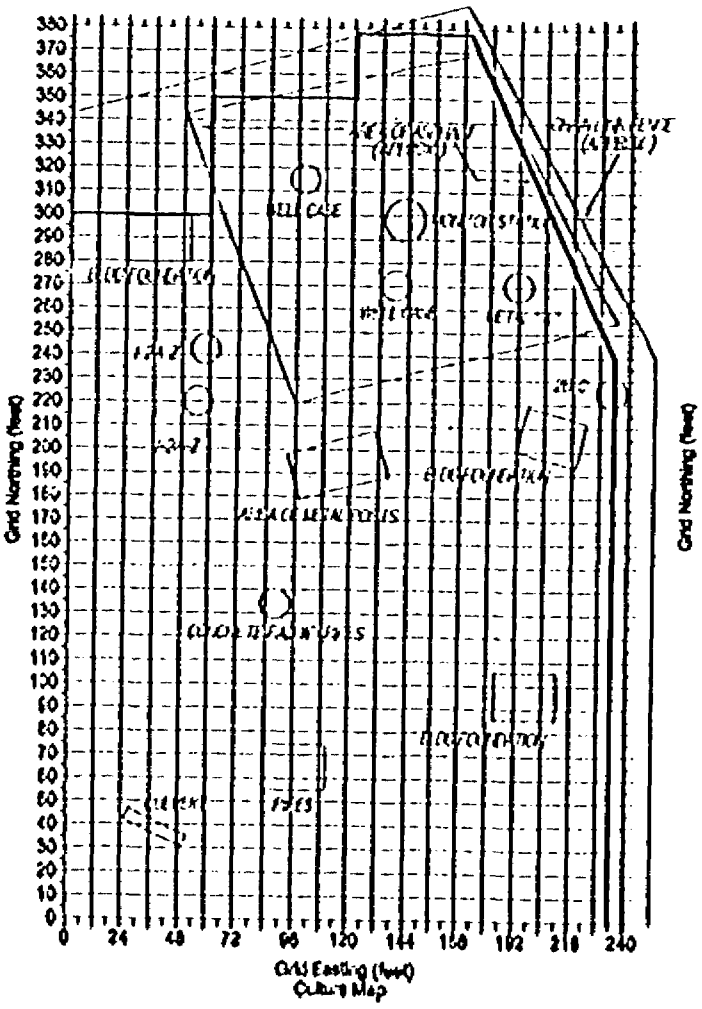


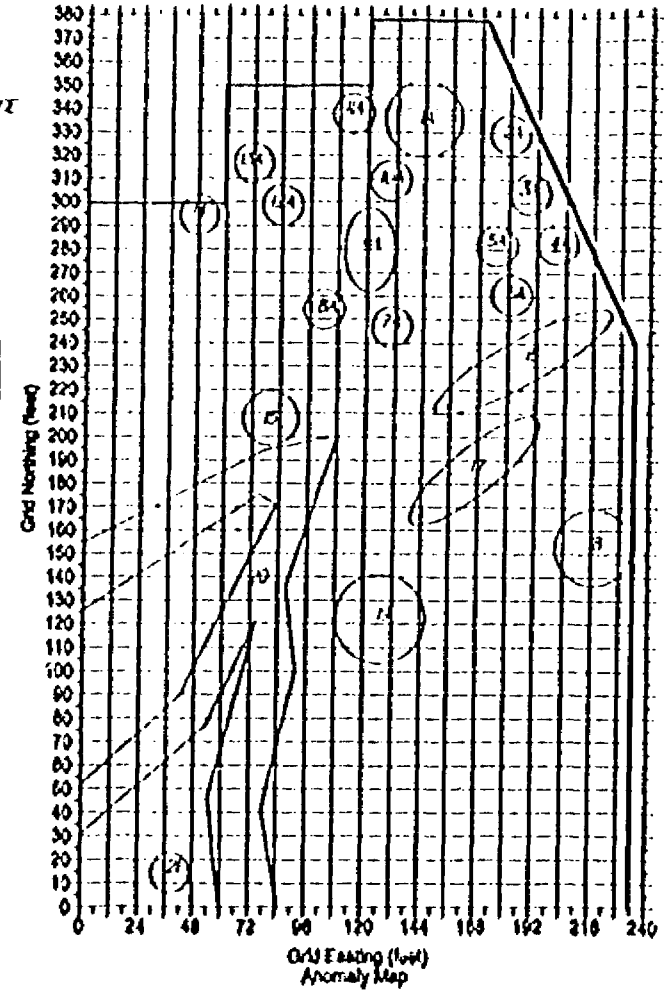



(APPROXIMATE)

SWITCH FIRST

TOTAL HAZARDOUS FIELD AND
HAZARDOUS OBJECTS
COORDINATES



(APPROXIMATE)

SWITCH FIRST

QUEUE AND GEOPHYSICAL ANOMALY MAPS

METHOD APPENDIX

ELECTROMAGNETIC METHODS

NOTE: This method appendix is furnished as background for those unfamiliar with electromagnetic methods. The EM-31 and EM-34 operate similarly. The EM-61 is specifically described in the latter part of this appendix.

# ELECTROMAGNETICS

## INTRODUCTION

With frequency-domain electromagnetic methods, the source most commonly consists of a closed loop of wire in which alternating current flows. Electric current in the transmitter loop generates a magnetic field. The magnetic field is the energizer in electromagnetic methods as compared with electric current in direct current methods. This magnetic field penetrates the earth and is coupled to the earth materials and any conductors present. Secondary fields are generated due to the mutual coupling between the primary fields and whatever is present in the subsurface. These secondary field are recorded along with the primary field by a receiver loop sensitive to magnetic fields. The nature of the secondary fields, in certain simple geometries, can be related to earth structure.

Tens of different electromagnetic techniques have been applied in geophysics. This discussion will focus on inductive frequency-domain electromagnetic techniques, specifically terrain conductivity. The terrain conductivity techniques differ from most other EM techniques in that:

1. The operating frequency is low enough at each of the intercoil spacings that the electrical skin depth in the ground is always significantly greater than the intercoil spacing. (low induction numbers).

2. Soundings are done by varying the coil spacing or orientation rather than the frequency. If the frequency is varied significantly, the conditions in 1) are not satisfied.

3. The quadrature phase component is directly proportional to the bulk conductivity of the material in the vicinity of the two coils.

Time domain instruments operate on the same physical principles as the frequency domain instruments. They form a powerful magnetic field within the earth which couples very well with any conductors present. When the field is turned off, the eddy currents persist within the conductors, leading to a detectable magnetic signal at time windows late with respect to the off time of the primary pulse. If the behavior of the signal near the off time is recorded in detail, the electrical properties of nearby earth materials can be discerned. If both early and late time information is recorded, both general earth properties (early times) and nearby conductors (late times) can be detected.

Time domain instruments are often focused on "anomaly detection" and are sometimes labeled as metal detectors such as the EM-61.

Electromagnetic measurements allow a rapid determination of the average conductivity of the ground because they do not require

electrical contact with the ground like direct current methods such as dipole-dipole and Schlumberger soundings. The disadvantage is that unless all three intercoil spacings (as in the case of Geonics EM-34) at both coil geometries (a total of six measurements) are taken at a location, minimal vertical sounding information is obtained. If geology to the depth being explored is fairly homogeneous or slowly varying, then the lack of information about vertical variations is not a problem.

The EM-34 consists of two 1-meter area coils operated at a separation of 10, 20, or 40 meters in a horizontal axis co-planer orientation or a vertical axis co-planer orientation. An audio frequency excitation is output by the transmitter coil and recorded by the receiver coil. The time-varying magnetic field arising from the alternating current in the transmitter coil induces very small currents in the earth. These currents generate a secondary magnetic field $H_s$ which is sensed, together with the primary field $H_p$, by the receiver coil. In general this secondary magnetic field is a complicated function of the intercoil spacing, s, the operating frequency, f, and the ground conductivity, c. Under certain constraints, technically defined as "operation at low values of induction number", the secondary magnetic field is a very simple function of these variables. These constraints are incorporated in the design of the instrument allowing the secondary magnetic field to be calculated as

$$H_s/H_p = icwu_0s^2/4$$

where $H_s$ = secondary magnetic field at the receiver coil
$H_p$ = primary magnetic field at the receiver coil
$w = 6.28\ f$
f = frequency in Hz
$u_0$ = permeability of free space
c = ground conductivity in Siemens per meter or mho per meter (milliSiemens are the common unit, 1/1000 of a Siemen)
s = intercoil spacing in meters
$i = (-1)^{1/2}$

The ratio of the secondary to the primary magnetic field is now linearly proportional to the terrain conductivity, a fact which makes it possible to construct a direct reading, linear terrain conductivity meter by simply measuring this ratio. Given $H_s/H_p$ the apparent conductivity indicated by the instrument is defined as

$$c_a = 4\ (H_s/H_p)\ /\ (wu_0s^2)$$

The results, including phase information sent from the transmitter to the receiver by a connecting wire are converted by the receiver box into a terrain conductivity in millisiemens/meter. The inphase portion of the signal is nulled by varying the coil spacing, a convenient method of assuring consistent geometry. Thus the inphase value is not available as an independent parameter when using the EM-34. The conductivity value derived represents an average of the resistivity of the surrounding earth materials to a

depth of approximately one-quarter to one-half of the coil spacing and laterally to an equal degree. The EM-31 has a fixed coil spacing and both the conductivity and the inphase readings can be recorded.

Figure EM1 shows the cumulative response curves for both vertical coplanar transmitter/receiver dipoles and horizontal coplanar dipoles. These curves show the relative contribution to the secondary magnetic field or apparent conductivity from all material below a given depth. As an example, this figure shows that for vertical coplanar dipoles all material below a depth of two intercoil spacings yields a relative contribution of approximately 0.25 (i.e. 25%) to the response, i.e. the conductivity measurement, at the receiver coil. A comparison of the two curves on Figure EM1 illustrates that the vertical dipole mode of operation has approximately twice the effective exploration depth of the horizontal dipole mode. The most significant result of analysis of the curves is the near-surface differences. Note that the vertical dipole mode is considerably less sensitive to near-surface material than the horizontal dipole mode.

If the geology is very heterogeneous, then the "average" value obtained may be very misleading. Other complicating items include but are not limited to: dipping beds, nearby metallic objects, and topographic effects. To illustrate the reasons for these complications, Figures EM-2 and EM-3 were prepared. The primary magnetic field, $H_p$, is generated by the transmitter loop. This primary field is received by the receiver loop and the amount of field detected generally depends on the nature of the material near and under both loops. The figures show the qualitative effect of a conductive body on these fields. Secondary fields, $H_s$, are generated within the conductor and link into the receiver but with opposite sign when the conductor is between the two loops as shown in Figure EM-3. Note that in figure EM-2 that when the conductor is beyond the end of the loops, the secondary fields add to the primary and the apparent response of the earth is enhanced. This simplified version of the effects does not account for the way that the presence of a conductor has varying effects on the inphase and quadrature components of the received fields. The presence of a conductor obviously can cause the assumptions inherent in the conversion of quadrature phase to conductivity to be in error and greatly complicate the quantitative interpretation of terrain conductivity data. Near conductive bodies which are of size and depth comparable to the coil spacings, the terrain conductivity and inphase measurements may be erratic. In this case, the technique becomes an "anomaly finder" and the recorded values have relative meaning only.

REFERENCE

McNeill, J.D., 1980, Electromagnetic Terrain Conductivity Measurement at Low Induction Numbers: Technical Note TN-6, Geonics Limited.

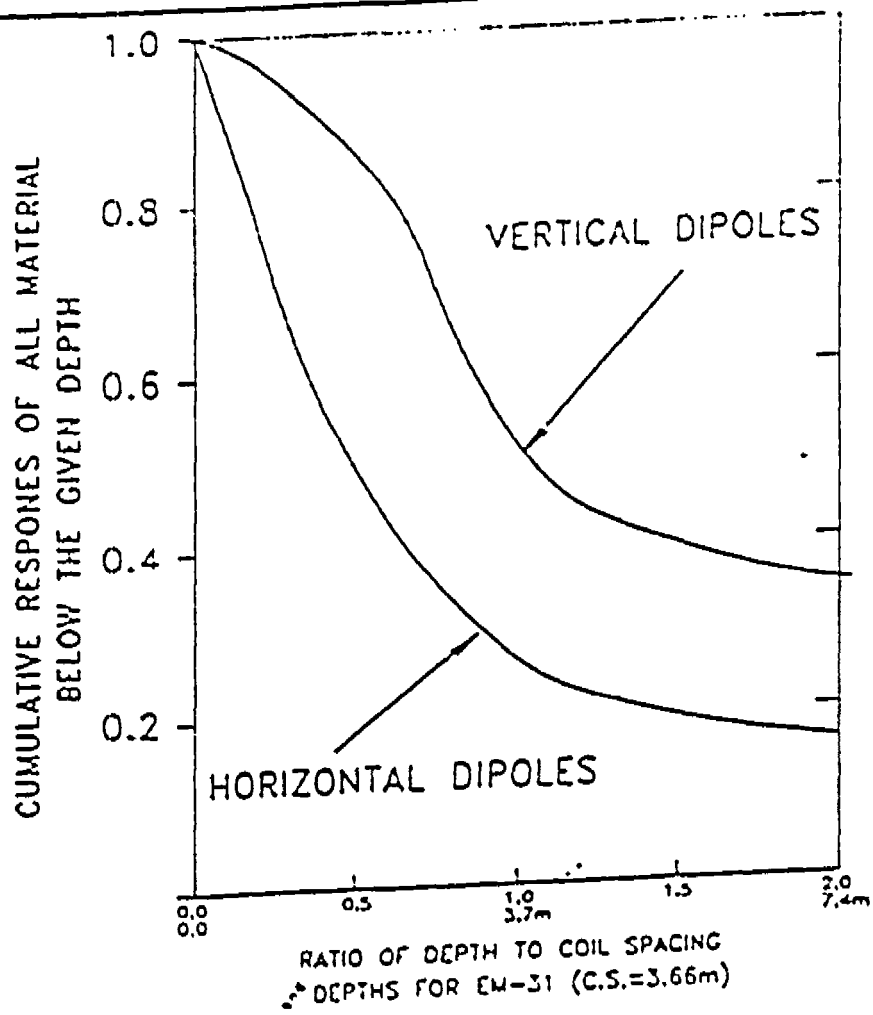
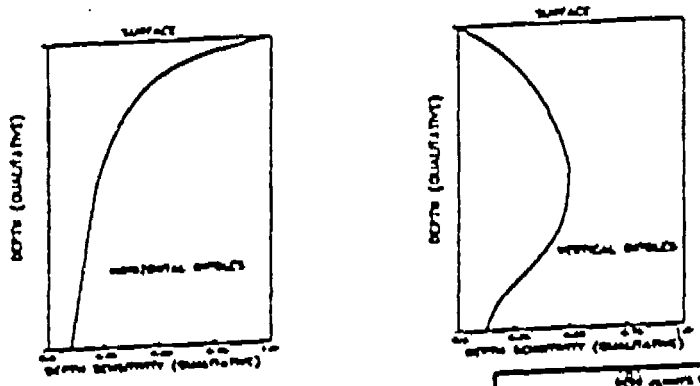



FIGURE EM-1



SAFETY

ELECTROMAGNETIC RESPONSE DIAGRAMS

CUMULATIVE RESPONSE CURVES OVER CUMULATIVE COPLANAR SENSITIVITY CURVES

FIGURE EM-1

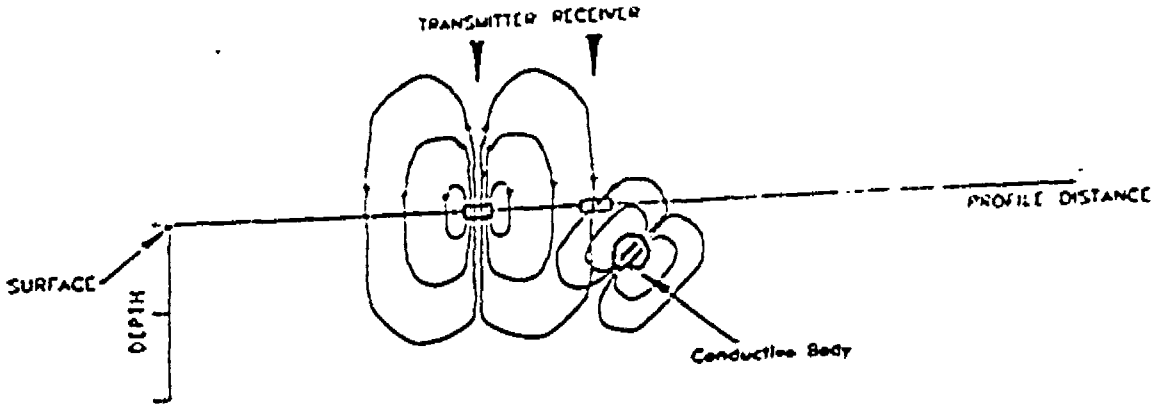



FIGURE EM-2

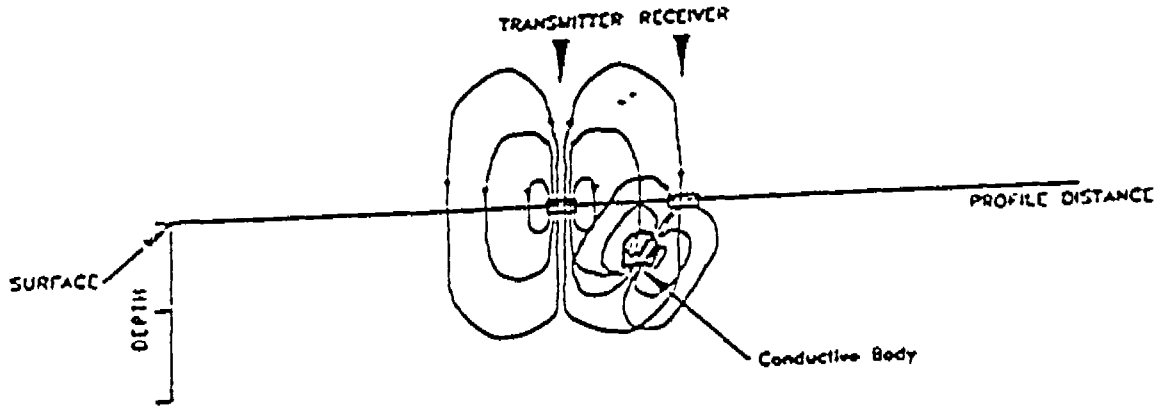



FIGURE EM-3

SAFETY

ELECTROMAGNETIC FIELD DIAGRAMS

FIGURE EM-2,3

13

# EM-61 HIGH SENSITIVITY METAL DETECTOR

## INTRODUCTION

The Geonics EM-61 is a high-sensitivity high-resolution time-domain metal detector which is used to detect both ferrous and non-ferrous metallic objects. It consists of a powerful transmitter that generates a pulsed primary magnetic field, which induces eddy currents in nearby metallic objects. The decay of these currents is measured by two receiver coils mounted on the coil assembly. The responses are recorded and displayed by an integrated data logger as two channels of information. For further processing and interpretation data can be transferred to PC computer.

The EM-61 detects a single 200 litre (55 gal) drum at a depth of over 3 meters beneath the instrument, yet it is relatively insensitive to interference from nearby surface metal such as fences, buildings, cars, etc. By making the measurement at a relatively long time after termination of the primary pulse, the response is practically independent of the electrical conductivity of the ground.

Due to its unique coil arrangement, the response curve is a single well defined positive peak, greatly facilitating quick and accurate location of the target. The depth of the target can be estimated from the width of the response and/or from relative response from each of the two receiver coils.

The EM-61 consists of three major parts: coil assembly, backpack with battery and processing electronics and digital data recorder.

## EM-61 Interpretation

The EM-61 is designed in such a way that it is possible not only to separate anomalies spatially but it is also possible under some conditions, to distinguish deeper targets from shallow ones. In addition, the unique two receiver coil system allows suppression of near surface targets that may mask response from deeper more important ones. This feature is very useful when the purpose of the survey is to locate deeper targets, like underground storage tanks or drums, in presence of shallow near surface metallic objects (manhole covers or metal scrap).

Because the amplitude of response is highly depended on the distance between the coil assembly and target, small near surface anomalies will very often produce a response orders of magnitude larger than much bigger but deeper targets. This masking effect from near surface material is drastically reduced by using output of two coils and processing them in the differential mode. In this case output from channel 1 is subtracted from channel 2. Channel 1 represents data from top receiver coil, whereas channel 2 is data from coil closer to the ground. The calculation is automatically performed by EM-61 DAt61 computer program.

The most common way of interpretation of EM-61 data is by using channel 2 and difference channel data.

The difference channel is calculated in the following way:

$$D = k*CH1 - CH2$$

Where: D is differential output in mV
CH1 is output from top coil in mV
CH2 is output from bottom coil in mV
k is depth coefficient normally set to 1

It is possible to vary k, and adjust the depth at which the response will be suppressed the most. If k is selected to be 1, the response from targets right below the surface will be reduced the most. If the coefficient k is made smaller than 1, the deeper target will be suppressed more than shallow targets. In this case surface anomalies will have negative response in the difference channel.

It should be noted that the degree of cancellation will be affected by size, shape and depth of targets. The response from the targets shaped like balls, spheres or small plate-like targets parallel with the ground can be reduced more than response from larger 3-dimensional targets.

Note that the negative values on the differential channel map are often associated with the metallic objects located on the surface, assuming that the depth coefficient of 1 is used (normal practice).

Calculation of Apparent Depth of Target

The user can estimate an approximate depth (apparent depth) of a target. This parameter is calculated on the basis of ratio of amplitude from channel 1 and channel 2 response. The apparent depth estimation is most accurate when the instrument is positioned over the center of buried target. (an additional reason from choosing the spacing between the survey lines). In order to determine position of an anomaly, the peak response of the channel 2 profile should be examined along the survey line as well as on the neighboring survey lines. By comparing responses of nearby lines and selecting anomaly maximum, it is normally easy to locate the position of the target. The apparent depth is determined at the highest point of the anomaly.

It should be noted that the calculation of depth is an approximation. The accuracy of estimation will depend on the

relation between the line (station) and center of the target, the size and shape of target, as well as the quality of data.

Depth estimation for the small ball-shaped targets will be more accurate that the estimate for larger targets (like underground storage tanks or pipes). Depth for the larger targets will be normally overestimated, meaning that the anomaly will appear deeper than it actually is.

In order to improve depth estimation accuracy, especially for deeper targets with low response, it may be necessary to remove a small offset from the readings. Although each instrument prior to leaving the factory, has outputs of both channels adjusted to read zero, it is possible that with time a small offset of several millivolts appears at the output(s). This effect could be recognized as a small non-zero shift in readings over the portion of the survey line that has no visible anomaly response.

## Surface Metal Discrimination

The EM-61 has another very useful feature. For surveys carried out in areas where there is a large amount of near surface metal, a second coil is utilized. The design of this coil is such that this near surface metal response can be made virtually zero, greatly facilitating the detection of deeper targets such as buried drums. Conversely, it is also possible, using the coil, to make the response from near surface metal to have one polarity, while that from deeper metal (the actual depth can be adjusted) is of opposite polarity, so that distinguishing between the two is rendered very simple.

The interpretation of EM-61 data is often qualitative as the metal detector is an excellent "anomaly finder".

Technical Specifications - EM-61

| | |
|---|---|
| Measured Quantity: | Two channels of secondary response in mV |
| EM Source: | Air cored coil, 1 x 1 m size |
| Current Waveform: | Bipolar rectangular current with 50% duty cycle |
| EM Sensors: coincident | A) Main: Air-cored coil, 1 x 1 m in size, with EM source<br>B) Focussing Air-cored coil, 1 x 1 m in size above main coil |
| 40 cm | |
| Maximum Output: | 40,000 mV for low gain<br>10,000 mV for high gain |
| Dynamic Range: | 18 bits |
| Display: | 4-line LCD with 16 characters per line |
| Data Storage: | Solid-state memory for up to 20,364 records |
| Power Supply: | 12 V rechargeable battery for 4 h continuous operations |
| Operating Weight & Dimensions: | Backpack: 10 kg; Coil Assembly: 16.5 kg (24 kg trailer mode)<br>Backpack: 60 x 30 x 10 cm<br>Coil: a) Main: 100 x 100 x 5 cm<br>b) Focussing: 100 x 100 x 2 cm |
| Shipping Weight & Dimensions | 61 kg (86 kg with trailer)<br>104 x 104 x 22 cm (Box 1)<br>54 x 54 x 52 cm (Box 2) with trailer option only |

METHOD APPENDIX

MAGNETIC METHOD

NOTE: This method appendix is furnished as background for those unfamiliar with the magnetic method.

## MAGNETICS

This discussion of the magnetic method includes general background information about magnetics. Most of the background information presented here on the magnetic method was compiled from M. P. Dobrin's Introduction to Geophysical Prospecting, and readers who desire a more detailed discussion should refer directly to that text.

### The Earth's Magnetic Field

The earth possesses a magnetic field caused primarily by sources in the earth's core. The field is a vector field with magnitude and direction similar to a field caused by a dipole or bar magnet located near the earth's center and aligned subparallel to the geographic axis. The intensity of the earth's magnetic field is expressed in S.I. units of nanoTesla (nT) or in an older unit, the gamma. The intensity of the earth's magnetic field varies between 45,000 and 60,000 nT over the coterminous United States. If measurements are made with a magnetic needle it would be found that the north-seeking end of the needle dips downward in the northern magnetic hemisphere, while in the southern magnetic hemisphere, the south-seeking end will dip downward. In between, at the magnetic equator, the needle will be horizontal; i.e, the inclination is zero. As the needle is moved closer to the magnetic poles, the angle of inclination increases from zero degrees at the equator to ninety degrees at the poles.

### Temporal Variations in the Earth's Magnetic Field

The earth's magnetic field varies with time. Temporal changes can be resolved into secular changes, solar diurnal changes, lunar diurnal changes, and changes resulting from magnetic storms. Secular changes take place over decades and centuries and do not impact short term magnetic measurements. The remaining higher frequency variations are significant. Normal diurnal variations have a period of about one day and an average amplitude of 25 nT; however, changes as large as 1000 nT may be observed during magnetic storms. Magnetic surveys are usually halted during magnetic storms. Diurnal variations are unpredictable but normal variations can be measured and removed from magnetic observations.

### Buried Magnetic Bodies

Variations in the magnetic field of the earth which are attributable to changes in geologic structure, magnetic properties in near-surface rocks, or man-made structures are measured with the magnetic method. Many rocks and minerals are weakly magnetic or magnetized by induction in the earth's magnetic field and cause spatial variations in the earth's field. The induced magnetization

is in the direction of the external field, and its strength is proportional to the strength of the external field. The constant of proportionality between the external field and the induced field is called the susceptibility. The susceptibility is zero for a vacuum and entirely nonmagnetic substances. Magnetic materials having positive susceptibilities are known as paramagnetic materials. A paramagnetic material of very high susceptibility is said to be ferromagnetic. Man-made objects containing iron or steel are often ferromagnetic and can create changes in the earth's field of several thousand nT.

**Magnetic Measurements**

A widely used land magnetometer is the nuclear resonance (proton) magnetometer. Most chemical elements have a magnetic moment; each nuclei represents a small spherical magnet spinning about its magnetic axis. Spheres of this type orient either parallel or antiparallel to an external magnetic field with the majority of the nuclei oriented in the antiparallel direction. When an external magnetic field is removed the magnetic moment returns to its original orientation (that of the earth's field) by precessing around the ambient field with an angular frequency that is proportional to the magnitude of the earth's magnetic field. Proton magnetometers measure the precession frequency and calculate a value for the magnitude of the earth's magnetic field. Proton magnetometers measure the total magnetic field of the earth rather than the individual components.

The measurement of magnetic gradient is a useful technique in magnetic exploration. Magnetic gradients are not affected by diurnal variations and serve to emphasize the anomalies caused by shallow bodies. Land survey gradiometers employ two individual magnetometers separated in the direction of the desired gradient measurement by a distance of approximately one-half meter. The gradient is approximated by the difference between the values measured by the two sensors, divided by the sensor separation.

The magnetometer is operated by a single person. However, grid layout or safety concerns may require the presence of another technician. The incorporation of computers and non-volatile memory in magnetometers has greatly increased the ease of use and data handling capability of magnetometers. The instruments can typically record position, comments, an entire day's worth of magnetic data.

**Interpretation of Magnetic Data**

Much of the information obtained from magnetic data is obtained in a qualitative sense. The interpreter of magnetic data is initially concerned with the presence or absence of a subsurface feature rather than its depth or shape. However, following anomaly identification, a more detailed interpretation effort can yield the

following quantitative pieces of information; the magnetic susceptibility contrast of the causative body, the dimensions of the body, and the depth of the body. While no interpretation is unique, a reasonable interpretation is found by limiting possible solutions with known geologic and physical constraints. An iterative process of modeling magnetic data aids the interpretation. Synthetic magnetic data is modeled (based on an input model) and compared with the observed magnetic data. Errors in the initial model are refined and the process begins again. Hopefully, within several interations the error between the model data and observed data will be small enough to confidently conclude that the causative body is similar in size, depth, and susceptibility to that of the model body.

The declination and inclination of the earth's magnetic field greatly influence the shapes of magnetic anomalies. Total magnetic field anomalies are highly variable in shape and amplitude; they are almost always asymmetrical, appear complex even when related to simple sources, and usually are the combined effect of several sources. The observed magnetic anomaly is the sum of the earth's magnetic field and the magnetic field induced into the source body. The anomaly is positive when the field of the buried body reinforces the earth's field and is negative when the field opposes the earth's field (Figure M-1).

The inclination of the earth's field is approximately 60 degrees and the declination is near 10 degrees in the western United States, so most magnetic bodies will create a dipolar total field anomaly. A magnetic low is expected near the north end of the body and a magnetic high is expected near the south end of the body. An anomaly from a shallow object will be sharper laterally (higher spatial frequency) and larger in amplitude than an anomaly from the same object buried at a greater depth. Steel underground storage tanks can create magnetic field anomalies as large as several hundred nanoTesla while a concrete reinforced septic tank may create an anomaly of only 100 nT. The spatial character of a magnetic anomaly is as important as anomaly magnitude. A long linear total field feature is probably attributable to a pipe, foundation, or roadway rather than an underground tank. It is also necessary to integrate any possible external information into the interpretation, whether it is in the form of historical information or an interpretation from a different geophysical method (Figure M2-3).

It is important to separate anomalies caused by cultural features such as debris piles, pipes, and buildings from subsurface related anomalies. Field maps of cultural features enable the identification of cultural anomalies.

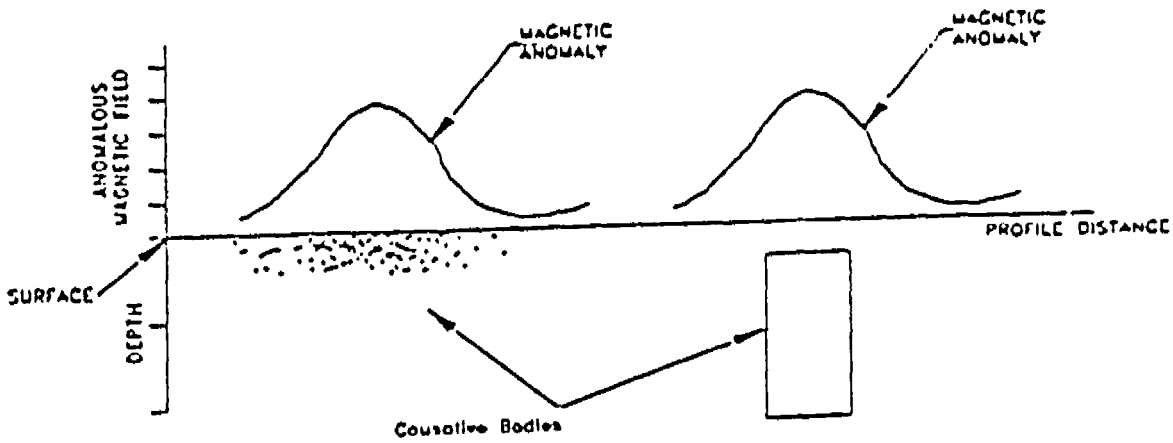



FIGURE M-1

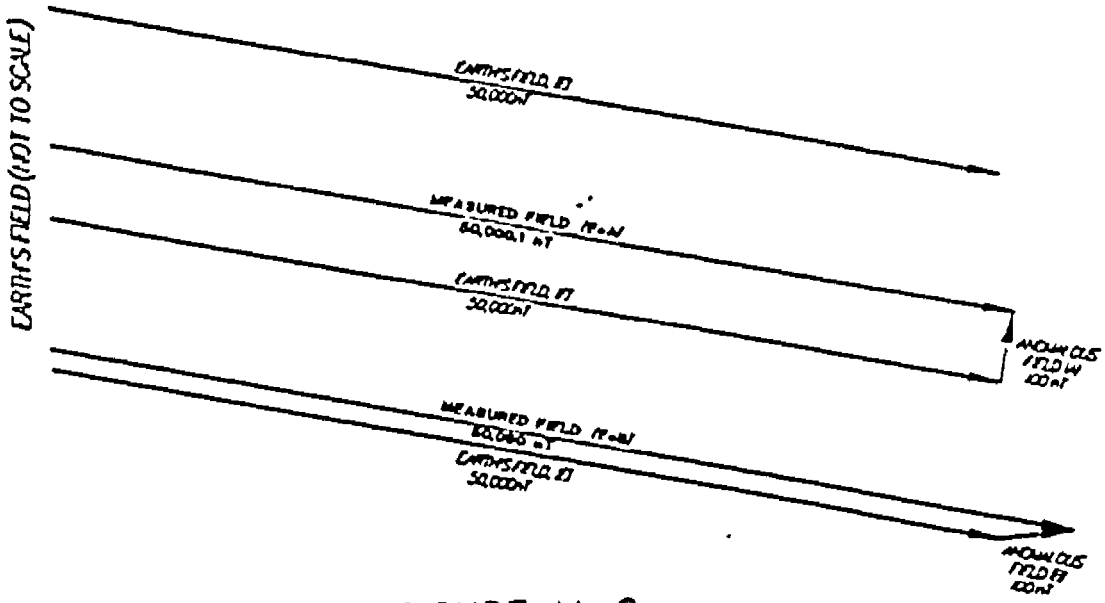



FIGURE M-2

SAFETY

MAGNETIC FIELD DIAGRAMS

ANOMALOUS DIAPLE, N

TOTAL FIELD MEASUREMENT DIAPLE, N+T

FIGURE M-1,2

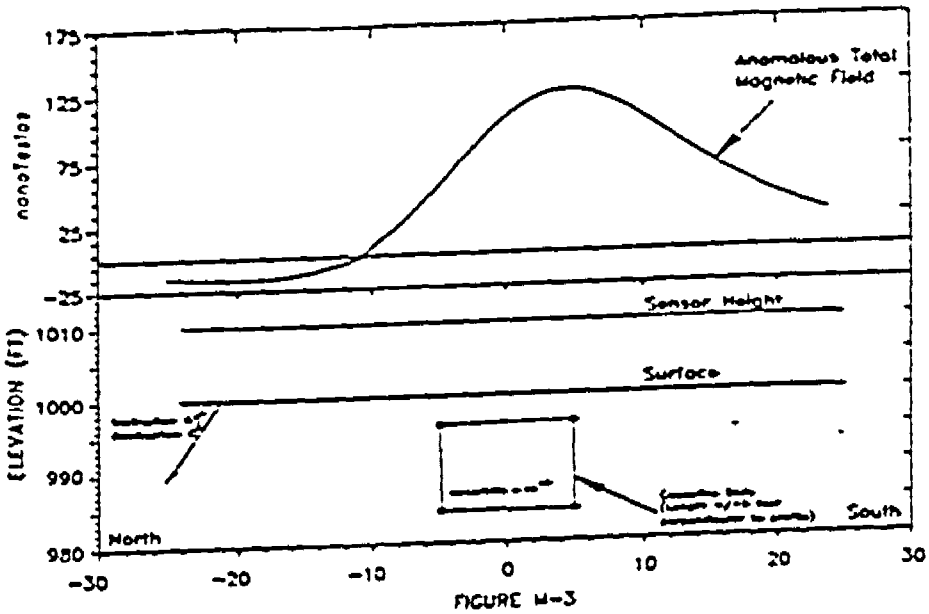



FIGURE M-3

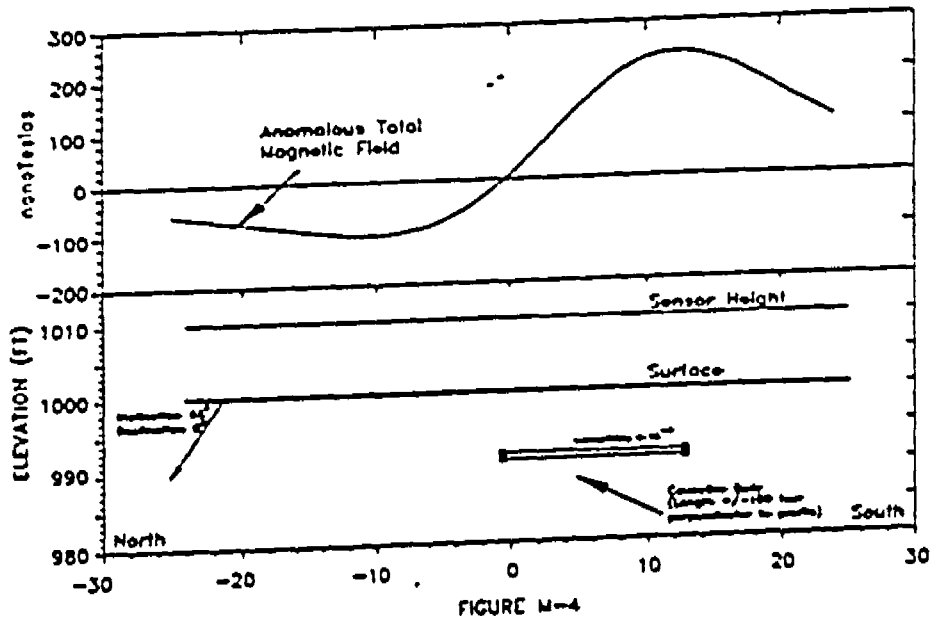



FIGURE M-4

SAFETY

MAGNETIC FIELD DIAGRAMS

FIGURE M-3,4

PARAGON ANALYTICS, INC.
225 Commerce Drive • Fort Collins, CO 80524 • (800) 443-1511 • (970) 490-1511 • FAX (970) 490-1522

November 14, 1997

Mr. Scott P. Anderson
NMED DOE Oversight Bureau
2044A Galisteo St.
Santa Fe, NM 87505

RECEIVED
DEC 26 1997
DOE OVERSIGHT BUREAU

RE: Paragon Workorder: 97-07-012
NMED Project Name: TA-49 7-1-97-26 (Soil)
NMED Project Number: Not Submitted

Dear Mr. Anderson:

One soil sample was received from New Mexico Environmental Department on July 2, 1997. The samples were scheduled for Gross Alpha/Beta (pages 1-6) and Isotopic Uranium (pages 1-7) analysis. The results for these analyses are contained in the enclosed reports.

Thank you for your confidence in Paragon Analytics, Inc. Should you have any questions, please call.

Sincerely,

RECEIVED
DEC 26 1997
DOE OVERSIGHT BUREAU

Paragon Analytics, Inc.
Lance Steere
Senior Project Manager

LS/jjc
Enclosures: Report



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# Paragon Analytics, Inc.

## Radiochemistry Case Narrative
## Gross Alpha/Beta

---

**NMED DOE OB**

Scott Anderson - TA49

PAI WO 97-07-012

1. This report consists of 1 soil sample received by Paragon on 07/02/97.

2. This sample was prepared according to Paragon Analytics, Inc. procedure PAI SOP702R10.

3. The sample was analyzed for gross alpha and beta activity by gas flow proportional counting according to Paragon Analytics, Inc. procedure PAI SOP705R2. The analyses were completed on 7/27/97. Gross alpha results are referenced to $^{241}$Am. Gross beta results are referenced to $^{90}$Sr/Y.

4. The result for this sample is reported on a dry weight basis in units of pCi/gram.

5. This sample was flamed, as prescribed in EPA Methods 900.0 and 9310 for samples which demonstrate hygroscopicity. This could reduce the beta activity if the samples contained $^{137}$Cs, or other beta emitters, that may be volatile under the conditions associated with flaming.

6. The blank showed a statistically positive value for gross alpha, but was well below the required detection level and the associated sample activity. Results are submitted.

7. No further anomalous situations were encountered during the preparation or analysis of these samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Renee Gallegos — Date: 8/1/97
Radiochemistry Instrument Technician

Radiochemistry Final Data Review — Date: 8/6/97

Paragon Analytics, Inc.

# SAMPLE NUMBER(S) CROSS-REFERENCE TABLE

Client Name: NMED DOE OB

Client Project ID:

| PAI-ID | Client ID | MATRIX | DATE SAMPLED |
|---|---|---|---|
| 9707012-1 | TA49BH-1 | Soil | 07/01/97 |

## ALPHA/BETA ANALYSIS RESULTS SUMMARY

Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc.

Date Collected: 07/01/97

Client Name: NMED DOE OB

Date Analyzed : 07/27/97

Client Project ID: Scott Anderson - TA49

Sample Matrix : Soil

Lab Sample ID Series: 97-07-012

Count Duration: 30 Min.

Analyzed By : RG

| Client Sample ID | Lab Sample ID | Gross Alpha (pCi/gram) | Gross Beta (pCi/gram) |
|---|---|---|---|
| TA49BH-1 | 97-07-012-01 | 21.7 ± 2.7 | 24.9 ± 2.9 |

Reported Uncertainties are the Estimated Total Propagated Uncertainties ($2\sigma$)
See PAI SOP 743FC for TPU determinations.

These samples were prepared using PAI SOP721FC and PAI SOP763FC
and analyzed using PAI SOP705FC.

**ALPHA/BETA ANALYSIS RESULTS SUMMARY**

Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc. Date Collected: 07/14/97

Client Name: Shared QC Date Analyzed : 07/24/97

Client Project ID: Blank Sample Matrix : Soil

Lab Sample ID Series: 97-07-012 Count Duration: 30 Min.

Analyzed By : RG

| Client Sample ID | Lab Sample ID | Gross Alpha (pCi/gram) | Gross Beta (pCi/gram) |
|---|---|---|---|
| Blank | 97-07-012-B1 | 0.49 ± 0.34 | < 0.80 (BDL) |

Reported Uncertainties are the Estimated Total Propagated Uncertainties (2σ)
See PAI SOP 743FC for TPU determinations.

These samples were prepared using PAI SOP721FC and PAI SOP763FC and analyzed using PAI SOP705FC.

BDL = Below Detection Limit; see method for DL determination

Remarks:

Blank for workorders 97-07-012, 06-195, and 07-024.

29 P

## GROSS ALPHA/BETA BLANK SPIKE RESULTS

Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc. Date Collected: 07/14/97

Client Name: Shared QC Date Analyzed : 07/24/97

Client Project ID : Blank Spike Sample Matrix : Soil

Lab Workorder Number : 97-07-012 Units : pCi/g

Alpha Recovery Data

| Lab Sample ID | Alpha Spike Added | Alpha Reported | Percent Recovery | Flag |
|---|---|---|---|---|
| 97-07-012-S1 | 44.8 | 54.8 | 122.3 | Pass |

Beta Recovery Data

| Lab Sample ID | Beta Spike Added | Beta Reported | Percent Recovery | Flag |
|---|---|---|---|---|
| 97-07-012-S1 | 28.8 | 28.8 | 99.9 | Pass |

PAI sets control limits for gross alpha/beta measurements based on EPA/EMSL Laboratory Intercomparison Control Limits.

Acceptance Range for Percent Recovery of blank spike samples is known ± 43% for gross alpha, known ± 26% for gross beta.

Remarks:

Blank Spike for workorders 97-07-012, 06-195, and 07-024.

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# Paragon Analytics, Inc.

## Radiochemistry Case Narrative
## Isotopic Uranium

---

**NMED DOE OB**

Scott Anderson-TA49

PAI WO 97-07-012

1. This report consists of 1 soil sample received by Paragon on 07/02/97.

2. This sample was prepared according to Paragon Analytics, Inc. procedures PAI SOP721R5, PAI SOP773R2 and PAI SOP778R3.

3. The sample was analyzed for the presence of isotopic uranium according to Paragon Analytics, Inc. procedure PAI SOP714R4. The analyses were completed on 10/14/97.

4. Sample TA49BH-1 was re-extracted because of elevated $^{238}U$ activity. This activity resulted in low tracer recovery for the sample in the initial batch 142904. A lower aliquot was taken for the re-extracted sample (batch 142984). Results are acceptable and are reported.

5. $^{234}U$, $^{235}U$ and $^{238}U$ activities are reported in the associated method blank above the minimum detectable concentration value. The measured blank activity is below the requested MDC. Results should be compared to the method blank activity to determine the validity of the measurement.

6. No sample duplicate was prepared for this sample. However a batch duplicate was run and meets acceptable DER criteria.

7. No further anomalous situations were encountered during the preparation or analysis of this sample. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Lisa Duckworth — 11/10/97
Radiochemistry Instrument Technician — Date

Radiochemistry Final Data Review — 11/11/97
Date

# CONTROLLED

NCR # 00-330

## NON-CONFORMANCE REPORT

Initiated by: DCS

Date Initiated 11/5/97

Method/QA Procedure ~~[illegible]~~ 1504

Workorders Affected ~~[illegible]~~ 9707012

11/10/97

**SECTION I**

TYPE OF EVENT: 11/10/97 SPECIFY

| | | |
|---|---|---|
| ____ | 1. Spike/Surrogate Criteria Not Met | ~~[illegible]~~ |
| ____ | 2. Calibration Criteria Not Met (Type of Equipment) | ~~[illegible]~~ |
| ____ | 3. Lab Contamination | ~~[illegible]~~ Due to chem action |
| ____ | 4. Method Requirements Not Met | of 12-236 - can't pick up trace. |
| ____ | 5. Purchased Materials Do Not Meet Quality Specs | Need to re-extract using |
| ____ | 6. Equipment Failure | a smaller volume. |
| ____ | 7. Deviation from QAP, SOP, Method | |
| X | 8. Other (Specify) | |

**SECTION II**

CORRRECTIVE ACTION TAKEN:

- X 1. Submit for Re-Extraction (Re-work)
- ____ 2. Recalibrate (Re-work)
- ____ 3. Re-analyze (Re-work)
- ____ 4. Return to Vendor/Reject
- ____ 5. Service call/return for repair
- ____ 6. Retrain
- ____ 7. Document in Narrative
- ____ 8. Other, describe ____

Approved by: [illegible]

**SECTION III**

REQUEST FOR REWORK IN SAMPLE PREP OR DIGESTION

| | |
|---|---|
| Initial date prepared, Page # | 142904 8/18/97 |
| Date for Rework, Page # | 142984 10/12/97 |
| Submitted by | [illegible] |
| Received by | [illegible] |
| Outcome of Re-analysis | Good, will report. |

Approved by: [illegible]

COMMENTS: Results are acceptable will report.

DISPOSITION Use as is ☐ Reject ☐ Repair ☐

SIGNATURES

Approved by [illegible] Date 11/10/97

Verification of Disposition [illegible] Date 11/10/97

QA Dept Approval [illegible] Date 11-10-97

CLOSEOUT DATE ____

COPIES TO: ____ Project Manager ____ Lab Manager

ATI FM 313FC2 (6/13/94)

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# Sample Results Summary

Client Name: NMED DOE OB

Client Project Name: Scott Anderson-TA49

Client Project Number:

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order Number: 9707012



Reported on: Monday, November 10, 1997

| Lab Sample ID | Client Sample ID | Test | Nuclide | Result +/- 2 s TPU | MDC | Units | Matrix | Prep Batch | Date Analyzed | Flags |
|---|---|---|---|---|---|---|---|---|---|---|
| 9707012-01 | TA49BH-1 | ISO U | U-234 | 32.4 +/- 4.1 | 0.25 | pCi/g | Soil | 142984 | 10/14/97 | |
| 9707012-01 | TA49BH-1 | ISO U | U-235 | 3.55 +/- 0.65 | 0.14 | pCi/g | Soil | 142984 | 10/14/97 | |
| 9707012-01 | TA49BH-1 | ISO U | U-238 | 343 +/- 40 | 0.23 | pCi/g | Soil | 142984 | 10/14/97 | |

Comments:

Abbreviations

TPU = Total Propagated Uncertainty (see PAI SOP 741)

MDC = Minimum Detectable Concentration (see PAI SOP 700)

Qualifiers/Flags:

U = Result is less than the sample specific minimum detectable activity

Y2 = Chemical Yield outside default limits

* = Duplicate Analysis not within specified limits

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Sample Results



Reported on: Monday, November 10, 1997

Client Name: NMED DOE OB

Client Project Name: Scott Anderson-TA49

Laboratory Name: Paragon Analytics, Inc.

Client Project Number: -

PAI Work Order Number: 9707012

| | | | |
|---|---|---|---|
| Field ID: TA49BH-1 | Sample Matrix: Soil | Date Collected: 01-Jul-97 | Final Aliquot: 0.2 |
| Lab ID: 9707012-01 | Date Prepared: 08-Oct-97 | Date Analyzed: 14-Oct-97 | Aliquot Units: g |
| | Prep SOP: PAI SOP 778R3 | Analytical SOP: PAI SOP 714R4 | Report Basis: DRY WEIGHT |
| | Prep Batch: 142984 | | Count Time (min.): 1000 |

| Target Nuclide | Result +/- 2s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 32.4 +/- 4.1 | 0.25 | pCi/g | |
| U-235 | 3.55 +/- 0.65 | 0.14 | pCi/g | |
| U-238 | 343 +/- 40 | 0.23 | pCi/g | |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 42.1 | 15.8 | pCi/g | 37% | 20-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 708)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

Y2 - Chemical Yield outside default limits.

* - Duplicate Analysis not within control limits.

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# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Method Blank Results



Reported on: Monday, November 10, 1997

Client Name: NMED DOE OB

Client Project Name: Scott Anderson-TA49

Client Project Number:

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order Number: 9707012

Field ID:

Lab ID: 9707220-BSMB1

Sample Matrix: Soil

Date Prepared: 08-Oct-97

Prep SOP: PAI SOP 778R3

Prep Batch: 142984

Date Collected: 08-Oct-97

Date Analyzed: 14-Oct-97

Analytical SOP: PAI SOP 714R4

Final Aliquot: 1

Aliquot Units: g

Report Basis: DRY WEIGHT

Count Time (min.): 1000

| Target Nuclide | Result +/- 2s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 0.073 +/- 0.025 | 0.017 | pCi/g | |
| U-235 | 0.036 +/- 0.018 | 0.017 | pCi/g | |
| U-238 | 0.047 +/- 0.023 | 0.026 | pCi/g | |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 8.4 | 6.72 | pCi/g | 80% | 20-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

Y2 - Chemical Yield outside default limits.

* - Duplicate Analysis not within control limits.

34

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## LCS Results



Reported on: Monday, November 10, 1997

Client Name: NMED DOE OB

Client Project Name: Scott Anderson-TA49

Client Project Number:

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order Number: 9707012

Field ID:

Lab ID: 9707220-SSLCS1

Sample Matrix: Soil

Date Prepared: 08-Oct-97

Prep SOP: PAI SOP 778R3

Prep Batch: 142984

Date Collected: 08-Oct-97

Date Analyzed: 14-Oct-97

Analytical SOP: PAI SOP 714R4

Final Aliquot: 1

Aliquot Units: g

Report Basis: DRYWEIGHT

Count Time (min.): 1000

| Target Nuclide | LCS Results +/- 2s TPU | MDC | Spike Added | Reporting Units | LCS Recovery | Control Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|
| U-234 | 10.9 +/- 1.3 | 0.032 | 11.7 | pCi/g | 93% | +/-27% | |
| U-235 | 0.583 +/- 0.096 | 0.019 | N/A | pCi/g | N/A | N/A | |
| U-238 | 11.2 +/- 1.3 | 0.027 | 11.7 | pCi/g | 96% | +/-27% | |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 8.4 | 6.45 | pCi/g | 77% | 20-110% |

Comments:

Abbreviations:

TPU = Total Propagated Uncertainty (see PAI SOP 743)

MDC = Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U = Result is less than the sample specific minimum detectable activity.

Y2 = Chemical Yield outside default limits.

* = Duplicate Analysis not within control limits.

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**ALPHA/BETA ANALYSIS RESULTS SUMMARY**

Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc. Date Collected: 07/01/97

Client Name: NMED DOE OB Date Analyzed : 07/27/97

Client Project ID: Scott Anderson -TA49 Sample Matrix : Soil

Lab Sample ID Series: 97-07-012 Count Duration: 30 Min.

Analyzed By : RG

| Client Sample ID | Lab Sample ID | Gross Alpha (pCi/gram) | Gross Beta (pCi/gram) |
|---|---|---|---|
| TA49BH-1 | 97-07-012-01 | 21.7 ± 2.7 | 24.9 ± 2.9 |

Reported Uncertainties are the Estimated Total Propagated Uncertainties (2σ)
See PAI SOP 743FC for TPU determinations.

These samples were prepared using PAI SOP721FC and PAI SOP763FC and analyzed using PAI SOP705FC.

Since α > 15 pCi/g

then start Iso U

If no Iso U, then Iso Pu

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NAME: S.P. Anderson
PHONE: (505) 827-1536
DATE COLLECTED: 7-1-97

## RADIOLOGICAL LIST

SAMPLE ID: TA49BH-1

Sample exhibited an elevated alpha/beta count of 3420cpm in the field before sampling.

GROSS ALPHA/BETA
ISOTOPIC URANIUM *
ISOTOPIC PLUTONIUM 239/240 *

* See "COMMENTS" on Chain of Custody form.

**PARAGON ANALYTICS, INC.**
225 Commerce Drive Ft. Collins, CO 80524

(800) 443 1511 or (970) 490 1511
(970) 490-1522 - Fax

# CHAIN OF CUSTODY

DATE 7-1-97 Page 1 of 1

[redacted]

REPORT TO: Scott P. Anderson
COMPANY: NMED DOE OB
ADDRESS: P.O. Box 1663 MSJ-993
Los Alamos, N.M. 87545
SAMPLER: S. P. Anderson
(505) 827-1536 PHONE NO.
(505) 827-1545 FAX NO.

ANALYSIS REQUESTED

| SAMPLE ID | DATE | TIME | MATRIX | [redacted] | Oil & Grease 9070/9071/413.2 | 418.1 - TRPH | 8015 Mod. - Gasoline | 8015 Mod. - Diesel | 8015m/8020 - Gasoline/BETX | 8020 - BETX only | 8240/8260 - GC/MS VOC's | 8270 - GC/MS SVOC's | 8080 - Pesticides/PCB's | 8080 - PCB's only | 8310/610 - HPLC PNA's | 8150 - Herbicides | 8141/614 - OP Pesticides | TOX - EOX - AOX - TX | Total Metals "(specify parameters in comments) | TCLP: "(specify parameters in comments) | Gross Alpha / Beta | Gross Gamma | Gamma Spec | Isotopic Plutonium 239/240 | Isotopic Uranium | Total Uranium (KPA) | Radium 226 / 228 | Tritium (H3) | Strontium 89 / 90 | 8315 - Formaldehyde | % Moisture | | | | | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TA49BH-1 | 7-1-97 | 9:55 | Soil | [redacted] | | | | | | | | | | | | | | | | | X | | | X | X | | | | | | 1 | | | | | 1 |

PROJECT INFORMATION
PROJECT NUMBER
PROJECT NAME:
P.O. NUMBER
TAT: STANDARD RUSH DUE _____

[redacted]

SAMPLE DISPOSAL: HAZ WASTE $5.00 ea RAD CHEM $15.00 ea RETURN

COMMENTS
(1) Sample Elevated Alpha/Beta probe Detected 3420CPM. At Sampling Time in Field.
(2) Only Run Isotopic Uranium IF Gross α Exceeds 15 pCi/L or Gross β Exceeds 50 pCi/L.
(3) Only Run Isotopic Plutonium 239/240 IF Isotopic Uranium Not Detected. However, Please Call Me To Verify (505) 827-1536 Before Doing this.
(4) Archive The Rest of The Sample.

| RELINQUISHED BY: 1 | RELINQUISHED BY: 2 | RELINQUISHED BY: 3 |
|---|---|---|
| Sign. S. P. Anderson Time 12:01 | Sign. Time | Sign. Time |
| Print S. P. Anderson Date 7/1/97 | Print Date | Print Date |
| Company NMED DOE OB | Company FDY | Company |
| **RECEIVED BY: 1** | **RECEIVED BY: 2** | **RECEIVED BY: 3** |
| Sign. Time | Sign. Time 915 | Sign. Time |
| Print Date | Print D. Hd Date 7/1/97 | Print Date |
| Company FDY | Company PAT | Company |

DO NOT WRITE IN SHADED AREAS

DISTRIBUTION White, Canary - PARAGON ANALYTICS, INC. Pink - Originator

Paragon Analytics, Inc. - Fort Collins, Colorado

# CONDITION OF SAMPLE UPON RECEIPT

CLIENT: NMED SHIPPING CONTAINER #: Cooler

WORKORDER NO. 97-07-012 INITIALS: DJL DATE: 7/2/97

| | | | | |
|---|---|---|---|---|
| 1. | Does this project require special handling according to NEESA, Level 3, or CLP protocols?<br>If yes, complete a. and b.<br>a. Cooler Temperature_____<br>b. Lot No's._____<br>c. Airbill Number | | Yes | (No) |
| 2. | Are custody seals on the cooler intact? If so, how many | (N/A) | Yes | No |
| 3. | Are custody seals on sample containers intact? | N/A | (Yes) | No |
| 4. | Is there a Chain of Custody (COC) or other representative documents, letters or shipping memos? | | (Yes) | No |
| 5. | Is the COC complete?<br>Relinquished: Yes ✓ No Requested Analysis: Yes ✓ No | N/A | (Yes) | No |
| 6. | Is the COC in agreement with the samples received?<br>No. of Samples: Yes ✓ No___ Sample ID's: Yes ✓ No___<br>Matrix: Yes ✓ No No. of Containers: Yes ✓ No | | (Yes) | No |
| 7. | Are the samples requiring acid preservation preserved correctly? | (N/A) | Yes | No |
| 8. | Is there enough sample? If so, are they in the proper containers? | | (Yes) | No |
| 9. | Are all samples within holding times for the requested analyses? | | (Yes) | No |
| 10. | Were the sample received on ice? | N/A | (Yes) | No |
| 11. | Were all sample containers received intact? (not broken or leaking, etc.) | | (Yes) | No |
| 12. | Are samples requiring no headspace, headspace free? | (N/A) | Yes | No |
| 13. | Do the samples require quarantine? | | Yes | (No) |
| 14. | Do samples require Paragon disposal? | | (Yes) | No |
| 15. | Did the client return any unused bottles? | | Yes | (No) |

Describe "NO" items (except No's 1, 13, &14):_____

Was the client contacted? Yes____ No____

If yes, Date:_____ Name of person contacted:_____

Describe actions taken or client instructions:_____

Group Leader's Signature:_____ Date:_____

Cooler Temperature: -2°c

FRM 201FC6 (24/1/97)

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# PARAGON ANALYTICS, INC.

225 Commerce Drive • Fort Collins, CO 80524 • (800) 443-1511 • (970) 490-1511 • FAX (970) 490-1522

# Invoice

| DATE | INVOICE # |
|---|---|
| 11/17/97 | 6136 |

**BILL TO**

New Mexico Environmental Department
PO Box 26110
Sante Fe NM 87502

July 1, 1

| P.O. NO. |
|---|
| NMED |

| TERMS | DUE DATE | SHIP DATE | PROJECT MGR | ASSESSION | CLIENT ID |
|---|---|---|---|---|---|
| 2% 10 Net 30 | 12/17/97 | 11/17/97 | Lance Steere | 97-07-012 | Scott Anderson TA49 |

| DESCRIPTION | QTY | RATE | AMOUNT |
|---|---|---|---|
| Gross Alpha Beta | 1 | 55.00 | 55.00 |
| Isotopic Uranium | 1 | 145.00 | 145.00 |
| Contract Discount | | -6.00 | -6.00 |

**Total** $194.00

Terms are 2%10 N30. Client agrees to pay delinquency charges on past due accounts at a rate of 1 1/2% per month (18% Annual). Client also agrees to pay collection costs and attorney fees if placed for collection.

*An Employee Owned Small Business*

Bill To: NMED-~~DOE~~ OVERSIGHT BUREAU
2044 A Galisteo St.
Santa Fe, NM 87502

Customer Number: 810-153

Original
BALANCE DUE: 211.63

| Date | Invoice |
|---|---|
| 11/20/97 | 77073 |

Proj.Name:Scott Anderson TA49

| PO Number | Terms | Project |
|---|---|---|
| | Net 30 | AEN ALB-810 |

| Quantity | Description | Rate | Amount |
|---|---|---|---|
| 1 | Gross Alpha/Beta | 55.00 | 55.00 |
| 1 | Isotopic Uranium (U-238, U-234, U-235) | 145.00 | 145.00 |
| | NM Gross Receipts Tax | 5.8125% | 11.63 |

acc OK! Michael Dale 1-7-97

Authorized By: No COC

TOTAL: 211.63

A finance charge of 1½% will be charged on balances 30 days past due
DISTRIBUTION: White-Customer, Yellow-File, Pink-Accounting

2709-D Pan American Freeway, NE • Albuquerque, NM 87107 • (505) 344-3777 • Fax (602) 344-4413

43

7-1-97 / Bottle House

— R/B count = ~~3410~~ 3420

— 1-1000 Nalgene Sample Taken

— Btwn Flags 13 & 18

— Taken @ 9:55 AM

A-Dye Took A Petri Dish Split.

— Clear / Sunny

S.P. Anderson

7-1-97

Bennie M.

1/99

MD49-98-0140 Resubmitted

Site ID # 4522R (Req. #)

SCL

COC

And TCLP met.

ND for all

Non-detect except Ba 0.45 mg/L

<RL

TCLP Ba RL

= 100 mg/L

C42 TCLP

MD49-98-0141 Resubmit

Site ID/Req # 4526R

TCLP met:

ND except Ba 1.4 mg/L <RL

MD ——— 0142 Resubmit

Req # 4526R

TCLP metal

ND, Ba 0.69 mg/L <RL

MD ——— 0143 Req # 4528R TCLP Met ND, Ba 0.66 mg/L <RL.

65

# ANALYTICAL DATA REPORT

submitted to

Los Alamos National Laboratory

COPY

4321R

July 14, 1998

Report Sent To: Augusta Garcia

Approved By: _____

Date Sent: 7/16/98

QST

Gainesville, Florida Laboratory

# RESULTS OF ANALYSIS

Explosives

4321R

Prepared for:
Los Alamos National Laboratory
Los Alamos, New Mexico
87545

Prepared by:
QST Environmental
404 S.W. 140th Terrace
Newberry, Florida 32669-3000
(352) 332-3318

July 14, 1998

QST Environmental Lab Project No. 1944006G 0208

47

Thursday, June 18, 1998

REQUEST NUMBER: 4321R
ANALYSIS TYPE: HE

**Los Alamos**
NATIONAL LABORATORY

ATTN: Ed Mansfield
ESE
14220 NEWBERRY ROAD
GAINSVILLE, FL 32607

Please analyze the enclosed samples according to the schedule indicated:

SHIP DATE: 6/18/98
REPORT DUE: 7/18/98
TURN AROUND REQ'D: 30 days

These samples are on:

LANL Request Number: 4321R
Per Agreement Number: 7796L0014-9S
Project Cost Code: MR2T05153318

R/AD SCREENING: Yes, Received
COMMENTS: 49 - 1144 , DK;

LANL ER SMO CONTACT: Joylene Valdez MS H895 5056659968
Signature: Joylene Valdez

| ANALYSIS ORDER CODE | ANALYTE(S) | SAMPLE ID | CONT ID | SAMPLE MATRIX | DATE SAMPLED | COMMENTS |
|---|---|---|---|---|---|---|
| HEXP 128305 | 184 | MD49-98-0146 | 01 | S | 6/16/98 | |
| HEXP | 185 | MD49-98-0147 | 01 | S | 6/16/98 | |
| HEXP | 187 | MD49-98-0148 | 01 | S | 6/16/98 | |
| HEXP | 186 | MD49-98-0149 | 01 | S | 6/11/68 | |

Final Page of REQUEST NUMBER 4321R Page 1

List = HEXPS.98

NW 6/19/98 17:35

Thursday, June 18, 1998

**Los Alamos**
NATIONAL LABORATORY

CHAIN OF CUSTODY DOCUMENT NUMBER: 4321RC

REQUEST NUMBER: 4321R
ANALYSIS TYPE: HE

ATTN: Ed Mansfield
ESE
14220 NEWBERRY ROAD
GAINSVILLE, FL 32607

| SAMPLE ID | CONT ID | CONTAINER DESCRIPTION | ANALYSIS ORDER CODE | PRESERVATIVE | MATRIX |
|---|---|---|---|---|---|
| MD49-98-0146 | 01 | 125 ml Glass | HEXP | Ice | S |
| MD49-98-0147 | 01 | 125 ml Glass | HEXP | Ice | S |
| MD49-98-0148 | 01 | 125 ml Glass | HEXP | Ice | S |
| MD49-98-0149 | 01 | 125 ml Glass | HEXP | Ice | S |

Final Page of CHAIN OF CUSTODY DOCUMENT FOR REQUEST NUMBER 4321R Page 1

Cooler Temp=4°C

| Relinquished By: | Date | Time | Received By: | Date | Time |
|---|---|---|---|---|---|
| John Kemp / John Kemp (PRINTED NAME / SIGNATURE) | 6/18/98 | 13:20 | [illegible] (PRINTED NAME / SIGNATURE) | | |
| | | | Scott Kemp / [illegible] (PRINTED NAME / SIGNATURE) | 6-19-98 | 1200 |
| | | | | | |

Received for DISPOSAL By: Date Time

PRINTED NAME SIGNATURE

Remarks:

0007 49

FORM 1
ANALYSIS DATA SHEET

Client ID

MD49-98-0146

Lab Name: QST Project No.: 1944006G SDG No.: G91201

Matrix: (soil/water) SOIL Lab Sample ID: 1L830S-184

Sample wt/vol: 2.00. G Lab File ID: G91201

%Moisture: 2.7 Dilution Factor: 1.00

Concentrated Extract Volume: 0.040 L Date Received: 06/19/98

Injection Volume: Date Extracted: 06/22/98

Time Analyzed: 1953 Date Analyzed: 07/08/98

| CAS NO. | COMPOUND | CONCENTRATION UNITS UG/G | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 0.205 | U |
| 121-82-4 | RDX | 0.205 | U |
| 99-35-4 | 1,3,5-TRINITROBENZENE | 0.103 | U |
| 99-65-0 | 1,3-DINITROBENZENE | 0.103 | U |
| 479-45-8 | TETRYL | 0.205 | U |
| 98-95-3 | NITROBENZENE | 0.103 | U |
| 118-96-7 | 2,4,6-TRINITROTOLUENE | 0.103 | U |
| 1946-51-0 | 4-AMINO-2,6-DINITROTOLUENE | 0.103 | U |
| 355-72-78-2 | 2,AMINO-4,6-DINIT-TOLUENE | 0.103 | U |
| 606-20-2 | 2,6-DINITROTOLUENE | 0.103 | U |
| 121-14-2 | 2,4-DINITROTOLUENE | 0.103 | U |
| 88-72-2 | 2-NITROTOLUENE | 0.205 | U |
| 99-99-0 | 4-NITROTOLUENE | 0.205 | U |
| 99-08-1 | 3-NITROTOLUENE | 0.205 | U |

FORM 1
ANALYSIS DATA SHEET

Client ID
MD49-98-0148

Lab Name: QST Project No.: 1944006G SDG No.: G91201

Matrix: (soil/water) SOIL Lab Sample ID: !L830S*187

Sample wt/vol: 2.01. G Lab File ID: G91201

%Moisture: 2.0 Dilution Factor: 1.00

Concentrated Extract Volume: 0.040 L Date Received: 06/19/98

Injection Volume: Date Extracted: 06/22/98

Time Analyzed: 2138 Date Analyzed: 07/08/98

| CAS NO. | COMPOUND | CONCENTRATION UNITS UG/G | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 0.203 | U |
| 121-82-4 | RDX | 0.203 | U |
| 99-35-4 | 1,3,5-TRINITROBENZENE | 0.102 | U |
| 99-65-0 | 1,3-DINITROBENZENE | 0.102 | U |
| 479-45-8 | TETRYL | 0.203 | U |
| 98-95-3 | NITROBENZENE | 0.102 | U |
| 118-96-7 | 2,4,6-TRINITROTOLUENE | 0.102 | U |
| 1946-51-0 | 4-AMINO-2,6-DINITROTOLUENE | 0.102 | U |
| 355-72-78-2 | 2,AMINO-4,6-DINIT-TOLUENE | 0.102 | U |
| 606-20-2 | 2,6-DINITROTOLUENE | 0.102 | U |
| 121-14-2 | 2,4-DINITROTOLUENE | 0.102 | U |
| 88-72-2 | 2-NITROTOLUENE | 0.203 | U |
| 99-99-0 | 4-NITROTOLUENE | 0.203 | U |
| 99-08-1 | 3-NITROTOLUENE | 0.203 | U |

FORM 1
ANALYSIS DATA SHEET

Client ID

MD49-98-0149

Lab Name: QST Project No.: 1944006G SDG No.: G91201

Matrix: (soil/water) SOIL Lab Sample ID: !L830S*186

Sample wt/vol: 2.01. G Lab File ID: G91201

%Moisture: 1.9 Dilution Factor: 1.00

Concentrated Extract Volume: 0.040 L Date Received: 06/19/98

Injection Volume: Date Extracted: 06/22/98

Time Analyzed: 2103 Date Analyzed: 07/08/98

| CAS NO. | COMPOUND | CONCENTRATION UNITS UG/G | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 0.203 | U |
| 121-82-4 | RDX | 0.203 | U |
| 99-35-4 | 1,3,5-TRINITROBENZENE | 0.101 | U |
| 99-65-0 | 1,3-DINITROBENZENE | 0.101 | U |
| 479-45-8 | TETRYL | 0.203 | U |
| 98-95-3 | NITROBENZENE | 0.101 | U |
| 118-96-7 | 2,4,6-TRINITROTOLUENE | 0.101 | U |
| 1946-51-0 | 4-AMINO-2,6-DINITROTOLUENE | 0.101 | U |
| 355-72-78-2 | 2,AMINO-4,6-DINIT-TOLUENE | 0.101 | U |
| 606-20-2 | 2,6-DINITROTOLUENE | 0.101 | U |
| 121-14-2 | 2,4-DINITROTOLUENE | 0.101 | U |
| 88-72-2 | 2-NITROTOLUENE | 0.203 | U |
| 99-99-0 | 4-NITROTOLUENE | 0.203 | U |
| 99-08-1 | 3-NITROTOLUENE | 0.203 | U |

FORM 1
ANALYSIS DATA SHEET

Client ID

BLK1

Lab Name: QST  Project No.: 1944006G  SDG No.: G91201

Matrix: (soil/water) SOIL  Lab Sample ID: MB-QC-91201-1

Sample wt/vol: 2.01. G  Lab File ID: G91201

%Moisture: 0.0  Dilution Factor: 1.00

Concentrated Extract Volume: 0.040 L  Date Received: 00/00/00

Injection Volume:  Date Extracted: 06/22/98

Time Analyzed: 1735  Date Analyzed: 07/08/98

| CAS NO. | COMPOUND | CONCENTRATION UNITS UG/G | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 0.199 | U |
| 121-82-4 | RDX | 0.199 | U |
| 99-35-4 | 1,3,5-TRINITROBENZENE | 0.100 | U |
| 99-65-0 | 1,3-DINITROBENZENE | 0.100 | U |
| 479-45-8 | TETRYL | 0.199 | U |
| 98-95-3 | NITROBENZENE | 0.100 | U |
| 118-96-7 | 2,4,6-TRINITROTOLUENE | 0.100 | U |
| 1946-51-0 | 4-AMINO-2,6-DINITROTOLUENE | 0.100 | U |
| 355-72-78-2 | 2,AMINO-4,6-DINIT-TOLUENE | 0.100 | U |
| 606-20-2 | 2,6-DINITROTOLUENE | 0.100 | U |
| 121-14-2 | 2,4-DINITROTOLUENE | 0.100 | U |
| 88-72-2 | 2-NITROTOLUENE | 0.199 | U |
| 99-99-0 | 4-NITROTOLUENE | 0.199 | U |
| 99-08-1 | 3-NITROTOLUENE | 0.199 | U |

Client ID

SP1

REFERENCE STANDARD

Lab Name: QST

SDG No: G91201

Lab Sample ID: SP1*QC-91201*1

Date Analyzed: 07/08/98

Instrument ID:

| Analyte | True (UG/G) | Found (UG/G) | # | %Recv | Limits % |
|---|---|---|---|---|---|
| HMX | 4.98 | 5.09 | | 102.2 | 70-130 |
| RDX | 5.00 | 5.15 | | 103.0 | 70-130 |
| 1,3,5-TRINITROBENZENE | 4.95 | 5.75 | | 116.2 | 70-130 |
| 1,3-DINITROBENZENE | 4.99 | 5.18 | | 103.8 | 70-130 |
| TETRYL | 7.51 | 3.17 | * | 42.2 | 70-130 |
| NITROBENZENE | 7.50 | 8.19 | | 109.2 | 70-130 |
| 2,4,6-TRINITROTOLUENE | 3.75 | 4.16 | | 110.9 | 70-130 |
| 4-AMINO-2,6-DINITROTOLUENE | 3.76 | 6.45 | * | 171.5 | 70-130 |
| 2,AMINO-4,6-DINIT-TOLUENE | 3.76 | 3.87 | | 102.9 | 70-130 |
| 2,6-DINITROTOLUENE | 3.77 | 3.96 | | 105.0 | 70-130 |
| 2,4-DINITROTOLUENE | 2.46 | 2.53 | | 102.8 | 70-130 |
| 2-NITROTOLUENE | 12.4 | 13.1 | | 105.6 | 70-130 |
| 4-NITROTOLUENE | 17.3 | 18.1 | | 104.6 | 70-130 |
| 3-NITROTOLUENE | 12.4 | 13.1 | | 105.6 | 70-130 |

# Column to be used to flag recovery outside of QC limits
* Values outside of QC limits

Comments:

FORM V QST

FORM 1
ANALYSIS DATA SHEET

Client ID

SP1

Lab Name: QST Project No.: 1944006G SDG No.: G91201

Matrix: (soil/water) SOIL Lab Sample ID: SP1-QC-91201-1

Sample wt/vol: 2.00. G Lab File ID: G91201

%Moisture: 0.0 Dilution Factor: 1.00

Concentrated Extract Volume: 0.040 L Date Received: 00/00/00

Injection Volume: Date Extracted: 06/22/98

Time Analyzed: 1809 Date Analyzed: 07/08/98

| CAS NO. | COMPOUND | CONCENTRATION UNITS UG/G | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 5.09 | |
| 121-82-4 | RDX | 5.15 | |
| 99-35-4 | 1,3,5-TRINITROBENZENE | 5.75 | |
| 99-65-0 | 1,3-DINITROBENZENE | 5.18 | |
| 479-45-8 | TETRYL | 3.27 | |
| 98-95-3 | NITROBENZENE | 8.19 | |
| 118-96-7 | 2,4,6-TRINITROTOLUENE | 4.16 | |
| 1946-51-0 | 4-AMINO-2,6-DINITROTOLUENE | 6.45 | |
| 355-72-78-2 | 2,AMINO-4,6-DINIT-TOLUENE | 3.87 | |
| 606-20-2 | 2,6-DINITROTOLUENE | 3.96 | |
| 121-14-2 | 2,4-DINITROTOLUENE | 2.53 | |
| 88-72-2 | 2-NITROTOLUENE | 13.1 | |
| 99-99-0 | 4-NITROTOLUENE | 18.1 | |
| 99-08-1 | 3-NITROTOLUENE | 13.1 | |

FORM 1
ANALYSIS DATA SHEET

Client ID

MD49-98-0147MS

Lab Name: QST Project No.: 1944006G SDG No.: G91201

Matrix: (soil/water) SOIL Lab Sample ID: SPM1*!L830S*185

Sample wt/vol: 2.00. G Lab File ID: G91201

%Moisture: 0.8 Dilution Factor: 1.00

Concentrated Extract Volume: 0.040 L Date Received: 06/19/98

Injection Volume: Date Extracted: 06/22/98

Time Analyzed: 1844 Date Analyzed: 07/08/98

| CAS NO. | COMPOUND | CONCENTRATION UNITS UG/G | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 4.74 | |
| 121-82-4 | RDX | 4.88 | |
| 99-35-4 | 1,3,5-TRINITROBENZENE | 5.49 | |
| 99-65-0 | 1,3-DINITROBENZENE | 4.91 | |
| 479-45-8 | TETRYL | 7.25 | |
| 98-95-3 | NITROBENZENE | 7.82 | |
| 118-96-7 | 2,4,6-TRINITROTOLUENE | 4.17 | |
| 1946-51-0 | 4-AMINO-2,6-DINITROTOLUENE | 3.55 | |
| 355-72-78-2 | 2,AMINO-4,6-DINIT-TOLUENE | 3.70 | |
| 606-20-2 | 2,6-DINITROTOLUENE | 3.78 | |
| 121-14-2 | 2,4-DINITROTOLUENE | 2.44 | |
| 88-72-2 | 2-NITROTOLUENE | 12.7 | |
| 99-99-0 | 4-NITROTOLUENE | 17.5 | |
| 99-08-1 | 3-NITROTOLUENE | 12.5 | |

FORM I
ANALYSIS DATA SHEET

Client ID
MD49-98-0147MSD

Lab Name: QST  Project No.: 1944006G  SDG No.: G91201

Matrix: (soil/water) SOIL  Lab Sample ID: SPM2*1L830S*185

Sample wt/vol: 2.00. G  Lab File ID: G91201

%Moisture: 0.8  Dilution Factor: 1.00

Concentrated Extract Volume: 0.040 L  Date Received: 06/19/98

Injection Volume:  Date Extracted: 06/22/98

Time Analyzed: 1919  Date Analyzed: 07/08/98

| CAS NO. | COMPOUND | CONCENTRATION UNITS UG/G | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 4.94 | |
| 121-82-4 | RDX | 4.98 | |
| 99-35-4 | 1,3,5-TRINITROBENZENE | 5.61 | |
| 99-65-0 | 1,3-DINITROBENZENE | 5.08 | |
| 479-45-8 | TETRYL | 6.65 | |
| 98-95-3 | NITROBENZENE | 8.07 | |
| 118-96-7 | 2,4,6-TRINITROTOLUENE | 4.22 | |
| 1946-51-0 | 4-AMINO-2,6-DINITROTOLUENE | 3.81 | |
| 355-72-78-2 | 2,AMINO-4,6-DINIT-TOLUENE | 3.79 | |
| 606-20-2 | 2,6-DINITROTOLUENE | 3.95 | |
| 121-14-2 | 2,4-DINITROTOLUENE | 2.51 | |
| 88-72-2 | 2-NITROTOLUENE | 13.2 | |
| 99-99-0 | 4-NITROTOLUENE | 18.2 | |
| 99-08-1 | 3-NITROTOLUENE | 13.0 | |

Copy to file 9/14/98

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H865, Drop Point OIU
Los Alamos, NM 87545
Attention: John Miglio

PO Number:
Account Number: LANL-295

Login #: L9808434
Report Date: 09/14/98
Work ID: 4525R/MR2W05153318
Date Received: 08/25/98

COPY

SAMPLE IDENTIFICATION

| Sample Number | Sample Description |
|---|---|
| L9808434-01 | MD49-98-0141 |
| L9808434-02 | MD49-98-0142 |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Certified By
Dennis S. Tepe

KEMRON ENVIRONMENTAL SERVICES

Sent By: KEMRON OH VALLEY LAB; 1 740 373 4835; 14 Sep 98 3:48PM;JOB 814;Page 10/11

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318

Matrix: Soil
Collected: 08/21/98 N/A

% Solid: 71
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids..... | % wt. | 71 | | 1.0 | 1 | N/A | DKM | 08/27/98 | 09:50 | D2216-90 |

Product: 827-LS - Library Search (Ten Peaks)

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 14:39

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98
Instrument: HPMS5
Analyst: MDC
Lab File ID: 7489

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71
Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Ret Time |
|---|---|---|---|---|---|---|
| 111-76-2 | Ethanol, 2-butoxy..... | ug/kg | 820 | | | 7.26 |

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 14:39

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98
Instrument: HPMS5
Analyst: MDC
Lab File ID: 7489

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71
Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 62-75-9 | n-Nitrosodimethylamine..... | ug/kg | | ND | 930 | 2 |
| 62-53-3 | Aniline..... | ug/kg | | ND | 1900 | 2 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 14:39

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7489

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 108-95-2 | Phenol | ug/kg | | ND | 930 | 2 |
| 111-44-4 | bis(2-Chloroethyl)ether | ug/kg | | ND | 930 | 2 |
| 95-57-8 | 2-Chlorophenol | ug/kg | | ND | 930 | 2 |
| 541-73-1 | 1,3-Dichlorobenzene | ug/kg | | ND | 930 | 2 |
| 106-46-7 | 1,4-Dichlorobenzene | ug/kg | | ND | 930 | 2 |
| 95-50-1 | 1,2-Dichlorobenzene | ug/kg | | ND | 930 | 2 |
| 95-48-7 | 2-Methylphenol | ug/kg | | ND | 930 | 2 |
| 106-44-5 | 4-Methylphenol | ug/kg | | ND | 930 | 2 |
| 621-64-7 | n-Nitroso-di-n-propylamine | ug/kg | | ND | 930 | 2 |
| 67-72-1 | Hexachloroethane | ug/kg | | ND | 930 | 2 |
| 98-95-3 | Nitrobenzene | ug/kg | | ND | 930 | 2 |
| 78-59-1 | Isophorone | ug/kg | | ND | 930 | 2 |
| 88-75-5 | 2-Nitrophenol | ug/kg | | ND | 930 | 2 |
| 105-67-9 | 2,4-Dimethylphenol | ug/kg | | ND | 930 | 2 |
| 65-85-0 | Benzoic acid | ug/kg | | ND | 9300 | 2 |
| 111-91-1 | bis(2-Chloroethoxy)methane | ug/kg | | ND | 930 | 2 |
| 120-83-2 | 2,4-Dichlorophenol | ug/kg | | ND | 930 | 2 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ug/kg | | ND | 930 | 2 |
| 91-20-3 | Naphthalene | ug/kg | | ND | 930 | 2 |
| 106-47-8 | 4-Chloroaniline | ug/kg | | ND | 3700 | 2 |
| 87-68-3 | Hexachlorobutadiene | ug/kg | | ND | 930 | 2 |
| 59-50-7 | 4-Chloro-3-methylphenol | ug/kg | | ND | 1900 | 2 |
| 91-57-6 | 2-Methylnaphthalene | ug/kg | | ND | 930 | 2 |
| 77-47-4 | Hexachlorocyclopentadiene | ug/kg | | ND | 930 | 2 |
| 88-06-2 | 2,4,6-Trichlorophenol | ug/kg | | ND | 930 | 2 |
| 95-95-4 | 2,4,5-Trichlorophenol | ug/kg | | ND | 4500 | 2 |
| 91-58-7 | 2-Chloronaphthalene | ug/kg | | ND | 930 | 2 |
| 88-74-4 | 2-Nitroaniline | ug/kg | | ND | 4500 | 2 |
| 131-11-3 | Dimethylphthalate | ug/kg | | ND | 930 | 2 |
| 208-96-8 | Acenaphthylene | ug/kg | | ND | 930 | 2 |
| 99-09-2 | 3-Nitroaniline | ug/kg | | ND | 4500 | 2 |
| 83-32-9 | Acenaphthene | ug/kg | | ND | 930 | 2 |
| 51-28-5 | 2,4-Dinitrophenol | ug/kg | | ND | 4500 | 2 |
| 100-02-7 | 4-Nitrophenol | ug/kg | | ND | 4500 | 2 |
| 132-64-9 | Dibenzofuran | ug/kg | | ND | 930 | 2 |
| 121-14-2 | 2,4-Dinitrotoluene | ug/kg | | ND | 930 | 2 |
| 606-20-2 | 2,6-Dinitrotoluene | ug/kg | | ND | 930 | 2 |
| 84-66-2 | Diethylphthalate | ug/kg | | ND | 930 | 2 |
| 7005-72-3 | 4-Chlorophenyl-phenyl ether | ug/kg | | ND | 930 | 2 |

RL = Reporting Limit



60

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A

Sample Weight: N/A
Extract Volume: N/A

Date Collected: 08/21/98

% Solid: 71

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 14:39

Instrument: BPMS5
Analyst: MDC
Lab File ID: 7489

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 86-73-7 | Fluorene | ug/kg | | ND | 930 | 2 |
| 100-01-6 | 4-Nitroaniline | ug/kg | | ND | 1900 | 2 |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | ug/kg | | ND | 4500 | 2 |
| 86-30-6 | n-Nitrosodiphenylamine | ug/kg | | ND | 930 | 2 |
| 103-33-3 | Azobenzene | ug/kg | | ND | 1900 | 2 |
| 101-55-3 | 4-Bromophenyl-phenylether | ug/kg | | ND | 930 | 2 |
| 118-74-1 | Hexachlorobenzene | ug/kg | | ND | 930 | 2 |
| 87-86-5 | Pentachlorophenol | ug/kg | | ND | 4500 | 2 |
| 85-01-8 | Phenanthrene | ug/kg | | ND | 930 | 2 |
| 120-12-7 | Anthracene | ug/kg | | ND | 930 | 2 |
| 84-74-2 | Di-n-butylphthalate | ug/kg | | ND | 930 | 2 |
| 206-44-0 | Fluoranthene | ug/kg | | ND | 930 | 2 |
| 129-00-0 | Pyrene | ug/kg | | ND | 930 | 2 |
| 85-68-7 | Butylbenzylphthalate | ug/kg | | ND | 930 | 2 |
| 91-94-1 | 3,3'-Dichlorobenzidine | ug/kg | | ND | 1900 | 2 |
| 56-55-3 | Benzo(a)anthracene | ug/kg | | ND | 930 | 2 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ug/kg | | ND | 930 | 2 |
| 218-01-9 | Chrysene | ug/kg | | ND | 930 | 2 |
| 117-84-0 | Di-n-octylphthalate | ug/kg | | ND | 930 | 2 |
| 205-99-2 | Benzo(b)fluoranthene | ug/kg | | ND | 930 | 2 |
| 207-08-9 | Benzo(k)fluoranthene | ug/kg | | ND | 930 | 2 |
| 50-32-8 | Benzo(a)pyrene | ug/kg | | ND | 930 | 2 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ug/kg | | ND | 930 | 2 |
| 53-70-3 | Dibenzo(a,h)anthracene | ug/kg | | ND | 930 | 2 |
| 191-24-2 | Benzo(g,h,i)Perylene | ug/kg | | ND | 930 | 2 |
| 100-51-6 | Benzyl alcohol | ug/kg | | ND | 3700 | 2 |
| 108-60-1 | 2,2'-Oxybis(1-chloropropane) | ug/kg | | ND | 930 | 2 |

SURROGATES- In Percent Recovery:

| | | |
|---|---|---|
| 2,4,6-Tribromophenol | 78.2 | ( 19 - 122%) |
| 2-Fluorobiphenyl | 61.1 | ( 30 - 115%) |
| 2-Fluorophenol | 49.2 | ( 25 - 121%) |
| Nitrobenzene-d5 | 55.0 | ( 23 - 120%) |
| Phenol-d5 | 47.9 | ( 24 - 113%) |
| p-Terphenyl-d14 | 119 | ( 18 - 137%) |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

**KEMRON ENVIRONMENTAL SERVICES**

Product: 8260LS - VOA Library Search

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:26

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98
Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09624

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71
Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Ret Time |
|---|---|---|---|---|---|---|
| | No searchable peaks..... | ug/kg | | | | |

Product: 826LA - Volatile Organics

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:26

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98
Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09624

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71
Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane..... | ug/kg | | ND | 14 | 1 |
| 74-87-3 | Chloromethane..... | ug/kg | | ND | 14 | 1 |
| 75-01-4 | Vinyl chloride..... | ug/kg | | ND | 14 | 1 |
| 74-83-9 | Bromomethane..... | ug/kg | | ND | 14 | 1 |
| 75-00-3 | Chloroethane..... | ug/kg | | ND | 14 | 1 |
| 75-69-4 | Trichlorofluoromethane..... | ug/kg | | ND | 7.0 | 1 |
| 75-35-4 | 1,1-Dichloroethene..... | ug/kg | | ND | 7.0 | 1 |
| 74-88-4 | Iodomethane..... | ug/kg | | ND | 7.0 | 1 |
| 75-15-0 | Carbon disulfide..... | ug/kg | | ND | 7.0 | 1 |
| 67-64-1 | Acetone..... | ug/kg | | ND | 28 | 1 |
| 75-09-2 | Methylene chloride..... | ug/kg | | ND | 7.0 | 1 |
| 156-60-5 | trans-1,2-Dichloroethene..... | ug/kg | | ND | 14 | 1 |
| 75-34-3 | 1,1-Dichloroethane..... | ug/kg | | ND | 7.0 | 1 |
| 594-20-7 | 2,2-Dichloropropane..... | ug/kg | | ND | 7.0 | 1 |
| 156-59-2 | cis-1,2-Dichloroethene..... | ug/kg | | ND | 14 | 1 |
| 78-93-3 | 2-Butanone..... | ug/kg | | ND | 28 | 1 |
| 74-97-5 | Bromochloromethane..... | ug/kg | | ND | 7.0 | 1 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 826LA - Volatile Organics

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:26

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09624

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 67-66-3 | Chloroform | ug/kg | | ND | 7.0 | 1 |
| 71-55-6 | 1,1,1-Trichloroethane | ug/kg | | ND | 7.0 | 1 |
| 56-23-5 | Carbon tetrachloride | ug/kg | | ND | 7.0 | 1 |
| 563-58-6 | 1,1-Dichloropropene | ug/kg | | ND | 7.0 | 1 |
| 71-43-2 | Benzene | ug/kg | | ND | 7.0 | 1 |
| 107-06-2 | 1,2-Dichloroethane | ug/kg | | ND | 7.0 | 1 |
| 79-01-6 | Trichloroethene | ug/kg | | ND | 7.0 | 1 |
| 78-87-5 | 1,2-Dichloropropane | ug/kg | | ND | 7.0 | 1 |
| 74-95-3 | Dibromomethane | ug/kg | | ND | 7.0 | 1 |
| 75-27-4 | Bromodichloromethane | ug/kg | | ND | 7.0 | 1 |
| 10061-02-6 | trans-1,3-Dichloropropene | ug/kg | | ND | 7.0 | 1 |
| 108-10-1 | 4-Methyl-2-pentanone | ug/kg | | ND | 28 | 1 |
| 108-88-3 | Toluene | ug/kg | | ND | 7.0 | 1 |
| 10061-01-5 | cis-1,3-Dichloropropene | ug/kg | | ND | 7.0 | 1 |
| 79-00-5 | 1,1,2-Trichloroethane | ug/kg | | ND | 7.0 | 1 |
| 127-18-4 | Tetrachloroethene | ug/kg | | ND | 7.0 | 1 |
| 142-28-9 | 1,3-Dichloropropane | ug/kg | | ND | 7.0 | 1 |
| 124-48-1 | Dibromochloromethane | ug/kg | | ND | 7.0 | 1 |
| 591-78-6 | 2-Hexanone | ug/kg | | ND | 28 | 1 |
| 106-93-4 | 1,2-Dibromoethane | ug/kg | | ND | 7.0 | 1 |
| 108-90-7 | Chlorobenzene | ug/kg | | ND | 7.0 | 1 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ug/kg | | ND | 7.0 | 1 |
| 100-41-4 | Ethyl benzene | ug/kg | | ND | 7.0 | 1 |
| 1330-20-7 | Xylenes (total) | ug/kg | | ND | 7.0 | 1 |
| 100-42-5 | Styrene | ug/kg | | ND | 7.0 | 1 |
| 75-25-2 | Bromoform | ug/kg | | ND | 7.0 | 1 |
| 98-82-8 | Isopropylbenzene | ug/kg | | ND | 7.0 | 1 |
| 108-86-1 | Bromobenzene | ug/kg | | ND | 7.0 | 1 |
| 96-18-4 | 1,2,3-Trichloropropane | ug/kg | | ND | 7.0 | 1 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ug/kg | | ND | 7.0 | 1 |
| 103-65-1 | n-Propylbenzene | ug/kg | | ND | 7.0 | 1 |
| 95-49-8 | 2-Chlorotoluene | ug/kg | | ND | 7.0 | 1 |
| 106-43-4 | 4-Chlorotoluene | ug/kg | | ND | 7.0 | 1 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ug/kg | | ND | 7.0 | 1 |
| 98-06-6 | tert-Butylbenzene | ug/kg | | ND | 7.0 | 1 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ug/kg | | ND | 7.0 | 1 |
| 135-98-8 | sec-Butylbenzene | ug/kg | | ND | 7.0 | 1 |
| 541-73-1 | 1,3-Dichlorobenzene | ug/kg | | ND | 7.0 | 1 |
| 106-46-7 | 1,4-Dichlorobenzene | ug/kg | | ND | 7.0 | 1 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

**KEMRON ENVIRONMENTAL SERVICES**

**Product: 826LA - Volatile Organics**

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:26

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09624

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 99-87-6 | p-Isopropyltoluene | ug/kg | | ND | 7.0 | 1 |
| 95-50-1 | 1,2-Dichlorobenzene | ug/kg | | ND | 7.0 | 1 |
| 104-51-8 | n-Butylbenzene | ug/kg | | ND | 7.0 | 1 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ug/kg | | ND | 14 | 1 |
| 76-13-1 | Trichlorotrifluoroethane | ug/kg | | ND | 7.0 | 1 |

SURROGATES- In Percent Recovery:

| | | |
|---|---|---|
| Toluene-d8 | 113 | ( 81 - 117%) |
| p-Bromofluorobenzene | 121 | ( 74 - 121%) |
| Dibromofluoromethane | 109 | ( 80 - 120%) |
| 1,2-Dichloroethane-d4 | 118 | ( 80 - 120%) |

---

**Product: 808-PCB-S - PCB's (Soil)**

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: 08/25/98
Analysis Date: 08/27/98 Time:

Instrument: HP4
Analyst: RCL
Lab File ID: 019R0101

Method: 8082\3550
Run ID: R51257

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 12674-11-2 | Aroclor-1016 | ug/kg | | ND | 36 | 1 |
| 11104-28-2 | Aroclor-1221 | ug/kg | | ND | 36 | 1 |
| 11141-16-5 | Aroclor-1232 | ug/kg | | ND | 36 | 1 |
| 53469-21-9 | Aroclor-1242 | ug/kg | | ND | 36 | 1 |
| 12672-29-6 | Aroclor-1248 | ug/kg | | ND | 36 | 1 |
| 11097-69-1 | Aroclor-1254 | ug/kg | | ND | 72 | 1 |
| 11096-82-5 | Aroclor-1260 | ug/kg | | ND | 72 | 1 |

RL = Reporting limit

Login #L9808434
September 14, 1998 01:18 pm

# KEMRON ENVIRONMENTAL SERVICES

Product: 808-PCB-S - PCB's (Soil)

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

TCLP Extract Date: N/A
Extract Date: 08/25/98
Analysis Date: 08/27/98 Time:

Dil. Type: N/A
COC Info: N/A

Date Collected: 08/21/98

Instrument: HP4
Analyst: ECL
Lab File ID: 019R0101

Sample Weight: N/A
Extract Volume: N/A

% Solid: 46

Method: 8082\3550
Run ID: R51257

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| | SURROGATES- In Percent Recovery: | | | | | |
| | 2,4,5,6-Tetrachloro-m-xylene..... | 51.3 | | ( 29 - 133%) | | |
| | Decachlorobiphenyl..... | 74.7 | | ( 30 - 173%) | | |

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318

Matrix: Soil
Collected: 08/21/98 N/A

% Solid: 46
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids..... | % wt. | 46 | | 1.0 | 1 | N/A | DKM | 08/27/98 | 09:50 | D2216-90 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 827-LS - Library Search (Ten Peaks)

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 15:22

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7490

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Ret Time |
|---|---|---|---|---|---|---|
| | unknown..... | ug/kg | 170 | | | 7.36 |

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 15:22

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7490

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 62-75-9 | n-Nitrosodimethylamine..... | ug/kg | | ND | 720 | 1 |
| 62-53-3 | Aniline..... | ug/kg | | ND | 1400 | 1 |
| 108-95-2 | Phenol..... | ug/kg | | ND | 720 | 1 |
| 111-44-4 | bis(2-Chloroethyl)ether..... | ug/kg | | ND | 720 | 1 |
| 95-57-8 | 2-Chlorophenol..... | ug/kg | | ND | 720 | 1 |
| 541-73-1 | 1,3-Dichlorobenzene..... | ug/kg | | ND | 720 | 1 |
| 106-46-7 | 1,4-Dichlorobenzene..... | ug/kg | | ND | 720 | 1 |
| 95-50-1 | 1,2-Dichlorobenzene..... | ug/kg | | ND | 720 | 1 |
| 95-48-7 | 2-Methylphenol..... | ug/kg | | ND | 720 | 1 |
| 106-44-5 | 4-Methylphenol..... | ug/kg | | ND | 720 | 1 |
| 621-64-7 | n-Nitroso-di-n-propylamine..... | ug/kg | | ND | 720 | 1 |
| 67-72-1 | Hexachloroethane..... | ug/kg | | ND | 720 | 1 |
| 98-95-3 | Nitrobenzene..... | ug/kg | | ND | 720 | 1 |
| 78-59-1 | Isophorone..... | ug/kg | | ND | 720 | 1 |
| 88-75-5 | 2-Nitrophenol..... | ug/kg | | ND | 720 | 1 |
| 105-67-9 | 2,4-Dimethylphenol..... | ug/kg | | ND | 720 | 1 |
| 65-85-0 | Benzoic acid..... | ug/kg | | ND | 7200 | 1 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

**KEMRON ENVIRONMENTAL SERVICES**

Product: 827LAB - Semivolatile Compounds

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 15:22

Instrument: HMS5
Analyst: MDC
Lab File ID: 7490

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 111-91-1 | bis(2-Chloroethoxy)methane | ug/kg | | ND | 720 | 1 |
| 120-83-2 | 2,4-Dichlorophenol | ug/kg | | ND | 720 | 1 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ug/kg | | ND | 720 | 1 |
| 91-20-3 | Naphthalene | ug/kg | | ND | 720 | 1 |
| 106-47-8 | 4-Chloroaniline | ug/kg | | ND | 2800 | 1 |
| 87-68-3 | Hexachlorobutadiene | ug/kg | | ND | 720 | 1 |
| 59-50-7 | 4-Chloro-3-methylphenol | ug/kg | | ND | 1400 | 1 |
| 91-57-6 | 2-Methylnaphthalene | ug/kg | | ND | 720 | 1 |
| 77-47-4 | Hexachlorocyclopentadiene | ug/kg | | ND | 720 | 1 |
| 88-06-2 | 2,4,6-Trichlorophenol | ug/kg | | ND | 720 | 1 |
| 95-95-4 | 2,4,5-Trichlorophenol | ug/kg | | ND | 3500 | 1 |
| 91-58-7 | 2-Chloronaphthalene | ug/kg | | ND | 720 | 1 |
| 88-74-4 | 2-Nitroaniline | ug/kg | | ND | 3500 | 1 |
| 131-11-3 | Dimethylphthalate | ug/kg | | ND | 720 | 1 |
| 208-96-8 | Acenaphthylene | ug/kg | | ND | 720 | 1 |
| 99-09-2 | 3-Nitroaniline | ug/kg | | ND | 3500 | 1 |
| 83-32-9 | Acenaphthene | ug/kg | | ND | 720 | 1 |
| 51-28-5 | 2,4-Dinitrophenol | ug/kg | | ND | 3500 | 1 |
| 100-02-7 | 4-Nitrophenol | ug/kg | | ND | 3500 | 1 |
| 132-64-9 | Dibenzofuran | ug/kg | | ND | 720 | 1 |
| 121-14-2 | 2,4-Dinitrotoluene | ug/kg | | ND | 720 | 1 |
| 606-20-2 | 2,6-Dinitrotoluene | ug/kg | | ND | 720 | 1 |
| 84-66-2 | Diethylphthalate | ug/kg | | ND | 720 | 1 |
| 7005-72-3 | 4-Chlorophenyl-phenyl ether | ug/kg | | ND | 720 | 1 |
| 86-73-7 | Fluorene | ug/kg | | ND | 720 | 1 |
| 100-01-6 | 4-Nitroaniline | ug/kg | | ND | 1400 | 1 |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | ug/kg | | ND | 3500 | 1 |
| 86-30-6 | n-Nitrosodiphenylamine | ug/kg | | ND | 720 | 1 |
| 103-33-3 | Azobenzene | ug/kg | | ND | 1400 | 1 |
| 101-55-3 | 4-Bromophenyl-phenylether | ug/kg | | ND | 720 | 1 |
| 118-74-1 | Hexachlorobenzene | ug/kg | | ND | 720 | 1 |
| 87-86-5 | Pentachlorophenol | ug/kg | | ND | 3500 | 1 |
| 85-01-8 | Phenanthrene | ug/kg | | ND | 720 | 1 |
| 120-12-7 | Anthracene | ug/kg | | ND | 720 | 1 |
| 84-74-2 | Di-n-butylphthalate | ug/kg | | ND | 720 | 1 |
| 206-44-0 | Fluoranthene | ug/kg | | ND | 720 | 1 |
| 129-00-0 | Pyrene | ug/kg | | ND | 720 | 1 |
| 85-68-7 | Butylbenzylphthalate | ug/kg | | ND | 720 | 1 |
| 91-94-1 | 3,3'-Dichlorobenzidine | ug/kg | | ND | 1400 | 1 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 827LAB - Semivolatile Compounds

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MRZW05153318
Matrix: Soil

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 15:22

Dil. Type: N/A
COC Info: N/A

Date Collected: 08/21/98

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7490

Sample Weight: N/A
Extract Volume: N/A

% Solid: 46

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 56-55-3 | Benzo(a)anthracene | ug/kg | | ND | 720 | 1 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ug/kg | | ND | 720 | 1 |
| 218-01-9 | Chrysene | ug/kg | | ND | 720 | 1 |
| 117-84-0 | Di-n-octylphthalate | ug/kg | | ND | 720 | 1 |
| 205-99-2 | Benzo(b)fluoranthene | ug/kg | | ND | 720 | 1 |
| 207-08-9 | Benzo(k)fluoranthene | ug/kg | | ND | 720 | 1 |
| 50-32-8 | Benzo(a)pyrene | ug/kg | | ND | 720 | 1 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ug/kg | | ND | 720 | 1 |
| 53-70-3 | Dibenzo(a,h)anthracene | ug/kg | | ND | 720 | 1 |
| 191-24-2 | Benzo(g,h,i)Perylene | ug/kg | | ND | 2800 | 1 |
| 100-51-6 | Benzyl alcohol | ug/kg | | ND | 720 | 1 |
| 108-60-1 | 2,2'-Oxybis(1-chloropropane) | ug/kg | | ND | 720 | 1 |

SURROGATES- In Percent Recovery:

| | | |
|---|---|---|
| 2,4,6-Tribromophenol | 68.5 | ( 19 - 122%) |
| 2-Fluorobiphenyl | 46.1 | ( 30 - 115%) |
| 2-Fluorophenol | 42.8 | ( 25 - 121%) |
| Nitrobenzene-d5 | 40.3 | ( 23 - 120%) |
| Phenol-d5 | 39.2 | ( 24 - 113%) |
| p-Terphenyl-d14 | 102 | ( 18 - 137%) |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 8260LS - VOA Library Search

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:59

Dil. Type: N/A
COC Info: N/A

Date Collected: 08/21/98

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09625

Sample Weight: N/A
Extract Volume: N/A

% Solid: 46

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Ret Time |
|---|---|---|---|---|---|---|
| | No searchable peaks..... | ug/kg | | | | |

Product: 826LA - Volatile Organics

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:59

Dil. Type: N/A
COC Info: N/A

Date Collected: 08/21/98

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09625

Sample Weight: N/A
Extract Volume: N/A

% Solid: 46

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane..... | ug/kg | | ND | 22 | 1 |
| 74-87-3 | Chloromethane..... | ug/kg | | ND | 22 | 1 |
| 75-01-4 | Vinyl chloride..... | ug/kg | | ND | 22 | 1 |
| 74-83-9 | Bromomethane..... | ug/kg | | ND | 22 | 1 |
| 75-00-3 | Chloroethane..... | ug/kg | | ND | 22 | 1 |
| 75-69-4 | Trichlorofluoromethane..... | ug/kg | | ND | 11 | 1 |
| 75-35-4 | 1,1-Dichloroethene..... | ug/kg | | ND | 11 | 1 |
| 74-88-4 | Iodomethane..... | ug/kg | | ND | 11 | 1 |
| 75-15-0 | Carbon disulfide..... | ug/kg | | ND | 11 | 1 |
| 67-64-1 | Acetone..... | ug/kg | | ND | 43 | 1 |
| 75-09-2 | Methylene chloride..... | ug/kg | | ND | 11 | 1 |
| 156-60-5 | trans-1,2-Dichloroethene..... | ug/kg | | ND | 22 | 1 |
| 75-34-3 | 1,1-Dichloroethane..... | ug/kg | | ND | 11 | 1 |
| 594-20-7 | 2,2-Dichloropropane..... | ug/kg | | ND | 11 | 1 |
| 156-59-2 | cis-1,2-Dichloroethene..... | ug/kg | | ND | 22 | 1 |
| 78-93-3 | 2-Butanone..... | ug/kg | | ND | 43 | 1 |
| 74-97-5 | Bromochloromethane..... | ug/kg | | ND | 11 | 1 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 826LA - Volatile Organics

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:59

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09625

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 67-66-3 | Chloroform | ug/kg | | ND | 11 | 1 |
| 71-55-6 | 1,1,1-Trichloroethane | ug/kg | | ND | 11 | 1 |
| 56-23-5 | Carbon tetrachloride | ug/kg | | ND | 11 | 1 |
| 563-58-6 | 1,1-Dichloropropene | ug/kg | | ND | 11 | 1 |
| 71-43-2 | Benzene | ug/kg | | ND | 11 | 1 |
| 107-06-2 | 1,2-Dichloroethane | ug/kg | | ND | 11 | 1 |
| 79-01-6 | Trichloroethene | ug/kg | | ND | 11 | 1 |
| 78-87-5 | 1,2-Dichloropropane | ug/kg | | ND | 11 | 1 |
| 74-95-3 | Dibromomethane | ug/kg | | ND | 11 | 1 |
| 75-27-4 | Bromodichloromethane | ug/kg | | ND | 11 | 1 |
| 10061-02-6 | trans-1,3-Dichloropropene | ug/kg | | ND | 11 | 1 |
| 108-10-1 | 4-Methyl-2-pentanone | ug/kg | | ND | 43 | 1 |
| 108-88-3 | Toluene | ug/kg | | ND | 11 | 1 |
| 10061-01-5 | cis-1,3-Dichloropropene | ug/kg | | ND | 11 | 1 |
| 79-00-5 | 1,1,2-Trichloroethane | ug/kg | | ND | 11 | 1 |
| 127-18-4 | Tetrachloroethene | ug/kg | | ND | 11 | 1 |
| 142-28-9 | 1,3-Dichloropropane | ug/kg | | ND | 11 | 1 |
| 124-48-1 | Dibromochloromethane | ug/kg | | ND | 11 | 1 |
| 591-78-6 | 2-Hexanone | ug/kg | | ND | 43 | 1 |
| 106-93-4 | 1,2-Dibromoethane | ug/kg | | ND | 11 | 1 |
| 108-90-7 | Chlorobenzene | ug/kg | | ND | 11 | 1 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ug/kg | | ND | 11 | 1 |
| 100-41-4 | Ethyl benzene | ug/kg | | ND | 11 | 1 |
| 1330-20-7 | Xylenes (total) | ug/kg | | ND | 11 | 1 |
| 100-42-5 | Styrene | ug/kg | | ND | 11 | 1 |
| 75-25-2 | Bromoform | ug/kg | | ND | 11 | 1 |
| 98-82-8 | Isopropylbenzene | ug/kg | | ND | 11 | 1 |
| 108-86-1 | Bromobenzene | ug/kg | | ND | 11 | 1 |
| 96-18-4 | 1,2,3-Trichloropropane | ug/kg | | ND | 11 | 1 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ug/kg | | ND | 11 | 1 |
| 103-65-1 | n-Propylbenzene | ug/kg | | ND | 11 | 1 |
| 95-49-8 | 2-Chlorotoluene | ug/kg | | ND | 11 | 1 |
| 106-43-4 | 4-Chlorotoluene | ug/kg | | ND | 11 | 1 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ug/kg | | ND | 11 | 1 |
| 98-06-6 | tert-Butylbenzene | ug/kg | | ND | 11 | 1 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ug/kg | | ND | 11 | 1 |
| 135-98-8 | sec-Butylbenzene | ug/kg | | ND | 11 | 1 |
| 541-73-1 | 1,3-Dichlorobenzene | ug/kg | | ND | 11 | 1 |
| 106-46-7 | 1,4-Dichlorobenzene | ug/kg | | ND | 11 | 1 |

RL - Reporting Limit

Login #L9808434
September 14, 1998 01:10 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 826LA - Volatile Organics

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:59

Dil. Type: N/A
COC Info: N/A

Date Collected: 08/21/98

Instrument: HPMSG
Analyst: CMG
Lab File ID: 61A09625

Sample Weight: N/A
Extract Volume: N/A

% Solid: 46

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 99-87-6 | p-Isopropyltoluene | ug/kg | | ND | 11 | 1 |
| 95-50-1 | 1,2-Dichlorobenzene | ug/kg | | ND | 11 | 1 |
| 104-51-8 | n-Butylbenzene | ug/kg | | ND | 11 | 1 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ug/kg | | ND | 22 | 1 |
| 76-13-1 | Trichlorotrifluoroethane | ug/kg | | ND | 11 | 1 |
| | SURROGATES- In Percent Recovery: | | | | | |
| | Toluene-d8 | | 115 | | ( 81 - 117%) | |
| | p-Bromofluorobenzene | | 124 | *,RB | ( 74 - 121%) | |
| | Dibromofluoromethane | | 113 | | ( 80 - 120%) | |
| | 1,2-Dichloroethane-d4 | | 123 | *,RB | ( 80 - 120%) | |

RL = Reporting Limit

Copy to
Rene Evans
9/22/98

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H865, Drop Point O1U
Los Alamos, NM 87545
Attention: John Miglio

PO Number:
Account Number: LANL-295

Login #: L9808434
Report Date: 09/15/98
Work ID: 4525R/MR2W05153318
Date Received: 08/25/98

COPY

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9808434-01 | MD49-98-0141 | L9808434-02 | MD49-98-0142 |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Certified By
Dennis S. Tepe

Report Sent To: [illegible]
Approved By: 9/22/98
Date Sent: _____

KEMRON ENVIRONMENTAL SERVICES

Order #98-08-434
September 16, 1998
9:41

**KEMRON ENVIRONMENTAL SERVICES**
**REPORT NARRATIVE**

Lab ID# 7797L0014-8M

CLIENT: Los Alamos National Laboratory

LANL SDG/RN: 4525R

Sample Management:
Two soil samples were received at Kemron Environmental Services on 8/25/98.

Client ID:
MD49-98-0141
ND49-98-0142

Quality Control:

VOLATILE ORGANICS - 8260:
MS/MSD outlier acceptable in daily soil LCS. A separate calibration curve was used for the quantitation of trichlorotrifluoroethane.

MS/MSD analysis was performed on a non-LANL sample.

SEMIVOLATILE ORGANICS - 8270:
There were no technical difficulties encountered during the analysis of these samples.

MS/MSD analysis was performed on sample MD49-98-0140 RN 4521R.

PCB - 8082:
There were no technical difficulties encountered during the analysis of this sample.

MS/MSD analysis was performed on a non-LANL sample.

Shipment Conditions:
The samples were received intact. Solid blue ice was present.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and in completeness, except as detailed in this QC Report.

Laboratory Manager

Date: 9/16/98

Login #L9808434
September 15, 1998 03:17 pm

KEMRON ENVIRONMENTAL SERVICES

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318

Matrix: Soil
Collected: 08/21/98 N/A

% Solid: 71
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids..... | % wt. | 71 | | 1.0 | 1 | N/A | DKM | 08/27/98 | 09:50 | D2216-90 |

Product: 827-LS - Library Search (Ten Peaks)

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 14:39

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7489

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Ret Time |
|---|---|---|---|---|---|---|
| 111-76-2 | Ethanol, 2-butoxy..... | ug/kg | 820 | | | 7.26 |

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 14:39

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7489

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 62-75-9 | n-Nitrosodimethylamine..... | ug/kg | | ND | 930 | 2 |
| 62-53-3 | Aniline..... | ug/kg | | ND | 1900 | 2 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 14:39

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7489

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 108-95-2 | Phenol | ug/kg | | ND | 930 | 2 |
| 111-44-4 | bis(2-Chloroethyl)ether | ug/kg | | ND | 930 | 2 |
| 95-57-8 | 2-Chlorophenol | ug/kg | | ND | 930 | 2 |
| 541-73-1 | 1,3-Dichlorobenzene | ug/kg | | ND | 930 | 2 |
| 106-46-7 | 1,4-Dichlorobenzene | ug/kg | | ND | 930 | 2 |
| 95-50-1 | 1,2-Dichlorobenzene | ug/kg | | ND | 930 | 2 |
| 95-48-7 | 2-Methylphenol | ug/kg | | ND | 930 | 2 |
| 106-44-5 | 4-Methylphenol | ug/kg | | ND | 930 | 2 |
| 621-64-7 | n-Nitroso-di-n-propylamine | ug/kg | | ND | 930 | 2 |
| 67-72-1 | Hexachloroethane | ug/kg | | ND | 930 | 2 |
| 98-95-3 | Nitrobenzene | ug/kg | | ND | 930 | 2 |
| 78-59-1 | Isophorone | ug/kg | | ND | 930 | 2 |
| 88-75-5 | 2-Nitrophenol | ug/kg | | ND | 930 | 2 |
| 105-67-9 | 2,4-Dimethylphenol | ug/kg | | ND | 930 | 2 |
| 65-85-0 | Benzoic acid | ug/kg | | ND | 9300 | 2 |
| 111-91-1 | bis(2-Chloroethoxy)methane | ug/kg | | ND | 930 | 2 |
| 120-83-2 | 2,4-Dichlorophenol | ug/kg | | ND | 930 | 2 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ug/kg | | ND | 930 | 2 |
| 91-20-3 | Naphthalene | ug/kg | | ND | 930 | 2 |
| 106-47-8 | 4-Chloroaniline | ug/kg | | ND | 3700 | 2 |
| 87-68-3 | Hexachlorobutadiene | ug/kg | | ND | 930 | 2 |
| 59-50-7 | 4-Chloro-3-methylphenol | ug/kg | | ND | 1900 | 2 |
| 91-57-6 | 2-Methylnaphthalene | ug/kg | | ND | 930 | 2 |
| 77-47-4 | Hexachlorocyclopentadiene | ug/kg | | ND | 930 | 2 |
| 88-06-2 | 2,4,6-Trichlorophenol | ug/kg | | ND | 930 | 2 |
| 95-95-4 | 2,4,5-Trichlorophenol | ug/kg | | ND | 4500 | 2 |
| 91-58-7 | 2-Chloronaphthalene | ug/kg | | ND | 930 | 2 |
| 88-74-4 | 2-Nitroaniline | ug/kg | | ND | 4500 | 2 |
| 131-11-3 | Dimethylphthalate | ug/kg | | ND | 930 | 2 |
| 208-96-8 | Acenaphthylene | ug/kg | | ND | 930 | 2 |
| 99-09-2 | 3-Nitroaniline | ug/kg | | ND | 4500 | 2 |
| 83-32-9 | Acenaphthene | ug/kg | | ND | 930 | 2 |
| 51-28-5 | 2,4-Dinitrophenol | ug/kg | | ND | 4500 | 2 |
| 100-02-7 | 4-Nitrophenol | ug/kg | | ND | 4500 | 2 |
| 132-64-9 | Dibenzofuran | ug/kg | | ND | 930 | 2 |
| 121-14-2 | 2,4-Dinitrotoluene | ug/kg | | ND | 930 | 2 |
| 606-20-2 | 2,6-Dinitrotoluene | ug/kg | | ND | 930 | 2 |
| 84-66-2 | Diethylphthalate | ug/kg | | ND | 930 | 2 |
| 7005-72-3 | 4-Chlorophenyl-phenyl ether | ug/kg | | ND | 930 | 2 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 14:39

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7489

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 86-73-7 | Fluorene | ug/kg | | ND | 930 | 2 |
| 100-01-6 | 4-Nitroaniline | ug/kg | | ND | 1900 | 2 |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | ug/kg | | ND | 4500 | 2 |
| 86-30-6 | n-Nitrosodiphenylamine | ug/kg | | ND | 930 | 2 |
| 103-33-3 | Azobenzene | ug/kg | | ND | 1900 | 2 |
| 101-55-3 | 4-Bromophenyl-phenylether | ug/kg | | ND | 930 | 2 |
| 118-74-1 | Hexachlorobenzene | ug/kg | | ND | 930 | 2 |
| 87-86-5 | Pentachlorophenol | ug/kg | | ND | 4500 | 2 |
| 85-01-8 | Phenanthrene | ug/kg | | ND | 930 | 2 |
| 120-12-7 | Anthracene | ug/kg | | ND | 930 | 2 |
| 84-74-2 | Di-n-butylphthalate | ug/kg | | ND | 930 | 2 |
| 206-44-0 | Fluoranthene | ug/kg | | ND | 930 | 2 |
| 129-00-0 | Pyrene | ug/kg | | ND | 930 | 2 |
| 85-68-7 | Butylbenzylphthalate | ug/kg | | ND | 930 | 2 |
| 91-94-1 | 3,3'-Dichlorobenzidine | ug/kg | | ND | 1900 | 2 |
| 56-55-3 | Benzo(a)anthracene | ug/kg | | ND | 930 | 2 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ug/kg | | ND | 930 | 2 |
| 218-01-9 | Chrysene | ug/kg | | ND | 930 | 2 |
| 117-84-0 | Di-n-octylphthalate | ug/kg | | ND | 930 | 2 |
| 205-99-2 | Benzo(b)fluoranthene | ug/kg | | ND | 930 | 2 |
| 207-08-9 | Benzo(k)fluoranthene | ug/kg | | ND | 930 | 2 |
| 50-32-8 | Benzo(a)pyrene | ug/kg | | ND | 930 | 2 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ug/kg | | ND | 930 | 2 |
| 53-70-3 | Dibenzo(a,h)anthracene | ug/kg | | ND | 930 | 2 |
| 191-24-2 | Benzo(g,h,i)Perylene | ug/kg | | ND | 930 | 2 |
| 100-51-6 | Benzyl alcohol | ug/kg | | ND | 3700 | 2 |
| 108-60-1 | 2,2'-Oxybis(1-chloropropane) | ug/kg | | ND | 930 | 2 |

SURROGATES- In Percent Recovery:

| | | |
|---|---|---|
| 2,4,6-Tribromophenol | 78.2 | ( 19 - 122%) |
| 2-Fluorobiphenyl | 61.1 | ( 30 - 115%) |
| 2-Fluorophenol | 49.2 | ( 25 - 121%) |
| Nitrobenzene-d5 | 55.0 | ( 23 - 120%) |
| Phenol-d5 | 47.9 | ( 24 - 113%) |
| p-Terphenyl-d14 | 119 | ( 18 - 137%) |

RL = Reporting Limit

KEMRON ENVIRONMENTAL SERVICES

Product: 8260LS - VOA Library Search

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:26

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09624

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Ret Time |
|---|---|---|---|---|---|---|
| | No searchable peaks..... | ug/kg | | | | |

Product: 826LA - Volatile Organics

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:26

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09624

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane..... | ug/kg | | ND | 14 | 1 |
| 74-87-3 | Chloromethane..... | ug/kg | | ND | 14 | 1 |
| 75-01-4 | Vinyl chloride..... | ug/kg | | ND | 14 | 1 |
| 74-83-9 | Bromomethane..... | ug/kg | | ND | 14 | 1 |
| 75-00-3 | Chloroethane..... | ug/kg | | ND | 14 | 1 |
| 75-69-4 | Trichlorofluoromethane..... | ug/kg | | ND | 7.0 | 1 |
| 75-35-4 | 1,1-Dichloroethene..... | ug/kg | | ND | 7.0 | 1 |
| 74-88-4 | Iodomethane..... | ug/kg | | ND | 7.0 | 1 |
| 75-15-0 | Carbon disulfide..... | ug/kg | | ND | 7.0 | 1 |
| 67-64-1 | Acetone..... | ug/kg | | ND | 28 | 1 |
| 75-09-2 | Methylene chloride..... | ug/kg | | ND | 7.0 | 1 |
| 156-60-5 | trans-1,2-Dichloroethene..... | ug/kg | | ND | 14 | 1 |
| 75-34-3 | 1,1-Dichloroethane..... | ug/kg | | ND | 7.0 | 1 |
| 594-20-7 | 2,2-Dichloropropane..... | ug/kg | | ND | 7.0 | 1 |
| 156-59-2 | cis-1,2-Dichloroethene..... | ug/kg | | ND | 14 | 1 |
| 78-93-3 | 2-Butanone..... | ug/kg | | ND | 28 | 1 |
| 74-97-5 | Bromochloromethane..... | ug/kg | | ND | 7.0 | 1 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 826LA - Volatile Organics

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:26

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09624

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 67-66-3 | Chloroform | ug/kg | | ND | 7.0 | 1 |
| 71-55-6 | 1,1,1-Trichloroethane | ug/kg | | ND | 7.0 | 1 |
| 56-23-5 | Carbon tetrachloride | ug/kg | | ND | 7.0 | 1 |
| 563-58-6 | 1,1-Dichloropropene | ug/kg | | ND | 7.0 | 1 |
| 71-43-2 | Benzene | ug/kg | | ND | 7.0 | 1 |
| 107-06-2 | 1,2-Dichloroethane | ug/kg | | ND | 7.0 | 1 |
| 79-01-6 | Trichloroethene | ug/kg | | ND | 7.0 | 1 |
| 78-87-5 | 1,2-Dichloropropane | ug/kg | | ND | 7.0 | 1 |
| 74-95-3 | Dibromomethane | ug/kg | | ND | 7.0 | 1 |
| 75-27-4 | Bromodichloromethane | ug/kg | | ND | 7.0 | 1 |
| 10061-02-6 | trans-1,3-Dichloropropene | ug/kg | | ND | 7.0 | 1 |
| 108-10-1 | 4-Methyl-2-pentanone | ug/kg | | ND | 28 | 1 |
| 108-88-3 | Toluene | ug/kg | | ND | 7.0 | 1 |
| 10061-01-5 | cis-1,3-Dichloropropene | ug/kg | | ND | 7.0 | 1 |
| 79-00-5 | 1,1,2-Trichloroethane | ug/kg | | ND | 7.0 | 1 |
| 127-18-4 | Tetrachloroethene | ug/kg | | ND | 7.0 | 1 |
| 142-28-9 | 1,3-Dichloropropane | ug/kg | | ND | 7.0 | 1 |
| 124-48-1 | Dibromochloromethane | ug/kg | | ND | 7.0 | 1 |
| 591-78-6 | 2-Hexanone | ug/kg | | ND | 28 | 1 |
| 106-93-4 | 1,2-Dibromoethane | ug/kg | | ND | 7.0 | 1 |
| 108-90-7 | Chlorobenzene | ug/kg | | ND | 7.0 | 1 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ug/kg | | ND | 7.0 | 1 |
| 100-41-4 | Ethyl benzene | ug/kg | | ND | 7.0 | 1 |
| 1330-20-7 | Xylenes (total) | ug/kg | | ND | 7.0 | 1 |
| 100-42-5 | Styrene | ug/kg | | ND | 7.0 | 1 |
| 75-25-2 | Bromoform | ug/kg | | ND | 7.0 | 1 |
| 98-82-8 | Isopropylbenzene | ug/kg | | ND | 7.0 | 1 |
| 108-86-1 | Bromobenzene | ug/kg | | ND | 7.0 | 1 |
| 96-18-4 | 1,2,3-Trichloropropane | ug/kg | | ND | 7.0 | 1 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ug/kg | | ND | 7.0 | 1 |
| 103-65-1 | n-Propylbenzene | ug/kg | | ND | 7.0 | 1 |
| 95-49-8 | 2-Chlorotoluene | ug/kg | | ND | 7.0 | 1 |
| 106-43-4 | 4-Chlorotoluene | ug/kg | | ND | 7.0 | 1 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ug/kg | | ND | 7.0 | 1 |
| 98-06-6 | tert-Butylbenzene | ug/kg | | ND | 7.0 | 1 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ug/kg | | ND | 7.0 | 1 |
| 135-98-8 | sec-Butylbenzene | ug/kg | | ND | 7.0 | 1 |
| 541-73-1 | 1,3-Dichlorobenzene | ug/kg | | ND | 7.0 | 1 |
| 106-46-7 | 1,4-Dichlorobenzene | ug/kg | | ND | 7.0 | 1 |

RL = Reporting Limit

KEMRON ENVIRONMENTAL SERVICES

Product: 826LA - Volatile Organics

Lab Sample ID: L9808434-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 71

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:26

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09624

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 99-87-6 | p-Isopropyltoluene..... | ug/kg | | ND | 7.0 | 1 |
| 95-50-1 | 1,2-Dichlorobenzene..... | ug/kg | | ND | 7.0 | 1 |
| 104-51-8 | n-Butylbenzene..... | ug/kg | | ND | 7.0 | 1 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane..... | ug/kg | | ND | 14 | 1 |
| 76-13-1 | Trichlorotrifluoroethane..... | ug/kg | | ND | 7.0 | 1 |

SURROGATES- In Percent Recovery:

| | | |
|---|---|---|
| Toluene-d8..... | 113 | ( 81 - 117%) |
| p-Bromofluorobenzene..... | 121 | ( 74 - 121%) |
| Dibromofluoromethane..... | 109 | ( 80 - 120%) |
| 1,2-Dichloroethane-d4..... | 118 | ( 80 - 120%) |

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Product: 808-PCB-S - PCB's (Soil)

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: 08/25/98
Analysis Date: 08/27/98 Time:

Instrument: HP4
Analyst: ECL
Lab File ID: 019R0101

Method: 8082\3550
Run ID: R51257

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 12674-11-2 | Aroclor-1016..... | ug/kg | | ND | 36 | 1 |
| 11104-28-2 | Aroclor-1221..... | ug/kg | | ND | 36 | 1 |
| 11141-16-5 | Aroclor-1232..... | ug/kg | | ND | 36 | 1 |
| 53469-21-9 | Aroclor-1242..... | ug/kg | | ND | 36 | 1 |
| 12672-29-6 | Aroclor-1248..... | ug/kg | | ND | 36 | 1 |
| 11097-69-1 | Aroclor-1254..... | ug/kg | | ND | 72 | 1 |
| 11096-82-5 | Aroclor-1260..... | ug/kg | | ND | 72 | 1 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 808-PCB-S - PCB's (Soil)

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: 08/25/98
Analysis Date: 08/27/98 Time:

Instrument: HP4
Analyst: ECL
Lab File ID: 019R0101

Method: 8082\3550
Run ID: R51257

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| | SURROGATES- In Percent Recovery: | | | | | |
| | 2,4,5,6-Tetrachloro-m-xylene..... | | 51.3 | ( 29 - 133%) | | |
| | Decachlorobiphenyl..... | | 74.7 | ( 30 - 173%) | | |

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318

Matrix: Soil
Collected: 08/21/98 N/A

% Solid: 46
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids..... | % wt. | 46 | | 1.0 | 1 | N/A | DKM | 08/27/98 | 09:50 | D2216-90 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 827-LS - Library Search (Ten Peaks)

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 15:22

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7490

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Ret Time |
|---|---|---|---|---|---|---|
| | unknown..... ..... | ug/kg | 170 | | | 7.36 |

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 15:22

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7490

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 62-75-9 | n-Nitrosodimethylamine..... | ug/kg | | ND | 720 | 1 |
| 62-53-3 | Aniline..... | ug/kg | | ND | 1400 | 1 |
| 108-95-2 | Phenol..... | ug/kg | | ND | 720 | 1 |
| 111-44-4 | bis(2-Chloroethyl)ether..... | ug/kg | | ND | 720 | 1 |
| 95-57-8 | 2-Chlorophenol..... | ug/kg | | ND | 720 | 1 |
| 541-73-1 | 1,3-Dichlorobenzene..... | ug/kg | | ND | 720 | 1 |
| 106-46-7 | 1,4-Dichlorobenzene..... | ug/kg | | ND | 720 | 1 |
| 95-50-1 | 1,2-Dichlorobenzene..... | ug/kg | | ND | 720 | 1 |
| 95-48-7 | 2-Methylphenol..... | ug/kg | | ND | 720 | 1 |
| 106-44-5 | 4-Methylphenol..... | ug/kg | | ND | 720 | 1 |
| 621-64-7 | n-Nitroso-di-n-propylamine..... | ug/kg | | ND | 720 | 1 |
| 67-72-1 | Hexachloroethane..... | ug/kg | | ND | 720 | 1 |
| 98-95-3 | Nitrobenzene..... | ug/kg | | ND | 720 | 1 |
| 78-59-1 | Isophorone..... | ug/kg | | ND | 720 | 1 |
| 88-75-5 | 2-Nitrophenol..... | ug/kg | | ND | 720 | 1 |
| 105-67-9 | 2,4-Dimethylphenol..... | ug/kg | | ND | 720 | 1 |
| 65-85-0 | Benzoic acid..... | ug/kg | | ND | 7200 | 1 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 15:22

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7490

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 111-91-1 | bis(2-Chloroethoxy)methane | ug/kg | | ND | 720 | 1 |
| 120-83-2 | 2,4-Dichlorophenol | ug/kg | | ND | 720 | 1 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ug/kg | | ND | 720 | 1 |
| 91-20-3 | Naphthalene | ug/kg | | ND | 720 | 1 |
| 106-47-8 | 4-Chloroaniline | ug/kg | | ND | 2800 | 1 |
| 87-68-3 | Hexachlorobutadiene | ug/kg | | ND | 720 | 1 |
| 59-50-7 | 4-Chloro-3-methylphenol | ug/kg | | ND | 1400 | 1 |
| 91-57-6 | 2-Methylnaphthalene | ug/kg | | ND | 720 | 1 |
| 77-47-4 | Hexachlorocyclopentadiene | ug/kg | | ND | 720 | 1 |
| 88-06-2 | 2,4,6-Trichlorophenol | ug/kg | | ND | 720 | 1 |
| 95-95-4 | 2,4,5-Trichlorophenol | ug/kg | | ND | 3500 | 1 |
| 91-58-7 | 2-Chloronaphthalene | ug/kg | | ND | 720 | 1 |
| 88-74-4 | 2-Nitroaniline | ug/kg | | ND | 3500 | 1 |
| 131-11-3 | Dimethylphthalate | ug/kg | | ND | 720 | 1 |
| 208-96-8 | Acenaphthylene | ug/kg | | ND | 720 | 1 |
| 99-09-2 | 3-Nitroaniline | ug/kg | | ND | 3500 | 1 |
| 83-32-9 | Acenaphthene | ug/kg | | ND | 720 | 1 |
| 51-28-5 | 2,4-Dinitrophenol | ug/kg | | ND | 3500 | 1 |
| 100-02-7 | 4-Nitrophenol | ug/kg | | ND | 3500 | 1 |
| 132-64-9 | Dibenzofuran | ug/kg | | ND | 720 | 1 |
| 121-14-2 | 2,4-Dinitrotoluene | ug/kg | | ND | 720 | 1 |
| 606-20-2 | 2,6-Dinitrotoluene | ug/kg | | ND | 720 | 1 |
| 84-66-2 | Diethylphthalate | ug/kg | | ND | 720 | 1 |
| 7005-72-3 | 4-Chlorophenyl-phenyl ether | ug/kg | | ND | 720 | 1 |
| 86-73-7 | Fluorene | ug/kg | | ND | 720 | 1 |
| 100-01-6 | 4-Nitroaniline | ug/kg | | ND | 1400 | 1 |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | ug/kg | | ND | 3500 | 1 |
| 86-30-6 | n-Nitrosodiphenylamine | ug/kg | | ND | 720 | 1 |
| 103-33-3 | Azobenzene | ug/kg | | ND | 1400 | 1 |
| 101-55-3 | 4-Bromophenyl-phenylether | ug/kg | | ND | 720 | 1 |
| 118-74-1 | Hexachlorobenzene | ug/kg | | ND | 720 | 1 |
| 87-86-5 | Pentachlorophenol | ug/kg | | ND | 3500 | 1 |
| 85-01-8 | Phenanthrene | ug/kg | | ND | 720 | 1 |
| 120-12-7 | Anthracene | ug/kg | | ND | 720 | 1 |
| 84-74-2 | Di-n-butylphthalate | ug/kg | | ND | 720 | 1 |
| 206-44-0 | Fluoranthene | ug/kg | | ND | 720 | 1 |
| 129-00-0 | Pyrene | ug/kg | | ND | 720 | 1 |
| 85-68-7 | Butylbenzylphthalate | ug/kg | | ND | 720 | 1 |
| 91-94-1 | 3,3'-Dichlorobenzidine | ug/kg | | ND | 1400 | 1 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 627LAS - Semivolatile Compounds

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 15:22

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7490

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 56-55-3 | Benzo(a)anthracene | ug/kg | | ND | 720 | 1 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ug/kg | | ND | 720 | 1 |
| 218-01-9 | Chrysene | ug/kg | | ND | 720 | 1 |
| 117-84-0 | Di-n-octylphthalate | ug/kg | | ND | 720 | 1 |
| 205-99-2 | Benzo(b)fluoranthene | ug/kg | | ND | 720 | 1 |
| 207-08-9 | Benzo(k)fluoranthene | ug/kg | | ND | 720 | 1 |
| 50-32-8 | Benzo(a)pyrene | ug/kg | | ND | 720 | 1 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ug/kg | | ND | 720 | 1 |
| 53-70-3 | Dibenzo(a,h)anthracene | ug/kg | | ND | 720 | 1 |
| 191-24-2 | Benzo(g,h,i)Perylene | ug/kg | | ND | 720 | 1 |
| 100-51-6 | Benzyl alcohol | ug/kg | | ND | 2800 | 1 |
| 108-60-1 | 2,2'-Oxybis(1-chloropropane) | ug/kg | | ND | 720 | 1 |

SURROGATES- In Percent Recovery:

| | | |
|---|---|---|
| 2,4,6-Tribromophenol | 68.5 | ( 19 - 122%) |
| 2-Fluorobiphenyl | 46.1 | ( 30 - 115%) |
| 2-Fluorophenol | 42.8 | ( 25 - 121%) |
| Nitrobenzene-d5 | 40.3 | ( 23 - 120%) |
| Phenol-d5 | 39.2 | ( 24 - 113%) |
| p-Terphenyl-d14 | 102 | ( 18 - 137%) |

RL = Reporting Limit

KEMRON ENVIRONMENTAL SERVICES

Product: 8260LS - VOA Library Search

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:59

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09625

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Ret Time |
|---|---|---|---|---|---|---|
| | No searchable peaks..... | ug/kg | | | | |

Product: 826LA - Volatile Organics

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:59

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09625

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane..... | ug/kg | | ND | 22 | 1 |
| 74-87-3 | Chloromethane..... | ug/kg | | ND | 22 | 1 |
| 75-01-4 | Vinyl chloride..... | ug/kg | | ND | 22 | 1 |
| 74-83-9 | Bromomethane..... | ug/kg | | ND | 22 | 1 |
| 75-00-3 | Chloroethane..... | ug/kg | | ND | 22 | 1 |
| 75-69-4 | Trichlorofluoromethane..... | ug/kg | | ND | 11 | 1 |
| 75-35-4 | 1,1-Dichloroethene..... | ug/kg | | ND | 11 | 1 |
| 74-88-4 | Iodomethane..... | ug/kg | | ND | 11 | 1 |
| 75-15-0 | Carbon disulfide..... | ug/kg | | ND | 11 | 1 |
| 67-64-1 | Acetone..... | ug/kg | | ND | 43 | 1 |
| 75-09-2 | Methylene chloride..... | ug/kg | | ND | 11 | 1 |
| 156-60-5 | trans-1,2-Dichloroethene..... | ug/kg | | ND | 22 | 1 |
| 75-34-3 | 1,1-Dichloroethane..... | ug/kg | | ND | 11 | 1 |
| 594-20-7 | 2,2-Dichloropropane..... | ug/kg | | ND | 11 | 1 |
| 156-59-2 | cis-1,2-Dichloroethene..... | ug/kg | | ND | 22 | 1 |
| 78-93-3 | 2-Butanone..... | ug/kg | | ND | 43 | 1 |
| 74-97-5 | Bromochloromethane..... | ug/kg | | ND | 11 | 1 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 826LA - Volatile Organics

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 09/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:59

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09625

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 67-66-3 | Chloroform | ug/kg | | ND | 11 | 1 |
| 71-55-6 | 1,1,1-Trichloroethane | ug/kg | | ND | 11 | 1 |
| 56-23-5 | Carbon tetrachloride | ug/kg | | ND | 11 | 1 |
| 563-58-6 | 1,1-Dichloropropene | ug/kg | | ND | 11 | 1 |
| 71-43-2 | Benzene | ug/kg | | ND | 11 | 1 |
| 107-06-2 | 1,2-Dichloroethane | ug/kg | | ND | 11 | 1 |
| 79-01-6 | Trichloroethene | ug/kg | | ND | 11 | 1 |
| 78-87-5 | 1,2-Dichloropropane | ug/kg | | ND | 11 | 1 |
| 74-95-3 | Dibromomethane | ug/kg | | ND | 11 | 1 |
| 75-27-4 | Bromodichloromethane | ug/kg | | ND | 11 | 1 |
| 10061-02-6 | trans-1,3-Dichloropropene | ug/kg | | ND | 11 | 1 |
| 108-10-1 | 4-Methyl-2-pentanone | ug/kg | | ND | 43 | 1 |
| 108-88-3 | Toluene | ug/kg | | ND | 11 | 1 |
| 10061-01-5 | cis-1,3-Dichloropropene | ug/kg | | ND | 11 | 1 |
| 79-00-5 | 1,1,2-Trichloroethane | ug/kg | | ND | 11 | 1 |
| 127-18-4 | Tetrachloroethene | ug/kg | | ND | 11 | 1 |
| 142-28-9 | 1,3-Dichloropropane | ug/kg | | ND | 11 | 1 |
| 124-48-1 | Dibromochloromethane | ug/kg | | ND | 11 | 1 |
| 591-78-6 | 2-Hexanone | ug/kg | | ND | 43 | 1 |
| 106-93-4 | 1,2-Dibromoethane | ug/kg | | ND | 11 | 1 |
| 108-90-7 | Chlorobenzene | ug/kg | | ND | 11 | 1 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ug/kg | | ND | 11 | 1 |
| 100-41-4 | Ethyl benzene | ug/kg | | ND | 11 | 1 |
| 1330-20-7 | Xylenes (total) | ug/kg | | ND | 11 | 1 |
| 100-42-5 | Styrene | ug/kg | | ND | 11 | 1 |
| 75-25-2 | Bromoform | ug/kg | | ND | 11 | 1 |
| 98-82-8 | Isopropylbenzene | ug/kg | | ND | 11 | 1 |
| 108-86-1 | Bromobenzene | ug/kg | | ND | 11 | 1 |
| 96-18-4 | 1,2,3-Trichloropropane | ug/kg | | ND | 11 | 1 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ug/kg | | ND | 11 | 1 |
| 103-65-1 | n-Propylbenzene | ug/kg | | ND | 11 | 1 |
| 95-49-8 | 2-Chlorotoluene | ug/kg | | ND | 11 | 1 |
| 106-43-4 | 4-Chlorotoluene | ug/kg | | ND | 11 | 1 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ug/kg | | ND | 11 | 1 |
| 98-06-6 | tert-Butylbenzene | ug/kg | | ND | 11 | 1 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ug/kg | | ND | 11 | 1 |
| 135-98-8 | sec-Butylbenzene | ug/kg | | ND | 11 | 1 |
| 541-73-1 | 1,3-Dichlorobenzene | ug/kg | | ND | 11 | 1 |
| 106-46-7 | 1,4-Dichlorobenzene | ug/kg | | ND | 11 | 1 |

RL = Reporting Limit

Login #L9808434
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 826LA - Volatile Organics

Lab Sample ID: L9808434-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4525R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/21/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 46

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 16:59

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09625

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 99-87-6 | p-Isopropyltoluene..... | ug/kg | | ND | 11 | 1 |
| 95-50-1 | 1,2-Dichlorobenzene..... | ug/kg | | ND | 11 | 1 |
| 104-51-8 | n-Butylbenzene..... | ug/kg | | ND | 11 | 1 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane..... | ug/kg | | ND | 22 | 1 |
| 76-13-1 | Trichlorotrifluoroethane..... | ug/kg | | ND | 11 | 1 |

SURROGATES- In Percent Recovery:

| | | | |
|---|---|---|---|
| Toluene-d8..... | 115 | | ( 81 - 117%) |
| p-Bromofluorobenzene..... | 124 | *,RE | ( 74 - 121%) |
| Dibromofluoromethane..... | 113 | | ( 80 - 120%) |
| 1,2-Dichloroethane-d4..... | 123 | *,RE | ( 80 - 120%) |

RL = Reporting Limit

# KEMRON ENVIRONMENTAL SERVICES - OVL
## VOLATILE QUALITY CONTROL SUMMARY

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Workgroup # | WG45130 | Run Date | 8/26/98 | SMPL Num | 08 02402 | LCS # | 1 |
| Method | 8260A | Instrument ID | HPMS 6 | SMPL FILNM | 6170610 | SMPL # | 1 |
| Matrix | Soil | BLK FILNM | 6BK0615 | LCS FILNM | 6172617 | MS # | 1 |
| Units | ug/kg | LCS FILNM | 6QC0614 | MSD FILNM | 6172618 | MSD # | 1 |

| | | CONCENTRATION, PPB | | | | | | | PERCENT RECOVERY | | | | | | | | | PERCENT RPD | | OUTLIERS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LCS Spike | | | | MS Spike | | | LCS | LCS | | | | MS | MS | MS | RPD | | | | | | |
| | RDL | BLK | LCS | Level | SMPL | MS | MSD | Level | BLK | LCS | LCL | UCL | SMPL | MS | MSD | LCL | UCL | RPD | UCL | BLK | LCS | SMPL | MS | MSD | RPD |
| Target Analyte | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | % | % | % | % | % | % | % | % | % | % | % | | | | | | |
| dichlorodifluoromethane | 10.0 | ND | 12.1 | 20.0 | ND | 13.0 | 13.8 | 20.0 | ND | 61.5 | 49.0 | 132.0 | ND | 39.5 | 64.0 | 60.0 | 140.0 | 7.3 | 30.0 | | | | L | | |
| vinyl chloride | 10.0 | ND | 18.2 | 20.0 | ND | 17.0 | 18.1 | 20.0 | ND | 91.0 | 70.0 | 117.0 | ND | 85.0 | 90.5 | D | 251.0 | 6.1 | 30.0 | | | | | | |
| chloromethane | 10.0 | ND | 17.2 | 20.0 | ND | 15.5 | 15.9 | 20.0 | ND | 86.0 | 64.0 | 109.0 | ND | 77.5 | 79.5 | D | 276.0 | 2.5 | 30.0 | | | | | | |
| bromomethane | 10.0 | ND | 24.0 | 20.0 | ND | 19.5 | 19.7 | 20.0 | ND | 120.0 | 62.0 | 147.0 | ND | 97.5 | 98.5 | D | 242.0 | 1.0 | 30.0 | | | | | | |
| chloroethane | 10.0 | ND | 17.0 | 20.0 | ND | 16.0 | 17.5 | 20.0 | ND | 85.0 | 69.0 | 136.0 | ND | 82.0 | 87.5 | 14.0 | 230.0 | 6.5 | 30.0 | | | | | | |
| trichlorofluoromethane | 5.0 | ND | 25.0 | 20.0 | ND | 22.6 | 21.4 | 20.0 | ND | 125.0 | 70.0 | 154.0 | ND | 111.0 | 117.0 | 17.0 | 181.0 | 5.5 | 30.0 | | | | | | |
| acetone | 20.0 | ND | 17.7 | 20.0 | 10.3 | 17.4 | 25.9 | 20.0 | ND | 88.5 | 14.0 | 171.0 | 10.3 | 35.5 | 75.0 | 70.0 | 130.0 | 39.3 | 30.0 | | | | L | | H |
| trichlorotrifluoroethane | 5.0 | ND | NS | 20.0 | ND | NS | NS | 20.0 | ND | NA | NA | NA | ND | NA | NA | 70.0 | 130.0 | NA | 30.0 | | | | | | |
| 1,1 dichloroethene | 5.0 | ND | 22.5 | 20.0 | ND | 18.8 | 20.6 | 20.0 | ND | 111.5 | 50.0 | 143.0 | ND | 94.0 | 103.0 | D | 234.0 | 9.1 | 30.0 | | | | | | |
| iodomethane | 5.0 | ND | 23.0 | 20.0 | ND | 13.7 | 16.9 | 20.0 | ND | 117.0 | 50.0 | 150.0 | ND | 68.5 | 84.5 | 70.0 | 130.0 | 20.9 | 30.0 | | | | L | | H |
| methylene chloride | 5.0 | ND | 22.4 | 20.0 | ND | 20.1 | 20.2 | 20.0 | ND | 112.0 | 57.0 | 145.0 | ND | 100.5 | 104.0 | D | 221.0 | 3.4 | 30.0 | | | | | | |
| carbon disulfide | 5.0 | ND | 23.1 | 20.0 | ND | 17.2 | 19.3 | 20.0 | ND | 110.5 | 69.0 | 125.0 | ND | 86.0 | 96.5 | 70.0 | 130.0 | 11.5 | 30.0 | | | | | | |
| trans 1,2 dichloroethene | 5.0 | ND | 21.5 | 20.0 | ND | 17.3 | 19.1 | 20.0 | ND | NA | 75.0 | 141.0 | ND | 85.5 | 95.5 | 54.0 | 156.0 | 9.9 | 30.0 | | | | | | |
| 1,1 dichloroethane | 5.0 | ND | 21.0 | 20.0 | ND | 17.3 | 18.2 | 20.0 | ND | 105.0 | 79.0 | 125.0 | ND | 86.5 | 91.0 | 59.0 | 155.0 | 5.1 | 30.0 | | | | | | |
| 2 butanone | 20.0 | ND | 14.6 | 20.0 | ND | 8.3 | 9.1 | 20.0 | ND | 73.0 | 20.0 | 173.0 | ND | 41.5 | 45.5 | 70.0 | 130.0 | 9.2 | 30.0 | | | | L | L | |
| 2,2 dichloropropane | 5.0 | ND | 20.0 | 20.0 | ND | 17.1 | 18.6 | 20.0 | ND | 104.5 | 59.0 | 128.0 | ND | 85.5 | 93.0 | 60.0 | 162.0 | 8.4 | 30.0 | | | | | | |
| cis 1,2 dichloroethene | 5.0 | ND | 18.1 | 20.0 | ND | 13.2 | 14.4 | 20.0 | ND | 90.5 | 75.0 | 125.0 | ND | 68.5 | 72.0 | 60.0 | 149.0 | 5.0 | 30.0 | | | | | | |
| chloroform | 5.0 | ND | 21.0 | 20.0 | ND | 16.7 | 17.2 | 20.0 | ND | 105.0 | 78.0 | 124.0 | ND | 83.5 | 86.0 | 71.0 | 132.0 | 3.0 | 30.0 | | | | | | |
| bromochloromethane | 5.0 | ND | 21.2 | 20.0 | ND | 16.2 | 16.4 | 20.0 | ND | 106.5 | 78.0 | 125.0 | ND | 81.0 | 82.0 | 60.0 | 140.0 | 1.2 | 30.0 | | | | | | |
| 1,1,1 trichloroethane | 5.0 | ND | 20.9 | 20.0 | ND | 17.0 | 15.4 | 20.0 | ND | 104.5 | 77.0 | 124.0 | ND | 85.0 | 92.0 | 72.0 | 162.0 | 7.9 | 30.0 | | | | | | |
| 1,1 dichloropropene | 5.0 | ND | 22.5 | 20.0 | ND | 15.6 | 17.9 | 20.0 | ND | 114.0 | 75.0 | 132.0 | ND | 78.0 | 89.5 | 60.0 | 140.0 | 13.7 | 30.0 | | | | | | |
| carbon tetrachloride | 5.0 | ND | 22.0 | 20.0 | ND | 17.3 | 19.0 | 20.0 | ND | 110.0 | 77.0 | 126.0 | ND | 86.0 | 95.0 | 70.0 | 143.0 | 9.9 | 30.0 | | | | | | |
| 1,2 dichloroethane | 5.0 | ND | 20.1 | 20.0 | ND | 15.0 | 15.2 | 20.0 | ND | 100.0 | 75.0 | 126.0 | ND | 75.0 | 76.0 | 49.0 | 155.0 | 1.3 | 30.0 | | | | | | |
| benzene | 5.0 | ND | 22.5 | 20.0 | ND | 17.1 | 17.8 | 20.0 | ND | 112.5 | 81.0 | 122.0 | ND | 85.5 | 89.0 | 37.0 | 151.0 | 4.0 | 30.0 | | | | | | |
| trichloroethene | 5.0 | ND | 21.0 | 20.0 | ND | 14.0 | 16.2 | 20.0 | ND | 105.5 | 81.0 | 125.0 | ND | 70.5 | 81.0 | 71.0 | 137.0 | 8.4 | 30.0 | | | | | | |
| 1,2 dichloropropane | 5.0 | ND | 21.1 | 20.0 | ND | 15.7 | 15.7 | 20.0 | ND | 105.5 | 78.0 | 125.0 | ND | 78.5 | 78.5 | D | 210.0 | 0.0 | 30.0 | | | | | | |
| bromodichloromethane | 5.0 | ND | 21.5 | 20.0 | ND | 15.0 | 14.7 | 20.0 | ND | 107.5 | 81.0 | 123.0 | ND | 75.0 | 73.5 | 53.0 | 151.0 | 2.0 | 30.0 | | | | | | |
| dibromomethane | 5.0 | ND | 21.5 | 20.0 | ND | 16.5 | 14.7 | 20.0 | ND | 107.5 | 81.0 | 126.0 | ND | 72.5 | 73.5 | 60.0 | 145.0 | 1.4 | 30.0 | | | | | | |
| 4 methyl 2 pentanone | 20.0 | ND | 16.4 | 20.0 | ND | 9.0 | 8.7 | 20.0 | ND | 82.0 | 58.0 | 152.0 | ND | 45.0 | 43.5 | 70.0 | 130.0 | 3.4 | 30.0 | | | | L | L | |
| cis 1,3 dichloropropene | 5.0 | ND | 21.2 | 20.0 | ND | 12.9 | 15.0 | 20.0 | ND | 106.0 | 81.0 | 124.0 | ND | 64.5 | 65.0 | D | 227.0 | 0.8 | 30.0 | | | | | | |
| toluene | 5.0 | ND | 21.1 | 20.0 | ND | 15.9 | 17.3 | 20.0 | ND | 105.5 | 81.0 | 124.0 | ND | 79.5 | 84.0 | 47.0 | 150.0 | 7.9 | 30.0 | | | | | | |

# XEMRON ENVIRONMENTAL SERVICES - OVL
## VOLATILE QUALITY CONTROL SUMMARY

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Workgroup # | WG45130 | Run Date | 6/26/98 | SMPL Num | 06 02 02 | ECS DF | 1 |
| Method | 8260A | Instrument ID | HPMS6 | SMPL FILNM | 6E12016 | SMPL DF | 1 |
| Matrix | Soil | BLK FILNM | 6W09015 | MS FILNM | 6E12017 | MS DF | 1 |
| Units | ug/kg | ECS FILNM | 6QC0016 | MSD FILNM | 6E12018 | MSD DF | 1 |

| Target Analyte | RDL | CONCENTRATION PPB BLK | ECS | ECS Spike Level | SMPL | MS | MSD | MS Spike Level | PERCENT RECOVERY BLK | ECS | ECS LCL | ECS UCL | SMPL | MS | MSD | MS LCL | MS UCL | PERCENT RPD MS RPD | RPD UCL | OUTLIERS BLK | ECS | SMPL | MS | MSD | RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | % | % | % | % | % | % | % | % | % | % | % | | | | | | |
| trans 1,3 dichloropropene | 5.0 | ND | 20.3 | 20.0 | ND | 11.5 | 11.0 | 20.0 | ND | 101.5 | 80.0 | 122.0 | ND | 58.5 | 58.0 | 17.0 | 131.0 | 0.9 | 20.0 | | | | | | |
| 2 hexanone | 20.0 | ND | 15.0 | 20.0 | ND | 7.5 | 7.6 | 20.0 | ND | 79.0 | 11.0 | 163.0 | ND | 37.5 | 38.0 | 70.0 | 130.0 | 1.3 | 20.0 | | | | | | |
| 1,1,2 trichloroethane | 5.0 | ND | 21.9 | 20.0 | ND | 10.3 | 14.0 | 20.0 | ND | 109.5 | 79.0 | 123.0 | ND | 71.5 | 70.0 | 52.0 | 150.0 | 2.1 | 20.0 | | | | | | |
| 1,3 dichloropropane | 5.0 | ND | 21.6 | 20.0 | ND | 11.9 | 13.2 | 20.0 | ND | 108.0 | 79.0 | 121.0 | ND | 69.5 | 68.5 | 60.0 | 141.0 | 1.4 | 20.0 | | | | | | |
| tetrachloroethene | 5.0 | ND | 22.0 | 20.0 | ND | 11.0 | 16.0 | 20.0 | ND | 110.0 | 80.0 | 122.0 | ND | 68.0 | 80.0 | 64.0 | 148.0 | 16.3 | 20.0 | | | | | | |
| chlorodibromomethane | 5.0 | ND | 20.3 | 20.0 | ND | 12.4 | 12.5 | 20.0 | ND | 101.5 | 81.0 | 122.0 | ND | 62.0 | 62.5 | 55.0 | 149.0 | 0.8 | 20.0 | | | | | | |
| 1,2 dibromoethane | 5.0 | ND | 20.0 | 20.0 | ND | 12.4 | 12.5 | 20.0 | ND | 100.0 | 79.0 | 125.0 | ND | 62.0 | 61.5 | 60.0 | 160.0 | 0.8 | 20.0 | | | | | | |
| chlorobenzene | 5.0 | ND | 22.2 | 20.0 | ND | 11.6 | 13.3 | 20.0 | ND | 111.0 | 82.0 | 124.0 | ND | 61.0 | 66.0 | 37.0 | 160.0 | 4.7 | 20.0 | | | | | | |
| 1,1,1,2 tetrachloroethane | 5.0 | ND | 21.0 | 20.0 | ND | 13.3 | 13.5 | 20.0 | ND | 105.0 | 83.0 | 124.0 | ND | 66.5 | 67.5 | 60.0 | 190.0 | 1.5 | 20.0 | | | | | | |
| ethylbenzene | 5.0 | ND | 22.3 | 20.0 | ND | 11.5 | 14.6 | 20.0 | ND | 111.5 | 78.0 | 127.0 | ND | 67.5 | 74.0 | 37.0 | 162.0 | 9.2 | 20.0 | | | | | | |
| m,p xylene | 5.0 | ND | 45.1 | 40.0 | ND | 26.1 | 29.9 | 40.0 | ND | 112.8 | 81.0 | 124.0 | ND | 65.3 | 72.0 | 40.0 | 160.0 | 9.5 | 20.0 | | | | | | |
| o xylene | 5.0 | ND | 22.6 | 20.0 | ND | 11.8 | 13.0 | 20.0 | ND | 113.0 | 81.0 | 124.0 | ND | 59.0 | 65.0 | 40.0 | 180.0 | 9.7 | 20.0 | | | L | | | |
| total xylenes | 5.0 | ND | 67.9 | 60.0 | ND | 37.9 | 41.1 | 60.0 | ND | 113.2 | NA | NA | ND | 63.2 | 69.2 | NA | NA | 9.0 | 20.0 | | | | | | |
| styrene | 5.0 | ND | 22.3 | 20.0 | ND | 10.6 | 10.5 | 20.0 | ND | 111.5 | 83.0 | 122.0 | ND | 52.0 | 52.5 | 40.0 | 160.0 | 0.9 | 20.0 | | | L | L | | |
| isopropylbenzene | 5.0 | ND | 22.4 | 20.0 | ND | 11.5 | 11.6 | 20.0 | ND | 112.0 | 82.0 | 124.0 | ND | 57.5 | 58.0 | 40.0 | 160.0 | 16.3 | 20.0 | | | L | | | |
| bromoform | 5.0 | ND | 19.3 | 20.0 | ND | 9.7 | 9.6 | 20.0 | ND | 96.5 | 67.0 | 134.0 | ND | 48.5 | 48.0 | 43.0 | 169.0 | 1.0 | 20.0 | | | | | | |
| 1,1,2,2 tetrachloroethane | 5.0 | ND | 21.1 | 20.0 | ND | 10.9 | 10.5 | 20.0 | ND | 105.5 | 71.0 | 136.0 | ND | 54.5 | 52.5 | 46.0 | 137.0 | 3.7 | 20.0 | | | | | | |
| 1,2,3 trichloropropane | 5.0 | ND | 20.8 | 20.0 | ND | 12.1 | 10.3 | 20.0 | ND | 104.0 | 70.0 | 119.0 | ND | 60.5 | 54.5 | 60.0 | 141.0 | 10.4 | 20.0 | | | | | L | |
| n propylbenzene | 5.0 | ND | 21.6 | 20.0 | ND | 10.3 | 12.7 | 20.0 | ND | 108.0 | 79.0 | 124.0 | ND | 54.0 | 63.5 | 60.0 | 140.0 | 18.3 | 20.0 | | | L | | | |
| bromobenzene | 5.0 | ND | 20.7 | 20.0 | ND | 9.1 | 9.9 | 20.0 | ND | 103.5 | 83.0 | 122.0 | ND | 46.5 | 49.5 | 60.0 | 140.0 | 6.3 | 20.0 | | | L | L | | |
| 1,3,5 trimethylbenzene | 5.0 | ND | 21.7 | 20.0 | ND | 10.2 | 11.7 | 20.0 | ND | NA | 82.0 | 123.0 | ND | 51.0 | 58.5 | 60.0 | 140.0 | 13.7 | 20.0 | | | L | L | | |
| 2 chlorotoluene | 5.0 | ND | 20.9 | 20.0 | ND | 10.5 | 10.5 | 20.0 | ND | 104.5 | 77.0 | 126.0 | ND | 50.5 | 52.5 | 60.0 | 141.0 | 3.9 | 20.0 | | | L | L | | |
| 4 chlorotoluene | 5.0 | ND | 22.5 | 20.0 | ND | 9.2 | 10.8 | 20.0 | ND | 112.5 | 80.0 | 124.0 | ND | 46.0 | 54.0 | 60.0 | 140.0 | 16.0 | 20.0 | | | L | L | | |
| tert butylbenzene | 5.0 | ND | 20.5 | 20.0 | ND | 10.1 | 11.9 | 20.0 | ND | 102.5 | 78.0 | 122.0 | ND | 50.5 | 59.5 | 60.0 | 140.0 | 16.4 | 20.0 | | | L | L | | |
| 1,2,4 trimethylbenzene | 5.0 | ND | 21.6 | 20.0 | ND | 9.9 | 10.7 | 20.0 | ND | 108.0 | 81.0 | 121.0 | ND | 47.5 | 53.5 | 60.0 | 141.0 | 7.8 | 20.0 | | | L | L | | |
| sec butylbenzene | 5.0 | ND | 21.6 | 20.0 | ND | 9.9 | 12.2 | 20.0 | ND | 108.0 | 83.0 | 124.0 | ND | 49.5 | 61.0 | 60.0 | 140.0 | 20.8 | 20.0 | | | I | | | H |
| p isopropyltoluene | 5.0 | ND | 21.0 | 20.0 | ND | 9.1 | 11.1 | 20.0 | ND | 105.0 | 77.0 | 126.0 | ND | 45.5 | 55.5 | 60.0 | 141.0 | 17.6 | 20.0 | | | I | I | | |
| 1,3 dichlorobenzene | 5.0 | ND | 21.1 | 20.0 | ND | 7.5 | 8.3 | 20.0 | ND | 105.5 | 82.0 | 129.0 | ND | 37.5 | 41.0 | 60.0 | 141.0 | 8.9 | 20.0 | | | I | L | | |
| 1,4 dichlorobenzene | 5.0 | ND | 21.3 | 20.0 | ND | 7.7 | 8.1 | 20.0 | ND | 106.5 | 81.0 | 121.0 | ND | 38.5 | 40.5 | 18.0 | 190.0 | 5.1 | 20.0 | | | | | | |

# KEMRON ENVIRONMENTAL SERVICES - OVL
## VOLATILE QUALITY CONTROL SUMMARY

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Work group # | WG45130 | Run Date | 8/26/98 | SMPL Num | 08424-92 | LCS ID# | 1 |
| Method | 8260A | Instrument ID | HPMS 6 | SMPL FILNM | 6170916 | SMPL ID# | 1 |
| Matrix | Soil | BLK FILNM | 6BK0915 | MS FILNM | 6170917 | MS ID# | 1 |
| Units | ug/kg | LCS FILNM | 6QC0914 | MSD FILNM | 6170918 | MSD ID# | 1 |

| | | CONCENTRATION/PER | | | | | | | PERCENT RECOVERY | | | | | | | | | PERCENT RPD | | OUTLIERS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | RDL | BLK | LCS | LCS Spike Level | SMPL | MS | MSD | MS Spike Level | BLK | LCS | LCL | UCL | SMPL | MS | MSD | MS LCL | MS UCL | MS RPD | RPD UCL | BLK | LCS | SMPL | MS | MSD | |
| Target Analytes | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | % | % | % | % | % | % | % | % | % | % | % | | | | | | |
| n-butylbenzene | 5.0 | ND | 22.0 | 20.0 | ND | 9.6 | 10.5 | 20.0 | ND | 110.0 | 81.0 | 121.0 | ND | 48.0 | 52.5 | 60.0 | 140.0 | 18.9 | 20.0 | | | | L | L | |
| 1,2-dichlorobenzene | 5.0 | ND | 21.3 | 20.0 | ND | 6.5 | 6.8 | 20.0 | ND | 106.5 | 84.0 | 122.0 | ND | 32.5 | 34.0 | 60.0 | 140.0 | 4.5 | 20.0 | | | | | | |
| 1,2-dibromo-3-chloropropane | 10.0 | ND | 18.3 | 20.0 | ND | 2.5 | 7.5 | 20.0 | ND | 91.5 | 55.0 | 135.0 | ND | 35.5 | 37.5 | 60.0 | 140.0 | 2.7 | 20.0 | | | | L | L | |
| Surrogates | | | | | | | | | | | | | | | | | | | | | | | | | |
| dibromofluoromethane | | 50.4 | 52.2 | 50.0 | 56.5 | 54.2 | 54.2 | 50.0 | 100.7 | 104.4 | 83 | 120 | 113.0 | 108.50 | 108.46 | | | | | | | | | | |
| 1,2-dichloroethane-d4 | | 50.2 | 51.6 | 50.0 | 60.4 | 53.5 | 54.0 | 50.0 | 100.4 | 103.2 | 83 | 120 | 120.9 | 107.0 | 109.56 | | | | | | | | | | |
| toluene-d8 | | 55.2 | 53.5 | 50.0 | 62.3 | 57.0 | 57.5 | 50.0 | 110.5 | 106.92 | 81 | 117 | 125.02 | 113.98 | 114.0 | | | | | | | | | | |
| p-bromofluorobenzene | | 54.0 | 54.6 | 50.0 | 72.4 | 58.4 | 58.0 | 50.0 | 108.0 | 112.9 | 74 | 121 | 144.8 | 116.86 | 117.6 | | | | | | | | | | |

Notes and Definitions
RDL = Reporting Detection Limit
BLK = Method Blank
LCS = Laboratory Control Sample
SMPL = Sample Results
MS/MSD = Matrix Spike / Matrix Spike Duplicate
LCL = Lower Control Limit
UCL = Upper Control Limit
RPD = Relative Percent Difference

01

KEMRON ENVIRONMENTAL SERVICES, OVL
SEMI VOLATILES QUALITY CONTROL SUMMARY

ANAL WORK GRP : WG45223 EXT DATE : 8/26/98 RUN DATE : 8/27/98 INSTRUMENT : HP/MSS
METHOD : 8270 BENCH SHEET : V99P72 SMPL ID : 08 431-01 ANALYST : mdc
MATRIX : SOIL BLK FLNM : 7391 D* SMPL FLNM : 7442 D*
CONCENTRATION UNITS : UG/KG LCS FLNM : 7392 D* MS FLNM : 7443 D*
PREP WORK GRP : WG45115 MSD FLNM : 7444 D*

| ANALYTE | CONCENTRATION, ug/L | | | | | | | | PERCENT RECOVERY, % | | | | | | | | | PERCENT | | | BEYOND LIMITS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | RDL | BLANK | LCS SPIKE ADDED | LCS | SAMPLE | MS SPIKE ADDED | MS | MSD | BLANK | LCS | LCS LCL | LCS UCL | SAMPLE | MS | MSD | MS LCL | MS UCL | DUP RPD | MSD RPD | RPD UCL | SAMPLE | BLANK | LCS | MS | MSD |
| PYRIDINE | 165 | ND | 1670 | 90 | ND | 1670 | 149 | 69 | NA | 5.4 | 25 | 150 | NA | 8.9 | 4.1 | 25 | 150 | NA | NA | 40 | | | L | L | L |
| N-NITROSODIMETHYLAMINE | 165 | ND | 1670 | 666 | ND | 1670 | 629 | 622 | NA | 39.9 | 25 | 150 | NA | 37.7 | 37.3 | 25 | 150 | NA | 1 | 40 | | | | | |
| ANILINE | 165 | ND | 1670 | 252 | ND | 1670 | 364 | 363 | NA | 15.1 | 25 | 150 | NA | 21.8 | 21.7 | 25 | 150 | NA | 0 | 40 | | | L | L | L |
| PHENOL | 165 | ND | 1670 | 844 | ND | 1670 | 666 | 582 | NA | 58.6 | 25 | 135 | NA | 39.9 | 34.8 | 25 | 135 | NA | 14 | 40 | | | | | |
| BIS(2-CHLOROETHYL)ETHER | 165 | ND | 1670 | 697 | ND | 1670 | 617 | 726 | NA | 41.7 | 34 | 135 | NA | 37.0 | 43.5 | 34 | 135 | NA | 18 | 40 | | | | | |
| 2-CHLOROPHENOL | 165 | ND | 1670 | 648 | ND | 1670 | 626 | 607 | NA | 38.8 | 31 | 135 | NA | 37.5 | 36.3 | 31 | 135 | NA | 3 | 40 | | | | | |
| 1,3-DICHLOROBENZENE | 165 | ND | 1670 | 648 | ND | 1670 | 639 | 627 | NA | 38.8 | 26 | 135 | NA | 38.2 | 37.5 | 26 | 135 | NA | 2 | 40 | | | | | |
| 1,4-DICHLOROBENZENE | 165 | ND | 1670 | 663 | ND | 1670 | 671 | 645 | NA | 40.0 | 25 | 135 | NA | 40.2 | 38.8 | 25 | 135 | NA | 3 | 40 | | | | | |
| BENZYL ALCOHOL | 165 | ND | 1670 | 630 | ND | 1670 | 610 | 597 | NA | 37.7 | 25 | 135 | NA | 36.5 | 35.8 | 25 | 135 | NA | 2 | 40 | | | | | |
| 1,2-DICHLOROBENZENE | 165 | ND | 1670 | 660 | ND | 1670 | 655 | 638 | NA | 40.0 | 32 | 135 | NA | 39.2 | 38.2 | 32 | 135 | NA | 3 | 40 | | | | | |
| 2-METHYLPHENOL | 165 | ND | 1670 | 697 | ND | 1670 | 621 | 615 | NA | 41.7 | 25 | 135 | NA | 37.2 | 36.8 | 25 | 135 | NA | 1 | 40 | | | | | |
| BIS(2-CHLOROISOPROPYL)E | 165 | ND | 1670 | 548 | ND | 1670 | 514 | 503 | NA | 32.8 | 26 | 175 | NA | 30.8 | 30.1 | 26 | 175 | NA | 2 | 40 | | | | | |
| 3- & 4-METHYLPHENOL | 165 | ND | 1670 | 675 | ND | 1670 | 645 | 594 | NA | 40.4 | 25 | 135 | NA | 38.6 | 35.6 | 25 | 135 | NA | 8 | 40 | | | | | |
| N-NITROSO-DI-N-PROPYLAMI | 165 | ND | 1670 | 631 | ND | 1670 | 601 | 584 | NA | 37.8 | 27 | 135 | NA | 36.0 | 35.2 | 27 | 135 | NA | 2 | 40 | | | | | |
| HEXACHLOROETHANE | 165 | ND | 1670 | 660 | ND | 1670 | 608 | 595 | NA | 39.5 | 25 | 163 | NA | 36.4 | 35.6 | 25 | 163 | NA | 2 | 40 | | | | | |
| NITROBENZENE | 165 | ND | 1670 | 644 | ND | 1670 | 671 | 647 | NA | 38.5 | 36 | 143 | NA | 40.2 | 38.8 | 36 | 143 | NA | 4 | 40 | | | | | |
| ISOPHORONE | 165 | ND | 1670 | 744 | ND | 1670 | 718 | 700 | NA | 44.6 | 25 | 175 | NA | 42.9 | 41.9 | 25 | 175 | NA | 2 | 40 | | | | | |
| 2-NITROPHENOL | 165 | ND | 1670 | 571 | ND | 1670 | 610 | 587 | NA | 34.2 | 34 | 135 | NA | 37.1 | 35.1 | 34 | 135 | NA | 5 | 40 | | | | | |
| 2,4-DIMETHYLPHENOL | 165 | ND | 1670 | 650 | ND | 1670 | 670 | 598 | NA | 38.9 | 35 | 149 | NA | 40.1 | 35.8 | 35 | 149 | NA | 11 | 40 | | | | | |
| BIS(2-CHLOROETHOXY)METH | 165 | ND | 1670 | 602 | ND | 1670 | 595 | 578 | NA | 36.0 | 39 | 135 | NA | 35.6 | 34.6 | 39 | 135 | NA | 3 | 40 | | | L | L | L |
| BENZOIC ACID | 825 | ND | 1670 | 515 | ND | 1650 | 738 | 702 | NA | 30.8 | 25 | 172 | NA | 44.7 | 42.6 | 25 | 172 | NA | 5 | 40 | | | | | |
| 2,4-DICHLOROPHENOL | 165 | ND | 1670 | 693 | ND | 1670 | 673 | 639 | NA | 41.5 | 36 | 135 | NA | 40.3 | 38.3 | 36 | 135 | NA | 5 | 40 | | | | | |
| 1,2,4-TRICHLOROBENZENE | 165 | ND | 1670 | 670 | ND | 1670 | 649 | 634 | NA | 40.1 | 34 | 152 | NA | 38.8 | 38.0 | 34 | 152 | NA | 2 | 40 | | | | | |
| NAPHTHALENE | 165 | ND | 1670 | 678 | ND | 1670 | 690 | 671 | NA | 40.6 | 40 | 135 | NA | 41.3 | 40.2 | 40 | 135 | NA | 3 | 40 | | | | | |
| 4-CHLOROANILINE | 165 | ND | 1670 | 492 | ND | 1670 | 533 | 585 | NA | 29.4 | 35 | 146 | NA | 31.9 | 35.2 | 35 | 146 | NA | 10 | 40 | | | L | L | |
| HEXACHLOROBUTADIENE | 165 | ND | 1670 | 726 | ND | 1670 | 718 | 706 | NA | 43.5 | 25 | 135 | NA | 42.9 | 42.3 | 25 | 135 | NA | 1 | 40 | | | | | |
| 4-CHLORO-3-METHYLPHENO | 165 | ND | 1670 | 774 | ND | 1670 | 838 | 736 | NA | 46.3 | 34 | 135 | NA | 50.2 | 44.1 | 34 | 135 | NA | 13 | 40 | | | | | |
| 2-METHYLNAPHTHALENE | 165 | ND | 1670 | 663 | ND | 1670 | 677 | 662 | NA | 41.5 | 31 | 135 | NA | 40.8 | 39.8 | 31 | 135 | NA | 2 | 40 | | | | | |
| HEXACHLOROCYCLOPENTA | 165 | ND | 1670 | 638 | ND | 1670 | 190 | 158 | NA | 38.2 | 31 | 135 | NA | 11.4 | 9.4 | 31 | 135 | NA | 19 | 40 | | | | L | L |
| 2,4,6-TRICHLOROPHENOL | 165 | ND | 1670 | 799 | ND | 1670 | 817 | 727 | NA | 48.1 | 29 | 138 | NA | 48.9 | 43.8 | 29 | 138 | NA | 12 | 40 | | | | | |
| 2,4,5-TRICHLOROPHENOL | 165 | ND | 1670 | 843 | ND | 1670 | 842 | 802 | NA | 50.5 | 25 | 175 | NA | 50.4 | 48.0 | 25 | 175 | NA | 18 | 40 | | | | | |
| 2-CHLORONAPHTHALENE | 165 | ND | 1670 | 734 | ND | 1670 | 726 | 694 | NA | 43.9 | 50 | 135 | NA | 43.5 | 41.6 | 50 | 135 | NA | 5 | 40 | | | L | L | L |
| 2-NITROANILINE | 825 | ND | 1670 | 876 | ND | 1670 | 945 | 795 | NA | 52.5 | 40 | 135 | NA | 56.6 | 47.7 | 40 | 135 | NA | 17 | 40 | | | | | |
| DIMETHYLPHTHALATE | 165 | ND | 1670 | 1014 | ND | 1670 | 974 | 860 | NA | 60.7 | 25 | 175 | NA | 58.3 | 48.4 | 25 | 175 | NA | 19 | 40 | | | | | |
| ACENAPHTHYLENE | 165 | ND | 1670 | 822 | ND | 1670 | 843 | 762 | NA | 49.2 | 37 | 135 | NA | 50.5 | 45.6 | 37 | 135 | NA | 10 | 40 | | | | | |
| 2,6-DINITROTOLUENE | 165 | ND | 1670 | 1025 | ND | 1670 | 996 | 826 | NA | 61.4 | 41 | 135 | NA | 59.6 | 49.4 | 41 | 135 | NA | 19 | 40 | | | | | |
| 3-NITROANILINE | 825 | ND | 1670 | 1149 | ND | 1670 | 1087 | 917 | NA | 68.8 | 41 | 135 | NA | 65.1 | 54.9 | 41 | 135 | NA | 17 | 40 | | | | | |
| ACENAPHTHENE | 165 | ND | 1670 | 797 | ND | 1670 | 838 | 742 | NA | 47.7 | 39 | 135 | NA | 50.2 | 44.4 | 39 | 135 | NA | 12 | 40 | | | | | |
| 2,4-DINITROPHENOL | 825 | ND | 1670 | 1211 | ND | 1670 | 948 | 735 | NA | 72.5 | 25 | 161 | NA | 56.8 | 44.0 | 25 | 161 | NA | 25 | 40 | | | | | |
| 4-NITROPHENOL | 825 | ND | 1670 | 1115 | ND | 1670 | 1360 | 1215 | NA | 66.8 | 25 | 141 | NA | 82.8 | 72.8 | 25 | 141 | NA | 13 | 40 | | | | | |
| DIBENZOFURAN | 165 | ND | 1670 | 838 | ND | 1670 | 920 | 796 | NA | 50.2 | 42 | 135 | NA | 55.1 | 47.6 | 42 | 135 | NA | 14 | 40 | | | | | |
| 2,4-DINITROTOLUENE | 165 | ND | 1670 | 1130 | ND | 1670 | 1266 | 1057 | NA | 67.7 | 29 | 143 | NA | 75.8 | 63.3 | 29 | 143 | NA | 18 | 40 | | | | | |

WG45223.XLS

16

KEMRON ENVIRONMENTAL SERVICES, OVL
SEMI VOLATILES QUALITY CONTROL SUMMARY

ANAL WORK GRP : WG45223 EXT DATE : 8/26/98
METHOD : 8270 BENCH SHEET : V99P72
MATRIX : SOIL BLK FLNM : 7301 D*
CONCENTRATION UNITS : UG/KG LCS FLNM : 7302 D*
PREP WORK GRP : WG45115

RUN DATE :
SMPL ID :
SMPL FLNM :
MS FLNM :
MSD FLNM :

INSTRUMENT : HP5955
ANALYST : mdc

| ANALYTE | CONCENTRATION, ug/L | | | | | | | | PERCENT RECOVERY, % | | | | | | | | | PERCENT | | | BEYOND LIMITS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | RDL | BLANK | LCS SPIKE ADDED | LCS | SAMPLE | MS SPIKE ADDED | MS | MSD | BLANK | LCS | LCS LCL | LCS UCL | SAMPLE | MS | MSD | MS LCL | MS UCL | DUP RPD | MSD RPD | RPD UCL | SAMPLE | BLANK | LCS | MS | MSD |
| DIETHYLPHTHALATE | 165 | ND | 1670 | 1144 | ND | 1670 | 1158 | 971 | NA | 68.5 | 27 | 135 | NA | 69.4 | 58.2 | 27 | 135 | NA | 18 | 40 | | | | | |
| FLUORENE | 165 | ND | 1670 | 924 | ND | 1670 | 1007 | 843 | NA | 55.3 | 38 | 149 | NA | 60.3 | 50.5 | 38 | 149 | NA | 18 | 40 | | | | | |
| 4-CHLOROPHENYL-PHENYL | 165 | ND | 1670 | 873 | ND | 1670 | 941 | 792 | NA | 52.3 | 41 | 142 | NA | 56.4 | 47.4 | 41 | 142 | NA | 17 | 40 | | | | | |
| 4-NITROANILINE | 825 | ND | 1670 | 1323 | ND | 1670 | 1187 | 1045 | NA | 79.2 | 30 | 153 | NA | 63.8 | 62.6 | 30 | 153 | NA | 11 | 40 | | | | | |
| 1,2-DIPHENYLHYDRAZINE * | 165 | ND | 1670 | 815 | ND | 1670 | 1061 | 908 | NA | 54.8 | 25 | 150 | NA | 63.5 | 54.4 | 25 | 150 | NA | 18 | 40 | | | | | |
| 4,6-DINITRO-2-METHYLPHEN | 825 | ND | 1670 | 1502 | ND | 1670 | 1240 | 1023 | NA | 89.9 | 34 | 135 | NA | 74.3 | 61.3 | 34 | 135 | NA | 19 | 40 | | | | | |
| N-NITROSODIPHENYLAMINE | 165 | ND | 1670 | 1175 | ND | 1670 | 1189 | 1000 | NA | 70.4 | 25 | 135 | NA | 71.2 | 59.9 | 25 | 135 | NA | 17 | 40 | | | | | |
| 4-BROMOPHENYL-PHENYL E | 165 | ND | 1670 | 973 | ND | 1670 | 990 | 837 | NA | 58.2 | 43 | 137 | NA | 59.3 | 50.1 | 43 | 137 | NA | 17 | 40 | | | | | |
| HEXACHLOROBENZENE | 165 | ND | 1670 | 1256 | ND | 1670 | 1290 | 1101 | NA | 75.2 | 36 | 143 | NA | 77.2 | 65.9 | 36 | 143 | NA | 16 | 40 | | | | | |
| PENTACHLOROPHENOL | 825 | ND | 1670 | 1557 | ND | 1670 | 1247 | 1048 | NA | 93.2 | 38 | 149 | NA | 74.7 | 65.1 | 38 | 149 | NA | 14 | 40 | | | | | |
| PHENANTHRENE | 165 | ND | 1670 | 1254 | ND | 1670 | 1347 | 1180 | NA | 75.1 | 44 | 135 | NA | 80.6 | 70.7 | 44 | 135 | NA | 13 | 40 | | | | | |
| ANTHRACENE | 165 | ND | 1670 | 1232 | ND | 1670 | 1315 | 1132 | NA | 73.7 | 35 | 175 | NA | 78.8 | 67.8 | 35 | 175 | NA | 15 | 40 | | | | | |
| CARBAZOLE | 165 | ND | 1670 | 1379 | ND | 1670 | 1518 | 1326 | NA | 82.6 | 25 | 150 | NA | 90.8 | 79.4 | 25 | 150 | NA | 13 | 40 | | | | | |
| DI-N-BUTYLPHTHALATE | 165 | ND | 1670 | 1375 | ND | 1670 | 1504 | 1331 | NA | 82.3 | 25 | 136 | NA | 90.1 | 79.7 | 25 | 136 | NA | 12 | 40 | | | | | |
| FLUORANTHENE | 165 | ND | 1670 | 1395 | ND | 1670 | 1460 | 1298 | NA | 83.5 | 37 | 135 | NA | 87.4 | 77.7 | 37 | 135 | NA | 12 | 40 | | | | | |
| PYRENE | 165 | ND | 1670 | 1412 | ND | 1670 | 1601 | 1445 | NA | 84.6 | 37 | 146 | NA | 95.8 | 86.5 | 37 | 146 | NA | 10 | 40 | | | | | |
| BUTYLBENZYLPHTHALATE | 165 | ND | 1670 | 1402 | ND | 1670 | 1523 | 1377 | NA | 84.0 | 25 | 135 | NA | 91.2 | 82.4 | 25 | 135 | NA | 10 | 40 | | | | | |
| BENZO(A)ANTHRACENE | 330 | ND | 1670 | 1413 | ND | 1670 | 1493 | 1338 | NA | 84.6 | 41 | 143 | NA | 89.4 | 80.0 | 41 | 143 | NA | 11 | 40 | | | | | |
| 3,3'-DICHLOROBENZIDINE | 165 | ND | 1670 | 866 | ND | 1670 | 994 | 957 | NA | 52.0 | 25 | 175 | NA | 59.5 | 57.3 | 25 | 175 | NA | 4 | 40 | | | | | |
| CHRYSENE | 165 | ND | 1670 | 1443 | ND | 1670 | 1520 | 1364 | NA | 86.4 | 45 | 143 | NA | 91.0 | 81.7 | 45 | 143 | NA | 11 | 40 | | | | | |
| BIS(2-ETHYLHEXYL)PHTHALA | 165 | ND | 1670 | 1483 | ND | 1670 | 1610 | 1432 | NA | 88.8 | 25 | 139 | NA | 96.4 | 85.8 | 25 | 139 | NA | 12 | 40 | | | | | |
| DI-N-OCTYLPHTHALATE | 165 | ND | 1670 | 1344 | ND | 1670 | 1518 | 1333 | NA | 80.5 | 28 | 137 | NA | 90.9 | 79.8 | 28 | 137 | NA | 13 | 40 | | | | | |
| BENZO(B)FLUORANTHENE | 165 | ND | 1670 | 1312 | ND | 1670 | 1424 | 1312 | NA | 78.5 | 27 | 135 | NA | 85.3 | 78.5 | 27 | 135 | NA | 8 | 40 | | | | | |
| BENZO(K)FLUORANTHENE | 165 | ND | 1670 | 1427 | ND | 1670 | 1534 | 1301 | NA | 85.4 | 25 | 150 | NA | 91.8 | 77.8 | 25 | 150 | NA | 16 | 40 | | | | | |
| BENZO(A)PYRENE | 165 | ND | 1670 | 1385 | ND | 1670 | 1460 | 1288 | NA | 82.9 | 31 | 135 | NA | 87.4 | 77.1 | 31 | 135 | NA | 13 | 40 | | | | | |
| INDENO(1,2,3-CD)PYRENE | 165 | ND | 1670 | 1381 | ND | 1670 | 1351 | 1151 | NA | 82.7 | 25 | 170 | NA | 80.9 | 68.9 | 25 | 170 | NA | 18 | 40 | | | | | |
| DIBENZ(A,H)ANTHRACENE | 165 | ND | 1670 | 1428 | ND | 1670 | 1412 | 1200 | NA | 85.4 | 43 | 135 | NA | 84.5 | 71.8 | 43 | 135 | NA | 18 | 40 | | | | | |
| BENZO(G,H,I)PERYLENE | 165 | ND | 1670 | 1419 | ND | 1670 | 1344 | 1122 | NA | 85.0 | 25 | 150 | NA | 80.5 | 67.2 | 25 | 150 | NA | 18 | 40 | | | | | |
| SURROGATES | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-FLUOROPHENOL | | 63.8 | 100 | 63.1 | 31.8 | 100 | 38.9 | 37.8 | 63.8 | 63.1 | 25 | 121 | 31.8 | 38.9 | 37.8 | 25 | 121 | | | | | | | | |
| PHENOL-D5 | | 37.7 | 100 | 42.1 | 28.9 | 100 | 33.2 | 37.5 | 37.7 | 42.1 | 24 | 113 | 28.6 | 33.2 | 37.5 | 24 | 113 | | | | | | | | |
| NITROBENZENE-D5 | | 18.4 | 50 | 18.8 | 14.4 | 50 | 18.9 | 18.5 | 36.7 | 37.5 | 23 | 120 | 28.8 | 37.7 | 36.9 | 23 | 120 | | | | | | | | |
| 2-FLUOROBIPHENYL | | 20.0 | 50 | 23.3 | 15.3 | 50 | 21.5 | 21.1 | 40.0 | 45.5 | 30 | 115 | 30.5 | 43.0 | 42.2 | 30 | 115 | | | | | | | | |
| 2,4,6-TRIBROMOPHENOL | | 53.3 | 100 | 78.3 | 65.1 | 100 | 80.9 | 69.4 | 53.3 | 78.3 | 19 | 122 | 65.1 | 80.9 | 69.4 | 19 | 122 | | | | | | | | |
| O-TERPHENYL-D14 | | 55.7 | 50 | 50.8 | 54.3 | 50 | 52.8 | 48.1 | 111.4 | 101.6 | 18 | 137 | 108.5 | 105.6 | 96.2 | 18 | 137 | | | | | | | | |

NOTES & DEFINITIONS :
NA = NOT APPLICABLE
ND = NOT DETECTED
RDL = REPORTING DETECTION LIMIT
NS = NOT SPIKED
L = below QC limit
H = above QC limit

WG45223.XLS

Copy to Jim Young 9/16/98

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H865, Drop Point 01U
Los Alamos, NM 87545
Attention: John Miglio

PO Number:
Account Number: LANL-295

Login #: L9808430
Report Date: 09/15/98
Work ID: 4522R/MR2W05153318
Date Received: 08/25/98

**SAMPLE IDENTIFICATION**

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9808430-01 | MD49-98-0140 | | |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Certified By
Maren M. Beery

PRELIMINARY COPY

Login #L9808430
September 15, 1998 02:56 pm

# KEMRON ENVIRONMENTAL SERVICES

Lab Sample ID: L9808430-01
Client Sample ID: MD49-98-0140
Site/Work ID: 4522R/MR2W05153318

Matrix: Soil
Collected: 08/20/98 N/A

% Solid: 79
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids | % wt. | 79 | | 1.0 | 1 | N/A | DKM | 08/27/98 | 09:50 | D2216-90 |
| Silver, Total | mg/kg | | ND | 2.5 | 1 | R-2 | KHA | 09/04/98 | 14:15 | 6010B\3050A |
| Aluminum, Total | mg/kg | 21000 | | 6.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Arsenic, Total | mg/kg | 4.8 | | 0.63 | 1 | N/A | KHA | 09/04/98 | 14:15 | 6010B\3050A |
| Barium, Total | mg/kg | 110 | | 0.63 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Beryllium, Total | mg/kg | 1.0 | | 0.63 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Calcium, Total | mg/kg | 1000 | | 13 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cadmium, Total | mg/kg | | ND | 0.63 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cobalt, Total | mg/kg | 6.5 | | 1.3 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Chromium, Total | mg/kg | 11 | | 1.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Copper, Total | mg/kg | 9.5 | | 1.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Iron, Total | mg/kg | 21000 | | 13 | 5 | R-4 | SLP | 09/03/98 | 22:39 | 6010B\3050A |
| Mercury, Total | mg/kg | | ND | 0.13 | 1 | N/A | ALC | 08/26/98 | | 7471A\7471A |
| Potassium, Total | mg/kg | 2100 | | 63 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Magnesium, Total | mg/kg | 2200 | | 32 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Manganese, Total | mg/kg | 380 | | 0.63 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Sodium, Total | mg/kg | 110 | | 32 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Nickel, Total | mg/kg | 8.0 | | 2.5 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Lead, Total | mg/kg | 28 | | 0.32 | 1 | N/A | KHA | 09/04/98 | 14:15 | 6010B\3050A |
| Antimony, Total | mg/kg | | ND | 13 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Selenium, Total | mg/kg | 1.1 | S | 0.51 | 2 | N/A | RSS | 09/14/98 | 14:00 | 7740 |
| Thallium, Total | mg/kg | | ND | 0.32 | 1 | N/A | CRC | 08/27/98 | 09:10 | 7841 |
| Vanadium, Total | mg/kg | 20 | | 0.63 | 1 | R-2 | KHA | 09/04/98 | 14:15 | 6010B\3050A |
| Zinc, Total | mg/kg | 850 | | 1.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |

RL = Reporting limit

9/15/98

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H865, Drop Point 01U
Los Alamos, NM 87545
Attention: John Miglio

PO Number:
Account Number: LANL-295

Login #: L9808433
Report Date: 09/14/98
Work ID: 4526R/MR2W05153318
Date Received: 08/25/98

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9808433-01 | MD49-98-0141 | L9808433-02 | MD49-98-0147 |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Certified By
Maren M. Beery

COPY

KEMRON ENVIRONMENTAL SERVICES

Sent by: KEMRON ON YALE; LAB.

Login #L9808433
September 14, 1998 12:33 pm

KEMRON ENVIRONMENTAL SERVICES

Lab Sample ID: L9808433-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4526R/MR2W05153318

Matrix: Soil
Collected: 08/21/98 N/A

% Solid: 71
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids..... | % wt. | 71 | | 1.0 | 1 | N/A | DFM | 08/27/98 | 09:50 | D2216-90 |
| Silver, Total..... | mg/kg | | ND | 2.8 | 1 | R-2 | KHA | 09/04/98 | 14:02 | 6010B\3050A |
| Aluminum, Total..... | mg/kg | 28000 | | 7.0 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Arsenic, Total..... | mg/kg | 7.5 | | 0.70 | 1 | N/A | KHA | 09/04/98 | 14:02 | 6010B\3050A |
| Barium, Total..... | mg/kg | 180 | | 0.70 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Beryllium, Total..... | mg/kg | 1.8 | | 0.70 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Calcium, Total..... | mg/kg | 5500 | | 14 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cadmium, Total..... | mg/kg | 1.1 | | 0.70 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cobalt, Total..... | mg/kg | 6.5 | | 1.4 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Chromium, Total..... | mg/kg | 18 | | 1.4 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Copper, Total..... | mg/kg | 36 | | 1.4 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Iron, Total..... | mg/kg | 52000 | | 14 | 5 | R-4 | SLP | 09/03/98 | 22:44 | 6010B\3050A |
| Mercury, Total..... | mg/kg | | ND | 0.14 | 1 | N/A | AJC | 08/26/98 | | 7471A\7471A |
| Potassium, Total..... | mg/kg | 2500 | | 70 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Magnesium, Total..... | mg/kg | 2900 | | 35 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Manganese, Total..... | mg/kg | 420 | | 0.70 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Sodium, Total..... | mg/kg | 160 | | 35 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Nickel, Total..... | mg/kg | 15 | | 2.8 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Lead, Total..... | mg/kg | 570 | | 0.35 | 1 | N/A | KHA | 09/04/98 | 14:02 | 6010B\3050A |
| Antimony, Total..... | mg/kg | | ND | 14 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Selenium, Total..... | mg/kg | | ND,L | 0.53 | 1 | N/A | RSS | 09/08/98 | 10:50 | 7740 |
| Thallium, Total..... | mg/kg | | ND | 0.35 | 1 | N/A | CRC | 08/27/98 | 09:10 | 7841 |
| Vanadium, Total..... | mg/kg | 28 | | 0.70 | 1 | R-2 | KHA | 09/04/98 | 14:02 | 6010B\3050A |
| Zinc, Total..... | mg/kg | 20000 | | 1.4 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |

Lab Sample ID: L9808433-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4526R/MR2W05153318

Matrix: Soil
Collected: 08/21/98 N/A

% Solid: 46
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids..... | % wt. | 46 | | 1.0 | 1 | N/A | DFM | 08/27/98 | 09:50 | D2216-90 |
| Silver, Total..... | mg/kg | | ND | 4.3 | 1 | R-2 | KHA | 09/04/98 | 14:50 | 6010B\3050A |
| Aluminum, Total..... | mg/kg | 15000 | | 11 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Arsenic, Total..... | mg/kg | 4.8 | | 1.1 | 1 | N/A | KHA | 09/04/98 | 14:50 | 6010B\3050A |
| Barium, Total..... | mg/kg | 110 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Beryllium, Total..... | mg/kg | | ND | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |

RL = Reporting limit

Login #L9808433
September 14, 1998 12:33 pm

XENRON ENVIRONMENTAL SERVICES

Lab Sample ID: L9808433-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4526R/MR2W05153318

Matrix: Soil
Collected: 08/21/98 N/A

% Solid: 46
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium, Total | mg/kg | 6000 | | 22 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cadmium, Total | mg/kg | 3.1 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cobalt, Total | mg/kg | | ND | 2.2 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Chromium, Total | mg/kg | 4.9 | | 2.2 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Copper, Total | mg/kg | 28 | | 2.2 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Iron, Total | mg/kg | 14000 | | 22 | 5 | R-4 | SLP | 09/03/98 | 22:48 | 6010B\3050A |
| Mercury, Total | mg/kg | | ND | 0.22 | 1 | N/A | ALC | 08/26/98 | | 7471A\7471A |
| Potassium, Total | mg/kg | 770 | | 110 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Magnesium, Total | mg/kg | 3200 | | 54 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Manganese, Total | mg/kg | 190 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Sodium, Total | mg/kg | 150 | | 54 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Nickel, Total | mg/kg | 6.8 | | 4.3 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Lead, Total | mg/kg | 450 | | 0.54 | 1 | N/A | KHA | 09/04/98 | 14:50 | 6010B\3050A |
| Antimony, Total | mg/kg | | ND | 22 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Selenium, Total | mg/kg | | ND,L | 0.78 | 1 | N/A | RSS | 09/08/98 | 10:50 | 7740 |
| Thallium, Total | mg/kg | | ND | 0.54 | 1 | N/A | CRC | 08/27/98 | 09:10 | 7841 |
| Vanadium, Total | mg/kg | 6.5 | | 1.1 | 1 | R-2 | KHA | 09/04/98 | 14:50 | 6010B\3050A |
| Zinc, Total | mg/kg | 32000 | | 2.2 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |

RL = Reporting Limit

Copy to Fred Vocks
4/15/99

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H855, Drop Point O1U
Los Alamos, NM 87545
Attention: John Miglio

Login #: L9808435
Report Date: 09/15/98
Work ID: 4520R/MR2W05153318
Date Received: 08/25/98

PO Number:
Account Number: LANL-295

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9808435-01 | MD49-98-0143 | | |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Certified By
Maren M. Beery

PRELIMINARY COPY

Sent By: KEMRON OH VALLEY LAB; 1 740 373 4835; 15 Sep 98 3:29PM;Job 863;Page 2/5

Login #L9808435
September 15, 1993 02:56 pm

KEMRON ENVIRONMENTAL SERVICES

Lab Sample ID: L9808435-01
Client Sample ID: MD49-98-0143
Site/Work ID: 4528R/MR2W05153318

Matrix: Soil
Collected: 08/24/98 N/A

% Solid: 44
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids..... | % wt. | 44 | | 1.0 | 1 | N/A | DFM | 08/27/98 | 09:50 | D2216-90 |
| Silver, Total..... | mg/kg | | ND | 4.5 | 1 | R-2 | KHA | 09/04/98 | 14:19 | 6010B\3050A |
| Aluminum, Total..... | mg/kg | 31000 | | 11 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Arsenic, Total..... | mg/kg | 21 | | 1.1 | 1 | N/A | KHA | 09/04/98 | 14:19 | 6010B\3050A |
| Barium, Total..... | mg/kg | 130 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Beryllium, Total..... | mg/kg | 2.5 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Calcium, Total..... | mg/kg | 6600 | | 23 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cadmium, Total..... | mg/kg | 4.4 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cobalt, Total..... | mg/kg | 5.9 | | 2.3 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Chromium, Total..... | mg/kg | 18 | | 2.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Copper, Total..... | mg/kg | 55 | | 2.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Iron, Total..... | mg/kg | 47000 | | 23 | 5 | R-4 | SLP | 09/03/98 | 22:53 | 6010B\3050A |
| Mercury, Total..... | mg/kg | | ND | 0.23 | 1 | N/A | ALC | 08/26/98 | | 7471A\7471A |
| Potassium, Total..... | mg/kg | 2300 | | 110 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Magnesium, Total..... | mg/kg | 4200 | | 57 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Manganese, Total..... | mg/kg | 340 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Sodium, Total..... | mg/kg | 700 | | 57 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Nickel, Total..... | mg/kg | 18 | | 4.5 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Lead, Total..... | mg/kg | 310 | | 0.57 | 1 | N/A | KHA | 09/04/98 | 14:19 | 6010B\3050A |
| Antimony, Total..... | mg/kg | 24 | | 23 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Selenium, Total..... | mg/kg | 3.1 | S | 0.91 | 2 | N/A | PSS | 09/14/98 | 14:03 | 7740 |
| Thallium, Total..... | mg/kg | | ND, (L) | 0.87 | 1 | N/A | CRC | 08/27/98 | 09:10 | 7841 |
| Vanadium, Total..... | mg/kg | 20 | | 1.1 | 1 | R-2 | KHA | 09/04/98 | 14:19 | 6010B\3050A |
| Zinc, Total..... | mg/kg | 38000 | | 2.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |

RL = Reporting Limit

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

copy to Rene Evans
9/16/98

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H865, Drop Point O1U
Los Alamos, NM 87545
Attention: John Miglio

PO Number:
Account Number: LANL-295

Login #: L9808431
Report Date: 09/09/98
Work ID: 4521R/MR2W05153318
Date Received: 08/25/98

SEP 1 3

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9808431-01 | MD49-98-0140 | | |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Dennis S. Tepe

Certified By
Dennis S. Tepe

Report Sent To: [illegible]
Approved By: _____
Date Sent: 9/15/98

COPY

COPY

KEMRON ENVIRONMENTAL SERVICES

Order #98-08-431
September 11, 1998
16:37

**KEMRON ENVIRONMENTAL SERVICES**
**REPORT NARRATIVE**

Lab ID# 7797L0014-8M

CLIENT: Los Alamos National Laboratory

LANL SDG/RN: 4521R

Sample Management:
One soil sample was received at Kemron Environmental Services on 8/25/98.

Client ID:
MD49-98-0140

Quality Control:

VOLATILE ORGANICS - 8260:
MS/MSD analysis was performed on a non-LANL sample.

MS/MSD outlier were acceptable in the daily soil LCS. A separate calibration curve was used for the quantitation of trichlorotrifluoroethane.

SEMIVOLATILE ORGANICS - 8270:
The batch LCS, MS, and MSD yielded % recoveries for aniline, bis(2-chloroethoxy) methane, 4-chloroaniline, and 2-chloronaphthalene that were outside advisory limits. The MS/MSD yielded a % recovery for hexachlorocyclopentadiene that was outside advisory limits. All other analytes were within limits.

MS/MSD analysis was performed on sample MD49-98-0140.

PCB - 8082:
There were no technical difficulties encountered during the analysis of this sample.

MS/MSD analysis was performed on a non-LANL sample.

Shipment Conditions:
The sample was received intact. Solid blue ice was present.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and in completeness, except as detailed in this QC Report.

Laboratory Manager

Date: 9/11/98

Login #L9808431
September 9, 1998 09:18 am

KEMRON ENVIRONMENTAL SERVICES

Product: 808-PCB-S - PCB's (Soil)

Lab Sample ID: L9808431-01
Client Sample ID: MD49-98-0140
Site/Work ID: 4521R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/20/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 79

TCLP Extract Date: N/A
Extract Date: 08/25/98
Analysis Date: 08/27/98 Time:

Instrument: HP4
Analyst: ECL
Lab File ID: 018R0101

Method: 8082\3550
Run ID: R51257

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 12674-11-2 | Aroclor-1016..... | ug/kg | | ND | 21 | 1 |
| 11104-28-2 | Aroclor-1221..... | ug/kg | | ND | 21 | 1 |
| 11141-16-5 | Aroclor-1232..... | ug/kg | | ND | 21 | 1 |
| 53469-21-9 | Aroclor-1242..... | ug/kg | | ND | 21 | 1 |
| 12672-29-6 | Aroclor-1248..... | ug/kg | | ND | 21 | 1 |
| 11097-69-1 | Aroclor-1254..... | ug/kg | | ND | 42 | 1 |
| 11096-82-5 | Aroclor-1260..... | ug/kg | | ND | 42 | 1 |

SURROGATES- In Percent Recovery:

| | | |
|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene..... | 54.4 | ( 29 - 133%) |
| Decachlorobiphenyl..... | 63.8 | ( 30 - 173%) |

Lab Sample ID: L9808431-01
Client Sample ID: MD49-98-0140
Site/Work ID: 4521R/MR2W05153318

Matrix: Soil
Collected: 08/20/98 N/A

% Solid: 79
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids..... | % wt. | 79 | | 1.0 | 1 | N/A | DKM | 08/27/98 | 09:50 | D2216-90 |

RL = Reporting Limit

Login #L9808431
September 9, 1998 09:18 am

KEMRON ENVIRONMENTAL SERVICES

Product: 827-LS - Library Search (Ten Peaks)

Lab Sample ID: L9808431-01
Client Sample ID: MD49-98-0140
Site/Work ID: 4521R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/20/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 79

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 08/31/98 Time: 20:53

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7442

Method: 8270C
Run ID: R51918

| CAS # | Compound | Units | Result | Qualifiers | RL | Ret Time |
|---|---|---|---|---|---|---|
| | Unknown..... | ug/L | 140 | | | 20.24 |
| | Unknown..... | ug/L | 420 | | | 23.42 |

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808431-01
Client Sample ID: MD49-98-0140
Site/Work ID: 4521R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/20/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 79

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 08/31/98 Time: 20:53

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7442

Method: 8270C
Run ID: R51918

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 62-75-9 | n-Nitrosodimethylamine..... | ug/kg | | ND | 420 | 1 |
| 62-53-3 | Aniline..... | ug/kg | | ND | 840 | 1 |
| 108-95-2 | Phenol..... | ug/kg | | ND | 420 | 1 |
| 111-44-4 | bis(2-Chloroethyl)ether..... | ug/kg | | ND | 420 | 1 |
| 95-57-8 | 2-Chlorophenol..... | ug/kg | | ND | 420 | 1 |
| 541-73-1 | 1,3-Dichlorobenzene..... | ug/kg | | ND | 420 | 1 |
| 106-46-7 | 1,4-Dichlorobenzene..... | ug/kg | | ND | 420 | 1 |
| 95-50-1 | 1,2-Dichlorobenzene..... | ug/kg | | ND | 420 | 1 |
| 95-48-7 | 2-Methylphenol..... | ug/kg | | ND | 420 | 1 |
| 106-44-5 | 4-Methylphenol..... | ug/kg | | ND | 420 | 1 |
| 621-64-7 | n-Nitroso-di-n-propylamine..... | ug/kg | | ND | 420 | 1 |
| 67-72-1 | Hexachloroethane..... | ug/kg | | ND | 420 | 1 |
| 98-95-3 | Nitrobenzene..... | ug/kg | | ND | 420 | 1 |
| 78-59-1 | Isophorone..... | ug/kg | | ND | 420 | 1 |
| 88-75-5 | 2-Nitrophenol..... | ug/kg | | ND | 420 | 1 |
| 105-67-9 | 2,4-Dimethylphenol..... | ug/kg | | ND | 420 | 1 |

RL = Reporting Limit

Login #L9808431
September 9, 1998 09:18 am

KEMRON ENVIRONMENTAL SERVICES

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808431-01
Client Sample ID: MD49-98-0140
Site/Work ID: 4521R/MR2W05153318
Matrix: Soil

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 08/31/98 Time: 20:53

Dil. Type: N/A
COC Info: N/A

Date Collected: 08/20/98

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7442

Sample Weight: N/A
Extract Volume: N/A

% Solid: 79

Method: 8270C
Run ID: R51918

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ug/kg | | ND | 4200 | 1 |
| 111-91-1 | bis(2-Chloroethoxy)methane | ug/kg | | ND | 420 | 1 |
| 120-83-2 | 2,4-Dichlorophenol | ug/kg | | ND | 420 | 1 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ug/kg | | ND | 420 | 1 |
| 91-20-3 | Naphthalene | ug/kg | | ND | 420 | 1 |
| 106-47-8 | 4-Chloroaniline | ug/kg | | ND | 1600 | 1 |
| 87-68-3 | Hexachlorobutadiene | ug/kg | | ND | 420 | 1 |
| 59-50-7 | 4-Chloro-3-methylphenol | ug/kg | | ND | 840 | 1 |
| 91-57-6 | 2-Methylnaphthalene | ug/kg | | ND | 420 | 1 |
| 77-47-4 | Hexachlorocyclopentadiene | ug/kg | | ND | 420 | 1 |
| 88-06-2 | 2,4,6-Trichlorophenol | ug/kg | | ND | 420 | 1 |
| 95-95-4 | 2,4,5-Trichlorophenol | ug/kg | | ND | 2000 | 1 |
| 91-58-7 | 2-Chloronaphthalene | ug/kg | | ND | 420 | 1 |
| 88-74-4 | 2-Nitroaniline | ug/kg | | ND | 2000 | 1 |
| 131-11-3 | Dimethylphthalate | ug/kg | | ND | 420 | 1 |
| 208-96-8 | Acenaphthylene | ug/kg | | ND | 420 | 1 |
| 99-09-2 | 3-Nitroaniline | ug/kg | | ND | 2000 | 1 |
| 83-32-9 | Acenaphthene | ug/kg | | ND | 420 | 1 |
| 51-28-5 | 2,4-Dinitrophenol | ug/kg | | ND | 2000 | 1 |
| 100-02-7 | 4-Nitrophenol | ug/kg | | ND | 2000 | 1 |
| 132-64-9 | Dibenzofuran | ug/kg | | ND | 420 | 1 |
| 121-14-2 | 2,4-Dinitrotoluene | ug/kg | | ND | 420 | 1 |
| 606-20-2 | 2,6-Dinitrotoluene | ug/kg | | ND | 420 | 1 |
| 84-66-2 | Diethylphthalate | ug/kg | | ND | 420 | 1 |
| 7005-72-3 | 4-Chlorophenyl-phenyl ether | ug/kg | | ND | 420 | 1 |
| 86-73-7 | Fluorene | ug/kg | | ND | 420 | 1 |
| 100-01-6 | 4-Nitroaniline | ug/kg | | ND | 840 | 1 |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | ug/kg | | ND | 2000 | 1 |
| 86-30-6 | n-Nitrosodiphenylamine | ug/kg | | ND | 420 | 1 |
| 103-33-3 | Azobenzene | ug/kg | | ND | 840 | 1 |
| 101-55-3 | 4-Bromophenyl-phenylether | ug/kg | | ND | 420 | 1 |
| 118-74-1 | Hexachlorobenzene | ug/kg | | ND | 420 | 1 |
| 87-86-5 | Pentachlorophenol | ug/kg | | ND | 2000 | 1 |
| 85-01-8 | Phenanthrene | ug/kg | | ND | 420 | 1 |
| 120-12-7 | Anthracene | ug/kg | | ND | 420 | 1 |
| 84-74-2 | Di-n-butylphthalate | ug/kg | | ND | 420 | 1 |
| 206-44-0 | Fluoranthene | ug/kg | | ND | 420 | 1 |
| 129-00-0 | Pyrene | ug/kg | | ND | 420 | 1 |
| 85-68-7 | Butylbenzylphthalate | ug/kg | | ND | 420 | 1 |

RL = Reporting Limit

Login #L9808431
September 9, 1998 09:18 am

KEMRON ENVIRONMENTAL SERVICES

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808431-01
Client Sample ID: MD49-98-0140
Site/Work ID: 4521R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/20/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 79

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 08/31/98 Time: 20:53

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7442

Method: 8270C
Run ID: R51918

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 91-94-1 | 3,3'-Dichlorobenzidine | ug/kg | | ND | 840 | 1 |
| 56-55-3 | Benzo(a)anthracene | ug/kg | | ND | 420 | 1 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ug/kg | | ND | 420 | 1 |
| 218-01-9 | Chrysene | ug/kg | | ND | 420 | 1 |
| 117-84-0 | Di-n-octylphthalate | ug/kg | | ND | 420 | 1 |
| 205-99-2 | Benzo(b)fluoranthene | ug/kg | | ND | 420 | 1 |
| 207-08-9 | Benzo(k)fluoranthene | ug/kg | | ND | 420 | 1 |
| 50-32-8 | Benzo(a)pyrene | ug/kg | | ND | 420 | 1 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ug/kg | | ND | 420 | 1 |
| 53-70-3 | Dibenzo(a,h)anthracene | ug/kg | | ND | 420 | 1 |
| 191-24-2 | Benzo(g,h,i)Perylene | ug/kg | | ND | 420 | 1 |
| 100-51-6 | Benzyl alcohol | ug/kg | | ND | 1600 | 1 |
| 108-60-1 | 2,2'-Oxybis(1-chloropropane) | ug/kg | | ND | 420 | 1 |

SURROGATES- In Percent Recovery:

| | | |
|---|---|---|
| 2,4,6-Tribromophenol | 65.1 | ( 19 - 122%) |
| 2-Fluorobiphenyl | 30.5 | ( 30 - 115%) |
| 2-Fluorophenol | 31.6 | ( 25 - 121%) |
| Nitrobenzene-d5 | 28.8 | ( 23 - 120%) |
| Phenol-d5 | 28.6 | ( 24 - 113%) |
| p-Terphenyl-d14 | 109 | ( 18 - 137%) |

RL = Reporting Limit



184

Login #L9808431
September 9, 1998 09:18 am

KEMRON ENVIRONMENTAL SERVICES

Product: 8260LS - VOA Library Search

Lab Sample ID: L9808431-01
Client Sample ID: MD49-98-0140
Site/Work ID: 4521R/MR2W05153318
Matrix: Soil

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 15:53

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/20/98
Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09623

Sample Weight: N/A
Extract Volume: N/A
% Solid: 79
Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Ret Time |
|---|---|---|---|---|---|---|
| | No searchable peaks..... | ug/kg | | | | |

---

Product: 826LA - Volatile Organics

Lab Sample ID: L9808431-01
Client Sample ID: MD49-98-0140
Site/Work ID: 4521R/MR2W05153318
Matrix: Soil

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 15:53

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/20/98
Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09623

Sample Weight: N/A
Extract Volume: N/A
% Solid: 79
Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane..... | ug/kg | | ND | 13 | 1 |
| 74-87-3 | Chloromethane..... | ug/kg | | ND | 13 | 1 |
| 75-01-4 | Vinyl chloride..... | ug/kg | | ND | 13 | 1 |
| 74-83-9 | Bromomethane..... | ug/kg | | ND | 13 | 1 |
| 75-00-3 | Chloroethane..... | ug/kg | | ND | 13 | 1 |
| 75-69-4 | Trichlorofluoromethane..... | ug/kg | | ND | 6.3 | 1 |
| 75-35-4 | 1,1-Dichloroethene..... | ug/kg | | ND | 6.3 | 1 |
| 74-88-4 | Iodomethane..... | ug/kg | | ND | 6.3 | 1 |
| 75-15-0 | Carbon disulfide..... | ug/kg | | ND | 6.3 | 1 |
| 67-64-1 | Acetone..... | ug/kg | | ND | 25 | 1 |
| 75-09-2 | Methylene chloride..... | ug/kg | | ND | 6.3 | 1 |
| 156-60-5 | trans-1,2-Dichloroethene..... | ug/kg | | ND | 13 | 1 |
| 75-34-3 | 1,1-Dichloroethane..... | ug/kg | | ND | 6.3 | 1 |
| 594-20-7 | 2,2-Dichloropropane..... | ug/kg | | ND | 6.3 | 1 |
| 156-59-2 | cis-1,2-Dichloroethene..... | ug/kg | | ND | 13 | 1 |
| 78-93-3 | 2-Butanone..... | ug/kg | | ND | 25 | 1 |
| 74-97-5 | Bromochloromethane..... | ug/kg | | ND | 6.3 | 1 |

RL = Reporting Limit

Login #L9808431
September 9, 1998 09:18 am

KEMRON ENVIRONMENTAL SERVICES

Product: 826LA - Volatile Organics

Lab Sample ID: L9808431-01
Client Sample ID: MD49-98-0140
Site/Work ID: 4521R/MR2W05153318
Matrix: Soil

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 15:53

Dil. Type: N/A
COC Info: N/A

Date Collected: 08/20/98

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09623

Sample Weight: N/A
Extract Volume: N/A

% Solid: 79

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 67-66-3 | Chloroform | ug/kg | | ND | 6.3 | 1 |
| 71-55-6 | 1,1,1-Trichloroethane | ug/kg | | ND | 6.3 | 1 |
| 56-23-5 | Carbon tetrachloride | ug/kg | | ND | 6.3 | 1 |
| 563-58-6 | 1,1-Dichloropropene | ug/kg | | ND | 6.3 | 1 |
| 71-43-2 | Benzene | ug/kg | | ND | 6.3 | 1 |
| 107-06-2 | 1,2-Dichloroethane | ug/kg | | ND | 6.3 | 1 |
| 79-01-6 | Trichloroethene | ug/kg | | ND | 6.3 | 1 |
| 78-87-5 | 1,2-Dichloropropane | ug/kg | | ND | 6.3 | 1 |
| 74-95-3 | Dibromomethane | ug/kg | | ND | 6.3 | 1 |
| 75-27-4 | Bromodichloromethane | ug/kg | | ND | 6.3 | 1 |
| 10061-02-6 | trans-1,3-Dichloropropene | ug/kg | | ND | 6.3 | 1 |
| 108-10-1 | 4-Methyl-2-pentanone | ug/kg | | ND | 25 | 1 |
| 108-88-3 | Toluene | ug/kg | | ND | 6.3 | 1 |
| 10061-01-5 | cis-1,3-Dichloropropene | ug/kg | | ND | 6.3 | 1 |
| 79-00-5 | 1,1,2-Trichloroethane | ug/kg | | ND | 6.3 | 1 |
| 127-18-4 | Tetrachloroethene | ug/kg | | ND | 6.3 | 1 |
| 142-28-9 | 1,3-Dichloropropane | ug/kg | | ND | 6.3 | 1 |
| 124-48-1 | Dibromochloromethane | ug/kg | | ND | 6.3 | 1 |
| 591-78-6 | 2-Hexanone | ug/kg | | ND | 25 | 1 |
| 106-93-4 | 1,2-Dibromoethane | ug/kg | | ND | 6.3 | 1 |
| 108-90-7 | Chlorobenzene | ug/kg | | ND | 6.3 | 1 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ug/kg | | ND | 6.3 | 1 |
| 100-41-4 | Ethyl benzene | ug/kg | | ND | 6.3 | 1 |
| 1330-20-7 | Xylenes (total) | ug/kg | | ND | 6.3 | 1 |
| 100-42-5 | Styrene | ug/kg | | ND | 6.3 | 1 |
| 75-25-2 | Bromoform | ug/kg | | ND | 6.3 | 1 |
| 98-82-8 | Isopropylbenzene | ug/kg | | ND | 6.3 | 1 |
| 108-86-1 | Bromobenzene | ug/kg | | ND | 6.3 | 1 |
| 96-18-4 | 1,2,3-Trichloropropane | ug/kg | | ND | 6.3 | 1 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ug/kg | | ND | 6.3 | 1 |
| 103-65-1 | n-Propylbenzene | ug/kg | | ND | 6.3 | 1 |
| 95-49-8 | 2-Chlorotoluene | ug/kg | | ND | 6.3 | 1 |
| 106-43-4 | 4-Chlorotoluene | ug/kg | | ND | 6.3 | 1 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ug/kg | | ND | 6.3 | 1 |
| 98-06-6 | tert-Butylbenzene | ug/kg | | ND | 6.3 | 1 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ug/kg | | ND | 6.3 | 1 |
| 135-98-8 | sec-Butylbenzene | ug/kg | | ND | 6.3 | 1 |
| 541-73-1 | 1,3-Dichlorobenzene | ug/kg | | ND | 6.3 | 1 |
| 106-46-7 | 1,4-Dichlorobenzene | ug/kg | | ND | 6.3 | 1 |

RL = Reporting Limit

Login #L9808431
September 9, 1998 09:18 am

KEMRON ENVIRONMENTAL SERVICES

Product: 826LA - Volatile Organics

Lab Sample ID: L9808431-01
Client Sample ID: MD49-98-0140
Site/Work ID: 4521R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/20/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 79

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 15:53

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09623

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 99-87-6 | p-Isopropyltoluene..... | ug/kg | | ND | 6.3 | 1 |
| 95-50-1 | 1,2-Dichlorobenzene..... | ug/kg | | ND | 6.3 | 1 |
| 104-51-8 | n-Butylbenzene..... | ug/kg | | ND | 6.3 | 1 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane..... | ug/kg | | ND | 13 | 1 |
| 76-13-1 | Trichlorotrifluoroethane..... | ug/kg | | ND | 6.3 | 1 |

SURROGATES- In Percent Recovery:

| | | |
|---|---|---|
| Toluene-d8..... | 112 | ( 81 - 117%) |
| p-Bromofluorobenzene..... | 115 | ( 74 - 121%) |
| Dibromofluoromethane..... | 107 | ( 80 - 120%) |
| 1,2-Dichloroethane-d4..... | 109 | ( 80 - 120%) |

RL = Reporting Limit

KEMRON Environmental Services, Inc.
LIST OF VALID QUALIFIERS (qual)
March 9, 1998

| Qualifier | Description |
|---|---|
| (A) | See the report narrative |
| (B) | See the report narrative |
| (C) | See the report narrative |
| + | Correlation coefficient for the MSA is less than 0.995 |
| < | Less than |
| > | Greater than |
| B | Present in the method blank |
| C | Confirmed by GC/MS |
| * | Surrogate or spike compound out of range |
| CG | Confluent growth |
| D | The analyte was quantified at a secondary dilution factor |
| DL | Surrogate or spike was diluted out |
| E | Estimated concentration due to sample matrix interference |
| F | Present below nominal reporting limit (AFCEE only) |
| FL | Free liquid |
| I | Semiquantitative result, out of instrument calibration range |
| J | Present below nominal reporting limit |
| L | Sample reporting limits elevated due to matrix interference |
| M | Duplicate injection precision not met |
| N | Tentatively Identified Compound (TIC) |
| NA | Not applicable |
| ND | Not detected at or above the reporting limit (RL) |
| NF | Not found |
| NFL | No free liquid |
| NI | Non-ignitable |
| NR | Analyte is not required to be analyzed |
| NS | Not spiked |
| P | Concentration > 25% difference between the two GC columns |
| QNS | Quantity not sufficient to perform analysis |
| R | Analyte exceeds regulatory limit |
| RA | Reanalysis confirms reported results |
| RB | Reanalysis confirms sample matrix interference |
| S | Analyzed by method of standard addition |
| SMI | Sample matrix interference on surrogate |
| SP | Reported results are for spike compounds only |
| TNTC | Too numerous to count |
| U | Analyzed for but not detected |
| W | Post-digestion spike for furnace AA out of control limits |
| X | Can not be resolved from isomer. See below. |

**Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semiquantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methyphenol and 4-Methyphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.

Copy to [illegible]
9/22/98

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H865, Drop Point O1U
Los Alamos, NM 87545
Attention: John Miglio

Login #: L9808436
Report Date: 09/14/98
Work ID: 4527R/MR2W05153318
Date Received: 08/25/98

PO Number:
Account Number: LANL-295

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9808436-01 | MD49-98-0143 | | |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Certified By
Dennis S. Tepe

COPY

Report Sent To: [illegible]
Approved By: 9/21/98
Date Sent:

Kemron
ENVIRONMENTAL SERVICES

Order #98-08-436
September 15, 1998
15:37

**KEMRON ENVIRONMENTAL SERVICES**
**REPORT NARRATIVE**

Lab ID# 7797L0014-8M

CLIENT: Los Alamos National Laboratory

LANL SDG/RN: 4527R

Sample Management:
One soil sample was received at Kemron Environmental Serivces on 08/05/98.

Client ID:
MD49-98-0143

Quality Control:

VOLATILE ORGANICS - 8260:
MS/MSD outlier acceptable in daily soil LCS. A separate calibration curve was used for trichlorotrifluoroethane quantitation.

MS/MSD analysis was performed on a non-LANL sample.

SEMIVOLATILE ORGANCIS - 8270:
Sample fraction 01 yielded % recoveries for several surrogates that were outside acceptable limits. The sample will be re-extracted and re-analyzed.

MS/MSD analysis was performed on sample MD49-98-0140 RN 4521R.

PCB - 8082:
There were no technical difficulties encountered during the analysis of this sample. MS/MSD analysis was performed on a non-LANL sample.

Shipment Conditions:
The sample was received intact. Solid blue ice was present.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and in completeness, except as detailed in this QC Report.

Laboratory Manager

Date: 9/16/98

Login #L9808436
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 808-PCB-S - PCB's (Soil)

Lab Sample ID: L9808436-01
Client Sample ID: MD49-98-0143
Site/Work ID: 4527R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/24/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 44

TCLP Extract Date: N/A
Extract Date: 08/25/98
Analysis Date: 08/27/98 Time:

Instrument: HP4
Analyst: ECL
Lab File ID: 020R0101

Method: 8082\3550
Run ID: R51257

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 12674-11-2 | Aroclor-1016..... | ug/kg | | ND | 38 | 1 |
| 11104-28-2 | Aroclor-1221..... | ug/kg | | ND | 38 | 1 |
| 11141-16-5 | Aroclor-1232..... | ug/kg | | ND | 38 | 1 |
| 53469-21-9 | Aroclor-1242..... | ug/kg | | ND | 38 | 1 |
| 12672-29-6 | Aroclor-1248..... | ug/kg | | ND | 38 | 1 |
| 11097-69-1 | Aroclor-1254..... | ug/kg | | ND | 75 | 1 |
| 11096-82-5 | Aroclor-1260..... | ug/kg | | ND | 75 | 1 |

SURROGATES- In Percent Recovery:

| | | |
|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene..... | 53.8 | ( 29 - 133%) |
| Decachlorobiphenyl..... | 73.1 | ( 30 - 173%) |

Lab Sample ID: L9808436-01
Client Sample ID: MD19-98-0143
Site/Work ID: 4527R/MR2W05153318

Matrix: Soil
Collected: 08/24/98 N/A

% Solid: 44
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids..... | % wt. | 44 | | 1.0 | 1 | N/A | DKM | 08/27/98 | 09:50 | D2216-90 |

RL = Reporting Limit

Login #L9808436
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 827-LS - Library Search (Ten Peaks)

Lab Sample ID: L9808436-01
Client Sample ID: MD49-98-0143
Site/Work ID: 4527R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/24/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 44

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 16:05

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7491

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Ret Time |
|---|---|---|---|---|---|---|
| 301-02-0 | 9-Octadecenamide, (Z) | ug/kg | 530 | | | 23.43 |

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808436-01
Client Sample ID: MD49-98-0143
Site/Work ID: 4527R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/24/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 44

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 16:05

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7491

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 62-75-9 | n-Nitrosodimethylamine | ug/kg | | ND | 750 | 1 |
| 62-53-3 | Aniline | ug/kg | | ND | 1500 | 1 |
| 108-95-2 | Phenol | ug/kg | | ND | 750 | 1 |
| 111-44-4 | bis(2-Chloroethyl)ether | ug/kg | | ND | 750 | 1 |
| 95-57-8 | 2-Chlorophenol | ug/kg | | ND | 750 | 1 |
| 541-73-1 | 1,3-Dichlorobenzene | ug/kg | | ND | 750 | 1 |
| 106-46-7 | 1,4-Dichlorobenzene | ug/kg | | ND | 750 | 1 |
| 95-50-1 | 1,2-Dichlorobenzene | ug/kg | | ND | 750 | 1 |
| 95-48-7 | 2-Methylphenol | ug/kg | | ND | 750 | 1 |
| 106-44-5 | 4-Methylphenol | ug/kg | | ND | 750 | 1 |
| 621-64-7 | n-Nitroso-di-n-propylamine | ug/kg | | ND | 750 | 1 |
| 67-72-1 | Hexachloroethane | ug/kg | | ND | 750 | 1 |
| 98-95-3 | Nitrobenzene | ug/kg | | ND | 750 | 1 |
| 78-59-1 | Isophorone | ug/kg | | ND | 750 | 1 |
| 88-75-5 | 2-Nitrophenol | ug/kg | | ND | 750 | 1 |
| 105-67-9 | 2,4-Dimethylphenol | ug/kg | | ND | 750 | 1 |
| 65-85-0 | Benzoic acid | ug/kg | | ND | 7500 | 1 |

RL = Reporting Limit

Login #L9808436
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808436-01
Client Sample ID: MD49-98-0143
Site/Work ID: 4527R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/24/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 44

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 16:05

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7491

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 111-91-1 | bis(2-Chloroethoxy)methane | ug/kg | | ND | 750 | 1 |
| 120-83-2 | 2,4-Dichlorophenol | ug/kg | | ND | 750 | 1 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ug/kg | | ND | 750 | 1 |
| 91-20-3 | Naphthalene | ug/kg | | ND | 750 | 1 |
| 106-47-8 | 4-Chloroaniline | ug/kg | | ND | 3000 | 1 |
| 87-68-3 | Hexachlorobutadiene | ug/kg | | ND | 750 | 1 |
| 59-50-7 | 4-Chloro-3-methylphenol | ug/kg | | ND | 1500 | 1 |
| 91-57-6 | 2-Methylnaphthalene | ug/kg | | ND | 750 | 1 |
| 77-47-4 | Hexachlorocyclopentadiene | ug/kg | | ND | 750 | 1 |
| 88-06-2 | 2,4,6-Trichlorophenol | ug/kg | | ND | 750 | 1 |
| 95-95-4 | 2,4,5-Trichlorophenol | ug/kg | | ND | 3600 | 1 |
| 91-58-7 | 2-Chloronaphthalene | ug/kg | | ND | 750 | 1 |
| 88-74-4 | 2-Nitroaniline | ug/kg | | ND | 3600 | 1 |
| 131-11-3 | Dimethylphthalate | ug/kg | | ND | 750 | 1 |
| 208-96-8 | Acenaphthylene | ug/kg | | ND | 750 | 1 |
| 99-09-2 | 3-Nitroaniline | ug/kg | | ND | 3600 | 1 |
| 83-32-9 | Acenaphthene | ug/kg | | ND | 750 | 1 |
| 51-28-5 | 2,4-Dinitrophenol | ug/kg | | ND | 3600 | 1 |
| 100-02-7 | 4-Nitrophenol | ug/kg | | ND | 3600 | 1 |
| 132-64-9 | Dibenzofuran | ug/kg | | ND | 750 | 1 |
| 121-14-2 | 2,4-Dinitrotoluene | ug/kg | | ND | 750 | 1 |
| 606-20-2 | 2,6-Dinitrotoluene | ug/kg | | ND | 750 | 1 |
| 84-66-2 | Diethylphthalate | ug/kg | | ND | 750 | 1 |
| 7005-72-3 | 4-Chlorophenyl-phenyl ether | ug/kg | | ND | 750 | 1 |
| 86-73-7 | Fluorene | ug/kg | | ND | 750 | 1 |
| 100-01-6 | 4-Nitroaniline | ug/kg | | ND | 1500 | 1 |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | ug/kg | | ND | 3600 | 1 |
| 86-30-6 | n-Nitrosodiphenylamine | ug/kg | | ND | 750 | 1 |
| 103-33-3 | Azobenzene | ug/kg | | ND | 1500 | 1 |
| 101-55-3 | 4-Bromophenyl-phenylether | ug/kg | | ND | 750 | 1 |
| 118-74-1 | Hexachlorobenzene | ug/kg | | ND | 750 | 1 |
| 87-86-5 | Pentachlorophenol | ug/kg | | ND | 3600 | 1 |
| 85-01-8 | Phenanthrene | ug/kg | | ND | 750 | 1 |
| 120-12-7 | Anthracene | ug/kg | | ND | 750 | 1 |
| 84-74-2 | Di-n-butylphthalate | ug/kg | | ND | 750 | 1 |
| 206-44-0 | Fluoranthene | ug/kg | | ND | 750 | 1 |
| 129-00-0 | Pyrene | ug/kg | | ND | 750 | 1 |
| 85-68-7 | Butylbenzylphthalate | ug/kg | | ND | 750 | 1 |
| 91-94-1 | 3,3'-Dichlorobenzidine | ug/kg | | ND | 1500 | 1 |

RL = Reporting Limit

Login #L9808436
September 14, 1998 01:18 pm

XEMRON ENVIRONMENTAL SERVICES

Product: 827LAS - Semivolatile Compounds

Lab Sample ID: L9808436-01
Client Sample ID: MD49-98-0143
Site/Work ID: 4527R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/24/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 44

TCLP Extract Date: N/A
Extract Date: 08/26/98
Analysis Date: 09/03/98 Time: 16:05

Instrument: HPMS5
Analyst: MDC
Lab File ID: 7491

Method: 8270C
Run ID: R52025

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 56-55-3 | Benzo(a)anthracene | ug/kg | | ND | 750 | 1 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ug/kg | | ND | 750 | 1 |
| 218-01-9 | Chrysene | ug/kg | | ND | 750 | 1 |
| 117-84-0 | Di-n-octylphthalate | ug/kg | | ND | 750 | 1 |
| 205-99-2 | Benzo(b)fluoranthene | ug/kg | | ND | 750 | 1 |
| 207-08-9 | Benzo(k)fluoranthene | ug/kg | | ND | 750 | 1 |
| 50-32-8 | Benzo(a)pyrene | ug/kg | | ND | 750 | 1 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ug/kg | | ND | 750 | 1 |
| 53-70-3 | Dibenzo(a,h)anthracene | ug/kg | | ND | 750 | 1 |
| 191-24-2 | Benzo(g,h,i)Perylene | ug/kg | | ND | 750 | 1 |
| 100-51-6 | Benzyl alcohol | ug/kg | | ND | 3000 | 1 |
| 108-60-1 | 2,2'-Oxybis(1-chloropropane) | ug/kg | | ND | 750 | 1 |

SURROGATES- In Percent Recovery:

| | | | |
|---|---|---|---|
| 2,4,6-Tribromophenol | 66.9 | | ( 19 - 122%) |
| 2-Fluorobiphenyl | 21.6 | * | ( 30 - 115%) |
| 2-Fluorophenol | 20.6 | * | ( 25 - 121%) |
| Nitrobenzene-d5 | 19.0 | * | ( 23 - 120%) |
| Phenol-d5 | 17.8 | * | ( 24 - 113%) |
| p-Terphenyl-d14 | 100 | | ( 18 - 137%) |

RL = Reporting Limit

KEMRON ENVIRONMENTAL SERVICES

Product: 8260LS - VOA Library Search

Lab Sample ID: L9808436-01
Client Sample ID: MD49-98-0143
Site/Work ID: 4527R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/24/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 44

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 17:32

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09626

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Ret Time |
|---|---|---|---|---|---|---|
| | No searchable peaks..... | ug/kg | | | | |

Product: 826LA - Volatile Organics

Lab Sample ID: L9808436-01
Client Sample ID: MD49-98-0143
Site/Work ID: 4527R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/24/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 44

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 17:32

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09626

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane..... | ug/kg | | ND | 23 | 1 |
| 74-87-3 | Chloromethane..... | ug/kg | | ND | 23 | 1 |
| 75-01-4 | Vinyl chloride..... | ug/kg | | ND | 23 | 1 |
| 74-83-9 | Bromomethane..... | ug/kg | | ND | 23 | 1 |
| 75-00-3 | Chloroethane..... | ug/kg | | ND | 23 | 1 |
| 75-69-4 | Trichlorofluoromethane..... | ug/kg | | ND | 11 | 1 |
| 75-35-4 | 1,1-Dichloroethene..... | ug/kg | | ND | 11 | 1 |
| 74-88-4 | Iodomethane..... | ug/kg | | ND | 11 | 1 |
| 75-15-0 | Carbon disulfide..... | ug/kg | | ND | 11 | 1 |
| 67-64-1 | Acetone..... | ug/kg | | ND | 45 | 1 |
| 75-09-2 | Methylene chloride..... | ug/kg | | ND | 11 | 1 |
| 156-60-5 | trans-1,2-Dichloroethene..... | ug/kg | | ND | 23 | 1 |
| 75-34-3 | 1,1-Dichloroethane..... | ug/kg | | ND | 11 | 1 |
| 594-20-7 | 2,2-Dichloropropane..... | ug/kg | | ND | 11 | 1 |
| 156-59-2 | cis-1,2-Dichloroethene..... | ug/kg | | ND | 23 | 1 |
| 78-93-3 | 2-Butanone..... | ug/kg | | ND | 45 | 1 |
| 74-97-5 | Bromochloromethane..... | ug/kg | | ND | 11 | 1 |

RL = Reporting limit

Login #L9808436
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 826LA - Volatile Organics

Lab Sample ID: L9808436-01
Client Sample ID: MD49-98-0143
Site/Work ID: 4527R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/24/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 44

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 17:32

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09626

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 67-66-3 | Chloroform | ug/kg | | ND | 11 | 1 |
| 71-55-6 | 1,1,1-Trichloroethane | ug/kg | | ND | 11 | 1 |
| 56-23-5 | Carbon tetrachloride | ug/kg | | ND | 11 | 1 |
| 563-58-6 | 1,1-Dichloropropene | ug/kg | | ND | 11 | 1 |
| 71-43-2 | Benzene | ug/kg | | ND | 11 | 1 |
| 107-06-2 | 1,2-Dichloroethane | ug/kg | | ND | 11 | 1 |
| 79-01-6 | Trichloroethene | ug/kg | | ND | 11 | 1 |
| 78-87-5 | 1,2-Dichloropropane | ug/kg | | ND | 11 | 1 |
| 74-95-3 | Dibromomethane | ug/kg | | ND | 11 | 1 |
| 75-27-4 | Bromodichloromethane | ug/kg | | ND | 11 | 1 |
| 10061-02-6 | trans-1,3-Dichloropropene | ug/kg | | ND | 11 | 1 |
| 108-10-1 | 4-Methyl-2-pentanone | ug/kg | | ND | 45 | 1 |
| 108-88-3 | Toluene | ug/kg | | ND | 11 | 1 |
| 10061-01-5 | cis-1,3-Dichloropropene | ug/kg | | ND | 11 | 1 |
| 79-00-5 | 1,1,2-Trichloroethane | ug/kg | | ND | 11 | 1 |
| 127-18-4 | Tetrachloroethene | ug/kg | | ND | 11 | 1 |
| 142-28-9 | 1,3-Dichloropropane | ug/kg | | ND | 11 | 1 |
| 124-48-1 | Dibromochloromethane | ug/kg | | ND | 11 | 1 |
| 591-78-6 | 2-Hexanone | ug/kg | | ND | 45 | 1 |
| 106-93-4 | 1,2-Dibromoethane | ug/kg | | ND | 11 | 1 |
| 108-90-7 | Chlorobenzene | ug/kg | | ND | 11 | 1 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ug/kg | | ND | 11 | 1 |
| 100-41-4 | Ethyl benzene | ug/kg | | ND | 11 | 1 |
| 1330-20-7 | Xylenes (total) | ug/kg | | ND | 11 | 1 |
| 100-42-5 | Styrene | ug/kg | | ND | 11 | 1 |
| 75-25-2 | Bromoform | ug/kg | | ND | 11 | 1 |
| 98-82-8 | Isopropylbenzene | ug/kg | | ND | 11 | 1 |
| 108-86-1 | Bromobenzene | ug/kg | | ND | 11 | 1 |
| 96-18-4 | 1,2,3-Trichloropropane | ug/kg | | ND | 11 | 1 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ug/kg | | ND | 11 | 1 |
| 103-65-1 | n-Propylbenzene | ug/kg | | ND | 11 | 1 |
| 95-49-8 | 2-Chlorotoluene | ug/kg | | ND | 11 | 1 |
| 106-43-4 | 4-Chlorotoluene | ug/kg | | ND | 11 | 1 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ug/kg | | ND | 11 | 1 |
| 98-06-6 | tert-Butylbenzene | ug/kg | | ND | 11 | 1 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ug/kg | | ND | 11 | 1 |
| 135-98-8 | sec-Butylbenzene | ug/kg | | ND | 11 | 1 |
| 541-73-1 | 1,3-Dichlorobenzene | ug/kg | | ND | 11 | 1 |
| 106-46-7 | 1,4-Dichlorobenzene | ug/kg | | ND | 11 | 1 |

RL = Reporting Limit

Login #L9808436
September 14, 1998 01:18 pm

KEMRON ENVIRONMENTAL SERVICES

Product: 826LA - Volatile Organics

Lab Sample ID: L9808436-01
Client Sample ID: MD49-98-0143
Site/Work ID: 4527R/MR2W05153318
Matrix: Soil

Dil. Type: N/A
COC Info: N/A
Date Collected: 08/24/98

Sample Weight: N/A
Extract Volume: N/A
% Solid: 44

TCLP Extract Date: N/A
Extract Date: N/A
Analysis Date: 08/26/98 Time: 17:32

Instrument: HPMS6
Analyst: CMS
Lab File ID: 6LA09626

Method: 8260B
Run ID: R51255

| CAS # | Compound | Units | Result | Qualifiers | RL | Dilution |
|---|---|---|---|---|---|---|
| 99-87-6 | p-Isopropyltoluene..... | ug/kg | | ND | 11 | 1 |
| 95-50-1 | 1,2-Dichlorobenzene..... | ug/kg | | ND | 11 | 1 |
| 104-51-8 | n-Butylbenzene..... | ug/kg | | ND | 11 | 1 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane..... | ug/kg | | ND | 23 | 1 |
| 76-13-1 | Trichlorotrifluoroethane..... | ug/kg | | ND | 11 | 1 |

SURROGATES- In Percent Recovery:

| | | |
|---|---|---|
| Toluene-d8..... | 110 | ( 81 - 117%) |
| p-Bromofluorobenzene..... | 117 | ( 74 - 121%) |
| Dibromofluoromethane..... | 107 | ( 80 - 120%) |
| 1,2-Dichloroethane-d4..... | 110 | ( 80 - 120%) |

RL = Reporting Limit

# KEMRON ENVIRONMENTAL SERVICES - OVL
## VOLATILE QUALITY CONTROL SUMMARY

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Workgroup # | WG41190 | Run Date | 8/26/90 | SMPL Num | [illegible] | ECS ID | [illegible] |
| Method | 8260A | Instrument ID | HPMS6 | SMPL FILNM | [illegible] | SMPL ID | [illegible] |
| Matrix | Soil | BLK FILNM | [illegible] | MS FILNM | [illegible] | MS ID | [illegible] |
| Units | ug/g | ECS FILNM | [illegible] | MSD FILNM | [illegible] | MSD ID | [illegible] |

| | | CONCENTRATION, PPB | | | | | | | PERCENT RECOVERY | | | | | | | | | PERCENT RPD | | OUTLIERS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ECS Spike | | | | | MS Spike | | | ECS | ECS | | | | MS | MS | MS | RPD | | | | | | |
| | RDL | BLK | ECS | Level | SMPL | MS | MSD | Level | BLK | ECS | LCL | UCL | SMPL | MS | MSD | LCL | UCL | RPD | LCL | BLK | ECS | SMPL | MS | MSD | RPD |
| Target Analytes | ug/g | ug/g | ug/g | ug/g | ug/g | ug/g | ug/g | ug/g | % | % | % | % | % | % | % | % | % | % | % | | | | | | |
| dichlorodifluoromethane | 20.0 | ND | 12.7 | 20.0 | ND | 11.9 | 12.0 | 20.0 | ND | 63.5 | 46.0 | 152.0 | ND | 59.5 | 60.0 | 60.0 | 140.0 | 7.3 | 20.0 | | | | L | | |
| vinyl chloride | 10.0 | ND | 18.2 | 20.0 | ND | 17.0 | 18.1 | 20.0 | ND | 91.0 | 70.0 | 131.0 | ND | 85.0 | 90.5 | D | 251.0 | 6.3 | 20.0 | | | | | | |
| chloromethane | 10.0 | ND | 13.3 | 20.0 | ND | 15.5 | 15.9 | 20.0 | ND | 66.5 | 60.0 | 145.0 | ND | 77.5 | 79.5 | D | 273.0 | 2.5 | 20.0 | | | | | | |
| bromomethane | 10.0 | ND | 24.0 | 20.0 | ND | 19.5 | 19.7 | 20.0 | ND | 120.0 | 62.0 | 147.0 | ND | 97.5 | 98.5 | D | 242.0 | 1.0 | 20.0 | | | | | | |
| chloroethane | 10.0 | ND | 17.0 | 20.0 | ND | 16.4 | 17.5 | 20.0 | ND | 85.0 | 69.0 | 136.0 | ND | 82.0 | 87.5 | 14.0 | 230.0 | 6.5 | 20.0 | | | | | | |
| trichlorofluoromethane | 5.0 | ND | 25.0 | 20.0 | ND | 22.6 | 23.4 | 20.0 | ND | 125.0 | 70.0 | 134.0 | ND | 113.0 | 117.0 | 17.0 | 181.0 | 3.5 | 20.0 | | | | | | |
| acetone | 20.0 | ND | 15.7 | 20.0 | 18.3 | 17.4 | 25.9 | 20.0 | ND | 88.5 | 14.0 | 171.0 | 18.3 | 35.5 | 70.0 | 70.0 | 150.0 | 39.3 | 20.0 | | | | L | | H |
| trichlorotrifluoroethane | 5.0 | ND | NS | 20.0 | ND | NS | NS | 20.0 | ND | NA | NA | NA | ND | NA | NA | 70.0 | 130.0 | NA | 20.0 | | | | | | |
| 1,1-dichloroethane | 5.0 | ND | 22.3 | 20.0 | ND | 18.0 | 20.6 | 20.0 | ND | 111.5 | 70.0 | 140.0 | ND | 94.0 | 103.0 | D | 234.0 | 9.1 | 20.0 | | | | | | |
| iodomethane | 5.0 | ND | 23.4 | 20.0 | ND | 13.7 | 16.9 | 20.0 | ND | 117.0 | 50.0 | 150.0 | ND | 68.5 | 84.5 | 70.0 | 130.0 | 20.0 | 20.0 | | | | L | | H |
| methylene chloride | 5.0 | ND | 25.4 | 20.0 | ND | 20.1 | 20.0 | 20.0 | ND | 127.0 | 57.0 | 146.0 | ND | 100.5 | 154.0 | D | 221.0 | 3.4 | 20.0 | | | | | | |
| carbon disulfide | 5.0 | ND | 22.1 | 20.0 | ND | 17.2 | 19.3 | 20.0 | ND | 110.5 | 69.0 | 135.0 | ND | 86.0 | 96.5 | 70.0 | 130.0 | 11.5 | 20.0 | | | | | | |
| trans 1,2-dichloroethene | 5.0 | ND | 21.5 | 20.0 | ND | 19.3 | 19.1 | 20.0 | ND | NA | 75.0 | 141.0 | ND | 96.5 | 95.5 | 54.0 | 156.0 | 0.9 | 20.0 | | | | | | |
| 1,1-dichloroethane | 5.0 | ND | 21.0 | 20.0 | ND | 17.3 | 19.2 | 20.0 | ND | 105.0 | 79.0 | 135.0 | ND | 86.5 | 91.0 | 59.0 | 155.0 | 5.1 | 20.0 | | | | | | |
| 2-butanone | 20.0 | ND | 14.6 | 20.0 | ND | 8.3 | 9.1 | 20.0 | ND | 73.0 | 28.0 | 173.0 | ND | 41.5 | 45.5 | 70.0 | 130.0 | 9.2 | 20.0 | | | | L | L | |
| 2,2-dichloropropane | 5.0 | ND | 20.0 | 20.0 | ND | 17.4 | 18.6 | 20.0 | ND | 100.5 | 69.0 | 128.0 | ND | 87.5 | 93.0 | 60.0 | 160.0 | 6.6 | 20.0 | | | | | | |
| cis-1,2-dichloroethene | 5.0 | ND | 18.1 | 20.0 | ND | 13.7 | 14.4 | 20.0 | ND | 90.5 | 75.0 | 125.0 | ND | 68.5 | 72.0 | 60.0 | 140.0 | 5.0 | 20.0 | | | | | | |
| chloroform | 5.0 | ND | 21.0 | 20.0 | ND | 16.7 | 17.2 | 20.0 | ND | 105.0 | 78.0 | 126.0 | ND | 83.5 | 86.0 | 51.0 | 138.0 | 2.9 | 20.0 | | | | | | |
| bromochloromethane | 5.0 | ND | 21.7 | 20.0 | ND | 16.2 | 16.4 | 20.0 | ND | 108.5 | 78.0 | 123.0 | ND | 81.0 | 82.0 | 60.0 | 140.0 | 1.2 | 20.0 | | | | | | |
| 1,1,1-trichloroethane | 5.0 | ND | 20.9 | 20.0 | ND | 17.5 | 18.4 | 20.0 | ND | 104.5 | 73.0 | 124.0 | ND | 87.0 | 92.0 | 52.0 | 162.0 | 7.0 | 20.0 | | | | | | |
| 1,1-dichloropropene | 5.0 | ND | 22.3 | 20.0 | ND | 15.6 | 17.9 | 20.0 | ND | 111.0 | 75.0 | 132.0 | ND | 78.0 | 89.5 | 60.0 | 140.0 | 13.7 | 20.0 | | | | | | |
| carbon tetrachloride | 5.0 | ND | 22.0 | 20.0 | ND | 17.2 | 19.0 | 20.0 | ND | 110.0 | 72.0 | 126.0 | ND | 86.0 | 95.0 | 70.0 | 165.0 | 9.9 | 20.0 | | | | | | |
| 1,2-dichloroethane | 5.0 | ND | 20.0 | 20.0 | ND | 15.0 | 15.2 | 20.0 | ND | 100.0 | 73.0 | 126.0 | ND | 75.0 | 76.0 | 49.0 | 155.0 | 1.3 | 20.0 | | | | | | |
| benzene | 5.0 | ND | 22.5 | 20.0 | ND | 17.1 | 17.8 | 20.0 | ND | 112.5 | 81.0 | 122.0 | ND | 85.5 | 89.0 | 37.0 | 152.0 | 4.0 | 20.0 | | | | | | |
| trichloroethene | 5.0 | ND | 21.9 | 20.0 | ND | 14.0 | 16.2 | 20.0 | ND | 109.5 | 81.0 | 123.0 | ND | 74.5 | 81.0 | 71.0 | 157.0 | 8.4 | 20.0 | | | | | | |
| 1,2-dichloropropane | 5.0 | ND | 21.1 | 20.0 | ND | 15.2 | 15.3 | 20.0 | ND | 105.5 | 74.0 | 125.0 | ND | 76.5 | 76.5 | D | 210.0 | 0.0 | 20.0 | | | | | | |
| bromodichloromethane | 5.0 | ND | 21.5 | 20.0 | ND | 15.0 | 14.7 | 20.0 | ND | 107.5 | 81.0 | 123.0 | ND | 75.0 | 73.5 | 55.0 | 155.0 | 2.0 | 20.0 | | | | | | |
| dibromomethane | 5.0 | ND | 21.5 | 20.0 | ND | 14.5 | 14.7 | 20.0 | ND | 107.5 | 83.0 | 126.0 | ND | 72.5 | 73.5 | 60.0 | 140.0 | 1.4 | 20.0 | | | | | | |
| 4-methyl-2-pentanone | 20.0 | ND | 18.6 | 20.0 | ND | 9.8 | 8.7 | 20.0 | ND | 92.0 | 58.0 | 162.0 | ND | 45.0 | 43.5 | 70.0 | 130.0 | 3.4 | 20.0 | | | | L | L | |
| cis-1,3-dichloropropene | 5.0 | ND | 21.7 | 20.0 | ND | 12.9 | 13.0 | 20.0 | ND | 108.5 | 81.0 | 124.0 | ND | 64.5 | 65.0 | D | 227.0 | 0.8 | 20.0 | | | | | | |
| toluene | 5.0 | ND | 21.1 | 20.0 | ND | 15.9 | 17.2 | 20.0 | ND | 105.5 | 81.0 | 124.0 | ND | 79.5 | 86.0 | 47.0 | 150.0 | 7.9 | 20.0 | | | | | | |

# KEMRON ENVIRONMENTAL SERVICES - OVL
## VOLATILE QUALITY CONTROL SUMMARY

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Workgroup # | WG41130 | Run Date | 8/26/98 | SMPL Num | 08 424 02 | ECS DF | 1 |
| Method | 8260A | Instrument ID | HPMS 6 | SMPL FLNM | 6IT2616 | SMPL DF | 1 |
| Matrix | Soil | BLK FLNM | 6BL0961S | MS FLNM | 6IT2617 | MS DF | 1 |
| Units | ug/kg | ECS FLNM | 6QC0961S | MSD FLNM | 6IT2618 | MSD DF | 1 |

| | | CONCENTRATION, PPB | | | | | | | PERCENT RECOVERY | | | | | | | | | PERCENT RPD | | OUTLIERS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | RDL | BLK | ECS | ECS Spike Level | SMPL | MS | MSD | MS Spike Level | BLK | ECS | ECS LCL | ECS UCL | SMPL | MS | MSD | MS LCL | MS UCL | MS RPD | RPD UCL | BLK | ECS | SMPL | MS | MSD | RPD |
| Target Analyte | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | % | % | % | % | % | % | % | % | % | % | % | | | | | | |
| trans 1,3 dichloropropene | 5.0 | ND | 20.3 | 20.0 | ND | 11.7 | 11.6 | 20.0 | ND | 101.5 | 80.0 | 122.0 | ND | 58.5 | 58.0 | 17.0 | 133.0 | 0.9 | 20.0 | | | | | | |
| 2 hexanone | 20.0 | ND | 15.0 | 20.0 | ND | 7.5 | 7.6 | 20.0 | ND | 79.0 | 31.0 | 149.0 | ND | 37.5 | 38.0 | 30.0 | 130.0 | 1.3 | 20.0 | | | | | | |
| 1,1,2 trichloroethane | 5.0 | ND | 21.0 | 20.0 | ND | 14.3 | 14.0 | 20.0 | ND | 139.5 | 79.0 | 123.0 | ND | 71.5 | 70.0 | 52.0 | 150.0 | 2.1 | 20.0 | | | | | | |
| 1,3 dichloropropane | 5.0 | ND | 21.6 | 20.0 | ND | 13.9 | 13.7 | 20.0 | ND | 108.0 | 79.0 | 123.0 | ND | 69.5 | 68.5 | 60.0 | 140.0 | 1.4 | 20.0 | | | | | | |
| tetrachloroethene | 5.0 | ND | 23.9 | 20.0 | ND | 13.6 | 16.0 | 20.0 | ND | 119.0 | 80.0 | 122.0 | ND | 68.0 | 80.0 | 64.0 | 148.0 | 16.2 | 20.0 | | | | | | |
| chlorodibromomethane | 5.0 | ND | 20.7 | 20.0 | ND | 12.4 | 12.5 | 20.0 | ND | 103.5 | 81.0 | 122.0 | ND | 62.0 | 62.5 | 55.0 | 149.0 | 0.8 | 20.0 | | | | | | |
| 1,2 dibromoethane | 5.0 | ND | 20.6 | 20.0 | ND | 12.4 | 12.3 | 20.0 | ND | 103.0 | 79.0 | 125.0 | ND | 62.0 | 61.5 | 60.0 | 165.0 | 0.8 | 20.0 | | | | | | |
| chlorobenzene | 5.0 | ND | 22.2 | 20.0 | ND | 12.6 | 13.2 | 20.0 | ND | 111.0 | 82.0 | 120.0 | ND | 63.0 | 66.0 | 37.0 | 160.0 | 4.7 | 20.0 | | | | | | |
| 1,1,1,2 tetrachloroethane | 5.0 | ND | 21.0 | 20.0 | ND | 13.3 | 13.5 | 20.0 | ND | 105.0 | 83.0 | 124.0 | ND | 66.5 | 67.5 | 60.0 | 140.0 | 1.5 | 20.0 | | | | | | |
| ethylbenzene | 5.0 | ND | 22.3 | 20.0 | ND | 13.5 | 14.0 | 20.0 | ND | 111.5 | 78.0 | 127.0 | ND | 67.5 | 74.0 | 37.0 | 162.0 | 9.2 | 20.0 | | | | | | |
| m,p xylene | 5.0 | ND | 45.1 | 40.0 | ND | 26.1 | 28.6 | 40.0 | ND | 112.8 | 81.0 | 124.0 | ND | 65.3 | 72.0 | 60.0 | 140.0 | 9.8 | 20.0 | | | | | | |
| o xylene | 5.0 | ND | 22.6 | 20.0 | ND | 11.8 | 13.0 | 20.0 | ND | 113.0 | 83.0 | 124.0 | ND | 59.0 | 65.0 | 60.0 | 140.0 | 9.7 | 20.0 | | | | L | | |
| total xylenes | 5.0 | ND | 67.7 | 60.0 | ND | 37.9 | 41.6 | 60.0 | ND | 112.8 | NA | NA | ND | 63.2 | 69.7 | NA | NA | 9.5 | 20.0 | | | | | | |
| styrene | 5.0 | ND | 22.5 | 20.0 | ND | 10.4 | 10.5 | 20.0 | ND | 111.5 | 87.0 | 122.0 | ND | 52.0 | 52.5 | 60.0 | 140.0 | 1.0 | 20.0 | | | | L | L | |
| isopropylbenzene | 5.0 | ND | 22.4 | 20.0 | ND | 11.5 | 13.6 | 20.0 | ND | 112.0 | 82.0 | 124.0 | ND | 57.5 | 68.0 | 60.0 | 140.0 | 16.7 | 20.0 | | | | L | | |
| bromoform | 5.0 | ND | 19.3 | 20.0 | ND | 9.7 | 9.6 | 20.0 | ND | 96.5 | 67.0 | 134.0 | ND | 48.5 | 48.0 | 45.0 | 169.0 | 1.0 | 20.0 | | | | | | |
| 1,1,2,2 tetrachloroethane | 5.0 | ND | 21.1 | 20.0 | ND | 10.9 | 10.5 | 20.0 | ND | 105.5 | 71.0 | 134.0 | ND | 54.5 | 52.5 | 46.0 | 157.0 | 3.7 | 20.0 | | | | | | |
| 1,2,3 trichloropropane | 5.0 | ND | 20.8 | 20.0 | ND | 12.1 | 10.9 | 20.0 | ND | 104.0 | 70.0 | 119.0 | ND | 60.5 | 54.5 | 60.0 | 140.0 | 10.4 | 20.0 | | | | | L | |
| n propylbenzene | 5.0 | ND | 21.6 | 20.0 | ND | 10.8 | 12.3 | 20.0 | ND | 108.0 | 79.0 | 124.0 | ND | 54.0 | 63.5 | 60.0 | 140.0 | 15.2 | 20.0 | | | | L | | |
| bromobenzene | 5.0 | ND | 20.7 | 20.0 | ND | 9.3 | 9.9 | 20.0 | ND | 103.5 | 83.0 | 122.0 | ND | 46.5 | 49.5 | 60.0 | 140.0 | 6.5 | 20.0 | | | | L | L | |
| 1,3,5 trimethylbenzene | 5.0 | ND | 21.3 | 20.0 | ND | 10.2 | 11.3 | 20.0 | ND | NA | 82.0 | 123.0 | ND | 51.0 | 56.5 | 60.0 | 140.0 | 11.2 | 20.0 | | | | L | L | |
| 2 chlorotoluene | 5.0 | ND | 20.9 | 20.0 | ND | 10.1 | 10.5 | 20.0 | ND | 104.5 | 77.0 | 126.0 | ND | 50.5 | 52.5 | 60.0 | 140.0 | 3.9 | 20.0 | | | | L | L | |
| 4 chlorotoluene | 5.0 | ND | 22.5 | 20.0 | ND | 9.2 | 10.6 | 20.0 | ND | 112.5 | 80.0 | 124.0 | ND | 46.0 | 54.0 | 60.0 | 140.0 | 16.0 | 20.0 | | | | L | L | |
| tert butylbenzene | 5.0 | ND | 20.3 | 20.0 | ND | 10.1 | 11.9 | 20.0 | ND | 102.5 | 78.0 | 123.0 | ND | 50.5 | 59.5 | 60.0 | 140.0 | 16.4 | 20.0 | | | | L | L | |
| 1,2,4 trimethylbenzene | 5.0 | ND | 21.6 | 20.0 | ND | 9.9 | 10.7 | 20.0 | ND | 108.0 | 81.0 | 125.0 | ND | 49.5 | 53.5 | 60.0 | 140.0 | 7.8 | 20.0 | | | | L | L | |
| sec butylbenzene | 5.0 | ND | 21.6 | 20.0 | ND | 9.9 | 12.2 | 20.0 | ND | 108.0 | 83.0 | 124.0 | ND | 49.5 | 61.0 | 60.0 | 140.0 | 20.3 | 20.0 | | | | L | | H |
| p isopropyltoluene | 5.0 | ND | 21.0 | 20.0 | ND | 8.3 | 11.1 | 20.0 | ND | 105.0 | 73.0 | 124.0 | ND | 46.5 | 55.5 | 60.0 | 140.0 | 17.6 | 20.0 | | | | L | L | |
| 1,3 dichlorobenzene | 5.0 | ND | 21.3 | 20.0 | ND | 7.5 | 8.2 | 20.0 | ND | 106.5 | 82.0 | 120.0 | ND | 37.5 | 41.0 | 60.0 | 140.0 | 8.9 | 20.0 | | | | L | L | |
| 1,4 dichlorobenzene | 5.0 | ND | 21.3 | 20.0 | ND | 7.7 | 8.1 | 20.0 | ND | 106.0 | 81.0 | 121.0 | ND | 38.5 | 40.5 | 18.0 | 130.0 | 5.1 | 20.0 | | | | | | |

# KEMRON ENVIRONMENTAL SERVICES - OVL
## VOLATILE QUALITY CONTROL SUMMARY

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Workgroup # | WG45130 | Run Date | 8/26/98 | SMPL Name | 08 424 02 | ECS # | 1 |
| Method | 8260A | Instrument ID | HPMS 6 | SMPL FILNM | 6HT09616 | SMPL # | 1 |
| Matrix | Soil | BLK FILNM | 6BF09615 | MS FILNM | 6HT09617 | MS # | 1 |
| Units | ug/kg | ECS FILNM | 6QC09614 | MSD FILNM | 6HT09618 | MSD # | 1 |

| | | CONCENTRATION PPB | | | | | | | PERCENT RECOVERY | | | | | | | | | PERCENT RPD | | OUTLIERS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | RDL | BLK | ECS | ECS Spike Level | SMPL | MS | MSD | MS Spike Level | BLK | ECS | ECS LCL | ECS UCL | SMPL | MS | MSD | MS LCL | MS UCL | MS RPD | RPD UCL | BLK | ECS | SMPL | MS | MSD | |
| Target Analytes | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | % | % | % | % | % | % | % | % | % | % | % | | | | | | |
| n-butylbenzene | 5.0 | ND | 22.0 | 20.0 | ND | 8.6 | 10.5 | 20.0 | ND | 110.0 | 81.0 | 125.0 | ND | 43.0 | 52.5 | 60.0 | 140.0 | 33.9 | 20.0 | | | | L | L | |
| 1,2-dichlorobenzene | 5.0 | ND | 21.3 | 20.0 | ND | 6.5 | 6.8 | 20.0 | ND | 106.5 | 84.0 | 122.0 | ND | 32.5 | 34.0 | 110.0 | 130.0 | 4.5 | 20.0 | | | | | | |
| 1,2-dibromo-3-chloropropane | 10.0 | ND | 18.3 | 20.0 | ND | 7.3 | 7.5 | 20.0 | ND | 91.5 | 55.0 | 135.0 | ND | 36.5 | 37.5 | 60.0 | 140.0 | 2.7 | 20.0 | | | | L | L | |
| Surrogates | | | | | | | | | | | | | | | | | | | | | | | | | |
| dibromofluoromethane | | 50.4 | 52.2 | 50.0 | 56.5 | 54.2 | 54.2 | 50.0 | 100.7 | 104.4 | 83 | 120 | 113.0 | 108.38 | 108.45 | | | | | | | | | | |
| 1,2-dichloroethane-d4 | | 50.2 | 51.6 | 50.0 | 60.4 | 53.5 | 54.6 | 50.0 | 100.4 | 103.2 | 83 | 120 | 120.8 | 107.0 | 109.36 | | | | | | | | | | |
| toluene-d8 | | 55.3 | 55.5 | 50.0 | 62.7 | 57.0 | 57.3 | 50.0 | 110.5 | 110.92 | 81 | 117 | 125.42 | 113.95 | 114.6 | | | | | | | | | | |
| p-bromofluorobenzene | | 54.8 | 56.4 | 50.0 | 72.0 | 58.4 | 58.8 | 50.0 | 109.7 | 112.8 | 74 | 121 | 144.8 | 116.84 | 117.6 | | | | | | | | | | |

Notes and Definitions
RDL = Reporting Detection Limit
BLK = Method Blank
ECS = Laboratory Control Sample
SMPL = Sample Results
MS/MSD = Matrix Spike / Matrix Spike Duplicate
LCL = Lower Control Limit
UCL = Upper Control Limit
RPD = Relative Percent Difference
1

KEMRON ENVIRONMENTAL SERVICES, OVL
SEMI VOLATILES QUALITY CONTROL SUMMARY

ANAL WORK GRP : WG45223 EXT DATE : 8/26/98 RUN DATE : 8/27/98 INSTRUMENT : HPMS5
METHOD : 8270 BENCH SHEET : V99P72 SMPL ID : 05 831-01 ANALYST : mdc
MATRIX : SOIL BLK FLNM : 7391 D* SMPL FLNM : 7442 D*
CONCENTRATION UNITS : UG/KG LCS FLNM : 7392 D* MS FLNM : 7443 D*
PREP WORK GRP : WG45115 MSD FLNM : 7444 D*

| ANALYTE | CONCENTRATION, ug/L | | | | | | | PERCENT RECOVERY, % | | | | | | | | | PERCENT | | | BEYOND LIMITS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | RDL | BLANK | LCS SPIKE ADDED | LCS | SAMPLE | MS SPIKE ADDED | MS | MSD | BLANK | LCS | LCS LCL | LCS UCL | SAMPLE | MS | MSD | MS LCL | MS UCL | DUP RPD | MSD RPD | RPD UCL | SAMPLE | BLANK | LCS | MS | MSD |
| PYRIDINE | 165 | ND | 1670 | 90 | ND | 1670 | 148 | 69 | NA | 5.4 | 25 | 150 | NA | 8.9 | 4.1 | 25 | 150 | NA | NA | 40 | | | L | L | L |
| N-NITROSODIMETHYLAMINE | 165 | ND | 1670 | 696 | ND | 1670 | 829 | 822 | NA | 39.9 | 25 | 150 | NA | 37.7 | 37.3 | 25 | 150 | NA | 1 | 40 | | | | | |
| ANILINE | 165 | ND | 1670 | 252 | ND | 1670 | 364 | 363 | NA | 15.1 | 25 | 150 | NA | 21.8 | 21.7 | 25 | 150 | NA | 0 | 40 | | | L | L | L |
| PHENOL | 165 | ND | 1670 | 644 | ND | 1670 | 608 | 582 | NA | 38.6 | 25 | 135 | NA | 33.9 | 34.8 | 25 | 135 | NA | 14 | 40 | | | | | |
| BIS(2-CHLOROETHYL)ETHER | 165 | ND | 1670 | 697 | ND | 1670 | 817 | 726 | NA | 41.7 | 34 | 135 | NA | 37.0 | 43.5 | 34 | 135 | NA | 16 | 40 | | | | | |
| 2-CHLOROPHENOL | 165 | ND | 1670 | 648 | ND | 1670 | 626 | 607 | NA | 38.8 | 31 | 135 | NA | 37.5 | 36.3 | 31 | 135 | NA | 3 | 40 | | | | | |
| 1,3-DICHLOROBENZENE | 165 | ND | 1670 | 648 | ND | 1670 | 639 | 627 | NA | 38.8 | 28 | 135 | NA | 38.2 | 37.5 | 28 | 135 | NA | 2 | 40 | | | | | |
| 1,4-DICHLOROBENZENE | 165 | ND | 1670 | 683 | ND | 1670 | 671 | 646 | NA | 43.8 | 25 | 135 | NA | 40.2 | 38.8 | 25 | 135 | NA | 3 | 40 | | | | | |
| BENZYL ALCOHOL | 165 | ND | 1670 | 630 | ND | 1670 | 610 | 597 | NA | 37.7 | 25 | 135 | NA | 36.5 | 35.8 | 25 | 135 | NA | 2 | 40 | | | | | |
| 1,2-DICHLOROBENZENE | 165 | ND | 1670 | 669 | ND | 1670 | 655 | 638 | NA | 40.0 | 32 | 135 | NA | 39.2 | 38.2 | 32 | 135 | NA | 3 | 40 | | | | | |
| 2-METHYLPHENOL | 165 | ND | 1670 | 697 | ND | 1670 | 821 | 815 | NA | 41.7 | 25 | 135 | NA | 37.2 | 36.8 | 25 | 135 | NA | 1 | 40 | | | | | |
| BIS(2-CHLOROISOPROPYL)E | 165 | ND | 1670 | 548 | ND | 1670 | 516 | 503 | NA | 32.8 | 28 | 175 | NA | 30.8 | 30.1 | 28 | 175 | NA | 2 | 40 | | | | | |
| 3- & 4-METHYLPHENOL | 165 | ND | 1670 | 875 | ND | 1670 | 645 | 594 | NA | 40.4 | 25 | 135 | NA | 38.8 | 35.8 | 25 | 135 | NA | 8 | 40 | | | | | |
| N-NITROSO-DI-N-PROPYLAMI | 165 | ND | 1670 | 631 | ND | 1670 | 601 | 588 | NA | 37.8 | 27 | 135 | NA | 36.0 | 35.2 | 27 | 135 | NA | 2 | 40 | | | | | |
| HEXACHLOROETHANE | 165 | ND | 1670 | 660 | ND | 1670 | 608 | 595 | NA | 39.5 | 25 | 163 | NA | 36.4 | 35.8 | 25 | 163 | NA | 2 | 40 | | | | | |
| NITROBENZENE | 165 | ND | 1670 | 644 | ND | 1670 | 671 | 647 | NA | 38.5 | 36 | 143 | NA | 40.2 | 38.8 | 36 | 143 | NA | 4 | 40 | | | | | |
| ISOPHORONE | 165 | ND | 1670 | 744 | ND | 1670 | 716 | 700 | NA | 44.6 | 25 | 175 | NA | 42.9 | 41.9 | 25 | 175 | NA | 2 | 40 | | | | | |
| 2-NITROPHENOL | 165 | ND | 1670 | 571 | ND | 1670 | 810 | 587 | NA | 34.2 | 34 | 135 | NA | 37.1 | 35.1 | 34 | 135 | NA | 8 | 40 | | | | | |
| 2,4-DIMETHYLPHENOL | 165 | ND | 1670 | 650 | ND | 1670 | 670 | 596 | NA | 38.9 | 35 | 149 | NA | 40.1 | 35.8 | 35 | 149 | NA | 11 | 40 | | | | | |
| BIS(2-CHLOROETHOXY)METH | 165 | ND | 1670 | 602 | ND | 1670 | 595 | 576 | NA | 36.0 | 39 | 135 | NA | 35.6 | 34.6 | 39 | 135 | NA | 3 | 40 | | | L | L | L |
| BENZOIC ACID | 825 | ND | 1670 | 515 | ND | 1650 | 738 | 702 | NA | 30.8 | 25 | 172 | NA | 44.7 | 42.6 | 25 | 172 | NA | 5 | 40 | | | | | |
| 2,4-DICHLOROPHENOL | 165 | ND | 1670 | 693 | ND | 1670 | 673 | 639 | NA | 41.5 | 36 | 135 | NA | 40.3 | 38.3 | 36 | 135 | NA | 5 | 40 | | | | | |
| 1,2,4-TRICHLOROBENZENE | 165 | ND | 1670 | 670 | ND | 1670 | 649 | 634 | NA | 40.1 | 34 | 152 | NA | 38.8 | 38.0 | 34 | 152 | NA | 2 | 40 | | | | | |
| NAPHTHALENE | 165 | ND | 1670 | 678 | ND | 1670 | 690 | 671 | NA | 40.6 | 40 | 135 | NA | 41.3 | 40.2 | 40 | 135 | NA | 3 | 40 | | | | | |
| 4-CHLOROANILINE | 165 | ND | 1670 | 492 | ND | 1670 | 533 | 588 | NA | 29.4 | 35 | 146 | NA | 31.9 | 35.2 | 35 | 146 | NA | 10 | 40 | | | L | L | |
| HEXACHLOROBUTADIENE | 165 | ND | 1670 | 726 | ND | 1670 | 718 | 706 | NA | 43.5 | 25 | 135 | NA | 42.9 | 42.3 | 25 | 135 | NA | 1 | 40 | | | | | |
| 4-CHLORO-3-METHYLPHENO | 165 | ND | 1670 | 776 | ND | 1670 | 838 | 736 | NA | 46.3 | 34 | 135 | NA | 50.2 | 44.1 | 34 | 135 | NA | 13 | 40 | | | | | |
| 2-METHYLNAPHTHALENE | 165 | ND | 1670 | 693 | ND | 1670 | 677 | 662 | NA | 41.5 | 31 | 135 | NA | 40.6 | 39.6 | 31 | 135 | NA | 2 | 40 | | | | | |
| HEXACHLOROCYCLOPENTA | 165 | ND | 1670 | 638 | ND | 1670 | 190 | 154 | NA | 38.2 | 31 | 135 | NA | 11.4 | 9.4 | 31 | 135 | NA | 19 | 40 | | | | L | L |
| 2,4,6-TRICHLOROPHENOL | 165 | ND | 1670 | 709 | ND | 1670 | 817 | 727 | NA | 46.1 | 29 | 138 | NA | 48.9 | 43.6 | 29 | 138 | NA | 12 | 40 | | | | | |
| 2,4,5-TRICHLOROPHENOL | 165 | ND | 1670 | 843 | ND | 1670 | 842 | 802 | NA | 50.5 | 25 | 175 | NA | 50.4 | 48.0 | 25 | 175 | NA | 10 | 40 | | | | | |
| 2-CHLORONAPHTHALENE | 165 | ND | 1670 | 734 | ND | 1670 | 726 | 684 | NA | 43.8 | 50 | 135 | NA | 43.5 | 41.0 | 50 | 135 | NA | 5 | 40 | | | L | L | L |
| 2-NITROANILINE | 825 | ND | 1670 | 878 | ND | 1670 | 945 | 796 | NA | 52.5 | 43 | 135 | NA | 56.6 | 47.7 | 43 | 135 | NA | 17 | 40 | | | | | |
| DIMETHYLPHTHALATE | 165 | ND | 1670 | 1014 | ND | 1670 | 974 | 808 | NA | 60.7 | 25 | 175 | NA | 58.3 | 48.4 | 25 | 175 | NA | 18 | 40 | | | | | |
| ACENAPHTHYLENE | 165 | ND | 1670 | 822 | ND | 1670 | 843 | 762 | NA | 49.2 | 37 | 135 | NA | 50.5 | 45.6 | 37 | 135 | NA | 10 | 40 | | | | | |
| 2,6-DINITROTOLUENE | 165 | ND | 1670 | 1025 | ND | 1670 | 996 | 826 | NA | 61.4 | 41 | 135 | NA | 59.6 | 49.4 | 41 | 135 | NA | 18 | 40 | | | | | |
| 3-NITROANILINE | 825 | ND | 1670 | 1149 | ND | 1670 | 1087 | 917 | NA | 68.8 | 41 | 135 | NA | 65.1 | 54.9 | 41 | 135 | NA | 17 | 40 | | | | | |
| ACENAPHTHENE | 165 | ND | 1670 | 797 | ND | 1670 | 838 | 742 | NA | 47.7 | 33 | 135 | NA | 50.2 | 44.4 | 33 | 135 | NA | 12 | 40 | | | | | |
| 2,4-DINITROPHENOL | 825 | ND | 1670 | 1211 | ND | 1670 | 946 | 735 | NA | 72.5 | 25 | 161 | NA | 56.6 | 44.0 | 25 | 161 | NA | 25 | 40 | | | | | |
| 4-NITROPHENOL | 825 | ND | 1670 | 1115 | ND | 1670 | 1360 | 1215 | NA | 66.8 | 25 | 141 | NA | 82.8 | 72.8 | 25 | 141 | NA | 13 | 40 | | | | | |
| DIBENZOFURAN | 165 | ND | 1670 | 838 | ND | 1670 | 920 | 796 | NA | 50.2 | 42 | 135 | NA | 55.1 | 47.6 | 42 | 135 | NA | 14 | 40 | | | | | |
| 2,4-DINITROTOLUENE | 165 | ND | 1670 | 1130 | ND | 1670 | 1266 | 1057 | NA | 67.7 | 29 | 143 | NA | 75.8 | 63.3 | 29 | 143 | NA | 18 | 40 | | | | | |

WG45223 XLS

KEMRON ENVIRONMENTAL SERVICES, OVL
*SEMI VOLATILES QUALITY CONTROL SUMMARY*

ANAL WORK GRP : WG45223 EXT DATE : 8/26/98 RUN DATE : INSTRUMENT : HP1455
METHOD : 8270 BENCH SHEET : V99P72 SMPL ID : ANALYST : mdc
MATRIX : SOIL BLK FLNM : 7381 D* SMPL FLNM :
CONCENTRATION UNITS : UG/KG LCS FLNM : 7382 D* MS FLNM :
PREP WORK GRP : WG45115 MSD FLNM :

| ANALYTE | CONCENTRATION, ug/L | | | | | | | | PERCENT RECOVERY, % | | | | | | | | | PERCENT | | | BEYOND LIMITS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | RDL | BLANK | LCS SPIKE ADDED | LCS | SAMPLE | MS SPIKE ADDED | MS | MSD | BLANK | LCS | LCS LCL | LCS UCL | SAMPLE | MS | MSD | MS LCL | MS UCL | DUP RPD | MSD RPD | RPD UCL | SAMPLE | BLANK | LCS | MS | MSD |
| DIETHYLPHTHALATE | 165 | ND | 1670 | 1144 | ND | 1670 | 1158 | 971 | NA | 68.5 | 27 | 135 | NA | 69.4 | 58.2 | 27 | 135 | NA | 19 | 40 | | | | | |
| FLUORENE | 165 | ND | 1670 | 924 | ND | 1670 | 1007 | 843 | NA | 55.3 | 38 | 143 | NA | 60.3 | 50.5 | 38 | 143 | NA | 18 | 40 | | | | | |
| 4-CHLOROPHENYL-PHENYL | 165 | ND | 1670 | 873 | ND | 1670 | 941 | 792 | NA | 52.3 | 41 | 142 | NA | 56.4 | 47.4 | 41 | 142 | NA | 17 | 40 | | | | | |
| 4-NITROANILINE | 825 | ND | 1670 | 1323 | ND | 1670 | 1187 | 1045 | NA | 79.2 | 30 | 153 | NA | 69.9 | 62.6 | 30 | 153 | NA | 11 | 40 | | | | | |
| 1,2-DIPHENYLHYDRAZINE * | 165 | ND | 1670 | 815 | ND | 1670 | 1061 | 908 | NA | 54.8 | 25 | 150 | NA | 63.5 | 54.4 | 25 | 150 | NA | 18 | 40 | | | | | |
| 4,6-DINITRO-2-METHYLPHEN | 825 | ND | 1670 | 1502 | ND | 1670 | 1240 | 1023 | NA | 89.9 | 34 | 135 | NA | 74.3 | 61.3 | 34 | 135 | NA | 19 | 40 | | | | | |
| N-NITROSODIPHENYLAMINE | 165 | ND | 1670 | 1175 | ND | 1670 | 1189 | 1000 | NA | 70.4 | 25 | 135 | NA | 71.2 | 59.9 | 25 | 135 | NA | 17 | 40 | | | | | |
| 4-BROMOPHENYL-PHENYL E | 165 | ND | 1670 | 973 | ND | 1670 | 990 | 837 | NA | 58.2 | 43 | 137 | NA | 59.3 | 50.1 | 43 | 137 | NA | 17 | 40 | | | | | |
| HEXACHLOROBENZENE | 165 | ND | 1670 | 1256 | ND | 1670 | 1290 | 1101 | NA | 75.2 | 36 | 143 | NA | 77.2 | 65.9 | 36 | 143 | NA | 16 | 40 | | | | | |
| PENTACHLOROPHENOL | 825 | ND | 1670 | 1557 | ND | 1670 | 1247 | 1088 | NA | 93.2 | 38 | 146 | NA | 74.7 | 65.1 | 38 | 146 | NA | 14 | 40 | | | | | |
| PHENANTHRENE | 165 | ND | 1670 | 1254 | ND | 1670 | 1347 | 1180 | NA | 75.1 | 44 | 135 | NA | 80.6 | 70.7 | 44 | 135 | NA | 13 | 40 | | | | | |
| ANTHRACENE | 165 | ND | 1670 | 1232 | ND | 1670 | 1315 | 1132 | NA | 73.7 | 35 | 175 | NA | 78.8 | 67.8 | 35 | 175 | NA | 15 | 40 | | | | | |
| CARBAZOLE | 165 | ND | 1670 | 1379 | ND | 1670 | 1516 | 1326 | NA | 82.6 | 25 | 150 | NA | 90.8 | 79.4 | 25 | 150 | NA | 13 | 40 | | | | | |
| DI-N-BUTYLPHTHALATE | 165 | ND | 1670 | 1375 | ND | 1670 | 1504 | 1331 | NA | 82.3 | 25 | 136 | NA | 90.1 | 79.7 | 25 | 136 | NA | 12 | 40 | | | | | |
| FLUORANTHENE | 165 | ND | 1670 | 1365 | ND | 1670 | 1460 | 1298 | NA | 83.5 | 37 | 135 | NA | 87.4 | 77.7 | 37 | 135 | NA | 12 | 40 | | | | | |
| PYRENE | 165 | ND | 1670 | 1412 | ND | 1670 | 1601 | 1445 | NA | 84.6 | 37 | 146 | NA | 95.9 | 86.5 | 37 | 146 | NA | 10 | 40 | | | | | |
| BUTYLBENZYLPHTHALATE | 165 | ND | 1670 | 1402 | ND | 1670 | 1523 | 1377 | NA | 84.0 | 25 | 135 | NA | 91.2 | 82.4 | 25 | 135 | NA | 10 | 40 | | | | | |
| BENZO(A)ANTHRACENE | 330 | ND | 1670 | 1413 | ND | 1670 | 1483 | 1330 | NA | 84.6 | 41 | 143 | NA | 89.4 | 80.0 | 41 | 143 | NA | 11 | 40 | | | | | |
| 3,3'-DICHLOROBENZIDINE | 165 | ND | 1670 | 868 | ND | 1670 | 994 | 957 | NA | 52.0 | 25 | 175 | NA | 59.5 | 57.3 | 25 | 175 | NA | 4 | 40 | | | | | |
| CHRYSENE | 165 | ND | 1670 | 1443 | ND | 1670 | 1520 | 1364 | NA | 86.4 | 45 | 143 | NA | 91.0 | 81.7 | 45 | 143 | NA | 11 | 40 | | | | | |
| BIS(2-ETHYLHEXYL)PHTHALA | 165 | ND | 1670 | 1483 | ND | 1670 | 1610 | 1432 | NA | 88.8 | 25 | 139 | NA | 96.4 | 85.8 | 25 | 139 | NA | 12 | 40 | | | | | |
| DI-N-OCTYLPHTHALATE | 165 | ND | 1670 | 1344 | ND | 1670 | 1518 | 1333 | NA | 80.5 | 28 | 137 | NA | 90.9 | 79.8 | 28 | 137 | NA | 13 | 40 | | | | | |
| BENZO(B)FLUORANTHENE | 165 | ND | 1670 | 1312 | ND | 1670 | 1424 | 1312 | NA | 78.5 | 27 | 135 | NA | 85.3 | 78.5 | 27 | 135 | NA | 8 | 40 | | | | | |
| BENZO(K)FLUORANTHENE | 165 | ND | 1670 | 1427 | ND | 1670 | 1534 | 1301 | NA | 85.4 | 25 | 150 | NA | 91.8 | 77.9 | 25 | 150 | NA | 16 | 40 | | | | | |
| BENZO(A)PYRENE | 165 | ND | 1670 | 1385 | ND | 1670 | 1460 | 1288 | NA | 82.9 | 31 | 135 | NA | 87.4 | 77.1 | 31 | 135 | NA | 13 | 40 | | | | | |
| INDENO(1,2,3-CD)PYRENE | 165 | ND | 1670 | 1381 | ND | 1670 | 1351 | 1151 | NA | 82.7 | 25 | 170 | NA | 80.9 | 68.9 | 25 | 170 | NA | 16 | 40 | | | | | |
| DIBENZ(A,H)ANTHRACENE | 165 | ND | 1670 | 1420 | ND | 1670 | 1412 | 1200 | NA | 85.4 | 40 | 135 | NA | 84.5 | 71.8 | 40 | 135 | NA | 16 | 40 | | | | | |
| BENZO(G,H,I)PERYLENE | 165 | ND | 1670 | 1410 | ND | 1670 | 1344 | 1122 | NA | 85.0 | 25 | 159 | NA | 80.5 | 67.2 | 25 | 159 | NA | 18 | 40 | | | | | |
| SURROGATES | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-FLUOROPHENOL | | 438 | 100 | 431 | 316 | 100 | 389 | 378 | 43.8 | 43.1 | 25 | 121 | 31.6 | 38.9 | 37.8 | 25 | 121 | | | | | | | | |
| PHENOL-D5 | | 377 | 100 | 421 | 268 | 100 | 392 | 375 | 37.7 | 42.1 | 24 | 113 | 26.8 | 39.2 | 37.5 | 24 | 113 | | | | | | | | |
| NITROBENZENE-D5 | | 184 | 50 | 188 | 144 | 50 | 189 | 185 | 36.7 | 37.5 | 23 | 120 | 28.8 | 37.7 | 36.9 | 23 | 120 | | | | | | | | |
| 2-FLUOROBIPHENYL | | 200 | 50 | 233 | 153 | 50 | 215 | 211 | 40.0 | 45.5 | 30 | 115 | 30.5 | 41.0 | 42.2 | 30 | 115 | | | | | | | | |
| 2,4,6-TRIBROMOPHENOL | | 533 | 100 | 783 | 651 | 100 | 809 | 694 | 53.3 | 78.3 | 19 | 122 | 65.1 | 80.9 | 69.4 | 19 | 122 | | | | | | | | |
| p-TERPHENYL-D14 | | 857 | 50 | 508 | 543 | 50 | 828 | 481 | 111.4 | 101.8 | 18 | 137 | 108.5 | 105.6 | 95.2 | 18 | 137 | | | | | | | | |

NOTES & DEFINITIONS:
NA = NOT APPLICABLE NS = NOT SPIKED
ND = NOT DETECTED L = below QC limit
RDL = REPORTING DETECTION LIMIT H = above QC limit

WG45223.XLS

**Hall Environmental Analysis Laboratory**

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Suite A
Albuquerque, NM 87109

12/21/98

Keers
5904 Florence
Albuquerque, NM 87113

Dear Mr. Dan Gay,

Enclosed are the results for the analyses that were requested. These were done according to EPA procedures or equivalent.

Detection limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Scott Hallenbeck
Lab Manager

Project: 9812090 - TA 49 Spill #2

4901 Hawkins NE, Suite A, Albuquerque, NM 87109
Ph (505) 345-3975, Fax (505) 345-4107

**Hall Environmental Analysis Laboratory**

| | | | |
|---|---|---|---|
| Client: | Keers | Date Collected: | 12/16/98 |
| Project: | TA 49 Spill #2 | Date Received: | 12/16/98 |
| Project Manager: | Dan Gay | Sample Matrix: | Soil |
| Project Number: | TA 49 | Extraction Date | 12/17/98 |

## EPA Method - 418.1

| HEAL ID | Client ID | Dilution | TPH (mg/kg) | Analysis Date |
|---|---|---|---|---|
| 9812090-1 | Soil #1 | 1 | 60 | 12/18/98 |
| 9812090-2 | Soil #2 | 1 | ND | 12/18/98 |
| Ext. Blk. | - | 1 | ND | 12/18/98 |

| MRL | 20 |
|---|---|

QA/QC

| Sample ID: | Sample Amount | Spike | Recovery | % Recovery |
|---|---|---|---|---|
| BS 12/15 | <20 | 101 | 105 | 104 |

| Sample ID: | Sample Amount | Duplicate | RPD |
|---|---|---|---|
| Ext. Dup 12/15 | <20 | <20 | NA |

Sincerely:

Andy Freeman
Assistant Lab Manager

4901 Hawkins NE Suite A, Albuquerque, NM 87109
Ph (505) 345-3975, Fax (505) 345-4107

# CHAIN-OF-CUSTODY RECORD

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE, Suite A
Albuquerque, New Mexico 87109
505.345.3975
Fax 505.345.4107

Client: KEERS
Address: 5904 FLORENCE ALB NM 87113
Phone #: 823 9006
Fax #: 823 2766

Project Name: TA 49 SPILL #2
Project #: TA 49
Project Manager: D. GAY
Sampler: R EVANS
Samples Cold?: ☒ Yes ☐ No

| Date | Time | Matrix | Sample I.D. No. | Number/Volume | Preservative HgCl2 | Preservative HCl | | HEAL No. | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gasoline Only) | TPH Method 8015B MOD (Gas/Diesel) | TPH (Method 418.1) | Volatiles Full List (8021) | EDB (Method 504.1) | EDC (Method 8021) | 8310 (PNA or PAH) | RCRA 8 Metals | Cations (Na, K, Ca, Mg) | Anions (F, Cl, $NO_3$, $NO_2$, $PO_4$, $SO_4$) | 8081 Pesticides / PCB's (8082) | 8260 (VOA) | 8270 (Semi-VOA) | | | Air Bubbles or Headspace (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/16/98 | 10:30 | S | SOIL #1 | 4 oz | | | | 812090-1 | | | | X | | | | | | | | | | | | | |
| 12/16/98 | 10:30 | S | SOIL #2 | 4 oz | | | | -2 | | | | X | | | | | | | | | | | | | |

Remarks:

| Date: | Time: | Relinquished By: (Signature) | Received By: (Signature) | Date: |
|---|---|---|---|---|
| 12/16/98 | 10:30 | | | 12/16 |
| Date: | Time: | Relinquished By: (Signature) | Received By: (Signature) | |

PARAGON ANALYTICS, INC.
225 Commerce Drive ◆ Fort Collins, CO 80524 ◆ (800) 443-1511 ◆ (970) 490-1511 ◆ FAX (970) 490-1522

February 4, 1999

Joylene Valdez
Los Alamos National Laboratory SMO
SMO TA-3, Building 271
Los Alamos, NM 87545

FEB 1999

RE: Paragon Workorder: 99-01-004
Client Project Name: None Submitted
Client Project Number: 5103R

Dear Ms. Valdez:

Ten soil samples were received from Los Alamos National Laboratory SMO on January 5, 1999. The samples were scheduled for Isotopic Uranium analysis. The results for this analysis are contained in the enclosed report pages 1-211.

Please note that an EDD was sent out on February 4, 1999.

Thank you for your confidence in Paragon Analytics, Inc. Should you have any questions, please call.

Sincerely,

Paragon Analytics, Inc.
Lance Steere
Senior Project Manager

Bulkin Fatley CS chart
Report Sent To: Charles Wilson
Approved By:
Date Sent: 2/10/99

LRS/ar
Enclosure: Report

FIELD COPY



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Monday, January 04, 1999

REQUEST NUMBER: 5103R
ANALYSIS TYPE: RAD

**Los Alamos**
NATIONAL LABORATORY

ATTN: Steve Fry
Paragon/ATI
225 COMMERCE
FT. COLLINS, CO 80524

Please analyze the enclosed samples according to the schedule indicated:

SHIP DATE: 1/4/99
REPORT DUE: 2/4/99
TURN AROUND REQ'D: 30 days

These samples are on:

LANL Request Number: 5103R
Per Agreement Number: 7794L0014-9S
Project Cost Code: MR2W05153318

RAD SCREENING: Yes, Received

COMMENTS: 49 - 1144 , DK; PLEASE GRIND THE ENTIRE SAMPLE TO POWDER AND THOROUGHTY HOMOGENIZE IT BEFORE TAKING ALIQUOTS FOR ANALYSIS.

LANL ER SMO CONTACT: Joylene Valdez MS H865 5056659968
Signature: Joylene Valdez

| ANALYSIS ORDER CODE | ANALYTE(S) | SAMPLE ID | CONT ID | SAMPLE MATRIX | DATE SAMPLED | COMMENTS |
|---|---|---|---|---|---|---|
| ISOU | | MD49-98-0161 | 01 | S | 12/16/98 | |
| ISOU | | MD49-98-0162 | 01 | S | 12/16/98 | |
| ISOU | | MD49-98-0163 | 01 | S | 12/16/98 | |
| ISOU | | MD49-98-0164 | 01 | S | 12/16/98 | |
| ISOU | | MD49-98-0165 | 01 | S | 12/16/98 | |
| ISOU | | MD49-98-0166 | 01 | S | 12/17/98 | |
| ISOU | | MD49-98-0167 | 01 | S | 12/17/98 | |
| ISOU | | MD49-98-0168 | 01 | S | 12/17/98 | |
| ISOU | | MD49-98-0169 | 01 | S | 12/17/98 | |
| ISOU | | MD49-98-0170 | 01 | S | 12/17/98 | |



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# Paragon Analytics, Incorporated

## Sample Number(s) Cross-Reference Table

**Paragon OrderNum:** 9901004
**Client Name:** Los Alamos National Laboratory SMO
**Client Project Name:**
**Client Project Number:** 5103R
**Client PO Number:** 7794L0014-9S

| Client Sample | Lab Sample Number | COC Number | Matrix | Date Collected | Time Collected |
|---|---|---|---|---|---|
| MD49-98-0161 | 9901004-1 | | Soil | 12/16/98 | |
| MD49-98-0162 | 9901004-2 | | Soil | 12/16/98 | |
| MD49-98-0163 | 9901004-3 | | Soil | 12/16/98 | |
| MD49-98-0164 | 9901004-4 | | Soil | 12/16/98 | |
| MD49-98-0165 | 9901004-5 | | Soil | 12/16/98 | |
| MD49-98-0166 | 9901004-6 | | Soil | 12/17/98 | |
| MD49-98-0167 | 9901004-7 | | Soil | 12/17/98 | |
| MD49-98-0168 | 9901004-8 | | Soil | 12/17/98 | |
| MD49-98-0169 | 9901004-9 | | Soil | 12/17/98 | |
| MD49-98-0170 | 9901004-10 | | Soil | 12/17/98 | |





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Monday, January 04, 1999

**Los Alamos**
NATIONAL LABORATORY

**CHAIN OF CUSTODY DOCUMENT NUMBER: 5103RC**

**REQUEST NUMBER: 5103R**
**ANALYSIS TYPE: RAD**

9901004

ATTN: Steve Fry
Paragon/ATI
225 COMMERCE
FT. COLLINS, CO 80524

| | SAMPLE ID | CONT ID | CONTAINER DESCRIPTION | ANALYSIS ORDER CODE | PRESERVATIVE | MATRIX |
|---|---|---|---|---|---|---|
| 01 | MD49-98-0161 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 02 | MD49-98-0162 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 03 | MD49-98-0163 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 04 | MD49-98-0164 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 05 | MD49-98-0165 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 06 | MD49-98-0166 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 07 | MD49-98-0167 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 08 | MD49-98-0168 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 09 | MD49-98-0169 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 10 | MD49-98-0170 | 01 | 125 ml Polyethylene | ISOU | None | S |

Final Page of CHAIN OF CUSTODY DOCUMENT FOR REQUEST NUMBER 5103R Page 1

| Relinquished By: | Date | Time | Received By: | Date | Time |
|---|---|---|---|---|---|
| [illegible] | 1-4-99 | 13:25 | Fed Ex | | |
| Fed Ex | | | Jeannine Hunter Jeannine Hunter | 1/5/99 | 9:30am |
| | | | | | |
| | | | | | |

| Received for DISPOSAL By: | Date | Time | Remarks: |
|---|---|---|---|
| | | | |

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Paragon Analytics, Inc. - Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Land PROJECT MANAGER: Lance

WORKORDER NO: 9901004 INITIALS: JH DATE: 1/5/99

| | | | | |
|---|---|---|---|---|
| 1. | Does this project require any special handling in addition to standard PAI procedures? | | Yes | No |
| | PRESCREEN REQUIRED (Rad, DOE, etc.) | | Yes | No |
| 2. | Are custody seals on the cooler intact? If so, how many 4 | N/A | Yes | No |
| 3. | Are custody seals on sample containers intact? | N/A | Yes | No |
| 4. | Is there a Chain of Custody (COC) or other representative documents, letters, or shipping memos? | | Yes | No |
| 5. | Is the COC complete? Relinquished: Yes ✓ No Analyses Requested: Yes ✓ No | N/A | Yes | No |
| 6. | Is the COC in agreement with the samples received? No. of Samples: Yes ✓ No___ Sample ID's: Yes ✓ No___ Matrix: Yes ✓ No No. of Containers: Yes ✓ No | | Yes | No |
| 7. | Are all aqueous samples requiring chemical preservation preserved correctly (excluding volatile organics)? | N/A | Yes | No |
| | Are all aqueous non-preserved samples at the correct pH? | | Yes | No |
| 8. | Is there enough sample? If so, are they in the proper containers? | | Yes | No |
| 9. | Are all samples within holding times for the requested analyses? | | Yes | No |
| 10. | Were the sample(s) shipped on ice? | N/A | Yes | No |
| 11. | Were all sample containers received intact? (not broken or leaking, etc.) | | Yes | No |
| 12. | Are samples requiring no headspace, headspace free? Size of bubble < green pea > green pea | N/A | Yes | No |
| 13. | Are airbills present and removable? | | Yes | No |
| 14. | Shall Paragon dispose of samples? | | Yes | No |
| 15. | Were the cooler temperatures ≤ 6° C ? | N/A | Yes | No |

Cooler #'s land ___ ___ ___ ___ ___ ___

Temperature 4° ___ ___ ___ ___ ___ ___ °C

PM Reviewed/Date: S.F. 1/5/99 1/5/99 S.F. 1/6/99

A NO RESPONSE TO ANY QUESTION (EXCEPT # 1&13) REQUIRES THE COMPLETION OF PAGE 2 OF THE FORM

FORM 201FC7.frm (12/17/98)



130

TO: STEVE FRY
PARAGON
225 COMMERCE

FORT COLLINS CO 80524

4117 9901 2198 FedEx

4117 9901 2198

REF: 6E20MR2W05153318

DIM WEIGHT CHECKED

(800)443-1511

PRIORITY OVERNIGHT TUE

Deliver by:

05JAN99

TRK# 4117 9901 2198 Form 0201

DEN AA

80524-CO-US XF FTCA

# Paragon Analytics, Inc.
# Case Narrative File

Subcontract Number: 7794L0014-9S

Request Number: 5103R

Date File Saved: 02/02/99

**Section 1. Sample Identification Numbers**

| LANL Sample IDs | PAI Sample IDs |
|---|---|
| MD49-98-0161 | 9901004-1 |
| MD49-98-0162 | 9901004-2 |
| MD49-98-0163 | 9901004-3 |
| MD49-98-0164 | 9901004-4 |
| MD49-98-0165 | 9901004-5 |
| MD49-98-0166 | 9901004-6 |
| MD49-98-0167 | 9901004-7 |
| MD49-98-0168 | 9901004-8 |
| MD49-98-0169 | 9901004-9 |
| MD49-98-0170 | 9901004-10 |

**Section 2. Case Narrative**

**Section 2.1 Sample Shipping and Receipt Logistics**

The samples were received intact. No problems were observed.

**Section 2.2 Sample Preparation, Analysis, and QC Narrative**

**Section 2.2.1 Analysis Method: ISOU**

The samples under Request Number 5103R (Work Order 9901004) were received on 01/05/99 and scheduled for isotopic uranium analyses.

These samples were prepared according to Paragon Analytics, Inc. procedure PAI SOP778R3.

These samples were analyzed by alpha spectrometry according to Paragon Analytics, Inc. procedure PAI SOP714R4. The analyses were completed on 01/28/99. The analysis results for these samples are reported on a dry weight basis in units of pCi/gram.

Samples under Lanl Request Number 5103R were completely ground into a powder and thoroughly homogenized before sample aliquots were taken as per the COC comments.

Samples MD49-98-0163 and MD49-98-0168 (PAI Ids 9901004-3 and -8) were initially prepared in batch AS02038 on 1/11/99. Due to elevated U-238 activity, the chemical recovery for these samples was low. The

samples were re-extracted in batch AS02078 on 1/28/99 using a reduced aliquot. The results of the second analysis are reported in this data package.

U-238 activity is reported in the associated method blank (AS02038BLK1) above the minimum detectable concentration value. The measured blank activity is below the requested MDC. Results should be compared to the method blank activity to determine the validity of the measurement.

The duplicate error ratio (DER) for the $^{234}U$ and $^{235}U$ analysis of sample MD49-98-0170 (PAI Sample ID 9901004-10) and its duplicate sample 9901004-10-D1 was elevated above our warning limit. DER is defined as :

$$DER = \frac{|S - D|}{2 * \sqrt{\sigma_S^2 + \sigma_D^2}}$$

The warning limit for DER is 1.42. This result for this sample exceeds PAI control limits. The elevated DER may be attributable to inhomogeneity in the sample.

The duplicate error ratio (DER) for the $^{234}U$, $^{235}U$ and $^{238}U$ analysis of sample MD49-98-0168 (PAI Sample ID 9901004-8) and its duplicate sample 9901004-8-D1 was elevated above our warning limit
The warning limit for DER is 1.42. This result for this sample exceeds PAI control limits. The elevated DER may be attributable to inhomogeneity in the sample.

A reduced aliquot was taken for samples MD49-98-0163 and MD49-98-0168 (PAI Ids 9901004-3 and -8) due to elevated activity; consequently, the requested MDA (0.1 pCi/g) was not achieved. Activity for both samples exceeded the achieved MDA.

Reported sample activities are NET activities; that is, they have not been truncated or censored based on an *a priori* detection limit. Rather, as recommended by ANSI N42.23, the actual values for each measurement have been reported, and Decision Level values for each analyte are reported with the process blank. Each result should be compared to the appropriate decision level for determination of the validity of that measurement.

No further problems were observed in the preparation and analyses of the samples listed above. All remaining method required quality control parameters were met.

**Section 3 Certification Statement**

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, except as detailed in this case narrative. This certification is verified by the Laboratory Manager's or designee's signature in the hardcopy report.

Renee Gallegos — 2/3/99
Renee Gallegos — Date
Radiochemistry Instrument Technician

2/3/99
Radiochemistry Final Review — Date

# Sample Results Summary

Client Name: Los Alamos National Laboratory SMO
Client Project Name:
Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 9901004


Reported on: Monday, February 01, 1999 17:38:03

| Lab Sample ID | Client Sample ID | Test | Nuclide | Result +/- 1 s TPU | MDC | Units | Matrix | Prep Batch | Date Analyzed | Flags |
|---|---|---|---|---|---|---|---|---|---|---|
| 9901004-1 | MD49-98-0161 | U-ISO | U-234 | 3.40 +/- 0.24 | 0.066 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-1 | MD49-98-0161 | U-ISO | U-235 | 0.708 +/- 0.074 | 0.054 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-1 | MD49-98-0161 | U-ISO | U-238 | 35.1 +/- 2.1 | 0.060 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-2 | MD49-98-0162 | U-ISO | U-234 | 2.13 +/- 0.15 | 0.045 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-2 | MD49-98-0162 | U-ISO | U-235 | 0.316 +/- 0.039 | 0.038 | pCi/g | Soil | AS02038 | 1/22/99 | LT |
| 9901004-2 | MD49-98-0162 | U-ISO | U-238 | 21.7 +/- 1.3 | 0.029 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-3 | MD49-98-0163 | U-ISO | U-234 | 21.4 +/- 1.7 | 0.78 | pCi/g | Soil | AS02078 | 1/28/99 | |
| 9901004-3 | MD49-98-0163 | U-ISO | U-235 | 4.13 +/- 0.57 | 0.54 | pCi/g | Soil | AS02078 | 1/28/99 | |
| 9901004-3 | MD49-98-0163 | U-ISO | U-238 | 270 +/- 16 | 0.54 | pCi/g | Soil | AS02078 | 1/28/99 | |
| 9901004-4 | MD49-98-0164 | U-ISO | U-234 | 0.817 +/- 0.066 | 0.028 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-4 | MD49-98-0164 | U-ISO | U-235 | 0.042 +/- 0.011 | 0.025 | pCi/g | Soil | AS02038 | 1/22/99 | LT |
| 9901004-4 | MD49-98-0164 | U-ISO | U-238 | 0.995 +/- 0.077 | 0.017 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-5 | MD49-98-0165 | U-ISO | U-234 | 0.757 +/- 0.063 | 0.017 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-5 | MD49-98-0165 | U-ISO | U-235 | 0.055 +/- 0.013 | 0.025 | pCi/g | Soil | AS02038 | 1/22/99 | LT |
| 9901004-5 | MD49-98-0165 | U-ISO | U-238 | 2.23 +/- 0.15 | 0.023 | pCi/g | Soil | AS02038 | 1/22/99 | |

Comments:

Abbreviations
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 799)

Qualifiers/Flags
U - Result is less than the sample specific minimum detectable activity
LT - Result is less than Reported MDC, greater than sample specific MDC
Y2 - Chemical Yield outside default limits

# Sample Results Summary

Client Name: Los Alamos National Laboratory SMO
Client Project Name:
Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 9901004


Reported on: Monday, February 01, 1999 17:38 03

| Lab Sample ID | Client Sample ID | Test | Nuclide | Result +/- 1s TPU | MDC | Units | Matrix | Prep Batch | Date Analyzed | Flags |
|---|---|---|---|---|---|---|---|---|---|---|
| 9901004-6 | MD49-98-0166 | U-ISO | U-234 | 7.76 +/- 0.50 | 0.020 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-6 | MD49-98-0166 | U-ISO | U-235 | 0.833 +/- 0.085 | 0.020 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-6 | MD49-98-0166 | U-ISO | U-238 | 38.1 +/- 2.3 | 0.037 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-7 | MD49-98-0167 | U-ISO | U-234 | 6.56 +/- 0.42 | 0.058 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-7 | MD49-98-0167 | U-ISO | U-235 | 0.736 +/- 0.075 | 0.033 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-7 | MD49-98-0167 | U-ISO | U-238 | 31.3 +/- 1.9 | 0.048 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-8 | MD49-98-0168 | U-ISO | U-234 | 9.35 +/- 0.97 | 0.63 | pCi/g | Soil | AS02078 | 1/28/99 | |
| 9901004-8 | MD49-98-0168 | U-ISO | U-235 | 0.58 +/- 0.22 | 0.63 | pCi/g | Soil | AS02078 | 1/28/99 | U |
| 9901004-8 | MD49-98-0168 | U-ISO | U-238 | 37.0 +/- 2.7 | 0.73 | pCi/g | Soil | AS02078 | 1/28/99 | |
| 9901004-9 | MD49-98-0169 | U-ISO | U-234 | 0.776 +/- 0.062 | 0.027 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-9 | MD49-98-0169 | U-ISO | U-235 | 0.081 +/- 0.015 | 0.015 | pCi/g | Soil | AS02038 | 1/22/99 | LT |
| 9901004-9 | MD49-98-0169 | U-ISO | U-238 | 1.79 +/- 0.12 | 0.018 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-10 | MD49-98-0170 | U-ISO | U-234 | 1.40 +/- 0.10 | 0.030 | pCi/g | Soil | AS02038 | 1/22/99 | |
| 9901004-10 | MD49-98-0170 | U-ISO | U-235 | 0.093 +/- 0.016 | 0.015 | pCi/g | Soil | AS02038 | 1/22/99 | LT |
| 9901004-10 | MD49-98-0170 | U-ISO | U-238 | 4.05 +/- 0.26 | 0.018 | pCi/g | Soil | AS02038 | 1/22/99 | |

Comments:

Notes:
TPU = Total Propagated Uncertainty (see PAI SOP 743)
MDC = Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:
U - Result is less than the sample specific minimum detectable activity
LT - Result is less than Requested MDC, greater than sample specific MDC
Y2 - Chemical Yield outside default limits

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Method Blank Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| | |
|---|---|
| Field ID: | |
| Lab ID: | AS02038BLK1 |

Sample Matrix: Soil
Date Prepared: 11-Jan-99
Prep SOP: PAI 778R3
Prep Batch: AS02038

Date Collected: 11-Jan-99
Date Analyzed: 23-Jan-99
Analytical SOP: PAISOP714R4

Final Aliquot: 2
Aliquot Units: g
Report Basis: Dry Weight
Count Time (min.): 400

| Target Nuclide | Result +/- 1 s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 0.0130 +/- 0.0068 | 0.024 | pCi/g | U |
| U-235 | 0.0032 +/- 0.0043 | 0.021 | pCi/g | U |
| U-238 | 0.045 +/- 0.011 | 0.014 | pCi/g | B3 |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 2.05 | 1.69 | pCi/g | 83% | 30-110% |

Comments:

Abbreviations.

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y2 - Chemical Yield outside default limits.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

B - Analyte concentration greater than MDC.

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Decision Level Report



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| | |
|---|---|
| Field ID: | |
| Lab ID: | AS02038BLK1 |

Sample Matrix: Soil
Date Prepared: 11-Jan-99
Prep SOP: PAI 778R3
Prep Batch: AS02038

Date Collected: 11-Jan-99
Date Analyzed: 23-Jan-99
Analytical SOP: PAISOP714R4

Final Aliquot: 2
Aliquot Units: g
Report Basis: Dry Weight

| Target Nuclide | Decision Level | Reporting Units |
|---|---|---|
| U-234 | 0.021 | pCi/g |
| U-235 | 0.013 | pCi/g |
| U-238 | 0.034 | pCi/g |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 2.05 | 1.69 | pCi/g | 83% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

Y2 - Chemical Yield outside default limits.

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Method Blank Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| | |
|---|---|
| Field ID: | |
| Lab ID: | AS02078BLK1 |

Sample Matrix: Soil
Date Prepared: 25-Jan-99
Prep SOP: PAI 778R3
Prep Batch: AS02078

Date Collected: 25-Jan-99
Date Analyzed: 28-Jan-99
Analytical SOP: PAISOP714R4

Final Aliquot: 1
Aliquot Units: g
Report Basis: Dry Weight
Count Time (min.): 400

| Target Nuclide | Result +/- 1 s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 0.020 +/- 0.013 | 0.046 | pCi/g | U |
| U-235 | 0.026 +/- 0.014 | 0.046 | pCi/g | U |
| U-238 | 0.022 +/- 0.012 | 0.038 | pCi/g | U |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 4.67 | 3.02 | pCi/g | 65% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y2 - Chemical Yield outside default limits.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

B - Analyte concentration greater than MDC.

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Decision Level Report



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| Field ID: | |
|---|---|
| Lab ID: | AS02078BLK1 |

Sample Matrix: Soil
Date Prepared: 25-Jan-99
Prep SOP: PAI 778R3
Prep Batch: AS02078

Date Collected: 25-Jan-99
Date Analyzed: 28-Jan-99
Analytical SOP: PAISOP714R4

Final Aliquot: 1
Aliquot Units: g
Report Basis: Dry Weight

| Target Nuclide | Decision Level | Reporting Units |
|---|---|---|
| U-234 | 0.040 | pCi/g |
| U-235 | 0.045 | pCi/g |
| U-238 | 0.040 | pCi/g |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 4.67 | 3.02 | pCi/g | 65% | 30-110% |

Comments:

Abbreviations:
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:
U - Result is less than the sample specific minimum detectable activity.
Y2 - Chemical Yield outside default limits.



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# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## LCS Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

Field ID:

Lab ID: AS02038LCS1

Sample Matrix: Soil

Date Prepared: 11-Jan-99

Prep SOP: PAI 778R3

Prep Batch: AS02038

Date Collected: 11-Jan-99

Date Analyzed: 23-Jan-99

Analytical SOP: PAISOP714R4

Final Aliquot: 2

Aliquot Units: g

Report Basis: Dry Weight

Count Time (min.): 400

| Target Nuclide | LCS Results +/- 1s TPU | MDC | Spike Added | Reporting Units | LCS Recovery | Control Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|
| U-234 | 2.43 +/- 0.16 | 0.016 | 2.42 | pCi/g | 100% | +/- 25% | Pass |
| U-235 | 0.122 +/- 0.019 | 0.024 | N/A | pCi/g | N/A | N/A | LT |
| U-238 | 2.53 +/- 0.17 | 0.022 | 2.42 | pCi/g | 105% | +/- 25% | Pass |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 2.05 | 1.43 | pCi/g | 70% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.



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# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## LCS Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

Field ID:

Lab ID: AS02078LCS1

Sample Matrix: Soil

Date Prepared: 25-Jan-99

Prep SOP: PAI 778R3

Prep Batch: AS02078

Date Collected: 25-Jan-99

Date Analyzed: 28-Jan-99

Analytical SOP: PAISOP714R4

Final Aliquot: 1

Aliquot Units: g

Report Basis: Dry Weight

Count Time (min.): 400

| Target Nuclide | LCS Results +/- 1s TPU | MDC | Spike Added | Reporting Units | LCS Recovery | Control Limits | Lab Qualifier |
|---|---|---|---|---|---|---|---|
| U-234 | 5.22 +/- 0.35 | 0.058 | 4.85 | pCi/g | 108% | +/- 25% | Pass |
| U-235 | 0.245 +/- 0.042 | 0.053 | N/A | pCi/g | N/A | N/A | LT |
| U-238 | 5.11 +/- 0.35 | 0.047 | 4.85 | pCi/g | 106% | +/- 25% | Pass |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 4.67 | 2.72 | pCi/g | 58% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.



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# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Duplicate Sample Results (DER)



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| | | Prep Date | Analysis Date | Prep Batch | Final Aliquot |
|---|---|---|---|---|---|
| Field ID: | MD49-98-0168 | | | | |
| Lab ID: | 9901004-08 | 1/25/99 | 1/28/99 | AS02078 | 0.1 |
| DUP ID: | 9901004-8-D1 | 1/25/99 | 1/28/99 | AS02078 | 0.1 |

Sample Matrix: Soil
Date Collected: 17-Dec-98
Analytical SOP: PAISOP714R4
Prep SOP: PAI 778R3
Aliquot Units: g
Report Basis: Dry Weight

| Analyte | Sample Result +/- 1s TPU | Duplicate Result +/- 1s TPU | Units | DER | Control Limit | Lab Qualifiers |
|---|---|---|---|---|---|---|
| U-234 | 9.35 +/- 0.49 | 35.9 +/- 2.6 | pCi/g | 5.08 | < 1.42 | * |
| U-235 | 0.58 +/- 0.11 | 3.13 +/- 0.48 | pCi/g | 2.57 | < 1.42 | * |
| U-238 | 37.0 +/- 1.4 | 107.9 +/- 6.8 | pCi/g | 5.11 | < 1.42 | * |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 46.8 | 28.7 | pCi/g | 61% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

DER - Duplicate Error Ratio

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.



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# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Duplicate Sample Results (DER)



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| Field ID: | MD49-98-0170 | Prep Date | Analysis Date | Prep Batch | Final Aliquot |
|---|---|---|---|---|---|
| Lab ID: | 9901004-10 | 1/11/99 | 1/22/99 | AS02038 | 2 |
| DUP ID: | 9901004-10-D1 | 1/11/99 | 1/22/99 | AS02038 | 2 |

Sample Matrix: Soil
Date Collected: 17-Dec-98
Analytical SOP: PAISOP714R4
Prep SOP: PAI 778R3
Aliquot Units: g
Report Basis: Dry Weight

| Analyte | Sample Result +/- 1s TPU | Duplicate Result +/- 1s TPU | Units | DER | Control Limit | Lab Qualifiers |
|---|---|---|---|---|---|---|
| U-234 | 1.399 +/- 0.050 | 0.932 +/- 0.072 | pCi/g | 2.68 | < 1.42 | * |
| U-235 | 0.0934 +/- 0.0060 | 0.052 +/- 0.012 | pCi/g | 1.45 | < 1.42 | LT* |
| U-238 | 4.05 +/- 0.13 | 1.81 +/- 0.12 | pCi/g | 6.22 | < 1.42 | * |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 2.05 | 1.57 | pCi/g | 77% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

DER - Duplicate Error Ratio

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Sample Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| | | | |
|---|---|---|---|
| Field ID: MD49-98-0161 | Sample Matrix: Soil | Date Collected: 16-Dec-98 | Final Aliquot: 2.000 |
| Lab ID: 9901004-1 | Date Prepared: 11-Jan-99 | Date Analyzed: 22-Jan-99 | Aliquot Units: g |
| | Prep SOP: PAI 778R3 | Analytical SOP: PAISOP714R4 | Report Basis: Dry Weight |
| | Prep Batch: AS02038 | | Count Time (min.): 400 |

| Target Nuclide | Result +/- 1s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 3.40 +/- 0.24 | 0.066 | pCi/g | |
| U-235 | 0.708 +/- 0.074 | 0.054 | pCi/g | |
| U-238 | 35.1 +/- 2.1 | 0.060 | pCi/g | |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 2.05 | 0.736 | pCi/g | 36% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Sample Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| | | | |
|---|---|---|---|
| Field ID: MD49-98-0162 | Sample Matrix: Soil | Date Collected: 16-Dec-98 | Final Aliquot: 2.000 |
| Lab ID: 9901004-2 | Date Prepared: 11-Jan-99 | Date Analyzed: 22-Jan-99 | Aliquot Units: g |
| | Prep SOP: PAI 778R3 | Analytical SOP: PAISOP714R4 | Report Basis: Dry Weight |
| | Prep Batch: AS02038 | | Count Time (min.): 400 |

| Target Nuclide | Result +/- 1s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 2.13 +/- 0.15 | 0.045 | pCi/g | |
| U-235 | 0.316 +/- 0.039 | 0.038 | pCi/g | LT |
| U-238 | 21.7 +/- 1.3 | 0.029 | pCi/g | |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 2.05 | 1.04 | pCi/g | 51% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Sample Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| | | | |
|---|---|---|---|
| Field ID: MD49-98-0163 | Sample Matrix: Soil | Date Collected: 16-Dec-98 | Final Aliquot: 0.100 |
| Lab ID: 9901004-3 | Date Prepared: 25-Jan-99 | Date Analyzed: 28-Jan-99 | Aliquot Units: g |
| | Prep SOP: PAI 778R3 | Analytical SOP: PAISOP714R4 | Report Basis: Dry Weight |
| | Prep Batch: AS02078 | | Count Time (min.): 400 |

| Target Nuclide | Result +/- 1s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 21.4 +/- 1.7 | 0.78 | pCi/g | |
| U-235 | 4.13 +/- 0.57 | 0.54 | pCi/g | |
| U-238 | 270 +/- 16 | 0.54 | pCi/g | |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 46.8 | 28.4 | pCi/g | 61% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Sample Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| | | | |
|---|---|---|---|
| Field ID: MD49-98-0164 | Sample Matrix: Soil | Date Collected: 16-Dec-98 | Final Aliquot: 2.000 |
| Lab ID: 9901004-4 | Date Prepared: 11-Jan-99 | Date Analyzed: 22-Jan-99 | Aliquot Units: g |
| | Prep SOP: PAI 778R3 | Analytical SOP: PAISOP714R4 | Report Basis: Dry Weight |
| | Prep Batch: AS02038 | | Count Time (min.): 400 |

| Target Nuclide | Result +/- 1s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 0.817 +/- 0.066 | 0.028 | pCi/g | |
| U-235 | 0.042 +/- 0.011 | 0.025 | pCi/g | LT |
| U-238 | 0.995 +/- 0.077 | 0.017 | pCi/g | |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 2.05 | 1.45 | pCi/g | 71% | 30-110% |

**Comments:**

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.



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# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Sample Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| | | | |
|---|---|---|---|
| Field ID: MD49-98I-0165 | Sample Matrix: Soil | Date Collected: 16-Dec-98 | Final Aliquot: 2.000 |
| Lab ID: 9901004-5 | Date Prepared: 11-Jan-99 | Date Analyzed: 22-Jan-99 | Aliquot Units: g |
| | Prep SOP: PAI 778R3 | Analytical SOP: PAISOP714R4 | Report Basis: Dry Weight |
| | Prep Batch: AS02038 | | Count Time (min.): 400 |

| Target Nuclide | Result +/- 1s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 0.757 +/- 0.063 | 0.017 | pCi/g | |
| U-235 | 0.055 +/- 0.013 | 0.025 | pCi/g | LT |
| U-238 | 2.23 +/- 0.15 | 0.023 | pCi/g | |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 2.05 | 1.39 | pCi/g | 68% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.



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# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Sample Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| | |
|---|---|
| Field ID: | MD49-98-0166 |
| Lab ID: | 9901004-6 |

Sample Matrix: Soil
Date Prepared: 11-Jan-99
Prep SOP: PAI 778R3
Prep Batch: AS02038

Date Collected: 17-Dec-98
Date Analyzed: 22-Jan-99
Analytical SOP: PAISOP714R4

Final Aliquot: 2.000
Aliquot Units: g
Report Basis: Dry Weight
Count Time (min.): 400

| Target Nuclide | Result +/- 1s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 7.76 +/- 0.50 | 0.020 | pCi/g | |
| U-235 | 0.833 +/- 0.085 | 0.020 | pCi/g | |
| U-238 | 38.1 +/- 2.3 | 0.037 | pCi/g | |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 2.05 | 0.664 | pCi/g | 32% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Sample Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| | | | |
|---|---|---|---|
| Field ID: MD49-98-0167 | Sample Matrix: Soil | Date Collected: 17-Dec-98 | Final Aliquot: 2.000 |
| Lab ID: 9901004-7 | Date Prepared: 11-Jan-99 | Date Analyzed: 22-Jan-99 | Aliquot Units: g |
| | Prep SOP: PAI 778R3 | Analytical SOP: PAISOP714R4 | Report Basis: Dry Weight |
| | Prep Batch: AS02038 | | Count Time (min.): 400 |

| Target Nuclide | Result +/- 1s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 8.56 +/- 0.42 | 0.058 | pCi/g | |
| U-235 | 0.736 +/- 0.075 | 0.033 | pCi/g | |
| U-238 | 31.3 +/- 1.9 | 0.048 | pCi/g | |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 2.05 | 0.766 | pCi/g | 37% | 30-110% |

**Comments:**

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Sample Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| | | | |
|---|---|---|---|
| Field ID: MD49-98-0168 | Sample Matrix: Soil | Date Collected: 17-Dec-98 | Final Aliquot: 0.100 |
| Lab ID: 9901004-8 | Date Prepared: 25-Jan-99 | Date Analyzed: 28-Jan-99 | Aliquot Units: g |
| | Prep SOP: PAI 778R3 | Analytical SOP: PAISOP714R4 | Report Basis: Dry Weight |
| | Prep Batch: AS02078 | | Count Time (min.): 400 |

| Target Nuclide | Result +/- 1s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 9.35 +/- 0.97 | 0.63 | pCi/g | |
| U-235 | 0.58 +/- 0.22 | 0.63 | pCi/g | U |
| U-238 | 37.0 +/- 2.7 | 0.73 | pCi/g | |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 46.8 | 27.8 | pCi/g | 59% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Sample Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

Field ID: MD49-98-0169

Lab ID: 9901004-9

Sample Matrix: Soil

Date Prepared: 11-Jan-99

Prep SOP: PAI 778R3

Prep Batch: AS02038

Date Collected: 17-Dec-98

Date Analyzed: 22-Jan-99

Analytical SOP: PAISOP714R4

Final Aliquot: 2.000

Aliquot Units: g

Report Basis: Dry Weight

Count Time (min.): 400

| Target Nuclide | Result +/- 1s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 0.776 +/- 0.062 | 0.027 | pCi/g | |
| U-235 | 0.081 +/- 0.015 | 0.015 | pCi/g | LT |
| U-238 | 1.79 +/- 0.12 | 0.018 | pCi/g | |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 2.05 | 1.69 | pCi/g | 83% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

# Isotopic Uranium By Alpha Spectroscopy

## Method PAI714R4

## Sample Results



Reported on: Monday, February 01, 1999 17:38:03

Client Name: Los Alamos National Laboratory SMO

Client Project Name:

Client Project Number: 5103R

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 9901004

| | | | |
|---|---|---|---|
| Field ID: MD49-98-0170 | Sample Matrix: Soil | Date Collected: 17-Dec-98 | Final Aliquot: 2.000 |
| Lab ID: 9901004-10 | Date Prepared: 11-Jan-99 | Date Analyzed: 22-Jan-99 | Aliquot Units: g |
| | Prep SOP: PAI 778R3 | Analytical SOP: PAISOP714R4 | Report Basis: Dry Weight |
| | Prep Batch: AS02038 | | Count Time (min.): 400 |

| Target Nuclide | Result +/- 1s TPU | MDC | Reporting Units | Lab Qualifier |
|---|---|---|---|---|
| U-234 | 1.40 +/- 0.10 | 0.030 | pCi/g | |
| U-235 | 0.093 +/- 0.016 | 0.015 | pCi/g | LT |
| U-238 | 4.05 +/- 0.26 | 0.018 | pCi/g | |

## Chemical Yield Summary

| Tracer Nuclide | Tracer Known | Tracer Measured | Units | Tracer Yield | Control Limits |
|---|---|---|---|---|---|
| U-232 | 2.05 | 1.63 | pCi/g | 79% | 30-110% |

Comments:

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable activity.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

# Raw Data Report

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 9901004

Prep SOP: PAI 776R3
Analytical SOP: PAISOP714R4


Reported on: Monday, February 01, 1999
17:38 03

| Sample ID Spectrum | Batch ID | Count Start | Det | T/A | Test Nuclide | NetCounts SampTime | BkgCnts BkgTime | Det Eff | Chem Yield | DPM/Aliquot | Aliquot Used | Activity +/- 1s TPU | MDC | Report Units | Matrix | Flags | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9901004 1<br>U100401 | AS02038 | 1/22/99<br>17 37 43 | 12 | T | U ISO<br>U 232 | 372 80<br>400 | 28<br>1000 | 0 2855 | 35 95% | 9 08213 | 2 | 2 05<br>0 16 | 0 10 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 1<br>U100401 | AS02038 | 1/22/99<br>17 37 43 | 12 | A | U ISO<br>U 234 | 617 40<br>400 | 9<br>1000 | 0 2855 | 35 95% | 15 0839 | 2 | 3 40<br>0 24 | 0 066 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 1<br>U100401 | AS02038 | 1/22/99<br>17 37 43 | 12 | A | U ISO<br>U 235 | 129 00<br>400 | 5<br>1000 | 0 2855 | 35 95% | 3 14269 | 2 | 0 708<br>0 078 | 0 054 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 1<br>U100401 | AS02038 | 1/22/99<br>17 37 43 | 12 | A | U ISO<br>U 238 | 6394 20<br>400 | 7<br>1000 | 0 2855 | 35 95% | 155 775 | 2 | 35 1<br>2 1 | 0 060 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 2<br>U100402 | AS02038 | 1/22/99<br>17 38 08 | 13 | T | U ISO<br>U 232 | 530 00<br>400 | 20<br>1000 | 0 2873 | 50 78% | 9 08213 | 2 | 2 05<br>0 15 | 0 063 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 2<br>U100402 | AS02038 | 1/22/99<br>17 38 08 | 13 | A | U ISO<br>U 234 | 550 80<br>400 | 8<br>1000 | 0 2873 | 50 78% | 9 43856 | 2 | 2 13<br>0 15 | 0 045 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 2<br>U100402 | AS02038 | 1/22/99<br>17 38 08 | 13 | A | U ISO<br>U 235 | 82 00<br>400 | 5<br>1000 | 0 2873 | 50 78% | 1 40516 | 2 | 0 318<br>0 039 | 0 038 | pCi/g<br>Dry Weight | Soil | LT | |
| 9901004 2<br>U100402 | AS02038 | 1/22/99<br>17 38 08 | 13 | A | U ISO<br>U 238 | 5625 20<br>400 | 2<br>1000 | 0 2873 | 50 78% | 96 394 | 2 | 21 7<br>1 3 | 0 029 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 3<br>~~U100403~~ | AS02078 | 1/28/99<br>18 27 55 | 19 | T | U ISO<br>U 232 | 722 60<br>400 | 26<br>1000 | 0 2870 | 60 68% | 10 3725 | 0 1 | 48 8<br>3 2 | 1 2 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 3<br>~~U100403~~ | AS02078 | 1/28/99<br>18 27 55 | 19 | A | U ISO<br>U 234 | 330 40<br>400 | 9<br>1000 | 0 2870 | 60 68% | 4 74272 | 0 1 | 21 4<br>1 7 | 0 78 | pCi/g<br>Dry Weight | Soil | M | |
| 9901004 3<br>~~U100403~~ | AS02078 | 1/28/99<br>18 27 55 | 19 | A | U ISO<br>U 235 | 63 80<br>400 | 3<br>1000 | 0 2870 | 60 68% | 0 91582 | 0 1 | 4 13<br>0 57 | 0 54 | pCi/g<br>Dry Weight | Soil | M | |
| 9901004 3<br>~~U100403~~ | AS02078 | 1/28/99<br>18 27 55 | 19 | A | U ISO<br>U 238 | 4175 80<br>400 | 3<br>1000 | 0 2870 | 60 68% | 59 9414 | 0 1 | 270<br>16 | 0 54 | pCi/g<br>Dry Weight | Soil | M | |
| 9901004 4<br>U100404 | AS02038 | 1/22/99<br>17 39 37 | 15 | T | U ISO<br>U 232 | 758 00<br>400 | 20<br>1000 | 0 2944 | 70 89% | 9 08213 | 2 | 2 05<br>0 14 | 0 044 | pCi/g<br>Dry Weight | Soil | | |

Filename U X100403
RG 2-2-99

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable concentration
Y2 - Chemical Yield outside default limits
* - Duplicate DER not within control limits
- Duplicate RPD not within limits

LT - Result is less than Requested MDC, greater than sample specific MDC
B3 - Analyte concentration greater than MDC but less than Requested MDC
B - Analyte concentration greater than MDC
M - Requested MDC not met

Abbreviations:

T - Tracer  A - Analyte
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 739)
DER - Duplicate Error Ratio


COUNT + NO FOG + .5-.15

# Raw Data Report

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 9901004

Prep SOP: PAI 778R3
Analytical SOP: PAISOP714R4


Reported on: Monday, February 01, 1999 17:38 03

| Sample ID Spectrum | Batch ID | Count Start | Det | T/A | Test Nuclide | NetCounts SampTime | BkgCnts BkgTime | Det Eff | Chem Yield | DPM/Aliquot | Aliquot Used | Activity +/- 1s TPU | MDC | Report Units | Matrix | Flags | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9901004 4<br>U100404 | AS02038 | 1/22/99<br>17:39:37 | 15 | A | U ISO<br>U 234 | 302 60<br>400 | 6<br>1000 | 0 2944 | 70 88% | 3 82566 | 2 | 0 817<br>0 068 | 0 028 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 4<br>U100404 | AS02038 | 1/22/99<br>17:39:37 | 15 | A | U ISO<br>U 235 | 15 40<br>400 | 4<br>1000 | 0 2944 | 70 88% | 0 19452 | 2 | 0 042<br>0 011 | 0 025 | pCi/g<br>Dry Weight | Soil | LT | |
| 9901004 4<br>U100404 | AS02038 | 1/22/99<br>17:39:37 | 15 | A | U ISO<br>U 238 | 368 60<br>400 | 1<br>1000 | 0 2944 | 70 88% | 4 41646 | 2 | 0 995<br>0 077 | 0 017 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 5<br>U100405 | AS02038 | 1/22/99<br>17:39:59 | 16 | T | U ISO<br>U 232 | 753 20<br>400 | 27<br>1000 | 0 3064 | 67 66% | 9 08213 | 2 | 2 05<br>0 14 | 0 050 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 5<br>U100405 | AS02038 | 1/22/99<br>17:39:59 | 16 | A | U ISO<br>U 234 | 278 60<br>400 | 1<br>1000 | 0 3064 | 67 66% | 3 35938 | 2 | 0 757<br>0 063 | 0 017 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 5<br>U100405 | AS02038 | 1/22/99<br>17:39:59 | 16 | A | U ISO<br>U 235 | 20 40<br>400 | 4<br>1000 | 0 3064 | 67 66% | 0 24598 | 2 | 0 055<br>0 013 | 0 025 | pCi/g<br>Dry Weight | Soil | LT | |
| 9901004 5<br>U100405 | AS02038 | 1/22/99<br>17:39:59 | 16 | A | U ISO<br>U 238 | 820 80<br>400 | 3<br>1000 | 0 3064 | 67 66% | 9 89726 | 2 | 2 23<br>0 15 | 0 023 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 6<br>U100406 | AS02038 | 1/22/99<br>17:40:18 | 17 | T | U ISO<br>U 232 | 339 80<br>400 | 8<br>1000 | 0 2876 | 32 43% | 9 08213 | 2 | 2 05<br>0 16 | 0 070 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 6<br>U100406 | AS02038 | 1/22/99<br>17:40:18 | 17 | A | U ISO<br>U 234 | 1298 00<br>400 | 0<br>1000 | 0 2876 | 32 43% | 34 4735 | 2 | 7 76<br>0 50 | 0 020 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 6<br>U100406 | AS02038 | 1/22/99<br>17:40:18 | 17 | A | U ISO<br>U 235 | 138 00<br>400 | 0<br>1000 | 0 2876 | 32 43% | 3 65933 | 2 | 0 833<br>0 065 | 0 020 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 6<br>U100406 | AS02038 | 1/22/99<br>17:40:18 | 17 | A | U ISO<br>U 238 | 6304 60<br>400 | 1<br>1000 | 0 2876 | 32 43% | 169 006 | 2 | 38 1<br>2 3 | 0 037 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 7<br>U100407 | AS02038 | 1/22/99<br>17:40:43 | 18 | T | U ISO<br>U 232 | 368 20<br>400 | 37<br>1000 | 0 2856 | 37 41% | 9 08213 | 2 | 2 05<br>0 16 | 0 11 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 7<br>U100407 | AS02038 | 1/22/99<br>17:40:43 | 18 | A | U ISO<br>U 234 | 1244 20<br>400 | 7<br>1000 | 0 2856 | 37 41% | 29 1087 | 2 | 6 56<br>0 42 | 0 058 | pCi/g<br>Dry Weight | Soil | | |

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable concentration
Y2 - Chemical Yield outside default limits
* - Duplicate DER not within control limits
* - Duplicate RPD not within limits

LT - Result is less than Requested MDC, greater than sample specific MDC
BJ - Analyte concentration greater than MDC but less than Requested MDC
B - Analyte concentration greater than MDC
M - Requested MDC not met

Abbreviations:

T - Tracer A - Analyte
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
DER - Duplicate Error Ratio

# Raw Data Report

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 9901004

Prep SOP: PAI 778R3
Analytical SOP: PAISOP714R4


Reported on: Monday, February 01, 1999 17:38 03

| Sample ID Spectrum | Batch ID | Count Start | Det | T/A | Test Nuclide | NetCounts SampTime | BkgCnts BkgTime | Det Eff | Chem Yield | DPM/ Aliquot | Aliquot Used | Activity +/- 1σ TPU | MDC | Report Units | Matrix | Flags | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9901004 7<br>U100407 | AS02038 | 1/22/99<br>17 40 43 | 19 | A | U ISO<br>U 235 | 139 60<br>400 | 1<br>1000 | 0 2856 | 37 41% | 3 26601 | 2 | 0 736<br>0 075 | 0 033 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 7<br>U100407 | AS02038 | 1/22/99<br>17 40 43 | 19 | A | U ISO<br>U 238 | 5933 43<br>400 | 4<br>1000 | 0 2856 | 37 41% | 138 815 | 2 | 31 3<br>1 9 | 0 048 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 8<br>~~U100408~~ | AS02078 | 1/28/99<br>18 28 30 | 20 | T | U ISO<br>U 232 | 671 80<br>400 | 29<br>1000 | 0 2729 | 59 33% | 10 3725 | 0 1 | 46 8<br>3 3 | 1 3 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 8<br>~~U100408~~ | AS02078 | 1/28/99<br>18 28 30 | 20 | A | U ISO<br>U 234 | 134 40<br>400 | 4<br>1000 | 0 2729 | 59 33% | 2 07513 | 0 1 | 9 35<br>0 97 | 0 63 | pCi/g<br>Dry Weight | Soil | M | |
| 9901004 8<br>~~U100408~~ | AS02078 | 1/28/99<br>18 28 30 | 20 | A | U ISO<br>U 235 | 8 43<br>400 | 4<br>1000 | 0 2729 | 59 33% | 0 1297 | 0 1 | 0 58<br>0 22 | 0 83 | pCi/g<br>Dry Weight | Soil | UM | |
| 9901004 8<br>~~U100408~~ | AS02078 | 1/28/99<br>18 28 30 | 20 | A | U ISO<br>U 238 | 532 60<br>400 | 6<br>1000 | 0 2729 | 59 33% | 8 22330 | 0 1 | 37 0<br>2 7 | 0 73 | pCi/g<br>Dry Weight | Soil | M | |
| 9901004 8 D1<br>~~U100408D~~ | AS02078 | 1/28/99<br>18 29 12 | 21 | T | U ISO<br>U 232 | 728 60<br>400 | 31<br>1000 | 0 2858 | 61 44% | 10 3725 | 0 1 | 46 8<br>3 2 | 1 3 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 8 D1<br>~~U100408D~~ | AS02078 | 1/28/99<br>18 29 12 | 21 | A | U ISO<br>U 234 | 560 43<br>400 | 4<br>1000 | 0 2858 | 61 44% | 7 97800 | 0 1 | 35 9<br>2 6 | 0 58 | pCi/g<br>Dry Weight | Soil | *M | DER=5 08 |
| 9901004 8 D1<br>~~U100408D~~ | AS02078 | 1/28/99<br>18 29 12 | 21 | A | U ISO<br>U 235 | 48 80<br>400 | 3<br>1000 | 0 2858 | 61 44% | 0 69473 | 0 1 | 3 13<br>0 48 | 0 53 | pCi/g<br>Dry Weight | Soil | *M | DER=2 67 |
| 9901004 8 D1<br>~~U100408D~~ | AS02078 | 1/28/99<br>18 29 12 | 21 | A | U ISO<br>U 238 | 1683 00<br>400 | 5<br>1000 | 0 2858 | 61 44% | 23 9556 | 0 1 | 107 9<br>6 8 | 0 83 | pCi/g<br>Dry Weight | Soil | *M | DER=5 11 |
| 9901004 9<br>U100409 | AS02038 | 1/22/99<br>17 41 43 | 21 | T | U ISO<br>U 232 | 843 60<br>400 | 28<br>1000 | 0 2834 | 82 52% | 9 08213 | 2 | 2 05<br>0 14 | 0 044 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 9<br>U100409 | AS02038 | 1/22/99<br>17 41 43 | 21 | A | U ISO<br>U 234 | 322 20<br>400 | 7<br>1000 | 0 2834 | 82 52% | 3 44428 | 2 | 0 776<br>0 062 | 0 027 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 9<br>U100409 | AS02038 | 1/22/99<br>17 41 43 | 21 | A | U ISO<br>U 235 | 33 60<br>400 | 1<br>1000 | 0 2834 | 82 52% | 0 35918 | 2 | 0 081<br>0 015 | 0 015 | pCi/g<br>Dry Weight | Soil | LT | |

Filename UX100408 RG 2/2/99
UX100408D1

Comments:

Qualifiers/Flags:

U - Result less than the sample specific minimum detectable concentration
Y2 - Chemical Yield outside default limits
* - Duplicate DER not within control limits
+ - Duplicate RPD not within limits
LT - Result is less than Requested MDC, greater than sample specific MDC
B3 - Analyte concentration greater than MDC but less than Requested MDC
B - Analyte concentration greater than MDC
M - Requested MDC not met

Abbreviations:

T - Tracer A - Analyte
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
DER - Duplicate Error Ratio


COH - 10570 - 5JN

# Raw Data Report

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 9901004

Prep SOP: PAI 778R3
Analytical SOP: PAISOP714R4


Reported on: Monday, February 01, 1999
17:38 03

| Sample ID Spectrum | Batch ID | Count Start | Det | T/A | Test Nuclide | NetCounts SampTime | BkgCnts BkgTime | Det Eff | Chem Yield | DPM/ Aliquot | Aliquot Used | Activity +/- 1s TPU | MDC | Report Units | Matrix | Flags | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9901004 9<br>U100409 | AS02038 | 1/22/99<br>17 41 43 | 21 | A | U ISO<br>U 238 | 743 20<br>400 | 2<br>1000 | 0 2834 | 82 52% | 7 94473 | 2 | 1 79<br>0 12 | 0 018 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 10<br>U100410 | AS02038 | 1/22/99<br>17 42 05 | 22 | T | U ISO<br>U 232 | 823 60<br>400 | 31<br>1000 | 0 2855 | 79 41% | 9 08213 | 2 | 2 05<br>0 14 | 0 049 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 10<br>U100410 | AS02038 | 1/22/99<br>17 42 05 | 22 | A | U ISO<br>U 234 | 563 40<br>400 | 9<br>1000 | 0 2855 | 79 41% | 6 21281 | 2 | 1 43<br>0 10 | 0 030 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 10<br>U100410 | AS02038 | 1/22/99<br>17 42 05 | 22 | A | U ISO<br>U 235 | 37 60<br>400 | 1<br>1000 | 0 2855 | 79 41% | 0 41463 | 2 | 0 093<br>0 016 | 0 015 | pCi/g<br>Dry Weight | Soil | LT | |
| 9901004 10<br>U100410 | AS02038 | 1/22/99<br>17 42 05 | 22 | A | U ISO<br>U 238 | 1631 20<br>400 | 2<br>1000 | 0 2855 | 79 41% | 17 9578 | 2 | 4 05<br>0 26 | 0 018 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 10 D1<br>U100410D | AS02038 | 1/22/99<br>17 42 34 | 24 | T | U ISO<br>U 232 | 844 80<br>400 | 38<br>1000 | 0 3026 | 76 86% | 9 08213 | 2 | 2 05<br>0 14 | 0 052 | pCi/g<br>Dry Weight | Soil | | |
| 9901004 10 D1<br>U100410D | AS02038 | 1/22/99<br>17 42 34 | 24 | A | U ISO<br>U 234 | 384 80<br>400 | 3<br>1000 | 0 3026 | 76 86% | 4 13684 | 2 | 0 932<br>0 072 | 0 020 | pCi/g<br>Dry Weight | Soil | * | DER=2 14 |
| 9901004 10 D1<br>U100410D | AS02038 | 1/22/99<br>17 42 34 | 24 | A | U ISO<br>U 235 | 21 40<br>400 | 4<br>1000 | 0 3026 | 76 86% | 0 23006 | 2 | 0 052<br>0 012 | 0 022 | pCi/g<br>Dry Weight | Soil | LT* | DER=1 45 |
| 9901004 10 D1<br>U100410D | AS02038 | 1/22/99<br>17 42 34 | 24 | A | U ISO<br>U 238 | 749 20<br>400 | 2<br>1000 | 0 3026 | 76 86% | 8 05437 | 2 | 1 81<br>0 12 | 0 018 | pCi/g<br>Dry Weight | Soil | * | DER 0 22 |
| AS02038BLK1<br>U020381 | AS02038 | 1/23/99<br>18 22 42 | 15 | T | U ISO<br>U 232 | 883 80<br>400 | 18<br>1000 | 0 2944 | 82 65% | 9 08189 | 2 | 2 05<br>0 14 | 0 036 | pCi/g<br>Dry Weight | Soil | | |
| AS02038BLK1<br>U020381 | AS02038 | 1/23/99<br>18 22 42 | 15 | A | U ISO<br>U 234 | 5 60<br>400 | 6<br>1000 | 0 2944 | 82 65% | 0 05755 | 2 | 0 0130<br>0 0068 | 0 024 | pCi/g<br>Dry Weight | Soil | U | |
| AS02038BLK1<br>U020381 | AS02038 | 1/23/99<br>18 22 42 | 15 | A | U ISO<br>U 235 | 1 40<br>400 | 4<br>1000 | 0 2944 | 82 65% | 0 01439 | 2 | 0 0032<br>0 0043 | 0 021 | pCi/g<br>Dry Weight | Soil | U | |
| AS02038BLK1<br>U020381 | AS02038 | 1/23/99<br>18 22 42 | 15 | A | U ISO<br>U 238 | 19 60<br>400 | 1<br>1000 | 0 2944 | 82 65% | 0 20141 | 2 | 0 045<br>0 011 | 0 014 | pCi/g<br>Dry Weight | Soil | B3 | |

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific minimum detectable concentration
Y2 - Chemical Yield outside default limits
* - Duplicate DER not within control limits
# - Duplicate RPD not within limits

LT - Result is less than Requested MDC, greater than sample specific MDC
B3 - Analyte concentration greater than MDC but less than Requested MDC
B - Analyte concentration greater than MDC
M - Requested MDC not met

Abbreviations:

T - Tracer A - Analyte
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
DER - Duplicate Error Ratio

# Raw Data Report

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 9901004

Prep SOP: PAI 778R3
Analytical SOP: PAISOP714R4


Reported on: Monday, February 01, 1999
17:38 03

| Sample ID Spectrum | Batch ID | Count Start | Det | T/A | Test Nuclide | NetCounts SampTime | BkgCnts BkgTime | Det Eff | Chem Yield | DPM/Aliquot | Aliquot Used | Activity +/- 1σ TPU | MDC | Report Units | Matrix | Flags | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AS02038LCS1<br>U02038S1 | AS02038 | 1/23/99<br>18 23 09 | 16 | T | U ISO<br>U 232 | 780 20<br>400 | 27<br>1000 | 0 3064 | 70 08% | 9 06189 | 2 | 2 05<br>0 14 | 0 049 | pCi/g<br>Dry Weight | Soil | | |
| AS02038LCS1<br>U02038S1 | AS02038 | 1/23/99<br>18 23 09 | 16 | A | U ISO<br>U 234 | 928 60<br>400 | 1<br>1000 | 0 3064 | 70 08% | 10 8093 | 2 | 2 43<br>0 18 | 0 018 | pCi/g<br>Dry Weight | Soil | Pass | LCS RECOV=100% |
| AS02038LCS1<br>U02038S1 | AS02038 | 1/23/99<br>18 23 09 | 16 | A | U ISO<br>U 235 | 46 40 | 4<br>1000 | 0 3064 | 70 08% | 0 54012 | 2 | 0 122<br>0 019 | 0 024 | pCi/g<br>Dry Weight | Soil | LT | |
| AS02038LCS1<br>U02038S1 | AS02038 | 1/23/99<br>18 23 09 | 16 | A | U ISO<br>U 238 | 964 80<br>400 | 3<br>1000 | 0 3064 | 70 08% | 11 254 | 2 | 2 53<br>0 17 | 0 022 | pCi/g<br>Dry Weight | Soil | Pass | LCS RECOV=105% |
| AS02078BLK1<br>U02078B1 | AS02078 | 1/28/99<br>18 29 37 | 22 | T | U ISO<br>U 232 | 757 80<br>400 | 18<br>1000 | 0 2825 | 64 65% | 10 3725 | 1 | 4 67<br>0 32 | 0 097 | pCi/g<br>Dry Weight | Soil | | |
| AS02078BLK1<br>U02078B1 | AS02078 | 1/28/99<br>18 29 37 | 22 | A | U ISO<br>U 234 | 3 20<br>400 | 2<br>1000 | 0 2825 | 64 65% | 0 04380 | 1 | 0 020<br>0 013 | 0 048 | pCi/g<br>Dry Weight | Soil | U | |
| AS02078BLK1<br>U02078B1 | AS02078 | 1/28/99<br>18 29 37 | 22 | A | U ISO<br>U 235 | 4 20<br>400 | 2<br>1000 | 0 2825 | 64 65% | 0 05749 | 1 | 0 026<br>0 014 | 0 046 | pCi/g<br>Dry Weight | Soil | U | |
| AS02078BLK1<br>U02078B1 | AS02078 | 1/28/99<br>18 29 37 | 22 | A | U ISO<br>U 238 | 3 60<br>400 | 1<br>1000 | 0 2825 | 64 65% | 0 04928 | 1 | 0 022<br>0 012 | 0 038 | pCi/g<br>Dry Weight | Soil | U | |
| AS02078LCS1<br>U02078S1 | AS02078 | 1/28/99<br>18 30 01 | 24 | T | U ISO<br>U 232 | 743 20<br>400 | 27<br>1000 | 0 3067 | 58 17% | 10 3725 | 1 | 4 67<br>0 32 | 0 12 | pCi/g<br>Dry Weight | Soil | | |
| AS02078LCS1<br>U02078S1 | AS02078 | 1/28/99<br>18 30 01 | 24 | A | U ISO<br>U 234 | 826 40<br>400 | 4<br>1000 | 0 3067 | 58 17% | 11 5805 | 1 | 5 22<br>0 35 | 0 058 | pCi/g<br>Dry Weight | Soil | Pass | LCS RECOV=100% |
| AS02078LCS1<br>U02078S1 | AS02078 | 1/28/99<br>18 30 01 | 24 | A | U ISO<br>U 235 | 38 80 | 3<br>1000 | 0 3067 | 58 17% | 0 54371 | 1 | 0 245<br>0 042 | 0 053 | pCi/g<br>Dry Weight | Soil | LT | |
| AS02078LCS1<br>U02078S1 | AS02078 | 1/28/99<br>18 30 01 | 24 | A | U ISO<br>U 238 | 810 20<br>400 | 2<br>1000 | 0 3067 | 58 17% | 11 3535 | 1 | 5 11<br>0 35 | 0 047 | pCi/g<br>Dry Weight | Soil | Pass | LCS RECOV=101% |

Comments:

Qualifier Flags:

U - Result less than the sample specific minimum detectable concentration
Y2 - Chemical Yield outside default limits
* - Duplicate DER not within control limits
† - Duplicate RPD not within limits

LT - Result is less than Requested MDC, greater than sample specific MDC
B3 - Analyte concentration greater than MDC but less than Requested MDC
B - Analyte concentration greater than MDC
M - Requested MDC not met

Abbreviations:

T - Tracer  A - Analyte
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 739)
DER - Duplicate Error Ratio

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: 9901004-1 AS02038
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 2 Total, 2 Aliquot
Tracer: 9.085 DPM

DETECTOR: MCB 2 Input 4
Efficiency: 28.55%  Chem. Recovery: 35.94%
Total Eff.: 10.26%  Manual:100.00%
CALIBRATION: 3054.94 + 9.7609 * Chn keV
Original: 3054.94 + 9.65503 * Chn keV
File: C:\USER\ALPHA\ALPHA\C9011712.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 22-Jan-99 17:37:43
Live Time: 24000.00  Real Time: 24000.64 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\U100401.CHN
Background File: C:\USER\ALPHA\ALPHA\B9011612.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: U100401

## P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 176.30 | 155 | 184 | 8.00 | 63.00 | 3.60 | 619.40 | 1.55 |
| 2. | 137.39 | 124 | 154 | 8.00 | 12.00 | 2.00 | 129.00 | 0.32 |
| 3. | 116.90 | 82 | 123 | 8.00 | 554.00 | 2.80 | 6394.20 | 15.99 |
| Tracer | 232.09 | 213 | 238 | 8.00 | 42.00 | 11.20 | 372.80 | 0.93 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 78.087 | 4.0000 | 15.09 | 0.23 | 7.90 |
| 2. | U-235 | 0.55 | 4396.00 | 78.087 | 4.0000 | 3.14 | 0.19 | 17.41 |
| 3. | U-238 | 0.77 | 4196.00 | 78.087 | 4.0000 | 155.82 | 0.22 | 2.45 |
| Tracer | U-232 | 0.69 | 5320.30 | 78.087 | 4.0000 | 9.09 | 0.33 | 10.00 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 7757.0000 | 100.00 |
| Net Area | 7657.8000 | 98.72 |
| Background | 99.2000 | 1.28 |
| Composite Fit | 7535.0000 | 97.14 |
| Residuals | 122.8000 | 1.58 |

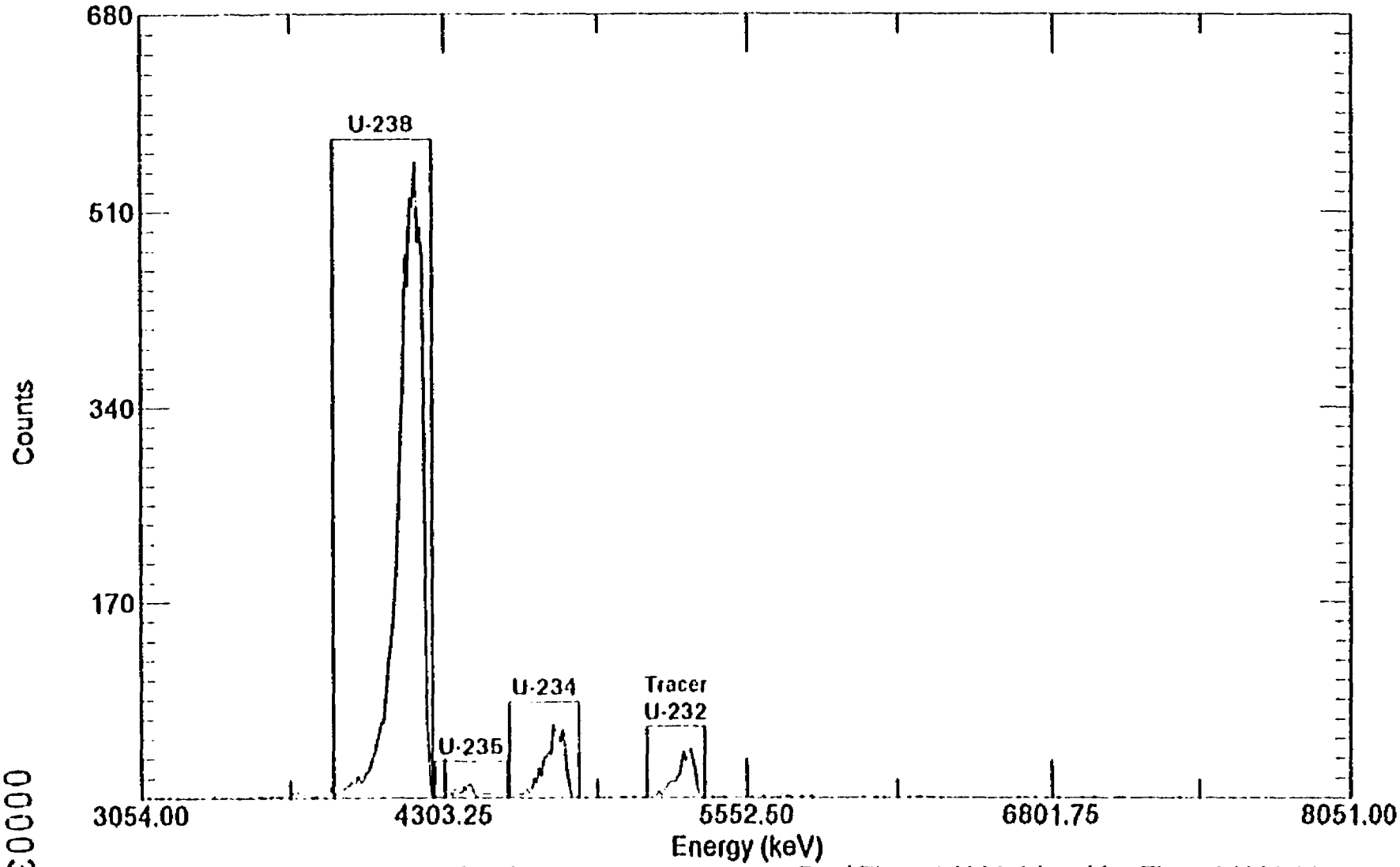
Analyzed By: [signature] ()

Checked By: BG ()

000031

103

U100401 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 17:37:43 on 22-Jan-99
File: C:\USER\ALPHA\ALPHA\U100401.CHN
Sample: 9901004-1 AS02038

Real Time: 24000.64 s, Live Time: 24000.00 s.
Detector: #12 MCB 2 Input 4
Type: Uranium

000032

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: 9901004-2 AS02038
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 2 Total, 2 Aliquot
Tracer: 9.085 DPM

DETECTOR: MCB 2 Input 5
Efficiency: 28.73%  Chem. Recovery: 50.76%
Total Eff.: 14.58%  Manual:100.00%
CALIBRATION: 3055.32 + 9.80836 * Chn keV
Original: 3055.32 + 9.73328 * Chn keV
File: C:\USER\ALPHA\ALPHA\C9011713.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 22-Jan-99 17:38:08
Live Time: 24000.00  Real Time: 24000.64 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\U100402.CHN
Background File: C:\USER\ALPHA\ALPHA\B9011613.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: U100402

P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 175.41 | 154 | 185 | 8.00 | 62.00 | 3.20 | 550.80 | 1.38 |
| 2. | 126.69 | 123 | 153 | 8.00 | 9.00 | 2.00 | 82.00 | 0.21 |
| 3. | 116.30 | 90 | 122 | 8.00 | 624.00 | 0.80 | 5625.20 | 14.06 |
| Tracer | 230.92 | 212 | 239 | 4.00 | 76.00 | 8.00 | 530.00 | 1.33 |

D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 78.467 | 4.0000 | 9.44 | 0.16 | 8.38 |
| 2. | U-235 | 0.55 | 4396.00 | 78.467 | 4.0000 | 1.41 | 0.14 | 21.95 |
| 3. | U-238 | 0.77 | 4196.00 | 78.467 | 4.0000 | 96.42 | 0.21 | 2.61 |
| Tracer | U-232 | 0.69 | 5320.30 | 39.233 | 2.0000 | 9.09 | 0.21 | 8.45 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 6992.0000 | 100.00 |
| Net Area | 6895.2000 | 98.62 |
| Background | 96.8000 | 1.38 |
| Composite Fit | 6802.0000 | 97.28 |
| Residuals | 93.2000 | 1.33 |

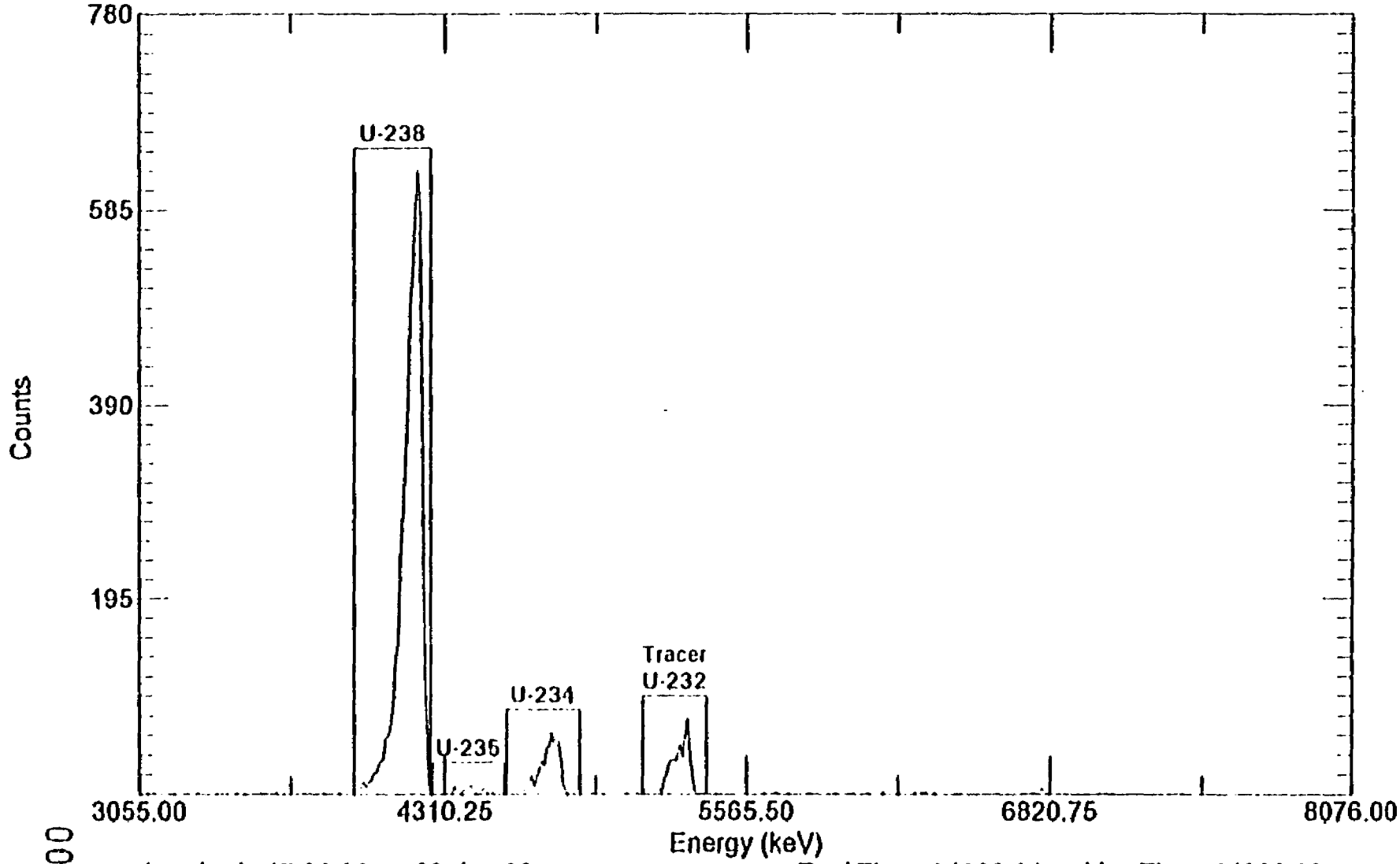
Analyzed By: G _____ ()

Checked By: BG _____ ()



105

U100402 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 17:38:08 on 22-Jan-99
File: C:\USER\ALPHA\ALPHA\U100402.CHN
Sample: 9901004-2 AS02038

Real Time: 24000.64 s. Live Time: 24000.00 s.
Detector: #13 MCB 2 Input 5
Type: Uranium

000034

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: 9901004-4 AS02038
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 2 Total, 2 Aliquot
Tracer: 9.085 DPM

DETECTOR: MCB 2 Input 7
Efficiency: 29.44%  Chem. Recovery: 70.86%
Total Eff.: 20.86%  Manual:100.00%
CALIBRATION: 3046.9 + 9.76618 * Chn keV
Original: 3046.9 + 9.67684 * Chn keV
File: C:\USER\ALPHA\ALPHA\C9011715.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 22-Jan-99 17:39:37
Live Time: 24000.00  Real Time: 24000.66 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\U100404.CHN
Background File: C:\USER\ALPHA\ALPHA\B9011615.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: U100404

## P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 177.03 | 156 | 185 | 6.00 | 41.00 | 2.40 | 302.60 | 0.76 |
| 2. | 138.14 | 124 | 155 | 2.00 | 2.00 | 1.60 | 15.40 | 0.04 |
| 3. | 117.66 | 97 | 123 | 8.00 | 42.00 | 0.40 | 368.60 | 0.92 |
| Tracer | 232.78 | 212 | 239 | 6.00 | 88.00 | 8.00 | 758.00 | 1.90 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 58.597 | 3.0000 | 3.63 | 0.10 | 11.32 |
| 2. | U-235 | 0.55 | 4396.00 | 19.532 | 1.0000 | 0.18 | 0.09 | 52.87 |
| 3. | U-238 | 0.77 | 4196.00 | 78.129 | 4.0000 | 4.42 | 0.07 | 10.22 |
| Tracer | U-232 | 0.69 | 5320.30 | 58.597 | 3.0000 | 9.09 | 0.15 | 7.08 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 1548.0000 | 100.00 |
| Net Area | 1471.6000 | 95.06 |
| Background | 76.4000 | 4.94 |
| Composite Fit | 1457.0000 | 94.12 |
| Residuals | 14.6000 | 0.94 |

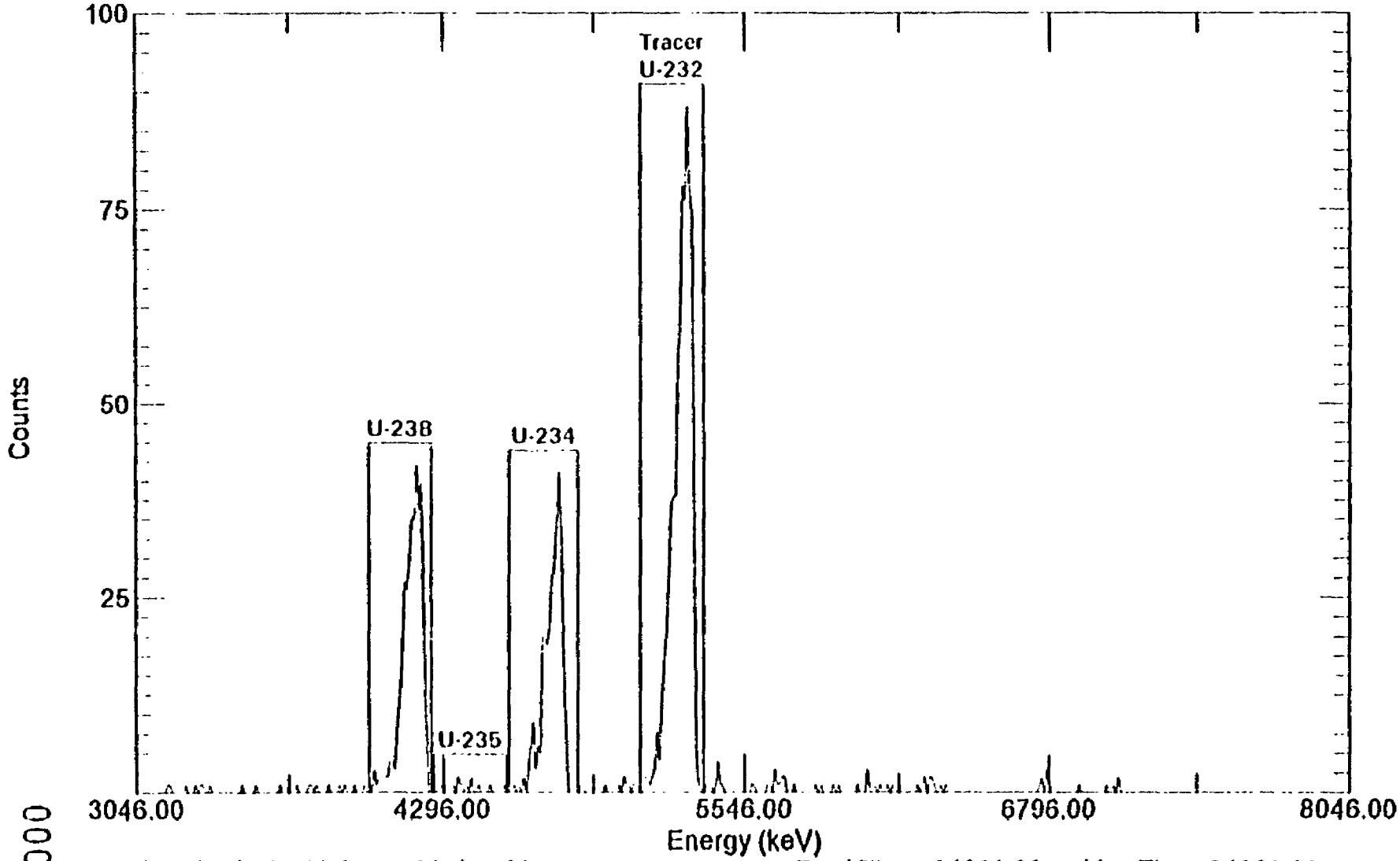
Analyzed By: _____ ()

Checked By: BG _____ ()



167

U100404 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 17:39:37 on 22-Jan-99
File: C:\USER\ALPHA\ALPHA\U100404.CHN
Sample: 9901004-4 AS02038

Real Time: 24000.66 s, Live Time: 24000.00 s.
Detector: #15 MCB 2 Input 7
Type: Uranium

000036

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: 9901004-5 AS02038
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 2 Total, 2 Aliquot
Tracer: 9.085 DPM

DETECTOR: MCB 2 Input 8
Efficiency: 30.64%  Chem. Recovery: 67.63%
Total Eff.: 20.73%  Manual:100.00%
CALIBRATION: 3070.92 + 9.83306 * Chn keV
Original: 3070.92 + 9.75482 * Chn keV
File: C:\USER\ALPHA\ALPHA\C9011716.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 22-Jan-99 17:39:59
Live Time: 24000.00  Real Time: 24000.64 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\U100405.CHN
Background File: C:\USER\ALPHA\ALPHA\B9011616.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: U100405

## P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 173.38 | 153 | 183 | 8.00 | 37.00 | 0.40 | 278.60 | 0.70 |
| 2. | 134.76 | 122 | 152 | 2.00 | 3.00 | 1.60 | 20.40 | 0.05 |
| 3. | 114.42 | 94 | 121 | 8.00 | 118.00 | 1.20 | 820.80 | 2.05 |
| Tracer | 228.76 | 209 | 237 | 6.00 | 89.00 | 10.80 | 753.20 | 1.88 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 78.664 | 4.0000 | 3.36 | 0.07 | 11.75 |
| 2. | U-235 | 0.55 | 4396.00 | 19.666 | 1.0000 | 0.25 | 0.09 | 45.33 |
| 3. | U-238 | 0.77 | 4196.00 | 78.664 | 4.0000 | 9.90 | 0.09 | 6.65 |
| Tracer | U-232 | 0.69 | 5320.30 | 58.998 | 3.0000 | 9.09 | 0.16 | 7.09 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 1968.0000 | 100.00 |
| Net Area | 1876.4000 | 95.35 |
| Background | 91.6000 | 4.65 |
| Composite Fit | 1887.0000 | 95.88 |
| Residuals | 10.6000 | 0.54 |

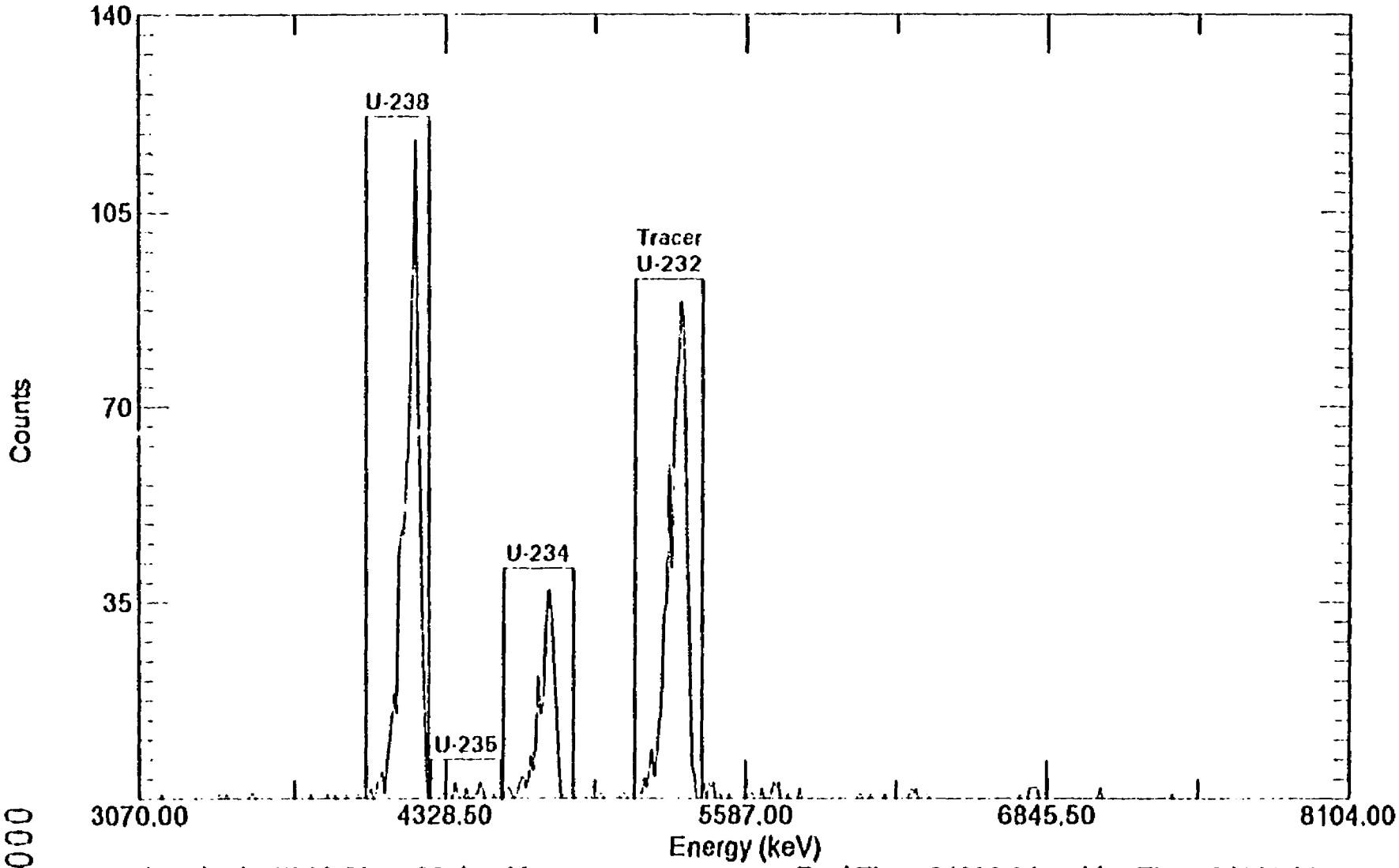
Analyzed By: (10) ()

Checked By: BG ()

000037

169

U100405 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 17:39:59 on 22-Jan-99
File: C:\USER\ALPHA\ALPHA\U100405.CHN
Sample: 9901004-5 AS02038

Real Time: 24000.64 s. Live Time: 24000.00 s.
Detector: #16 MCB 2 Input 8
Type: Uranium

0000038

76

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: 9901004-6 AC02038
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 2 Total, 2 Aliquot
Tracer: 9.085 DPM

DETECTOR: MCB 3 Input 1
Efficiency: 28.76%  Chem. Recovery: 32.42%
Total Eff.: 9.32%  Manual:100.00%
CALIBRATION: 3058.46 + 9.78043 * Chn keV
Original: 3058.46 + 9.6718 * Chn keV
File: C:\USER\ALPHA\ALPHA\C9011717.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 22-Jan-99 17:40:18
Live Time: 24000.00  Real Time: 24000.86 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\U100406.CHN
Background File: C:\USER\ALPHA\ALPHA\B9011617.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: U100406

## P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 175.59 | 155 | 186 | 6.00 | 136.00 | 0.30 | 1286.00 | 3.22 |
| 2. | 136.76 | 123 | 154 | 8.00 | 15.00 | 0.00 | 138.00 | 0.35 |
| 3. | 116.31 | 90 | 122 | 8.00 | 668.00 | 0.40 | 6304.60 | 15.76 |
| Tracer | 231.26 | 213 | 240 | 8.00 | 37.00 | 3.20 | 338.80 | 0.85 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 58.683 | 3.0000 | 34.48 | 0.10 | 5.47 |
| 2. | U-235 | 0.55 | 4396.00 | 78.243 | 4.0000 | 3.70 | 0.10 | 16.68 |
| 3. | U-238 | 0.77 | 4196.00 | 78.243 | 4.0000 | 169.06 | 0.15 | 2.47 |
| Tracer | U-232 | 0.69 | 5320.30 | 78.243 | 4.0000 | 9.09 | 0.24 | 10.60 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 8262.0000 | 100.00 |
| Net Area | 8207.2000 | 99.34 |
| Background | 54.8000 | 0.66 |
| Composite Fit | 8071.0000 | 97.69 |
| Residuals | 136.2000 | 1.65 |

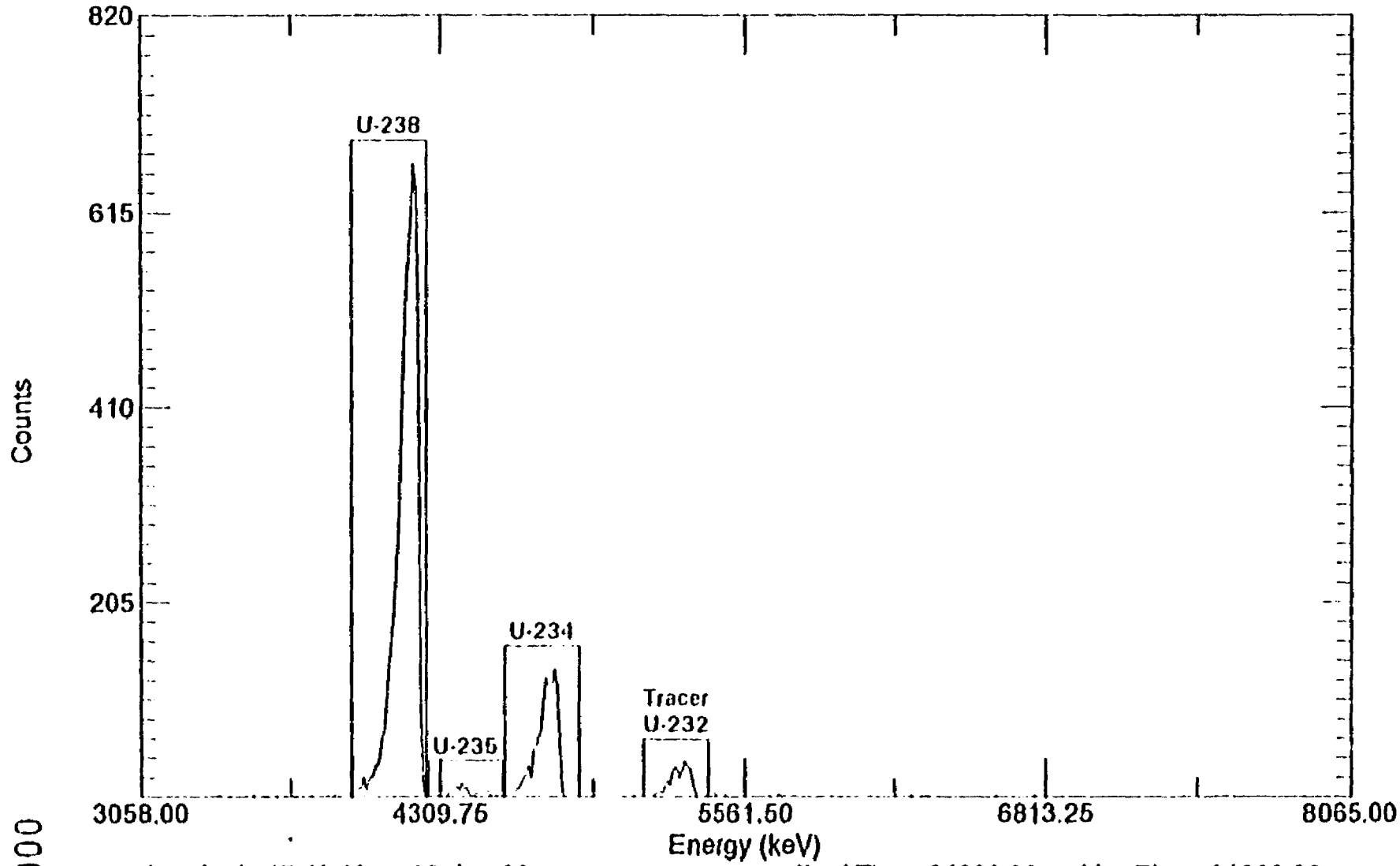
Analyzed By: KC ()

Checked By: RG ()

000039

171

U100406 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 17:40:18 on 22-Jan-99
File: C:\USER\ALPHA\ALPHA\U100406.CHN
Sample: 9901004-6 AS02038

Real Time: 24000.86 s, Live Time: 24000.00 s.
Detector: #17 MCB 3 Input 1
Type: Uranium

000040

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: 9901004-7 AS02038
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 2 Total, 2 Aliquot
Tracer: 9.085 DPM

DETECTOR: MCB 3 Input 3
Efficiency: 28.56%  Chem. Recovery: 37.40%
Total Eff.: 10.68%  Manual:100.00%
CALIBRATION: 3074.56 + 9.75127 * Chn keV
Original: 3074.56 + 9.69928 * Chn keV
File: C:\USER\ALPHA\ALPHA\C9011719.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 22-Jan-99 17:40:43
Live Time: 24000.00  Real Time: 24000.86 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\U100407.CHN
Background File: C:\USER\ALPHA\ALPHA\B9011619.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: U100407

## P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 174.46 | 152 | 183 | 8.00 | 133.00 | 2.80 | 1244.20 | 3.11 |
| 2. | 135.52 | 121 | 151 | 8.00 | 14.00 | 0.40 | 139.60 | 0.35 |
| 3. | 115.00 | 89 | 120 | 8.00 | 661.00 | 1.60 | 5933.40 | 14.83 |
| Tracer | 230.30 | 211 | 238 | 6.00 | 51.00 | 14.80 | 388.20 | 0.97 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 78.010 | 4.0000 | 29.22 | 0.20 | 5.56 |
| 2. | U-235 | 0.55 | 4396.00 | 78.010 | 4.0000 | 3.27 | 0.13 | 16.62 |
| 3. | U-238 | 0.77 | 4196.00 | 78.010 | 4.0000 | 138.86 | 0.28 | 2.54 |
| Tracer | U-232 | 0.69 | 5320.30 | 58.508 | 3.0000 | 9.09 | 0.35 | 9.76 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 7936.0000 | 100.00 |
| Net Area | 7828.4000 | 98.64 |
| Background | 107.6000 | 1.36 |
| Composite Fit | 7725.0000 | 97.34 |
| Residuals | 103.4000 | 1.30 |

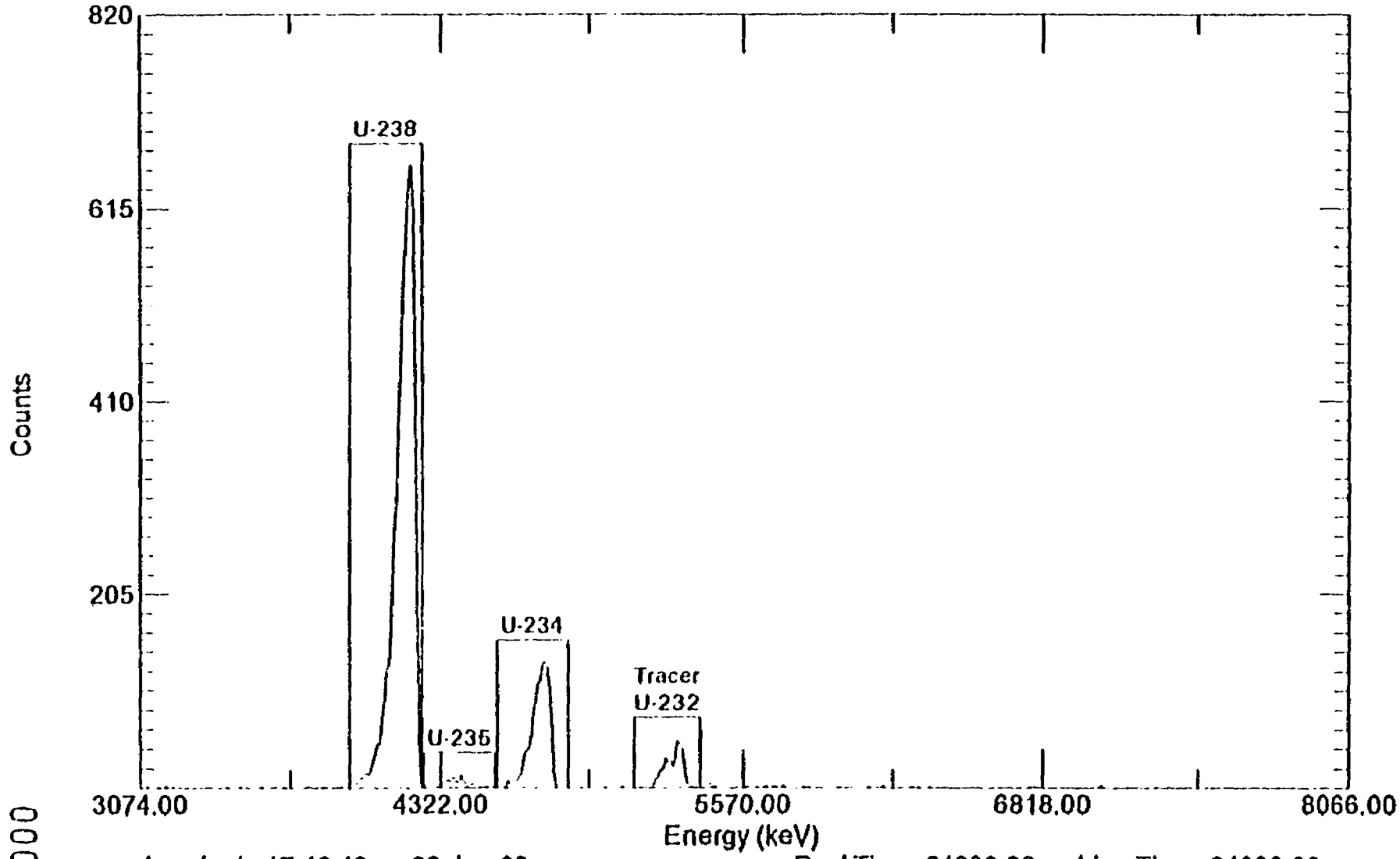
Analyzed By: 16 ()

Checked By: RG ()



173

U100407 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 17:40:43 on 22-Jan-99
File: C:\USER\ALPHA\ALPHA\U100407.CHN
Sample: 9901004-7 AS02038

Real Time: 24000.86 s. Live Time: 24000.00 s.
Detector: #19 MCB 3 Input 3
Type: Uranium

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: 9901004-9 AS02038
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 2 Total, 2 Aliquot
Tracer: 9.085 DPM

DETECTOR: MCB 3 Input 5
Efficiency: 28.34%  Chem. Recovery: 82.50%
Total Eff.: 23.38%  Manual:100.00%
CALIBRATION: 3059.71 + 9.73123 * Chn keV
Original: 3059.71 + 9.6549 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011721.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 22-Jan-99 17:41:43
Live Time: 24000.00  Real Time: 24000.84 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\U100409.CHN
Background File: C:\USER\ALPHA\BKGND\B9011621.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: U100409

P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 176.35 | 153 | 184 | 8.00 | 42.00 | 2.80 | 322.20 | 0.81 |
| 2. | 137.32 | 122 | 152 | 4.00 | 7.00 | 0.40 | 33.60 | 0.08 |
| 3. | 116.77 | 95 | 121 | 8.00 | 94.00 | 0.80 | 742.20 | 1.86 |
| Tracer | 232.30 | 211 | 238 | 6.00 | 103.00 | 10.40 | 849.60 | 2.12 |

D E C A Y  C O R R E C T E D  R E S U L T S

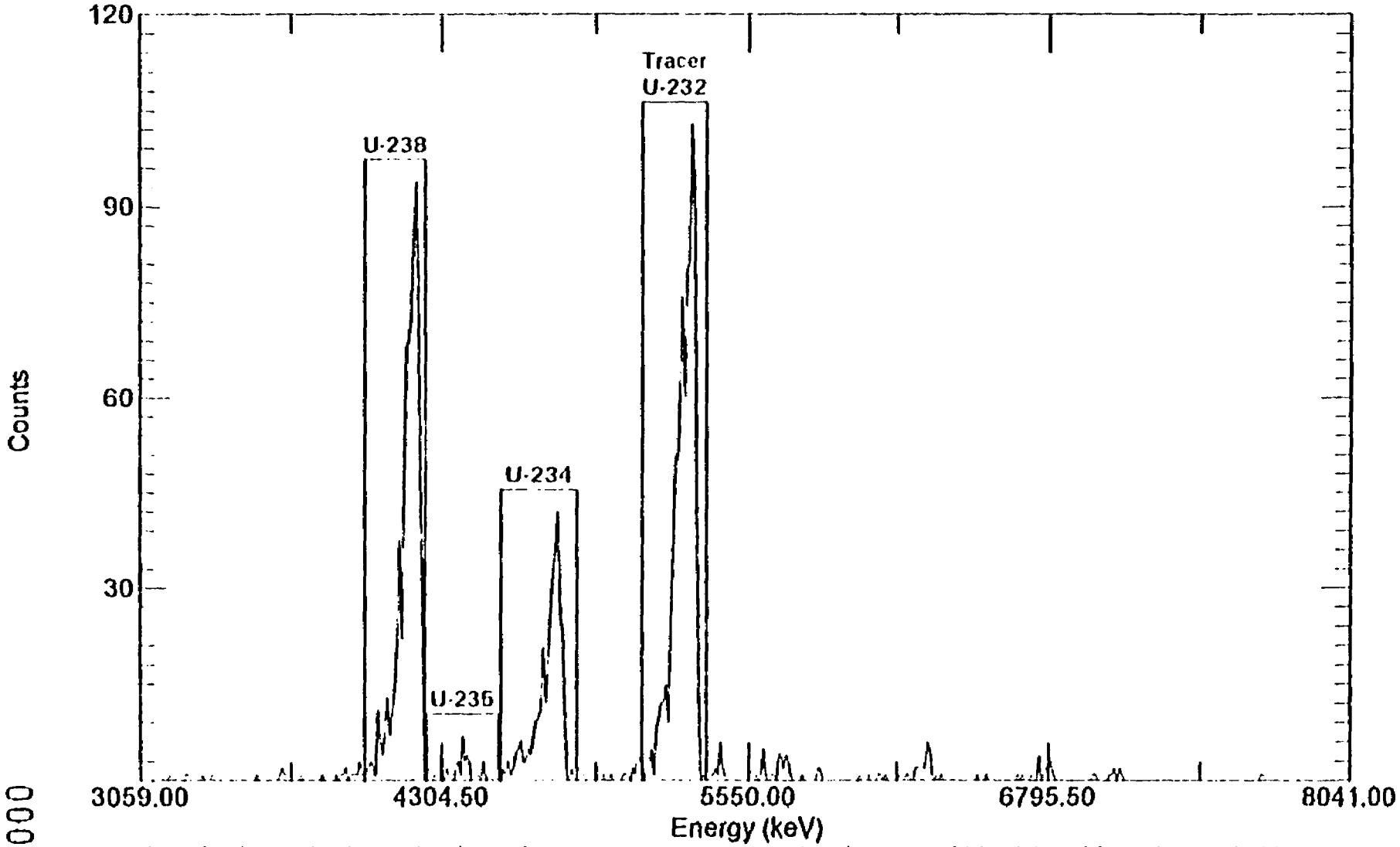
| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 77.850 | 4.0000 | 3.45 | 0.09 | 10.97 |
| 2. | U-235 | 0.55 | 4396.00 | 38.925 | 2.0000 | 0.36 | 0.06 | 34.05 |
| 3. | U-238 | 0.77 | 4196.00 | 77.850 | 4.0000 | 7.95 | 0.07 | 7.19 |
| Tracer | U-232 | 0.69 | 5320.30 | 58.387 | 3.0000 | 9.09 | 0.14 | 6.68 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 2118.0000 | 100.00 |
| Net Area | 1996.4000 | 94.26 |
| Background | 121.6000 | 5.74 |
| Composite Fit | 1963.0000 | 92.68 |
| Residuals | 33.4000 | 1.58 |

Analyzed By: G ()

Checked By: BG ()

U100409 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 17:41:43 on 22-Jan-99
File: C:\USER\ALPHA\ALPHA\U100409.CHN
Sample: 9901004-9 AS02038

Real Time: 24000.84 s. Live Time: 24000.00 s.
Detector: #21 MCB 3 Input 5
Type: Uranium

000044

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: 9901004-10 AS02038
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 2 Total, 2 Aliquot
Tracer: 9.085 DPM

DETECTOR: MCB 3 Input 6
Efficiency: 28.55%  Chem. Recovery: 79.38%
Total Eff.: 22.66%  Manual:100.00%
CALIBRATION: 3065.56 + 9.71788 * Chn keV
Original: 3065.56 + 9.6558 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011722.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 22-Jan-99 17:42:05
Live Time: 24000.00  Real Time: 24000.86 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\U100410.CHN
Background File: C:\USER\ALPHA\BKGND\B9011622.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: U100410

P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 175.99 | 153 | 184 | 6.00 | 64.00 | 3.60 | 563.40 | 1.41 |
| 2. | 136.91 | 122 | 152 | 8.00 | 3.00 | 0.40 | 37.60 | 0.09 |
| 3. | 116.33 | 94 | 121 | 8.00 | 184.00 | 0.80 | 1631.20 | 4.08 |
| Tracer | 232.02 | 211 | 238 | 6.00 | 102.00 | 12.40 | 823.60 | 2.06 |

D E C A Y  C O R R E C T E D  R E S U L T S

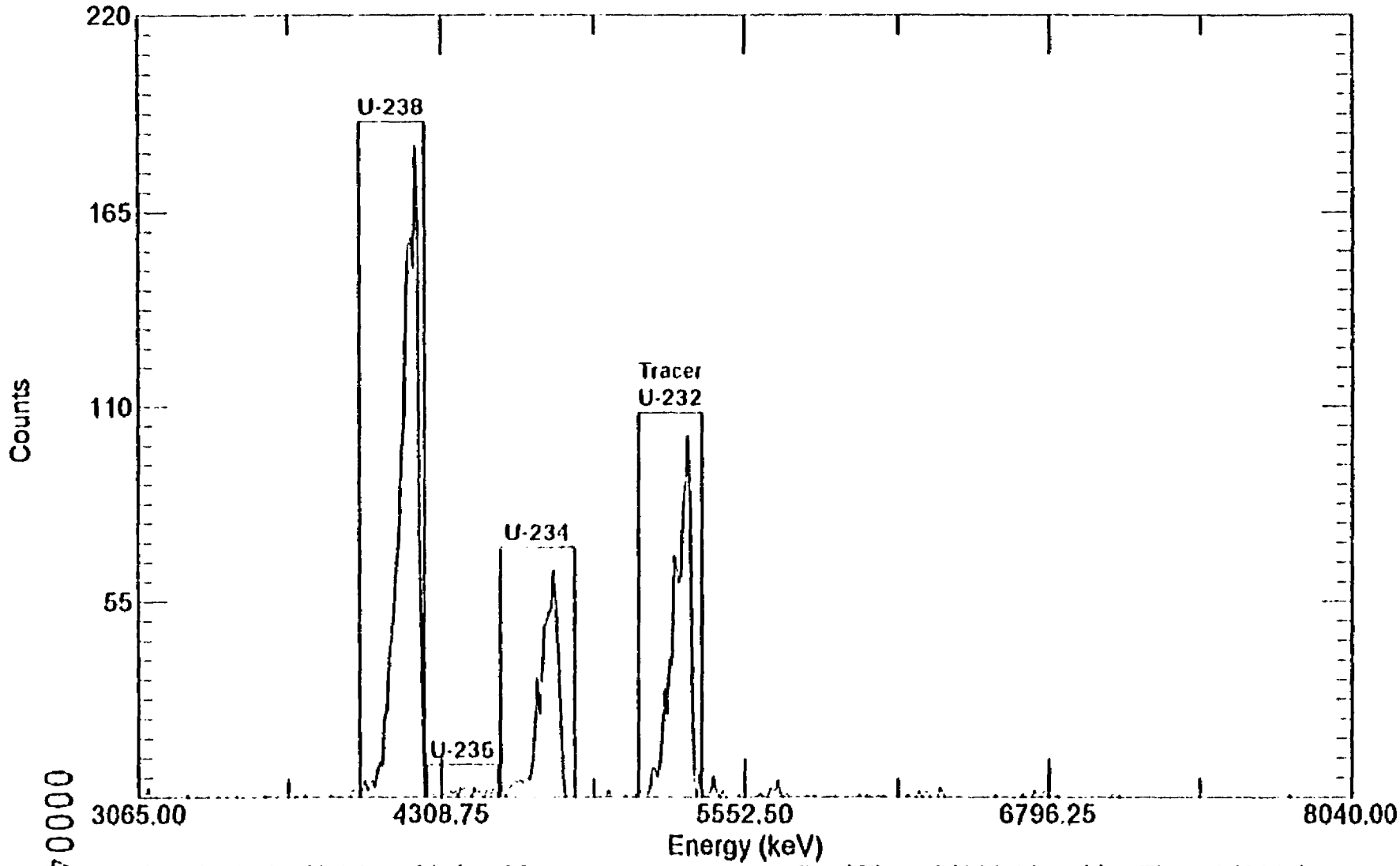
| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 58.307 | 3.0000 | 6.21 | 0.10 | 8.29 |
| 2. | U-235 | 0.55 | 4396.00 | 77.743 | 4.0000 | 0.41 | 0.06 | 32.16 |
| 3. | U-238 | 0.77 | 4196.00 | 77.743 | 4.0000 | 17.99 | 0.07 | 4.85 |
| Tracer | U-232 | 0.69 | 5320.30 | 58.307 | 3.0000 | 9.09 | 0.16 | 6.78 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 3184.0000 | 100.00 |
| Net Area | 3071.6000 | 96.47 |
| Background | 112.4000 | 3.53 |
| Composite Fit | 3073.0000 | 96.51 |
| Residuals | 1.4000 | 0.04 |

Analyzed By: [illegible] ()

Checked By: BG ()

U100410 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 17:42:05 on 22-Jan-99
File: C:\USER\ALPHA\ALPHA\U100410.CHN
Sample: 9901004-10 AS02038

Real Time: 24000.86 s, Live Time: 24000.00 s.
Detector: #22 MCB 3 Input 6
Type: Uranium

0000046

78

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: 9901004-10-D1 AS02038
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 2 Total, 2 Aliquot
Tracer: 9.085 DPM

DETECTOR: MCB 3 Input 8
Efficiency: 30.26%  Chem. Recovery: 76.83%
Total Eff.: 23.25%  Manual:100.00%
CALIBRATION: 3071.74 + 9.4318 * Chn keV
Original: 3071.74 + 9.69973 * Chn keV
File: C:\USER\ALPHA\ALPHA\C9011724.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 22-Jan-99 17:42:34
Live Time: 24000.00  Real Time: 24000.86 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\U100410D.CHN
Background File: C:\USER\ALPHA\ALPHA\B9011624.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: U100410D

P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 180.67 | 161 | 187 | 2.00 | 51.00 | 1.20 | 384.80 | 0.96 |
| 2. | 140.40 | 127 | 160 | 2.00 | 4.00 | 1.60 | 21.40 | 0.05 |
| 3. | 119.20 | 96 | 126 | 14.00 | 77.00 | 0.80 | 749.20 | 1.87 |
| Tracer | 238.40 | 214 | 243 | 8.00 | 80.00 | 15.20 | 844.80 | 2.11 |

D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 18.864 | 1.0000 | 4.14 | 0.08 | 10.01 |
| 2. | U-235 | 0.55 | 4396.00 | 18.864 | 1.0000 | 0.23 | 0.08 | 44.17 |
| 3. | U-238 | 0.77 | 4196.00 | 132.045 | 7.0000 | 8.06 | 0.07 | 7.17 |
| Tracer | U-232 | 0.69 | 5320.30 | 75.454 | 4.0000 | 9.09 | 0.16 | 6.68 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 2157.0000 | 100.00 |
| Net Area | 2072.2000 | 96.07 |
| Background | 84.8000 | 3.93 |
| Composite Fit | 2019.0000 | 93.60 |
| Residuals | 53.2000 | 2.47 |

Analyzed By: KL ()

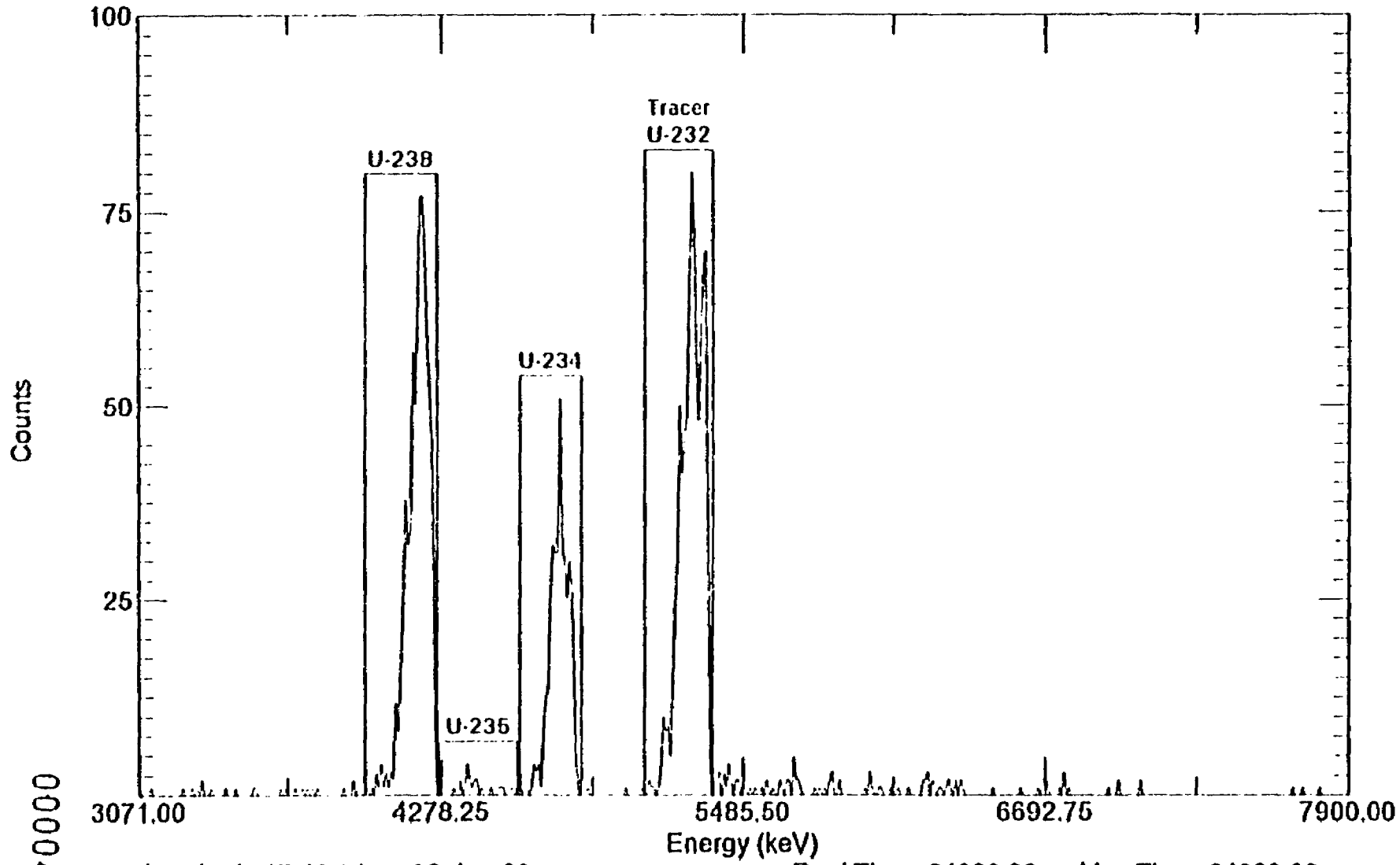
Checked By: RG ()

000047

179

U100410D

AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 17:42:34 on 22-Jan-99
File: C:\USER\ALPHA\ALPHA\U100410D.CHN
Sample: 9901004-10-D1 AS02038

Real Time: 24000.86 s, Live Time: 24000.00 s.
Detector: #24 MCB 3 Input 8
Type: Uranium

000048

80

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: AS02038BLK1 AS02038
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 2 Total, 2 Aliquot
Tracer: 9.085 DPM

DETECTOR: MCB 2 Input 7
Efficiency: 29.44%  Chem. Recovery: 82.62%
Total Eff.: 24.32%  Manual:100.00%
CALIBRATION: 3046.9 + 9.76099 * Chn keV
Original: 3046.9 + 9.67684 * Chn keV
File: C:\USER\ALPHA\ALPHA\C9011715.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 23-Jan-99 18:22:42
Live Time: 24000.00  Real Time: 24000.28 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\U02038B1.CHN
Background File: C:\USER\ALPHA\ALPHA\B9011615.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: U02038B1

## P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 177.12 | 156 | 187 | 2.00 | 2.00 | 2.40 | 5.60 | 0.01 |
| 2. | 138.21 | 124 | 155 | 2.00 | 1.00 | 1.60 | 1.40 | 0.00 |
| 3. | 117.72 | 97 | 123 | 2.00 | 4.00 | 0.40 | 19.60 | 0.05 |
| Tracer | 232.91 | 209 | 238 | 6.00 | 115.00 | 7.20 | 883.80 | 2.21 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 19.522 | 1.0000 | 0.06 | 0.09 | 101.34 |
| 2. | U-235 | 0.55 | 4396.00 | 19.522 | 1.0000 | 0.01 | 0.08 | 252.62 |
| 3. | U-238 | 0.77 | 4196.00 | 19.522 | 1.0000 | 0.20 | 0.06 | 44.79 |
| Tracer | U-232 | 0.69 | 5320.30 | 58.566 | 3.0000 | 9.09 | 0.12 | 6.57 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 998.0000 | 100.00 |
| Net Area | 921.6000 | 92.34 |
| Background | 76.4000 | 7.66 |
| Composite Fit | 922.0000 | 92.38 |
| Residuals | 0.4000 | 0.04 |

Analyzed By: KC ()

Checked By: BG ()

000049

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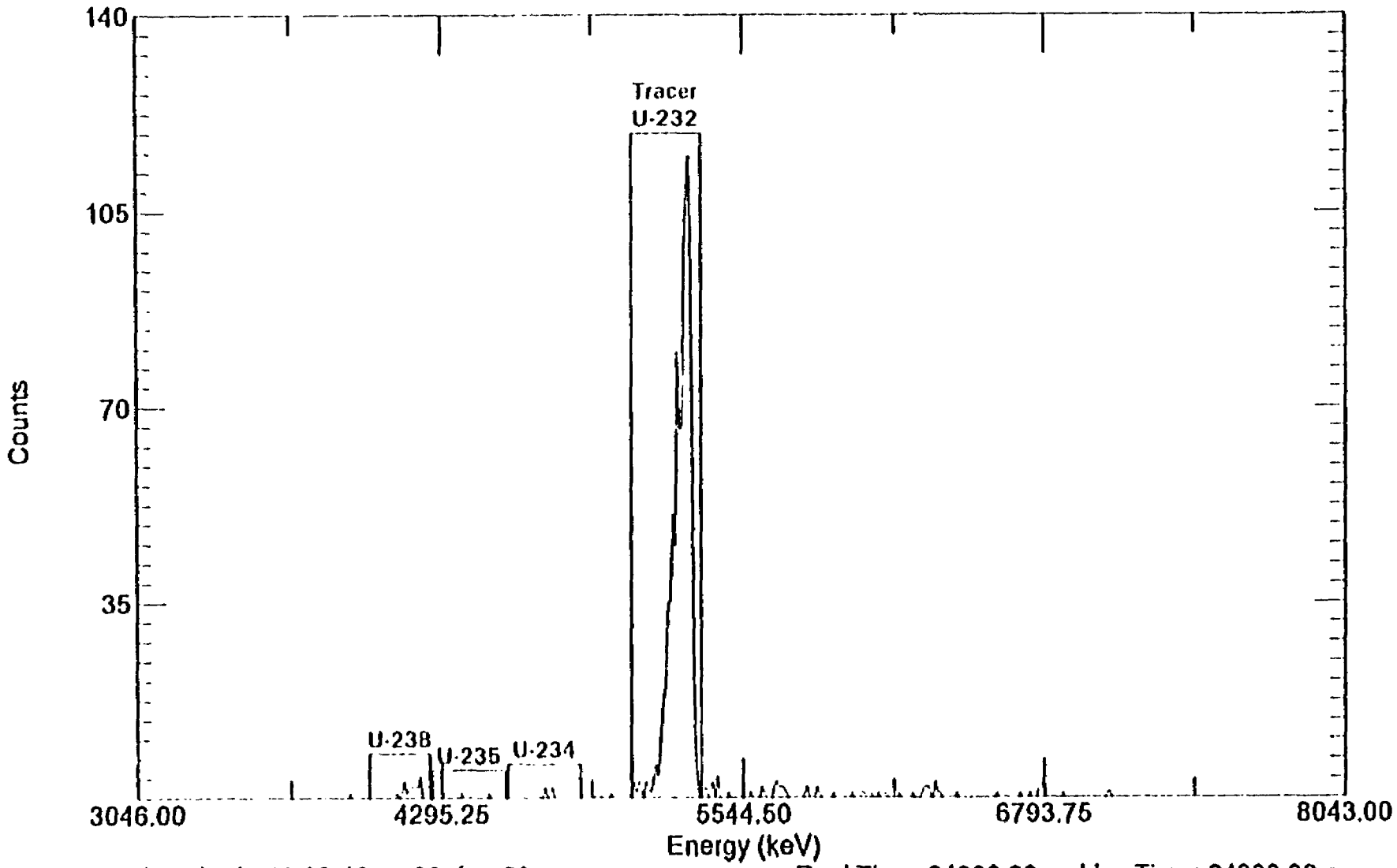
U02038B1 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 18:22:42 on 23-Jan-99
File: C:\USER\ALPHA\ALPHA\U02038B1.CHN
Sample: AS02038BLK1 AS02038

Real Time: 24000.28 s. Live Time: 24000.00 s.
Detector: #15 MCB 2 Input 7
Type: Uranium

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: AS02038LCS1 AS02038
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 2 Total, 2 Aliquot
Tracer: 9.085 DPM

DETECTOR: MCB 2 Input 8
Efficiency: 30.64%  Chem. Recovery: 70.06%
Total Eff.: 21.47%  Manual:100.00%
CALIBRATION: 3070.92 + 9.82474 * Chn keV
Original: 3070.92 + 9.75482 * Chn keV
File: C:\USER\ALPHA\ALPHA\C9011716.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 23-Jan-99 18:23:09
Live Time: 24000.00  Real Time: 24000.30 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\U02038S1.CHN
Background File: C:\USER\ALPHA\ALPHA\B9011616.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: U02038S1

## P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 173.53 | 153 | 183 | 6.00 | 113.00 | 0.40 | 928.60 | 2.32 |
| 2. | 134.87 | 122 | 152 | 2.00 | 7.00 | 1.60 | 46.40 | 0.12 |
| 3. | 114.51 | 93 | 121 | 8.00 | 134.00 | 1.20 | 966.80 | 2.42 |
| Tracer | 228.95 | 208 | 237 | 6.00 | 103.00 | 10.80 | 780.20 | 1.95 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 58.948 | 3.0000 | 10.81 | 0.07 | 6.43 |
| 2. | U-235 | 0.55 | 4396.00 | 19.649 | 1.0000 | 0.54 | 0.09 | 29.34 |
| 3. | U-238 | 0.77 | 4196.00 | 78.598 | 4.0000 | 11.26 | 0.08 | 6.32 |
| Tracer | U-232 | 0.69 | 5320.30 | 58.948 | 3.0000 | 9.09 | 0.16 | 6.97 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 2839.0000 | 100.00 |
| Net Area | 2747.4000 | 96.77 |
| Background | 91.6000 | 3.23 |
| Composite Fit | 2736.0000 | 96.37 |
| Residuals | 11.4000 | 0.40 |

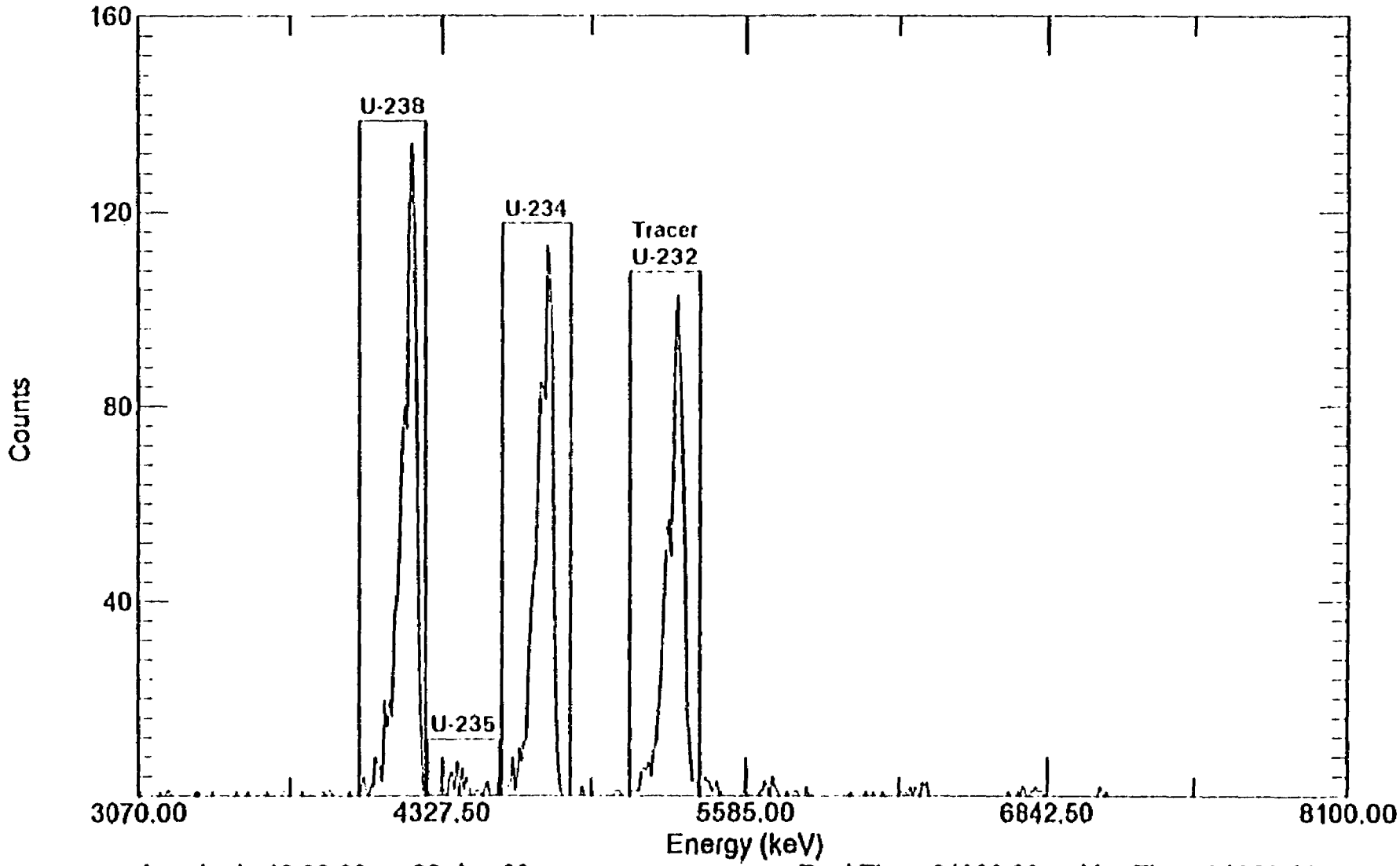
Analyzed By: (G) _____ ()

Checked By: BG _____ ()

000050

183

U02038S1 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 18:23:09 on 23-Jan-99
File: C:\USER\ALPHA\ALPHA\U02038S1.CHN
Sample: AS02038LCS1 AS02038

Real Time: 24000.30 s. Live Time: 24000.00 s.
Detector: #16 MCB 2 Input 8
Type: Uranium

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: 9901004-3 AS02078
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 0.1 Total, 0.1 Aliquot
Tracer: 10.3725 DPM

DETECTOR: MCB 3 Input 3
Efficiency: 28.70%  Chem. Recovery: 60.68%
Total Eff.: 17.42%  Manual:100.00%
CALIBRATION: 3074.23 + 9.75309 * Chn keV
Original: 3074.23 + 9.6966 * Chn keV
File: C:\USER\ALPHA\CALIB\C9012519.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 28-Jan-99 18:27:55
Live Time: 24000.00  Real Time: 24000.50 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\UX100403.CHN
Background File: C:\USER\ALPHA\BKGND\B9012519.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: UX100403

## P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 174.46 | 151 | 182 | 8.00 | 38.00 | 3.60 | 330.40 | 0.83 |
| 2. | 135.52 | 121 | 150 | 4.00 | 11.00 | 1.20 | 63.80 | 0.16 |
| 3. | 115.02 | 93 | 120 | 8.00 | 527.00 | 1.20 | 4175.80 | 10.44 |
| Tracer | 230.29 | 209 | 236 | 6.00 | 86.00 | 10.40 | 722.60 | 1.81 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 78.025 | 4.0000 | 4.74 | 0.14 | 10.85 |
| 2. | U-235 | 0.55 | 4396.00 | 39.012 | 2.0000 | 0.92 | 0.10 | 24.80 |
| 3. | U-238 | 0.77 | 4196.00 | 78.025 | 4.0000 | 59.94 | 0.10 | 3.03 |
| Tracer | U-232 | 0.69 | 5320.30 | 58.519 | 3.0000 | 10.37 | 0.19 | 7.24 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 5481.0000 | 100.00 |
| Net Area | 5334.2000 | 97.32 |
| Background | 146.8000 | 2.68 |
| Composite Fit | 5309.0000 | 96.86 |
| Residuals | 25.2000 | 0.46 |

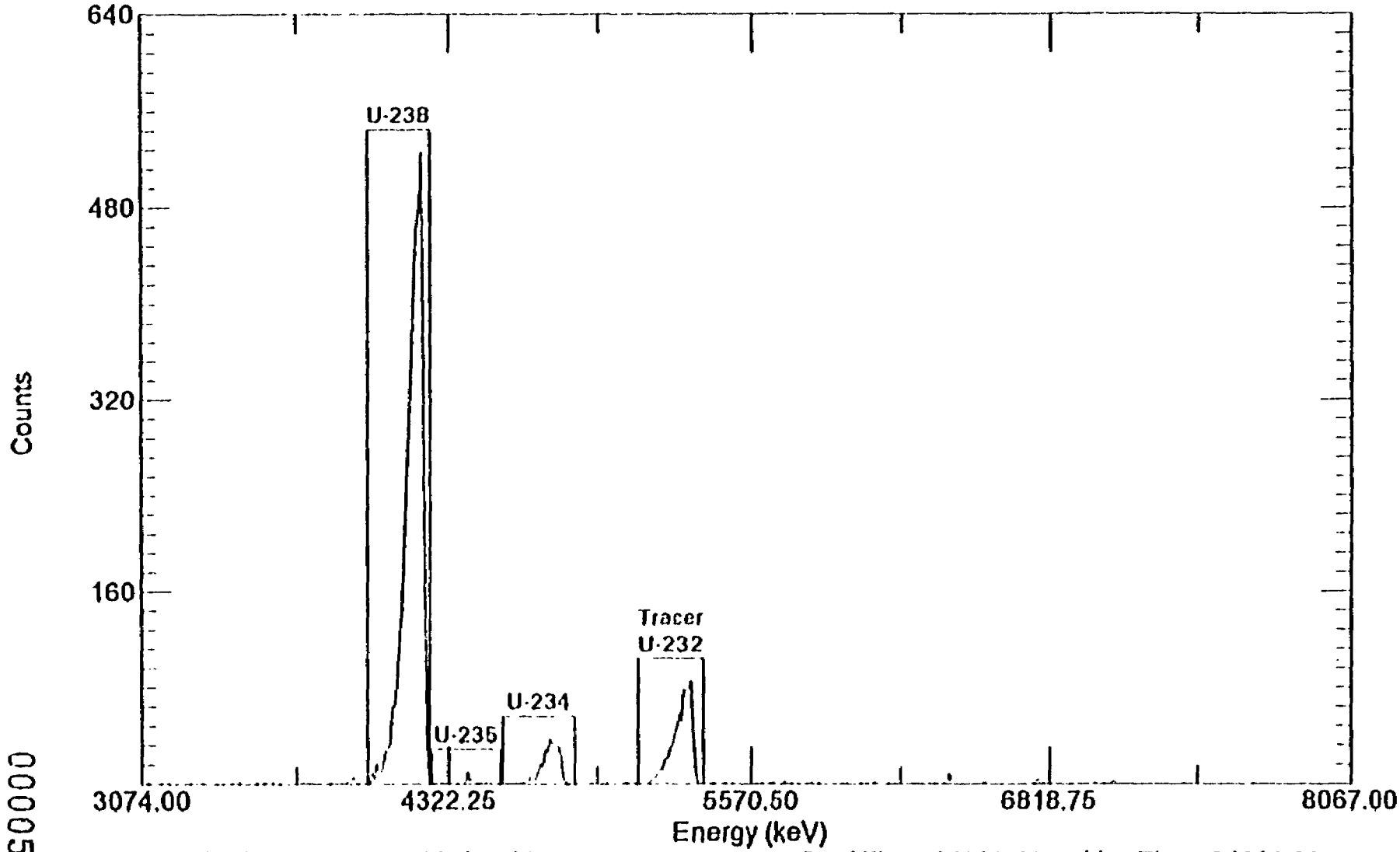
Analyzed By: _____ ()

Checked By: BG _____ ()



185

UX100403 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 18:27:55 on 28-Jan-99
File: C:\USER\ALPHA\ALPHA\UX100403.CHN
Sample: 9901004-3 AS02078

Real Time: 24000.50 s, Live Time: 24000.00 s.
Detector: #19 MCB 3 Input 3
Type: Uranium

000052

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# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: 9901004-8 AS02078
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 0.1 Total, 0.1 Aliquot
Tracer: 10.3725 DPM

DETECTOR: MCB 3 Input 4
Efficiency: 27.29%  Chem. Recovery: 59.33%
Total Eff.: 16.19%  Manual:100.00%
CALIBRATION: 3064.01 + 9.73419 * Chn keV
Original: 3064.01 + 9.6789 * Chn keV
File: C:\USER\ALPHA\CALIB\C9012520.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 28-Jan-99 18:28:30
Live Time: 24000.00  Real Time: 24000.48 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\UX100408.CHN
Background File: C:\USER\ALPHA\BKGND\B9012520.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: UX100408

P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 175.85 | 154 | 185 | 6.00 | 19.00 | 1.60 | 134.40 | 0.34 |
| 2. | 136.84 | 123 | 153 | 2.00 | 4.00 | 1.60 | 8.40 | 0.02 |
| 3. | 116.29 | 95 | 122 | 8.00 | 81.00 | 2.40 | 532.60 | 1.33 |
| Tracer | 231.79 | 213 | 238 | 6.00 | 89.00 | 11.20 | 671.80 | 1.68 |

D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 58.405 | 3.0000 | 2.08 | 0.12 | 17.02 |
| 2. | U-235 | 0.55 | 4396.00 | 19.468 | 1.0000 | 0.13 | 0.12 | 74.72 |
| 3. | U-238 | 0.77 | 4196.00 | 77.874 | 4.0000 | 8.22 | 0.13 | 8.52 |
| Tracer | U-232 | 0.69 | 5320.30 | 58.405 | 3.0000 | 10.37 | 0.21 | 7.50 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 1509.0000 | 100.00 |
| Net Area | 1373.0000 | 90.99 |
| Background | 136.0000 | 9.01 |
| Composite Fit | 1364.0000 | 90.39 |
| Residuals | 9.0000 | 0.60 |

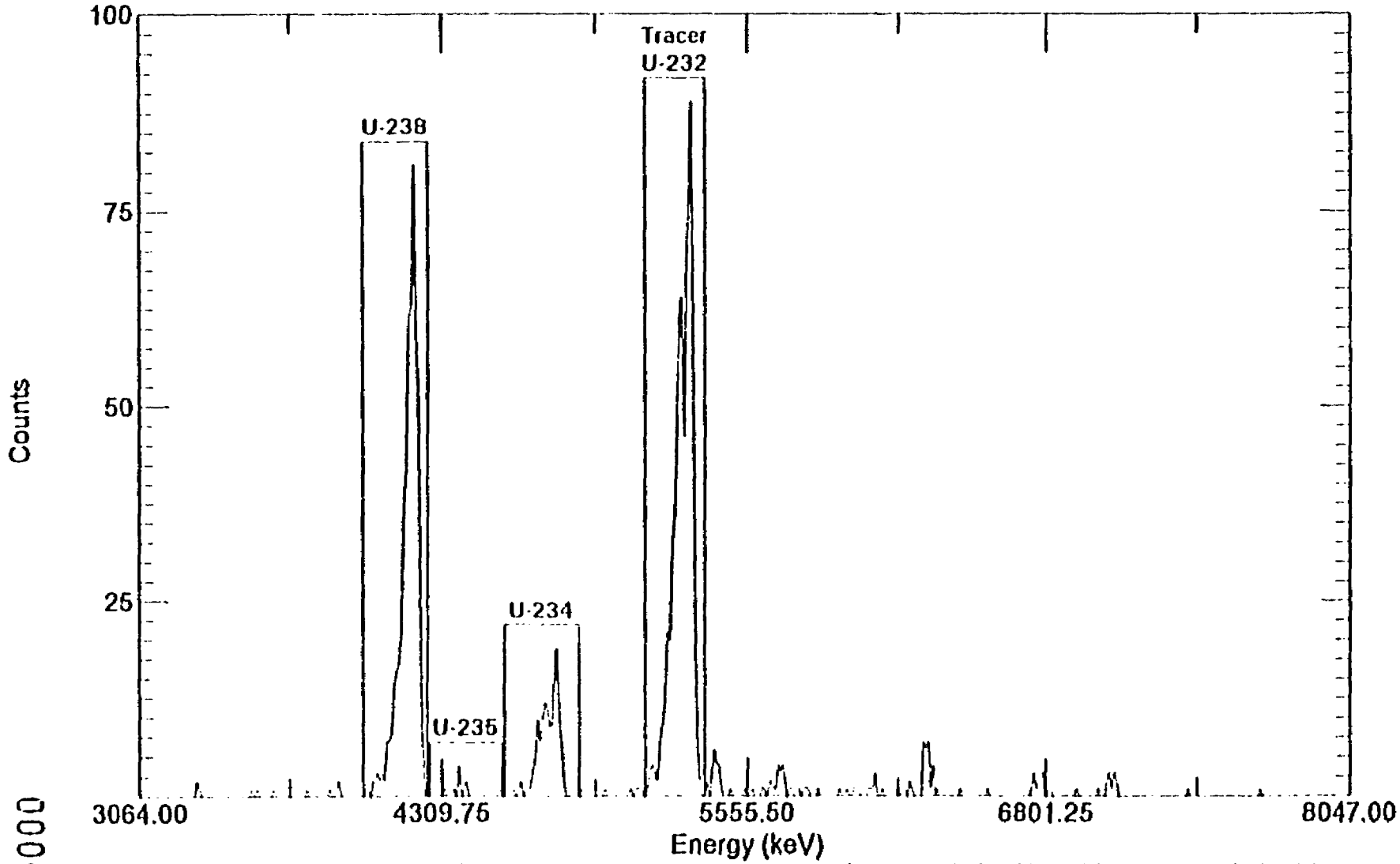
Analyzed By: [illegible] ()

Checked By: BG ()

000053

187

UX100408 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 18:28:30 on 28-Jan-99
File: C:\USER\ALPHA\ALPHA\UX100408.CHN
Sample: 9901004-8 AS02078

Real Time: 24000.48 s. Live Time: 24000.00 s.
Detector: #20 MCB 3 Input 4
Type: Uranium

000054

38

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: 9901004-8-D1 AS02078
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 0.1 Total, 0.1 Aliquot
Tracer: 10.3725 DPM

DETECTOR: MCB 3 Input 5
Efficiency: 28.58%  Chem. Recovery: 61.44%
Total Eff.: 17.56%  Manual:100.00%
CALIBRATION: 3060.64 + 9.73127 * Chn keV
Original: 3060.64 + 9.6615 * Chn keV
File: C:\USER\ALPHA\CALIB\C9012521.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 28-Jan-99 18:29:12
Live Time: 24000.00  Real Time: 24000.48 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\UX1004D1.CHN
Background File: C:\USER\ALPHA\BKGND\B9012521.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: UX1004D1

P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 176.25 | 153 | 184 | 6.00 | 77.00 | 1.60 | 560.40 | 1.40 |
| 2. | 137.22 | 122 | 152 | 4.00 | 5.00 | 1.20 | 48.80 | 0.12 |
| 3. | 116.67 | 95 | 121 | 8.00 | 207.00 | 2.00 | 1683.00 | 4.21 |
| Tracer | 232.21 | 211 | 238 | 6.00 | 97.00 | 12.40 | 728.60 | 1.82 |

D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 58.388 | 3.0000 | 7.98 | 0.11 | 8.29 |
| 2. | U-235 | 0.55 | 4396.00 | 38.925 | 2.0000 | 0.69 | 0.10 | 28.45 |
| 3. | U-238 | 0.77 | 4196.00 | 77.850 | 4.0000 | 23.96 | 0.11 | 4.78 |
| Tracer | U-232 | 0.69 | 5320.30 | 58.388 | 3.0000 | 10.37 | 0.20 | 7.20 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 3204.0000 | 100.00 |
| Net Area | 3045.2000 | 95.04 |
| Background | 158.8000 | 4.96 |
| Composite Fit | 3038.0000 | 94.82 |
| Residuals | 7.2000 | 0.22 |

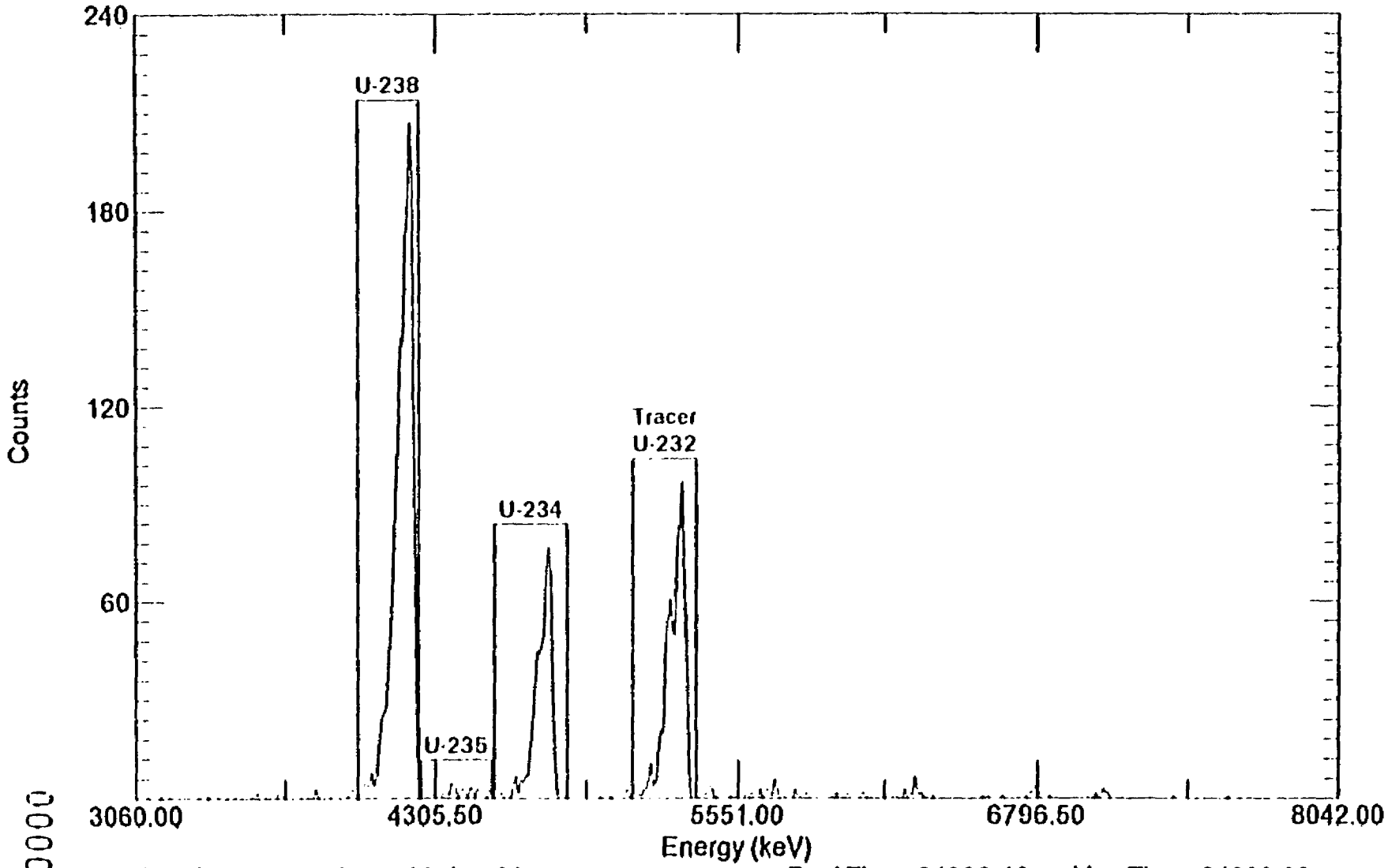
Analyzed By: KC ()

Checked By: BG ()

000055

189

UX1004D1 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 18:29:12 on 28-Jan-99
File: C:\USER\ALPHA\ALPHA\UX1004D1.CHN
Sample: 9901004-8-D1 AS02078

Real Time: 24000.48 s. Live Time: 24000.00 s.
Detector: #21 MCB 3 Input 5
Type: Uranium

000056

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: AS02078BLK1 AS02078
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 0.1 Total, 0.1 Aliquot
Tracer: 10.3725 DPM

DETECTOR: MCB 3 Input 6
Efficiency: 28.25%  Chem. Recovery: 64.65%
Total Eff.: 18.26%  Manual:100.00%
CALIBRATION: 3065.75 + 9.70751 * Chn keV
Original: 3065.75 + 9.6508 * Chn keV
File: C:\USER\ALPHA\CALIB\C9012522.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 28-Jan-99 18:29:37
Live Time: 24000.00  Real Time: 24000.50 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\U02078B1.CHN
Background File: C:\USER\ALPHA\BKGND\B9012522.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: U02078B1

## P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 176.16 | 154 | 185 | 2.00 | 2.00 | 0.80 | 3.20 | 0.01 |
| 2. | 137.03 | 123 | 153 | 4.00 | 1.00 | 0.80 | 4.20 | 0.01 |
| 3. | 116.43 | 95 | 122 | 2.00 | 1.00 | 0.40 | 3.60 | 0.01 |
| Tracer | 232.25 | 211 | 240 | 6.00 | 90.00 | 7.20 | 757.80 | 1.89 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 19.415 | 1.0000 | 0.04 | 0.09 | 124.44 |
| 2. | U-235 | 0.55 | 4396.00 | 38.830 | 2.0000 | 0.06 | 0.09 | 105.68 |
| 3. | U-238 | 0.77 | 4196.00 | 19.415 | 1.0000 | 0.05 | 0.08 | 109.76 |
| Tracer | U-232 | 0.69 | 5320.30 | 58.245 | 3.0000 | 10.37 | 0.16 | 7.09 |

| TOTALS | | % Recovery |
|---|---|---|
| Gross Count | 917.0000 | 100.00 |
| Net Area | 805.8000 | 87.87 |
| Background | 111.2000 | 12.13 |
| Composite Fit | 778.0000 | 84.84 |
| Residuals | 27.8000 | 3.03 |

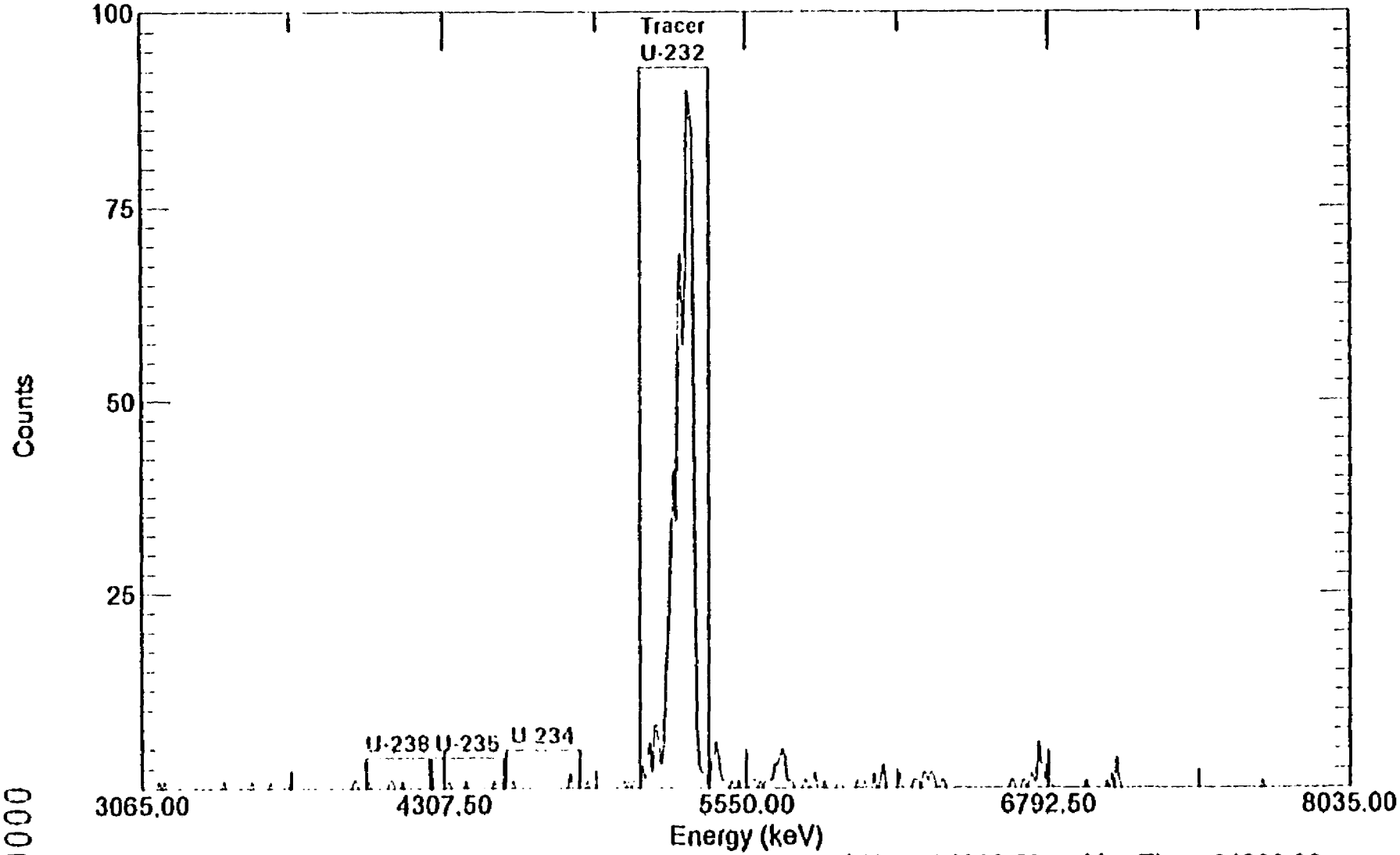
Analyzed By: _____ ()

Checked By: RG _____ ()

000057

191

U02078B1 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 18:29:37 on 28-Jan-99
File: C:\USER\ALPHA\ALPHA\U02078B1.CHN
Sample: AS02078BLK1 AS02078

Real Time: 24000.50 s. Live Time: 24000.00 s.
Detector: #22 MCB 3 Input 6
Type: Uranium

000038

192

# A L P H A V I S I O N  S P E C T R A L  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: AS02078LCS1 AS02078
Type: Uranium  Sample Collected: 16-Feb-96 08:26:33
Volume: 0.1 Total, 0.1 Aliquot
Tracer: 10.3725 DPM

DETECTOR: MCB 3 Input 8
Efficiency: 30.67%  Chem. Recovery: 58.17%
Total Eff.: 17.84%  Manual:100.00%
CALIBRATION: 3070.65 + 9.7249 * Chn keV
Original: 3070.65 + 9.6637 * Chn keV
File: C:\USER\ALPHA\CALIB\C9012524.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 28-Jan-99 18:30:01
Live Time: 24000.00  Real Time: 24000.50 Sec.
Spectrum File: C:\USER\ALPHA\ALPHA\U02078S1.CHN
Background File: C:\USER\ALPHA\BKGND\B9012524.CHN
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Relative Region-Of-Interest
Slope Recalibration
Results: U02078S1

## P E A K S

| | Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|---|
| 1. | 175.34 | 152 | 183 | 6.00 | 104.00 | 1.60 | 826.40 | 2.07 |
| 2. | 136.28 | 121 | 151 | 4.00 | 6.00 | 1.20 | 38.80 | 0.10 |
| 3. | 115.72 | 94 | 120 | 8.00 | 96.00 | 0.80 | 810.20 | 2.03 |
| Tracer | 231.33 | 210 | 237 | 8.00 | 89.00 | 10.80 | 740.20 | 1.85 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | U-234 | 0.72 | 4775.80 | 58.349 | 3.0000 | 11.58 | 0.11 | 6.83 |
| 2. | U-235 | 0.55 | 4396.00 | 38.900 | 2.0000 | 0.54 | 0.10 | 32.03 |
| 3. | U-238 | 0.77 | 4196.00 | 77.799 | 4.0000 | 11.35 | 0.09 | 6.89 |
| Tracer | U-232 | 0.69 | 5320.30 | 77.799 | 4.0000 | 10.37 | 0.19 | 7.15 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 2590.0000 | 100.00 |
| Net Area | 2460.4000 | 95.00 |
| Background | 129.6000 | 5.00 |
| Composite Fit | 2430.0000 | 93.82 |
| Residuals | 30.4000 | 1.17 |

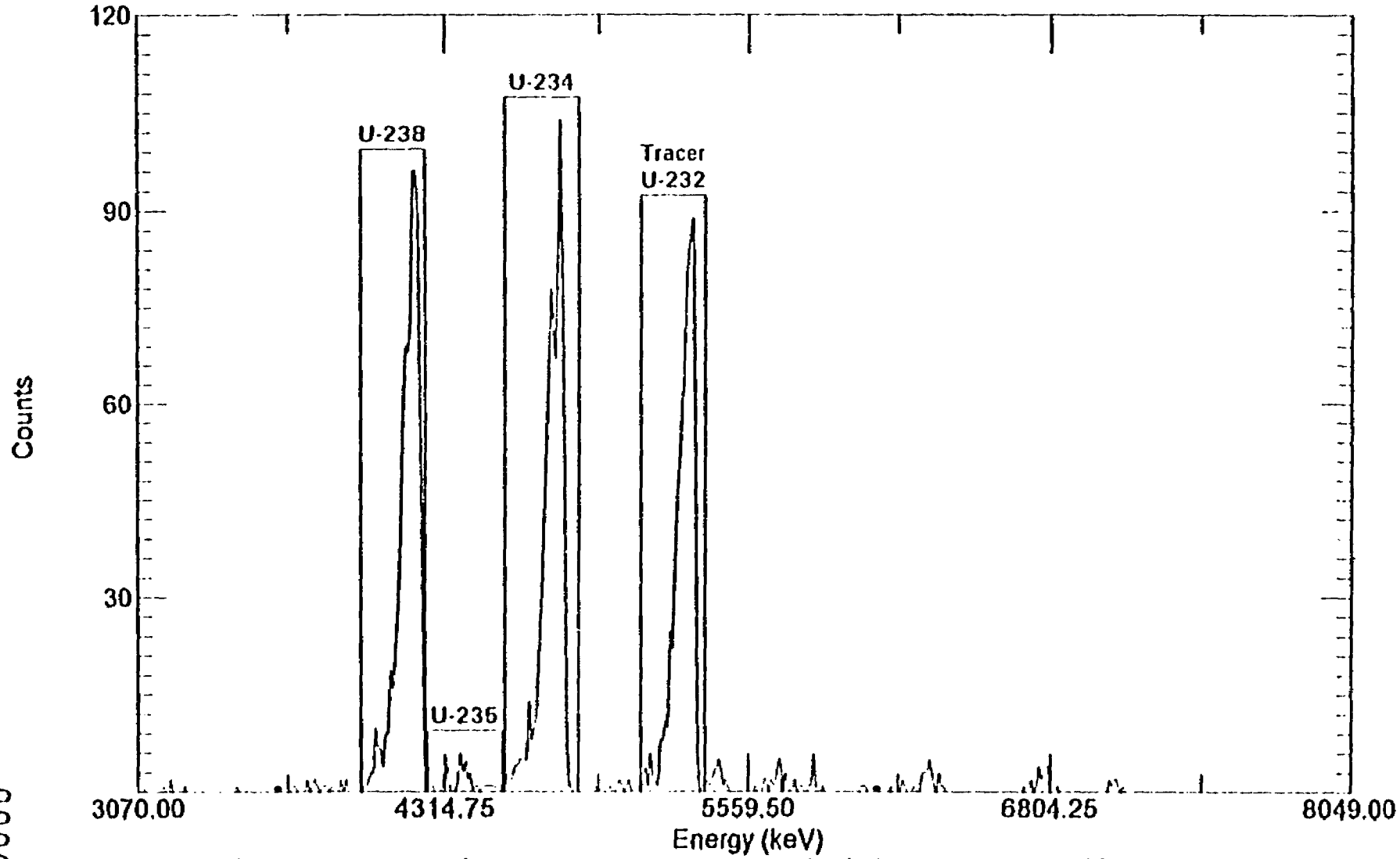
Analyzed By: _____ ()

Checked By: RG _____ ()

000059

193

U02078S1 AlphaVision Relative Region-Of-Interest (Slope Recalibration)




Acquired: 18:30:01 on 28-Jan-99
File: C:\USER\ALPHA\ALPHA\U02078S1.CHN
Sample: AS02078LCS1 AS02078

Real Time: 24000.50 s. Live Time: 24000.00 s.
Detector: #24 MCB 3 Input 8
Type: Uranium

000060

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Continued from page 170361

Paragon Analytics, Inc.

PAI FM 746fc4.xls (10/15/97)

# Alpha Spectrometer Instrument Run Log

Date: 1/22/99

| Detector | Batch ID | Sample ID | Iso/Matrix | Duration | Initial | File ID/Comm. |
|---|---|---|---|---|---|---|
| 28 | A502020 | 9812227-2 | A/water | ~~1000 min~~ 400 min | (RG) | AC22702 |
| 29 | ↓ | -3 | ↓ | ↓ | ↓ | 03 |
| 30 | ↓ | -3D1 | ↓ | ↓ | ↓ | 03D |
| 31 | A502039 | 9911067-3 | A/filter | 1000 min | (RG) | AB106703 |
| 32 | A502028 | 9812125-1 | A/solid | 400 min | (RG) | AC12501 |
| 34 | ↓ | -2 | ↓ | ↓ | ↓ | 02 |
| 36 | ↓ | -3 | ↓ | ↓ | ↓ | 03 |
| 37 | ↓ | -3-D1 | ↓ | ↓ | ↓ | 03D |
| 47 | ↓ | -4 | ↓ | ↓ | ↓ | 04 |
| * 38 | A502028 | 9812125-5 | A/solid | 400 min | (RG) | AC12505 |
| * 40 | ↓ | -6 | ↓ | ↓ | ↓ | 06 |
| * 41 | ↓ | -7 | ↓ | ↓ | ↓ | 07 |
| * 42 | ↓ | -8 | ↓ | ↓ | ↓ | 08 |
| * 43 | ↓ | -9 | ↓ | ↓ | ↓ | 09 |
| * 44 | ↓ | -10 | ↓ | ↓ | ↓ | 10 |
| * 45 | ↓ | A502028B1 | ↓ | ↓ | ↓ | A502028B1 |
| | | RG | 1/23/99 | | | |

| Detector | Batch ID | Sample ID | Iso/Matrix | Duration | Initial | File ID/Comm. |
|---|---|---|---|---|---|---|
| * 12 | A502038 | 9901001-1 | U/soil | 400 min | (RG) | U100401 |
| * 13 | ↓ | -2 | ↓ | ↓ | ↓ | 02 |
| * 14 | ↓ | -3 | ↓ | ↓ | ↓ | 03 |
| * 15 | ↓ | -4 | ↓ | ↓ | ↓ | 04 |
| * 16 | ↓ | -5 | ↓ | ↓ | ↓ | 05 |
| * 17 | ↓ | -6 | ↓ | ↓ | ↓ | 06 |
| * 19 | ↓ | -7 | ↓ | ↓ | ↓ | 07 |
| * 20 | ↓ | -8 | ↓ | ↓ | ↓ | 08 |
| * 21 | ↓ | -9 | ↓ | ↓ | ↓ | 09 |
| * 22 | ↓ | -10 | ↓ | ↓ | ↓ | 10 |
| * 24 | ↓ | -10-M | ↓ | ↓ | ↓ | 10D |
| | | RG | 1/23/99 | | | |

Notes: * Mistakenly not logged in at time of count. Information confirmed from bench sheet and raw data report. (RG) 1/27/99

Reviewed by: RG
Date: 1-23-99

0000061

170362

PAI FM 746fc4.xls (10/15/97)

# Paragon Analytics, Inc.
## Alpha Spectrometer Instrument Run Log

Date: 1/23/99

| Detector | Batch ID | Sample ID | Iso/Matrix | Duration | Initial | File ID/Comm. |
|---|---|---|---|---|---|---|
| 10 | AS02026 | 9812208-2 | U/soil | 400 min | KG | UC20802 |
| 13 | ↓ | -3 | ↓ | ↓ | ↓ | 03 |
| 15 | ↓ | -3-DI | ↓ | ↓ | ↓ | 03D |
| 16 | ↓ | -8 | ↓ | ↓ | ↓ | 08 |
| 17 | ↓ | -9 | ↓ | ↓ | ↓ | 09 |
| 19 | ↓ | -10 | ↓ | ↓ | ↓ | 10 |
| 20 | ↓ | 9812216-8 | ↓ | ↓ | ↓ | UC21608 |
| 21 | ↓ | -9 | ↓ | ↓ | ↓ | UC21609 |
| 22 | ↓ | -11 | ↓ | ↓ | ↓ | 11 |
| 24 | ↓ | -13 | ↓ | ↓ | ↓ | 13 |
| 12 | ↓ | -13D | ↓ | ↓ | ↓ | 13D |
| 1 | AS02028 | 9812125-12 | A/soil | 400 min | KG | ARC12503 |
| 2 | ↓ | AS02028LCS1 | ↓ | ↓ | ↓ | A02028S1 |
| 6 | AS02030 | 9812125-11 | A/soil | 400 min | KG | AC12511 |
| 7 | ↓ | -12 | ↓ | ↓ | ↓ | 12 |
| 8 | ↓ | -13 | ↓ | ↓ | ↓ | 13 |
| 25 | ↓ | -14 | ↓ | ↓ | ↓ | 14 |
| 26 | ↓ | -15 | ↓ | ↓ | ↓ | 15 |
| 27 | ↓ | -16 | ↓ | ↓ | ↓ | 16 |
| 28 | ↓ | -17 | ↓ | ↓ | ↓ | 17 |
| 29 | ↓ | -18 | ↓ | ↓ | ↓ | 18 |
| 30 | ↓ | -18DI | ↓ | ↓ | ↓ | 18D |
| 31 | ↓ | -19 | ↓ | ↓ | ↓ | 19 |
| 32 | ↓ | -20 | ↓ | ↓ | ↓ | 20 |

| Detector | Batch ID | Sample ID | Iso/Matrix | Duration | Initial | File ID/Comm. |
|---|---|---|---|---|---|---|
| 36 | AS02030 | AS02030LCS1 | A/soil | 400 min | KG | A02030S1 |
| 37 | ↓ | ↓ LCS1 | ↓ | ↓ | ↓ | ↓ S1 |
| 10 | AS02026 | 9812216-15 | U/soil | 400 min | KG | UC21615 |
| 12 | ↓ | AS02026LCS1 | ↓ | ↓ | ↓ | U02026S1 |
| 13 | ↓ | ↓ LCS1 | ↓ | ↓ | ↓ | ↓ S1 |
| 15 | AS02038 | AS02038LCS1 | U/soil | 400 min | KG | U02038S1 |
| 16 | ↓ | ↓ LCS1 | ↓ | ↓ | ↓ | ↓ S1 |
| 17 | AS02027 | 9812208-3 | TA/soil | 400 min | KG | TC20803 |
| 17 | ↓ | -9 | ↓ | ↓ | ↓ | 09 |
| 20 | ↓ | -9DI | ↓ | ↓ | ↓ | 09D |
| 21 | ↓ | -10 | ↓ | ↓ | ↓ | 10 |
| 22 | ↓ | 9812216-8 | ↓ | ↓ | ↓ | TC21608 |
| 24 | ↓ | ↓ -11 | ↓ | ↓ | ↓ | ↓ 11 |

KG 1/21/99

Notes:

Reviewed by: RG
Date: 1-26-99

290000

170363

# CONTROLLED

NCR # ~~061998~~

## PARAGON ANALYTICS, INC.

## NON-CONFORMANCE REPORT

Initiated by: Kurt Garrett
Date Initiated 1/25/99
Method/QA Procedure Iso-Uranium
Workorders Affected 9901004
Clients LANL

**SECTION I**

| TYPE OF EVENT: | SPECIFY |
|---|---|
| ____ 1. Spike/Surrogate Criteria Not Met | Low chemical Recovery for |
| ____ 2. Calibration Criteria Not Met (Type of Equipment) | samples 03 (8%) and 08 (15%) |
| ____ 3. Lab Contamination | U238 activity in both samples |
| ____ 4. Method Requirements Not Met | Elevated. |
| ____ 5. Purchased Materials Do Not Meet Quality Specs | |
| ____ 6. Equipment Failure | |
| ____ 7. Deviation from QAP, SOP, Method | |
| ✓ 8. Other (Specify) | |

Client Contacted? ( Y (N): Name: Date: Time:

**SECTION II**
CORRRECTIVE ACTION TAKEN:

- X 1. Submit for Re-Extraction (Re-work)
- ____ 2. Recalibrate (Re-work)
- ____ 3. Re-analyze (Re-work)
- ____ 4. Return to Vendor/Reject
- ____ 5. Service call/return for repair
- ____ 6. Retrain
- ____ 7. Document in Narrative
- ____ 8. Other, describe ____

Approved by: ____

**SECTION III**
REQUEST FOR REWORK IN SAMPLE PREP OR DIGESTION

Initial date prepared, Page # 1/11/99 A5020358
Date for Rework, Page # 1/25/99 A5020778
Submitted by PSB 1/28/99
Received by KG 1/28/99
Outcome of Re-analysis Both samples acceptable recovery -03 (60.72) and -08 (59.5%). 2-1-99 RG

Approved by: ____

**DISPOSITION** Use as is ☐ Reject ☐ Repair ☐

Samples -03 and -08 reported from second analysis. 2-1-99 RG

**SIGNATURES**

Approved By ____ Date 1/25/99 (Project Mgr)
Verification of Disposition ____ Date 2/2/99 (Dept Supv)
QA Dept Approval ____ Date ____ (QA Mgr)

COPIES: ___ Project Manager ___ Operations Manager ___ Department Supervisor

Form Date (11-20-98)

108

Re-Ext

# Actinides Prep Worksheet

Paragon Analytics, Inc.

Prep Batch AS02078

Page 1 of 1

Prep Analyst AV

Analyte(s) U-ISO

Matrix Soil

Printed 01/28/1999 02 58 30 PM

Preparation Date 01/25/1999

Non-Routine Pretreatment? Y / (N) Batch NA

Supersedes AS02038

Prep SOP PAI 778R3

Re-Extraction? (Y) / N

Status 1=In Prep 2=Ready to Count 10=RePrep 99=Skip

| Lab Sample ID | Samp Size | Samp Vol | Aliq Vol | Dil No | Aliq Units | Aliq Basis | U-ISO | Tracer / Spike Reference U-ISO | Micro Init | Micro Date | Remarks | Spectrum Name | Det ID | Pos Ckd By |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9901004 3 | .10000 | .10000 | .10000 | | g | DRY | 2 | 1/ | | | | UX100403 | 19 | (RG) |
| 9901004 8 | .10000 | .10000 | .10000 | | g | DRY | 2 | 1/ | | | | 100408 | 20 | |
| 9901004 8 D1 | .10000 | .10000 | .10000 | | g | DRY | 2 | 1/ | | | UX1004D1 | ~~1004D1~~ | 21 | |
| AS02078BLK1 | 1 0000 | 1 0000 | 1.0000 | | g | DRY | 2 | 1/ | | | U02078B1 | ~~U2078B1~~ | 22 | |
| AS02078LCS1 | 1 0000 | 1 0000 | 1 0000 | | g | DRY | 2 | 1/1 | | | U02078S1 | ~~U2078S1~~ | 24 | |

PSB 1/28/99

PSB 1/28/99

PSB 1/28/99

RG 1/28/99

Prep QASS (Y) / Y / N # 001878

Spiked By FB on 01/25/1999

Spike Witness AV on 01/25/1999

Reviewed By FB on 01/28/1999

Balance 20

Analytical QASS NCR? Y / N #

## Tracer Information

| Ref # | Nuclide | Standard | dpm/ml | Vol | Pipet |
|---|---|---|---|---|---|
| 1 | U-232 | 507.1572 41 | 20 745 | 50000 | AW006 |

| | Relinquished By | Date | Received By | Date |
|---|---|---|---|---|
| U ISO | PSB | 1/28/99 | (RG) | 1/28/99 |

## Spike Information

| Ref # | Nuclide | Standard | dpm/ml | Vol | Pipet |
|---|---|---|---|---|---|
| 1 | U-238 | 470 1284 70 | 10 76 | 1 000 | AW007 |
| 2 | U-234 | 470.1284 70 | 10 76 | 1 000 | AW007 |

1/28/99

# Actinides Prep Worksheet

**Paragon Analytics, Inc.**

Prep Batch: AS02038

Page 1 of 1

Prep Analyst: AV

Analyte(s): U ISO

Non Routine Pretreatment? Y / (N) Batch: NA

Matrix: Soil

Printed: 01/11/99 07:37:33 AM

Preparation Date: 01/11/99

Prep SOP: PAI 778R3

Re Extraction? Y / (N)

Supersedes: NA

Status: 1=In Prep 2=Ready to Count 10=RePrep 99=Stop

Tracer / Spike Reference

| Lab Sample ID | Samp Size | Samp Vol | Aliq Vol | Dish No | Aliq Units | Aliq Basis | U-ISO | | | | | | U-ISO | | | | | | Micro Int | Micro Date | Remarks | Spectrum Name | Det ID | Pos Ckd By |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9901004-1 | 2.0000 | 2.0000 | 2.0000 | 1/1 | g | DRY | 1 | | | | | | 1/1 | | | | | | EB | 1-21-99 | | 100401 | 12 | (KL) |
| 9901004-2 | 2.0000 | 2.0000 | 2.0000 | | g | DRY | 1 | | | | | | 1/1 | | | | | | | | | 100402 | 13 | |
| 9901004-3 | 2.0000 | 2.0000 | 2.0000 | | g | DRY | 1 | | | | | | 1/1 | | | | | | | | | 100403 | 14 | |
| 9901004-4 | 2.0000 | 2.0000 | 2.0000 | | g | DRY | 1 | | | | | | 1/1 | | | | | | | | | 100404 | 15 | |
| 9901004-5 | 2.0000 | 2.0000 | 2.0000 | | g | DRY | 1 | | | | | | 1/1 | | | | | | | | | 100405 | 16 | |
| 9901004-6 | 2.0000 | 2.0000 | 2.0000 | | g | DRY | 1 | | | | | | 1/1 | | | | | | | | | 100406 | 17 | |
| 9901004-7 | 2.0000 | 2.0000 | 2.0000 | | g | DRY | 1 | | | | | | 1/1 | | | | | | | | | 100407 | 19 | |
| 9901004-8 | 2.0000 | 2.0000 | 2.0000 | | g | DRY | 1 | | | | | | 1/1 | | | | | | | | | 100408 | 20 | |
| 9901004-9 | 2.0000 | 2.0000 | 2.0000 | | g | DRY | 1 | | | | | | 1/1 | | | | | | | | | 100409 | 21 | |
| 9901004-10 | 2.0000 | 2.0000 | 2.0000 | | g | DRY | 1 | | | | | | 1/1 | | | | | | | | | 100410 | 22 | |
| 9901004-10 D1 | 2.0000 | 2.0000 | 2.0000 | | g | DRY | 1 | | | | | | 1/1 | | | | | | | | | 100410D | 24 | |
| AS02038BLK1 | 2.0000 | 2.0000 | 2.0000 | | g | DRY | 1 | | | | | | 1/1 | | | | | | | | 1/02038 B1 | ~~100401~~ | 15 | (KL) |
| AS02038LCS1 | 2.0000 | 2.0000 | 2.0000 | | g | DRY | 1 | | | | | | 1/1 | | | | | | | | 1/02038 S1 | ~~100401~~ | 16 | |

Prep QASS NCR? Y / (N)

Balance # 12

Analytical QASS NCR? Y / N # 001898

Spiked By: AW on 01/11/99 1-12-99

Spike Witness: AW on 1/12/99

Reviewed By: EB on 1-20-99

## Tracer Information

| Ref # | Nuclide | Standard | dpm/ml | Vol | Pipet |
|---|---|---|---|---|---|
| 1 | U-232 | 490 1572 06 | 9 085 | 1 0000 | AW007 |

| | Relinquished By | Date | Received By | Date |
|---|---|---|---|---|
| U ISO | EB | 1-21-99 | (illegible) | 1/21/99 |

## Spike Information

| Ref # | Nuclide | Standard | dpm/ml | Vol | Pipet |
|---|---|---|---|---|---|
| 1 | U-238 | 470.1284 70 | 10 76 | 1 000 | AW007 |
| 2 | U-234 | 470.1284 70 | 10 76 | 1 000 | AW007 |

PROJECT U-232 490.1572.06

Notebook No. 1572

Continued From Page

6/11/98

Vial tare: 27.8543 g  Bottle Tare: 59.0 g

Vial full: 53.1438  Bottle Full 846.3 g

Vial after aliquot: 29.9129 g  737.3 g

3.2309 g

U.S. Department of Commerce
National Institute of Standards and Technology
SRM 4324A
Uranium-232
<220 Bq in 12% nitric acid
490

CAUTION
RADIOACTIVE

Activity = 3.2309 g × 39.23 Bq/g × 60 DPM/Bq × 1/759.1 ml = 19.0 DPM/ml

Matrix: 1N $HNO_3$

Soln density: 1.0372 g/ml

Ref date: 11/6/93

Stnd ID: 490.1572.06

Description: U-232 working level tracer solution
Activity: 9.563 dpm/ml
Uncertainty: 0.048 dpm/ml
Ref. Date: 11/6/93
Ref Time: na
Prep Date 6/11/98 Prep by: WC
Expiration 6/11/03
Matrix/Comp. 1M HNO3

Verified 6/25/98

Continued on Page

Read and Understood By

Signed: Dale Cain  Date: 6/11/98  Signed:  Date:

000069

23

PH-1, 496
rec'd 4-29-98

# National Institute of Standards & Technology

# Certificate

THIS IS A PHOTOCOPY OF THE CERTIFICATE WHICH IS BEING MAILED TO YOU UNDER SEPARATE COVER.

## Standard Reference Material 4324A
## Uranium-232 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive uranium-232 nitrate and nitric acid dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of alpha-particle counting instruments and for the monitoring of radiochemical procedures.

### Radiological Hazard

The SRM ampoule contains uranium-232 with a total activity of approximately 200 Bq. Uranium-232 decays by alpha-particle emission. The progeny of uranium-232 have a total activity of approximately 1400 Bq and decay by alpha- and beta-particle emission. None of the alpha or beta particles escape from the SRM ampoule. During the decay process X-rays and gamma rays with energies from 10 keV to 4.5 MeV are also emitted. Most of these photons escape from the SRM ampoule but their intensities are so small that they do not represent a radiation hazard. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]*. The SRM should be used only by persons qualified to handle radioactive material.

### Chemical Hazard

The SRM ampoule contains nitric acid ($HNO_3$) with a concentration of 2 moles per liter of water. The solution is corrosive and represents a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2. The ampoule should be opened only by persons qualified to handle both radioactive material and strong acid solution.

### Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least November 2003.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) both because of the radioactivity and because of the strong acid.

### Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by N.M. Trahey.

Gaithersburg, Maryland 20899
June 1995

Thomas E. Gills, Chief
Standard Reference Materials Program

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*Notes and references are on pages 5 and 6.



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## Recommended Procedure for Opening the SRM Ampoule

1) If the SRM solution is to be diluted, it is recommended that the diluting solution have an acid concentration comparable to that of the SRM solution.

2) Wear eye protection, gloves, and protective clothing and work over a tray with absorbent paper in it. Work in a fume hood. In addition to the radioactive material, the solution contains strong acid and is corrosive.

3) Shake the ampoule to wet all of the inside surface of the ampoule. Return the ampoule to the upright position.

4) Check that all of the liquid has drained out of the neck of the ampoule. If necessary, gently tap the neck to speed the process.

5) Holding the ampoule upright, score the narrowest part of the neck with a scribe or diamond pencil.

6) Lightly wet the scored line. This reduces the crack propagation velocity and makes for a cleaner break.

7) Hold the ampoule upright with a paper towel, a wiper, or a support jig. Position the scored line away from you. Using a paper towel or wiper to avoid contamination, snap off the top of the ampoule by pressing the narrowest part of the neck away from you while pulling the tip of the ampoule towards you.

8) Transfer the solution from the ampoule using a pycnometer or a pipet with dispenser handle. NEVER PIPETTE BY MOUTH.

9) Seal any unused SRM solution in a flame-sealed glass ampoule, if possible, to minimize the evaporation loss.

See also reference [4]*.



*Notes and references are on pages 5 and 6.

## PROPERTIES OF SRM 4324A
(Certified values are shown in bold type)

| | | | |
|---|---|---|---|
| Source identification number | NIST SRM 4324A | | |
| Physical Properties: | | | |
| Source description | Liquid in flame-sealed NIST borosilicate-glass ampoule | | |
| Ampoule specifications | Body outside diameter<br>Wall Thickness<br>Barium content<br>Lead-oxide content<br>Other heavy elements | (16.5 ± 0.5) mm<br>(0.60 ± 0.04) mm<br>Less than 2.5%<br>Less than 0.02%<br>Trace quantities | |
| Solution density | (1.062 ± 0.002) $g \cdot mL^{-1}$ at 22.5 °C [b]* | | |
| Solution mass | Approximately 5.3 g | | |
| Chemical Properties: | | | |
| Solution composition | Chemical Formula | Concentration ($mol \cdot L^{-1}$) | Mass Fraction ($g \cdot g^{-1}$) |
| | $H_2O$<br>$HNO_3$<br>$UO_2(NO_3)_2$ | 52<br>2.0<br>$2 \times 10^{-10}$ | 0.88<br>0.12<br>$8 \times 10^{-11}$ |
| Radiological Properties: | | | |
| Radionuclide | Uranium-232 | | |
| Reference time (Separation time) | 1330 EST, 6 November 1993 | | |
| Massic activity of the solution [c] | 39.23 $Bq \cdot g^{-1}$ | | |
| Relative expanded uncertainty ($k$=2) | 0.50% [d] | | |
| Alpha-particle-emitting impurities | None detected [e] | | |
| Photon-emitting impurities | None detected [f] | | |
| Half lives used | Uranium-232: (68.9 ± 0.4) a [g]<br>Thorium-228: (1.9131 ± 0.0009) a<br>Radium-224: (3.66 ± 0.04) d<br>Radon-220: (55.6 ± 0.1) s<br>Polonium-216: (0.145 ± 0.002) s<br>Lead-212: (10.64 ± 0.01) h<br>Bismuth-212: (60.55 ± 0.06) m<br>Thallium-208: (3.053 ± 0.004) m | | |
| Measuring instruments | Two 4π(α+β) liquid-scintillation counting systems | | |



*Notes and references are on page 6 of 6

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## EVALUATION OF THE UNCERTAINTY OF THE MASSIC ACTIVITY [d]*

| Input Quantity $x_i$, the source of uncertainty | Method Used To Evaluate $u(x_i)$, the standard uncertainty of $x_i$ | Relative Uncertainty Of Input Quantity, $u(x_i)/x_i$, (%) [h] | Relative Sensitivity Factor, $\lvert\partial y/\partial x_i\rvert \cdot (x_i/y)$ [i] | Relative Uncertainty Of Output Quantity, $u_c(y)/y$, (%) [j] |
|---|---|---|---|---|
| **Uncertainties Evaluated By Statistical Methods** | | | | |
| Massic alpha-particle emission rate | Standard deviation of the mean for 10 sets of $4\pi(\alpha+\beta)$ liquid-scintillation measurements | 0.02 | 1.0 | 0.02 |
| Background | Standard deviation of the mean for 10 sets of measurements | 3.5 | [k] 0.002 | 0.01 |
| **Uncertainties Evaluated By Other Means** | | | | |
| Mass calibration of the balance | Estimated from manufacturer's data | 0.05 | 1.0 | 0.05 |
| Decay correction for uranium-232 | Standard uncertainty of the half life | 0.58 [m] | 0.0006 [n] | 0.0004 |
| Decay-scheme data | Standard uncertainty of the probability of decay by alpha-particle emission | 0.01 | 1.0 | 0.01 |
| Correction for ingrowth of daughter radionuclides | Estimated | 0.02 | 1.0 | 0.02 |
| Live-time [p] | Estimated | 0.10 | 1.0 | 0.10 |
| Detection efficiency of the liquid-scintillation counting systems | Estimated | 0.20 | 1.0 | 0.20 |
| Alpha-particle-emitting impurities | Limit of detection [q] | 100. | 0.001 | 0.10 |
| Photon-emitting impurities | Limit of detection [q] | 100. | 0.0001 | 0.01 |
| Relative Combined Standard Uncertainty of the Output Quantity, $u_c(y)/y$, (%) | | | | 0.25 |
| Coverage Factor, $k$ | | | | x 2 |
| Relative Expanded Uncertainty of the Output Quantity, $U/y$, (%) | | | | 0.50 |

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*Notes and references are on pages 5 and 6.

## NOTES

[a] The Sievert is the SI unit for dose equivalent. See reference [1]. One $\mu$Sv is equal to 0.1 mrem.

| Distance from Ampoule (cm): | 1 | 30 | 100 |
|---|---|---|---|
| Approximate Dose Rate ($\mu$Sv/h): | <0.1 | - | - |

[b] The stated uncertainty is two times the standard uncertainty.

[c] Massic activity is the preferred name for the quantity activity per unit mass. See reference [1].

[d] The reported value, $y$, of massic activity (activity per unit mass) at the reference time was not measured directly but was derived from measurements and calculations of other quantities. This can be expressed as $y = f(x_1, x_2, x_3, \ldots x_n)$, where $f$ is a mathematical function derived from the assumed model of the measurement process.

The value, $x_i$, used for each input quantity $i$ has a standard uncertainty, $u(x_i)$, that generates a corresponding uncertainty in $y$, $u_i(y) = |\partial y/\partial x_i| \cdot u(x_i)$, called a component of combined standard uncertainty of $y$.

The combined standard uncertainty of $y$, $u_c(y)$, is the positive square root of the sum of the squares of the components of combined standard uncertainty.

The combined standard uncertainty is multiplied by a coverage factor of $k = 2$ to obtain $U$, the expanded uncertainty of $y$.

Since it can be assumed that the possible estimated values of the massic activity are approximately normally distributed with approximate standard deviation $u_c(y)$, the unknown value of the massic activity is believed to lie in the interval $y \pm U$ with a level of confidence of approximately 95 percent.

For further information on the expression of uncertainties, see references [2] and [3].

[e] Estimated limits of detection for alpha-particle-emitting impurities are:
0.04 $\alpha \cdot s^{-1} \cdot g^{-1}$ for energies less than 3.9 MeV,
0.4 $\alpha \cdot s^{-1} \cdot g^{-1}$ for energies between 3.9 and 4.9 MeV, and
0.04 $\alpha \cdot s^{-1} \cdot g^{-1}$ for energies greater than 5.6 MeV.

[f] Estimated limits of detection for photon-emitting impurities are:
0.013 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 9 and 125 keV,
0.009 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 135 and 234 keV,
0.004 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 243 and 579 keV,
0.002 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 588 and 1616 keV, and
0.001 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 1624 and 1900 keV,
provided that the photons are separated in energy by 4 keV or more from photons emitted in the decay of uranium-232 and progeny.

[g] Evaluated Nuclear Structure Data File (ENSDF), June 1995. The stated uncertainty is the standard uncertainty.

[h] Relative standard uncertainty of the input quantity $x_i$.

[i] The relative change in the output quantity $y$ divided by the relative change in the input quantity $x_i$. If $|\partial y/\partial x_i| \cdot (x_i/y) = 1.0$, then a 1% change in $x_i$ results in a 1% change in $y$. If $|\partial y/\partial x_i| \cdot (x_i/y) = 0.05$, then a 1% change in $x_i$ results in a 0.05% change in $y$.

[j] Relative component of combined standard uncertainty of output quantity $y$, rounded to two significant figures or less. The relative component of combined standard uncertainty of $y$ is given by $u_i(y)/y = |\partial y/\partial x_i| \cdot u(x_i)/y = |\partial y/\partial x_i| \cdot (x_i/y) \cdot u(x_i)/x_i$. The numerical values of $u(x_i)/x_i$, $|\partial y/\partial x_i| \cdot (x_i/y)$, and $u_i(y)/y$, all dimensionless quantities, are listed in columns 3, 4, and 5, respectively. Thus, the value in column 5 is equal to the value in column 4 multiplied by the value in column 3. The input quantities are independent, or very nearly so. Hence the covariances are zero or negligible.

[k] $|\partial y/\partial x_i| \cdot (x_i/y)$ = (average background count rate)/(average net sample count rate).

[m] The relative standard uncertainty of $\lambda \cdot t$ is determined by the relative standard uncertainty of $\lambda$ (i.e., of the half life). The relative standard uncertainty of $t$ is negligible.

[n] $|\partial y/\partial x_i| \cdot (x_i/y) = |\lambda \cdot t|$

[p] The live time is determined by counting the pulses from a gated oscillator.

[q] The standard uncertainty for each undetected impurity that might reasonably be expected to be present is estimated to be equal to the estimated limit of detection for that impurity, i.e. $u(x_i)/x_i$ = 100%. $|\partial y/\partial x_i| \cdot (x_i/y)$ = {(response per Bq of impurity)/(response per Bq of U-232)}·{(Bq of impurity)/(Bq of U-232)}. Thus $u_i(y)/y$ is the relative change in $y$ if the impurity were present with a massic activity equal to the estimated limit of detection.

## REFERENCES


[1] International Organization for Standardization (ISO), *ISO Standards Handbook - Quantities and Units*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900.

[2] International Organization for Standardization (ISO), *Guide to the Expression of Uncertainty in Measurement*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900. (Listed under ISO miscellaneous publications as "ISO Guide to the Expression 1993".)

[3] B. N. Taylor and C. E. Kuyatt, *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results*, NIST Technical Note 1297, 1993. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, U.S.A.

[4] National Council on Radiation Protection and Measurements Report No. 58, *A Handbook of Radioactivity Measurements Procedures*, Second Edition, 1985. Available from the National Council on Radiation Protection and Measurements, 7910 Woodmont Avenue, Bethesda, MD 20814 U.S.A.

PROJECT U-232 Working Soln. 507.1572.41 Notebook No. Continued From Page

1/11/99

Soln numbers 507 + 508 (NIST SRM 4324A) were taken and combined digitally diluted to 1 liter in 2N $HNO_3$ as follows:

Soln 507 (Amp 1) 1/11/99

| | |
|---|---|
| Start | 9.5053 g |
| ~~Start~~ Finish | 8.5713 g |
| Δ Mass | 5.3118 g |

Soln 508 (Amp 2) 1/11/99

| | |
|---|---|
| Start | 8.8515 g |
| Finish | 4.7222 g |
| Δ Mass | 4.1129 g |

Bottle tare 59.39 g

Bottle final 1128.6 g

1/11/99

~~Sol~~ total soln mass 1069.21 g

Soln density = 105.3 g/100 ml

total of 507 + 508 transferred 5.3118 g + 4.1129 g = 9.4247 g

total soln volume = 1069.21 g / 1.053 g/ml

= 1015.4 ml

activity = $\frac{9.4247\ g}{1015.4\ ml} \times \frac{53.23\ Bq}{g} \times \frac{60\ dpm}{Bq}$ = 21.8475 dpm/ml

$T_0$ = 11/6/93 uncert = 0.50% (3σ)

Prep RS on 1/11/99

Exp on 1/11/2004

U.S. Department of Commerce
National Institute of Standards and Technology
SRM 4324A
Uranium-232
<20 Bq in 10% nitric acid

CAUTION
RADIOACTIVE

Std ID: 507.1572.41

Description: Uranium 232 Working Level Dilution
Activity: 21.85 dpm/mL
Uncertainty 0.11 dpm/mL (3σ)
Ref. Date: 11/6/93
Ref. Time: 10:00
Prep Date: 1/11/99 prep by: RTS
Expiration: 1/11/04
Matrix/Comp.: 2 N HNO3
*Short-lived – Decay Correct with Each Use*

Continued on Page

Read and Understood By

Signed 1/11/99 Date Signed Date

Pal 7507 - rec: 1/2/99
+502

# National Institute of Standards & Technology

# Certificate

THE [illegible] OF THE [illegible] WHICH IS BEING MAILED TO YOU UNDER SEPARATE COVER.

## Standard Reference Material 4324A
## Uranium-232 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive uranium-232 nitrate and nitric acid dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of alpha-particle counting instruments and for the monitoring of radiochemical procedures.

### Radiological Hazard

The SRM ampoule contains uranium-232 with a total activity of approximately 200 Bq. Uranium-232 decays by alpha-particle emission. The progeny of uranium-232 have a total activity of approximately 1400 Bq and decay by alpha- and beta-particle emission. None of the alpha or beta particles escape from the SRM ampoule. During the decay process X-rays and gamma rays with energies from 10 keV to 4.5 MeV are also emitted. Most of these photons escape from the SRM ampoule but their intensities are so small that they do not represent a radiation hazard. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]*. The SRM should be used only by persons qualified to handle radioactive material.

### Chemical Hazard

The SRM ampoule contains nitric acid ($HNO_3$) with a concentration of 2 moles per liter of water. The solution is corrosive and represents a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2. The ampoule should be opened only by persons qualified to handle both radioactive material and strong acid solution.

### Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least November 2003.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) both because of the radioactivity and because of the strong acid.

### Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by N.M. Trahey.

Gaithersburg, Maryland 20899
June 1995

Thomas E. Gills, Chief
Standard Reference Materials Program



*Notes and references are on pages 5 and 6.

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## Recommended Procedure for Opening the SRM Ampoule

1) If the SRM solution is to be diluted, it is recommended that the diluting solution have an acid concentration comparable to that of the SRM solution.

2) Wear eye protection, gloves, and protective clothing and work over a tray with absorbent paper in it. Work in a fume hood. In addition to the radioactive material, the solution contains strong acid and is corrosive.

3) Shake the ampoule to wet all of the inside surface of the ampoule. Return the ampoule to the upright position.

4) Check that all of the liquid has drained out of the neck of the ampoule. If necessary, gently tap the neck to speed the process.

5) Holding the ampoule upright, score the narrowest part of the neck with a scribe or diamond pencil.

6) Lightly wet the scored line. This reduces the crack propagation velocity and makes for a cleaner break.

7) Hold the ampoule upright with a paper towel, a wiper, or a support jig. Position the scored line away from you. Using a paper towel or wiper to avoid contamination, snap off the top of the ampoule by pressing the narrowest part of the neck away from you while pulling the tip of the ampoule towards you.

8) Transfer the solution from the ampoule using a pycnometer or a pipet with dispenser handle. NEVER PIPETTE BY MOUTH.

9) Seal any unused SRM solution in a flame-sealed glass ampoule, if possible, to minimize the evaporation loss.

See also reference [4]*.



*Notes and references are on pages 5 and 6.

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## PROPERTIES OF SRM 4324A
(Certified values are shown in bold type)

| | | | |
|---|---|---|---|
| Source identification number | NIST SRM 4324A | | |
| Physical Properties: | | | |
| Source description | Liquid in flame-sealed NIST borosilicate-glass ampoule | | |
| Ampoule specifications | Body outside diameter<br>Wall Thickness<br>Barium content<br>Lead-oxide content<br>Other heavy elements | (16.5 ± 0.5) mm<br>(0.60 ± 0.04) mm<br>Less than 2.5%<br>Less than 0.02%<br>Trace quantities | |
| Solution density | (1.062 ± 0.002) $g \cdot mL^{-1}$ at 22.5 °C [b]* | | |
| Solution mass | Approximately 5.3 g | | |
| Chemical Properties: | | | |
| Solution composition | Chemical Formula | Concentration ($mol \cdot L^{-1}$) | Mass Fraction ($g \cdot g^{-1}$) |
| | $H_2O$<br>$HNO_3$<br>$UO_2(NO_3)_2$ | 52<br>2.0<br>$2 \times 10^{-10}$ | 0.88<br>0.12<br>$8 \times 10^{-11}$ |
| Radiological Properties: | | | |
| Radionuclide | Uranium-232 | | |
| Reference time (Separation time) | 1330 EST, 6 November 1993 | | |
| Massic activity of the solution [c] | 39.23 $Bq \cdot g^{-1}$ | | |
| Relative expanded uncertainty ($k$=2) | 0.50% [d] | | |
| Alpha-particle-emitting impurities | None detected [e] | | |
| Photon-emitting impurities | None detected [f] | | |
| Half lives used | Uranium-232: (68.9 ± 0.4) a [g]<br>Thorium-228: (1.9131 ± 0.0009) a<br>Radium-224: (3.66 ± 0.04) d<br>Radon-220: (55.6 ± 0.1) s<br>Polonium-216: (0.145 ± 0.002) s<br>Lead-212: (10.64 ± 0.01) h<br>Bismuth-212: (60.55 ± 0.06) m<br>Thallium-208: (3.053 ± 0.004) m | | |
| Measuring instruments | Two $4\pi(\alpha+\beta)$ liquid-scintillation counting systems | | |



*Notes and references are on pages 5 and 6

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## EVALUATION OF THE UNCERTAINTY OF THE MASSIC ACTIVITY [d]*

| Input Quantity $x_i$, the source of uncertainty | Method Used To Evaluate $u(x_i)$, the standard uncertainty of $x_i$ | Relative Uncertainty Of Input Quantity, $u(x_i)/x_i$, (%) [h] | Relative Sensitivity Factor, $\lvert\partial y/\partial x_i\rvert \cdot (x_i/y)$ [i] | Relative Uncertainty Of Output Quantity, $u_i(y)/y$, (%) [j] |
|---|---|---|---|---|
| Uncertainties Evaluated By Statistical Methods | | | | |
| Massic alpha-particle emission rate | Standard deviation of the mean for 10 sets of $4\pi(\alpha+\beta)$ liquid-scintillation measurements | 0.02 | 1.0 | 0.02 |
| Background | Standard deviation of the mean for 10 sets of measurements | 3.5 | [k] 0.002 | 0.01 |
| Uncertainties Evaluated By Other Means | | | | |
| Mass calibration of the balance | Estimated from manufacturer's data | 0.05 | 1.0 | 0.05 |
| Decay correction for uranium-232 | Standard uncertainty of the half life | 0.58 [m] | 0.0006 [n] | 0.0004 |
| Decay-scheme data | Standard uncertainty of the probability of decay by alpha-particle emission | 0.01 | 1.0 | 0.01 |
| Correction for ingrowth of daughter radionuclides | Estimated | 0.02 | 1.0 | 0.02 |
| Live-time [p] | Estimated | 0.10 | 1.0 | 0.10 |
| Detection efficiency of the liquid-scintillation counting systems | Estimated | 0.20 | 1.0 | 0.20 |
| Alpha-particle-emitting impurities | Limit of detection [q] | 100. | 0.001 | 0.10 |
| Photon-emitting impurities | Limit of detection [q] | 100. | 0.0001 | 0.01 |
| Relative Combined Standard Uncertainty of the Output Quantity, $u_c(y)/y$, (%) | | | | 0.25 |
| Coverage Factor, $k$ | | | | x 2 |
| Relative Expanded Uncertainty of the Output Quantity, $U/y$, (%) | | | | 0.50 |

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*Notes and references are on pages 5 and 6.

## NOTES

[a] The Sievert is the SI unit for dose equivalent. See reference [1]. One $\mu$Sv is equal to 0.1 mrem.

| Distance from Ampoule (cm): | 1 | 30 | 100 |
|---|---|---|---|
| Approximate Dose Rate ($\mu$Sv/h): | <0.1 | - | - |

[b] The stated uncertainty is two times the standard uncertainty.

[c] Massic activity is the preferred name for the quantity activity per unit mass. See reference [1].

[d] The reported value, $y$, of massic activity (activity per unit mass) at the reference time was not measured directly but was derived from measurements and calculations of other quantities. This can be expressed as $y = f(x_1, x_2, x_3, \ldots x_n)$, where $f$ is a mathematical function derived from the assumed model of the measurement process.

The value, $x_i$, used for each input quantity $i$ has a standard uncertainty, $u(x_i)$, that generates a corresponding uncertainty in $y$, $u_i(y) = |\partial y/\partial x_i| \cdot u(x_i)$, called a component of combined standard uncertainty of $y$.

The combined standard uncertainty of $y$, $u_c(y)$, is the positive square root of the sum of the squares of the components of combined standard uncertainty.

The combined standard uncertainty is multiplied by a coverage factor of $k = 2$ to obtain $U$, the expanded uncertainty of $y$.

Since it can be assumed that the possible estimated values of the massic activity are approximately normally distributed with approximate standard deviation $u_c(y)$, the unknown value of the massic activity is believed to lie in the interval $y \pm U$ with a level of confidence of approximately 95 percent.

For further information on the expression of uncertainties, see references [2] and [3].

[e] Estimated limits of detection for alpha-particle-emitting impurities are:
0.04 $\alpha \cdot s^{-1} \cdot g^{-1}$ for energies less than 3.9 MeV,
0.4 $\alpha \cdot s^{-1} \cdot g^{-1}$ for energies between 3.9 and 4.9 MeV, and
0.04 $\alpha \cdot s^{-1} \cdot g^{-1}$ for energies greater than 5.6 MeV.

[f] Estimated limits of detection for photon-emitting impurities are:
0.013 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 9 and 125 keV,
0.009 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 135 and 234 keV,
0.004 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 243 and 579 keV,
0.002 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 588 and 1616 keV, and
0.001 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 1624 and 1900 keV,
provided that the photons are separated in energy by 4 keV or more from photons emitted in the decay of uranium-232 and progeny.

[g] Evaluated Nuclear Structure Data File (ENSDF), June 1995. The stated uncertainty is the standard uncertainty.

[h] Relative standard uncertainty of the input quantity $x_i$.

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[i] The relative change in the output quantity $y$ divided by the relative change in the input quantity $x_i$. If $|\partial y/\partial x_i| \cdot (x_i/y) = 1.0$, then a 1% change in $x_i$ results in a 1% change in $y$. If $|\partial y/\partial x_i| \cdot (x_i/y) = 0.05$, then a 1% change in $x_i$ results in a 0.05% change in $y$.

[j] Relative component of combined standard uncertainty of output quantity $y$, rounded to two significant figures or less. The relative component of combined standard uncertainty of $y$ is given by $u_i(y)/y = |\partial y/\partial x_i| \cdot u(x_i)/y = |\partial y/\partial x_i| \cdot (x_i/y) \cdot u(x_i)/x_i$. The numerical values of $u(x_i)/x_i$, $|\partial y/\partial x_i| \cdot (x_i/y)$, and $u_i(y)/y$, all dimensionless quantities, are listed in columns 3, 4, and 5, respectively. Thus, the value in column 5 is equal to the value in column 4 multiplied by the value in column 3. The input quantities are independent, or very nearly so. Hence the covariances are zero or negligible.

[k] $|\partial y/\partial x_i| \cdot (x_i/y)$ = (average background count rate)/(average net sample count rate).

[m] The relative standard uncertainty of $\lambda \cdot t$ is determined by the relative standard uncertainty of $\lambda$ (i.e., of the half life). The relative standard uncertainty of $t$ is negligible.

[n] $|\partial y/\partial x_i| \cdot (x_i/y) = |\lambda \cdot t|$

[p] The live time is determined by counting the pulses from a gated oscillator.

[q] The standard uncertainty for each undetected impurity that might reasonably be expected to be present is estimated to be equal to the estimated limit of detection for that impurity, i.e. $u(x_i)/x_i$ = 100%. $|\partial y/\partial x_i| \cdot (x_i/y)$ = {(response per Bq of impurity)/(response per Bq of U-232)}·{(Bq of impurity)/(Bq of U-232)}. Thus $u_i(y)/y$ is the relative change in $y$ if the impurity were present with a massic activity equal to the estimated limit of detection.

## REFERENCES


[1] International Organization for Standardization (ISO), *ISO Standards Handbook - Quantities and Units*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900.

[2] International Organization for Standardization (ISO), *Guide to the Expression of Uncertainty in Measurement*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900. (Listed under ISO miscellaneous publications as "ISO Guide to the Expression 1993".)

[3] B. N. Taylor and C. E. Kuyatt, *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results*, NIST Technical Note 1297, 1993. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20407, U.S.A.

[4] National Council on Radiation Protection and Measurements Report No. 58, *A Handbook of Radioactivity Measurements Procedures*, Second Edition, 1985. Available from the National Council on Radiation Protection and Measurements, 7910 Woodmont Avenue, Bethesda, MD 20814 U.S.A.

12/17/97 Prep date

Vial tare: 20.8915 g

Vial full: 25.8255 g

Vial after diluent: 23.7850 g

Diluent 2.0405 g

Solution density: 1 ml = 1.0070 g (0.5 M $HNO_3$)

$2.0405\,g \times 2.38\,nCi/g \times \frac{1}{1002\,mg/g\ 5M\,HNO_3} = 4.847\,pCi/g$

Matrix: 0.5 M $HNO_3$

Std ID: 470.1284.70

Description: Uranium-238 (U-Nat) Working Level Dilution
Activity: 10.69 dpm/mL
Uncertainty: +/- 0.43 dpm/mL
Ref. Date: 8/1/93
Ref Time: 12:00 PM
Prep Date 12/17/97 Prep by: WC
Expiration 12/16/02
Matrix/Comp. 0.5 M HNO3
Short-lived - Decay correct with each use

Diluted by Wade Curia on 12/17/97 Verified by 12/17/97 12/17/97

Continued on Page

Read and Understood By

Signed 1/6/98 Date Signed Date



271

Paragon ID 0470
recd 12-12-97

U.S. Environmental Protection Agency
Environmental Monitoring Systems Laboratory-Las Vegas
Nuclear Radiation Assessment Division

## Calibration Certificate

**Description**

Principal radionuclide: Uranium-238 — Half life: $4.47 \times 10^9$ years

Nominal activity: 11.9 nanocuries

Nominal volume: 5.0 ml in ampoule/bottle number: 1843-2

**Measurement** Activity of principal radionuclide

Activity per gram of this solution

2.38 nanocuries of Uranium-238

October 1993

*Accompanied by 0.11 nanoCuries of Uranium-235 per gram of solution.

Activity of daughter radionuclide

The principal activity was accompanied at the quoted time by

2.38 nanocuries per gram

of the daughter nuclides Th-234, Pa-234, U-234 assuming secular equilibrium.

Total mass of this solution

Approximately [illegible] grams

Method of measurement:

The solution was prepared gravimetrically by dissolving a weighed quantity of the National Bureau of Standards SRM 950a (99.97±0.1 percent Uranium Oxide ($U_3O_8$)) in nitric acid and diluting to a known weight. Natural uranium was assumed to consist of 99.28 percent U-238 and 0.711 percent U-235 by weight with specific activities of $3.36 \times 10^{-4}$ and $2.16 \times 10^{-4}$ nanoCuries per gram respectively. The solution was compared to an earlier preparation (1843-1), which was traced to the National Institute of Standards and Technology (NIST), using liquid scintillation counting.

**Useful Life**

This radionuclide has decayed through [ ] half lives since it was standardized by EMSL/LV

We recommend that this solution should not be used after INDEFINITE

000084

28

**Purity**

The manufacturer states that activities other than that of the principal nuclide and of its daughter nuclides, if any, were estimated/known to be:

| | | | |
|---|---|---|---|
| (1) Radium-226 | less than | 0.5 % | of the principal activity |
| (2) | less than equal to | % | of the principal activity |
| (3) | less than equal to | % | of the principal activity |

The activity of impurity (1) is not (2) is not (3) is not included in the quoted figures of the principal activity.

**Random Errors**

The precision of this standard was such that the certified value of the radioactive concentration of the principal activity had a standard error (sm) not greater than ± 0.5 %
(The 99.7% confidence limits are given by t(sm) where t is obtained from the student t factor for the degree of freedom (n-1)).

The maximum uncertainty due to the assessable systematic errors (dilution, counting, and known uncertainty of the standard) is obtained by the separate arithmetic summation of the positive and negative systematic error ( + δ − δ' ). These have been estimated not to exceed

+2.5 % or − 2.5 %

the overall uncertainty (often called accuracy) is an estimate of the possible divergence of the quoted result from the true value. It is a combination of random error [t(sm)] at the 99.7% confidence limits and the worst case estimate of the systematic errors ( + δ , − δ' )
The overall uncertainty is therefore calculated on the basis of + [t(sm) + δ] , − [t(sm) − δ']
and is + 4.0 % , − 4.0 % of the quoted radioactive concentration

**Decay Scheme**

This standardization is based on the following assumptions of the principle nuclide, its daughter nuclides and impurities (no allowance for error in these assumptions or the assumption of quoted half-life have been included in the statement of accuracy above).

Uranium-238 decays by alpha emission to Thorium-234 which decays by two successive beta emissions to Uranium-234. Uranium-234 is assumed to be in secular equilibrium with Uranium-238

**Chemical Composition of Solution**

Carrier content per gram of solution

Other components
0.5N nitric acid

Preservative:

**Remarks**

The uranium concentration of the solution is 7.12 milligrams/gram.

Date Certificate Prepared October 27, 1993

Approval Signature Paul B. Fahn

000085

# Paragon Analytics, Incorporated

## Sample Number(s) Cross-Reference Table

**Paragon OrderNum:** 9901004
**Client Name:** Los Alamos National Laboratory SMO
**Client Project Name:**
**Client Project Number:** 5103R
**Client PO Number:** 7794L0014-9S

| Client Sample | Lab Sample Number | COC Number | Matrix | Date Collected | Time Collected |
|---|---|---|---|---|---|
| MD49-98-0161 | 9901004-1 | | Soil | 12/16/98 | |
| MD49-98-0162 | 9901004-2 | | Soil | 12/16/98 | |
| MD49-98-0163 | 9901004-3 | | Soil | 12/16/98 | |
| MD49-98-0164 | 9901004-4 | | Soil | 12/16/98 | |
| MD49-98-0165 | 9901004-5 | | Soil | 12/16/98 | |
| MD49-98-0166 | 9901004-6 | | Soil | 12/17/98 | |
| MD49-98-0167 | 9901004-7 | | Soil | 12/17/98 | |
| MD49-98-0168 | 9901004-8 | | Soil | 12/17/98 | |
| MD49-98-0169 | 9901004-9 | | Soil | 12/17/98 | |
| MD49-98-0170 | 9901004-10 | | Soil | 12/17/98 | |



000037

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Monday, January 04, 1999

REQUEST NUMBER: 5103R
ANALYSIS TYPE: RAD

**Los Alamos**
NATIONAL LABORATORY

ATTN: Steve Fry
Paragon/ATI
225 COMMERCE
FT. COLLINS, CO 80524

9901004

Please analyze the enclosed samples according to the schedule indicated:

**SHIP DATE:** 1/4/99
**REPORT DUE:** 2/4/99
**TURN AROUND REQ'D:** 30 days

These samples are on:

**LANL Request Number:** 5103R
**Per Agreement Number:** 7794L0014-9S
**Project Cost Code:** MR2W05153318

**RAD SCREENING:** Yes, Received

**COMMENTS:** 49 - 1144 , DK; PLEASE GRIND THE ENTIRE SAMPLE TO POWDER AND THOROUGHTY HOMOGENIZE IT BEFORE TAKING ALIQUOTS FOR ANALYSIS.

LANL ER SMO CONTACT: Joylene Valdez MS H865 5056659968
Signature: Joylene Valdez

| | ANALYSIS ORDER CODE | ANALYTE(S) | SAMPLE ID | CONT ID | SAMPLE MATRIX | DATE SAMPLED | COMMENTS |
|---|---|---|---|---|---|---|---|
| 01 | ISOU | | MD49-98-0161 | 01 | S | 12/16/98 | |
| 02 | ISOU | | MD49-98-0162 | 01 | S | 12/16/98 | |
| 03 | ISOU | | MD49-98-0163 | 01 | S | 12/16/98 | |
| 04 | ISOU | | MD49-98-0164 | 01 | S | 12/16/98 | |
| 05 | ISOU | | MD49-98-0165 | 01 | S | 12/16/98 | |
| 06 | ISOU | | MD49-98-0166 | 01 | S | 12/17/98 | |
| 07 | ISOU | | MD49-98-0167 | 01 | S | 12/17/98 | |
| 08 | ISOU | | MD49-98-0168 | 01 | S | 12/17/98 | |
| 09 | ISOU | | MD49-98-0169 | 01 | S | 12/17/98 | |
| 10 | ISOU | | MD49-98-0170 | 01 | S | 12/17/98 | |

Final Page of REQUEST NUMBER 5103R



000088 222

Monday, January 04, 1999

**Los Alamos**
NATIONAL LABORATORY

**CHAIN OF CUSTODY DOCUMENT NUMBER: 5103RC**

**REQUEST NUMBER: 5103R**
**ANALYSIS TYPE: RAD**

9901004

ATTN: Steve Fry
ParagonATI
225 COMMERCE
FT. COLLINS, CO 80524

| | SAMPLE ID | CONT ID | CONTAINER DESCRIPTION | ANALYSIS ORDER CODE | PRESERVATIVE | MATRIX |
|---|---|---|---|---|---|---|
| 01 | MD49-98-0161 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 02 | MD49-98-0162 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 03 | MD49-98-0163 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 04 | MD49-98-0164 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 05 | MD49-98-0165 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 06 | MD49-98-0166 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 07 | MD49-98-0167 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 08 | MD49-98-0168 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 09 | MD49-98-0169 | 01 | 125 ml Polyethylene | ISOU | None | S |
| 10 | MD49-98-0170 | 01 | 125 ml Polyethylene | ISOU | None | S |

Final Page of CHAIN OF CUSTODY DOCUMENT FOR REQUEST NUMBER 5103R



| Relinquished By: | Date | Time | Received By: | Date | Time |
|---|---|---|---|---|---|
| [illegible] / [illegible] | 1-4-99 | 13:25 | Fed Ex | | |
| Fed Ex | | | Jeannine Hunter / Jeannine Hunter | 1/5/99 | 9:30am |
| | | | | | |

Received for DISPOSAL By: Date Time

Remarks:

000039

UNIS • JOEGS • FHB

Paragon Analytics, Inc. - Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Fand PROJECT MANAGER: Lance

WORKORDER NO: 9901004 INITIALS: JH DATE: 1/5/99

| | | | | |
|---|---|---|---|---|
| 1. | Does this project require any special handling in addition to standard PAI procedures? | | Yes | No |
| | **PRESCREEN REQUIRED (Rad, DOE, etc.)** | | Yes | No |
| 2. | Are custody seals on the cooler intact? If so, how many 4 | N/A | Yes | No |
| 3. | Are custody seals on sample containers intact? | N/A | Yes | No |
| 4. | Is there a Chain of Custody (COC) or other representative documents, letters, or shipping memos? | | Yes | No |
| 5. | Is the COC complete? Relinquished: Yes ✓ No Analyses Requested: Yes ✓ No | N/A | Yes | No |
| 6. | Is the COC in agreement with the samples received? No. of Samples: Yes ✓ No ___ Sample ID's: Yes ✓ No ___ Matrix: Yes ✓ No No. of Containers: Yes ✓ No | | Yes | No |
| 7. | Are all aqueous samples requiring chemical preservation preserved correctly (excluding volatile organics)? | N/A | Yes | No |
| | Are all aqueous **non-preserved** samples at the correct pH? | | Yes | No |
| 8. | Is there enough sample? If so, are they in the proper containers? | | Yes | No |
| 9. | Are all samples within holding times for the requested analyses? | | Yes | No |
| 10. | Were the sample(s) shipped on ice? | N/A | Yes | No |
| 11. | Were all sample containers received intact? (not broken or leaking, etc.) | | Yes | No |
| 12. | Are samples requiring no headspace, headspace free? **Size of bubble < green pea > green pea** | N/A | Yes | No |
| 13. | Are airbills present and removable? | | Yes | No |
| 14. | Shall Paragon dispose of samples? | | Yes | No |
| 15. | Were the cooler temperatures ≤ 6° C ? | N/A | Yes | No |

**Cooler #'s** 1 and ___ ___ ___ ___ ___ ___

**Temperature** 19° ___ ___ ___ ___ ___ ___ °C

**PM Reviewed/Date:** S.F. 1/5/99 1/5/99 S.F. 1/5/99

**A NO RESPONSE TO ANY QUESTION (EXCEPT # 1&13) REQUIRES THE COMPLETION OF PAGE 2 OF THE FORM**

FORM 201FC7.frm (12/17/98)



224

r:\newfalpha\plat_dpm.xls

## Alpha Spectroscopy Calibration Standard Reverification

| Source ID | PAI ID | CALVERIF DATE | Old Exp. Exp. Date | DPM | %U234 | %AM241 | COUNT DATE | New Exp. Date | U-234 dp at ref | Am-241 at ref | Decay Corrected U dpm | Decay Corrected Am dpm | U-234 0.000 at time=t | Am-241 0.000 at time=t |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 92MIX2203026 | 97-19-103-01 | 7/28/97 | 7/28/98 | 8680 | 83.77 | 14.59 | 4/10/98 | 4/10/99 | 7271.2 | 1266.4 | 7271.2 | 1266.0 | 330 | 1896 |
| 92MIX2203028 | 97-19-103-02 | 7/28/97 | 7/28/98 | 16500 | 89.47 | 8.96 | 4/10/98 | 4/10/99 | 14762.6 | 1478.4 | 14762.5 | 1478.7 | 163 | 1623 |
| 92MIX2203024 | 97-19-103-03 | 7/28/97 | 7/28/98 | 14100 | 52.09 | 47.07 | 4/10/98 | 4/10/99 | 7344.7 | 6636.9 | 7344.7 | 6629.4 | 327 | 362 |
| 92MIX2203021 | 97-19-103-04 | 7/28/97 | 7/28/98 | 8480 | 73.54 | 25.54 | 4/10/98 | 4/10/99 | 6236.2 | 2165.8 | 6236.2 | 2163.4 | 386 | 1108 |
| 92MIX2203025 | 97-19-103-05 | 7/28/97 | 7/28/98 | 22100 | 57.12 | 41.92 | 4/10/98 | 4/10/99 | 12623.5 | 9264.3 | 12623.5 | 9253.9 | 190 | 259 |
| 92MIX2203022 | 97-19-103-06 | 7/28/97 | 7/28/98 | 16100 | 51.22 | 47.56 | 4/10/98 | 4/10/99 | 8246.4 | 7657.2 | 8246.4 | 7648.6 | 291 | 313 |
| 92MIX2203023 | 97-19-103-07 | 7/28/97 | 7/28/98 | 11100 | 59.01 | 40.48 | 4/10/98 | 4/10/99 | 6550.1 | 4493.3 | 6550.1 | 4488.2 | 366 | 534 |
| 92MIX2203029 | 97-19-103-08 | 7/28/97 | 7/28/98 | 23400 | 84.8 | 13.54 | 4/10/98 | 4/10/99 | 19643.2 | 3168.4 | 19643.2 | 3164.8 | 127 | 757 |
| 92MIX2203027 | 97-19-103-09 | 7/28/97 | 7/28/98 | 3980 | 81.24 | 17.52 | 4/10/98 | 4/10/99 | 3233.4 | 697.3 | 3233.3 | 696.5 | 742 | 3442 |

Done: 4/10/98
By: DCB



227

PAI Source ID ± 15%
Rec'd Recalibrated 3-26-98

THE SOURCE INC.

Radiation Standards and Check Sources

2810 Siler Lane
Santa Fe, NM 87501
(505) 473-9538
FAX: (505) 473-5805

# Certificate of Calibration
## (Alpha Source)

The U 234/235,Am 241 alpha source was measured in a gas proportional counter using P-10 as counting gas. The alpha emissions from the surface of the source were measured at its plateau voltage to determine its 2π particle emission rate (i.e. particles per minute). Corrections were applied for background, coincidence loss and backscatter factors when applicable.

Alpha standard 93AM3204191 is our NIST calibrated source used in establishing NIST traceability following ANSI N42.22 participating in the NIST radioactivity measurement assurance program annually.

REF.PO# _____

Model Recalibration

Active Diameter (or area) 19mm  Mounting Material SS
Total Diameter (or area) 22mm  Thickness 0.79mm

| | | | | | |
|---|---|---|---|---|---|
| 4,400 | ppm ± | 220 | ppm 2π | U-235 | 1.64% |
| 8,680 | dpm ± | 434 | dpm 4π | U-234 | 83.77% |
| 0.00391 | uCi | | Bq | Am-241 | 14.59% |
| 03/02/98 | date of measurement | | | | |
| 92MIX2203026 | source serial number | | | | |
| 5.0 | overall uncertainty (percent) | | | | |
| 1.5 | backscatter(percent) | | | | |

Michael A. Ortiz . . . . Calibration Manager

Charles L. Gonzales . . Quality Assurance Manager

<20 dpm leak test results (dpm/100cm²)

The overall uncertainty of the measurement is three times the value found from combining quadratically the sum of the overall uncertainty reported by NIST in the radioactive measurements assurance program; the standard deviation of the mean for the NIST standard as measured in the system used for calibration; and the standard deviation of the mean for the source measurements.

AC006-97

Porocon # 183
[α2] rec'd 32196

THE SOURCE INC.
Radiation standards and check sources
2810 Siler Lane Santa Fe, NM 87501
(505)473-9538 FAX(505)473-5805

REF.PO# 65-1924

# Certificate of Calibration

(Alpha Sources)

The Uranium234, Americium241 alpha source was measured in a proportional counter using P-10 as counting gas. The alpha emissions from the surface of the source were measured at its plateau voltage to determine its 2pi cpm rate. Corrections were applied for background, coincidence loss and backscatter factors when applicable. The source is referenced to NIST 90AM4704625 used in establishing traceablilty.

Active Diameter(or area) 19mm
Total Diameter(or area) 22mm
8,400 cpm ± 420 cpm 2pi
16,500 dpm ± 830 dpm 4pi
0.00745 microcurie
08/13/92 date of measurement
92MIX2203028 source serial number

Mounting Material SS
Thickness 0.79mm

Activity Percent

| | |
|---|---|
| U234 | 89.47% |
| U235 | 1.57% |
| AM241 | 8.96% |

Michael A. Ortiz — Calibration Manager
Charles L. Gonzales — Q.A. Manager

The total uncertainty of the measurement at the 99% confidence interval is 5.0 percent.

AC005 000095

Geroger ID # 184
rec'd 3-21-96
α3

THE SOURCE INC.

Radiation standards and check sources
2810 Siler Lane Santa Fe, NM 87501
(505)473-9538 FAX(505)473-5805

REF.PO# 65-1924

# Certificate of Calibration

(Alpha Sources)

The Uranium234, Americium241 alpha source was measured in a proportional counter using P-10 as counting gas. The alpha emissions from the surface of the source were measured at its plateau voltage to determine its 2pi cpm rate. Corrections were applied for background, coincidence loss and backscatter factors when applicable. The source is referenced to NIST 90AM4704625 used in establishing traceablity.

Active Diameter(or area) 19mm
Total Diameter(or area) 22mm
7,170 cpm ± 360 cpm 2pi
14,100 dpm ± 710 dpm 4pi
0.00637 microcurie
08/13/92 date of measurement
92MTX2203024 source serial number

Mounting Material SS
Thickness 0.79mm

Activity Percent

| | |
|---|---|
| U234 | 52.09% |
| U235 | 0.84% |
| AM241 | 47.07% |

Michael A. Ortiz — Calibration Manager
Charles L. Gonzales — Q.A. Manager

The total uncertainty of the measurement at the 99% confidence interval is 5.0 percent.

AC005 000096

Paragon ID 185 rec'd 3/21/96
[04]

THE SOURCE INC.

Radiation standards and check sources
2810 Siler Lane Santa Fe, NM 87501
(505)473-9538 FAX(505)473-5805

REF.PO# 65-1924

# Certificate of Calibration

(Alpha Sources)

The Uranium234, Americium241 alpha source was measured in a proportional counter using P-10 as counting gas. The alpha emissions from the surface of the source were measured at its plateau voltage to determine its 2pi cpm rate. Corrections were applied for background, coincidence loss and backscatter factors when applicable. The source is referenced to NIST 90AM4704625 used in establishing traceablilty.

Active Diameter(or area) 19mm
Total Diameter(or area) 22mm
4,300 cpm ± 215 cpm 2pi
8,480 dpm ± 420 dpm 4pi
0.00382 microcurie
08/13/92 date of measurement
92MIX2203021 source serial number

Mounting Material SS
Thickness 0.79mm

Activity Percent

| | |
|---|---|
| U234 | 73.54% |
| U235 | 0.92% |
| AM241 | 25.54% |

Michael A. Ortiz — Calibration Manager
Charles L. Gonzales — Q.A. Manager

The total uncertainty of the measurement at the 99% confidence interval is 5.0 percent.

000097

231

Foreign ID 186
rec'd 3-21-96
(α3)

THE SOURCE INC.

Radiation standards and check sources
2810 Siler Lane Santa Fe, NM 87501
(505)473-9538 FAX(505)473-5805

REF.PO# 65-1924

# Certificate of Calibration

(Alpha Sources)

The Uranium234, Americium241 alpha source was measured in a proportional counter using P-10 as counting gas. The alpha emissions from the surface of the source were measured at its plateau voltage to determine its 2pi cpm rate. Corrections were applied for background, coincidence loss and backscatter factors when applicable. The source is referenced to NIST 90AM4704625 used in establishing traceablilty.

| | | | |
|---|---|---|---|
| Active Diameter(or area) 19mm | | Mounting Material SS | |
| Total Diameter(or area) 22mm | | Thickness 0.79mm | |
| 11,200 | cpm | ± 560 | cpm 2pi |
| 22,100 | dpm | ± 1,100 | dpm 4pi |
| 0.00995 | microcurie | Activity Percent | |
| 08/13/92 | date of measurement | U234 | 57.12% |
| 92MIX2203025 | source serial number | U235 | 0.96% |
| | | AM241 | 41.92% |

Michael A. Ortiz — Calibration Manager
Charles L. Gonzales — Q.A. Manager

The total uncertainty of the measurement at the 99% confidence interval is 5.0 percent.

AC005 000098

Paragon ID # 187 rec'd 3-21-96 (x6)

THE SOURCE INC.

Radiation standards and check sources
2810 Siler Lane Santa Fe, NM 87501
(505)473-9538 FAX(505)473-5805

REF.PO# 65-1924

# Certificate of Calibration

(Alpha Sources)

The Uranium234, Americium241 alpha source was measured in a proportional counter using P-10 as counting gas. The alpha emissions from the surface of the source were measured at its plateau voltage to determine its 2pi cpm rate. Corrections were applied for background, coincidence loss and backscatter factors when applicable. The source is referenced to NIST 90AM4704625 used in establishing traceability.

Active Diameter(or area) 19mm
Total Diameter(or area) 22mm
8,190 cpm ± 410 cpm 2pi
16,100 dpm ± 810 dpm 4pi
0.00727 microcurie
08/13/92 date of measurement
92MTX2203022 source serial number

Mounting Material SS
Thickness 0.79mm

Activity Percent

| | |
|---|---|
| U234 | 51.22% |
| U235 | 1.22% |
| AM241 | 47.56% |

Michael A. Ortiz — Calibration Manager
Charles L. Gonzales — Q.A. Manager

The total uncertainty of the measurement at the 99% confidence interval is 5.0 percent.

AC005 000099

233

Surogen ID 185 rec'd 32196

α7

THE SOURCE INC.

Radiation standards and check sources
2810 Siler Lane Santa Fe, NM 87501
(505)473-9538 FAX(505)473-5805

REF.PO# 65-1924

# Certificate of Calibration

(Alpha Sources)

The Uranium234, Americium241 alpha source was measured in a proportional counter using P-10 as counting gas. The alpha emissions from the surface of the source were measured at its plateau voltage to determine its 2pi cpm rate. Corrections were applied for background, coincidence loss and backscatter factors when applicable. The source is referenced to NIST 90AM4704625 used in establishing traceablilty.

Active Diameter(or area) 19mm
Total Diameter(or area) 22mm
5,650 cpm ± 280 cpm 2pi
11,100 dpm ± 560 dpm 4pi
0.00502 microcurie
08/13/92 date of measurement
92MIX2203023 source serial number

Mounting Material SS
Thickness 0.79mm

Activity Percent

| | |
|---|---|
| U234 | 59.01% |
| U235 | 0.51% |
| AM241 | 40.48% |

Michael A. Ortiz — Calibration Manager
Charles L. Gonzales — Q.A. Manager

The total uncertainty of the measurement at the 99% confidence interval is 5.0 percent.

AC005

000100

234

THE SOURCE INC.
Radiation Standards and Check Sources
2810 Siler Lane
Santa Fe, NM 87501
(505) 473-9538
FAX: (505) 473-5805

PAI Source 0189
rec'd recalibrated 3-26-98

# Certificate of Calibration
## (Alpha Source)

The U 234/235,Am 241 alpha source was measured in a gas proportional counter using P-10 as counting gas. The alpha emissions from the surface of the source were measured at its plateau voltage to determine its 2π particle emission rate (i.e. particles per minute). Corrections were applied for background, coincidence loss and backscatter factors when applicable.

Alpha standard 93AM3204191 is our NIST calibrated source used in establishing NIST traceability following ANSI N42.22 participating in the NIST radioactivity measurement assurance program annually.

REF.PO# _____

Model Recalibration

Active Diameter (or area) 19mm  Mounting Material SS
Total Diameter (or area) 22mm  Thickness 0.79mm

| | | | | | |
|---|---|---|---|---|---|
| 11,900 | ppm ± | 595 | ppm 2π | U-235 | 1.66% |
| 23,400 | dpm ± | 1,170 | dpm 4π | U-234 | 84.80% |
| 0.0105 | uCi | | Bq | Am-241 | 13.54% |
| 03/02/98 | date of measurement | | | | |
| 92MIX2203029 | source serial number | | | | |
| 5.0 | overall uncertainty (percent) | | | | |
| 1.5 | backscatter(percent) | | | | |

Michael A. Ortiz . . . . Calibration Manager

Charles L. Gonzales . . Quality Assurance Manager

<20 dpm leak test results (dpm/100cm²)

The overall uncertainty of the measurement is three times the value found from combining quadratically the sum of the overall uncertainty reported by NIST in the radioactive measurements assurance program; the standard deviation of the mean for the NIST standard as measured in the system used for calibration; and the standard deviation of the mean for the source measurements.

AC006-97

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-04 Weekly Cal
Type: ECAL4 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 2 Input 4
Efficiency: 28.55% Chem. Recovery: 0.00%
Total Eff.: 28.55% Manual:100.00%
CALIBRATION: 3054.94 + 9.65503 * Chn keV
Original: 3058.64 + 9.65 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011312.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 17-Jan-99 11:39:24
Live Time: 2100.00 Real Time: 2119.48 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9011712.CHN
Background File: C:\USER\ALPHA\BKGND\B9011612.CHN
Nuclide Library: C:\USER\ALPHA\ECAL4.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9011712

## P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 251.79 | 6.19 | 2465.36 | 22212.26 | 0.27 | 22211.99 | 634.63 |
| 2. | 178.13 | 4.50 | 6555.17 | 60853.70 | 0.06 | 60853.65 | 1738.68 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 59.770 | 3.4959 | 2226.38 | 0.42 | 1.31 |
| 2. | U-234 | 0.72 | 4774.80 | 62.526 | 1.6659 | 6091.00 | 1.50 | 0.79 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 85507.0000 | 100.00 |
| Net Area | 85498.3200 | 99.99 |
| Background | 8.6800 | 0.01 |
| Composite Fit | 84346.6204 | 98.64 |
| Residuals | 1151.6996 | 1.35 |

Analyzed By: _____ ()

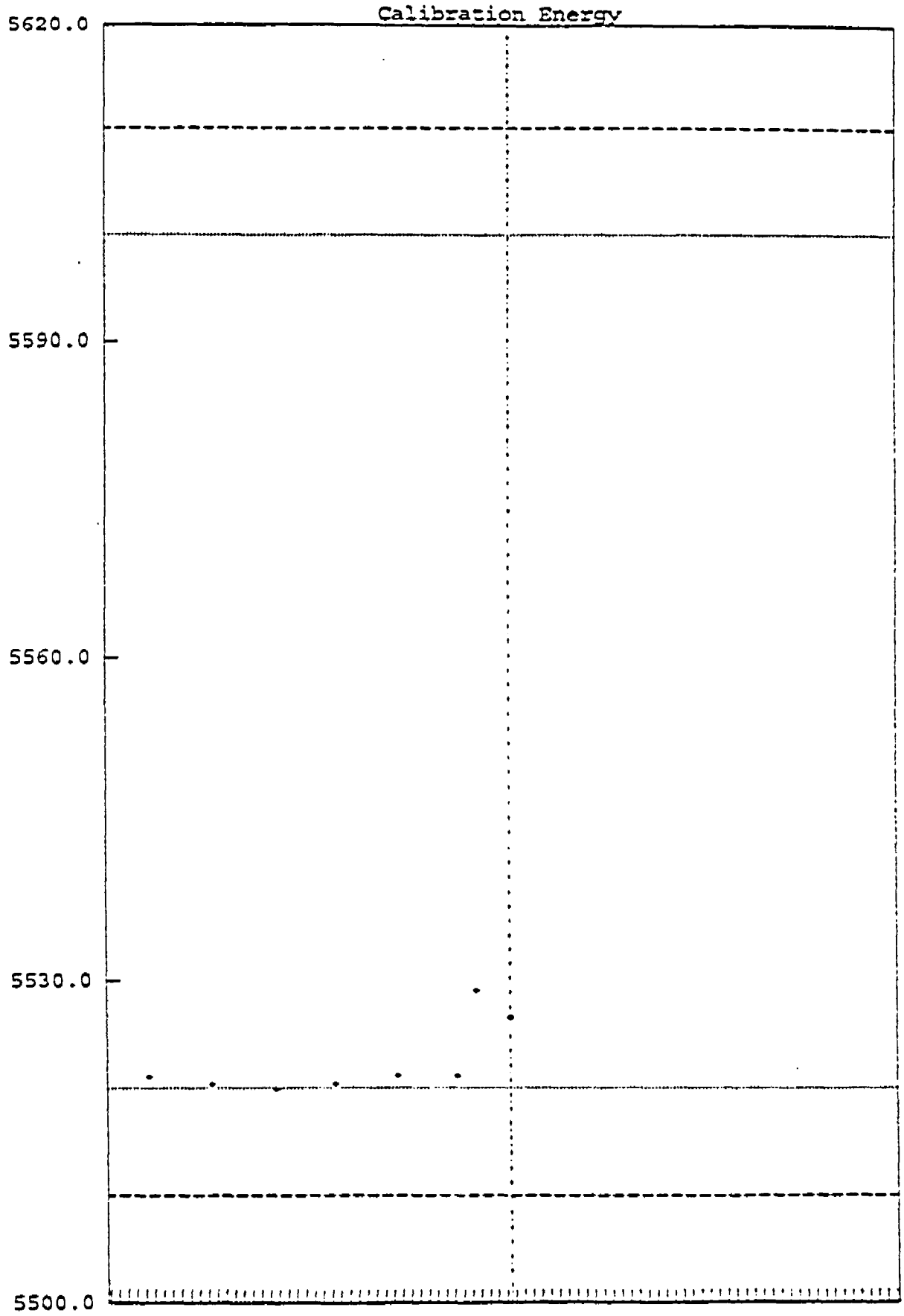
Checked By: BG _____ ()



330

Paragon Analytics, Inc.
12 MCB 2 Input 4

1/17/99 2:30:19 PM

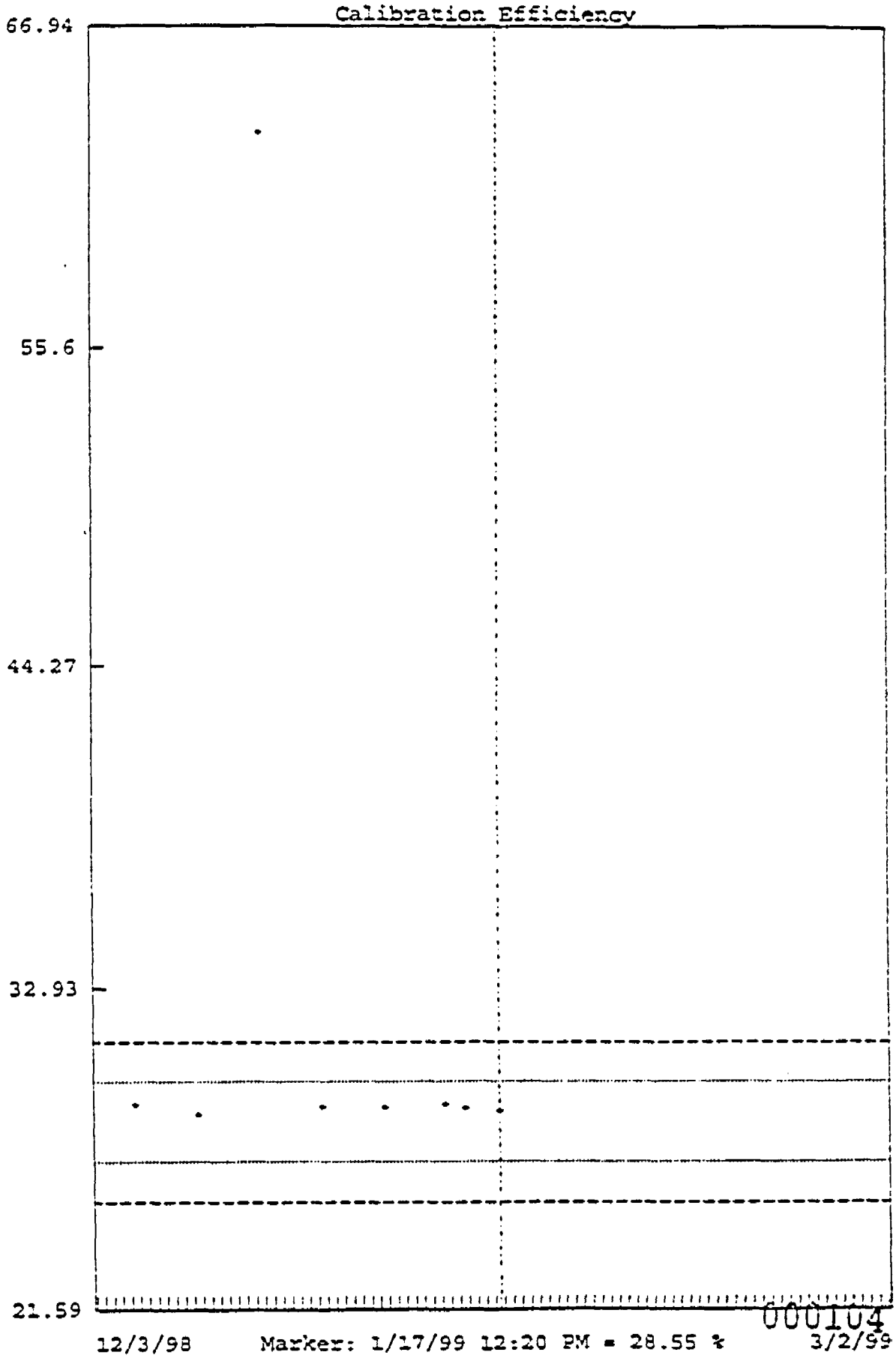





23

Paragon Analytics, Inc.
12 MCB 2 Input 4

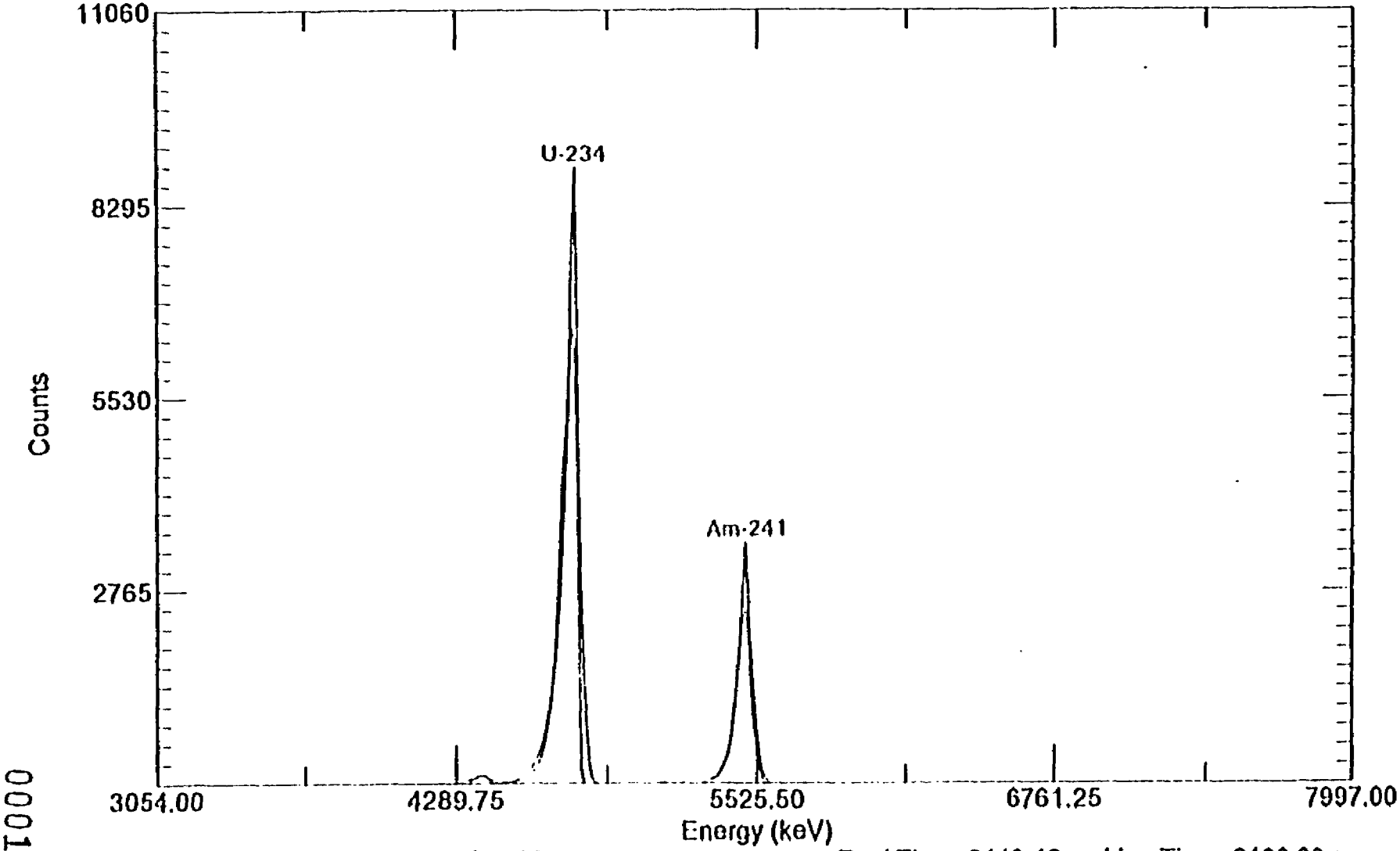
1/17/99 2:38:59 PM




000104

C9011712

AlphaVision Absolute Peak Search And Fit




Acquired: 11:39:24 on 17-Jan-99
File: C:\USER\ALPHA\CALIB\C9011712.CHN
Sample: Source 97-19-103-04 Weekly Cal

Real Time: 2119.48 s. Live Time: 2100.00 s.
Detector: #12 MCB 2 Input 4
Type: ECAL4

000105

234

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-05 Weekly Cal
Type: ECAL5 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 2 Input 5
Efficiency: 28.73% Chem. Recovery: 0.00%
Total Eff.: 28.73% Manual:100.00%
CALIBRATION: 3055.32 + 9.73328 * Chn keV
Original: 3059.99 + 9.7116 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011313.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 17-Jan-99 11:39:32
Live Time: 2100.00 Real Time: 2119.52 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9011713.CHN
Background File: C:\USER\ALPHA\BKGND\B9011613.CHN
Nuclide Library: C:\USER\ALPHA\ECAL5.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9011713

P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 249.73 | 6.91 | 10794.61 | 97412.98 | 0.27 | 97412.71 | 2783.22 |
| 2. | 176.66 | 5.56 | 13572.54 | 119755.25 | 0.13 | 119755.12 | 3421.57 |

D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 67.216 | 5.4128 | 9701.30 | 0.42 | 0.63 |
| 2. | U-234 | 0.72 | 4774.80 | 54.135 | 2.8835 | 11909.66 | 14.08 | 0.57 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 223472.0000 | 100.00 |
| Net Area | 223463.5300 | 100.00 |
| Background | 8.4700 | 0.00 |
| Composite Fit | 219738.9645 | 98.33 |
| Residuals | 3724.5654 | 1.67 |

Analyzed By: _____ ()

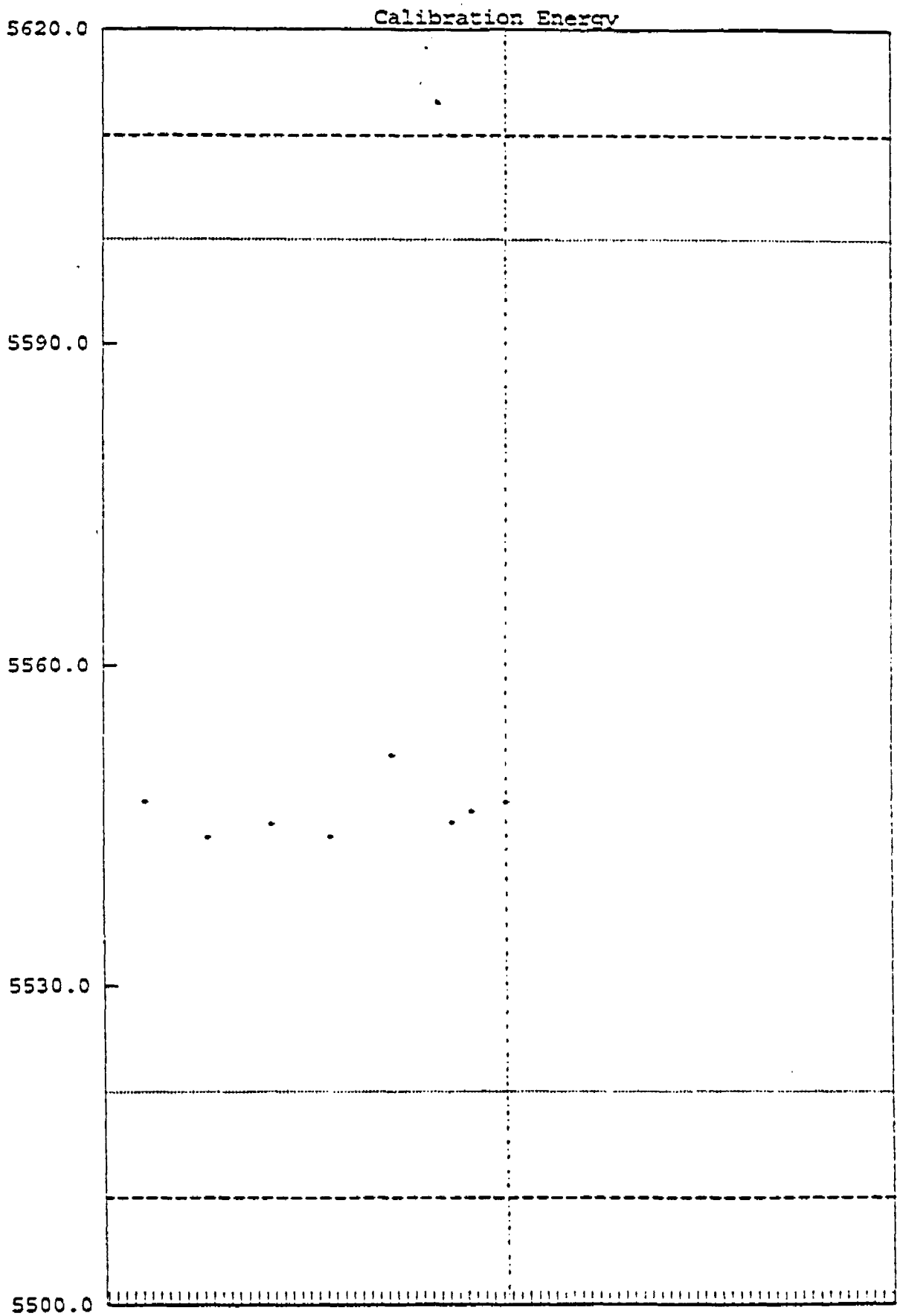
Checked By: RG _____ ()



240

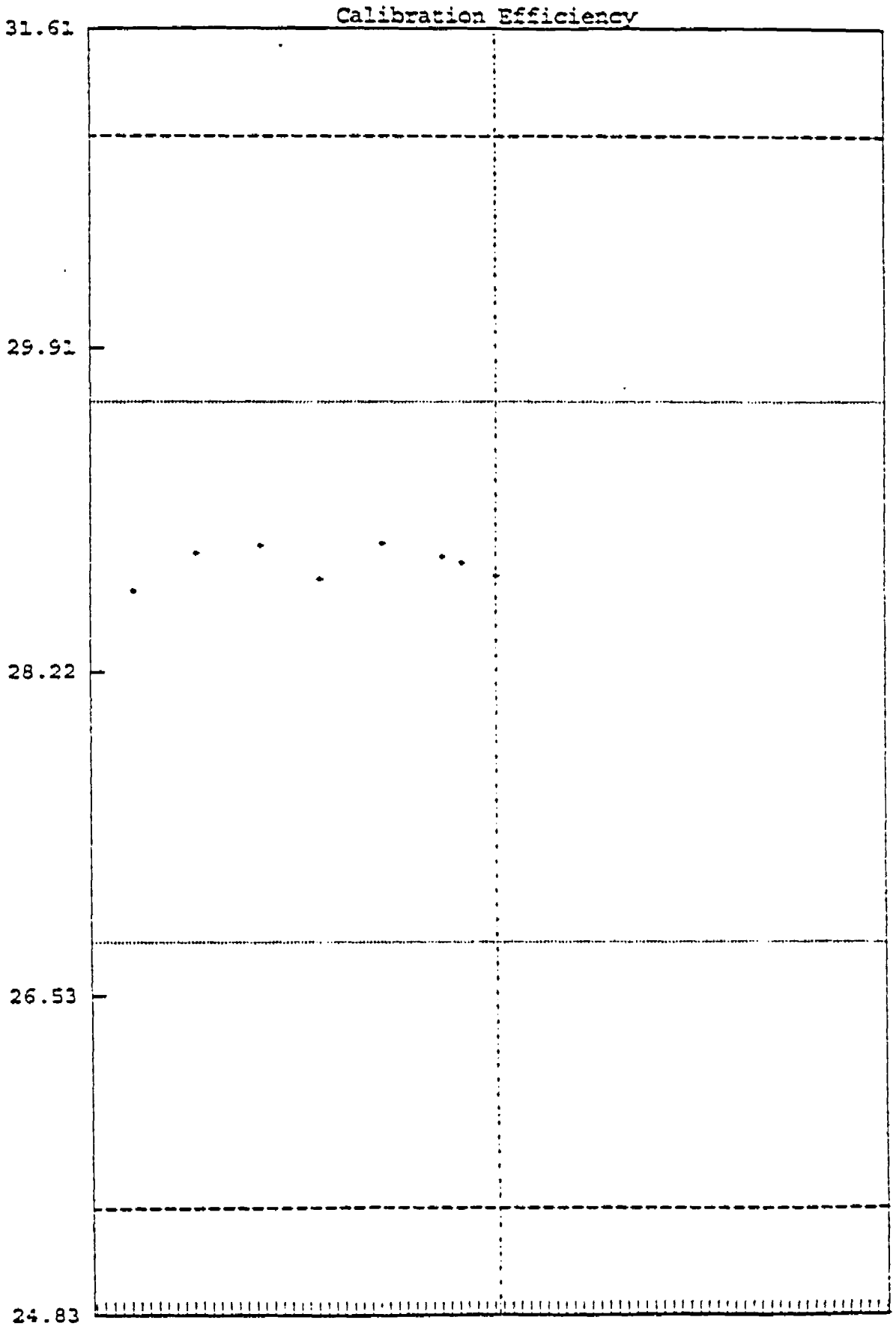
Paragon Analytics, Inc.
13 MCB 2 Input 5

1/17/99 2:30:23 PM



Paragon Analytics, Inc.
13 MCB 2 Input 5

1/17/99 2:39:04 PM

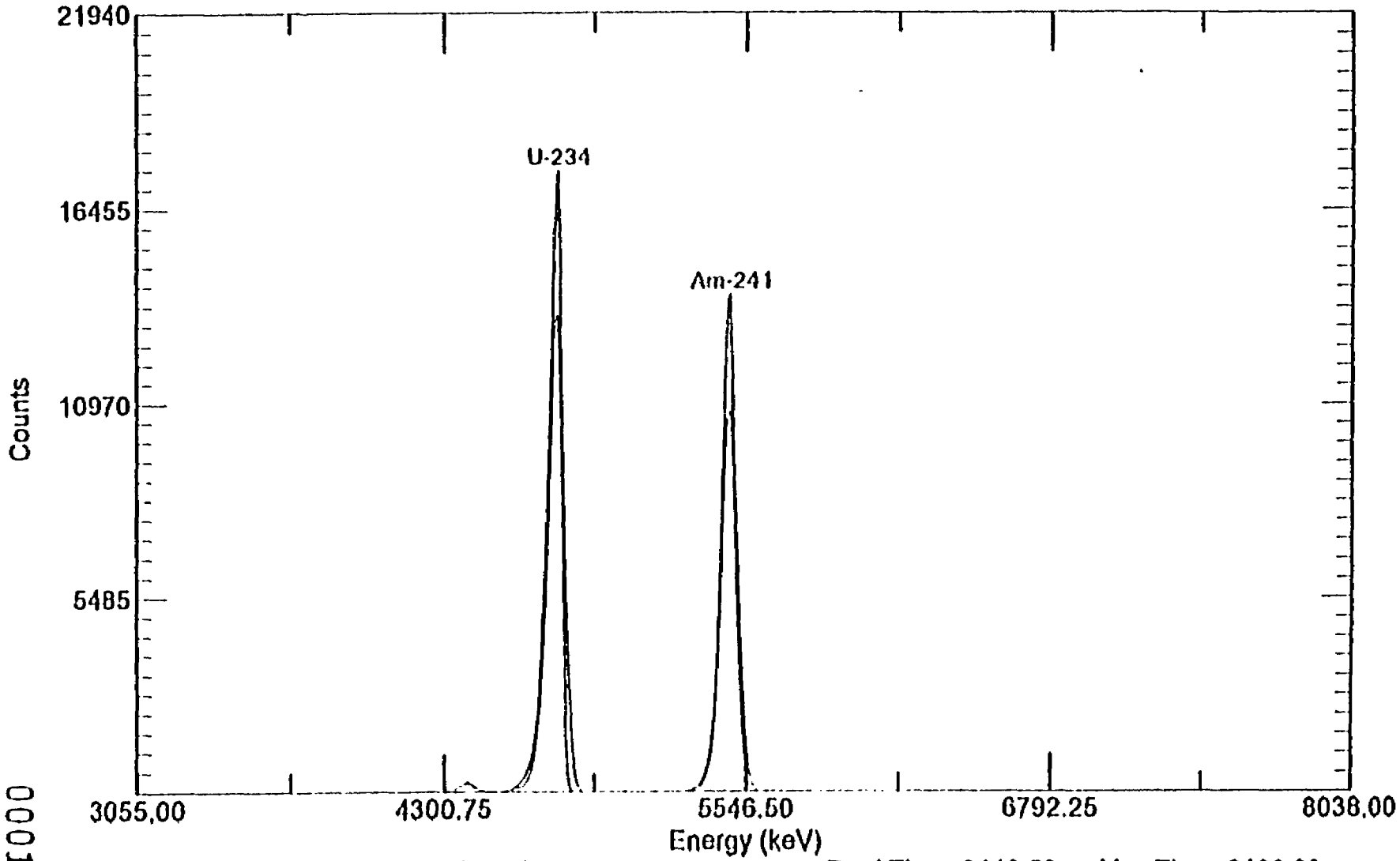



000108

242

C9011713

AlphaVision Absolute Peak Search And Fit




Acquired: 11:39:32 on 17-Jan-99
File: C:\USER\ALPHA\CALIB\C9011713.CHN
Sample: Source 97-19-103-05 Weekly Cal

Real Time: 2119.52 s. Live Time: 2100.00 s.
Detector: #13 MCB 2 Input 5
Type: ECAL5

000109

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-06 Weekly Cal
Type: ECAL6 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 2 Input 6
Efficiency: 28.87% Chem. Recovery: 0.00%
Total Eff.: 28.87% Manual:100.00%
CALIBRATION: 3057.99 + 9.69667 * Chn keV
Original: 3060.13 + 9.695 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011314.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 17-Jan-99 11:39:34
Live Time: 2100.00 Real Time: 2119.52 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9011714.CHN
Background File: C:\USER\ALPHA\BKGND\B9011614.CHN
Nuclide Library: C:\USER\ALPHA\ECAL6.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9011714

P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 250.40 | 5.54 | 9472.34 | 77117.64 | 0.38 | 77117.26 | 2203.35 |
| 2. | 177.05 | 4.03 | 10360.64 | 82757.76 | 0.07 | 82757.69 | 2364.51 |

D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 53.710 | 4.4676 | 7641.81 | 0.43 | 0.70 |
| 2. | U-234 | 0.72 | 4774.80 | 53.749 | 2.0058 | 8189.24 | 1.60 | 0.68 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 165618.0000 | 100.00 |
| Net Area | 165609.6000 | 99.99 |
| Background | 8.4000 | 0.01 |
| Composite Fit | 161934.7435 | 97.78 |
| Residuals | 3674.8564 | 2.22 |

Analyzed By: _____ ()

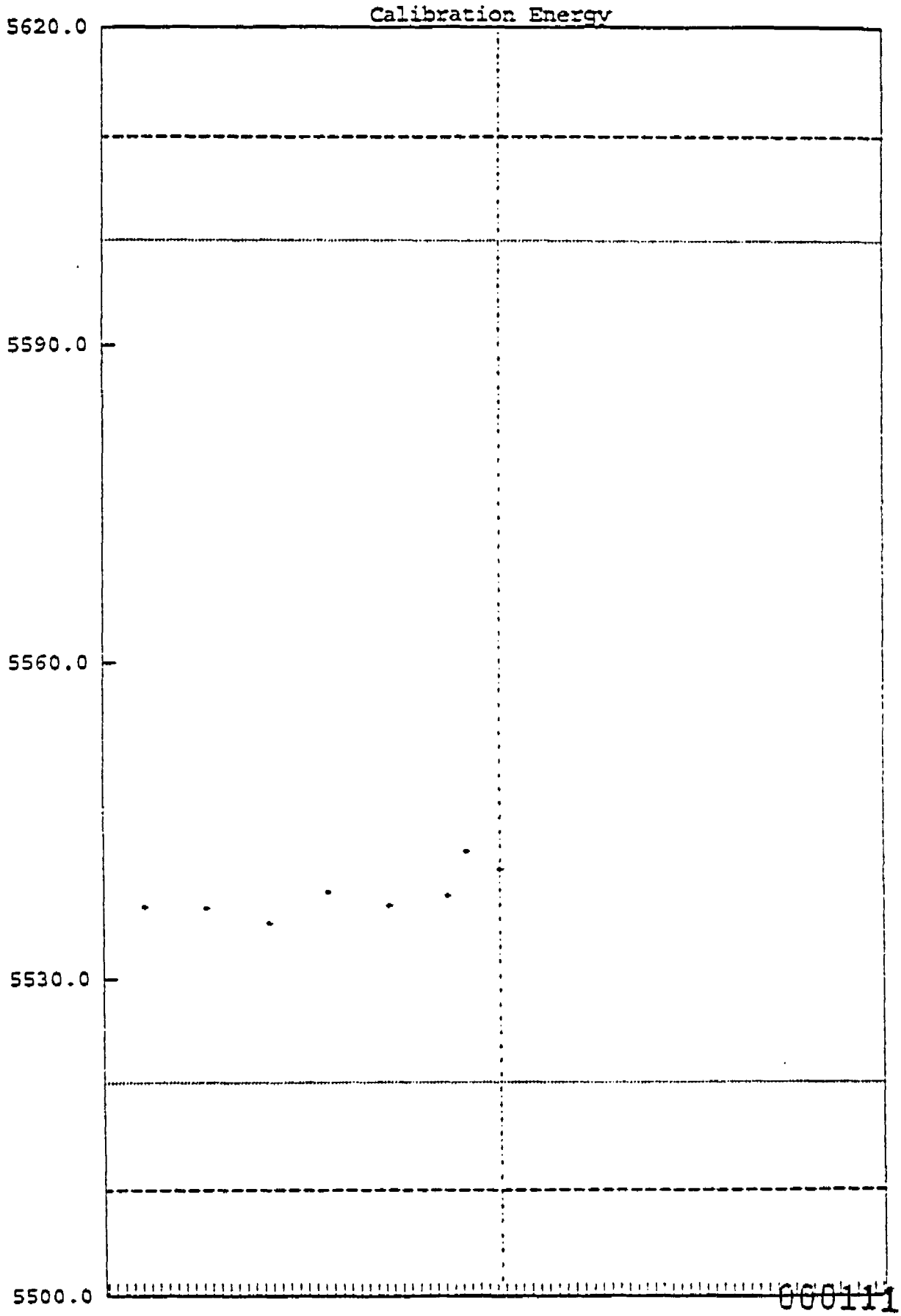
Checked By: BG _____ ()

000110

244

Paragon Analytics, Inc.
14 MCB 2 Input 6

1/17/99 2:30:27 PM

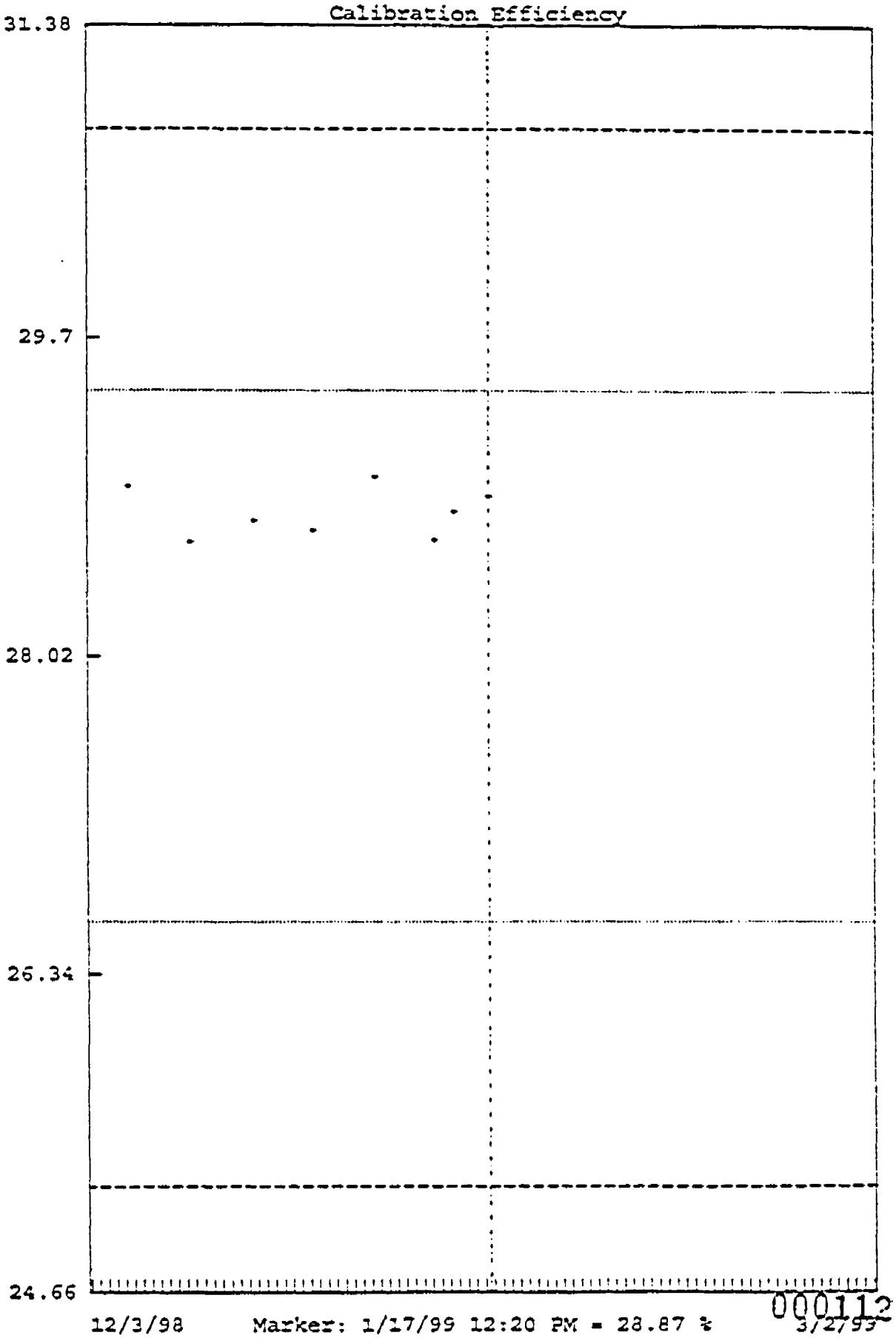



000111

245

Paragon Analytics, Inc.
14 MCB 2 Input 6

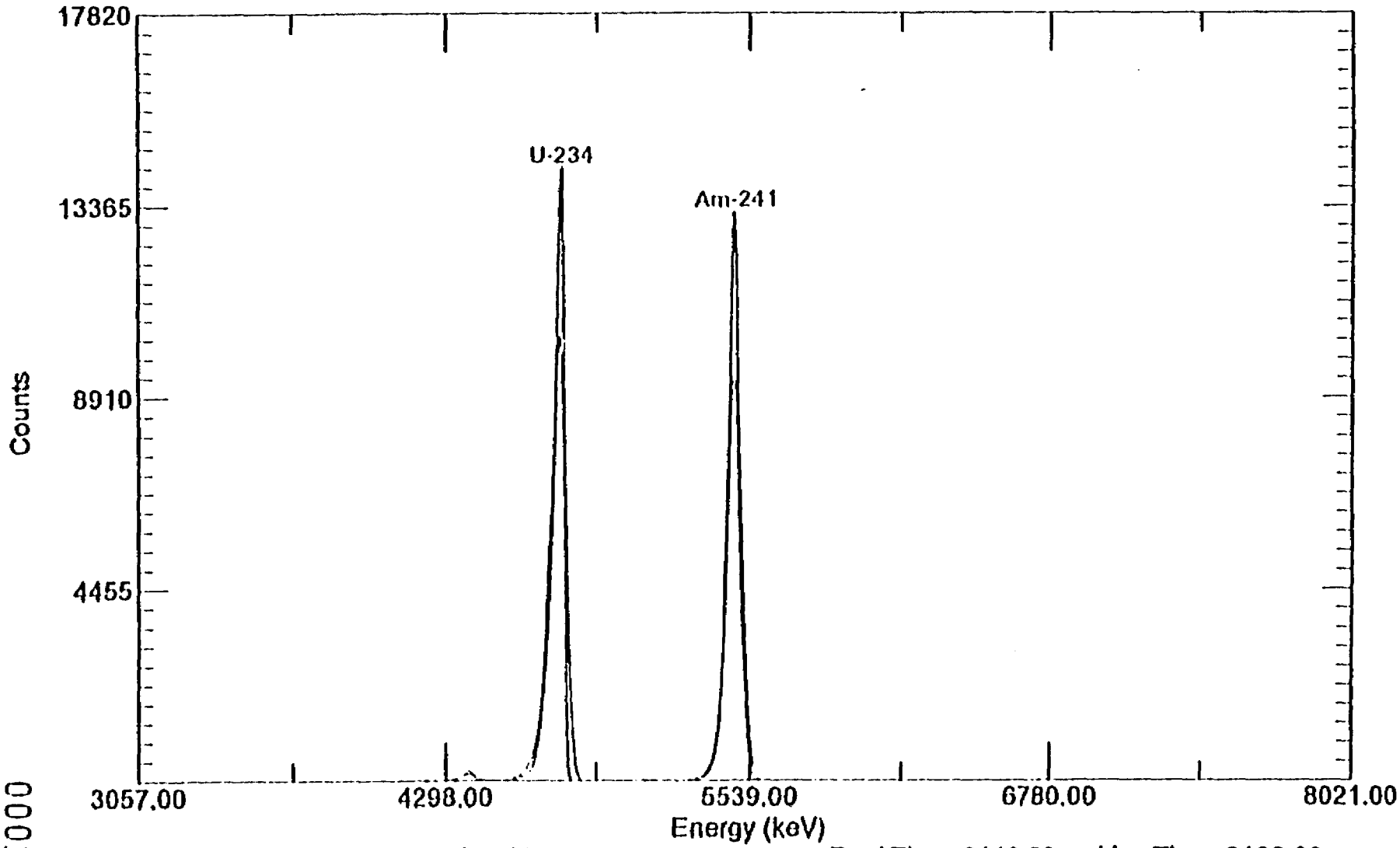
1/17/99 2:39:07 PM




000112

C9011714

AlphaVision Absolute Peak Search And Fit




Acquired: 11:39:34 on 17-Jan-99
File: C:\USER\ALPHA\CALIB\C9011714.CHN
Sample: Source 97-19-103-06 Weekly Cal

Real Time: 2119.52 s. Live Time: 2100.00 s.
Detector: #14 MCB 2 Input 6
Type: ECAL6

000113

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-07 Weekly Cal
Type: ECAL7 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 2 Input 7
Efficiency: 29.44% Chem. Recovery: 0.00%
Total Eff.: 29.44% Manual:100.00%
CALIBRATION: 3046.9 + 9.67684 * Chn keV
Original: 3048.12 + 9.6841 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011315.CHN
ACQUISITION: 512 Channels Spectrum Acquired. 17-Jan-99 11:39:36
Live Time: 2100.00 Real Time: 2119.52 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9011715.CHN
Background File: C:\USER\ALPHA\BKGND\B9011615.CHN
Nuclide Library: C:\USER\ALPHA\ECAL7.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9011715

P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 252.06 | 5.65 | 5377.20 | 44730.44 | 0.30 | 44730.14 | 1278.00 |
| 2. | 178.56 | 3.98 | 8408.92 | 69081.08 | 0.08 | 69081.01 | 1973.74 |

D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 54.682 | 4.0923 | 4347.85 | 0.41 | 0.93 |
| 2. | U-234 | 0.72 | 4774.80 | 54.701 | 1.8151 | 6705.39 | 3.43 | 0.75 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 117134.0000 | 100.00 |
| Net Area | 117127.3150 | 99.99 |
| Background | 6.6850 | 0.01 |
| Composite Fit | 115284.9421 | 98.42 |
| Residuals | 1842.3729 | 1.57 |

Analyzed By: _____ ()

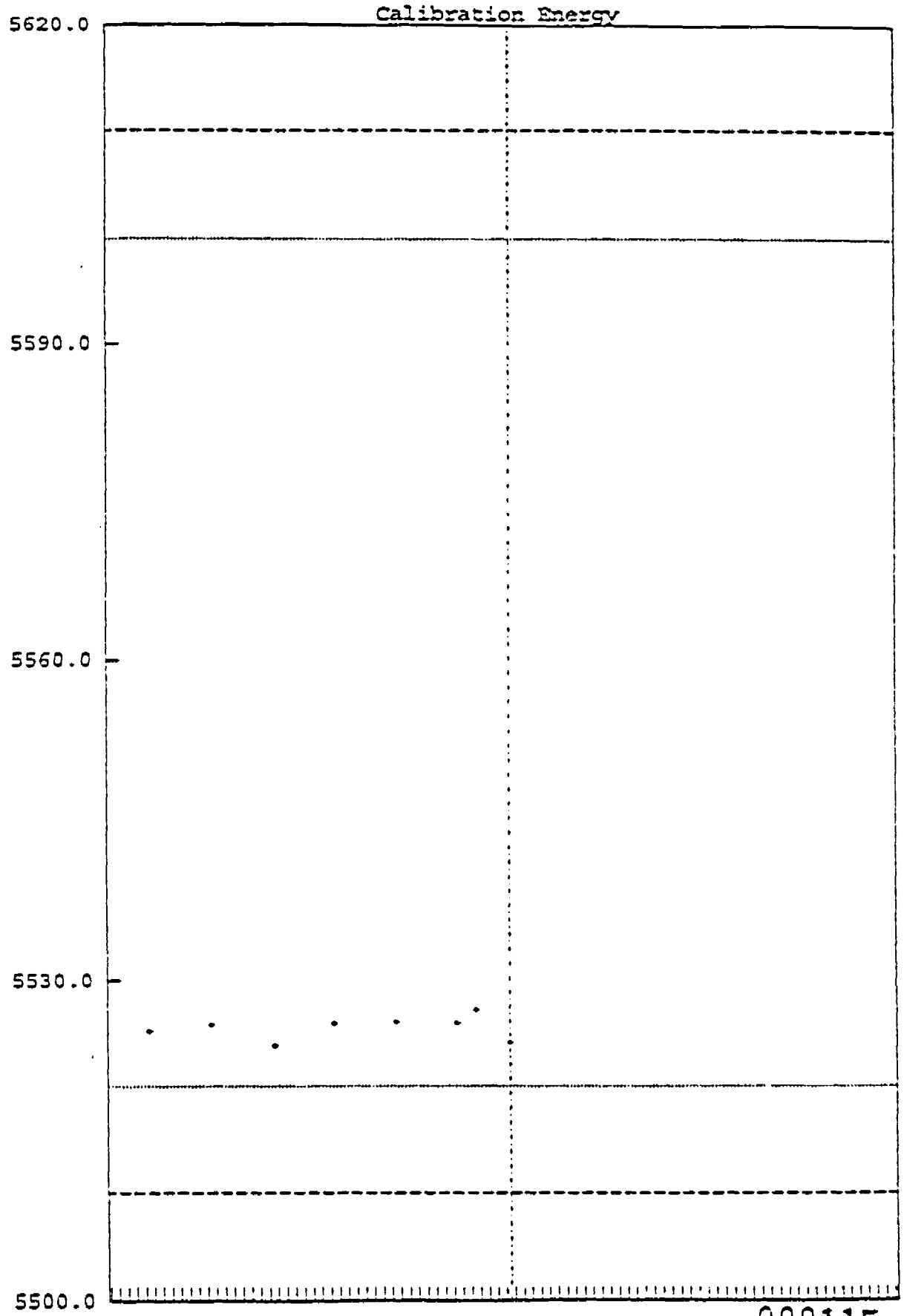
Checked By: BG _____ ()



287

Paragon Analytics, Inc.
15 MCB 2 Input 7

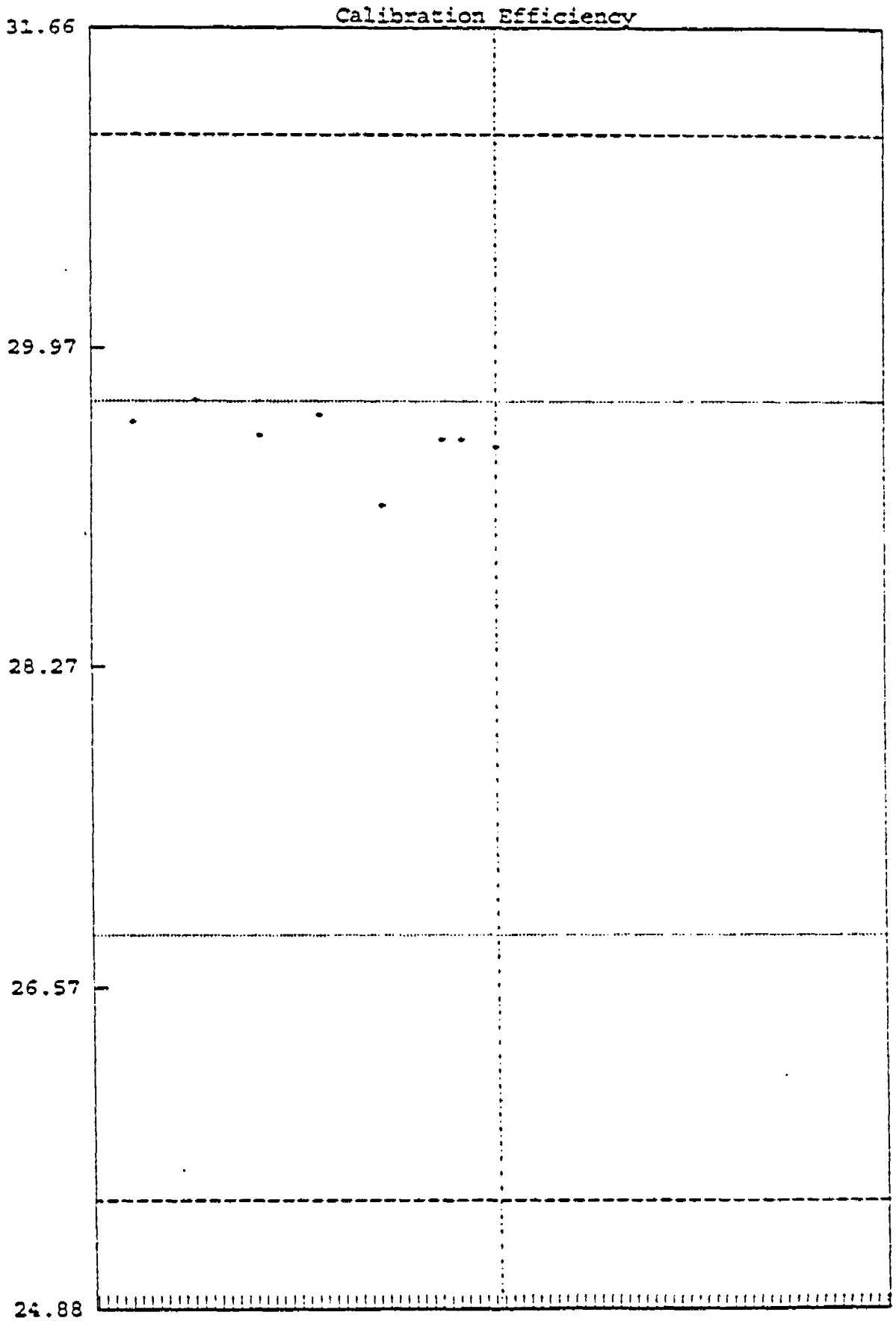
1/17/99 2:30:35 PM




000115

Paragon Analytics, Inc.
15 MCB 2 Input 7

1/17/99 2:39:11 PM

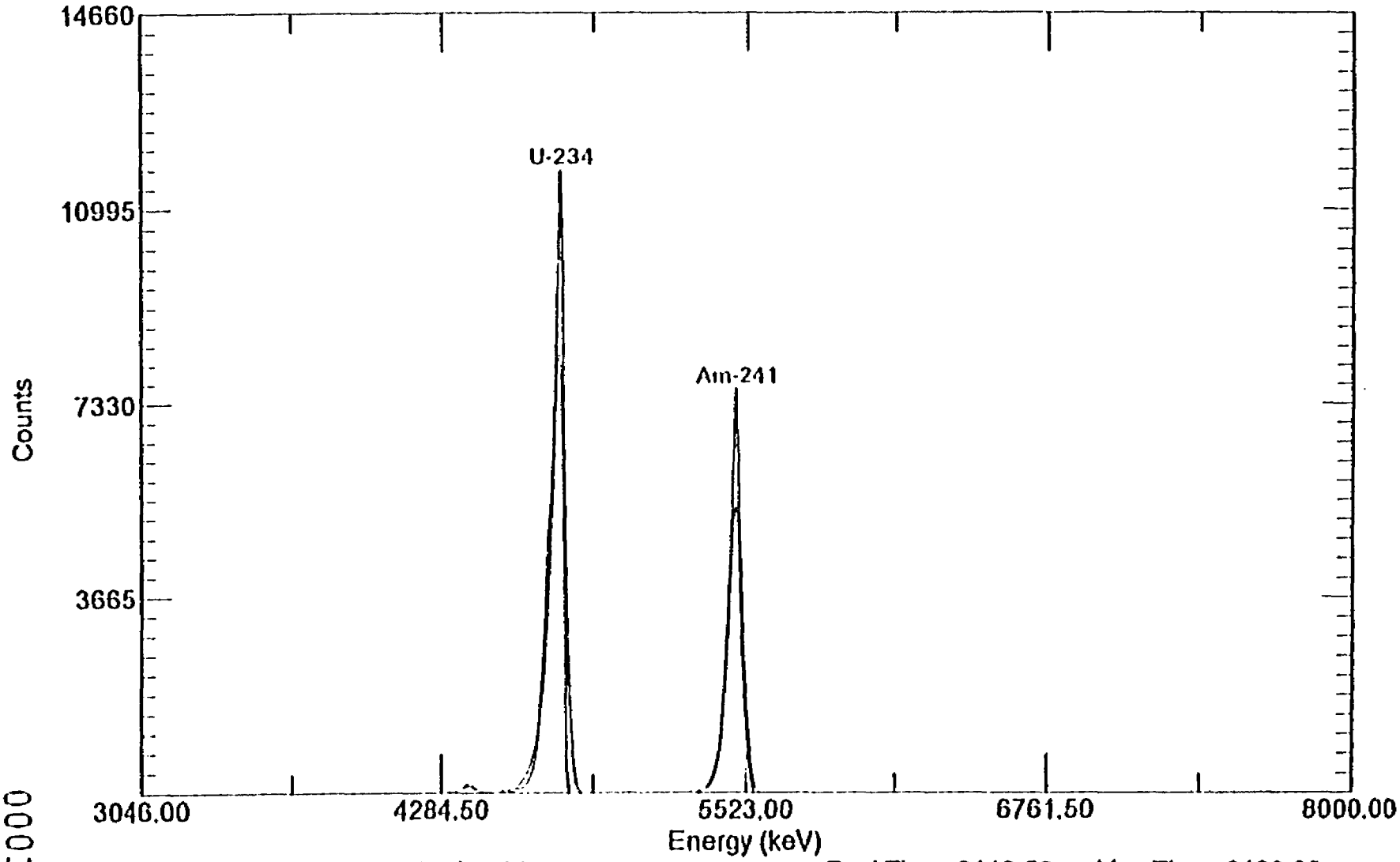



00071P6

25

C9011715

AlphaVision Absolute Peak Search And Fit




Acquired: 11:39:36 on 17-Jan-99
File: C:\USER\ALPHA\CALIB\C9011715.CHN
Sample: Source 97-19-103-07 Weekly Cal

Real Time: 2119.52 s. Live Time: 2100.00 s.
Detector: #15 MCB 2 Input 7
Type: ECAL7

000117

251

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-08 Weekly Cal
Type: ECAL8 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 2 Input 8
Efficiency: 30.64% Chem. Recovery: 0.00%
Total Eff.: 30.64% Manual:100.00%
CALIBRATION: 3070.92 + 9.75482 * Chn keV
Original: 3071.57 + 9.7569 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011316.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 17-Jan-99 11:39:39
Live Time: 2100.00 Real Time: 2119.52 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9011716.CHN
Background File: C:\USER\ALPHA\BKGND\B9011616.CHN
Nuclide Library: C:\USER\ALPHA\ECAL8.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9011716

## P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 247.58 | 6.65 | 3765.04 | 33839.80 | 0.51 | 33839.29 | 966.84 |
| 2. | 174.67 | 5.02 | 24658.51 | 213434.75 | 0.03 | 213434.72 | 6098.13 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 64.887 | 4.5868 | 3159.42 | 0.41 | 1.06 |
| 2. | U-234 | 0.72 | 4774.80 | 61.527 | 2.4426 | 19899.47 | 0.37 | 0.42 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 255214.0000 | 100.00 |
| Net Area | 255205.9850 | 100.00 |
| Background | 8.0150 | 0.00 |
| Composite Fit | 251333.4159 | 98.48 |
| Residuals | 3872.5691 | 1.52 |

Analyzed By: _____ ()

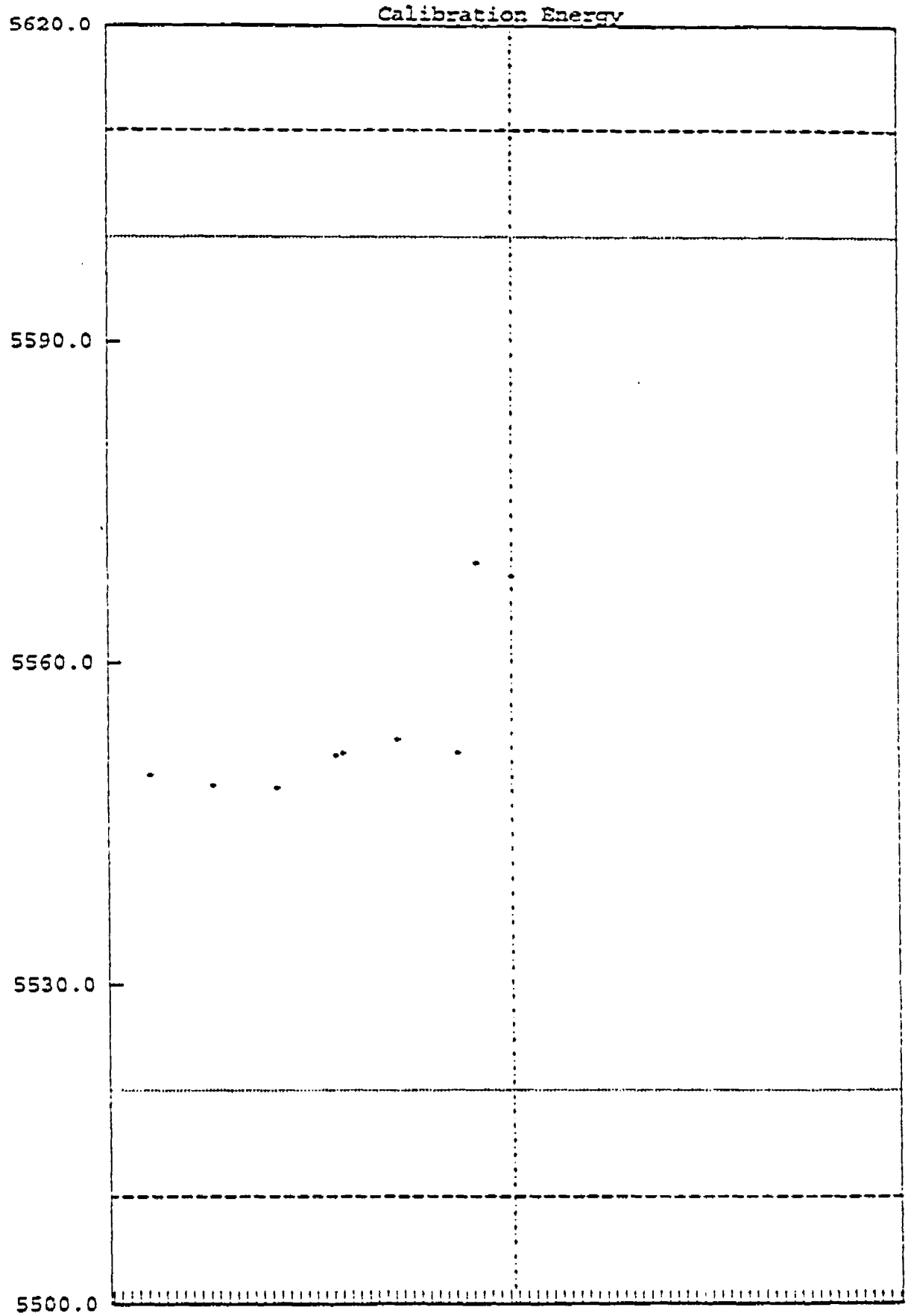
Checked By: BG _____ ()

000118

258

Paragon Analytics, Inc.
16 MCB 2 Input 8

1/27/99 2:30:39 PM

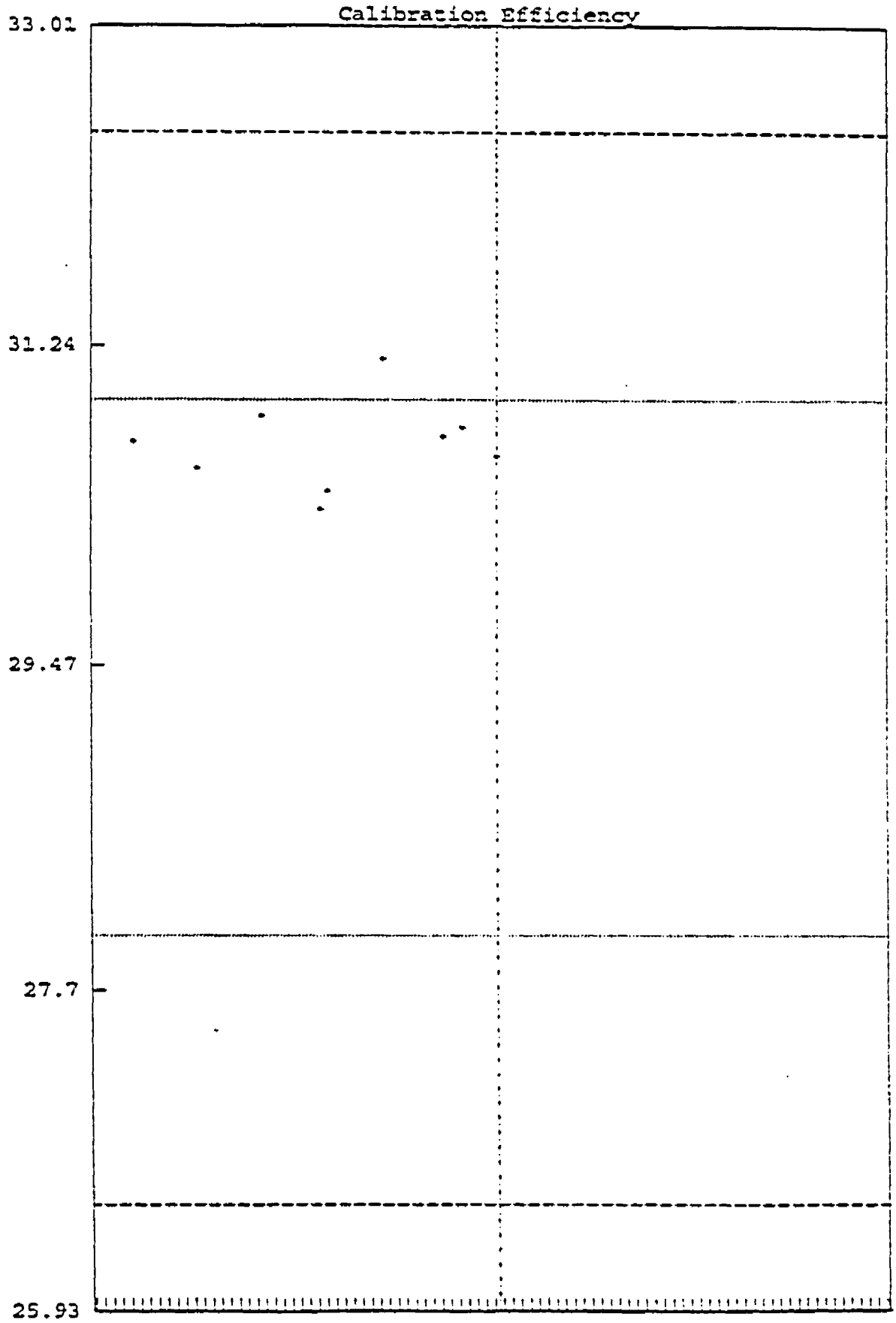



000119

53

Paragon Analytics, Inc.
16 MCB 2 Input 8

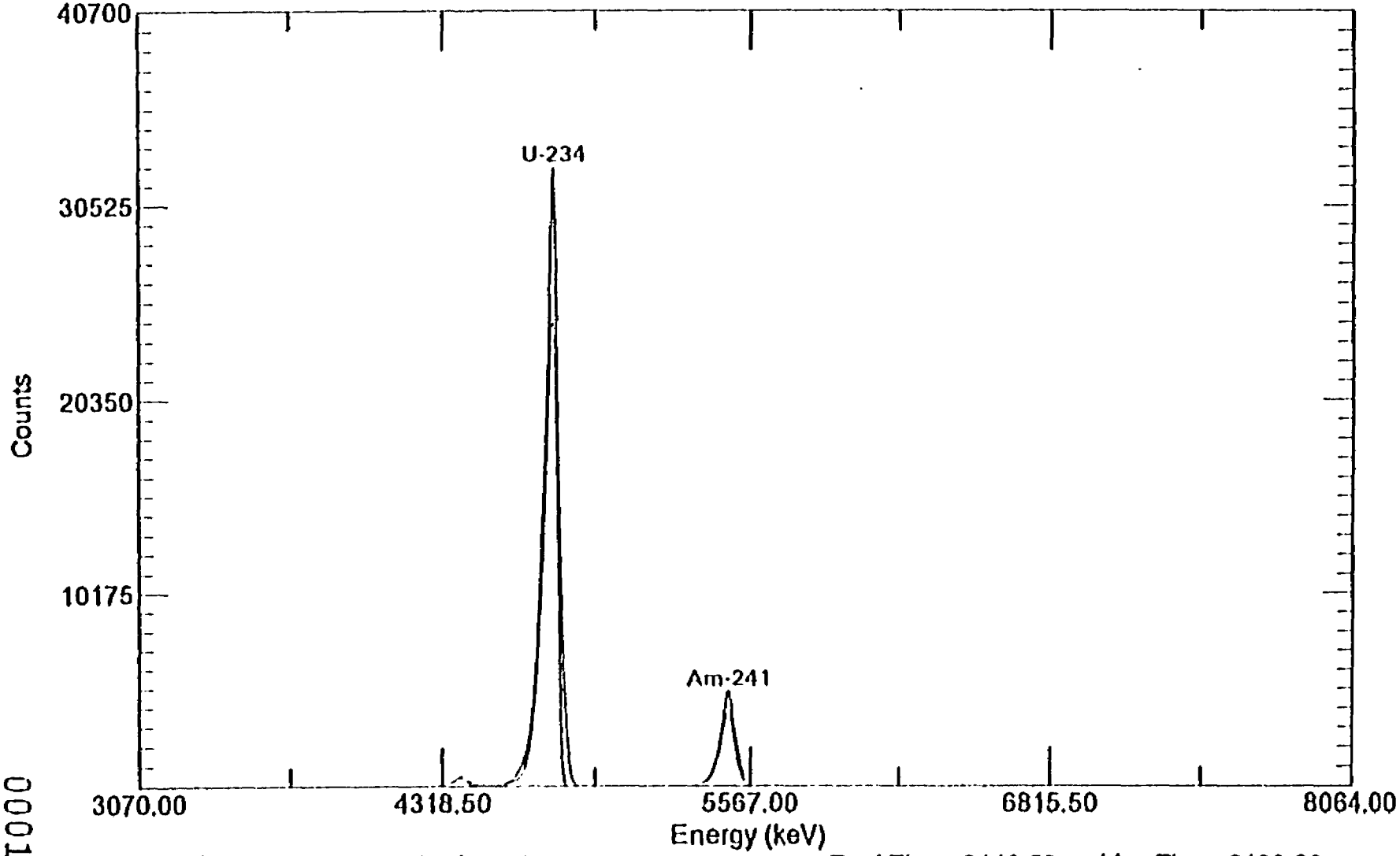
1/17/99 2:39:15




000120

C9011716

AlphaVision Absolute Peak Search And Fit




Acquired: 11:39:39 on 17-Jan-99
File: C:\USER\ALPHA\CALIB\C9011716.CHN
Sample: Source 97-19-103-08 Weekly Cal

Real Time: 2119.52 s. Live Time: 2100.00 s.
Detector: #16 MCB 2 Input 8
Type: ECAL8

000121

153

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-01 Weekly Cal
Type: ECAL1 Sample Collected: 02-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 1
Efficiency: 29.76% Chem. Recovery: 0.00%
Total Eff.: 28.76% Manual:100.00%
CALIBRATION: 3058.46 + 9.6718 * Chn keV
Original: 3057.51 + 9.6781 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011317.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 17-Jan-99 12:23:33
Live Time: 2100.00 Real Time: 2119.88 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9011717.CHN
Background File: C:\USER\ALPHA\BKGND\B9011617.CHN
Nuclide Library: C:\USER\ALPHA\ECAL1.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9011717

## P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 250.99 | 5.36 | 1544.00 | 12451.35 | 0.19 | 12451.16 | 355.75 |
| 2. | 177.46 | 3.82 | 9595.14 | 74778.22 | 0.00 | 74778.22 | 2136.52 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 51.883 | 4.1501 | 1238.82 | 0.41 | 1.75 |
| 2. | U-234 | 0.72 | 4774.80 | 36.935 | 1.9384 | 7429.55 | 0.38 | 0.72 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 90544.0000 | 100.00 |
| Net Area | 90539.2050 | 99.99 |
| Background | 4.7950 | 0.01 |
| Composite Fit | 88640.2440 | 97.90 |
| Residuals | 1898.9611 | 2.10 |

Analyzed By: _____ ()

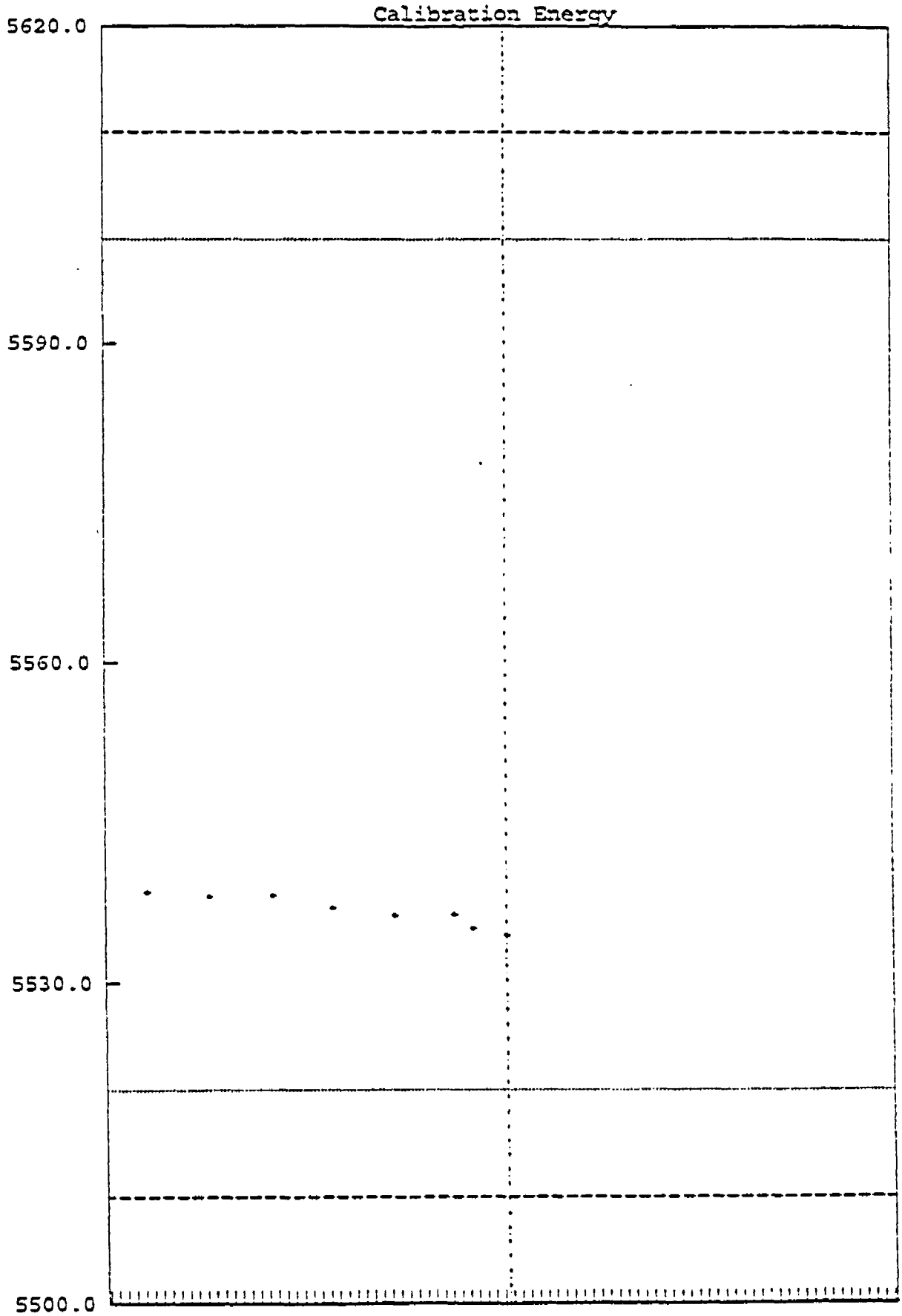
Checked By: RG _____ ()



JSU

Paragon Analytics, Inc.
17 MCB 3 Input 1

1/17/99 2:30:43 PM

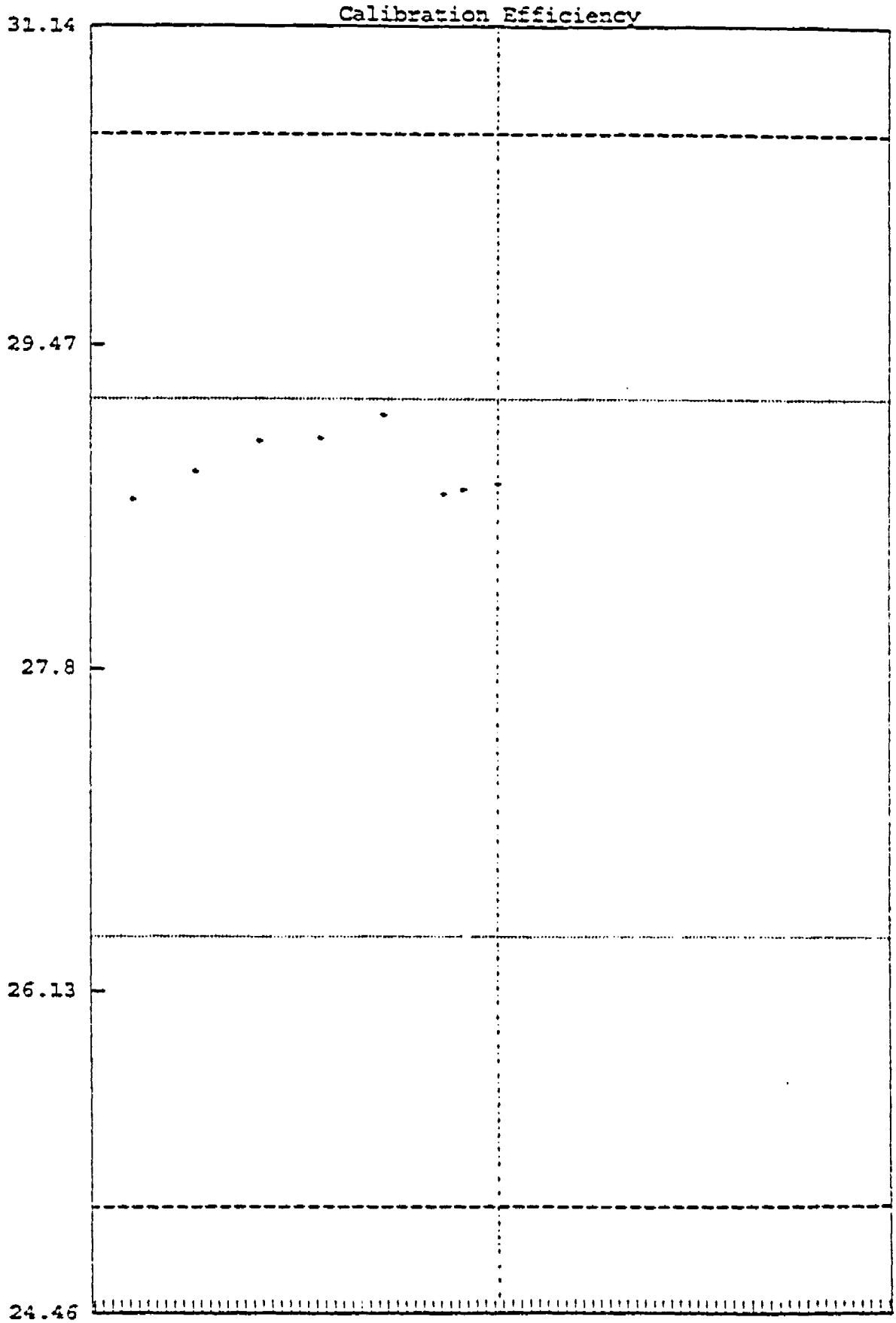



0001

251

Paragon Analytics, Inc.
17 MCB 3 Input 1

1/17/99 2:39:18 PM

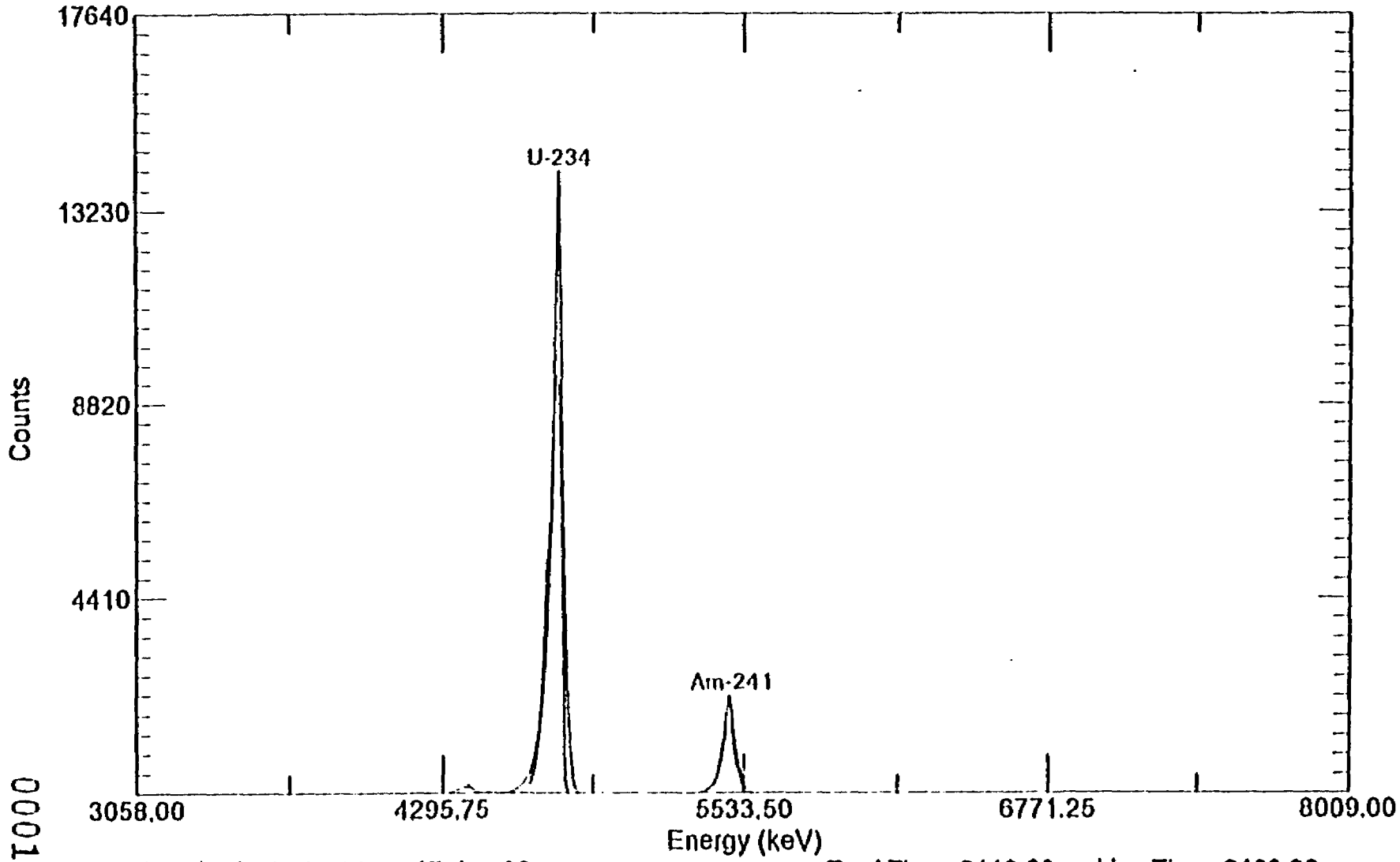



000124

258

C9011717

AlphaVision Absolute Peak Search And Fit




Acquired: 12:23:33 on 17-Jan-99
File: C:\USER\ALPHA\CALIB\C9011717.CHN
Sample: Source 97-19-103-01 Weekly Cal

Real Time: 2119.88 s. Live Time: 2100.00 s.
Detector: #17 MCB 3 Input 1
Type: ECAL1

000125

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-03 Weekly Cal
Type: ECAL3 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 3
Efficiency: 28.56% Chem. Recovery: 0.00%
Total Eff.: 28.56% Manual:100.00%
CALIBRATION: 3074.56 + 9.69928 * Chn keV
Original: 3077.79 + 9.7015 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011319.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 17-Jan-99 12:23:37
Live Time: 2100.00 Real Time: 2119.90 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9011719.CHN
Background File: C:\USER\ALPHA\BKGND\B9011619.CHN
Nuclide Library: C:\USER\ALPHA\ECAL3.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9011719

## P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 248.62 | 5.86 | 8017.00 | 68450.54 | 0.33 | 68450.20 | 1955.72 |
| 2. | 175.30 | 4.30 | 8272.84 | 70323.92 | 0.05 | 70323.86 | 2009.25 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 56.868 | 3.9511 | 6856.24 | 0.43 | 0.75 |
| 2. | U-234 | 0.72 | 4774.80 | 57.553 | 1.9046 | 7034.04 | 15.13 | 0.74 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 143267.0000 | 100.00 |
| Net Area | 143257.5850 | 99.99 |
| Background | 9.4150 | 0.01 |
| Composite Fit | 140418.9840 | 98.01 |
| Residuals | 2838.6011 | 1.98 |

Analyzed By: _____ ()

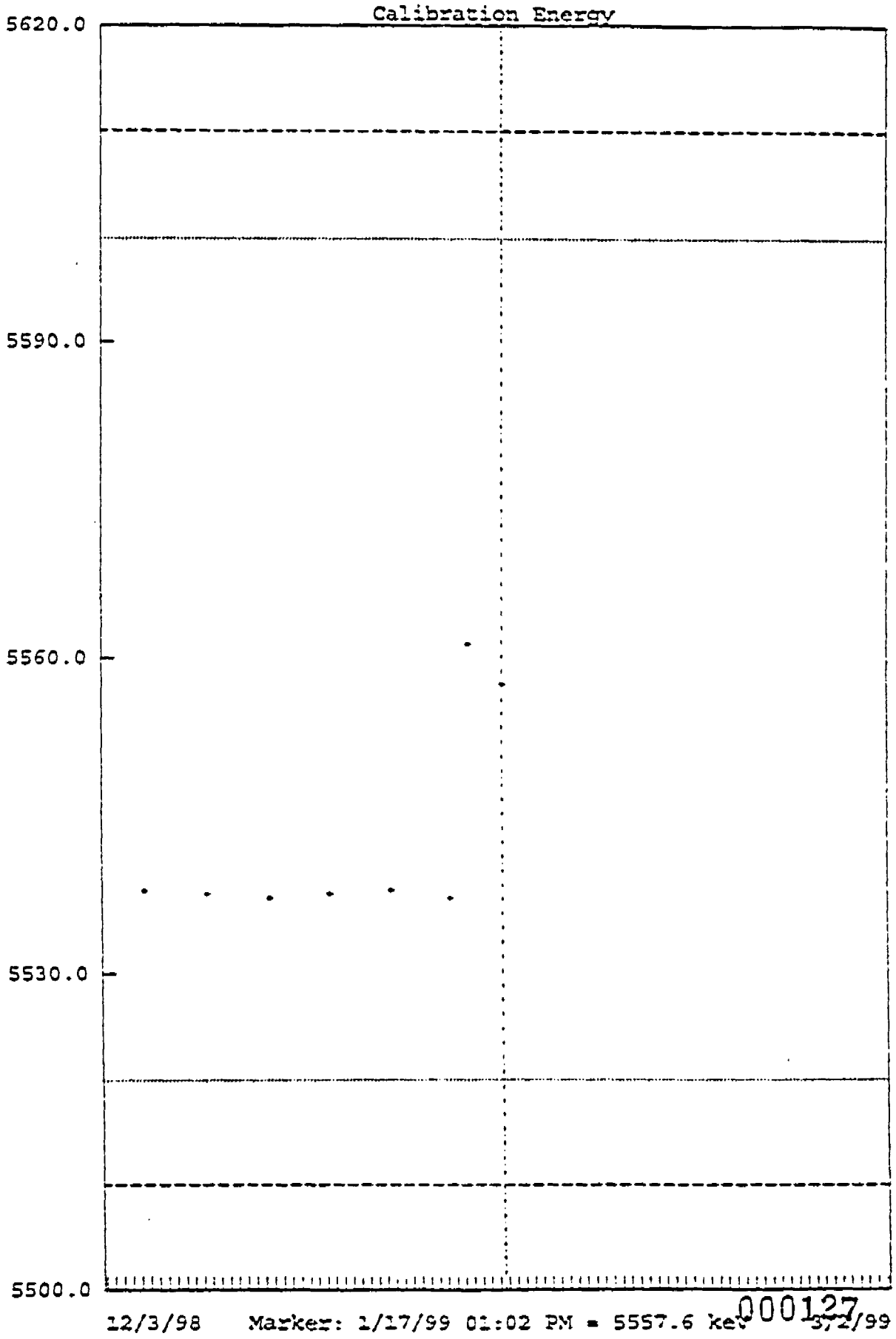
Checked By: BG _____ ()



2/6

Paragon Analytics, Inc.
19 MCB 3 Input 3

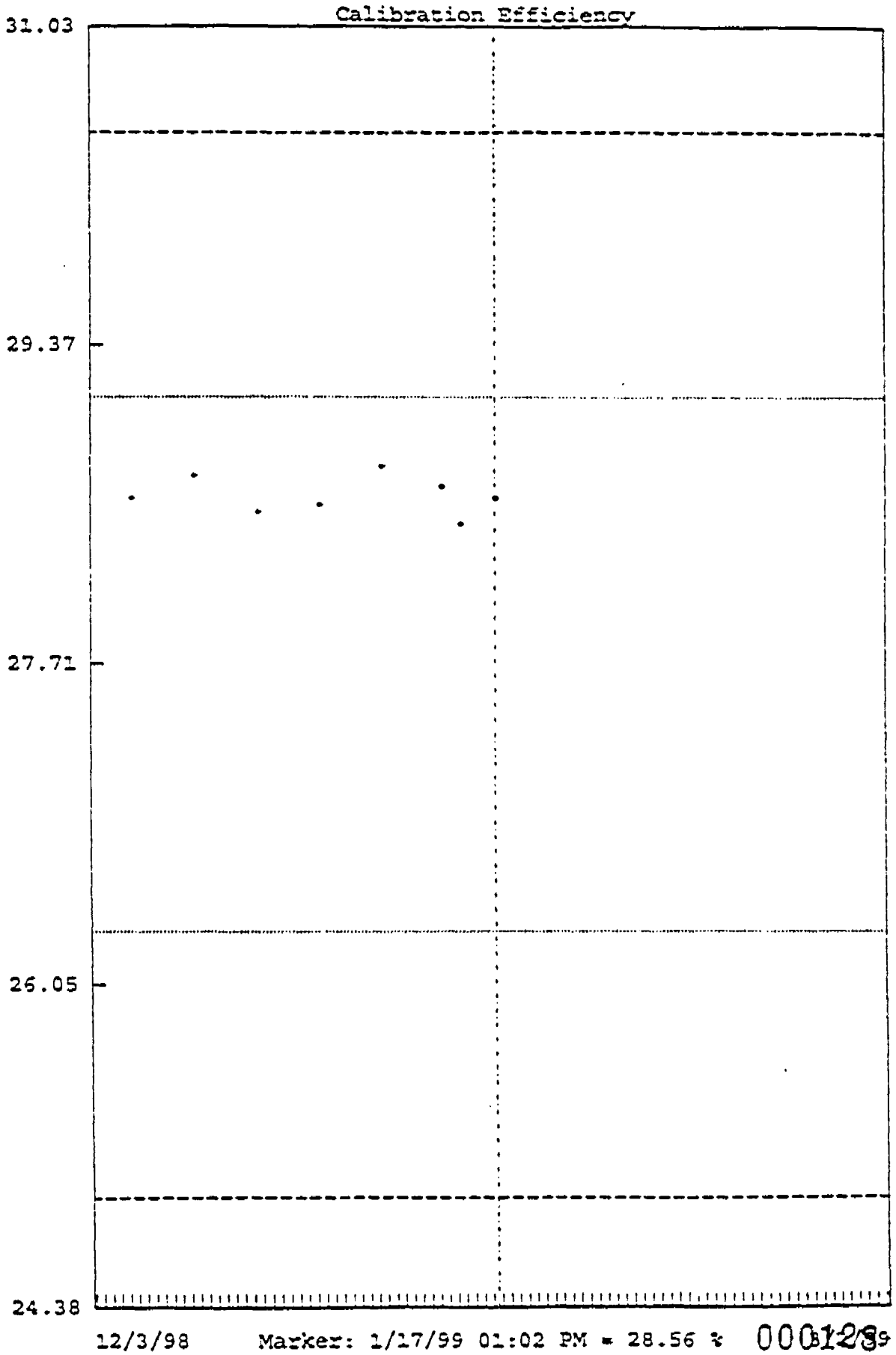
1/17/99 2:30:51




000127

Paragon Analytics, Inc.
19 MCB 3 Input 3

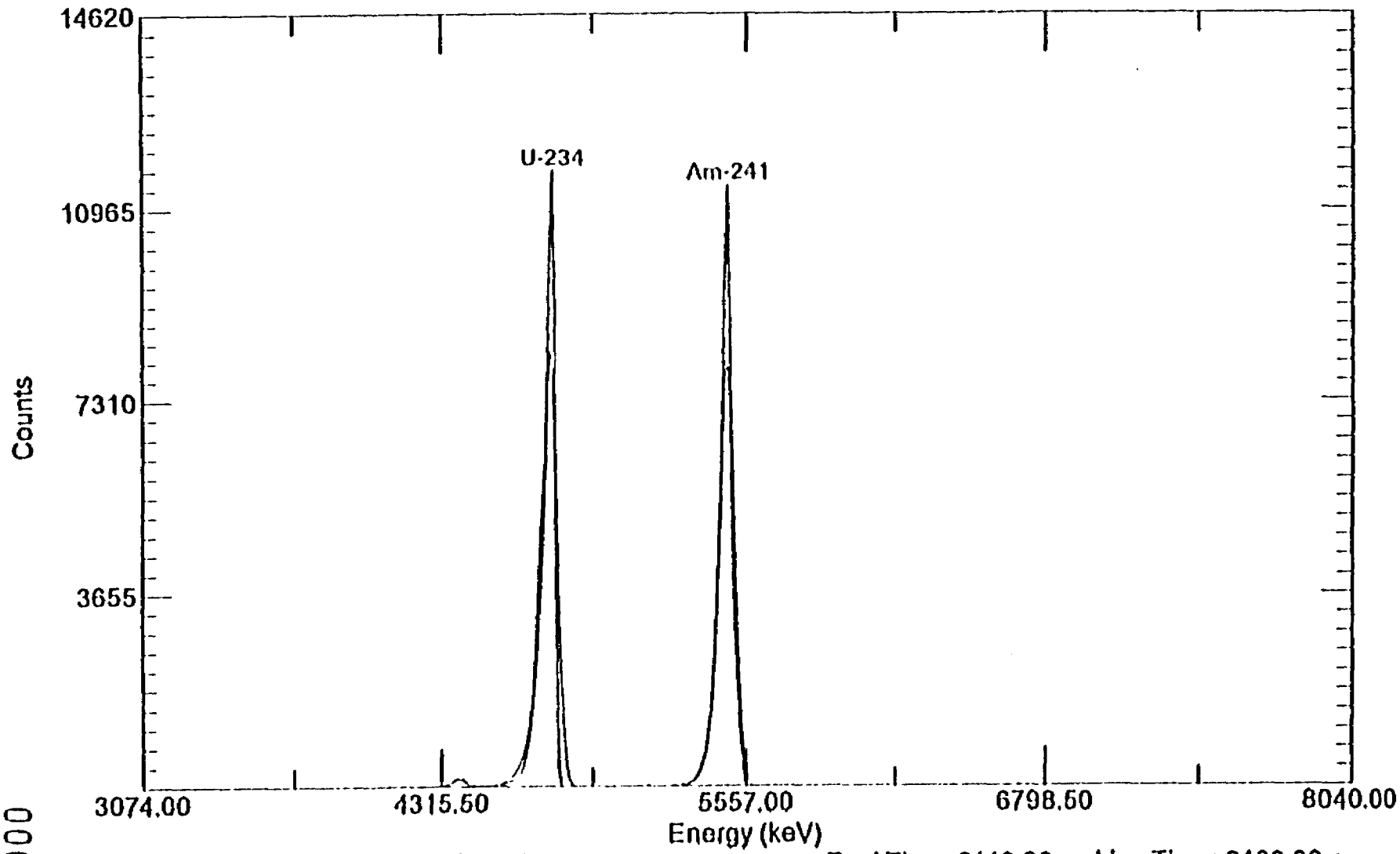
1/17/99 2:39:26 PM




000128

C9011719

AlphaVision Absolute Peak Search And Fit




Acquired: 12:23:37 on 17-Jan-99
File: C:\USER\ALPHA\CALIB\C9011719.CHN
Sample: Source 97-19-103-03 Weekly Cal

Real Time: 2119.90 s. Live Time: 2100.00 s.
Detector: #19 MCB 3 Input 3
Type: ECAL3

0001129

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-04 Weekly Cal
Type: ECAL4 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 4
Efficiency: 27.49% Chem. Recovery: 0.00%
Total Eff.: 27.49% Manual:100.00%
CALIBRATION: 3060.14 + 9.68322 * Chn keV
Original: 3062.48 + 9.6818 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011320.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 17-Jan-99 12:23:39
Live Time: 2100.00 Real Time: 2119.90 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9011720.CHN
Background File: C:\USER\ALPHA\BKGND\B9011620.CHN
Nuclide Library: C:\USER\ALPHA\ECAL4.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9011720

## P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 250.52 | 5.88 | 2484.11 | 21252.25 | 0.45 | 21251.79 | 607.19 |
| 2. | 177.08 | 4.20 | 6842.71 | 58994.49 | 0.01 | 58994.49 | 1685.56 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 56.910 | 3.9347 | 2212.26 | 0.45 | 1.34 |
| 2. | U-234 | 0.72 | 4774.80 | 57.825 | 1.7662 | 6132.59 | 0.93 | 0.81 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 82922.0000 | 100.00 |
| Net Area | 82910.6950 | 99.99 |
| Background | 11.3050 | 0.01 |
| Composite Fit | 81463.2823 | 98.24 |
| Residuals | 1447.4127 | 1.75 |

Analyzed By: _____ ()

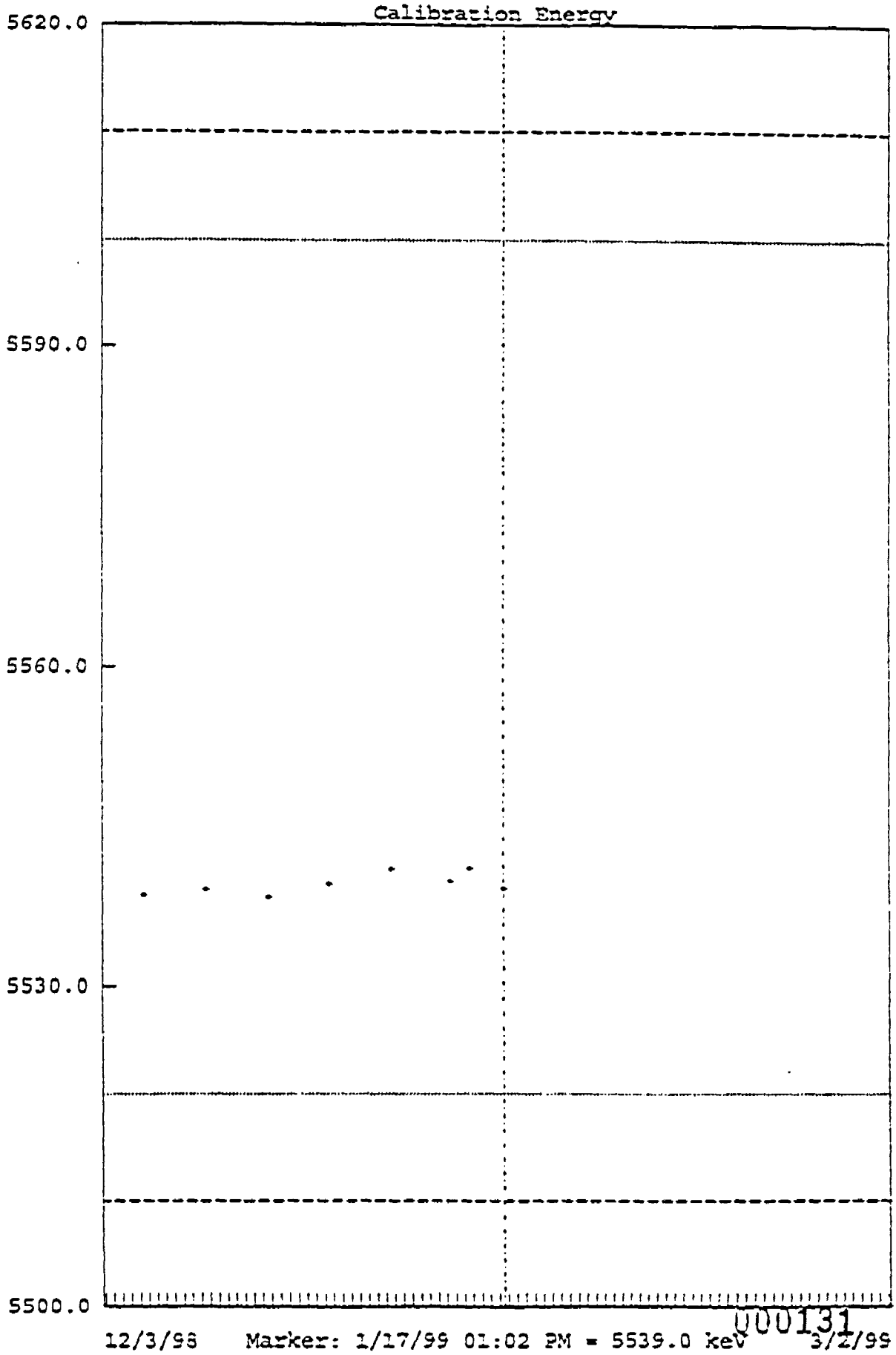
Checked By: BG _____ ()



264

Paragon Analytics, Inc.
20 MCB 3 Input 4

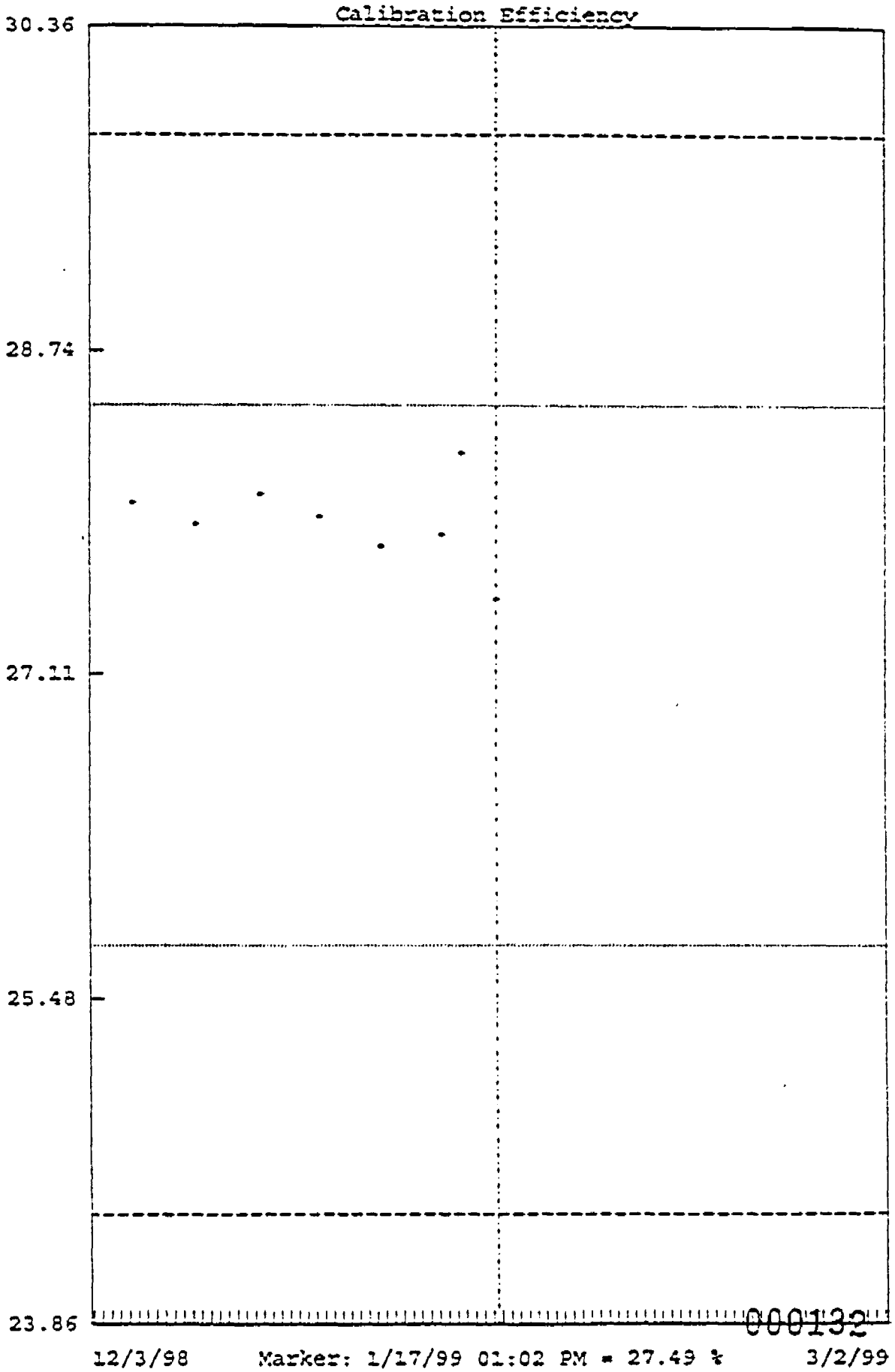
1/17/99 2:30:55 PM




000131

Paragon Analytics, Inc.
20 MCB 3 Input 4

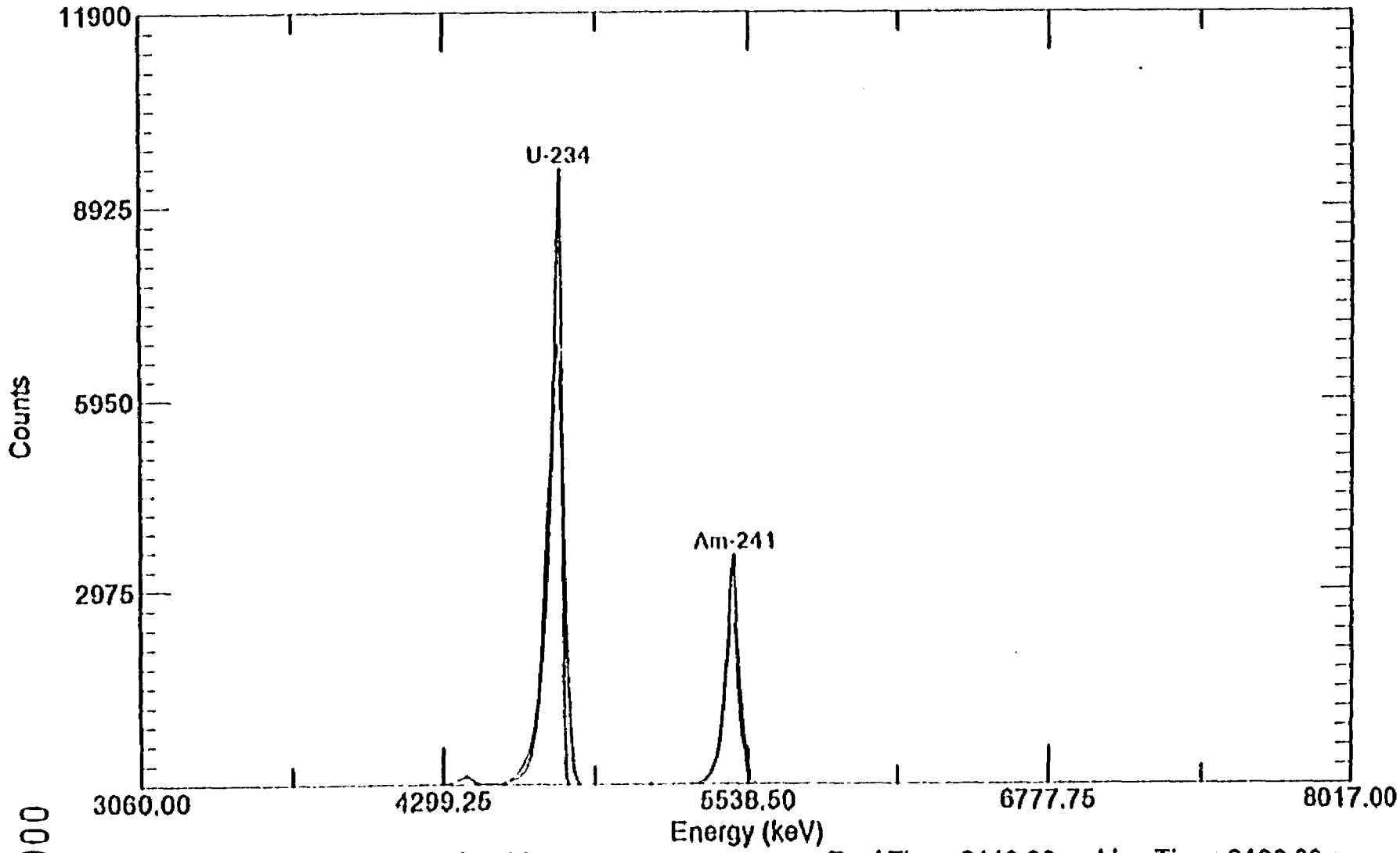
1/17/99 2:39:29 PM




000132

C9011720

AlphaVision Absolute Peak Search And Fit




Acquired: 12:23:39 on 17-Jan-99
File: C:\USER\ALPHA\CALIB\C9011720.CHN
Sample: Source 97-19-103-04 Weekly Cal

Real Time: 2119.90 s. Live Time: 2100.00 s.
Detector: #20 MCB 3 Input 4
Type: ECAL4

000133

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-05 Weekly Cal
Type: ECALS  Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 5
Efficiency: 28.34%  Chem. Recovery: 0.00%
Total Eff.: 28.34%  Manual:100.00%
CALIBRATION: 3059.71 + 9.65487 * Chn keV
Original: 3060.5 + 9.6558 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011321.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 17-Jan-99 12:23:47
Live Time: 2100.00  Real Time: 2119.92 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9011721.CHN
Background File: C:\USER\ALPHA\BKGND\B9011621.CHN
Nuclide Library: C:\USER\ALPHA\ECALS.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9011721

## P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 251.30 | 5.68 | 11486.97 | 96141.88 | 0.45 | 96141.43 | 2746.90 |
| 2. | 177.64 | 3.99 | 14419.37 | 118070.01 | 0.13 | 118069.87 | 3373.42 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 54.836 | 3.9956 | 9706.04 | 0.44 | 0.63 |
| 2. | U-234 | 0.72 | 4774.80 | 54.460 | 1.8390 | 11903.14 | 14.23 | 0.57 |

## T O T A L S

| | | % Recovery |
|---|---|---|
| Gross Count | 220505.0000 | 100.00 |
| Net Area | 220494.3600 | 100.00 |
| Background | 10.6400 | 0.00 |
| Composite Fit | 216628.7755 | 98.24 |
| Residuals | 3865.5245 | 1.75 |

Analyzed By: _____ ()

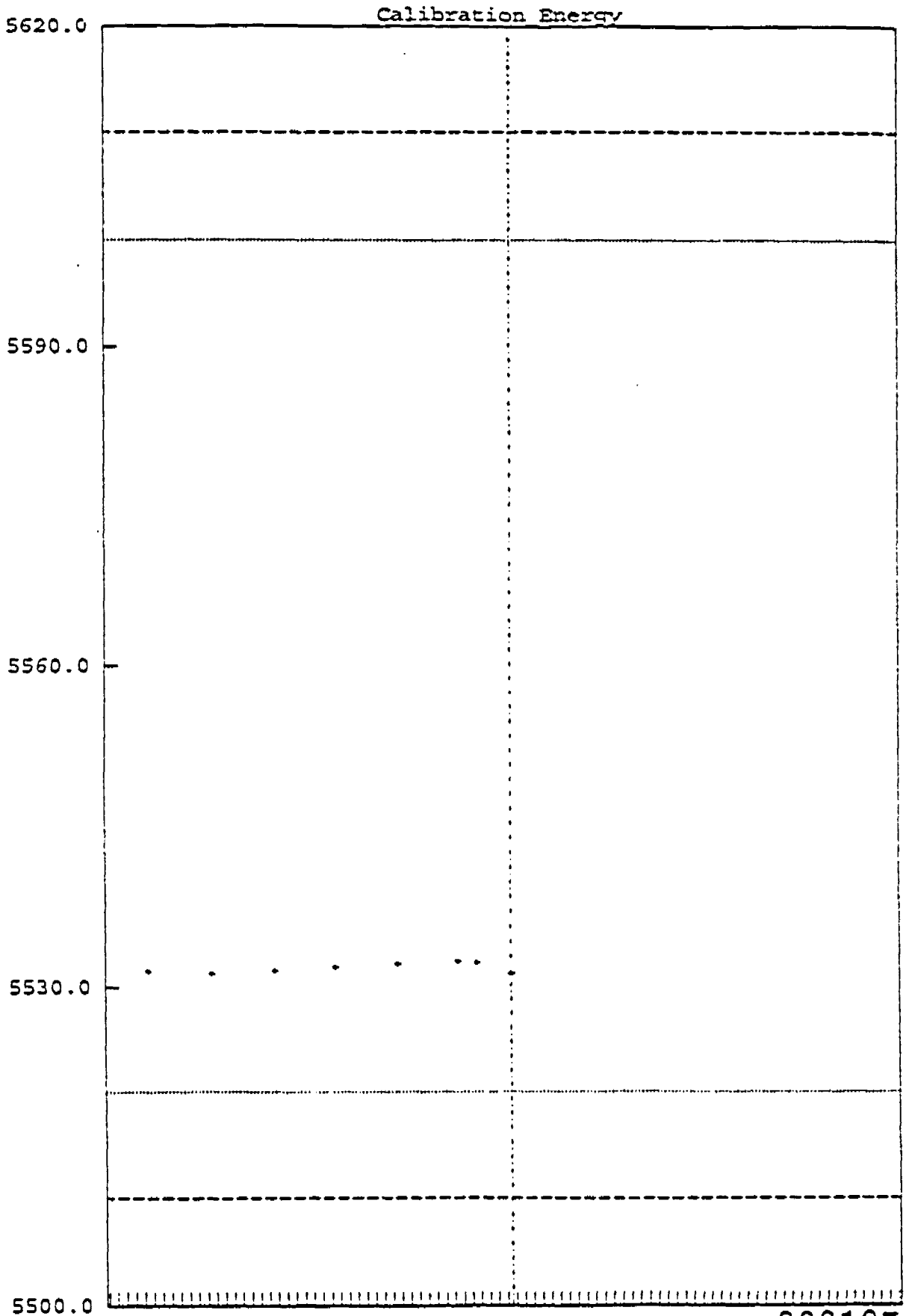
Checked By: RG _____ ()



268

Paragon Analytics, Inc.
21 MCB 3 Input 5

1/17/99 2:30:59 PM

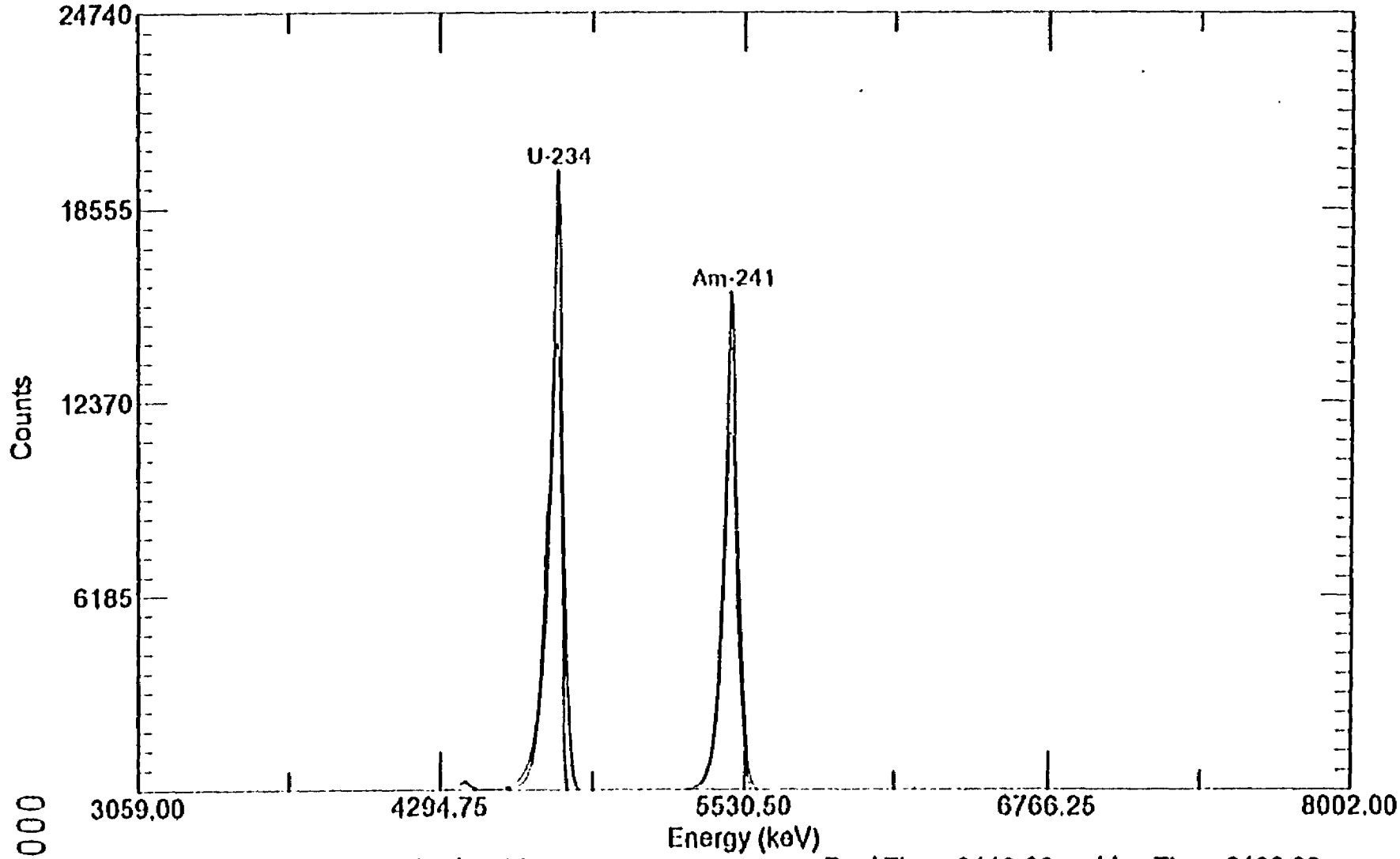



12/3/98 Marker: 1/17/99 01:02 PM = 5531.4 keV 3/2/99

000135

C9011721

AlphaVision Absolute Peak Search And Fit




Acquired: 12:23:47 on 17-Jan-99
File: C:\USER\ALPHA\CALIB\C9011721.CHN
Sample: Source 97-19-103-05 Weekly Cal

Real Time: 2119.92 s, Live Time: 2100.00 s,
Detector: #21 MCB 3 Input 5
Type: ECAL5

0001137

270

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-06 Weekly Cal
Type: ECAL6 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 6
Efficiency: 28.55% Chem. Recovery: 0.00%
Total Eff.: 28.55% Manual:100.00%
CALIBRATION: 3065.56 + 9.65581 * Chn keV
Original: 3067.74 + 9.6524 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011322.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 17-Jan-99 12:23:48
Live Time: 2100.00 Real Time: 2119.90 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9011722.CHN
Background File: C:\USER\ALPHA\BKGND\B9011622.CHN
Nuclide Library: C:\USER\ALPHA\ECAL6.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9011722

## P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 250.67 | 6.10 | 8758.19 | 76846.04 | 0.45 | 76845.59 | 2195.59 |
| 2. | 177.02 | 4.37 | 9243.62 | 81186.42 | 0.08 | 81186.34 | 2319.61 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 58.941 | 3.8550 | 7701.15 | 0.43 | 0.71 |
| 2. | U-234 | 0.72 | 4774.80 | 59.172 | 1.8084 | 8124.76 | 1.12 | 0.69 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 162359.0000 | 100.00 |
| Net Area | 162349.1650 | 99.99 |
| Background | 9.8350 | 0.01 |
| Composite Fit | 159939.9802 | 98.51 |
| Residuals | 2409.1848 | 1.48 |

Analyzed By: _____ ()

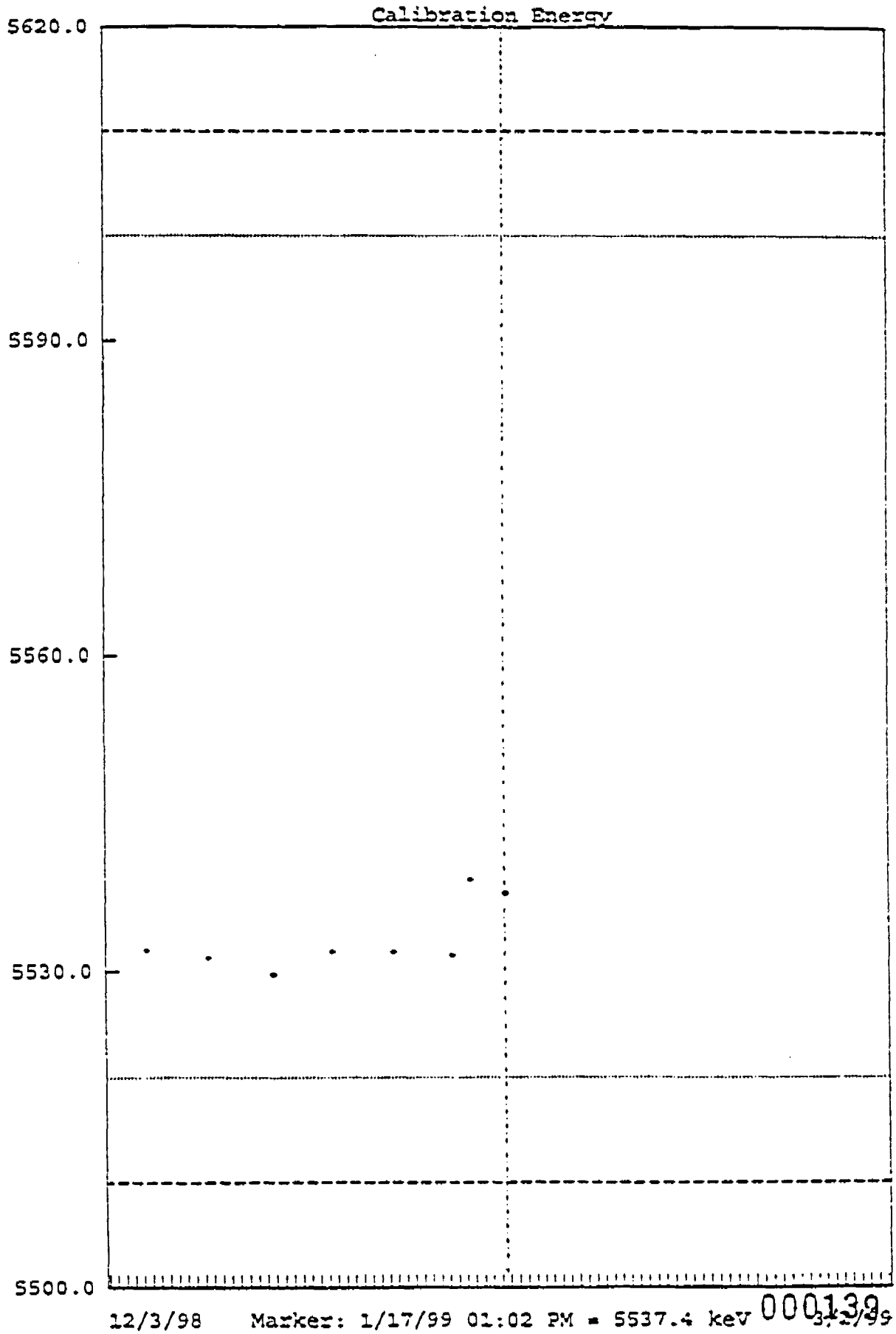
Checked By: BG _____ ()

000138

JL

Paragon Analytics, Inc.
22 MCB 3 Input 6

1/17/99 2:31:02 PM

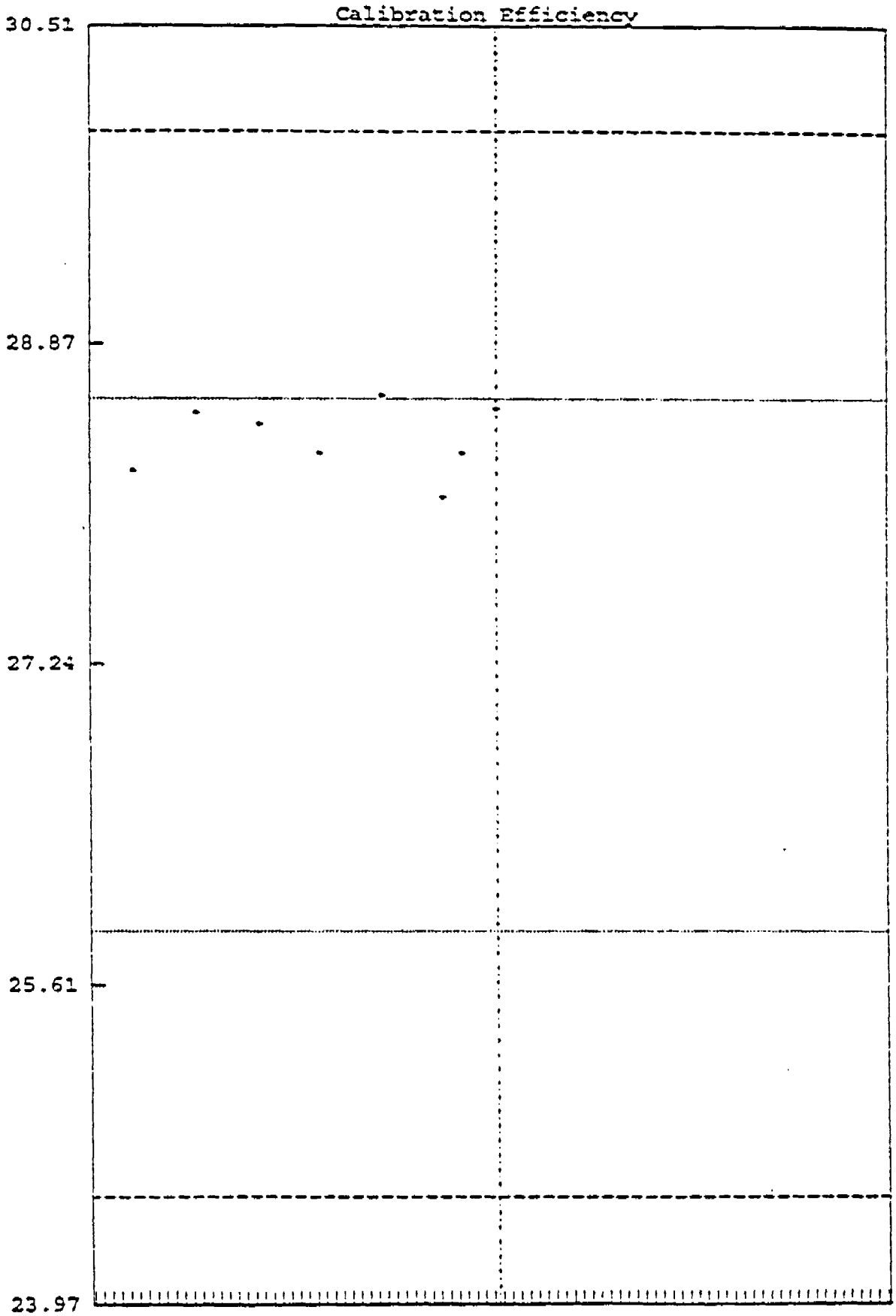



000139

272

Paragon Analytics, Inc.
22 MCB 3 Input 6

1/17/99 2:39:37 PM

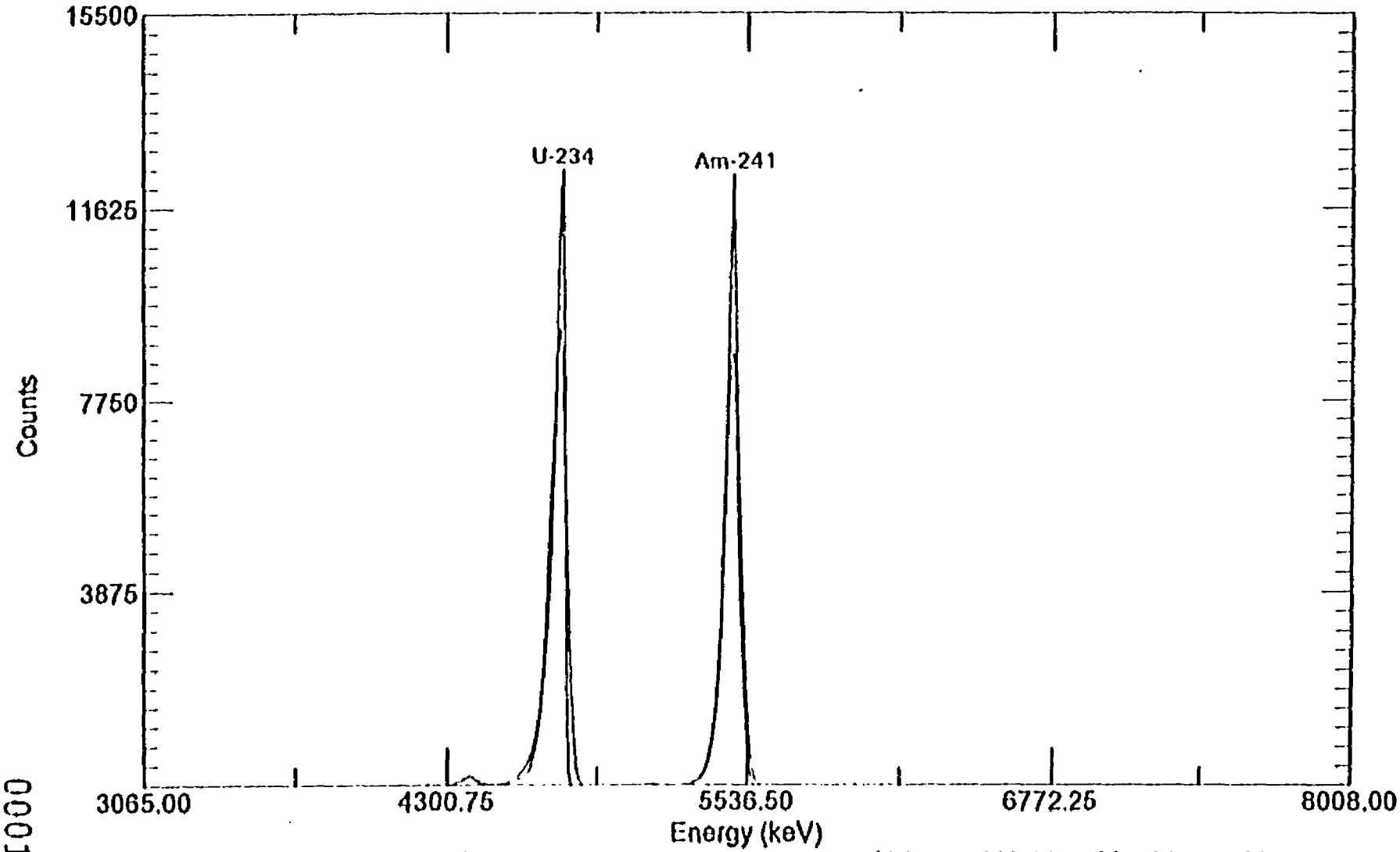



000110

273

C9011722

AlphaVision Absolute Peak Search And Fit




Acquired: 12:23:48 on 17-Jan-99
File: C:\USER\ALPHA\CALIB\C9011722.CHN
Sample: Source 97-19-103-06 Weekly Cal

Real Time: 2119.90 s. Live Time: 2100.00 s.
Detector: #22 MCB 3 Input 6
Type: ECAL6

000141

24

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-08 Weekly Cal
Type: ECAL8 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 8
Efficiency: 30.26% Chem. Recovery: 0.00%
Total Eff.: 30.26% Manual:100.00%
CALIBRATION: 3071.74 + 9.69973 * Chn keV
Original: 3071.24 + 9.7027 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011324.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 17-Jan-99 12:23:57
Live Time: 2100.00 Real Time: 2119.86 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9011724.CHN
Background File: C:\USER\ALPHA\BKGND\B9011624.CHN
Nuclide Library: C:\USER\ALPHA\ECAL8.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9011724

## P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 248.90 | 6.46 | 3743.81 | 33485.84 | 0.58 | 33485.27 | 956.72 |
| 2. | 175.58 | 4.94 | 23586.98 | 210263.16 | 0.07 | 210263.09 | 6007.52 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 62.618 | 4.1924 | 3166.47 | 0.42 | 1.07 |
| 2. | U-234 | 0.72 | 4774.80 | 62.230 | 2.1718 | 19855.27 | 0.38 | 0.42 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 250638.0000 | 100.00 |
| Net Area | 250630.5800 | 100.00 |
| Background | 7.4200 | 0.00 |
| Composite Fit | 247578.3177 | 98.78 |
| Residuals | 3052.2622 | 1.22 |

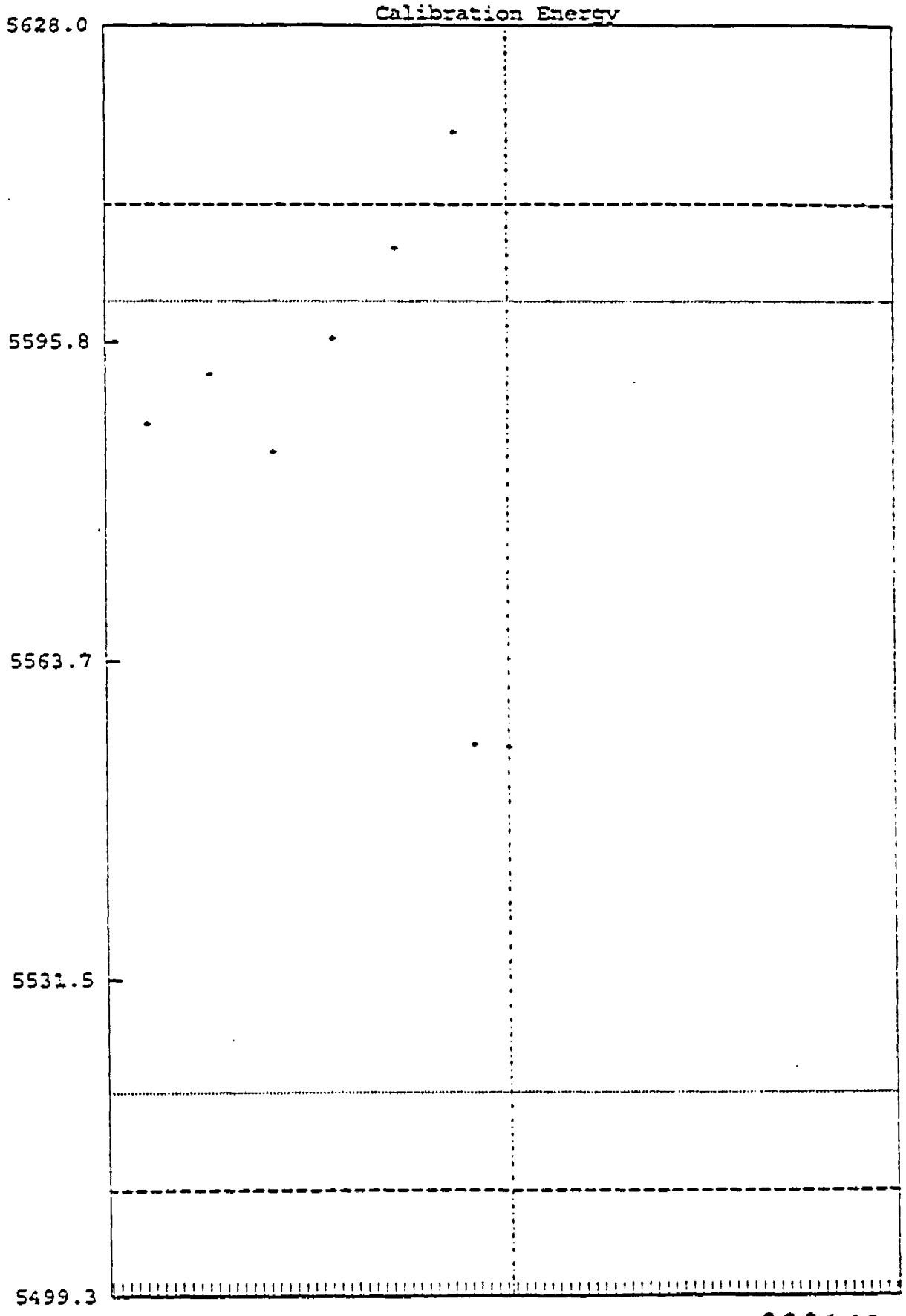
Analyzed By: _____ ()

Checked By: BG _____ ()

275

Paragon Analytics, Inc.
24 MCB 3 Input 8

1/17/99 2:31:07 PM

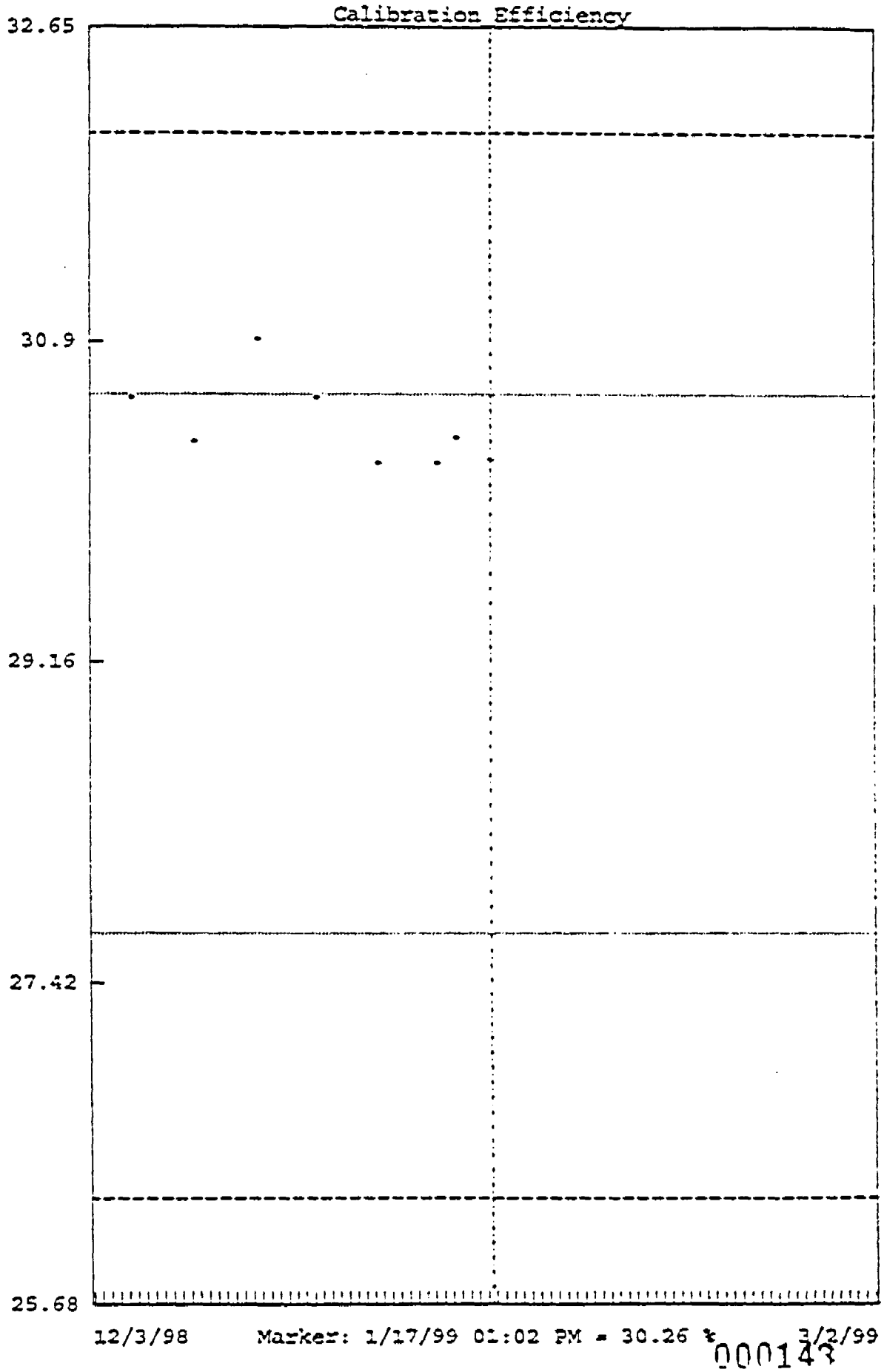





24

Paragon Analytics, Inc.
24 MCB 3 Input 8

1/17/99 2:39:41 PM

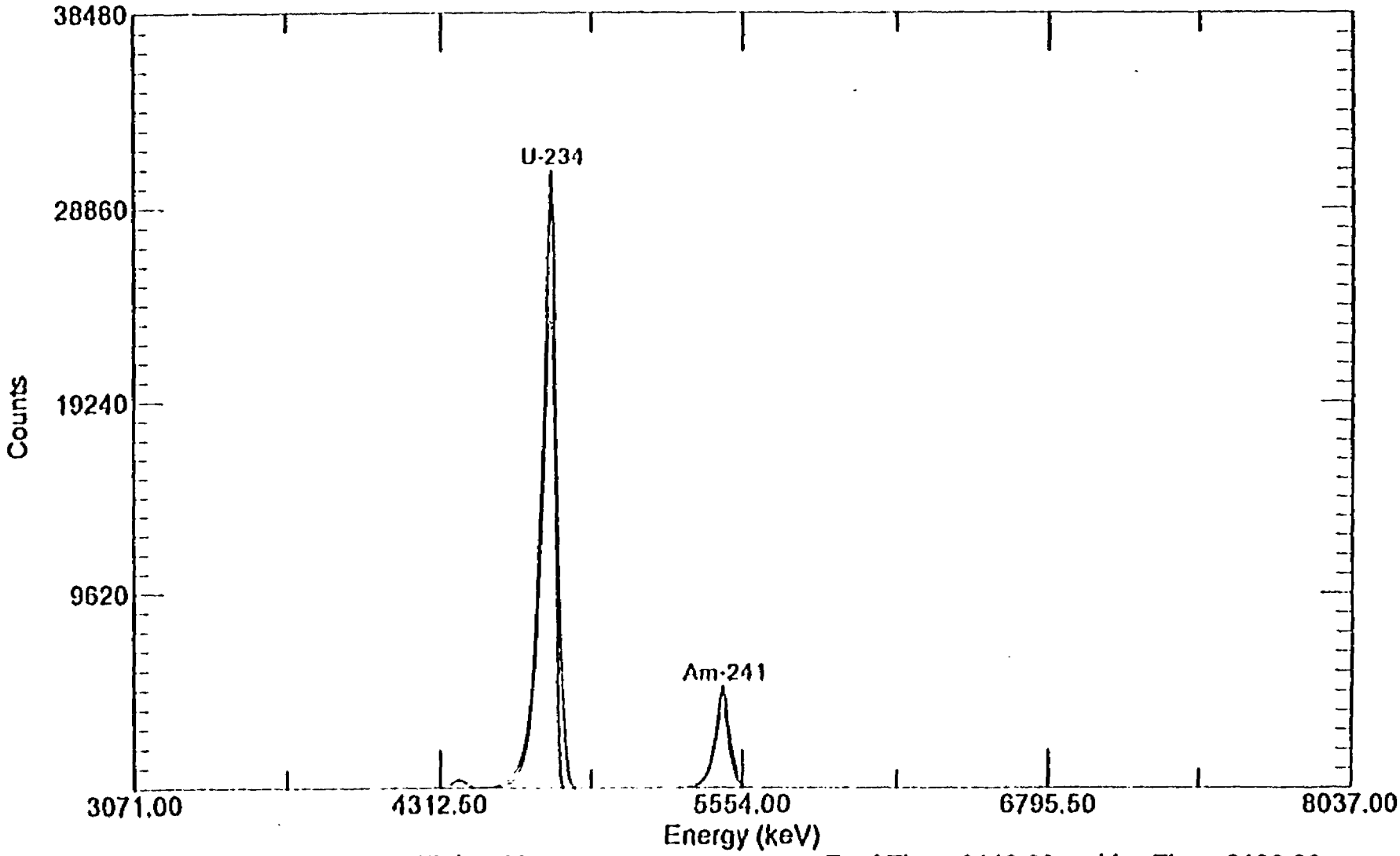



000143

277

C9011724

AlphaVision Absolute Peak Search And Fit




Acquired: 12:23:57 on 17-Jan-99
File: C:\USER\ALPHA\CALIB\C9011724.CHN
Sample: Source 97-10-103-08 Weekly Cal

Real Time: 2119.86 s, Live Time: 2100.00 s.
Detector: #24 MCB 3 Input 8
Type: ECAL8

000144

28

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-03 Weekly Cal
Type: ECAL3 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 3
Efficiency: 28.70% Chem. Recovery: 0.00%
Total Eff.: 28.70% Manual:100.00%
CALIBRATION: 3074.23 + 9.6966 * Chn keV
Original: 3074.56 + 9.6993 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011719.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 25-Jan-99 12:18:42
Live Time: 2100.00 Real Time: 2118.30 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9012519.CHN
Background File: C:\USER\ALPHA\BKGND\B9011619.CHN
Nuclide Library: C:\USER\ALPHA\ECAL3.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9012519

## P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 248.72 | 5.98 | 7923.84 | 68304.92 | 0.33 | 68304.59 | 1951.56 |
| 2. | 175.38 | 4.27 | 8318.09 | 71154.01 | 0.05 | 71153.96 | 2032.97 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 58.022 | 4.0081 | 6810.83 | 0.43 | 0.75 |
| 2. | U-234 | 0.72 | 4774.80 | 57.742 | 1.8528 | 7084.75 | 15.81 | 0.73 |

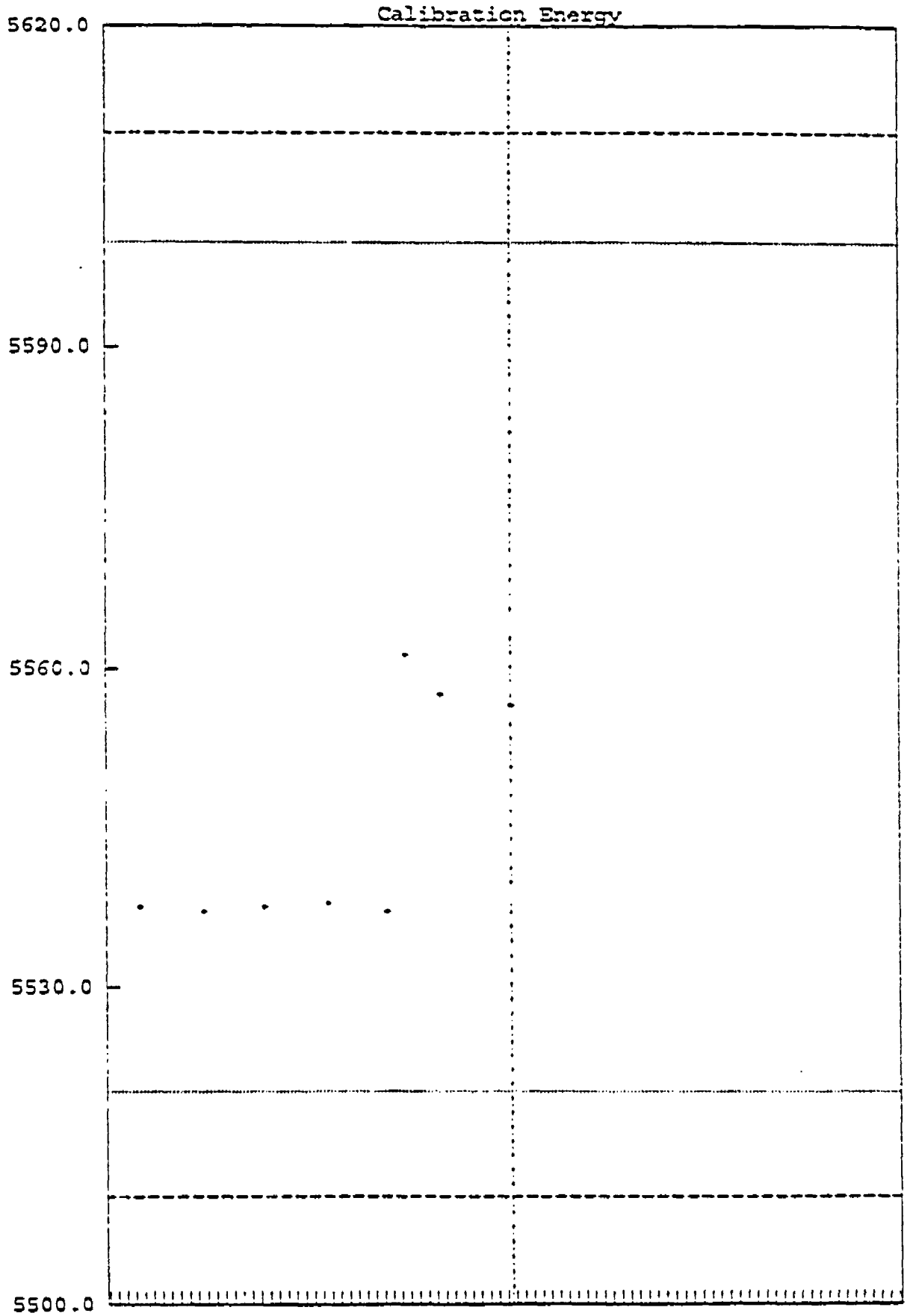
| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 143715.0000 | 100.00 |
| Net Area | 143705.5850 | 99.99 |
| Background | 9.4150 | 0.01 |
| Composite Fit | 141122.7106 | 98.20 |
| Residuals | 2582.8743 | 1.80 |

Analyzed By: _____ ()

Checked By: RG _____ ()

Paragon Analytics, Inc.
19 MCB 3 Input 3

1/26/99 1:46:00 PM

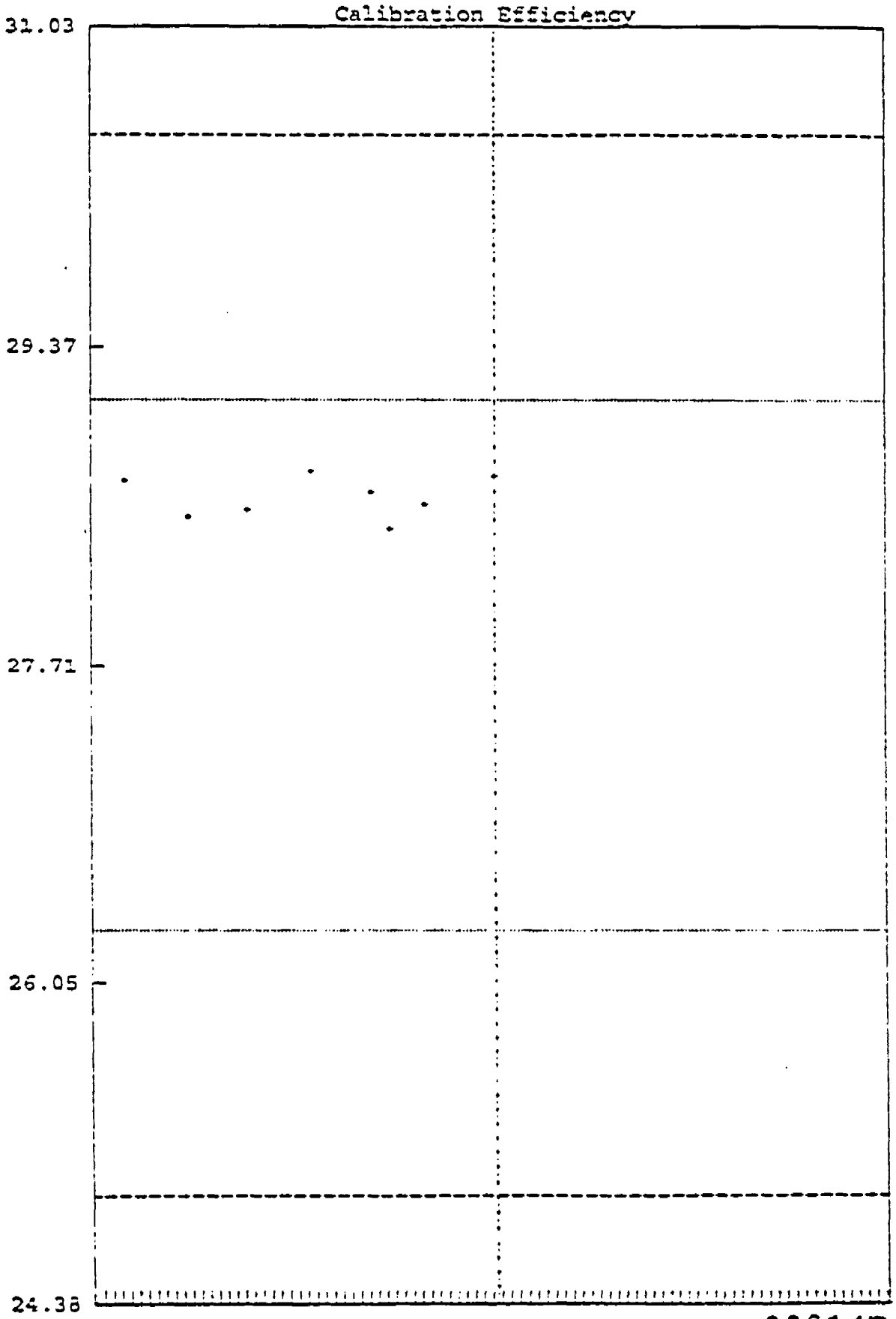





250

Paragon Analytics, Inc.
19 MCB 3 Input 3

1/26/99 1:48:58 PM

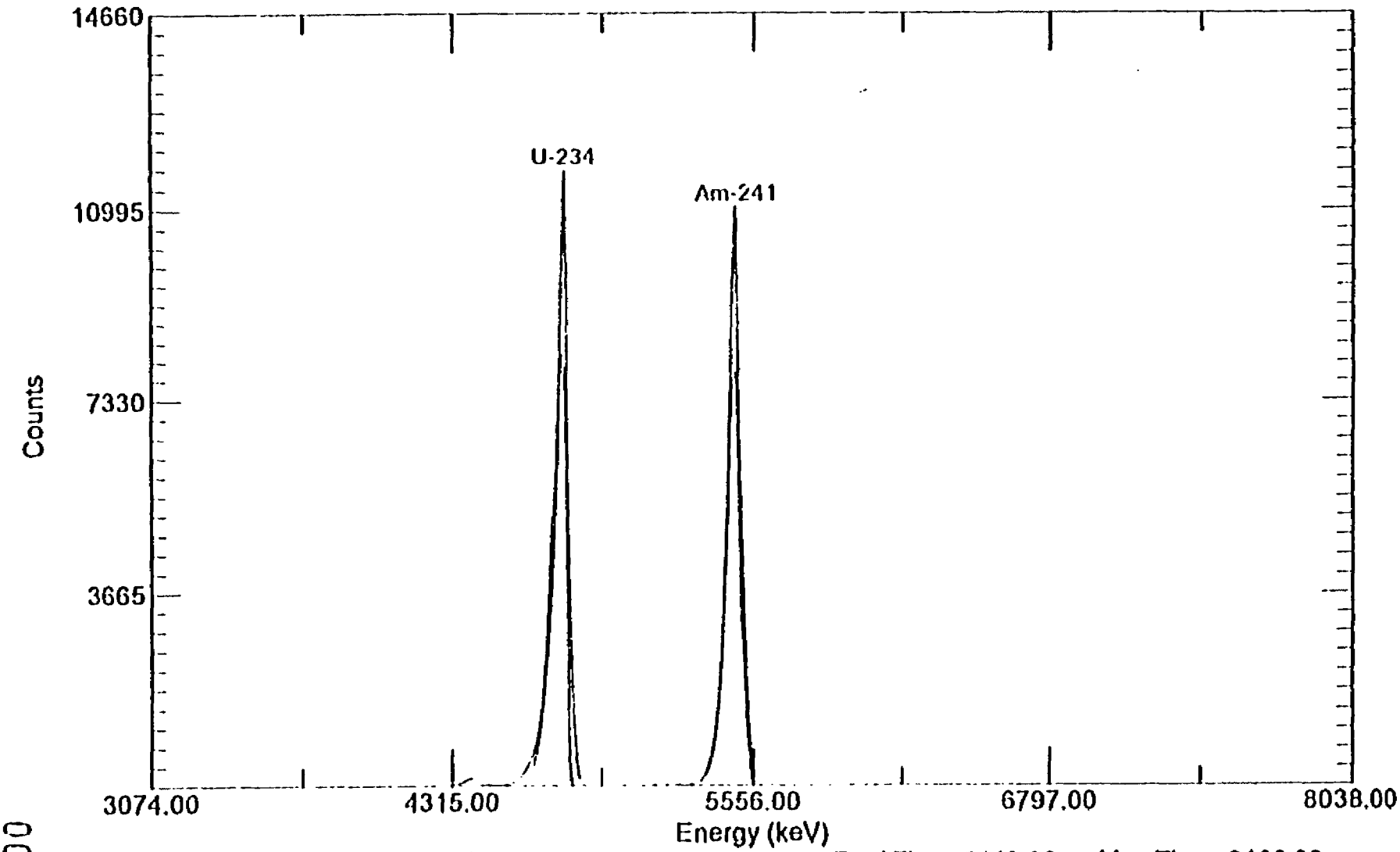



000147

281

C9012519

AlphaVision Absolute Peak Search And Fit




Acquired: 12:18:42 on 25-Jan-99
File: C:\USER\ALPHA\CALIB\C9012519.CHN
Sample: Source 97-19-103-03 Weekly Cal

Real Time: 2118.30 s, Live Time: 2100.00 s.
Detector; #19 MCB 3 Input 3
Type: ECAL3

000148

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-04 Weekly Cal
Type: ECAL4 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 4
Efficiency: 27.29% Chem. Recovery: 0.00%
Total Eff.: 27.29% Manual:100.00%
CALIBRATION: 3064.01 + 9.67889 * Chn keV
Original: 3060.14 + 9.6832 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011720.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 25-Jan-99 12:18:44
Live Time: 2100.00 Real Time: 2118.28 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9012520.CHN
Background File: C:\USER\ALPHA\BKGND\B9011620.CHN
Nuclide Library: C:\USER\ALPHA\ECAL4.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9012520

## P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 250.23 | 5.86 | 2507.99 | 21495.26 | 0.50 | 21494.77 | 614.14 |
| 2. | 176.75 | 4.17 | 6658.20 | 57417.69 | 0.01 | 57417.68 | 1640.51 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 56.698 | 3.8419 | 2253.51 | 0.46 | 1.33 |
| 2. | U-234 | 0.72 | 4774.80 | 57.689 | 1.7395 | 6011.02 | 4.20 | 0.82 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 81315.0000 | 100.00 |
| Net Area | 81303.6950 | 99.99 |
| Background | 11.3050 | 0.01 |
| Composite Fit | 80187.5127 | 98.61 |
| Residuals | 1116.1823 | 1.37 |

Analyzed By: _____ ()

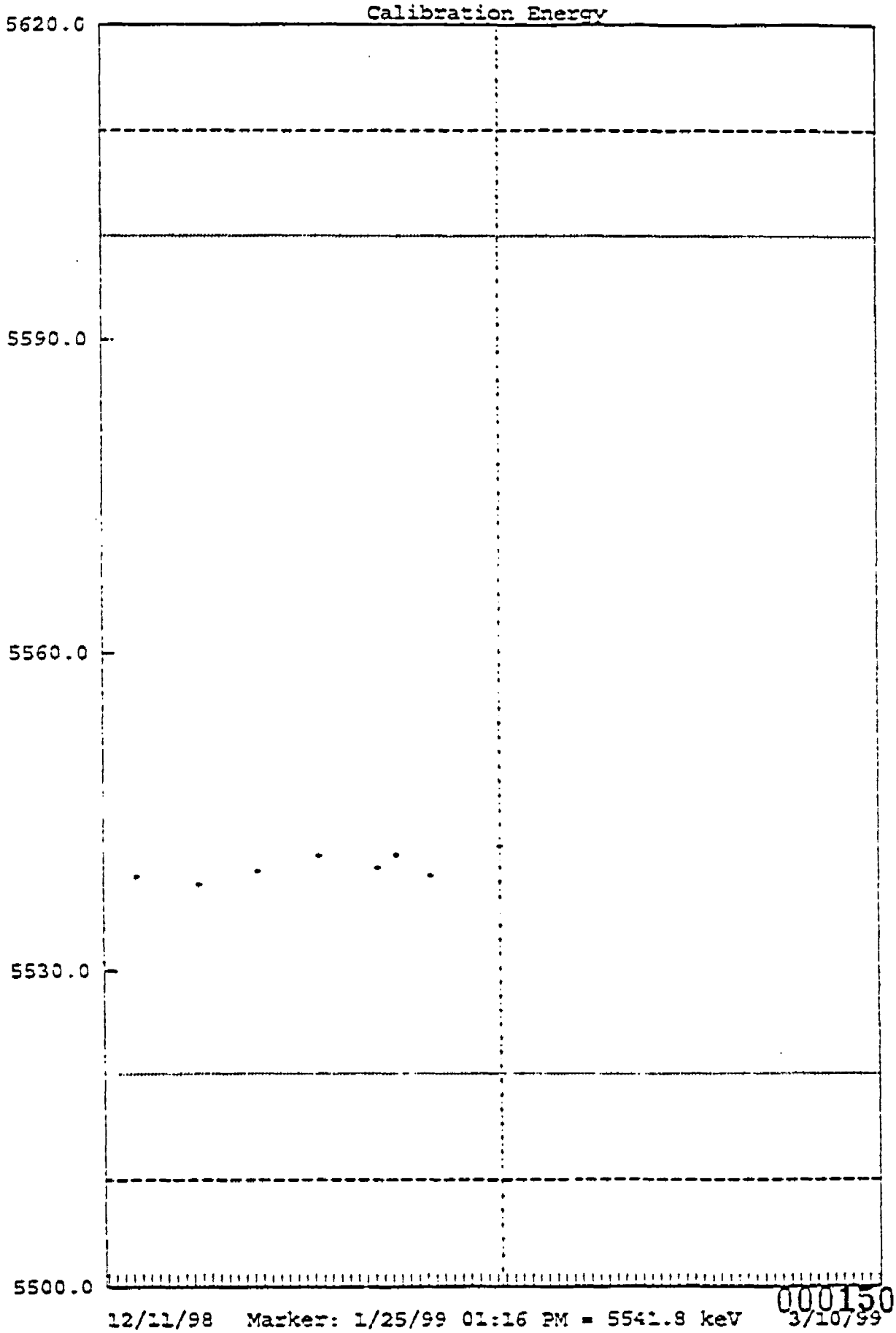
Checked By: RG _____ ()

000149

253

Paragon Analytics, Inc.
20 MCB 3 Input 4

1/26/99 1:46:03 PM

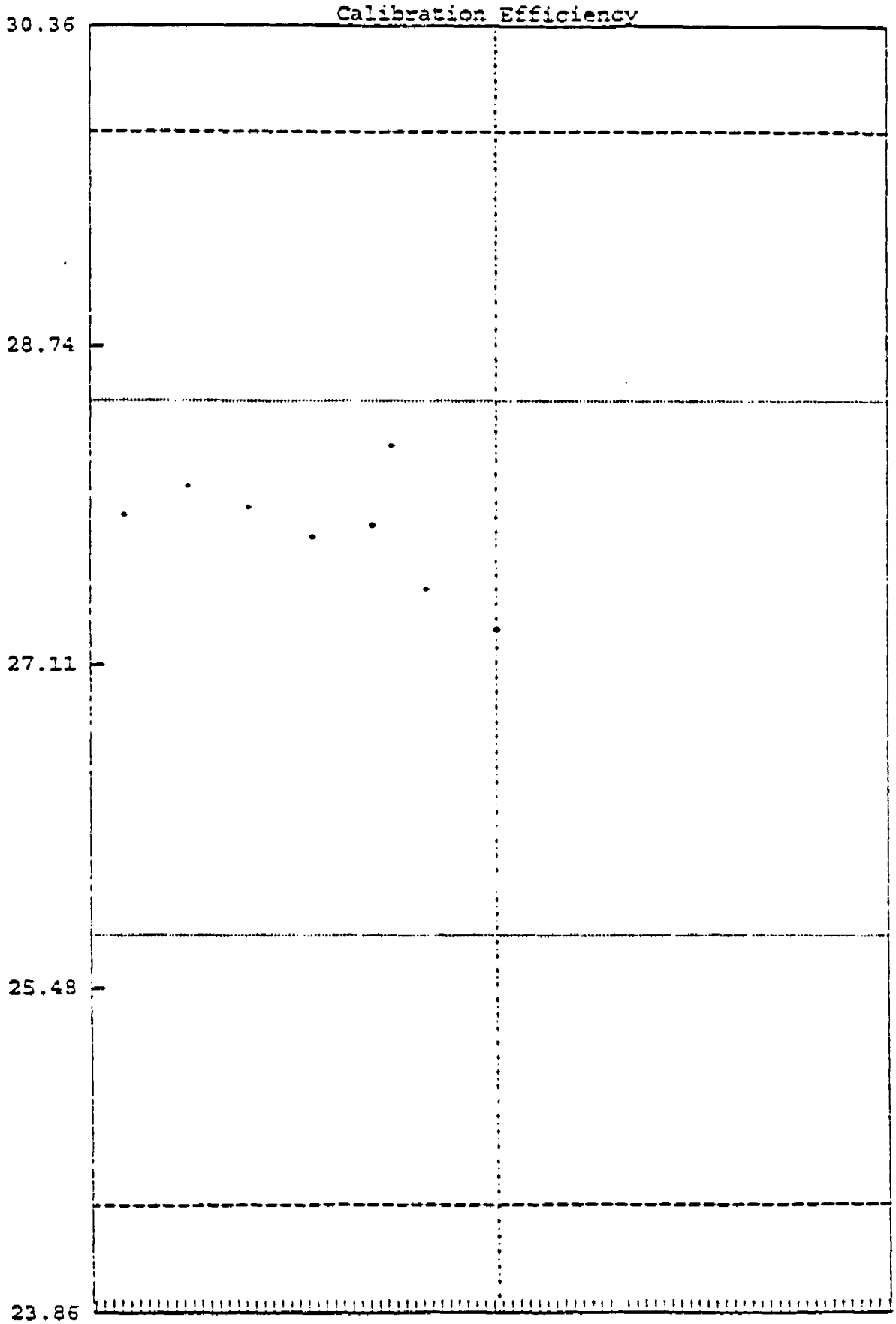



000150

284

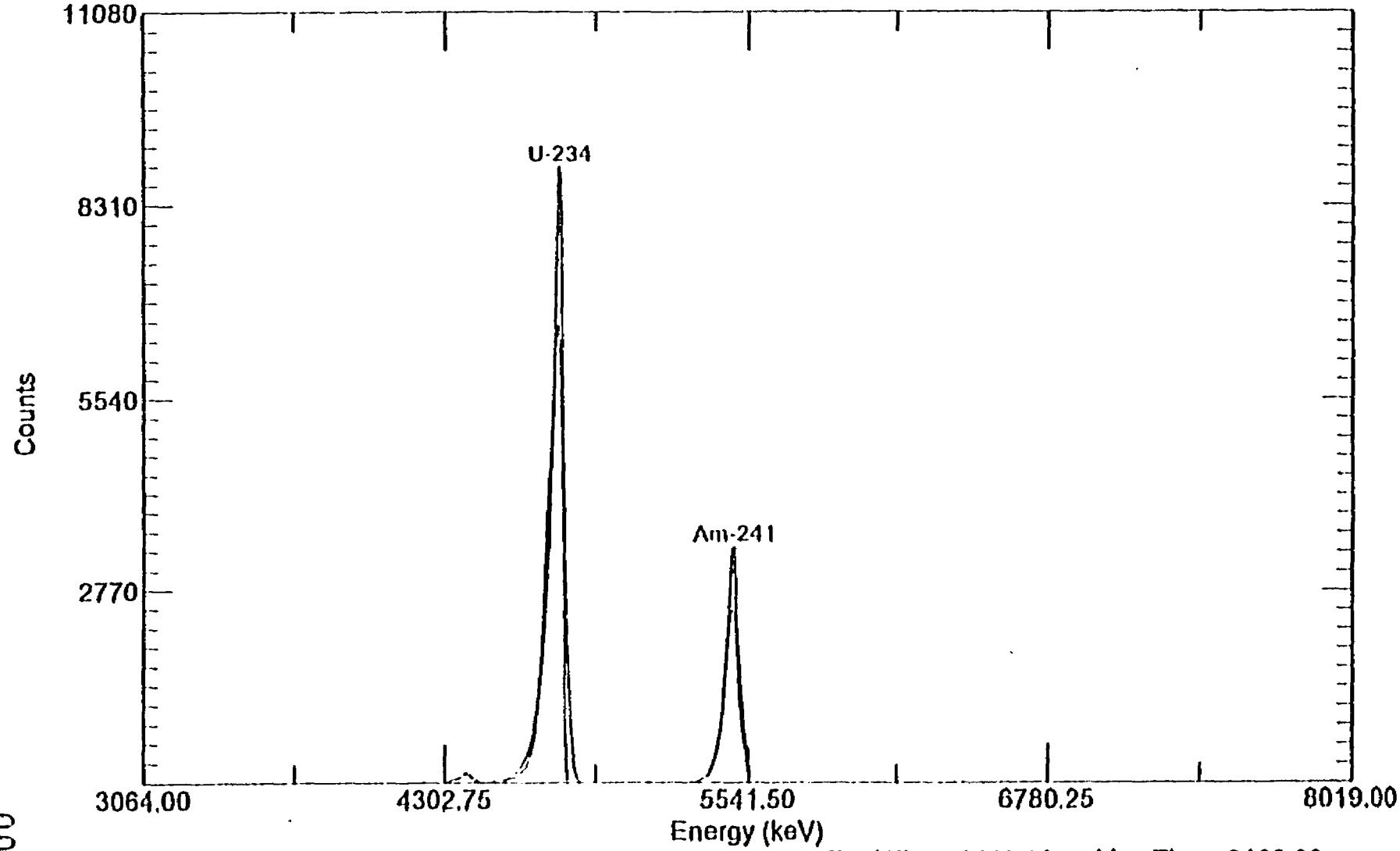
Paragon Analytics, Inc.
20 MCB 3 Input 4

1/26/99 1:49:02 PM



C9012520

AlphaVision Absolute Peak Search And Fit




Acquired: 12:18:44 on 25-Jan-99
File: C:\USER\ALPHA\CALIB\C9012520.CHN
Sample: Source 97-19-103-04 Weekly Cal

Real Time: 2118.28 s, Live Time: 2100.00 s,
Detector: #20 MCB 3 Input 4
Type: ECAL4

000152

284

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-05 Weekly Cal
Type: ECAL5 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 5
Efficiency: 28.58% Chem. Recovery: 0.00%
Total Eff.: 28.58% Manual:100.00%
CALIBRATION: 3060.64 + 9.66154 * Chn keV
Original: 3059.71 + 9.6549 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011721.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 25-Jan-99 12:18:51
Live Time: 2100.00 Real Time: 2118.32 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9012521.CHN
Background File: C:\USER\ALPHA\BKGND\B9011621.CHN
Nuclide Library: C:\USER\ALPHA\ECAL5.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9012521

P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 251.03 | 5.70 | 12577.37 | 97078.93 | 0.49 | 97078.45 | 2773.67 |
| 2. | 177.42 | 4.09 | 14385.61 | 118848.41 | 0.13 | 118848.28 | 3395.67 |

D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 55.116 | 4.0146 | 9720.52 | 0.44 | 0.63 |
| 2. | U-234 | 0.72 | 4774.80 | 55.255 | 1.8771 | 11883.24 | 13.57 | 0.57 |

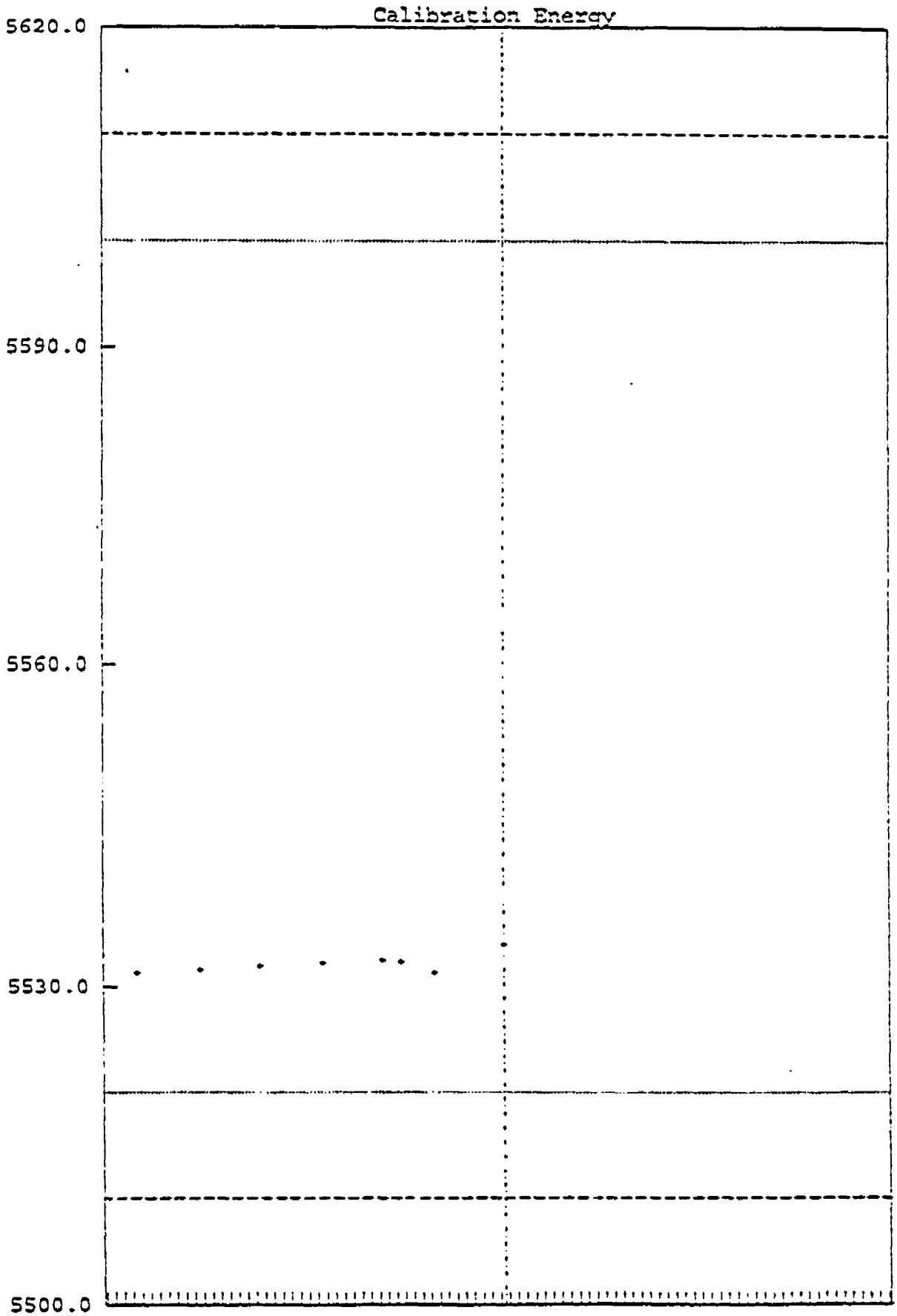
| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 222229.0000 | 100.00 |
| Net Area | 222218.3600 | 100.00 |
| Background | 10.6400 | 0.00 |
| Composite Fit | 218418.2366 | 98.29 |
| Residuals | 3800.1235 | 1.71 |

Analyzed By: _____ ()

Checked By: RG _____ ()

Paragon Analytics, Inc.
21 MCB 3 Input 5

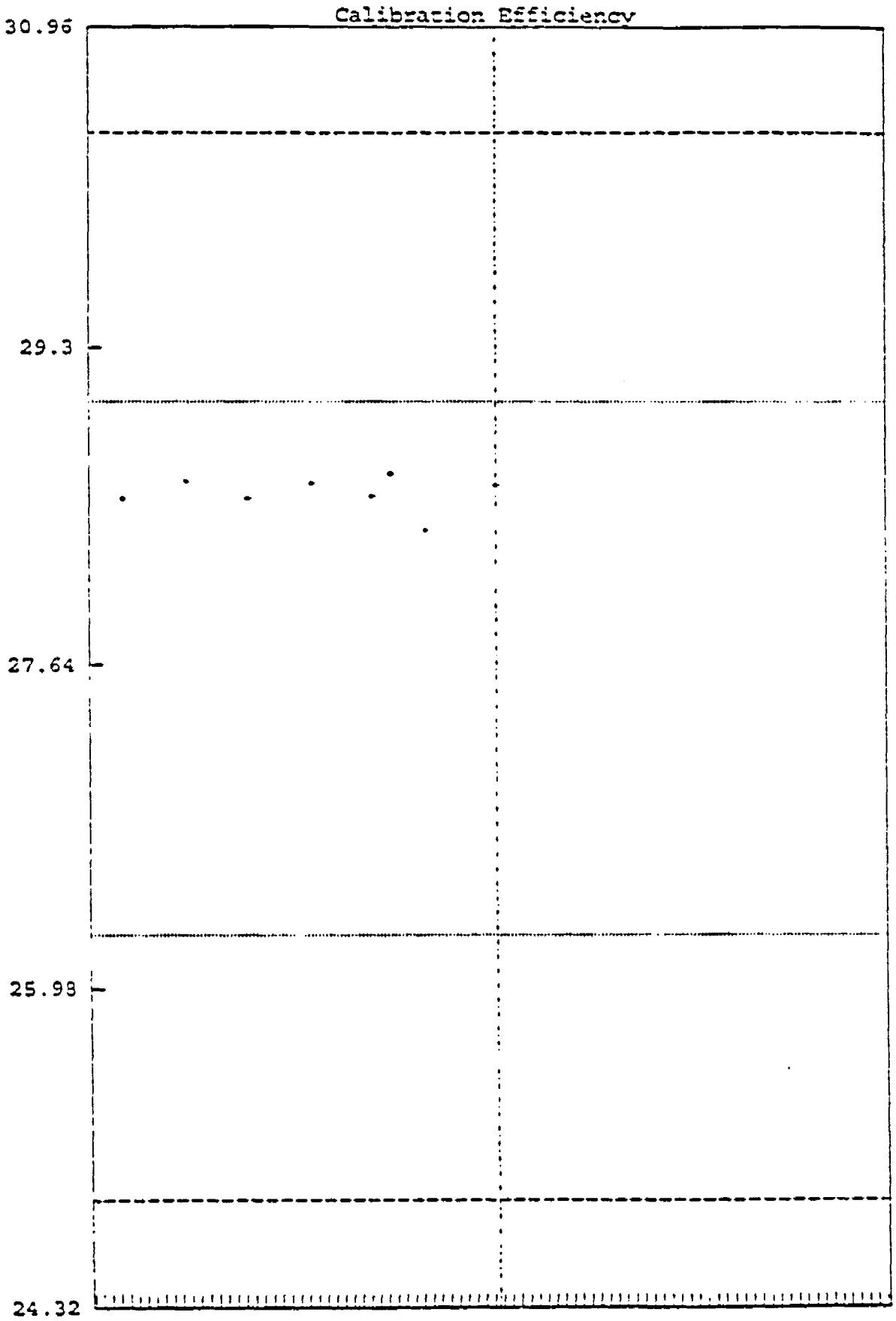
1/26/99 1:46:07 PM




000154

Paragon Analytics, Inc.
21 MCB 3 Input 5

1/26/99 1:49:07 PM

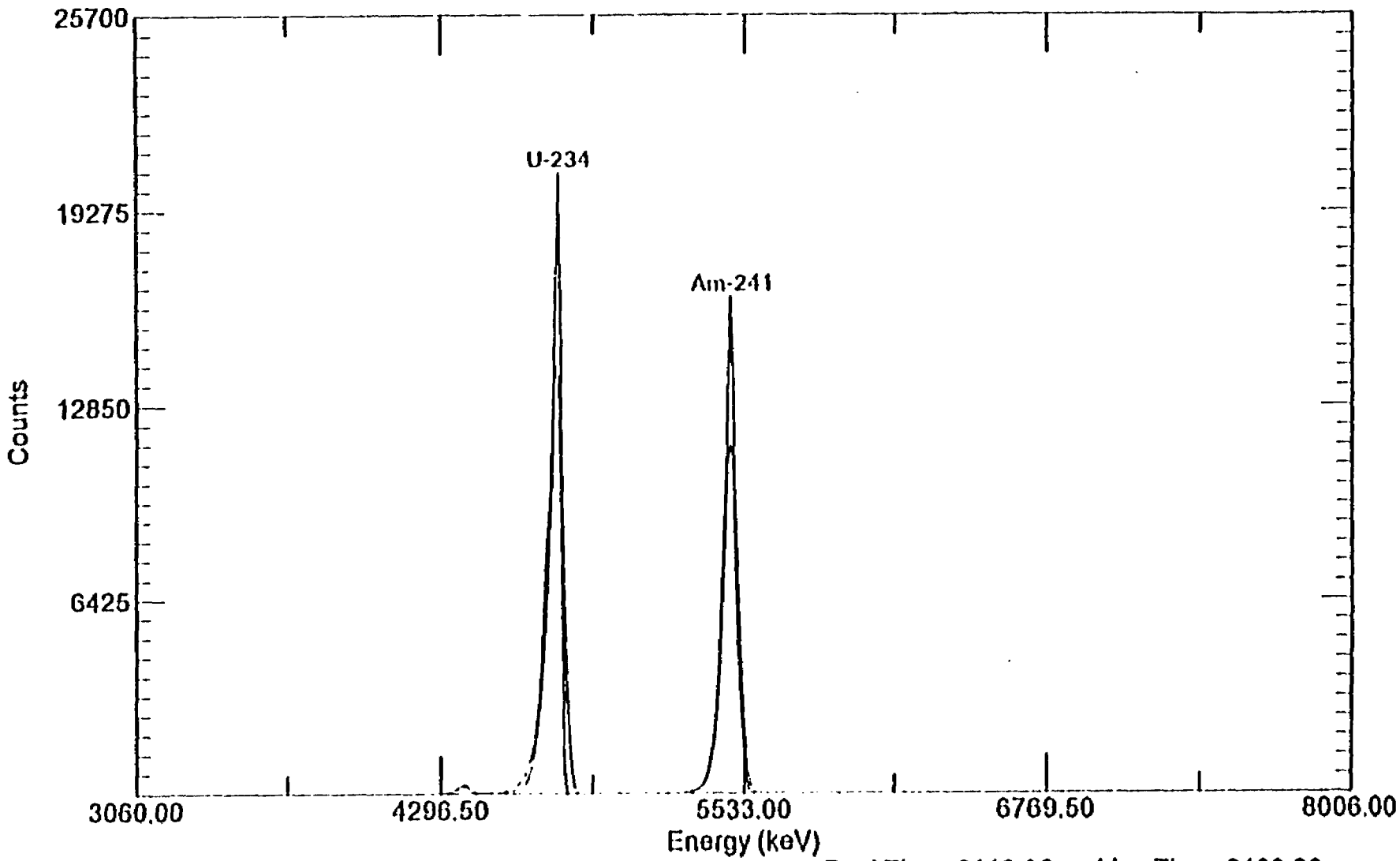



000135

289

C9012521

AlphaVision Absolute Peak Search And Fit




Acquired: 12:18:51 on 25-Jan-99
File: C:\USER\ALPHA\CALIB\C9012521.CHN
Sample: Source 97-19-103-05 Weekly Cal

Real Time: 2118.32 s, Live Time: 2100.00 s,
Detector: #21 MCB 3 Input 5
Type: ECAL5

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-06 Weekly Cal
Type: ECAL6 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 6
Efficiency: 28.25% Chem. Recovery: 0.00%
Total Eff.: 28.25% Manual:100.00%
CALIBRATION: 3065.75 + 9.65081 * Chn keV
Original: 3065.56 + 9.6558 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011722.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 25-Jan-99 12:18:53
Live Time: 2100.00 Real Time: 2118.30 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9012522.CHN
Background File: C:\USER\ALPHA\BKGND\B9011622.CHN
Nuclide Library: C:\USER\ALPHA\ECAL6.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9012522

## P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 250.78 | 5.97 | 8675.02 | 75375.83 | 0.43 | 75375.40 | 2153.58 |
| 2. | 177.09 | 4.45 | 9103.84 | 81055.60 | 0.09 | 81055.51 | 2315.87 |

## D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 57.621 | 3.7825 | 7634.11 | 0.44 | 0.71 |
| 2. | U-234 | 0.72 | 4774.80 | 60.097 | 1.8025 | 8197.61 | 3.68 | 0.69 |

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 160732.0000 | 100.00 |
| Net Area | 160722.1650 | 99.99 |
| Background | 9.8350 | 0.01 |
| Composite Fit | 158388.3018 | 98.54 |
| Residuals | 2333.8632 | 1.45 |

Analyzed By: _____ ()

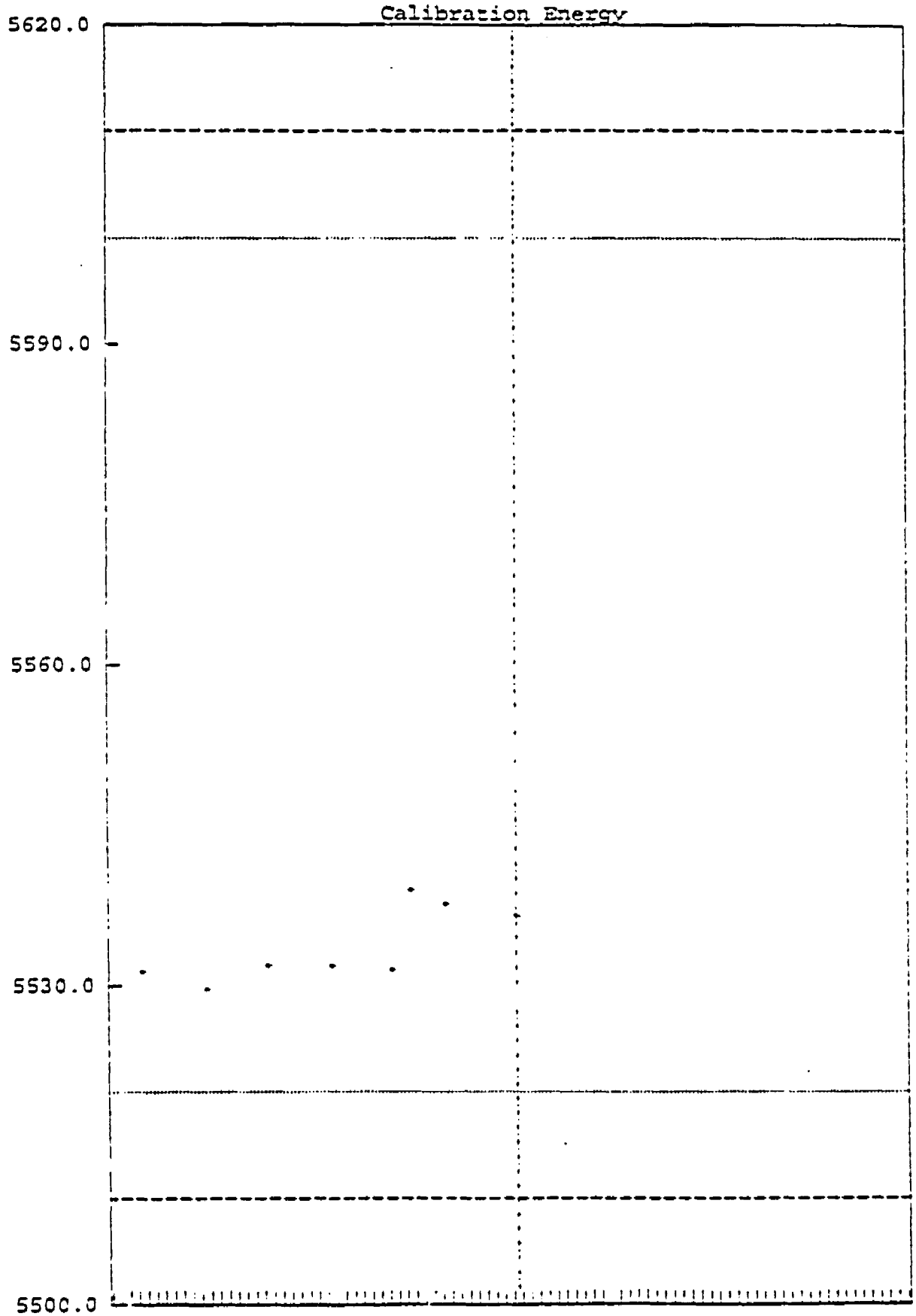
Checked By: RG _____ ()

000156

291

Paragon Analytics, Inc.
22 MCB 3 Input 6

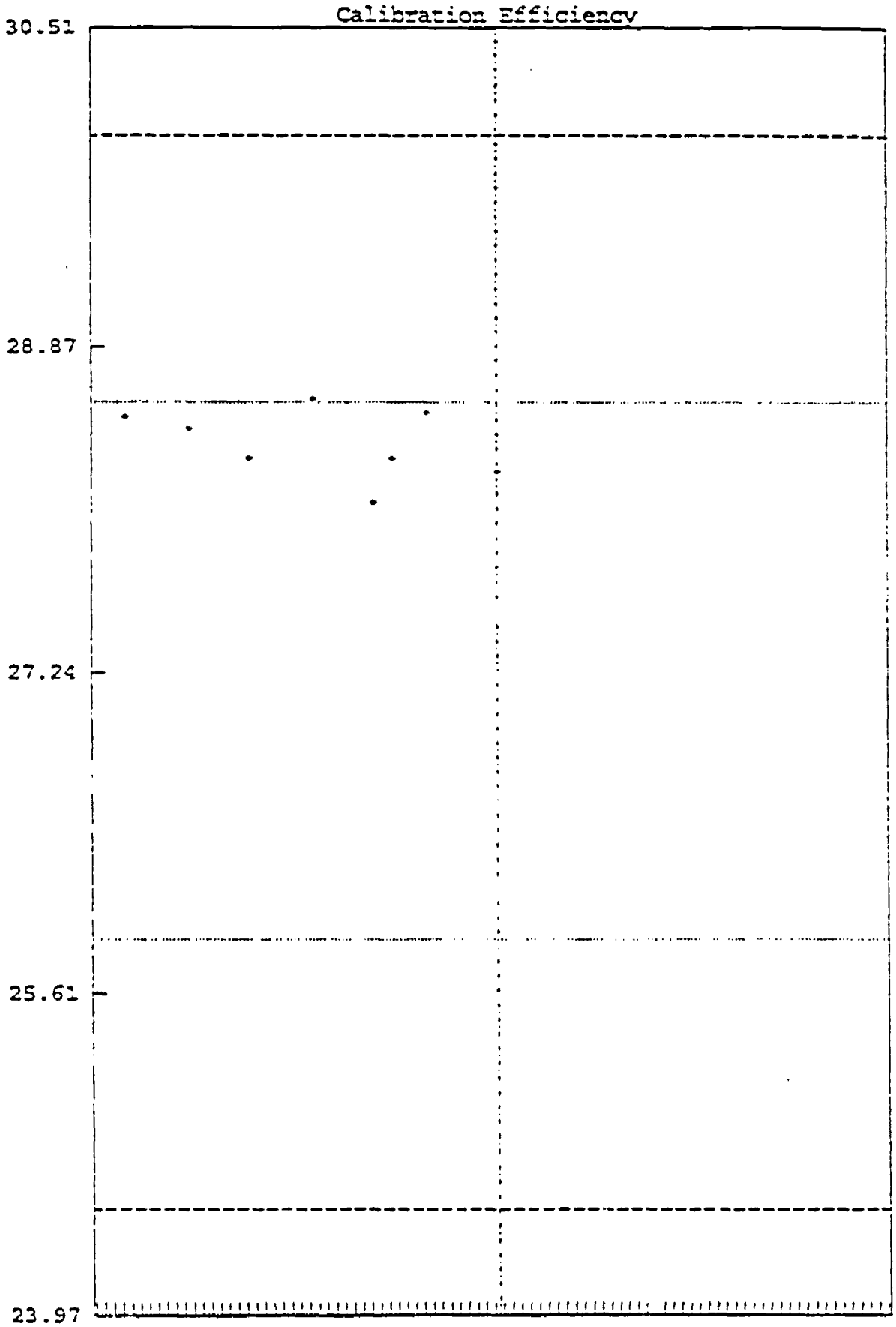
1/26/99 1:46:10 PM




12/11/98 Marker: 1/25/99 01:17 PM = 5536.4 keV

Paragon Analytics, Inc.
22 MCB 3 Input 6

1/26/99 1:49:11 PM

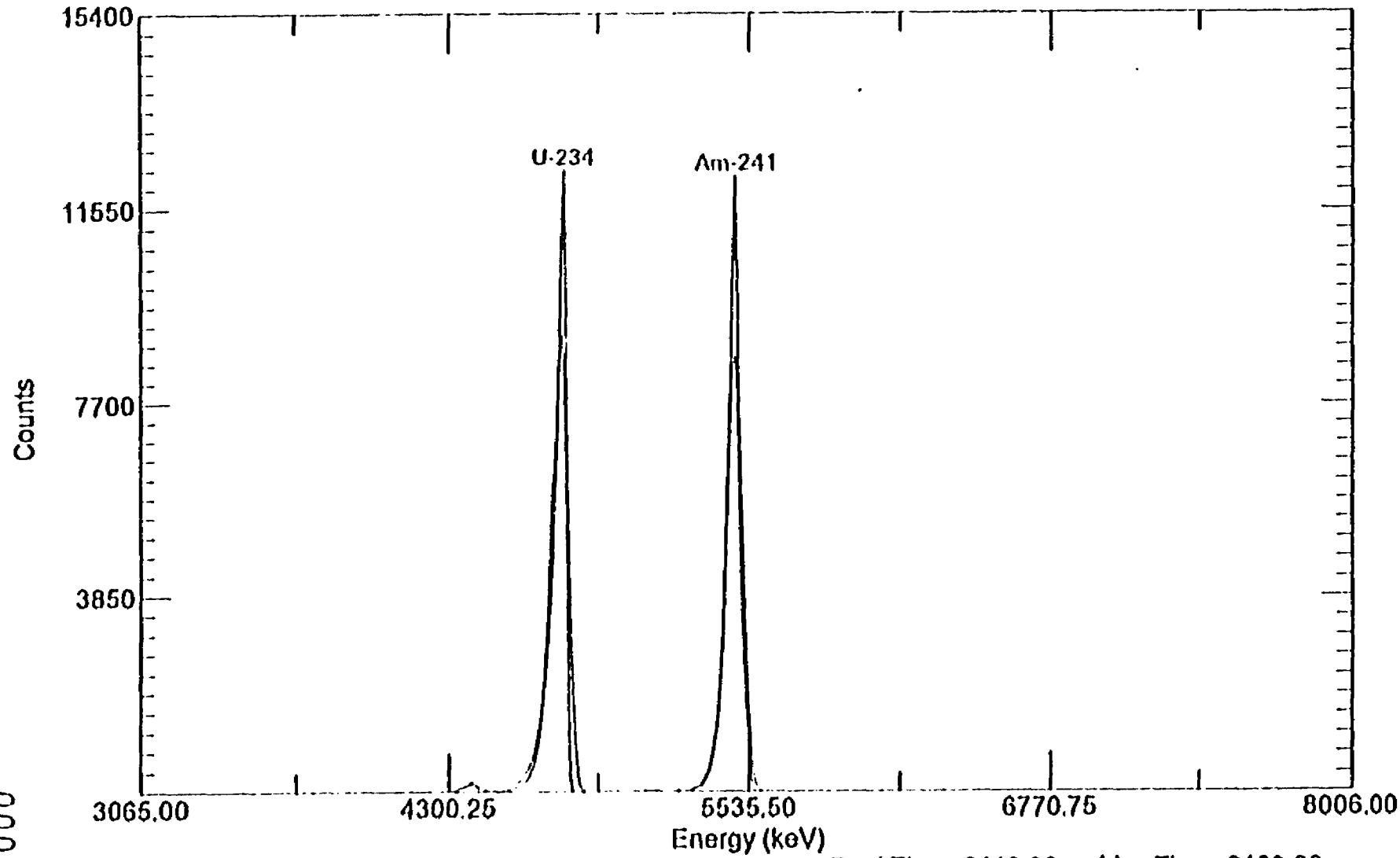



000158

JB

C9012522

AlphaVision Absolute Peak Search And Fit




Acquired: 12:18:53 on 25-Jan-99
File: C:\USER\ALPHA\CALIB\C9012522.CHN
Sample: Source 97-19-103-06 Weekly Cal

Real Time: 2118.30 s. Live Time: 2100.00 s.
Detector: #22 MCB 3 Input 6
Type: ECAL6

0001159

# A L P H A V I S I O N  C A L I B R A T I O N  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: Source 97-19-103-08 Weekly Cal
Type: ECAL8 Sample Collected: 03-Mar-98 12:00:00
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 8
Efficiency: 30.67% Chem. Recovery: 0.00%
Total Eff.: 30.67% Manual:100.00%
CALIBRATION: 3070.65 + 9.66367 * Chn keV
Original: 3071.74 + 9.6997 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011724.CHN
ACQUISITION: 512 Channels Spectrum Acquired: 25-Jan-99 12:18:59
Live Time: 2100.00 Real Time: 2118.28 Sec.
Spectrum File: C:\USER\ALPHA\CALIB\C9012524.CHN
Background File: C:\USER\ALPHA\BKGND\B9011624.CHN
Nuclide Library: C:\USER\ALPHA\ECAL8.ALB

ANALYSIS Method: Absolute Peak Search And Fit
Results: C9012524

P E A K S

| | Channel | FWHM | Height | Gross | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|
| 1. | 249.94 | 6.03 | 3886.53 | 33895.96 | 0.43 | 33895.53 | 968.44 |
| 2. | 176.35 | 4.31 | 24712.33 | 213474.99 | 0.06 | 213474.93 | 6099.28 |

D E C A Y  C O R R E C T E D  R E S U L T S

| | Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|---|
| 1. | Am-241 | 0.86 | 5486.00 | 58.271 | 3.8277 | 3161.80 | 0.40 | 1.06 |
| 2. | U-234 | 0.72 | 4774.80 | 58.158 | 1.8358 | 19884.51 | 0.37 | 0.42 |

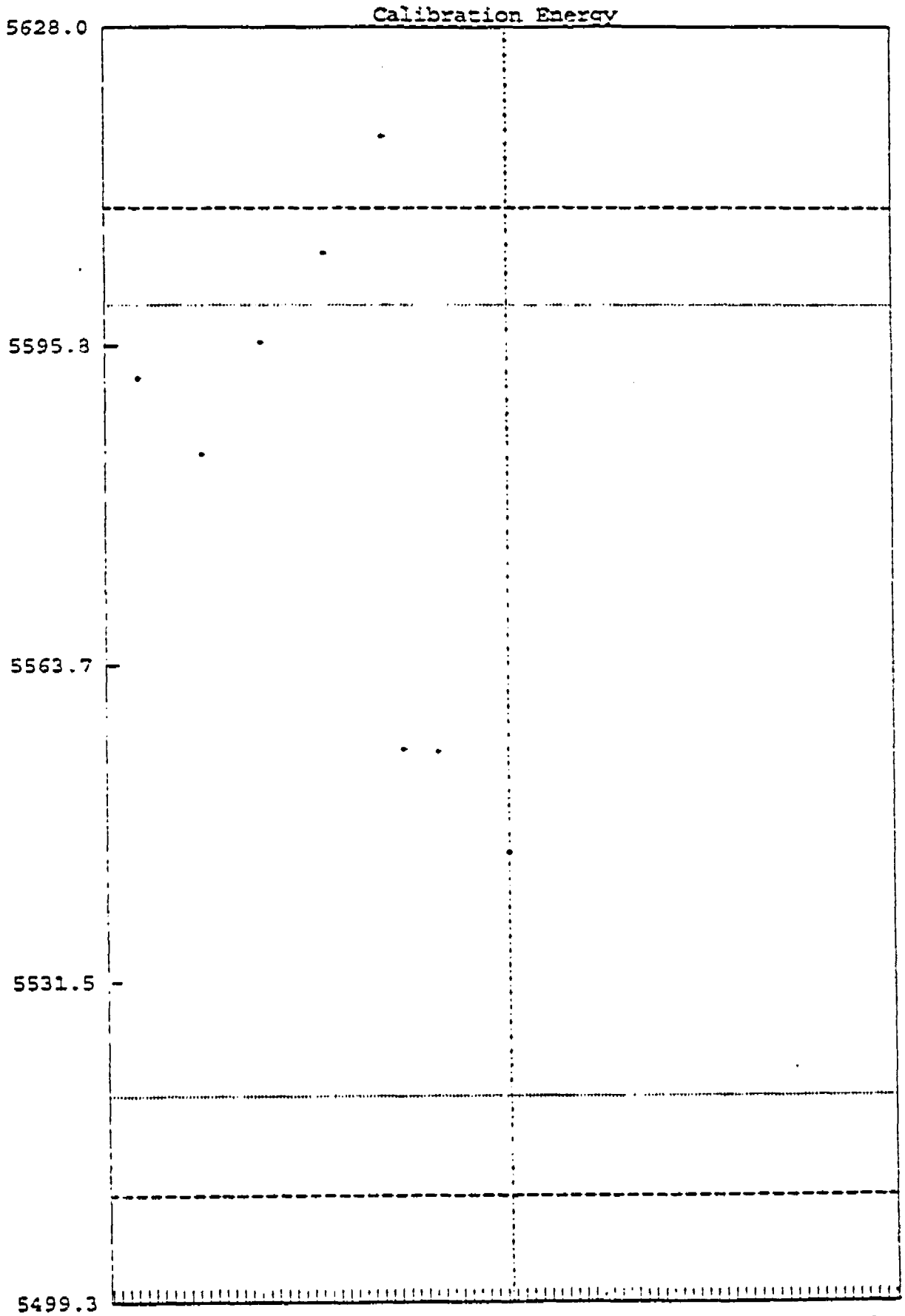
| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 255227.0000 | 100.00 |
| Net Area | 255219.5800 | 100.00 |
| Background | 7.4200 | 0.00 |
| Composite Fit | 251252.6610 | 98.44 |
| Residuals | 3966.9189 | 1.55 |

Analyzed By: _____ ()

Checked By: BG _____ ()

Paragon Analytics, Inc.
24 MCB 3 Input 8

1/26/99 1:46:13 PM



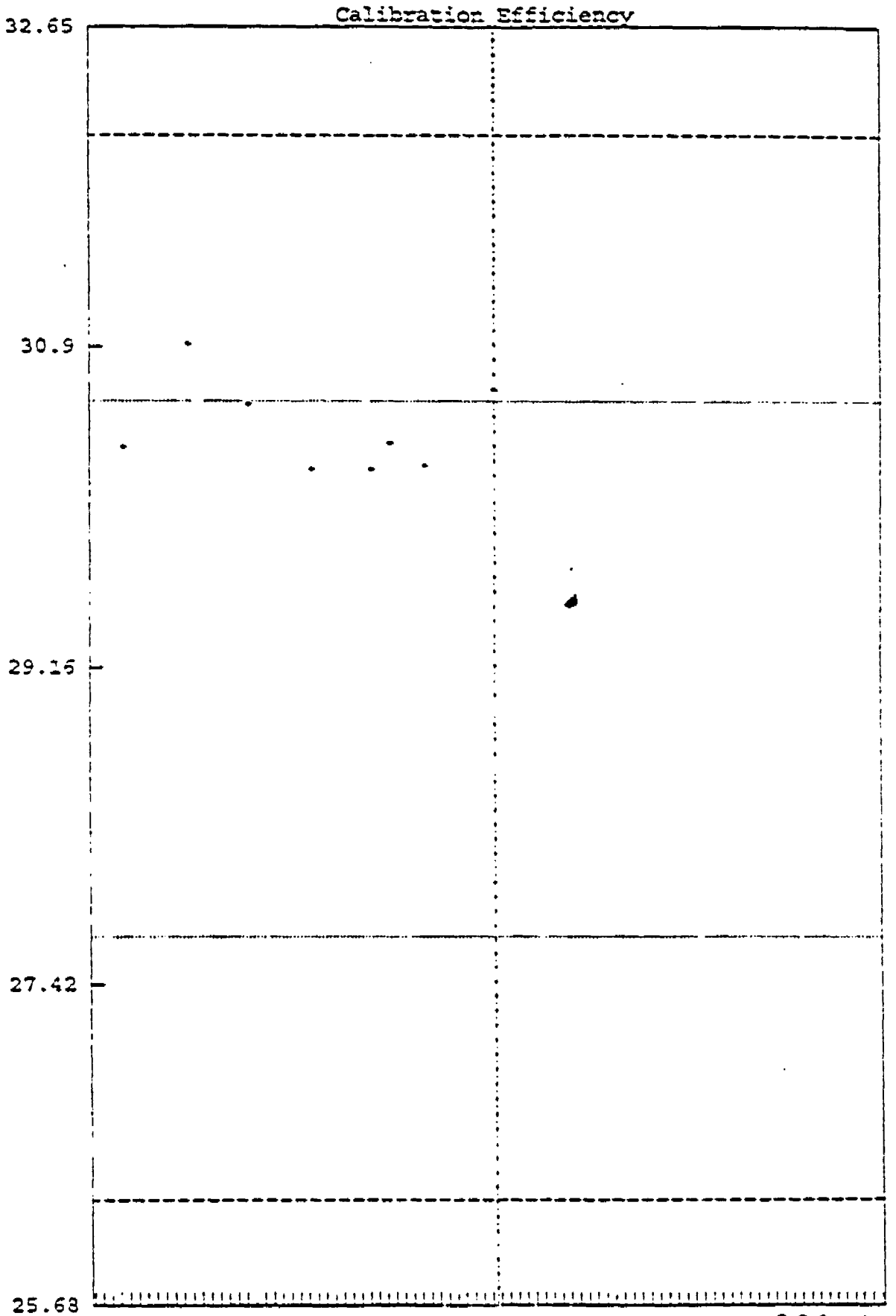

12/11/98 Marker: 1/25/99 01:17 PM = 5544.6 keV

000160

24

Paragon Analytics, Inc.
24 MCB 3 Input 8

1/26/99 1:49:15 PM

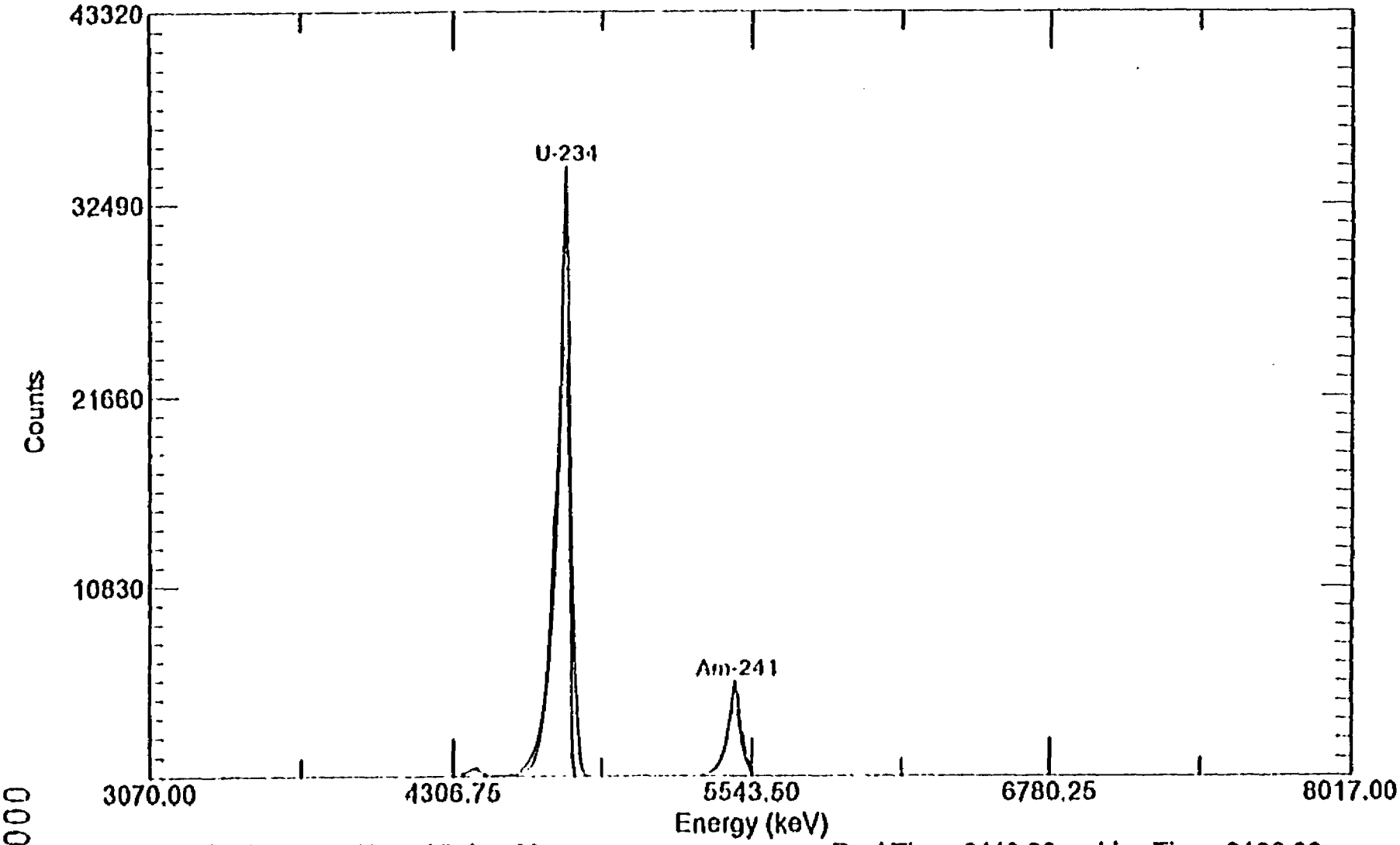



000161

247

C9012524

AlphaVision Absolute Peak Search And Fit




Acquired: 12:18:59 on 25-Jan-99
File: C:\USER\ALPHA\CALIB\C9012524.CHN
Sample: Source 97-19-103-08 Weekly Cal

Real Time: 2118.28 s. Live Time: 2100.00 s.
Detector: #24 MCB 3 Input 8
Type: ECAL8

000162

28

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 16-Jan-99 12:53:37
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 2 Input 4
Efficiency: 28.66%  Chem. Recovery: 0.00%
Total Eff.: 28.66%  Manual:100.00%
CALIBRATION: 3058.64 + 9.65 * Chn keV
Original: 3058.64 + 9.65 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011312.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 16-Jan-99 12:53:44
Live Time: 60000.00  Real Time: 60000.26 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9011612.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9011612

P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

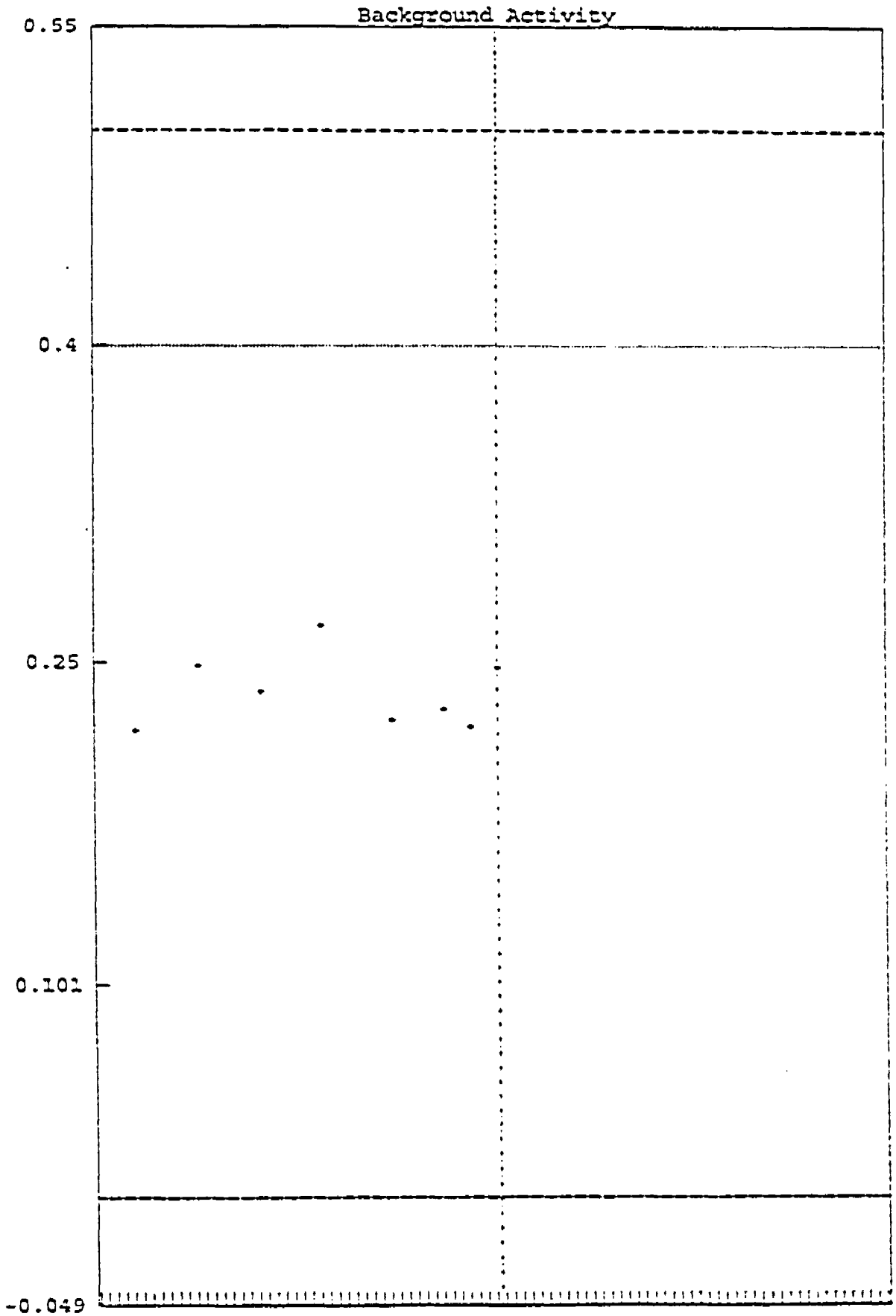
| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 248.0000 | 100.00 |
| Net Area | 248.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 248.0000 | 100.00 |

Analyzed By: _____ ()

Checked By: BG _____ ()

Paragon Analytics, Inc.
12 MCB 2 Input 4

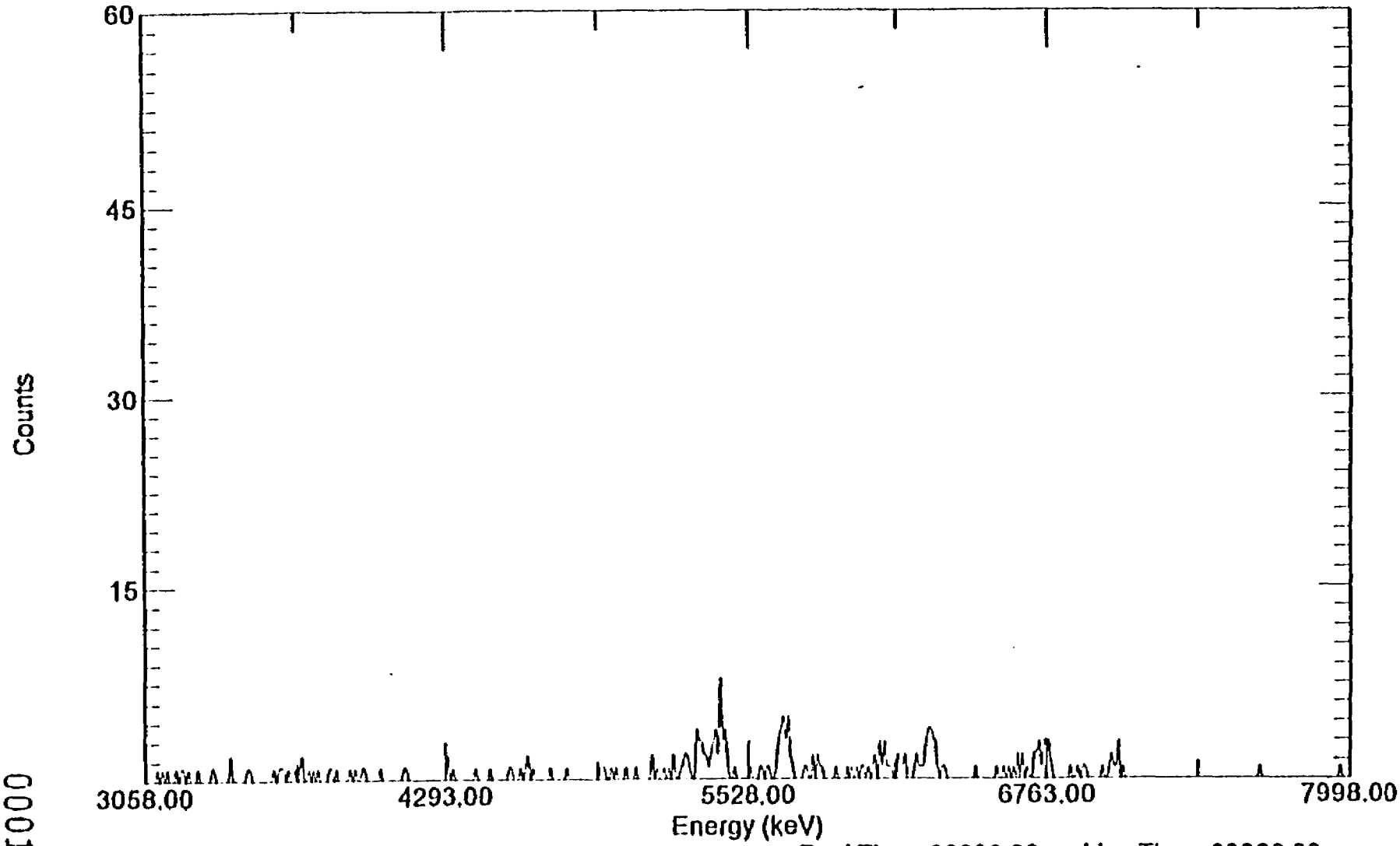
1/17/99 1:56:26 PM




000105

B9011612

AlphaVision Absolute Region-Of-Interest




Acquired: 12:53:44 on 16-Jan-99
File: C:\USER\ALPHA\BKGND\B9011612.CHN
Sample: weekly background

Real Time: 60000.26 s. Live Time: 60000.00 s.
Detector: #12 MCB 2 Input 4
Type: Background

000166

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 16-Jan-99 12:54:22
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 2 Input 5
Efficiency: 28.80%  Chem. Recovery: 0.00%
Total Eff.: 28.80%  Manual:100.00%
CALIBRATION: 3059.99 + 9.7116 * Chn keV
Original: 3059.99 + 9.7116 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011313.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 16-Jan-99 12:54:29
Live Time: 60000.00  Real Time: 60000.28 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9011613.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9011613

P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 242.0000 | 100.00 |
| Net Area | 242.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 242.0000 | 100.00 |

Analyzed By: _____ ()

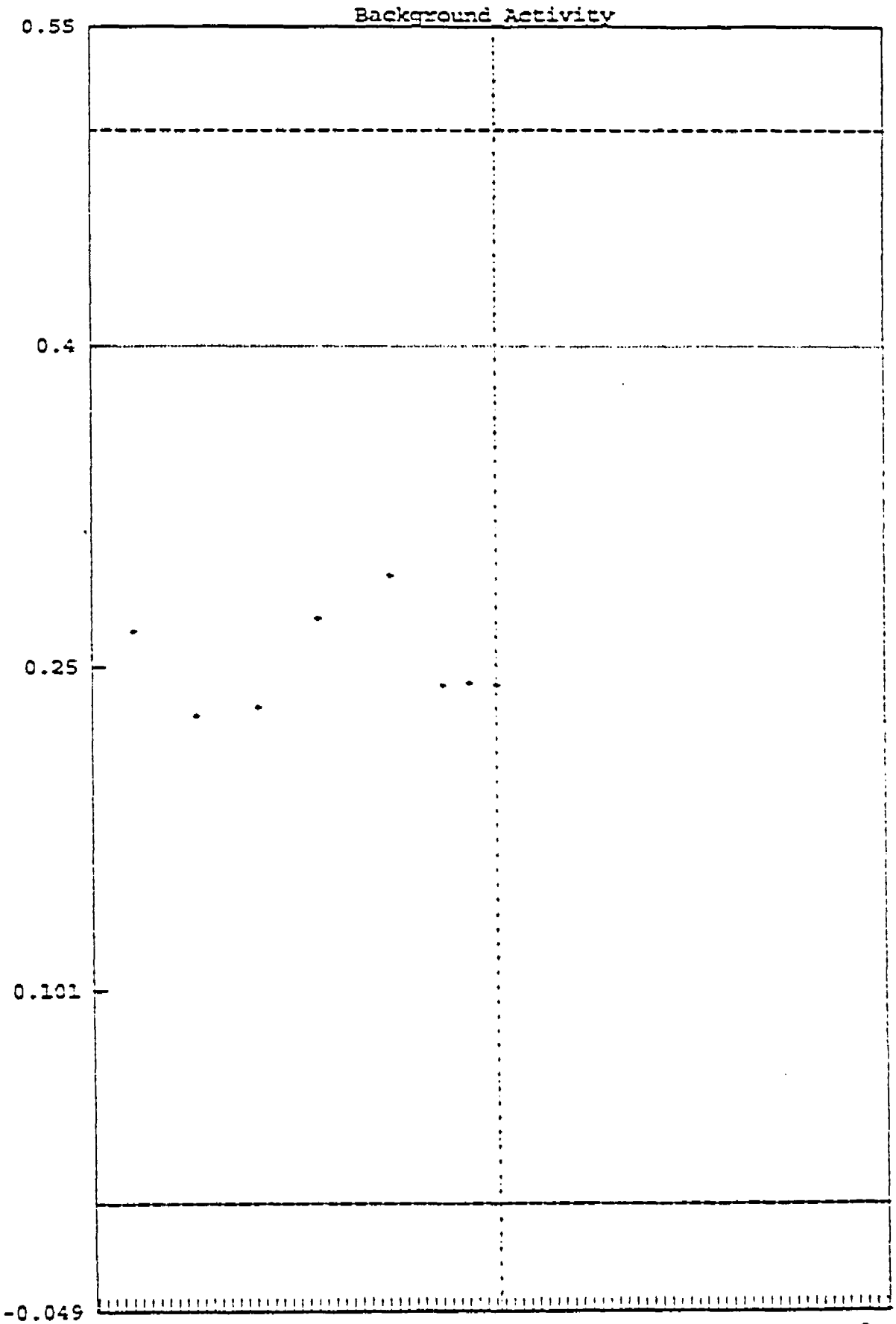
Checked By: RG _____ ()



30

Paragon Analytics, Inc.
13 MCB 2 Input 5

1/17/99 1:56:29 PM

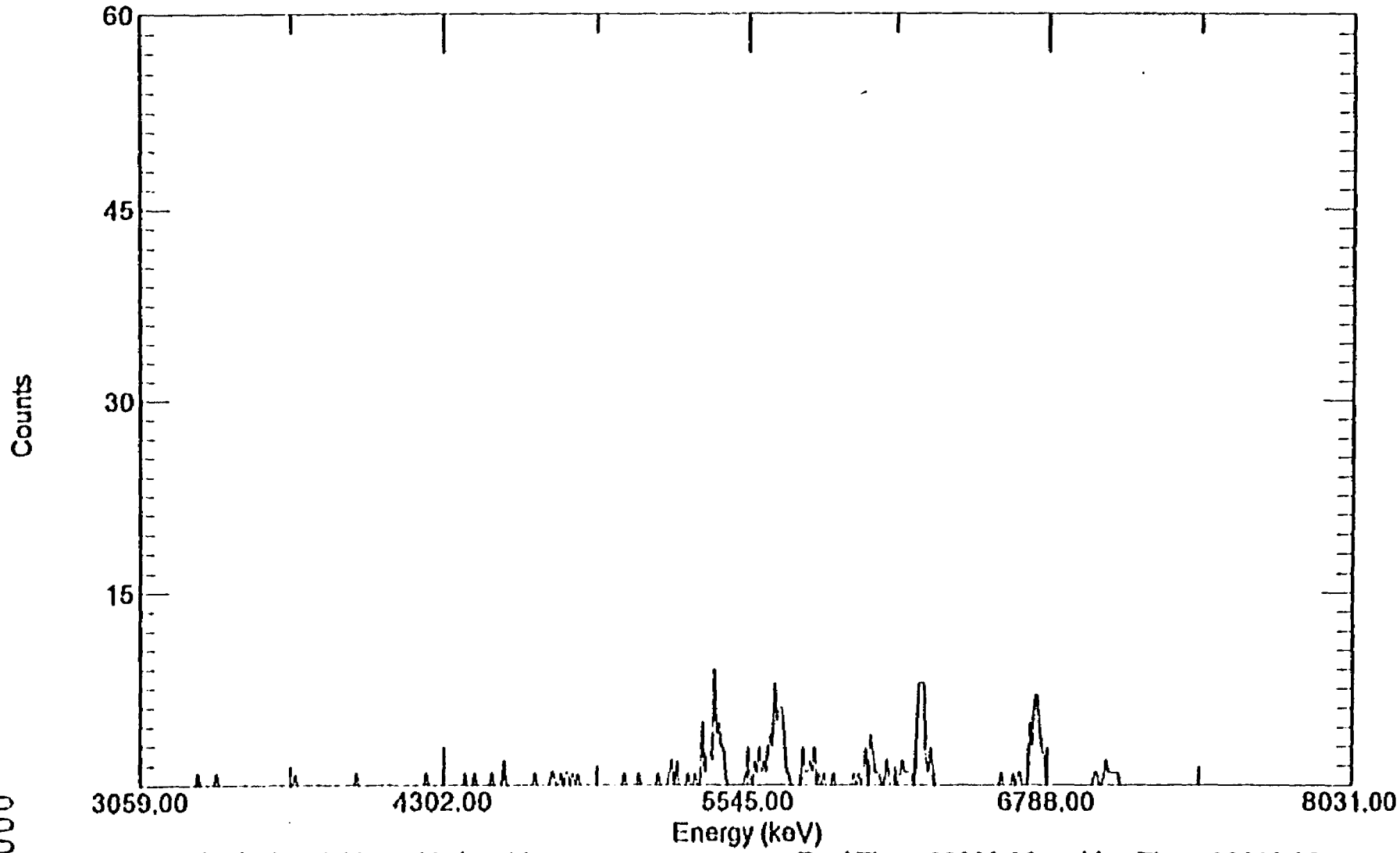



000168

20

B9011613

AlphaVision Absolute Region-Of-Interest




Acquired: 12:54:29 on 16-Jan-99
File: C:\USER\ALPHA\BKGND\B9011613.CHN
Sample: weekly background

Real Time: 60000.28 s, Live Time: 60000.00 s,
Detector: #13 MCB 2 Input 5
Type: Background

000169

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 16-Jan-99 12:54:29
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 2 Input 6
Efficiency: 28.79%  Chem. Recovery: 0.00%
Total Eff.: 28.79%  Manual:100.00%
CALIBRATION: 3060.13 + 9.695 * Chn keV
Original: 3060.13 + 9.695 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011314.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 16-Jan-99 12:54:31
Live Time: 60000.00  Real Time: 60000.26 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9011614.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9011614

P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 240.0000 | 100.00 |
| Net Area | 240.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 240.0000 | 100.00 |

Analyzed By: _____ ()

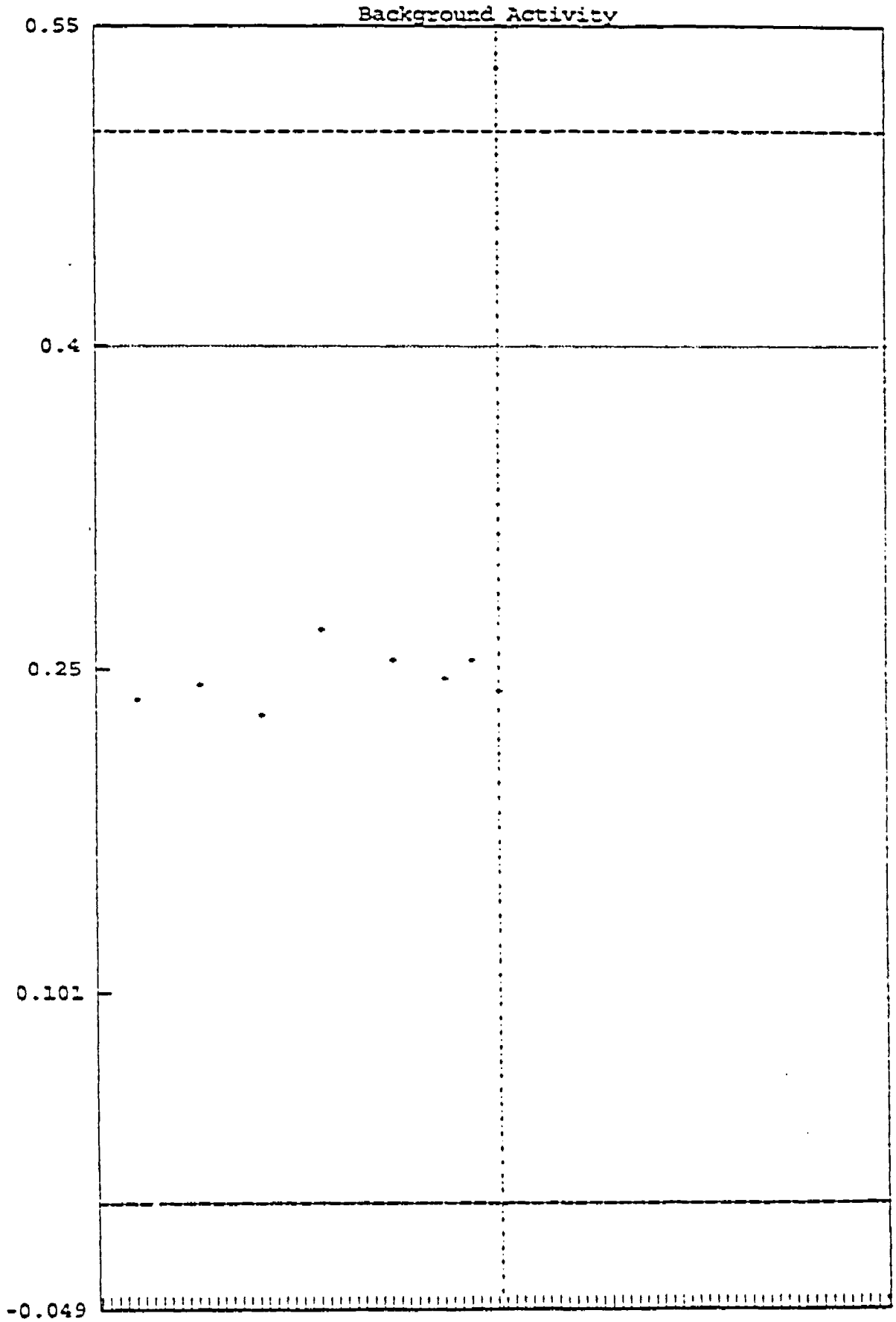
Checked By: BG _____ ()



3/4

Paragon Analytics, Inc.
14 MCB 2 Input 6

1/17/99 1:56:34 PM

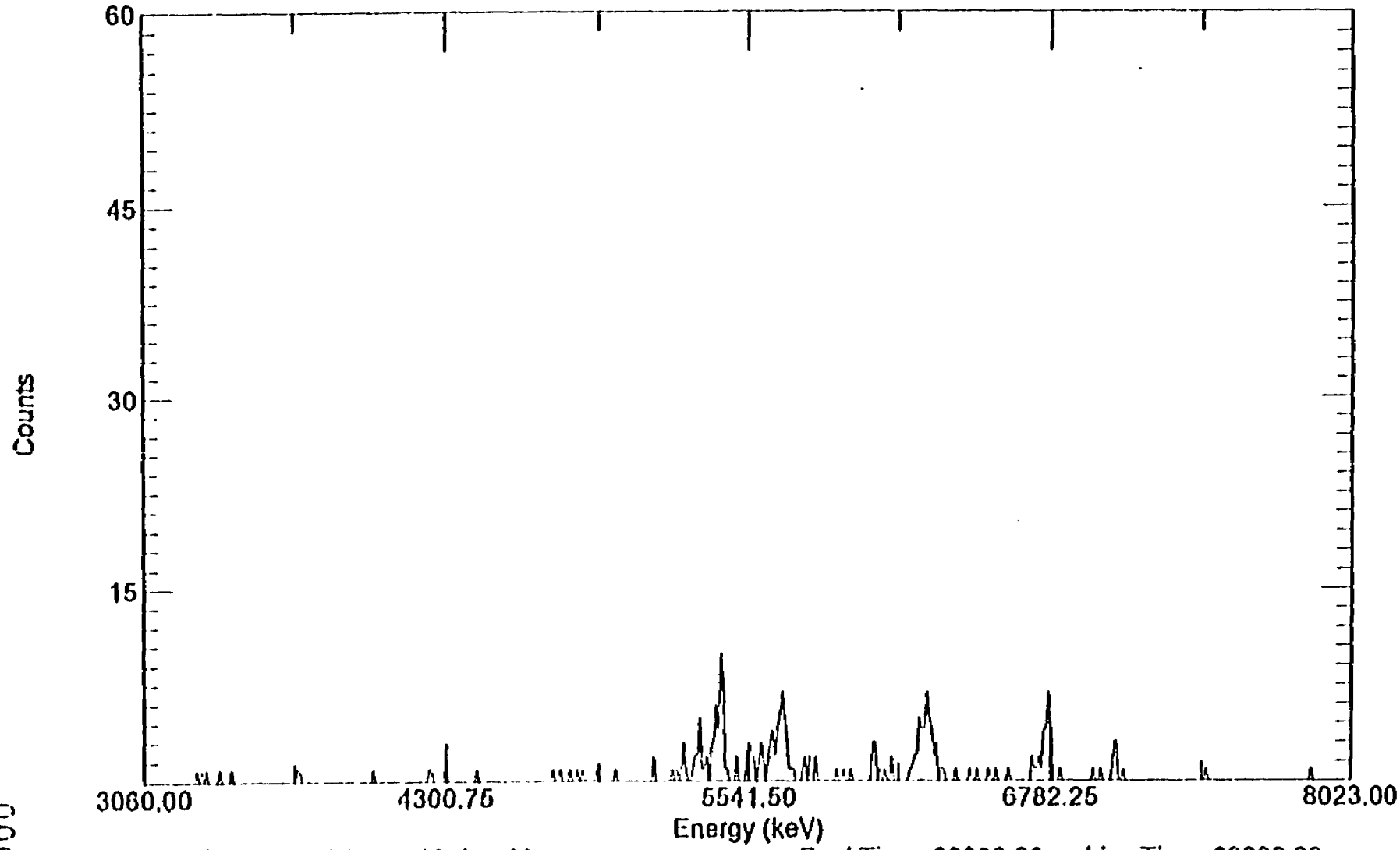





97

B9011614

AlphaVision Absolute Region-Of-Interest




Acquired: 12:54:31 on 16-Jan-99
File: C:\USER\ALPHA\BKGND\B9011614.CHN
Sample: weekly background

Real Time: 60000.26 s. Live Time: 60000.00 s.
Detector: #14 MCB 2 Input 6
Type: Background

000172

38

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 16-Jan-99 12:54:31
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 2 Input 7
Efficiency: 29.48%  Chem. Recovery: 0.00%
Total Eff.: 29.48%  Manual:100.00%
CALIBRATION: 3048.12 + 9.6841 * Chn keV
Original: 3048.12 + 9.6841 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011315.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 16-Jan-99 12:54:33
Live Time: 60000.00  Real Time: 60000.28 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9011615.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9011615

P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

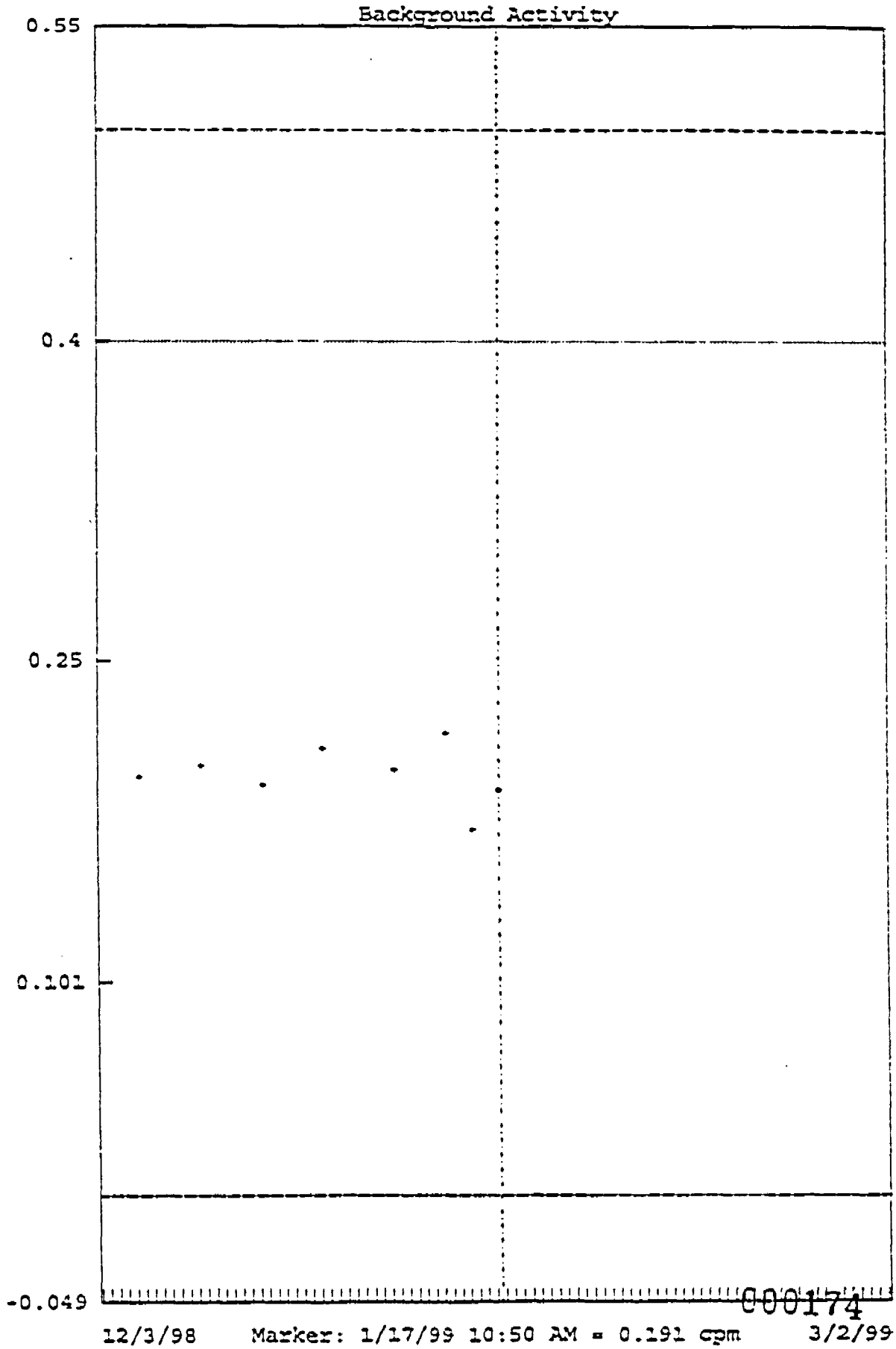
| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 191.0000 | 100.00 |
| Net Area | 191.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 191.0000 | 100.00 |

Analyzed By: _____ ()

Checked By: RG _____ ()

Paragon Analytics, Inc.
15 MCB 2 Input 7

1/17/99 1:56:38 PM

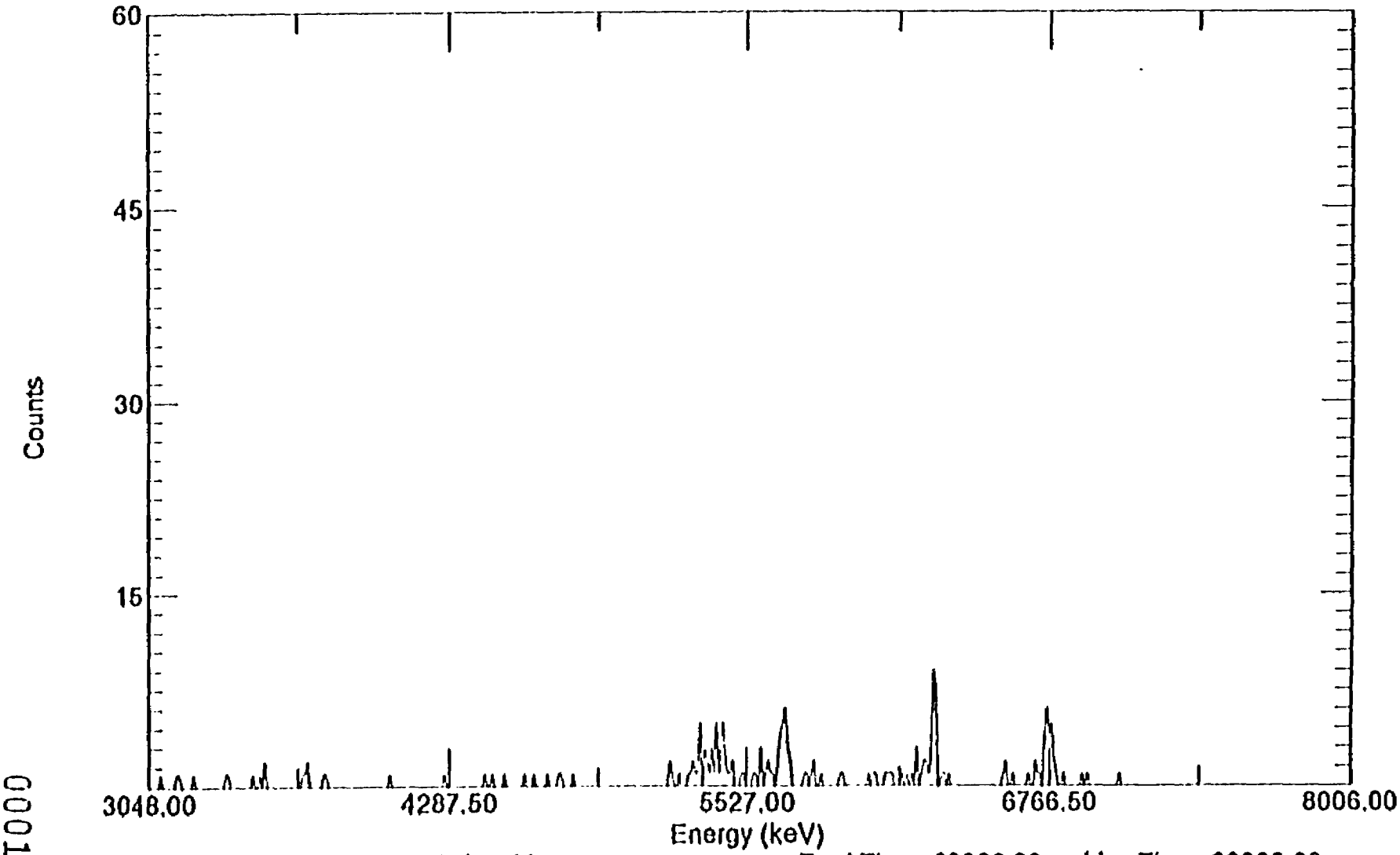





10

B9011615

AlphaVision Absolute Region-Of-Interest




Acquired: 12:54:33 on 16-Jan-99
File: C:\USER\ALPHA\BKGND\B9011615.CHN
Sample: weekly background

Real Time: 60000.28 s, Live Time: 60000.00 s,
Detector: #15 MCB 2 Input 7
Type: Background

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 16-Jan-99 12:54:33
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 2 Input 8
Efficiency: 30.80%  Chem. Recovery: 0.00%
Total Eff.: 30.80%  Manual:100.00%
CALIBRATION: 3071.57 + 9.7569 * Chn keV
Original: 3071.57 + 9.7569 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011316.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 16-Jan-99 12:54:35
Live Time: 60000.00  Real Time: 60000.28 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9011616.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9011616

## P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

## D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

## T O T A L S

| | | % Recovery |
|---|---|---|
| Gross Count | 229.0000 | 100.00 |
| Net Area | 229.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 229.0000 | 100.00 |

Analyzed By: _____ ()

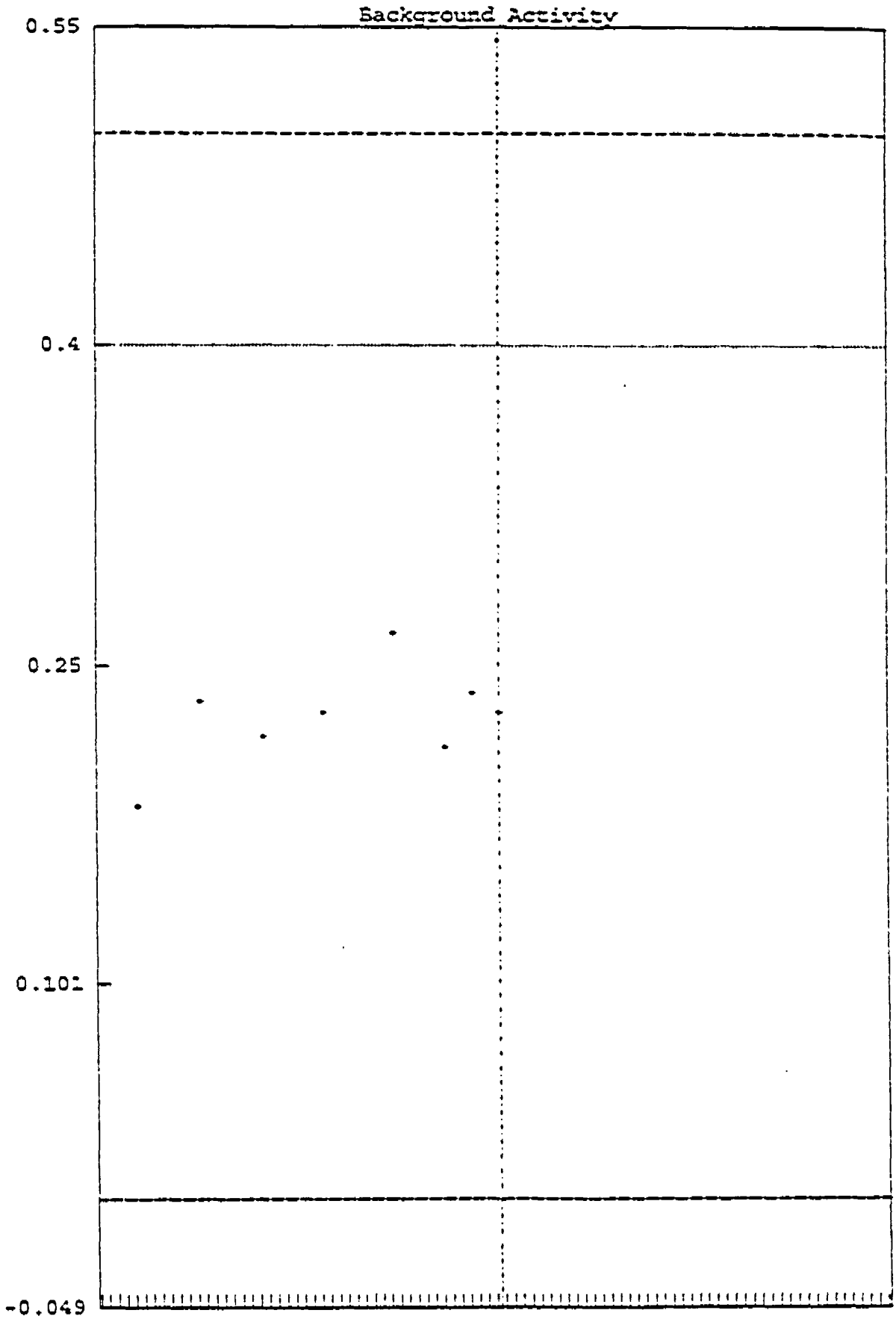
Checked By: BG _____ ()



32

Paragon Analytics, Inc.
16 MCB 2 Input 8

1/17/99 1:56:42 PM

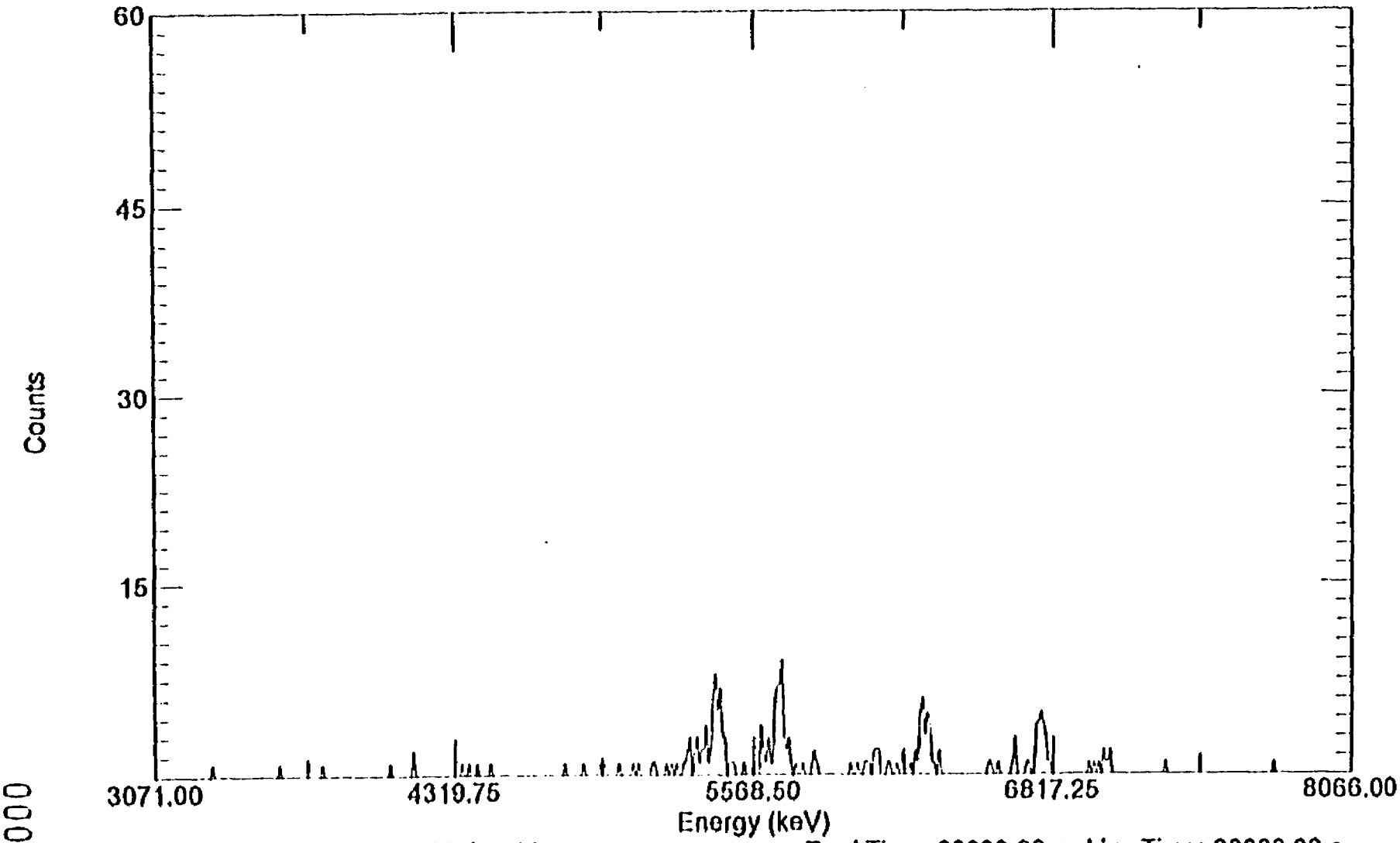



000172799

30

B9011616

AlphaVision Absolute Region-Of-Interest




Acquired: 12:54:35 on 16-Jan-99
File: C:\USER\ALPHA\BKGND\B9011616.CHN
Sample: weekly background

Real Time: 60000.28 s. Live Time: 60000.00 s.
Detector: #16 MCB 2 Input 8
Type: Background

000178

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 16-Jan-99 12:54:38
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 1
Efficiency: 28.73%  Chem. Recovery: 0.00%
Total Eff.: 28.73%  Manual:100.00%
CALIBRATION: 3057.51 + 9.6781 * Chn keV
Original: 3057.51 + 9.6781 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011317.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 16-Jan-99 12:54:41
Live Time: 60000.00  Real Time: 60000.68 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9011617.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9011617

P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

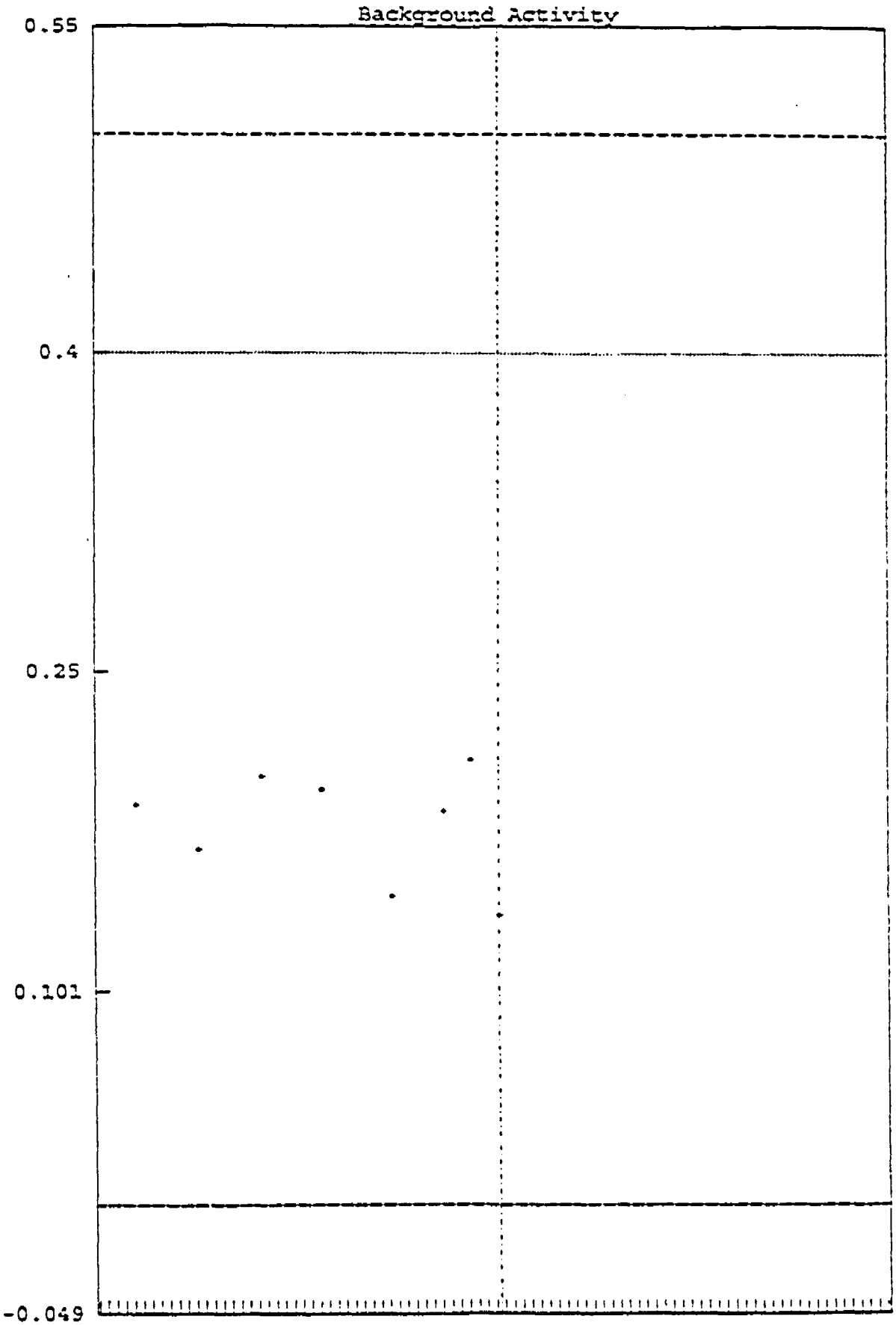
| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 137.0000 | 100.00 |
| Net Area | 137.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 137.0000 | 100.00 |

Analyzed By: _____ ()

Checked By: BG _____ ()

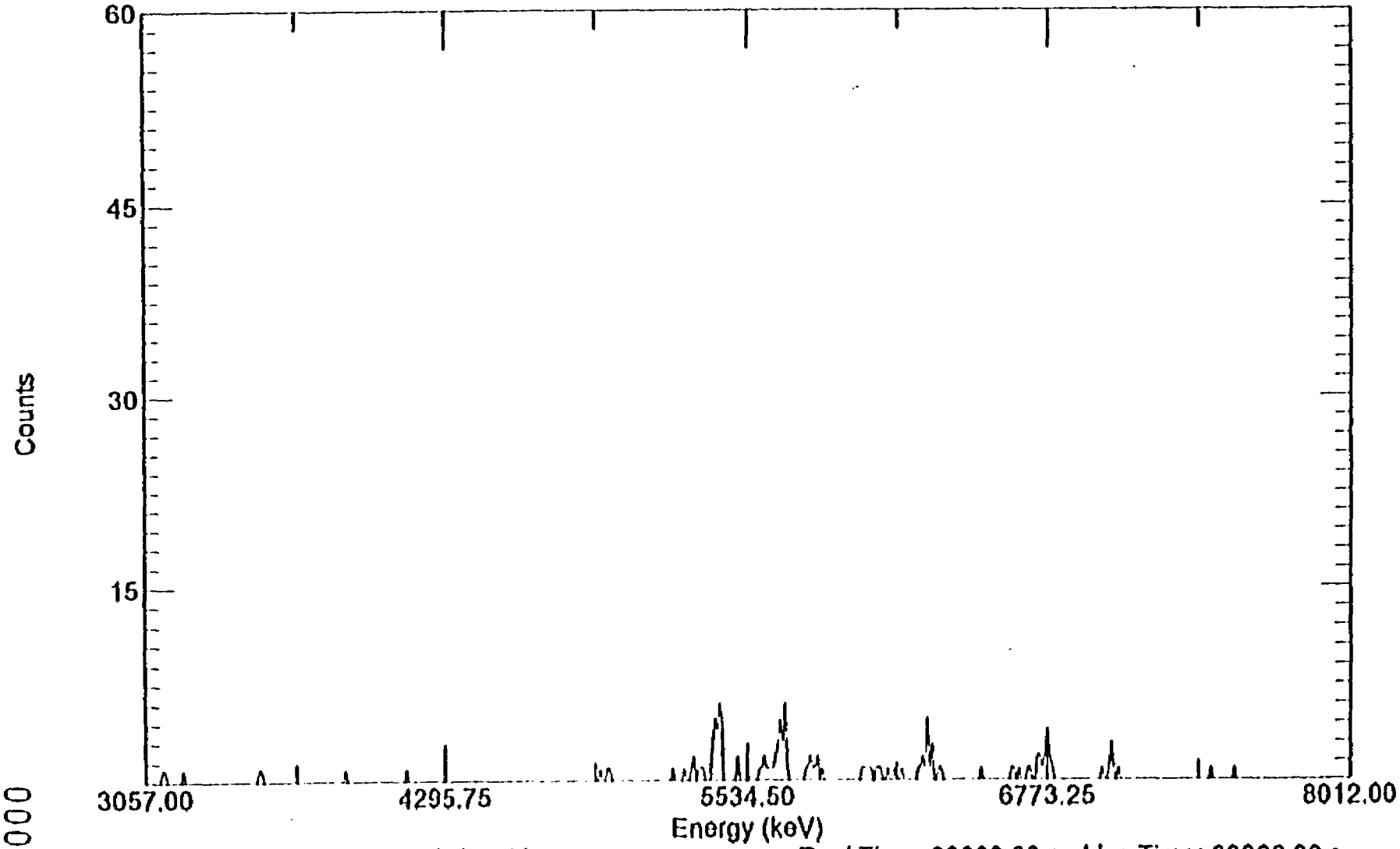
Paragon Analytics, Inc.
17 MCB 3 Input 1

1/17/99 1:56:46 PM



B9011617

AlphaVision Absolute Region-Of-Interest




Acquired: 12:54:41 on 16-Jan-99
File: C:\USER\ALPHA\BKGND\B9011617.CHN
Sample: weekly background

Real Time: 60000.68 s. Live Time: 60000.00 s.
Detector: #17 MCB 3 Input 1
Type: Background

0001181

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 16-Jan-99 12:54:44
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 3
Efficiency: 28.43%  Chem. Recovery: 0.00%
Total Eff.: 28.43%  Manual:100.00%
CALIBRATION: 3077.79 + 9.7015 * Chn keV
Original: 3077.79 + 9.7015 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011319.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 16-Jan-99 12:54:46
Live Time: 60000.00  Real Time: 60000.68 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9011619.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9011619

P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 269.0000 | 100.00 |
| Net Area | 269.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 269.0000 | 100.00 |

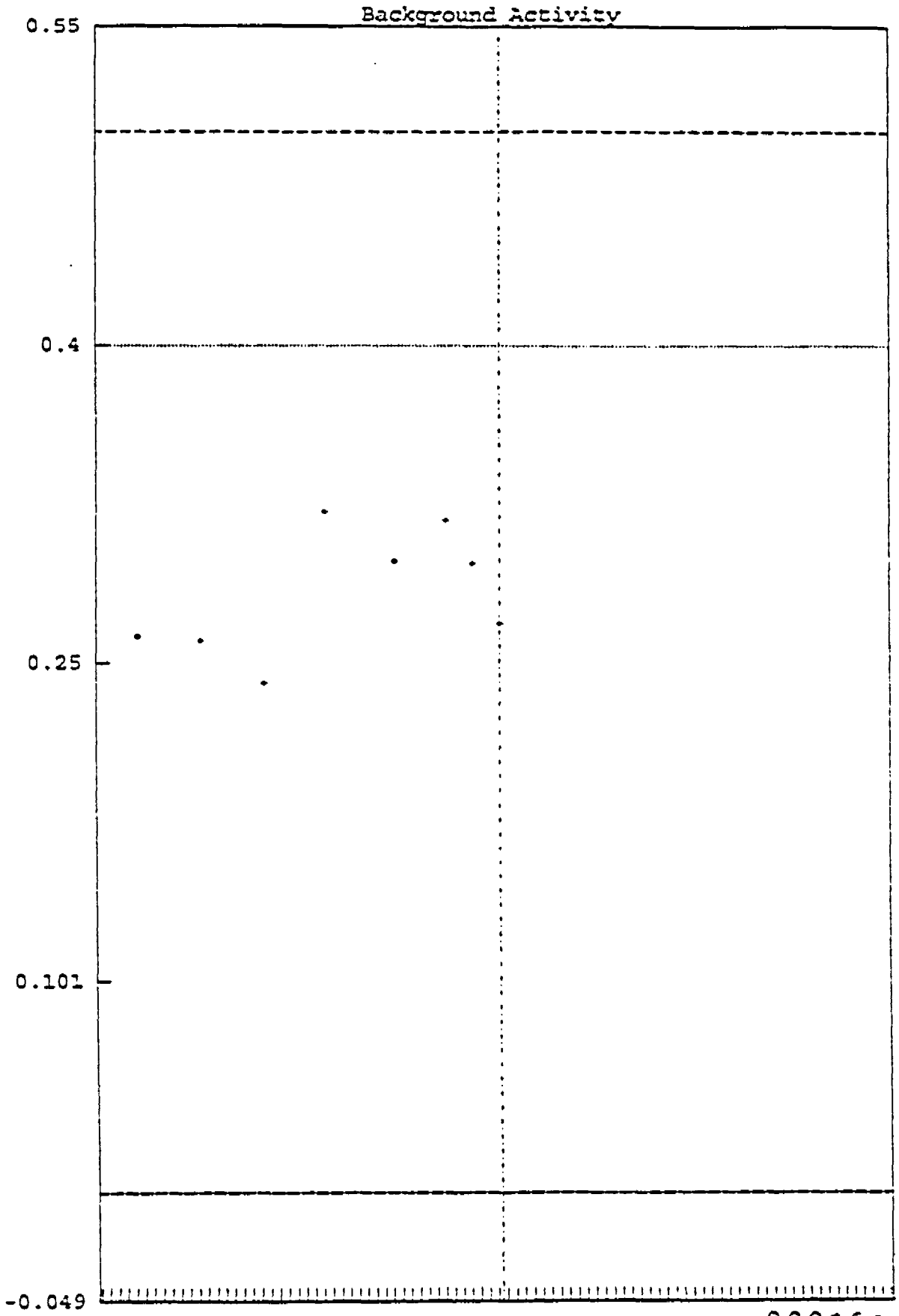
Analyzed By: _____ ()

Checked By: BG _____ ()

000182

Paragon Analytics, Inc.
19 MCB 3 Input 3

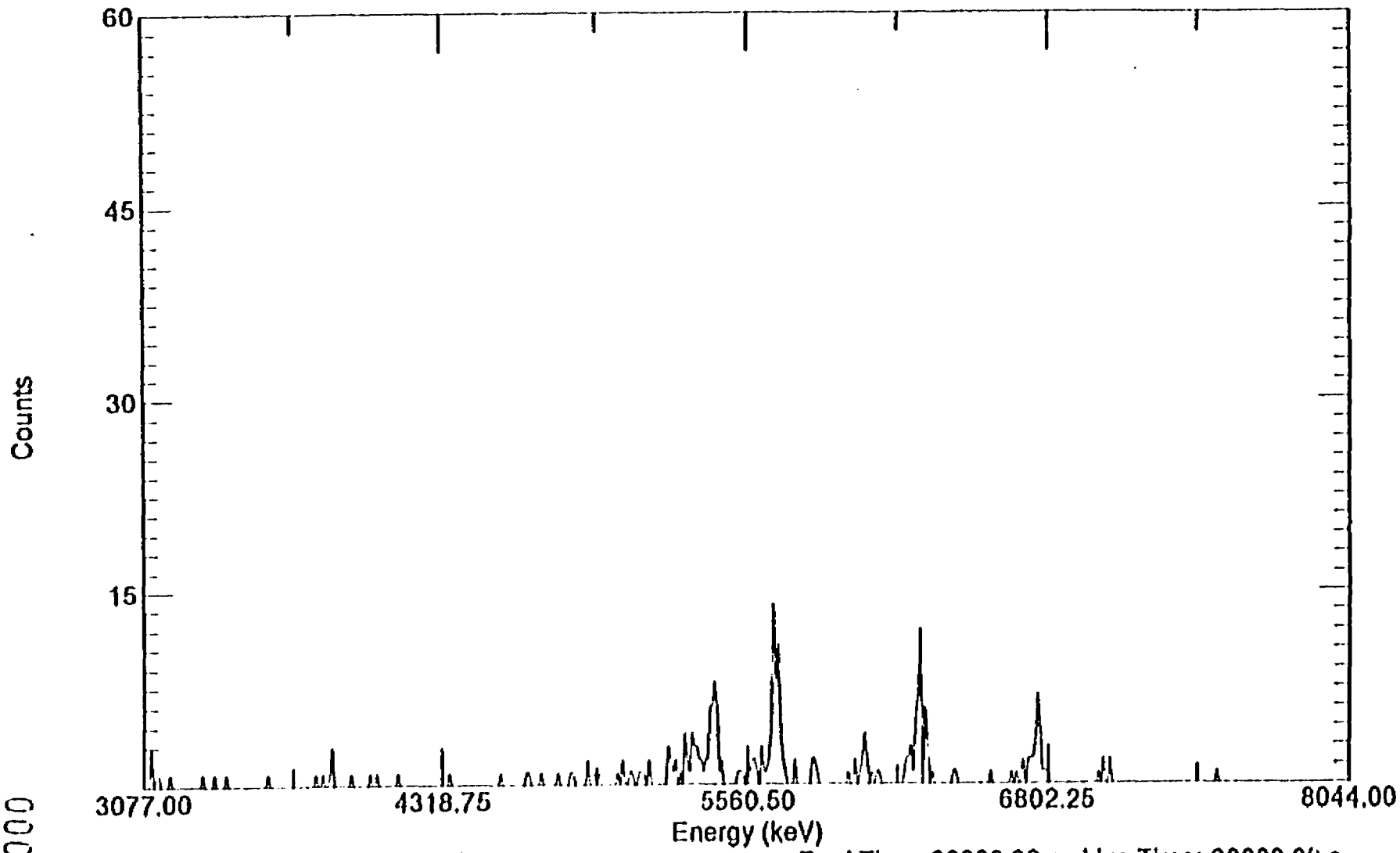
1/17/99 1:57:04 PM




000162

B9011619

AlphaVision Absolute Region-Of-Interest




Acquired: 12:54:46 on 16-Jan-99
File: C:\USER\ALPHA\BKGND\B9011619.CHN
Sample: weekly background

Real Time: 60000.68 s. Live Time: 60000.00 s.
Detector: #19 MCB 3 Input 3
Type: Background

0001864

326

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 16-Jan-99 12:54:46
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 4
Efficiency: 28.23%  Chem. Recovery: 0.00%
Total Eff.: 28.23%  Manual:100.00%
CALIBRATION: 3062.48 + 9.6818 * Chn keV
Original: 3062.48 + 9.6818 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011320.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 16-Jan-99 12:54:48
Live Time: 60000.00  Real Time: 60000.66 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9011620.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9011620

P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 323.0000 | 100.00 |
| Net Area | 323.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 323.0000 | 100.00 |

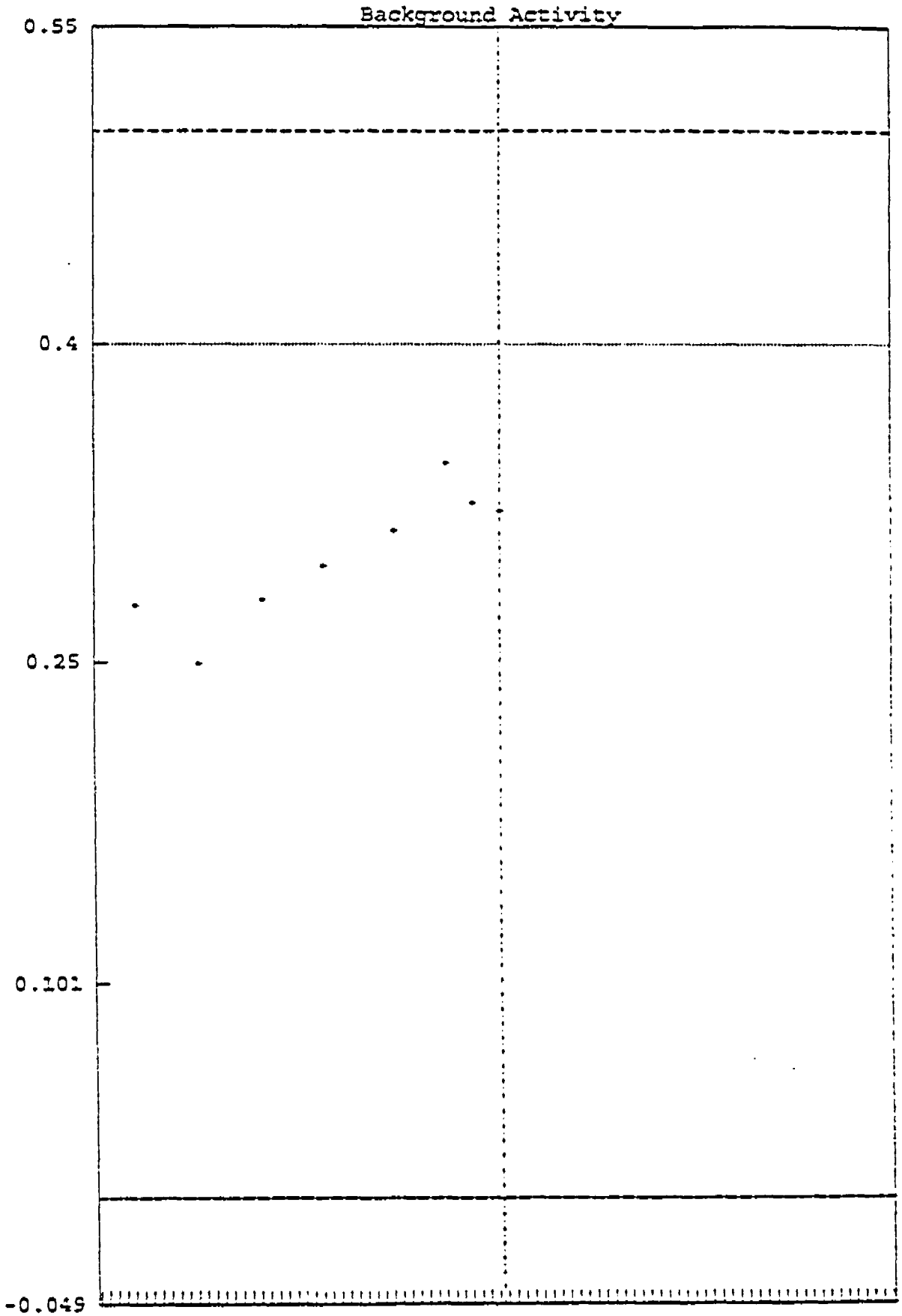
Analyzed By: _____ ()

Checked By: BC _____ ()

000135

Paragon Analytics, Inc.
20 MCB 3 Input 4

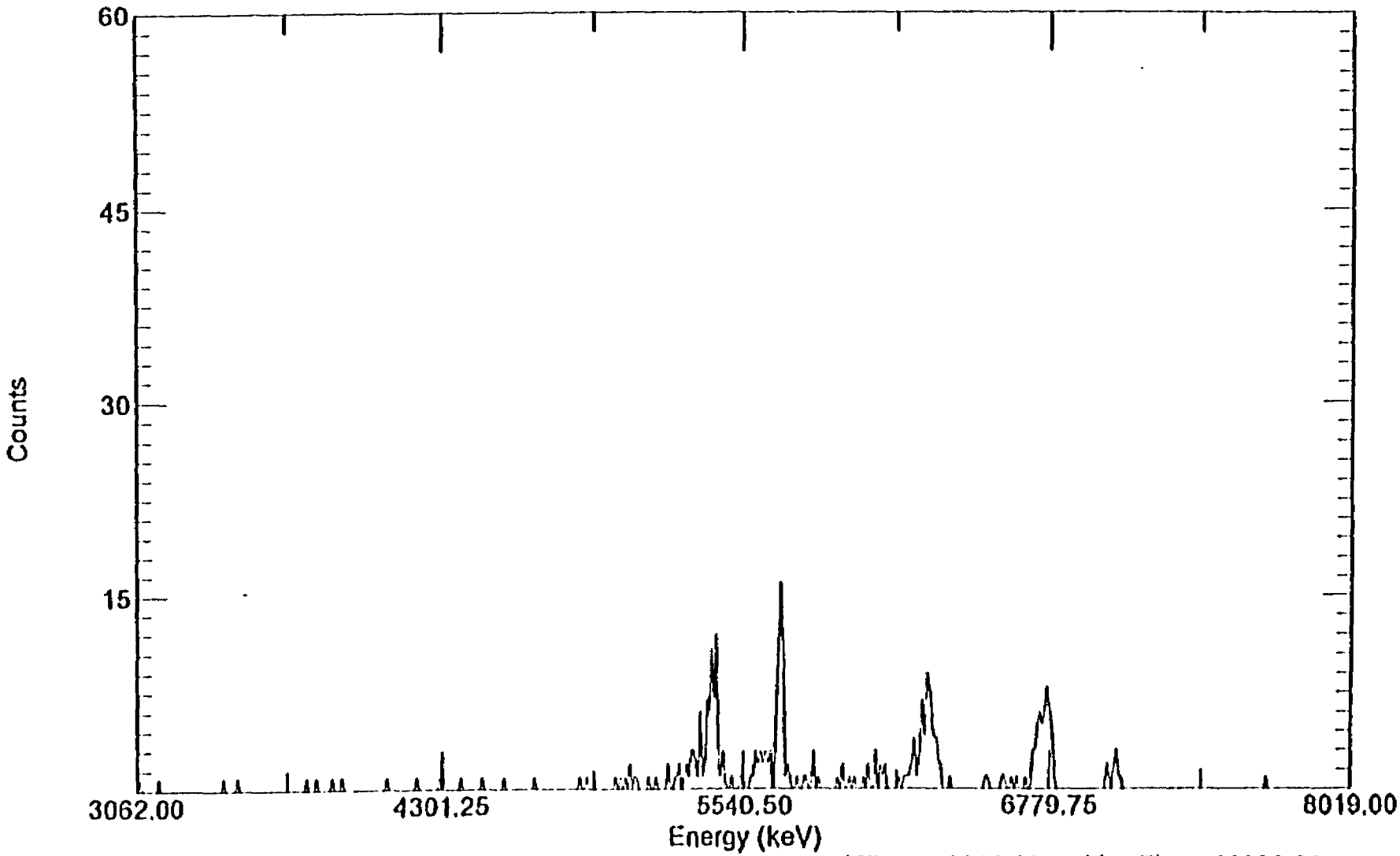
1/17/99 1:57:08 PM




000136

B9011620

AlphaVision Absolute Region-Of-Interest




Acquired: 12:54:48 on 16-Jan-99
File: C:\USER\ALPHA\BKGND\B9011620.CHN
Sample: weekly background

Real Time: 60000.66 s. Live Time: 60000.00 s.
Detector: #20 MCB 3 Input 4
Type: Background

0001187

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 16-Jan-99 12:54:50
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 5
Efficiency: 28.64%  Chem. Recovery: 0.00%
Total Eff.: 28.64%  Manual:100.00%
CALIBRATION: 3060.5 + 9.6558 * Chn keV
Original: 3060.5 + 9.6558 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011321.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 16-Jan-99 12:54:53
Live Time: 60000.00  Real Time: 60000.68 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9011621.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9011621

P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

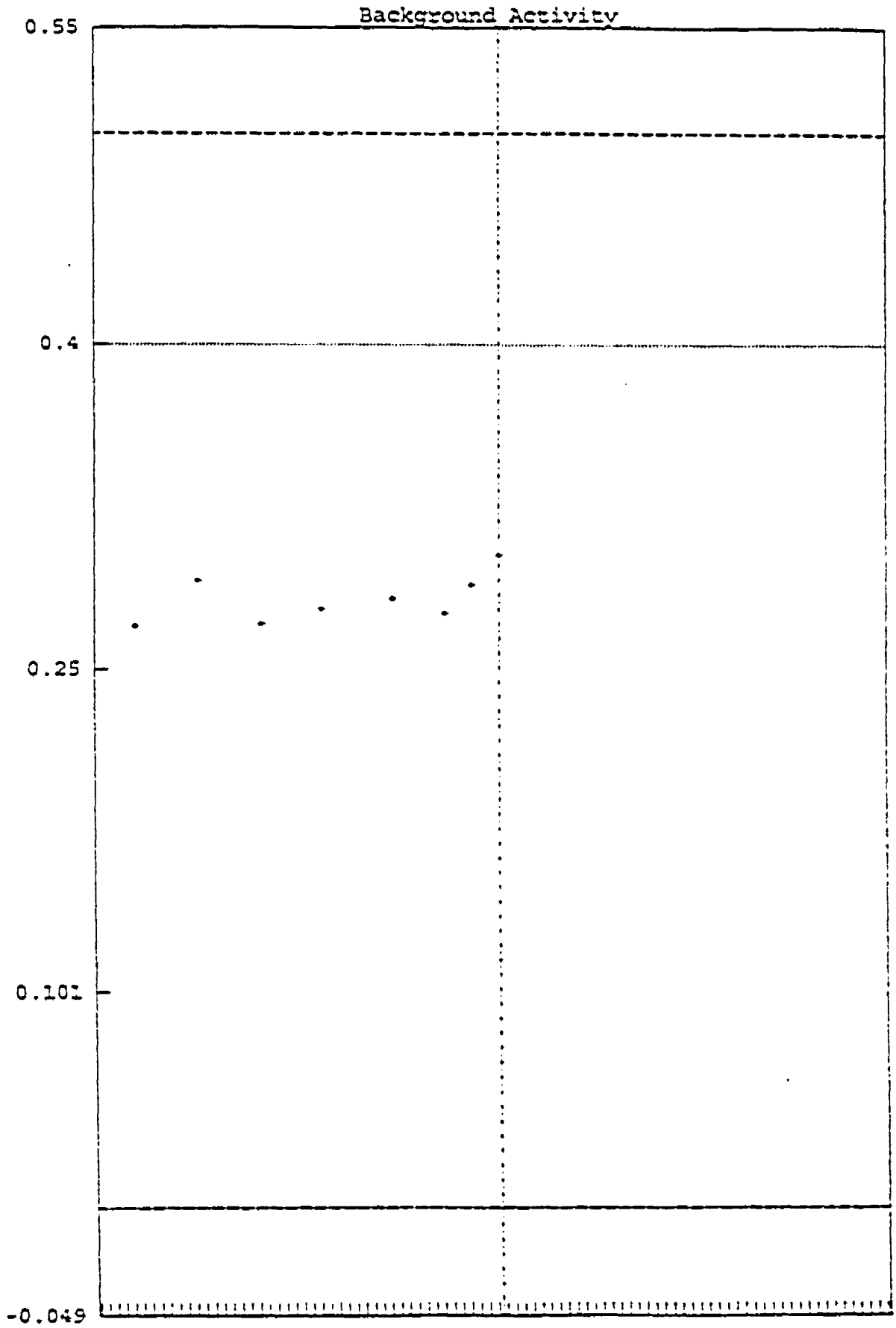
| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 304.0000 | 100.00 |
| Net Area | 304.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 304.0000 | 100.00 |

Analyzed By: _____ ()

Checked By: BG _____ ()

Paragon Analytics, Inc.
21 MCB 3 Input 5

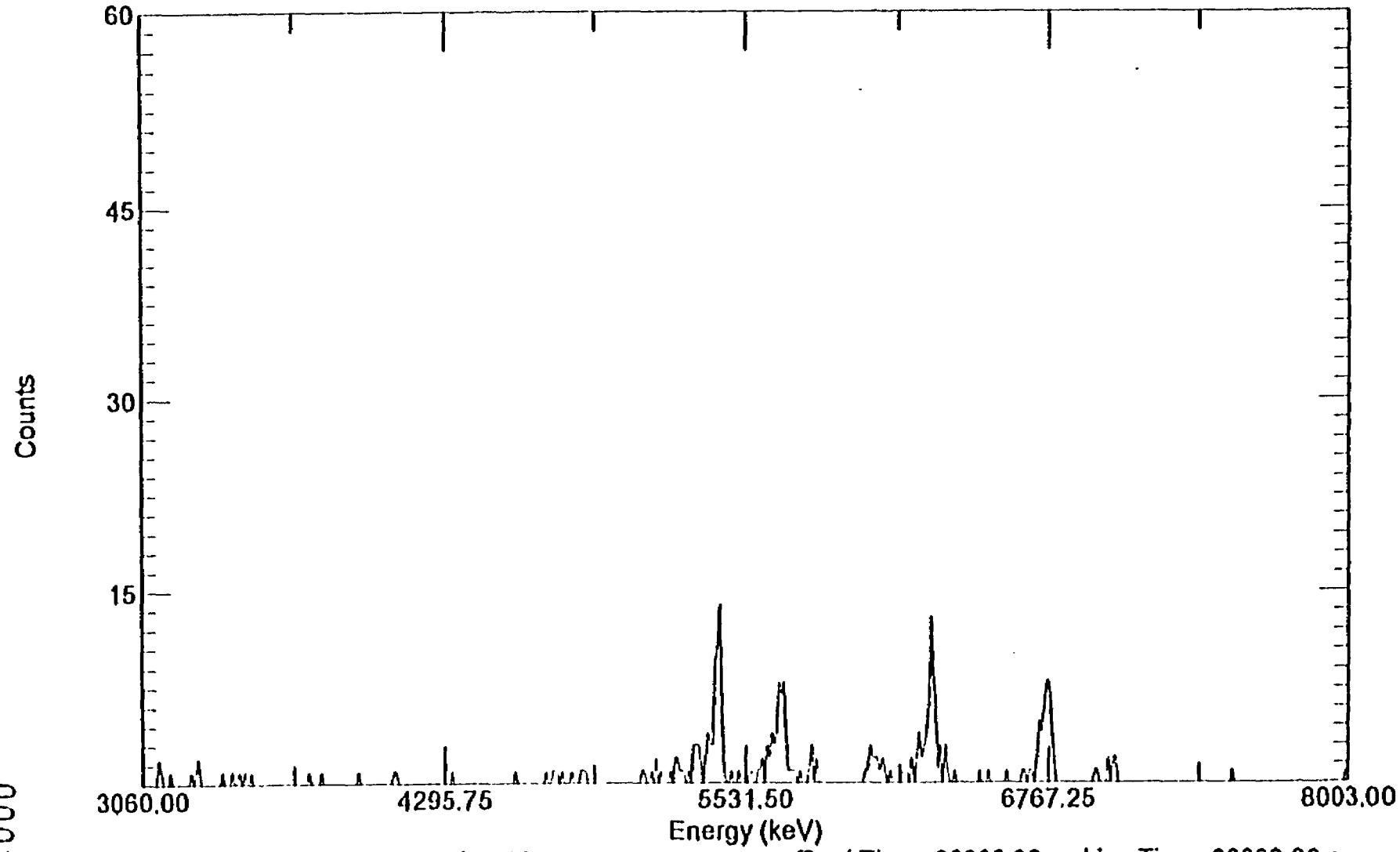
1/17/99 1:57:11 PM




000133

B9011621

AlphaVision Absolute Region-Of-Interest




Acquired: 12:54:53 on 16-Jan-99
File: C:\USER\ALPHA\BKGND\B9011621.CHN
Sample: weekly background

Real Time: 60000.68 s. Live Time: 60000.00 s.
Detector: #21 MCB 3 Input 5
Type: Background

000190

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 16-Jan-99 12:54:53
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 6
Efficiency: 28.32%  Chem. Recovery: 0.00%
Total Eff.: 28.32%  Manual:100.00%
CALIBRATION: 3067.74 + 9.6524 * Chn keV
Original: 3067.74 + 9.6524 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011322.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 16-Jan-99 12:54:55
Live Time: 60000.00  Real Time: 60000.68 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9011622.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9011622

## P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

## D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 281.0000 | 100.00 |
| Net Area | 281.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 281.0000 | 100.00 |

Analyzed By: _____ ()

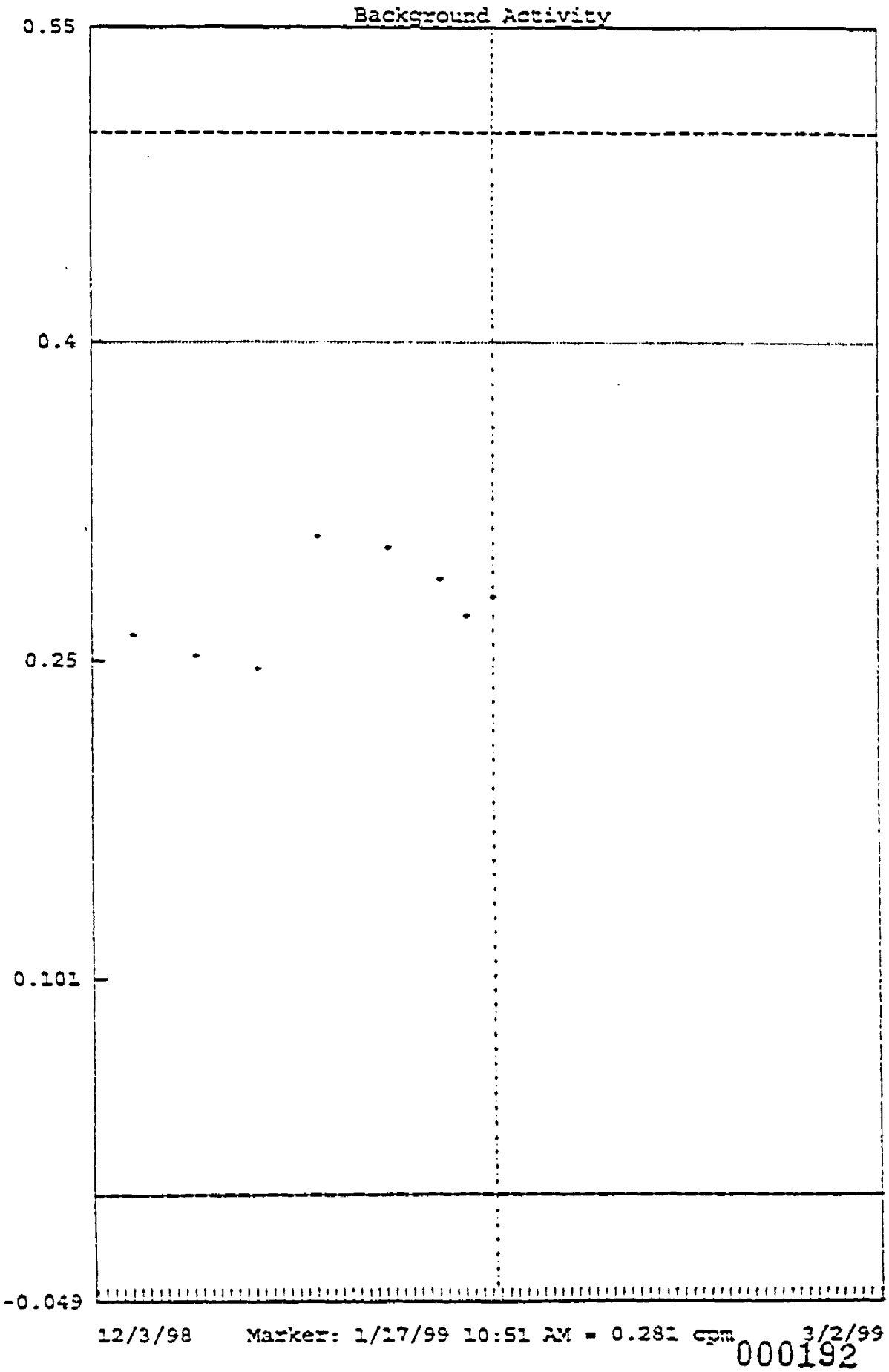
Checked By: BG _____ ()



327

Paragon Analytics, Inc.
22 MCB 3 Input 6

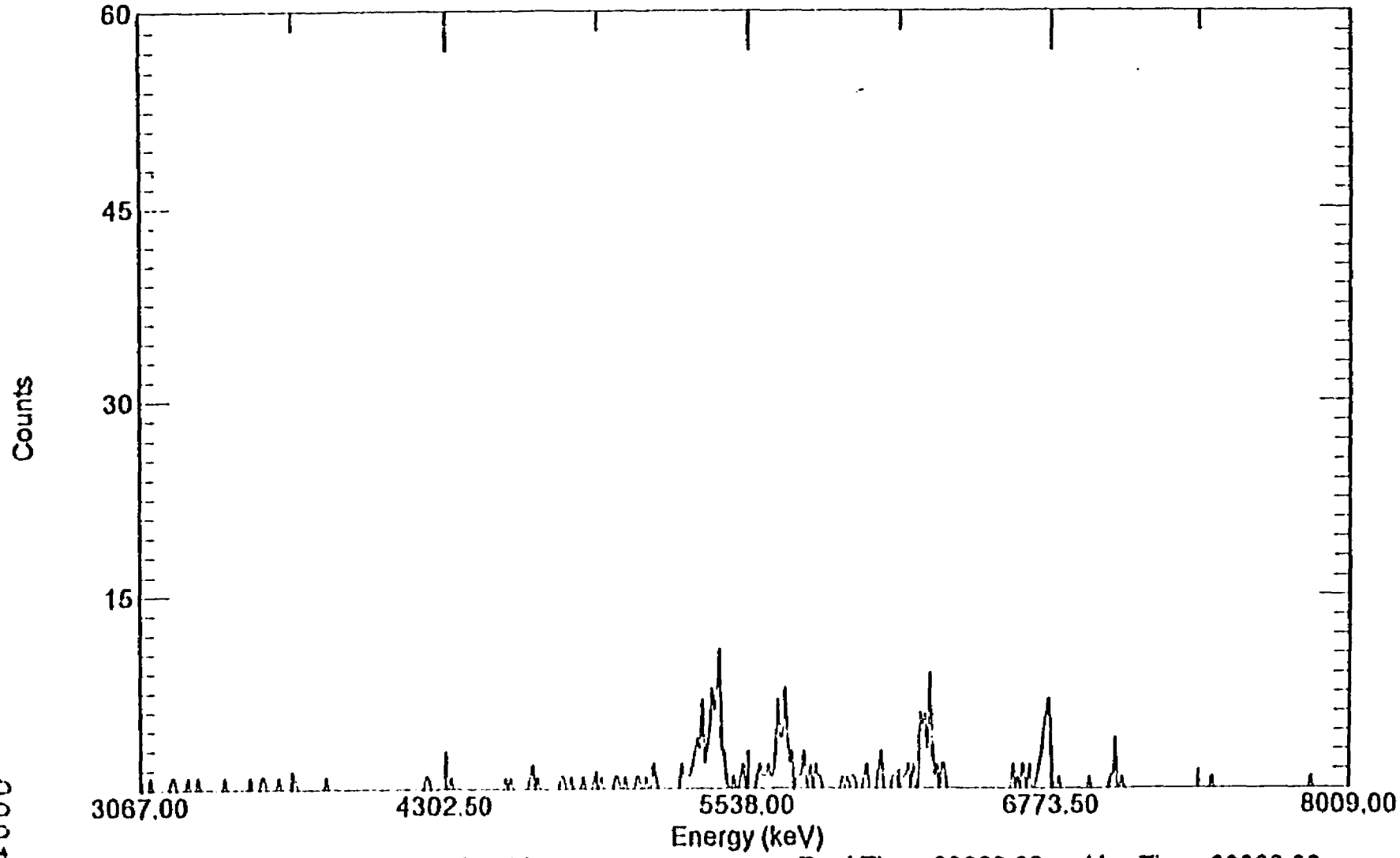
1/17/99 1:57:14 PM




000192

B9011622

AlphaVision Absolute Region-Of-Interest




Acquired: 12:54:55 on 16-Jan-99
File: C:\USER\ALPHA\BKGND\B9011622.CHN
Sample: weekly background

Real Time: 60000.68 s. Live Time: 60000.00 s.
Detector: #22 MCB 3 Input 6
Type: Background

000163

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 16-Jan-99 12:54:57
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 8
Efficiency: 30.38%  Chem. Recovery: 0.00%
Total Eff.: 30.38%  Manual:100.00%
CALIBRATION: 3071.24 + 9.7027 * Chn keV
Original: 3071.24 + 9.7027 * Chn keV
File: C:\USER\ALPHA\CALIB\C9011324.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 16-Jan-99 12:55:00
Live Time: 60000.00  Real Time: 60000.66 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9011624.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9011624

## P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

## D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

## T O T A L S

| | | % Recovery |
|---|---|---|
| Gross Count | 212.0000 | 100.00 |
| Net Area | 212.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 212.0000 | 100.00 |

Analyzed By: _____ ()

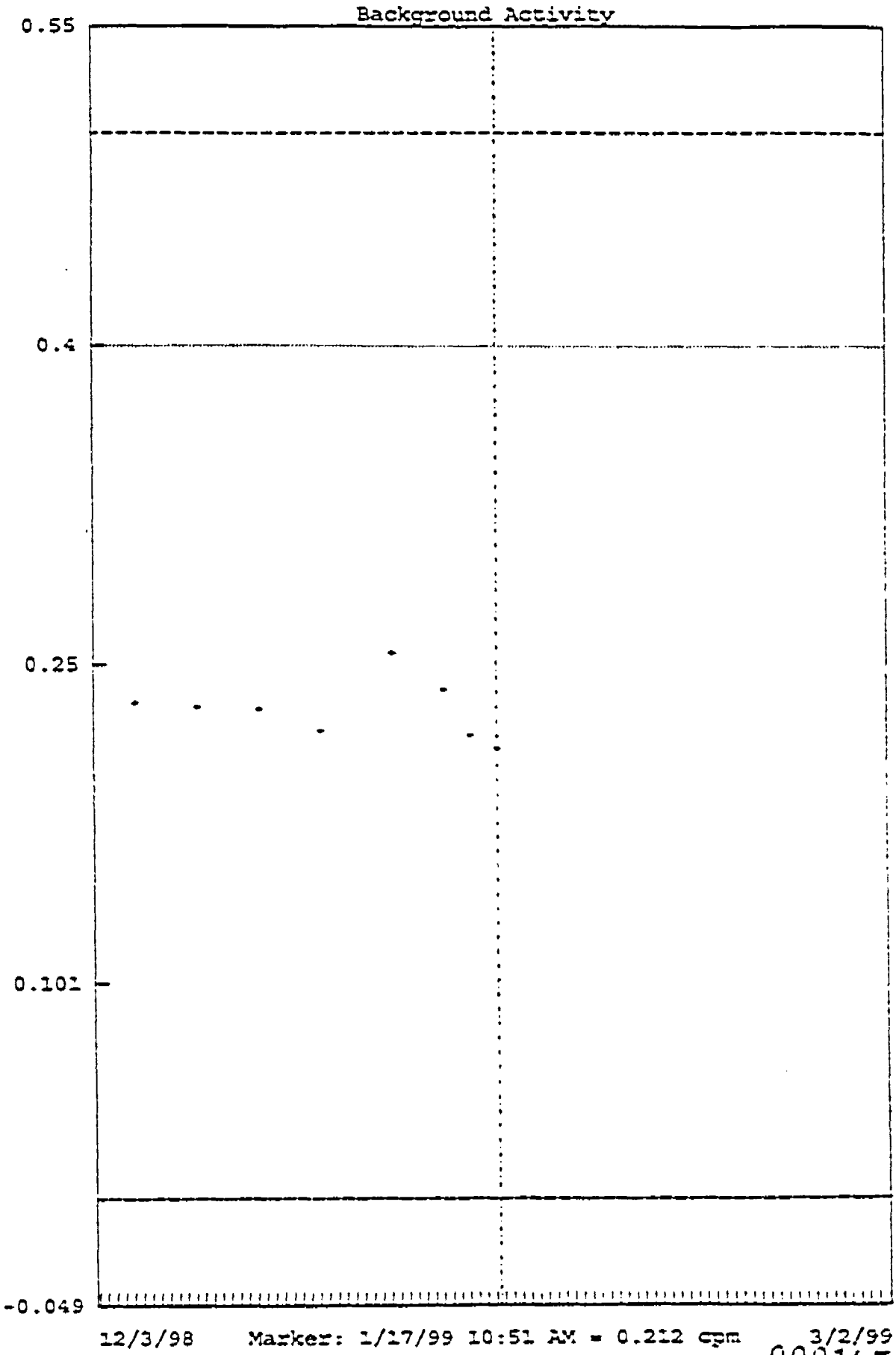
Checked By: RG _____ ()

000154

3.20

Paragon Analytics, Inc.
24 MCB 3 Input 8

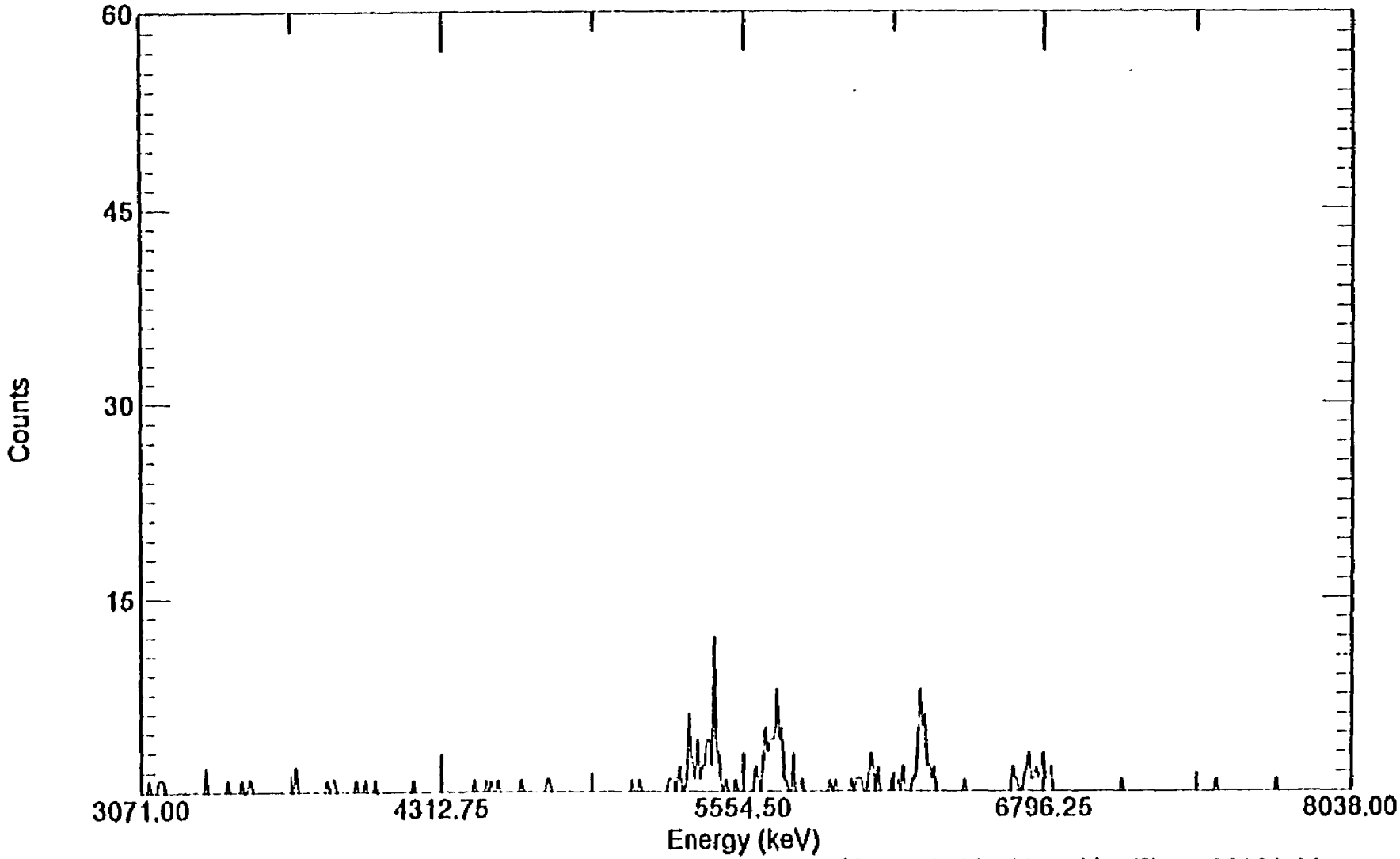
1/17/99 1:57:17 PM




000195

B9011624

AlphaVision Absolute Region-Of-Interest




Acquired: 12:55:00 on 16-Jan-99
File: C:\USER\ALPHA\BKGND\B9011624.CHN
Sample: weekly background

Real Time: 60000.66 s. Live Time: 60000.00 s.
Detector: #24 MCB 3 Input 8
Type: Background

000196

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 25-Jan-99 14:06:30
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 3
Efficiency: 28.70%  Chem. Recovery: 0.00%
Total Eff.: 28.70%  Manual:100.00%
CALIBRATION: 3074.23 + 9.6966 * Chn keV
Original: 3074.23 + 9.6966 * Chn keV
File: C:\USER\ALPHA\CALIB\C9012519.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 25-Jan-99 14:06:33
Live Time: 60000.00  Real Time: 60000.70 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9012519.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9012519

P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

T O T A L S

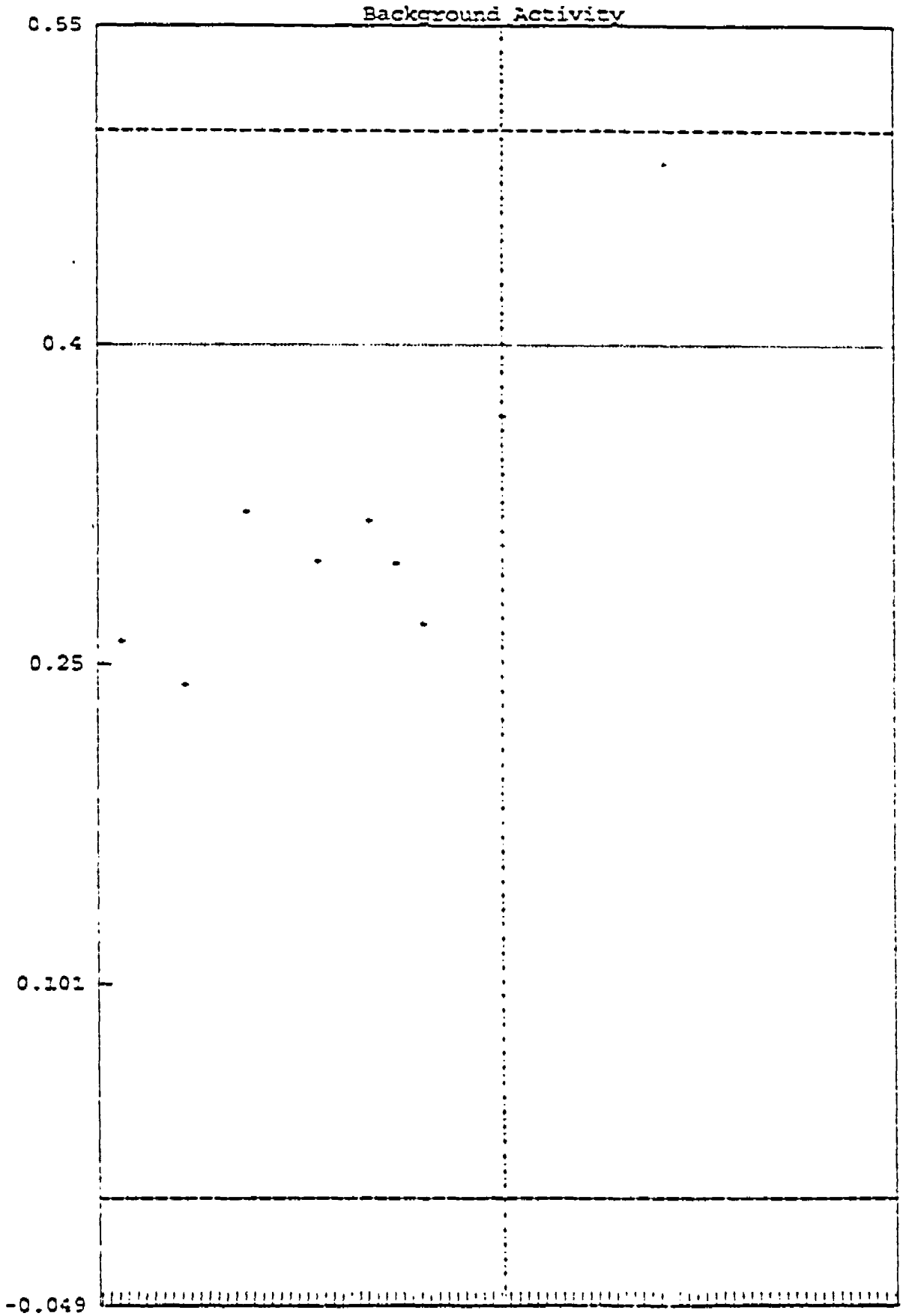
| | | % Recovery |
|---|---|---|
| Gross Count | 367.0000 | 100.00 |
| Net Area | 367.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 367.0000 | 100.00 |

Analyzed By: _____ ()

Checked By: RG _____ ()

Paragon Analytics, Inc.
19 MCB 3 Input 3

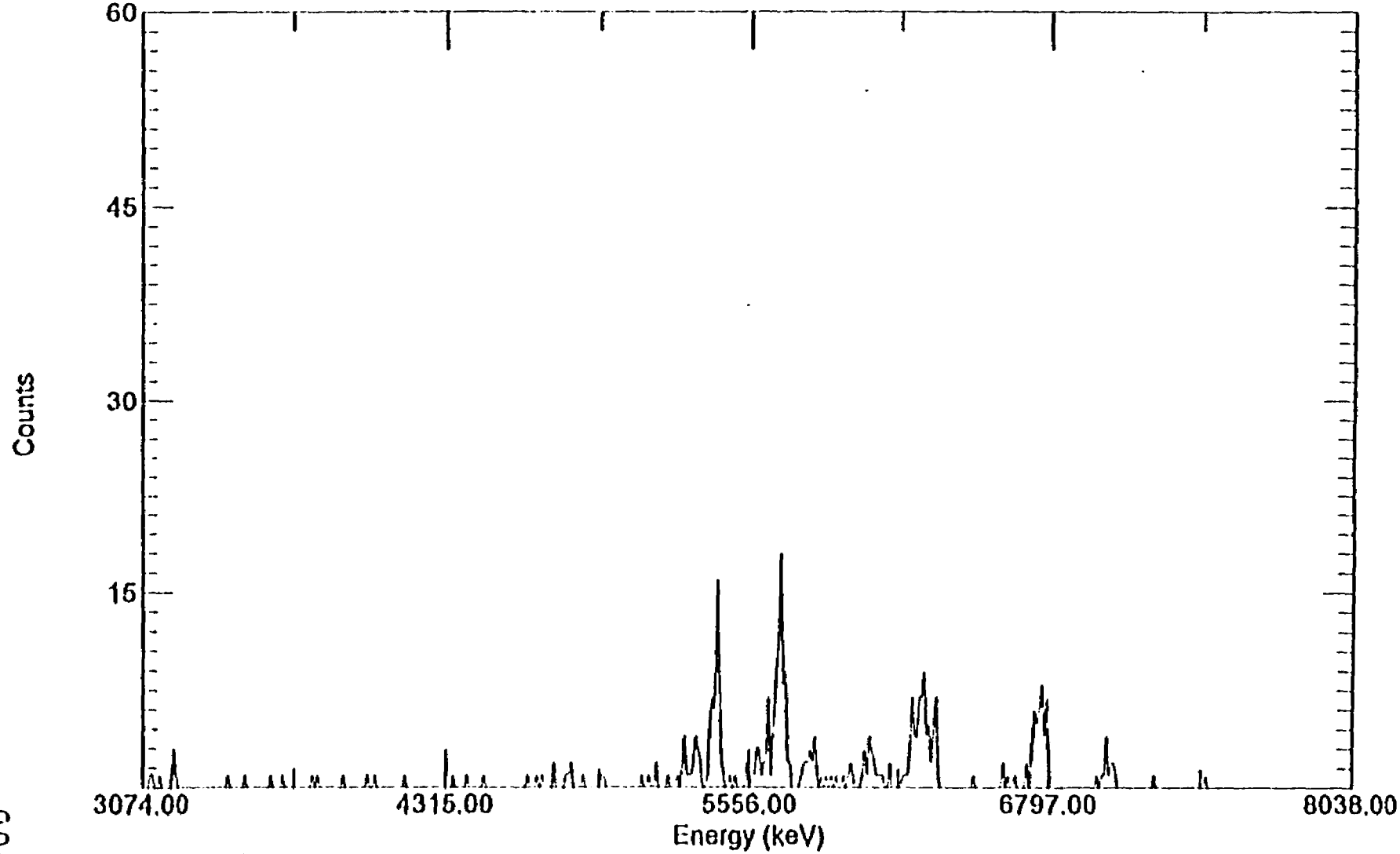
1/26/99 1:51:48 PM




00/198

B9012519

AlphaVision Absolute Region-Of-Interest




Acquired: 14:06:33 on 25-Jan-99
File: C:\USER\ALPHA\BKGND\B9012519.CHN
Sample: weekly background

Real Time: 60000.70 s. Live Time: 60000.00 s.
Detector: #19 MCB 3 Input 3
Type: Background

000199

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 25-Jan-99 14:06:33
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 4
Efficiency: 27.29%  Chem. Recovery: 0.00%
Total Eff.: 27.29%  Manual:100.00%
CALIBRATION: 3064.01 + 9.6789 * Chn keV
Original: 3064.01 + 9.6789 * Chn keV
File: C:\USER\ALPHA\CALIB\C9012520.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 25-Jan-99 14:06:35
Live Time: 60000.00  Real Time: 60000.68 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9012520.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9012520

P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

D E C A Y  C O R R E C T E D  R E S U L T S

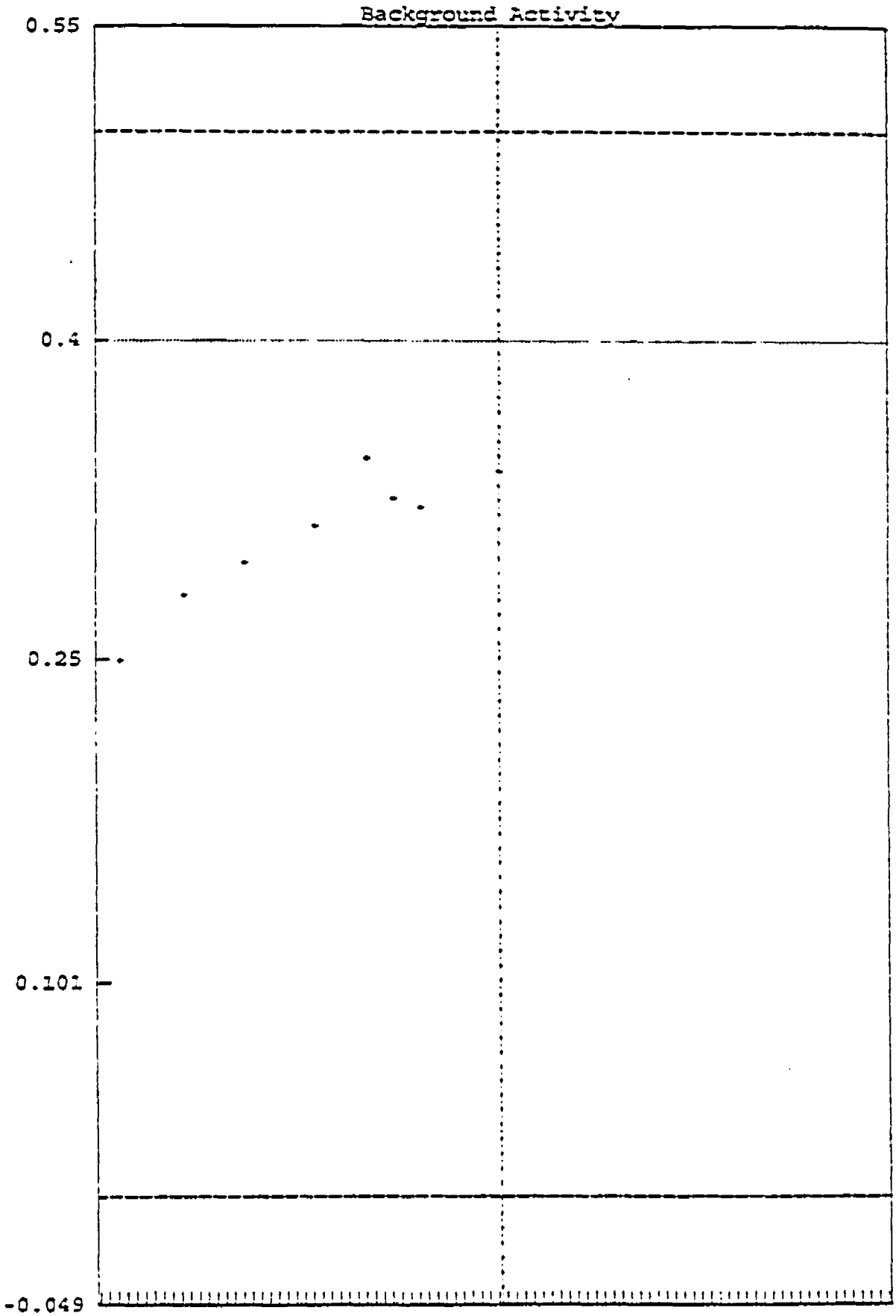
| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 340.0000 | 100.00 |
| Net Area | 340.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 340.0000 | 100.00 |

Analyzed By: _____ ()

Checked By: RG _____ ()

Paragon Analytics, Inc. 1/26/99 1:51:52 PM
20 MCB 3 Input 4

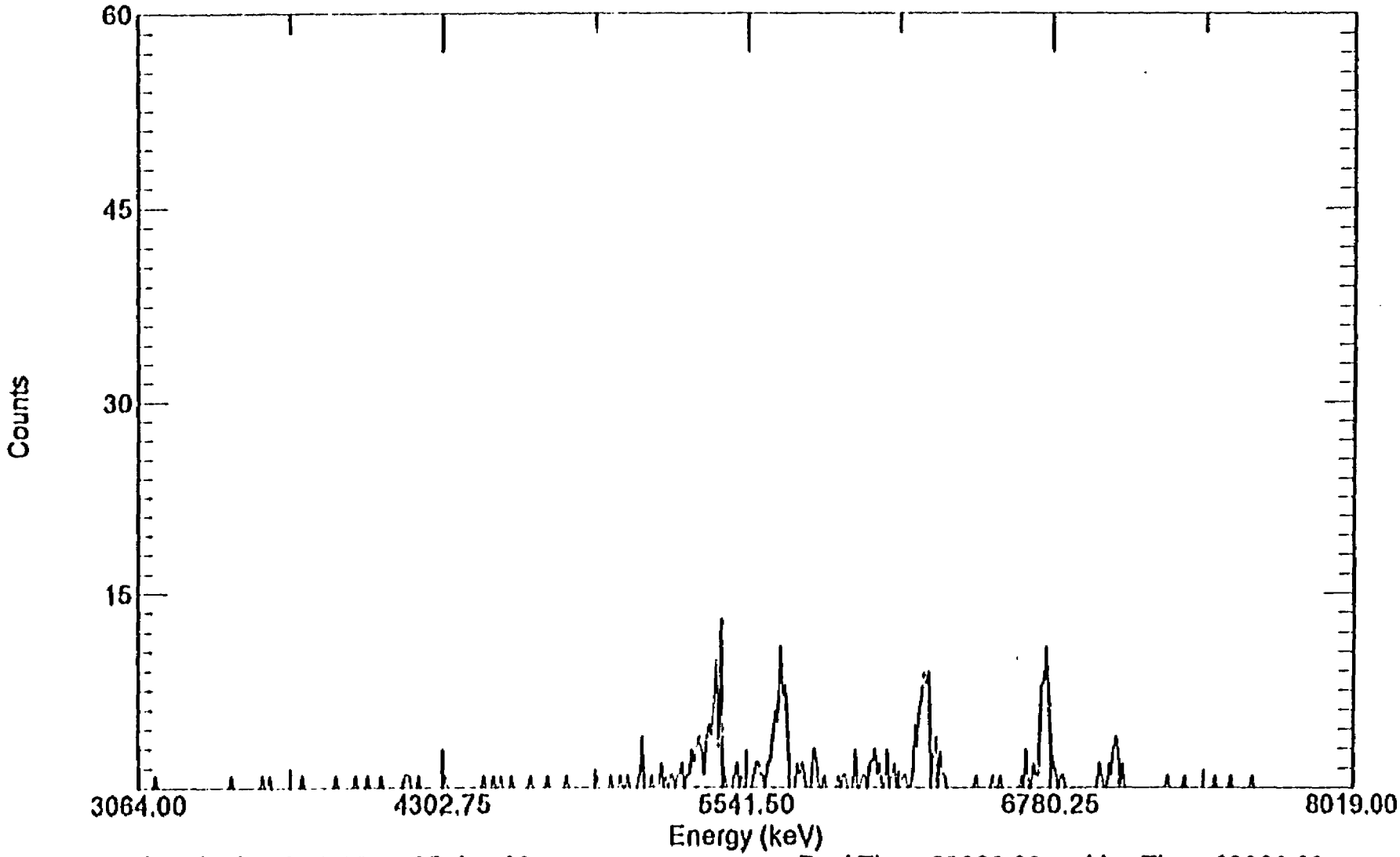



000201

B37

B9012520

AlphaVision Absolute Region-Of-Interest




Acquired: 14:06:35 on 25-Jan-99
File: C:\USER\ALPHA\BKGND\B9012520.CHN
Sample: weekly background

Real Time: 60000.68 s, Live Time: 60000.00 s.
Detector: #20 MCB 3 Input 4
Type: Background

000202

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 25-Jan-99 14:06:37
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 5
Efficiency: 28.58%  Chem. Recovery: 0.00%
Total Eff.: 28.58%  Manual:100.00%
CALIBRATION: 3060.64 + 9.6615 * Chn keV
Original: 3060.64 + 9.6615 * Chn keV
File: C:\USER\ALPHA\CALIB\C9012521.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 25-Jan-99 14:06:41
Live Time: 60000.00  Real Time: 60000.68 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9012521.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9012521

## P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

## D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

## T O T A L S

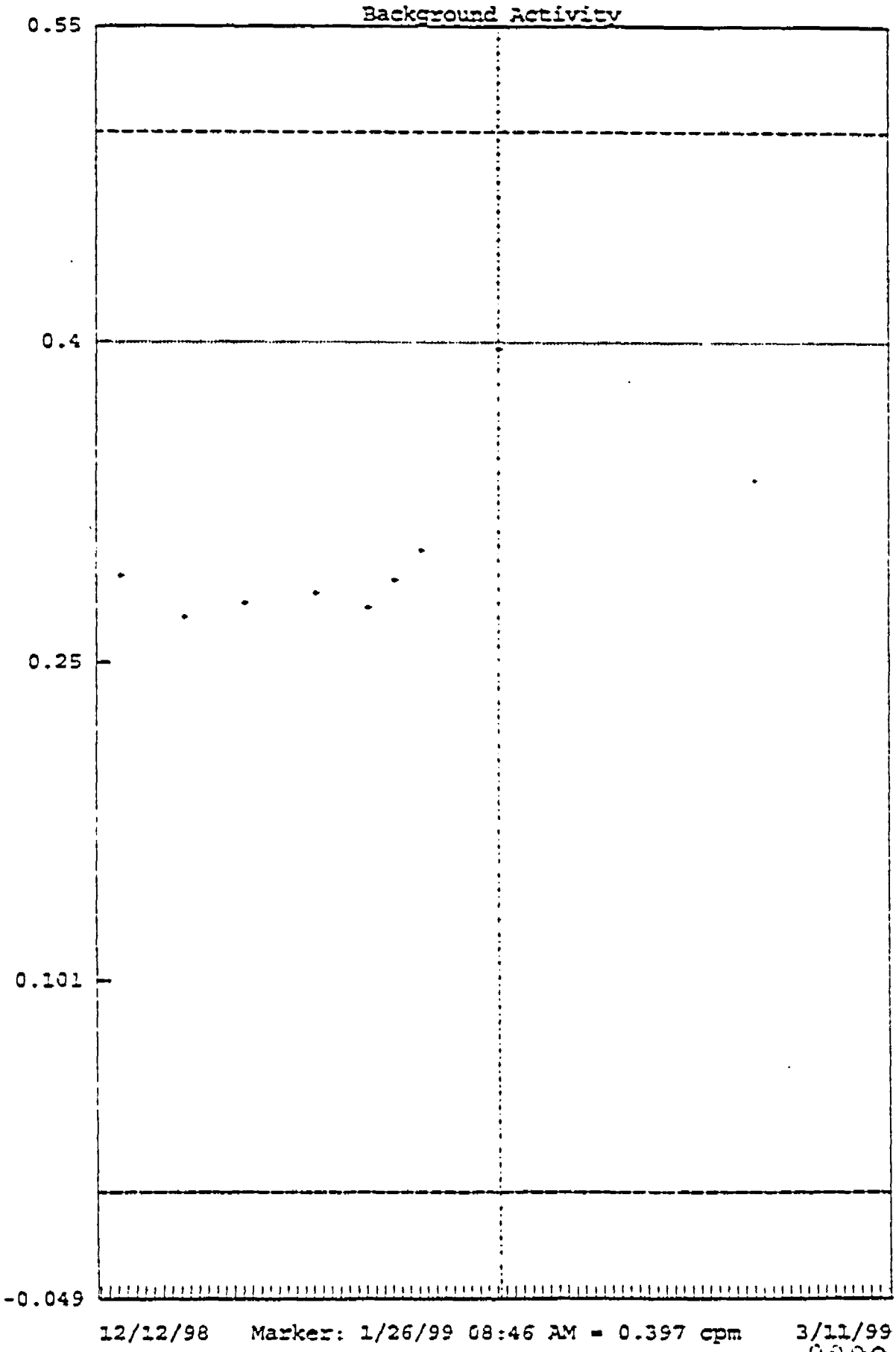
| | | % Recovery |
|---|---|---|
| Gross Count | 397.0000 | 100.00 |
| Net Area | 397.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 397.0000 | 100.00 |

Analyzed By: _____ ()

Checked By: BG _____ ()

Paragon Analytics, Inc.
21 MCB 3 Input 5

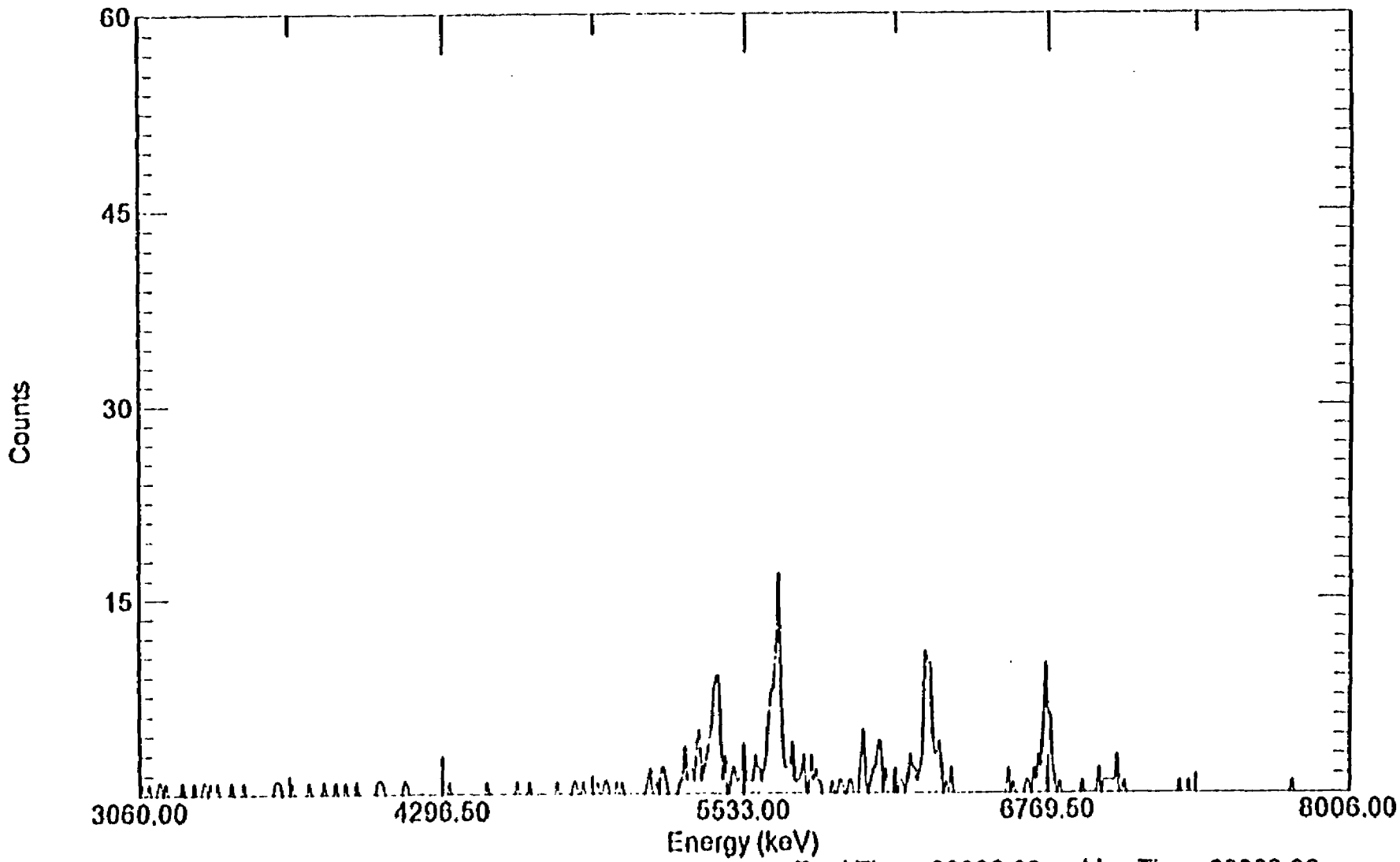
1/26/99 1:51:55 PM




000204

B9012521

AlphaVision Absolute Region-Of-Interest




Acquired: 14:06:41 on 25-Jan-99
File: C:\USERVALPHA\BKGND\B9012521.CHN
Sample: weekly background

Real Time: 60000.68 s, Live Time: 60000.00 s.
Detector: #21 MCB 3 Input 5
Type: Background

000265

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 25-Jan-99 14:06:41
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 6
Efficiency: 28.25%  Chem. Recovery: 0.00%
Total Eff.: 28.25%  Manual:100.00%
CALIBRATION: 3065.75 + 9.6508 * Chn keV
Original: 3065.75 + 9.6508 * Chn keV
File: C:\USER\ALPHA\CALIB\C9012522.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 25-Jan-99 14:06:44
Live Time: 60000.00  Real Time: 60000.68 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9012522.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9012522

P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

| T O T A L S | | % Recovery |
|---|---|---|
| Gross Count | 278.0000 | 100.00 |
| Net Area | 278.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 278.0000 | 100.00 |

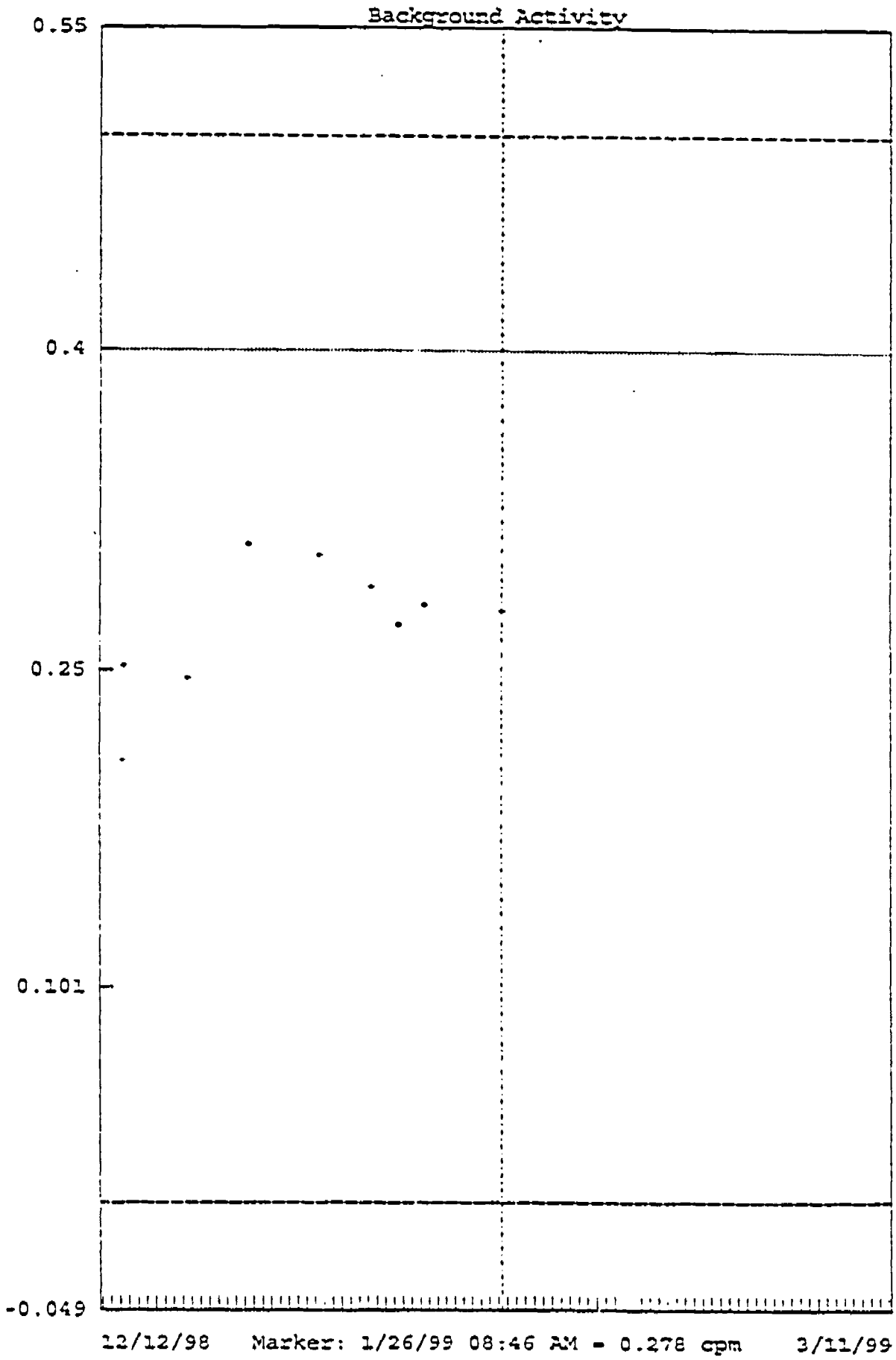
Analyzed By: _____ ()

Checked By: RG _____ ()

000206

Paragon Analytics, Inc.
22 MCB 3 Input 6

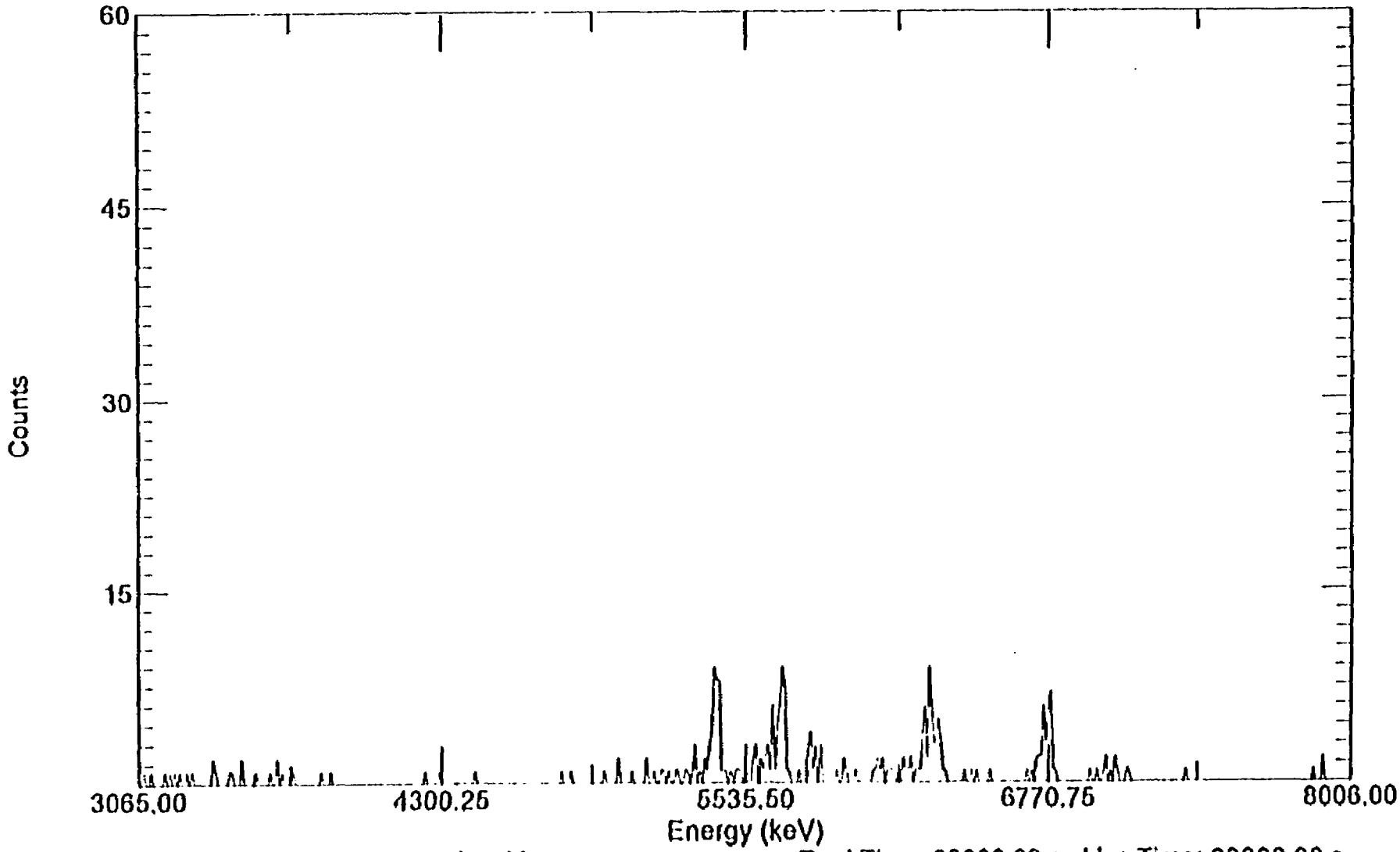
1/26/99 1:52:00 PM




000207

B9012522

AlphaVision Absolute Region-Of-Interest




Acquired: 14:06:44 on 25-Jan-99
File: C:\USERVALPHA\BKGND\B9012522.CHN
Sample: weekly background

Real Time: 60000.68 s. Live Time: 60000.00 s.
Detector: #22 MCB 3 Input 6
Type: Background

000268

# A L P H A V I S I O N  B A C K G R O U N D  A N A L Y S I S

Paragon Analytics, Inc.

SAMPLE: weekly background
Type: Background  Sample Collected: 25-Jan-99 14:06:44
Volume: 1 Total, 1 Aliquot

DETECTOR: MCB 3 Input 8
Efficiency: 30.67%  Chem. Recovery: 0.00%
Total Eff.: 30.67%  Manual:100.00%
CALIBRATION: 3070.65 + 9.6637 * Chn keV
Original: 3070.65 + 9.6637 * Chn keV
File: C:\USER\ALPHA\CALIB\C9012524.CHN
ACQUISITION: 512 Channels  Spectrum Acquired: 25-Jan-99 14:06:49
Live Time: 60000.00  Real Time: 60000.70 Sec.
Spectrum File: C:\USER\ALPHA\BKGND\B9012524.CHN
Background File:
Nuclide Library: C:\USER\ALPHA\ALPHAVIS.ALB

ANALYSIS Method: Absolute Region-Of-Interest
Results: B9012524

P E A K S

| Channel | Start | End | FWHM | Height | Background | Net Area | CPM |
|---|---|---|---|---|---|---|---|

D E C A Y  C O R R E C T E D  R E S U L T S

| Nuclide | Br. Ratio | Energy (keV) | Width (keV) | Tau | Aliquot DPM | MDA | % Error |
|---|---|---|---|---|---|---|---|

T O T A L S

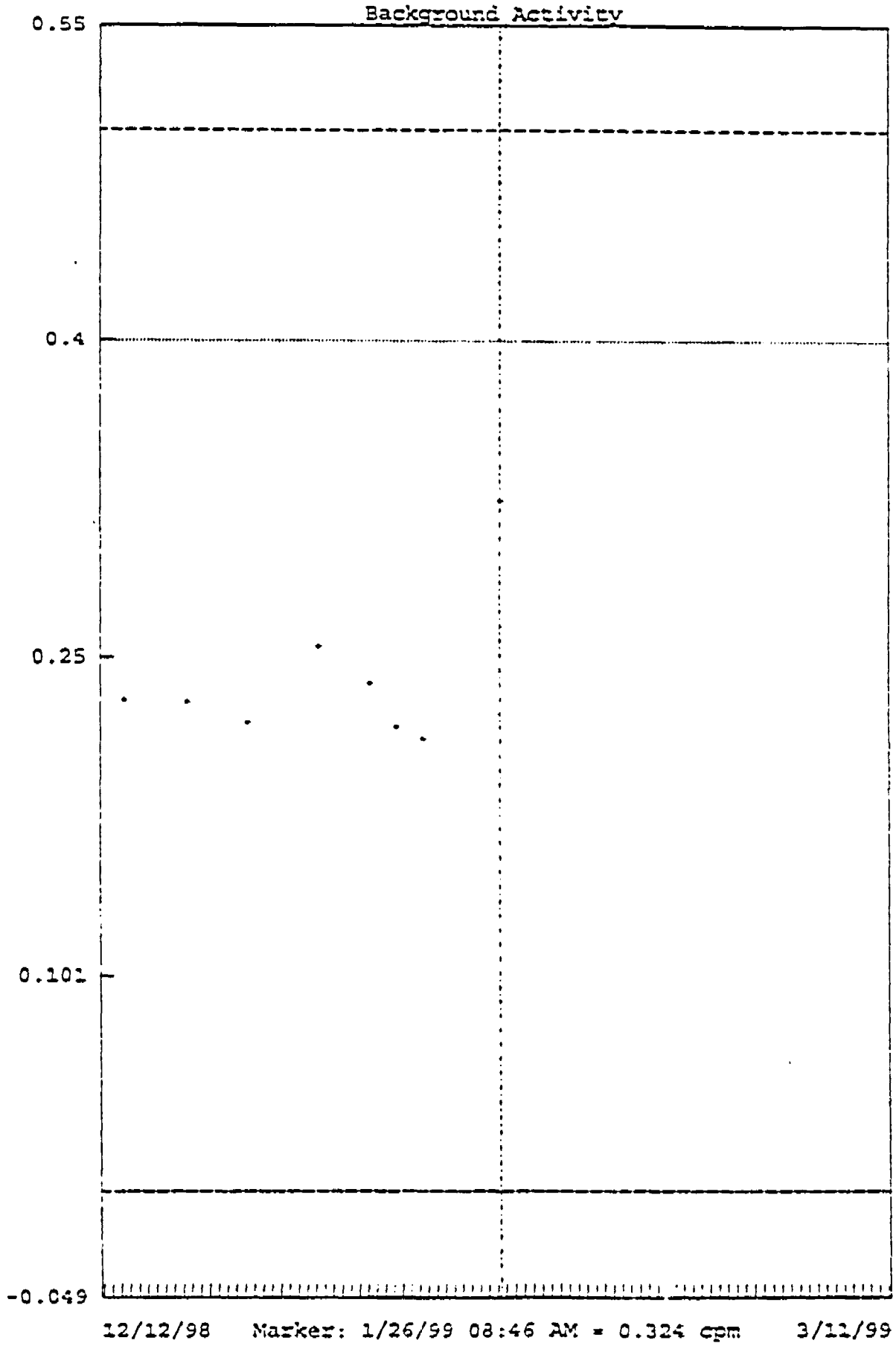
| | | % Recovery |
|---|---|---|
| Cross Count | 324.0000 | 100.00 |
| Net Area | 324.0000 | 100.00 |
| Background | 0.0000 | 0.00 |
| Composite Fit | 0.0000 | 0.00 |
| Residuals | 324.0000 | 100.00 |

Analyzed By: _____ ()

Checked By: BG _____ ()

Paragon Analytics, Inc.
24 MCB 3 Input 8

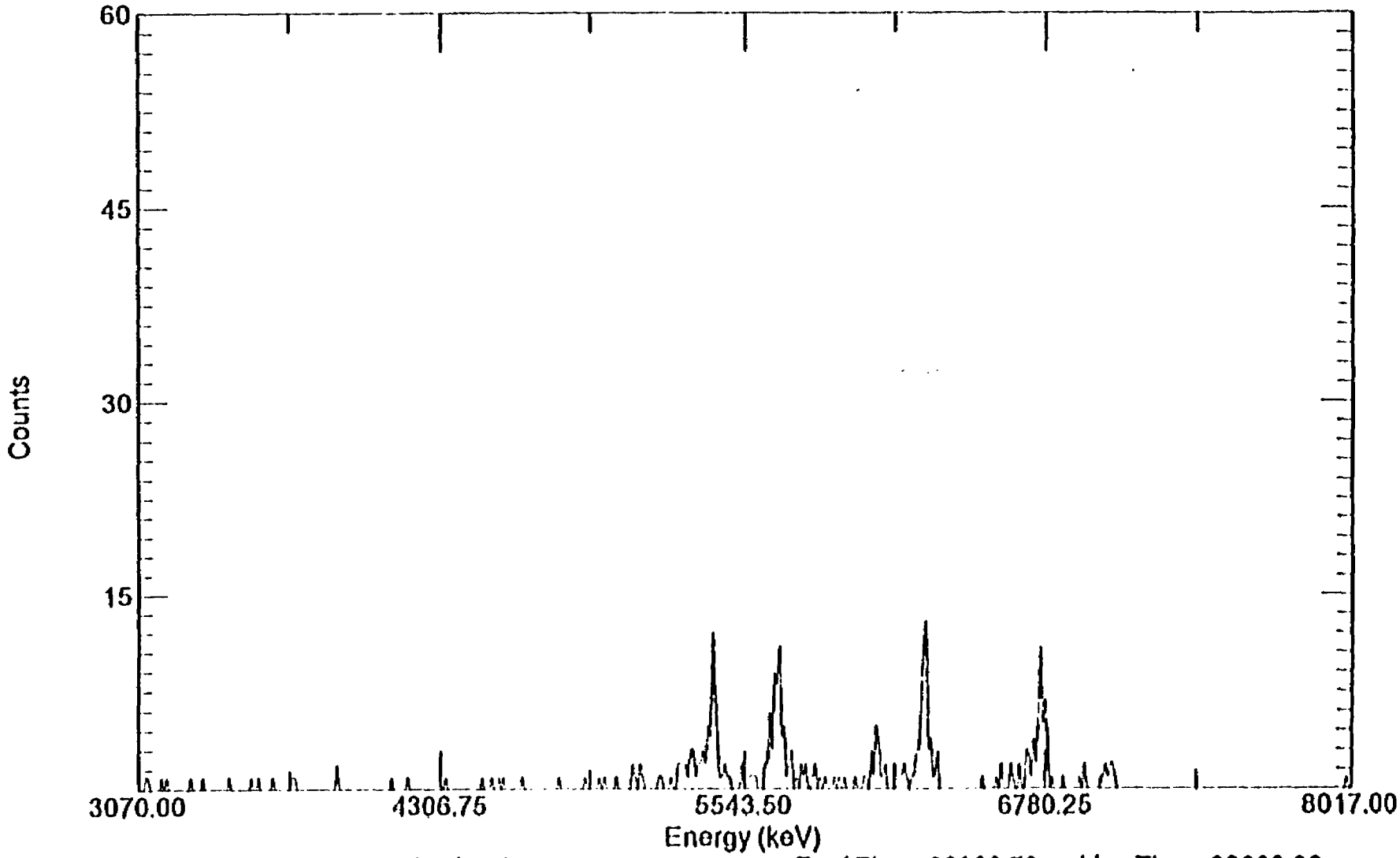
1/26/99 1:52:06 PM




000210

B9012524

AlphaVision Absolute Region-Of-Interest




Acquired: 14:06:49 on 25-Jan-99
File: C:\USER\ALPHA\BKGND\B9012524.CHN
Sample: weekly background

Real Time: 60000.70 s, Live Time: 60000.00 s.
Detector: #24 MCB 3 Input 8
Type: Background

00021 1 of 1

# MEMORANDUM

From: C.R. Wilson, MK/PMC Team
To: Files
Date: 26 February 1999

Subject: Tritium Sampling in TA-49 Area 2 Corehole 2

This memo was prepared to document tritium sampling conducted in Corehole 2 prior to plugging and abandoning that hole. The sampling of moisture for tritium analysis occurred on 6 and 7 August 1998. Because there was no standing water in the hole at the time of sampling, moisture was collected by condensing water vapor from the formation pore gas using a cold trap. The procedure used for the sampling is described in the attached letter. The borehole was purged prior to sampling to remove atmospheric air and collect only formation pore gas.

Approximately 4 mL of liquid water was collected and submitted to LANL's TA-21 count lab for tritium analysis. Copies of the ESH-1 Sample Analysis Form and laboratory results are attached. The result was reported as 196.70 disintigrations per minute (dpm). To convert this to picocuries the conversion constant 2.22 dpm/pCi was used, giving 88.6 pCi in the sample. However, the volume of the test sample was not recorded by the laboratory. According to John Elliot of ESH-1, the laboratory's standard test volume for measuring tritium in water is 1 mL. Assuming that the standard volume was used, the volumetric tritium concentration is 88.6 pCi/mL. If a larger test volume was used, the actual concentration would be lower. By comparison, tritium concentrations in moisture sampled directly beneath the asphalt pad at the site ranged from zero to 4,340 pCi/mL and the background tritium concentration in atmospheric moisture is currently about 5 pCi/mL. Because of the locally high tritium concentrations found immediately beneath the asphalt, an above background tritium concentration at depth beneath the asphalt pad was not unexpected.

Cc: Dwain Farley, LANL
John DeJoia, MK/PMC
Project File

Science &
Engineering
Associates, Inc.
Environmental Technologies Programs
3205 Richards Lane, Suite A
Santa Fe, NM 87505
(505) 424-6955
FAX: (505) 424-6956

~ 25 Aug 1998

Mr. Charlie Wilson
Morrison Knudesn Corporation
2237 Trinity Dr.
Building 2
Los Alamos, NM 87544

Dear Mr. Wilson

The following is the test procedure for tritium testing in bore hole 2 at TA-49, which took place on August 6th and 7th 1998. The sample time was from 3 p.m. on the 6th to 11a.m. on the 7th at a depth of 480 feet with about 4 ml of fluid collected out of the borehole.

1. Set up with tubing deployed to bottom of bore hole through cap. Hook up tubing to flow meter, from flow meter through air pump, from pump to sample container setting in an ice bath. (see diagram on next page)

2. Purge bore hole for 80 minuets to rid of any atmospheric gasses by hooking up air pump to purge line coming out of the top of the cap on the casing.

3. Disconnect pump from purge line and plug purge line

4. Put air pump in line for sampling.

5. Start air pump; let run for 10 minuets to purge sampling system before running air into sample bottle.

6. Run airline into sample bottle, which is setting in an ice bath and collect at a minimum of 1 ml of condensation out of sample line.

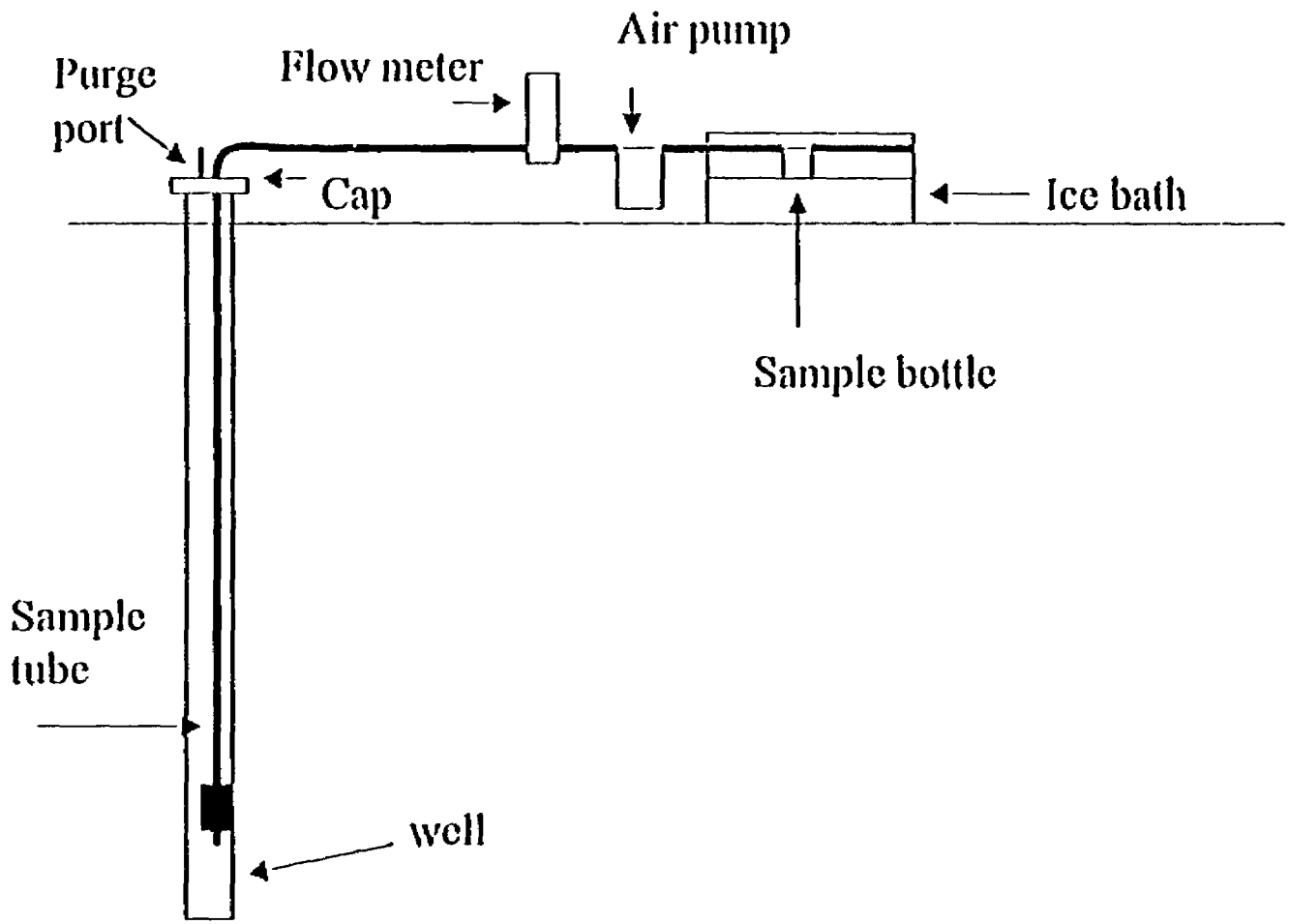
7. Seal sample bottle and document on chain of custody.

The sample was delivered to the Count Lab at TA-21 for analysis of tritium on August 7, 1998; results are included and questions on the results should be directed to ESH-1. In future tests of this nature the ice bath should be changed from dry ice to regular ice to avoid freeze ups of the sample tube.

Any questions please feel free to give me a call at 424-6955.

David Wykoff

# Diagram for tritium sampling



# ESH-1 SAMPLE ANALYSIS FORM

**SAMPLE DESCRIPTION**

Sample Date/Time: 8/7/98 No. Of Samples: 1

TA: 49 Bldg: core hole 2

RCT: [illegible] Z Number: 115625

Phone/Fax:

**SAMPLE TRACKING NUMBER**

David Wykoff 14 7708
SEA
424-0955

**PURPOSE OF SURVEY**

☐ ROUTINE ☐ PRE-JOB ☐ POST-JOB ☐ HOT-JOB

☐ ITEM RELEASE ☐ OFFSITE SHIPMENT ☐ ONSITE SHIPMENT

☑ NON-ROUTINE/OTHER:

**INSTRUMENTATION**

| TYPE | HSE No. | CAL DUE | % EFF | BKG |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**ADDITIONAL INFORMATION**

☐ Occurrence No.:

☐ Incident No.: N/A

☐ RWP No.:

**NASAL SMEARS**

| Name | Z No. | Group | Resp. Yes/No | Date | Time | Nasal Smear Results (cpm) Alpha | Beta |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**LIQUID / WOUND / OTHER SAMPLES**

| Description | ID No. | Results (add units) | Comments |
|---|---|---|---|
| Water out of core Hole 2 | TA49-2-1 | | |
| At TA-49 | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H865, Drop Point O1U
Los Alamos, NM 87545
Attention: John Miglio

Login #: L9808430
Report Date: 09/15/98
Work ID: 4522R/MR2W05153318
Date Received: 08/25/98

PO Number:
Account Number: LANL-295

COPY

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9808430-01 | MD49-98-0140 | | |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Maren M Beery
Certified By
Maren M. Beery

John Hepburn

Heather E
10/1/98

KEMRON

Order #98 08-430
October 2, 1998 16:01

**KEMRON ENVIRONMENTAL SERVICES**
**REPORT NARRATIVE**

Lab ID# 7797L0014-8M

CLIENT: Los Alamos National Laboratory

LANL SDG/RN: 4522R

Sample Management:
One soil sample was received at Kemron Environmental Services on 08/25/98.

Client ID:
MD 49-98-0140

Quality Control:

METALS - 6010/7000:
A post digestion spike was analyzed with the following recoveries:

| | |
|---|---|
| Sb | 103% Recovery |
| Hg | 109% Recovery |
| Tl | 90.3% Recovery |

A serial dilution was analyzed for Zn within 10% of the original determination.
Due to poor spike recovery the Se was analyzed by the method of Standard Addition.

Shipment Conditions:
The sample was received intact. Solid blue ice was present.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and in completeness, except as detailed in this QC Report.

Laboratory Manager

Date: 10/5/98

Login #L9808430
September 15, 1998 02:56 pm

KEMRON ENVIRONMENTAL SERVICES

Lab Sample ID: L9808430-01
Client Sample ID: MD49-98-0140
Site/Work ID: 4522R/MR2W05153318

Matrix: Soil
Collected: 08/20/98 N/A

% Solid: 79
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids..... | % wt. | 79 | | 1.0 | 1 | N/A | DKM | 08/27/98 | 09:50 | D2216-90 |
| Silver, Total..... | mg/kg | | ND | 2.5 | 1 | R-2 | KHA | 09/04/98 | 14:15 | 6010B\3050A |
| Aluminum, Total..... | mg/kg | 21000 | | 6.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Arsenic, Total..... | mg/kg | 4.8 | | 0.63 | 1 | N/A | KHA | 09/04/98 | 14:15 | 6010B\3050A |
| Barium, Total..... | mg/kg | 110 | | 0.63 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Beryllium, Total..... | mg/kg | 1.0 | | 0.63 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Calcium, Total..... | mg/kg | 1000 | | 13 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cadmium, Total..... | mg/kg | | ND | 0.63 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cobalt, Total..... | mg/kg | 6.5 | | 1.3 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Chromium, Total..... | mg/kg | 11 | | 1.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Copper, Total..... | mg/kg | 9.5 | | 1.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Iron, Total..... | mg/kg | 21000 | | 13 | 5 | R-4 | SLP | 09/03/98 | 22:39 | 6010B\3050A |
| Mercury, Total..... | mg/kg | | ND | 0.13 | 1 | N/A | ALC | 08/26/98 | | 7471A\7471A |
| Potassium, Total..... | mg/kg | 2100 | | 63 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Magnesium, Total..... | mg/kg | 2200 | | 32 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Manganese, Total..... | mg/kg | 380 | | 0.63 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Sodium, Total..... | mg/kg | 110 | | 32 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Nickel, Total..... | mg/kg | 8.0 | | 2.5 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Lead, Total..... | mg/kg | 28 | | 0.32 | 1 | N/A | KHA | 09/04/98 | 14:15 | 6010B\3050A |
| Antimony, Total..... | mg/kg | | ND | 13 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Selenium, Total..... | mg/kg | 1.1 | S | 0.51 | 2 | N/A | RSS | 09/14/98 | 14:00 | 7740 |
| Thallium, Total..... | mg/kg | | ND | 0.32 | 1 | N/A | CRC | 08/27/98 | 09:10 | 7841 |
| Vanadium, Total..... | mg/kg | 20 | | 0.63 | 1 | R-2 | KHA | 09/04/98 | 14:15 | 6010B\3050A |
| Zinc, Total..... | mg/kg | 850 | | 1.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |

RL = Reporting Limit

Order #: 98-08-430
September 15, 1998 02:56 pm

# KEMRON ENVIRONMENTAL SERVICES
## WORK GROUPS

| Work Group | Run ID | Sample | Dil Type | Matrix | Product | Method | Analyst | Date Collected | Run Date | Run Time | Department |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W365049 | R51232 | L9808430-01 | | Soil | Mercury, Total | 7471A\7471A | AIC | 20-AUG-1998 | 26-AUG-1998 | | Digestion |
| W365050 | R51385 | L9808430-01 | | Soil | Thallium, Total | 7841 | CRC | 20-AUG-1998 | 27-AUG-1998 | 09:10 | Digestion |
| W365052 | R51920 | L9808430-01 | | Soil | Aluminum, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W365052 | R51920 | L9808430-01 | | Soil | Antimony, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W365052 | R51923 | L9808430-01 | | Soil | Arsenic, Total | 6010B\3050A | KHA | 20-AUG-1998 | 04-SEP-1998 | 14:15 | Digestion |
| W365052 | R51920 | L9808430-01 | | Soil | Barium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W365052 | R51920 | L9808430-01 | | Soil | Beryllium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W365052 | R51920 | L9808430-01 | | Soil | Cadmium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W365052 | R51920 | L9808430-01 | | Soil | Calcium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W365052 | R51920 | L9808430-01 | | Soil | Chromium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W365052 | R51925 | L9808430-01 | R 3 | Soil | Cobalt, Total | 6010B\3050A | MMB | 20-AUG-1998 | 31-AUG-1998 | 09:54 | Digestion |
| W365052 | R51920 | L9808430-01 | | Soil | Copper, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W365052 | R51927 | L9808430-01 | R 4 | Soil | Iron, Total | 6010B\3050A | SLP | 20-AUG-1998 | 03-SEP-1998 | 22:39 | Digestion |
| W365052 | R51923 | L9808430-01 | | Soil | Lead, Total | 6010B\3050A | KHA | 20-AUG-1998 | 04-SEP-1998 | 14:15 | Digestion |
| W365052 | R51920 | L9808430-01 | | Soil | Magnesium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W365052 | R51920 | L9808430-01 | | Soil | Manganese, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W365052 | R51925 | L9808430-01 | R 3 | Soil | Nickel, Total | 6010B\3050A | MMB | 20-AUG-1998 | 31-AUG-1998 | 09:54 | Digestion |
| W365052 | R51925 | L9808430-01 | R 3 | Soil | Potassium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 31-AUG-1998 | 09:54 | Digestion |
| W365052 | R51923 | L9808430-01 | R 2 | Soil | Silver, Total | 6010B\3050A | KHA | 20-AUG-1998 | 04-SEP-1998 | 14:15 | Digestion |
| W365052 | R51920 | L9808430-01 | | Soil | Sodium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W365052 | R51923 | L9808430-01 | R 2 | Soil | Vanadium, Total | 6010B\3050A | KHA | 20-AUG-1998 | 04-SEP-1998 | 14:15 | Digestion |
| W365052 | R51920 | L9808430-01 | | Soil | Zinc, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W365156 | R51232 | L9808430-01 | | Soil | Mercury, Total | 7471A\7471A | AIC | 20-AUG-1998 | 26-AUG-1998 | | Metals - AA |
| W365164 | R51371 | L9808430-01 | | Soil | Percent Solids | D2216-90 | KFM | 20-AUG-1998 | 27-AUG-1998 | 09:50 | Conventionals |
| W365184 | R51385 | L9808430-01 | | Soil | Thallium, Total | 7841 | CRC | 20-AUG-1998 | 27-AUG-1998 | 09:10 | Metals - AA |
| W365191 | R51920 | L9808430-01 | | Soil | Aluminum, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W365191 | R51920 | L9808430-01 | | Soil | Antimony, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W365191 | R51923 | L9808430-01 | | Soil | Arsenic, Total | 6010B\3050A | KHA | 20-AUG-1998 | 04-SEP-1998 | 14:15 | Metals - ICP |
| W365191 | R51920 | L9808430-01 | | Soil | Barium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W365191 | R51920 | L9808430-01 | | Soil | Beryllium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W365191 | R51920 | L9808430-01 | | Soil | Cadmium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W365191 | R51920 | L9808430-01 | | Soil | Calcium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W365191 | R51920 | L9808430-01 | | Soil | Chromium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W365191 | R51925 | L9808430-01 | R 3 | Soil | Cobalt, Total | 6010B\3050A | MMB | 20-AUG-1998 | 31-AUG-1998 | 09:54 | Metals - ICP |
| W365191 | R51920 | L9808430-01 | | Soil | Copper, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W365191 | R51927 | L9808430-01 | R 4 | Soil | Iron, Total | 6010B\3050A | SLP | 20-AUG-1998 | 03-SEP-1998 | 22:39 | Metals - ICP |
| W365191 | R51923 | L9808430-01 | | Soil | Lead, Total | 6010B\3050A | KHA | 20-AUG-1998 | 04-SEP-1998 | 14:15 | Metals - ICP |
| W365191 | R51920 | L9808430-01 | | Soil | Magnesium, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W365191 | R51920 | L9808430-01 | | Soil | Manganese, Total | 6010B\3050A | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |

Order #: 98-08-430
September 15, 1998 02:56 pm

# KEMRON ENVIRONMENTAL SERVICES
## WORK GROUPS

| Work Group | Run ID | Sample | Dil Type | Matrix | Product | Method | Analyst | Date Collected | Run Date | Run Time | Department |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W345191 | R51925 | L9808430-01 | R-3 | Soil | Nickel, Total | 601CB\305CA | MMB | 20-AUG-1998 | 31-AUG-1998 | 09:54 | Metals - ICP |
| W345191 | R51925 | L9808430-01 | R-3 | Soil | Potassium, Total | 601CB\305CA | MMB | 20-AUG-1998 | 31-AUG-1998 | 09:54 | Metals - ICP |
| W345191 | R51923 | L9808430-01 | R-2 | Soil | Silver, Total | 601CB\305CA | KHA | 20-AUG-1998 | 04-SEP-1998 | 14:15 | Metals - ICP |
| W345191 | R51920 | L9808430-01 | | Soil | Sodium, Total | 601CB\305CA | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51923 | L9808430-01 | R-2 | Soil | Vanadium, Total | 601CB\305CA | KHA | 20-AUG-1998 | 04-SEP-1998 | 14:15 | Metals - ICP |
| W345191 | R51920 | L9808430-01 | | Soil | Zinc, Total | 601CB\305CA | MMB | 20-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345783 | R52277 | L9808430-01 | | Soil | Selenium, Total | 7740 | RSS | 20-AUG-1998 | 14-SEP-1998 | 14:00 | Metals - AA |

# KEMRON ANALYST LIST

## Ohio Valley Laboratory

## 07/06/98

---

ALC - - Ann L. Clark
BAD - - Becky A. Diehl
BWH - - Ben W. Haynes
CEB - - Chad E. Barnes
CDB - - Christy D. Burton
CLH - - Chris L. Hurst
CMS - - Crystal M. Stevens
CRC - - Carla R. Cochran
DHH - - Deanna I. Hesson
DKM - - Dewey K. Miller
DLN - - Deanna L. Norton
DLP - - Dorothy L. Payne
ECL - - Eric C. Lawson
FEH - - Fay E. Harmon
HV - - Hema Vilasagar
JLH - - Janice L. Holland
JMM - - Jim M. Monk
JWR - - John W. Richards
JYH - - Ji Y. Hu
KHA - - Kim H. Archer
KMM - - Kevin M. McDonald
KMS - - Kevin M. Stutler
KRA - - Kathy R. Albertson
MDA - - Mike D. Albertson
MDC - - Michael D. Cochran
MES - - Mary E. Schilling
MLS - - Michael L. Schimmel
MMB - - Maren M. Beery
RDC - - Rebecca D. Cutlip
RDS - - Rebecca D. Sutton
REF - - Ron E. Fertile
RER - - Robert E. Kyer
RSS - - Regina S. Simmons
RWC - - Rodney W. Campbell
SJK - - Sindy J. Kinney
SJM - - Shawn J. Marshall
SKH - - Shellie K. Hamrick
SLJ - - Susan L. Johnson
SLP - - Sheri L. Pfalzgraf
SLT - - Stephanie L. Tepe
SMW - - Shanna M. Welch
SPL - - Steve P. Learn
TJW - - Thomas J. Ware
TRS - - Todd R. Stack
VC - - Vicki Collier
VMN - - Vincent M. Nedeff

KEMRON Environmental Services, Inc.
LIST OF VALID QUALIFIERS (qual)
March 9, 1998

| Qualifier | Description |
|---|---|
| (A) | See the report narrative |
| (B) | See the report narrative |
| (C) | See the report narrative |
| + | Correlation coefficient for the MSA is less than 0.995 |
| < | Less than |
| > | Greater than |
| B | Present in the method blank |
| C | Confirmed by GC/MS |
| * | Surrogate or spike compound out of range |
| CG | Confluent growth |
| D | The analyte was quantified at a secondary dilution factor |
| DL | Surrogate or spike was diluted out |
| E | Estimated concentration due to sample matrix interference |
| F | Present below nominal reporting limit (AFCEE only) |
| FL | Free liquid |
| I | Semiquantitative result, out of instrument calibration range |
| J | Present below nominal reporting limit |
| L | Sample reporting limits elevated due to matrix interference |
| M | Duplicate injection precision not met |

| Qualifier | Description |
|---|---|
| N | Tentatively Identified Compound (TIC) |
| NA | Not applicable |
| ND | Not detected at or above the reporting limit (RL) |
| NF | Not found |
| NFL | No free liquid |
| NI | Non-ignitable |
| NR | Analyte is not required to be analyzed |
| NS | Not spiked |
| P | Concentration > 25% difference between the two GC columns |
| QNS | Quantity not sufficient to perform analysis |
| R | Analyte exceeds regulatory limit |
| RA | Reanalysis confirms reported results |
| RE | Reanalysis confirms sample matrix interference |
| S | Analyzed by method of standard addition |
| SMI | Sample matrix interference on surrogate |
| SP | Reported results are for spike compounds only |
| TNTC | Too numerous to count |
| U | Analyzed for but not detected |
| W | Post-digestion spike for furnace AA out of control limits |
| X | Can not be resolved from isomer. See below. |

**Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semiquantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methyphenol and 4-Methyphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.

Work Order L9808430 Client [illegible] #of Samples 01 Due Date 9/4 Page 1

| Sample # | Analyses | Reason | Removed By ADT | Removed From | Moved To | Reliq. By | Rec'd by ADT | Rec'd To | Rec'd By | Reason |
|---|---|---|---|---|---|---|---|---|---|---|
| 01 | MET | DIG | 5/28/98@1400 | walk in | MET | [illegible] | 5/28/98@1510 | walk in | BIG | storage |
| 01 | PCNS | test | 08/24/98@1000 | walk in | wet | BIG | 08/25/98@1000 | Archive | BIG | archive |

Monday, August 24, 1998

REQUEST NUMBER: 4522R
ANALYSIS TYPE: INORG

# Los Alamos
NATIONAL LABORATORY

ATTN: Maren Beery
KEMRON
109 STARLITE PARK
MARIETTA, OH 45750

Please analyze the enclosed samples according to the schedule indicated:

SHIP DATE: 8/24/98
REPORT DUE: 9/14/98
TURN AROUND REQ'D: 15 days

These samples are on:

LANL Request Number: 4522R
Per Agreement Number: 7797L0014-9S
Project Cost Code: MR2W05153318

RAD SCREENING: Yes, Received
COMMENTS: 49 - 1144 , DK;

LANL ER SMO CONTACT: Joylene Valdez MS H865 5056659968
Signature:

| ANALYSIS ORDER CODE | ANALYTE(S) | SAMPLE ID | CONT ID | SAMPLE MATRIX | DATE SAMPLED | COMMENTS |
|---|---|---|---|---|---|---|
| METTAL | | MD49-98-0140 | 01 | S | 8/20/98 | |

Final Page of REQUEST NUMBER 4522R



360

Monday, August 24, 1998

**Los Alamos**
NATIONAL LABORATORY

# CHAIN OF CUSTODY DOCUMENT NUMBER: 4522RC

REQUEST NUMBER: 4522R
ANALYSIS TYPE: INORG

ATTN: Maren Beery
KEMRON
109 STARLITE PARK
MARIETTA, OH 45750

| SAMPLE ID | CONT ID | CONTAINER DESCRIPTION | ANALYSIS ORDER CODE | PRESERVATIVE | MATRIX |
|---|---|---|---|---|---|
| MD49-98-0140 | 01 | 125 ml Polyethelyne | METTAL | None | S |

Final Page of CHAIN OF CUSTODY DOCUMENT FOR REQUEST NUMBER 4522R



| Relinquished By: | Date | Time | Received By: | Date | Time |
|---|---|---|---|---|---|
| PRINTED NAME / SIGNATURE | | | PRINTED NAME / SIGNATURE | | |
| PRINTED NAME / SIGNATURE | | | PRINTED NAME / SIGNATURE | | |
| PRINTED NAME / SIGNATURE | | | PRINTED NAME / SIGNATURE | | |

| Received for DISPOSAL By: | Date | Time |
|---|---|---|
| PRINTED NAME / SIGNATURE | | |

Remarks:

# DOE - AL
# COOLER RECEIPT FORM

Contractor Cooler ____
Number of Coolers 1 / 1

PROJECT: DE-20025153318 LIMS# 19005430 [illegible]

A. PRELIMINARY EXAMINATION PHASE: Date cooler opened: 8/25/98 C-of-C Number: DE-20025153318
by (print) [illegible] (sign) [illegible] 4521-22, 4523-24

1. Did cooler come with a shipping slip (air bill, etc.)? ..... YES NO
   If YES, enter carrier name & air bill number here: Fed Ex - 4117990088 01
2. Were custody seals on outside of cooler? ..... YES NO
3. Were custody seals unbroken and intact at the datE and time of arrival? ..... YES NO
4. Did you screen samples for radioactivity using the Geiger Counter? ..... YES NO
5. Were custody papers filled out properly and legible (ink, signed, etc.)? ..... YES NO
6. If required, was enough ice used? ..... Type of ice: Blue ..... Temp 2.0 °C YES NO
   See Cooler Check Form if more than 1 cooler

B LOG-IN PHASE: Date samples were logged-in: 8/25/98
by (print) [illegible] (sign) [illegible]

7. Did all bottles arrive unbroken & were labels in good condition? ..... YES NO
8. Were all bottle labels complete (ID, date, time, signature, preservative, etc.)? ..... YES NO
9. Did all bottle labels agree with custody papers? ..... YES NO
10. Were correct containers used for the tests indicated? ..... YES NO
11. Were correct preservatives added to samples? ..... YES NO
12. Was a sufficient amount of sample sent for tests indicated? ..... YES NO
13. Were bubbles absent in volatile samples? If NO, list by Sample # ____ YES NO
14. Was the project manager called and status discussed? If YES, give details on the back of this form ..... YES NO
15. Who was called? ____ By whom? ____ (date) ____

Comments: LIMS # 19005431
19005432
19005434
19005435
19005436

# QC SUMMARY

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U.S. EPA - CLP

2A

# INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4522

Initial Calibration Source: INORGANIC VE

Continuing Calibration Source: INORGANIC VE

Concentration Units: ug/L

| Analyte | Initial Calibration True | Initial Calibration Found | Initial Calibration %R(1) | Continuing Calibration True | Continuing Calibration Found | Continuing Calibration %R(1) | Continuing Calibration Found | Continuing Calibration %R(1) |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 10000.0 | 10010.00 | 100.1 | 10000.0 | 10470.00 | 104.7 | 10380.00 | 103.8 |
| Antimony | 5000.0 | 4937.00 | 98.7 | 5000.0 | 5256.00 | 105.1 | 5148.00 | 103.0 |
| Arsenic | 400.0 | 403.28 | 100.8 | 400.0 | 392.60 | 98.2 | 382.88 | 95.7 |
| Barium | 10000.0 | 9870.00 | 98.7 | 10000.0 | 10150.00 | 101.5 | 10180.00 | 101.8 |
| Beryllium | 250.0 | 245.20 | 98.1 | 250.0 | 255.60 | 102.2 | 249.40 | 99.8 |
| Cadmium | 2500.0 | 2581.00 | 103.2 | 2500.0 | 2743.00 | 109.7 | 2623.00 | 104.9 |
| Calcium | 25000.0 | 25050.00 | 100.2 | 25000.0 | 26720.00 | 106.9 | 25830.00 | 103.3 |
| Chromium | 1000.0 | 1008.00 | 100.8 | 1000.0 | 1069.00 | 106.9 | 1045.00 | 104.5 |
| Cobalt | 2500.0 | 2543.00 | 101.7 | 2500.0 | 2692.00 | 107.7 | 2675.00 | 107.0 |
| Copper | 1250.0 | 1239.00 | 99.1 | 1250.0 | 1289.00 | 103.1 | 1293.00 | 103.4 |
| Iron | 5000.0 | 5010.00 | 100.2 | 5000.0 | 5290.00 | 105.8 | 5113.00 | 102.3 |
| Lead | 500.0 | 512.27 | 102.5 | 500.0 | 506.13 | 101.2 | 496.33 | 99.3 |
| Magnesium | 25000.0 | 25200.00 | 100.8 | 25000.0 | 26650.00 | 106.6 | 26070.00 | 104.3 |
| Manganese | 2500.0 | 2526.00 | 101.0 | 2500.0 | 2652.00 | 106.1 | 2598.00 | 103.9 |
| Mercury | 1.0 | 0.98 | 98.0 | 1.0 | 0.96 | 96.0 | 0.97 | 97.0 |
| Nickel | 2500.0 | 2538.00 | 101.5 | 2500.0 | 2726.00 | 109.0 | 2671.00 | 106.8 |
| Potassium | 25000.0 | 24890.00 | 99.6 | 25000.0 | 25830.00 | 103.3 | 26540.00 | 106.2 |
| Selenium | 25.0 | 25.28 | 101.1 | 25.0 | 25.80 | 103.2 | 25.51 | 102.0 |
| Silver | 400.0 | 393.62 | 98.4 | 400.0 | 387.89 | 97.0 | 381.50 | 95.4 |
| Sodium | 25000.0 | 24510.00 | 98.0 | 25000.0 | 25480.00 | 101.9 | 25780.00 | 103.1 |
| Thallium | 25.0 | 26.03 | 104.1 | 25.0 | 25.62 | 102.5 | 26.65 | 106.6 |
| Vanadium | 1000.0 | 1024.61 | 102.5 | 1000.0 | 1007.37 | 100.7 | 996.82 | 99.7 |
| Zinc | 2500.0 | 2544.00 | 101.8 | 2500.0 | 2707.00 | 108.3 | 2596.00 | 103.8 |
| Cyanide | | | | | | | | |

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4522R

Initial Calibration Source: INORGANIC VE

Continuing Calibration Source: INORGANIC VE

Concentration Units: ug/L

| Analyte | Initial Calibration True | Initial Calibration Found | Initial Calibration %R(1) | Continuing Calibration True | Continuing Calibration Found | Continuing Calibration %R(1) | Continuing Calibration Found | Continuing Calibration %R(1) | |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | 10000.0 | 10840.00 | 108.4 | 10300.00 | 103.0 | P |
| Antimony | | | | 5000.0 | 5400.00 | 108.0 | 5204.00 | 104.1 | P |
| Arsenic | | | | 400.0 | 381.55 | 95.4 | 374.20 | 93.6 | P |
| Barium | | | | 10000.0 | 10630.00 | 106.3 | 9857.00 | 98.6 | P |
| Beryllium | | | | 250.0 | 258.00 | 103.2 | 250.90 | 100.4 | P |
| Cadmium | | | | 2500.0 | 2700.00 | 108.0 | 2686.00 | 107.4 | P |
| Calcium | | | | 25000.0 | 26730.00 | 106.9 | 26390.00 | 105.6 | P |
| Chromium | | | | 1000.0 | 1089.00 | 108.9 | 1064.00 | 106.4 | P |
| Cobalt | 2500.0 | 2520.00 | 100.8 | 2500.0 | 2571.00 | 102.8 | 2540.00 | 101.6 | P |
| Copper | | | | 1250.0 | 1344.00 | 107.5 | 1283.00 | 102.6 | P |
| Iron | | | | 5000.0 | 5312.00 | 106.2 | 5139.00 | 102.8 | P |
| Lead | | | | 500.0 | 487.41 | 97.5 | 475.37 | 95.1 | P |
| Magnesium | | | | 25000.0 | 27120.00 | 108.5 | 26510.00 | 106.0 | P |
| Manganese | | | | 2500.0 | 2710.00 | 108.4 | 2618.00 | 104.7 | P |
| Mercury | | | | 1.0 | 0.99 | 99.0 | | | CV |
| Nickel | 2500.0 | 2525.00 | 101.0 | 2500.0 | 2566.00 | 102.6 | 2518.00 | 100.7 | P |
| Potassium | 25000.0 | 24390.00 | 97.6 | 25000.0 | 25170.00 | 100.7 | 25030.00 | 100.1 | P |
| Selenium | | | | 25.0 | 25.19 | 100.8 | 25.13 | 100.5 | P |
| Silver | | | | 400.0 | 384.22 | 96.1 | 385.71 | 96.4 | P |
| Sodium | | | | 25000.0 | 27060.00 | 108.2 | 25730.00 | 102.9 | P |
| Thallium | | | | 25.0 | 26.54 | 106.2 | 27.14 | 108.6 | P |
| Vanadium | | | | 1000.0 | 1003.87 | 100.4 | 1006.63 | 100.7 | P |
| Zinc | | | | 2500.0 | 2677.00 | 107.1 | 2541.00 | 101.6 | P |
| Cyanide | | | | | | | | | |

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4512F

Initial Calibration Source: INORGANIC VE

Continuing Calibration Source: INORGANIC VE

Concentration Units: ug/L

| Analyte | Initial Calibration True | Initial Calibration Found | Initial Calibration %R(1) | Continuing Calibration True | Continuing Calibration Found | Continuing Calibration %R(1) | Continuing Calibration Found | Continuing Calibration %R(1) |
|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | |
| Antimony | | | | | | | | |
| Arsenic | | | | 400.0 | 386.66 | 96.7 | | |
| Barium | | | | | | | | |
| Beryllium | | | | | | | | |
| Cadmium | | | | | | | | |
| Calcium | | | | | | | | |
| Chromium | | | | | | | | |
| Cobalt | | | | 2500.0 | 2429.00 | 97.2 | | |
| Copper | | | | | | | | |
| Iron | 5000.0 | 5096.00 | 102.0 | 5000.0 | 5252.00 | 105.0 | 4829.00 | 96.6 |
| Lead | | | | 500.0 | 496.73 | 99.7 | | |
| Magnesium | | | | | | | | |
| Manganese | | | | | | | | |
| Mercury | | | | | | | | |
| Nickel | | | | 2500.0 | 2389.00 | 95.6 | | |
| Potassium | | | | 25000.0 | 23680.00 | 94.7 | | |
| Selenium | | | | | | | | |
| Silver | | | | 400.0 | 405.05 | 101.3 | | |
| Sodium | | | | | | | | |
| Thallium | | | | 25.0 | 26.88 | 107.5 | | |
| Vanadium | | | | 1000.0 | 1053.10 | 105.3 | | |
| Zinc | | | | | | | | |
| Cyanide | | | | | | | | |

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

# 3
# BLANKS

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 45222

Preparation Blank Matrix (soil/water): SOIL_

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 31.9 | U | 31.9 | U | 31.9 | U | 31.9 | U | 1.595 | U |
| Antimony | 36.8 | U | 36.8 | U | 36.8 | U | 36.8 | U | 1.840 | U |
| Arsenic | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | 0.050 | U |
| Barium | 2.2 | U | 2.2 | U | 2.2 | U | 2.2 | U | 0.110 | U |
| Beryllium | 0.3 | U | 0.3 | U | 0.3 | U | 0.3 | U | 0.015 | U |
| Cadmium | 1.3 | U | 1.3 | U | 1.3 | U | 1.3 | U | 0.065 | U |
| Calcium | 16.4 | U | 16.4 | U | 16.4 | U | 16.4 | U | 4.225 | B |
| Chromium | 1.6 | U | 1.6 | U | 1.6 | U | 1.6 | U | 0.080 | U |
| Cobalt | 3.0 | U | 3.0 | U | 3.0 | U | | | 0.150 | U |
| Copper | 2.8 | U | 2.8 | U | 2.8 | U | 2.8 | U | 0.140 | U |
| Iron | 7.9 | U | 7.9 | U | 7.9 | U | 7.9 | U | 0.625 | B |
| Lead | 2.7 | U | 2.3 | B | 2.1 | B | 2.8 | B | 0.030 | U |
| Magnesium | 17.6 | U | 17.6 | U | 17.6 | U | 17.6 | U | 0.880 | U |
| Manganese | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 0.160 | U |
| Mercury | 0.0 | B | 0.0 | B | 0.0 | B | 0.0 | B | -0.005 | B |
| Nickel | 4.7 | U | 4.7 | U | 4.7 | U | | | 0.235 | U |
| Potassium | 201.0 | U | 237.2 | B | 201.0 | U | | | 10.050 | U |
| Selenium | 0.9 | U | 0.9 | U | 0.9 | U | 1.4 | B | 0.045 | U |
| Silver | 0.2 | U | -0.2 | B | -0.2 | B | -0.2 | B | 0.010 | U |
| Sodium | 117.0 | U | 117.0 | U | 117.0 | U | 117.0 | U | 5.850 | U |
| Thallium | 0.6 | U | 0.6 | U | 0.6 | U | 0.6 | U | 0.030 | U |
| Vanadium | 0.3 | U | 0.3 | U | 0.3 | U | 0.3 | U | 0.015 | U |
| Zinc | 6.8 | U | 6.8 | U | 6.8 | U | 6.8 | U | 0.340 | U |
| Cyanide | | | | | | | | | | |

U.S. EPA - CLP

3
BLANKS

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4822R

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | 31.9 | U | | | | | | |
| Antimony | | | 36.8 | U | | | | | | |
| Arsenic | | | 1.0 | U | 1.0 | U | | | | |
| Barium | | | 2.2 | U | | | | | | |
| Beryllium | | | 0.3 | U | | | | | | |
| Cadmium | | | 1.3 | U | | | | | | |
| Calcium | | | 16.4 | U | | | | | | |
| Chromium | | | 1.6 | U | | | | | | |
| Cobalt | 3.0 | U | 3.0 | U | 3.0 | U | 3.0 | U | | |
| Copper | | | 2.8 | U | | | | | | |
| Iron | | | 11.1 | B | | | | | | |
| Lead | | | -2.2 | B | -2.1 | B | | | | |
| Magnesium | | | 17.6 | U | | | | | | |
| Manganese | | | 3.2 | U | | | | | | |
| Mercury | | | | | | | | | | |
| Nickel | 4.7 | U | 4.7 | U | 4.7 | U | 4.7 | U | | |
| Potassium | 201.0 | U | 201.0 | U | 201.0 | U | 201.0 | U | | |
| Selenium | | | 0.9 | U | | | | | | |
| Silver | | | 0.2 | U | 0.2 | U | | | | |
| Sodium | | | 117.0 | U | | | | | | |
| Thallium | | | 0.6 | U | 0.6 | U | | | | |
| Vanadium | | | 0.3 | U | 0.3 | U | | | | |
| Zinc | | | 6.8 | U | | | | | | |
| Cyanide | | | | | | | | | | |



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# 3
# BLANKS

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4822R

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | | |
| Antimony | | | | | | | | | | |
| Arsenic | | | | | | | | | | |
| Barium | | | | | | | | | | |
| Beryllium | | | | | | | | | | |
| Cadmium | | | | | | | | | | |
| Calcium | | | | | | | | | | |
| Chromium | | | | | | | | | | |
| Cobalt | | | | | | | | | | |
| Copper | | | | | | | | | | |
| Iron | 7.9 | U | 7.9 | U | 7.9 | U | | | | |
| Lead | | | | | | | | | | |
| Magnesium | | | | | | | | | | |
| Manganese | | | | | | | | | | |
| Mercury | | | | | | | | | | |
| Nickel | | | | | | | | | | |
| Potassium | | | | | | | | | | |
| Selenium | | | | | | | | | | |
| Silver | | | | | | | | | | |
| Sodium | | | | | | | | | | |
| Thallium | | | | | | | | | | |
| Vanadium | | | | | | | | | | |
| Zinc | | | | | | | | | | |
| Cyanide | | | | | | | | | | |

# ICP INTERFERENCE CHECK SAMPLE

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No: _____ SDG No.: 4522R

ICP ID Number: LEEMAN_____ ICS Source: INORGANIC VE

Concentration Units: ug/L

| Analyte | True Sol. A | True Sol. AB | Initial Found Sol. A | Initial Found Sol. AB | %R | Final Found Sol. A | Final Found Sol. AB | %R |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 500000 | 500000 | 536200 | 496300.0 | 99.3 | 529300 | 521400.0 | 104.3 |
| Antimony | 1000 | 1000 | -33 | 1036.0 | 103.6 | 34 | 1118.0 | 111.8 |
| Arsenic | | | | | | | | |
| Barium | 500 | 500 | 5 | 512.2 | 102.4 | 5 | 523.2 | 104.6 |
| Beryllium | 500 | 500 | 1 | 520.4 | 104.1 | 2 | 539.7 | 107.9 |
| Cadmium | 1000 | 1000 | 2 | 972.7 | 97.3 | 2 | 1006.0 | 100.6 |
| Calcium | 500000 | 500000 | 505600 | 473300.0 | 94.7 | 497100 | 490900.0 | 98.2 |
| Chromium | 500 | 500 | 6 | 490.9 | 98.2 | 5 | 513.5 | 102.7 |
| Cobalt | 500 | 500 | 3 | 494.7 | 98.9 | 2 | 525.0 | 105.0 |
| Copper | 500 | 500 | 16 | 535.7 | 107.1 | 18 | 563.7 | 112.7 |
| Iron | 200000 | 200000 | 192200 | 178900.0 | 89.4 | 185300 | 183200.0 | 91.6 |
| Lead | | | | | | | | |
| Magnesium | 500000 | 500000 | 578600 | 536600.0 | 107.3 | 572200 | 563600.0 | 112.7 |
| Manganese | 500 | 500 | 9 | 499.4 | 99.9 | 9 | 515.8 | 103.2 |
| Mercury | | | | | | | | |
| Nickel | 1000 | 1000 | 15 | 974.2 | 97.4 | 15 | 1015.0 | 101.5 |
| Potassium | 5000 | 5000 | -205 | 5366.0 | 107.3 | -63 | 5885.0 | 117.7 |
| Selenium | | | | | | | | |
| Silver | | | | | | | | |
| Sodium | 2500 | 2500 | 56 | 2739.0 | 109.6 | 59 | 2921.0 | 116.8 |
| Thallium | | | | | | | | |
| Vanadium | | | | | | | | |
| Zinc | 1000 | 1000 | 15 | 976.9 | 97.7 | 33 | 961.1 | 96.1 |

U.S. EPA - CLP

4

# ICP INTERFERENCE CHECK SAMPLE

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No: _____ SDG No.: 4522R

ICP ID Number: LEEMAN_____ ICS Source: INORGANIC VE

Concentration Units: ug/L

| Analyte | True Sol. A | True Sol. AB | Initial Found Sol. A | Initial Found Sol. AB | %R | Final Found Sol. A | Final Found Sol. AB | %R |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 500000 | 500000 | 467600 | 467000.0 | 93.4 | 480400 | 475500.0 | 95.1 |
| Antimony | | | | | | | | |
| Arsenic | | | | | | | | |
| Barium | | | | | | | | |
| Beryllium | | | | | | | | |
| Cadmium | | | | | | | | |
| Calcium | 500000 | 500000 | 437100 | 436100.0 | 87.2 | 447200 | 443600.0 | 88.7 |
| Chromium | | | | | | | | |
| Cobalt | 500 | 500 | 3 | 449.7 | 89.9 | 4 | 456.2 | 91.2 |
| Copper | | | | | | | | |
| Iron | 200000 | 200000 | 168900 | 167600.0 | 83.8 | 169800 | 168100.0 | 84.0 |
| Lead | | | | | | | | |
| Magnesium | 500000 | 500000 | 503700 | 503100.0 | 100.6 | 514100 | 510200.0 | 102.0 |
| Manganese | | | | | | | | |
| Mercury | | | | | | | | |
| Nickel | 1000 | 1000 | 18 | 899.5 | 90.0 | 19 | 886.6 | 88.7 |
| Potassium | 5000 | 5000 | -54 | 4985.0 | 99.7 | -16 | 5167.0 | 103.3 |
| Selenium | | | | | | | | |
| Silver | | | | | | | | |
| Sodium | | | | | | | | |
| Thallium | | | | | | | | |
| Vanadium | | | | | | | | |
| Zinc | | | | | | | | |

U.S. EPA - CLP

4

# ICP INTERFERENCE CHECK SAMPLE

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No: _____ SDG No.: 4522R

ICP ID Number: LEEMAN_____ ICS Source: INORGANIC VE

Concentration Units: ug/L

| Analyte | True Sol. A | True Sol. AB | Initial Found Sol. A | Initial Found Sol. AB | Initial Found %R | Final Found Sol. A | Final Found Sol. AB | Final Found %R |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 500000 | 500000 | 463800 | 485300.0 | 97.1 | 491300 | 471300.0 | 94.3 |
| Antimony | | | | | | | | |
| Arsenic | | | | | | | | |
| Barium | | | | | | | | |
| Beryllium | | | | | | | | |
| Cadmium | | | | | | | | |
| Calcium | 500000 | 500000 | 437600 | 455800.0 | 91.2 | 457400 | 434600.0 | 86.9 |
| Chromium | | | | | | | | |
| Cobalt | | | | | | | | |
| Copper | | | | | | | | |
| Iron | 200000 | 200000 | 169400 | 176100.0 | 88.0 | 177000 | 169100.0 | 84.6 |
| Lead | | | | | | | | |
| Magnesium | 500000 | 500000 | 495400 | 518500.0 | 103.7 | 520400 | 492000.0 | 98.4 |
| Manganese | | | | | | | | |
| Mercury | | | | | | | | |
| Nickel | | | | | | | | |
| Potassium | | | | | | | | |
| Selenium | | | | | | | | |
| Silver | | | | | | | | |
| Sodium | | | | | | | | |
| Thallium | | | | | | | | |
| Vanadium | | | | | | | | |
| Zinc | | | | | | | | |

# 4
# ICP INTERFERENCE CHECK SAMPLE

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No: _____ SDG No.: 4522R

ICP ID Number: PE TRACE ICP ICS Source: INORGANIC VE

Concentration Units: ug/L

| Analyte | True Sol. A | True Sol. AB | Initial Found Sol. A | Initial Found Sol. AB | %R | Final Found Sol. A | Final Found Sol. AB | %R |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 250000 | 250000 | 257866 | 247662.3 | 99.1 | 265303 | 259201.7 | 103.7 |
| Antimony | | | | | | | | |
| Arsenic | 250 | 250 | -1 | 284.9 | 114.0 | -3 | 274.6 | 109.9 |
| Barium | | | | | | | | |
| Beryllium | | | | | | | | |
| Cadmium | | | | | | | | |
| Calcium | 250000 | 250000 | 272694 | 263629.2 | 105.5 | 279331 | 271415.5 | 108.6 |
| Chromium | | | | | | | | |
| Cobalt | | | | | | | | |
| Copper | | | | | | | | |
| Iron | 100000 | 100000 | 90120 | 86940.8 | 86.9 | 93821 | 91025.6 | 91.0 |
| Lead | 500 | 500 | 2 | 477.8 | 95.6 | 1 | 467.1 | 93.4 |
| Magnesium | 250000 | 250000 | 247068 | 236936.0 | 94.8 | 255368 | 247714.9 | 99.1 |
| Manganese | | | | | | | | |
| Mercury | | | | | | | | |
| Nickel | | | | | | | | |
| Potassium | | | | | | | | |
| Selenium | | | | | | | | |
| Silver | 500 | 500 | -1 | 559.6 | 111.9 | -1 | 591.5 | 118.3 |
| Sodium | | | | | | | | |
| Thallium | | | | | | | | |
| Vanadium | 250 | 250 | 8 | 256.0 | 102.4 | 8 | 268.6 | 107.4 |
| Zinc | | | | | | | | |

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MD49-0143S

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4522R_

Matrix (soil/water): SOIL__ Level (low/med): LOW__

% Solids for Sample: _44.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | |
| Antimony | 75-125 | 76.6591 | | 23.6827 | | 219.59 | 24.1 | N | P |
| Arsenic | 75-125 | 708.5254 | | 20.5314 | | 878.35 | 78.3 | | P |
| Barium | 75-125 | 1048.1818 | | 128.8557 | | 878.35 | 104.7 | | P |
| Beryllium | 75-125 | 24.4318 | | 2.4820 | | 21.96 | 100.0 | | P |
| Cadmium | 75-125 | 24.8752 | | 4.3793 | | 21.96 | 93.3 | | P |
| Calcium | | | | | | | | | |
| Chromium | 75-125 | 104.9773 | | 17.6267 | | 87.83 | 99.5 | | P |
| Cobalt | 75-125 | 198.3114 | | 5.9104 | | 219.59 | 87.6 | | P |
| Copper | 75-125 | 174.5909 | | 54.7819 | | 109.79 | 109.1 | | P |
| Iron | | | | | | | | | |
| Lead | 75-125 | 512.5225 | | 314.0097 | | 219.59 | 90.4 | | P |
| Magnesium | | | | | | | | | |
| Manganese | 75-125 | 586.3636 | | 336.6995 | | 219.59 | 113.7 | | P |
| Mercury | 75-125 | 1.6500 | | 0.0250 | B | 2.27 | 71.6 | N | CV |
| Nickel | 75-125 | 206.6606 | | 18.2933 | | 219.59 | 85.8 | | P |
| Potassium | | | | | | | | | |
| Selenium | 75-125 | 4.2333 | | 0.2287 | B | 4.78 | 83.8 | | P |
| Silver | 75-125 | 17.2401 | | 0.0220 | U | 21.96 | 78.5 | | P |
| Sodium | | | | | | | | | |
| Thallium | 75-125 | 49.0431 | | 0.2203 | B | 23.92 | 204.1 | N | P |
| Vanadium | 75-125 | 190.4967 | | 19.8726 | | 219.59 | 77.7 | | P |
| Zinc | | 33681.8182 | | 37628.4387 | | 219.59 | -1797.3 | | P |
| Cyanide | | | | | | | | | |

Comments:

FORM V (Part 1) - IN



375

U.S. EPA - CLP

7

# LABORATORY CONTROL SAMPLE

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4522R_

Solid LCS Source: K-1412_____

Aqueous LCS Source: _____

| Analyte | Aqueous (ug/L) True | Aqueous (ug/L) Found | Aqueous (ug/L) %R | Solid (mg/kg) True | Solid (mg/kg) Found | C | Limits | Limits | %R |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | 628.0 | 710.1 | | 503.0 | 754.0 | 113.0 |
| Antimony | | | | 50.0 | 51.3 | | 40.0 | 60.0 | 102.6 |
| Arsenic | | | | 50.0 | 46.9 | | 40.0 | 60.0 | 93.8 |
| Barium | | | | 500.0 | 536.9 | | 400.0 | 600.0 | 107.4 |
| Beryllium | | | | 50.0 | 49.3 | | 40.0 | 60.0 | 98.6 |
| Cadmium | | | | 50.0 | 50.9 | | 40.0 | 60.0 | 101.8 |
| Calcium | | | | 500.9 | 521.3 | | 400.7 | 601.1 | 104.1 |
| Chromium | | | | 50.0 | 52.4 | | 40.0 | 60.0 | 104.8 |
| Cobalt | | | | 50.0 | 53.1 | | 40.0 | 60.0 | 106.2 |
| Copper | | | | 50.0 | 53.5 | | 40.0 | 60.0 | 107.0 |
| Iron | | | | 103.3 | 112.0 | | 82.7 | 124.0 | 108.4 |
| Lead | | | | 50.3 | 48.5 | | 40.3 | 60.4 | 96.4 |
| Magnesium | | | | 500.0 | 509.0 | | 400.0 | 600.0 | 101.8 |
| Manganese | | | | 50.0 | 52.3 | | 40.0 | 60.0 | 104.6 |
| Mercury | | | | 0.163 | 0.142 | | 0.134 | 0.205 | 89.0 |
| Nickel | | | | 50.0 | 52.5 | | 40.0 | 60.0 | 105.0 |
| Potassium | | | | 2500.0 | 2697.0 | | 2000.0 | 3000.0 | 107.9 |
| Selenium | | | | 1.2 | 1.3 | | 1.0 | 1.5 | 108.3 |
| Silver | | | | 10.0 | 9.1 | | 8.0 | 12.0 | 91.0 |
| Sodium | | | | 2500.0 | 2673.0 | | 2000.0 | 3000.0 | 106.9 |
| Thallium | | | | 1.2 | 1.3 | | 1.0 | 1.5 | 108.3 |
| Vanadium | | | | 50.0 | 48.8 | | 40.0 | 60.0 | 97.6 |
| Zinc | | | | 50.7 | 50.4 | | 40.6 | 60.8 | 99.4 |
| Cyanide | | | | | | | | | |

FORM VII - IN ILM03.0

10

Instrument Detection Limits (Quarterly)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4522R_

ICP ID Number: _____ Date: 06/01/96

Flame AA ID Number : _____

Furnace AA ID Number : PERKIN_ELMER

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | X |
|---|---|---|---|---|---|
| Aluminum | | | 200 | | NR |
| Antimony | | | | | NR |
| Arsenic | | | 10 | | NR |
| Barium | | | 200 | | NR |
| Beryllium | | | 5 | | NR |
| Cadmium | | | 5 | | NR |
| Calcium | | | 5000 | | NR |
| Chromium | | | 10 | | NR |
| Cobalt | | | 50 | | NR |
| Copper | | | 25 | | NR |
| Iron | | | 100 | | NR |
| Lead | | | 5 | | NR |
| Magnesium | | | 5000 | | NR |
| Manganese | | | 15 | | NR |
| Mercury | | | 0.2 | | NR |
| Nickel | | | 40 | | NR |
| Potassium | | | 5000 | | NR |
| Selenium | 196.00 | BZ | 5 | 0.9 | F |
| Silver | | | 10 | | NR |
| Sodium | | | 5000 | | NR |
| Thallium | | | 10 | | NR |
| Vanadium | | | 50 | | NR |
| Zinc | | | 20 | | NR |

Comments:

U.S. EPA - CLP

10

Instrument Detection Limits (Quarterly)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4822R_

ICP ID Number: _____ Date: 09/15/96

Flame AA ID Number : _____

Furnace AA ID Number : ZEEMAN2_____

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | | | 200 | | NR |
| Antimony | | | | | NR |
| Arsenic | | | 10 | | NR |
| Barium | | | 200 | | NR |
| Beryllium | | | 5 | | NR |
| Cadmium | | | 5 | | NR |
| Calcium | | | 5000 | | NR |
| Chromium | | | 10 | | NR |
| Cobalt | | | 50 | | NR |
| Copper | | | 25 | | NR |
| Iron | | | 100 | | NR |
| Lead | | | 5 | | NR |
| Magnesium | | | 5000 | | NR |
| Manganese | | | 15 | | NR |
| Mercury | | | 0.2 | | NR |
| Nickel | | | 40 | | NR |
| Potassium | | | 5000 | | NR |
| Selenium | | | 5 | | NR |
| Silver | | | 10 | | NR |
| Sodium | | | 5000 | | NR |
| Thallium | 276.80 | BZ | 10 | 0.6 | P |
| Vanadium | | | 50 | | NR |
| Zinc | | | 20 | | NR |
| | | | | | |

Comments:

FORM X - IN ILM03.0

10

Instrument Detection Limits (Quarterly)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4522R_

ICP ID Number: LEEMAN_____ Date: 04/14/97

Flame AA ID Number : _____

Furnace AA ID Number : _____

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | 308.22 | | 200 | 31.9 | P |
| Antimony | 206.83 | | | 36.8 | P |
| Arsenic | | | 10 | | NR |
| Barium | 455.40 | | 200 | 2.2 | P |
| Beryllium | 254.86 | | 5 | 0.3 | P |
| Cadmium | 214.44 | | 5 | 1.3 | P |
| Calcium | 315.89 | | 5000 | 16.4 | P |
| Chromium | 267.72 | | 10 | 1.6 | P |
| Cobalt | 228.62 | | 50 | 3.0 | P |
| Copper | 324.75 | | 25 | 2.8 | P |
| Iron | 259.94 | | 100 | 7.9 | P |
| Lead | | | 5 | | NR |
| Magnesium | 383.23 | | 5000 | 17.6 | P |
| Manganese | 257.61 | | 15 | 3.2 | P |
| Mercury | | | 0.2 | | NR |
| Nickel | 231.60 | | 40 | 4.7 | P |
| Potassium | 766.49 | | 5000 | 201.0 | P |
| Selenium | | | 5 | | NR |
| Silver | | | 10 | | NR |
| Sodium | 589.59 | | 5000 | 117.0 | P |
| Thallium | | | 10 | | NR |
| Vanadium | | | 50 | | NR |
| Zinc | 202.55 | | 20 | 6.8 | P |
| | | | | | |

Comments:

U.S. EPA - CLP

IC

Instrument Detection Limits (Quarterly)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4822R_

ICP ID Number: _____ Date: 06/05/95

Flame AA ID Number : LEEMAN_HG_AA

Furnace AA ID Number : _____

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | | | 200 | | NR |
| Antimony | | | | | NR |
| Arsenic | | | 10 | | NR |
| Barium | | | 200 | | NR |
| Beryllium | | | 5 | | NR |
| Cadmium | | | 5 | | NR |
| Calcium | | | 5000 | | NR |
| Chromium | | | 10 | | NR |
| Cobalt | | | 50 | | NR |
| Copper | | | 25 | | NR |
| Iron | | | 100 | | NR |
| Lead | | | 5 | | NR |
| Magnesium | | | 5000 | | NR |
| Manganese | | | 15 | | NR |
| Mercury | 253.70 | | 0.2 | 0.0 | CV |
| Nickel | | | 40 | | NR |
| Potassium | | | 5000 | | NR |
| Selenium | | | 5 | | NR |
| Silver | | | 10 | | NR |
| Sodium | | | 5000 | | NR |
| Thallium | | | 10 | | NR |
| Vanadium | | | 50 | | NR |
| Zinc | | | 20 | | NR |

Comments:

U.S. EPA - CLP

10

Instrument Detection Limits (Quarterly)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 45222R_

ICP ID Number: PE_TRACE_ICP Date: 05/20/96

Flame AA ID Number : _____

Furnace AA ID Number : _____

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | 237.31 | | 200 | 4.1 | P |
| Antimony | | | | | NR |
| Arsenic | 188.98 | | 10 | 1.0 | P |
| Barium | | | 200 | | NR |
| Beryllium | | | 5 | | NR |
| Cadmium | | | 5 | | NR |
| Calcium | 227.55 | | 5000 | 32.4 | P |
| Chromium | | | 10 | | NR |
| Cobalt | | | 50 | | NR |
| Copper | | | 25 | | NR |
| Iron | 261.39 | | 100 | 2.7 | P |
| Lead | 220.35 | | 5 | 0.6 | P |
| Magnesium | 202.58 | | 5000 | 5.2 | P |
| Manganese | | | 15 | | NR |
| Mercury | | | 0.2 | | NR |
| Nickel | | | 40 | | NR |
| Potassium | | | 5000 | | NR |
| Selenium | | | 5 | | NR |
| Silver | 328.07 | | 10 | 0.2 | P |
| Sodium | | | 5000 | | NR |
| Thallium | | | 10 | | NR |
| Vanadium | 292.40 | | 50 | 0.3 | P |
| Zinc | | | 20 | | NR |

Comments:

FORM X - IN ILM03.0

U.S. EPA - CLP

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4522R_

ICP ID Number: LEEMAN_____ Date: 01/26/95

| Analyte | Wave-length (nm) | Interelement Correction Factors for : Al | Ca | Fe | Mg | CR_ |
|---|---|---|---|---|---|---|
| Aluminum | 308.22 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Antimony | 206.83 | 0.0000000 | 0.0000000 | 0.0003490 | -0.0000100 | 0.0092000 |
| Arsenic | 193.70 | -0.0006600 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Barium | 455.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Beryllium | 254.86 | 0.0000000 | 0.0000000 | 0.0000440 | 0.0000000 | 0.0000000 |
| Cadmium | 214.44 | 0.0000000 | 0.0000000 | 0.0000200 | 0.0000000 | 0.0000000 |
| Calcium | 315.89 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Chromium | 267.72 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Cobalt | 228.62 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Copper | 324.75 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Iron | 259.94 | 0.0000000 | 0.0000540 | 0.0000000 | 0.0000000 | 0.0000000 |
| Lead | 220.35 | -0.0006600 | 0.0000000 | 0.0001500 | 0.0000000 | 0.0000000 |
| Magnesium | 383.23 | 0.0000000 | 0.0000000 | 0.0002440 | 0.0000000 | 0.0000000 |
| Manganese | 257.61 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000700 | 0.0000000 |
| Mercury | | | | | | |
| Nickel | 231.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Potassium | 766.49 | 0.0000000 | 0.0000000 | -0.0001000 | 0.0000000 | 0.0000000 |
| Selenium | 196.03 | 0.0000600 | 0.0000000 | 0.0003000 | 0.0000000 | 0.0000000 |
| Silver | 338.29 | 0.0000000 | 0.0000000 | -0.0000200 | 0.0000000 | 0.0000000 |
| Sodium | 589.59 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Thallium | | 0.0000000 | 0.0000000 | 0.0010000 | 0.0000000 | 0.0000000 |
| Vanadium | 309.31 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Zinc | 202.55 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000050 | 0.0000000 |

Comments:

U.S. EPA - CLP

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ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4522R_

ICP ID Number: LEEMAN_____ Date: 01/26/95

| Analyte | Wave-length (nm) | Interelement Correction Factors for : MN_ | NI_ | V__ | ___ | ___ |
|---|---|---|---|---|---|---|
| Aluminum_ | 308.22 | 0.0000000 | 0.0000000 | -0.1060000 | | |
| Antimony_ | 206.83 | 0.0000000 | 0.0000000 | -0.0029000 | | |
| Arsenic__ | 193.70 | 0.0000000 | 0.0000000 | 0.0165000 | | |
| Barium___ | 455.40 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Beryllium | 254.86 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Cadmium__ | 214.44 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Calcium__ | 315.89 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Chromium_ | 267.72 | 0.0000000 | 0.0000000 | 0.0003000 | | |
| Cobalt___ | 228.62 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Copper___ | 324.75 | 0.0000000 | 0.0000000 | -0.0005000 | | |
| Iron____ | 259.94 | 0.0001000 | 0.0000000 | 0.0000000 | | |
| Lead____ | 220.35 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Magnesium | 383.23 | 0.0000000 | -0.0039000 | 0.0000000 | | |
| Manganese | 257.61 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Mercury__ | | | | | | |
| Nickel___ | 231.60 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Potassium | 766.49 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Selenium_ | 196.03 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Silver___ | 338.29 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Sodium___ | 589.59 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Thallium_ | | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Vanadium_ | 309.31 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Zinc____ | 202.55 | 0.0000000 | 0.0000000 | 0.0000000 | | |

Comments:

U.S. EPA - CLP

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4522R_

ICP ID Number: PE TRACE ICP Date: 09/12/96

| Analyte | Wave-length (nm) | Interelement Correction Factors for : Al | Ca | Fe | Mg | CR_ |
|---|---|---|---|---|---|---|
| Aluminum_ | 237.31 | 0.0000000 | 0.0969987 | -0.3305220 | 0.0552789 | 0.0000000 |
| Antimony_ | 206.83 | 0.0900000 | 0.0040000 | 0.0350000 | 0.0040000 | 15.4753000 |
| Arsenic__ | 188.98 | 0.0020000 | 0.0020000 | -0.0320000 | -0.0400000 | 4.3000100 |
| Barium___ | 230.42 | 0.0000000 | 0.0000000 | -0.0262557 | -0.0063059 | -0.3522760 |
| Beryllium | 234.86 | 0.0037000 | 0.0000000 | 0.0430000 | 0.0000000 | -0.0151580 |
| Cadmium__ | 214.44 | 0.0010000 | -0.0003000 | -0.0006000 | -4.0000000 | -0.0293325 |
| Calcium__ | 227.55 | -0.2926390 | 0.0000000 | 17.8344000 | 0.0555621 | 2.1659400 |
| Chromium_ | 267.72 | 0.0010000 | 0.0000000 | -0.0430000 | 0.0060000 | 0.0000000 |
| Cobalt___ | 228.62 | -0.0040000 | -0.0010000 | 0.0000000 | -0.0001000 | 0.0753690 |
| Copper___ | 327.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.1754700 |
| Iron____ | 261.39 | 0.0000000 | 0.0000000 | 0.0000000 | -0.0352288 | -5.0257120 |
| Lead____ | 220.35 | -0.0550000 | 0.0000000 | 0.0250000 | 0.0050000 | -0.1270900 |
| Magnesium | 202.58 | 0.1167470 | 0.1054740 | 0.5323290 | 0.0000000 | 4.3855500 |
| Manganese | 257.61 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0187278 | 0.0000000 |
| Mercury__ | | | | | | |
| Nickel___ | 231.60 | 0.0050000 | -0.0010000 | -0.0040000 | 0.0040000 | -0.0945416 |
| Potassium | 404.72 | -0.4284930 | 2.9360500 | 0.0000000 | 0.0000000 | 0.0000000 |
| Selenium_ | 196.03 | 0.0250000 | 0.0000000 | 0.0000000 | 0.0020000 | -0.3052920 |
| Silver___ | 328.07 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Sodium___ | 330.24 | 0.0000000 | 0.0000000 | -1.4496600 | 0.0000000 | 0.0000000 |
| Thallium_ | 190.80 | 0.0340000 | 0.0000000 | -0.0860000 | -0.0220000 | 0.1660050 |
| Vanadium_ | 292.40 | 0.0000000 | 0.0000000 | 0.0357075 | 0.0000000 | -5.4537700 |
| Zinc____ | 206.20 | 0.0353990 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

Comments:

FORM XI (Part 1) - IN ILM03.0

11B

# ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4522R_

ICP ID Number: PE TRACE ICP Date: 09/12/96

| Analyte | Wave-length (nm) | Interelement Correction Factors for : V__ | ___ | ___ | ___ | ___ |
|---|---|---|---|---|---|---|
| Aluminum | 237.31 | 0.0000000 | | | | |
| Antimony | 206.83 | -1.2044200 | | | | |
| Arsenic | 188.98 | 0.2414050 | | | | |
| Barium | 230.42 | -0.2741970 | | | | |
| Beryllium | 234.86 | 0.0000000 | | | | |
| Cadmium | 214.44 | -0.0107753 | | | | |
| Calcium | 227.55 | 38.9246000 | | | | |
| Chromium | 267.72 | -0.4656690 | | | | |
| Cobalt | 228.62 | -0.0688589 | | | | |
| Copper | 327.40 | 0.0000000 | | | | |
| Iron | 261.39 | -5.2005300 | | | | |
| Lead | 220.35 | -0.2017490 | | | | |
| Magnesium | 202.58 | 4.5560400 | | | | |
| Manganese | 257.61 | 0.0000000 | | | | |
| Mercury | | | | | | |
| Nickel | 231.60 | -0.0872334 | | | | |
| Potassium | 404.72 | 0.0000000 | | | | |
| Selenium | 196.03 | 0.0000000 | | | | |
| Silver | 328.07 | 0.0000000 | | | | |
| Sodium | 330.24 | 0.0000000 | | | | |
| Thallium | 190.80 | 4.7910200 | | | | |
| Vanadium | 292.40 | 0.0000000 | | | | |
| Zinc | 206.20 | 0.0000000 | | | | |

Comments:

U.S. EPA - CLP

12

ICP LINEAR RANGES (QUARTERLY)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4522R_

ICP ID Number: LEEMAN_____ Date: 02/05/96

| Analyte | Integ. Time (sec.) | Concentration (ug/L) | M |
|---|---|---|---|
| Aluminum_ | 7.00 | 500000.0 | P |
| Antimony_ | 7.00 | 100000.0 | P |
| Arsenic__ | 7.00 | 500000.0 | P |
| Barium___ | 7.00 | 1000000.0 | P |
| Beryllium | 7.00 | 100000.0 | P |
| Cadmium__ | 7.00 | 40000.0 | P |
| Calcium__ | 7.00 | 1000000.0 | P |
| Chromium_ | 7.00 | 10000.0 | P |
| Cobalt___ | 7.00 | 50000.0 | P |
| Copper___ | 7.00 | 50000.0 | P |
| Iron_____ | 7.00 | 100000.0 | P |
| Lead_____ | 7.00 | 100000.0 | P |
| Magnesium | 7.00 | 500000.0 | P |
| Manganese | 7.00 | 100000.0 | P |
| Mercury__ | | | NR |
| Nickel___ | 7.00 | 50000.0 | P |
| Potassium | 7.00 | 500000.0 | P |
| Selenium_ | 7.00 | 1000000.0 | P |
| Silver___ | 7.00 | 2500.0 | P |
| Sodium___ | 7.00 | 500000.0 | P |
| Thallium_ | 7.00 | | P |
| Vanadium_ | 7.00 | 100000.0 | P |
| Zinc_____ | 7.00 | 500000.0 | P |

Comments:

FORM XII - IN ILM03.0

U.S. EPA - CLP

12

ICP LINEAR RANGES (QUARTERLY)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 08430_ SAS No.: _____ SDG No.: 4522R_

ICP ID Number: PE TRACE ICP Date: 09/10/96

| Analyte | Integ. Time (sec.) | Concentration (ug/L) | M |
|---|---|---|---|
| Aluminum | | 250000.0 | P |
| Antimony | | 100000.0 | P |
| Arsenic | | 800.0 | P |
| Barium | | 10000.0 | P |
| Beryllium | | 100.0 | P |
| Cadmium | | 1000.0 | P |
| Calcium | | 1000000.0 | P |
| Chromium | | 10000.0 | P |
| Cobalt | | 10000.0 | P |
| Copper | | 1000.0 | P |
| Iron | | 100.0 | P |
| Lead | | 100000.0 | P |
| Magnesium | | 500000.0 | P |
| Manganese | | 10000.0 | P |
| Mercury | | | NR |
| Nickel | | 50000.0 | P |
| Potassium | | 100000.0 | P |
| Selenium | | 800.0 | P |
| Silver | | 10000.0 | P |
| Sodium | | 100000.0 | P |
| Thallium | | 10000.0 | P |
| Vanadium | | 2000.0 | P |
| Zinc | | 10000.0 | P |

Comments:

FORM XII - IN ILM03.0

# INSTRUMENT DATA

# KEMRON ENVIRONMENTAL SERVICES
## ICP RUN LOGBOOK

ANALYST [illegible] DATE 08/27/98 TIME 1004
METHOD = [illegible] SOP = [illegible] WORK GROUP = [illegible]
CAL STD SOURCE [illegible] ICV/CCV SOURCE [illegible]
ICS AB SOURCE [illegible] ICS A SOURCE [illegible] POST SPK SOURCE [illegible]

| Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs | Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs |
|---|---|---|---|---|---|---|---|---|---|
| | [illegible] | | | | 27. | [illegible] | | [illegible] | |
| | [illegible] | | | | 28. | [illegible] | | [illegible] | |
| | [illegible] | | | | 29. | [illegible] | | | |
| | [illegible] | | | | 30. | [illegible] | | | [illegible] |
| | [illegible] | | | | 31. | | | | |
| | [illegible] | | | | 32. | | | | |
| | [illegible] | | | | 33. | | | | |
| | [illegible] | | | | 34. | | | | |
| | [illegible] | | | | 35. | | | | |
| | [illegible] | | | | 36. | | | | |
| | [illegible] | | | | 37. | | | | |
| | [illegible] | | | [illegible] | 38. | | | | |
| | [illegible] | | [illegible] | | 39. | | | | |
| | [illegible] | | | [illegible] | 40. | | | | |
| | [illegible] | | [illegible] | [illegible] | 41. | | | | |
| | [illegible] | | [illegible] | [illegible] | 42. | | | | |
| | [illegible] | | [illegible] | [illegible] | 43. | | | | |
| | [illegible] | | [illegible] | | 44. | | | | |
| | [illegible] | | [illegible] | | 45. | | | | |
| | [illegible] | | [illegible] | [illegible] | 46. | | | | |
| | [illegible] | | [illegible] | [illegible] | 47. | | | | |
| | [illegible] | | [illegible] | [illegible] | 48. | | | | |
| | [illegible] | | [illegible] | | 49. | | | | |
| | [illegible] | | [illegible] | | 50. | | | | |
| | [illegible] | | [illegible] | | 51. | | | | |
| | [illegible] | | [illegible] | | 52. | | | | |
| | [illegible] | | [illegible] | | 53. | | | | |
| | [illegible] | | | | 54. | | | | |
| | [illegible] | | | [illegible] | 55. | | | | |
| | [illegible] | | [illegible] | [illegible] | 56. | | | | |
| | [illegible] | | [illegible] | [illegible] | 57. | | | | |
| | [illegible] | | [illegible] | [illegible] | 58. | | | | |
| | [illegible] | | [illegible] | [illegible] | 59. | | | | |
| | [illegible] | | [illegible] | | 60. | | | | |

Comments: [illegible]

Note: No entry for Dil represents 1X Dilution

Autosampler Run Key

CCV = Continuing Calibration Verification
CCB = Continuing Calibration Blank
% D = Automatic Instrument Rerun due to % RSD > 20%
FRS = Full Recalibration Sequence

ID = Automatic Instrument Dilution
R = Analyst Rerun
BLK = Blank Rerun

24

Best Available Copy

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | [illegible] | S. D. = | [illegible] | |

| Elem | Conc. | Units | Blank | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| Ag1 | .1000 | PPM | 97128 | 97693 | 99078 | 98594 | [illegible] | |
| | | | Avg. Int. = [illegible] | S. D. = [illegible] | | | | |
| Al2 | 1.000 | PPM | 183894 | 184168 | 184960 | 184187 | 184971 | |
| | | | Avg. Int. = [illegible] | S. D. = [illegible] | | | | |
| Ba4 | 1.000 | PPM | 421481 | 418871 | 421881 | 420182 | [illegible] | |
| | | | Avg. Int. = [illegible] | S. D. = [illegible] | | | | |
| Be2 | .0100 | PPM | 38490 | 38872 | 37429 | 37436 | 37078 | |
| | | | Avg. Int. = 37640 | S. D. = 806 | | | | |
| Ca2 | 1.000 | PPM | 123996 | 121168 | 122182 | 123122 | [illegible] | |
| | | | Avg. Int. = 122601 | S. D. = 1056 | | | | |
| Cd1 | .0500 | PPM | 45071 | 44781 | 45332 | 45458 | [illegible] | |
| | | | Avg. Int. = 45277 | S. D. = 316 | | | | |
| Co1 | .1000 | PPM | 61371 | 61588 | 61696 | 61820 | 61438 | |
| | | | Avg. Int. = 61620 | S. D. = 201 | | | | |
| Cr4 | .1000 | PPM | 110696 | 109422 | 111766 | 109810 | 110071 | |
| | | | Avg. Int. = 110355 | S. D. = 936 | | | | |
| Cu1 | .1000 | PPM | 315772 | 311190 | 314609 | 312540 | 316942 | |
| | | | Avg. Int. = 314069 | S. D. = 2058 | | | | |
| Fe2 | .5000 | PPM | 162672 | 161277 | 161481 | 162912 | 165131 | |
| | | | Avg. Int. = 163161 | S. D. = 1696 | | | | |
| K 1 | 2.000 | PPM | 38782 | 37107 | 34940 | 37440 | 38774 | |
| | | | Avg. Int. = 36709 | S. D. = 1958 | | | | |
| Mg4 | 2.000 | PPM | 154321 | 152342 | 152891 | 153642 | 156977 | |
| | | | Avg. Int. = 154016 | S. D. = 1666 | | | | |
| Mn4 | .1000 | PPM | 391418 | 387929 | 387324 | 388564 | 390310 | |
| | | | Avg. Int. = [illegible] | S. D. = [illegible] | | | | |
| Na2 | 2.000 | PPM | 341710 | 341820 | 350420 | 342839 | 342957 | |
| | | | Avg. Int. = 344377 | S. D. = 3704 | | | | |
| Ni3 | .1000 | PPM | 22813 | 24318 | 24621 | 24918 | 25017 | |
| | | | Avg. Int. = 24666 | S. D. = 991 | | | | |
| Pb1 | .5000 | PPM | 20133 | 15320 | 18450 | 19100 | 19203 | |
| | | | Avg. Int. = 18110 | S. D. = 1912 | | | | |
| Sr 2 | .2000 | PPM | 324372 | 324381 | 325941 | 322143 | 326366 | |
| | | | Avg. Int. = 322901 | S. D. = 2136 | | | | |
| Zn2 | .1000 | PPM | 122672 | 124149 | 125321 | 124061 | 127127 | |
| | | | Avg. Int. = [illegible] | S. D. = [illegible] | | | | |
| Al3 | .5000 | PPM | 13409 | 13136 | 13734 | 13141 | 13184 | |
| | | | Avg. Int. = [illegible] | S. D. = 372 | | | | |
| Ba1 | .5000 | PPM | 4243 | 3947 | 5069 | 4472 | 5443 | |
| | | | Avg. Int. = 4672 | S. D. = 1844 | | | | |
| Sr1 | .5000 | PPM | 33151 | 37278 | 38429 | 37619 | 38994 | |
| | | | Avg. Int. = 37694 | S. D. = 1036 | | | | |

Best Available Copy

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | |
| | | | Ave. Int. = | [illegible] | S. D. = | [illegible] | |

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| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|---|
| [illegible] | 101.6 | 1.535 | 1.500 | PPM | .1012 |
| [illegible] | 101.4 | 50.38 | 50.00 | PPM | 1.888 |
| [illegible] | 100.2 | 50.01 | 50.00 | PPM | [illegible] |
| [illegible] | 101.0 | .5053 | .5000 | PPM | .2374 |
| [illegible] | 100.8 | 50.41 | 50.00 | PPM | 3.374 |
| [illegible] | 100.7 | 5.036 | 5.000 | PPM | .3214 |
| [illegible] | [illegible] | 5.057 | 5.000 | PPM | .3478 |
| [illegible] | 101.0 | [illegible] | 5.000 | PPM | .1419 |
| [illegible] | [illegible] | [illegible] | [illegible] | PPM | .2043 |
| [illegible] | 100.8 | 10.08 | 10.00 | PPM | .7334 |
| [illegible] | 101.7 | 50.87 | 50.00 | PPM | 4.062 |
| [illegible] | 101.4 | 50.68 | 50.00 | PPM | 3.881 |
| [illegible] | 100.8 | 5.041 | 5.000 | PPM | .2049 |
| [illegible] | 101.6 | 50.78 | 50.00 | PPM | 4.288 |
| [illegible] | [illegible] | 5.072 | 5.000 | PPM | .3032 |
| [illegible] | 101.3 | 10.13 | 10.00 | PPM | .7514 |
| [illegible] | [illegible] | 5.051 | 5.000 | PPM | .3619 |
| [illegible] | 99.68 | 4.983 | 5.000 | PPM | .3146 |
| [illegible] | 101.7 | 10.17 | 10.00 | PPM | .7531 |
| [illegible] | 100.1 | 10.01 | 10.00 | PPM | .6070 |
| [illegible] | 101.1 | 10.11 | 10.00 | PPM | .5389 |

[illegible]

31

396

*** Check Standard: [illegible] Batch: [illegible] [illegible] 27 Aug 19[illegible]

| Line | Flag | %Rec. | Found | True | Units | SDev |
|---|---|---|---|---|---|---|
| Ag1 | | 10[illegible].3 | [illegible] | [illegible] | PPM | .02[illegible] |
| Al2 | | 100.1 | 25.0[illegible] | 25.00 | PPM | .2772 |
| Ba4 | | 97.[illegible] | 9.87[illegible] | 10.00 | PPM | .0[illegible] |
| Be1 | | 98.09 | .3422 | .3500 | PPM | .0062 |
| Ca3 | | 100.3 | 25.08 | 25.00 | PPM | .6652 |
| Cd1 | | 102.3 | 2.551 | 2.500 | PPM | .0535 |
| Co1 | | 101.7 | 2.542 | 2.500 | PPM | .0669 |
| Cr4 | | 100.8 | 1.048 | 1.000 | PPM | .0287 |
| Cu1 | | 99.15 | 1.239 | 1.250 | PPM | .0376 |
| Fe2 | | 100.2 | 5.010 | 5.000 | PPM | .1295 |
| K 1 | | 99.58 | 24.89 | 25.00 | PPM | .8227 |
| Mg4 | | 100.3 | 25.08 | 25.00 | PPM | .7175 |
| Mn4 | | 101.1 | 2.526 | 2.500 | PPM | .0697 |
| Na2 | | 98.05 | 24.51 | 25.00 | PPM | .7282 |
| Ni1 | | 101.5 | 2.538 | 2.500 | PPM | .0669 |
| Pb1 | | 98.73 | 4.937 | 5.000 | PPM | .2133 |
| V 2 | | 100.2 | 2.505 | 2.500 | PPM | .0745 |
| Zn3 | | 101.7 | 2.544 | 2.500 | PPM | .0692 |
| As1 | | 100.4 | 5.021 | 5.000 | PPM | .1419 |
| Se1 | | 101.9 | 5.095 | 5.000 | PPM | .1388 |
| Tl1 | | 97.81 | 4.890 | 5.000 | PPM | .1763 |

*** Check Standard: [illegible] Batch: [illegible] 10:57 27 Aug 19[illegible]

| Line | Flag | %Rec. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 17.71 | .0008 | .0047 | PPM | .0010 |
| Al2 | | 8.007 | .0033 | .0374 | PPM | .0083 |
| Ba4 | | 101.7 | .0016 | .0015 | PPM | .0023 |
| Be1 | | 55.57 | .0003 | .0005 | PPM | .0023 |
| Ca3 | | .8[illegible]18 | .0001 | .0148 | PPM | .0055 |
| Cd1 | | 2.781 | .0001 | .0033 | PPM | .0014 |
| Co1 | | 31.74 | .0013 | .0040 | PPM | .0022 |
| Cr4 | | -13.34 | -.0003 | .0041 | PPM | .0009 |
| Cu1 | | 47.0[illegible] | .0011 | .0023 | PPM | .0011 |
| Fe2 | | 4.354 | .0005 | .0132 | PPM | .0073 |
| K 1 | | 35.40 | .1[illegible] | .4074 | PPM | .1542 |
| Mg4 | | 24.57 | .0043 | .0175 | PPM | .0722 |
| Mn4 | | 4.137 | .0001 | .0024 | PPM | .0023 |
| Na2 | | .5[illegible] | .0[illegible] | .0311 | PPM | .0195 |
| Ni1 | | 3.[illegible]23 | .0002 | .0040 | PPM | .0022 |
| Pb1 | | 1[illegible] | .0073 | .0426 | PPM | .0515 |
| V 2 | | 87.53 | .0764 | .1078 | PPM | .0022 |
| Zn3 | | -36.72 | -.0024 | .0065 | PPM | .0009 |
| As1 | | -2.703 | -.0009 | .0332 | PPM | .0239 |
| Se1 | | -101.1 | -.0701 | .0[illegible]56 | PPM | .0202 |
| Tl1 | | -95.12 | -.0065 | .0034 | PPM | .0118 |

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*** [illegible]

[illegible]

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

*** [illegible]

[illegible]

[illegible]

*** Sample ID: [illegible]

[illegible]

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | .0092 | .0070 | [illegible] | .0051 | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | 545.[illegible] | [illegible] | 530.[illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | .00[illegible] | .0048 | .0053 | .0047 | .0049 |
| [illegible] | .0017 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | 505.6 | PPM | 5.480 | 510.5 | 510.9 | 521.7 | [illegible] | [illegible] |
| [illegible] | .0022 | PPM | .0013 | .0005 | .0023 | .0020 | .0047 | [illegible] |
| [illegible] | .0012 | PPM | .0037 | .0024 | .0045 | .0074 | -.0021 | .0027 |
| [illegible] | .0059 | PPM | .0013 | .0073 | .0044 | .0046 | .0049 | .0059 |
| [illegible] | .0172 | PPM | .0016 | .0171 | .0194 | .0265 | .0170 | .0175 |
| [illegible] | 193.7 | PPM | 3.847 | 194.3 | 187.6 | 190.7 | 187.6 | [illegible] |
| [illegible] | -.0043 | PPM | .0345 | -.1104 | -.3487 | -.1749 | -.0227 | [illegible] |
| [illegible] | 576.2 H | PPM | 12.30 | 586.7 | 585.7 | 573.2 | 563.0 | [illegible] |
| [illegible] | .0092 | PPM | .0012 | .0084 | .0100 | .0099 | .0081 | .0100 |
| [illegible] | .2557 | PPM | [illegible] | .2257 | .3451 | .2520 | .2749 | .2533 |
| [illegible] | .0147 | PPM | .0033 | .0187 | .0161 | .0143 | .0153 | .0071 |
| [illegible] | -.0334 | PPM | .0378 | -.0571 | -.0735 | .0411 | -.0123 | -.0461 |
| [illegible] | .0047 | PPM | .0023 | .0074 | .0053 | .0042 | .0030 | .0013 |
| [illegible] | .0147 | PPM | .0033 | .0141 | .0155 | .0112 | .0154 | .0127 |
| [illegible] | .0480 | PPM | .0871 | -.0292 | .0447 | .0443 | -.0414 | .1773 |
| [illegible] | .1122 | PPM | .0342 | .1207 | .1706 | .1181 | .0851 | .1017 |
| [illegible] | .1040 | PPM | .0831 | .0068 | .0185 | .0576 | [illegible] | .1142 |

*** Sample ID: 201-3

[illegible] 11:40:37 27 Aug [illegible]

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | .0157 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | .5007 | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | 1.017 | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | .9725 | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | 1.125 | 1.130 | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | .2234 | [illegible] | [illegible] | .5455 | [illegible] |

Line Comp. Units ID/MDL 1 2 3 4 5

06491

| Elem | Time | Weight | Conc. | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Al1 | | 105.9 | 1.324 | 1.250 | PPM | .0409 |
| Al2 | | 104.7 | 1.247 | 1.250 | PPM | .0352 |
| Ba4 | | 101.5 | .0115 | 10.00 | PPM | .0414 |
| Be2 | | 102.3 | .2555 | .2500 | PPM | .0082 |
| Cd2 | | 106.9 | 25.72 | 25.00 | PPM | .7068 |
| Co1 | | 105.7 | 2.742 | 2.500 | PPM | .0731 |
| Cr1 | | 107.7 | 2.592 | 2.500 | PPM | .0613 |
| Cu4 | | 106.9 | 1.269 | 1.000 | PPM | .0273 |
| Fe1 | | 107.1 | 1.281 | 1.250 | PPM | .0402 |
| Fe2 | | 105.8 | 5.390 | 5.000 | PPM | .1707 |
| K 1 | | 103.3 | 25.93 | 25.00 | PPM | .6360 |
| Mg4 | | 106.4 | 25.65 | 25.00 | PPM | .4166 |
| Mn4 | | 106.1 | 2.652 | 2.500 | PPM | .0766 |
| Na1 | | 101.9 | 25.48 | 25.00 | PPM | .8755 |
| Ni2 | | 106.1 | 2.726 | 2.500 | PPM | .0765 |
| Pb1 | | 102.1 | 5.155 | 5.000 | PPM | .1376 |
| P 1 | | 105.9 | 2.645 | 2.500 | PPM | .0611 |
| Zn2 | | 108.3 | 2.707 | 2.500 | PPM | .0778 |
| As2 | | 102.7 | 5.033 | 5.000 | PPM | .1669 |
| Bi1 | | 109.5 | 5.476 | 5.000 | PPM | .1844 |
| Sb1 | | 108.8 | 5.188 | 5.000 | PPM | .1507 |

| Elem | Time | Weight | Conc. | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Al1 | | 15.41 | .0017 | .0017 | PPM | .0013 |
| Al2 | | -1.5495 | -.0002 | .0374 | PPM | .0038 |
| Ba4 | | 51.95 | .0007 | .0015 | PPM | .0011 |
| Be2 | | -53.85 | -.0003 | .0006 | PPM | .0001 |
| Cd2 | | 17.14 | .0024 | .0148 | PPM | .0041 |
| Co1 | | 24.06 | .0011 | .0009 | PPM | .0009 |
| Cr1 | | -71.91 | -.0069 | .0040 | PPM | .0022 |
| Cu4 | | -9.394 | -.0004 | .0041 | PPM | .0009 |
| Fe1 | | 72.38 | .0017 | .0013 | PPM | .0011 |
| Fe2 | | 14.81 | .0023 | .0182 | PPM | .0007 |
| K 1 | | -1.4477 | -.0012 | .0524 | PPM | .1982 |
| Mg4 | | -45.79 | -.0175 | .0176 | PPM | .0007 |
| Mn4 | | 2.161 | .0001 | .0034 | PPM | .0004 |
| Na2 | | -2.571 | -.0002 | .0311 | PPM | .0132 |
| Ni2 | | 49.85 | .0045 | .0040 | PPM | .0055 |
| Pb1 | | 4.417 | .0016 | .0406 | PPM | .0293 |
| P 1 | | 337.5 | .0133 | .0078 | PPM | .0051 |
| Zn2 | | -14.72 | -.0014 | .0095 | PPM | .0019 |
| As2 | | [illegible] | .0044 | .0388 | PPM | .0182 |
| Bi1 | | -321.3 | -.0635 | .0196 | PPM | .0313 |
| Sb1 | | 56.04 | .0170 | .0304 | PPM | .0090 |

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100

[illegible] 27 Aug 1998 [illegible] Intensity [illegible] = 10.000

| Line | [illegible] | [illegible] | [illegible] | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| [illegible] | | | | | | | | |

*** Blk [illegible] 27 Aug 1998

[illegible] = [illegible] Intensity [illegible]

*** [illegible] [illegible] 27 Aug 1998 [illegible]

| Line | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|---|
| Ag1 | -16.13 | -.0006 | .0047 | PPM | .0009 |
| B10 | 22.61 | .0006 | .0374 | PPM | .0150 |
| Ba4 | -24.77 | -.0014 | .0015 | PPM | .0003 |
| Ba2 | -9.96 | -.0003 | .0004 | PPM | .0003 |
| Ca2 | 13.07 | .0033 | .0145 | PPM | .0030 |
| Cd1 | -2.46 | -.0001 | .0019 | PPM | .0010 |
| Co1 | -21.72 | -.0009 | .0040 | PPM | .0022 |
| Cr4 | 3.095 | .0001 | .0041 | PPM | .0020 |
| Cu1 | 2.760 | .0001 | .0013 | PPM | .0008 |
| Fe2 | 2.64 | .0017 | .0152 | PPM | .0016 |
| K 1 | 91.30 | .0075 | .0204 | PPM | .1610 |
| Mg4 | 20.72 | .0026 | .0178 | PPM | .0074 |
| Mn4 | -15.31 | -.0004 | .0024 | PPM | .0004 |
| Na2 | 1.147 | .0037 | .0311 | PPM | .0099 |
| Ni2 | -19.75 | -.0016 | .0042 | PPM | .0052 |
| Pb1 | 50.64 | .0039 | .0405 | PPM | .0111 |
| V 1 | 57.46 | .0076 | .0078 | PPM | .0017 |
| Zn2 | -2.22 | -.0000 | .0045 | PPM | .0011 |
| W1 | -27.03 | -.0092 | .0032 | PPM | .0203 |
| Sr1 | 24.7[illegible] | .0147 | .0133 | PPM | .0075 |
| Ti1 | 26.23 | .0095 | .0204 | PPM | .0134 |

*** Blk [illegible] 27 Aug 1998

[illegible] = [illegible] Intensity = [illegible]

*** Blk [illegible] 27 Aug 1998

[illegible] = [illegible] Intensity = [illegible]

| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| Al2 | 1.967 | PPM | .1[illegible] | .868[illegible] | 1.065 | 1.664 | 1.343 | .1[illegible] |
| Ba4 | .1749 | PPM | .0041 | .1526 | .1911 | .1840 | .1875 | .174[illegible] |
| Be2 | .0026 | PPM | .0016 | .0035 | .0077 | .0038 | .0062 | .0027 |
| Ca2 | 30.70 | PPM | 1.103 | 31.05 | 31.97 | 31.36 | 29.11 | 29.90 |
| Co1 | 3.167 | PPM | .1259 | 3.610 | 3.719 | 3.639 | 3.366 | 3.426 |
| Cr1 | .0695 | PPM | .0176 | .0449 | .0663 | .1001 | .0549 | .0830 |
| Cr4 | .0032 | PPM | .0082 | .0051 | .0096 | .0086 | -.0086 | -.0070 |
| Cu1 | .0186 | PPM | .0044 | .0162 | .0254 | .0191 | .0133 | .0197 |
| Fe2 | .9866 | PPM | .0274 | .9850 | 1.047 | 1.031 | .9761 | .9422 |
| K 1 | 3.047 | PPM | 1.613 | 3.673 | -.4181 | 3.132 | 3.933 | .7151 |
| Mg4 | 5.920 | PPM | .2546 | 6.251 | 6.004 | 5.877 | 5.666 | 5.669 |
| Mn4 | .6148 | PPM | .0243 | .6305 | .6488 | .6305 | .5810 | .6022 |
| Na2 | 1361. | PPM | 71.46 | 1457. | 1473. | 1472. | 1394. | 1347. |
| Ni2 | .1418 | PPM | .0616 | .3049 | .1903 | .0335 | .1173 | .0292 |
| Pb1 | -.1436 | PPM | .6825 | -.7796 | -.3785 | .2543 | .7464 | -.1463 |
| V 2 | -.0033 | PPM | .0035 | .0819 | .0875 | .0244 | -.0356 | -.0510 |
| Zn3 | 3.182 | PPM | 1.174 | 32.46 | 33.96 | 32.44 | 34.37 | 31.1[illegible] |
| As2 | .1049 | PPM | .1140 | .1144 | -.3463 | .3545 | .1496 | .1433 |
| Pb1 | .2373 | PPM | .0328 | .3763 | -.1546 | .2374 | .2469 | .2451 |
| Sn1 | .2318 | PPM | .1631 | .6447 | .1968 | .3018 | .5996 | .2954 |

| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
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| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| Al2 | .0010 | PPM | .0031 | .0022 | .0015 | -.0042 | .0040 | .0014 |
| Ba4 | .0142 | PPM | .0134 | .0103 | .0331 | .0243 | .0370 | .0331 |
| Be4 | -.0001 | PPM | .0003 | -.0003 | .0004 | -.0003 | -.0007 | -.0001 |
| Be2 | .0002 | PPM | .0001 | .0001 | .0003 | .0002 | .0001 | .0002 |
| Ca2 | .0442 | PPM | .0033 | .0433 | .0633 | .0906 | .0526 | .0636 |
| Co1 | -.0005 | PPM | .0004 | -.0004 | -.0011 | -.0003 | -.0003 | -.0007 |
| Cr1 | -.0008 | PPM | .0024 | -.0006 | .0036 | .0004 | -.0025 | -.0026 |
| Cr4 | -.0009 | PPM | .0009 | .0010 | -.0016 | -.0017 | -.0013 | .0001 |
| Cu1 | .0005 | PPM | .0004 | .0003 | .0000 | .0005 | .0008 | .0010 |
| Fe2 | .0185 | PPM | .0014 | .0190 | .0140 | .0115 | .0113 | .0098 |
| K 1 | .0621 | PPM | .0475 | .0496 | .0352 | .0404 | .1308 | .1314 |
| Mg4 | -.0038 | PPM | .0193 | .0113 | .0042 | -.0082 | .0091 | -.0135 |
| Mn4 | .0007 | PPM | .0001 | .0004 | .0003 | .0001 | .0003 | .0007 |
| Na2 | .1641 | PPM | .0372 | .1129 | .3703 | .0546 | .0130 | .0257 |
| Ni2 | -.0036 | PPM | .0097 | .0056 | .0021 | .0003 | -.0171 | -.0134 |
| Pb1 | -.0003 | PPM | .0332 | -.0049 | .0339 | -.0108 | .0081 | -.0571 |
| V 2 | .0024 | PPM | .0020 | .0064 | .0051 | .0024 | .0041 | .0054 |
| Zn3 | .0042 | PPM | .0025 | .0019 | .0009 | .0022 | .0019 | .0050 |
| As2 | -.0051 | PPM | .0139 | .0053 | -.0220 | -.0115 | .0110 | -.0090 |
| Pb1 | -.0194 | PPM | .0194 | -.0073 | .0042 | -.0278 | -.0037 | .0242 |
| Sn1 | -.0048 | PPM | .0184 | .0189 | -.0054 | -.0017 | .0019 | .0012 |

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[illegible] 27 Aug 19[illegible]    [illegible]

| Elem | Conc. | Units | SD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Sample ID: [illegible]    [illegible]

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Ag | [illegible] | PPM | .0042 | [illegible] | .1821 | .0111 | .0735 | .184[illegible] |
| Al | 25950 | H PPM | 323.3 | 24440 | 25780 | 24250 | 25240 | [illegible] |
| Ba | 151.3 | PPM | 1.467 | 140.6 | 150.2 | 151.4 | 151.2 | 152.2 |
| Be | 1.058 | PPM | .0257 | 1.07[illegible] | 1.052 | 1.0[illegible] | 1.055 | [illegible] |
| Ca | 2607. | H PPM | 13.01 | 2548. | 2595. | 2601. | 2611. | 2617. |
| Cd | .2[illegible] | PPM | .2655 | .7254 | .1634 | .1573 | .2116 | .2172 |
| Co | 6.205 | PPM | .1048 | 6.171 | 6.385 | 6.202 | 6.137 | 6.1[illegible] |
| Cr | 33.57 | H PPM | .2586 | 33.21 | 33.37 | 33.53 | 33.61 | 33.88 |
| Cu | 17.95 | PPM | .2140 | 17.66 | 17.79 | 18.11 | 18.02 | 18.18 |
| Fe | 11940 | H PPM | 91.77 | 11810 | 11890 | 12000 | 11990 | 12020 |
| K | 1482. | H PPM | 26.64 | 1455. | 1468. | 1509. | 1482. | 1492. |
| Mg | 2472. | H PPM | 14.34 | 2442. | 2466. | 2484. | 2482. | 2481. |
| Mn | 117.3 | H PPM | .6594 | 115.9 | 116.6 | 117.5 | 117.5 | 117.9 |
| Na | 119.7 | PPM | 3.153 | 116.6 | 118.7 | 123.2 | 119.4 | 120.6 |
| Ni | 14.63 | PPM | .3827 | 14.63 | 14.68 | 14.43 | 14.28 | 15.24 |
| Sb | -4.160 | PPM | 1.047 | -3.307 | -5.610 | -3.336 | -4.64[illegible] | -4.5[illegible] |
| V | 56.54 | PPM | .5597 | 55.66 | 56.01 | 56.65 | 55.92 | 57.03 |
| Zn | 55.13 | PPM | .5447 | 54.54 | 54.66 | 55.10 | 55.72 | 56.01 |
| As | 5.571 | PPM | 1.427 | 6.544 | 7.348 | 5.307 | 3.772 | 3.887 |
| Pb | 15.92 | PPM | 2.025 | 13.53 | 15.15 | 17.90 | 14.85 | 18.24 |
| Se | -.5514 | PPM | 2.432 | .1282 | -3.443 | 1.953 | -3.571 | .5222 |

*** Sample ID: [illegible]    Seq: 608    [illegible]

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Ag | .2[illegible] | PPM | [illegible] | .1265 | .1546 | .2063 | .2782 | .3396 |
| Al | 12001 | H PPM | 178.7 | 11870 | 12060 | 12310 | 12450 | 11[illegible] |
| Ba | 80.84 | PPM | 1.129 | 79.23 | 80.40 | 80.71 | 81.69 | 82.12 |
| Be | .5[illegible] | PPM | .0117 | .5631 | .5791 | .5892 | .5855 | .5778 |
| Ca | 32050 | H PPM | 284.1 | 31270 | 32020 | 31920 | 32370 | 32530 |
| Cd | .2[illegible] | PPM | .0871 | .1513 | .2662 | .2181 | .2870 | .3[illegible] |
| Co | 6.782 | PPM | .1045 | 6.750 | 6.688 | 6.814 | 6.658 | 6.[illegible] |
| Cr | 36.78 | H PPM | .4517 | 36.30 | 36.76 | 36.82 | 37.00 | 37.32 |
| Cu | 50.37 | H PPM | .6922 | 49.63 | 50.55 | 50.65 | 51.02 | 51.49 |
| Fe | 9[illegible] | H PPM | [illegible] | 9055. | 9165. | 9180. | 9272. | [illegible] |
| K | 755.3 | PPM | 10.98 | 742.2 | 753.3 | 759.8 | 759.8 | 773.1 |
| Mg | 10690 | H PPM | [illegible] | 10450 | 10650 | 10650 | 10750 | 10860 |
| Mn | 150.3 | H PPM | 3.110 | 157.4 | 159.4 | 159.6 | 161.3 | 163.2 |
| Na | 115.1 | PPM | 1.487 | 113.3 | 115.7 | 115.1 | 114.6 | 115.6 |
| Ni | 52.27 | H PPM | .7468 | 51.30 | 52.41 | 51.92 | 52.27 | 53.33 |
| Sb | 1.135 | PPM | 1.520 | -1.341 | 3.420 | 3.366 | 1.191 | .2664 |
| V | 26.58 | PPM | .3205 | 26.06 | 26.62 | 26.44 | 26.82 | 26.93 |
| Zn | 50.84 | PPM | .[illegible] | 50.05 | 51.17 | 50.43 | 51.05 | 51.54 |
| As | 6.153 | PPM | 1.402 | 4.255 | 7.574 | 4.431 | 6.312 | 6.232 |
| Pb | 36.64 | PPM | 2.[illegible] | 36.30 | 35.76 | 34.50 | 41.17 | 35.53 |
| Se | 2.[illegible] | PPM | 1.[illegible] | 4.332 | 1.153 | 1.119 | 1.147 | 3.[illegible] |

X 1.11

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| [illegible] | [illegible] | [illegible] | [illegible] | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** [illegible] | | | | [illegible] | [illegible] | [illegible] | | |
| Fe1 | 11.82 | H PPM | .224 | 11.38 | 11.40 | 11.50 | 11.51 | 11.88 |
| Ni1 | 12300 | H PPM | 152.1 | 12040 | 12950 | 12430 | 12850 | 12410 |
| Se4 | 613.7 | PPM | 6.902 | 601.1 | 612.2 | 614.9 | 615.3 | 615.1 |
| Ti1 | 56.04 | PPM | .6936 | 54.96 | 55.89 | 56.63 | 56.34 | 56.85 |
| Ca2 | 31920 | H PPM | 401.6 | 31470 | 31942 | 32390 | 32940 | 32330 |
| Cr1 | 51.61 | H PPM | .6076 | 50.81 | 51.66 | 52.10 | 52.08 | 51.47 |
| Co1 | 58.40 | H PPM | .7881 | 57.44 | 58.37 | 58.38 | 58.99 | 58.82 |
| Cu4 | 84.18 | H PPM | .1133 | 86.36 | 87.84 | 89.03 | 89.56 | 81.0. |
| Cl1 | 104.1 | H PPM | 1.211 | 102.9 | 104.1 | 105.3 | 104.2 | 105.0 |
| Fe2 | 8954. | H PPM | 108.4 | 8815. | 8978. | 9083. | 9012. | 8989. |
| K 1 | 3664. | H PPM | 51.71 | 3570. | 3675. | 3700. | 3679. | 3683. |
| Mg4 | 10920 | H PPM | 132.9 | 10700 | 10910 | 11030 | 10940 | 1.0.1 |
| Na4 | 201.5 | H PPM | 1.255 | 200.9 | 202.9 | 203.4 | 207.5 | 203.2 |
| Na2 | 3264. | H PPM | 3.112 | 3197. | 3264. | 3254. | 3.73. | 3213. |
| Al2 | 103.0 | H PPM | 1.762 | 100.8 | 103.0 | 103.0 | 103.4 | 104.7 |
| Si1 | 60.50 | PPM | 3.692 | 58.56 | 60.50 | 59.88 | 60.44 | 60.71 |
| V 1 | 78.30 | PPM | 1.312 | 75.48 | 78.06 | 78.61 | 78.89 | 78.28 |
| Zn2 | 98.70 | PPM | 1.520 | 96.5. | 99.19 | 100.5 | 99.69 | 99.81 |
| Ar1 | 61.82 | PPM | 4.015 | 52.79 | 61.38 | 66.42 | 62.94 | 66.13 |
| Ti1 | 86.70 | PPM | 1.210 | 84.7. | 85.30 | 84.36 | 87.5. | 87.96 |
| Ni1 | 55.05 | PPM | 1.577 | 55.41 | 55.85 | 60.23 | 56.21 | 60.11 |



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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 |
| Ag | .0852 | PPM | .1017 | .0995 | .0500 | .1450 | .0822 | .0791 |
| Al | 4467. M | PPM | 134.3 | 4515. | 4625. | 4403. | 4410. | 4376. |
| As | 41.88 | PPM | 1.888 | 40.96 | 44.21 | 41.93 | 41.97 | 41.74 |
| Ba | .8180 | PPM | .0177 | .8397 | .8114 | .8045 | .8721 | .8487 |
| Be | 1917. M | PPM | 43.11 | 1941. | 1976. | 1894. | 1895. | 1883. |
| Bi | .0707 | PPM | .0197 | .0082 | .0274 | -.0025 | .0431 | .0731 |
| Ca | 2.034 | PPM | .1431 | 2.540 | 2.785 | 2.381 | 2.409 | 2.625 |
| Cd | 7.422 | PPM | .1753 | 7.586 | 7.551 | 7.321 | 7.340 | 7.347 |
| Co | 6.225 | PPM | .2003 | 6.313 | 6.526 | 6.142 | 6.136 | 6.088 |
| Cr | 3394. M | PPM | 73.64 | 3445. | 3492. | 3337. | 3343. | 3311. |
| Cu | 326.0 | PPM | 16.38 | 319.7 | 313.2 | 319.3 | 288.6 | 374.0 |
| Fe | 654.6 M | PPM | 16.32 | 658.3 | 720.5 | 654.4 | 651.3 | 671.3 |
| Mg | 78.58 | PPM | 1.718 | 79.43 | 81.09 | 77.50 | 77.61 | 77.06 |
| Mn | 23.46 | PPM | .5627 | 23.3. | 24.44 | 21.91 | 23.05 | 2[illegible] |
| Na | 5.179 | PPM | .2723 | 5.455 | 5.335 | 5.381 | 4.812 | 5.501 |
| Ni | -.0974 | PPM | 1.693 | 1.609 | 1.524 | -.9747 | -1.339 | -1.127 |
| P | 13.90 | PPM | .5434 | 14.21 | 14.72 | 13.61 | 13.44 | 13.54 |
| Pb | 15.67 | PPM | .2419 | 15.93 | 15.91 | 15.79 | 15.63 | 15.22 |
| K | 3.059 | PPM | 1.031 | 2.127 | 3.555 | 3.603 | 4.227 | 1.675 |
| Sb | 2.614 | PPM | 3.34. | .4011 | 2.213 | 5.379 | 3.616 | 1.555 |
| Se | -.7545 | PPM | 1.367 | .7254 | 1.255 | -1.355 | -1.722 | -1.557 |

Best Available Copy

13:27:01 27 Aug 1998        [illegible]        [illegible]

| [illegible] | [illegible] | [illegible] | [illegible] | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** [illegible]        [illegible] 632        13:27:[illegible] 27 Aug 1998 [illegible]
[illegible] weight 1.0000 [illegible]

| | | | | | | | | |
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| [illegible] | 5.[illegible] | [illegible] | [illegible] | 10.32 | 10.20 | [illegible] | [illegible] | [illegible] |
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| [illegible] | [illegible].19 | [illegible] | 1.[illegible] | 47.[illegible] | 47.[illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | 2[illegible]2. | [illegible] | [illegible] | 2118. | 21[illegible]. | [illegible] | 20[illegible]. | [illegible] |
| [illegible] | [illegible].7[illegible] | [illegible] | [illegible] | 47.74 | 45.[illegible] | [illegible].35 | [illegible] | [illegible].92 |
| [illegible] | [illegible].70 | [illegible] | [illegible] | 53.1[illegible] | 52.7[illegible] | 5[illegible].[illegible] | 53.7[illegible] | [illegible] |
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| [illegible] | 5[illegible].47 | [illegible] | [illegible] | 52.97 | 5[illegible].[illegible] | 55.47 | 5[illegible].77 | [illegible] |
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| [illegible] | [illegible] | [illegible] | 1[illegible].5 | 3313. | 3355. | [illegible] | [illegible] | [illegible] |
| [illegible] | 1[illegible]. | [illegible] | [illegible].73 | 12[illegible]. | 12[illegible]. | 1[illegible]. | 11[illegible]. | 1170. |
| [illegible] | 11[illegible].[illegible] | [illegible] | [illegible] | 121.3 | 123.[illegible] | 12[illegible].7 | 115.7 | [illegible] |
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| [illegible] | [illegible].[illegible] | [illegible] | [illegible] | 47.36 | 50.98 | 48.56 | 4[illegible] | [illegible] |

*** [illegible] ID: [illegible]        [illegible] 632        13:27:0[illegible] 27 Aug 1998 [illegible]

| | Spike | | Spike: %Rcv. | Unspiked: Avg(U) | SD(U) | Avg(S) | [illegible] |
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| [illegible] | .[illegible] | [illegible] | [illegible] | .[illegible] | .0000 | .[illegible] | .0000 |
| [illegible] | 10.00 | [illegible] | 2[illegible].3 | [illegible] | .0000 | 1[illegible] | .0000 |
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| [illegible] | [illegible] | [illegible] | [illegible] | .[illegible] | .0000 | [illegible] | .0000 |
| [illegible] | 1.000 | [illegible] | [illegible] | .[illegible] | .0000 | 1.0[illegible] | .0000 |
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| [illegible] | 1.000 | [illegible] | [illegible] | .[illegible] | .0000 | 1.2[illegible] | .0000 |
| [illegible] | 1.000 | [illegible] | [illegible].73 | .[illegible] | .0000 | 1.[illegible] | .0000 |
| [illegible] | 1.000 | [illegible] | [illegible] | .0[illegible] | .0000 | 1.0[illegible] | .0000 |
| [illegible] | 1.000 | [illegible] | [illegible] | .0[illegible] | .0000 | 1.027 | .0000 |
| [illegible] | 1.000 | [illegible] | [illegible] | -.[illegible] | .0000 | .9[illegible]7 | .0000 |

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| Line | Conc. | Intensity | Std.Dev. | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Begin | | | | | | | | |
| *** Cuvette Standard | | | | | | | | |
| Line | Element | Conc. | Std.Dev. | Unit | Intensity | | | |
| Ag1 | | 100.7 | 1.134 | 1.250 | PPM | .0239 | | |
| Al1 | | 100.9 | 10.35 | 10.00 | PPM | .0766 | | |
| Ba4 | | 101.8 | 10.15 | 10.00 | PPM | .2453 | | |
| Be1 | | 99.75 | .2414 | .2500 | PPM | .0057 | | |
| Ca1 | | 100.1 | 25.45 | 25.00 | PPM | .4996 | | |
| Cd1 | | 104.9 | 2.972 | 2.500 | PPM | .0488 | | |
| Co1 | | 107.3 | 2.575 | 2.500 | PPM | .0515 | | |
| Cr4 | | 104.5 | 1.045 | 1.000 | PPM | .0207 | | |
| Cu1 | | 102.4 | 1.393 | 1.250 | PPM | .0310 | | |
| Fe1 | | 102.3 | 5.119 | 5.000 | PPM | .1021 | | |
| K 1 | | 100.1 | 25.54 | 25.00 | PPM | .7645 | | |
| Mg4 | | 104.3 | 25.07 | 25.00 | PPM | .5943 | | |
| Mn4 | | 102.9 | 2.558 | 2.500 | PPM | .0554 | | |
| Na1 | | 103.1 | 25.78 | 25.00 | PPM | .6616 | | |
| Ni1 | | 100.8 | 2.572 | 2.500 | PPM | .0681 | | |
| Pb1 | | 102.0 | 5.145 | 5.000 | PPM | .0500 | | |
| V 1 | | 100.8 | 2.568 | 2.500 | PPM | .0572 | | |
| Zn1 | | 100.6 | 2.596 | 2.500 | PPM | .0450 | | |
| As1 | | 103.3 | 5.165 | 5.000 | PPM | .1577 | | |
| Se1 | | 104.2 | 5.241 | 5.000 | PPM | .0991 | | |
| Tl1 | | 98.98 | 4.948 | 5.000 | PPM | .1195 | | |

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|---|---|---|---|---|---|
| Ag1 | 70.4? | -.0011 | .0047 | PPM | [illegible] |
| Al2 | -8.27? | .0031 | .0074 | PPM | .0106 |
| Ba4 | -14.40 | -.0024 | .0015 | PPM | .0003 |
| Be1 | 29.67 | .0011 | .0006 | PPM | .0001 |
| Ca3 | 4.410 | .0027 | .0138 | PPM | .0027 |
| Cd1 | -15.70 | -.0009 | .0039 | PPM | .0014 |
| Co1 | -24.20 | -.0027 | .0040 | PPM | .0033 |
| Cr4 | 5.351 | .0011 | .0041 | PPM | .0009 |
| Cu1 | 4.754 | .0031 | .0023 | PPM | .0011 |
| Fe1 | 8.044 | .0015 | .0143 | PPM | .0003 |
| K 1 | 13.75 | .0015 | .7604 | PPM | .1043 |
| Mg4 | -44.01 | -.0077 | .0175 | PPM | .0061 |
| Mn4 | -12.61 | -.0006 | .0034 | PPM | .0004 |
| Na1 | .5106 | .0791 | .0311 | PPM | .0102 |
| Ni1 | -1[illegible].81 | -.0018 | .0056 | PPM | .0055 |
| Pb1 | 67.41 | .0075 | .0429 | PPM | .0255 |
| V 1 | -88.1[illegible] | -.0017 | .0073 | PPM | .0019 |
| Zn3 | -18.01 | -.0014 | .0043 | PPM | .0020 |
| As1 | -16.57 | -.0057 | .0030 | PPM | .0034 |
| Sb1 | -54.16 | -.0116 | .0146 | PPM | .0137 |
| Se1 | -26.60 | -.0075 | .0034 | PPM | .0569 |

Cup Not loaded

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loaded



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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Fe | .693 | PPM | .0015 | .8478 | .8442 | .8417 | .8341 | .8183 | |
| Al2 | .1201 | PPM | 3435. | 13340 | 13270 | 13160 | 11710 | 13870 | |
| Ba4 | 84.9 | PPM | 3.127 | 82.6 | 83.1 | 84.51 | 83.87 | 87.65 | |
| Sr2 | .8377 | PPM | .0607 | .8175 | .8423 | .8457 | .7148 | .8434 | |
| Li3 | 35234 | PPM | 789.4 | 35170 | 35200 | 35160 | 37872 | 35990 | |
| Ni1 | .2673 | PPM | .1191 | .1036 | .0174 | -.0546 | .0726 | .1421 | |
| Zn1 | 7.173 | PPM | .8621 | 7.073 | 8.471 | 6.170 | 7.056 | 6.170 | |
| Cr4 | 42.91 | PPM | 1.173 | 41.31 | 41.11 | 41.06 | 35.87 | 41.87 | |
| Cu1 | 50.11 | PPM | 1.774 | 50.77 | 50.41 | 50.35 | 47.31 | 51.07 | |
| Pb1 | 10140 | PPM | 5.513 | 10120 | 10340 | 10130 | 9837. | 10330 | |
| K 1 | 742.3 | PPM | 35.87 | 736.9 | 751.4 | 802.6 | 708.4 | 717.7 | |
| Mg4 | 10720 | PPM | 379.3 | 10760 | 10740 | 10850 | 10340 | 11050 | |
| Na4 | 170.1 | PPM | 4.254 | 170.3 | 172.5 | 176.9 | 160.8 | 140.2 | |
| Mn2 | 110.1 | PPM | 6.798 | 112.9 | 110.6 | 114.3 | 104.5 | 103.1 | |
| Ti2 | 51.57 | PPM | 3.256 | 61.18 | 57.86 | 56.74 | 57.06 | 52.27 | |
| Sn1 | 10.21 | PPM | 2.932 | 3.098 | 10.67 | 10.30 | 10.76 | 11.02 | |
| V 2 | 22.1 | PPM | .5.77 | 25.86 | 25.36 | 24.59 | 23.62 | 25.74 | |
| Zn2 | 59.11 | PPM | 1.578 | 58.99 | 62.02 | 57.74 | 57.37 | 59.95 | |
| Ag2 | 2.121 | PPM | 3.792 | -3.741 | -1.415 | 13.52 | 3.430 | 11.41 | |
| Pb1 | 43.88 | PPM | 3.831 | 46.44 | 37.79 | 43.11 | 47.22 | 44.31 | |
| Sb1 | 4.812 | PPM | 3.020 | 3.263 | 9.039 | -4.947 | 5.102 | 10.21 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Pb1 | .1128 | PPM | .5415 | -.1993 | -.5351 | 1.043 | .1590 | .1352 | |
| Al3 | 25930 | PPM | 343.7 | 25190 | 25370 | 25490 | 26110 | 24010 | |
| Ba4 | 140.3 | PPM | 1.022 | 138.3 | 141.1 | 142.6 | 144.5 | 142.1 | |
| Sr2 | 1.027 | PPM | .0274 | .9527 | .9599 | 1.035 | .9880 | 1.03 | |
| Ti2 | 3043. | PPM | 33.97 | 3994. | 3047. | 3059. | 3073. | 3046. | |
| Zn1 | -.1741 | PPM | .1761 | -.3244 | -.1869 | .1054 | -.3711 | -.1143 | |
| Cr1 | 7.217 | PPM | .3553 | 6.940 | 7.142 | 6.474 | 7.111 | 7.432 | |
| Cu4 | 31.41 | PPM | .5145 | 31.14 | 30.57 | 32.55 | 32.09 | 31.16 | |
| Ni1 | 15.13 | PPM | .0307 | 15.03 | 15.02 | 15.04 | 15.42 | 15.13 | |
| Pb1 | 12047 | PPM | .2741 | 11412 | 12420 | 12170 | 12100 | 12412 | |
| K 1 | 1194. | PPM | 32.48 | 1241. | 1234. | 1413. | 1268. | 1416. | |
| Mg4 | 3443. | PPM | 3443 | 3072. | 3435. | 3437. | 3424. | 3435. | |
| Mn2 | 119.5 | PPM | 1.133 | 117.5 | 120.2 | 120.3 | 121.3 | 120.2 | |
| Na2 | 175.1 | PPM | 6.267 | 175.3 | 180.6 | 182.7 | 166.1 | 172.1 | |
| Ti2 | 18.60 | PPM | 1.693 | 16.44 | 17.19 | 18.83 | 17.79 | 14.82 | |
| Sb1 | 5.134 | PPM | 12.34 | -.5732 | 11.54 | 3.947 | -1.860 | 14.13 | |
| V 2 | 49.13 | PPM | .7354 | 47.42 | 45.73 | 45.20 | 49.08 | 48.45 | |
| Zn2 | 66.71 | PPM | .7759 | 66.44 | 65.97 | 66.75 | 67.24 | 67.51 | |
| Ag2 | 7.139 | PPM | -.060 | 1.599 | 14.90 | 6.738 | 5.043 | 8.121 | |
| Pb1 | 34.02 | PPM | 5.607 | 24.16 | 35.82 | 16.03 | 33.87 | 36.54 | |
| Sb1 | -6.405 | PPM | 8.939 | -7.195 | -16.31 | -7.511 | 8.011 | -9.222 | |

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|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | .0074 | .0022 | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | .0047 | .0048 | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | .0015 | [illegible] | .0012 | [illegible] | [illegible] |
| [illegible] | 482.7 | PPM | 2.043 | 491.2 | 480.2 | 484.2 | 480.2 | 482.9 |
| [illegible] | .0017 | PPM | .0014 | .0013 | -.0001 | .0006 | .0026 | [illegible] |
| [illegible] | .0027 | PPM | .0025 | .0017 | .0060 | .0074 | [illegible] | [illegible] |
| [illegible] | .0041 | PPM | [illegible] | .0055 | .0039 | .0048 | .0050 | [illegible] |
| [illegible] | [illegible] | PPM | .0013 | .0159 | .0175 | .0153 | .0142 | .0149 |
| [illegible] | [illegible] | PPM | [illegible] | 186.3 | 181.1 | 183.6 | 180.5 | [illegible] |
| [illegible] | -.1130 | PPM | .0561 | -.1701 | -.1151 | -.0837 | [illegible] | [illegible] |
| [illegible] | 556.6 H | PPM | 7.177 | 565.0 | 552.6 | 559.3 | 548.8 | 555.3 |
| [illegible] | .0062 | PPM | .0025 | .0040 | .0061 | .0043 | .0078 | .0079 |
| [illegible] | [illegible] | PPM | .0256 | .0144 | .0261 | .0582 | .0759 | [illegible] |
| [illegible] | .0154 | PPM | [illegible] | .0152 | -.0118 | .0231 | .0325 | .0201 |
| [illegible] | [illegible] | PPM | .0272 | -.0130 | .0567 | .0573 | -.0186 | .0261 |
| [illegible] | [illegible] | PPM | .0014 | -.0055 | -.0078 | -.0060 | -.0045 | -.0076 |
| [illegible] | [illegible] | PPM | .0015 | .0159 | .0156 | .0177 | [illegible] | .0179 |
| [illegible] | [illegible] | PPM | [illegible] | -.0031 | .0039 | -.0094 | .0596 | [illegible] |
| [illegible] | [illegible] | PPM | .0244 | .1454 | .0777 | .0728 | .1309 | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | .0338 | .0042 | .0379 | .0542 | .0754 |

*** Sample ID: [illegible] Seq: [illegible] 14:54:37 27 Aug 1998 [illegible]

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | 1.179 | 1.160 | 1.140 | [illegible] |
| [illegible] | [illegible] | PPM | 2.472 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | .5276 | .5241 | .5371 | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | .9934 | .9948 | 1.009 | 1.009 | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | .5736 | .5724 | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | .5141 | .5119 | .5177 | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | 185.5 | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | 5.287 | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | 1.248 | 1.004 | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | 1.109 | 1.117 | 1.109 | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | .5096 | .5057 | [illegible] | [illegible] | .5033 |
| [illegible] | [illegible] | PPM | [illegible] | 1.001 | .9944 | .9972 | 1.002 | .9977 |
| [illegible] | .5791 | PPM | .0042 | .5490 | .5420 | .5496 | [illegible] | [illegible] |
| [illegible] | 1.171 | PPM | [illegible] | 1.197 | 1.151 | 1.146 | 1.336 | 1.128 |
| [illegible] | [illegible] | PPM | .0217 | [illegible] | .5782 | .6016 | [illegible] | .5046 |

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| Elem | [illegible] | [illegible] | [illegible] | Units | [illegible] |
|---|---|---|---|---|---|
| [illegible] | -55.31 | .1314 | .0447 | PPM | .0015 |
| [illegible] | 44.31 | [illegible] | .0374 | PPM | .0011 |
| [illegible] | 60.88 | -.0409 | .0012 | PPM | .0001 |
| [illegible] | 27.57 | .1001 | .0005 | PPM | .0001 |
| [illegible] | 11.36 | -.0082 | .0146 | PPM | .0012 |
| [illegible] | 17.14 | -.1007 | .0464 | PPM | .0042 |
| [illegible] | 10.71 | .0022 | .0040 | PPM | .0022 |
| [illegible] | 4.077 | [illegible] | [illegible] | PPM | .0007 |
| [illegible] | -82.15 | -.0005 | .0073 | PPM | .0009 |
| [illegible] | 1.343 | .0007 | [illegible] | PPM | .0013 |
| [illegible] | [illegible] | -.0012 | [illegible] | PPM | [illegible] |
| [illegible] | 10.24 | .0015 | [illegible] | PPM | .0029 |
| [illegible] | -14.00 | -.0002 | .0034 | PPM | .0005 |
| [illegible] | 1.655 | .0024 | .0311 | PPM | .0045 |
| [illegible] | 5.741 | .0015 | .0040 | PPM | .0081 |
| [illegible] | 57.80 | .0371 | .0435 | PPM | .0164 |
| [illegible] | -130.6 | -.2102 | .0075 | PPM | .0035 |
| [illegible] | -47.81 | -.1046 | .0011 | PPM | .0074 |
| [illegible] | -93.87 | -.0211 | .0022 | PPM | .0187 |
| [illegible] | [illegible] | [illegible] | .0118 | PPM | [illegible] |
| [illegible] | -64.09 | -.0195 | .0204 | PPM | .0041 |



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

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| Elem | Conc | | Units | SD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|
| Ag | 10.88 | | [illegible] | [illegible] | [illegible] | [illegible] | 10.71 | 10.65 | [illegible] |
| Al | 13515 | H | PPM | 13.74 | 13440 | 13410 | 13530 | 13560 | [illegible] |
| Ba | 552.? | | PPM | [illegible] | 552.5 | 545.9 | 554.0 | 555.8 | 553.? |
| Be | 49.91 | | PPM | [illegible] | 49.78 | 49.51 | 49.50 | 50.07 | [illegible] |
| Ca | 3075. | H | PPM | 17.31 | 3043. | 3052. | 3076. | 3088. | 3098. |
| Cd | 50.55 | H | PPM | [illegible] | 50.45 | 50.41 | 51.05 | 51.14 | 51.40 |
| Co | 53.89 | H | PPM | [illegible] | 52.?? | 52.75 | 53.72 | 54.50 | 54.37 |
| Cr | [illegible] | H | PPM | [illegible] | 55.81 | 55.61 | 55.91 | 57.14 | [illegible] |
| Cu | 73.1? | H | PPM | [illegible] | 73.09 | 72.69 | 73.20 | 73.47 | [illegible] |
| Fe | 17480 | H | PPM | 23.25 | 17370 | 17360 | 17440 | 17490 | [illegible] |
| K | 37.5? | H | PPM | [illegible] | 2733. | 3653. | [illegible] | [illegible] | [illegible] |
| Mg | 2175. | H | PPM | 11.93 | 2102. | 2103. | 2178. | 2103. | 2182. |
| Mn | 180.7 | H | PPM | [illegible] | 180.1 | 179.3 | 180.9 | [illegible] | [illegible] |
| Na | 2915. | H | PPM | 11.24 | 2928. | 2908. | [illegible] | [illegible] | [illegible] |
| Ni | 57.8? | H | PPM | [illegible] | 57.50 | 57.14 | [illegible] | 57.74 | [illegible] |
| [illegible] | 59.12 | | PPM | 1.645 | 59.04 | 57.70 | 58.13 | 58.39 | 58.35 |
| V | 57.59 | | PPM | .2578 | 57.34 | 57.17 | 57.77 | 58.03 | [illegible] |
| Zn | 14700 | H | PPM | 77.33 | 14340 | 14620 | 14700 | 14740 | [illegible] |
| As | 66.80 | | PPM | 1.984 | 64.75 | 63.95 | 68.74 | 66.69 | 65.57 |
| Pb | 213.6 | H | PPM | 2.085 | 213.6 | 218.0 | 212.8 | 213.1 | 217.2 |
| Se | 52.47 | | PPM | 1.115 | 53.80 | 52.74 | 53.7? | 49.57 | [illegible] |

[illegible] 664 16:47:14 27 Aug 1998 [illegible]

| Elem | Conc | | Units | %Rec | Avg(1) | SD(1) | Avg(2) | SD(2) |
|---|---|---|---|---|---|---|---|---|
| Ag | .2000 | | PPM | 107.? | .0070 | .0000 | .2211 | .0000 |
| Al | 10.00 | L | PPM | 73.44 | 251.2 | .0000 | 258.9 | .0000 |
| Ba | 10.00 | | PPM | 110.4 | 1.056 | .0000 | 11.40 | .0000 |
| Be | 1.000 | | PPM | 101.1 | .0003 | .0000 | 1.031 | .0000 |
| Ca | 10.00 | | PPM | 57.?? | 52.93 | .0000 | 63.66 | .0000 |
| Cd | 1.000 | | PPM | 101.? | .0037 | .0000 | 1.055 | .0000 |
| Co | 1.000 | | PPM | 111.? | .0046 | .0000 | 1.115 | .0000 |
| Cr | 1.000 | | PPM | 103.3 | .1448 | .0000 | 1.173 | .0000 |
| Cu | 1.000 | | PPM | 105.6 | .4402 | .0000 | 1.515 | .0000 |
| Fe | 1.000 | | PPM | -56.47 | 280.1 | .0000 | 280.6 | .0000 |
| K | 1.000 | L | PPM | [illegible] | 2.037 | .0000 | 78.93 | .0000 |
| Mg | 50.00 | | PPM | 102.7 | 34.74 | .0000 | 45.?? | .0000 |
| Mn | 10.00 | | PPM | 99.0 | 3.750 | .0000 | 3.740 | .0000 |
| Na | 1.000 | | PPM | 10?.? | 5.793 | .0000 | 60.55 | .0000 |
| Ni | 50.00 | | PPM | 103.1 | .0050 | .0000 | 1.151 | .0000 |
| [illegible] | 1.000 | | PPM | 103.? | .1742 | .0000 | 1.724 | .0000 |
| V | 1.000 | | PPM | 103.? | .1643 | .0000 | 1.15? | .0000 |
| Zn | 1.000 | L | PPM | -411.? | 304.4 | .0000 | 304.2 | .0000 |
| As | 1.000 | | PPM | 101.? | .2891 | .0000 | 1.366 | .0000 |
| Pb | 1.000 | | PPM | 45.42 | 2.417 | .0000 | 4.425 | .0000 |
| Se | 1.000 | | PPM | 100.4 | .0081 | .0000 | 1.097 | .0000 |



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[illegible]

| [illegible] | [illegible] | | [illegible] | SD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|

[illegible] 0.2 [illegible]

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | | [illegible] | [illegible] | .1346 | .1903 | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | - | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | 11.[illegible] | | [illegible] | [illegible] | 12.48 | 11.[illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] | .3098 | [illegible] | [illegible] | [illegible] |
| [illegible] | 551.5 | | PPM | 17.43 | 557.4 | 551.5 | 551.7 | [illegible] | [illegible] |
| [illegible] | [illegible] | | PPM | [illegible] | .7667 | .4113 | .7102 | [illegible] | [illegible] |
| [illegible] | .4[illegible] | | PPM | .1[illegible] | .7241 | .2571 | .4519 | .5207 | [illegible] |
| [illegible] | 1.[illegible] | | PPM | .0452 | 1.511 | 1.611 | 1.[illegible] | [illegible] | [illegible] |
| [illegible] | 4.[illegible] | | PPM | [illegible] | 4.503 | 4.912 | 4.7[illegible] | 4.9[illegible] | 4.7[illegible] |
| [illegible] | [illegible] | - | PPM | [illegible] | 3753. | 4032. | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | PPM | 12.[illegible] | 214.9 | 225.7 | 241.4 | 233.7 | [illegible] |
| [illegible] | [illegible] | | PPM | [illegible] | 350. | 372.[illegible] | [illegible] | [illegible] | [illegible] |
| Mn[illegible] | 30.17 | | PPM | .4287 | 29.64 | 30.51 | 30.54 | 31.12 | 32.[illegible] |
| [illegible] | 57.[illegible] | | PPM | 2.[illegible] | 55.31 | 57.[illegible] | 61.91 | 61.[illegible] | [illegible] |
| [illegible] | 1.554 | | PPM | [illegible] | 1.103 | 1.831 | 2.140 | 1.3[illegible] | [illegible] |
| [illegible] | [illegible] | | PPM | [illegible] | 7.207 | -3.055 | 4.07[illegible] | 5.960 | 5.1[illegible] |
| [illegible] | 1.654 | | PPM | .1735 | 1.479 | 1.809 | 1.747 | 1.759 | 1.4[illegible] |
| [illegible] | [illegible] | - | PPM | [illegible] | 3335. | 3472. | 3411. | 3477. | [illegible] |
| [illegible] | [illegible] | | PPM | 1.373 | .3301 | 2.675 | [illegible] | 4.0[illegible] | [illegible] |
| Pb1 | [illegible] | | PPM | 2.[illegible] | 35.54 | 40.29 | 37.31 | 43.25 | 37.[illegible] |
| [illegible] | .[illegible] | | PPM | .6745 | -.0316 | -.9615 | .0067 | -.1519 | [illegible] |

X5

[illegible]

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| [illegible] | [illegible] | - | PPM | .1734 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | - | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | PPM | [illegible] | [illegible] | 10.64 | 10.76 | 10.81 | [illegible] |
| [illegible] | [illegible] | - | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | PPM | [illegible] | 10.57 | 11.03 | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | - | PPM | [illegible] | 102.1 | 101.7 | [illegible] | 99.95 | [illegible] |
| [illegible] | [illegible] | - | PPM | [illegible] | 45.80 | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | - | PPM | [illegible] | [illegible] | 77.31 | 73.34 | [illegible] | [illegible] |
| [illegible] | [illegible] | - | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | - | PPM | [illegible] | 1318. | 1401. | 1400. | 1272. | [illegible] |
| [illegible] | [illegible] | - | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | - | PPM | 2.373 | 255.3 | 259.3 | 257.9 | [illegible] | [illegible] |
| [illegible] | [illegible] | | PPM | [illegible] | 342.5 | 350.9 | 344.1 | 342.5 | [illegible] |
| [illegible] | [illegible] | - | PPM | [illegible] | 128.5 | [illegible] | [illegible] | 104.3 | [illegible] |
| [illegible] | [illegible] | | PPM | [illegible] | [illegible] | 31.97 | 30.33 | 33.50 | [illegible] |
| [illegible] | [illegible] | - | PPM | 1.008 | 105.3 | 107.4 | 106.5 | [illegible] | [illegible] |
| [illegible] | [illegible] | - | PPM | [illegible] | 14650 | 14880 | 14460 | 14770 | [illegible] |
| [illegible] | 401.2 | | PPM | [illegible] | [illegible] | 409.4 | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | - | PPM | 5.564 | 307.3 | [illegible] | [illegible] | [illegible] | [illegible] |
| Ca1 | [illegible] | | PPM | 3.922 | 384.5 | 390.7 | 389.7 | 390.5 | [illegible] |

BEST AVAILABLE COPY

Best Available Copy

# KEMRON ENVIRONMENTAL SERVICES
## ICP RUN LOGBOOK

ANALYST: M.M.B DATE: 05/31/98 TIME: 0954 /

METHOD = 6010 SOP = MFL-MM WORK GROUP = [illegible]

CAL STD SOURCE MMR 05/98 ICP ICV/CCV SOURCE [illegible]

ICS AB SOURCE [illegible] ICS A SOURCE [illegible] POST SPK SOURCE [illegible]

| Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs | Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs |
|---|---|---|---|---|---|---|---|---|---|
| | SC | | | | 27. | PRS L | | | W1-4 SD5 [illegible] |
| | S1 1300 | | | | 28. | LCSS L | | [illegible] | [illegible] |
| | S2 120 | | | | 29. | OX4X320 | | [illegible] | [illegible] |
| | S3 X2 | | | | 30. | 20MS | | [illegible] | [illegible] |
| | S4 | | | | 31. | 20MSD | | [illegible] | [illegible] |
| | S5 | | | | 32. | 22 | | [illegible] | [illegible] |
| | S6 | | | | 33. | 22 DUP | | [illegible] | [illegible] |
| | PK VERIFIED | | | | 34. | 21 | | 0.9 [illegible] | |
| 1. | TCU | | | | 35. | 21 SPK | | [illegible] | [illegible] |
| 2. | ICB | | | | 36. | 21 DL | | 0.2 [illegible] | [illegible] |
| 3. | ICSA | | | | 37. | | | | |
| 4. | ICSAB | | 1X | CCV/CCB | 38. | | | | |
| 5. | OX47X01 | | 150 | | 39. | | | | |
| 6. | PBW C | | | W-[illegible] | 40. | | | | |
| 7. | LCSW C | | | 04 | 41. | | | | |
| 8. | OX47601 | | | | 42. | | | | |
| 9. | 01 DL | 0.2 | | | 43. | | | | |
| 10. | OX4X236 | | | 01 | 44. | | | | |
| 11. | 36MS | | | 05 | 45. | | | | |
| 12. | 36MSD | | | 06 | 46. | | | | |
| 13. | OX4602.01 | | | 07 | 47. | | | | |
| 14. | 01 DUP | | | CCV/CCB 07 | 48. | | | | |
| 15. | ICSF | | | | 49. | | | | |
| 16. | ICSAB | | | CCV/CCB | 50. | | | | |
| 17. | OX4250.1 | 0.9 | [illegible] | MD4998014 | 51. | | | | |
| 18. | 01 SPK | | [illegible] | | 52. | | | | |
| 19. | 01 MS | | [illegible] | | 53. | | | | |
| 20. | OX4301 | | [illegible] | MD4998010 | 54. | | | | |
| 21. | OX4230.1 | | [illegible] | MD4998011 | 55. | | | | |
| 22. | OX4350.2 | | [illegible] | MD4998012 | 56. | | | | |
| 23. | [illegible] | | | | 57. | | | | |
| 24. | ICSF | | | | 58. | | | | |
| 25. | ICSAB | | | CCV/CCB | 59. | | | | |
| 26. | FRS | | | | 60. | | | | |

Comments: _____

Note: No entry for Dil represents 1X Dilution

Autosampler Run Key:

CCV - Continuing Calibration Verification
CCB = Continuing Calibration Blank
% D = Automatic Instrument Rerun due to % RSD > 20%
FRS = Full Recalibration Sequence

ID = Automatic Instrument Dilution
R = Analyst Rerun
BLK = Blank Rerun

1/28

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| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | Ave. Int. = [illegible] | | S. D. = [illegible] | | |
| [illegible] | .0000 | PPM | 131717 | 12135 | 134101 | 12774 | 13327 |
| | | | Ave. Int. = 130240 | | S. D. = 1300 | | |
| [illegible] | .0000 | PPM | 1640 | 1717 | 1466 | 1812 | 1714 |
| | | | Ave. Int. = 1673 | | S. D. = 122 | | |
| [illegible] | .0000 | PPM | -35219 | -28633 | -28490 | -28784 | -17827 |
| | | | Ave. Int. = 27547 | | S. D. = 850 | | |
| [illegible] | .0000 | PPM | 3801 | 3770 | 3750 | 4854 | 3800 |
| | | | Ave. Int. = 3751 | | S. D. = 55 | | |
| [illegible] | .0000 | PPM | 1477 | 2564 | 3784 | 2441 | 2203 |
| | | | Ave. Int. = 2509 | | S. D. = 145 | | |
| [illegible] | .0000 | PPM | 933 | 1702 | 1361 | 1081 | 1000 |
| | | | Ave. Int. = 1323 | | S. D. = 347 | | |
| [illegible] | .0000 | PPM | 4731 | 5624 | 5689 | 5842 | 5621 |
| | | | Ave. Int. = 5619 | | S. D. = 797 | | |
| [illegible] | .0000 | PPM | 18832 | 33079 | 20997 | 30474 | 34657 |
| | | | Ave. Int. = 20948 | | S. D. = 1730 | | |
| [illegible] | .0000 | PPM | 3414 | 4129 | 3999 | 3178 | 3324 |
| | | | Ave. Int. = 3508 | | S. D. = 712 | | |
| [illegible] | .0000 | PPM | 3043 | 4034 | 2184 | 4973 | 1507 |
| | | | Ave. Int. = 2043 | | S. D. = 1574 | | |
| [illegible] | .0000 | PPM | 7143 | 4013 | 9409 | 9013 | 7335 |
| | | | Ave. Int. = 8143 | | S. D. = 990 | | |
| [illegible] | .0000 | PPM | 3329 | 3643 | 3438 | 3909 | 3313 |
| | | | Ave. Int. = 3444 | | S. D. = 344 | | |
| [illegible] | .0000 | PPM | 10333 | 10351 | 7423 | 10548 | 13917 |
| | | | Ave. Int. = 9899 | | S. D. = 1412 | | |
| [illegible] | .0000 | PPM | 1553 | 1991 | 599 | 395 | 2291 |
| | | | Ave. Int. = 1237 | | S. D. = 791 | | |
| [illegible] | .0000 | PPM | 5438 | 3335 | 4138 | 6453 | 3137 |
| | | | Ave. Int. = 5103 | | S. D. = 1443 | | |
| [illegible] | .0000 | PPM | 333448 | 330911 | 308979 | 336474 | 333303 |
| | | | Ave. Int. = 335334 | | S. D. = 4713 | | |
| [illegible] | .0000 | PPM | 4311 | 4621 | 6038 | 3363 | 5430 |
| | | | Ave. Int. = 5433 | | S. D. = 691 | | |
| [illegible] | .0000 | PPM | 1323 | -1139 | -488 | -1214 | -191 |
| | | | Ave. Int. = -1073 | | S. D. = 577 | | |
| [illegible] | .0000 | PPM | -9542 | -10810 | -9664 | -9129 | -9827 |
| | | | Ave. Int. = -9474 | | S. D. = 621 | | |
| [illegible] | .0000 | PPM | 11513 | 11577 | 11746 | 11352 | 10732 |
| | | | Ave. Int. = 11995 | | S. D. = 993 | | |

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| [illegible] | [illegible] | [illegible] | [illegible] | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

[illegible] [illegible] 887 [illegible] Aug [illegible]

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | .07[illegible] | .0590 | .0[illegible] | .0370 | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | -.0[illegible] | -.0[illegible] | .0[illegible] | .0[illegible] |
| [illegible] | [illegible] | PPM | .0022 | .0139 | .0153 | .0177 | .0[illegible] | .0074 |
| [illegible] | .0001 | PPM | .0003 | .0001 | -.0002 | .0007 | -.0001 | .0004 |
| [illegible] | [illegible] | PPM | .0081 | .0941 | .1541 | .0918 | .1002 | [illegible] |
| [illegible] | .0[illegible] | PPM | .0002 | .0004 | -.0005 | .0004 | .0027 | .0003 |
| [illegible] | .0572 | PPM | .0014 | .0549 | .0577 | .0560 | .0553 | .0553 |
| [illegible] | .00[illegible] | PPM | .0039 | -.0005 | -.0006 | .0005 | .0009 | .0004 |
| [illegible] | .0[illegible] | PPM | .0012 | .0004 | -.0009 | .0014 | -.0011 | .0005 |
| [illegible] | 1.33[illegible] | PPM | .0330 | 1.275 | 1.351 | 1.34[illegible] | 1.345 | 1.37[illegible] |
| [illegible] | .0424 | PPM | .2464 | .0435 | .0678 | -.0546 | .1880 | -.0278 |
| [illegible] | .0714 | PPM | .0[illegible] | .0053 | .0[illegible] | .0640 | .0357 | .0023 |
| [illegible] | .0243 | PPM | .0027 | .0133 | .0340 | .0344 | .0349 | .0[illegible] |
| [illegible] | .05[illegible] | PPM | .0072 | .0568 | .0471 | .0597 | .0458 | .0[illegible] |
| [illegible] | -.0049 | PPM | .0066 | -.0005 | .0109 | -.0048 | -.0018 | -.0117 |
| [illegible] | -.0061 | PPM | .0184 | -.0[illegible] | -.0125 | .04[illegible] | -.0171 | -.0740 |
| [illegible] | .0179 | PPM | .0035 | .0139 | .0158 | .0[illegible] | .0[illegible] | .0[illegible] |
| [illegible] | 1.039 | PPM | .0[illegible] | 1.077 | 1.027 | 1.03[illegible] | 1.04[illegible] | 1.05[illegible] |
| [illegible] | .0[illegible] | PPM | .0030 | .04[illegible] | -.0[illegible] | .0[illegible] | .04[illegible] | -.0[illegible] |
| [illegible] | -.0061 | PPM | .0274 | -.0025 | -.0018 | -.0155 | -.0054 | -.0[illegible] |
| [illegible] | .0[illegible] | PPM | .0159 | .0246 | .0339 | .0337 | .0322 | .0[illegible] |

[illegible] [illegible] ID: RAW C [illegible] 11:58:03 [illegible] Aug 1993 [illegible]

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|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | PPM | .0[illegible] | -.0071 | -.0[illegible] | -.0[illegible] | .0[illegible] | -.0[illegible] |
| [illegible] | [illegible] | PPM | .0[illegible] | -.0[illegible] | -.0[illegible] | .0[illegible] | .0[illegible] | -.0[illegible] |
| [illegible] | -.0[illegible] | PPM | .0003 | .0002 | -.0003 | -.0000 | -.0001 | -.0003 |
| [illegible] | .0[illegible] | PPM | .0007 | .0000 | .0003 | .0007 | .0006 | .000[illegible] |
| [illegible] | -.0[illegible] | PPM | .0[illegible] | -.0012 | -.0[illegible] | -.0[illegible] | -.0[illegible] | -.0[illegible] |
| [illegible] | .0[illegible] | PPM | .0005 | .0012 | .0015 | .0004 | .0014 | .0007 |
| [illegible] | .0007 | PPM | .0030 | -.0011 | .0097 | -.0037 | .0011 | .0021 |
| [illegible] | .0012 | PPM | .0010 | -.0021 | -.0008 | .0001 | -.0011 | -.0017 |
| [illegible] | .0[illegible] | PPM | .0019 | -.0007 | -.0012 | -.0015 | -.0022 | -.0032 |
| [illegible] | .0[illegible] | PPM | .0[illegible] | .0041 | .0058 | .0052 | .0018 | .0010 |
| [illegible] | [illegible] | PPM | .0[illegible] | .1[illegible] | .0[illegible] | .0[illegible] | .0[illegible] | .0[illegible] |
| [illegible] | -.0[illegible] | PPM | .0[illegible] | .0[illegible] | -.0[illegible] | -.0[illegible] | -.0[illegible] | -.0[illegible] |
| [illegible] | .0[illegible] | PPM | .0[illegible] | -.0[illegible] | .0003 | -.0[illegible] | -.0[illegible] | -.0[illegible] |
| [illegible] | .0[illegible] | PPM | .0075 | .0271 | .0[illegible] | .0007 | -.0009 | -.0[illegible] |
| [illegible] | .0[illegible] | PPM | .0[illegible] | .0037 | -.0018 | -.0101 | .0098 | .0[illegible] |
| [illegible] | .0[illegible] | PPM | .0[illegible] | -.0[illegible] | .0115 | -.0[illegible] | .0174 | -.0451 |
| [illegible] | .0[illegible] | PPM | .0[illegible] | .0[illegible] | .0[illegible] | .0157 | .0176 | .0[illegible] |
| [illegible] | -.0061 | PPM | .0[illegible] | -.0043 | -.0075 | -.0090 | -.0032 | -.0059 |
| [illegible] | .0012 | PPM | .0113 | -.0033 | .0157 | .0464 | -.0028 | -.0051 |
| [illegible] | .0[illegible] | PPM | .0134 | -.0412 | -.0350 | -.0395 | -.0396 | -.0[illegible] |
| [illegible] | .0[illegible] | PPM | .0[illegible] | -.0[illegible] | .0[illegible] | -.0[illegible] | -.0[illegible] | -.0[illegible] |

| [illegible] | [illegible] | [illegible] | [illegible] | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: [illegible] | | | | Seq: [illegible] | | [illegible] | | |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | .0774 | 9.347 | 9.172 | 9.224 | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | .0792 | 9.831 | 9.462 | 9.542 | [illegible] | [illegible] |
| [illegible] | .9641 | PPM | .0362 | .9713 | .9533 | .9722 | .9575 | [illegible] |
| [illegible] | 9.747 | PPM | .0464 | 9.788 | 9.683 | 9.748 | 9.732 | 9.827 |
| [illegible] | 1.022 | PPM | .0055 | 1.025 | 1.019 | 1.027 | 1.027 | [illegible] |
| [illegible] | 1.021 | PPM | .0266 | 1.029 | 1.014 | 1.018 | 1.014 | [illegible] |
| [illegible] | .9918 | PPM | .0203 | .9725 | .9801 | .9996 | .9979 | [illegible] |
| [illegible] | .9721 | PPM | .0086 | .9765 | .9595 | .9772 | .9701 | [illegible] |
| [illegible] | .9601 | PPM | .0221 | .9944 | .9615 | .9888 | .9919 | [illegible] |
| [illegible] | 49.80 | PPM | .5044 | 49.95 | 49.71 | [illegible] | [illegible] | [illegible] |
| [illegible] | 9.777 | PPM | .0552 | 9.792 | 9.710 | 9.779 | 9.747 | [illegible] |
| [illegible] | [illegible] | PPM | .0257 | .9997 | .9847 | .9982 | .9957 | [illegible] |
| [illegible] | [illegible] | PPM | .4444 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | .0105 | 1.021 | 1.016 | .9992 | 1.007 | [illegible] |
| [illegible] | 1.007 | PPM | .0276 | .9988 | .9827 | 1.044 | 1.041 | [illegible] |
| [illegible] | .9986 | PPM | .0070 | .9942 | .9798 | [illegible] | [illegible] | [illegible] |
| [illegible] | 1.028 | PPM | .0078 | 1.034 | 1.013 | 1.029 | 1.034 | 1.028 |
| [illegible] | 1.006 | PPM | .0216 | .9950 | 1.040 | 1.014 | .9954 | [illegible] |
| [illegible] | .9794 | PPM | .0237 | .9824 | .9738 | 1.034 | .9428 | .9834 |
| [illegible] | .9732 | PPM | .0247 | .9532 | .9777 | 1.012 | [illegible] | [illegible] |

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|---|---|---|---|---|---|---|---|---|
| *** Sample ID: [illegible] | | | | Seq: 900 | | [illegible] | | |
| [illegible] | [illegible] | PPM | [illegible] | -.0330 | -.0355 | -.0346 | -.0350 | [illegible] |
| [illegible] | 1.022 | PPM | .0725 | 1.130 | 1.057 | .9584 | [illegible] | [illegible] |
| [illegible] | .9873 | PPM | .0473 | 1.052 | 1.012 | .9376 | .9551 | [illegible] |
| [illegible] | .0004 | PPM | .0003 | -.0002 | .0004 | .0007 | .0007 | .0002 |
| [illegible] | [illegible] | PPM | 3.899 | 101.1 | 96.12 | 91.95 | 92.15 | [illegible] |
| [illegible] | .0034 | PPM | .0008 | .0031 | .0037 | [illegible] | .0026 | [illegible] |
| [illegible] | .0984 | PPM | .0027 | .0997 | .1032 | .0967 | .0978 | .0967 |
| [illegible] | .1028 | PPM | .0055 | .1099 | .1084 | .0978 | .0979 | .1011 |
| [illegible] | [illegible] | PPM | .0013 | .0725 | .0720 | .0707 | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | 8.721 | 8.418 | [illegible] | 7.974 | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | 5.459 | 133.2 | 128.7 | [illegible] | 121.9 | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | 2.121 | 2.080 | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | 1955. | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | .0339 | [illegible] | -.0125 | .0547 | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | .0027 | .0544 | .0520 | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | .0097 | .2196 | .2181 | .2004 | [illegible] | [illegible] |
| [illegible] | .2272 | PPM | .0211 | .2275 | .1911 | .1536 | [illegible] | [illegible] |
| [illegible] | -.0121 | PPM | .0339 | -.0419 | -.0140 | -.0419 | .0493 | [illegible] |
| [illegible] | .0153 | PPM | .0107 | [illegible] | [illegible] | [illegible] | .0160 | [illegible] |

| Elem | Conc. | Units | S.D. | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| Ag1 | [illegible] | [illegible] | .2221 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| Al2 | [illegible] | [illegible] | .1127 | [illegible] | .2427 | [illegible] | [illegible] | [illegible] |
| Be4 | [illegible] | [illegible] | .1351 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| Ba1 | .0022 | PPM | .0024 | .0011 | .0034 | .0021 | [illegible] | [illegible] |
| Ca2 | 108.8 | PPM | .8113 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| Cd1 | .0012 | PPM | .0041 | .0117 | .0044 | .0052 | [illegible] | [illegible] |
| Co1 | .1091 | PPM | .0342 | .1251 | [illegible] | .1072 | .1071 | [illegible] |
| Cr4 | .1138 | PPM | .0053 | .1099 | .1213 | [illegible] | [illegible] | [illegible] |
| Cu1 | .0174 | PPM | .0027 | .0160 | .0171 | .0182 | [illegible] | [illegible] |
| Fe2 | 9.424 | PPM | .1751 | 9.327 | 9.725 | 9.374 | 9.592 | 9.571 |
| K 1 | 419.8 | PPM | 12.59 | 410.3 | 430.7 | 402.7 | 425.4 | 427.0 |
| Mg4 | 134.6 | PPM | 2.773 | 131.6 | 139.4 | 130.4 | 133.5 | 138.1 |
| Mn4 | 2.284 | PPM | .0425 | 2.333 | 2.351 | 2.204 | 2.282 | 2.319 |
| Na2 | 2129. | PPM | 59.94 | 2104. | 2205. | 2022. | 2157. | 2157. |
| Ni2 | .3361 | PPM | .0285 | .4175 | .3711 | .3469 | .4124 | .3144 |
| Sb1 | -.1119 | PPM | .1015 | -.2101 | -.1530 | -.0153 | .0031 | -.1873 |
| V 2 | .1384 | PPM | .0094 | .1335 | .1454 | .1277 | .1505 | .1249 |
| Zn2 | .2097 | PPM | .0175 | .2284 | .2097 | .1931 | .2219 | .1977 |
| As2 | .3376 | PPM | .1254 | .3949 | .4374 | .3597 | .1156 | .1507 |
| Pb1 | -.0754 | PPM | .0712 | -.1111 | -.0518 | -.1308 | -.1102 | .0292 |
| Se1 | -.0626 | PPM | .1172 | -.0951 | -.2345 | -.0265 | .1176 | -.1035 |

>>> QLF [illegible] Seq: 902 12:06:30 31 Aug 1995 [illegible]

| | RPD | | Orig. | Dup. |
|---|---|---|---|---|
| Ag1 | 131.0 | % | -.0957 | -.4419 |
| Al2 | 205.1 | % | [illegible] | -.7284 |
| Be4 | 15.27 | % | .9372 | 1.150 |
| Ba1 | 120.3 | % | .0004 | .0022 |
| Ca2 | 10.77 | % | 98.09 | 108.8 |
| Cd1 | 89.43 | % | .0094 | .0059 |
| Co1 | 13.25 | % | .0964 | .1091 |
| Cr4 | 13.14 | % | .1099 | .1138 |
| Cu1 | 20.94 | % | .0214 | .0174 |
| Fe2 | 12.82 | % | 8.317 | 9.424 |
| K 1 | 9.288 | % | 373.6 | 419.8 |
| Mg4 | 7.781 | % | 125.2 | 134.6 |
| Mn4 | 11.72 | % | 2.011 | 2.284 |
| Na2 | 11.17 | % | 1905. | 2129. |
| Ni2 | 21.74 | % | .3133 | .3361 |
| Sb1 | 577.2 | % | .0543 | -.1119 |
| V 2 | 90.43 | % | .0512 | .1384 |
| Zn2 | .1428 | % | .2080 | .2097 |
| As2 | 39.13 | % | .2372 | .3376 |
| Pb1 | 140.9 | % | -.0131 | -.0754 |
| Se1 | 228.7 | % | .0155 | -.0626 |

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| [illegible] | [illegible] | [illegible] | [illegible] | 1 | 2 | 3 | 4 | 5 |
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*** Sample ID: [illegible] Seq: 905 15:15:?? 31 Aug 1993

Spike #1 [illegible]

| | [illegible] | | [illegible] | Avg | SDev | Avg C | SDev |
|---|---|---|---|---|---|---|---|
| Ag1 | .2000 | PPM | 96.51 | .0788 | .0000 | .1022 | .0000 |
| Al2 | 10.00 | PPM | [illegible] | -.2285 | .0002 | 8.820 | .0001 |
| Ba4 | 10.00 | PPM | 90.46 | -.0001 | .0000 | 9.046 | .0001 |
| Be1 | 1.000 | PPM | 91.37 | .0003 | .0000 | .9224 | .0000 |
| Ca2 | 10.00 | PPM | 93.49 | .0102 | .0000 | 9.333 | .0000 |
| Cd1 | 1.000 | PPM | 97.57 | .0004 | .0000 | .9401 | .0000 |
| Co1 | 1.000 | PPM | 91.28 | -.0001 | .0000 | .9308 | .0000 |
| Cr4 | 1.000 | PPM | 94.77 | -.0021 | .0000 | .9427 | .0000 |
| Cu1 | 1.000 | PPM | 91.94 | -.0015 | .0000 | .9079 | .0000 |
| Fe1 | 1.000 | PPM | 93.67 | -.0007 | .0000 | .9320 | .0000 |
| K 1 | 50.00 | PPM | 93.57 | .1025 | .0000 | 46.91 | .0000 |
| Mg4 | 10.00 | PPM | 93.28 | -.0004 | .0000 | 9.328 | .0000 |
| Mn4 | 1.000 | PPM | 94.53 | .0000 | .0000 | .9453 | .0000 |
| Na2 | 50.00 | PPM | 91.56 | .2520 | .0000 | 46.03 | .0000 |
| Ni2 | 1.000 | PPM | 96.00 | .0009 | .0000 | .9609 | .0000 |
| Sb1 | 1.000 | PPM | 97.2[illegible] | -.0477 | .0000 | .9299 | .0000 |
| V 2 | 1.000 | PPM | 91.51 | .0305 | .0000 | .9355 | .0000 |
| Zn2 | 1.000 | PPM | 96.63 | -.0057 | .0000 | .9611 | .0000 |
| As2 | 1.000 | PPM | 95.47 | .0054 | .0000 | .9602 | .0000 |
| Pb1 | 1.000 | PPM | 96.21 | -.0201 | .0000 | .9554 | .0000 |
| Tl1 | 1.000 | PPM | 93.14 | -.0216 | .0000 | .9103 | .0000 |

*** Sample ID: [illegible] Seq: 9?? 15:01:21 31 Aug 1993 [illegible]

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Ag1 | .0948 | PPM | .0034 | .0916 | .1024 | .0991 | .0999 | .0910 |
| Al2 | 8.789 | PPM | .1361 | 8.510 | 8.875 | 8.775 | 8.780 | 8.171 |
| Ba4 | 8.941 | PPM | .1533 | 8.744 | 9.057 | 9.002 | 8.927 | 9.001 |
| Be1 | .8771 | PPM | .0146 | .8934 | .8794 | .8724 | .9160 | .8753 |
| Ca2 | 9.277 | PPM | .1118 | 9.028 | 9.378 | 9.295 | 9.205 | 9.222 |
| Cd1 | .9710 | PPM | [illegible] | .9497 | .9781 | .9780 | .9711 | [illegible] |
| Co1 | .9578 | PPM | .0121 | .9787 | .9622 | .9107 | .9611 | .9888 |
| Cr4 | .9331 | PPM | [illegible] | [illegible] | [illegible] | .9360 | [illegible] | [illegible] |
| Cu1 | .9209 | PPM | .0146 | .9076 | .9345 | .9172 | .9104 | .9227 |
| Fe1 | .9327 | PPM | .0142 | [illegible] | .9476 | [illegible] | [illegible] | [illegible] |
| K 1 | 46.44 | PPM | 1.02? | 44.75 | 47.34 | 46.42 | 46.17 | 47.?2 |
| Mg4 | 9.12? | PPM | [illegible] | 9.071 | 9.351 | 9.012 | 9.12? | 9.?? |
| Mn4 | .9331 | PPM | .0135 | .9127 | .9505 | .9374 | .9333 | .9482 |
| Na2 | 46.27 | PPM | .3124 | [illegible] | 46.45 | 46.?3 | 46.43 | 46.51 |
| Ni2 | .9454 | PPM | .0150 | .9218 | .9540 | .9511 | .9376 | .9522 |
| Sb1 | .9132 | PPM | .0401 | .8479 | .9411 | .9364 | .9005 | .9327 |
| V 2 | .9315 | PPM | .0135 | .9040 | .9458 | .9430 | .9374 | .9312 |
| Zn2 | .9596 | PPM | .0134 | .9402 | .9676 | .9537 | .9526 | .9742 |
| As2 | .9748 | PPM | .0257 | .9527 | .9949 | .9607 | 1.015 | .9991 |
| Pb1 | .9495 | PPM | .0275 | .8728 | 1.030 | .9437 | .9273 | .9693 |
| Tl1 | .9147 | PPM | .0333 | .9022 | .8987 | .8711 | .8912 | .9962 |

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| A11 | [illegible] | % | [illegible] | [illegible] |
| A12 | [illegible] | % | [illegible] | [illegible] |
| A13 | [illegible] | % | [illegible] | [illegible] |
| B11 | [illegible] | % | [illegible] | [illegible] |
| B12 | [illegible] | % | [illegible] | [illegible] |
| B21 | [illegible] | % | [illegible] | [illegible] |
| B22 | [illegible] | % | [illegible] | [illegible] |
| B23 | [illegible] | % | [illegible] | [illegible] |
| C11 | [illegible] | % | [illegible] | [illegible] |
| C12 | [illegible] | % | [illegible] | [illegible] |
| C21 | [illegible] | % | [illegible] | [illegible] |
| C22 | [illegible] | % | [illegible] | [illegible] |
| D11 | [illegible] | % | [illegible] | [illegible] |
| D12 | [illegible] | % | [illegible] | [illegible] |
| D21 | [illegible] | % | [illegible] | [illegible] |
| D22 | [illegible] | % | [illegible] | [illegible] |
| E11 | [illegible] | % | [illegible] | [illegible] |
| E12 | [illegible] | % | [illegible] | [illegible] |
| E21 | [illegible] | % | [illegible] | [illegible] |
| E22 | [illegible] | % | [illegible] | [illegible] |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| A11 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| A12 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| A13 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| B11 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| B12 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| B21 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| B22 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| B23 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| C11 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| C12 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| C21 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| C22 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| D11 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| D12 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| D21 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| D22 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| E11 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| E12 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| E21 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| E22 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

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| [illegible] | [illegible] | [illegible] | [illegible] | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** [illegible] | | | | [illegible] | [illegible] | 12:33: [illegible] | | |
| [illegible] | | | [illegible] | | | | | |
| [illegible] | .1877 | [illegible] | [illegible] | .1484 | .2492 | .244 | .2402 | [illegible] |
| [illegible] | .1022 | [illegible] | .0077 | .1028 | .1552 | -.1022 | .1027 | [illegible] |
| Ba4 | [illegible] | [illegible] | [illegible] | [illegible] | .1031 | .1048 | .1034 | .1027 |
| Be2 | [illegible] | [illegible] | .0002 | .0008 | .0012 | .0014 | .0008 | [illegible] |
| Ca1 | [illegible] | [illegible] | .7414 | 51.83 | 51.59 | 50.9 | [illegible] | [illegible] |
| Cd1 | .0029 | [illegible] | .0019 | .0004 | .0012 | .0040 | .0011 | .0010 |
| Co1 | -.0001 | PPM | .0048 | .0408 | .0024 | -.0048 | .0028 | [illegible] |
| Cr4 | [illegible] | PPM | .0103 | .0412 | .0143 | .0031 | .0028 | .0015 |
| Cu1 | .0021 | PPM | .0029 | .0016 | .0017 | .0031 | .0024 | .0021 |
| Fe1 | .2472 | PPM | .0024 | .2492 | .2511 | .2642 | .2517 | .2443 |
| K 1 | [illegible] | PPM | .7.44 | -.517 | -.545 | -.577 | -.761 | [illegible] |
| Mg4 | 12.72 | PPM | .3.58 | 13.57 | 12.98 | 13.03 | 13.78 | 13.31 |
| Mn4 | .0348 | [illegible] | .0002 | .0349 | .0348 | .0341 | .0338 | .0344 |
| Na1 | 33.19 | PPM | .1788 | 34.31 | 34.09 | 33.40 | 34.04 | 33.03 |
| Ni1 | [illegible] | PPM | .0150 | .0088 | .0122 | .0163 | .0059 | .0151 |
| Sb1 | -.0123 | PPM | .0592 | .0330 | -.0387 | .0458 | -.0148 | -.0205 |
| V 2 | .0361 | PPM | .0219 | .0360 | .0321 | .0364 | .0274 | .0751 |
| Zn2 | -.0077 | PPM | .0022 | -.0253 | -.0151 | -.0111 | -.0009 | -.0072 |
| As1 | .0523 | PPM | .0360 | .0757 | .0634 | .0422 | .0672 | .0134 |
| Pb1 | -.0471 | PPM | .0224 | -.0674 | -.0354 | -.0303 | -.0418 | -.0244 |
| Se1 | -.0041 | PPM | .0173 | .0134 | -.0232 | -.0099 | -.0183 | .0159 |

*** [illegible] Seq: 910 12:33:43 31 Aug 1995 [illegible]

| | RSD | | Indiv. | Dup. |
|---|---|---|---|---|
| [illegible] | [illegible] | % | -.0377 | -.0379 |
| [illegible] | 7.608 | % | -.1762 | -.1883 |
| Ba4 | 2.109 | % | .1031 | .1052 |
| Be2 | 17.87 | % | .0007 | .0005 |
| Ca1 | 2.207 | % | 49.48 | 51.15 |
| Cd1 | 41.61 | % | .0014 | .0009 |
| Co1 | 228.8 | % | .0003 | -.0001 |
| Cr4 | 127.9 | % | .0002 | .0028 |
| Cu1 | 13.55 | % | .0019 | .0021 |
| Fe1 | 5.241 | % | .2402 | .2407 |
| K 1 | 1.411 | % | [illegible] | [illegible] |
| Mg4 | [illegible] | % | 13.46 | 13.73 |
| Mn4 | 2.118 | % | .0338 | .0348 |
| Na1 | 2.033 | % | 33.61 | 33.67 |
| Ni1 | [illegible] | % | .0172 | .0107 |
| Sb1 | [illegible] | % | -.0107 | -.0113 |
| V 2 | 14.51 | % | .0421 | .0385 |
| Zn2 | 2.287 | % | -.0071 | -.0077 |
| As1 | 3.134 | % | .0515 | .0522 |
| Pb1 | 27.88 | % | -.0355 | -.0470 |
| Se1 | 613.2 | % | .0069 | -.0041 |

[illegible]

38

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| | | | | | |
|---|---|---|---|---|---|
| [illegible] | 88.87 | [illegible] | [illegible] | PPM | .0398 |
| [illegible] | 73.93 | 1.183 | 10.00 | PPM | .1187 |
| [illegible] | 94.17 | 9.413 | 10.00 | PPM | [illegible] |
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| [illegible] | 98.11 | 14.88 | 15.00 | PPM | .1074 |
| [illegible] | 99.14 | 2.488 | 2.500 | PPM | .0179 |
| [illegible] | 98.3 | 2.458 | 2.500 | PPM | .0177 |
| [illegible] | 97.54 | .9754 | 1.000 | PPM | .0072 |
| [illegible] | 97.12 | 1.214 | 1.250 | PPM | .0140 |
| [illegible] | 98.49 | 4.244 | 5.000 | PPM | .0088 |
| [illegible] | 97.19 | 24.30 | 25.00 | PPM | .2703 |
| [illegible] | 97.53 | 24.38 | 25.00 | PPM | .2227 |
| [illegible] | 97.94 | 2.448 | 2.500 | PPM | .0238 |
| [illegible] | 96.97 | 24.24 | 25.00 | PPM | .3162 |
| [illegible] | 97.14 | 2.479 | 2.500 | PPM | .0282 |
| [illegible] | 97.08 | 4.854 | 5.000 | PPM | .0922 |
| [illegible] | 96.47 | 2.412 | 2.500 | PPM | .0222 |
| [illegible] | 98.75 | 2.490 | 2.500 | PPM | .0152 |
| [illegible] | 98.77 | 4.939 | 5.000 | PPM | .0772 |
| [illegible] | 97.50 | 4.875 | 5.000 | PPM | .0795 |
| [illegible] | 94.22 | 4.711 | 5.000 | PPM | .0621 |

| [illegible] | [illegible] | [illegible] | [illegible] | UNITS | SD/RSD |
|---|---|---|---|---|---|
| [illegible] | 1173. | .0788 | .0067 | PPM | .0140 |
| [illegible] | -757.1 | -.0292 | .0074 | PPM | .0073 |
| [illegible] | 67.91 | .0411 | .0015 | PPM | .0008 |
| [illegible] | 39.19 | .0022 | .0006 | PPM | .0007 |
| [illegible] | -111.5 | -.0233 | .0198 | PPM | .0014 |
| [illegible] | 64.39 | .0025 | .0039 | PPM | .0009 |
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| [illegible] | -57.34 | -.0023 | .0041 | PPM | .0009 |
| [illegible] | -37.81 | -.0119 | .0312 | PPM | .0003 |
| [illegible] | -11.71 | -.0033 | [illegible] | PPM | .0035 |
| [illegible] | -3.34 | .1114 | .2504 | PPM | .1288 |
| [illegible] | -31.07 | -.0122 | .0170 | PPM | .0207 |
| [illegible] | 13.48 | .0005 | .0034 | PPM | .0001 |
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| [illegible] | -3.354 | -.0014 | .0405 | PPM | .1149 |
| [illegible] | 372.2 | .0142 | .0038 | PPM | .0037 |
| [illegible] | -74.02 | -.0071 | .0095 | PPM | .0016 |
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| [illegible] | -175.5 | -.0466 | .0195 | PPM | .0187 |
| [illegible] | 52.11 | -.0177 | .0304 | PPM | .0105 |



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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [illegible] | .[illegible] | PPM | .0092 | [illegible] | .9[illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | .4[illegible] | PPM | .0012 | .4[illegible] | .4127 | .4[illegible] | .4[illegible] | .4[illegible] |
| [illegible] | .4[illegible] | PPM | .0036 | .4731 | .4775 | .4[illegible] | .4[illegible] | .4[illegible] |
| [illegible] | 4[illegible] | PPM | 1.441 | 422.7 | 437.2 | 440.7 | 43[illegible] | 4[illegible] |
| [illegible] | .2[illegible] | PPM | .0082 | .2766 | .2722 | .2[illegible] | .2[illegible] | .2[illegible] |
| [illegible] | .4[illegible] | PPM | .0011 | .4511 | .4511 | .4[illegible] | .4[illegible] | .4[illegible] |
| [illegible] | .4524 | PPM | .0049 | .4525 | .4455 | .4[illegible] | .4[illegible] | .4[illegible] |
| [illegible] | .4[illegible] | PPM | .0041 | .4480 | .4552 | .4[illegible] | .4[illegible] | .4[illegible] |
| [illegible] | 1[illegible] | PPM | 1.[illegible] | 157.7 | 157.6 | 1[illegible] | 1[illegible] | [illegible] |
| [illegible] | 5.[illegible] | PPM | .1[illegible] | 5.132 | 5.424 | 5.022 | 5.[illegible] | 5.40[illegible] |
| [illegible] | 5[illegible] | PPM | 4.[illegible] | 526.3 | 528.1 | 5[illegible] | 525.9 | [illegible] |
| [illegible] | .4274 | PPM | .0029 | .4546 | .4572 | .4[illegible] | .4[illegible] | .4[illegible] |
| [illegible] | 2.531 | PPM | .0345 | 2.512 | 2.527 | 2.[illegible] | [illegible] | 2.[illegible] |
| [illegible] | .9[illegible] | PPM | .0[illegible] | .9059 | .9132 | .9224 | .[illegible] | .[illegible] |
| [illegible] | 1.0[illegible] | PPM | .0[illegible] | 1.012 | .9957 | 1.0[illegible] | 1.[illegible] | .[illegible] |
| [illegible] | .45[illegible] | PPM | .0030 | .4569 | .4589 | .4[illegible] | .4[illegible] | .4[illegible] |
| [illegible] | .8[illegible] | PPM | .0[illegible] | .8[illegible] | .8909 | .8[illegible] | .8[illegible] | .[illegible] |
| [illegible] | .5[illegible] | PPM | .0[illegible] | .5076 | .5[illegible] | .5[illegible] | .5[illegible] | .5[illegible] |
| [illegible] | 1.016 | PPM | .0[illegible] | 1.014 | 1.064 | .9522 | 1.0[illegible] | 1.[illegible] |
| [illegible] | .4[illegible] | PPM | .0424 | .4544 | .5138 | .4[illegible] | .4[illegible] | .5[illegible] |

| [illegible] | % Recovery | Found | True | Units | SD |
|---|---|---|---|---|---|
| [illegible] | 95.03 | 1.199 | 1.250 | PPM | .0145 |
| [illegible] | 9[illegible] | 9.[illegible] | 10.0[illegible] | PPM | .1[illegible] |
| [illegible] | 97.07 | 9.707 | 10.00 | PPM | .1099 |
| [illegible] | 96.03 | .2401 | .2500 | PPM | .0032 |
| [illegible] | 97.14 | 24.[illegible] | 25.00 | PPM | .2[illegible] |
| [illegible] | 99.9[illegible] | 2.49[illegible] | 2.500 | PPM | .0[illegible] |
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| [illegible] | 100.[illegible] | 1.00[illegible] | 1.000 | PPM | .0094 |
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| [illegible] | 100.[illegible] | 25.0[illegible] | 25.00 | PPM | .4117 |
| [illegible] | [illegible] | [illegible] | 25.00 | PPM | .[illegible] |
| [illegible] | 9[illegible] | 2.4[illegible] | 2.500 | PPM | .0221 |
| [illegible] | 9[illegible] | 24.[illegible] | 25.00 | PPM | .2[illegible] |
| [illegible] | 10[illegible] | 2.5[illegible] | 2.500 | PPM | .0121 |
| [illegible] | 9[illegible] | 4.9[illegible] | 5.000 | PPM | .0802 |
| [illegible] | 98.16 | 2.454 | 2.500 | PPM | .0[illegible] |
| [illegible] | 100.3 | 7.505 | 7.500 | PPM | .0181 |
| [illegible] | 97.48 | 4.874 | 5.000 | PPM | .0702 |
| [illegible] | 100.0 | 5.001 | 5.000 | PPM | .0736 |
| [illegible] | 94.86 | 4.743 | 5.000 | PPM | .0759 |

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|---|---|---|---|---|---|---|---|---|
| [illegible] | 13.[illegible] | [illegible] | 1[illegible] | 102[illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | 22.27 | [illegible] | .5[illegible] | [illegible] | [illegible] | 5.[illegible] | 12.8[illegible] | 21.[illegible] |
| [illegible] | 1.042 | PPM | .0173 | 1.009 | 1.018 | .9911 | 1.008 | [illegible] |
| [illegible] | 2032. | H PPM | 22.27 | 2040. | 2029. | [illegible] | [illegible] | [illegible] |
| [illegible] | 1.030 | PPM | .0422 | 1.734 | 1.073 | 1.659 | 1.[illegible] | [illegible] |
| [illegible] | 1.595 | PPM | .1074 | 1.625 | 1.564 | 1.[illegible] | [illegible] | [illegible] |
| [illegible] | 7.050 | PPM | .0513 | 7.071 | 7.010 | 7.017 | 7.[illegible] | [illegible] |
| [illegible] | 21.27 | PPM | .3922 | 21.81 | 22.15 | 21.69 | [illegible] | [illegible] |
| [illegible] | 15287 | H PPM | 155.4 | 15070 | 15210 | 15170 | 15[illegible] | 15[illegible] |
| [illegible] | 1024. | C PPM | 12.76 | 1016. | 1027. | 997.1 | 1034. | 1032. |
| [illegible] | 1692. | H PPM | 15.00 | 1674. | 1696. | 1679. | 1707. | 1727. |
| [illegible] | 135.4 | H PPM | 1.326 | 134.6 | 136.7 | 135.6 | 137.8 | 137.[illegible] |
| [illegible] | 375.5 | PPM | 4.559 | 373.1 | 378.0 | 371.2 | 381.0 | 381.[illegible] |
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| [illegible] | 7.532 | PPM | 1.357 | 8.917 | 8.943 | 9.614 | 6.730 | 8.451 |
| [illegible] | 9.342 | PPM | .1632 | 9.322 | 9.312 | 9.180 | 9.534 | 9.442 |
| [illegible] | 15930 | H PPM | 102.9 | 15790 | 15990 | 15890 | 16050 | 15970 |
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| [illegible] | 171.4 | H PPM | 1.522 | 170.2 | 173.6 | 172.1 | 171.7 | 171.[illegible] |
| [illegible] | 1.744 | PPM | .9058 | 2.257 | 2.388 | .6710 | 2.522 | 2.344 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [illegible] | 5.299 | H [illegible] | .0741 | 5.3[illegible] | 5.329 | 5.281 | 5.2[illegible] | 5.2[illegible] |
| [illegible] | 11620 | H PPM | 33.47 | 11580 | 11610 | 11660 | 11[illegible] | 11[illegible] |
| [illegible] | 504.0 | PPM | 4.287 | 497.5 | 503.6 | 507.0 | 507.7 | 507.[illegible] |
| [illegible] | 45.45 | PPM | .3[illegible] | 44.95 | 45.40 | 45.82 | 45.87 | 45.8[illegible] |
| [illegible] | 2744. | H PPM | 14.87 | 2724. | 2735. | 2731. | 2751. | 2752. |
| [illegible] | 46.44 | H PPM | .2792 | 46.17 | 46.91 | 46.67 | 46.51 | 46.57 |
| [illegible] | 48.22 | PPM | .4373 | 47.86 | 48.64 | 48.65 | 48.05 | 48.14 |
| [illegible] | 51.47 | H PPM | .5327 | 50.69 | 51.16 | 51.75 | 51.[illegible] | 51.[illegible] |
| [illegible] | 62.97 | H PPM | .5949 | 62.28 | 62.57 | 62.49 | 63.35 | 63.[illegible] |
| [illegible] | 15[illegible] | H PPM | 71.[illegible] | 15850 | 15140 | 15060 | 15[illegible] | 15[illegible] |
| [illegible] | 2270. | H PPM | 24.07 | 2275. | 2265. | 2277. | 2311. | 2251. |
| [illegible] | 1942. | H PPM | [illegible] | 1916. | 1925. | 1927. | 1946. | 1932. |
| [illegible] | 184.1 | H PPM | 1.271 | 183.3 | 183.6 | 185.2 | 184.7 | 184.7 |
| [illegible] | 2612. | H PPM | 16.83 | 2594. | 2602. | 2627. | 2613. | 2619. |
| [illegible] | 51.81 | H PPM | .6321 | 51.09 | 51.91 | 51.41 | 52.59 | 52.12 |
| [illegible] | 56.34 | PPM | 3.249 | 52.27 | 55.11 | 55.87 | 59.00 | 57.15 |
| [illegible] | 52.85 | PPM | .8028 | 52.06 | 52.37 | 52.27 | 53.94 | 53.17 |
| [illegible] | 13912 | H PPM | 61.52 | 13830 | 13960 | 13980 | 13922 | 13940 |
| [illegible] | 60.18 | PPM | 3.074 | 60.77 | 60.04 | 62.75 | 62.15 | 55.22 |
| [illegible] | 195.9 | H PPM | 2.662 | 195.0 | 194.3 | 201.1 | 195.6 | 197.2 |
| [illegible] | 45.75 | PPM | 1.899 | 46.93 | 46.45 | 47.91 | 44.07 | 43.42 |

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|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | 87.8[illegible] | [illegible] | 87.6[illegible] | [illegible] | [illegible] |
| [illegible] | .7328 | [illegible] | .0348 | .7834 | .8108 | .7717 | .7448 | .7830 |
| [illegible] | 771.2 | PPM | 5.207 | 765.6 | 773.6 | [illegible] | [illegible] | 761.8 |
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| [illegible] | 5.168 | [illegible] | .1407 | 5.11[illegible] | 5.340 | 5.783 | 5.058 | [illegible] |
| [illegible] | 8.424 | PPM | .1205 | 8.349 | 8.454 | 8.431 | 8.297 | 8.482 |
| [illegible] | 7.240 | [illegible] | [illegible] | 7.098 | 7.465 | 7.270 | 7.474 | [illegible] |
| [illegible] | 14432 # | PPM | 150.1 | 14412 | 14550 | 14520 | [illegible] | 14271 |
| [illegible] | 1592. # | PPM | 34.73 | 1536. | 1569. | 1548. | 1637. | 1574. |
| [illegible] | 1525. # | PPM | 14.30 | 1504. | 1531. | 1511. | 1528. | 1534. |
| [illegible] | 887.0 # | PPM | 3.124 | 885.8 | 891.5 | [illegible] | [illegible] | [illegible] |
| [illegible] | 34.59 | PPM | 1.546 | 32.83 | 36.42 | 32.82 | 36.25 | [illegible] |
| [illegible] | 6.159 | PPM | .2951 | 5.909 | 6.330 | 6.143 | [illegible] | [illegible] |
| [illegible] | -4.749 | PPM | 1.355 | -2.990 | -6.248 | -2.925 | -5.910 | -4.621 |
| [illegible] | 15.69 | PPM | .2084 | 15.67 | 15.79 | 15.76 | 15.59 | 15.19 |
| [illegible] | 655.0 | PPM | 4.175 | 650.1 | 655.7 | 655.5 | 651.8 | 645.7 |
| [illegible] | 5.243 | PPM | 1.386 | 1.789 | 5.181 | [illegible] | 5.644 | [illegible] |
| [illegible] | 31.64 | PPM | 1.761 | 30.72 | 31.79 | 35.17 | 31.77 | 28.75 |
| [illegible] | [illegible] | PPM | .7724 | .4864 | .6980 | -.2979 | -.5712 | -.7698 |

*** [illegible]

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | PPM | .0757 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] # | PPM | [illegible] | 17656 | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | .0229 | 1.001 | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] # | PPM | [illegible] | [illegible] | 3527. | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | .8084 | [illegible] | .9512 | .8907 | [illegible] |
| [illegible] | 4.587 | PPM | .1953 | 4.434 | 4.488 | 4.755 | 4.840 | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] # | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] # | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] # | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] # | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | 97.59 | PPM | [illegible] | [illegible] | [illegible] | 97.54 | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | .4133 | 10.28 | 9.799 | 10.09 | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | [illegible] | 6.931 | [illegible] | [illegible] | 7.592 | [illegible] |
| [illegible] | 20.72 | PPM | .4192 | 20.72 | 21.01 | 20.70 | [illegible] | [illegible] |
| [illegible] | 13480 # | PPM | 141.5 | 13940 | 13070 | 12980 | 13130 | 13780 |
| [illegible] | 9.908 | PPM | 3.647 | 9.714 | 9.149 | 9.392 | 15.62 | 5.787 |
| [illegible] | 487.6 # | PPM | [illegible] | 485.5 | 486.8 | 489.7 | 497.0 | 482.7 |
| [illegible] | 1.591 | PPM | 1.134 | 3.345 | 1.090 | .6116 | 2.370 | 1.051 |

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| | | | | 1 | 2 | 3 | | 5 |
|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | .0071 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | 5501. | PPM | 104.2 | 5073. | 5571. | 5516. | 5542. | 5141. |
| [illegible] | 34.[illegible] | [illegible] | .5732 | 41.04 | 40.34 | 40.32 | 31.78 | 31.27 |
| [illegible] | .4042 | PPM | .0121 | .4132 | .4010 | .4072 | .3912 | .3821 |
| [illegible] | 2308. | PPM | 40.81 | 2337. | 2316. | 2312. | 2301. | 2345. |
| [illegible] | 1.342 | PPM | .0312 | 1.347 | 1.332 | 1.394 | 1.312 | 1.322 |
| [illegible] | .8447 | [illegible] | .1154 | .8885 | .8845 | .7287 | .9407 | 1.021 |
| [illegible] | 1.831 | PPM | .0961 | 1.938 | 1.806 | 1.770 | 1.815 | 1.713 |
| [illegible] | 10.8[illegible] | PPM | .2661 | 11.00 | 10.89 | 10.79 | 10.51 | 10.21 |
| [illegible] | 4453. | PPM | 37.89 | 5012. | 4372. | 4313. | 4322. | 4211. |
| [illegible] | 351.[illegible] | PPM | 10.81 | 365.0 | 355.3 | 363.7 | 346.5 | 344.2 |
| [illegible] | 1193. | PPM | 21.09 | 1228. | 1196. | 1201. | 1193. | 1181. |
| [illegible] | 74.07 | PPM | 1.372 | 76.16 | 74.72 | 74.77 | 72.84 | 72.40 |
| [illegible] | 55.33 | PPM | 1.341 | 57.45 | 54.45 | 55.49 | 55.41 | 52.71 |
| [illegible] | 3.172 | PPM | .2001 | 3.047 | 3.804 | 3.840 | 3.449 | 3.432 |
| [illegible] | 3.977 | PPM | 3.354 | 9.397 | 2.692 | 5.962 | 3.390 | 4.034 |
| [illegible] | 3.793 | PPM | .0347 | 3.792 | 3.807 | 3.771 | 3.794 | [illegible] |
| [illegible] | [illegible] | PPM | 301.8 | 18910 | 18370 | 18372 | 18310 | 18340 |
| [illegible] | 6.081 | PPM | 3.175 | 5.813 | 6.235 | 9.973 | 3.177 | 5.847 |
| [illegible] | 331.7 | PPM | 2.940 | 334.4 | 333.7 | 328.4 | 332.4 | 332.4 |
| [illegible] | 3.014 | PPM | 1.047 | 4.419 | 3.343 | 3.003 | 3.115 | 1.776 |

*** Sample ID: WATER BL[illegible] 13:47:07 [illegible] Aug 1995 [illegible]

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | -.0947 | -.0594 | -.0868 | -.0012 | [illegible] |
| [illegible] | .0115 | PPM | [illegible] | [illegible] | -.3174 | -.3202 | -.3167 | .3332 |
| [illegible] | -.0011 | PPM | .0003 | -.0003 | .0006 | -.0005 | -.0001 | -.0011 |
| [illegible] | .0002 | [illegible] | [illegible] | .0112 | .0002 | -.0002 | .0024 | .0002 |
| [illegible] | -.1246 | PPM | .024 | -.0175 | -.0595 | -.0772 | -.0071 | -.1284 |
| [illegible] | .0003 | PPM | .0006 | .0008 | .0014 | .0019 | -.0001 | .0001 |
| [illegible] | -.0022 | PPM | .0021 | -.0025 | -.0015 | -.0009 | -.0021 | -.0027 |
| [illegible] | -.0031 | PPM | .0108 | -.0023 | -.0014 | -.0017 | -.0033 | -.0013 |
| [illegible] | -.0018 | PPM | .0027 | -.0031 | -.0031 | -.0011 | -.0012 | -.0017 |
| [illegible] | .0219 | PPM | .0127 | .0447 | .0444 | .0171 | .0014 | [illegible] |
| [illegible] | [illegible] | PPM | .1273 | .0241 | .2753 | -.0182 | .1742 | .0023 |
| [illegible] | [illegible] | PPM | .0182 | .0138 | -.0052 | .0042 | .0047 | -.0007 |
| [illegible] | .0024 | PPM | .0007 | .0024 | .0005 | .0002 | .0023 | .0001 |
| [illegible] | .0179 | PPM | .0118 | .0171 | .0111 | -.0027 | .0051 | .0271 |
| [illegible] | .0106 | PPM | .0127 | .0039 | -.0034 | .0134 | .0013 | -.0016 |
| [illegible] | -.0181 | PPM | .0448 | -.0232 | -.0349 | -.0515 | .0457 | .0229 |
| [illegible] | .0150 | PPM | .0036 | .0277 | .0158 | .0110 | .0198 | .0128 |
| [illegible] | .0315 | PPM | .0191 | .0357 | .0610 | .0109 | .0052 | .0211 |
| [illegible] | .0147 | PPM | .0197 | -.0029 | -.0172 | .0176 | -.0055 | .0317 |
| [illegible] | -.0132 | PPM | .0373 | -.0048 | .0019 | -.0471 | .0148 | -.0793 |
| [illegible] | -.0177 | PPM | .0124 | -.0194 | -.0125 | -.0171 | -.0025 | .0017 |

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1/5/

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | PPM | .0121 | [illegible] | .0244 | .0250 | .0252 | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | .0021 | .0032 | .0041 | .0042 | .0037 | [illegible] |
| [illegible] | .0319 | PPM | .0033 | .0037 | .0033 | .0019 | .0014 | .0019 |
| [illegible] | [illegible] | PPM | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | .0032 | PPM | .0034 | .0041 | .0039 | .0036 | .0032 | [illegible] |
| [illegible] | .0142 | PPM | .0022 | .0019 | .0018 | .0013 | .0040 | .0052 |
| [illegible] | .0031 | PPM | .0025 | .0026 | .0039 | .0037 | .0031 | .0026 |
| [illegible] | .0155 | PPM | .0027 | .0155 | .0154 | .0147 | .0146 | .0152 |
| [illegible] | 191.5 | PPM | 1.243 | 189.1 | 189.0 | 17.4 | 190.9 | 189.1 |
| [illegible] | .0157 | PPM | .0198 | .0035 | .0171 | -.0044 | -.0074 | [illegible] |
| MgO | [illegible] | PPM | 4.770 | 5.41 | 511.2 | 511.1 | 517.2 | 519.5 |
| [illegible] | .0199 | PPM | .0020 | .0037 | .0092 | .0037 | .0076 | .0012 |
| [illegible] | .0351 | PPM | .0031 | .0303 | .0312 | .0499 | .0319 | .0309 |
| [illegible] | .0192 | PPM | .0057 | .0121 | .0281 | .0175 | .0129 | .0210 |
| [illegible] | -.0319 | PPM | .0460 | -.0965 | .0106 | -.0098 | -.0625 | .0044 |
| [illegible] | .0117 | PPM | .0011 | .0168 | .0158 | .0170 | .0166 | .0137 |
| [illegible] | .0137 | PPM | .0048 | .0114 | .0148 | .0119 | .0093 | .0713 |
| [illegible] | .0400 | PPM | .0132 | .0575 | .0325 | .0281 | .0331 | .0317 |
| Pb1 | .0952 | PPM | .0174 | .0892 | .0500 | .0497 | .0937 | .1597 |
| Sr1 | .0191 | PPM | .0163 | .0401 | .0045 | .0444 | .0347 | .0217 |

[illegible] Sample ID: [illegible] Seq: 925 13:55:40 31 Aug 1993 ICP

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | PPM | .0171 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | PPM | 11.57 | 412.8 | 482.4 | 488.8 | 479.9 | [illegible] |
| [illegible] | .4580 | PPM | .0104 | .4461 | .4620 | .4693 | .4556 | [illegible] |
| [illegible] | .4721 | PPM | .0094 | .4191 | .4616 | .4925 | .4614 | [illegible] |
| [illegible] | 441.6 | PPM | 5.575 | 437.2 | 446.8 | 452.7 | 444.1 | 436.3 |
| [illegible] | .9103 | PPM | .0127 | .8994 | .9055 | .9197 | .9038 | .8977 |
| [illegible] | .4587 | PPM | .0090 | .4522 | .4608 | .4690 | .4404 | [illegible] |
| [illegible] | .4497 | PPM | .0017 | .4437 | .4030 | .4541 | .4410 | [illegible] |
| [illegible] | .4601 | PPM | .0172 | .4611 | .4490 | .5081 | .4634 | [illegible] |
| [illegible] | 118.1 | PPM | 5.905 | 165.2 | 169.2 | 172.2 | 68.8 | [illegible] |
| [illegible] | 5.167 | PPM | .1023 | 5.320 | 5.280 | 5.321 | 5.007 | 5.377 |
| [illegible] | [illegible] | PPM | 9.191 | 521.5 | 514.3 | 511.3 | 517.1 | 522.3 |
| [illegible] | .4507 | PPM | .0057 | .4461 | .4572 | .4605 | .4556 | [illegible] |
| [illegible] | 1.642 | PPM | .0112 | 1.554 | 1.577 | 1.715 | 1.656 | 1.582 |
| [illegible] | .8466 | PPM | .0747 | .8671 | .8591 | .8317 | .8768 | .8297 |
| [illegible] | .9044 | PPM | .0688 | .9175 | .9846 | 1.060 | .9058 | 1.014 |
| [illegible] | .4124 | PPM | .0103 | .4445 | .4561 | .4651 | .4043 | [illegible] |
| [illegible] | .6646 | PPM | .0064 | .6561 | .6703 | .6758 | .6037 | .6577 |
| [illegible] | .5757 | PPM | .0467 | .6034 | .5552 | .5465 | .5776 | [illegible] |
| Pb1 | 1.017 | PPM | .0376 | 1.015 | 1.024 | 1.046 | .9714 | 1.022 |
| Sr1 | [illegible] | PPM | .0513 | .5165 | .5321 | .5753 | .5094 | [illegible] |

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456

# KEMRON ENVIRONMENTAL SERVICES
# ICP RUN LOGBOOK

ANALYST SLD DATE 05/03/05 TIME 1705/2008
METHOD # 6010B SOP # MB-006 WORK GROUP # 45510 45511 45329
CAL STD SOURCE MB&K 3055 ICP ICV/CCV SOURCE SLD050355ICV
ICS AB SOURCE TMB050295AB ICS A SOURCE MMB050295A POST SPK SOURCE [illegible]
1619

| Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs | Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs |
|---|---|---|---|---|---|---|---|---|---|
| | S0 | | | | 27. | MS-501-24 | 0.2 | 50/100 | Q |
| | S1 50 | | | | 28. | 25 | 1 | 50/100 | |
| | S2 5 | | | | 29. | 26 | 1 | 50/100 | |
| | S3 5 | | | | 30. | 27 | 1 | 50/100 | |
| | S4 | | | | 31. | 28 | 1 | 50/100 | |
| | "B" Values | | | | 32. | 29 | 1 | 50/100 | |
| | S5 | | | | 33. | 30 | 1 | 50/100 | |
| | S6 | | | | 34. | 31 | 1 | 50/100 | |
| 1. | ICV | | | | 35. | ICSA | | | |
| 2. | ICB X2 | | | | 36. | ICSAB | | | CCV/CCB |
| 3. | ICSA | | | | 37. | | | | |
| 4. | ICSAB | | | CCV/CCB | 38. | | | | |
| 5. | TMS-515-02 | | 5/50 | | 39. | | | | |
| 6. | 02D2 | | 1 | WMH-25-CH | 40. | | | | |
| 7. | 03 | | | | 41. | | | | |
| 8. | 0405 | | | 05 | 42. | | | | |
| 9. | 0505 | | 1 | 06 | 43. | | | | |
| 10. | ICSA | | | | 44. | | | | |
| 11. | ICSAB | | | CCV/CCB | 45. | | | | |
| 12. | TCS-516-01 | 0.5 | 5/50 | | 46. | | | | |
| 13. | 0102 | | — | | 47. | | | | |
| 14. | ICSA | | | | 48. | | | | |
| 15. | ICSAB | | | CCV/CCB | 49. | | | | |
| 16. | EPS | | | | 50. | | | | |
| 17. | MS-430-01 | 0.2 | [illegible]/100 | WMH-55-0140 | 51. | | | | |
| 18. | 402-01 | 0.2 | [illegible]/100 | WMH-55-0141 | 52. | | | | |
| 19. | 03 | 0.2 | [illegible]/100 | WMH-55-0142 | 53. | | | | |
| 20. | 404-01 | 0.2 | [illegible]/100 | WMH-55-0143 | 54. | | | | |
| 21. | ICSA | | | | 55. | | | | |
| 22. | ICSAB | | | CCV/CCB | 56. | | | | |
| 23. | MS-501-22 | 0.2 | [illegible]/100 | | 57. | | | | |
| 24. | 22D2 | 1 | [illegible]/100 | | 58. | | | | |
| 25. | 23 | 1 | [illegible]/100 | | 59. | | | | |
| 26. | 23 | 1 | [illegible]/100 | | 60. | | | | |

Comments:

Note: No entry for Dil represents 1X Dilution

Autosampler Run Key:

CCV - Continuing Calibration Verification
CCB = Continuing Calibration Blank
% D = Automatic Instrument Rerun due to % RSD > 20%
FRS = Full Recalibration Sequence

ID = Automatic Instrument Dilution
R = Analyst Rerun
BLK = Blank Rerun

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Peak Seq: 492 20:06:09 03 Sep 1998

XAp = 206 YAp = 125 Intensity = 3776198

*** Standard: 1 Rep: 1 Seq: 496 20:22:06 03 Sep 1998 ICP

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Ag1 | .0000 | PPM | 27096 | 23829 | 22614 | 25186 | 26446 | |
| | | | Ave. Int. = | 25033 | S. D. = | 1844 | | |
| Al3 | .0000 | PPM | 78798 | 74599 | 77883 | 73120 | 75188 | |
| | | | Ave. Int. = | 75918 | S. D. = | 2359 | | |
| Ba4 | .0000 | PPM | 5080 | 5167 | 5535 | 5297 | 5576 | |
| | | | Ave. Int. = | 5331 | S. D. = | 219 | | |
| Be2 | .0000 | PPM | -31542 | -33005 | -34352 | -32581 | -31859 | |
| | | | Ave. Int. = | -32668 | S. D. = | 1104 | | |
| Ca3 | .0000 | PPM | 2621 | 2341 | 2563 | 2555 | 2503 | |
| | | | Ave. Int. = | 2517 | S. D. = | 107 | | |
| Cd1 | .0000 | PPM | 3291 | 3018 | 3102 | 3133 | 3018 | |
| | | | Ave. Int. = | 3112 | S. D. = | 112 | | |
| Co1 | .0000 | PPM | -1342 | -819 | -1631 | -1090 | -2005 | |
| | | | Ave. Int. = | -1377 | S. D. = | 462 | | |
| Cr4 | .0000 | PPM | 9248 | 9973 | 6942 | 8408 | 10080 | |
| | | | Ave. Int. = | 8930 | S. D. = | 1298 | | |
| Cu1 | .0000 | PPM | 18060 | 19822 | 16308 | 16137 | 15793 | |
| | | | Ave. Int. = | 17224 | S. D. = | 1697 | | |
| Fe2 | .0000 | PPM | 4015 | 4392 | 4626 | 5632 | 5420 | |
| | | | Ave. Int. = | 4817 | S. D. = | 687 | | |
| K 1 | .0000 | PPM | 1799 | 552 | 1978 | -1431 | 2668 | |
| | | | Ave. Int. = | 1113 | S. D. = | 1614 | | |
| Mg4 | .0000 | PPM | 11638 | 12641 | 11013 | 11904 | 10809 | |
| | | | Ave. Int. = | 11601 | S. D. = | 733 | | |
| Mn4 | .0000 | PPM | 2317 | 2235 | 2020 | 2180 | 2458 | |
| | | | Ave. Int. = | 2242 | S. D. = | 162 | | |
| Na2 | .0000 | PPM | 20884 | 18969 | 21575 | 16661 | 20996 | |
| | | | Ave. Int. = | 19817 | S. D. = | 2019 | | |
| Ni3 | .0000 | PPM | 1835 | 2479 | 617 | 1858 | 1214 | |
| | | | Ave. Int. = | 1601 | S. D. = | 709 | | |
| Sb1 | .0000 | PPM | 12018 | 17197 | 9251 | 9777 | 6873 | |
| | | | Ave. Int. = | 11023 | S. D. = | 3906 | | |
| V 2 | .0000 | PPM | 287749 | 283852 | 289585 | 290668 | 287583 | |
| | | | Ave. Int. = | 287887 | S. D. = | 2599 | | |
| Zn3 | .0000 | PPM | 4028 | 5436 | 5310 | 5344 | 5088 | |
| | | | Ave. Int. = | 5041 | S. D. = | 581 | | |
| As2 | .0000 | PPM | -2519 | -3767 | -2464 | -3194 | -1690 | |
| | | | Ave. Int. = | -2727 | S. D. = | 789 | | |
| Pb1 | .0000 | PPM | -10460 | -10425 | -9979 | -10544 | -11704 | |
| | | | Ave. Int. = | -10622 | S. D. = | 643 | | |
| Se1 | .0000 | PPM | 18060 | 16257 | 15809 | 15398 | 15250 | |
| | | | Ave. Int. = | 16155 | S. D. = | 1135 | | |

95

410

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Standard: 2 Rep: 1 | | | | Seq: 497 | | 20:26:54 03 Sep 1998 ICP | | |
| Ag1 | .0125 | PPM | 27184 | 26318 | 27986 | 26433 | 23003 | |
| | | | Ave. Int. = | 26185 | S. D. = | 1900 | | |
| Al3 | .1000 | PPM | 93315 | 96169 | 99967 | 99856 | 97454 | |
| | | | Ave. Int. = | 98012 | S. D. = | 1795 | | |
| Ba4 | .1000 | PPM | 41519 | 41775 | 42296 | 42894 | 42718 | |
| | | | Ave. Int. = | 42240 | S. D. = | 591 | | |
| Be2 | .0025 | PPM | -25511 | -24937 | -25454 | -25967 | -26055 | |
| | | | Ave. Int. = | -25586 | S. D. = | 449 | | |
| Ca3 | .2500 | PPM | 18558 | 18537 | 18577 | 19039 | 18997 | |
| | | | Ave. Int. = | 18742 | S. D. = | 253 | | |
| Cd1 | .0250 | PPM | 8530 | 8772 | 8567 | 9109 | 8890 | |
| | | | Ave. Int. = | 8780 | S. D. = | 233 | | |
| Co1 | .0250 | PPM | 7497 | 6523 | 6394 | 7690 | 6776 | |
| | | | Ave. Int. = | 6976 | S. D. = | 584 | | |
| Cr4 | .0100 | PPM | 21262 | 20281 | 21493 | 20826 | 22855 | |
| | | | Ave. Int. = | 21343 | S. D. = | 963 | | |
| Cu1 | .0125 | PPM | 50262 | 54132 | 56450 | 54249 | 54676 | |
| | | | Ave. Int. = | 53954 | S. D. = | 2264 | | |
| Fe2 | .0500 | PPM | 24622 | 23890 | 23002 | 23218 | 24026 | |
| | | | Ave. Int. = | 23752 | S. D. = | 652 | | |
| K 1 | .2500 | PPM | 2189 | 4488 | 5665 | 4193 | 2240 | |
| | | | Ave. Int. = | 3755 | S. D. = | 1510 | | |
| Mg4 | .2500 | PPM | 29539 | 29151 | 29914 | 29661 | 28767 | |
| | | | Ave. Int. = | 29406 | S. D. = | 451 | | |
| Mn4 | .0250 | PPM | 36378 | 35970 | 36533 | 37167 | 35992 | |
| | | | Ave. Int. = | 36412 | S. D. = | 497 | | |
| Na2 | .2500 | PPM | 56031 | 57611 | 58982 | 60696 | 52237 | |
| | | | Ave. Int. = | 57111 | S. D. = | 3232 | | |
| Ni3 | .0250 | PPM | 4563 | 3192 | 3943 | 5313 | 5468 | |
| | | | Ave. Int. = | 4496 | S. D. = | 952 | | |
| Sb1 | .0500 | PPM | 8378 | 10613 | 9724 | 10809 | 10009 | |
| | | | Ave. Int. = | 9907 | S. D. = | 961 | | |
| V 2 | .0250 | PPM | 314902 | 318641 | 318248 | 320004 | 320693 | |
| | | | Ave. Int. = | 318498 | S. D. = | 2242 | | |
| Zn3 | .0250 | PPM | 21722 | 21307 | 21165 | 21385 | 23079 | |
| | | | Ave. Int. = | 21732 | S. D. = | 781 | | |
| As2 | .0500 | PPM | -709 | -92 | 657 | -1213 | 151 | |
| | | | Ave. Int. = | -241 | S. D. = | 732 | | |
| Pb1 | .0500 | PPM | -10400 | -11205 | -9933 | -8753 | -9513 | |
| | | | Ave. Int. = | -9961 | S. D. = | 922 | | |
| Se1 | .0500 | PPM | 19086 | 20997 | 23249 | 19307 | 24887 | |
| | | | Ave. Int. = | 21505 | S. D. = | 2521 | | |

*** Peak Seq: 498 20:29:16 03 Sep 1998

XAp = 206 YAp = 125 Intensity = 3764060

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Standard: 3 Rep: 1 | | | | Seq: 499 | | 20:31:43 03 Sep 1998 ICP | | |
| Ag1 | .1250 | PPM | 134335 | 134003 | 137699 | 136206 | 135573 | |
| | | | Ave. Int. = | 135949 | S. D. = | 1901 | | |
| Al3 | 1.000 | PPM | 303173 | 301491 | 309913 | 307540 | 312512 | |
| | | | Ave. Int. = | 306926 | S. D. = | 4506 | | |
| Ba4 | 1.000 | PPM | 463376 | 463398 | 473714 | 473417 | 477029 | |
| | | | Ave. Int. = | 470187 | S. D. = | 6367 | | |
| Be2 | .0250 | PPM | 51960 | 52951 | 52018 | 53118 | 52326 | |
| | | | Ave. Int. = | 52475 | S. D. = | 533 | | |
| Ca3 | 2.500 | PPM | 181938 | 181171 | 184171 | 184927 | 186628 | |
| | | | Ave. Int. = | 183637 | S. D. = | 2144 | | |
| Cd1 | .2500 | PPM | 69935 | 69457 | 70657 | 70872 | 71664 | |
| | | | Ave. Int. = | 70557 | S. D. = | 994 | | |
| Co1 | .2500 | PPM | 89902 | 89344 | 91012 | 88502 | 91569 | |
| | | | Ave. Int. = | 90066 | S. D. = | 1240 | | |
| Cr4 | .1000 | PPM | 157204 | 153554 | 155359 | 155576 | 159123 | |
| | | | Ave. Int. = | 156163 | S. D. = | 2100 | | |
| Cu1 | .1250 | PPM | 368858 | 370113 | 374699 | 376709 | 380143 | |
| | | | Ave. Int. = | 374104 | S. D. = | 4665 | | |
| Fe2 | .5000 | PPM | 217808 | 216197 | 221169 | 222841 | 224766 | |
| | | | Ave. Int. = | 220556 | S. D. = | 3531 | | |
| K 1 | 2.500 | PPM | 30845 | 31099 | 32808 | 30684 | 32947 | |
| | | | Ave. Int. = | 31677 | S. D. = | 1107 | | |
| Mg4 | 2.500 | PPM | 218717 | 216738 | 224348 | 224015 | 226340 | |
| | | | Ave. Int. = | 222032 | S. D. = | 4089 | | |
| Mn4 | .2500 | PPM | 399073 | 397292 | 404836 | 406351 | 412987 | |
| | | | Ave. Int. = | 404508 | S. D. = | 6486 | | |
| Na2 | 2.500 | PPM | 415102 | 411265 | 421444 | 419752 | 420620 | |
| | | | Ave. Int. = | 418037 | S. D. = | 4744 | | |
| Ni3 | .2500 | PPM | 36423 | 34254 | 36143 | 35969 | 35214 | |
| | | | Ave. Int. = | 35641 | S. D. = | 926 | | |
| Sb1 | .5000 | PPM | 28044 | 25383 | 24159 | 27581 | 26410 | |
| | | | Ave. Int. = | 26415 | S. D. = | 1532 | | |
| V 2 | .2500 | PPM | 655714 | 657452 | 667569 | 666165 | 672533 | |
| | | | Ave. Int. = | 664487 | S. D. = | 8074 | | |
| Zn3 | .2500 | PPM | 145874 | 148720 | 149769 | 152613 | 152352 | |
| | | | Ave. Int. = | 149866 | S. D. = | 2783 | | |
| As2 | .5000 | PPM | 16839 | 16816 | 17072 | 17683 | 17076 | |
| | | | Ave. Int. = | 17097 | S. D. = | 350 | | |
| Pb1 | .5000 | PPM | 8381 | 8401 | 7296 | 9354 | 7981 | |
| | | | Ave. Int. = | 8283 | S. D. = | 748 | | |
| Se1 | .5000 | PPM | 57630 | 54133 | 54136 | 57904 | 56605 | |
| | | | Ave. Int. = | 56062 | S. D. = | 1818 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Standard: 4 Rep: 1 | | | | Seq: 500 | | 20:36:32 03 Sep 1998 ICP | | |
| Ag1 | 1.250 | PPM | | 1112218 | 1153363 | 1153918 | 1137352 | 1125663 |
| | | | Ave. Int. = | 1136703 | S. D. = | 18121 | | |
| Al3 | 10.00 | PPM | | 2098681 | 2195666 | 2190023 | 2164527 | 2137796 |
| | | | Ave. Int. = | 2157339 | S. D. = | 40036 | | |
| Ba4 | 10.00 | PPM | | 4015137 | 4190936 | 4173370 | 4121904 | 4051284 |
| | | | Ave. Int. = | 4111527 | S. D. = | 77140 | | |
| Be2 | .2500 | PPM | | 725389 | 757363 | 757910 | 748394 | 735280 |
| | | | Ave. Int. = | 744867 | S. D. = | 14230 | | |
| Ca3 | 25.00 | PPM | | 1585307 | 1644046 | 1640495 | 1625853 | 1605178 |
| | | | Ave. Int. = | 1620176 | S. D. = | 24778 | | |
| Cd1 | 2.500 | PPM | | 592079 | 615768 | 613881 | 610374 | 602882 |
| | | | Ave. Int. = | 606997 | S. D. = | 9685 | | |
| Co1 | 2.500 | PPM | | 793618 | 825330 | 824028 | 816087 | 809416 |
| | | | Ave. Int. = | 813696 | S. D. = | 12935 | | |
| Cr4 | 1.000 | PPM | | 1280319 | 1333487 | 1330427 | 1324168 | 1303926 |
| | | | Ave. Int. = | 1314465 | S. D. = | 22292 | | |
| Cu1 | 1.250 | PPM | | 3144935 | 3267738 | 3273714 | 3224593 | 3173529 |
| | | | Ave. Int. = | 3216908 | S. D. = | 56865 | | |
| Fe2 | 5.000 | PPM | | 1876562 | 1952966 | 1945309 | 1921339 | 1897618 |
| | | | Ave. Int. = | 1918859 | S. D. = | 32062 | | |
| K 1 | 25.00 | PPM | | 275675 | 290528 | 289826 | 285712 | 282487 |
| | | | Ave. Int. = | 284846 | S. D. = | 6073 | | |
| Mg4 | 25.00 | PPM | | 1905022 | 1977507 | 1966886 | 1944420 | 1926555 |
| | | | Ave. Int. = | 1944078 | S. D. = | 29454 | | |
| Mn4 | 2.500 | PPM | | 3482533 | 3613834 | 3609293 | 3564336 | 3516902 |
| | | | Ave. Int. = | 3557790 | S. D. = | 57037 | | |
| Na2 | 25.00 | PPM | | 3462841 | 3630412 | 3627433 | 3572938 | 3509306 |
| | | | Ave. Int. = | 3560586 | S. D. = | 73621 | | |
| Ni3 | 2.500 | PPM | | 302275 | 314883 | 313943 | 310158 | 307770 |
| | | | Ave. Int. = | 309816 | S. D. = | 5106 | | |
| Sb1 | 5.000 | PPM | | 169867 | 175811 | 178915 | 176706 | 173186 |
| | | | Ave. Int. = | 174897 | S. D. = | 3481 | | |
| V 2 | 2.500 | PPM | | 3609864 | 3754073 | 3741481 | 3707293 | 3648974 |
| | | | Ave. Int. = | 3692337 | S. D. = | 61507 | | |
| Zn3 | 2.500 | PPM | | 1278123 | 1331584 | 1325107 | 1311741 | 1303201 |
| | | | Ave. Int. = | 1309951 | S. D. = | 20973 | | |
| As2 | 5.000 | PPM | | 170956 | 174647 | 175431 | 176164 | 169510 |
| | | | Ave. Int. = | 173342 | S. D. = | 2933 | | |
| Pb1 | 5.000 | PPM | | 161570 | 170993 | 169434 | 166073 | 164832 |
| | | | Ave. Int. = | 166580 | S. D. = | 3743 | | |
| Se1 | 5.000 | PPM | | 374577 | 386575 | 386290 | 386150 | 374293 |
| | | | Ave. Int. = | 381577 | S. D. = | 6522 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Standard: 5 Rep: 1 | | | | Seq: 501 | | 20:41:21 03 Sep 1998 ICP | | |
| Ag1 | 2.500 | PPM | | 2296534 | 2321130 | 2344797 | 2322398 | 2308395 |
| | | | Ave. Int. = | 2318651 | S. D. = | 18015 | | |
| Al3 | 20.00 | PPM | | 4302211 | 4359809 | 4401897 | 4363523 | 4343019 |
| | | | Ave. Int. = | 4354092 | S. D. = | 36129 | | |
| Ba4 | 20.00 | PPM | | 8196520 | 8283674 | 8393239 | 8309346 | 8246490 |
| | | | Ave. Int. = | 8265654 | S. D. = | 73525 | | |
| Be2 | .5000 | PPM | | 1582784 | 1565426 | 1584254 | 1564389 | 1553884 |
| | | | Ave. Int. = | 1564147 | S. D. = | 12653 | | |
| Ca3 | 50.00 | PPM | | 3243740 | 3268953 | 3294037 | 3264920 | 3254606 |
| | | | Ave. Int. = | 3265251 | S. D. = | 18031 | | |
| Cd1 | 5.000 | PPM | | 1210874 | 1221864 | 1227856 | 1219966 | 1214637 |
| | | | Ave. Int. = | 1219043 | S. D. = | 6570 | | |
| Co1 | 5.000 | PPM | | 1627292 | 1639631 | 1664193 | 1640477 | 1631437 |
| | | | Ave. Int. = | 1640646 | S. D. = | 14303 | | |
| Cr4 | 2.000 | PPM | | 2603251 | 2635125 | 2648008 | 2636232 | 2625751 |
| | | | Ave. Int. = | 2630673 | S. D. = | 14817 | | |
| Cu1 | 2.500 | PPM | | 6466264 | 6540981 | 6613549 | 6550591 | 6501715 |
| | | | Ave. Int. = | 6538620 | S. D. = | 49665 | | |
| Fe2 | 10.00 | PPM | | 3826053 | 3866502 | 3888287 | 3857333 | 3842709 |
| | | | Ave. Int. = | 3856177 | S. D. = | 23600 | | |
| K 1 | 50.00 | PPM | | 578539 | 587027 | 593437 | 588419 | 581468 |
| | | | Ave. Int. = | 585858 | S. D. = | 5756 | | |
| Mg4 | 50.00 | PPM | | 3958712 | 3991656 | 4031806 | 3985017 | 3964694 |
| | | | Ave. Int. = | 3990377 | S. D. = | 26371 | | |
| Mn4 | 5.000 | PPM | | 7099785 | 7156689 | 7233494 | 7177632 | 7138577 |
| | | | Ave. Int. = | 7161935 | S. D. = | 49498 | | |
| Na2 | 50.00 | PPM | | 7235493 | 7317255 | 7413168 | 7326166 | 7265973 |
| | | | Ave. Int. = | 7311611 | S. D. = | 67886 | | |
| Ni3 | 5.000 | PPM | | 608002 | 618975 | 622536 | 618302 | 620272 |
| | | | Ave. Int. = | 617617 | S. D. = | 5613 | | |
| Sb1 | 10.00 | PPM | | 348204 | 349371 | 354702 | 351612 | 353192 |
| | | | Ave. Int. = | 351416 | S. D. = | 2669 | | |
| V 2 | 5.000 | PPM | | 7106150 | 7166308 | 7217922 | 7170750 | 7141513 |
| | | | Ave. Int. = | 7160529 | S. D. = | 41081 | | |
| Zn3 | 5.000 | PPM | | 2600026 | 2627348 | 2648719 | 2629961 | 2606366 |
| | | | Ave. Int. = | 2622466 | S. D. = | 19572 | | |
| As2 | 10.00 | PPM | | 354473 | 359539 | 362681 | 360346 | 354701 |
| | | | Ave. Int. = | 358348 | S. D. = | 3673 | | |
| Pb1 | 10.00 | PPM | | 344302 | 347616 | 352674 | 349832 | 344836 |
| | | | Ave. Int. = | 347852 | S. D. = | 3497 | | |
| Se1 | 10.00 | PPM | | 750522 | 766034 | 780979 | 765944 | 753701 |
| | | | Ave. Int. = | 763436 | S. D. = | 12066 | | |

Protocol: CLP-2 Y IS SEQ Power: 1.1 KW
Mode: Simultaneous Rev: 3.003 Time: 20:48:44 03 Sep 1998 Coolant: 16 LPM
Folder: CLP0831 Seq: 502 Plasma: On Print: On Neb: 45 PSI
User: Batch: Id: Std5Rep1 Cup: 1 15 Auxil: 0.6 LPM
State: Idle Xmit: Off Autosampler: On

CALIBRATION: Accepted Values

| | Current | Accepted | Type | A | B | C | r |
|---|---|---|---|---|---|---|---|
| Ag1 | Yes | 20:48 03-Sep-98 | L | | 1.08139e-6 | -1.73547e-2 | .999893 |
| Al3 | Yes | 20:48 03-Sep-98 | L | | 4.61042e-6 | -3.40997e-1 | .999893 |
| Ba4 | Yes | 20:48 03-Sep-98 | L | | 2.42218e-6 | -3.64616e-2 | .999969 |
| Be2 | Yes | 20:48 03-Sep-98 | L | | 3.14356e-7 | 1.06927e-2 | .999902 |
| Ca3 | Yes | 20:48 03-Sep-98 | L | | 1.53759e-5 | -9.5868+e-2 | .999973 |
| Cd1 | Yes | 20:48 03-Sep-98 | L | | 4.11879e-6 | -1.8+872e-2 | .999977 |
| Co1 | Yes | 20:48 03-Sep-98 | L | | 3.05359e-6 | -2.33473e-3 | .999975 |
| Cr4 | Yes | 20:48 03-Sep-98 | L | | 7.64392e-7 | -9.89308e-3 | .999978 |
| Cu1 | Yes | 20:48 03-Sep-98 | L | | 3.54028e-7 | -7.75212e-3 | .999939 |
| Fe2 | Yes | 20:48 03-Sep-98 | L | | 2.60409e-6 | -2.68119e-2 | .999975 |
| K 1 | Yes | 20:48 03-Sep-98 | L | | 8.58490e-5 | -2.72869e-2 | .999884 |
| Mg4 | Yes | 20:48 03-Sep-98 | L | | 1.26130e-5 | -8.99170e-2 | .999888 |
| Mn4 | Yes | 20:48 03-Sep-98 | L | | 7.00298e-7 | -8.52717e-3 | .999973 |
| Na2 | Yes | 20:48 03-Sep-98 | L | | 6.89083e-6 | -1.158++e-1 | .999875 |
| Ni3 | Yes | 20:48 03-Sep-98 | L | | 8.12932e-6 | -2.07+10e-2 | .999987 |

PgDn

Update coefficients

Protocol: CLP-2 Y IS SEQ Power: 1.1 Kw
Mode: Simultaneous Rev: 3.003 Time: 20:48:46 03 Sep 1998 Coolant: 16 LPM
Folder: CLP0831 Seq: 502 Plasma: On Print: On Neb: 45 PSI
User: Batch: Id: Std5Rep1 Cup: 1 15 Aux1: 0.6 LPM
State: Idle Xmit: Off Autosampler: On

CALIBRATION: Accepted Values PgUp

| | Current | Accepted | Type | A | B | C | r |
|---|---|---|---|---|---|---|---|
| Sb1 | Yes | 20:48 03-Sep-98 | L | | 2.94371e-5 | -2.59035e-1 | .999847 |
| V 2 | Yes | 20:48 03-Sep-98 | L | | 7.29345e-7 | -2.13477e-1 | .999974 |
| Zn3 | Yes | 20:48 03-Sep-98 | L | | 1.91115e-6 | -1.90690e-2 | .999986 |
| As2 | Yes | 20:48 03-Sep-98 | L | | 2.76850e-5 | 7.03224e-2 | .999900 |
| Pb1 | Yes | 20:48 03-Sep-98 | L | | 2.78741e-5 | 3.05107e-1 | .999973 |
| Se1 | Yes | 20:48 03-Sep-98 | L | | 1.34508e-5 | -2.20651e-1 | .999925 |
| Tl1 | Yes | 16:51 01-Sep-98 | L | | 1.11717e-4 | 4.30749e-1 | .999971 |

Update coefficients

Folder: CLP0831 Page 173

20:59:55 03 Sep 1998 Protocol: CLP-2 Y IS BKD

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Peak Seq: 502 20:59:55 03 Sep 1998

XAp = 206 YAp = 125 Intensity = 3776327

*** Update Intercept (IEC) Seq: 503 21:02:20 03 Sep 1998 ICP

| | | | Corr. | Avg. | SD/RSD | Old |
|---|---|---|---|---|---|---|
| Ag1 | .0000 | PPM | .0053 | -.0053 | .0018 | -.0053 |
| Al3 | .0000 | PPM | -.0103 | .0103 | .0155 | .0103 |
| Ba4 | .0000 | PPM | .0232 | -.0232 | .0002 | -.0232 |
| Be2 | .0000 | PPM | -.0005 | .0005 | .0002 | .0005 |
| Ca3 | .0000 | PPM | .0564 | -.0564 | .0015 | -.0564 |
| Cd1 | .0000 | PPM | .0056 | -.0056 | .0006 | -.0056 |
| Co1 | .0000 | PPM | .0070 | -.0070 | .0022 | -.0070 |
| Cr4 | .0000 | PPM | .0021 | -.0021 | .0013 | -.0021 |
| Cu1 | .0000 | PPM | .0010 | -.0010 | .0009 | -.0010 |
| Fe2 | .0000 | PPM | .0145 | -.0145 | .0016 | -.0145 |
| K 1 | .0000 | PPM | .0841 | -.0841 | .1107 | -.0841 |
| Mg4 | .0000 | PPM | -.0478 | .0478 | .0001 | .0478 |
| Mn4 | .0000 | PPM | .0071 | -.0071 | .0005 | -.0071 |
| Na2 | .0000 | PPM | -.0261 | .0261 | .0127 | .0261 |
| Ni3 | .0000 | PPM | .0091 | -.0091 | .0046 | -.0091 |
| Sb1 | .0000 | PPM | -.0093 | .0093 | .0332 | .0093 |
| V 2 | .0000 | PPM | -.0024 | .0024 | .0018 | .0024 |
| Zn3 | .0000 | PPM | .0099 | -.0099 | .0012 | -.0099 |
| As2 | .0000 | PPM | -.0171 | .0171 | .0106 | .0171 |
| Pb1 | .0000 | PPM | .0177 | -.0177 | .0284 | -.0177 |
| Se1 | .0000 | PPM | -.0061 | .0061 | .0264 | .0061 |

Folder: CLP0A51 Page 113

21:07:07 03 Sep 1998 Protocol: CLP-2 Y IS STD

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 4 CH4 HI STD Seq: 504 21:07:07 03 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 100.9 | 2.524 | 2.500 | PPM | .0447 |
| Al3 | | 100.8 | 20.15 | 20.00 | PPM | .3328 |
| Ba4 | | 100.6 | 20.12 | 20.00 | PPM | .3241 |
| Be2 | | 100.5 | .5027 | .5000 | PPM | .0078 |
| Ca3 | | 100.9 | 50.46 | 50.00 | PPM | .6466 |
| Cd1 | | 100.9 | 5.047 | 5.000 | PPM | .0653 |
| Co1 | | 100.9 | 5.046 | 5.000 | PPM | .0758 |
| Cr4 | | 100.8 | 2.016 | 2.000 | PPM | .0268 |
| Cu1 | | 100.9 | 2.523 | 2.500 | PPM | .0355 |
| Fe2 | | 100.9 | 10.09 | 10.00 | PPM | .1420 |
| K 1 | | 101.0 | 50.51 | 50.00 | PPM | .9391 |
| Mg4 | | 101.2 | 50.58 | 50.00 | PPM | .7561 |
| Mn4 | | 100.9 | 5.044 | 5.000 | PPM | .0663 |
| Na2 | | 100.7 | 50.37 | 50.00 | PPM | .8789 |
| Ni3 | | 100.9 | 5.045 | 5.000 | PPM | .0638 |
| Sb1 | | 100.8 | 10.08 | 10.00 | PPM | .1440 |
| V 2 | | 100.7 | 5.033 | 5.000 | PPM | .0729 |
| Zn3 | | 101.4 | 5.069 | 5.000 | PPM | .0748 |
| As2 | | 100.9 | 10.09 | 10.00 | PPM | .1708 |
| Pb1 | | 101.2 | 10.12 | 10.00 | PPM | .1000 |
| Se1 | | 100.6 | 10.06 | 10.00 | PPM | .1967 |

*** Peak Seq: 505 21:09:48 03 Sep 1998

XAb = 206 YAb = 125 Intensity = 3779102

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 6 Ck6 ICV Seq: 506 21:03:13 03 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 101.7 | 1.271 | 1.250 | PPM | .0109 |
| Al3 | | 102.4 | 10.24 | 10.00 | PPM | .0773 |
| Ba4 | | 103.0 | 10.30 | 10.00 | PPM | .0939 |
| Be2 | | 98.95 | .2474 | .2500 | PPM | .0018 |
| Ca3 | | 100.5 | 25.13 | 25.00 | PPM | .1627 |
| Cd1 | | 101.5 | 2.537 | 2.500 | PPM | .0181 |
| Co1 | | 101.3 | 2.533 | 2.500 | PPM | .0156 |
| Cr4 | | 101.3 | 1.013 | 1.000 | PPM | .0069 |
| Cu1 | | 102.2 | 1.277 | 1.250 | PPM | .0130 |
| Fe2 | | 102.0 | 5.098 | 5.000 | PPM | .0404 |
| K 1 | | 101.0 | 25.24 | 25.00 | PPM | .2113 |
| Mg4 | | 100.4 | 25.10 | 25.00 | PPM | .1916 |
| Mn4 | | 102.1 | 2.552 | 2.500 | PPM | .0197 |
| Na2 | | 101.3 | 25.31 | 25.00 | PPM | .2659 |
| Ni3 | | 100.6 | 2.515 | 2.500 | PPM | .0260 |
| Sb1 | | 99.86 | 4.993 | 5.000 | PPM | .0416 |
| V 2 | | 101.4 | 2.536 | 2.500 | PPM | .0245 |
| Zn3 | | 102.0 | 2.550 | 2.500 | PPM | .0161 |
| As2 | | 99.49 | 4.974 | 5.000 | PPM | .0486 |
| Pb1 | | 101.8 | 5.091 | 5.000 | PPM | .0162 |
| Se1 | | 98.59 | 4.929 | 5.000 | PPM | .0752 |

*** Check Standard: 7 Ck7 ICB Seq: 507 21:36:34 03 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | -83.71 | -.0039 | .0047 | PPM | .0021 |
| Al3 | | -12.33 | -.0046 | .0374 | PPM | .0079 |
| Ba4 | | -456.6 | -.0067 | .0015 | PPM | .0002 |
| Be2 | | 21.38 | .0001 | .0006 | PPM | .0001 |
| Ca3 | | -39.10 | -.0077 | .0198 | PPM | .0023 |
| Cd1 | | -3.279 | -.0001 | .0039 | PPM | .0008 |
| Co1 | | 49.91 | .0020 | .0040 | PPM | .0019 |
| Cr4 | | 1.406 | .0001 | .0041 | PPM | .0009 |
| Cu1 | | .4504 | .0000 | .0023 | PPM | .0015 |
| Fe2 | | .5908 | .0001 | .0193 | PPM | .0015 |
| K 1 | | 63.72 | .1659 | .2604 | PPM | .0899 |
| Mg4 | | -32.18 | -.0057 | .0176 | PPM | .0155 |
| Mn4 | | 8.808 | .0003 | .0034 | PPM | .0001 |
| Na2 | | -3.991 | -.0092 | .2311 | PPM | .0195 |
| Ni3 | | -14.99 | -.0013 | .0090 | PPM | .0047 |
| Sb1 | | -20.79 | -.0084 | .0406 | PPM | .0021 |
| V 2 | | -89.30 | -.0070 | .0078 | PPM | .0015 |
| Zn3 | | -26.21 | -.0025 | .0095 | PPM | .0013 |
| As2 | | -6.398 | -.0021 | .0332 | PPM | .0163 |
| Pb1 | | 127.4 | .0252 | .0198 | PPM | .0257 |
| Se1 | | .2521 | .0001 | .0304 | PPM | .0078 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Peak Seq: 508 21:46:40 03 Sep 1998

XAp = 206 YAp = 125 Intensity = 3827048

*** Check Standard: 7 CH7 ICB Seq: 509 21:49:04 03 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | -74.84 | -.0035 | .0047 | PPM | .0012 |
| Al3 | | 8.194 | .0031 | .0374 | PPM | .0106 |
| Ba4 | | -464.8 | -.0068 | .0015 | PPM | .0002 |
| Be2 | | 14.84 | .0001 | .0006 | PPM | .0002 |
| Ca3 | | -32.48 | -.0064 | .0198 | PPM | .0030 |
| Cd1 | | 2.500 | .0001 | .0039 | PPM | .0004 |
| Co1 | | 48.46 | .0019 | .0040 | PPM | .0017 |
| Cr4 | | -12.32 | -.0005 | .0041 | PPM | .0006 |
| Cu1 | | -13.27 | -.0003 | .0023 | PPM | .0008 |
| Fe2 | | -3.106 | -.0006 | .0193 | PPM | .0014 |
| K 1 | | 91.36 | .2379 | .2604 | PPM | .1477 |
| Mg4 | | .2468 | .0000 | .0176 | PPM | .0066 |
| Mn4 | | 2.675 | .0001 | .0034 | PPM | .0003 |
| Na2 | | 2.369 | .0055 | .2311 | PPM | .0130 |
| Ni3 | | 37.50 | .0034 | .0090 | PPM | .0075 |
| Sb1 | | -58.09 | -.0236 | .0406 | PPM | .0280 |
| V 2 | | -53.48 | -.0073 | .0078 | PPM | .0038 |
| Zn3 | | -33.04 | -.0032 | .0095 | PPM | .0001 |
| As2 | | 6.791 | .0023 | .0332 | PPM | .0232 |
| Pb1 | | 56.26 | .0111 | .0198 | PPM | .0179 |
| Se1 | | 2.564 | .0008 | .0304 | PPM | .0162 |

*** Peak Seq: 510 22:00:51 03 Sep 1998

XAp = 206 YAp = 125 Intensity = 3778025

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: ICSA | | | | Seq: 511 | 22:03:16 03 Sep 1998 ICP | | | |
| Ag1 | .0019 | PPM | .0029 | .0038 | -.0010 | .0056 | -.0011 | .0021 |
| Al3 | 463.8 | PPM | 5.107 | 469.1 | 467.2 | 463.5 | 456.6 | 460.2 |
| Ba4 | -.0028 | PPM | .0004 | -.0031 | -.0027 | -.0026 | -.0024 | -.0035 |
| Be2 | .0014 | PPM | .0002 | .0017 | .0014 | .0013 | .0015 | .0010 |
| Ca3 | 437.6 | PPM | 5.447 | 443.4 | 441.2 | 439.8 | 431.7 | 431.9 |
| Cd1 | .0002 | PPM | .0007 | .0001 | .0005 | -.0004 | .0011 | -.0005 |
| Co1 | .0029 | PPM | .0010 | .0013 | .0033 | .0028 | .0036 | .0035 |
| Cr4 | .0037 | PPM | .0008 | .0038 | .0047 | .0041 | .0035 | .0025 |
| Cu1 | .0108 | PPM | .0007 | .0110 | .0118 | .0102 | .0109 | .0103 |
| Fe2 | 169.4 | PPM | 2.086 | 171.5 | 170.8 | 170.3 | 167.0 | 167.3 |
| K 1 | .0144 | PPM | .1665 | -.2152 | .1275 | .2004 | -.0852 | .0440 |
| Mg4 | 495.4 | PPM | 6.428 | 501.7 | 499.6 | 496.7 | 488.3 | 488.6 |
| Mn4 | .0083 | PPM | .0005 | .0080 | .0091 | .0077 | .0083 | .0085 |
| Na2 | .0389 | PPM | .0108 | .0574 | .0327 | .0391 | .0309 | .0344 |
| Ni3 | .0135 | PPM | .0104 | .0094 | .0098 | .0025 | .0300 | .0158 |
| Sb1 | -.0581 | PPM | .0214 | -.0511 | -.0941 | -.0398 | -.0596 | -.0459 |
| V 2 | -.0121 | PPM | .0023 | -.0110 | -.0104 | -.0128 | -.0105 | -.0159 |
| Zn3 | .0132 | PPM | .0023 | .0153 | .0123 | .0144 | .0143 | .0096 |
| As2 | .0359 | PPM | .0851 | .0692 | .1615 | -.0618 | .0233 | -.0126 |
| Pb1 | .1161 | PPM | .0274 | .1339 | .1159 | .1354 | .1262 | .0691 |
| Se1 | .0064 | PPM | .0422 | .0399 | -.0067 | .0611 | -.0294 | -.0330 |
| *** Sample ID: ICSAB | | | | Seq: 512 | 22:07:59 03 Sep 1998 ICP | | | |
| Ag1 | 1.005 | PPM | .0172 | 1.003 | 1.018 | 1.010 | .9944 | .9815 |
| Al3 | 485.3 | PPM | 8.078 | 491.8 | 492.5 | 488.6 | 478.6 | 474.8 |
| Ba4 | .4887 | PPM | .0080 | .4968 | .4952 | .4905 | .4824 | .4765 |
| Be2 | .4978 | PPM | .0079 | .5045 | .5047 | .5009 | .4914 | .4875 |
| Ca3 | 455.8 | PPM | 5.879 | 460.2 | 462.3 | 457.1 | 451.4 | 448.3 |
| Cd1 | .9291 | PPM | .0113 | .9356 | .9436 | .9301 | .9213 | .9152 |
| Co1 | .4683 | PPM | .0069 | .4773 | .4749 | .4718 | .4589 | .4587 |
| Cr4 | .4671 | PPM | .0055 | .4704 | .4727 | .4694 | .4639 | .4593 |
| Cu1 | .5074 | PPM | .0092 | .5145 | .5178 | .5087 | .4996 | .4965 |
| Fe2 | 176.1 | PPM | 2.381 | 178.0 | 178.5 | 176.8 | 174.3 | 173.0 |
| K 1 | 5.209 | PPM | .1134 | 5.322 | 5.287 | 5.259 | 5.105 | 5.071 |
| Mg4 | 518.5 H | PPM | 7.120 | 523.7 | 526.0 | 520.2 | 513.3 | 509.0 |
| Mn4 | .4781 | PPM | .0078 | .4857 | .4855 | .4788 | .4719 | .4684 |
| Na2 | 2.690 | PPM | .0597 | 2.750 | 2.734 | 2.693 | 2.674 | 2.598 |
| Ni3 | .9216 | PPM | .0176 | .9275 | .9449 | .9256 | .8966 | .9143 |
| Sb1 | .9924 | PPM | .0250 | .9939 | 1.032 | .9694 | .9731 | .9934 |
| V 2 | .4722 | PPM | .0077 | .4754 | .4777 | .4791 | .4681 | .4607 |
| Zn3 | .9401 | PPM | .0163 | .9511 | .9630 | .9330 | .9250 | .9286 |
| As2 | .5486 | PPM | .0583 | .5779 | .6084 | .5698 | .5297 | .4573 |
| Pb1 | 1.087 | PPM | .0678 | 1.105 | 1.183 | 1.070 | 1.083 | .9948 |
| Se1 | .5309 | PPM | .0665 | .5187 | .5840 | .5333 | .5923 | .4263 |

Line Conc. Units SD/RSD 1 2 3 4 5

*** Check Standard: 6 Ck6 Seq: 513 22:12:44 03 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 104.0 | 1.300 | 1.250 | PPM | .0094 |
| Al3 | | 106.0 | 10.60 | 10.00 | PPM | .0910 |
| Ba4 | | 105.5 | 10.55 | 10.00 | PPM | .0961 |
| Be2 | | 101.3 | .2533 | .2500 | PPM | .0016 |
| Ca3 | | 103.2 | 25.80 | 25.00 | PPM | .1355 |
| Cd1 | | 104.0 | 2.599 | 2.500 | PPM | .0088 |
| Co1 | | 103.7 | 2.593 | 2.500 | PPM | .0179 |
| Cr4 | | 103.8 | 1.038 | 1.000 | PPM | .0057 |
| Cu1 | | 104.5 | 1.307 | 1.250 | PPM | .0115 |
| Fe2 | | 105.0 | 5.252 | 5.000 | PPM | .0307 |
| K 1 | | 102.8 | 25.71 | 25.00 | PPM | .3250 |
| Mg4 | | 103.4 | 25.84 | 25.00 | PPM | .1536 |
| Mn4 | | 104.7 | 2.618 | 2.500 | PPM | .0131 |
| Na2 | | 103.4 | 25.84 | 25.00 | PPM | .2562 |
| Ni3 | | 103.4 | 2.586 | 2.500 | PPM | .0288 |
| Sb1 | | 102.1 | 5.106 | 5.000 | PPM | .0646 |
| V 2 | | 104.0 | 2.601 | 2.500 | PPM | .0161 |
| Zn3 | | 105.0 | 2.625 | 2.500 | PPM | .0176 |
| As2 | | 102.1 | 5.107 | 5.000 | PPM | .0577 |
| Pb1 | | 104.0 | 5.201 | 5.000 | PPM | .0709 |
| Se1 | | 102.3 | 5.115 | 5.000 | PPM | .0468 |

*** Check Standard: 7 Ck7 Seq: 514 22:17:30 03 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | -114.8 | -.0054 | .0047 | PPM | .0013 |
| Al3 | | 40.75 | .0153 | .0374 | PPM | .0333 |
| Ba4 | | -374.1 | -.0055 | .0015 | PPM | .0004 |
| Be2 | | 15.06 | .0001 | .0006 | PPM | .0002 |
| Ca3 | | 70.44 | .0139 | .0198 | PPM | .0333 |
| Cd1 | | 19.47 | .0006 | .0039 | PPM | .0010 |
| Co1 | | 89.61 | .0035 | .0040 | PPM | .0015 |
| Cr4 | | -20.48 | -.0008 | .0041 | PPM | .0003 |
| Cu1 | | -26.68 | -.0006 | .0023 | PPM | .0012 |
| Fe2 | | 50.18 | .0097 | .0193 | PPM | .0139 |
| K 1 | | 76.32 | .1987 | .2604 | PPM | .2419 |
| Mg4 | | 134.3 | .0236 | .0176 | PPM | .0342 |
| Mn4 | | 21.48 | .0007 | .0034 | PPM | .0004 |
| Na2 | | -6.311 | -.0146 | .2311 | PPM | .0138 |
| Ni3 | | -45.69 | -.0041 | .0090 | PPM | .0061 |
| Sb1 | | 37.10 | .0150 | .0406 | PPM | .0737 |
| V 2 | | -142.9 | -.0112 | .0078 | PPM | .0015 |
| Zn3 | | -23.33 | -.0022 | .0095 | PPM | .0006 |
| As2 | | -33.04 | -.0110 | .0332 | PPM | .0276 |
| Pb1 | | 48.15 | .0095 | .0198 | PPM | .0134 |
| Se1 | | -27.15 | -.0082 | .0304 | PPM | .0204 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Peak Seq: 515 22:28:02 03 Sep 1998

XAp = 206 YAp = 125 Intensity = 3820106

*** Check Standard: 7 CW7 Seq: 516 22:30:27 03 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | -166.4 | -.0078 | .0047 | PPM | .0023 |
| Al3 | | 12.72 | .0048 | .0374 | PPM | .0134 |
| Ba4 | | -473.3 | -.0069 | .0015 | PPM | .0004 |
| Be2 | | 3.265 | .0000 | .0006 | PPM | .0002 |
| Ca3 | | -36.66 | -.0072 | .0198 | PPM | .0011 |
| Cd1 | | -4.136 | -.0002 | .0039 | PPM | .0003 |
| Co1 | | 5.732 | .0002 | .0040 | PPM | .0018 |
| Cr4 | | -22.25 | -.0009 | .0041 | PPM | .0013 |
| Cu1 | | -54.70 | -.0013 | .0023 | PPM | .0009 |
| Fe2 | | -4.428 | -.0009 | .0193 | PPM | .0013 |
| K 1 | | 49.13 | .1279 | .2604 | PPM | .0532 |
| Mg4 | | 9.986 | .0018 | .0176 | PPM | .0138 |
| Mn4 | | 1.566 | .0001 | .0034 | PPM | .0003 |
| Na2 | | -5.552 | -.0128 | .2311 | PPM | .0269 |
| Ni3 | | 27.62 | .0025 | .0090 | PPM | .0060 |
| Sb1 | | 10.41 | .0042 | .0406 | PPM | .0625 |
| V 2 | | -128.0 | -.0100 | .0078 | PPM | .0018 |
| Zn3 | | -50.84 | -.0049 | .0095 | PPM | .0015 |
| As2 | | -34.73 | -.0115 | .0332 | PPM | .0119 |
| Pb1 | | 107.8 | .0213 | .0198 | PPM | .0313 |
| Se1 | | -6.316 | -.0019 | .0304 | PPM | .0275 |

*** Peak Seq: 517 22:37:03 03 Sep 1998

XAp = 206 YAp = 125 Intensity = 3831402

*** Sample ID: 0843001 Seq: 518 22:39:28 03 Sep 1998 ICP
MD49980140 0.2 Dil. Weight 1.9700 Volume 500.00

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| Ag1 | -1.442 | PPM | .4161 | -.9933 | -1.310 | -2.052 | -1.652 | -1.203 |
| Al3 | 16640 H | PPM | 264.0 | 16580 | 16430 | 16420 | 16760 | 17050 |
| Ba4 | 91.81 | PPM | 1.401 | 91.69 | 90.38 | 90.71 | 92.38 | 93.87 |
| Be2 | .8605 | PPM | .0484 | .8258 | .8731 | .8460 | .8189 | .9384 |
| Ca3 | 824.6 | PPM | 14.18 | 818.3 | 812.7 | 812.9 | 835.0 | 844.0 |
| Cd1 | .0668 | PPM | .1293 | .2249 | .1782 | -.0576 | .0358 | -.0473 |
| Co1 | 5.593 | PPM | .7475 | 5.687 | 6.640 | 4.964 | 4.788 | 5.889 |
| Cr4 | 8.836 | PPM | .2666 | 8.829 | 8.529 | 8.655 | 8.954 | 9.215 |
| Cu1 | 6.889 | PPM | .2053 | 6.553 | 6.940 | 6.929 | 7.116 | 6.906 |
| Fe2 | 16230 H | PPM | 263.8 | 16120 | 16020 | 16020 | 16390 | 16620 |
| K 1 | 1656. H | PPM | 23.29 | 1631. | 1673. | 1688. | 1645. | 1645. |
| Mg4 | 1653. H | PPM | 30.64 | 1644. | 1639. | 1619. | 1663. | 1700. |
| Mn4 | 310.7 H | PPM | 4.925 | 309.1 | 305.9 | 307.6 | 312.8 | 318.2 |
| Na2 | 83.70 | PPM | 1.608 | 81.71 | 84.89 | 85.74 | 83.03 | 83.12 |
| Ni3 | 5.733 | PPM | 1.698 | 2.834 | 5.735 | 7.012 | 6.845 | 6.241 |
| Sb1 | -.8700 | PPM | 8.478 | -14.27 | -2.301 | 5.115 | -.3741 | 7.483 |
| V 2 | 16.53 | PPM | .9954 | 15.40 | 16.02 | 16.09 | 17.47 | 17.69 |
| Zn3 | 716.9 | PPM | 11.99 | 711.1 | 705.1 | 709.6 | 724.9 | 733.8 |
| As2 | -.4841 | PPM | 5.954 | -2.784 | -4.385 | -6.805 | 6.987 | 4.568 |
| Pb1 | 32.67 | PPM | 5.928 | 28.67 | 24.32 | 37.68 | 37.53 | 35.13 |
| Se1 | -2.930 | PPM | 7.016 | -8.212 | 7.438 | -7.375 | 1.304 | -7.808 |

*** Sample ID: 0843301 Seq: 519 22:44:10 03 Sep 1998 ICP
MD49980141 0.2 Dil. Weight 2.0000 Volume 500.00

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| Ag1 | -.5468 | PPM | .5894 | .1744 | -.1130 | -.8831 | -1.297 | -.6147 |
| Al3 | 20010 H | PPM | 756.1 | 20430 | 20060 | 21010 | 19440 | 19120 |
| Ba4 | 134.2 | PPM | 4.806 | 136.6 | 133.9 | 141.0 | 130.9 | 128.8 |
| Be2 | 1.421 | PPM | .1456 | 1.496 | 1.442 | 1.589 | 1.379 | 1.200 |
| Ca3 | 4134. H | PPM | 154.2 | 4241. | 4156. | 4315. | 4017. | 3943. |
| Cd1 | .5065 | PPM | .1846 | .3339 | .6249 | .6034 | .2894 | .6878 |
| Co1 | 6.133 | PPM | .2169 | 5.934 | 6.181 | 6.311 | 6.353 | 5.855 |
| Cr4 | 13.36 H | PPM | .8630 | 14.23 | 12.79 | 14.36 | 12.76 | 12.63 |
| Cu1 | 25.33 | PPM | 1.082 | 26.23 | 25.24 | 26.60 | 24.50 | 24.09 |
| Fe2 | 36670 H | PPM | 1322. | 37520 | 36850 | 38280 | 35670 | 35040 |
| K 1 | 1952. H | PPM | 102.8 | 2015. | 2008. | 2055. | 1856. | 1828. |
| Mg4 | 2102. H | PPM | 80.51 | 2157. | 2111. | 2201. | 2032. | 2012. |
| Mn4 | 321.4 H | PPM | 11.32 | 328.7 | 322.0 | 335.6 | 313.6 | 307.4 |
| Na2 | 107.0 | PPM | 8.936 | 110.4 | 100.4 | 120.7 | 104.7 | 98.51 |
| Ni3 | 11.31 | PPM | .7747 | 11.22 | 11.39 | 10.97 | 10.44 | 12.54 |
| Sb1 | 18.79 | PPM | 7.087 | 13.99 | 31.01 | 18.38 | 13.94 | 16.61 |
| V 2 | 21.79 | PPM | 1.108 | 22.93 | 20.93 | 23.01 | 21.40 | 20.69 |
| Zn3 | 16000 H | PPM | 606.1 | 16450 | 16120 | 16650 | 15520 | 15230 |
| As2 | 11.61 | PPM | 1.153 | 13.36 | 10.39 | 11.38 | 10.76 | 11.64 |
| Pb1 | 579.0 H | PPM | 21.00 | 597.3 | 576.4 | 602.9 | 553.3 | 565.2 |
| Se1 | 1.767 | PPM | 4.497 | -5.434 | .5370 | 4.912 | 5.764 | 3.053 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| ←→→ Sample ID: 0843302 | | | | Seq: 520 | | 22:46:52 03 Sep 1998 ICP | | |
| | | | MD49980142 | | 0.2 Dil. Weight 2.0600 Volume 500.00 | | | |
| Ag1 | -1.151 | PPM | .5349 | -1.243 | -1.946 | -.7810 | -.5512 | -1.235 |
| Al3 | 6639. H | PPM | 172.8 | 6437. | 6478. | 6797. | 6681. | 6800. |
| Ba4 | 49.18 | PPM | 1.149 | 47.98 | 48.02 | 50.06 | 49.32 | 50.46 |
| Be2 | .5069 | PPM | .0784 | .4197 | .5366 | .4772 | .4801 | .6289 |
| Ca3 | 2777. H | PPM | 56.44 | 2715. | 2719. | 2827. | 2797. | 2829. |
| Cd1 | 1.471 | PPM | .1138 | 1.612 | 1.335 | 1.524 | 1.509 | 1.375 |
| Co1 | 1.321 | PPM | .4522 | 1.253 | 1.322 | 1.907 | .8249 | .7975 |
| Cr4 | 2.250 | PPM | .4496 | 2.471 | 1.453 | 2.517 | 2.457 | 2.352 |
| Cu1 | 12.61 | PPM | .3592 | 12.22 | 12.30 | 13.05 | 12.59 | 12.86 |
| Fe2 | 6211. H | PPM | 142.2 | 6057. | 6064. | 6338. | 6252. | 6344. |
| K 1 | 464.5 | PPM | 24.61 | 441.5 | 464.8 | 482.8 | 494.6 | 439.0 |
| Mg4 | 1394. H | PPM | 27.06 | 1371. | 1359. | 1417. | 1405. | 1416. |
| Mn4 | 91.40 | PPM | 2.106 | 89.19 | 89.21 | 93.59 | 91.86 | 93.14 |
| Na2 | 65.92 | PPM | 2.632 | 62.55 | 67.47 | 65.22 | 64.92 | 69.45 |
| Ni3 | 3.399 | PPM | 1.568 | 5.400 | 3.020 | 4.634 | 2.178 | 1.765 |
| Sb1 | 20.27 | PPM | 34.54 | -7.626 | 9.425 | 13.67 | 80.39 | 5.473 |
| V 2 | .1252 | PPM | .8623 | .3365 | -1.140 | -.1146 | .3053 | 1.239 |
| Zn3 | 15610 H | PPM | 298.6 | 15310 | 15260 | 15500 | 15700 | 15860 |
| As2 | 2.350 | PPM | 7.969 | 2.749 | .1076 | 7.680 | 10.96 | -5.746 |
| Pb1 | 266.1 H | PPM | 9.892 | 279.0 | 274.3 | 259.9 | 289.2 | 288.0 |
| Se1 | .6786 | PPM | 3.976 | -4.172 | 6.264 | -.7336 | -.7634 | 2.798 |
| ←→→ Sample ID: 0843301 | | | | Seq: 521 | | 22:53:35 03 Sep 1998 ICP | | |
| | | | MD49980143 | | 0.2 Dil. Weight 2.0700 Volume 500.00 | | | |
| Ag1 | -1.284 | PPM | .1802 | -1.523 | -1.360 | -1.141 | -1.077 | -1.296 |
| Al3 | 12960 H | PPM | 427.7 | 12970 | 13530 | 12330 | 12910 | 13060 |
| Ba4 | 55.83 | PPM | 2.109 | 55.73 | 56.91 | 52.97 | 55.56 | 55.99 |
| Be2 | 1.057 | PPM | .0651 | 1.081 | 1.193 | .9756 | 1.029 | 1.001 |
| Ca3 | 2812. H | PPM | 63.07 | 2798. | 2925. | 2694. | 2804. | 2838. |
| Cd1 | 1.676 | PPM | .1986 | 1.462 | 1.987 | 1.656 | 1.722 | 1.564 |
| Co1 | 3.895 | PPM | .7141 | 3.906 | 3.329 | 2.118 | 2.613 | 2.512 |
| Cr4 | 7.451 | PPM | .6651 | 7.611 | 8.316 | 6.711 | 7.760 | 6.858 |
| Cu1 | 22.65 | PPM | 1.123 | 22.13 | 24.20 | 21.16 | 23.02 | 22.77 |
| Fe2 | 20820 H | PPM | 631.7 | 20800 | 21680 | 19910 | 20720 | 20990 |
| K 1 | 1052. H | PPM | 24.31 | 1070. | 1065. | 1015. | 1072. | 1040. |
| Mg4 | 1744. H | PPM | 56.96 | 1749. | 1816. | 1658. | 1736. | 1761. |
| Mn4 | 147.7 H | PPM | 4.548 | 147.2 | 153.2 | 140.7 | 147.5 | 149.6 |
| Na2 | 284.8 | PPM | 11.30 | 285.0 | 303.0 | 272.4 | 279.6 | 283.8 |
| Ni3 | 7.012 | PPM | 2.162 | 5.378 | 7.807 | 5.976 | 5.444 | 10.46 |
| Sb1 | 12.65 | PPM | 12.18 | 6.107 | 25.85 | 25.70 | 5.240 | .3455 |
| V 2 | 6.618 | PPM | .9401 | 7.031 | 7.284 | 4.974 | 7.071 | 6.733 |
| Zn3 | 17000 H | PPM | 480.0 | 16900 | 17640 | 16320 | 16940 | 17190 |
| As2 | 12.38 | PPM | 3.339 | 11.16 | 17.75 | 9.947 | 9.675 | 13.39 |
| Pb1 | 185.8 H | PPM | 11.26 | 181.6 | 199.0 | 169.4 | 192.6 | 186.3 |
| Se1 | 3.399 | PPM | 5.277 | 1.713 | 9.273 | -1.503 | -1.232 | 8.745 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: ICSA | | | | Seq: 522 | 22:58:18 03 Sep 1998 ICP | | | |
| Ag1 | .0018 | PPM | .0029 | -.0005 | .0016 | .0011 | .0067 | .0001 |
| Al3 | 491.3 | PPM | 2.575 | 487.2 | 491.3 | 491.1 | 493.1 | 493.8 |
| Ba4 | -.0021 | PPM | .0001 | -.0021 | -.0020 | -.0021 | -.0021 | -.0022 |
| Be2 | .0016 | PPM | .0005 | .0012 | .0011 | .0015 | .0024 | .0020 |
| Ca3 | 457.4 | PPM | 2.123 | 453.7 | 459.1 | 457.8 | 457.7 | 458.6 |
| Cd1 | .0005 | PPM | .0005 | .0000 | .0008 | .0005 | .0002 | .0012 |
| Co1 | .0040 | PPM | .0030 | .0029 | .0050 | .0020 | .0087 | .0014 |
| Cr4 | .0050 | PPM | .0016 | .0033 | .0053 | .0041 | .0076 | .0047 |
| Cu1 | .0119 | PPM | .0016 | .0096 | .0113 | .0136 | .0117 | .0132 |
| Fe2 | 177.0 | PPM | .7714 | 175.7 | 177.6 | 177.0 | 177.3 | 177.5 |
| K 1 | .0624 | PPM | .1491 | -.0643 | .1030 | -.1032 | .2661 | .1054 |
| Mg4 | 520.4 H | PPM | 2.726 | 515.6 | 521.7 | 520.8 | 521.8 | 522.1 |
| Mn4 | .0090 | PPM | .0005 | .0082 | .0092 | .0089 | .0093 | .0093 |
| Na2 | .0378 | PPM | .0149 | .0269 | .0366 | .0211 | .0464 | .0581 |
| Ni3 | .0113 | PPM | .0038 | .0108 | .0174 | .0071 | .0096 | .0117 |
| Sb1 | .0042 | PPM | .0398 | .0601 | -.0408 | .0260 | -.0212 | -.0035 |
| V 2 | -.0064 | PPM | .0024 | -.0083 | -.0055 | -.0080 | -.0026 | -.0075 |
| Zn3 | .0219 | PPM | .0050 | .0298 | .0232 | .0210 | .0181 | .0174 |
| As2 | .0348 | PPM | .0400 | .0087 | .0852 | -.0031 | .0705 | .0126 |
| Pb1 | .1296 | PPM | .0322 | .0768 | .1448 | .1213 | .1534 | .1525 |
| Se1 | .0381 | PPM | .0158 | .0610 | .0449 | .0197 | .0291 | .0358 |
| *** Sample ID: ICSAB | | | | Seq: 523 | 23:03:02 03 Sep 1998 ICP | | | |
| Ag1 | .9740 | PPM | .0145 | .9638 | .9847 | .9606 | .9938 | .9672 |
| Al3 | 471.3 | PPM | 9.049 | 467.8 | 478.0 | 461.4 | 483.3 | 466.0 |
| Ba4 | .4801 | PPM | .0087 | .4774 | .4874 | .4695 | .4905 | .4754 |
| Be2 | .4811 | PPM | .0079 | .4733 | .4835 | .4717 | .4916 | .4776 |
| Ca3 | 434.6 | PPM | 5.910 | 433.8 | 439.1 | 428.2 | 442.4 | 430.7 |
| Cd1 | .8752 | PPM | .0116 | .8691 | .8814 | .8650 | .8926 | .8680 |
| Co1 | .4459 | PPM | .0065 | .4407 | .4507 | .4434 | .4547 | .4399 |
| Cr4 | .4471 | PPM | .0071 | .4431 | .4508 | .4407 | .4578 | .4433 |
| Cu1 | .4933 | PPM | .0095 | .4883 | .5003 | .4836 | .5061 | .4881 |
| Fe2 | 169.1 | PPM | 2.571 | 168.1 | 170.9 | 166.3 | 172.5 | 167.5 |
| K 1 | 5.116 | PPM | .2628 | 5.023 | 5.222 | 4.946 | 5.523 | 4.867 |
| Mg4 | 492.0 | PPM | 7.496 | 489.7 | 497.6 | 484.1 | 502.0 | 486.8 |
| Mn4 | .4615 | PPM | .0086 | .4603 | .4673 | .4520 | .4733 | .4547 |
| Na2 | 2.602 | PPM | .0538 | 2.576 | 2.600 | 2.569 | 2.696 | 2.570 |
| Ni3 | .8853 | PPM | .0187 | .8739 | .9057 | .8765 | .9050 | .8654 |
| Sb1 | .9598 | PPM | .0520 | .9274 | .9935 | .8886 | 1.018 | .9712 |
| V 2 | .4472 | PPM | .0089 | .4420 | .4518 | .4374 | .4602 | .4448 |
| Zn3 | .8906 | PPM | .0137 | .8840 | .8970 | .8832 | .9115 | .8776 |
| As2 | .5280 | PPM | .0617 | .4812 | .6223 | .4666 | .5465 | .5237 |
| Pb1 | 1.035 | PPM | .0325 | 1.077 | 1.062 | 1.007 | 1.018 | 1.010 |
| Se1 | .4890 | PPM | .0366 | .4836 | .5260 | .4333 | .5258 | .4764 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 6 Ck6 Seq: 524 23:07:47 03 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 96.54 | 1.207 | 1.250 | PPM | .0112 |
| Al3 | | 97.63 | 9.763 | 10.00 | PPM | .1119 |
| Ba4 | | 99.00 | 9.900 | 10.00 | PPM | .0863 |
| Be2 | | 93.80 | .2345 | .2500 | PPM | .0027 |
| Ca3 | | 95.42 | 23.85 | 25.00 | PPM | .2567 |
| Cd1 | | 96.28 | 2.407 | 2.500 | PPM | .0283 |
| Co1 | | 96.55 | 2.414 | 2.500 | PPM | .0271 |
| Cr4 | | 96.50 | .9650 | 1.000 | PPM | .0108 |
| Cu1 | | 96.93 | 1.212 | 1.250 | PPM | .0117 |
| Fe2 | | 96.57 | 4.829 | 5.000 | PPM | .0466 |
| K 1 | | 96.34 | 24.06 | 25.00 | PPM | .2671 |
| Mg4 | | 94.94 | 23.73 | 25.00 | PPM | .2631 |
| Mn4 | | 97.52 | 2.438 | 2.500 | PPM | .0255 |
| Na2 | | 95.49 | 23.87 | 25.00 | PPM | .1910 |
| Ni3 | | 96.20 | 2.405 | 2.500 | PPM | .0362 |
| Sb1 | | 95.45 | 4.773 | 5.000 | PPM | .0707 |
| V 2 | | 97.06 | 2.426 | 2.500 | PPM | .0239 |
| Zn3 | | 97.69 | 2.442 | 2.500 | PPM | .0293 |
| As2 | | 94.69 | 4.735 | 5.000 | PPM | .0836 |
| Pb1 | | 97.01 | 4.851 | 5.000 | PPM | .0530 |
| Se1 | | 93.17 | 4.658 | 5.000 | PPM | .0667 |

*** Check Standard: 7 Ck7 Seq: 525 23:12:33 03 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | -135.5 | -.0063 | .0047 | PPM | .0020 |
| Al3 | | 52.34 | .0196 | .0374 | PPM | .0095 |
| Ba4 | | -449.7 | -.0066 | .0015 | PPM | .0003 |
| Be2 | | -32.28 | -.0002 | .0006 | PPM | .0002 |
| Ca3 | | -23.74 | -.0047 | .0198 | PPM | .0044 |
| Cd1 | | -.0772 | -.0000 | .0039 | PPM | .0006 |
| Co1 | | 38.70 | .0015 | .0040 | PPM | .0023 |
| Cr4 | | -8.107 | -.0003 | .0041 | PPM | .0009 |
| Cu1 | | -61.62 | -.0014 | .0023 | PPM | .0011 |
| Fe2 | | 10.32 | .0020 | .0193 | PPM | .0019 |
| K 1 | | 62.75 | .1634 | .2604 | PPM | .2196 |
| Mg4 | | 36.72 | .0065 | .0176 | PPM | .0129 |
| Mn4 | | 3.543 | .0001 | .0034 | PPM | .0002 |
| Na2 | | -4.616 | -.0107 | .2311 | PPM | .0215 |
| Ni3 | | -22.53 | -.0020 | .0090 | PPM | .0047 |
| Sb1 | | -2.114 | -.0009 | .0406 | PPM | .0330 |
| V 2 | | -167.8 | -.0131 | .0078 | PPM | .0015 |
| Zn3 | | -41.06 | -.0039 | .0095 | PPM | .0012 |
| As2 | | -12.39 | -.0041 | .0332 | PPM | .0259 |
| Pb1 | | 36.47 | .0072 | .0198 | PPM | .0150 |
| Se1 | | -.0689 | -.0000 | .0304 | PPM | .0250 |

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23:17:55 03 Sep 1998 Protocol: CLP-2 Y IS 360

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Peak | | | | Seq: 526 | 23:17:55 03 Sep 1998 | | | |
| XAp = 207 YAp = 125 | | Intensity = | | 3873308 | | | | |
| *** Sample ID: 0850127 | | | | Seq: 527 | 23:20:20 03 Sep 1998 ICP | | | |
| | | | 0.2 | | D:1. Weight 2.0000 Volume 500.00 | | | |
| Ag1 | -.8390 | PPM | .3288 | -.4300 | .0260 | -1.161 | -.1050 | .5254 |
| Al3 | 7644. H | PPM | 192.4 | 7332. | 7727. | 7831. | 7779. | 7603. |
| Ba4 | 97.85 | PPM | 2.566 | 93.67 | 98.44 | 100.6 | 99.05 | 97.53 |
| Be2 | .5362 | PPM | .0580 | .6329 | .5064 | .4831 | .5174 | .5411 |
| Ca3 | 194400H | PPM | 4166. | 188100 | 196900 | 198900 | 195100 | 192800 |
| Cd1 | 5.760 | PPM | .2055 | 5.621 | 5.638 | 6.060 | 5.684 | 5.593 |
| Co1 | 4.936 | PPM | .3859 | 4.916 | 5.056 | 4.857 | 4.380 | 5.444 |
| Cr4 | 33.94 H | PPM | .9291 | 32.32 | 34.57 | 34.51 | 34.22 | 34.08 |
| Cu1 | 41.08 | PPM | 1.383 | 38.69 | 41.34 | 42.25 | 41.49 | 41.65 |
| Fe2 | 12680 H | PPM | 293.2 | 12220 | 12820 | 12990 | 12760 | 12600 |
| K 1 | 1855. H | PPM | 84.10 | 1728. | 1913. | 1911. | 1915. | 1806. |
| Mg4 | 39290 H | PPM | 981.4 | 37760 | 39790 | 40340 | 39560 | 38980 |
| Mn4 | 277.9 H | PPM | 6.740 | 267.5 | 281.3 | 285.2 | 279.7 | 275.6 |
| Na2 | 385.5 | PPM | 11.15 | 373.8 | 388.5 | 404.1 | 394.6 | 386.6 |
| Ni3 | 16.21 | PPM | 1.857 | 13.82 | 16.21 | 17.93 | 14.88 | 18.20 |
| Sb1 | 11.68 | PPM | 11.93 | 10.79 | 13.11 | -1.008 | 4.880 | 30.64 |
| V 2 | 14.26 | PPM | .6652 | 13.17 | 14.49 | 14.87 | 14.65 | 14.22 |
| Zn3 | 90.18 | PPM | 2.686 | 86.78 | 90.04 | 94.06 | 90.98 | 88.99 |
| As3 | 15.43 | PPM | 6.836 | 18.25 | 4.116 | 20.11 | 14.04 | 20.64 |
| Pb1 | 21.57 | PPM | 5.477 | 22.75 | 18.20 | 15.05 | 22.27 | 29.59 |
| Se1 | 16.31 | PPM | 3.837 | 12.94 | 13.01 | 22.34 | 16.45 | 16.82 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: 27 DUP | | | | Seq: 528 | | 23:25:04 03 Sep 1998 ICP | | |
| DUP | | | 0.2 | | | Dil. Weight 1.9900 Volume 500.00 | | |
| Ag1 | -.3731 | PPM | .2677 | -.3816 | -.0821 | -.4411 | -.1850 | -.7755 |
| Al3 | 7521. H | PPM | 372.6 | 7871. | 7690. | 7798. | 7050. | 7196. |
| Ba4 | 107.3 | PPM | 5.459 | 112.4 | 109.4 | 111.5 | 100.2 | 100.6 |
| Be2 | .5441 | PPM | .0611 | .5830 | .5777 | .5331 | .5850 | .4417 |
| Ca3 | 195900H | PPM | 8076. | 203400 | 199400 | 202200 | 185700 | 188900 |
| Cd1 | 7.910 | PPM | .4646 | 8.064 | 8.215 | 8.381 | 7.621 | 7.251 |
| Co1 | 5.581 | PPM | .6128 | 5.153 | 5.846 | 5.253 | 6.541 | 5.112 |
| Cr4 | 39.71 H | PPM | 1.618 | 41.42 | 40.34 | 41.07 | 37.06 | 38.69 |
| Cu1 | 64.87 H | PPM | 3.247 | 68.23 | 66.10 | 67.13 | 60.84 | 62.04 |
| Fe2 | 10700 H | PPM | 470.3 | 11130 | 10890 | 11080 | 10110 | 10290 |
| K 1 | 1918. H | PPM | 121.0 | 2005. | 1958. | 2036. | 1746. | 1844. |
| Mg4 | 41500 H | PPM | 1958. | 43340 | 42340 | 43000 | 39020 | 39812 |
| Mn4 | 258.1 H | PPM | 11.48 | 268.2 | 262.6 | 267.6 | 242.9 | 249.0 |
| Na2 | 422.3 | PPM | 18.88 | 444.6 | 420.7 | 438.0 | 407.0 | 401.2 |
| Ni3 | 16.53 | PPM | 1.251 | 17.19 | 16.98 | 16.21 | 14.50 | 17.75 |
| Sb1 | 11.75 | PPM | 12.78 | 16.03 | 30.72 | 11.86 | -.9990 | 1.071 |
| V 2 | 14.84 | PPM | 1.396 | 15.61 | 14.61 | 16.59 | 12.84 | 14.55 |
| Zn3 | 80.78 | PPM | 3.514 | 83.73 | 82.29 | 83.86 | 76.40 | 77.65 |
| As2 | 8.593 | PPM | 3.197 | 3.255 | 10.52 | 8.199 | 9.697 | 11.29 |
| Pb1 | 19.23 | PPM | 6.368 | 13.93 | 26.00 | 26.04 | 16.26 | 13.72 |
| Se1 | 12.61 | PPM | 6.659 | 20.90 | 5.529 | 16.99 | 13.25 | 6.374 |

*** DUP ID: 27 DUP Seq: 529 23:00:04 03 Sep 1998 ICP

| | RPD | | Orig. | Dup. |
|---|---|---|---|---|
| Ag1 | 43.79 | % | -.2390 | -.3731 |
| Al3 | 1.629 | % | 7644. | 7521. |
| Ba4 | 9.165 | % | 97.85 | 107.3 |
| Be2 | 1.467 | % | .5362 | .5441 |
| Ca3 | .7916 | % | 194400 | 195900 |
| Cd1 | 31.47 | % | 5.760 | 7.910 |
| Co1 | 12.26 | % | 4.936 | 5.581 |
| Cr4 | 15.68 | % | 33.94 | 39.71 |
| Cu1 | 44.90 | % | 41.08 | 64.87 |
| Fe2 | 16.93 | % | 12680 | 10700 |
| K 1 | 3.355 | % | 1855. | 1918. |
| Mg4 | 5.478 | % | 39290 | 41500 |
| Mn4 | 7.390 | % | 277.9 | 258.1 |
| Na2 | 8.081 | % | 389.5 | 422.3 |
| Ni3 | 1.975 | % | 16.21 | 16.53 |
| Sb1 | .5847 | % | 11.68 | 11.75 |
| V 2 | 3.845 | % | 14.28 | 14.84 |
| Zn3 | 10.99 | % | 90.18 | 80.78 |
| As2 | 56.93 | % | 15.43 | 8.593 |
| Pb1 | 11.48 | % | 21.57 | 19.23 |
| Se1 | 25.60 | % | 16.31 | 12.61 |

*** Sample ID: 0850122 Seq: 530 23:29:50 03 Sep 1998 ICP

0.2 Dil. Weight 2.0100 Volume 500.00

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| Ag1 | -.2899 | PPM | .6620 | .3220 | -.6427 | -.3015 | .3705 | -1.194 |
| Al3 | 6633. H | PPM | 44.36 | 6661. | 6672. | 6646. | 6624. | 6560. |
| Ba4 | 103.1 | PPM | .5534 | 103.5 | 103.6 | 103.3 | 102.6 | 102.3 |
| Be2 | .4457 | PPM | .0702 | .5009 | .3243 | .4725 | .4303 | .4502 |
| Ca3 | 202200H | PPM | 1589. | 203400 | 203600 | 202300 | 201900 | 199600 |
| Cd1 | -.0875 | PPM | .1115 | -.1290 | .0002 | -.2652 | -.0148 | -.0257 |
| Co1 | 4.156 | PPM | .5309 | 3.663 | 4.428 | 3.632 | 4.880 | 4.170 |
| Cr4 | 9.270 | PPM | .4212 | 9.508 | 9.718 | 9.393 | 9.100 | 8.631 |
| Cu1 | 21.07 | PPM | .2872 | 21.06 | 21.48 | 21.16 | 20.96 | 20.69 |
| Fe2 | 10820 H | PPM | 82.38 | 10890 | 10880 | 10840 | 10810 | 10690 |
| K 1 | 1331. H | PPM | 32.10 | 1329. | 1370. | 1281. | 1340. | 1334. |
| Mg4 | 43630 H | PPM | 357.8 | 43380 | 43980 | 43660 | 43590 | 43060 |
| Mn4 | 340.1 H | PPM | 2.749 | 342.8 | 342.1 | 340.0 | 339.9 | 335.8 |
| Na2 | 378.5 | PPM | 8.570 | 388.9 | 377.1 | 366.2 | 383.6 | 376.6 |
| Ni3 | 12.83 | PPM | 1.594 | 12.38 | 14.02 | 14.00 | 13.52 | 10.24 |
| Sb1 | 18.20 | PPM | 6.229 | 23.84 | 21.66 | 7.698 | 18.57 | 19.21 |
| V 2 | 12.41 | PPM | .3916 | 12.71 | 12.62 | 12.73 | 12.04 | 11.93 |
| Zn3 | 21.72 | PPM | .7556 | 22.18 | 22.68 | 20.83 | 21.14 | 21.79 |
| As2 | 13.12 | PPM | 4.566 | 19.42 | 14.09 | 8.686 | 14.78 | 8.617 |
| Pb1 | 13.64 | PPM | 5.743 | 7.247 | 15.47 | 8.145 | 16.80 | 20.54 |
| Se1 | 15.10 | PPM | 4.376 | 9.890 | 14.29 | 22.01 | 14.10 | 15.20 |

*** Sample ID: 0850123 Seq: 531 23:34:34 03 Sep 1998 ICP

0.2 Dil. Weight 2.0300 Volume 500.00

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| Ag1 | .0497 | PPM | .5281 | .5253 | -.7862 | .3959 | -.1314 | .2449 |
| Al3 | 6371. H | PPM | 93.95 | 6455. | 6458. | 6347. | 6229. | 6369. |
| Ba4 | 1173. H | PPM | 16.05 | 1186. | 1187. | 1171. | 1149. | 1171. |
| Be2 | .4177 | PPM | .0673 | .5190 | .4535 | .3781 | .3796 | .3582 |
| Ca3 | 206800H | PPM | 2686. | 211500 | 211100 | 208300 | 204800 | 208200 |
| Cd1 | .1462 | PPM | .0880 | .2058 | .2138 | .2089 | .0787 | .0235 |
| Co1 | 4.328 | PPM | .5584 | 4.432 | 4.028 | 5.090 | 3.594 | 4.495 |
| Cr4 | 21.44 H | PPM | .5482 | 22.09 | 21.69 | 21.08 | 20.70 | 21.63 |
| Cu1 | 11.79 | PPM | .4907 | 12.02 | 12.15 | 11.62 | 11.01 | 12.16 |
| Fe2 | 8661. H | PPM | 119.6 | 8775. | 8769. | 8630. | 8484. | 8644. |
| K 1 | 1236. H | PPM | 39.65 | 1295. | 1206. | 1257. | 1221. | 1201. |
| Mg4 | 46460 H | PPM | 686.2 | 47150 | 47030 | 46320 | 45440 | 46370 |
| Mn4 | 316.0 H | PPM | 4.249 | 319.9 | 319.7 | 314.7 | 309.5 | 315.9 |
| Na2 | 454.1 | PPM | 13.63 | 473.0 | 461.7 | 448.3 | 437.3 | 450.5 |
| Ni3 | 9.981 | PPM | 2.227 | 12.29 | 10.77 | 8.002 | 7.262 | 11.59 |
| Sb1 | 24.87 | PPM | 21.20 | 17.49 | 18.91 | 17.85 | 8.105 | 61.99 |
| V 2 | 11.49 | PPM | .3969 | 11.72 | 11.21 | 11.17 | 11.26 | 12.08 |
| Zn3 | 21.53 | PPM | .4343 | 21.78 | 21.49 | 20.99 | 21.29 | 22.12 |
| As2 | 12.77 | PPM | 3.429 | 15.94 | 16.69 | 9.934 | 12.11 | 9.111 |
| Pb1 | 29.82 | PPM | 10.08 | 28.15 | 36.49 | 42.18 | 15.88 | 26.41 |
| Se1 | 14.69 | PPM | 6.562 | 10.84 | 12.39 | 12.05 | 11.77 | 26.38 |

*** Sample ID: 0850124 Seq: 530 23:39:18 03 Sep 1998 ICP
Dil. Weight 2.0200 Volume 500.00

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| | | | 0.2 | | | | | |
| Ag1 | .0991 | PPM | .6723 | .2500 | -.7201 | -.1115 | -.0307 | 1.128 |
| Al3 | 5990. H | PPM | 112.9 | 6147. | 6002. | 5962. | 5832. | 6009. |
| Ba4 | 209.2 | PPM | 3.550 | 213.9 | 209.3 | 208.2 | 204.1 | 210.3 |
| Be2 | .4078 | PPM | .0544 | .4476 | .4259 | .4100 | .3140 | .4412 |
| Ca3 | 205800H | PPM | 3325. | 210400 | 206600 | 205100 | 201100 | 205800 |
| Cd1 | .0714 | PPM | .1791 | .0571 | -.1282 | .3152 | -.0627 | .1757 |
| Co1 | 3.415 | PPM | .7632 | 2.859 | 4.636 | 2.743 | 3.619 | 3.219 |
| Cr4 | 10.61 H | PPM | .5556 | 11.48 | 10.21 | 10.30 | 10.21 | 10.87 |
| Cu1 | 12.54 | PPM | .4759 | 12.88 | 12.30 | 12.56 | 11.88 | 13.08 |
| Fe2 | 8287. H | PPM | 135.9 | 8479. | 8313. | 8255. | 8099. | 8289. |
| K 1 | 1254. H | PPM | 53.20 | 1271. | 1268. | 1288. | 1159. | 1281. |
| Mg4 | 44910 H | PPM | 644.9 | 43030 | 45070 | 44620 | 43750 | 45020 |
| Mn4 | 283.2 H | PPM | 5.317 | 290.7 | 283.5 | 281.3 | 276.0 | 284.4 |
| Na2 | 380.8 | PPM | 6.403 | 384.7 | 380.3 | 379.0 | 371.6 | 388.6 |
| Ni3 | 10.42 | PPM | 1.966 | 8.789 | 12.53 | 10.70 | 8.042 | 12.04 |
| Sb1 | 15.82 | PPM | 8.924 | 10.61 | 13.41 | 9.194 | 31.31 | 14.55 |
| V 2 | 11.57 | PPM | .7191 | 11.19 | 11.31 | 11.68 | 10.92 | 12.77 |
| Zn3 | 20.38 | PPM | .6302 | 19.78 | 21.45 | 20.18 | 20.15 | 20.37 |
| As2 | 10.90 | PPM | 9.361 | 13.34 | 13.15 | 3.623 | .3007 | 24.10 |
| Pb1 | 8.752 | PPM | 11.68 | 1.394 | 12.51 | -5.534 | 10.15 | 25.24 |
| Se1 | 17.73 | PPM | 3.279 | 19.16 | 13.09 | 16.02 | 21.67 | 15.70 |

*** Sample ID: 0850125 Seq: 533 23:44:02 03 Sep 1998 ICP
Dil. Weight 2.0500 Volume 500.00

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| | | | 0.2 | | | | | |
| Ag1 | -.0644 | PPM | .2928 | -.3263 | .0063 | .3240 | .0595 | -.3854 |
| Al3 | 6412. H | PPM | 61.40 | 6397. | 6364. | 6453. | 6352. | 6497. |
| Ba4 | 88.48 | PPM | .7869 | 88.40 | 87.92 | 89.26 | 87.52 | 89.28 |
| Be2 | .4548 | PPM | .0634 | .3890 | .5266 | .4993 | .3885 | .4707 |
| Ca3 | 177700H | PPM | 1246. | 177400 | 176800 | 176600 | 176300 | 179300 |
| Cd1 | 1.543 | PPM | .0412 | 1.525 | 1.560 | 1.606 | 1.519 | 1.503 |
| Co1 | 3.951 | PPM | .4645 | 3.337 | 3.602 | 3.824 | 4.240 | 4.554 |
| Cr4 | 38.75 H | PPM | .2997 | 38.57 | 38.36 | 39.14 | 38.77 | 38.91 |
| Cu1 | 13.80 | PPM | .2957 | 14.09 | 13.32 | 13.76 | 13.85 | 13.98 |
| Fe2 | 8697. H | PPM | 66.50 | 8680. | 8649. | 8744. | 8625. | 8785. |
| K 1 | 1860. H | PPM | 45.70 | 1829. | 1808. | 1917. | 1898. | 1850. |
| Mg4 | 47180 H | PPM | 377.0 | 47140 | 47000 | 47400 | 46680 | 47670 |
| Mn4 | 257.5 H | PPM | 2.233 | 256.4 | 256.4 | 259.0 | 255.2 | 260.6 |
| Na2 | 620.6 | PPM | 8.070 | 616.4 | 611.0 | 626.2 | 618.3 | 631.3 |
| Ni3 | 12.85 | PPM | 1.647 | 10.88 | 14.54 | 14.59 | 11.96 | 12.30 |
| Sb1 | 13.65 | PPM | 4.962 | 10.84 | 14.41 | 9.665 | 21.96 | 11.40 |
| V 2 | 11.50 | PPM | .3473 | 11.20 | 11.59 | 11.08 | 11.78 | 11.86 |
| Zn3 | 49.66 | PPM | .4044 | 49.02 | 49.73 | 50.13 | 49.79 | 49.65 |
| As2 | 9.119 | PPM | 7.941 | 10.29 | 8.119 | -1.060 | 21.06 | 7.189 |
| Pb1 | 17.01 | PPM | 2.929 | 15.20 | 14.10 | 17.69 | 21.66 | 16.39 |
| Se1 | 10.61 | PPM | 7.609 | 5.519 | 3.337 | 7.908 | 22.13 | 14.17 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: 0850126 | | | | Seq: 534 | 23:48:46 03 Sep 1998 ICP | | | |
| | | | 0.2 | | Dil. Weight 2.0000 Volume 500.00 | | | |
| Ag1 | -.4871 | PPM | .6848 | -.1049 | .1867 | -.4499 | -.4519 | -1.616 |
| Al3 | 6476. H | PPM | 357.2 | 7030. | 6398. | 6393. | 6388. | 6122. |
| Ba4 | 228.7 | PPM | 12.37 | 249.6 | 226.1 | 225.5 | 226.3 | 216.3 |
| Be2 | .4297 | PPM | .0915 | .5005 | .5389 | .4267 | .3619 | .3205 |
| Ca3 | 195500H | PPM | 9457. | 211500 | 193300 | 193100 | 193600 | 186100 |
| Cd1 | 3.040 | PPM | .2639 | 3.162 | 2.940 | 3.152 | 3.313 | 2.632 |
| Co1 | 4.207 | PPM | .6934 | 5.060 | 4.847 | 3.797 | 3.536 | 3.796 |
| Cr4 | 30.84 H | PPM | 1.862 | 33.77 | 30.36 | 30.52 | 30.91 | 28.62 |
| Cu1 | 27.50 | PPM | 2.199 | 31.10 | 27.29 | 26.78 | 27.25 | 25.05 |
| Fe2 | 7923. H | PPM | 410.4 | 8617. | 7829. | 7815. | 7834. | 7519. |
| K 1 | 1824. H | PPM | 132.3 | 2051. | 1775. | 1796. | 1795. | 1700. |
| Mg4 | 46780 H | PPM | 2619. | 51180 | 46210 | 46120 | 46250 | 44120 |
| Mn4 | 226.1 H | PPM | 11.42 | 245.7 | 223.0 | 223.2 | 223.4 | 215.5 |
| Na2 | 602.4 | PPM | 36.71 | 664.5 | 581.6 | 599.8 | 596.1 | 589.9 |
| Ni3 | 12.98 | PPM | 1.468 | 11.94 | 11.18 | 13.97 | 14.80 | 13.01 |
| Sb1 | 11.33 | PPM | 6.155 | 18.54 | 7.877 | 14.66 | 12.85 | 2.715 |
| V 2 | 12.09 | PPM | 1.427 | 14.55 | 11.83 | 11.46 | 11.74 | 10.86 |
| Zn3 | 46.47 | PPM | 2.149 | 52.20 | 47.08 | 47.82 | 48.24 | 46.99 |
| As2 | 10.57 | PPM | 4.285 | 9.545 | 9.331 | 15.10 | 14.32 | 4.549 |
| Pb1 | 11.98 | PPM | 8.725 | 23.68 | 18.28 | 9.561 | 3.906 | 4.447 |
| Se1 | 9.849 | PPM | 7.591 | 19.86 | .5564 | 10.50 | 13.78 | 4.548 |
| *** Sample ID: 0850128 | | | | Seq: 535 | 23:53:30 03 Sep 1998 ICP | | | |
| | | | 0.2 | | Dil. Weight 2.0000 Volume 500.00 | | | |
| Ag1 | -.1586 | PPM | .4827 | -.5215 | -.3821 | .5470 | -.5686 | .1321 |
| Al3 | 5949. H | PPM | 57.30 | 6029. | 5902. | 5902. | 5923. | 5969. |
| Ba4 | 485.1 | PPM | 5.082 | 492.0 | 481.2 | 480.6 | 482.8 | 488.9 |
| Be2 | .5042 | PPM | .0692 | .4578 | .4922 | .5432 | .6039 | .4267 |
| Ca3 | 185900H | PPM | 1520. | 187600 | 184300 | 184400 | 185700 | 187200 |
| Cd1 | 1.630 | PPM | .1530 | 1.772 | 1.622 | 1.412 | 1.779 | 1.567 |
| Co1 | 5.476 | PPM | .7997 | 5.257 | 4.836 | 6.544 | 6.056 | 4.687 |
| Cr4 | 80.73 H | PPM | 1.071 | 81.34 | 80.10 | 79.24 | 81.01 | 81.95 |
| Cu1 | 46.52 | PPM | .4924 | 47.22 | 45.94 | 46.26 | 46.42 | 46.76 |
| Fe2 | 18680 H | PPM | 166.5 | 18890 | 18530 | 18530 | 18650 | 18820 |
| K 1 | 1496. H | PPM | 28.07 | 1536. | 1480. | 1496. | 1462. | 1507. |
| Mg4 | 44640 H | PPM | 427.6 | 45150 | 44200 | 44250 | 44580 | 45000 |
| Mn4 | 514.4 H | PPM | 4.636 | 520.2 | 509.3 | 510.8 | 513.9 | 518.0 |
| Na2 | 425.6 | PPM | 4.859 | 424.5 | 433.2 | 421.8 | 427.3 | 421.3 |
| Ni3 | 16.35 | PPM | .8214 | 15.47 | 16.63 | 16.03 | 17.63 | 16.01 |
| Sb1 | 9.248 | PPM | 9.493 | -2.708 | 21.81 | 6.211 | 15.34 | 5.589 |
| V 2 | 12.93 | PPM | .7541 | 14.00 | 12.89 | 12.93 | 11.86 | 12.96 |
| Zn3 | 75.30 | PPM | .7419 | 74.47 | 75.84 | 74.52 | 75.96 | 75.72 |
| As2 | 13.96 | PPM | 3.715 | 19.10 | 16.23 | 10.00 | 11.24 | 13.22 |
| Pb1 | 54.42 | PPM | 4.823 | 62.50 | 54.24 | 50.89 | 53.96 | 50.53 |
| Se1 | 11.55 | PPM | 7.747 | 7.514 | 23.41 | 11.50 | 12.82 | 2.517 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: 0850129 | | | | Seq: 536 | 23:58:14 03 Sep 1998 ICP | | | |
| | | | 0.2 | | Dil. Weight 2.0300 Volume 500.00 | | | |
| Ag1 | -.5912 | PPM | .3945 | .0752 | -.8381 | -.9285 | -.6411 | -.6233 |
| Al3 | 5335. H | PPM | 183.0 | 5508. | 5539. | 5308. | 5170. | 5149. |
| Ba4 | 65.23 | PPM | 2.131 | 67.38 | 67.54 | 64.72 | 63.38 | 63.11 |
| Be2 | .3486 | PPM | .0817 | .4745 | .3430 | .3558 | .2486 | .3211 |
| Ca3 | 180900H | PPM | 5215. | 185700 | 186600 | 180500 | 176000 | 175500 |
| Cd1 | .0838 | PPM | .0612 | .1041 | -.0006 | .1384 | .1355 | .0417 |
| Co1 | 4.161 | PPM | .6795 | 4.320 | 3.010 | 4.301 | 4.349 | 4.826 |
| Cr4 | 10.66 H | PPM | .4928 | 10.77 | 11.38 | 10.17 | 10.23 | 10.75 |
| Cu1 | 16.31 | PPM | .2871 | 16.62 | 16.58 | 16.13 | 15.97 | 16.22 |
| Fe2 | 9579. H | PPM | 300.6 | 9859. | 9917. | 9542. | 9305. | 9275. |
| K 1 | 1255. H | PPM | 34.58 | 1263. | 1282. | 1288. | 1236. | 1204. |
| Mg4 | 54660 H | PPM | 1604. | 56350 | 56660 | 54480 | 53040 | 52780 |
| Mn4 | 279.9 H | PPM | 9.389 | 288.8 | 290.3 | 278.6 | 271.3 | 270.5 |
| Na2 | 352.1 | PPM | 14.67 | 367.8 | 368.1 | 342.0 | 344.1 | 338.2 |
| Ni3 | 10.76 | PPM | 1.167 | 12.47 | 9.967 | 9.953 | 9.921 | 11.49 |
| Sb1 | 13.76 | PPM | 11.11 | 25.19 | 25.08 | 11.34 | .2350 | 6.976 |
| V 2 | 10.87 | PPM | .7772 | 11.11 | 11.79 | 11.20 | 9.753 | 10.48 |
| Zn3 | 41.31 | PPM | .7749 | 42.45 | 40.80 | 40.42 | 41.32 | 41.53 |
| As2 | 8.430 | PPM | 8.160 | 18.36 | -.1089 | 13.96 | .3961 | 9.550 |
| Pb1 | 9.771 | PPM | 9.345 | 18.66 | -5.169 | 10.65 | 16.42 | 8.301 |
| Se1 | 12.76 | PPM | 4.570 | 19.70 | 9.850 | 13.61 | 7.810 | 12.81 |
| *** Sample ID: 0850130 | | | | Seq: 537 | 00:02:58 04 Sep 1998 ICP | | | |
| | | | 0.2 | | Dil. Weight 2.0900 Volume 500.00 | | | |
| Ag1 | -.3770 | PPM | .4398 | .2764 | -.3360 | -.2835 | -.9073 | -.6145 |
| Al3 | 5162. H | PPM | 110.9 | 5314. | 5212. | 5176. | 5043. | 5066. |
| Ba4 | 91.42 | PPM | 2.008 | 94.23 | 92.23 | 91.38 | 89.41 | 89.57 |
| Be2 | .4177 | PPM | .0573 | .3985 | .5101 | .4336 | .3722 | .3743 |
| Ca3 | 188600H | PPM | 3204. | 193100 | 190000 | 188700 | 184900 | 186300 |
| Cd1 | .4460 | PPM | .0986 | .5183 | .5379 | .3283 | .3511 | .4945 |
| Co1 | 3.910 | PPM | .3875 | 4.332 | 3.639 | 3.595 | 4.336 | 3.648 |
| Cr4 | 20.63 H | PPM | .4972 | 21.15 | 21.15 | 20.16 | 20.29 | 20.37 |
| Cu1 | 22.95 | PPM | .6335 | 23.67 | 23.49 | 22.67 | 22.12 | 22.62 |
| Fe2 | 11660 H | PPM | 224.2 | 11970 | 11760 | 11670 | 11410 | 11500 |
| K 1 | 1369. H | PPM | 45.89 | 1425. | 1417. | 1374. | 1315. | 1415. |
| Mg4 | 49890 H | PPM | 1056. | 51380 | 50330 | 49940 | 48660 | 49150 |
| Mn4 | 306.7 H | PPM | 6.060 | 315.5 | 308.8 | 306.9 | 300.0 | 302.3 |
| Na2 | 394.5 | PPM | 12.21 | 405.7 | 400.7 | 403.0 | 385.0 | 378.0 |
| Ni3 | 11.67 | PPM | 2.265 | 8.759 | 10.67 | 12.47 | 11.56 | 14.89 |
| Sb1 | 6.439 | PPM | 2.617 | 4.301 | 4.998 | 8.969 | 9.589 | 4.338 |
| V 2 | 9.976 | PPM | .4723 | 10.08 | 10.36 | 10.45 | 9.352 | 9.633 |
| Zn3 | 56.57 | PPM | 1.653 | 57.96 | 56.55 | 56.95 | 53.78 | 57.62 |
| As2 | 10.67 | PPM | 7.182 | 12.90 | 7.777 | 21.90 | 3.045 | 7.717 |
| Pb1 | 11.57 | PPM | 10.20 | 23.85 | 15.93 | -1.418 | 3.791 | 15.70 |
| Se1 | 6.461 | PPM | 4.723 | 13.64 | 9.981 | 2.262 | 11.50 | 4.928 |

Line Conc. Units SD/RSD 1 2 3 4 5

*** Check Standard: 6 Ck6 Seq: 538 00:07:43 04 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 97.17 | 1.215 | 1.250 | PPM | .0275 |
| Al3 | | 98.54 | 9.854 | 10.00 | PPM | .2131 |
| Ba4 | | 99.01 | 9.901 | 10.00 | PPM | .2070 |
| Be2 | | 96.08 | .2402 | .2500 | PPM | .0051 |
| Ca3 | | 98.35 | 24.59 | 25.00 | PPM | .4990 |
| Cd1 | | 99.65 | 2.491 | 2.500 | PPM | .0482 |
| Co1 | | 98.74 | 2.468 | 2.500 | PPM | .0488 |
| Cr4 | | 98.40 | .9840 | 1.000 | PPM | .0238 |
| Cu1 | | 98.41 | 1.230 | 1.250 | PPM | .0256 |
| Fe2 | | 98.98 | 4.949 | 5.000 | PPM | .0928 |
| K 1 | | 96.06 | 24.01 | 25.00 | PPM | .6846 |
| Mg4 | | 97.35 | 24.34 | 25.00 | PPM | .5058 |
| Mn4 | | 99.40 | 2.485 | 2.500 | PPM | .0527 |
| Na2 | | 96.38 | 24.09 | 25.00 | PPM | .5746 |
| Ni3 | | 96.19 | 2.455 | 2.500 | PPM | .0620 |
| Sb1 | | 95.92 | 4.796 | 5.000 | PPM | .1104 |
| V 2 | | 98.63 | 2.466 | 2.500 | PPM | .0536 |
| Zn3 | | 100.2 | 2.505 | 2.500 | PPM | .0525 |
| As2 | | 97.81 | 4.891 | 5.000 | PPM | .1247 |
| Pb1 | | 99.44 | 4.972 | 5.000 | PPM | .0936 |
| Se1 | | 95.65 | 4.783 | 5.000 | PPM | .1241 |

*** Check Standard: 7 Ck7 Seq: 539 00:12:29 04 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | -94.05 | -.0044 | .0047 | PPM | .0019 |
| Al3 | | -5.513 | -.0022 | .0374 | PPM | .0161 |
| Ba4 | | -364.3 | -.0053 | .0015 | PPM | .0005 |
| Be2 | | 3.530 | .0000 | .0006 | PPM | .0004 |
| Ca3 | | 165.8 | .0328 | .0198 | PPM | .0188 |
| Cd1 | | 5.042 | .0002 | .0039 | PPM | .0006 |
| Co1 | | 64.35 | .0035 | .0040 | PPM | .0018 |
| Cr4 | | -9.376 | -.0004 | .0041 | PPM | .0011 |
| Cu1 | | -55.13 | -.0013 | .0023 | PPM | .0008 |
| Fe2 | | 21.42 | .0041 | .0193 | PPM | .0019 |
| K 1 | | 65.69 | .1711 | .2604 | PPM | .2107 |
| Mg4 | | 13.47 | .0024 | .0176 | PPM | .0156 |
| Mn4 | | 21.58 | .0007 | .0034 | PPM | .0003 |
| Na2 | | -4.884 | -.0113 | .2311 | PPM | .0388 |
| Ni3 | | -31.43 | -.0028 | .0090 | PPM | .0072 |
| Sb1 | | -99.14 | -.0402 | .0406 | PPM | .0510 |
| V 2 | | -145.5 | -.0114 | .0078 | PPM | .0014 |
| Zn3 | | -39.28 | -.0037 | .0095 | PPM | .0014 |
| As2 | | -34.50 | -.0114 | .0332 | PPM | .0081 |
| Pb1 | | 48.09 | .0095 | .0198 | PPM | .0285 |
| Se1 | | -47.65 | -.0145 | .0304 | PPM | .0194 |

Recalc to verify SCP 9/4/98

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Folder: CLP0831
Protocol: CLP-2 V IS SRD

00:30:41 04 Sep 1998

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Peak Seq: 540 00:30:41 04 Sep 1998

XAp = 207 YAp = 125 Intensity = 3939312

*** Check Standard: 7 Ck7 Seq: 541 00:33:05 04 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | -124.4 | -.0058 | .0047 | PPM | .0015 |
| Al3 | | -1.939 | -.0007 | .0374 | PPM | .0044 |
| Ba4 | | -457.9 | -.0073 | .0015 | PPM | .0005 |
| Be2 | | -14.42 | -.0001 | .0006 | PPM | .0002 |
| Ca3 | | -44.00 | -.0087 | .0198 | PPM | .0031 |
| Cd1 | | -12.62 | -.0005 | .0039 | PPM | .0004 |
| Co1 | | 80.92 | .0032 | .0040 | PPM | .0024 |
| Cr4 | | .6926 | .0000 | .0041 | PPM | .0006 |
| Cu1 | | -39.71 | -.0009 | .0023 | PPM | .0010 |
| Fe2 | | -9.721 | -.0019 | .0193 | PPM | .0015 |
| K 1 | | 45.82 | .1193 | .2604 | PPM | .1555 |
| Mg4 | | -24.88 | -.0044 | .0176 | PPM | .0096 |
| Mn4 | | 1.364 | .0000 | .0034 | PPM | .0004 |
| Na2 | | -11.47 | -.0265 | .2311 | PPM | .0260 |
| Ni3 | | 2.710 | .0002 | .0090 | PPM | .0045 |
| Sb1 | | -61.29 | -.0249 | .0406 | PPM | .0247 |
| V 2 | | -140.0 | -.0109 | .0078 | PPM | .0022 |
| Zn3 | | -43.56 | -.0042 | .0095 | PPM | .0020 |
| As2 | | 8.358 | .0028 | .0332 | PPM | .0222 |
| Pb1 | | 139.9 | .0277 | .0198 | PPM | .0240 |
| Se1 | | -28.52 | -.0087 | .0304 | PPM | .0069 |

*** Peak Seq: 542 00:37:28 04 Sep 1998

XAp = 207 YAp = 125 Intensity = 3930787

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: 0850132 | | | | Seq: 543 | 00:39:53 04 Sep 1998 ICP | | | |
| | | | 0.2 | | Dil. Weight 2.0800 Volume 500.00 | | | |
| Ag1 | .2036 | PPM | 1.046 | .1949 | -.4561 | -.0623 | 1.981 | -.6399 |
| Al3 | 5584. H | PPM | 209.3 | 5720. | 5764. | 5582. | 5620. | 5233. |
| Ba4 | 145.7 | PPM | 5.470 | 148.8 | 150.6 | 145.6 | 147.0 | 136.5 |
| Be2 | .3951 | PPM | .0632 | .4351 | .3833 | .4346 | .4332 | .2892 |
| Ca3 | 195300H | PPM | 6348. | 199200 | 200600 | 195600 | 196700 | 184500 |
| Cd1 | .2716 | PPM | .1797 | .2563 | .0776 | .1179 | .4881 | .4163 |
| Co1 | 3.472 | PPM | .4986 | 3.820 | 2.803 | 4.078 | 3.424 | 3.235 |
| Cr4 | 13.82 H | PPM | .6096 | 14.11 | 13.87 | 14.08 | 14.26 | 12.76 |
| Cu1 | 11.87 | PPM | .9347 | 11.83 | 12.18 | 12.10 | 12.90 | 10.36 |
| Fe2 | 8854. H | PPM | 310.4 | 9046. | 9127. | 8860. | 8903. | 8333. |
| K 1 | 1501. H | PPM | 41.91 | 1533. | 1546. | 1486. | 1497. | 1441. |
| Mg4 | 45090 H | PPM | 1650. | 46130 | 46410 | 45160 | 45480 | 42280 |
| Mn4 | 236.9 H | PPM | 8.158 | 242.0 | 243.6 | 237.5 | 238.3 | 223.0 |
| Na2 | 412.4 | PPM | 19.54 | 423.6 | 420.2 | 421.0 | 419.8 | 377.6 |
| Ni3 | 10.32 | PPM | .8205 | 10.65 | 9.512 | 10.70 | 11.33 | 9.436 |
| Sb1 | 14.85 | PPM | 7.756 | 16.97 | 6.685 | 16.41 | 23.95 | 8.228 |
| V 2 | 8.982 | PPM | .6146 | 9.090 | 9.346 | 9.438 | 9.120 | 7.914 |
| Zn3 | 47.33 | PPM | 2.174 | 47.51 | 49.45 | 48.36 | 47.65 | 43.69 |
| As2 | 11.25 | PPM | 6.872 | 7.277 | 2.515 | 13.35 | 12.32 | 20.82 |
| Pb1 | 11.47 | PPM | 2.455 | 11.85 | 10.22 | 11.06 | 15.39 | 8.855 |
| Se1 | 8.528 | PPM | 3.275 | 5.807 | 5.203 | 9.835 | 8.502 | 13.30 |
| *** Sample ID: 0850133 | | | | Seq: 544 | 00:44:37 04 Sep 1998 ICP | | | |
| | | | 0.2 | | Dil. Weight 2.0200 Volume 500.00 | | | |
| Ag1 | -.7238 | PPM | .1345 | -.6665 | -.5350 | -.8842 | -.8113 | -.7219 |
| Al3 | 5587. H | PPM | 170.1 | 5528. | 5791. | 5620. | 5652. | 5546. |
| Ba4 | 69.22 | PPM | 2.006 | 66.17 | 71.63 | 69.81 | 69.79 | 68.69 |
| Be2 | .4303 | PPM | .0659 | .4328 | .4936 | .4045 | .4874 | .3332 |
| Ca3 | 195600H | PPM | 5224. | 187300 | 201300 | 197200 | 197500 | 194600 |
| Cd1 | -.1302 | PPM | .2733 | -.1671 | -.3908 | .3340 | -.2213 | -.2054 |
| Co1 | 3.740 | PPM | .3731 | 4.135 | 4.125 | 3.456 | 3.336 | 3.650 |
| Cr4 | 10.60 H | PPM | .6221 | 9.743 | 11.06 | 10.75 | 11.26 | 10.21 |
| Cu1 | 11.21 | PPM | .6186 | 10.38 | 11.73 | 11.19 | 11.88 | 10.86 |
| Fe2 | 9366. H | PPM | 272.3 | 8940. | 9686. | 9416. | 9460. | 9327. |
| K 1 | 1368. H | PPM | 40.53 | 1339. | 1429. | 1338. | 1390. | 1343. |
| Mg4 | 47260 H | PPM | 1479. | 44900 | 48900 | 47650 | 47800 | 47040 |
| Mn4 | 249.9 H | PPM | 6.975 | 238.8 | 257.8 | 251.1 | 252.4 | 249.4 |
| Na2 | 374.9 | PPM | 14.61 | 358.8 | 395.1 | 373.9 | 383.0 | 363.9 |
| Ni3 | 9.591 | PPM | 1.005 | 10.29 | 9.380 | 10.15 | 10.22 | 7.917 |
| Sb1 | 9.672 | PPM | 3.436 | 4.191 | 12.14 | 8.964 | 10.18 | 12.89 |
| V 2 | 11.29 | PPM | 1.464 | 8.948 | 12.32 | 10.74 | 12.31 | 12.12 |
| Zn3 | 41.91 | PPM | 1.905 | 38.79 | 43.87 | 43.00 | 42.12 | 41.76 |
| As2 | 11.22 | PPM | 4.410 | 11.03 | 12.93 | 17.64 | 8.301 | 6.211 |
| Pb1 | 13.10 | PPM | 8.991 | 14.06 | -1.837 | 20.75 | 19.49 | 13.05 |
| Se1 | 11.30 | PPM | 3.056 | 9.306 | 13.21 | 10.17 | 15.53 | 7.800 |

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| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: ICSA | | | | Seq: 545 | 00:49:21 04 Sep 1998 ICP | | | |
| Ag1 | .0004 | PPM | .0019 | -.0028 | .0008 | .0017 | .0020 | .0021 |
| Al3 | 447.6 | PPM | 7.939 | 453.4 | 443.1 | 435.9 | 454.9 | 450.7 |
| Ba4 | -.0027 | PPM | .0003 | -.0025 | -.0025 | -.0030 | -.0031 | -.0023 |
| Be2 | .0017 | PPM | .0003 | .0020 | .0012 | .0017 | .0018 | .0016 |
| Ca3 | 423.3 | PPM | 6.212 | 427.8 | 419.7 | 414.5 | 429.8 | 424.8 |
| Cd1 | -.0008 | PPM | .0012 | -.0010 | -.0005 | .0005 | -.0002 | -.0026 |
| Co1 | .0035 | PPM | .0033 | .0077 | .0027 | .0062 | -.0002 | .0013 |
| Cr4 | .0049 | PPM | .0014 | .0055 | .0049 | .0030 | .0068 | .0044 |
| Cu1 | .0097 | PPM | .0009 | .0092 | .0091 | .0091 | .0111 | .0098 |
| Fe2 | 163.8 | PPM | 2.505 | 165.2 | 162.2 | 160.3 | 166.5 | 164.7 |
| K 1 | .0154 | PPM | .1258 | .1698 | .1076 | -.0824 | -.1310 | .0131 |
| Mg4 | 475.6 | PPM | 8.113 | 480.6 | 470.4 | 464.4 | 484.5 | 476.2 |
| Mn4 | .0083 | PPM | .0003 | .0090 | .0087 | .0085 | .0085 | .0080 |
| Na2 | .0306 | PPM | .0075 | .0365 | .0359 | .0188 | .0344 | .0273 |
| Ni3 | .0101 | PPM | .0069 | .0143 | .0136 | .0158 | .0077 | -.0010 |
| Sb1 | -.0258 | PPM | .0786 | -.0330 | .0673 | -.1277 | -.0009 | -.0546 |
| V 2 | -.0014 | PPM | .0027 | -.0019 | -.0040 | -.0000 | .0025 | -.0037 |
| Zn3 | .0097 | PPM | .0025 | .0096 | .0130 | .0095 | .0105 | .0061 |
| As2 | .0176 | PPM | .0359 | -.0229 | .0174 | .0488 | .0578 | -.0128 |
| Pb1 | .1097 | PPM | .0249 | .1362 | .1053 | .1199 | .1298 | .0682 |
| Se1 | -.0132 | PPM | .0360 | .0116 | -.0256 | -.0129 | .0270 | -.0662 |
| *** Sample ID: ICSAB | | | | Seq: 546 | 00:54:06 04 Sep 1998 ICP | | | |
| Ag1 | .9561 | PPM | .0177 | .9826 | .9547 | .9618 | .9359 | .9457 |
| Al3 | 463.2 | PPM | 8.190 | 475.8 | 463.2 | 464.7 | 454.4 | 457.9 |
| Ba4 | .4706 | PPM | .0086 | .4843 | .4697 | .4722 | .4620 | .4649 |
| Be2 | .4755 | PPM | .0084 | .4878 | .4753 | .4735 | .4661 | .4697 |
| Ca3 | 433.9 | PPM | 7.335 | 444.7 | 434.4 | 436.3 | 426.0 | 428.4 |
| Cd1 | .8851 | PPM | .0121 | .9029 | .8848 | .8894 | .8723 | .8759 |
| Co1 | .4495 | PPM | .0121 | .4704 | .4482 | .4465 | .4411 | .4415 |
| Cr4 | .4480 | PPM | .0090 | .4616 | .4473 | .4511 | .4397 | .4405 |
| Cu1 | .4824 | PPM | .0107 | .4996 | .4805 | .4846 | .4725 | .4746 |
| Fe2 | 168.7 | PPM | 2.828 | 173.0 | 168.7 | 169.4 | 165.7 | 166.7 |
| K 1 | 5.040 | PPM | .1594 | 5.134 | 5.116 | 5.203 | 4.821 | 4.928 |
| Mg4 | 490.7 | PPM | 8.890 | 503.7 | 490.9 | 493.8 | 481.0 | 484.1 |
| Mn4 | .4600 | PPM | .0086 | .4726 | .4612 | .4630 | .4500 | .4534 |
| Na2 | 2.563 | PPM | .0474 | 2.620 | 2.590 | 2.575 | 2.519 | 2.510 |
| Ni3 | .8808 | PPM | .0196 | .9055 | .8921 | .8843 | .8631 | .8589 |
| Sb1 | .9402 | PPM | .0532 | .9845 | .8783 | 1.005 | .9258 | .9072 |
| V 2 | .4593 | PPM | .0099 | .4743 | .4551 | .4625 | .4478 | .4568 |
| Zn3 | .8993 | PPM | .0151 | .9235 | .8957 | .9029 | .8879 | .8863 |
| As2 | .5353 | PPM | .0456 | .5425 | .4594 | .5818 | .5392 | .5538 |
| Pb1 | 1.027 | PPM | .0541 | 1.103 | .9534 | 1.009 | 1.032 | 1.040 |
| Se1 | .4956 | PPM | .0436 | .5591 | .4664 | .4852 | .5177 | .4494 |

Folder: CLP0031 Page 19

00:58:44 04 Sep 1998 Protocol: CLP-2 Y IS ISD

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Peak Seq: 547 00:58:44 04 Sep 1998

XAp = 206 YAp = 125 Intensity = 3936776

*** Check Standard: 6 Ck6 Seq: 548 01:01:09 04 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 97.44 | 1.218 | 1.250 | PPM | .0111 |
| Al3 | | 99.14 | 9.914 | 10.00 | PPM | .0649 |
| Ba4 | | 98.81 | 9.881 | 10.00 | PPM | .0626 |
| Be2 | | 96.42 | .2411 | .2500 | PPM | .0019 |
| Ca3 | | 99.24 | 24.81 | 25.00 | PPM | .1083 |
| Cd1 | | 101.6 | 2.539 | 2.500 | PPM | .0139 |
| Co1 | | 99.21 | 2.480 | 2.500 | PPM | .0159 |
| Cr4 | | 99.22 | .9922 | 1.000 | PPM | .0062 |
| Cu1 | | 98.43 | 1.230 | 1.250 | PPM | .0086 |
| Fe2 | | 100.2 | 5.009 | 5.000 | PPM | .0271 |
| K 1 | | 95.51 | 23.88 | 25.00 | PPM | .2042 |
| Mg4 | | 98.87 | 24.72 | 25.00 | PPM | .1329 |
| Mn4 | | 100.2 | 2.506 | 2.500 | PPM | .0105 |
| Na2 | | 96.67 | 24.17 | 25.00 | PPM | .1661 |
| Ni3 | | 98.67 | 2.467 | 2.500 | PPM | .0187 |
| Sb1 | | 96.70 | 4.835 | 5.000 | PPM | .0913 |
| V 2 | | 99.24 | 2.481 | 2.500 | PPM | .0160 |
| Zn3 | | 101.4 | 2.535 | 2.500 | PPM | .0098 |
| As2 | | 98.78 | 4.939 | 5.000 | PPM | .0287 |
| Pb1 | | 100.8 | 5.040 | 5.000 | PPM | .0369 |
| Se1 | | 98.07 | 4.904 | 5.000 | PPM | .0505 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 7 CK7 Seq: 549 01:13:27 04 Sep 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | -150.7 | -.0070 | .0047 | PPM | .0013 |
| Al3 | | -2.040 | -.0008 | .0374 | PPM | .0017 |
| Ba4 | | -484.4 | -.0071 | .0015 | PPM | .0004 |
| Be2 | | 26.38 | .0002 | .0006 | PPM | .0001 |
| Ca3 | | -23.67 | -.0047 | .0198 | PPM | .0043 |
| Cd1 | | 2.497 | .0001 | .0039 | PPM | .0007 |
| Co1 | | 32.79 | .0013 | .0040 | PPM | .0036 |
| Cr4 | | -20.22 | -.0008 | .0041 | PPM | .0003 |
| Cu1 | | 3.045 | .0001 | .0023 | PPM | .0007 |
| Fe2 | | 2.544 | .0005 | .0193 | PPM | .0008 |
| K 1 | | 75.25 | .2064 | .2604 | PPM | .1689 |
| Mg4 | | -54.73 | -.0096 | .0176 | PPM | .0139 |
| Mn4 | | 14.25 | .0005 | .0034 | PPM | .0004 |
| Na2 | | .5541 | .0013 | .2311 | PPM | .0111 |
| Ni3 | | 18.50 | .0017 | .0090 | PPM | .0073 |
| Sb1 | | -1.266 | -.0005 | .0406 | PPM | .0607 |
| V 2 | | 39.65 | .0031 | .0078 | PPM | .0024 |
| Zn3 | | -44.05 | -.0042 | .0095 | PPM | .0014 |
| As2 | | 26.31 | .0087 | .0332 | PPM | .0307 |
| Pb1 | | -32.61 | -.0064 | .0198 | PPM | .0216 |
| Se1 | | -69.87 | -.0212 | .0304 | PPM | .0145 |

# KEMRON ENVIRONMENTAL SERVICES
## ICP RUN LOGBOOK

ANALYST _____ DATE _____ TIME _____
METHOD # _____ SOP # _____ WORK GROUP # _____
CAL STD SOURCE _____ ICV/CCV SOURCE _____
ICS AB SOURCE _____ ICS A SOURCE _____ POST SPK SOURCE _____

| Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs | Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 27. | | | | |
| | | | | | 28. | | | | |
| | | | | | 29. | | | | |
| | | | | | 30. | | | | |
| | | | | | 31. | | | | |
| | | | | | 32. | | | | |
| | | | | | 33. | | | | |
| | | | | | 34. | | | | |
| 11. | | | | | 35. | | | | |
| 12. | | | | | 36. | | | | |
| 13. | | | | | 37. | | | | |
| 14. | | | | | 38. | | | | |
| 15. | | | | | 39. | | | | |
| 16. | | | | | 40. | | | | |
| 17. | | | | | 41. | | | | |
| 18. | | | | | 42. | | | | |
| 19. | | | | | 43. | | | | |
| 10. | | | | | 44. | | | | |
| 11. | | | | | 45. | | | | |
| 12. | | | | | 46. | | | | |
| 13. | | | | | 47. | | | | |
| 14. | | | | | 48. | | | | |
| 15. | | | | | 49. | | | | |
| 16. | | | | | 50. | | | | |
| 17. | | | | | 51. | | | | |
| 18. | | | | | 52. | | | | |
| 19. | | | | | 53. | | | | |
| 20. | | | | | 54. | | | | |
| 21. | | | | | 55. | | | | |
| 22. | | | | | 56. | | | | |
| 23. | | | | | 57. | | | | |
| 24. | | | | | 58. | | | | |
| 25. | | | | | 59. | | | | |
| 26. | | | | | 60. | | | | |

Comments: _____

Note: No entry for Dil represents 1X Dilution



Autosampler Run Key

CCV = Continuing Calibration Verification
CCB = Continuing Calibration Blank
*, D = Automatic Instrument Rerun due to % RSD > 20%.
FRS = Full Recalibration Sequence

ID = Automatic Instrument Dilution
R = Analyte Rerun
BLK = Blank Rerun

Calibration Summary
Method: clptstd Date: 9/4/98 9:14:57 AM

| Element | Std | Equation | Intercept | Slope | Curvature | Corr. Coeff. |
|---|---|---|---|---|---|---|

Method: clptstd
Results: 090498
Sample Info: 090498
Method Description:

IDC: d4lec.lec
Spectra Stored: Yes
User: User1

MCP:
Method Stored: Yes
Date: 9/4/98 9:14:07

Mean Data
ID: IS Init
Seq. No.: 1
Data: Original
A/S Pos: 1
Date: 9/4/98 9:19:22 AM

| Element | Mean Corr. Intensity | Std.Dev. | RSD |
|---|---|---|---|
| Y 360.073 | 1710517.1 | 6721.04 | 0.39% |

Mean Data
ID: S1
Seq. No.: 2
Data: Original
A/S Pos: 1
Date: 9/4/98 9:19:59 AM

| Element | Mean Corr. Intensity | Std.Dev. | RSD | Conc. | Calib Units |
|---|---|---|---|---|---|
| Y 360.073 | 1749618.6 | 18123.21 | 1.05% | | |
| Ag 328.068 | -160.1 | 16.07 | 10.03% | 0 | mg/L |
| Al 237.312 | -561.8 | 2.93 | 0.52% | 0 | mg/L |
| As 189.979 | -6.7 | 0.05 | 0.75% | 0 | mg/L |
| Ba 230.424 | -459.0 | 6.36 | 1.39% | 0 | mg/L |
| Be 234.861 | -376.5 | 6.83 | 1.18% | 0 | mg/L |
| Ca 227.549 | -111.5 | 4.61 | 4.17% | 0 | mg/L |
| Cd 226.502 | 35.6 | 5.11 | 14.32% | 0 | mg/L |
| Co 228.616 | -91.4 | 5.17 | 5.59% | 0 | mg/L |
| Cr 267.716 | 275.6 | 8.76 | 3.14% | 0 | mg/L |
| Cu 327.396 | 241.2 | 44.91 | 18.54% | 0 | mg/L |
| Fe 261.187 | -648.3 | 2.25 | 0.35% | 0 | mg/L |
| K 404.721 | 324.3 | 97.97 | 30.21% | 0 | mg/L |
| K 766.491 | 296112.1 | 6729.31 | 2.27% | 0 | mg/L |
| Li 460.289 | -1424.8 | 169.64 | 11.84% | 0 | mg/L |
| Mg 279.079 | -34.4 | 39.26 | 114.02% | 0 | mg/L |
| Mn 257.611 | -480.5 | 6.34 | 1.31% | 0 | mg/L |
| Mo 202.032 | -30.7 | 3.84 | 12.51% | 0 | mg/L |
| Na 330.237 | -75.4 | 21.41 | 2.72% | 0 | mg/L |
| Ni 231.604 | -207.0 | 3.56 | 1.61% | 0 | mg/L |
| Pb 220.353 | 89.4 | 3.54 | 3.61% | 0 | mg/L |
| Sb 206.833 | 122.5 | 2.91 | 2.38% | 0 | mg/L |
| Se 196.026 | -51.9 | 3.87 | 7.46% | 0 | mg/L |
| Si 288.158 | 503.7 | 11.34 | 1.93% | 0 | mg/L |
| Sn 189.933 | 12.4 | 5.13 | 41.39% | 0 | mg/L |
| Sr 232.235 | 12.1 | 5.72 | 47.21% | 0 | mg/L |
| Tl 377.572 | -509.9 | 54.03 | 7.91% | 0 | mg/L |
| Zn 213.856 | -20.4 | 1.99 | 9.76% | 0 | mg/L |
| V 292.402 | -135.6 | 31.34 | 23.82% | 0 | mg/L |
| Zn 206.201 | 98.9 | 1.57 | 1.60% | 0 | mg/L |
| B 182.587 | -11.5 | 4.12 | 34.84% | 0 | mg/L |
| B 208.893 | 143.6 | 3.94 | 2.22% | 0 | mg/L |
| B 208.959 | 421.7 | 0.39 | 0.10% | 0 | mg/L |
| B 249.773 | 569.9 | 1.72 | 0.30% | 0 | mg/L |

Mean Data
ID: S1
Seq. No.: 3
Data: Original
A/S Pos: 2
Date: 9/4/98 9:23:20 AM

| Element | Mean Corr. Intensity | Std.Dev. | RSD | Conc. | Calib Units |
|---|---|---|---|---|---|
| Y 360.073 | 1753630.5 | 36304.69 | 2.04% | | |
| Ag 328.068 | 2482.7 | 43.03 | 1.73% | 0.0040 | mg/L |

| | | | | | |
|---|---|---|---|---|---|
| Al 237.312 | 1882.9 | 44.60 | 2.37% | 0.10 | mg/L |
| As 189.979 | 61.1 | 1.37 | 2.24% | 0.0040 | mg/L |
| Ba 233.424 | 5441.5 | 158.04 | 2.90% | 0.010 | mg/L |
| Be 234.861 | 961.2 | 19.92 | 2.08% | 0.00050 | mg/L |
| Ca 227.549 | 49.6 | 9.99 | 20.16% | 0.10 | mg/L |
| Cd 228.802 | 123.4 | 7.59 | 6.15% | 0.00050 | mg/L |
| Co 228.616 | 385.1 | 2.92 | 0.76% | 0.0010 | mg/L |
| Cr 267.716 | 2334.0 | 86.77 | 3.69% | 0.0050 | mg/L |
| Cu 327.396 | 1330.7 | 75.12 | 5.34% | 0.0050 | mg/L |
| Fe 261.387 | 1113.4 | 28.40 | 2.55% | 0.040 | mg/L |
| K 404.721 | 716.1 | 68.94 | 9.62% | 0.50 | mg/L |
| K 766.491 | 2031603.0 | 54505.27 | 2.68% | 0.50 | mg/L |
| Li 460.286 | 89.3 | 172.17 | 192.81% | 0.010 | mg/L |
| Mg 279.079 | 4105.7 | 142.41 | 3.46% | 0.10 | mg/L |
| Mn 257.610 | 6132.9 | 114.92 | 1.87% | 0.0050 | mg/L |
| Mo 202.030 | 770.5 | 11.96 | 1.55% | 0.010 | mg/L |
| Na 330.237 | 2688.9 | 26.67 | 0.99% | 0.50 | mg/L |
| Ni 231.604 | 578.5 | 20.12 | 3.48% | 0.0050 | mg/L |
| Pb 220.353 | 189.7 | 8.91 | 4.70% | 0.0050 | mg/L |
| Sb 206.833 | 460.6 | 12.46 | 2.71% | 0.010 | mg/L |
| Se 196.026 | -32.6 | 10.02 | 30.48% | 0.0040 | mg/L |
| Si 288.158 | 2942.9 | 78.45 | 2.67% | 0.050 | mg/L |
| Sn 189.933 | 442.5 | 11.53 | 2.62% | 0.010 | mg/L |
| Sr 232.235 | 73.1 | 4.73 | 6.47% | 0.010 | mg/L |
| Ti 337.280 | 16300.0 | 239.42 | 1.47% | 0.010 | mg/L |
| Tl 190.800 | 104.4 | 2.35 | 2.25% | 0.0050 | mg/L |
| V 292.402 | 3765.4 | 46.94 | 1.25% | 0.010 | mg/L |
| Zn 206.200 | 4096.9 | 79.78 | 1.94% | 0.010 | mg/L |
| B 182.527 | -13.9 | 0.99 | 7.07% | 0.1 | mg/L |

Calib. Std. disproportionate. Check Std. Conc. and reanalyze element: B 182.527

| | | | | | |
|---|---|---|---|---|---|
| B 208.893 | 139.3 | 0.98 | 0.71% | 0.1 | mg/L |

Calib. Std. disproportionate. Check Std. Conc. and reanalyze element: B 208.893

| | | | | | |
|---|---|---|---|---|---|
| B 208.959 | 416.0 | 6.82 | 1.65% | 0.1 | mg/L |
| B 249.773 | 563.5 | 14.34 | 2.54% | 0.1 | mg/L |

Calib. Std. disproportionate. Check Std. Conc. and reanalyze element: B 249.773

Mean Data ----------

ID: S2 Seq. No.: 4 A/C Pos: 2
Data: Original Date: 9/4/98 9:27:14 AM

| Element | Mean Corr. Intensity | Std.Dev. | RSD | Conc. | Calib Units |
|---|---|---|---|---|---|
| Y 360.073 | 2279264.3 | 7819.45 | 0.34% | | |
| Ag 328.068 | 273950.4 | 2224.34 | 0.44% | 0.40 | mg/L |
| Al 237.312 | 241327.7 | 4797.02 | 1.99% | 10 | mg/L |
| As 189.979 | 6485.6 | 41.51 | 0.64% | 0.40 | mg/L |
| Ba 233.424 | 547238.5 | 622.04 | 0.11% | 1.0 | mg/L |
| Be 234.861 | 138564.3 | 2326.57 | 1.68% | 0.050 | mg/L |
| Ca 227.549 | 13972.2 | 367.52 | 0.63% | 10 | mg/L |
| Cd 228.802 | 5956.4 | 101.91 | 1.71% | 0.050 | mg/L |
| Co 228.616 | 42385.2 | 479.62 | 1.12% | 0.40 | mg/L |
| Cr 267.716 | 194411.9 | 2695.55 | 1.39% | 0.50 | mg/L |
| Cu 327.396 | 172795.3 | 6179.05 | 3.58% | 0.50 | mg/L |
| Fe 261.387 | 159120.2 | 2224.41 | 1.40% | 4.0 | mg/L |
| K 404.721 | 61115.2 | 125.62 | 0.21% | 50 | mg/L |
| Li 460.286 | 103679.1 | 2445.99 | 2.36% | 1.0 | mg/L |
| Mg 279.079 | 407365.4 | 353.23 | 0.09% | 10 | mg/L |
| Mn 257.610 | 590283.8 | 261.64 | 0.04% | 0.50 | mg/L |
| Mo 202.030 | 74226.1 | 993.89 | 1.33% | 1.0 | mg/L |
| Na 330.237 | 306539.2 | 783.50 | 0.26% | 50 | mg/L |
| Ni 231.604 | 72464.2 | 784.16 | 1.08% | 0.50 | mg/L |
| Pb 220.353 | 9220.6 | 77.92 | 0.85% | 0.50 | mg/L |
| Sb 206.833 | 33740.6 | 628.19 | 1.86% | 1.2 | mg/L |
| Se 196.026 | 5051.2 | 33.29 | 0.66% | 0.40 | mg/L |
| Si 288.158 | 263963.1 | 1011.79 | 0.38% | 5.0 | mg/L |
| Sn 189.933 | 39860.2 | 336.66 | 0.84% | 1.0 | mg/L |
| Sr 232.235 | 5598.3 | 57.47 | 1.03% | 1.0 | mg/L |
| Ti 337.280 | 1625369.2 | 2092.69 | 0.13% | 1.0 | mg/L |
| Tl 190.800 | 10758.5 | 49.21 | 0.45% | 0.50 | mg/L |
| V 292.402 | 298759.2 | 2.74 | 0.00% | 1.0 | mg/L |
| Zn 206.200 | 319777.3 | 921.01 | 0.29% | 1.0 | mg/L |

| | | | | |
|---|---|---|---|---|
| B 182.527 | 30.4 | 2.52 | 8.30% | 10.0 mg/L |

Calib. Std. disproportionate. Check Std. Conc. and reanalyze element: B 182.527

| | | | | |
|---|---|---|---|---|
| B 208.893 | 306.0 | 5.01 | 1.65% | 10.0 mg/L |

Calib. Std. disproportionate. Check Std. Conc. and reanalyze element: B 208.893

| | | | | |
|---|---|---|---|---|
| B 208.959 | 3556.1 | 27.69 | 0.79% | 10.0 mg/L |
| B 249.773 | 2069.8 | 56.13 | 2.71% | 10.0 mg/L |

Calib. Std. disproportionate. Check Std. Conc. and reanalyze element: B 249.773

Mean Data ----------

ID: S3 Seq. No.: 5 A/D Pos: 4

Data: Original Date: 9/4/96 9:32:07 AM

| Element | Mean Corr. Intensity | Std.Dev. | RSD | Conc. | Calib Units |
|---|---|---|---|---|---|
| Y 360.073 | 2236008.4 | 10820.45 | 0.48% | | |
| Ag 328.068 | 569467.7 | 72.00 | 0.01% | 0.80 | mg/L |
| Al 237.312 | 510680.6 | 874.33 | 0.17% | 20 | mg/L |
| As 188.979 | 13142.0 | 167.59 | 1.28% | 0.80 | mg/L |
| Ba 230.424 | 1080939.0 | 3998.74 | 0.37% | 2.0 | mg/L |
| Be 234.861 | 299300.5 | 563.78 | 0.19% | 0.10 | mg/L |
| Ca 227.549 | 28115.9 | 7.81 | 0.03% | 20 | mg/L |
| Cd 226.502 | 18309.0 | 84.50 | 0.46% | 0.10 | mg/L |
| Co 228.616 | 83618.4 | 521.59 | 0.62% | 0.40 | mg/L |
| Cr 267.716 | 382698.0 | 1738.57 | 0.45% | 1.0 | mg/L |
| Cu 327.396 | 354494.7 | 773.77 | 0.22% | 1.0 | mg/L |
| Fe 261.387 | 317077.2 | 1712.65 | 0.54% | 8.0 | mg/L |
| K 404.721 | 119334.6 | 242.37 | 0.20% | 100 | mg/L |
| Li 460.286 | 190587.5 | 441.54 | 0.23% | 2.0 | mg/L |
| Mg 279.079 | 840947.7 | 3748.23 | 0.45% | 20 | mg/L |
| Mn 257.610 | 1107511.5 | 3437.89 | 0.29% | 1.0 | mg/L |
| Mo 202.030 | 143926.6 | 551.53 | 0.38% | 2.0 | mg/L |
| Na 330.237 | 589940.9 | 70.43 | 0.01% | 100 | mg/L |
| Ni 231.604 | 140426.6 | 835.43 | 0.59% | 1.0 | mg/L |
| Pb 220.353 | 18013.1 | 99.48 | 0.55% | 1.0 | mg/L |
| Sb 206.833 | 69626.5 | 447.11 | 0.65% | 2.4 | mg/L |
| Se 196.026 | 10230.2 | 30.38 | 0.30% | 0.80 | mg/L |
| Si 288.158 | 501945.4 | 217.37 | 0.04% | 10 | mg/L |
| Sn 189.933 | 77926.1 | 571.97 | 0.73% | 2.0 | mg/L |
| Sr 232.235 | 11018.3 | 70.22 | 0.64% | 2.0 | mg/L |
| Ti 337.280 | 3253217.5 | 6217.67 | 0.19% | 2.0 | mg/L |
| Tl 190.800 | 20848.3 | 46.71 | 0.22% | 1.0 | mg/L |
| V 292.402 | 797185.6 | 1919.07 | 0.24% | 2.0 | mg/L |
| Zn 206.200 | 632116.9 | 4818.43 | 0.76% | 2.0 | mg/L |
| B 182.527 | 256.6 | 9.99 | 3.86% | 20.0 | mg/L |

Calib. Std. disproportionate. Check Std. Conc. and reanalyze element: B 182.527

| | | | | |
|---|---|---|---|---|
| B 208.893 | 1244.7 | 41.85 | 3.11% | 20.0 mg/L |

Calib. Std. disproportionate. Check Std. Conc. and reanalyze element: B 208.893

| | | | | |
|---|---|---|---|---|
| B 208.959 | 6735.2 | 104.28 | 1.54% | 20.0 mg/L |
| B 249.773 | 9265.8 | 508.32 | 5.48% | 20.0 mg/L |

Calib. Std. disproportionate. Check Std. Conc. and reanalyze element: B 249.773

Calibration Summary ----------

Method: clptstd Date: 9/4/96 9:33:07 AM

| Element | Stds | Equation | Intercept | Slope | Curvature | Corr. Coeff. |
|---|---|---|---|---|---|---|
| Ag 328.068 | 3 | Linear-thru-Zero | 0.0 | 706441.0 | 0.00000 | 0.999787 |
| Al 237.312 | 3 | Linear-thru-Zero | 0.0 | 25263.8 | 0.00000 | 0.999891 |
| As 188.979 | 3 | Linear-thru-Zero | 0.0 | 16384.4 | 0.00000 | 0.999975 |
| Ba 230.424 | 3 | Linear-thru-Zero | 0.0 | 541779.3 | 0.00000 | 0.999977 |
| Be 234.861 | 3 | Linear | -1636.9 | 2988346.0 | 0.00000 | 0.999788 |
| Ca 227.549 | 3 | Linear | -107.9 | 1410.6 | 0.00000 | 0.999999 |
| Cd 226.502 | 3 | Linear | -5.3 | 182362.6 | 0.00000 | 0.999926 |
| Co 228.616 | 3 | Linear | 151.2 | 209736.4 | 0.00000 | 0.999895 |
| Cr 267.716 | 3 | Linear-thru-Zero | 0.0 | 383927.1 | 0.00000 | 0.999962 |
| Cu 327.396 | 3 | Linear-thru-Zero | 0.0 | 355904.1 | 0.00000 | 0.999807 |
| Fe 261.387 | 3 | Linear | -404.1 | 39724.6 | 0.00000 | 0.999966 |
| K 404.721 | 3 | Linear-thru-Zero | 0.0 | 1199.1 | 0.00000 | 0.999924 |
| K 766.491 | 1 | Linear | 296112.1 | 3512001.7 | 0.00000 | 1.000000 |
| Li 460.286 | 3 | Linear | 482.5 | 96675.9 | 0.00000 | 0.999856 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mg 279.079 | 3 | Linear | -2474.5 | 41925.1 | 0.00000 | 0.999999 |
| Mn 257.610 | 3 | Linear | 1165.2 | 1165753.4 | 0.00000 | 1.000000 |
| Mo 202.030 | 3 | Linear-thru-Zero | 0.0 | 72416.0 | 0.00000 | 0.999997 |
| Na 330.237 | 3 | Linear-thru-Zero | 0.0 | 5945.7 | 0.00000 | 0.999973 |
| Ni 231.604 | 3 | Linear-thru-Zero | 0.0 | 141326.1 | 0.00000 | 0.999916 |
| Pb 220.353 | 3 | Linear | 225.1 | 17949.5 | 0.00000 | 0.999962 |
| Sb 206.833 | 3 | Linear | 9.2 | 28496.5 | 0.00000 | 0.999918 |
| Se 196.026 | 3 | Linear | -57.5 | 12993.5 | 0.00000 | 0.999997 |
| Si 288.158 | 3 | Linear | 40.4 | 53190.2 | 0.00000 | 0.999998 |
| Sn 189.933 | 3 | Linear | 152.9 | 35026.4 | 0.00000 | 0.999910 |
| Sr 232.236 | 3 | Linear | 26.1 | 8508.1 | 0.00000 | 0.999977 |
| Ti 337.280 | 3 | Linear | -580.3 | 1626710.3 | 0.00000 | 1.000000 |
| Tl 190.800 | 3 | Linear-thru-Zero | 0.0 | 20979.8 | 0.00000 | 0.999921 |
| V 292.402 | 3 | Linear | -138.5 | 398737.0 | 0.00000 | 1.000000 |
| Zn 206.200 | 3 | Linear-thru-Zero | 0.0 | 316604.5 | 0.00000 | 0.999979 |
| B 182.527 | 3 | Linear | -30.1 | 22.7 | 0.00000 | 0.937536 |
| B 208.893 | 3 | Linear | 56.6 | 56.4 | 0.00000 | 0.929044 |
| B 206.959 | 3 | Linear | 205.1 | 408.3 | 0.00000 | 0.992220 |
| B 249.773 | 3 | Linear | 29.1 | 410.4 | 0.00000 | 0.941910 |

Mean Data ----------

ID: HIGH STD CHECK Seq. No.: 6 Sample No.: 1 A/S Pos: 4
Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.0: 1.0
Data: Original Date: 9/4/96 9:37:09 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2233789.9 | | | | | | | 0.8 |
| Ag 328.068 | 568034.3 | 0.[illegible]4 | 0.0053 | mg/L | | | | [illegible] |
| Al 237.312 | 503095.1 | 19.9 | 0.00 | mg/L | | | | [illegible] |
| As 188.979 | 13302.5 | 0.827 | 0.0098 | mg/L | | | | [illegible] |
| Ba 230.424 | 1075802.7 | 1.99 | 0.017 | mg/L | | | | [illegible] |
| Be 234.861 | 293106.3 | 0.0983 | 0.00027 | mg/L | | | | [illegible] |
| Ca 227.549 | 27693.3 | 19.5 | 0.15 | mg/L | | | | [illegible] |
| Cd 226.502 | 152431.9 | 0.0999 | 0.00012 | mg/L | | | | [illegible] |
| Co 228.616 | 83124.0 | 0.365 | 0.0044 | mg/L | | | | [illegible] |
| Cr 267.716 | 378112.4 | 0.995 | 0.0081 | mg/L | | | | [illegible] |
| Cu 327.396 | 354513.5 | 0.996 | 0.0061 | mg/L | | | | [illegible] |
| Fe 261.187 | 313102.8 | 7.69 | 0.060 | mg/L | | | | [illegible] |
| K 404.721 | 119446.1 | 99.6 | 0.88 | mg/L | | | | 0.89 |
| K 766.491 | Saturated | | | | | | | |
| Li 460.289 | 169026.4 | 1.91 | 0.018 | mg/L | | | | 0.95 |
| Mg 279.079 | 836658.2 | 20.1 | 0.20 | mg/L | | | | [illegible] |
| Mn 257.610 | 1162071.1 | 0.994 | 0.0090 | mg/L | | | | [illegible] |
| Mo 202.030 | 143141.9 | 1.99 | 0.020 | mg/L | | | | [illegible] |
| Na 330.237 | 587957.5 | 99.6 | 0.79 | mg/L | | | | [illegible] |
| Ni 231.604 | 140069.3 | 0.991 | 0.0096 | mg/L | | | | [illegible] |
| Pb 220.353 | 14135.0 | 1.01 | 0.016 | mg/L | | | | [illegible] |
| Sb 206.833 | 69084.4 | 0.39 | 0.010 | mg/L | | | | [illegible] |
| Se 196.026 | 10340.1 | 0.796 | 0.0125 | mg/L | | | | [illegible] |
| Si 288.158 | 125254.7 | 9.87 | 0.047 | mg/L | | | | [illegible] |
| Sn 189.933 | 77220.6 | 1.97 | 0.027 | mg/L | | | | [illegible] |
| Sr 232.236 | 11037.6 | 1.94 | 0.027 | mg/L | | | | [illegible] |
| Ti 337.280 | 1243764.0 | 1.99 | 0.016 | mg/L | | | | [illegible] |
| Tl 190.800 | 11516.5 | 0.991 | 0.0152 | mg/L | | | | [illegible] |
| V 292.402 | 394789.7 | 2.00 | 0.017 | mg/L | | | | [illegible] |
| Zn 206.200 | 410513.5 | 1.93 | 0.043 | mg/L | | | | [illegible] |
| B 182.527* | 293.6 | 24.9 | 0.52 | mg/L | | | | [illegible] |
| *QC exceeds upper limit for B 182.527 Recovery = 124.46% Action = Continue | | | | | | | | |
| B 208.893 | 1446.6 | 22.2 | 0.82 | mg/L | | | | 0.69 |
| *QC exceeds upper limit for B 208.893 Recovery = 110.86% Action = Continue | | | | | | | | |
| B 206.959 | 8950.7 | 19.0 | 0.38 | mg/L | | | | 2.01 |
| B 249.773 | 1006.7 | 24.5 | 0.69 | mg/L | | | | 2.79 |
| *QC exceeds upper limit for B 249.773 Recovery = 122.21% Action = Continue | | | | | | | | |

Mean Data ----------

ID: ICV 2nd Vendor Seq. No.: 7 Sample No.: 2 A/S Pos: 5
Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.0: 1.0
Data: Original Date: 9/4/96 9:41:42 AM

| | Mean Corr. | Mean | | Calib | Mean | | Sample |
|---|---|---|---|---|---|---|---|

| Element | Intensity | Conc. | Std.Dev. | Units | Conc. | Std.Dev. | Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2334364.0 | | | | | | | [illegible] |
| Ag 328.068 | 278072.8 | 0.394 | 0.0001 | mg/L | | | | [illegible] |
| Al 237.312 | 244566.0 | 9.69 | 0.176 | mg/L | | | | [illegible] |
| As 188.979 | 6482.0 | 0.403 | 0.0006 | mg/L | | | | [illegible] |
| Ba 230.424 | 550211.6 | 1.00 | 0.001 | mg/L | | | | [illegible] |
| Be 234.861 | 135700.2 | 0.0474 | 0.00095 | mg/L | | | | [illegible] |
| *QC exceeds lower limit for Be 234.861 | | Recovery = 94.76% | | Action = Continue* | | | | |
| Ca 227.549 | 14130.7 | 9.98 | 0.179 | mg/L | | | | [illegible] |
| Cd 228.802 | 9123.6 | 0.0501 | 0.00093 | mg/L | | | | [illegible] |
| Co 228.616 | 43437.6 | 0.206 | 0.0043 | mg/L | | | | [illegible] |
| Cr 267.716 | 196098.2 | 0.513 | 0.0102 | mg/L | | | | [illegible] |
| Cu 327.396 | 180243.1 | 0.506 | 0.0099 | mg/L | | | | [illegible] |
| Fe 261.387 | 159643.9 | 4.03 | 0.080 | mg/L | | | | [illegible] |
| K 404.721 | 61946.5 | 51.7 | 0.10 | mg/L | | | | [illegible] |
| K 766.491 | Saturated | | | | | | | [illegible] |
| Li 460.286 | 104355.7 | 1.05 | 0.012 | mg/L | | | | [illegible] |
| Mg 279.079 | 414713.0 | 9.95 | 0.021 | mg/L | | | | [illegible] |
| Mn 257.610 | 597107.6 | 0.510 | 0.0005 | mg/L | | | | [illegible] |
| Mo 202.030 | 72414.6 | 1.01 | 0.023 | mg/L | | | | [illegible] |
| Na 330.237 | 308652.7 | 52.3 | 0.61 | mg/L | | | | [illegible] |
| Ni 231.604 | 74192.4 | 0.525 | 0.0093 | mg/L | | | | [illegible] |
| Pb 220.353 | 9278.4 | 0.512 | 0.0129 | mg/L | | | | [illegible] |
| Sb 206.833 | 32506.6 | 1.14 | 0.041 | mg/L | | | | [illegible] |
| Se 196.026 | 4995.9 | 0.393 | 0.0006 | mg/L | | | | [illegible] |
| Si 288.158 | 259396.9 | 4.98 | 0.009 | mg/L | | | | [illegible] |
| Sn 189.933 | 39271.8 | 1.00 | 0.021 | mg/L | | | | [illegible] |
| Sr 232.235 | 5529.0 | 0.967 | 0.0230 | mg/L | | | | [illegible] |
| Ti 337.280 | 1626717.4 | 1.00 | 0.002 | mg/L | | | | [illegible] |
| Tl 190.800 | 10767.1 | 0.519 | 0.0096 | mg/L | | | | [illegible] |
| V 292.402 | 407297.1 | 1.00 | 0.001 | mg/L | | | | [illegible] |
| Zn 206.200 | 316720.4 | 1.01 | 0.023 | mg/L | | | | [illegible] |
| B 182.527 | 72.1 | 9.06 | 0.054 | mg/L | | | | [illegible] |
| B 208.892 | 469.9 | 6.11 | 0.034 | mg/L | | | | [illegible] |
| B 209.959 | 3917.1 | 7.60 | 0.031 | mg/L | | | | [illegible] |
| B 249.773 | 3199.1 | 7.70 | 0.099 | mg/L | | | | [illegible] |

Mean Data ----------

ID: 200,000 Seq. No.: 9 Sample No.: 4 A/S Pos: 1

Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.0 1.0

Data: Original Date: 9/4/98 9:46:03 AM

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 178988[illegible] | | | | | | | [illegible] |
| Ag 328.068 | -131.2 | -0.00019 | 0.000026 | mg/L | | | | [illegible] |
| Al 237.312 | -539.7 | -0.0214 | 0.00046 | mg/L | | | | 507.42% |
| As 188.979 | -2.4 | -0.00014 | 0.000783 | mg/L | | | | [illegible] |
| Ba 230.424 | -450.2 | -0.00003 | 0.000009 | mg/L | | | | [illegible] |
| Be 234.861 | -560.6 | 0.00037 | 0.000001 | mg/L | | | | 118.66% |
| Ca 227.549 | -115.1 | -0.00504 | 0.005980 | mg/L | | | | 4.04% |
| Cd 228.802 | 41.1 | 0.00025 | 0.000010 | mg/L | | | | [illegible] |
| Co 228.616 | -95.9 | -0.00118 | 0.000021 | mg/L | | | | [illegible] |
| Cr 267.716 | 272.5 | 0.00071 | 0.000016 | mg/L | | | | [illegible] |
| Cu 327.396 | 1323.4 | 0.00374 | 0.000329 | mg/L | | | | 4.57% |
| Fe 261.387 | -628.0 | -0.00564 | 0.000257 | mg/L | | | | [illegible] |
| K 404.721 | 291.7 | 0.243 | 0.1002 | mg/L | | | | 46.50% |
| K 766.491 | 296766.7 | -0.00266 | 0.001039 | mg/L | | | | [illegible] |
| Li 460.286 | -1559.9 | -0.0021 | 0.00030 | mg/L | | | | [illegible] |
| Mg 279.079 | -121.7 | 0.0561 | 0.00004 | mg/L | | | | [illegible] |
| Mn 257.610 | -462.4 | -0.00131 | 0.000004 | mg/L | | | | [illegible] |
| Mo 202.030 | 257.6 | 0.00356 | 0.000421 | mg/L | | | | [illegible] |
| Na 330.237 | 733.0 | 0.122 | 0.0081 | mg/L | | | | [illegible] |
| Ni 231.604 | -221.4 | -0.00164 | 0.000016 | mg/L | | | | [illegible] |
| Pb 220.353 | 94.1 | -0.00172 | 0.000205 | mg/L | | | | [illegible] |
| Sb 206.833 | 270.8 | 0.00522 | 0.000764 | mg/L | | | | [illegible] |
| Se 196.026 | -76.6 | 0.00087 | 0.000990 | mg/L | | | | [illegible] |
| Si 288.158 | 1024.0 | 0.0185 | 0.00070 | mg/L | | | | [illegible] |
| Sn 189.933 | 31.1 | -0.00414 | 0.000081 | mg/L | | | | [illegible] |
| Sr 232.235 | 7.3 | -0.00378 | 0.000195 | mg/L | | | | 30.78% |
| Ti 337.280 | -700.2 | -0.00007 | 0.000023 | mg/L | | | | |



195

| | | | | |
|---|---|---|---|---|
| Ti 190.800 | 15.1 | 0.00072 | 0.001264 mg/L | |
| V 292.402 | [illegible] | 0.00018 | 0.000306 mg/L | |
| Zn 206.200 | 205.5 | 0.00064 | 0.000333 mg/L | |
| B 182.587 | [illegible] | 1.74 | 0.164 mg/L | |
| B 208.893 | [illegible] | 2.10 | 0.035 mg/L | |
| B 208.959 | [illegible] | 0.649 | 0.0224 mg/L | |
| B 249.773 | 343.5 | 0.74 | 0.047 mg/L | |

Mean Data ----------

ID: 2000A.5 Seq. No.: 9 Sample No.: 6 A/D Port: 6

Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.00

Data: Original Date: 9/4/98 9:51:03 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | Rel |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 1984331.5 | | | | | | | |
| Ag 328.068 | -2076.9 | -0.00151 | 0.000051 | mg/L | | | | |
| Al 237.312 | 6193666.1 | 261 | 0.2 | mg/L | | | | |
| As 188.979 | 7.7 | 0.00047 | 0.000296 | mg/L | | | | |
| Ba 230.424 | -1023.1 | 0.00051 | 0.000054 | mg/L | | | | |
| Be 234.861 | -1216.6 | -0.00059 | 0.000064 | mg/L | | | | |
| Ca 227.549 | 395229.0 | 279 | 0.1 | mg/L | | | | |
| Cd 226.502 | -141.4 | -0.00007 | 0.000106 | mg/L | | | | |
| Co 228.616 | -328.1 | -0.00177 | 0.000270 | mg/L | | | | |
| Cr 267.716 | -576.2 | 0.00093 | 0.000175 | mg/L | | | | |
| Cu 327.396 | 3465.5 | 0.00226 | 0.000269 | mg/L | | | | |
| Fe 261.387 | 3616439.5 | 91.0 | 0.02 | mg/L | | | | |
| K 404.721 | 311.6 | 0.260 | 0.0146 | mg/L | | | | |
| K 766.491 | 308480.7 | 0.00351 | 0.001124 | mg/L | | | | |
| Li 460.286 | 51189.4 | 0.0213 | 0.00293 | mg/L | | | | |
| Mg 279.078 | 10451090.5 | 249 | 0.1 | mg/L | | | | |
| Mn 257.610 | 4322.7 | 0.00277 | 0.000006 | mg/L | | | | |
| Mo 202.030 | -2219.7 | -0.00098 | 0.000433 | mg/L | | | | |
| Na 330.237 | 743.9 | 0.125 | 0.0046 | mg/L | | | | |
| Ni 231.604 | -23.1 | 0.00014 | 0.000626 | mg/L | | | | |
| Pb 220.353 | -110.6 | 0.0105 | 0.00057 | mg/L | | | | |
| *QC exceeds upper limit for Pb 220.353 | | | Action = Continue | | | | | |
| Sb 206.833 | 1679.6 | 0.0199 | 0.00437 | mg/L | | | | |
| Se 196.026 | 370.9 | -0.00615 | 0.001444 | mg/L | | | | |
| Si 288.158 | 1126.5 | 0.0204 | 0.00077 | mg/L | | | | |
| Sn 189.933 | -304.6 | -0.00596 | 0.001356 | mg/L | | | | |
| Sr 232.035 | 549.6 | -0.0147 | 0.00542 | mg/L | | | | |
| Tl 377.572 | 7123.4 | 0.00474 | 0.000023 | mg/L | | | | |
| Ti 190.800 | -60.6 | 0.0006 | 0.000212 | mg/L | | | | |
| *QC exceeds upper limit for Ti 190.800 | | | Action = Continue | | | | | |
| V 292.402 | 81.6 | 0.00024 | 0.000055 | mg/L | | | | |
| Zn 206.200 | 3981.0 | -0.00049 | 0.000152 | mg/L | | | | |
| B 182.587 | [illegible] | 59.6 | 1.80 | mg/L | | | | |
| B 208.893 | [illegible] | 45.2 | 1.38 | mg/L | | | | |
| B 208.959 | [illegible] | -7.82 | 0.269 | mg/L | | | | |
| B 249.773 | 38541.2 | 95.9 | 3.29 | mg/L | | | | |



9/96

Calibration Summary
Method: clptstd
Date: 9/4/96 10:10:17 AM

| Element | Stds | Equation | Intercept | Slope | Curvature | Corr. Coeff. |
|---|---|---|---|---|---|---|
| Ag 328.068 | 3 | Linear-thru-Zero | 0.0 | 706441.2 | 0.00000 | 1.000000 |
| Al 237.312 | 3 | Linear-thru-Zero | 0.0 | 25260.9 | 0.00000 | 1.000000 |
| As 189.979 | 3 | Linear-thru-Zero | 0.0 | 16384.4 | 0.00000 | 1.000000 |
| Ba 230.424 | 3 | Linear-thru-Zero | 0.0 | 542779.0 | 0.00000 | 1.000000 |
| Be 234.861 | 3 | Linear | -1636.9 | 2886346.0 | 0.00000 | 1.000000 |
| Ca 227.549 | 3 | Linear | -107.9 | 1410.6 | 0.00000 | 1.000000 |
| Cd 226.502 | 3 | Linear | -5.3 | 190362.6 | 0.00000 | 1.000000 |
| Co 228.616 | 3 | Linear | 151.2 | 266736.4 | 0.00000 | 1.000000 |
| Cr 267.716 | 3 | Linear-thru-Zero | 0.0 | 363917.1 | 0.00000 | 1.000000 |
| Cu 327.396 | 3 | Linear-thru-Zero | 0.0 | 255904.1 | 0.00000 | 1.000000 |
| Fe 261.387 | 3 | Linear | -404.1 | 29724.6 | 0.00000 | 1.000000 |
| K 404.721 | 3 | Linear-thru-Zero | 0.0 | 1199.1 | 0.00000 | 1.000000 |
| K 766.491 | 3 | Linear | 296122.1 | 3512001.7 | 0.00000 | 1.000000 |
| Li 460.287 | 3 | Linear | 482.5 | 66675.8 | 0.00000 | 1.000000 |
| Mg 279.079 | 3 | Linear | -2474.5 | 41925.1 | 0.00000 | 1.000000 |
| Mn 257.610 | 3 | Linear | 1065.2 | 1168753.4 | 0.00000 | 1.000000 |
| Mo 202.030 | 3 | Linear-thru-Zero | 0.0 | 42416.0 | 0.00000 | 1.000000 |
| Na 330.237 | 3 | Linear-thru-Zero | 0.0 | 5945.7 | 0.00000 | 1.000000 |
| Ni 231.604 | 3 | Linear-thru-Zero | 0.0 | 141326.5 | 0.00000 | 1.000000 |
| Pb 220.353 | 3 | Linear | 125.1 | 17945.5 | 0.00000 | 1.000000 |
| Se 206.835 | 3 | Linear | 5.2 | 28496.5 | 0.00000 | 1.000000 |
| Sb 196.026 | 3 | Linear | -87.9 | 12893.5 | 0.00000 | 1.000000 |
| Si 288.158 | 3 | Linear | 40.4 | 50190.1 | 0.00000 | 1.000000 |
| Sn 189.989 | 3 | Linear | 192.9 | 39026.4 | 0.00000 | 1.000000 |
| Sr 232.235 | 3 | Linear | 24.1 | 5509.1 | 0.00000 | 1.000000 |
| Ti 337.280 | 3 | Linear | -580.3 | 1626720.3 | 0.00000 | 1.000000 |
| Tl 190.801 | 3 | Linear-thru-Zero | 0.0 | 20979.9 | 0.00000 | 1.000000 |
| V 292.402 | 3 | Linear | -139.5 | 399737.0 | 0.00000 | 1.000000 |
| Zn 206.200 | 3 | Linear-thru-Zero | 0.0 | 316904.5 | 0.00000 | 1.000000 |
| B 182.587 | 3 | Linear | -21.1 | 12.1 | 0.00000 | 0.997104 |
| B 249.678 | 3 | Linear | 55.5 | 56.4 | 0.00000 | 1.000000 |
| B 208.959 | 3 | Linear | 205.1 | 405.2 | 0.00000 | 1.000000 |
| B 249.773 | 3 | Linear | 29.1 | 410.4 | 0.00000 | 0.943926 |

Method: clptstd
Results: 090496
Sample Info: 090496
Method Description:

IDD: 04160.160
Spectra Stored: Yes
User: User1

MOT:
Method Stored: Yes
Date: 9/4/96 10:04:57 AM

Mean Data
ID: 20 Std
Seq. No.: 1
Data: Original
A/D Pos: 9
Date: 9/4/96 10:10:19 AM

| Element | Mean Corr. Intensity | Std.Dev. | RSD |
|---|---|---|---|
| Y 360.073 | 1698594.5 | 2197.49 | 0.129 |

Mean Data
ID: 2CSA.5
Sample Qty: 1.0000 g
Seq. No.: 2
Prep. Vol.: 1.0 L
Data: Original
Sample No.: 6
A/D Pos: 6
Dilution: 1.0: 1.0
Date: 9/4/96 10:10:54 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 1798947.9 | | | | | | | 1.09% |
| Ag 328.068 | -2525.7 | -0.00128 | 0.000049 | mg/L | | | | 3.74% |
| Al 237.312 | 48146110.0 | 253 | 1.2 | mg/L | | | | 0.42% |
| As 189.979 | -23.5 | -0.00143 | 0.000077 | mg/L | | | | 490.65% |
| Ba 230.424 | -1060.4 | 0.00041 | 0.000031 | mg/L | | | | 7.52% |
| Be 234.861 | -556.3 | -0.00059 | 0.000004 | mg/L | | | | 0.64% |
| Ca 227.549 | 366917.0 | 273 | 0.4 | mg/L | | | | 0.14% |
| Cd 226.502 | -140.8 | -0.00005 | 0.000096 | mg/L | | | | 195.20% |
| Co 228.616 | -329.9 | -0.00179 | 0.000162 | mg/L | | | | 9.07% |

| | | | | |
|---|---|---|---|---|
| Cr 267.716 | [illegible] | [illegible] | [illegible] mg/L | |
| Cu 327.396 | [illegible] | [illegible] | [illegible] mg/L | |
| Fe 261.187 | [illegible] | [illegible] | [illegible] mg/L | |
| K 404.721 | [illegible] | [illegible] | [illegible] mg/L | |
| K 766.491 | [illegible] | [illegible] | [illegible] mg/L | |
| Li 460.289 | [illegible] | [illegible] | [illegible] mg/L | |
| Mg [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Mn 257.610 | [illegible] | [illegible] | [illegible] mg/L | |
| Mo [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Na [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Ni 231.604 | [illegible] | [illegible] | [illegible] mg/L | |
| Pb [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Sb 206.833 | [illegible] | [illegible] | [illegible] mg/L | |
| Se 196.026 | [illegible] | [illegible] | [illegible] mg/L | |
| Si 288.158 | [illegible] | [illegible] | [illegible] mg/L | |
| Sn 189.933 | [illegible] | [illegible] | [illegible] mg/L | |
| Sr [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Ti 337.281 | [illegible] | [illegible] | [illegible] mg/L | |
| Tl 190.800 | [illegible] | [illegible] | [illegible] mg/L | |
| V 292.402 | [illegible] | [illegible] | [illegible] mg/L | |
| Zn 206.200 | [illegible] | [illegible] | [illegible] mg/L | |
| B 182.587 | [illegible] | [illegible] | [illegible] mg/L | |
| B 208.893 | [illegible] | [illegible] | [illegible] mg/L | |
| B 208.959 | [illegible] | [illegible] | [illegible] mg/L | |
| B 249.773 | [illegible] | [illegible] | [illegible] mg/L | |

Mean Data ----------

ID: [illegible] Seq. No.: 3 Sample No.: 7 A/S Pos: 7

Sample Qty: [illegible] g Prep. Vol.: [illegible] L Dilution: [illegible]

Date: Original Date: [illegible]

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | Rct |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | |
| Ag 328.068 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Al 237.312 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| As 189.979 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Ba 233.424 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Be 234.861 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Ca 317.933 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Cd 228.802 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Co 228.616 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Cr 267.716 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Cu 327.396 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Fe 261.187 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| K 404.721 | [illegible] | [illegible] | [illegible] | mg/L | | | | |

*QC exceeds upper limit for K 404.721 Recovery = [illegible]% Action = Continue

| | | | | |
|---|---|---|---|---|
| K 766.491 | Saturated | | | |
| Li 460.289 | [illegible] | [illegible] | [illegible] mg/L | |
| Mg [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Mn 257.610 | [illegible] | [illegible] | [illegible] mg/L | |
| Mo [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Na [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Ni 231.604 | [illegible] | [illegible] | [illegible] mg/L | |
| Pb [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Sb 206.833 | [illegible] | [illegible] | [illegible] mg/L | |
| Se 196.026 | [illegible] | [illegible] | [illegible] mg/L | |
| Si 288.158 | [illegible] | [illegible] | [illegible] mg/L | |
| Sn 189.933 | [illegible] | [illegible] | [illegible] mg/L | |
| Sr [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Ti 337.281 | [illegible] | [illegible] | [illegible] mg/L | |
| Tl 190.800 | [illegible] | [illegible] | [illegible] mg/L | |
| V 292.402 | [illegible] | [illegible] | [illegible] mg/L | |
| Zn 206.200 | [illegible] | [illegible] | [illegible] mg/L | |
| B 182.587 | [illegible] | [illegible] | [illegible] mg/L | |
| B 208.893 | [illegible] | [illegible] | [illegible] mg/L | |
| B 208.959 | [illegible] | [illegible] | [illegible] mg/L | |
| B 249.773 | [illegible] | [illegible] | [illegible] mg/L | |

Mean Data ----------

ID: CCV Seq. No.: 4 Sample No.: 3 A/S Pos: 5

Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.0 1.0
Data: Original Date: 9/4/98 11:21:19 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2332181.4 | | | | | | | |
| Ag 328.068 | 274022.4 | 0.388 | 0.0008 | mg/L | | | | |
| Al 237.312 | 2412821.0 | 9.55 | 0.105 | mg/L | | | | |
| As 189.979 | 6309.1 | 0.393 | 0.0135 | mg/L | | | | |
| Ba 230.424 | 538245.3 | 0.993 | 0.0022 | mg/L | | | | |
| Be 234.861 | 134225.7 | 0.0469 | 0.00053 | mg/L | | | | |
| Ca 227.549 | 10922.8 | 9.82 | 0.023 | mg/L | | | | |
| Cd 226.502 | 9017.9 | 0.0495 | 0.00045 | mg/L | | | | |
| Co 228.616 | 42957.2 | 0.204 | 0.0020 | mg/L | | | | |
| Cr 267.716 | 134225.1 | 0.506 | 0.0045 | mg/L | | | | |
| Cu 327.396 | 178670.3 | 0.502 | 0.0066 | mg/L | | | | |
| Fe 261.187 | 157973.7 | 2.97 | 0.037 | mg/L | | | | |
| K 404.721 | 61244.0 | 51.1 | 0.36 | mg/L | | | | |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 1021572.0 | 1.03 | 0.009 | mg/L | | | | |
| Mg 279.079 | 4064995.5 | 9.75 | 0.015 | mg/L | | | | |
| Mn 257.610 | 585335.2 | 0.500 | 0.0011 | mg/L | | | | |
| Mo 202.030 | 71624.1 | 0.969 | 0.0026 | mg/L | | | | |
| Na 330.237 | 3051554.7 | 51.7 | 1.15 | mg/L | | | | |
| Ni 231.604 | 73341.6 | 0.519 | 0.0043 | mg/L | | | | |
| Pb 220.353 | 9169.5 | 0.506 | 0.0070 | mg/L | | | | |
| Sb 206.833 | 31954.5 | 1.12 | 0.000 | mg/L | | | | |
| Se 196.026 | 4871.4 | 0.363 | 0.0037 | mg/L | | | | |
| Si 288.158 | 2607746.7 | 4.90 | 0.012 | mg/L | | | | |
| Sn 189.989 | 38790.5 | 0.919 | 0.0224 | mg/L | | | | |
| Sr 232.236 | 5496.5 | 1.961 | 0.0012 | mg/L | | | | |
| Ti 337.280 | 16012240.7 | 0.985 | 0.0026 | mg/L | | | | |
| Tl 190.856 | 10448.6 | 0.504 | 0.0031 | mg/L | | | | |
| V 292.402 | 403432.9 | 1.11 | 0.004 | mg/L | | | | |
| Zn 206.200 | 314065.9 | 0.991 | 0.0100 | mg/L | | | | |
| B 182.587 | 57.1 | 0.46 | 0.035 | mg/L | | | | |
| S 181.972 | 414.7 | 0.45 | 0.037 | mg/L | | | | |
| B 208.959 | 3693.4 | 1.19 | 0.016 | mg/L | | | | |
| S 249.772 | 2791.3 | 0.73 | 0.053 | mg/L | | | | |

Mean Data

Std: zero/std Seq. No.: 5 Sample No.: 4 A/S Test: 1
Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.0 1.0
Data: Original Date: 9/4/98 11:25:57 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 1781568.5 | | | | | | | |
| Ag 328.068 | -142.4 | -0.00001 | 0.000016 | mg/L | | | | |
| Al 237.312 | -331.7 | -0.0015 | 0.00047 | mg/L | | | | |
| As 189.979 | 3.0 | 0.00001 | 0.00015 | mg/L | | | | |
| Ba 230.424 | -461.6 | -0.00005 | 0.000014 | mg/L | | | | |
| Be 234.861 | -571.4 | 0.00037 | 0.000002 | mg/L | | | | |
| Ca 227.549 | -111.1 | -0.00064 | 0.000581 | mg/L | | | | |
| Cd 226.502 | 38.0 | 0.00024 | 0.000010 | mg/L | | | | |
| Co 228.616 | -94.7 | -0.00017 | 0.000015 | mg/L | | | | |
| Cr 267.716 | 186.4 | 0.00075 | 0.000002 | mg/L | | | | |
| Cu 327.396 | 328.9 | 0.00058 | 0.000160 | mg/L | | | | |
| Fe 261.187 | -830.2 | -0.00568 | 0.000012 | mg/L | | | | |
| K 404.721 | 425.2 | 0.355 | 0.1303 | mg/L | | | | |
| K 766.491 | 274721.6 | -0.00609 | 0.000300 | mg/L | | | | |
| Li 460.286 | -1739.9 | -0.0030 | 0.00086 | mg/L | | | | |
| Mg 279.079 | -99.7 | 0.0566 | 0.00101 | mg/L | | | | |
| Mn 257.610 | -477.6 | -0.00110 | 0.000069 | mg/L | | | | |
| Mo 202.030 | 171.9 | 0.00037 | 0.000057 | mg/L | | | | |
| Na 330.237 | 672.9 | 0.113 | 0.0004 | mg/L | | | | |
| Ni 231.604 | -231.5 | -0.00160 | 0.000099 | mg/L | | | | |
| Pb 220.353 | 83.4 | -0.00022 | 0.000149 | mg/L | | | | |
| Sb 206.833 | 265.2 | 0.00904 | 0.000703 | mg/L | | | | |
| Se 196.026 | 476.6 | 0.00037 | 0.000673 | mg/L | | | | |
| Si 288.158 | 835.1 | 0.0149 | 0.00000 | mg/L | | | | |

| | | | | |
|---|---|---|---|---|
| Cr 189.933 | 23.3 | -1.00435 | 0.000016 | mg/L |
| Cu 324.435 | 11.7 | -1.00249 | 0.000435 | mg/L |
| Fe 187.241 | -790.6 | -1.00013 | 0.000063 | mg/L |
| Mn 190.871 | 1.1 | 1.00001 | 0.000016 | mg/L |
| V 292.402 | -91.6 | 1.00044 | 0.000043 | mg/L |
| Zn 206.201 | 134.5 | 1.01043 | 0.000065 | mg/L |
| B 182.627 | -6.3 | 1.03 | 1.017 | mg/L |
| B 218.590 | 162.7 | 1.03 | 1.041 | mg/L |
| B 208.959 | 442.3 | 1.061 | 1.0071 | mg/L |
| B 249.773 | 691.6 | 1.61 | 1.013 | mg/L |

Mean Data ----------

ID: PBW P/WG45367 Seq. No.: 6 Sample No.: 1 A/S Pos: 9
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.0
Data: Original Date: 9/4/98 10:21:35 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | -0.1 | | | | | | | |
| Ag 328.068 | 2055341.4 | 2.91 | 1.401 | mg/L | 2.91 | 1.401 | mg/L | 48.1 |
| Al 237.312 | -547555.5 | -21.7 | 9.78 | mg/L | -21.7 | 9.78 | mg/L | 45.1 |
| As 188.979 | 343547.1 | 21.6 | 21.47 | mg/L | 21.6 | 21.47 | mg/L | 99.4 |
| Ba 230.424 | 2524508.7 | 4.66 | 4.610 | mg/L | 4.66 | 4.610 | mg/L | 98.9 |
| Be 234.861 | -1268424.9 | -0.433 | 0.1427 | mg/L | -0.433 | 0.1427 | mg/L | 32.9 |
| Ca 227.549 | 210194.6 | 17.5 | 1318.79 | mg/L | 17.5 | 1318.79 | mg/L | >999.9 |
| Cd 228.802 | -1463342.7 | -8.03 | 7.666 | mg/L | -8.03 | 7.666 | mg/L | 95.4 |
| Co 228.616 | 1654966.6 | 7.80 | 3.999 | mg/L | 7.80 | 3.999 | mg/L | 51.3 |
| Cr 267.716 | 2720108.7 | 7.07 | 11.836 | mg/L | 7.07 | 11.836 | mg/L | 167.5 |
| Cu 327.396 | 1655136.5 | 4.65 | 4.540 | mg/L | 4.65 | 4.540 | mg/L | 97.6 |
| Fe 261.187 | -4900324.1 | -123 | 39.6 | mg/L | -123 | 39.6 | mg/L | 32.1 |
| K 404.721 | -1117860.7 | -932 | 26.1 | mg/L | -932 | 26.1 | mg/L | 2.8 |
| K 766.491 | -7164617.4 | -20.6 | 9.03 | mg/L | -20.6 | 9.03 | mg/L | 43.8 |
| Li 460.286 | -8041877.9 | -82.3 | 57.50 | mg/L | -82.3 | 57.50 | mg/L | 69.9 |
| Mg 279.079 | -4501991.7 | -117 | 60.9 | mg/L | -117 | 60.9 | mg/L | 51.9 |
| Mn 257.610 | -926996.3 | -0.793 | 1.4963 | mg/L | -0.793 | 1.4963 | mg/L | 188.7 |
| Mo 202.031 | -2772403.3 | -39.3 | 9.71 | mg/L | -39.3 | 9.71 | mg/L | 24.7 |
| Na 330.237 | -2968806.7 | -499 | 1.4 | mg/L | -499 | 1.4 | mg/L | 0.3 |
| Ni 231.604 | -2418015.5 | -17.1 | 2.19 | mg/L | -17.1 | 2.19 | mg/L | 12.8 |
| Pb 220.353 | -4720002.1 | -152 | 128.1 | mg/L | -152 | 128.1 | mg/L | 84.3 |
| Sb 206.833 | -9675621.0 | -340 | 71.4 | mg/L | -340 | 71.4 | mg/L | 21.0 |
| Se 196.026 | 7135653.3 | 553 | 16.0 | mg/L | 553 | 16.0 | mg/L | 2.9 |
| Si 288.158 | -1126494.9 | -21.2 | 18.19 | mg/L | -21.2 | 18.19 | mg/L | 85.8 |
| Sn 189.989 | -215441.9 | -5.53 | 28.554 | mg/L | -5.53 | 28.554 | mg/L | 516.5 |
| Sr 421.552 | -962031.9 | -172 | 266.1 | mg/L | -172 | 266.1 | mg/L | 154.9 |
| Tl 337.280 | 509960.2 | 0.316 | 0.2688 | mg/L | 0.316 | 0.2688 | mg/L | 85.1 |
| Tl 190.801 | -553987.9 | -26.3 | 74.94 | mg/L | -26.3 | 74.94 | mg/L | 285.0 |
| V 292.402 | -2203656.7 | -5.57 | 6.984 | mg/L | -5.57 | 6.984 | mg/L | 125.4 |
| Zn 206.200 | 2314432.9 | 7.31 | 4.779 | mg/L | 7.31 | 4.779 | mg/L | 65.4 |
| B 182.627 | 1715463.2 | 136000 | 26015.5 | mg/L | 136000 | 26015.5 | mg/L | 19.1 |
| B 208.890 | -2016821.2 | -38600 | 43614.7 | mg/L | -38600 | 43614.7 | mg/L | 113.0 |
| B 208.959 | 1914546.7 | 4671 | 3821.5 | mg/L | 4671 | 3821.5 | mg/L | 81.8 |
| B 249.773 | 1766260.0 | 4301 | 936.4 | mg/L | 4301 | 936.4 | mg/L | 21.8 |

Mean Data ----------

ID: LCSW P Seq. No.: 7 Sample No.: 2 A/S Pos: 10
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.0
Data: Original Date: 9/4/98 10:33:15 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2170663.6 | | | | | | | |
| Ag 328.068 | 134755.7 | 0.191 | 0.0005 | mg/L | 0.191 | 0.0005 | mg/L | 0.2 |
| Al 237.312 | 236510.9 | 9.36 | 0.035 | mg/L | 9.36 | 0.035 | mg/L | 0.3 |
| As 188.979 | 15558.9 | 0.964 | 0.0074 | mg/L | 0.964 | 0.0074 | mg/L | 0.8 |
| Ba 230.424 | 476882.4 | 9.79 | 0.059 | mg/L | 9.79 | 0.059 | mg/L | 0.6 |
| Be 234.861 | 2562712.4 | 0.888 | 0.0036 | mg/L | 0.888 | 0.0036 | mg/L | 0.4 |
| Ca 227.549 | 13612.9 | 9.69 | 0.077 | mg/L | 9.69 | 0.077 | mg/L | 0.8 |
| Cd 228.802 | 173461.9 | 0.951 | 0.0037 | mg/L | 0.951 | 0.0037 | mg/L | 0.4 |
| Co 228.616 | 204063.6 | 0.972 | 0.0094 | mg/L | 0.972 | 0.0094 | mg/L | 0.9 |
| Cr 267.716 | 372151.5 | 0.974 | 0.0069 | mg/L | 0.974 | 0.0069 | mg/L | 0.6 |
| Cu 327.396 | 336963.9 | 0.952 | 0.0021 | mg/L | 0.952 | 0.0021 | mg/L | 0.2 |

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Fe 261.387 | 34035.3 | 0.917 | 0.0069 | mg/L | 0.917 | 0.0069 | mg/L | [illegible] |
| K 404.721 | 5733.9 | 49.1 | 1.32 | mg/L | 49.0 | 1.32 | mg/L | [illegible] |
| K 766.491 | Saturated | | | | | | | |
| Li 460.289 | [illegible] | 11.6 | 0.05 | mg/L | 11.6 | 0.05 | mg/L | [illegible] |
| Mg 279.079 | 395659.5 | 9.50 | 0.169 | mg/L | 9.50 | 0.169 | mg/L | [illegible] |
| Mn 257.610 | [illegible] | 0.993 | 0.0149 | mg/L | 0.993 | 0.0149 | mg/L | [illegible] |
| Mo 202.030 | 1669.5 | 0.992 | 0.0201 | mg/L | 0.992 | 0.0201 | mg/L | [illegible] |
| Na 330.237 | [illegible] | 49.0 | 1.00 | mg/L | 49.0 | 1.00 | mg/L | [illegible] |
| Ni 231.604 | 107924.6 | 0.976 | 0.0103 | mg/L | 0.976 | 0.0103 | mg/L | [illegible] |
| Pb 220.353 | [illegible] | 0.994 | 0.0185 | mg/L | 0.994 | 0.0185 | mg/L | [illegible] |
| Sb 206.833 | 27944.6 | 0.963 | 0.0094 | mg/L | 0.963 | 0.0094 | mg/L | [illegible] |
| Se 196.026 | [illegible] | 0.976 | 0.0172 | mg/L | 0.976 | 0.0172 | mg/L | [illegible] |
| Si 288.158 | 494723.9 | 9.30 | 0.067 | mg/L | 9.30 | 0.067 | mg/L | [illegible] |
| Sn 189.933 | 335.8 | 0.00366 | 0.000476 | mg/L | 0.00366 | 0.000476 | mg/L | [illegible] |
| Sr 421.552 | [illegible] | 0.925 | 0.0128 | mg/L | 0.925 | 0.0128 | mg/L | [illegible] |
| Ti 337.280 | 1605296.0 | 0.999 | 0.0031 | mg/L | 0.999 | 0.0031 | mg/L | [illegible] |
| Tl 190.801 | [illegible] | 0.855 | 0.0058 | mg/L | 0.855 | 0.0058 | mg/L | [illegible] |
| V 292.402 | 955054.6 | 0.971 | 0.0041 | mg/L | 0.971 | 0.0041 | mg/L | [illegible] |
| Zn 206.200 | 307461.4 | 0.970 | 0.0130 | mg/L | 0.970 | 0.0130 | mg/L | [illegible] |
| B 182.587 | 56.5 | 6.99 | 0.170 | mg/L | 6.99 | 0.170 | mg/L | [illegible] |
| B 208.893 | 276.0 | 4.99 | 0.059 | mg/L | 4.99 | 0.059 | mg/L | [illegible] |
| B 209.959 | 3735.8 | 7.69 | 0.118 | mg/L | 7.69 | 0.118 | mg/L | [illegible] |
| B 249.773 | 2352.8 | 5.66 | 0.163 | mg/L | 5.66 | 0.163 | mg/L | [illegible] |

Mean Data ----------
ID: 0850901 Seq. No.: 8 Sample No.: 3 A/S Pos: 11
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.0 50.0
Data: Original Date: 9/4/98 10:37:16 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 361.075 | [illegible] | | | | | | | |
| Ag 328.068 | -205.9 | -0.00022 | 0.000010 | mg/L | -0.0160 | 0.00049 | mg/L | [illegible] |
| Al 237.312 | -859.2 | -0.0340 | 0.00112 | mg/L | -1.70 | 0.056 | mg/L | [illegible] |
| As 189.042 | 516.1 | 0.0499 | 0.00060 | mg/L | 2.50 | 0.030 | mg/L | [illegible] |
| Ba 233.527 | -[illegible] | -0.00162 | 0.000096 | mg/L | -0.0809 | 0.00480 | mg/L | [illegible] |
| Be 234.861 | -[illegible] | 0.00020 | 0.000010 | mg/L | 0.0114 | 0.00569 | mg/L | [illegible] |
| Cd 227.502 | -35.4 | 0.0035 | 0.000164 | mg/L | 0.175 | 0.008 | mg/L | [illegible] |
| Co 228.616 | 99.4 | 0.00057 | 0.000011 | mg/L | 0.0287 | 0.00056 | mg/L | [illegible] |
| Cr 205.618 | -61.4 | -0.00104 | 0.000010 | mg/L | -0.0504 | 0.00052 | mg/L | [illegible] |
| Cu 327.396 | 411.9 | 0.00207 | 0.000018 | mg/L | 0.0526 | 0.00091 | mg/L | [illegible] |
| Fe 261.387 | 962.9 | 0.00174 | 0.000079 | mg/L | 0.135 | 0.0160 | mg/L | [illegible] |
| K 404.721 | -503.1 | -0.0041 | 0.000613 | mg/L | -0.221 | 0.0336 | mg/L | [illegible] |
| K 766.491 | -1496.6 | -0.04 | 0.060 | mg/L | -50.0 | 2.13 | mg/L | [illegible] |
| Li 460.289 | 81051.9 | 0.166 | 0.0070 | mg/L | 7.95 | 0.344 | mg/L | [illegible] |
| Mg 279.079 | -8064.2 | -0.0698 | 0.000841 | mg/L | -3.49 | 0.042 | mg/L | [illegible] |
| Mn 257.610 | -[illegible] | 0.0566 | 0.000085 | mg/L | 2.83 | 0.043 | mg/L | [illegible] |
| Mo 202.030 | -[illegible] | -0.00144 | 0.000035 | mg/L | -0.0721 | 0.00175 | mg/L | [illegible] |
| Na 330.237 | 644.5 | 0.0089 | 0.000173 | mg/L | 0.445 | 0.0865 | mg/L | [illegible] |
| Ni 231.604 | 1074.3 | 0.0214 | 0.000268 | mg/L | 10.7 | 0.134 | mg/L | [illegible] |
| Pb 220.353 | -[illegible] | -0.00194 | 0.000103 | mg/L | -0.0970 | 0.00517 | mg/L | [illegible] |
| Sb 206.833 | 62.1 | -0.00356 | 0.000445 | mg/L | -0.178 | 0.0223 | mg/L | [illegible] |
| Se 196.026 | 433.2 | 0.0087 | 0.000026 | mg/L | 0.434 | 0.0130 | mg/L | [illegible] |
| Si 288.158 | 2416.5 | 0.048 | 0.0043 | mg/L | 2.42 | 0.217 | mg/L | [illegible] |
| Sn 189.933 | 1054.6 | 0.0473 | 0.000161 | mg/L | 2.36 | 0.080 | mg/L | [illegible] |
| Sr 421.552 | 803.5 | 0.0168 | 0.000006 | mg/L | 0.808 | 0.0033 | mg/L | [illegible] |
| Ti 337.280 | 44.9 | 0.00894 | 0.000931 | mg/L | 0.423 | 0.0466 | mg/L | [illegible] |
| Tl 190.801 | -1107.0 | -0.00242 | 0.000035 | mg/L | -0.0121 | 0.00175 | mg/L | [illegible] |
| V 292.402 | 410.1 | 0.00971 | 0.000366 | mg/L | 0.485 | 0.0183 | mg/L | [illegible] |
| Zn 206.200 | 945.0 | 0.00472 | 0.000193 | mg/L | 0.236 | 0.0096 | mg/L | [illegible] |
| B 182.587 | 2129.9 | 0.00672 | 0.000118 | mg/L | 0.336 | 0.0059 | mg/L | [illegible] |
| B 208.893 | 3964.1 | [illegible] | [illegible] | mg/L | 15800 | 54.7 | mg/L | [illegible] |
| B 209.959 | 21814.9 | [illegible] | [illegible] | mg/L | 18600 | 141.4 | mg/L | [illegible] |
| B 249.773 | 17416.4 | 115 | 1.2 | mg/L | 5763 | 12.3 | mg/L | [illegible] |
| B 249.773 | 122892.5 | 324 | 0.0 | mg/L | 16200 | 0.9 | mg/L | [illegible] |

Mean Data ----------
ID: 0901 Seq. No.: 9 Sample No.: 4 A/S Pos: 12
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.0 50.0
Data: Original Date: 9/4/98 10:41:40 AM

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| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | |
| Ag 328.068 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Al 237.312 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| As 189.979 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ba 233.527 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Be 234.861 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ca 317.933 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cd 226.502 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Co 228.616 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cr 267.716 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cu 327.396 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Fe 261.387 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| K 404.721 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| K 766.491 | Saturated | | | | | | | |
| Li 460.289 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mg 279.079 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mn 257.610 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mo 202.030 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Na 330.237 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ni 231.604 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Pb 220.353 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sb 206.833 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Se 196.026 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Si 288.158 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sn 189.933 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sr 421.035 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Zn 213.856 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |

Mean Data ----------

ID: [illegible] Seq. No.: 10 Sample No.: 5 A.C Post: 10

Sample Qty: 1.0000 mL Prep. Vol.: [illegible] mL Dilution: [illegible]

Data: Original Date: [illegible]

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | |
| Ag 328.068 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Al 237.312 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| As 189.979 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ba 233.527 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Be 234.861 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ca 317.933 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cd 226.502 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Co 228.616 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cr 267.716 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cu 327.396 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Fe 261.387 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| K 404.721 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| K 766.491 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Li 460.289 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mg 279.079 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mn 257.610 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mo 202.030 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Na 330.237 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ni 231.604 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Pb 220.353 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sb 206.833 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Se 196.026 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Si 288.158 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sn 189.933 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sr 421.035 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Zn 213.856 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tl 190.801 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| V 292.402 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Zn 206.200 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 182.587 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 208.893 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 208.959 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 249.773 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |

Mean Data ----------

ID: MC01 Seq. No.: 11 Sample No.: 6 A/C Pos: 14
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.0 [illegible]
Data: Original Date: 9/4/96 [illegible]

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2245034.4 | | | | | | | [illegible] |
| Ag 328.068 | 119599.6 | 0.269 | 0.0001 | mg/L | 8.46 | 0.004 | mg/L | [illegible] |
| Al 237.312 | 209914.8 | 8.31 | 0.006 | mg/L | 425 | 0.2 | mg/L | [illegible] |
| As 189.979 | 16649.6 | 1.02 | 0.011 | mg/L | 51.7 | 0.56 | mg/L | [illegible] |
| Ba 230.424 | 4780429.0 | 8.82 | 0.037 | mg/L | 441 | 1.9 | mg/L | [illegible] |
| Be 234.861 | 2328867.2 | 1.807 | 0.0023 | mg/L | 40.3 | 0.12 | mg/L | [illegible] |
| Ca 227.549 | 11547.8 | 8.19 | 0.004 | mg/L | 409 | 0.2 | mg/L | [illegible] |
| Cd 226.502 | 158659.1 | 0.871 | 0.0026 | mg/L | 43.5 | 0.13 | mg/L | [illegible] |
| Co 228.616 | 200874.4 | 1.05 | 0.006 | mg/L | 52.6 | 0.29 | mg/L | [illegible] |
| Cr 267.716 | 454432.2 | 1.19 | 0.004 | mg/L | 59.5 | 0.21 | mg/L | [illegible] |
| Cu 327.396 | 390696.9 | 1.10 | 0.000 | mg/L | 54.8 | 0.02 | mg/L | [illegible] |
| Fe 261.387 | 69397.5 | 1.77 | 0.001 | mg/L | 88.4 | 0.05 | mg/L | [illegible] |
| K 404.721 | 45762.4 | 40.7 | 0.10 | mg/L | 2030 | 5.2 | mg/L | [illegible] |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 918236.9 | 9.45 | 0.015 | mg/L | 473 | 0.7 | mg/L | [illegible] |
| Mg 279.079 | 860109.6 | 8.65 | 0.051 | mg/L | 432 | 2.6 | mg/L | [illegible] |
| Mn 257.610 | 2170671.2 | 1.02 | 0.003 | mg/L | 51.0 | 0.17 | mg/L | [illegible] |
| Mo 202.030 | 79307.7 | 1.08 | 0.005 | mg/L | 54.0 | 0.24 | mg/L | [illegible] |
| Na 330.237 | 230764.8 | 39.2 | 0.01 | mg/L | 1960 | 0.5 | mg/L | [illegible] |
| Ni 231.604 | 170367.3 | 1.21 | 0.009 | mg/L | 60.5 | 0.45 | mg/L | [illegible] |
| Pb 220.353 | 17390.4 | 0.964 | 0.0106 | mg/L | 48.2 | 0.53 | mg/L | [illegible] |
| Sb 206.833 | 45452.1 | 0.897 | 0.0074 | mg/L | 44.8 | 0.37 | mg/L | [illegible] |
| Se 196.026 | 8727.4 | 0.682 | 0.0130 | mg/L | 34.1 | 0.65 | mg/L | [illegible] |
| Si 251.611 | 412603.4 | 7.75 | 0.037 | mg/L | 387 | 1.8 | mg/L | [illegible] |
| Sn 189.933 | 224.1 | -0.00178 | 0.000962 | mg/L | -0.0892 | 0.04812 | mg/L | [illegible] |
| Sr 232.236 | 5545.6 | 0.966 | 0.0092 | mg/L | 48.3 | 0.46 | mg/L | [illegible] |
| Ti 337.280 | 1675739.2 | 1.03 | 0.001 | mg/L | 51.6 | 0.06 | mg/L | [illegible] |
| Tl 190.856 | 17715.5 | 0.854 | 0.0037 | mg/L | 42.7 | 0.19 | mg/L | [illegible] |
| V 292.402 | 409041.1 | 1.03 | 0.003 | mg/L | 51.6 | 0.16 | mg/L | [illegible] |
| Zn 206.200 | 363452.6 | 1.15 | 0.010 | mg/L | 57.4 | 0.51 | mg/L | [illegible] |
| B 182.587 | -12249.1 | -98.1 | 2.27 | mg/L | -4910 | 113.6 | mg/L | [illegible] |
| B 208.893 | 2119.0 | 18.4 | 0.44 | mg/L | 919 | 22.1 | mg/L | [illegible] |
| B 208.959 | 5774.1 | 11.7 | 0.15 | mg/L | 586 | 7.7 | mg/L | [illegible] |
| B 249.773 | 7021.9 | 17.6 | 0.18 | mg/L | 880 | 9.0 | mg/L | [illegible] |

Mean Data ----------

ID: [illegible] Seq. No.: 12 Sample No.: 7 A/C Pos: 15
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.0 [illegible]
Data: Original Date: 9/4/96 [illegible]

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2254038.2 | | | | | | | [illegible] |
| Ag 328.068 | -67.2 | -0.00010 | 0.000006 | mg/L | -0.00478 | 0.000278 | mg/L | [illegible] |
| Al 237.312 | 29717.4 | 1.18 | 0.005 | mg/L | 59.9 | 0.24 | mg/L | [illegible] |
| As 189.979 | -1734.9 | -0.0591 | 0.00021 | mg/L | -2.95 | 0.106 | mg/L | [illegible] |
| Ba 230.424 | 1449.9 | 0.00341 | 0.000013 | mg/L | 0.171 | 0.0007 | mg/L | [illegible] |
| Be 234.861 | 549.5 | 0.00010 | 0.000005 | mg/L | 0.00497 | 0.000249 | mg/L | [illegible] |
| Ca 227.549 | 1035.2 | 0.856 | 0.0029 | mg/L | 85.6 | 0.14 | mg/L | [illegible] |
| Cd 226.502 | -199.3 | -0.00087 | 0.000001 | mg/L | -0.0435 | 0.00006 | mg/L | [illegible] |
| Co 228.616 | 5861.4 | 0.0256 | 0.00012 | mg/L | 1.28 | 0.006 | mg/L | [illegible] |
| Cr 267.716 | 1710269.4 | 4.45 | 0.022 | mg/L | 223 | 1.1 | mg/L | [illegible] |
| Cu 327.396 | 1459976.6 | 4.12 | 0.011 | mg/L | 206 | 0.5 | mg/L | [illegible] |
| Fe 261.387 | 636538.0 | 16.1 | 0.04 | mg/L | 805 | 4.4 | mg/L | [illegible] |
| K 404.721 | 54.9 | 0.0455 | 0.14426 | mg/L | 2.28 | 7.212 | mg/L | [illegible] |
| K 766.491 | 741624.9 | 0.127 | 0.0004 | mg/L | 6.34 | 0.020 | mg/L | [illegible] |

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|---|---|---|---|---|---|---|---|
| Al 460.286 | 3762.5 | -0.0722 | 0.00090 mg/L | -3.76 | 0.045 mg/L | [illegible] |
| Mg 279.079 | 16364.1 | 1.437 | 0.0026 mg/L | 14.9 | 0.13 mg/L | [illegible] |
| Mn 257.610 | 441908.4 | 1.07 | 0.0022 mg/L | 10.7 | 0.11 mg/L | [illegible] |
| Mo 202.030 | 38259.7 | 1.823 | 0.0027 mg/L | 18.2 | 0.13 mg/L | [illegible] |
| Na 330.237 | 3771.1 | 1.604 | 0.0028 mg/L | 16.1 | 0.13 mg/L | [illegible] |
| Ni 231.604 | 38802.3 | 1.49 | 0.015 mg/L | 15 | 0.15 mg/L | [illegible] |
| Pb 220.353 | 193.4 | 0.0197 | 0.00055 mg/L | 0.197 | 0.0055 mg/L | [illegible] |
| Sb 206.833 | 2242.4 | 0.0441 | 0.00030 mg/L | 0.441 | 0.0030 mg/L | [illegible] |
| Se 196.026 | 1740.1 | 0.141 | 0.0025 mg/L | 1.41 | 0.025 mg/L | [illegible] |
| Sn 189.989 | 9936.3 | 0.199 | 0.0015 mg/L | 9.93 | 0.15 mg/L | [illegible] |
| Sr 232.236 | 726.3 | 0.0136 | 0.00021 mg/L | 0.682 | 0.0105 mg/L | [illegible] |
| Tl 377.572 | 149.3 | -0.0217 | 0.00028 mg/L | -0.585 | 0.0142 mg/L | [illegible] |
| Tl 190.800 | 4240.3 | 0.00246 | 0.000006 mg/L | 0.148 | 0.0003 mg/L | [illegible] |
| Tl 190.800 | -6.2 | 0.00079 | 0.000060 mg/L | 0.189 | 0.0000 mg/L | [illegible] |
| V 292.402 | 785.1 | 0.0066 | 0.00006 mg/L | 1.33 | 0.014 mg/L | [illegible] |
| Zn 206.200 | 3917.3 | 0.0195 | 0.00002 mg/L | 0.974 | 0.0005 mg/L | [illegible] |
| B 182.587 | 777.6 | 68.7 | 1.26 mg/L | 3150 | 62.7 mg/L | [illegible] |
| B 208.893 | 4524.1 | 80.6 | 1.14 mg/L | 4030 | 57.1 mg/L | [illegible] |
| B 208.959 | 12049.8 | 28.0 | 0.32 mg/L | 1400 | 16.2 mg/L | [illegible] |
| B 249.773 | 30595.1 | 74.5 | 1.35 mg/L | 3725 | 67.4 mg/L | [illegible] |

Mean Data ----------

ID: TC0847901 Seq. No.: 13 Sample No.: 6 A/C Pos: 14
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 5.0: [illegible]
Data: Original Date: 9/4/98 11:01:01 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 361.073 | 2109554.6 | | | | | | | [illegible] |
| Ag 328.068 | 2146.9 | 0.00304 | 0.000038 | mg/L | 0.0304 | 0.00038 | mg/L | [illegible] |
| Al 237.312 | -40.0 | -0.00158 | 0.000205 | mg/L | -0.0158 | 0.00205 | mg/L | [illegible] |
| As 189.479 | -15763.7 | -0.333 | 0.0078 | mg/L | -3.33 | 0.078 | mg/L | [illegible] |
| Ba 233.423 | 68.7 | 0.0150 | 0.00014 | mg/L | 0.150 | 0.0014 | mg/L | [illegible] |
| Be 234.861 | -440.1 | 0.00348 | 0.000016 | mg/L | 0.00348 | 0.000164 | mg/L | [illegible] |
| Ca 227.549 | 2659.2 | 1.51 | 0.014 | mg/L | 15.5 | 0.14 | mg/L | [illegible] |
| Cd 228.802 | 6243.7 | 0.0345 | 0.00040 | mg/L | 0.345 | 0.0041 | mg/L | [illegible] |
| Co 228.616 | 2956.2 | 0.0607 | 0.00148 | mg/L | 0.607 | 0.0148 | mg/L | [illegible] |
| Cr 267.716 | 1014603.4 | 42.1 | 0.42 | mg/L | 421 | 4.3 | mg/L | [illegible] |
| Cu 327.396 | -016.3 | -0.0439 | 0.00043 | mg/L | -0.439 | 0.0043 | mg/L | [illegible] |
| Fe 261.387 | 644246.2 | 16.6 | 0.07 | mg/L | 166 | 0.7 | mg/L | [illegible] |
| K 404.721 | 1413.7 | 11.8 | 0.03 | mg/L | 118 | 0.3 | mg/L | [illegible] |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | -296.9 | -0.0914 | 0.00032 | mg/L | -0.914 | 0.0032 | mg/L | [illegible] |
| Mg 279.079 | 48185.1 | 1.02 | 0.002 | mg/L | 10.2 | 0.02 | mg/L | [illegible] |
| Mn 257.610 | 77797.4 | 0.0742 | 0.00021 | mg/L | 0.742 | 0.0021 | mg/L | [illegible] |
| Mo 202.030 | 267.4 | 0.0202 | 0.00022 | mg/L | 0.202 | 0.0022 | mg/L | [illegible] |
| Na 330.237 | 179962.9 | 30.9 | 0.11 | mg/L | 303 | 1.1 | mg/L | [illegible] |
| Ni 231.604 | 899.2 | 0.00824 | 0.00084 | mg/L | 0.0824 | 0.00084 | mg/L | [illegible] |
| Pb 220.353 | 259.3 | 0.0316 | 0.00002 | mg/L | 0.316 | 0.0002 | mg/L | [illegible] |
| Sb 206.833 | 25280.7 | 0.674 | 0.0071 | mg/L | 6.74 | 0.071 | mg/L | [illegible] |
| Se 196.026 | 2205.9 | 0.0443 | 0.00066 | mg/L | 0.443 | 0.0066 | mg/L | [illegible] |
| Sn 189.989 | 164680.6 | 3.03 | 0.100 | mg/L | 30.3 | 1.00 | mg/L | [illegible] |
| Sr 232.236 | 1583.9 | 0.0356 | 0.00076 | mg/L | 0.356 | 0.0076 | mg/L | [illegible] |
| Tl 377.572 | 997.8 | 0.147 | 0.0020 | mg/L | 1.47 | 0.020 | mg/L | [illegible] |
| Tl 190.800 | 12544.3 | 0.0265 | 0.00025 | mg/L | 0.265 | 0.0025 | mg/L | [illegible] |
| Tl 190.800 | 490.0 | 0.0185 | 0.00043 | mg/L | 0.185 | 0.0043 | mg/L | [illegible] |
| V 292.402 | -65236.2 | 0.0586 | 0.00193 | mg/L | 0.586 | 0.0193 | mg/L | [illegible] |
| Zn 206.200 | 706039.7 | 2.30 | 0.029 | mg/L | 23.0 | 0.29 | mg/L | [illegible] |
| B 182.587 | 34.1 | 5.06 | 0.075 | mg/L | 50.6 | 0.75 | mg/L | [illegible] |
| B 208.893 | -1619.7 | -14.0 | 0.06 | mg/L | -140 | 0.6 | mg/L | [illegible] |
| B 208.959 | 1387.5 | 1.75 | 0.021 | mg/L | 17.5 | 0.21 | mg/L | [illegible] |
| B 249.773 | 4499.1 | 10.9 | 0.41 | mg/L | 109 | 4.1 | mg/L | [illegible] |

Mean Data ----------

ID: 0001 Seq. No.: 14 Sample No.: 9 A/C Pos: 17
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 5.0: 50.0
Data: Original Date: 9/4/98 11:03:26 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2094590.4 | | | | | | | [illegible] |

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Ag 328.068 | 2169.2 | 0.00307 | 0.000009 | mg/L | 0.0307 | 0.00009 | mg/L | [illegible] |
| Al 237.312 | 61.1 | 0.00242 | 0.000148 | mg/L | 0.0242 | 0.00148 | mg/L | [illegible] |
| As 189.979 | -15966.9 | -0.335 | 0.0021 | mg/L | -3.35 | 0.021 | mg/L | [illegible] |
| Ba 230.424 | -97.6 | 0.0149 | 0.00004 | mg/L | 0.149 | 0.0004 | mg/L | [illegible] |
| Be 234.861 | -424.1 | 0.00035 | 0.000008 | mg/L | 0.00350 | 0.000080 | mg/L | [illegible] |
| Ca 317.549 | 2733.2 | 1.59 | 0.009 | mg/L | 15.9 | 0.09 | mg/L | [illegible] |
| Cd 226.502 | 6254.4 | 0.0347 | 0.00019 | mg/L | 0.347 | 0.0019 | mg/L | [illegible] |
| Co 228.616 | 2089.0 | 0.0607 | 0.000165 | mg/L | 0.6074 | 0.00165 | mg/L | [illegible] |
| Cr 267.716 | 1020944.5 | 40.2 | 0.11 | mg/L | 402 | 1.1 | mg/L | [illegible] |
| Cu 327.396 | -626.9 | -0.0442 | 0.00014 | mg/L | -0.442 | 0.0014 | mg/L | [illegible] |
| Fe 261.387 | 647379.6 | 16.7 | 0.02 | mg/L | 167 | 0.2 | mg/L | [illegible] |
| K 404.721 | 14550.9 | 32.1 | 0.13 | mg/L | 321 | 1.3 | mg/L | [illegible] |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | -439.2 | -0.0934 | 0.00022 | mg/L | -0.934 | 0.0022 | mg/L | [illegible] |
| Mg 279.079 | 48497.9 | 1.12 | 0.001 | mg/L | 11.2 | 0.01 | mg/L | [illegible] |
| Mn 257.610 | 89602.4 | 0.0749 | 0.00016 | mg/L | 0.749 | 0.0016 | mg/L | [illegible] |
| Mo 202.030 | 2124.2 | 0.0197 | 0.00015 | mg/L | 0.197 | 0.0015 | mg/L | [illegible] |
| Na 330.237 | 152987.5 | 30.9 | 0.03 | mg/L | 309 | 0.3 | mg/L | [illegible] |
| Ni 231.604 | 574.1 | 0.00806 | 0.000017 | mg/L | 0.0806 | 0.00017 | mg/L | [illegible] |
| Pb 220.353 | 270.3 | 0.0322 | 0.00025 | mg/L | 0.322 | 0.0025 | mg/L | [illegible] |
| Sb 206.833 | 25328.0 | 6.75 | 0.0018 | mg/L | 67.5 | 0.018 | mg/L | [illegible] |
| Se 196.026 | 154.2 | 0.0315 | 0.00126 | mg/L | 0.315 | 0.0126 | mg/L | [illegible] |
| Si 288.158 | 152365.0 | 3.19 | 0.075 | mg/L | 31.9 | 0.75 | mg/L | [illegible] |
| Sn 189.933 | 1592.7 | 0.0359 | 0.00003 | mg/L | 0.359 | 0.0003 | mg/L | [illegible] |
| Sr 232.236 | 990.0 | 0.155 | 0.0014 | mg/L | 1.55 | 0.014 | mg/L | [illegible] |
| Ti 337.280 | 12468.9 | 0.0265 | 0.00007 | mg/L | 0.265 | 0.0007 | mg/L | [illegible] |
| Tl 190.800 | 486.0 | 0.0184 | 0.00051 | mg/L | 0.184 | 0.0051 | mg/L | [illegible] |
| V 292.402 | -68524.2 | 0.0576 | 0.00072 | mg/L | 0.576 | 0.0072 | mg/L | [illegible] |
| Zn 206.200 | 705132.9 | 2.29 | 0.001 | mg/L | 22.9 | 0.01 | mg/L | [illegible] |
| B 182.527 | [illegible] | 2.96 | 0.053 | mg/L | 29.6 | 0.53 | mg/L | [illegible] |
| B 208.893 | -1754.5 | -16.0 | 0.09 | mg/L | -160 | 0.9 | mg/L | [illegible] |
| B 208.959 | 1060.4 | 0.948 | 0.0329 | mg/L | 9.48 | 0.329 | mg/L | [illegible] |
| B 249.773 | 3555.3 | 8.59 | 0.087 | mg/L | 85.9 | 0.87 | mg/L | [illegible] |

Matrix Check Sample: [illegible]

| Element | Expected Conc. | Measured Conc. | Std.Dev. | Sample Units | Relative % Diff. |
|---|---|---|---|---|---|
| Y 360.073 | | | 0.001 | | |
| Ag 328.068 | 0.0304 | 0.0307 | 0.000 | mg/L | 1.032 |
| Al 237.312 | -0.0156 | 0.0242 | 0.001 | mg/L | 958.890 |
| As 189.979 | -3.00 | -3.35 | 0.020 | mg/L | -0.772 |
| Ba 230.424 | 0.150 | 0.149 | 0.001 | mg/L | 1.664 |
| Be 234.861 | 0.00346 | 0.00350 | 0.000 | mg/L | 1.034 |
| Ca 317.549 | 15.8 | 15.9 | 0.076 | mg/L | 1.959 |
| Cd 226.502 | 0.345 | 0.347 | 0.002 | mg/L | 0.651 |
| Co 228.616 | 0.0607 | 0.0607 | 0.001 | mg/L | 0.011 |
| Cr 267.716 | 401 | 402 | 1.064 | mg/L | 0.395 |
| Cu 327.396 | -0.435 | -0.442 | 0.001 | mg/L | -0.454 |
| Fe 261.387 | 169 | 167 | 0.249 | mg/L | 0.480 |
| K 404.721 | 119 | 121 | 1.321 | mg/L | 1.681 |
| K 766.491 | | | 0.030 | mg/L | |
| Li 460.286 | -0.934 | -0.934 | 0.023 | mg/L | -0.173 |
| Mg 279.079 | 11.2 | 11.3 | 0.010 | mg/L | 0.772 |
| Mn 257.610 | 0.742 | 0.749 | 0.002 | mg/L | 0.922 |
| Mo 202.030 | 0.201 | 0.197 | 0.002 | mg/L | 2.806 |
| Na 330.237 | 303 | 309 | 0.281 | mg/L | 1.667 |
| Ni 231.604 | 0.0824 | 0.0806 | 0.000 | mg/L | 1.982 |
| Pb 220.353 | 0.325 | 0.322 | 0.003 | mg/L | 0.915 |
| Sb 206.833 | 6.74 | 6.75 | 0.018 | mg/L | 0.121 |
| Se 196.026 | 0.443 | 0.315 | 0.013 | mg/L | 33.948 |
| Si 288.158 | 30.3 | 31.9 | 0.750 | mg/L | 1.298 |
| Sn 189.933 | 0.356 | 0.359 | 0.000 | mg/L | 0.827 |
| Sr 232.236 | 1.57 | 1.55 | 0.014 | mg/L | 0.825 |
| Ti 337.280 | 0.265 | 0.265 | 0.001 | mg/L | 0.086 |
| Tl 190.800 | 0.186 | 0.184 | 0.005 | mg/L | 0.610 |
| V 292.402 | 0.566 | 0.576 | 0.007 | mg/L | 1.396 |
| Zn 206.200 | 23.0 | 22.9 | 0.006 | mg/L | 0.154 |
| B 182.527 | 50.6 | 29.9 | 0.532 | mg/L | 51.640 |
| B 208.893 | -140 | -160 | 0.794 | mg/L | -15.480 |

| | | | | | | |
|---|---|---|---|---|---|---|
| B 208.959 | 17.5 | 9.45 | 0.029 | mg/L | 59.699 | |
| B 249.773 | 119 | 31.9 | 0.071 | mg/L | 23.831 | |

Mean Data

ID: 7C0849501 Seq. No.: 15 Sample No.: 11 A/D Rec: 11
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.00
Date: Original Date: 9 4 95 11:17:11

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2109813.4 | | | | | | | |
| Ag 328.068 | 145.6 | 0.00021 | 0.000004 | mg/L | 0.00206 | 0.000140 | mg/L | |
| Al 237.312 | -226.2 | -0.00903 | 0.000215 | mg/L | -0.1003 | 0.00215 | mg/L | |
| As 189.979 | -15.7 | -0.00114 | 0.000015 | mg/L | -0.0114 | 0.00115 | mg/L | |
| Ba 230.424 | 54073.2 | 0.0999 | 0.00025 | mg/L | 0.999 | 0.0025 | mg/L | |
| Be 234.861 | -461.1 | 0.00041 | 0.000000 | mg/L | 0.00407 | 0.000002 | mg/L | |
| Ca 227.549 | 139647.9 | 99.1 | 0.19 | mg/L | 991 | 1.9 | mg/L | |
| Cd 226.502 | 74.2 | 0.00044 | 0.000014 | mg/L | 0.00436 | 0.000141 | mg/L | |
| Co 228.616 | -47.1 | -0.00095 | 0.000036 | mg/L | -0.00946 | 0.000357 | mg/L | |
| Cr 267.716 | 6596.2 | 0.0176 | 0.00018 | mg/L | 0.1762 | 0.0018 | mg/L | |
| Cu 327.396 | 201.7 | 0.00006 | 0.000002 | mg/L | 0.00059 | 0.000019 | mg/L | |
| Fe 261.387 | -492.7 | -0.00223 | 0.000470 | mg/L | -0.0223 | 0.00471 | mg/L | |
| K 404.721 | 1019.9 | 1.01 | 0.029 | mg/L | 10.1 | 0.29 | mg/L | |
| K 766.491 | 2556562.1 | 0.928 | 0.0033 | mg/L | 9.28 | 0.033 | mg/L | |
| Li 460.286 | -1262.7 | -0.00934 | 0.000029 | mg/L | -0.0934 | 0.00029 | mg/L | |
| Mg 279.079 | 22000.3 | 0.564 | 0.0015 | mg/L | 5.64 | 0.015 | mg/L | |
| Mn 257.610 | 67238.3 | 0.0737 | 0.00029 | mg/L | 0.737 | 0.0029 | mg/L | |
| Mo 202.030 | 8.2 | 0.00011 | 0.000000 | mg/L | 0.00114 | 0.000019 | mg/L | |
| Na 330.237 | 546019.6 | 142 | 0.1 | mg/L | 1420 | 0.7 | mg/L | |
| Ni 231.604 | 34.3 | 0.00074 | 0.000056 | mg/L | 0.00739 | 0.000561 | mg/L | |
| Pb 220.353 | 126.1 | 0.00017 | 0.000003 | mg/L | 0.00169 | 0.000028 | mg/L | |
| Sb 206.833 | 120.1 | 0.0424 | 0.00028 | mg/L | 0.0424 | 0.00283 | mg/L | |
| Se 196.026 | 70.1 | 0.1203 | 0.00047 | mg/L | 0.120 | 0.0047 | mg/L | |
| Sr 216.256 | 23363.5 | 0.435 | 0.0033 | mg/L | 4.35 | 0.033 | mg/L | |
| Sn 189.989 | -164.5 | -0.00916 | 0.000049 | mg/L | -0.0916 | 0.00049 | mg/L | |
| Sr 421.552 | 453.1 | 0.1766 | 0.00027 | mg/L | 1.766 | 0.0027 | mg/L | |
| Ti 337.280 | -79.6 | -0.00035 | 0.000055 | mg/L | -0.0035 | 0.00055 | mg/L | |
| Tl 190.857 | -1.1 | 0.00195 | 0.000064 | mg/L | 0.01951 | 0.000642 | mg/L | |
| V 292.402 | 116.9 | 0.00240 | 0.000026 | mg/L | 0.0240 | 0.00026 | mg/L | |
| Zn 206.200 | 2293.9 | 0.00724 | 0.000074 | mg/L | 0.0724 | 0.00074 | mg/L | |
| B 182.847 | -3.1 | 0.07 | 0.066 | mg/L | 0.71 | 0.66 | mg/L | |
| B 208.959 | 216.3 | 2.60 | 0.196 | mg/L | 26.0 | 1.96 | mg/L | |
| B 249.773 | 550.7 | 0.846 | 0.0329 | mg/L | 8.46 | 0.329 | mg/L | |
| B 249.773 | 1313.6 | 3.22 | 0.120 | mg/L | 32.2 | 1.20 | mg/L | |

Mean Data

ID: CCV Seq. No.: 16 Sample No.: 3 A/D Rec: 3
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 L Dilution: 1.00
Date: Original Date: 9 4 95 11:21:01 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2303115.1 | | | | | | | |
| Ag 328.068 | 271019.9 | 0.384 | 0.0019 | mg/L | | | | |
| Al 237.312 | 231245.1 | 9.42 | 0.031 | mg/L | | | | |
| As 189.979 | 4291.1 | 0.394 | 0.0003 | mg/L | | | | |
| Ba 230.424 | 333333.4 | 0.964 | 0.0047 | mg/L | | | | |
| Be 234.861 | 332963.9 | 0.0469 | 0.00002 | mg/L | | | | |
| Ca 227.549 | 13505.5 | 9.54 | 0.035 | mg/L | | | | |
| Cd 226.502 | 8802.9 | 0.0483 | 0.00020 | mg/L | | | | |
| Co 228.616 | 42646.6 | 0.233 | 0.0014 | mg/L | | | | |
| Cr 267.716 | 196393.9 | 0.811 | 0.0013 | mg/L | | | | |
| Cu 327.396 | 169433.6 | 0.473 | 0.0030 | mg/L | | | | |
| Fe 261.387 | 156560.7 | 3.95 | 0.016 | mg/L | | | | |
| K 404.721 | 60536.9 | 60.5 | 0.26 | mg/L | | | | |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 103090.1 | 1.04 | 0.010 | mg/L | | | | |
| Mg 279.079 | 404531.1 | 9.71 | 0.043 | mg/L | | | | |
| Mn 257.610 | 590959.5 | 1.496 | 0.0016 | mg/L | | | | |
| Mo 202.030 | 71536.1 | 0.947 | 0.0089 | mg/L | | | | |
| Na 330.237 | 2019910.7 | 521.1 | 1.03 | mg/L | | | | |

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| | | | | |
|---|---|---|---|---|
| Ni 231.604 | [illegible] | [illegible] | [illegible] mg/L | |
| Pb [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Sb [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Se [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Si [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Sn [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Sr [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Ti [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Tl [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| V [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| Zn 206.200 | [illegible] | [illegible] | 0.0150 mg/L | |
| B [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| B [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| B [illegible] | [illegible] | [illegible] | [illegible] mg/L | |
| B [illegible] | [illegible] | [illegible] | [illegible] mg/L | |

Mean Data ----------

ID: ICB/CCB Seq. No.: 17 Sample No.: 4 A/C Por: 1

Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: [illegible]

Data: Original Date: 9/4/96 [illegible]

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | |
| Ag 328.068 | -130.9 | -0.00019 | 0.000000 | mg/L | | | | |
| Al 237.312 | -521.7 | -0.0206 | 0.00020 | mg/L | | | | |
| As 189.979 | -1.0 | -0.00006 | 0.000028 | mg/L | | | | |
| Ba 233.424 | -431.6 | -0.00080 | 0.000017 | mg/L | | | | |
| Be 234.861 | -549.5 | 0.00039 | 0.000003 | mg/L | | | | |
| Ca 317.549 | -106.5 | 0.00074 | 0.003580 | mg/L | | | | |
| Cd 226.502 | 42.8 | 0.00026 | 0.000020 | mg/L | | | | |
| Co 228.616 | -94.2 | -0.00117 | 0.000001 | mg/L | | | | |
| Cr 267.716 | 2057.0 | 0.00692 | 0.000114 | mg/L | | | | |
| *CC exceeds upper limit for Cr 267.716 Action = Continue | | | | | | | | |
| Cu 327.396 | 49.3 | 0.00014 | 0.000029 | mg/L | | | | |
| Fe 261.187 | -619.9 | -0.00540 | 0.000026 | mg/L | | | | |
| K 404.721 | 425.6 | 1.356 | 0.0456 | mg/L | | | | |
| K 766.491 | 264949.6 | -0.00881 | 0.000563 | mg/L | | | | |
| Li 460.289 | -1964.1 | -0.00445 | 0.00286 | mg/L | | | | |
| Mg 279.079 | -137.7 | 0.0557 | 0.00026 | mg/L | | | | |
| Mn 257.610 | -453.0 | -0.00130 | 0.000003 | mg/L | | | | |
| Mo 202.030 | 146.9 | 0.00031 | 0.000038 | mg/L | | | | |
| Na 330.237 | 641.1 | 0.108 | 0.004 | mg/L | | | | |
| Ni 231.604 | -206.5 | -0.00160 | 0.000007 | mg/L | | | | |
| Pb 220.353 | 86.0 | -0.00017 | 0.000048 | mg/L | | | | |
| Sb 206.833 | 249.3 | 0.00053 | 0.000039 | mg/L | | | | |
| Se 196.026 | -56.5 | 0.00049 | 0.000044 | mg/L | | | | |
| Si 288.158 | 997.5 | 0.0285 | 0.00009 | mg/L | | | | |
| Sn 189.989 | 24.6 | -0.00404 | 0.000200 | mg/L | | | | |
| Sr 421.552 | 19.5 | -0.00155 | 0.000761 | mg/L | | | | |
| Ti 337.280 | -231.7 | -0.00109 | 0.000023 | mg/L | | | | |
| Tl 190.864 | 46.1 | -0.00043 | 0.000048 | mg/L | | | | |
| V 292.402 | -1021.3 | 0.00037 | 0.000006 | mg/L | | | | |
| Zn 206.200 | 234.3 | 0.00075 | 0.000016 | mg/L | | | | |
| B 182.587 | [illegible] | [illegible] | 1.164 | mg/L | | | | |
| B 208.893 | 435.0 | 0.02 | 0.004 | mg/L | | | | |
| B 208.959 | 270.8 | 0.016 | 0.0020 | mg/L | | | | |
| B 249.773 | 511.1 | [illegible] | 0.004 | mg/L | | | | |

Calibration Summary
Method: clptest Date: [illegible] 11:[illegible] AM

| Element | Stds | Equation | Intercept | Slope | Correlation | Corr. Stddev |
|---|---|---|---|---|---|---|
| As 326.[illegible] | 3 | Linear-thru-Zero | 0.0 | [illegible] | [illegible] | [illegible] |
| Al 237.[illegible] | 3 | Linear-thru-Zero | 0.0 | [illegible] | [illegible] | [illegible] |
| As 189.[illegible] | 3 | Linear-thru-Zero | 0.0 | [illegible] | [illegible] | [illegible] |
| Ba 230.424 | 3 | Linear-thru-Zero | 0.0 | [illegible] | [illegible] | [illegible] |
| Be 234.861 | 3 | Linear | -1636.4 | [illegible] | [illegible] | [illegible] |
| Ca 227.549 | 3 | Linear | -[illegible] | [illegible] | [illegible] | [illegible] |
| Cd 228.802 | 3 | Linear | -5.3 | [illegible] | [illegible] | [illegible] |
| Co 228.616 | 3 | Linear | [illegible] | [illegible] | [illegible] | [illegible] |
| Cr 267.716 | 3 | Linear-thru-Zero | 0.0 | [illegible] | [illegible] | [illegible] |
| Cu 327.396 | 3 | Linear-thru-Zero | 0.0 | [illegible] | [illegible] | [illegible] |
| Fe 261.387 | 3 | Linear | -404.1 | [illegible] | [illegible] | [illegible] |
| K 404.721 | 3 | Linear-thru-Zero | 0.0 | [illegible] | [illegible] | [illegible] |
| K 766.491 | 3 | Linear | [illegible] | [illegible] | [illegible] | [illegible] |
| Li 460.286 | 3 | Linear | 482.8 | [illegible] | [illegible] | [illegible] |
| Mg 279.[illegible] | 3 | Linear | -2474.5 | [illegible] | [illegible] | [illegible] |
| Mn 257.610 | 3 | Linear | 1065.2 | [illegible] | [illegible] | [illegible] |
| Mo 202.031 | 3 | Linear-thru-Zero | 0.0 | [illegible] | [illegible] | [illegible] |
| Na 330.237 | 3 | Linear-thru-Zero | 0.0 | [illegible] | [illegible] | [illegible] |
| Ni 231.604 | 3 | Linear-thru-Zero | 0.0 | [illegible] | [illegible] | [illegible] |
| Pb 220.353 | 3 | Linear | 125.1 | [illegible] | [illegible] | [illegible] |
| Sb 206.833 | 3 | Linear | 5.0 | [illegible] | [illegible] | [illegible] |
| Se 196.026 | 3 | Linear | -67.9 | [illegible] | [illegible] | [illegible] |
| Si 288.158 | 3 | Linear | 40.4 | [illegible] | [illegible] | [illegible] |
| Sn 189.933 | 3 | Linear | 192.9 | [illegible] | [illegible] | [illegible] |
| Sr 232.035 | 3 | Linear | 28.1 | [illegible] | [illegible] | [illegible] |
| Ti 337.280 | 3 | Linear | -580.9 | [illegible] | [illegible] | [illegible] |
| Tl 190.[illegible] | 3 | Linear-thru-Zero | 0.0 | [illegible] | [illegible] | [illegible] |
| V 292.402 | 3 | Linear | -138.5 | [illegible] | [illegible] | [illegible] |
| Zn 206.200 | 3 | Linear-thru-Zero | 0.0 | [illegible] | [illegible] | [illegible] |
| B 182.[illegible] | 3 | Linear | -30.1 | [illegible] | [illegible] | [illegible] |
| B 208.[illegible] | 3 | Linear | [illegible] | [illegible] | [illegible] | [illegible] |
| B 208.[illegible] | 3 | Linear | 236.1 | 405.3 | [illegible] | [illegible] |
| B 249.773 | 3 | Linear | 29.1 | 420.4 | [illegible] | [illegible] |

Method: clptest
Results: 090498
Sample Info: 090498
Method Description:

ICC: 0410.inc
Spectra Stored: Yes
User: User1

MDT:
Method Stored: Yes
Date: 9/4/98 11:18:33 AM

DEQ-AWQMS CCP

Calibration Summary
Method: clptsts Date: [illegible] [illegible]

| Element | Stds | Equation | Intercept | Slope | Correlation | Corr. Coeff. |
|---|---|---|---|---|---|---|
| Ag 328.068 | 3 | Linear-thru-Zero | 0.0 | 766441.0 | 0.00000 | [illegible] |
| Al 237.312 | 3 | Linear-thru-Zero | 0.0 | 20260.9 | 0.00000 | [illegible] |
| As 189.979 | 3 | Linear-thru-Zero | 0.0 | 16384.4 | 0.00000 | [illegible] |
| Ba 230.424 | 3 | Linear-thru-Zero | 0.0 | 5417779.0 | 0.00000 | [illegible] |
| Be 234.861 | 3 | Linear | -1626.9 | 2888346.0 | 0.00000 | [illegible] |
| Ca 227.549 | 3 | Linear | -[illegible].9 | 1410.6 | 0.00000 | [illegible] |
| Cd 226.502 | 3 | Linear | -5.3 | 182362.6 | 0.00000 | [illegible] |
| Co 228.616 | 3 | Linear | 151.2 | 209736.4 | 0.00000 | [illegible] |
| Cr 267.716 | 3 | Linear-thru-Zero | 0.0 | 383917.1 | 0.00000 | [illegible] |
| Cu 327.396 | 3 | Linear-thru-Zero | 0.0 | 355904.1 | 0.00000 | [illegible] |
| Fe 261.387 | 3 | Linear | -404.1 | 39724.6 | 0.00000 | [illegible] |
| K 404.721 | 3 | Linear-thru-Zero | 0.0 | 1196.1 | 0.00000 | [illegible] |
| K 766.491 | 3 | Linear | 296111.1 | 3511001.7 | 0.00000 | [illegible] |
| Mg 279.553 | 3 | Linear | 482.5 | 96676.6 | 0.00000 | [illegible] |
| Mg 279.079 | 3 | Linear | -2474.1 | 41925.1 | 0.00000 | [illegible] |
| Mn 257.610 | 3 | Linear | 1165.2 | 2169753.4 | 0.00000 | [illegible] |
| Mo 202.031 | 3 | Linear-thru-Zero | 0.0 | 72416.0 | 0.00000 | [illegible] |
| Na 330.237 | 3 | Linear-thru-Zero | 0.0 | 5945.7 | 0.00000 | [illegible] |
| Ni 231.604 | 3 | Linear-thru-Zero | 0.0 | 141326.1 | 0.00000 | [illegible] |
| Pb 220.353 | 3 | Linear | 125.1 | 17949.5 | 0.00000 | [illegible] |
| Sb 206.833 | 3 | Linear | 0.0 | 28492.5 | 0.00000 | [illegible] |
| Se 196.026 | 3 | Linear | -87.5 | 12893.5 | 0.00000 | [illegible] |
| Si 251.611 | 3 | Linear | 40.4 | 50191.4 | 0.00000 | [illegible] |
| Sn 189.933 | 3 | Linear | 152.9 | 39026.4 | 0.00000 | [illegible] |
| Sr 216.256 | 3 | Linear | 25.1 | 6606.1 | 0.00000 | [illegible] |
| Ti 337.280 | 3 | Linear | -550.3 | 1026710.3 | 0.00000 | [illegible] |
| Tl 190.800 | 3 | Linear-thru-Zero | 0.0 | 20979.9 | 0.00000 | [illegible] |
| V 292.402 | 3 | Linear | -135.5 | 398737.1 | 0.00000 | [illegible] |
| Zn 206.200 | 3 | Linear-thru-Zero | 0.0 | 316304.5 | 0.00000 | [illegible] |
| B 182.587 | 3 | Linear | -21.1 | 12.7 | 0.00000 | [illegible] |
| B 208.893 | 3 | Linear | 55.9 | 84.4 | 0.00000 | [illegible] |
| B 208.959 | 3 | Linear | 215.1 | 436.3 | 0.00000 | [illegible] |
| B 249.773 | 3 | Linear | 29.1 | 410.4 | 0.00000 | [illegible] |

Method: clptsts
Results: [illegible]
Sample Info: [illegible]
Method Description:

IDC: Selected
Spectra Stored: Yes
Used: Used

MSF:
Method Stored: Yes
Date: 9/4/98 [illegible]

Calibration Summary
Method: clptstd Date: [illegible] 11:[illegible] AM

| Element | Star | Equation | Intercept | Slope | Curvature | Corr. Coeff. |
|---|---|---|---|---|---|---|
| Ag 328.068 | 3 | Linear-thru-Zero | 0.0 | 706441.2 | 0.00000 | [illegible] |
| Al 237.312 | 3 | Linear-thru-Zero | 0.0 | 25263.8 | 0.00000 | [illegible] |
| As 189.979 | 3 | Linear-thru-Zero | 0.0 | 16384.4 | 0.00000 | [illegible] |
| Ba 233.424 | 3 | Linear-thru-Zero | 0.0 | 541779.3 | 0.00000 | [illegible] |
| Be 234.861 | 3 | Linear | -1626.9 | 2889346.0 | 0.00000 | [illegible] |
| Ca 227.549 | 3 | Linear | -107.9 | 1410.6 | 0.00000 | [illegible] |
| Cd 226.502 | 3 | Linear | -5.3 | 182362.6 | 0.00000 | [illegible] |
| Co 228.616 | 3 | Linear | 151.2 | 209736.4 | 0.00000 | [illegible] |
| Cr 267.716 | 3 | Linear-thru-Zero | 0.0 | 383917.1 | 0.00000 | [illegible] |
| Cu 327.396 | 3 | Linear-thru-Zero | 0.0 | 355904.1 | 0.00000 | [illegible] |
| Fe 261.387 | 3 | Linear | -404.1 | 39724.6 | 0.00000 | [illegible] |
| K 404.721 | 3 | Linear-thru-Zero | 0.0 | 1199.1 | 0.00000 | [illegible] |
| K 766.491 | 1 | Linear | 296112.1 | 3511001.7 | 0.00000 | [illegible] |
| Li 460.289 | 3 | Linear | 492.5 | 96675.6 | 0.00000 | [illegible] |
| Mg 279.079 | 3 | Linear | -2474.6 | 41925.1 | 0.00000 | [illegible] |
| Mn 257.610 | 3 | Linear | 1065.2 | 1168753.4 | 0.00000 | [illegible] |
| Mo 202.030 | 3 | Linear-thru-Zero | 0.0 | 72416.0 | 0.00000 | [illegible] |
| Na 330.237 | 3 | Linear-thru-Zero | 0.0 | 5945.7 | 0.00000 | [illegible] |
| Ni 231.604 | 3 | Linear-thru-Zero | 0.0 | 141826.5 | 0.00000 | [illegible] |
| Pb 220.353 | 3 | Linear | 125.1 | 17946.5 | 0.00000 | [illegible] |
| Sb 206.833 | 3 | Linear | 5.2 | 28496.5 | 0.00000 | [illegible] |
| Se 196.026 | 3 | Linear | -87.9 | 12893.5 | 0.00000 | [illegible] |
| Si 288.158 | 3 | Linear | 40.4 | 53190.2 | 0.00000 | [illegible] |
| Sn 189.933 | 3 | Linear | 182.9 | 39026.4 | 0.00000 | [illegible] |
| Sr 421.552 | 3 | Linear | 25.1 | 5508.1 | 0.00000 | [illegible] |
| Ti 337.280 | 3 | Linear | -580.3 | 1626710.3 | 0.00000 | [illegible] |
| Tl 190.802 | 3 | Linear-thru-Zero | 0.0 | 20979.9 | 0.00000 | [illegible] |
| V 292.402 | 3 | Linear | -138.5 | 398737.6 | 0.00000 | [illegible] |
| Zn 206.200 | 3 | Linear-thru-Zero | 0.0 | 316804.5 | 0.00000 | [illegible] |
| B 182.527 | 3 | Linear | -33.1 | [illegible] | 0.00000 | [illegible] |
| B 208.893 | 3 | Linear | 55.9 | 56.4 | 0.00000 | [illegible] |
| B 208.959 | 3 | Linear | 205.2 | 409.3 | 0.00000 | [illegible] |
| B 249.773 | 3 | Linear | 29.2 | 410.4 | 0.00000 | [illegible] |

Method: clptstd
Results: [illegible]
Sample Info: [illegible]
Method Description:

ICP: d4ieo.inc
Spectra Stored: Yes
User: User1

MCP:
Method Stored: Yes
Date: [illegible] 11:[illegible] AM

Dept Analytical Corp



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Calibration Summary

Method: clptstd Date: 9/4/98 11:23:11 AM

| Element | Conc | Equation | Intercept | Slope | Correlation | Corr. Coeff. |
|---|---|---|---|---|---|---|
| Ag 328.068 | 3 | Linear-thru-Zero | 0.0 | 706441.2 | 0.00000 | 1.000000 |
| Al 237.312 | 3 | Linear-thru-Zero | 0.0 | 25060.0 | 0.00000 | 1.000000 |
| As 189.979 | 3 | Linear-thru-Zero | 0.0 | 16064.4 | 0.00000 | 1.000000 |
| Ba 230.424 | 3 | Linear-thru-Zero | 0.0 | 541779.3 | 0.00000 | 1.000000 |
| Be 234.861 | 3 | Linear | -1636.9 | 2988346.0 | 0.00000 | 1.000000 |
| Ca 227.549 | 3 | Linear | -107.6 | 1420.6 | 0.00000 | 1.000000 |
| Cd 228.802 | 3 | Linear | -5.3 | 182362.6 | 0.00000 | 1.000000 |
| Co 228.616 | 3 | Linear | 151.2 | 209736.4 | 0.00000 | 1.000000 |
| Cr 267.716 | 3 | Linear-thru-Zero | 0.0 | 353917.1 | 0.00000 | 1.000000 |
| Cu 327.396 | 3 | Linear-thru-Zero | 0.0 | 355904.1 | 0.00000 | 1.000000 |
| Fe 261.387 | 3 | Linear | -404.1 | 39724.6 | 0.00000 | 1.000000 |
| K 404.721 | 3 | Linear-thru-Zero | 0.0 | 1169.1 | 0.00000 | 1.000000 |
| K 766.491 | 3 | Linear | 296112.1 | 3511001.7 | 0.00000 | 1.000000 |
| Li 460.286 | 3 | Linear | 480.5 | 56675.9 | 0.00000 | 1.000000 |
| Mg 279.079 | 3 | Linear | -2474.5 | 41925.1 | 0.00000 | 1.000000 |
| Mn 257.610 | 3 | Linear | 1065.2 | 1165753.4 | 0.00000 | 1.000000 |
| Mo 202.030 | 3 | Linear-thru-Zero | 0.0 | 72416.2 | 0.00000 | 1.000000 |
| Na 330.237 | 3 | Linear-thru-Zero | 0.0 | 5945.7 | 0.00000 | 1.000000 |
| Ni 231.604 | 3 | Linear-thru-Zero | 0.0 | 142326.5 | 0.00000 | 1.000000 |
| Pb 220.353 | 3 | Linear | 125.1 | 17948.5 | 0.00000 | 1.000000 |
| Sb 206.833 | 3 | Linear | 5.2 | 28496.5 | 0.00000 | 1.000000 |
| Se 196.026 | 3 | Linear | -87.6 | 12893.5 | 0.00000 | 1.000000 |
| Si 288.158 | 3 | Linear | 40.4 | 53193.2 | 0.00000 | 1.000000 |
| Sn 189.933 | 3 | Linear | 192.9 | 39026.4 | 0.00000 | 1.000000 |
| Sr 232.236 | 3 | Linear | 26.1 | 5508.1 | 0.00000 | 1.000000 |
| Ti 337.281 | 3 | Linear | -560.3 | 1626710.3 | 0.00000 | 1.000000 |
| Tl 190.801 | 3 | Linear-thru-Zero | 0.0 | 20979.8 | 0.00000 | 1.000000 |
| V 290.882 | 3 | Linear | -138.5 | 398737.0 | 0.00000 | 1.000000 |
| Zn 206.200 | 3 | Linear-thru-Zero | 0.0 | 316804.5 | 0.00000 | 1.000000 |
| S 182.034 | 3 | Linear | -30.1 | 12.7 | 0.00000 | 1.000000 |
| B 208.890 | 3 | Linear | 58.5 | 56.4 | 0.00000 | 1.000000 |
| B 208.959 | 3 | Linear | 205.1 | 408.3 | 0.00000 | 1.000000 |
| B 249.773 | 3 | Linear | 29.1 | 410.4 | 0.00000 | 1.000000 |

Method: clptstd ICC: G4lec.lec MST:
Results: 090498 Spectra Stored: Yes Method Stored: Yes
Sample Info: 090498 User: User1 Date: 9/4/98 11:23:24 AM
Method Description:

Mean Data

ID: MSC1 Seq. No.: 1 Sample No.: 1 A/S Pos: 19
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 5.0 50.0
Data: Original Date: 9/4/98 11:25:16 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | Rel |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2356017.4 | | | | | | | 1.045 |
| Ag 328.068 | 146252.0 | 0.207 | 0.0014 | mg/L | 2.07 | 0.014 | mg/L | 0.666 |
| Al 237.312 | 274406.3 | 10.5 | 0.08 | mg/L | 105 | 0.8 | mg/L | 1.024 |
| As 189.979 | 16425.1 | 1.00 | 0.012 | mg/L | 10.0 | 0.12 | mg/L | 1.130 |
| Ba 230.424 | 4588688.4 | 8.47 | 0.062 | mg/L | 84.7 | 0.62 | mg/L | 1.021 |
| Be 234.861 | 2750152.0 | 0.953 | 0.0049 | mg/L | 9.53 | 0.049 | mg/L | 1.022 |
| Ca 227.549 | 152954.2 | 108 | 0.7 | mg/L | 1080 | 7.3 | mg/L | 0.678 |
| Cd 228.802 | 181797.7 | 0.997 | 0.0084 | mg/L | 9.97 | 0.084 | mg/L | 0.842 |
| Co 228.616 | 199368.1 | 0.951 | 0.0105 | mg/L | 9.51 | 0.105 | mg/L | 1.104 |
| Cr 267.716 | 377745.8 | 0.986 | 0.0080 | mg/L | 9.86 | 0.080 | mg/L | 0.812 |
| Cu 327.396 | 355039.4 | 0.999 | 0.0099 | mg/L | 9.99 | 0.099 | mg/L | 1.000 |
| Fe 261.387 | 36782.2 | 0.911 | 0.0085 | mg/L | 9.11 | 0.085 | mg/L | 0.934 |
| K 404.721 | 59033.9 | 49.2 | 0.42 | mg/L | 492 | 4.2 | mg/L | 0.854 |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 932291.3 | 9.66 | 0.003 | mg/L | 96.6 | 0.03 | mg/L | 0.031 |
| Mg 279.079 | 410359.5 | 9.85 | 0.104 | mg/L | 98.5 | 1.04 | mg/L | 1.060 |
| Mn 257.610 | 1188103.0 | 1.02 | 0.006 | mg/L | 10.2 | 0.06 | mg/L | 0.621 |

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|---|---|---|---|---|---|---|---|---|
| Mo 202.030 | 71436.6 | 1.687 | 0.0082 | mg/L | 5.67 | 0.032 | mg/L | [illegible] |
| Na 330.237 | 1089401.7 | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ni 231.064 | 135019.5 | 1.937 | 0.0044 | mg/L | 5.81 | 0.013 | mg/L | [illegible] |
| Pb 220.353 | 17316.6 | 1.966 | 0.0126 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sb 206.833 | 19275.8 | [illegible] | 0.009 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Se 196.026 | 22268.6 | 1.944 | 0.0116 | mg/L | 5.44 | [illegible] | mg/L | [illegible] |
| Sn 189.989 | 4998714.7 | 9.41 | 0.348 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sr 189.933 | -1185.5 | -0.00977 | 0.00000 | mg/L | -0.0977 | 0.00000 | mg/L | [illegible] |
| Sr 216.596 | 8356.2 | 1.944 | 0.0134 | mg/L | 5.41 | [illegible] | mg/L | [illegible] |
| Tl 377.572 | 1640690.4 | [illegible] | 0.004 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Tl 190.800 | 11684.5 | 1.565 | 0.0162 | mg/L | 5.65 | [illegible] | mg/L | [illegible] |
| V 292.402 | 395216.3 | 1.967 | 0.0098 | mg/L | 5.87 | [illegible] | mg/L | [illegible] |
| Zn 206.200 | 291689.3 | 1.921 | 0.0130 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| B 182.587 | 113.4 | [illegible] | 0.73 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| B 208.893 | 661.8 | 9.74 | 0.784 | mg/L | 97.4 | 7.84 | mg/L | [illegible] |
| B 208.959 | 4259.7 | 9.12 | 0.035 | mg/L | [illegible] | 0.35 | mg/L | [illegible] |
| B 249.773 | 4450.6 | 10.9 | 0.52 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |

Mean Data ----------

ID: MS001 Seq. No.: 2 Sample No.: 2 A/S Pos: 22
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.0 1.0
Date: Original Date: 9/4/98 11:30:22 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2039079.3 | | | | | | | [illegible] |
| Ag 328.068 | 146022.3 | 0.207 | 0.0010 | mg/L | 2.07 | 0.010 | mg/L | [illegible] |
| Al 237.312 | 261091.5 | 10.3 | 0.06 | mg/L | 103 | [illegible] | mg/L | [illegible] |
| As 189.979 | 26501.9 | 1.00 | 0.006 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ba 233.527 | 462203.4 | 9.51 | 0.052 | mg/L | 95.1 | [illegible] | mg/L | [illegible] |
| Be 234.861 | 2751117.3 | 0.965 | 0.0067 | mg/L | 9.65 | 0.067 | mg/L | [illegible] |
| Cd 214.438 | 181605.2 | [illegible] | 0.6 | mg/L | 107.0 | [illegible] | mg/L | [illegible] |
| Co 228.616 | 152799.6 | 1.00 | 0.004 | mg/L | 10.0 | [illegible] | mg/L | [illegible] |
| Co 230.786 | 211134.7 | 1.969 | 0.0058 | mg/L | 9.69 | [illegible] | mg/L | [illegible] |
| Cr 267.716 | 377204.7 | 1.969 | 0.0019 | mg/L | 9.85 | [illegible] | mg/L | [illegible] |
| Cu 327.396 | 363661.1 | 1.994 | 0.0027 | mg/L | 9.94 | [illegible] | mg/L | [illegible] |
| Fe 261.387 | 38393.4 | 1.901 | 0.0006 | mg/L | 9.01 | 0.006 | mg/L | [illegible] |
| K 404.721 | 591716.5 | 49.2 | 0.34 | mg/L | 492 | [illegible] | mg/L | [illegible] |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 927624.5 | 9.60 | 0.051 | mg/L | 96.0 | 0.51 | mg/L | [illegible] |
| Mg 279.079 | 412735.4 | 9.60 | 0.025 | mg/L | 96.0 | 0.25 | mg/L | [illegible] |
| Mn 257.610 | 1190329.7 | [illegible] | 0.006 | mg/L | [illegible] | 0.06 | mg/L | [illegible] |
| Mo 202.031 | -1907.4 | 0.993 | 0.0021 | mg/L | 9.93 | 0.021 | mg/L | [illegible] |
| Na 330.237 | 1034475.8 | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ni 231.604 | 136195.4 | 0.964 | 0.0044 | mg/L | 9.64 | 0.044 | mg/L | [illegible] |
| Pb 220.353 | 17509.6 | 0.971 | 0.0045 | mg/L | [illegible] | 0.045 | mg/L | [illegible] |
| Sb 206.833 | 19540.8 | [illegible] | 0.005 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Se 196.026 | 22297.4 | 0.960 | 0.0056 | mg/L | 9.60 | 0.056 | mg/L | [illegible] |
| Sn 189.989 | 5000015.4 | 9.41 | 0.344 | mg/L | 94.1 | [illegible] | mg/L | [illegible] |
| Sr 189.933 | -1185.4 | -0.00995 | 0.000041 | mg/L | -0.0995 | 0.000041 | mg/L | [illegible] |
| Sr 216.596 | 8358.2 | 1.944 | 0.0140 | mg/L | 5.44 | 0.040 | mg/L | [illegible] |
| Tl 377.572 | 1642175.6 | [illegible] | 0.006 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Tl 190.800 | 12147.6 | 0.591 | 0.0033 | mg/L | 5.91 | 0.033 | mg/L | [illegible] |
| V 292.402 | 396825.8 | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Zn 206.200 | 292021.8 | 0.933 | 0.0037 | mg/L | 9.33 | 0.037 | mg/L | [illegible] |
| B 182.587 | 112.6 | [illegible] | 0.51 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| B 208.893 | 675.7 | 10.00 | 0.055 | mg/L | 100.0 | 0.55 | mg/L | [illegible] |
| B 208.959 | 4423.4 | 9.97 | 0.069 | mg/L | 99.7 | 0.69 | mg/L | [illegible] |
| B 249.773 | 4574.6 | [illegible] | 0.05 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |

Mean Data ----------

ID: PBW F Seq. No.: 3 Sample No.: 3 A/S Pos: 21
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.0 1.0
Date: Original Date: 9/4/98 11:34:03 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 1790845.3 | | | | | | | [illegible] |
| Ag 328.068 | -93.7 | -0.00012 | 0.000004 | mg/L | -0.00012 | 0.000004 | mg/L | [illegible] |
| Al 237.312 | -420.7 | -0.0167 | 0.00036 | mg/L | -0.0167 | 0.00036 | mg/L | [illegible] |
| As 189.979 | 4.0 | 0.00025 | 0.000027 | mg/L | 0.00025 | 0.000027 | mg/L | [illegible] |

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|---|---|---|---|---|---|---|---|
| Ba 230.424 | 1331.9 | 0.00091 | 0.000016 mg/L | 0.00091 | 0.000016 mg/L | | |
| Be 234.861 | -1554.2 | 0.00037 | 0.000001 mg/L | 0.00037 | 0.000001 mg/L | | |
| Ca 227.549 | -178.9 | 1.0206 | 0.00742 mg/L | 0.0206 | 0.00742 mg/L | | |
| Cd 226.502 | 59.2 | 0.00036 | 0.000000 mg/L | 0.00036 | 0.000000 mg/L | | |
| Co 228.616 | -70.1 | -0.00106 | 0.000003 mg/L | -0.00106 | 0.000003 mg/L | | |
| Cr 267.716 | 1330.1 | 0.00294 | 0.000075 mg/L | 0.00294 | 0.000075 mg/L | | |
| Cu 327.396 | 206.2 | 0.00055 | 0.000020 mg/L | 0.00055 | 0.000020 mg/L | | |
| Fe 261.387 | -4777.9 | -0.00136 | 0.000138 mg/L | -0.00136 | 0.000138 mg/L | | |
| K 404.721 | 400.2 | 0.384 | 0.0151 mg/L | 0.384 | 0.0151 mg/L | | |
| K 766.491 | 291742.9 | -0.00124 | 0.011315 mg/L | -0.00124 | 0.000315 mg/L | | |
| Li 460.286 | -1757.4 | -0.0032 | 0.00097 mg/L | -0.0032 | 0.00097 mg/L | | |
| Mg 279.079 | -56.4 | 0.0177 | 0.00011 mg/L | 0.0177 | 0.00011 mg/L | | |
| Mn 257.610 | -208.8 | -0.00109 | 0.000005 mg/L | -0.00109 | 0.000005 mg/L | | |
| Mo 202.030 | 92.7 | 0.00126 | 0.000216 mg/L | 0.00126 | 0.000216 mg/L | | |
| Na 330.237 | 746.4 | 0.126 | 0.0050 mg/L | 0.126 | 0.0050 mg/L | | |
| Ni 231.604 | -219.4 | -0.00165 | 0.000011 mg/L | -0.00165 | 0.000011 mg/L | | |
| Pb 220.353 | 99.5 | -0.00143 | 0.000050 mg/L | -0.00143 | 0.000050 mg/L | | |
| Sb 206.833 | 118.3 | 0.00397 | 0.000006 mg/L | 0.00397 | 0.000006 mg/L | | |
| Se 196.026 | -80.9 | 0.00286 | 0.000375 mg/L | 0.00286 | 0.000375 mg/L | | |
| Si 288.158 | 1434.1 | 0.0262 | 0.00095 mg/L | 0.0262 | 0.00095 mg/L | | |
| Sn 189.933 | 22.5 | -0.00465 | 0.000097 mg/L | -0.00465 | 0.000097 mg/L | | |
| Sr 232.235 | 23.9 | -0.00257 | 0.000730 mg/L | -0.00257 | 0.000730 mg/L | | |
| Ti 337.280 | -715.6 | -0.00008 | 0.000118 mg/L | -0.00008 | 0.000118 mg/L | | |
| Tl 190.800 | 43.5 | 0.00207 | 0.000069 mg/L | 0.00207 | 0.000069 mg/L | | |
| V 292.402 | -112.7 | 0.00006 | 0.000036 mg/L | 0.00006 | 0.000036 mg/L | | |
| Zn 206.200 | 2659.4 | 0.00839 | 0.000029 mg/L | 0.00839 | 0.000029 mg/L | | |
| B 182.527 | -6.9 | 1.83 | 0.008 mg/L | 1.83 | 0.008 mg/L | | |
| B 208.893 | 203.9 | 1.66 | 0.068 mg/L | 1.66 | 0.068 mg/L | | |
| B 208.959 | 445.5 | 0.589 | 0.0150 mg/L | 0.589 | 0.0150 mg/L | | |
| B 249.773 | 729.1 | 1.71 | 0.069 mg/L | 1.71 | 0.069 mg/L | | |

Mean Data ----------

ID: ICSA.5 Seq. No.: 4 Sample No.: 6 A/S Pos: 6
Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.0
Data: Original Date: 9/4/98 11:13:38

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RT |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 1964136.7 | | | | | | | |
| Ag 328.068 | -2572.6 | -0.00144 | 0.000075 | mg/L | | | | |
| Al 237.312 | 6436617.6 | 285 | 2.7 | mg/L | | | | |
| As 189.979 | 43.3 | 0.00265 | 0.000724 | mg/L | | | | |
| Ba 230.424 | -1047.4 | 0.00039 | 0.000012 | mg/L | | | | |
| Be 234.861 | -384.7 | -0.00038 | 0.000013 | mg/L | | | | |
| Ca 227.549 | 380467.0 | 269 | 0.4 | mg/L | | | | |
| Cd 226.502 | -119.4 | 0.00005 | 0.000261 | mg/L | | | | |
| Co 228.616 | -298.4 | -0.00187 | 0.000303 | mg/L | | | | |
| Cr 267.716 | 1980.4 | 0.00449 | 0.000075 | mg/L | | | | |
| *QC exceeds upper limit for Cr 267.716 Action = Continue | | | | | | | | |
| Cu 327.396 | -440.9 | -0.00209 | 0.000147 | mg/L | | | | |
| Fe 261.387 | 3503808.4 | 88.2 | 0.41 | mg/L | | | | |
| K 404.721 | 284.6 | 0.154 | 0.0176 | mg/L | | | | |
| K 766.491 | 312399.1 | 0.00464 | 0.001346 | mg/L | | | | |
| Li 460.286 | 49240.7 | 0.0172 | 0.00490 | mg/L | | | | |
| Mg 279.079 | 10176455.1 | 243 | 1.4 | mg/L | | | | |
| Mn 257.610 | 4110.0 | 0.00261 | 0.000002 | mg/L | | | | |
| Mo 202.030 | -292.3 | -0.00179 | 0.000729 | mg/L | | | | |
| Na 330.237 | 808.8 | 0.136 | 0.0050 | mg/L | | | | |
| Ni 231.604 | 3.6 | 0.00225 | 0.000048 | mg/L | | | | |
| Pb 220.353 | -9.9 | 0.00012 | 0.000336 | mg/L | | | | |
| Sb 206.833 | 2562.4 | 0.0169 | 0.00648 | mg/L | | | | |
| Se 196.026 | 407.4 | -0.00560 | 0.012784 | mg/L | | | | |
| Si 288.158 | 1964.6 | 0.0362 | 0.00206 | mg/L | | | | |
| Sn 189.933 | -273.6 | -0.00537 | 0.000685 | mg/L | | | | |
| Sr 232.235 | 535.9 | -0.0174 | 0.00311 | mg/L | | | | |
| Ti 337.280 | 7038.7 | 0.00469 | 0.000013 | mg/L | | | | |
| Tl 190.800 | -142.2 | 0.0262 | 0.00020 | mg/L | | | | |
| V 292.402 | -21.1 | 0.00770 | 0.000062 | mg/L | | | | |
| Zn 206.200 | 2785.1 | -0.00079 | 0.000019 | mg/L | | | | |
| B 182.527 | 412.4 | 34.9 | 3.52 | mg/L | | | | |
| B 208.893 | 2376.3 | 25.3 | 1.09 | mg/L | | | | |

| | | | | |
|---|---|---|---|---|
| B 208.959 | 6954.3 | -14.6 | 0.75 mg/L | |
| B 249.773 | 28972.4 | 70.5 | 0.64 mg/L | |

Mean Data ----------

ID: 000RB.5 Seq. No.: 5 Sample No.: 7 A/D Seq: 7
Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.0
Data: Original Date: 9/4/98 11:14:11 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2123551.4 | | | | | | | |
| Ag 328.068 | 391361.3 | 0.556 | 0.0000 | mg/L | | | | |
| Al 237.312 | 6116575.7 | 242 | 2.6 | mg/L | | | | |
| As 188.979 | 4412.9 | 0.272 | 0.0006 | mg/L | | | | |
| Ba 230.424 | 130381.9 | 0.243 | 0.0011 | mg/L | | | | |
| Be 234.861 | 752966.1 | 0.258 | 0.0031 | mg/L | | | | |
| Ca 227.549 | 366878.7 | 259 | 0.7 | mg/L | | | | |
| Cd 226.502 | 90554.7 | 0.500 | 0.0026 | mg/L | | | | |
| Co 228.616 | 46179.2 | 0.219 | 0.0024 | mg/L | | | | |
| Cr 267.716 | 92991.4 | 0.245 | 0.0012 | mg/L | | | | |
| Cu 327.396 | 83921.6 | 0.229 | 0.0027 | mg/L | | | | |
| Fe 261.387 | 3388390.6 | 85.3 | 0.39 | mg/L | | | | |
| K 404.721 | 2768.3 | 0.16 | 0.040 | mg/L | | | | |
| *QC exceeds upper limit for K 404.721 Recovery = 126.37% Action = Continue | | | | | | | | |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 47343.4 | 0.0122 | 0.00144 | mg/L | | | | |
| Mg 279.079 | 9783381.4 | 230 | 2.9 | mg/L | | | | |
| Mn 257.610 | 598136.8 | 0.246 | 0.0011 | mg/L | | | | |
| Mo 202.030 | -2210.4 | -0.00195 | 0.000160 | mg/L | | | | |
| Na 330.237 | 7041.1 | 1.19 | 0.012 | mg/L | | | | |
| Ni 231.604 | 63088.6 | 0.449 | 0.0016 | mg/L | | | | |
| Pb 220.353 | 6449.8 | 0.471 | 0.0039 | mg/L | | | | |
| Sb 206.833 | 16136.4 | 0.521 | 0.0030 | mg/L | | | | |
| Se 196.026 | 3820.8 | 0.271 | 0.0087 | mg/L | | | | |
| Sr 346.446 | 2412.9 | 0.0446 | 0.00144 | mg/L | | | | |
| Sn 189.989 | -369.5 | -0.00807 | 0.000205 | mg/L | | | | |
| Sr 232.236 | 486.4 | -0.0243 | 0.00599 | mg/L | | | | |
| *QC exceeds lower limit for Sr 232.236 Action = Continue | | | | | | | | |
| Tl 377.572 | 5771.7 | 0.00446 | 0.000220 | mg/L | | | | |
| Zn 213.856 | 5603.1 | 0.496 | 0.0039 | mg/L | | | | |
| V 292.402 | 9782.5 | 0.253 | 0.0007 | mg/L | | | | |
| Zn 206.200 | 1339212.1 | 0.426 | 0.0035 | mg/L | | | | |
| B 182.627 | 441.4 | 36.8 | 1.32 | mg/L | | | | |
| B 208.893 | 3133.8 | 22.9 | 0.69 | mg/L | | | | |
| B 208.959 | 6594.6 | -13.7 | 0.15 | mg/L | | | | |
| B 249.773 | 28142.7 | 69.5 | 1.10 | mg/L | | | | |

Mean Data ----------

ID: CCV Seq. No.: 6 Sample No.: 3 A/D Seq: 3
Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.0
Data: Original Date: 9/4/98 11:46:48 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2374466.3 | | | | | | | |
| Ag 328.068 | 269509.3 | 0.382 | 0.0028 | mg/L | | | | |
| Al 237.312 | 2343889.0 | 9.28 | 0.059 | mg/L | | | | |
| As 188.979 | 6150.3 | 0.383 | 0.0004 | mg/L | | | | |
| Ba 230.424 | 527516.4 | 1.974 | 0.0062 | mg/L | | | | |
| Be 234.861 | 120096.7 | 0.0454 | 0.00038 | mg/L | | | | |
| Ca 227.549 | 13412.1 | 9.47 | 0.077 | mg/L | | | | |
| Cd 226.502 | 9859.3 | 0.0496 | 0.00029 | mg/L | | | | |
| Co 228.616 | 42234.5 | 0.201 | 0.0014 | mg/L | | | | |
| Cr 267.716 | 150117.1 | 0.553 | 0.0037 | mg/L | | | | |
| Cu 327.396 | 157988.9 | 0.470 | 0.0042 | mg/L | | | | |
| Fe 261.387 | 164959.0 | 3.91 | 0.030 | mg/L | | | | |
| K 404.721 | 60470.4 | 50.4 | 0.22 | mg/L | | | | |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 99260.5 | 0.998 | 0.0128 | mg/L | | | | |
| Mg 279.079 | 404393.3 | 9.70 | 0.066 | mg/L | | | | |
| Mn 257.610 | 573496.4 | 0.490 | 0.0035 | mg/L | | | | |



514

| | | | |
|---|---|---|---|
| Mn 257.610 | [illegible] | [illegible] | 0.0016 mg/L |
| Mo 202.030 | [illegible] | [illegible] | 0.04 mg/L |
| Na 330.237 | [illegible] | [illegible] | 0.0025 mg/L |
| Ni 231.604 | [illegible] | [illegible] | 0.0031 mg/L |
| Pb 220.353 | [illegible] | [illegible] | 0.001 mg/L |
| Sb 206.833 | [illegible] | [illegible] | [illegible] |
| *RSD exceeds lower limit for Sb 206.833 Percent = [illegible] Action = Continue | | | |
| Se 196.026 | [illegible] | [illegible] | 0.0014 mg/L |
| Si 288.158 | [illegible] | [illegible] | 0.061 mg/L |
| Sn 189.989 | [illegible] | [illegible] | 0.0020 mg/L |
| Sr 421.552 | [illegible] | [illegible] | 0.0074 mg/L |
| Ti 337.281 | [illegible] | [illegible] | 0.0066 mg/L |
| Tl 190.801 | [illegible] | [illegible] | 0.0043 mg/L |
| V 292.402 | [illegible] | [illegible] | 0.0067 mg/L |
| Zn 206.200 | [illegible] | [illegible] | 0.0065 mg/L |
| B 182.591 | [illegible] | [illegible] | 0.096 mg/L |
| P 213.618 | [illegible] | [illegible] | 0.093 mg/L |
| P 214.914 | [illegible] | [illegible] | 0.001 mg/L |
| P 178.287 | [illegible] | [illegible] | 0.053 mg/L |

Mean Data
Id: [illegible]
Sample Qty: 1.0000 g

Seq. No.: 7
Prep. Vol.: [illegible]
Date: Original

Sample No.: 4
1:0 L

A/C Pos: [illegible]
Dilution: [illegible]
Date: [illegible]

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | |
| Ag 328.068 | [illegible] | [illegible] | 0.000035 | mg/L | | | | |
| Al 237.312 | [illegible] | [illegible] | 0.00028 | mg/L | | | | |
| As 189.979 | [illegible] | [illegible] | 0.000261 | mg/L | | | | |
| Ba 230.424 | [illegible] | [illegible] | 0.000027 | mg/L | | | | |
| Be 234.861 | [illegible] | [illegible] | 0.000005 | mg/L | | | | |
| Ca 317.549 | [illegible] | [illegible] | 0.007409 | mg/L | | | | |
| Cd 226.502 | [illegible] | [illegible] | 0.000028 | mg/L | | | | |
| Co 228.616 | [illegible] | [illegible] | 0.000034 | mg/L | | | | |
| Cr 267.716 | [illegible] | [illegible] | 0.000101 | mg/L | | | | |
| Cu 327.396 | [illegible] | [illegible] | 0.000068 | mg/L | | | | |
| Fe 261.187 | [illegible] | [illegible] | 0.000479 | mg/L | | | | |
| K 404.721 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| K 766.491 | [illegible] | [illegible] | 0.011407 | mg/L | | | | |
| Li 460.286 | [illegible] | [illegible] | 0.00160 | mg/L | | | | |
| Mg [illegible] | [illegible] | [illegible] | 0.00013 | mg/L | | | | |
| Mn 257.610 | [illegible] | [illegible] | 0.000005 | mg/L | | | | |
| Mo 202.030 | [illegible] | [illegible] | 0.000020 | mg/L | | | | |
| Na 330.237 | [illegible] | [illegible] | 0.0043 | mg/L | | | | |
| Ni 231.604 | [illegible] | [illegible] | 0.000013 | mg/L | | | | |
| Pb 220.353 | [illegible] | [illegible] | 0.000017 | mg/L | | | | |
| Sb 206.833 | [illegible] | [illegible] | 0.000005 | mg/L | | | | |
| Se 196.026 | [illegible] | [illegible] | 0.000020 | mg/L | | | | |
| Si 288.158 | [illegible] | [illegible] | 0.00086 | mg/L | | | | |
| Sn 189.989 | [illegible] | [illegible] | 0.000002 | mg/L | | | | |
| Sr 421.552 | [illegible] | [illegible] | 0.000486 | mg/L | | | | |
| Ti 337.281 | [illegible] | [illegible] | 0.000004 | mg/L | | | | |
| Tl 190.801 | [illegible] | [illegible] | 0.000037 | mg/L | | | | |
| V 292.402 | [illegible] | [illegible] | 0.000005 | mg/L | | | | |
| Zn 206.200 | [illegible] | [illegible] | 0.000036 | mg/L | | | | |
| B 182.591 | [illegible] | [illegible] | 0.102 | mg/L | | | | |
| P 213.618 | [illegible] | [illegible] | 0.040 | mg/L | | | | |
| P 214.914 | [illegible] | [illegible] | 0.0402 | mg/L | | | | |
| P 178.287 | [illegible] | [illegible] | 0.040 | mg/L | | | | |

Calibration Summary
Method: clptstd Date: 9/4/98 11:51:03 AM

| Element | Stds | Equation | Intercept | Slope | Correlation | Corr. Coeff. |
|---|---|---|---|---|---|---|
| Ag 328.068 | 3 | Linear-thru-Zero | 0.0 | 726441.6 | 0.00000 | 1.000000 |
| Al 237.312 | 3 | Linear-thru-Zero | 0.0 | 20260.8 | 0.00000 | 0.999991 |
| As 188.979 | 3 | Linear-thru-Zero | 0.0 | 14064.4 | 0.00000 | 0.999973 |
| Ba 230.424 | 3 | Linear-thru-Zero | 0.0 | 541779.3 | 0.00000 | 0.999997 |
| Be 234.861 | 3 | Linear | -1636.9 | 2888346.0 | 0.00000 | 0.999744 |
| Ca 227.549 | 3 | Linear | -107.9 | 1410.6 | 0.00000 | 0.999999 |
| Cd 228.802 | 3 | Linear | -5.3 | 182362.6 | 0.00000 | 0.999924 |
| Co 228.616 | 3 | Linear | 151.2 | 209736.4 | 0.00000 | 0.999993 |
| Cr 267.716 | 3 | Linear-thru-Zero | 0.0 | 383917.4 | 0.00000 | 0.999961 |
| Cu 327.396 | 3 | Linear-thru-Zero | 0.0 | 355904.4 | 0.00000 | 0.999997 |
| Fe 261.387 | 3 | Linear | -404.1 | 39724.0 | 0.00000 | 0.999994 |
| K 404.721 | 3 | Linear-thru-Zero | 0.0 | 1199.1 | 0.00000 | 0.999924 |
| K 766.491 | 3 | Linear | 296112.1 | 3511001.7 | 0.00000 | 1.000000 |
| Li 460.286 | 3 | Linear | 480.5 | 94675.6 | 0.00000 | 0.999956 |
| Mg 279.079 | 3 | Linear | -2474.5 | 41925.1 | 0.00000 | 0.999994 |
| Mn 257.610 | 3 | Linear | 1065.2 | 1168752.4 | 0.00000 | 0.999994 |
| Mo 202.030 | 3 | Linear-thru-Zero | 0.0 | 72416.0 | 0.00000 | 1.000000 |
| Na 330.237 | 3 | Linear-thru-Zero | 0.0 | 5945.7 | 0.00000 | 0.999979 |
| Ni 231.604 | 3 | Linear-thru-Zero | 0.0 | 141326.5 | 0.00000 | 0.999991 |
| Pb 220.353 | 3 | Linear | 125.1 | 17945.5 | 0.00000 | 0.999994 |
| Sb 206.833 | 3 | Linear | 5.2 | 29496.5 | 0.00000 | 0.999954 |
| Se 196.026 | 3 | Linear | -97.6 | 12993.5 | 0.00000 | 0.999997 |
| Si 288.158 | 3 | Linear | 40.4 | 53180.3 | 0.00000 | 0.999993 |
| Sn 189.989 | 3 | Linear | 192.6 | 35026.4 | 0.00000 | 0.999994 |
| Sr 421.552 | 3 | Linear | 28.1 | 6506.1 | 0.00000 | 0.999977 |
| Ti 337.280 | 3 | Linear | -560.3 | 1406710.3 | 0.00000 | 1.000000 |
| Tl 190.800 | 3 | Linear-thru-Zero | 0.0 | 22679.9 | 0.00000 | 0.999993 |
| V 292.402 | 3 | Linear | -138.5 | 399737.0 | 0.00000 | 1.000000 |
| Zn 206.200 | 3 | Linear-thru-Zero | 0.0 | 314954.5 | 0.00000 | 0.999974 |
| B 182.587 | 3 | Linear | -30.1 | 22.7 | 0.00000 | 0.997947 |
| B 208.893 | 3 | Linear | 89.8 | 56.4 | 0.00000 | 0.993943 |
| B 208.959 | 3 | Linear | 208.1 | 405.3 | 0.00000 | 0.999993 |
| B 249.773 | 3 | Linear | 29.1 | 410.4 | 0.00000 | 0.999928 |

Method: clptstd
Results: 090498
Sample Info: 090498
Method Description:

IDC: 04ied.inc
Spectra Stored: Yes
User: User1

MCT:
Method Stored: Yes
Date: 9/4/98 11:51:03 AM

Mean Data
ID: 2 PPM CM
Sample Qty: 1.0000 mL

Seq. No.: 1
Prep. Vol.: 1.0 mL
Data: Original

Sample No.: 1

A/C Set: 22
Dilution: 1.0 1.0
Date: 9/4/98 11:54:00 AM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 1891616.1 | | | | | | | 1.71 |
| Ag 328.068 | -102.5 | -0.00015 | 0.000073 | mg/L | -0.00015 | 0.000073 | mg/L | 47.014 |
| Al 237.312 | -492.3 | -0.0195 | 0.00022 | mg/L | -0.0195 | 0.00022 | mg/L | 1.159 |
| As 188.979 | -597.0 | -0.00137 | 0.000179 | mg/L | -0.00137 | 0.000179 | mg/L | 13.031 |
| Ba 230.424 | -454.0 | -0.00094 | 0.000009 | mg/L | -0.00094 | 0.000009 | mg/L | 1.043 |
| Be 234.861 | -568.0 | 0.00037 | 0.000002 | mg/L | 0.00037 | 0.000002 | mg/L | 1.460 |
| Ca 227.549 | -85.3 | 0.0139 | 0.00673 | mg/L | 0.0139 | 0.00673 | mg/L | 48.551 |
| Cd 228.802 | 40.7 | 0.00025 | 0.000019 | mg/L | 0.00025 | 0.000019 | mg/L | 7.625 |
| Co 228.616 | -62.0 | -0.00102 | 0.000005 | mg/L | -0.00102 | 0.000005 | mg/L | 0.459 |
| Cr 267.716 | 795059.4 | 2.07 | 0.017 | mg/L | 2.07 | 0.017 | mg/L | 0.821 |
| Cu 327.396 | 348.2 | -0.00109 | 0.000042 | mg/L | -0.00109 | 0.000042 | mg/L | 3.894 |
| Fe 261.387 | -1360.4 | -0.00569 | 0.000110 | mg/L | -0.00569 | 0.000110 | mg/L | 1.940 |
| K 404.721 | 394.3 | 0.329 | 0.0214 | mg/L | 0.329 | 0.0214 | mg/L | 6.504 |
| K 766.491 | 260292.5 | -0.0102 | 0.00055 | mg/L | -0.0102 | 0.00055 | mg/L | 5.369 |
| Li 460.286 | -1989.4 | -0.0256 | 0.00199 | mg/L | -0.0256 | 0.00199 | mg/L | 7.775 |
| Mg 279.079 | -194.0 | 0.0544 | 0.00036 | mg/L | 0.0544 | 0.00036 | mg/L | 0.704 |
| Mn 257.610 | -410.7 | -0.00126 | 0.000001 | mg/L | -0.00126 | 0.000001 | mg/L | 0.079 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mo 202.030 | 63.3 | 0.00087 | 0.000019 mg/L | 0.00087 | 0.000019 mg/L | [illegible] |
| Na 330.237 | 659.8 | [illegible] | 0.0023 mg/L | [illegible] | 0.0023 mg/L | [illegible] |
| Ni 231.604 | -219.0 | -0.00154 | 0.000069 mg/L | -0.00154 | 0.000069 mg/L | [illegible] |
| Pb 220.353 | 94.1 | -0.00054 | 0.000140 mg/L | -0.00054 | 0.000140 mg/L | [illegible] |
| Sb 206.833 | 1119.3 | 0.0288 | 0.00006 mg/L | 0.0288 | 0.00006 mg/L | [illegible] |
| Se 196.026 | -25.4 | 0.00484 | 0.000103 mg/L | 0.00484 | 0.000103 mg/L | [illegible] |
| Si 288.158 | 180.1 | 0.00263 | 0.000416 mg/L | 0.00263 | 0.000416 mg/L | [illegible] |
| Sn 189.933 | 5.8 | -0.00472 | 0.000027 mg/L | -0.00472 | 0.000027 mg/L | [illegible] |
| Sr 232.235 | 9.6 | -0.00007 | 0.000006 mg/L | -0.00007 | 0.000006 mg/L | [illegible] |
| Ti 337.280 | -701.9 | -0.00007 | 0.000029 mg/L | -0.00007 | 0.000029 mg/L | [illegible] |
| Tl 190.800 | 23.8 | 0.00113 | 0.000031 mg/L | 0.00113 | 0.000031 mg/L | [illegible] |
| V 292.402 | -2686.9 | 0.00490 | 0.000054 mg/L | 0.00490 | 0.000054 mg/L | [illegible] |
| Zn 206.200 | 1248.3 | 0.00723 | 0.000085 mg/L | 0.00723 | 0.000085 mg/L | [illegible] |
| B 182.527 | -9.3 | 1.64 | 0.115 mg/L | 1.64 | 0.115 mg/L | [illegible] |
| B 208.893 | 54.9 | 0.755 | 0.0243 mg/L | 0.755 | 0.0243 mg/L | [illegible] |
| B 206.959 | 392.4 | 0.459 | 0.0044 mg/L | 0.459 | 0.0044 mg/L | [illegible] |
| B 249.773 | 597.0 | 1.39 | 0.096 mg/L | 1.39 | 0.096 mg/L | [illegible] |

Mean Data ----------
ID: 2 PPM TI
Sample Qty: 1.0000 mL
Seq. No.: 2
Prep. Vol.:
Data: Original
Sample No.: 2
1.0 mL
A/S Pos: 23
Dilution: 1.0: 1.0
Date: 9/4/98 11:59:[illegible] PM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 1795134.2 | | | | | | | [illegible] |
| Ag 328.068 | -73.3 | -0.00010 | 0.000092 | mg/L | -0.00010 | 0.000092 | mg/L | [illegible] |
| Al 237.312 | -512.3 | -0.0203 | 0.00006 | mg/L | -0.0203 | 0.00006 | mg/L | [illegible] |
| As 188.979 | 114.4 | 0.00699 | 0.000113 | mg/L | 0.00699 | 0.000113 | mg/L | [illegible] |
| Ba 230.424 | -440.5 | -0.00092 | 0.000014 | mg/L | -0.00092 | 0.000014 | mg/L | [illegible] |
| Be 234.861 | -552.4 | 0.00036 | 0.000001 | mg/L | 0.00036 | 0.000001 | mg/L | [illegible] |
| Ca 227.549 | -97.1 | 0.00761 | 0.003979 | mg/L | 0.00761 | 0.003979 | mg/L | [illegible] |
| Cd 226.502 | 40.6 | 0.00025 | 0.000016 | mg/L | 0.00025 | 0.000016 | mg/L | [illegible] |
| Co 228.616 | 656.9 | -0.00112 | 0.000007 | mg/L | -0.00112 | 0.000007 | mg/L | [illegible] |
| Cr 267.716 | 1098.4 | 0.00264 | 0.000034 | mg/L | 0.00264 | 0.000034 | mg/L | [illegible] |
| Cu 327.396 | -451.5 | -0.00127 | 0.000064 | mg/L | -0.00127 | 0.000064 | mg/L | [illegible] |
| Fe 261.387 | -642.0 | -0.00600 | 0.000369 | mg/L | -0.00600 | 0.000369 | mg/L | [illegible] |
| K 404.721 | 404.1 | 0.337 | 0.1349 | mg/L | 0.337 | 0.1349 | mg/L | [illegible] |
| K 766.491 | 274438.7 | -0.00617 | 0.001392 | mg/L | -0.00617 | 0.001392 | mg/L | [illegible] |
| Li 460.286 | -1982.4 | -0.0215 | 0.00323 | mg/L | -0.0215 | 0.00323 | mg/L | [illegible] |
| Mg 279.079 | -267.1 | 0.0527 | 0.00038 | mg/L | 0.0527 | 0.00038 | mg/L | [illegible] |
| Mn 257.610 | -428.5 | -0.00128 | 0.000003 | mg/L | -0.00128 | 0.000003 | mg/L | [illegible] |
| Mo 202.030 | 23.5 | 0.00249 | 0.000008 | mg/L | 0.00249 | 0.000008 | mg/L | [illegible] |
| Na 330.237 | -3196.0 | 0.151 | 0.0239 | mg/L | 0.151 | 0.0239 | mg/L | [illegible] |
| Ni 231.604 | -224.2 | -0.00123 | 0.000027 | mg/L | -0.00123 | 0.000027 | mg/L | [illegible] |
| Pb 220.353 | 76.1 | -0.00134 | 0.000197 | mg/L | -0.00134 | 0.000197 | mg/L | [illegible] |
| Sb 206.833 | 173.3 | 0.00590 | 0.000219 | mg/L | 0.00590 | 0.000219 | mg/L | [illegible] |
| Se 196.026 | -38.6 | 0.00382 | 0.000056 | mg/L | 0.00382 | 0.000056 | mg/L | [illegible] |
| Si 288.158 | 1074.1 | 0.0232 | 0.00004 | mg/L | 0.0232 | 0.00004 | mg/L | [illegible] |
| Sn 189.933 | -78.9 | -0.00696 | 0.000050 | mg/L | -0.00696 | 0.000050 | mg/L | [illegible] |
| Sr 232.235 | 18.7 | -0.00225 | 0.000523 | mg/L | -0.00225 | 0.000523 | mg/L | [illegible] |
| Ti 337.280 | 3169297.5 | 1.95 | 0.012 | mg/L | 1.95 | 0.012 | mg/L | [illegible] |
| Tl 190.800 | 52.2 | 0.00821 | 0.001811 | mg/L | 0.00821 | 0.001811 | mg/L | [illegible] |
| V 292.402 | 174.2 | 0.00078 | 0.000017 | mg/L | 0.00078 | 0.000017 | mg/L | [illegible] |
| Zn 206.200 | 2170.9 | 0.00685 | 0.000021 | mg/L | 0.00685 | 0.000021 | mg/L | [illegible] |
| B 182.527 | -12.6 | 1.39 | 0.093 | mg/L | 1.39 | 0.093 | mg/L | [illegible] |
| B 208.893 | 150.4 | 1.30 | 0.100 | mg/L | 1.30 | 0.100 | mg/L | [illegible] |
| B 206.959 | 398.7 | 0.455 | 0.0227 | mg/L | 0.455 | 0.0227 | mg/L | [illegible] |
| B 249.773 | 576.6 | 1.33 | 0.005 | mg/L | 1.33 | 0.005 | mg/L | [illegible] |

Mean Data ----------
ID: 2 PPM V
Sample Qty: 1.0000 mL
Seq. No.: 3
Prep. Vol.:
Data: Original
Sample No.: 3
1.0 mL
A/S Pos: 24
Dilution: 1.0: 1.0
Date: 9/4/98 12:03:07 PM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 1858399.9 | | | | | | | [illegible] |
| Ag 328.068 | -153.8 | -0.00022 | 0.000001 | mg/L | -0.00022 | 0.000001 | mg/L | [illegible] |
| Al 237.312 | -560.0 | -0.0222 | 0.00043 | mg/L | -0.0222 | 0.00043 | mg/L | [illegible] |
| As 188.979 | -7.7 | -0.00047 | 0.000270 | mg/L | -0.00047 | 0.000270 | mg/L | [illegible] |

Method: clpsstd

| | | | | | | |
|---|---|---|---|---|---|---|
| Ba 230.424 | -435.3 | -0.00075 | 0.000015 mg/l | -0.00079 | 0.000016 mg/l | |
| Be 234.861 | +342.4 | [illegible] | [illegible] | [illegible] | [illegible] | |
| Ca [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Cd [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Co [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Cr [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Cu [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Fe [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| K 404.721 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| K 766.491 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Li 460.289 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Mg [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Mn 257.610 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Mo 202.030 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Na 330.237 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Ni 231.604 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Pb 220.353 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Sb 206.833 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Se 196.026 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Si 288.158 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Sn 189.933 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Sr 232.235 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Ti 337.280 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Tl 190.800 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| V 292.402 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| Zn 206.200 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| B 182.527 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| B 208.893 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| B 208.959 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |

Mean Data
ID: 0 PPM MO
Sample Qty: 1.0000 mL

Seq. No.: 4
Prep. Vol.:
Data: Original

Sample No.: 4
1.0 mL

A/S Pos: 05
Dilution:
Date: 9/4/96

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units |
|---|---|---|---|---|---|---|---|
| Y 361.1[illegible] | 1601396.4 | | | | | | |
| Ag 328.068 | [illegible] | -0.00016 | 0.000057 mg/l | | -0.00016 | 0.000057 mg/l | |
| Al [illegible] | [illegible] | -0.0243 | 0.00082 mg/l | | -0.0243 | 0.00082 mg/l | |
| As [illegible] | [illegible] | 0.00044 | 0.000063 mg/l | | 0.00044 | 0.000063 mg/l | |
| Ba 230.424 | 2929.4 | 0.00541 | 0.000083 mg/l | | 0.00541 | 0.000083 mg/l | |
| Be 234.861 | [illegible] | 0.00020 | 0.000006 mg/l | | 0.00021 | 0.000006 mg/l | |
| Ca [illegible] | -96.4 | 0.00864 | 0.001073 mg/l | | 0.00864 | 0.001073 mg/l | |
| Cd [illegible] | 45.4 | 0.00028 | 0.000008 mg/l | | 0.00028 | 0.000008 mg/l | |
| Co [illegible] | [illegible] | 0.00009 | 0.000096 mg/l | | 0.00009 | 0.000096 mg/l | |
| Cr [illegible] | 941.8 | -0.00049 | 0.000038 mg/l | | -0.00044 | 0.000038 mg/l | |
| Cu [illegible] | [illegible] | 0.00245 | 0.000014 mg/l | | 0.00245 | 0.000014 mg/l | |
| Fe [illegible] | [illegible] | -0.00006 | 0.000108 mg/l | | -0.00006 | 0.000108 mg/l | |
| K 404.721 | [illegible] | 0.00402 | 0.0094 mg/l | | 0.00402 | 0.0094 mg/l | |
| K 766.491 | [illegible] | 0.0004 | 0.000263 mg/l | | 0.0004 | 0.000263 mg/l | |
| Li 460.289 | 261[illegible] | -0.00988 | 0.000155 mg/l | | -0.00988 | 0.000155 mg/l | |
| Mg [illegible] | [illegible] | 0.0258 | 0.00066 mg/l | | 0.0258 | 0.00066 mg/l | |
| Mn 257.610 | [illegible] | 0.0176 | 0.000003 mg/l | | 0.0176 | 0.000003 mg/l | |
| Mo 202.030 | [illegible] | -0.000129 | 0.012 mg/l | | -0.000129 | 0.012 mg/l | |
| Na 330.237 | -433.4 | 0.07 | 0.0064 mg/l | | 0.07 | 0.0064 mg/l | |
| Ni 231.604 | 149778.0 | 0.0101 | 0.000031 mg/l | | 0.0101 | 0.000031 mg/l | |
| Pb 220.353 | 637.4 | 0.0064 | 0.000445 mg/l | | 0.0064 | 0.000445 mg/l | |
| Sb 206.833 | -226.4 | -0.00160 | 0.000063 mg/l | | -0.00160 | 0.000063 mg/l | |
| Se 196.026 | 16.6 | -0.00126 | 0.000123 mg/l | | -0.00126 | 0.000123 mg/l | |
| Si 288.158 | [illegible] | 0.00937 | 0.00003 mg/l | | 0.00937 | 0.00003 mg/l | |
| Sn 189.933 | -37.4 | 0.00391 | 0.000154 mg/l | | 0.00391 | 0.000154 mg/l | |
| Sr 232.235 | [illegible] | 0.0195 | 0.00119 mg/l | | 0.0195 | 0.00119 mg/l | |
| Ti 337.280 | 6.4 | -0.00473 | 0.000089 mg/l | | -0.00473 | 0.000089 mg/l | |
| Tl 190.800 | 231.4 | -0.0199 | 0.000055 mg/l | | -0.0199 | 0.000055 mg/l | |
| V 292.402 | -179.2 | -0.00022 | 0.000036 mg/l | | -0.00022 | 0.000036 mg/l | |
| Zn 206.200 | -28.6 | -0.00113 | 0.000090 mg/l | | -0.00113 | 0.000090 mg/l | |
| B 182.527 | -554.4 | -0.00104 | 0.0800 mg/l | | -0.00104 | 0.0800 mg/l | |
| B 208.893 | 2033.6 | 0.00705 | 0.3607 mg/l | | 0.00705 | 0.3607 mg/l | |
| B 208.959 | -34.4 | -0.342 | 0.02 mg/l | | -0.342 | 0.02 mg/l | |
| | 92.2 | 0.593 | | | 0.593 | | |
| | 5948.4 | 14.1 | | | 14.1 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 5 249.773 | 340.8 | 0.759 | 0.0073 mg/L | 0.759 | 0.0073 mg/L | 0.4[illegible] |

Best Available Copy

Calibration Summary
Method: clptatd Date: 9/4/98 12:10:41 PM

| Element | Stds | Equation | Intercept | Slope | Curvature | Corr. Coeff. |
|---|---|---|---|---|---|---|
| Ag 328.068 | 3 | Linear-thru-Zero | 0.0 | 706441.2 | 0.00000 | 0.999917 |
| Al 237.312 | 3 | Linear-thru-Zero | 0.0 | 25203.8 | 0.00000 | 0.999891 |
| As 188.979 | 3 | Linear-thru-Zero | 0.0 | 16054.4 | 0.00000 | 0.999971 |
| Ba 233.424 | 3 | Linear-thru-Zero | 0.0 | 341779.3 | 0.00000 | 0.999947 |
| Be 234.861 | 3 | Linear | -1636.9 | 2888346.0 | 0.00000 | 0.999756 |
| Ca 227.549 | 3 | Linear | -107.9 | 1410.6 | 0.00000 | 0.999[illegible] |
| Cd 226.502 | 3 | Linear | -5.3 | 182362.6 | 0.00000 | 0.999924 |
| Co 228.616 | 3 | Linear | 151.2 | 209736.4 | 0.00000 | 0.999995 |
| Cr 267.716 | 3 | Linear-thru-Zero | 0.0 | 383917.1 | 0.00000 | 0.999962 |
| Cu 327.396 | 3 | Linear-thru-Zero | 0.0 | 255904.1 | 0.00000 | 0.999997 |
| Fe 261.387 | 3 | Linear | -404.1 | 39724.6 | 0.00000 | 0.999996 |
| K 404.721 | 3 | Linear-thru-Zero | 0.0 | 3199.1 | 0.00000 | 0.999964 |
| K 766.491 | 3 | Linear | 296112.1 | 3512001.7 | 0.00000 | 1.000000 |
| Li 460.286 | 3 | Linear | 482.5 | 96675.6 | 0.00000 | 0.999856 |
| Mg 279.079 | 3 | Linear | -2474.5 | 41925.1 | 0.00000 | 0.999966 |
| Mn 257.610 | 3 | Linear | 1065.2 | 1168753.4 | 0.00000 | 0.999984 |
| Mo 202.030 | 3 | Linear-thru-Zero | 0.0 | 72416.0 | 0.00000 | 0.999987 |
| Na 330.237 | 3 | Linear-thru-Zero | 0.0 | 5945.7 | 0.00000 | 0.999778 |
| Ni 231.604 | 3 | Linear-thru-Zero | 0.0 | 141326.6 | 0.00000 | 0.999981 |
| Pb 220.353 | 3 | Linear | 115.1 | 17948.5 | 0.00000 | 0.999954 |
| Sb 206.833 | 3 | Linear | 5.2 | 28496.5 | 0.00000 | 0.999954 |
| Se 196.026 | 3 | Linear | -67.5 | 12990.5 | 0.00000 | 0.999997 |
| Si 288.158 | 3 | Linear | 40.4 | 53190.2 | 0.00000 | 0.999985 |
| Sn 189.933 | 3 | Linear | 192.9 | 39026.4 | 0.00000 | 0.999932 |
| Sr 232.236 | 3 | Linear | 28.4 | 5508.1 | 0.00000 | 0.999977 |
| Ti 337.280 | 3 | Linear | -580.3 | 1626710.3 | 0.00000 | 1.000000 |
| Tl 190.801 | 3 | Linear-thru-Zero | 0.0 | 20979.8 | 0.00000 | 0.999853 |
| V 292.402 | 3 | Linear | -138.5 | 398737.0 | 0.00000 | [illegible] |
| Zn 206.200 | 3 | Linear-thru-Zero | 0.0 | 316804.5 | 0.00000 | [illegible] |
| B 182.587 | 3 | Linear | -30.1 | 22.7 | 0.00000 | 0.997139 |
| B 208.892 | 3 | Linear | 56.8 | 56.4 | 0.00000 | 0.999048 |
| B 208.959 | 3 | Linear | 225.1 | 405.3 | 0.00000 | 0.994125 |
| B 249.773 | 3 | Linear | 29.2 | 410.4 | 0.00000 | 0.941916 |

Method: clptatd
Results: 090498
Sample Info: 090498
Method Description:

IEC: 041ec.iec
Spectra Stored: Yes
User: Guest

MCF:
Method Stored: Yes
Date: 9/4/98 12:08:42 PM

Mean Data
ID: 2 PPM MM
Sample Qty: 1.0000 ml

Seq. No.: 1
Prep. Vol.: 1.0 ml
Date: Original

Sample No.: 1

A/S Pos: 06
Dilution: 1.0
Date: 9/4/98 12:10:29 PM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 361.073 | 1910543.7 | | | | | | | [illegible] |
| Ag 328.068 | -78.8 | -0.00011 | 0.000017 | mg/L | -0.00011 | 0.000017 | mg/L | [illegible] |
| Al 237.312 | -426.1 | -0.0169 | 0.00010 | mg/L | -0.0169 | 0.00010 | mg/L | [illegible] |
| As 188.979 | -0.2 | -0.00013 | 0.000259 | mg/L | -0.00013 | 0.000259 | mg/L | 196.[illegible] |
| Ba 233.424 | -423.0 | -0.00078 | 0.000077 | mg/L | -0.00078 | 0.000077 | mg/L | [illegible] |
| Be 234.861 | -837.1 | 0.00039 | 0.000000 | mg/L | 0.00039 | 0.000000 | mg/L | [illegible] |
| Ca 227.549 | -80.6 | 0.0198 | 0.00460 | mg/L | 0.0198 | 0.00460 | mg/L | [illegible] |
| Cd 226.502 | 36.4 | 0.00023 | 0.000004 | mg/L | 0.00023 | 0.000004 | mg/L | [illegible] |
| Co 228.616 | -93.4 | -0.00116 | 0.000016 | mg/L | -0.00116 | 0.000016 | mg/L | [illegible] |
| Cr 267.716 | 1143.0 | 0.00299 | 0.000045 | mg/L | 0.00299 | 0.000045 | mg/L | [illegible] |
| Cu 327.396 | 179.1 | 0.00050 | 0.000007 | mg/L | 0.00050 | 0.000007 | mg/L | [illegible] |
| Fe 261.387 | -679.9 | -0.00694 | 0.000322 | mg/L | -0.00694 | 0.000322 | mg/L | [illegible] |
| K 404.721 | 388.2 | 0.324 | 0.0106 | mg/L | 0.324 | 0.0106 | mg/L | [illegible] |
| K 766.491 | 259154.5 | -0.0105 | 0.00255 | mg/L | -0.0105 | 0.00255 | mg/L | [illegible] |
| Li 460.286 | -2119.6 | -0.0263 | 0.00056 | mg/L | -0.0263 | 0.00056 | mg/L | [illegible] |
| Mg 279.079 | -963.1 | 0.0363 | 0.00063 | mg/L | 0.0363 | 0.00063 | mg/L | [illegible] |
| Mn 257.610 | 2348534.3 | 2.01 | 0.001 | mg/L | 2.01 | 0.001 | mg/L | [illegible] |



520

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mo 202.031 | [illegible] | 0.00439 | 0.000703 mg/L | | 0.00439 | 0.000703 mg/L | | [illegible] |
| Na 330.237 | [illegible] | [illegible] | 0.0030 mg/L | | [illegible] | [illegible] mg/L | | [illegible] |
| Ni 231.604 | [illegible] | [illegible] | 0.000470 mg/L | | -0.00144 | [illegible] mg/L | | [illegible] |
| Pb 220.353 | [illegible] | [illegible] | 0.000422 mg/L | | [illegible] | [illegible] mg/L | | [illegible] |
| Sb 206.833 | [illegible] | [illegible] | 0.000370 mg/L | | [illegible] | [illegible] mg/L | | [illegible] |
| Se 196.026 | [illegible] | [illegible] | 0.000226 mg/L | | [illegible] | [illegible] mg/L | | [illegible] |
| Si 288.158 | [illegible] | [illegible] | [illegible] mg/L | | [illegible] | [illegible] mg/L | | [illegible] |
| Sn 189.933 | [illegible] | [illegible] | 0.000084 mg/L | | [illegible] | [illegible] mg/L | | [illegible] |
| Sr 232.035 | [illegible] | [illegible] | 0.000703 mg/L | | [illegible] | [illegible] mg/L | | [illegible] |
| Tl 377.572 | [illegible] | [illegible] | 0.000032 mg/L | | [illegible] | [illegible] mg/L | | [illegible] |
| Zn 213.856 | [illegible] | [illegible] | 0.000281 mg/L | | [illegible] | [illegible] mg/L | | [illegible] |
| V 292.402 | [illegible] | [illegible] | 0.000029 mg/L | | [illegible] | [illegible] mg/L | | [illegible] |
| Zn 206.200 | [illegible] | 0.00654 | 0.000062 mg/L | | 0.00654 | 0.000062 mg/L | | [illegible] |
| B 182.627 | [illegible] | 2.45 | 0.067 mg/L | | 2.45 | 0.067 mg/L | | [illegible] |
| B 208.893 | [illegible] | [illegible] | 0.002 mg/L | | [illegible] | 0.002 mg/L | | [illegible] |
| B 208.959 | [illegible] | 0.375 | 0.0029 mg/L | | 0.375 | 0.0029 mg/L | | [illegible] |
| B 249.773 | [illegible] | [illegible] | 0.016 mg/L | | [illegible] | 0.016 mg/L | | [illegible] |

Best Available Copy

Calibration Summary
Method: clptstd Date: 9/4/98 1:39:11

| Element | Std | Equation | Intercept | Slope | Curvature | Corr. Coeff. |
|---|---|---|---|---|---|---|
| Ag 328.068 | 3 | Linear-thru-Zero | 0.0 | 706441.2 | 0.00000 | 1.000000 |
| Al 237.312 | 3 | Linear-thru-Zero | 0.0 | 25263.9 | 0.00000 | 1.000000 |
| As 189.979 | 3 | Linear-thru-Zero | 0.0 | 16364.4 | 0.00000 | 1.000000 |
| Ba 230.424 | 3 | Linear-thru-Zero | 0.0 | 5417779.3 | 0.00000 | 1.000000 |
| Be 234.861 | 3 | Linear | -1434.9 | 2988346.0 | 0.00000 | 1.000000 |
| Ca 227.549 | 3 | Linear | -107.9 | 1416.6 | 0.00000 | 1.000000 |
| Cd 228.802 | 3 | Linear | -5.3 | 182362.6 | 0.00000 | 1.000000 |
| Co 228.616 | 3 | Linear | 161.2 | 209736.4 | 0.00000 | 1.000000 |
| Cr 267.716 | 3 | Linear-thru-Zero | 0.0 | 383917.1 | 0.00000 | 1.000000 |
| Cu 327.396 | 3 | Linear-thru-Zero | 0.0 | 355904.1 | 0.00000 | 1.000000 |
| Fe 261.187 | 3 | Linear | -404.1 | 39724.6 | 0.00000 | 1.000000 |
| K 404.721 | 3 | Linear-thru-Zero | 0.0 | 1199.1 | 0.00000 | 1.000000 |
| K 766.491 | 3 | Linear | 296112.1 | 3812001.7 | 0.00000 | 1.000000 |
| Li 460.286 | 3 | Linear | 492.5 | 96075.8 | 0.00000 | 1.000000 |
| Mg 279.079 | 3 | Linear | -2474.5 | 41926.1 | 0.00000 | 1.000000 |
| Mn 257.610 | 3 | Linear | 1065.2 | 1168750.4 | 0.00000 | 1.000000 |
| Mo 202.030 | 3 | Linear-thru-Zero | 0.0 | 72416.0 | 0.00000 | 1.000000 |
| Na 330.237 | 3 | Linear-thru-Zero | 0.0 | 5945.7 | 0.00000 | 1.000000 |
| Ni 231.604 | 3 | Linear-thru-Zero | 0.0 | 141324.6 | 0.00000 | 1.000000 |
| Pb 220.353 | 3 | Linear | 126.1 | 17945.5 | 0.00000 | 1.000000 |
| Sb 206.833 | 3 | Linear | 5.2 | 28496.6 | 0.00000 | 1.000000 |
| Se 196.026 | 3 | Linear | -67.9 | 12993.5 | 0.00000 | 1.000000 |
| Si 288.158 | 3 | Linear | 40.4 | 53190.2 | 0.00000 | 1.000000 |
| Sn 189.933 | 3 | Linear | 192.9 | 39026.4 | 0.00000 | 1.000000 |
| Sr 232.236 | 3 | Linear | 28.1 | 5508.1 | 0.00000 | 1.000000 |
| Ti 337.280 | 3 | Linear | -590.3 | 1626710.3 | 0.00000 | 1.000000 |
| Tl 190.801 | 3 | Linear-thru-Zero | 0.0 | 20579.8 | 0.00000 | 1.000000 |
| V 292.402 | 3 | Linear | -139.5 | 398737.0 | 0.00000 | 1.000000 |
| Zn 206.200 | 3 | Linear-thru-Zero | 0.0 | 316904.5 | 0.00000 | 1.000000 |
| B 182.577 | 3 | Linear | -80.1 | 122.7 | 0.00000 | 1.000000 |
| B 208.893 | 3 | Linear | 58.8 | 56.4 | 0.00000 | 1.000000 |
| B 208.959 | 3 | Linear | 215.1 | 408.3 | 0.00000 | 1.000000 |
| B 249.773 | 3 | Linear | 29.1 | 412.4 | 0.00000 | 1.000000 |

Method: clptstd
Results: 090498
Sample Info: 090498
Method Description:

ICS: ccleo.ics
Spectra Stored: Yes
User: User1

MCF:
Method Stored: Yes
Date: 9/4/98 1:39:10 PM

Mean Data
ID: PBC N/WG45010
Sample Qty: 1.0000 mL

Seq. No.: 1 Sample No.: 1
Prep. Vol.: 1.0 mL
Data: Original

A/C Pos: 27
Dilution: 1.0: 1.0
Date: 9/4/98 1:41:03 PM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 1608151.5 | | | | | | | 1.56% |
| Ag 328.068 | -112.1 | -0.00016 | 0.000126 | mg/L | -0.00016 | 0.000126 | mg/L | -79.07% |
| Al 237.312 | 151.0 | 0.00598 | 0.000297 | mg/L | 0.00598 | 0.000297 | mg/L | 4.97% |
| As 189.979 | -4.5 | -0.00052 | 0.000118 | mg/L | -0.00052 | 0.000118 | mg/L | 22.63% |
| Ba 230.424 | -331.4 | -0.00061 | 0.000003 | mg/L | -0.00061 | 0.000003 | mg/L | 0.42% |
| Be 234.861 | -619.1 | 0.00035 | 0.000003 | mg/L | 0.00035 | 0.000003 | mg/L | 1.79% |
| Ca 227.549 | -2.3 | 0.0749 | 0.00508 | mg/L | 0.0749 | 0.00508 | mg/L | 6.79% |
| Cd 228.802 | 69.1 | 0.00041 | 0.000005 | mg/L | 0.00041 | 0.000005 | mg/L | 1.35% |
| Co 228.616 | -109.2 | -0.00124 | 0.000002 | mg/L | -0.00124 | 0.000002 | mg/L | 0.16% |
| Cr 267.716 | 2350.1 | 0.00620 | 0.000811 | mg/L | 0.00620 | 0.000811 | mg/L | 13.08% |
| Cu 327.396 | 505.5 | 0.00142 | 0.000004 | mg/L | 0.00142 | 0.000004 | mg/L | 0.29% |
| Fe 261.187 | 338.3 | 0.0187 | 0.00001 | mg/L | 0.0187 | 0.00001 | mg/L | 0.07% |
| K 404.721 | 426.6 | 0.356 | 0.0050 | mg/L | 0.356 | 0.0050 | mg/L | 1.41% |
| K 766.491 | 307296.7 | 0.00318 | 0.001229 | mg/L | 0.00318 | 0.001229 | mg/L | 38.61% |
| Li 460.286 | -2310.4 | -0.0289 | 0.00091 | mg/L | -0.0289 | 0.00091 | mg/L | 3.15% |
| Mg 279.079 | -2.6 | 0.0590 | 0.00001 | mg/L | 0.0590 | 0.00001 | mg/L | 0.01% |
| Mn 257.610 | 56.9 | -0.00086 | 0.000010 | mg/L | -0.00086 | 0.000010 | mg/L | 1.11% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mo 202.031 | 204.1 | 0.00280 | 0.000102 mg/l | 0.00280 | 0.000102 mg/l | | |
| Na 330.237 | 856.5 | 0.144 | 0.0002 mg/l | 0.144 | 0.0002 mg/l | | |
| Ni 221.604 | [illegible] | -0.00160 | 0.000069 mg/l | -0.00160 | 0.000069 mg/l | | |
| Pb 220.353 | [illegible] | -0.00012 | 0.000016 mg/l | -0.00012 | 0.000016 mg/l | | |
| Sb 206.833 | [illegible] | 0.00482 | 0.000013 mg/l | 0.00482 | 0.000013 mg/l | | |
| Se 196.026 | [illegible] | 0.00107 | 0.000001 mg/l | 0.00107 | 0.000001 mg/l | | |
| Si 288.158 | [illegible] | 0.0259 | 0.00072 mg/l | 0.0259 | 0.00072 mg/l | | |
| Sn 189.933 | [illegible] | 0.00103 | 0.000405 mg/l | 0.00103 | 0.000405 mg/l | | |
| Sr 282.816 | [illegible] | -0.00100 | 0.000810 mg/l | -0.00100 | 0.000810 mg/l | | |
| Ti 337.280 | [illegible] | 0.00001 | 0.000001 mg/l | 0.00001 | 0.000001 mg/l | | |
| Tl 190.800 | 815.9 | 0.0391 | 0.00643 mg/l | 0.0391 | 0.00643 mg/l | | |
| V 292.402 | [illegible] | 0.00024 | 0.000004 mg/l | 0.00024 | 0.000004 mg/l | | |
| Zn 206.200 | 4620.9 | 0.0146 | 0.00011 mg/l | 0.0146 | 0.00011 mg/l | | |
| B 182.591 | [illegible] | 1.75 | 0.109 mg/l | 1.75 | 0.109 mg/l | | |
| B 208.893 | [illegible] | 2.12 | 0.047 mg/l | 2.12 | 0.047 mg/l | | |
| B 208.959 | [illegible] | 0.679 | 0.0135 mg/l | 0.679 | 0.0135 mg/l | | |
| B 249.773 | [illegible] | 1.81 | 0.038 mg/l | 1.81 | 0.038 mg/l | | |

Calibration Summary
Method: clptsrd Date: 9/4/98 1:43:47 PM

| Element | Conc | Equation | Intercept | Slope | Correlation | Corr. Coeff. |
|---|---|---|---|---|---|---|
| Ag 328.068 | 3 | Linear-thru-Zero | 0.0 | 706441.2 | 0.00000 | 1.000000 |
| Al 237.312 | 3 | Linear-thru-Zero | 0.0 | 25263.9 | 0.00000 | 1.000000 |
| As 189.979 | 3 | Linear-thru-Zero | 0.0 | 16083.4 | 0.00000 | 1.000000 |
| Ba 230.424 | 3 | Linear-thru-Zero | 0.0 | 541779.3 | 0.00000 | 1.000000 |
| Be 234.861 | 3 | Linear | -1636.9 | 2985346.0 | 0.00000 | 1.000000 |
| Ca 227.549 | 3 | Linear | -107.9 | 1410.6 | 0.00000 | 1.000000 |
| Cd 226.502 | 3 | Linear | -5.3 | 192362.6 | 0.00000 | 1.000000 |
| Co 228.616 | 3 | Linear | 151.2 | 209736.4 | 0.00000 | 1.000000 |
| Cr 267.716 | 3 | Linear-thru-Zero | 0.0 | 383917.1 | 0.00000 | 1.000000 |
| Cu 327.396 | 3 | Linear-thru-Zero | 0.0 | 355904.1 | 0.00000 | 1.000000 |
| Fe 261.387 | 3 | Linear | -404.1 | 39724.6 | 0.00000 | 1.000000 |
| K 404.721 | 3 | Linear-thru-Zero | 0.0 | 2199.1 | 0.00000 | 0.999914 |
| K 766.491 | 3 | Linear | 296112.1 | 3511001.7 | 0.00000 | 1.000000 |
| Li 460.286 | 3 | Linear | 482.5 | 96675.8 | 0.00000 | 1.000000 |
| Mg 279.079 | 3 | Linear | -2474.5 | 41925.1 | 0.00000 | 1.000000 |
| Mn 257.610 | 3 | Linear | 1065.2 | 1168752.4 | 0.00000 | 1.000000 |
| Mo 202.031 | 3 | Linear-thru-Zero | 0.0 | 72416.0 | 0.00000 | 1.000000 |
| Na 330.237 | 3 | Linear-thru-Zero | 0.0 | 5945.7 | 0.00000 | 0.999774 |
| Ni 231.604 | 3 | Linear-thru-Zero | 0.0 | 141326.5 | 0.00000 | 1.000000 |
| Pb 220.353 | 3 | Linear | 125.1 | 17948.5 | 0.00000 | 0.999984 |
| Sb 206.833 | 3 | Linear | 5.2 | 29496.5 | 0.00000 | 1.000000 |
| Se 196.026 | 3 | Linear | -87.8 | 12632.5 | 0.00000 | 1.000000 |
| Si 288.158 | 3 | Linear | 40.4 | 53190.2 | 0.00000 | 1.000000 |
| Sn 189.933 | 3 | Linear | 192.9 | 39026.4 | 0.00000 | 0.999932 |
| Sr 232.236 | 3 | Linear | 29.1 | 5508.1 | 0.00000 | 1.000000 |
| Ti 337.280 | 3 | Linear | -560.3 | 1626716.3 | 0.00000 | 1.000000 |
| Tl 190.803 | 3 | Linear-thru-Zero | 0.0 | 209779.9 | 0.00000 | 1.000000 |
| V 292.402 | 3 | Linear | -139.8 | 398737.3 | 0.00000 | 1.000000 |
| Zn 206.200 | 3 | Linear-thru-Zero | 0.0 | 316804.5 | 0.00000 | 1.000000 |
| B 182.587 | 3 | Linear | -21.1 | 12.7 | 0.00000 | 1.000000 |
| B 208.893 | 3 | Linear | 55.8 | 56.4 | 0.00000 | 1.000000 |
| B 208.959 | 3 | Linear | 230.1 | 407.0 | 0.00000 | 1.000000 |
| B 249.773 | 3 | Linear | 29.1 | 410.4 | 0.00000 | 1.000000 |

Method: clptsrd
Results: 090498
Sample Info: 090498
Method Description:

IDC: dilected
Spectra Stored: Yes
User: User1

MDF:
Method Stored: Yes
Date: 9/4/98 1:43:47 PM

Mean Data
ID: 1000 X .5
Sample Qty: 1.0000 ml

Seq. No.: 1 Sample No.: 1
Prep. Vol.: 1.0 ml
Data: Original

A/C Pos: 0+
Dilution: 0.01 210.0
Date: 9/4/98 1:45:41 PM

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2174452.4 | | | | | | | 1.37% |
| Ag 328.068 | 64376.9 | 0.0911 | 0.00065 | mg/L | 9.11 | 0.065 | mg/L | 1.72% |
| Al 237.312 | 156026.3 | 6.19 | 0.033 | mg/L | 619 | 3.3 | mg/L | 1.60% |
| As 189.979 | 7561.4 | 0.469 | 0.0010 | mg/L | 46.9 | 0.10 | mg/L | 1.01% |
| Ba 230.424 | 2501134.9 | 4.65 | 0.027 | mg/L | 465 | 2.7 | mg/L | 1.58% |
| Be 234.861 | 1272232.2 | 0.441 | 0.0020 | mg/L | 44.1 | 0.20 | mg/L | 1.21% |
| Ca 227.549 | 6696.6 | 4.83 | 0.000 | mg/L | 483 | 0.0 | mg/L | 0.00% |
| Cd 226.502 | 84146.3 | 0.461 | 0.0008 | mg/L | 46.1 | 0.08 | mg/L | 1.68% |
| Co 228.616 | 104763.5 | 0.499 | 0.0005 | mg/L | 49.9 | 0.05 | mg/L | 1.01% |
| Cr 267.716 | 192114.6 | 0.501 | 0.0001 | mg/L | 50.1 | 0.01 | mg/L | 0.20% |
| Cu 327.396 | 164214.0 | 0.461 | 0.0046 | mg/L | 46.1 | 0.46 | mg/L | 1.00% |
| Fe 261.387 | 37375.1 | 0.964 | 0.0027 | mg/L | 96.4 | 0.27 | mg/L | 0.28% |
| K 404.721 | 29197.1 | 24.3 | 0.18 | mg/L | 2430 | 17.8 | mg/L | 0.73% |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 605629.6 | 6.25 | 0.040 | mg/L | 625 | 4.0 | mg/L | 1.64% |
| Mg 279.079 | 196571.9 | 4.75 | 0.003 | mg/L | 475 | 0.3 | mg/L | 0.07% |
| Mn 257.610 | 581964.8 | 0.497 | 0.0029 | mg/L | 49.7 | 0.29 | mg/L | 0.57% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mo 202.030 | [illegible] | 0.497 | 0.0005 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Na 330.237 | [illegible] | [illegible] | 0.16 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Ni 231.604 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Pb 220.353 | [illegible] | 0.495 | 0.0024 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sb 206.833 | [illegible] | 0.474 | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Se 196.026 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Si 288.158 | [illegible] | [illegible] | 0.014 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sn 189.989 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | 0.0035 mg/L | [illegible] |
| Sr 232.236 | [illegible] | 0.477 | 0.0029 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Ti 337.280 | [illegible] | [illegible] | 0.0030 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Tl 190.800 | [illegible] | 0.372 | 0.0073 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| V 292.402 | [illegible] | 0.499 | 0.0016 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Zn 206.200 | [illegible] | 0.498 | 0.0048 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 182.527 | 15.6 | [illegible] | 0.061 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 208.892 | 216.9 | [illegible] | 0.120 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 208.959 | 1909.9 | [illegible] | 0.026 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 249.773 | 1195.2 | [illegible] | 0.072 mg/L | [illegible] | [illegible] mg/L | [illegible] |

Mean Data ----------

ID: 0843302 Seq. No.: 2 Sample No.: 2 A/C Pos: 29
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: [illegible]
Data: Original Date: 9/4/96 [illegible]

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2352866.0 | | | | | | | [illegible] |
| Ag 328.068 | -3852.6 | -0.00336 | 0.000029 | mg/L | -0.165 | 0.0014 | mg/L | [illegible] |
| Al 237.312 | 2672805.6 | 208 | 0.4 | mg/L | 5140 | 18.4 | mg/L | [illegible] |
| As 188.979 | 752.0 | 0.0489 | 0.00309 | mg/L | 2.03 | 0.081 | mg/L | [illegible] |
| Ba 230.424 | 419575.1 | 0.777 | 0.0040 | mg/L | 37.7 | 0.19 | mg/L | [illegible] |
| Be 234.861 | 26489.0 | 0.00619 | 0.000040 | mg/L | 0.301 | 0.0019 | mg/L | [illegible] |
| Ca 227.549 | 60319.3 | 45.6 | 0.16 | mg/L | [illegible] | 7.6 | mg/L | [illegible] |
| Cd 226.502 | 4935.9 | 0.0279 | 0.00018 | mg/L | 1.36 | 0.009 | mg/L | [illegible] |
| Co 228.616 | 2743.9 | 0.0115 | 0.00003 | mg/L | 0.558 | 0.0003 | mg/L | [illegible] |
| Cr 267.716 | 16157.5 | 0.0329 | 0.00026 | mg/L | 1.05 | 0.012 | mg/L | [illegible] |
| Cu 327.396 | 9442.1 | 0.207 | 0.0004 | mg/L | 11.2 | 0.01 | mg/L | [illegible] |
| Fe 261.187 | 3344873.9 | 54.2 | 0.43 | mg/L | 4190 | 21.7 | mg/L | [illegible] |
| K 404.721 | 15715.2 | 10.1 | 0.00 | mg/L | 636 | 0.0 | mg/L | [illegible] |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 55096.1 | 0.0140 | 0.00444 | mg/L | 0.692 | 0.0155 | mg/L | [illegible] |
| Mg 279.079 | 1011865.5 | 24.1 | 0.23 | mg/L | [illegible] | 6.3 | mg/L | [illegible] |
| Mn 257.610 | 1658663.9 | 1.42 | 0.007 | mg/L | 67.9 | 0.33 | mg/L | [illegible] |
| Mo 202.030 | 1615.3 | 0.0271 | 0.00079 | mg/L | 1.02 | 0.039 | mg/L | [illegible] |
| Na 330.237 | 67471.6 | 11.5 | 0.10 | mg/L | 557 | 4.0 | mg/L | [illegible] |
| Ni 231.604 | 7330.3 | 0.0525 | 0.00027 | mg/L | 2.56 | 0.012 | mg/L | [illegible] |
| Pb 220.353 | 77459.6 | 4.31 | 0.030 | mg/L | 205 | 1.5 | mg/L | [illegible] |
| Sb 206.833 | 186.9 | -0.0155 | 0.00547 | mg/L | -0.913 | 0.0254 | mg/L | [illegible] |
| Se 196.026 | 0.4 | -0.0101 | 0.00029 | mg/L | -0.490 | 0.0135 | mg/L | [illegible] |
| Si 288.158 | 219451.9 | 4.24 | 0.018 | mg/L | 199 | 0.9 | mg/L | [illegible] |
| Sn 189.989 | 506.9 | 0.00814 | 0.001208 | mg/L | 0.391 | 0.0594 | mg/L | [illegible] |
| Sr 232.236 | 1270.9 | 0.433 | 0.0146 | mg/L | [illegible] | 0.71 | mg/L | [illegible] |
| Ti 337.280 | 605209.0 | 0.370 | 0.0011 | mg/L | 18.1 | 0.05 | mg/L | [illegible] |
| Tl 190.800 | 93.3 | 0.0324 | 0.00036 | mg/L | 1.57 | 0.018 | mg/L | [illegible] |
| V 292.402 | 21773.0 | 0.0621 | 0.00035 | mg/L | 3.01 | 0.017 | mg/L | [illegible] |
| Zn 206.200 | 15079463.1 | 47.6 | 0.31 | mg/L | 2320 | 15.2 | mg/L | [illegible] |
| B 182.527 | 155.9 | 14.9 | 0.91 | mg/L | 724 | 44.1 | mg/L | [illegible] |
| B 208.892 | 1494.4 | 9.07 | 1.126 | mg/L | 451 | 54.7 | mg/L | [illegible] |
| B 208.959 | 2722.6 | -9.47 | 0.041 | mg/L | -460 | 2.0 | mg/L | [illegible] |
| B 249.773 | 16217.6 | 39.4 | 0.63 | mg/L | 1922 | 30.4 | mg/L | [illegible] |

Mean Data ----------

ID: SPCC .9 Seq. No.: 3 Sample No.: 3 A/C Pos: 30
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 2.1: 100.0
Data: Original Date: 9/4/96 1:54:33 PM

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2300434.1 | | | | | | | 0.33% |
| Ag 328.068 | 119985.0 | 0.172 | 0.0008 mg/L | | 8.34 | 0.041 | mg/L | 0.49% |
| Al 237.312 | 2686594.9 | 206 | 0.2 mg/L | | 5160 | 10.0 | mg/L | 0.19% |
| As 188.979 | 14426.9 | 0.893 | 0.0044 mg/L | | 43.4 | 0.22 | mg/L | 0.49% |

| | | | | | | |
|---|---|---|---|---|---|---|
| Ba 230.424 | [illegible] | [illegible] | 0.004 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Be 234.861 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Ca 227.549 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Cd 226.502 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Co 228.616 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Cr 267.716 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Cu 327.396 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Fe 261.187 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| K 404.721 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| K 766.491 | Saturated | | | | | |
| Li 460.286 | [illegible] | [illegible] | 0.050 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Mg 279.079 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Mn 257.610 | [illegible] | [illegible] | 0.000 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Mo 202.030 | [illegible] | [illegible] | 0.0002 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Na 330.237 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Ni 231.604 | [illegible] | [illegible] | 0.0014 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Pb 220.353 | [illegible] | [illegible] | 0.001 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sb 206.833 | [illegible] | [illegible] | 0.0051 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Se 196.026 | [illegible] | [illegible] | 0.0060 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Si 288.158 | [illegible] | [illegible] | 0.03 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sn 189.933 | [illegible] | [illegible] | 0.001151 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sr 232.236 | [illegible] | [illegible] | 0.004 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Ti 337.280 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Tl 190.800 | [illegible] | [illegible] | 0.0004 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| V 292.402 | [illegible] | [illegible] | 0.0010 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Zn 206.200 | [illegible] | [illegible] | 0.03 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| P 182.527 | [illegible] | [illegible] | 1.75 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 208.893 | [illegible] | [illegible] | 0.78 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 208.959 | [illegible] | [illegible] | 0.020 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 249.773 | [illegible] | [illegible] | 0.03 mg/L | [illegible] | [illegible] mg/L | [illegible] |

Mean Data ----------

ID: 0940302 .4 Seq. No.: 4 Sample No.: 4 A/C Peak: 31

Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.0

Data: Original Date: 9/4/96 1:59:02 PM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | |
| Ag 328.068 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Al 237.312 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| As 189.979 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ba 233.424 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Be 234.861 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ca 227.549 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cd 226.502 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Co 228.616 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cr 267.716 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cu 327.396 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Fe 261.187 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| K 404.721 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| K 766.491 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Li 460.286 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mg 279.079 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mn 257.610 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mo 202.030 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Na 330.237 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ni 231.604 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Pb 220.353 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sb 206.833 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Se 196.026 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Si 288.158 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sn 189.933 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sr 232.236 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ti 337.280 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Tl 190.800 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| V 292.402 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Zn 206.200 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| P 182.527 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| B 208.893 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| B 208.959 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |

| | | | | | | |
|---|---|---|---|---|---|---|
| B 249.773 | 3936.6 | 9.89 | 0.[illegible] mg/L | 2250 | 5.1 mg/L | [illegible] |

Mean Data ----------

ID: [illegible] Seq. No.: 5 Sample No.: 5 A/D Pos: [illegible]
Sample Qty: 1.0000 mL Prep. Vol.: [illegible] mL Dilution: [illegible] [illegible]
Date: Original Date: 9/4/98 [illegible] PM

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2166024.3 | | | | | | | [illegible] |
| Ag 328.068 | -13902.7 | -0.0116 | 0.00017 | mg/L | -0.582 | 0.0088 | mg/L | [illegible] |
| Al 257.312 | 7735962.5 | 306 | 0.1 | mg/L | 15300 | 4.7 | mg/L | [illegible] |
| As 188.979 | 1703.5 | 0.107 | 0.0008 | mg/L | 5.34 | 0.041 | mg/L | [illegible] |
| Ba 230.424 | 1054447.1 | 1.96 | 0.006 | mg/L | 97.9 | 0.32 | mg/L | [illegible] |
| Be 234.861 | 76328.4 | 0.0134 | 0.00005 | mg/L | 0.671 | 0.0026 | mg/L | [illegible] |
| Ca 227.549 | 1017[illegible].9 | 66.0 | 0.21 | mg/L | 3300 | 10.6 | mg/L | [illegible] |
| Cd 226.502 | 4384.6 | 0.0275 | 0.00008 | mg/L | 1.37 | 0.004 | mg/L | [illegible] |
| Co 228.616 | 14921.6 | 0.0566 | 0.00002 | mg/L | 2.83 | 0.001 | mg/L | [illegible] |
| Cr 267.716 | 71070.8 | 0.205 | 0.0006 | mg/L | 10.2 | 0.03 | mg/L | [illegible] |
| Cu 327.396 | 150964.7 | 0.421 | 0.0004 | mg/L | 21.1 | 0.02 | mg/L | [illegible] |
| Fe 261.387 | 12930140.2 | 323 | 0.2 | mg/L | 16100 | 16.5 | mg/L | [illegible] |
| K 404.721 | | Saturated | | | | | | |
| K 766.491 | | Saturated | | | | | | |
| Li 460.286 | 360905.2 | 1.58 | 0.007 | mg/L | 79.1 | 0.37 | mg/L | [illegible] |
| Mg 279.079 | 1404755.9 | 33.3 | 0.16 | mg/L | 1670 | 7.9 | mg/L | [illegible] |
| Mn 257.610 | 4984250.2 | 4.26 | 0.001 | mg/L | 213 | 0.1 | mg/L | [illegible] |
| Mo 202.030 | 541.4 | 0.0291 | 0.00105 | mg/L | 1.46 | 0.053 | mg/L | [illegible] |
| Na 330.237 | 57066.2 | 11.8 | 0.03 | mg/L | 591 | 1.6 | mg/L | [illegible] |
| Ni 231.604 | 22161.9 | 0.162 | 0.0000 | mg/L | 8.09 | 0.000 | mg/L | [illegible] |
| Pb 220.353 | 145616.0 | 8.12 | 0.043 | mg/L | 406 | 2.1 | mg/L | [illegible] |
| Sb 206.833 | 4224.9 | -0.0124 | 0.00042 | mg/L | -0.621 | 0.0208 | mg/L | [illegible] |
| Se 196.026 | -551.4 | -0.0837 | 0.00668 | mg/L | -4.19 | 0.334 | mg/L | [illegible] |
| Si 288.158 | 188[illegible].7 | 3.19 | 0.011 | mg/L | 159 | 0.6 | mg/L | [illegible] |
| Sn 189.933 | 1321.8 | 0.0321 | 0.00425 | mg/L | 1.60 | 0.213 | mg/L | [illegible] |
| Sr 421.552 | 6915.4 | 0.868 | 0.0031 | mg/L | 43.4 | 0.15 | mg/L | [illegible] |
| Ti 337.280 | 10010031.3 | 6.09 | 0.032 | mg/L | 304 | 1.6 | mg/L | [illegible] |
| Tl 190.856 | -11173.9 | 0.0494 | 0.00297 | mg/L | 2.47 | 0.148 | mg/L | [illegible] |
| V 292.402 | 150269.4 | 0.401 | 0.0000 | mg/L | [illegible] | 0.00 | mg/L | [illegible] |
| Zn 206.200 | 1610541.9 | 47.4 | 0.07 | mg/L | [illegible] | 3.7 | mg/L | [illegible] |
| B 182.587 | 572.2 | 47.5 | 0.70 | mg/L | [illegible] | 35.0 | mg/L | [illegible] |
| B 208.893 | 6743.4 | 67.1 | 0.04 | mg/L | 3360 | 2.9 | mg/L | [illegible] |
| B 208.959 | 7259.9 | -22.6 | 0.20 | mg/L | -1640 | 10.2 | mg/L | [illegible] |
| B 249.773 | 70964.6 | [illegible] | 1.1 | mg/L | 8650 | 52.9 | mg/L | [illegible] |

Mean Data ----------

ID: CCV Seq. No.: 6 Sample No.: 6 A/D Pos: 5
Sample Qty: 1.0000 mL Prep. Vol.: [illegible] L Dilution: [illegible] [illegible]
Date: Original Date: 9/4/98 [illegible] PM

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2203894.4 | | | | | | | [illegible] |
| Ag 328.068 | 271426.5 | 0.384 | 0.0010 | mg/L | | | | [illegible] |
| Al 257.312 | 2[illegible]054.4 | 9.26 | 0.075 | mg/L | | | | [illegible] |
| As 188.979 | 6121.5 | 0.382 | 0.0022 | mg/L | | | | [illegible] |
| Ba 230.424 | 505969.4 | 0.971 | 0.0014 | mg/L | | | | [illegible] |
| Be 234.861 | 130720.6 | 0.045[illegible] | 0.00033 | mg/L | | | | [illegible] |
| Ca 227.549 | 33567.0 | 9.55 | 0.059 | mg/L | | | | [illegible] |
| Cd 226.502 | 8733.2 | 0.0479 | 0.00024 | mg/L | | | | [illegible] |
| Co 228.616 | 42192.4 | 0.200 | 0.0016 | mg/L | | | | [illegible] |
| Cr 267.716 | 192290.4 | 0.553 | 0.0043 | mg/L | | | | [illegible] |
| Cu 327.396 | 173008.3 | 0.486 | 0.0046 | mg/L | | | | [illegible] |
| Fe 261.387 | 156034.9 | 3.94 | 0.029 | mg/L | | | | [illegible] |
| K 404.721 | 61961.9 | 51.[illegible] | 0.16 | mg/L | | | | [illegible] |
| K 766.491 | | Saturated | | | | | | |
| Li 460.286 | 101627.4 | 1.02 | 0.006 | mg/L | | | | [illegible] |
| Mg 279.079 | 404191.3 | 9.70 | 0.011 | mg/L | | | | [illegible] |
| Mn 257.610 | 578765.7 | 0.494 | 0.0011 | mg/L | | | | [illegible] |
| Mo 202.030 | 69077.1 | 0.954 | 0.0101 | mg/L | | | | [illegible] |
| Na 330.237 | 303246.4 | 51.3 | 0.05 | mg/L | | | | [illegible] |
| Ni 231.604 | 71752.6 | 0.505 | -0.0042 | mg/L | | | | [illegible] |

| | | | |
|---|---|---|---|
| Pb 220.353 | [illegible] | [illegible] | 0.0060 mg/L |
| Sb 206.833 | [illegible] | [illegible] | [illegible] mg/L |
| *CC exceeds Lower Limit for Cd 226.502 Recovery = [illegible] Action = Continue | | | |
| Se 196.026 | [illegible] | [illegible] | 0.0025 mg/L |
| Si 288.158 | [illegible] | 4.75 | 0.009 mg/L |
| Sn 189.989 | [illegible] | [illegible] | 0.0035 mg/L |
| Sr 421.552 | [illegible] | [illegible] | 0.0147 mg/L |
| Ti 337.280 | [illegible] | [illegible] | 0.0021 mg/L |
| Tl 190.856 | [illegible] | [illegible] | 0.0024 mg/L |
| V 292.402 | [illegible] | [illegible] | 0.002 mg/L |
| Zn 206.200 | [illegible] | [illegible] | 0.0073 mg/L |
| B 182.587 | [illegible] | 5.46 | 0.133 mg/L |
| B 208.893 | [illegible] | 2.66 | 0.068 mg/L |
| B 208.959 | [illegible] | 6.74 | 0.083 mg/L |
| B 249.773 | [illegible] | [illegible] | 0.097 mg/L |

Mean Data ----------

ID: 2CB/CCB
Sample Qty: 1.0000 g
Seq. No.: 7
Prep. Vol.:
Data: Original
Sample No.: 4
1.0 L
A/C Pos: 1
Dilution:
Date: 9/4/96
[illegible]

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | [illegible] |
| Ag 328.068 | -148.6 | -0.00001 | 0.000064 | mg/L | | | | [illegible] |
| Al 237.312 | -540.3 | -0.0214 | 0.00009 | mg/L | | | | [illegible] |
| As 188.979 | -21.6 | -0.00026 | 0.000061 | mg/L | | | | [illegible] |
| Ba 230.424 | -441.6 | -0.00058 | 0.000003 | mg/L | | | | [illegible] |
| Be 234.861 | -572.1 | [illegible] | 0.000003 | mg/L | | | | [illegible] |
| Ca 227.549 | [illegible] | -0.00185 | 0.014061 | mg/L | | | | [illegible] |
| Cd 226.502 | 40.0 | 0.00025 | 0.000001 | mg/L | | | | [illegible] |
| Co 228.616 | -96.1 | -0.00119 | 0.000019 | mg/L | | | | [illegible] |
| Cr 267.716 | 452.6 | [illegible] | 0.000002 | mg/L | | | | [illegible] |
| Cu 327.396 | [illegible] | [illegible] | 0.000037 | mg/L | | | | [illegible] |
| Fe 261.387 | [illegible] | -0.00515 | 0.000097 | mg/L | | | | [illegible] |
| K 404.721 | [illegible] | 0.298 | 0.0149 | mg/L | | | | [illegible] |
| K 766.491 | [illegible] | -0.00693 | 0.000095 | mg/L | | | | [illegible] |
| Li 460.289 | [illegible] | -0.0064 | 0.00099 | mg/L | | | | [illegible] |
| Mg 279.079 | [illegible] | 0.0565 | 0.00030 | mg/L | | | | [illegible] |
| Mn 257.610 | -460.1 | -0.00136 | 0.000004 | mg/L | | | | [illegible] |
| Mo 202.030 | 155.7 | 0.00215 | 0.000047 | mg/L | | | | [illegible] |
| Na 330.237 | [illegible] | 0.115 | 0.0102 | mg/L | | | | [illegible] |
| Ni 231.604 | [illegible] | -0.00161 | 0.000027 | mg/L | | | | [illegible] |
| Pb 220.353 | [illegible] | -0.00183 | 0.000095 | mg/L | | | | [illegible] |
| Sb 206.833 | [illegible] | 0.00476 | 0.000361 | mg/L | | | | [illegible] |
| Se 196.026 | -81.9 | 0.00054 | 0.000955 | mg/L | | | | [illegible] |
| Si 288.158 | [illegible] | 0.0152 | 0.00057 | mg/L | | | | [illegible] |
| Sn 189.989 | [illegible] | -0.00426 | 0.000012 | mg/L | | | | [illegible] |
| Sr 421.552 | [illegible] | -0.00092 | 0.000003 | mg/L | | | | [illegible] |
| Ti 337.280 | -669.6 | -0.00035 | 0.000028 | mg/L | | | | [illegible] |
| Tl 190.856 | [illegible] | 0.00144 | 0.000002 | mg/L | | | | [illegible] |
| V 292.402 | [illegible] | 0.00069 | 0.000008 | mg/L | | | | [illegible] |
| Zn 206.200 | [illegible] | 0.00995 | 0.000343 | mg/L | | | | [illegible] |
| B 182.587 | -11.6 | 1.45 | 0.167 | mg/L | | | | [illegible] |
| B 208.893 | [illegible] | 1.49 | 0.056 | mg/L | | | | [illegible] |
| B 208.959 | [illegible] | 0.464 | 0.0039 | mg/L | | | | [illegible] |
| B 249.773 | 550.9 | 1.34 | 0.051 | mg/L | | | | [illegible] |

Mean Data ----------

ID: 0843001
Sample Qty: 1.0000 mL
Seq. No.: 8
Prep. Vol.:
Data: Original
Sample No.: 6
1.0 mL
A/C Pos: 33
Dilution:
Date: 9/4/96
[illegible]

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2446494.2 | | | | | | | 1.46% |
| Ag 328.068 | -8309.7 | -0.00700 | 0.000009 | mg/L | -0.355 | 0.0005 | mg/L | 0.13% |
| Al 237.312 | 6246828.9 | 247 | 2.4 | mg/L | 12600 | 121.9 | mg/L | 0.97% |
| As 188.979 | 1189.7 | 0.0746 | 0.00177 | mg/L | 3.79 | 0.090 | mg/L | 2.37% |
| Ba 230.424 | 759954.9 | 1.42 | 0.001 | mg/L | 71.6 | 0.06 | mg/L | 0.08% |
| Be 234.861 | 47107.9 | 0.00887 | 0.000096 | mg/L | 0.450 | 0.0049 | mg/L | 1.09% |



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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ca 317.549 | [illegible] | [illegible] | [illegible] mg/L | 507 | 7.5 | mg/L | [illegible] |
| Cd 226.502 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Co 228.616 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cr 267.716 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cu 327.396 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Fe 261.187 | 7573885.0 | [illegible] | [illegible] mg/L | 9680 | [illegible] | mg/L | [illegible] |
| K 404.721 | Saturated | | | | | | |
| K 766.491 | Saturated | | | | | | |
| Li 460.286 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mg 279.079 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mn 257.610 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mo 202.030 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Na 330.237 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ni 231.604 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Pb 220.353 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sb 206.833 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Se 196.026 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Si 288.158 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sn 189.933 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sr 232.235 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ti 337.280 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Tl 190.800 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| V 292.402 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Zn 206.200 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| B 182.587 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| B 208.893 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| B 209.959 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| B 249.773 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] | mg/L | [illegible] |

Mean Data

ID: 0940501 Seq. No.: 9 Sample No.: 7 A/S Pos: 34

Sample Qty: 1.0000 ml Prep. Vol.: 1.0 ml Dilution: [illegible]

Data: Original Date: 9/4/98 [illegible]

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | |
| Ag 328.068 | -4983.0 | -0.00002 | 0.000068 | mg/L | -0.065 | 0.0003 | mg/L | [illegible] |
| Al 237.312 | 5434342.9 | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| As 189.679 | 3039.7 | 0.187 | 0.0002 | mg/L | 9.26 | 0.011 | mg/L | [illegible] |
| Ba 230.424 | 498460.4 | 0.906 | 0.0009 | mg/L | 45.9 | 0.04 | mg/L | [illegible] |
| Be 234.861 | 60969.6 | [illegible] | 0.00010 | mg/L | 0.608 | 0.0060 | mg/L | [illegible] |
| Ca 317.549 | 73404.6 | 47.8 | 0.14 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cd 226.502 | [illegible] | [illegible] | 0.00001 | mg/L | [illegible] | 0.010 | mg/L | [illegible] |
| Co 228.616 | 8255.1 | 0.0364 | 0.00006 | mg/L | [illegible] | 0.007 | mg/L | [illegible] |
| Cr 267.716 | 48058.3 | 0.124 | 0.0003 | mg/L | 6.16 | 0.016 | mg/L | [illegible] |
| Cu 327.396 | 151060.9 | 0.404 | 0.001 | mg/L | 20.6 | 0.03 | mg/L | [illegible] |
| Fe 261.187 | 9039639.7 | 243 | 1.0 | mg/L | [illegible] | 0.5 | mg/L | [illegible] |
| K 404.721 | Saturated | | | | | | | |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | [illegible] | 0.609 | 0.0074 | mg/L | 29.4 | 0.16 | mg/L | [illegible] |
| Mg 279.079 | [illegible] | [illegible] | 0.04 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mn 257.610 | [illegible] | [illegible] | 0.001 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mo 202.030 | [illegible] | 0.0143 | 0.00085 | mg/L | 0.689 | 0.0409 | mg/L | [illegible] |
| Na 330.237 | 99882.8 | [illegible] | 0.04 | mg/L | 814 | [illegible] | mg/L | [illegible] |
| Ni 231.604 | 141024.9 | 0.112 | 0.0015 | mg/L | 5.64 | 0.074 | mg/L | [illegible] |
| Pb 220.353 | 51379.3 | [illegible] | 0.006 | mg/L | 138 | 0.16 | mg/L | [illegible] |
| Sb 206.833 | [illegible] | -0.0007 | 0.00044 | mg/L | -1.000 | 0.0014 | mg/L | [illegible] |
| Se 196.026 | -264.0 | -0.0491 | 0.00324 | mg/L | -2.02 | 0.156 | mg/L | [illegible] |
| Si 288.158 | 145737.8 | [illegible] | 0.002 | mg/L | 143 | 0.4 | mg/L | [illegible] |
| Sn 189.933 | 1106.9 | 0.0258 | 0.00065 | mg/L | 1.26 | 0.031 | mg/L | [illegible] |
| Sr 232.235 | 6425.7 | 0.870 | 0.0016 | mg/L | 42.0 | 0.08 | mg/L | [illegible] |
| Ti 337.280 | 1054309.2 | 0.774 | 0.0006 | mg/L | [illegible] | 0.03 | mg/L | [illegible] |
| Tl 190.800 | -726.9 | [illegible] | 0.00521 | mg/L | [illegible] | 0.060 | mg/L | [illegible] |
| V 292.402 | 63932.5 | 0.161 | 0.0000 | mg/L | 8.74 | 0.002 | mg/L | [illegible] |
| Zn 206.200 | 15607632.1 | 49.9 | 0.51 | mg/L | 2380 | 24.5 | mg/L | [illegible] |
| B 182.587 | 410.9 | 34.8 | 0.31 | mg/L | 1680 | 15.0 | mg/L | [illegible] |
| B 208.893 | 4480.4 | 41.9 | 0.75 | mg/L | 2000 | 36.4 | mg/L | [illegible] |
| B 209.959 | 5469.9 | -23.2 | 0.31 | mg/L | -1100 | 15.0 | mg/L | [illegible] |
| B 249.773 | 47436.0 | 116 | 0.6 | mg/L | 5580 | 29.5 | mg/L | [illegible] |

Mean Data
ID: MDCI
Sample Qty: 1.0000 mL
Seq. No.: 10 Sample No.: 9
Prep. Vol.: 1.0 mL
Data: Original
A/D Test: 36
Dilution:
Date: 9/4/96

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | |
| Ag 328.068 | 1064309.0 | 0.187 | 0.0006 | mg/L | 7.59 | 0.031 | mg/L | [illegible] |
| Al 237.312 | 6453123.1 | 256 | 1.0 | mg/L | 10300 | 40.4 | mg/L | [illegible] |
| As 189.979 | 105557.9 | 0.45 | 0.035 | mg/L | 311 | 1.9 | mg/L | [illegible] |
| Ba 230.424 | 3531239.2 | 6.51 | 0.037 | mg/L | 316 | 1.8 | mg/L | [illegible] |
| Be 234.861 | 529735.6 | [illegible] | 0.0019 | mg/L | 8.35 | 0.091 | mg/L | [illegible] |
| Ca 227.549 | 91936.1 | 50.3 | 0.53 | mg/L | 2570 | 25.6 | mg/L | [illegible] |
| Cd 226.502 | 33836.6 | 0.199 | 0.0012 | mg/L | 9.09 | 0.059 | mg/L | [illegible] |
| Co 228.616 | 317702.6 | 4.51 | 0.010 | mg/L | 73.0 | 0.49 | mg/L | [illegible] |
| Cr 267.716 | 273149.0 | 0.726 | 0.0044 | mg/L | 36.1 | 0.22 | mg/L | [illegible] |
| Cu 327.396 | 457023.3 | [illegible] | 0.004 | mg/L | 66.1 | 0.55 | mg/L | [illegible] |
| Fe 261.187 | 10163628.6 | 256 | 0.1 | mg/L | 12400 | 146.6 | mg/L | [illegible] |
| K 404.721 | | Saturated | | | | | | |
| K 766.491 | | Saturated | | | | | | |
| Li 460.286 | 235054.1 | 0.788 | 0.0157 | mg/L | 36.6 | 0.73 | mg/L | [illegible] |
| Mg 279.079 | 2453147.0 | 34.5 | 0.20 | mg/L | 1670 | 9.5 | mg/L | [illegible] |
| Mn 257.610 | 4419654.9 | 3.77 | 0.046 | mg/L | 183 | 2.2 | mg/L | [illegible] |
| Mo 202.030 | 597.2 | 0.0213 | 0.00021 | mg/L | 1.05 | 0.005 | mg/L | [illegible] |
| Na 330.237 | 90635.6 | 15.8 | 0.04 | mg/L | 763 | 3.6 | mg/L | [illegible] |
| Ni 231.604 | 216127.0 | 1.61 | 0.013 | mg/L | 3.4 | 0.65 | mg/L | [illegible] |
| Pb 220.353 | 89782.1 | 4.6 | 0.028 | mg/L | 226 | 1.4 | mg/L | [illegible] |
| Sb 206.833 | 11033.9 | 0.054 | 0.0019 | mg/L | 0.13 | 0.09 | mg/L | [illegible] |
| Se 196.026 | 16402.4 | 0.05 | 0.035 | mg/L | 0.92 | 1.7 | mg/L | [illegible] |
| Si 251.158 | 3197710.8 | 6.24 | 0.029 | mg/L | 1.00 | 1.4 | mg/L | [illegible] |
| Sn 189.933 | 1067.4 | 0.0249 | 0.00044 | mg/L | 1.20 | 0.021 | mg/L | [illegible] |
| Sr 232.236 | 6347.4 | 0.913 | 0.0124 | mg/L | 44.1 | 0.55 | mg/L | [illegible] |
| Ti 337.280 | 2408864.5 | 1.48 | 0.006 | mg/L | 71.5 | 0.21 | mg/L | [illegible] |
| Tl 190.801 | 99011.5 | 4.79 | 0.032 | mg/L | 23.1 | 1.5 | mg/L | [illegible] |
| V 292.402 | 681644.6 | 1.74 | 0.009 | mg/L | 80.9 | 0.41 | mg/L | [illegible] |
| Zn 206.200 | 10202554.7 | 48.1 | 0.64 | mg/L | 2351 | 31.9 | mg/L | [illegible] |
| B 182.641 | 426.9 | 36.1 | 2.56 | mg/L | 1140 | 136.1 | mg/L | [illegible] |
| B 208.893 | 4770.9 | 40.7 | 0.77 | mg/L | 2060 | 37.0 | mg/L | [illegible] |
| B 208.959 | 5898.3 | -26.9 | 0.14 | mg/L | -4300 | 6.5 | mg/L | [illegible] |
| B 249.773 | 50127.9 | 122 | 1.6 | mg/L | 5900 | 76.5 | mg/L | [illegible] |

Mean Data
ID: 0942422
Sample Qty: 1.0000 mL
Seq. No.: 11 Sample No.: 9
Prep. Vol.: 1.0 mL
Data: Original
A/D Test: 36
Dilution:
Date: 9/4/96

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | [illegible] |
| Ag 328.068 | [illegible] | -0.00488 | 0.000061 | mg/L | -0.227 | 0.0031 | mg/L | [illegible] |
| Al 237.312 | 774693.5 | 307 | 0.4 | mg/L | 15600 | 21.1 | mg/L | [illegible] |
| As 189.979 | [illegible] | 0.003 | 0.00052 | mg/L | 4.05 | 0.026 | mg/L | [illegible] |
| Ba 230.424 | 910031.4 | [illegible] | 0.017 | mg/L | 84.2 | 0.85 | mg/L | [illegible] |
| Be 234.861 | 47081.0 | 0.0114 | 0.00003 | mg/L | 0.574 | 0.0002 | mg/L | [illegible] |
| Ca 227.549 | 257415.5 | 37.5 | 0.36 | mg/L | 1910 | 17.9 | mg/L | [illegible] |
| Cd 226.502 | [illegible] | 0.00400 | 0.000022 | mg/L | 0.217 | 0.0036 | mg/L | [illegible] |
| Co 228.616 | 16850.4 | 0.0721 | 0.00020 | mg/L | 3.64 | 0.010 | mg/L | [illegible] |
| Cr 267.716 | 155916.8 | 0.420 | 0.0034 | mg/L | 20.9 | 0.17 | mg/L | [illegible] |
| Cu 327.396 | 95528.2 | 0.207 | 0.0007 | mg/L | 10.5 | 0.19 | mg/L | [illegible] |
| Fe 261.187 | 1197006.2 | 121 | 0.4 | mg/L | 6020 | 19.1 | mg/L | [illegible] |
| K 404.721 | | Saturated | | | | | | |
| K 766.491 | | Saturated | | | | | | |
| Li 460.286 | 120550.0 | 0.557 | 0.0159 | mg/L | 28.1 | 0.80 | mg/L | 0.55% |
| Mg 279.079 | 1352152.3 | 32.9 | 0.28 | mg/L | 1660 | 14.4 | mg/L | 0.87% |
| Mn 257.610 | 1774643.3 | 1.52 | 0.002 | mg/L | 76.6 | 0.08 | mg/L | [illegible] |
| Mo 202.030 | 262.4 | 0.0223 | 0.00088 | mg/L | 0.570 | 0.0447 | mg/L | [illegible] |
| Na 330.237 | 1232.4 | 1.46 | 0.008 | mg/L | 73.2 | 0.39 | mg/L | [illegible] |
| Ni 231.604 | 27396.5 | 0.196 | 0.0027 | mg/L | 9.90 | 0.093 | mg/L | [illegible] |
| Pb 220.353 | 3606.9 | 0.206 | 0.0049 | mg/L | 10.4 | 0.24 | mg/L | [illegible] |
| Sb 206.833 | 2003.2 | 0.0197 | 0.00015 | mg/L | 0.994 | 0.0076 | mg/L | 0.76% |

| | | | | | | |
|---|---|---|---|---|---|---|
| Se 196.026 | 597.6 | 0.00409 | 0.004570 mg/L | 0.006 | 0.0304 mg/L | [illegible] |
| Si 288.158 | 181529.4 | 2.95 | 0.032 mg/L | 149 | 1.6 mg/L | [illegible] |
| Sn 189.989 | 374.9 | 0.00406 | 0.000942 mg/L | 0.004 | 0.0243 mg/L | [illegible] |
| Sr 421.552 | 2369.7 | 0.268 | 0.0121 mg/L | 13.6 | 1.91 mg/L | [illegible] |
| Ti 337.280 | 5721962.5 | 0.52 | 0.001 mg/L | 119 | 1.4 mg/L | [illegible] |
| Tl 190.801 | 749.7 | 0.0840 | 0.00404 mg/L | 4.51 | 0.0214 mg/L | [illegible] |
| V 292.402 | 166028.4 | 0.662 | 0.0382 mg/L | 34.5 | 1.41 mg/L | [illegible] |
| Zn 206.200 | 307517.0 | 0.935 | 0.0066 mg/L | 45.2 | 0.032 mg/L | [illegible] |
| B 182.587 | 114.9 | 10.4 | 2.67 mg/L | 629 | 129.4 mg/L | [illegible] |
| B 208.893 | 2712.0 | 7.45 | 0.141 mg/L | 331 | 1.1 mg/L | [illegible] |
| B 208.959 | 4603.7 | -27.9 | 0.20 mg/L | -1400 | 21.1 mg/L | [illegible] |
| B 249.773 | 27775.6 | 67.6 | 0.26 mg/L | 3430 | 20.0 mg/L | [illegible] |

Mean Data
ID: 0002 Seq. No.: 12 Sample No.: 10 A/C Pos: 37
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.0 [illegible]
Data: Original Date: 9/4/98 2:[illegible]:22 PM

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2745737.6 | | | | | | | [illegible] |
| Ag 328.068 | -6111.6 | -0.00831 | 0.000047 | mg/L | -0.055 | 0.0003 | mg/L | [illegible] |
| Al 237.312 | 6303764.6 | 369 | 0.4 | mg/L | 15900 | 17.4 | mg/L | [illegible] |
| As 188.979 | 931.5 | 0.0685 | 0.00177 | mg/L | 3.05 | 0.085 | mg/L | [illegible] |
| Ba 230.424 | 1003141.7 | 1.88 | 0.009 | mg/L | 84.1 | 0.42 | mg/L | [illegible] |
| Be 234.861 | 49865.4 | 0.0122 | 0.00006 | mg/L | 0.597 | 0.0030 | mg/L | [illegible] |
| Ca 227.549 | 48981.4 | 32.2 | 0.11 | mg/L | 1550 | 5.3 | mg/L | [illegible] |
| Cd 228.802 | 359.7 | 0.00311 | 0.000102 | mg/L | 0.150 | 0.0049 | mg/L | [illegible] |
| Co 228.616 | 10162.5 | 0.0691 | 0.00025 | mg/L | 3.32 | 0.014 | mg/L | [illegible] |
| Cr 267.716 | 169620.9 | 0.449 | 0.0018 | mg/L | 21.6 | 0.09 | mg/L | [illegible] |
| Cu 327.396 | 86019.3 | 0.240 | 0.0030 | mg/L | 11.5 | 0.14 | mg/L | [illegible] |
| Fe 261.387 | 5314492.1 | 194 | 0.2 | mg/L | 6430 | 11.7 | mg/L | [illegible] |
| K 404.721 | Saturated | | | | | | | |
| K 766.491 | Saturated | | | | | | | |
| Li 460.289 | 141654.[illegible] | 0.634 | 0.0161 | mg/L | 30.6 | 0.78 | mg/L | [illegible] |
| Mg 279.079 | 1411132.1 | 33.6 | 0.27 | mg/L | 1620 | 12.8 | mg/L | [illegible] |
| Mn 257.610 | 1768847.5 | 1.52 | 0.002 | mg/L | 72.6 | 0.10 | mg/L | [illegible] |
| Mo 202.031 | 154.7 | 0.00955 | 0.001096 | mg/L | 0.460 | 0.0527 | mg/L | [illegible] |
| Na 330.237 | 1265.9 | 1.42 | 0.007 | mg/L | 69.1 | 0.36 | mg/L | [illegible] |
| Ni 231.604 | 26671.[illegible] | 0.191 | 0.0006 | mg/L | 9.17 | 0.027 | mg/L | [illegible] |
| Pb 220.353 | 1978.1 | 0.116 | 0.0003 | mg/L | 5.55 | 0.016 | mg/L | [illegible] |
| Sb 206.833 | 2063.6 | 0.0191 | 0.00450 | mg/L | 0.938 | 0.0164 | mg/L | [illegible] |
| Se 196.026 | 524.0 | -0.00514 | 0.009905 | mg/L | -0.247 | 0.4762 | mg/L | [illegible] |
| Si 288.158 | 120147.4 | 0.39 | 0.002 | mg/L | 114 | 0.1 | mg/L | [illegible] |
| Sn 189.989 | 115.5 | -0.00196 | 0.002911 | mg/L | -0.0912 | 0.13514 | mg/L | [illegible] |
| Sr 421.552 | 2410.6 | 0.072 | 0.0026 | mg/L | 13.1 | 0.13 | mg/L | [illegible] |
| Ti 337.280 | 5540754.8 | 3.41 | 0.009 | mg/L | 164 | 0.4 | mg/L | [illegible] |
| Tl 190.801 | 268.4 | 0.0075 | 0.00114 | mg/L | 3.24 | 0.055 | mg/L | [illegible] |
| V 292.402 | 296573.5 | 0.758 | 0.0013 | mg/L | 36.4 | 0.06 | mg/L | [illegible] |
| Zn 206.200 | 278166.9 | 0.862 | 0.0205 | mg/L | 41.4 | 0.99 | mg/L | [illegible] |
| B 182.587 | 141.9 | 13.6 | 0.35 | mg/L | 652 | 16.9 | mg/L | [illegible] |
| B 208.893 | 2741.2 | 5.92 | 1.445 | mg/L | 285 | 69.6 | mg/L | [illegible] |
| B 208.959 | 4609.9 | -29.6 | 0.26 | mg/L | -1420 | 12.0 | mg/L | [illegible] |
| B 249.773 | 29505.9 | 71.5 | 0.86 | mg/L | 3450 | 41.4 | mg/L | [illegible] |

Mean Data
ID: 0942405 Seq. No.: 13 Sample No.: 11 A/C Pos: 38
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.0: [illegible]
Data: Original Date: 9/4/98 2:36:35 PM

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2269832.7 | | | | | | | [illegible] |
| Ag 328.068 | -1944.6 | -0.00135 | 0.000030 | mg/L | -0.0671 | 0.00150 | mg/L | [illegible] |
| Al 237.312 | 1843213.1 | 73.4 | 0.03 | mg/L | 3610 | 1.4 | mg/L | [illegible] |
| As 188.979 | 453.0 | 0.0296 | 0.00025 | mg/L | 1.46 | 0.012 | mg/L | 0.959 |
| Ba 230.424 | 382370.0 | 0.706 | 0.0049 | mg/L | 34.9 | 0.24 | mg/L | [illegible] |
| Be 234.861 | 23228.3 | 0.00283 | 0.000024 | mg/L | 0.140 | 0.0012 | mg/L | 0.854 |
| Ca 227.549 | 46831.7 | 32.2 | 0.13 | mg/L | 1590 | 6.3 | mg/L | 0.409 |
| Cd 228.802 | 390.5 | 0.00273 | 0.000010 | mg/L | 0.135 | 0.0005 | mg/L | 0.389 |
| Co 228.616 | 8957.6 | 0.0378 | 0.00041 | mg/L | 1.87 | 0.021 | mg/L | [illegible] |

| | | | | | | |
|---|---|---|---|---|---|---|
| Cr 267.716 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Cu 327.396 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Fe 261.187 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| K 404.721 | [illegible] | [illegible] | 0.065 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| K 766.491 | Saturated | | | | | |
| Li 460.289 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Mg 279.079 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Mn 257.610 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Mo 202.030 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Na 330.237 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Ni 231.604 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Pb 220.353 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sb 206.833 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Se 196.026 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Si 288.158 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sn 189.989 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sr 421.552 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Ti 337.281 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Tl 190.856 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| V 292.402 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Zn 206.200 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 182.587 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 208.892 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 208.959 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 249.773 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |

Mean Data ----------

| | | | | |
|---|---|---|---|---|
| ID: MOOS | | Seq. No.: 14 | Sample No.: 10 | A/C Post: 39 |
| Sample Qty: | 1.0000 ml | Prep. Vol.: | 1.0 ml | Dilution: |
| | | Data: Original | | Date: 9/4/96 |

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 361.075 | [illegible] | | | | | | | |
| Ag 328.068 | [illegible] | [illegible] | 0.0004 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Al 237.312 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| As 189.979 | [illegible] | [illegible] | 0.0053 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ba 233.424 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Be 234.861 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ca 227.549 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cd 228.802 | [illegible] | [illegible] | 0.0006 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Co 228.616 | [illegible] | [illegible] | 0.0047 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cr 267.716 | [illegible] | [illegible] | 0.0030 | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Cu 327.396 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Fe 261.187 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| K 404.721 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| K 766.491 | Saturated | | | | | | | |
| Li 460.289 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mg 279.079 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mn 257.610 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Mo 202.030 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Na 330.237 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ni 231.604 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Pb 220.353 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sb 206.833 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Se 196.026 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Si 288.158 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sn 189.989 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Sr 421.552 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Ti 337.281 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Tl 190.856 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| V 292.402 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| Zn 206.200 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| B 182.587 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| B 208.892 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| B 208.959 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |
| B 249.773 | [illegible] | [illegible] | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |

Calibration Summary ---------- Date: 9/4/98 2:46:11 PM
Method: clptstd

| Element | Order | Equation | Intercept | Slope | Curvature | Corr. Coeff. |
|---|---|---|---|---|---|---|
| Ag 328.068 | 1 | Linear-thru-Zero | 0.0 | 706441.2 | 0.00000 | [illegible] |
| Al 237.312 | 1 | Linear-thru-Zero | 0.0 | 25203.8 | 0.00000 | [illegible] |
| As 189.979 | 1 | Linear-thru-Zero | 0.0 | 16054.4 | 0.00000 | [illegible] |
| Ba 230.424 | 1 | Linear-thru-Zero | 0.0 | 542779.0 | 0.00000 | [illegible] |
| Be 234.861 | 1 | Linear | -1636.9 | 2886346.0 | 0.00000 | [illegible] |
| Ca 227.549 | 1 | Linear | -107.9 | 1420.6 | 0.00000 | [illegible] |
| Cd 226.502 | 1 | Linear | -5.0 | 183362.6 | 0.00000 | [illegible] |
| Co 228.616 | 1 | Linear | 151.8 | 209736.4 | 0.00000 | [illegible] |
| Cr 267.716 | 1 | Linear-thru-Zero | 0.0 | 3659517.1 | 0.00000 | [illegible] |
| Cu 327.396 | 1 | Linear-thru-Zero | 0.0 | 1559904.1 | 0.00000 | [illegible] |
| Fe 261.387 | 1 | Linear | -404.1 | 39724.6 | 0.00000 | [illegible] |
| K 404.721 | 1 | Linear-thru-Zero | 0.0 | 1199.1 | 0.00000 | [illegible] |
| K 766.491 | 1 | Linear | 296112.1 | 3511021.7 | 0.00000 | [illegible] |
| Li 460.286 | 1 | Linear | 482.5 | 966715.9 | 0.00000 | [illegible] |
| Mg 279.079 | 1 | Linear | -2474.5 | 41628.4 | 0.00000 | [illegible] |
| Mn 257.610 | 1 | Linear | 1065.2 | 1168753.4 | 0.00000 | [illegible] |
| Mo 202.032 | 1 | Linear-thru-Zero | 0.0 | 724[illegible] | 0.00000 | [illegible] |
| Na 330.237 | 1 | Linear-thru-Zero | 0.0 | 5945.7 | 0.00000 | [illegible] |
| Ni 231.604 | 1 | Linear-thru-Zero | 0.0 | 141326.5 | 0.00000 | [illegible] |
| Pb 220.353 | 1 | Linear | 126.1 | 17948.5 | 0.00000 | [illegible] |
| Sb 206.833 | 1 | Linear | 5.2 | 28496.5 | 0.00000 | [illegible] |
| Se 196.026 | 1 | Linear | -97.8 | 12990.5 | 0.00000 | [illegible] |
| Si 288.158 | 1 | Linear | 40.4 | 50190.4 | 0.00000 | [illegible] |
| Sn 189.933 | 1 | Linear | 192.9 | 39026.4 | 0.00000 | [illegible] |
| Sr 232.235 | 1 | Linear | 28.1 | 5506.1 | 0.00000 | [illegible] |
| Tl 377.572 | 1 | Linear | -560.3 | 1626[illegible] | 0.00000 | [illegible] |
| Tl 190.856 | 1 | Linear-thru-Zero | 0.0 | 20979.8 | 0.00000 | [illegible] |
| V 292.402 | 1 | Linear | -109.5 | 39873[illegible] | 0.00000 | [illegible] |
| Zn 206.200 | 1 | Linear-thru-Zero | 0.0 | 316804.3 | 0.00000 | [illegible] |
| B 182.591 | 1 | Linear | -[illegible] | [illegible] | 0.00000 | [illegible] |
| B 249.891 | 1 | Linear | 68.8 | 86.4 | 0.00000 | [illegible] |
| B 208.959 | 1 | Linear | 235.1 | 401.3 | 0.00000 | [illegible] |
| B 249.773 | 1 | Linear | 29.1 | 410.4 | 0.00000 | [illegible] |

Method: clptstd
Results: 090498
Sample Index: 090498
Method Description:

ICC: d4ied.icc
Spectra Stored: Yes
User: User1

MCP:
Method Stored: Yes
Date: 9/4/98 2:46:04 PM

Mean Data ----------
ID: MB005
Sample Qty: 1.0000 ml

Seq. No.: 1
Step. Vol.:
Date: Original

Sample No.: 1
1.0 ml

A/C Post: 40
Dilution:
Date: 9/4/98

2:47:24 PM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 361.073 | 414931.6 | | | | | | | [illegible] |
| Ag 328.068 | 121836.3 | 0.174 | 0.0004 | mg/L | 0.93 | 0.000 | mg/L | [illegible] |
| Al 237.312 | 3082051.4 | [illegible] | 0.0 | mg/L | 6260 | 2.5 | mg/L | [illegible] |
| As 189.979 | 14495.8 | 0.907 | 0.0103 | mg/L | 40.1 | 0.55 | mg/L | [illegible] |
| Ba 230.424 | 4470377.1 | 8.26 | 0.005 | mg/L | 424 | 0.3 | mg/L | [illegible] |
| Be 234.861 | 2334844.0 | 0.806 | 0.0003 | mg/L | 41.3 | 0.01 | mg/L | [illegible] |
| Ca 227.549 | 59020.5 | 40.6 | 0.26 | mg/L | 2080 | 13.5 | mg/L | [illegible] |
| Cd 226.502 | 160903.1 | 0.629 | 0.0005 | mg/L | 42.5 | 0.03 | mg/L | [illegible] |
| Co 228.616 | 196065.4 | 0.881 | 0.0006 | mg/L | 43.1 | 0.03 | mg/L | [illegible] |
| Cr 267.716 | 385701.5 | 1.01 | 0.001 | mg/L | 51.5 | 0.04 | mg/L | [illegible] |
| Cu 327.396 | 398799.4 | 1.02 | 0.001 | mg/L | 51.4 | 0.07 | mg/L | [illegible] |
| Fe 261.387 | 2534822.4 | 63.8 | 0.04 | mg/L | 3275 | 4.0 | mg/L | [illegible] |
| K 404.721 | *3282.0 | 62.1 | 0.02 | mg/L | 3130 | 1.2 | mg/L | [illegible] |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 693438.8 | 9.85 | 0.005 | mg/L | 506 | 0.3 | mg/L | [illegible] |
| Mg 279.079 | 1055909.9 | 24.0 | 0.03 | mg/L | 1230 | 1.7 | mg/L | [illegible] |
| Mn 257.610 | 2519547.3 | 2.25 | 0.002 | mg/L | 111 | 0.1 | mg/L | [illegible] |



53

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mo 202.030 | 59882.1 | 0.835 | 0.0004 mg/L | 42.8 | 0.02 mg/L | [illegible] | [illegible] |
| Na 330.237 | 2474462.9 | 42.9 | 0.01 mg/L | 2202 | 1.4 mg/L | [illegible] | [illegible] |
| Ni 231.604 | 1331216.6 | 0.945 | 0.0004 mg/L | 41.4 | 0.02 mg/L | [illegible] | [illegible] |
| Pb 220.353 | 14992.4 | 1.336 | 0.0042 mg/L | 44.3 | 0.02 mg/L | [illegible] | [illegible] |
| Sb 206.833 | 23188.5 | 0.794 | 0.0029 mg/L | 41.7 | 0.01 mg/L | [illegible] | [illegible] |
| Se 196.026 | 11749.6 | 0.897 | 0.0035 mg/L | 46.1 | 0.02 mg/L | [illegible] | [illegible] |
| Si 288.158 | 221068.5 | 4.91 | 0.014 mg/L | 282 | 0.4 mg/L | [illegible] | [illegible] |
| Sn 189.933 | 37.4 | -0.00401 | 0.000891 mg/L | -0.206 | 0.0015 mg/L | [illegible] | [illegible] |
| Sr 232.236 | 5969.1 | 0.873 | 0.0086 mg/L | 80.6 | 0.44 mg/L | [illegible] | [illegible] |
| Ti 337.280 | 6016296.6 | 3.40 | 0.002 mg/L | 193 | 0.1 mg/L | [illegible] | [illegible] |
| Tl 190.801 | 155842.8 | 0.782 | 0.0010 mg/L | 40.1 | 0.05 mg/L | [illegible] | [illegible] |
| V 292.402 | 461708.6 | 1.17 | 0.000 mg/L | 60.0 | 0.01 mg/L | [illegible] | [illegible] |
| Zn 206.200 | 3847599.7 | 1.21 | 0.000 mg/L | 62.0 | 0.02 mg/L | [illegible] | [illegible] |
| B 182.527 | 374.7 | 31.9 | 0.73 mg/L | 1640 | 37.6 mg/L | [illegible] | [illegible] |
| B 208.893 | 2629.9 | 29.3 | 0.24 mg/L | 1500 | 12.1 mg/L | [illegible] | [illegible] |
| B 208.959 | 7552.5 | 2.03 | 0.094 mg/L | 104 | 4.8 mg/L | [illegible] | [illegible] |
| B 249.773 | 21687.7 | 52.9 | 0.39 mg/L | 2710 | 21.2 mg/L | [illegible] | [illegible] |

Mean Data ----------

ID: 0843001 .5 Seq. No.: 2 Sample No.: 2 A/S Pos: 41
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 2.0: 200.0
Data: Original Date: 9/4/98 2:55:11 PM

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2329199.9 | | | | | | | [illegible] |
| Ag 328.068 | -4575.0 | -0.00340 | 0.000152 | mg/L | -0.347 | 0.0155 | mg/L | [illegible] |
| Al 237.312 | 3621433.4 | 139 | 0.5 | mg/L | 14200 | 49.7 | mg/L | [illegible] |
| As 188.979 | 660.3 | 0.0414 | 0.00293 | mg/L | 4.21 | 0.298 | mg/L | [illegible] |
| Ba 230.424 | 431219.6 | 0.800 | 0.0003 | mg/L | 81.4 | 0.03 | mg/L | [illegible] |
| Be 234.861 | 28342.5 | 0.00455 | 0.000043 | mg/L | 0.462 | 0.0044 | mg/L | [illegible] |
| Ca 227.549 | 11285.6 | 5.76 | 0.017 | mg/L | 564 | 1.6 | mg/L | [illegible] |
| Cd 226.502 | 843.2 | 0.00591 | 0.000107 | mg/L | 0.600 | 0.0109 | mg/L | [illegible] |
| Co 228.616 | 9432.4 | 0.0347 | 0.00079 | mg/L | 3.53 | 0.079 | mg/L | [illegible] |
| Cr 267.716 | 29298.5 | 0.0816 | 0.00061 | mg/L | 5.28 | 0.062 | mg/L | [illegible] |
| Cu 327.396 | 20192.9 | 0.0585 | 0.00040 | mg/L | 5.60 | 0.041 | mg/L | [illegible] |
| Fe 261.387 | 4858242.7 | 128 | 0.3 | mg/L | 12400 | 31.9 | mg/L | [illegible] |
| K 404.721 | Saturated | | | | | | | |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 87274.4 | 0.0915 | 0.00700 | mg/L | 9.29 | 0.711 | mg/L | [illegible] |
| Mg 279.079 | 635257.6 | 15.1 | 0.00 | mg/L | 1540 | 0.4 | mg/L | [illegible] |
| Mn 257.610 | 2984205.4 | 0.55 | 0.005 | mg/L | 259 | 0.5 | mg/L | [illegible] |
| Mo 202.030 | 215.8 | 0.0145 | 0.00015 | mg/L | 1.47 | 0.016 | mg/L | [illegible] |
| Na 330.237 | -2609.7 | 1.02 | 0.005 | mg/L | 105 | 0.5 | mg/L | [illegible] |
| Ni 231.604 | 70011.4 | 0.0515 | 0.00122 | mg/L | 5.23 | 0.124 | mg/L | [illegible] |
| Pb 220.353 | 4999.9 | 0.245 | 0.0049 | mg/L | 24.8 | 0.49 | mg/L | [illegible] |
| Sb 206.833 | [illegible] | 0.00147 | 0.000022 | mg/L | 0.149 | 0.0079 | mg/L | [illegible] |
| Se 196.026 | -224.9 | -0.0236 | 0.00580 | mg/L | -2.40 | 0.589 | mg/L | [illegible] |
| Si 288.158 | 85339.9 | 1.61 | 0.005 | mg/L | 163 | 0.6 | mg/L | [illegible] |
| Sn 189.933 | 134.1 | -0.00151 | 0.000372 | mg/L | -0.153 | 0.0378 | mg/L | [illegible] |
| Sr 232.236 | 1567.1 | 0.192 | 0.0026 | mg/L | 19.4 | 0.26 | mg/L | [illegible] |
| Ti 337.280 | 6744712.0 | 4.13 | 0.013 | mg/L | 419 | 1.4 | mg/L | [illegible] |
| Tl 190.801 | -2268.1 | 0.0416 | 0.00289 | mg/L | 4.23 | 0.293 | mg/L | [illegible] |
| V 292.402 | 69479.7 | 0.180 | 0.0006 | mg/L | 18.3 | 0.06 | mg/L | [illegible] |
| Zn 206.200 | 1698203.4 | 5.35 | 0.048 | mg/L | 543 | 4.9 | mg/L | [illegible] |
| B 182.527 | 131.1 | 12.7 | 1.94 | mg/L | 1290 | 196.1 | mg/L | [illegible] |
| B 208.893 | 2050.3 | 13.3 | 0.07 | mg/L | 1350 | 7.1 | mg/L | [illegible] |
| B 208.959 | 2496.7 | -15.7 | 0.28 | mg/L | -1590 | 28.0 | mg/L | [illegible] |
| B 249.773 | 20207.3 | 49.2 | 0.42 | mg/L | 4990 | 42.6 | mg/L | [illegible] |

Mean Data ----------

ID: 0843001 .5 Seq. No.: 3 Sample No.: 3 A/S Pos: 41
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 2.0: 200.0
Data: Original Date: 9/4/98 2:55:14 PM

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2132868.3 | | | | | | | [illegible] |
| Ag 328.068 | -7474.5 | -0.00499 | 0.000121 | mg/L | -0.499 | 0.0121 | mg/L | [illegible] |
| Al 237.312 | 4274970.1 | 169 | 0.2 | mg/L | 16900 | 21.8 | mg/L | [illegible] |
| As 188.979 | 838.2 | 0.0528 | 0.00276 | mg/L | 5.28 | 0.276 | mg/L | [illegible] |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ba 230.424 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Be 234.861 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Ca 227.549 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Cd 228.802 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Co 228.616 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Cr 267.716 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Cu 327.396 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Fe 261.387 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| K 404.721 | Saturated | | | | | |
| K 766.491 | Saturated | | | | | |
| Li 460.286 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Mg 279.079 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Mn 257.610 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Mo 202.030 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Na 330.237 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Ni 231.604 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Pb 220.353 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sb 206.833 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Se 196.026 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Si 288.158 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sn 189.933 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sr 232.235 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Ti 337.280 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Tl 190.800 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| V 292.402 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Zn 206.200 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 182.527 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 208.893 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 208.959 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 249.773 | [illegible] | [illegible] | [illegible] mg/L | [illegible] | [illegible] mg/L | [illegible] |

Mean Data ----------

ID: CCV Seq. No.: 4 Sample No.: 3 A/C Rep: 5

Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.0

Data: Original Date: 9/4/98 [illegible]

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | [illegible] |
| Ag 328.068 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Al 237.312 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| As 188.979 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Ba 230.424 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Be 234.861 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Ca 227.549 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Cd 228.802 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Co 228.616 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Cr 267.716 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Cu 327.396 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Fe 261.387 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| K 404.721 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Mg 279.079 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Mn 257.610 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Mo 202.030 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Na 330.237 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Ni 231.604 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Pb 220.353 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Sb 206.833 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |

*QC exceeds lower limit for Sb 206.833 Recovery = 45.62% Action = Continue

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Se 196.026 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |

*QC exceeds lower limit for Se 196.026 Recovery = 89.94% Action = Continue

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Si 288.158 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Sn 189.933 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Sr 232.235 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Ti 337.280 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Tl 190.800 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| V 292.402 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Zn 206.200 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| B 182.527 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |

170

535

| | | | | |
|---|---|---|---|---|
| B 208.893 | 319.6 | 3.45 | 0.140 mg/L | |
| B 208.959 | 3065.4 | 6.62 | 0.135 mg/L | |
| B 249.773 | 2239.7 | 5.39 | 0.135 mg/L | |

Mean Data ----------

ID: 200/200 Seq. No.: 5 Sample No.: 4 A/C Pos: 1
Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.0
Data: Original Date: 9/2/98 3:11:11

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 1726514.5 | | | | | | | |
| Ag 328.068 | +120.4 | -0.00019 | 0.000012 | mg/L | | | | |
| Al 237.312 | +537.0 | -0.0213 | 0.00061 | mg/L | | | | |
| As 189.979 | -3.5 | -0.00022 | 0.000235 | mg/L | | | | |
| Ba 230.424 | +434.7 | -0.00090 | 0.000007 | mg/L | | | | |
| Be 234.861 | +563.7 | 0.00037 | 0.000005 | mg/L | | | | |
| Ca 227.549 | +109.4 | -0.00148 | 0.001175 | mg/L | | | | |
| Cd 226.502 | 35.4 | 0.00004 | 0.000015 | mg/L | | | | |
| Co 228.616 | +87.6 | -0.00114 | 0.000013 | mg/L | | | | |
| Cr 267.716 | 362.4 | 0.00110 | 0.000027 | mg/L | | | | |
| Cu 327.396 | 934.5 | 0.00263 | 0.000013 | mg/L | | | | |
| Fe 261.387 | +610.0 | -0.00519 | 0.000209 | mg/L | | | | |
| K 404.721 | 490.4 | 0.400 | 0.0209 | mg/L | | | | |
| K 766.491 | 261867.5 | -0.00973 | 0.000546 | mg/L | | | | |
| Li 460.286 | +2245.1 | -0.0282 | 0.00220 | mg/L | | | | |
| Mg 279.079 | +170.7 | 0.0549 | 0.00009 | mg/L | | | | |
| Mn 257.610 | +468.6 | -0.00231 | 0.000016 | mg/L | | | | |
| Mo 202.030 | 140.9 | 0.00186 | 0.000061 | mg/L | | | | |
| Na 330.237 | 653.6 | 0.120 | 0.0007 | mg/L | | | | |
| Ni 231.604 | +231.9 | -0.00164 | 0.000025 | mg/L | | | | |
| Pb 220.353 | 85.8 | -0.00219 | 0.000059 | mg/L | | | | |
| Sb 206.833 | 141.1 | 0.00477 | 0.000342 | mg/L | | | | |
| Se 196.026 | +77.4 | 0.00051 | 0.001185 | mg/L | | | | |
| Si 288.158 | 752.9 | 0.0134 | 0.00046 | mg/L | | | | |
| Sn 189.933 | 26.9 | -0.00425 | 0.000021 | mg/L | | | | |
| Sr 232.236 | 18.3 | -0.00179 | 0.000796 | mg/L | | | | |
| Ti 337.281 | +112.5 | -0.00017 | 0.000009 | mg/L | | | | |
| Tl 190.801 | 27.4 | 0.00230 | 0.000032 | mg/L | | | | |
| V 292.402 | +71.3 | 0.00017 | 0.000031 | mg/L | | | | |
| Zn 206.200 | 1183.2 | 0.00375 | 0.000171 | mg/L | | | | |
| S 182.037 | +11.9 | 1.46 | 0.019 | mg/L | | | | |
| B 208.893 | 336.2 | 1.07 | 0.094 | mg/L | | | | |
| B 208.959 | 307.1 | 0.397 | 0.0331 | mg/L | | | | |
| B 249.773 | 533.1 | 1.22 | 0.039 | mg/L | | | | |

Mean Data ----------

ID: 0140000 .5 Seq. No.: 6 Sample No.: 4 A/C Pos: 43
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 0.1 200.0
Data: Original Date: 9/2/98 3:03:24 PM

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 361.073 | 2304945.5 | | | | | | | 1.23% |
| Ag 328.068 | -2165.6 | -0.00155 | 0.000001 | mg/L | -0.174 | 0.0001 | mg/L | 1.05% |
| Al 237.312 | 1446036.5 | 57.4 | 0.36 | mg/L | 5560 | 35.1 | mg/L | 0.63% |
| As 189.979 | 409.2 | 0.0245 | 0.00042 | mg/L | 2.34 | 0.041 | mg/L | 1.75% |
| Ba 230.424 | 231303.5 | 0.427 | 0.0003 | mg/L | 41.4 | 0.23 | mg/L | 0.55% |
| Be 234.861 | 14269.0 | 0.00339 | 0.000050 | mg/L | 0.328 | 0.0049 | mg/L | 1.49% |
| Ca 227.549 | 35994.2 | 24.1 | 0.20 | mg/L | 2390 | 19.8 | mg/L | 0.83% |
| Cd 226.502 | 2880.7 | 0.0148 | 0.00014 | mg/L | 1.44 | 0.013 | mg/L | 0.90% |
| Co 228.616 | 1875.9 | 0.00679 | 0.000041 | mg/L | 0.659 | 0.0039 | mg/L | 0.60% |
| Cr 267.716 | 7896.1 | 0.0226 | 0.00012 | mg/L | 2.21 | 0.012 | mg/L | 0.52% |
| Cu 327.396 | 44450.2 | 0.106 | 0.0009 | mg/L | 12.1 | 0.08 | mg/L | 0.69% |
| Fe 261.387 | 2115760.9 | 50.6 | 0.35 | mg/L | 4930 | 37.1 | mg/L | 0.75% |
| K 404.721 | 8705.0 | 7.26 | 0.150 | mg/L | 705 | 14.6 | mg/L | 2.07% |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 30466.6 | -0.0255 | 0.00080 | mg/L | -0.61 | 0.076 | mg/L | 3.12% |
| Mg 279.079 | 546039.9 | 23.1 | 0.10 | mg/L | 1270 | 9.6 | mg/L | 0.75% |
| Mn 257.610 | 938195.2 | 0.802 | 0.0053 | mg/L | 77.6 | 0.51 | mg/L | 0.65% |
| Mo 202.030 | 556.9 | 0.0206 | 0.00003 | mg/L | 1.03 | 0.003 | mg/L | 0.32% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Na 330.237 | 38549.2 | 5.99 | 0.041 mg/L | 580 | 3.9 mg/L | [illegible] |
| Ni 231.604 | 4034.9 | 0.0291 | 0.00029 mg/L | 2.92 | 0.029 mg/L | [illegible] |
| Pb 220.353 | 42359.7 | 2.35 | 0.017 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sb 206.833 | 168.9 | -0.00891 | 0.000833 mg/L | -0.865 | 0.0869 mg/L | [illegible] |
| Se 196.026 | -46.8 | -0.00614 | 0.000585 mg/L | -0.596 | 0.0549 mg/L | [illegible] |
| Si 288.158 | 117674.9 | 2.21 | 0.015 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sn 189.933 | 260.8 | 0.00174 | 0.000034 mg/L | 0.169 | 0.0331 mg/L | [illegible] |
| Sr 232.236 | 1610.2 | 0.234 | 0.0033 mg/L | [illegible] | 0.00 mg/L | [illegible] |
| Ti 337.280 | 334699.1 | 0.206 | 0.0013 mg/L | [illegible] | 0.13 mg/L | [illegible] |
| Tl 190.800 | 2.5 | 0.0161 | 0.00018 mg/L | 1.56 | [illegible] mg/L | [illegible] |
| V 292.402 | 11940.2 | 0.0345 | 0.00016 mg/L | 3.35 | 0.016 mg/L | [illegible] |
| Zn 206.200 | 12921054.2 | 40.8 | 1.03 mg/L | 3963 | 100.1 mg/L | [illegible] |
| B 182.527 | 80.8 | 8.74 | 0.093 mg/L | 849 | 9.1 mg/L | [illegible] |
| B 208.893 | 811.6 | 4.39 | 0.081 mg/L | 426 | 7.9 mg/L | [illegible] |
| B 208.959 | 1442.9 | -5.74 | 0.002 mg/L | -557 | 0.2 mg/L | [illegible] |
| B 249.773 | 8903.2 | 21.6 | 0.41 mg/L | 2100 | 39.6 mg/L | [illegible] |

Mean Data ----------

ID: 0843501 .5 Seq. No.: 7 Sample No.: 5 A/S Pos: 44
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.0: 200.0
Data: Original Date: 9/4/98 3:12:48 PM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2202611.6 | | | | | | | [illegible] |
| Ag 328.068 | -5381.7 | -0.00364 | 0.000128 | mg/L | -0.352 | 0.0124 | mg/L | [illegible] |
| Al 237.312 | 2978252.9 | 118 | 0.2 | mg/L | 11400 | 20.6 | mg/L | [illegible] |
| As 188.979 | 1609.8 | 0.0962 | 0.00310 | mg/L | 9.49 | 0.300 | mg/L | [illegible] |
| Ba 230.424 | 270596.9 | 0.504 | 0.0018 | mg/L | 48.7 | 0.17 | mg/L | [illegible] |
| Be 234.861 | 35291.0 | 0.00611 | 0.000110 | mg/L | 0.590 | 0.0106 | mg/L | [illegible] |
| Ca 227.549 | 38997.6 | 24.7 | 0.38 | mg/L | 2390 | 36.6 | mg/L | [illegible] |
| Cd 228.802 | 3587.4 | 0.0201 | 0.00005 | mg/L | 2.23 | 0.004 | mg/L | [illegible] |
| Co 228.616 | 4514.0 | 0.0198 | 0.00007 | mg/L | 1.91 | 0.007 | mg/L | [illegible] |
| Cr 267.716 | 24994.6 | 0.0717 | 0.00038 | mg/L | 6.93 | 0.037 | mg/L | [illegible] |
| Cu 327.396 | 78279.8 | 0.400 | 0.0006 | mg/L | 21.3 | 0.06 | mg/L | [illegible] |
| Fe 261.387 | 6314333.1 | 159 | 0.9 | mg/L | 15400 | 90.6 | mg/L | [illegible] |
| K 404.721 | Saturated | | | | | | | |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 115014.5 | 0.112 | 0.0074 | mg/L | 10.8 | 0.72 | mg/L | [illegible] |
| Mg 279.079 | 707901.9 | 16.9 | 0.09 | mg/L | 1630 | 8.2 | mg/L | [illegible] |
| Mn 257.610 | 1557033.9 | 1.33 | 0.005 | mg/L | 129 | 0.5 | mg/L | [illegible] |
| Mo 202.032 | 80.3 | 0.0102 | 0.00060 | mg/L | 0.982 | 0.0001 | mg/L | [illegible] |
| Na 330.237 | 51829.7 | 8.57 | 0.036 | mg/L | 857 | 3.7 | mg/L | [illegible] |
| Ni 231.604 | 8904.4 | 0.0646 | 0.00010 | mg/L | 6.24 | 0.009 | mg/L | [illegible] |
| Pb 220.353 | 25079.8 | 1.07 | 0.003 | mg/L | 102 | 1.3 | mg/L | [illegible] |
| Sb 206.833 | 622.8 | -0.0194 | 0.00003 | mg/L | -1.88 | 0.003 | mg/L | [illegible] |
| Se 196.026 | -210.9 | -0.0294 | 0.01000 | mg/L | -2.74 | 0.966 | mg/L | [illegible] |
| Si 288.158 | 79401.8 | 1.62 | 0.000 | mg/L | 156 | [illegible] | mg/L | [illegible] |
| Sn 189.933 | 568.7 | 0.00960 | 0.000218 | mg/L | 0.930 | 0.0211 | mg/L | [illegible] |
| Sr 232.236 | 3457.1 | 0.432 | 0.0103 | mg/L | 41.7 | 0.99 | mg/L | [illegible] |
| Ti 337.280 | 695645.6 | 0.428 | 0.0006 | mg/L | 41.4 | 0.06 | mg/L | [illegible] |
| Tl 190.800 | -390.3 | 0.0174 | 0.00010 | mg/L | 1.68 | 0.010 | mg/L | [illegible] |
| V 292.402 | 33490.6 | 0.103 | 0.0001 | mg/L | 9.91 | 0.007 | mg/L | [illegible] |
| Zn 206.200 | 13552544.7 | 42.6 | 0.06 | mg/L | 4133 | 5.9 | mg/L | [illegible] |
| B 182.527 | 260.1 | 28.1 | 0.85 | mg/L | 2730 | 82.5 | mg/L | [illegible] |
| B 208.893 | 2606.1 | 23.6 | 1.00 | mg/L | 2290 | 96.5 | mg/L | [illegible] |
| B 208.959 | 3276.0 | -13.9 | 0.09 | mg/L | -1330 | 8.3 | mg/L | [illegible] |
| B 249.773 | 26845.6 | 65.3 | 0.55 | mg/L | 6310 | 53.5 | mg/L | [illegible] |

Mean Data ----------

ID: 0851101 .5 Seq. No.: 8 Sample No.: 6 A/S Pos: 45
Sample Qty: 1.0000 mL Prep. Vol.: 1.0 mL Dilution: 1.0: 200.0
Data: Original Date: 9/4/98 3:17:02 PM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2308477.6 | | | | | | | 0.209 |
| Ag 328.068 | -73.0 | -0.00010 | 0.000007 | mg/L | -0.0103 | 0.00069 | mg/L | [illegible] |
| Al 237.312 | 16113.0 | 0.598 | 0.0092 | mg/L | 59.8 | 0.92 | mg/L | [illegible] |
| As 188.979 | -520.7 | -0.0168 | 0.00049 | mg/L | -1.68 | 0.049 | mg/L | [illegible] |
| Ba 230.424 | 986.1 | 0.00182 | [illegible] | mg/L | [illegible] | [illegible] | mg/L | [illegible] |

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537

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Be 234.861 | 41.1 | 0.00025 | 0.000001 mg/L | 0.0248 | 0.00005 mg/L | [illegible] | [illegible] |
| Ca 227.549 | 509.2 | 0.287 | 0.0047 mg/L | 28.7 | 0.47 mg/L | [illegible] | [illegible] |
| Cd 226.502 | -93.1 | -0.00249 | 0.000003 mg/L | -0.0493 | 0.00007 mg/L | [illegible] | [illegible] |
| Co 228.616 | 2569.5 | 0.0141 | 0.00007 mg/L | 1.41 | 0.007 mg/L | [illegible] | [illegible] |
| Cr 267.716 | [illegible] | 2.22 | 0.004 mg/L | 222 | 0.4 mg/L | [illegible] | [illegible] |
| Cu 327.396 | [illegible] | 2.06 | 0.009 mg/L | 206 | 0.9 mg/L | [illegible] | [illegible] |
| Fe 261.387 | 314819.4 | 7.95 | 0.023 mg/L | 795 | 2.3 mg/L | [illegible] | [illegible] |
| K 404.721 | 196.9 | 0.247 | 0.0669 mg/L | 24.7 | 6.69 mg/L | [illegible] | [illegible] |
| K 766.491 | 466196.9 | 0.0496 | 0.00064 mg/L | 4.96 | 0.064 mg/L | [illegible] | [illegible] |
| Li 460.289 | 1021.9 | -0.0500 | 0.00038 mg/L | -5.00 | 0.038 mg/L | [illegible] | [illegible] |
| Mg 279.079 | 9870.2 | 0.294 | 0.0044 mg/L | 29.4 | 0.44 mg/L | [illegible] | [illegible] |
| Mn 257.610 | [illegible] | 0.290 | 0.0001 mg/L | 29.0 | 0.01 mg/L | [illegible] | [illegible] |
| Mo 202.030 | 17622.5 | 0.243 | 0.0038 mg/L | 24.3 | 0.38 mg/L | [illegible] | [illegible] |
| Na 330.237 | 2306.4 | 0.340 | 0.0105 mg/L | 34.0 | 1.05 mg/L | [illegible] | [illegible] |
| Ni 231.604 | 171295.2 | [illegible] | 0.023 mg/L | [illegible] | [illegible] | [illegible] | [illegible] |
| Pb 220.353 | 131.1 | 0.00160 | 0.000362 mg/L | 0.160 | 0.0362 mg/L | [illegible] | [illegible] |
| Sb 206.833 | 1066.3 | 1.0303 | 0.00053 mg/L | 3.03 | 0.053 mg/L | [illegible] | [illegible] |
| Se 196.026 | 92.4 | 0.0140 | 0.00034 mg/L | 1.40 | 0.034 mg/L | [illegible] | [illegible] |
| Si 288.158 | 5774.3 | 0.158 | 0.0003 mg/L | 11.6 | 0.03 mg/L | [illegible] | [illegible] |
| Sn 189.933 | 343.8 | 0.00367 | 0.000002 mg/L | 0.367 | 0.0002 mg/L | [illegible] | [illegible] |
| Sr 232.235 | 72.6 | -0.00799 | 0.000446 mg/L | -0.799 | 0.0446 mg/L | [illegible] | [illegible] |
| Ti 337.280 | 1686.3 | 0.00152 | 0.000024 mg/L | 0.152 | 0.0024 mg/L | [illegible] | [illegible] |
| Tl 190.800 | 49.1 | 0.00199 | 0.000255 mg/L | 0.199 | 0.0255 mg/L | [illegible] | [illegible] |
| V 292.402 | 313.5 | 0.0232 | 0.00010 mg/L | 1.32 | 0.010 mg/L | [illegible] | [illegible] |
| Zn 206.200 | 15629.6 | 0.0529 | 0.00055 mg/L | 5.29 | 0.055 mg/L | [illegible] | [illegible] |
| B 182.527 | 486.7 | 40.7 | 1.54 mg/L | 4070 | 154.4 mg/L | [illegible] | [illegible] |
| B 208.893 | 2790.4 | 49.1 | 1.14 mg/L | 4910 | 114.4 mg/L | [illegible] | [illegible] |
| B 208.959 | 7180.0 | 16.5 | 0.39 mg/L | 1660 | 39.3 mg/L | [illegible] | [illegible] |
| B 249.773 | 19227.7 | 46.5 | 1.42 mg/L | 4660 | 141.9 mg/L | [illegible] | [illegible] |

Calibration Summary ----------
Method: clptstd

Date: 9/4/98 3:35:21 PM

| Element | Conc | Equation | Intercept | Slope | Curvature | Corr. Coeff. |
|---|---|---|---|---|---|---|
| Ag 328.068 | 3 | Linear-thru-Zero | 0.0 | 706441.2 | 0.00000 | 1.000000 |
| Al 237.312 | 3 | Linear-thru-Zero | 0.0 | 26263.6 | 0.00000 | 1.000000 |
| As 188.979 | 3 | Linear-thru-Zero | 0.0 | 16364.4 | 0.00000 | 1.000000 |
| Ba 230.424 | 3 | Linear-thru-Zero | 0.0 | 5417779.3 | 0.00000 | 1.000000 |
| Be 234.861 | 3 | Linear | -1636.9 | 2828346.0 | 0.00000 | 1.000000 |
| Ca 227.549 | 3 | Linear | -107.9 | 1410.6 | 0.00000 | 1.000000 |
| Cd 226.502 | 3 | Linear | -5.3 | 152362.6 | 0.00000 | 1.000000 |
| Co 228.616 | 3 | Linear | 111.4 | 209736.4 | 0.00000 | 1.000000 |
| Cr 267.716 | 3 | Linear-thru-Zero | 0.0 | 393917.4 | 0.00000 | 1.000000 |
| Cu 327.396 | 3 | Linear-thru-Zero | 0.0 | 355904.4 | 0.00000 | 1.000000 |
| Fe 261.387 | 3 | Linear | -404.1 | 39724.6 | 0.00000 | 1.000000 |
| K 404.721 | 3 | Linear-thru-Zero | 0.0 | 2166.4 | 0.00000 | 1.000000 |
| K 766.491 | 3 | Linear | 296112.1 | 3511002.7 | 0.00000 | 1.000000 |
| Li 460.286 | 3 | Linear | 482.5 | 96675.6 | 0.00000 | 1.000000 |
| Mg 279.079 | 3 | Linear | -2474.5 | 41925.1 | 0.00000 | 1.000000 |
| Mn 257.610 | 3 | Linear | 1065.2 | 1165753.4 | 0.00000 | 1.000000 |
| Mo 202.030 | 3 | Linear-thru-Zero | 0.0 | 72414.0 | 0.00000 | 1.000000 |
| Na 330.237 | 3 | Linear-thru-Zero | 0.0 | 5945.7 | 0.00000 | 1.000000 |
| Ni 231.604 | 3 | Linear-thru-Zero | 0.0 | 141326.5 | 0.00000 | 1.000000 |
| Pb 220.353 | 3 | Linear | 225.1 | 17948.5 | 0.00000 | 1.000000 |
| Sb 206.833 | 3 | Linear | 5.2 | 28496.5 | 0.00000 | 1.000000 |
| Se 196.026 | 3 | Linear | -87.5 | 12993.5 | 0.00000 | 1.000000 |
| Si 288.158 | 3 | Linear | 40.4 | 63194.2 | 0.00000 | 1.000000 |
| Sn 189.933 | 3 | Linear | 192.9 | 39026.4 | 0.00000 | 1.000000 |
| Sr 232.236 | 3 | Linear | 26.1 | 5509.1 | 0.00000 | 1.000000 |
| Ti 337.280 | 3 | Linear | -580.3 | 1626716.3 | 0.00000 | 1.000000 |
| Tl 190.801 | 3 | Linear-thru-Zero | 0.0 | 20979.5 | 0.00000 | 1.000000 |
| V 292.401 | 3 | Linear | -136.5 | 399737.0 | 0.00000 | 1.000000 |
| Zn 206.200 | 3 | Linear-thru-Zero | 0.0 | 316904.5 | 0.00000 | 1.000000 |
| B 182.587 | 3 | Linear | -30.1 | 22.7 | 0.00000 | 1.000000 |
| B 208.893 | 3 | Linear | 56.9 | 56.4 | 0.00000 | 1.000000 |
| B 208.959 | 3 | Linear | 208.4 | 408.3 | 0.00000 | 1.000000 |
| B 249.773 | 3 | Linear | 29.2 | 410.4 | 0.00000 | 1.000000 |

Method: clptstd
Results: 090498
Sample Info: 090498
Method Description:

IDC: d0040.idc
Spectra Stored: Yes
User: User1

MCP:
Method Stored: Yes
Date: 9/4/98 3:35:20 PM

Mean Data ----------
ID: SS Std

Seq. No.: 1
Data: Original

A/D Port: 1
Date: 9/4/98 3:34:43 PM

| Element | Mean Corr. Intensity | Std.Dev. | RSD |
|---|---|---|---|
| V 360.073 | 176926.6 | 3282.09 | 1.79% |

Calibration Summary
Method: clptstd Date: 9/4/96 1:37:11 PM

| Element | Stds | Equation | Intercept | Slope | Curvature | Corr. Coeff. |
|---|---|---|---|---|---|---|
| Ag 328.068 | 3 | Linear-thru-Zero | 0.0 | 706441.2 | 0.0000 | [illegible] |
| Al 237.312 | 3 | Linear-thru-Zero | 0.0 | 25065.9 | 0.0000 | [illegible] |
| As 189.979 | 3 | Linear-thru-Zero | 0.0 | 16254.4 | 0.0000 | [illegible] |
| Ba 230.424 | 3 | Linear-thru-Zero | 0.0 | 541779.3 | 0.0000 | [illegible] |
| Be 234.861 | 3 | Linear | -1636.9 | 2988346.0 | 0.00000 | [illegible] |
| Ca 227.549 | 3 | Linear | -107.9 | 1410.6 | 0.00000 | [illegible] |
| Cd 226.502 | 3 | Linear | -5.3 | 182362.6 | 0.00000 | [illegible] |
| Co 228.616 | 3 | Linear | 151.2 | 209736.4 | 0.00000 | [illegible] |
| Cr 267.716 | 3 | Linear-thru-Zero | 0.0 | 383917.1 | 0.00000 | [illegible] |
| Cu 327.396 | 3 | Linear-thru-Zero | 0.0 | 355904.1 | 0.00000 | [illegible] |
| Fe 261.387 | 3 | Linear | -404.1 | 39724.6 | 0.00000 | [illegible] |
| K 404.721 | 3 | Linear-thru-Zero | 0.0 | 1199.1 | 0.00000 | [illegible] |
| K 766.491 | 1 | Linear | 296120.1 | 3511001.7 | 0.00000 | [illegible] |
| Li 460.286 | 3 | Linear | 492.5 | 96675.5 | 0.00000 | [illegible] |
| Mg 279.079 | 3 | Linear | -2474.5 | 41925.1 | 0.00000 | [illegible] |
| Mn 257.610 | 3 | Linear | 1065.2 | 1168753.4 | 0.00000 | [illegible] |
| Mo 202.030 | 3 | Linear-thru-Zero | 0.0 | 72416.0 | 0.00000 | [illegible] |
| Na 330.237 | 3 | Linear-thru-Zero | 0.0 | 5945.7 | 0.00000 | [illegible] |
| Ni 231.604 | 3 | Linear-thru-Zero | 0.0 | 141326.5 | 0.00000 | [illegible] |
| Pb 220.353 | 3 | Linear | 125.1 | 17948.5 | 0.00000 | [illegible] |
| Sb 206.833 | 3 | Linear | 5.2 | 28496.5 | 0.00000 | [illegible] |
| Se 196.026 | 3 | Linear | -87.8 | 12883.5 | 0.00000 | [illegible] |
| Si 288.158 | 3 | Linear | 40.4 | 53190.2 | 0.00000 | [illegible] |
| Sn 189.933 | 3 | Linear | 192.9 | 39026.4 | 0.00000 | [illegible] |
| Sr 232.236 | 3 | Linear | 28.1 | 5508.1 | 0.00000 | [illegible] |
| Ti 337.280 | 3 | Linear | -580.3 | 1626710.3 | 0.00000 | [illegible] |
| Tl 190.803 | 3 | Linear-thru-Zero | 0.0 | 20979.8 | 0.00000 | [illegible] |
| V 292.402 | 3 | Linear | -138.5 | 398737.0 | 0.00000 | [illegible] |
| Zn 206.200 | 3 | Linear-thru-Zero | 0.0 | 316804.5 | 0.00000 | [illegible] |
| B 181.527 | 3 | Linear | -30.1 | 12.7 | 0.00000 | [illegible] |
| B 208.893 | 3 | Linear | 38.8 | 56.4 | 0.00000 | [illegible] |
| B 209.859 | 3 | Linear | 235.1 | 409.3 | 0.00000 | [illegible] |
| B 249.773 | 3 | Linear | 29.1 | 410.4 | 0.00000 | [illegible] |

Method: clptstd
Results: 090496
Sample Info: 090496
Method Description:

IEC: d4lec.iec
Spectra Stored: Yes
User: User1

MSF:
Method Stored: Yes
Date: 9/4/96 1:37:11 PM

Mean Data
ID: 0951101 .2
Sample Qty: 1.0000 mL

Seq. No.: 1
Prep. Vol.: 1.0 mL
Date: Original

Sample No.: 1
A/C Fac: 47
Dilution: 1.0: 250.0
Date: 9/4/96 3:39:14 PM

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2335594.2 | | | | | | | [illegible] |
| Ag 328.068 | -26.1 | -0.00004 | 0.000006 | mg/L | -0.00923 | 0.001540 | mg/L | [illegible] |
| Al 237.312 | 6463.9 | 0.256 | 0.0001 | mg/L | 64.0 | 0.03 | mg/L | [illegible] |
| As 189.979 | -325.5 | -0.00601 | 0.000569 | mg/L | -1.50 | 0.142 | mg/L | [illegible] |
| Ba 230.424 | 136.2 | 0.00025 | 0.000021 | mg/L | 0.0628 | 0.00529 | mg/L | [illegible] |
| Be 234.861 | -244.1 | 0.00034 | 0.000009 | mg/L | 0.0858 | 0.00229 | mg/L | [illegible] |
| Ca 227.549 | 199.7 | 0.147 | 0.0021 | mg/L | 36.8 | 0.52 | mg/L | [illegible] |
| Cd 226.502 | -0.1 | 0.00000 | 0.000002 | mg/L | 0.00716 | 0.000558 | mg/L | [illegible] |
| Co 228.616 | 1032.6 | 0.00419 | 0.000006 | mg/L | 1.05 | 0.001 | mg/L | [illegible] |
| Cr 267.716 | 354607.2 | 0.924 | 0.0009 | mg/L | 231 | 0.4 | mg/L | [illegible] |
| Cu 327.396 | 305884.1 | 0.859 | 0.0002 | mg/L | 215 | 0.1 | mg/L | [illegible] |
| Fe 261.387 | 130999.4 | 3.31 | 0.004 | mg/L | 827 | 1.1 | mg/L | [illegible] |
| K 404.721 | 306.5 | 0.256 | 0.0526 | mg/L | 63.9 | 13.20 | mg/L | 20.669 |
| K 766.491 | 390937.7 | 0.0070 | 0.00040 | mg/L | 6.75 | 0.099 | mg/L | [illegible] |
| Li 460.286 | 192.1 | -0.0262 | 0.00046 | mg/L | -6.54 | 0.120 | mg/L | [illegible] |
| Mg 279.079 | 4245.1 | 0.160 | 0.0001 | mg/L | 40.1 | 0.03 | mg/L | [illegible] |
| Mn 257.610 | 94433.1 | 0.0799 | 0.00013 | mg/L | 20.0 | 0.03 | mg/L | [illegible] |



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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mo 202.030 | 7176.9 | 0.0961 | 0.00064 | mg/L | 24.8 | 0.26 | mg/L |
| Na 330.237 | 14401.6 | 0.206 | 0.0025 | mg/L | 58.9 | 0.63 | mg/L |
| Ni 231.604 | 11823.5 | 0.561 | 0.0020 | mg/L | 127 | 0.5 | mg/L |
| Pb 220.353 | 103.5 | -0.00119 | 0.000074 | mg/L | -0.297 | 0.0185 | mg/L |
| Sb 206.833 | 554.3 | 0.0153 | 0.00001 | mg/L | 3.53 | 0.013 | mg/L |
| Se 196.026 | 5.6 | 0.00725 | 0.000140 | mg/L | 1.81 | 0.035 | mg/L |
| Si 288.158 | 8723.4 | 1.0516 | 0.00014 | mg/L | 12.6 | 0.04 | mg/L |
| Sn 189.989 | 150.2 | -0.00594 | 0.000012 | mg/L | -0.035 | 0.0031 | mg/L |
| Sr 282.202 | 41.5 | -0.00423 | 0.000265 | mg/L | -1.06 | 0.066 | mg/L |
| Ti 337.280 | 413.7 | 0.00061 | 0.000032 | mg/L | 0.153 | 0.0081 | mg/L |
| Tl 190.800 | -224.5 | -0.00052 | 0.000397 | mg/L | -0.130 | 0.0991 | mg/L |
| V 292.402 | 132.3 | 0.00572 | 0.000140 | mg/L | 1.43 | 0.035 | mg/L |
| Zn 206.200 | 7655.3 | 0.0242 | 0.00062 | mg/L | 6.04 | 0.154 | mg/L |
| B 182.587 | 226.3 | 20.5 | 0.23 | mg/L | 5110 | 56.8 | mg/L |
| B 208.890 | 1409.9 | 24.2 | 0.45 | mg/L | 6060 | 112.5 | mg/L |
| B 208.959 | 3555.4 | 7.99 | 0.148 | mg/L | 2000 | 36.9 | mg/L |
| B 249.773 | 9217.5 | 22.4 | 0.55 | mg/L | 5600 | 136.9 | mg/L |

Calibration Summary
Method: clptsta Date: [illegible]

| Element | Degr | Equation | Intercept | Slope | Curvature | Corr. Coef. |
|---|---|---|---|---|---|---|
| Ag 328.068 | 1 | Linear-thru-Zero | 0.0 | 706441.4 | 0.00000 | [illegible] |
| Al 237.312 | 1 | Linear-thru-Zero | 0.0 | 25283.8 | 0.00000 | [illegible] |
| As 189.979 | 1 | Linear-thru-Zero | 0.0 | 16054.4 | 0.00000 | [illegible] |
| Ba 230.424 | 1 | Linear-thru-Zero | 0.0 | 541779.5 | 0.00000 | [illegible] |
| Be 234.861 | 1 | Linear | -1636.9 | 2989346.0 | 0.00000 | [illegible] |
| Ca 227.549 | 1 | Linear | -107.9 | 1420.6 | 0.00000 | [illegible] |
| Cd 226.502 | 1 | Linear | -5.3 | 182362.6 | 0.00000 | [illegible] |
| Co 228.616 | 1 | Linear | 151.2 | 209736.4 | 0.00000 | [illegible] |
| Cr 267.716 | 1 | Linear-thru-Zero | 0.0 | 383927.1 | 0.00000 | [illegible] |
| Cu 327.396 | 1 | Linear-thru-Zero | 0.0 | 353904.1 | 0.00000 | [illegible] |
| Fe 261.387 | 1 | Linear | -404.1 | 39724.6 | 0.00000 | [illegible] |
| K 404.721 | 1 | Linear-thru-Zero | 0.0 | 2199.1 | 0.00000 | [illegible] |
| K 766.491 | 1 | Linear | 296112.1 | 3611001.7 | 0.00000 | [illegible] |
| Li 460.286 | 1 | Linear | 482.5 | 96675.9 | 0.00000 | [illegible] |
| Mg 279.079 | 1 | Linear | -2474.5 | 41926.1 | 0.00000 | [illegible] |
| Mn 257.610 | 1 | Linear | 1065.1 | 1168753.4 | 0.00000 | [illegible] |
| Mo 202.030 | 1 | Linear-thru-Zero | 0.0 | 72416.2 | 0.00000 | [illegible] |
| Na 330.237 | 1 | Linear-thru-Zero | 0.0 | 5945.7 | 0.00000 | [illegible] |
| Ni 231.604 | 1 | Linear-thru-Zero | 0.0 | 141326.5 | 0.00000 | [illegible] |
| Pb 220.353 | 1 | Linear | 125.1 | 17945.5 | 0.00000 | [illegible] |
| Sb 206.833 | 1 | Linear | 5.2 | 28496.5 | 0.00000 | [illegible] |
| Se 196.026 | 1 | Linear | -87.6 | 12883.5 | 0.00000 | [illegible] |
| Si 250.155 | 1 | Linear | 40.4 | 53190.4 | 0.00000 | [illegible] |
| Sn 189.933 | 1 | Linear | 192.9 | 39026.4 | 0.00000 | [illegible] |
| Sr 407.771 | 1 | Linear | 29.1 | 5504.1 | 0.00000 | [illegible] |
| Ti 337.280 | 1 | Linear | -560.3 | 1626710.3 | 0.00000 | [illegible] |
| Tl 190.800 | 1 | Linear-thru-Zero | 0.0 | 20979.8 | 0.00000 | [illegible] |
| V 292.402 | 1 | Linear | -136.5 | 396737.0 | 0.00000 | [illegible] |
| Zn 206.200 | 1 | Linear-thru-Zero | 0.0 | 316804.5 | 0.00000 | [illegible] |
| B 182.587 | 1 | Linear | -30.1 | 11.4 | 0.00000 | [illegible] |
| B 208.893 | 1 | Linear | 55.5 | 56.4 | 0.00000 | [illegible] |
| B 208.959 | 1 | Linear | 205.1 | 408.3 | 0.00000 | [illegible] |
| B 249.773 | 1 | Linear | 29.1 | 410.4 | 0.00000 | [illegible] |

Method: clptsta
Results: 090499
Sample Info: 090499
Method Description:

IDC: Calibration
Spectra Stored: Yes
User: User1

MDL:
Method Stored: Yes
Date: 9/4/99 3:48:07 PM

Mean Data
ID: [illegible]
Sample Qty: 1.0000 mL

Seq. No.: 1
Prep. Vol.: 1.0 mL
Data: Original

Sample No.: 1

A/D Ref: 49
Dilution: 1.0: [illegible]
Date: 9/4/99 3:47:22 PM

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | [illegible] |
| Ag 328.068 | -22.0 | -0.00003 | 0.000015 | mg/L | -0.0156 | 0.00733 | mg/L | 47.0[illegible] |
| Al 237.312 | 3254.0 | 0.129 | 0.0010 | mg/L | 64.4 | 0.48 | mg/L | 0.75[illegible] |
| As 189.979 | -169.9 | -0.00024 | 0.000127 | mg/L | -1.62 | 0.064 | mg/L | 3.93[illegible] |
| Ba 230.424 | -72.1 | -0.00013 | 0.000010 | mg/L | -0.0665 | 0.00493 | mg/L | 7.42[illegible] |
| Be 234.861 | -353.4 | 0.00044 | 0.000002 | mg/L | 0.222 | 0.0010 | mg/L | 0.45[illegible] |
| Ca 227.549 | 76.0 | 0.0579 | 0.00348 | mg/L | 49.0 | 1.74 | mg/L | 3.55[illegible] |
| Cd 226.502 | 12.1 | 0.00009 | 0.000014 | mg/L | 0.0474 | 0.00679 | mg/L | 14.33[illegible] |
| Co 228.616 | 506.0 | 0.00172 | 0.000031 | mg/L | 0.851 | 0.0153 | mg/L | 1.81[illegible] |
| Cr 267.716 | 180934.6 | 0.471 | 0.0009 | mg/L | 236 | 0.4 | mg/L | 0.[illegible] |
| Cu 327.396 | 154600.9 | 0.434 | 0.0014 | mg/L | 217 | 0.7 | mg/L | 0.32[illegible] |
| Fe 261.387 | 67512.9 | 1.71 | 0.002 | mg/L | 855 | 1.2 | mg/L | 0.14[illegible] |
| K 404.721 | 357.6 | 0.298 | 0.1098 | mg/L | 149 | 54.9 | mg/L | 36.81[illegible] |
| K 766.491 | 366735.9 | 0.0201 | 0.00056 | mg/L | 10.1 | 0.28 | mg/L | 2.78[illegible] |
| Li 460.286 | -522.7 | -0.0224 | 0.00049 | mg/L | -11.2 | 0.25 | mg/L | 2.21[illegible] |
| Mg 279.079 | 2272.2 | 0.113 | 0.0010 | mg/L | 56.6 | 0.50 | mg/L | 0.88[illegible] |
| Mn 257.610 | 49845.3 | 0.0409 | 0.00002 | mg/L | 20.4 | 0.01 | mg/L | 0.06[illegible] |

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mo 202.031 | 3651.4 | 0.0534 | 0.00019 mg/L | 35.8 | 0.03 mg/L | [illegible] |
| Na 330.237 | [illegible] | [illegible] | 0.0049 mg/L | 86.7 | 0.41 mg/L | [illegible] |
| Ni 231.604 | [illegible] | [illegible] | 0.0024 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Pb 220.353 | [illegible] | [illegible] | 0.000162 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sb 206.833 | [illegible] | [illegible] | 0.000296 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Se 196.026 | [illegible] | [illegible] | 0.000506 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Si 288.158 | [illegible] | [illegible] | 0.00022 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sn 189.989 | [illegible] | [illegible] | 0.000057 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Sr 216.596 | [illegible] | [illegible] | 0.000515 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Ti 337.280 | [illegible] | [illegible] | 0.000019 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Tl 190.800 | [illegible] | [illegible] | 0.000339 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| V 292.402 | [illegible] | [illegible] | 0.000210 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| Zn 206.200 | [illegible] | [illegible] | 0.00020 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 182.587 | [illegible] | [illegible] | 0.27 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 208.893 | [illegible] | [illegible] | 0.29 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 208.959 | [illegible] | [illegible] | 0.082 mg/L | [illegible] | [illegible] mg/L | [illegible] |
| B 249.773 | [illegible] | [illegible] | 0.15 mg/L | [illegible] | [illegible] mg/L | [illegible] |

Mean Data ----------

ID: [illegible] Seq. No.: 2 Sample No.: 6 A/C Pos: 6
Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.0 1.0
Data: Original Date: 9/4/98 3:51:11 PM

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | [illegible] |
| Ag 328.068 | -2619.5 | -0.00136 | 0.000043 | mg/L | | | | [illegible] |
| Al 237.312 | [illegible] | 265 | 0.7 | mg/L | | | | [illegible] |
| As 189.979 | -50.1 | -0.00006 | 0.000347 | mg/L | | | | [illegible] |
| Ba 230.424 | -1196.7 | 0.00044 | 0.000063 | mg/L | | | | [illegible] |
| Be 234.861 | 7745.4 | -0.00069 | 0.000004 | mg/L | | | | [illegible] |
| Ca 317.549 | [illegible] | 279 | 0.9 | mg/L | | | | [illegible] |
| Cd 226.502 | -137.5 | 0.00010 | 0.000051 | mg/L | | | | [illegible] |
| Co 228.616 | -163.4 | -0.00145 | 0.000395 | mg/L | | | | [illegible] |
| Cr 267.716 | -641.9 | 0.00064 | 0.000219 | mg/L | | | | [illegible] |
| Cu 327.396 | -1020.3 | -0.0106 | 0.00003 | mg/L | | | | [illegible] |
| *Cu exceeds lower limit for Cu 327.396 Action = Continue | | | | | | | | |
| Fe 261.187 | [illegible] | 93.5 | 0.34 | mg/L | | | | [illegible] |
| K 404.721 | 401.9 | 0.336 | 0.0699 | mg/L | | | | [illegible] |
| K 766.491 | [illegible] | 0.0170 | 0.00026 | mg/L | | | | [illegible] |
| Li 460.289 | [illegible] | 0.0176 | 0.00251 | mg/L | | | | [illegible] |
| Mg 279.079 | [illegible] | 255 | 0.2 | mg/L | | | | [illegible] |
| Mn 257.610 | [illegible] | [illegible] | 0.000014 | mg/L | | | | [illegible] |
| Mo 202.031 | -249.4 | -0.00006 | 0.001037 | mg/L | | | | [illegible] |
| Na 330.237 | [illegible] | 0.139 | 0.0026 | mg/L | | | | [illegible] |
| Ni 231.604 | -[illegible] | 0.00147 | 0.000094 | mg/L | | | | [illegible] |
| Pb 220.353 | [illegible] | 0.00146 | 0.000373 | mg/L | | | | [illegible] |
| Sb 206.833 | [illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Se 196.026 | [illegible] | [illegible] | 0.00365 | mg/L | | | | [illegible] |
| Si 288.158 | [illegible] | [illegible] | 0.00252 | mg/L | | | | [illegible] |
| Sn 189.989 | -[illegible] | [illegible] | [illegible] | mg/L | | | | [illegible] |
| Sr 216.596 | [illegible] | [illegible] | 0.000257 | mg/L | | | | [illegible] |
| Ti 337.280 | [illegible] | [illegible] | 0.000063 | mg/L | | | | [illegible] |
| Tl 190.800 | -[illegible] | [illegible] | 0.00322 | mg/L | | | | [illegible] |
| V 292.402 | [illegible] | [illegible] | 0.000027 | mg/L | | | | [illegible] |
| Zn 206.200 | [illegible] | [illegible] | 0.000092 | mg/L | | | | [illegible] |
| B 182.587 | [illegible] | [illegible] | 4.20 | mg/L | | | | [illegible] |
| B 208.893 | [illegible] | [illegible] | 1.69 | mg/L | | | | [illegible] |
| B 208.959 | [illegible] | -[illegible] | 0.14 | mg/L | | | | [illegible] |
| B 249.773 | [illegible] | [illegible] | 0.55 | mg/L | | | | [illegible] |

Mean Data ----------

ID: [illegible] Seq. No.: 3 Sample No.: 7 A/C Pos: 7
Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.0 1.0
Data: Original Date: 9/4/98 3:55:15 PM

| Element | Mean Corr. Intensity | Mean Conc. | Calib Std.Dev. | Calib Units | Mean Conc. | Sample Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | [illegible] | | | | | | | [illegible] |
| Ag 328.068 | [illegible] | 0.592 | 0.0002 | mg/L | | | | [illegible] |
| Al 237.312 | [illegible] | 259 | 0.5 | mg/L | | | | [illegible] |

| | | | | |
|---|---|---|---|---|
| As 189.979 | 4446.9 | 0.275 | 0.0006 | mg/L |
| Ba 233.424 | 107279.7 | 0.256 | 0.0006 | mg/L |
| Be 234.861 | 915490.5 | 0.276 | 0.0015 | mg/L |
| Ca 227.549 | [illegible] | [illegible] | 0.2 | mg/L |
| Cd 228.802 | 98529.2 | 0.542 | 0.0025 | mg/L |
| Co 228.616 | 47933.6 | 0.225 | 0.0024 | mg/L |
| Cr 267.716 | 96023.5 | 0.255 | 0.0036 | mg/L |
| Cu 327.396 | 57515.6 | 0.233 | 0.0011 | mg/L |
| Fe 261.387 | 3615543.9 | 92.0 | 0.27 | mg/L |
| K 404.721 | 4235.7 | 3.51 | 0.196 | mg/L |

*QC exceeds upper limit for K 404.721 Recovery = 140.29% Action = Continue

| | | | | |
|---|---|---|---|---|
| K 766.491 | Saturated | | | |
| Li 460.286 | 50904.7 | 0.0171 | 0.00057 | mg/L |
| Mg 279.079 | 10007506.0 | 248 | 0.6 | mg/L |
| Mn 257.610 | 311534.6 | 0.266 | 0.0003 | mg/L |
| Mo 202.031 | -362.5 | -0.00293 | 0.000163 | mg/L |
| Na 330.237 | 7573.7 | 1.27 | 0.016 | mg/L |
| Ni 231.604 | 65029.3 | 0.464 | 0.0035 | mg/L |
| Pb 220.353 | 8270.0 | 0.467 | 0.0045 | mg/L |
| Sb 206.833 | 16034.4 | 0.525 | 0.0029 | mg/L |
| Se 196.026 | 3657.0 | 0.249 | 0.0024 | mg/L |
| Si 288.158 | 2470.4 | 0.0269 | 0.00152 | mg/L |
| Sn 189.933 | -315.1 | -0.00032 | 0.000467 | mg/L |
| Sr 232.235 | 514.0 | -0.0012 | 0.00298 | mg/L |

*QC exceeds lower limit for Sr 232.235 Action = Continue

| | | | | |
|---|---|---|---|---|
| Ti 337.280 | 7074.1 | 0.00471 | 0.000030 | mg/L |
| Tl 190.800 | 8787.5 | 0.492 | 0.0004 | mg/L |
| V 292.402 | 103919.2 | 0.269 | 0.0004 | mg/L |
| Zn 206.200 | 140501.6 | 0.401 | 0.0028 | mg/L |
| B 182.587 | 264.7 | 22.5 | 3.79 | mg/L |
| B 208.893 | 2596.6 | 11.1 | 1.67 | mg/L |
| B 208.959 | 5257.5 | -19.1 | 0.12 | mg/L |
| B 249.773 | 23879.6 | 59.1 | 1.01 | mg/L |

Mean Data ----------

ID: CCV Seq. No.: 4 Sample No.: 3 A/C Port: 5
Sample Qty: 1.0000 g Prep. Vol.: 1.0 L Dilution: 1.0
Data: Original Date: 9/4/98

| Element | Mean Corr. Intensity | Mean Conc. | Std.Dev. | Calib Units | Mean Conc. | Std.Dev. | Sample Units | RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 2052924.0 | | | | | | | |
| Ag 328.068 | 296141.5 | 0.405 | 0.0019 | mg/L | | | | |
| Al 237.312 | 2461142.2 | 9.74 | 1.061 | mg/L | | | | |
| As 189.979 | 6227.1 | 0.357 | 0.0015 | mg/L | | | | |
| Ba 233.424 | 553021.5 | 1.02 | 0.000 | mg/L | | | | |
| Be 234.861 | 1071329.5 | 0.0479 | 0.00026 | mg/L | | | | |
| Ca 227.549 | 13944.2 | 9.44 | 0.060 | mg/L | | | | |
| Cd 228.802 | 8838.9 | 0.0484 | 0.00017 | mg/L | | | | |
| Co 228.616 | 44101.1 | 0.209 | 0.0013 | mg/L | | | | |
| Cr 267.716 | 199839.1 | 1.543 | 0.0015 | mg/L | | | | |
| Cu 327.396 | 171630.6 | 0.492 | 0.0050 | mg/L | | | | |
| Fe 261.387 | 160461.6 | 4.13 | 0.016 | mg/L | | | | |
| K 404.721 | 64507.4 | 54.1 | 0.14 | mg/L | | | | |
| K 766.491 | Saturated | | | | | | | |
| Li 460.286 | 116037.7 | 1.07 | 0.008 | mg/L | | | | |
| Mg 279.079 | 4248720.9 | 10.2 | 0.01 | mg/L | | | | |
| Mn 257.610 | 620348.1 | 0.530 | 0.0001 | mg/L | | | | |
| Mo 202.030 | 65715.3 | 0.949 | 0.0067 | mg/L | | | | |
| Na 330.237 | 321859.7 | 54.5 | 0.14 | mg/L | | | | |
| Ni 231.604 | 75093.0 | 0.531 | 0.0026 | mg/L | | | | |
| Pb 220.353 | 9035.1 | 0.499 | 0.0030 | mg/L | | | | |
| Sb 206.833 | 29606.4 | 1.05 | 0.018 | mg/L | | | | |

*QC exceeds lower limit for Sb 206.833 Recovery = 67.40% Action = Continue

| | | | | |
|---|---|---|---|---|
| Se 196.026 | 4764.1 | 0.375 | 0.0009 | mg/L |
| Si 288.158 | 259981.5 | 4.69 | 0.026 | mg/L |
| Sn 189.933 | 37448.7 | 0.955 | 0.0028 | mg/L |
| Sr 232.235 | 5736.0 | 1.01 | 0.005 | mg/L |
| Ti 337.280 | 1688066.4 | 1.04 | 0.002 | mg/L |
| Tl 190.800 | 30271.0 | 0.491 | 0.0012 | mg/L |
| V 292.402 | 428633.2 | 1.05 | 0.000 | mg/L |

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| | | | | |
|---|---|---|---|---|
| Zn 206.200 | [illegible] | [illegible] | [illegible] mg/L | [illegible] |
| B 182.587 | [illegible] | [illegible] | [illegible] mg/L | [illegible] |
| B 208.892 | [illegible] | [illegible] | [illegible] mg/L | [illegible] |
| B 208.959 | [illegible] | [illegible] | [illegible] mg/L | [illegible] |
| B 249.773 | [illegible] | [illegible] | [illegible] mg/L | [illegible] |

Mean Data ----------
Zb: [illegible] Seq. No.: [illegible] Sample No.: [illegible] A/D Set: [illegible]
Sample Qty: [illegible] F Prep. No.: [illegible] L Dilution: [illegible] Date: [illegible]
Data: Original

| Element | Mean Corr. Intensity | Mean Conc. | Calc Std.Dev. | Units | Mean Conc. | Sample Std.Dev. | Units | % RSD |
|---|---|---|---|---|---|---|---|---|
| Y 360.073 | 1766042.4 | | | | | | | |
| Ag 328.068 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Al 237.312 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| As 189.979 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Ba 233.424 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Be 234.861 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Ca 317.549 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Cd 226.502 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Co 228.616 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Cr 267.716 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Cu 327.396 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Fe 261.187 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| K 404.721 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| K 766.491 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Li 460.286 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Mg 279.079 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Mn 257.610 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Mo 202.030 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Na 330.237 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Ni 231.604 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Pb 220.353 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Sb 206.833 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Se 196.026 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Si 251.611 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Sn 189.989 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Sr 216.596 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Ti 337.280 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Tl 190.856 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| V 292.402 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| Zn 206.200 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| B 182.587 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| B 208.892 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| B 208.959 | [illegible] | [illegible] | [illegible] | mg/L | | | | |
| B 249.773 | [illegible] | [illegible] | [illegible] | mg/L | | | | |

DOCUMENT COPY

# KEMRON ENVIRONMENTAL SERVICES
## FURNACE RUN LOGBOOK

ANALYST [illegible] SE DATE 09/04/95 TIME 1050
METHOD = SOP = WORK GROUP =
CAL STD SOURCE [illegible] ICV/CCV SOURCE [illegible]
POST SPK SOURCE [illegible]

| Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs | Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 27. | | | | |
| | | | | | 28. | | | | |
| | | | | | 29. | | | | |
| | | | | | 30. | | | | |
| | | | | | 31. | | | | |
| | | | | | 32. | | | | |
| | | | | | 33. | | | | |
| | | | | | 34. | | | | |
| 1. | SB | | | SB SB | 35. | | | | |
| 2. | S20 | | | | 36. | | | | |
| 3. | S50 | | | | 37. | | | | |
| 4. | ICV | | | | 38. | | | | |
| 5. | ICB | | | CCV CCB | 39. | | | | |
| 6. | PBS G | | | | 40. | | | | |
| 7. | LCSS | | 1.00/50 | | 41. | | | | |
| 8. | 0508-35-01.9 | 0.5 | 1.00/50 | | 42. | | | | |
| 9. | S001 | | | | 43. | | | | |
| 10. | 0508-33-01 | | 1.00/50 | | 44. | | | | |
| 11. | 0508-33-02.9 | 0.5 | 1.00/50 | | 45. | | | | |
| 12. | S002 | | | | 46. | | | | |
| 13. | 0508-35-01.9 | 0.5 | 1.00/50 | | 47. | | | | |
| 14. | S001 | | | | 48. | | | | |
| 15. | M501 | | 0.00/50 | CCV CCB | 49. | | | | |
| 16. | 0508-26-02 | | 1.00/50 | | 50. | | | | |
| 17. | D1902 | | 0.00/50 | CCV CCB | 51. | | | | |
| 18. | 0508-33-01.9 | 0.5 | 1.00/50 | | 52. | | | | |
| 19. | S001 | | | | 53. | | | | |
| 20. | RR 0503-50 1502 | | | CCV CCB | 54. | | | | |
| 21. | | | | | 55. | | | | |
| 22. | | | | | 56. | | | | |
| 23. | | | | | 57. | | | | |
| 24. | | | | | 58. | | | | |
| 25. | | | | | 59. | | | | |
| 26. | | | | | 60. | | | | |

Comments:

Note: No entry for Dil represents 1X Dilution

Autosampler Run Key:

CCV - Continuing Calibration Verification
CCB = Continuing Calibration Blank
% D = Automatic Instrument Rerun due to % RSD > 20%
FRS = Full Recalibration Sequence

D = Automatic Instrument Dilution
R = Analyst Rerun
BLK = Blank Rerun

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Method Name: SEKEM  Element: Se
Method Description: SEKEM

Date: 09/09/1998
Technique: Furnace  Calibration Equation: Zero Intercept: Linear
Wavelength: 196.0 nm  Slit Width: 2.00 nm
Lamp Current: 0  Energy: 48
Sample Info File: SE090898.SIF  Results Data Set: SE090898

---

Element: Se  Seq. No.: 1  AS Loc.: 1  Date: 09/08/1998
Sample ID: S0
µL dispensed: 3 from 40, 20 from 1

| Repl # | SampleConc µg/L | StndConc µg/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | -0.006 | 0.002 | 0.010 | 0.011 | 0.011 | 10:50:06 | No |
| 2 | | | -0.008 | -0.001 | 0.010 | 0.012 | 0.011 | 10:52:49 | Yes |
| Mean: | | | -0.007 | | | | | | |
| SD : | | | 0.002 | | | | | | |
| %RSD: | | | 23.45 | | | | | | |

Auto-zero performed.

---

Element: Se  Seq. No.: 2  AS Loc.: 2  Date: 09/08/1998
Sample ID: S4
µL dispensed: 16 from 1, 3 from 40, 4 from 2

| Repl # | SampleConc µg/L | StndConc µg/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 0.019 | 0.020 | 0.040 | 0.020 | 0.015 | 10:55:39 | No |
| 2 | | | 0.019 | 0.019 | 0.039 | 0.020 | 0.017 | 10:58:29 | Yes |
| Mean: | | | 0.019 | | | | | | |
| SD : | | | 0.000 | | | | | | |
| %RSD: | | | 1.74 | | | | | | |

Standard number 1 applied. [4.000]
Correlation Coefficient: 1.0000  Slope: 0.0047

---

Element: Se  Seq. No.: 3  AS Loc.: 2  Date: 09/08/1998
Sample ID: S10
µL dispensed: 10 from 1, 3 from 40, 10 from 2

| Repl # | SampleConc µg/L | StndConc µg/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 0.041 | 0.041 | 0.080 | 0.025 | 0.024 | 11:01:00 | No |
| 2 | | | 0.044 | 0.044 | 0.078 | 0.022 | 0.022 | 11:04:11 | Yes |
| Mean: | | | 0.042 | | | | | | |
| SD : | | | 0.002 | | | | | | |
| %RSD: | | | 5.60 | | | | | | |

Standard number 2 applied. [10.000]
Correlation Coefficient: 0.9995  Slope: 0.0043



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Element: Se  Seq. No.: 4  AS Loc.: 2  Date: 09/08/1998
Sample ID: S20
uL dispensed: 3 from 40, 20 from 2

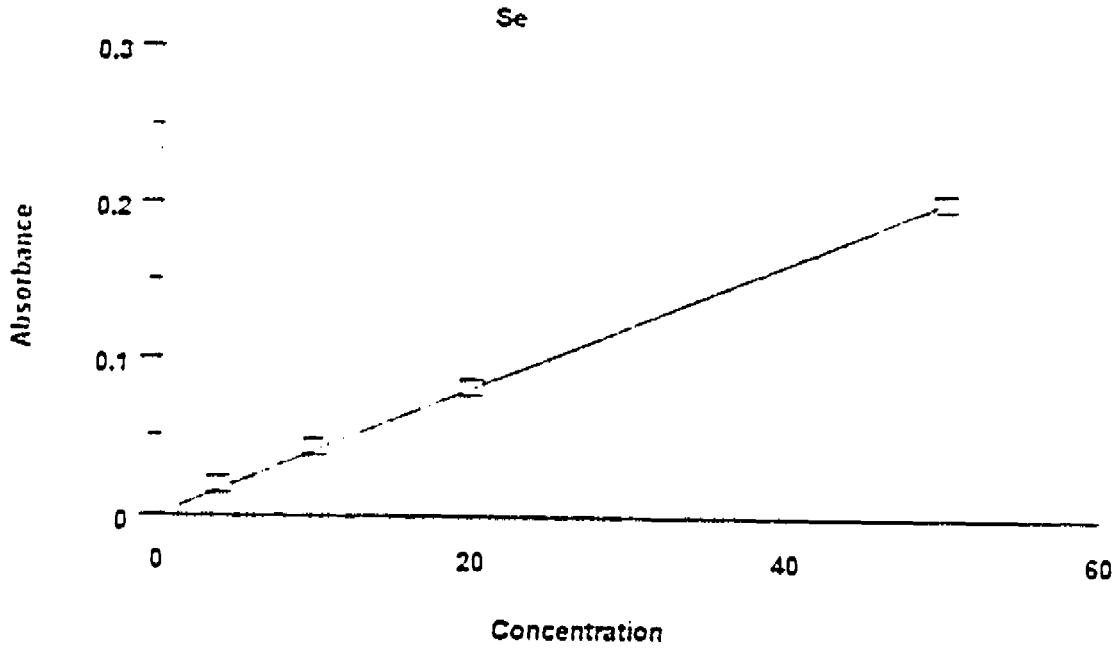
| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 0.080 | 0.081 | 0.154 | 0.028 | 0.036 | 11:06:56 | No |
| 2 | | | 0.082 | 0.082 | 0.153 | 0.027 | 0.036 | 11:09:41 | Yes |
| Mean: | | | 0.081 | | | | | | |
| SD : | | | 0.001 | | | | | | |
| %RSD: | | | 1.44 | | | | | | |

Standard number 3 applied. [20.000]
Correlation Coefficient: 0.9980  Slope: 0.0041

Element: Se  Seq. No.: 5  AS Loc.: 3  Date: 09/08/1998
Sample ID: S50
uL dispensed: 3 from 40, 20 from 3

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 0.202 | 0.202 | 0.387 | 0.057 | 0.090 | 11:12:26 | No |
| 2 | | | 0.201 | 0.201 | 0.393 | 0.055 | 0.090 | 11:15:11 | Yes |
| Mean: | | | 0.201 | | | | | | |
| SD : | | | 0.001 | | | | | | |
| %RSD: | | | 0.46 | | | | | | |

The calibration curve may not be linear.
Standard number 4 applied. [50.000]
Correlation Coefficient: 0.9997  Slope: 0.0040






528 15

Calibration data for Se

| Standard ID | Mean Signal (Pk Area) | Entered Concentration (ug/L) | Calculated Concentration (ug/L) | Standard Deviation | %RSD |
|---|---|---|---|---|---|
| S1 | 0.000 | ---- | 0.000 | 0.002 | 28.449 |
| S4 | 0.019 | 4.000 | 4.656 | 0.000 | 1.744 |
| S10 | 0.042 | 10.000 | 10.49 | 0.002 | 5.611 |
| S20 | 0.081 | 20.000 | 20.05 | 0.001 | 1.439 |
| S50 | 0.201 | 50.000 | 49.81 | 0.011 | 0.456 |

Correlation Coefficient: 0.99972 Slope: 0.00404

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Element: Se Seq. No.: 6 AS Loc.: 4 Date: 09/08/1998
Sample ID: ICV
uL dispensed: 3 from 40, 20 from 4

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 25.57 | 25.57 | 0.103 | 0.104 | 0.202 | 0.035 | 0.047 | 11:23:23 | No |
| 2 | 24.99 | 24.99 | 0.101 | 0.101 | 0.202 | 0.035 | 0.053 | 11:26:11 | Yes |
| Mean: | 25.28 | 25.28 | 0.102 | | | | | | |
| SD : | 0.419 | 0.419 | 0.002 | | | | | | |
| %RSD: | 1.65 | 1.65 | 1.65 | | | | | | |

QC value within specified limits.

Element: Se Seq. No.: 7 AS Loc.: 5 Date: 09/08/1998
Sample ID: ICB
uL dispensed: 3 from 40, 20 from 5

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.566 | 0.566 | 0.002 | 0.003 | 0.011 | 0.011 | 0.013 | 11:29:01 | No |
| 2 | 0.806 | 0.806 | 0.003 | 0.004 | 0.010 | 0.012 | 0.011 | 11:31:49 | Yes |
| Mean: | 0.686 | 0.686 | 0.003 | | | | | | |
| SD : | 0.170 | 0.170 | 0.001 | | | | | | |
| %RSD: | 24.78 | 24.78 | 24.78 | | | | | | |

QC value within specified limits.

Element: Se Seq. No.: 8 AS Loc.: 4 Date: 09/08/1998
Sample ID: CCV
uL dispensed: 3 from 40, 20 from 4

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 25.92 | 25.92 | 0.105 | 0.105 | 0.197 | 0.031 | 0.049 | 11:34:37 | No |
| 2 | 25.68 | 25.68 | 0.104 | 0.104 | 0.204 | 0.033 | 0.046 | 11:37:24 | Yes |
| Mean: | 25.80 | 25.80 | 0.104 | | | | | | |
| SD : | 0.170 | 0.170 | 0.001 | | | | | | |
| %RSD: | 0.66 | 0.66 | 0.66 | | | | | | |

QC value within specified limits.



1 of 1
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Element: Se  Seq. No.: 9  AS Loc.: 5  Date: 09/08/1998
Sample ID: CCB
µL dispensed: 3 from 40, 20 from 5

| Repl # | SampleConc µg/L | StndConc µg/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.985 | 0.985 | 0.004 | 0.004 | 0.009 | 0.010 | 0.010 | 11:40:14 | No |
| 2 | 0.621 | 0.621 | 0.003 | 0.003 | 0.008 | 0.009 | 0.010 | 11:43:02 | Yes |
| Mean: | 0.803 | 0.803 | 0.003 | | | | | | |
| SD : | 0.257 | 0.257 | 0.001 | | | | | | |
| %RSD: | 32.04 | 32.04 | 32.04 | | | | | | |

CC value within specified limits.

Element: Se  Seq. No.: 10  AS Loc.: 6  Date: 09/08/1998
Sample ID: PBS Q  WG45050-03
µL dispensed: 3 from 40, 20 from 6

| Repl # | SampleConc µg/L | StndConc µg/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.239 | 0.239 | 0.001 | 0.001 | 0.011 | 0.016 | 0.012 | 11:45:53 | No |
| 2 | 0.123 | 0.123 | 0.000 | 0.001 | 0.008 | 0.017 | 0.017 | 11:48:42 | Yes |
| Mean: | 0.181 | 0.181 | 0.001 | | | | | | |
| SD : | 0.082 | 0.082 | 0.000 | | | | | | |
| %RSD: | 45.37 | 45.37 | 45.37 | | | | | | |

Element: Se  Seq. No.: 11  AS Loc.: 7  Date: 09/08/1998
Sample ID: LCSS  WG45050-04
µL dispensed: 3 from 40, 20 from 7

| Repl # | SampleConc mg/kg | StndConc µg/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.299 | 25.97 | 0.105 | 0.105 | 0.200 | 0.040 | 0.047 | 11:51:32 | No |
| 2 | 1.216 | 24.32 | 0.098 | 0.099 | 0.206 | 0.042 | 0.046 | 11:54:22 | Yes |
| Mean: | 1.257 | 25.15 | 0.102 | | | | | | |
| SD : | 0.058 | 1.167 | 0.005 | | | | | | |
| %RSD: | 4.64 | 4.64 | 4.64 | | | | | | |

Element: Se  Seq. No.: 12  AS Loc.: 8  Date: 09/08/1998
Sample ID: 06430-01.9  MD49-98-0140
µL dispensed: 3 from 40, 20 from 8

| Repl # | SampleConc mg/kg | StndConc µg/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.186 | 4.003 | 0.016 | 0.017 | 0.037 | 1.077 | 0.831 | 11:57:13 | No |
| 2 | 0.113 | 2.436 | 0.010 | 0.010 | 0.037 | 1.249 | 0.923 | 12:00:01 | Yes |
| Mean: | 0.149 | 3.221 | 0.013 | | | | | | |
| SD : | 0.051 | 1.107 | 0.004 | | | | | | |
| %RSD: | 34.36 | 34.36 | 34.36 | | | | | | |



185
550

Element: Se  Seq. No.: 13  AS Loc.: 9  Date: 09/08/1996

Sample ID: SP01

uL dispensed: 3 from 40, 20 from 9

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 13.78 | 13.78 | 0.056 | 0.056 | 0.122 | 1.253 | 0.906 | 12:02:49 | No |
| 2 | 12.53 | 12.53 | 0.051 | 0.051 | 0.118 | 1.294 | 0.899 | 12:05:34 | Yes |
| Mean: | 13.15 | 13.15 | 0.053 | | | | | | |
| SD : | 0.894 | 0.894 | 0.004 | | | | | | |
| %RSD: | 6.72 | 6.72 | 6.72 | | | | | | |

Element: Se  Seq. No.: 14  AS Loc.: 10  Date: 09/08/1996

Sample ID: 08433-01  MD49-96-0141

uL dispensed: 3 from 40, 20 from 10

| Repl # | SampleConc mg/kg | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.155 | 3.100 | 0.013 | 0.013 | 0.024 | 1.117 | 0.700 | 12:08:23 | No |
| 2 | 0.069 | 1.388 | 0.006 | 0.006 | 0.020 | 1.126 | 0.647 | 12:11:09 | Yes |
| Mean: | 0.112 | 2.244 | 0.009 | | | | | | |
| SD : | 0.061 | 1.211 | 0.005 | | | | | | |
| %RSD: | 53.95 | 53.95 | 53.95 | | | | | | |

Element: Se  Seq. No.: 15  AS Loc.: 11  Date: 09/08/1996

Sample ID: 08433-02.9  MD49-96-0142  1.04/50

uL dispensed: 3 from 40, 20 from 11

| Repl # | SampleConc mg/kg | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.076 | 1.589 | 0.006 | 0.007 | 0.014 | 0.481 | 0.342 | 12:13:55 | No |
| 2 | 0.074 | 1.530 | 0.006 | 0.007 | 0.014 | 0.370 | 0.246 | 12:16:39 | Yes |
| Mean: | 0.075 | 1.560 | 0.006 | | | | | | |
| SD : | 0.002 | 0.042 | 0.000 | | | | | | |
| %RSD: | 2.67 | 2.67 | 2.67 | | | | | | |

Element: Se  Seq. No.: 16  AS Loc.: 12  Date: 09/08/1996

Sample ID: SP02

uL dispensed: 3 from 40, 20 from 12

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 13.87 | 13.87 | 0.056 | 0.056 | 0.134 | 0.378 | 0.266 | 12:19:25 | No |
| 2 | 13.93 | 13.93 | 0.056 | 0.057 | 0.137 | 0.387 | 0.270 | 12:22:09 | Yes |
| Mean: | 13.90 | 13.90 | 0.056 | | | | | | |
| SD : | 0.039 | 0.039 | 0.000 | | | | | | |
| %RSD: | 0.28 | 0.28 | 0.28 | | | | | | |

0.5556



156

55

Element: Se Seq. No.: 17 AS Loc.: 13 Date: 09/08/1998
Sample ID: 08435-01.9 MD49-96-0143
uL dispensed: 3 from 40, 20 from 13

| Repl # | SampleConc mg/kg | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.105 | 2.269 | 0.009 | 0.010 | 0.020 | 0.924 | 0.579 | 12:24:51 | No |
| 2 | 0.096 | 2.079 | 0.008 | 0.009 | 0.020 | 0.971 | 0.569 | 12:27:33 | Yes |
| Mean: | 0.101 | 2.174 | 0.009 | | | | | | |
| SD : | 0.006 | 0.134 | 0.001 | | | | | | |
| %RSD: | 6.18 | 6.18 | 6.18 | | | | | | |

Element: Se Seq. No.: 18 AS Loc.: 14 Date: 09/08/1998
Sample ID: SP01
uL dispensed: 3 from 40, 20 from 14

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 11.82 | 11.82 | 0.047 | 0.048 | 0.084 | 1.002 | 0.599 | 12:30:18 | No |
| 2 | 12.56 | 12.56 | 0.051 | 0.051 | 0.086 | 0.996 | 0.603 | 12:32:66 | Yes |
| Mean: | 12.19 | 12.19 | 0.049 | | | | | | |
| SD : | 0.524 | 0.524 | 0.002 | | | | | | |
| %RSD: | 4.30 | 4.30 | 4.30 | | | | | | |

Element: Se Seq. No.: 19 AS Loc.: 15 Date: 09/08/1998
Sample ID: MS01 0.75/50
uL dispensed: 3 from 40, 20 from 15

| Repl # | SampleConc mg/kg | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.834 | 34.85 | 0.141 | 0.141 | 0.264 | 0.982 | 0.569 | 12:35:37 | No |
| 2 | 1.861 | 35.93 | 0.146 | 0.146 | 0.264 | 0.967 | 0.547 | 12:39:17 | Yes |
| Mean: | 1.848 | 35.39 | 0.143 | | | | | | |
| SD : | 0.040 | 0.761 | 0.003 | | | | | | |
| %RSD: | 2.16 | 2.16 | 2.16 | | | | | | |

Element: Se Seq. No.: 20 AS Loc.: 4 Date: 09/08/1998
Sample ID: CCV
uL dispensed: 3 from 40, 20 from 4

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 25.43 | 25.43 | 0.103 | 0.103 | 0.229 | 0.110 | 0.258 | 12:41:01 | No |
| 2 | 25.60 | 25.60 | 0.103 | 0.104 | 0.209 | 0.042 | 0.052 | 12:43:47 | Yes |
| Mean: | 25.51 | 25.51 | 0.103 | | | | | | |
| SD : | 0.120 | 0.120 | 0.000 | | | | | | |
| %RSD: | 0.47 | 0.47 | 0.47 | | | | | | |

QC value within specified limits.



- 557

187

Element: Se  Seq. No.: 21  AS Loc.: 5  Date: 09/08/1998
Sample ID: CCB
uL dispensed: 3 from 40, 20 from 5

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.056 | 0.056 | 0.000 | 0.001 | 0.010 | 0.019 | 0.009 | 12:46:36 | No |
| 2 | 0.394 | 0.394 | 0.002 | 0.002 | 0.011 | 0.012 | 0.010 | 12:49:25 | Yes |
| Mean: | 0.225 | 0.225 | 0.001 | | | | | | |
| SD : | 0.239 | 0.239 | 0.001 | | | | | | |
| %RSD: | 106.3 | 106.3 | 106.34 | | | | | | |

QC value within specified limits.

Element: Se  Seq. No.: 22  AS Loc.: 16  Date: 09/08/1998
Sample ID: 08424-02  WG45050-02  1.0 g/50
uL dispensed: 3 from 40, 20 from 16

| Repl # | SampleConc mg/kg | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.472 | 10.000 | 0.040 | 0.041 | 0.074 | 1.637 | 1.421 | 12:52:09 | No |
| 2 | 0.472 | 10.01 | 0.040 | 0.041 | 0.091 | 1.623 | 1.510 | 12:54:47 | Yes |
| Mean: | 0.472 | 10.01 | 0.040 | | | | | | |
| SD : | 0.000 | 0.011 | 0.000 | | | | | | |
| %RSD: | 0.11 | 0.11 | 0.11 | | | | | | |

Element: Se  Seq. No.: 23  AS Loc.: 17  Date: 09/08/1998
Sample ID: DUP02  WG45050-07  0.5 g/50
uL dispensed: 3 from 40, 20 from 17

| Repl # | SampleConc mg/kg | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.035 | 9.477 | 0.035 | 0.039 | 0.081 | 1.761 | 1.470 | 12:57:26 | No |
| 2 | 0.034 | 7.839 | 0.032 | 0.032 | 0.079 | 1.747 | 1.481 | 13:00:04 | Yes |
| Mean: | 0.034 | 8.658 | 0.035 | | | | | | |
| SD : | 0.005 | 1.158 | 0.005 | | | | | | |
| %RSD: | 13.38 | 13.38 | 13.38 | | | | | | |

0.44/7 [illegible]

Element: Se  Seq. No.: 24  AS Loc.: 4  Date: 09/08/1998
Sample ID: CCV
uL dispensed: 3 from 40, 20 from 4

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 23.72 | 23.72 | 0.096 | 0.096 | 0.213 | 0.196 | 0.322 | 13:02:47 | No |
| 2 | 26.66 | 26.66 | 0.108 | 0.108 | 0.233 | 0.048 | 0.052 | 13:05:34 | Yes |
| Mean: | 25.19 | 25.19 | 0.102 | | | | | | |
| SD : | 2.080 | 2.080 | 0.008 | | | | | | |
| %RSD: | 8.26 | 8.26 | 8.26 | | | | | | |

QC value within specified limits.



552
155

Element: Se  Seq. No.: 25  AS Loc.: 5  Date: 09/08/1998
Sample ID: CCB
uL dispensed: 3 from 40, 20 from 5

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.247 | 1.247 | 0.005 | 0.005 | 0.012 | 0.013 | 0.011 | 13:09:22 | No |
| 2 | 1.585 | 1.585 | 0.006 | 0.007 | 0.012 | 0.010 | 0.010 | 13:11:10 | Yes |
| Mean: | 1.416 | 1.416 | 0.006 | | | | | | |
| SD : | 0.239 | 0.239 | 0.001 | | | | | | |
| %RSD: | 16.89 | 16.89 | 16.89 | | | | | | |

CC value within specified limits.



159
351

Method Name: SEKEM  Element: Se
Method Description: SEKEM

Date: 09/08/1998
Technique: Furnace  Calibration Equation: Zero Intercept: Linear
Wavelength: 196.0 nm  Slit Width: 2.00 nm
Lamp Current: 0  Energy: 47
Sample Info File: SE090898.SIF  Results Data Set: SE090898

---

Element: Se  Seq. No.: 26  AS Loc.: 10  Date: 09/08/1998
Sample ID: 08433-01.9  MD49-98-0141
uL dispensed: 3 from 40, 20 from 10

| Repl # | SampleConc mg/kg | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.122 | 2.445 | 0.010 | 0.010 | 0.021 | 0.842 | 0.608 | 13:15:46 | No |
| 2 | 0.069 | 1.375 | 0.006 | 0.006 | 0.016 | 0.961 | 0.661 | 13:18:31 | Yes |
| Mean: | 0.096 | 1.910 | 0.008 | | | | | | |
| SD : | 0.039 | 0.757 | 0.003 | | | | | | |
| %RSD: | 39.62 | 39.62 | 39.62 | | | | | | |

---

Element: Se  Seq. No.: 27  AS Loc.: 11  Date: 09/08/1998
Sample ID: SP01
uL dispensed: 3 from 40, 20 from 11

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 13.73 | 13.73 | 0.055 | 0.056 | 0.069 | 1.006 | 0.593 | 13:21:18 | No |
| 2 | 12.93 | 12.93 | 0.052 | 0.053 | 0.086 | 1.025 | 0.536 | 13:24:02 | Yes |
| Mean: | 13.33 | 13.33 | 0.054 | | | | | | |
| SD : | 0.565 | 0.565 | 0.002 | | | | | | |
| %RSD: | 4.24 | 4.24 | 4.24 | | | | | | |

0.523

---

Element: Se  Seq. No.: 28  AS Loc.: 14  Date: 09/08/1998
Sample ID: RR08435-01SPK
uL dispensed: 3 from 40, 20 from 14

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 12.13 | 12.13 | 0.049 | 0.049 | 0.093 | 1.006 | 0.587 | 13:26:45 | No |
| 2 | 12.27 | 12.27 | 0.050 | 0.050 | 0.099 | 1.017 | 0.605 | 13:29:29 | Yes |
| Mean: | 12.20 | 12.20 | 0.049 | | | | | | |
| SD : | 0.103 | 0.103 | 0.000 | | | | | | |
| %RSD: | 0.84 | 0.84 | 0.84 | | | | | | |

Illegible

---

Element: Se  Seq. No.: 29  AS Loc.: 4  Date: 09/08/1998
Sample ID: CCV
uL dispensed: 3 from 40, 20 from 4

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 25.21 | 25.21 | 0.102 | 0.102 | 0.228 | 0.111 | 0.233 | 13:32:13 | No |
| 2 | 25.04 | 25.04 | 0.101 | 0.102 | 0.212 | 0.043 | 0.050 | 13:35:00 | Yes |
| Mean. | 25.13 | 25.13 | 0.101 | | | | | | |
| SD : | 0.115 | 0.115 | 0.000 | | | | | | |
| %RSD: | 0.46 | 0.46 | 0.46 | | | | | | |

QC value within specified limits.



190
555

Element: Se  Seq. No.: 30  AS Loc.: 5  Date: 09/08/1996
Sample ID: CCB
uL dispensed: 3 from 40, 20 from 5

| Repl # | SampleConc ug/L | StndConc ug/L | BlnkCorr Signal | Peak Area | Peak Height | Bkgnd Area | Bkgnd Height | Time | Peak Stored |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.934 | 0.934 | 0.004 | 0.004 | 0.009 | 0.030 | 0.068 | 10:37:45 | No |
| 2 | 0.356 | 0.356 | 0.001 | 0.002 | 0.009 | 0.014 | 0.012 | 10:41:37 | Yes |
| 3 | 0.646 | 0.646 | 0.003 | | | | | | |
| Mean: | 0.406 | 0.406 | 0.002 | | | | | | |
| SD : | 63.11 | 63.11 | 63.11 | | | | | | |
| %RSD: | | | | | | | | | |

QC value within specified limits.





554

# KEMRON ENVIRONMENTAL SERVICES
# FURNACE RUN LOGBOOK

ANALYST [illegible] SE-MSE DATE 07/10/[illegible] TIME [illegible]
METHOD = _____ SOP = _____ WORK GROUP = _____
CAL STD SOURCE [illegible] ICV/CCV SOURCE [illegible]
POST SPK SOURCE _____

| Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs | Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 27. | | | | |
| | | | | | 28. | | | | |
| | | | | | 29. | | | | |
| | | | | | 30. | | | | |
| | | | | | 31. | | | | |
| | | | | | 32. | | | | |
| | | | | | 33. | | | | |
| | | | | | 34. | | | | |
| 1. | CCV-[illegible] | 0.2 | | [illegible] | 35. | | | | |
| 2. | CCB | | | | 36 | | | | |
| 3. | 05430-01 | | [illegible]/50 | [illegible] | 37. | | | | |
| 4. | 05430-01.5 | 0.5 | [illegible]/50 | [illegible] | 38. | | | | |
| 5 | 05435-01 | | | | 39. | | | | |
| 6. | 05435-01.5 | 0.5 | | | 40. | | | | |
| 7. | 07097-01 | | | | 41. | | | | |
| 8. | 09120-01 | | | | 42. | | | | |
| 9. | 09120-01.5 | 0.5 | | | 43. | | | | |
| 10. | 09120-02 | | | | 44. | | | | |
| 11. | 09120-02.5 | 0.5 | | | 45. | | | | |
| 12 | | | | | 46. | | | | |
| 13. | | | | | 47. | | | | |
| 14. | | | | | 48. | | | | |
| 15. | | | | | 49. | | | | |
| 16 | | | | | 50. | | | | |
| 17. | | | | | 51. | | | | |
| 18. | | | | | 52. | | | | |
| 19. | | | | | 53. | | | | |
| 20. | | | | | 54. | | | | |
| 21. | | | | | 55. | | | | |
| 22. | | | | | 56. | | | | |
| 23. | | | | | 57. | | | | |
| 24. | | | | | 58. | | | | |
| 25. | | | | | 59. | | | | |
| 26. | | | | | 60. | | | | |

Comments: _____

Note: No entry for Dil represents 1X Dilution.

Autosampler Run Key

CCV = Continuing Calibration Verification
CCB = Continuing Calibration Blank
*D = Automatic Instrument Rerun due to % RSD > 20%
FRS = Full Recalibration Sequence

ID = Automatic Instrument Dilution
R = Analyst Rerun
BLK = Blank Rerun

Copy

[illegible] STANDARD [illegible]
[illegible] PROTOCOL [illegible]

OPERATOR ABC
DATE 03/14/1400/86 D1
DATE- 03/14/1400/86 D1 BE MEA

D1 PROTOCOL PARAMETERS

| | |
|---|---|
| IF THERE IS AN ERROR | STOP |
| D1 BASE POSITION | [illegible] |
| RECEIVER LIMITS (%) | [illegible] |
| RECEIVER MINIMUM LIMIT (%) | [illegible] |
| CORRELATION COEFFICIENT (R) | 1.000 |
| DISTANCE VOLUME REDUCTION | [illegible] |
| REPLICATE RSD LIMIT (%) | [illegible] |

AS 091452 AS

PROGRAM 10 BA STANDARD ADDITIONS

| | |
|---|---|
| INSTRUMENT MODE | ABSORBANCE |
| CALIBRATION MODE | STANDARD ADDITIONS |
| MEASUREMENT MODE | PEAK AREA |
| LAMP POSITION | 1 |
| LAMP CURRENT (ma) | 10 |
| SLIT WIDTH (nm) | 1.0 |
| SLIT HEIGHT | NORMAL |
| WAVELENGTH (nm) | 193.0 |
| SAMPLE INTRODUCTION | SAMPLER AUTOMATIC |
| TIME CONSTANT | 0.05 |
| MEASUREMENT TIME (sec) | 1.0 |
| REPLICATES | [illegible] |
| BACKGROUND CORRECTION | ON |
| [illegible] ABSORBANCE | [illegible] |

AL 05793
WL 05793
WL 05993

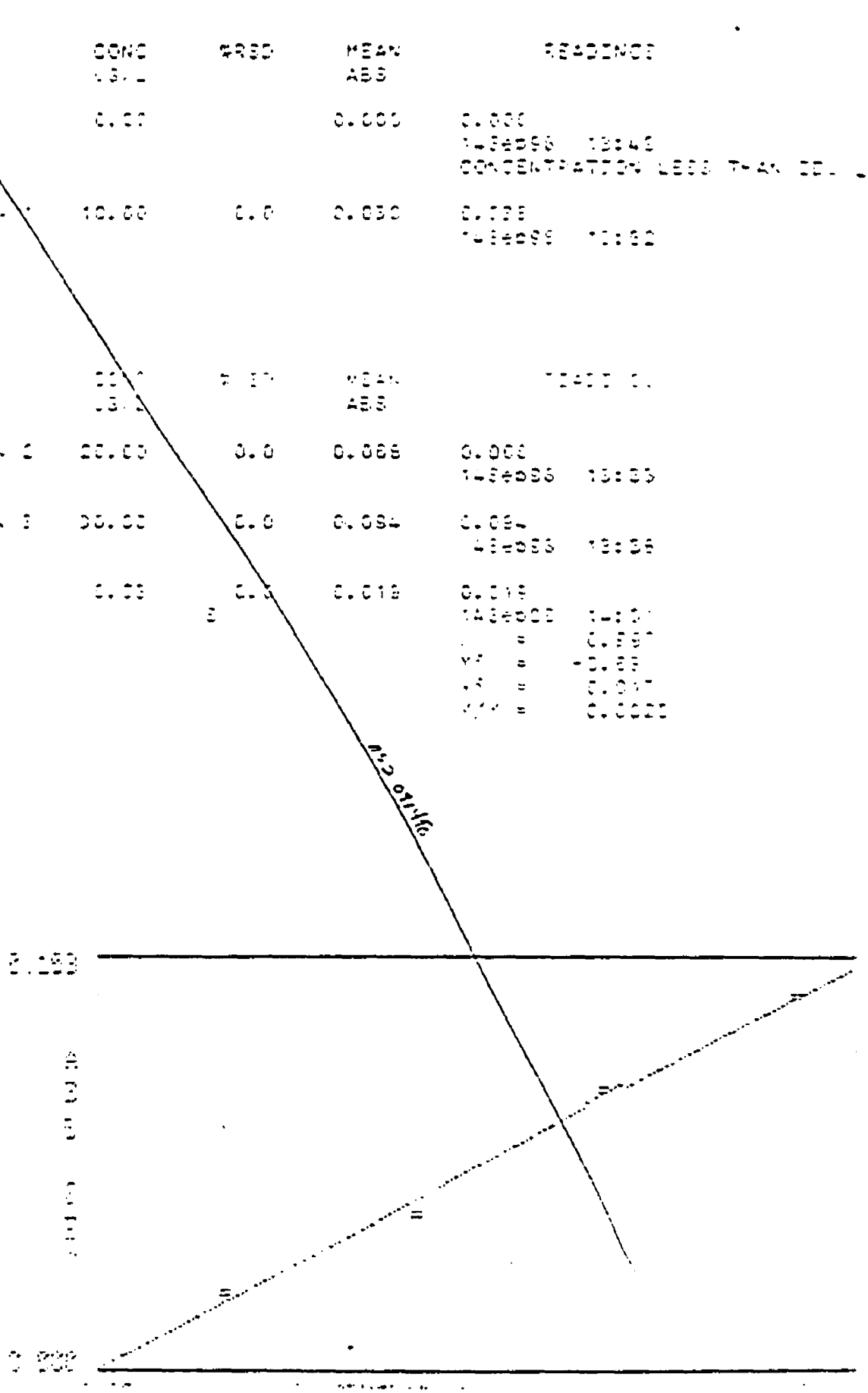
FURNACE PARAMETERS

| STEP NO. | TEMPERATURE (C) | TIME (sec) | GAS FLOW (L/min) | ACTION | READ (Y/N) |
|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | NORMAL | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | NORMAL | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | NORMAL | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | NORMAL | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | NORMAL | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | NORMAL | |
| [illegible] | [illegible] | [illegible] | [illegible] | NORMAL | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | NORMAL | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | NORMAL | |
| [illegible] | [illegible] | [illegible] | [illegible] | NORMAL | |

558

Best Available Copy

| SAMPLE | CONC (UG/L) | %RSD | MEAN ABS | READINGS |
|---|---|---|---|---|
| BLANK | 0.00 | | 0.000 | 0.000<br>14:06:56 10:40<br>CONCENTRATION LESS THAN DET. |
| ADDITION 1 | 10.00 | 0.0 | 0.030 | 0.030<br>14:06:59 10:52 |
| SAMPLE | CONC (UG/L) | %RSD | MEAN ABS | READINGS |
| ADDITION 2 | 20.00 | 0.0 | 0.066 | 0.066<br>14:06:56 10:55 |
| ADDITION 3 | 30.00 | 0.0 | 0.094 | 0.094<br>14:06:56 10:56 |
| [illegible] | 0.00 | 0.0 | 0.018 | 0.018<br>14:06:00 14:01<br>[illegible] = 0.997<br>[illegible] = -0.00[illegible]<br>[illegible] = 0.017<br>[illegible] = 0.0001 |

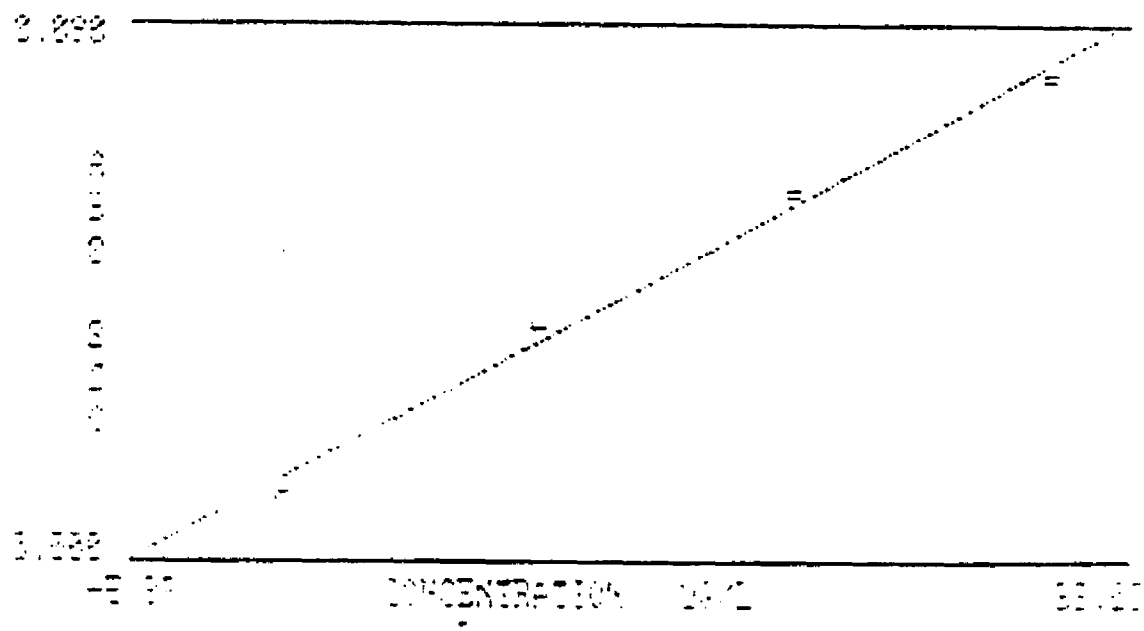


| | | | | | |
|---|---|---|---|---|---|
| BLANK 00 | 0.00 | | -0.001 | -0.001 14Sep88 14:00 CONCENTRATION LESS THAN DL | |
| * ADDITION 1 01 | 10.00 | 0.0 | 0.040 | 0.040 14Sep88 14:08 | |
| ADDITION 2 11 | 20.00 | 0.0 | 0.082 | 0.082 14Sep88 14:11 | |
| ADDITION 3 12 | 30.00 | 0.0 | 0.082 | 0.082 14Sep88 14:17 | |

| SAMPLE | CONC UG/L | %RSD | MEAN ABS | READINGS |
|---|---|---|---|---|
| CONC 00 | 0.00 | 0.0 | 0.011 | 0.011 14Sep88 14:18 |

R = 0.990
Y = -0.03
Y = 0.114
MAX = 0.0202

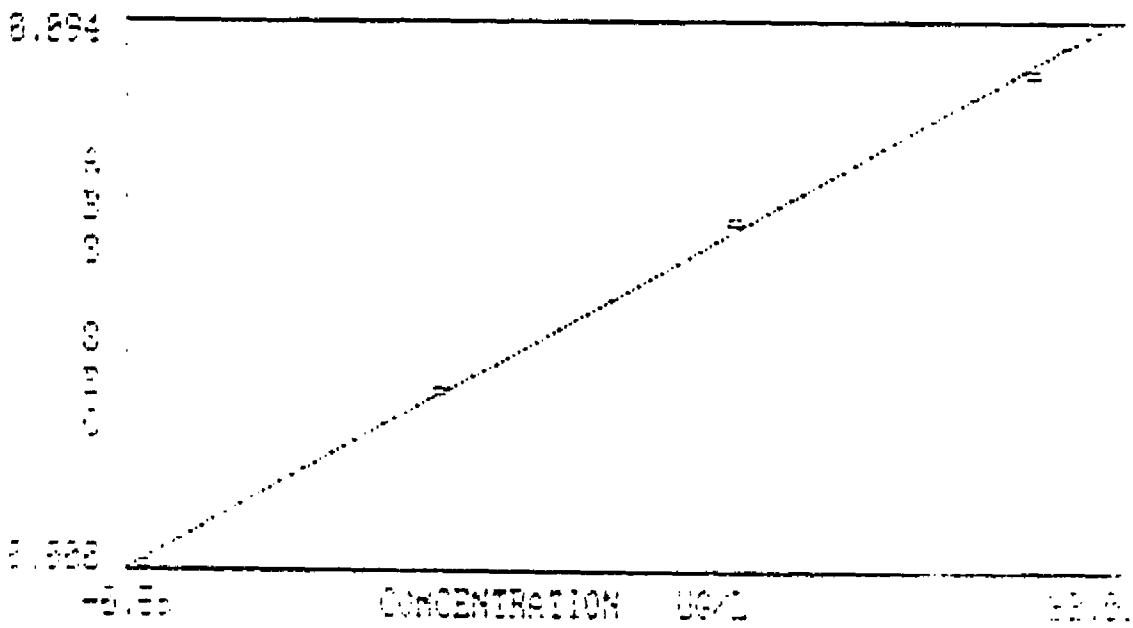
Best Available Copy



Best Available Copy

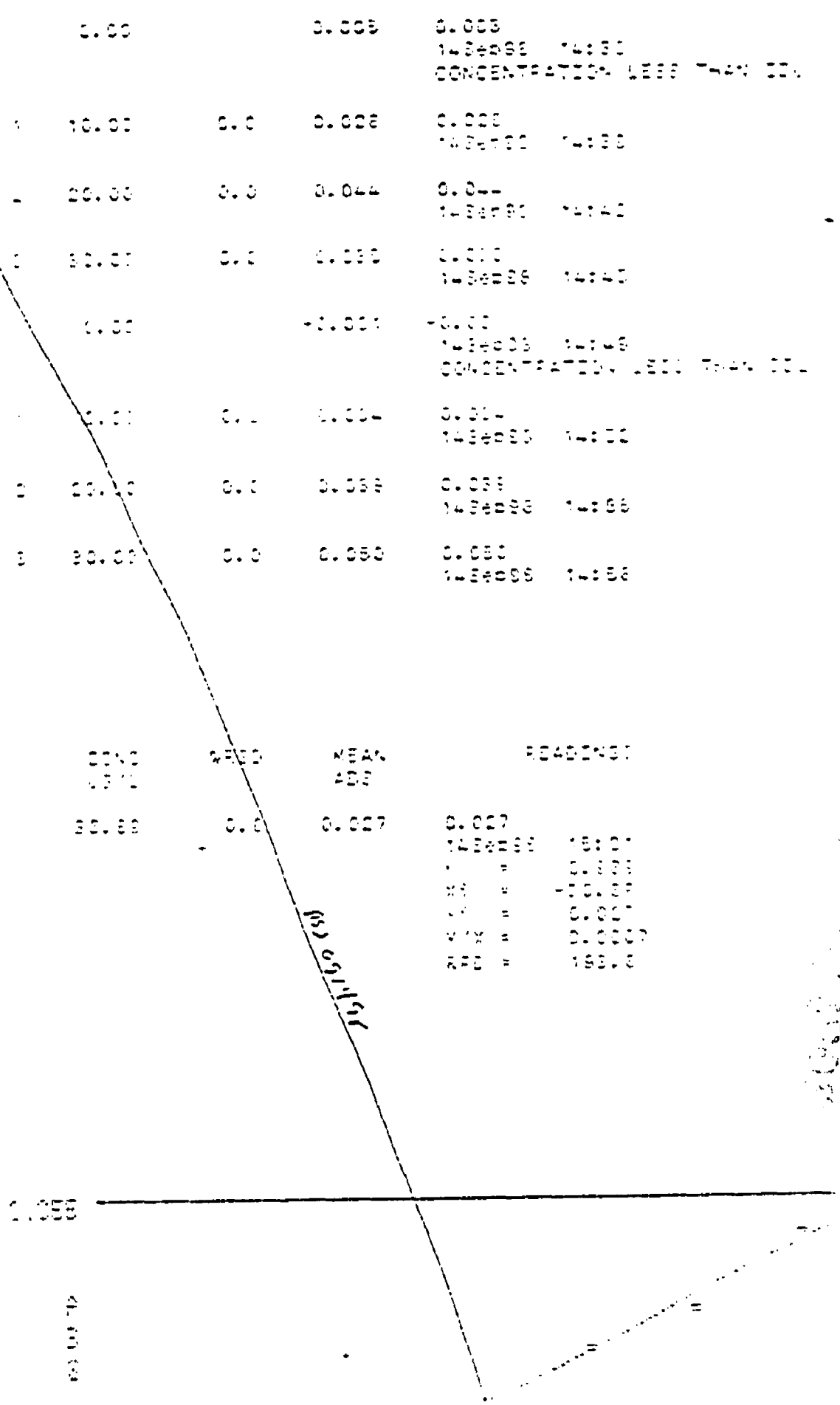
| | | | | | |
|---|---|---|---|---|---|
| BLANK 01 | 0.00 | | -0.003 | -0.003 | 14Sep90 14:20 CONCENTRATION LESS THAN DL |
| * ADDITION 1 02 | 10.00 | 0.0 | 0.031 | 0.031 | 14Sep90 14:23 |
| ADDITION 2 03 | 20.00 | 0.0 | 0.060 | 0.060 | 14Sep90 14:27 |
| ADDITION 3 04 | 30.00 | 0.0 | 0.080 | 0.080 | 14Sep90 14:30 |
| 100 05 | 0.00 | 0.0 | 0.001 | 0.00 | 14Sep90 14:33 |

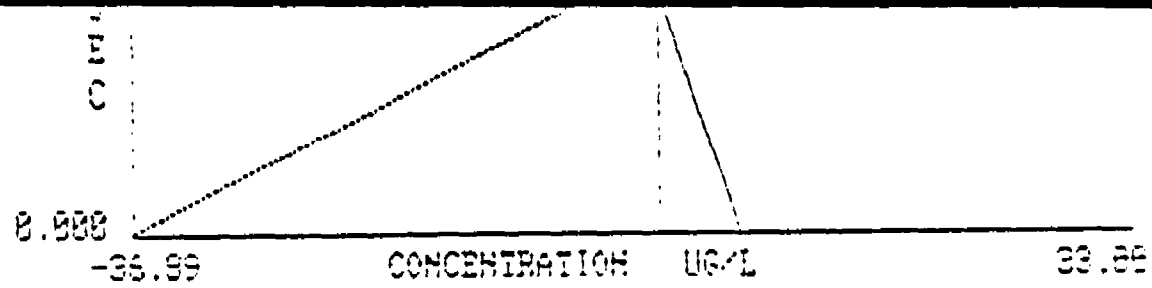
M = 0.197
B = -0.00
R = 0.996
V/N = 0.0028
CONCENTRATION LESS THAN DL



| SAMPLE | CONC UG/L | %RSD | MEAN ABS | READINGS |
|---|---|---|---|---|
| BLANK 02 | 0.00 | | 0.005 | 0.005<br>14Se88 14:30<br>CONCENTRATION LESS THAN DL |
| ADDITION 1 02 | 10.00 | 0.0 | 0.028 | 0.028<br>14Se88 14:33 |
| ADDITION 2 02 | 20.00 | 0.0 | 0.044 | 0.044<br>14Se88 14:40 |
| ADDITION 3 02 | 30.00 | 0.0 | 0.060 | 0.060<br>14Se88 14:43 |
| BLANK 03 | 0.00 | | -0.001 | -0.00<br>14Se88 14:46<br>CONCENTRATION LESS THAN DL |
| ADDITION 1 03 | 10.00 | 0.0 | 0.024 | 0.024<br>14Se88 14:50 |
| ADDITION 2 03 | 20.00 | 0.0 | 0.036 | 0.036<br>14Se88 14:53 |
| ADDITION 3 03 | 30.00 | 0.0 | 0.050 | 0.050<br>14Se88 14:56 |

| SAMPLE | CONC UG/L | %RSD | MEAN ABS | READINGS |
|---|---|---|---|---|
| 08-[illegible] 01 | 30.00 | 0.0 | 0.027 | 0.027<br>14Se88 15:07<br>[illegible] = 0.[illegible]<br>[illegible] = -[illegible]<br>[illegible] = 0.0[illegible]<br>[illegible]/X = 0.000[illegible]<br>RSD = 1[illegible].0 |

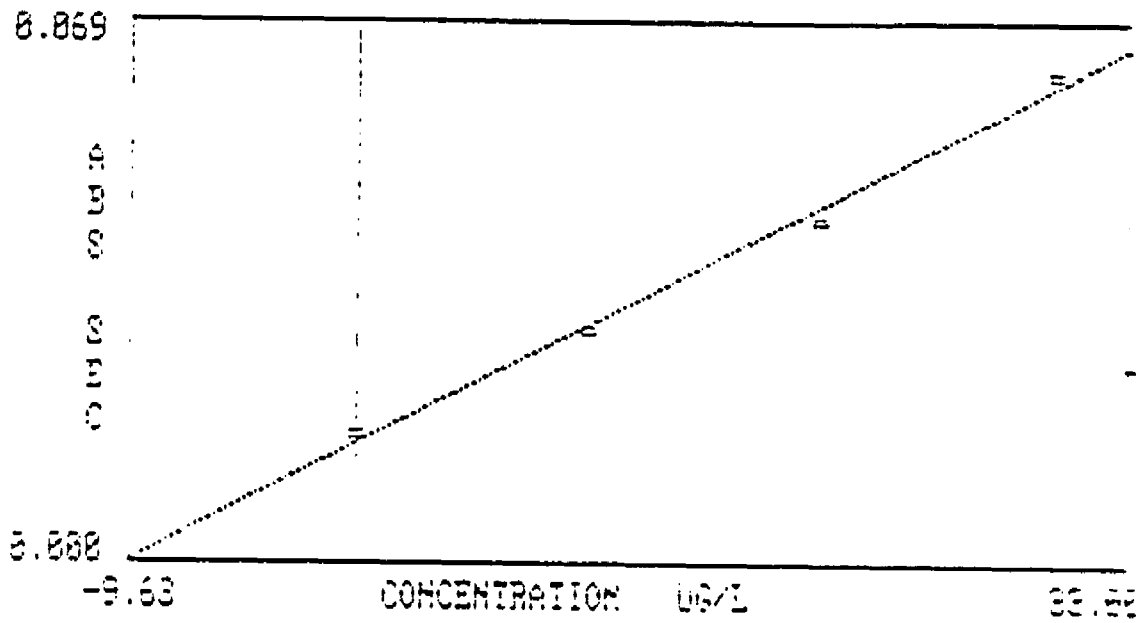





| | | | | |
|---|---|---|---|---|
| [illegible] | 0.00 | | 0.000 | 0.000<br>[illegible]<br>CONCENTRATION LESS THAN DL |
| ADDITION [illegible] | 10.00 | 0.0 | 0.001 | 0.001<br>[illegible] |
| ADDITION [illegible] | 20.00 | 0.0 | 0.045 | 0.045<br>[illegible] |
| ADDITION [illegible] | 30.00 | 0.0 | 0.042 | 0.042<br>[illegible] |
| BLANK | 0.00 | | -0.004 | -0.004<br>[illegible]<br>CONCENTRATION LESS THAN DL |
| ADDITION [illegible] | 10.00 | 0.0 | 0.029 | 0.029<br>[illegible] |

| SAMPLE | CONC | AREA | MEAN ABS | REGRESSION |
|---|---|---|---|---|
| | UG/L | | | |
| ADDITION [illegible] | 20.00 | 0.0 | 0.044 | 0.044<br>[illegible] |
| ADDITION [illegible] | 30.00 | 0.0 | 0.000 | 0.000<br>[illegible] |
| [illegible] | 0.00 | 0.0 | 0.010 | 0.010<br>[illegible] |

[illegible]




| | | | | |
|---|---|---|---|---|
| BLANK 00 | 0.00 | | -0.001 | -0.001 14Feb88 18:14 CONCENTRATION LESS THAN ZERO |
| ADDITION 1 00 | 10.00 | 0.0 | 0.043 | 0.043 14Feb88 18:37 |
| ADDITION 2 00 | 20.00 | 0.0 | 0.038 | 0.038 14Feb88 18:40 |
| ADDITION 3 00 | 30.00 | 0.0 | 0.039 | 0.039 14Feb88 18:43 |

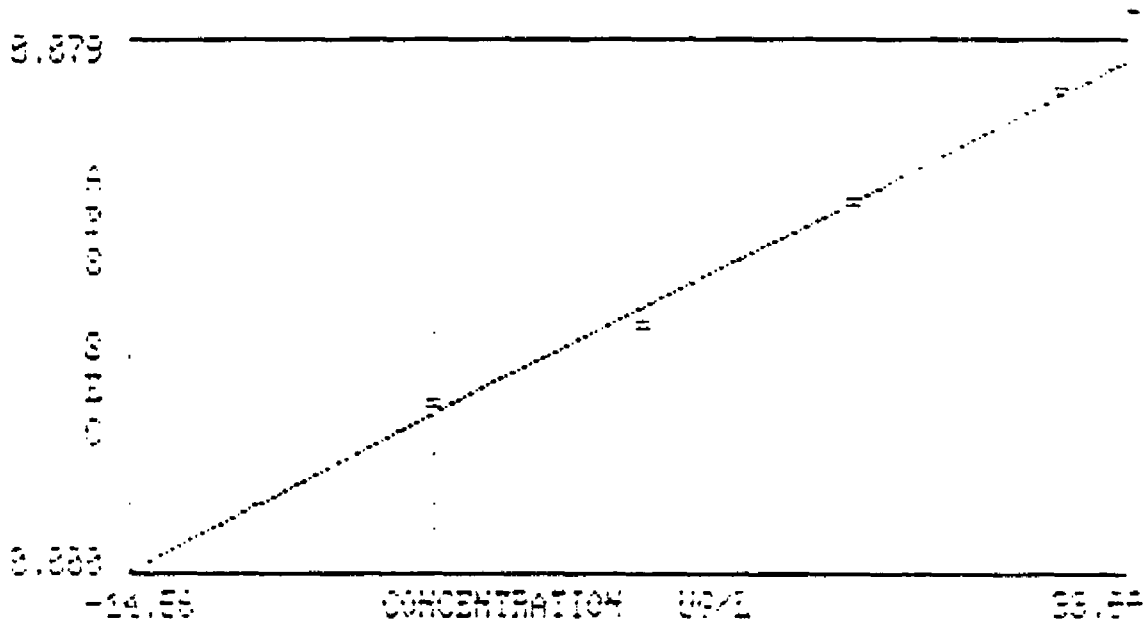
SIGNAL NOT INCREASING

| [illegible] | CONC UG/L | SFSD | MEAN ABS | READING |
|---|---|---|---|---|
| BLANK 00 | 0.00 | | 0.004 | 0.004 14Feb88 18:51 CONCENTRATION LESS THAN ZERO |
| ADDITION 1 00 | 10.00 | 0.0 | 0.037 | 0.037 14Feb88 18:51 |
| ADDITION 2 00 | 20.00 | 0.0 | 0.056 | 0.056 14Feb88 18:54 |
| ADDITION 3 00 | 30.00 | 0.0 | 0.072 | 0.072 14Feb88 18:57 |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |



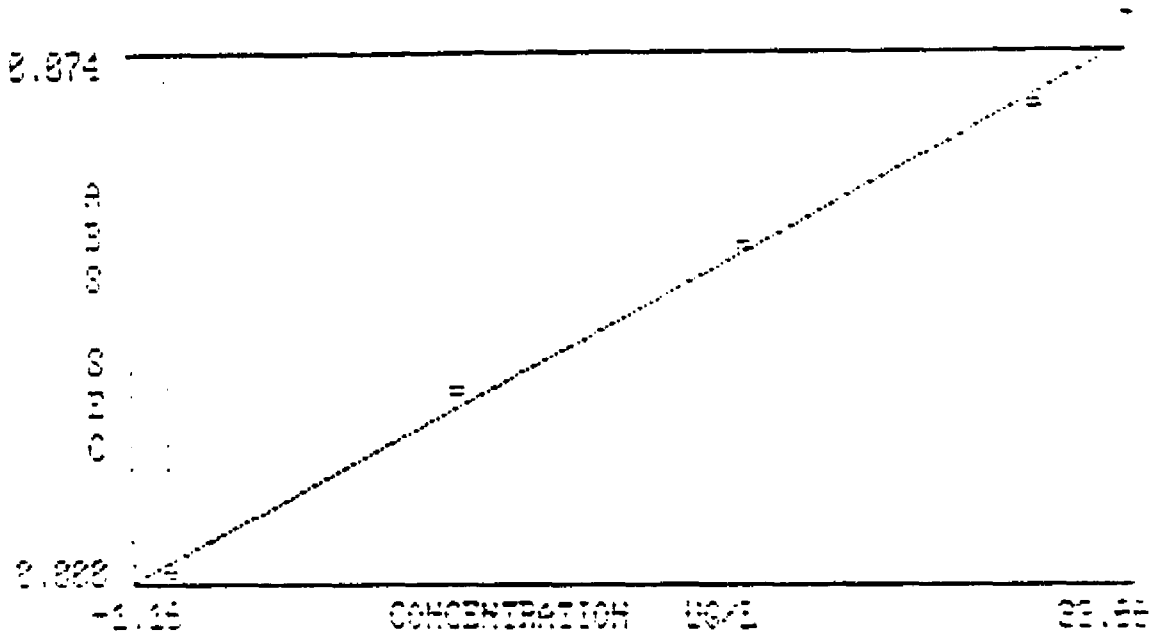
564

X1 = -14.56
V1 = 0.020
V/X = 0.0016



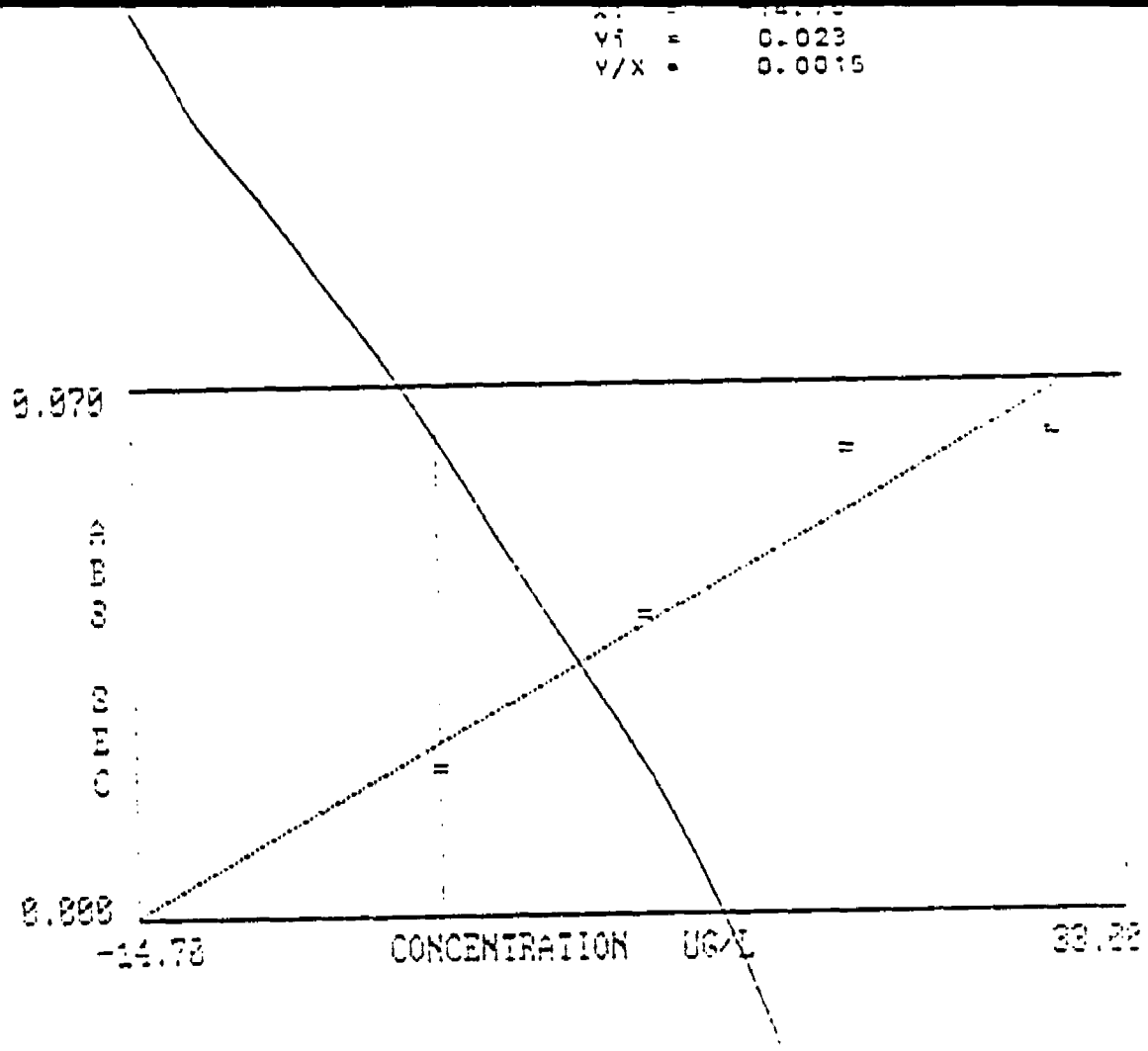

| | | | | |
|---|---|---|---|---|
| [illegible] | 0.00 | | 0.000 | 0.000<br>[illegible]<br>CONCENTRATION LESS THAN IDL |
| [illegible] | [illegible] | 0.0 | 0.027 | 0.027<br>[illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

Xi = -1.16
Yi = 0.003
Y/X = 0.0022
CONCENTRATION LESS THAN IDL




| | | | | |
|---|---|---|---|---|
| [illegible] | [illegible] | | 0.001 | 0.003<br>14Dec90 10:00<br>CONCENTRATION LESS THAN IDL |
| [illegible] | [illegible] | 0.0 | 0.040 | 0.041<br>14Dec90 10:00 |
| [illegible] | [illegible] | 0.0 | 0.002 | 0.001<br>14Dec90 10:00 |
| [illegible] | [illegible] | 0.0 | 0.004 | 0.014<br>14Dec90 10:01 |

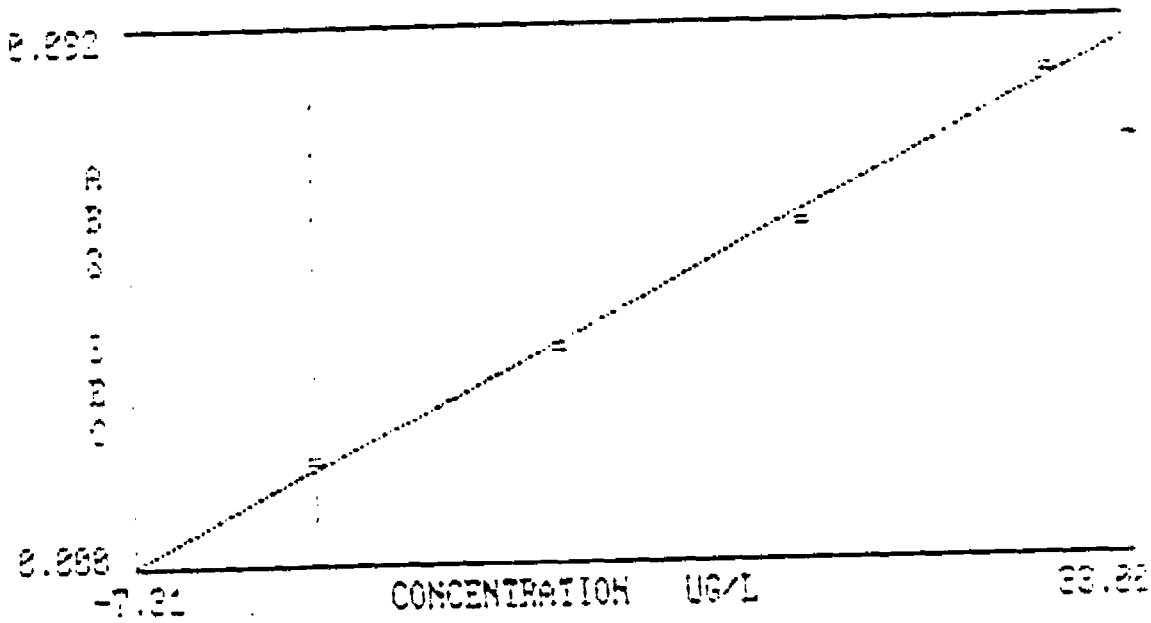
| | | | | |
|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | MEAN<br>ABS | RESULTS |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |




| | | | | |
|---|---|---|---|---|
| [illegible] | 0.03 | | -0.012 | -0.012<br>14[illegible] 10:44<br>CONCENTRATION LESS THAN [illegible] |
| ADDITION [illegible] | 10.00 | 0.0 | 0.007 | 0.007<br>14Se96 10:47 |
| ADDITION [illegible] | 20.00 | 0.0 | 0.038 | 0.038<br>14Se96 10:50 |
| ADDITION [illegible] | 30.00 | 0.0 | 0.061 | 0.061<br>14Se96 10:53 |
| [illegible] | [illegible] | 0.0 | 0.017 | 0.017<br>14[illegible] 10:56<br>[illegible]<br>[illegible]<br>[illegible] 0.016<br>[illegible] 0.0021 |

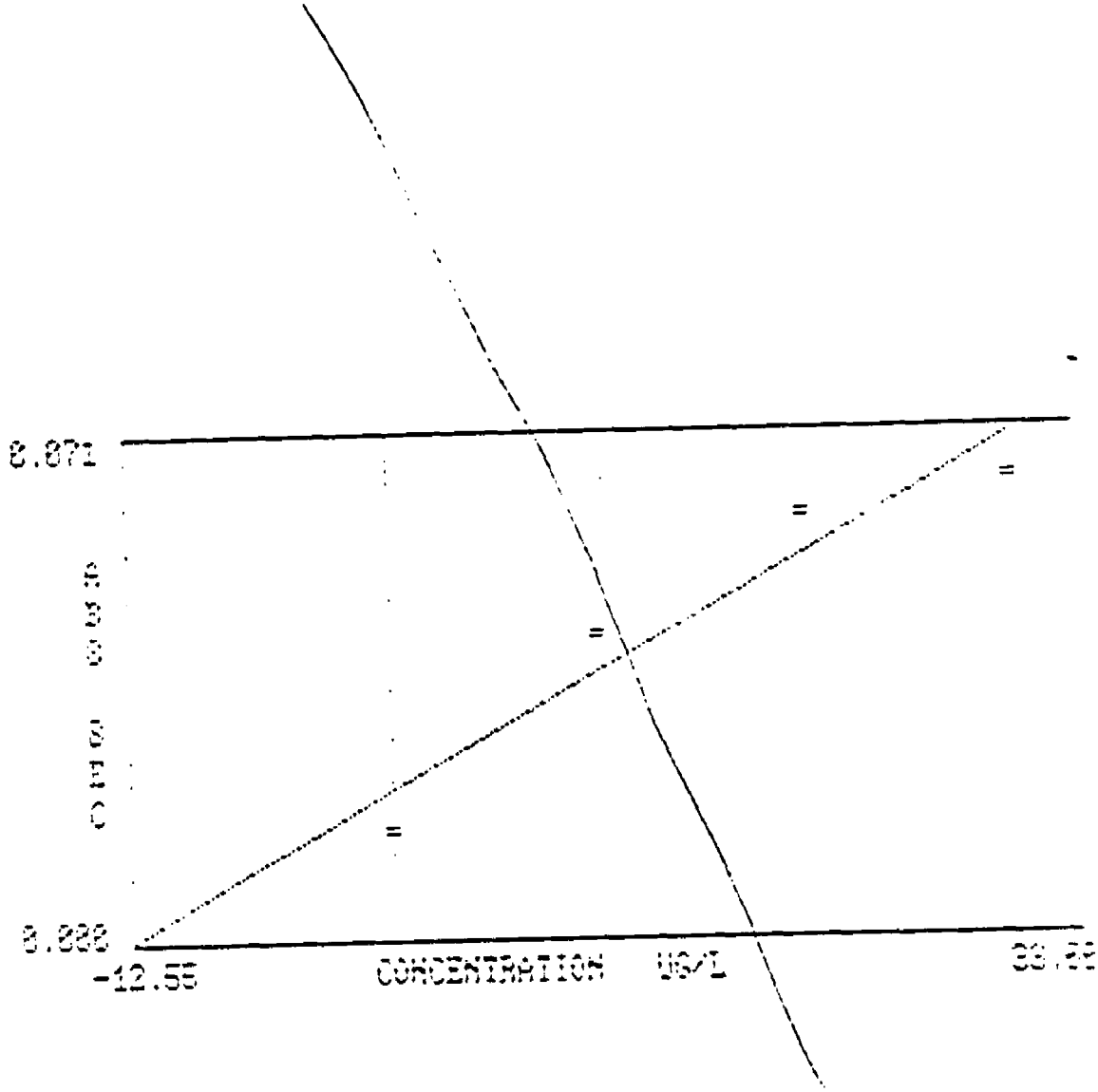
0.97/0.0

JOB • 10505 • 5-13
JOB • 10505 • 5-13




| SAMPLE | CONC UG/L | WRSD | MEAN ABS | READINGS |
|---|---|---|---|---|
| BLANK | 0.00 | | 0.004 | 0.004<br>14SEP96 10:58<br>CONCENTRATION LESS THAN DET. |
| ADDITION 1 | 10.00 | 0.0 | 0.047 | 0.047<br>14SEP96 17:01 |
| ADDITION 2 | 20.00 | 0.0 | 0.080 | 0.080<br>14SEP96 17:03 |
| ADDITION 3 | 30.00 | 0.0 | 0.085 | 0.085<br>14SEP96 17:06 |
| [illegible] | [illegible] | 0.0 | 0.010 | [illegible] |

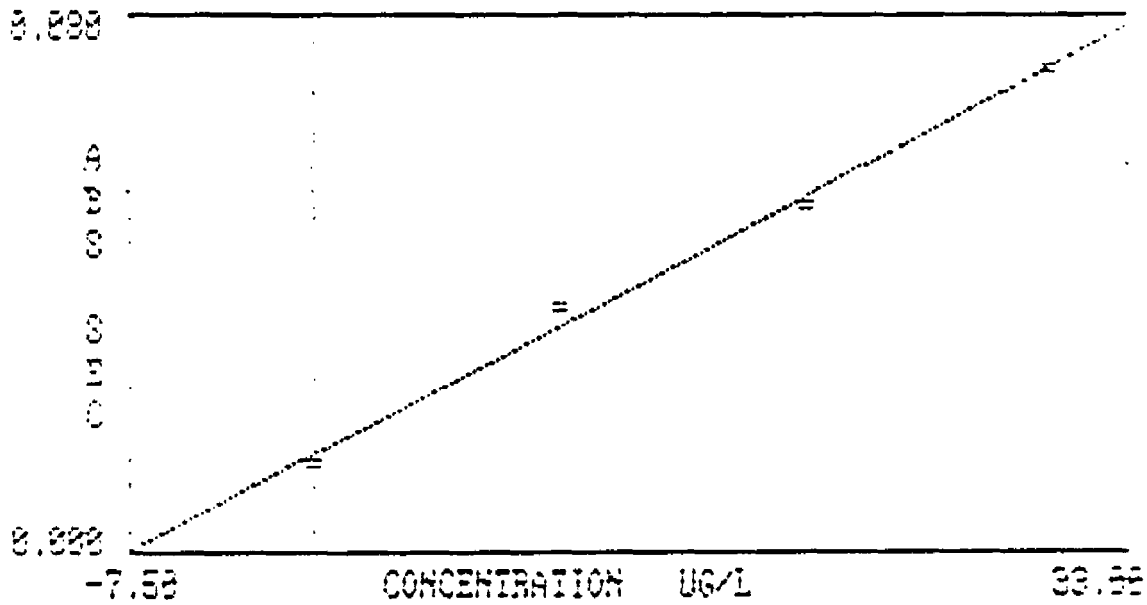
Discard




| | | | | |
|---|---|---|---|---|
| [illegible] | [illegible] UG/L | [illegible] | MEAN ABS | READING |
| [illegible] | 0.00 | | -0.003 | -0.003 1436096 17:16 CONCENTRATION LESS THAN [illegible] |
| [illegible] | -0.01 | 0.0 | 0.007 | 0.01[illegible] 1436[illegible] 17:17 |
| [illegible] | 0.00 | 0.1 | 0.007 | 0.00[illegible] 1436096 17:[illegible] |
| [illegible] | [illegible] | [illegible] | 0.07[illegible] | 0.07[illegible] 1436[illegible] 17:[illegible] |
| [illegible] | [illegible] | [illegible] | 0.013 | 0.01[illegible] 1436099 17:[illegible] |

[illegible]

BEST AVAILABLE COPY




| | | | | |
|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | MEAN ABS | READINGS |
| [illegible] | 0.00 | | -0.000 | -0.000 [illegible] CONCENTRATION LESS THAN ZERO |
| [illegible] | [illegible] | 0.0 | 0.037 | 0.037 [illegible] |
| [illegible] | [illegible] | 0.0 | 0.043 | 0.043 [illegible] |
| [illegible] | [illegible] | 0.0 | 0.056 | 0.056 [illegible] |

TUBE FAULT [illegible]

# KEMRON ENVIRONMENTAL SERVICES
# FURNACE RUN LOGBOOK

ANALYST [illegible] TL DATE [illegible] TIME [illegible]
METHOD = [illegible] SOP = [illegible] WORK GROUP = [illegible]
CAL STD SOURCE [illegible] ICV/CCV SOURCE [illegible]
POST SPK SOURCE [illegible]

| Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs | Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs |
|---|---|---|---|---|---|---|---|---|---|
| | [illegible] | | | | 27. | [illegible] | | | [illegible] |
| | [illegible] | | | | 28. | [illegible] | | | [illegible] |
| | [illegible] | | | | 29. | [illegible] | | | [illegible] |
| | [illegible] | | | | 30. | [illegible] | | | [illegible] |
| | [illegible] | | | | 31. | [illegible] | | [illegible] | [illegible] |
| | | | | | 32. | [illegible] | .6 | [illegible] | [illegible] |
| | | | | | 33. | [illegible] | | | [illegible] |
| | | | | | 34. | [illegible] | | [illegible] | [illegible] |
| 1. | [illegible] | | | | 35. | [illegible] | | [illegible] | [illegible] |
| 2. | [illegible] | | | [illegible] | 36. | [illegible] | | [illegible] | [illegible] |
| 3. | [illegible] | | | [illegible] | 37. | [illegible] | | [illegible] | [illegible] |
| 4. | [illegible] | | | [illegible] | 38. | [illegible] | | [illegible] | [illegible] |
| 5. | [illegible] | | | [illegible] | 39. | [illegible] | | [illegible] | [illegible] |
| 6 | [illegible] | | | [illegible] | 40. | [illegible] | .6 | [illegible] | [illegible] |
| 7 | [illegible] | | | | 41. | [illegible] | | | [illegible] |
| 8 | [illegible] | | | [illegible] | 42. | [illegible] | | [illegible] | [illegible] |
| 9 | [illegible] | | | [illegible] | 43. | [illegible] | .6 | [illegible] | [illegible] |
| 10. | [illegible] | | | [illegible] | 44. | [illegible] | | | |
| 11. | [illegible] | | | | 45. | [illegible] | [illegible] | [illegible] | [illegible] |
| 12. | [illegible] | | | [illegible] | 46. | [illegible] | | | |
| 13. | [illegible] | | | | 47. | [illegible] | .1 | [illegible] | [illegible] |
| 14. | [illegible] | | | | 48. | [illegible] | .1 | [illegible] | |
| 15. | [illegible] | | | | 49. | [illegible] | | | [illegible] |
| 16. | [illegible] | | | | 50. | [illegible] | | [illegible] | [illegible] |
| 17. | [illegible] | | | | 51. | [illegible] | .6 | [illegible] | [illegible] |
| 18. | [illegible] | .9 | | | 52. | [illegible] | | | |
| 19. | [illegible] | | | | 53. | [illegible] | | [illegible] | |
| 20. | [illegible] | | | | 54. | [illegible] | | [illegible] | |
| 21. | [illegible] | | | [illegible] | 55. | [illegible] | | [illegible] | |
| 22. | [illegible] | | | [illegible] | 56. | [illegible] | | [illegible] | [illegible] |
| 23. | [illegible] | .9 | | | 57. | [illegible] | .1 | [illegible] | |
| 24. | [illegible] | | | | 58. | [illegible] | .1 | [illegible] | |
| 25. | [illegible] | | | [illegible] | 59. | [illegible] | .9 | [illegible] | [illegible] |
| 26. | [illegible] | | | [illegible] | 60. | [illegible] | | | |

Comments: [illegible]

Note: No entry for Dil represents 1X Dilution

Autosampler Run Key

CCV = Continuing Calibration Verification
CCB = Continuing Calibration Blank
% D = Automatic Instrument Rerun due to % RSD > 20%.
FRS = Full Recalibration Sequence

ID = Automatic Instrument Dilution
R = Analyst Rerun
BLK = Blank Rerun



571

# KEMRON ENVIRONMENTAL SERVICES
## FURNACE RUN LOGBOOK

ANALYST [illegible] TL DATE [illegible] TIME [illegible]
METHOD = [illegible] SOP # [illegible] WORK GROUP = [illegible]
CAL STD SOURCE [illegible] ICV/CCV SOURCE [illegible]
POST SPK SOURCE [illegible]

| Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs | Cup # | Sample No. | Dil | Prep Conc | Autosamp Runs |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 27. | | | | |
| | | | | | 28. | | | | |
| | | | | | 29. | | | | |
| | | | | | 30. | | | | |
| | | | | | 31. | | | | |
| | | | | | 32. | | | | |
| | | | | | 33. | | | | |
| | | | | | 34. | | | | |
| 1. | [illegible] | | [illegible] | [illegible] | 35. | | | | |
| 2. | [illegible] | | [illegible] | [illegible] | 36. | | | | |
| 3. | [illegible] | [illegible] | [illegible] | | 37. | | | | |
| 4. | [illegible] | | | | 38. | | | | |
| 5. | [illegible] | | [illegible] | [illegible] | 39. | | | | |
| 6. | [illegible] | | [illegible] | [illegible] | 40. | | | | |
| 7. | [illegible] | | [illegible] | [illegible] | 41. | | | | |
| 8. | [illegible] | | [illegible] | [illegible] | 42. | | | | |
| 9. | | | | | 43. | | | | |
| 10. | | | | | 44. | | | | |
| 11. | | | | | 45. | | | | |
| 12. | | | | | 46. | | | | |
| 13. | | | | | 47. | | | | |
| 14. | | | | | 48. | | | | |
| 15. | | | | | 49. | | | | |
| 16. | | | | | 50. | | | | |
| 17. | | | | | 51. | | | | |
| 18. | | | | | 52. | | | | |
| 19. | | | | | 53. | | | | |
| 20. | | | | | 54. | | | | |
| 21. | | | | | 55. | | | | |
| 22. | | | | | 56. | | | | |
| 23. | | | | | 57. | | | | |
| 24. | | | | | 58. | | | | |
| 25. | | | | | 59. | | | | |
| 26. | | | | | 60. | | | | |

Comments: [illegible]

Note: No entry for Dil represents 1X Dilution

Autosampler Run Key

CCV = Continuing Calibration Verification
CCB = Continuing Calibration Blank
% D = Automatic Instrument Rerun due to % RSD > 20%
FRS = Full Recalibration Sequence

ID = Automatic Instrument Dilution
R = Analyst Rerun
BLK = Blank Rerun

217
STY

Varian SpectrAA 300/400 Zeeman
QC Protocol Report

| | |
|---|---|
| OPERATOR | CRC |
| DATE | 08/27/0910/98 Z2 |
| BATCH | 08/27/0910/98 Z2 TL |

Carla R. Cochran
CRC 8-27-98 TL
Box A, SM, C, H
CC 45213, 45214, 4512
45215

QC PROTOCOL PARAMETERS

| | |
|---|---|
| IF THERE IS AN ERROR | STOP |
| QC SPIKE POSITION | 52 |
| RECOVERY LIMITS (%) | 85 TO 115 |
| RECOVERY MINIMUM LIMIT (%) | 40 |
| CORRELATION COEFFICIENT (r) | 0.995 |
| OVERRANGE VOLUME REDUCTION | 2 |
| REPLICATE RSD LIMIT (%) | 20.0 |

PROGRAM 12 T1 PLATFORM C[illegible]

| | |
|---|---|
| INSTRUMENT MODE | ABSORBANCE |
| CALIBRATION MODE | CONCENTRATION |
| MEASUREMENT MODE | PEAK AREA |
| LAMP POSITION | 4 |
| LAMP CURRENT (mA) | 10 |
| SLIT WIDTH (nm) | 0.5 |
| SLIT HEIGHT | NORMAL |
| WAVELENGTH (nm) | 276.0 |
| SAMPLE INTRODUCTION | SAMPLER AUTOMIXING |
| TIME CONSTANT | 0.05 |
| MEASUREMENT TIME (sec) | 3.0 |
| REPLICATES | 2 |
| BACKGROUND CORRECTION | ON |
| MAXIMUM ABSORBANCE | 0.55 |

FURNACE PARAMETERS

| STEP NO. | TEMPERATURE (C) | TIME (sec) | GAS FLOW (L/min) | GAS TYPE | READ COMMAND |
|---|---|---|---|---|---|
| 1 | 135 | 10.0 | 3.0 | NORMAL | NO |
| 2 | 135 | 20.0 | 3.0 | NORMAL | NO |
| 3 | 250 | 10.0 | 3.0 | NORMAL | NO |
| 4 | 250 | 10.0 | 3.0 | NORMAL | NO |
| 5 | 450 | 10.0 | 3.0 | NORMAL | NO |
| 6 | 450 | 15.0 | 3.0 | NORMAL | NO |
| 7 | 2200 | 1.0 | 0.0 | NORMAL | YES |
| 8 | 2200 | 4.0 | 0.0 | NORMAL | YES |
| 9 | 2500 | 5.0 | 3.0 | NORMAL | NO |
| 10 | 50 | 13.0 | 3.0 | NORMAL | NO |
| 11 | 40 | 13.0 | 3.0 | NORMAL | NO |

SAMPLER PARAMETERS
VOLUMES (fL)

| | SOLUTION | BLANK | MODIFIER |
|---|---|---|---|
| BLANK | -- | 25 | 3 |
| STANDARD 1 | 1 | 24 | 3 |
| STANDARD 2 | 5 | 20 | 3 |
| STANDARD 3 | 10 | 15 | 3 |
| STANDARD 4 | 25 | 0 | 3 |
| SAMPLE | 25 | 0 | 3 |

RECALIBRATION RATE 0
RESLOPE RATE 0

MULTIPLE INJECT NO HOT INJECT YES PRE INJECT NO
TEMPERATURE 100
INJECT RATE 2

QC PROTOCOL PARAMETERS

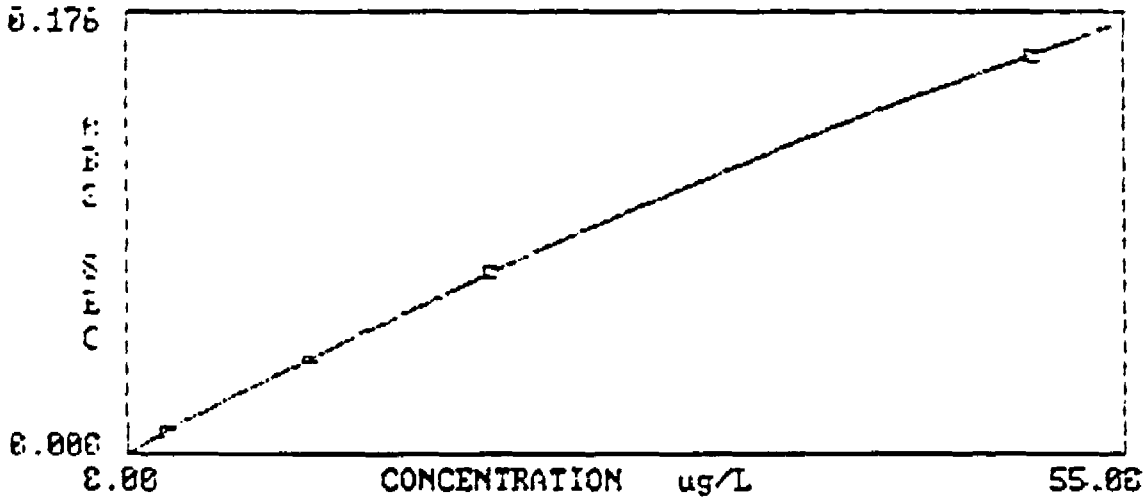
| | |
|---|---|
| QC STANDARD RATE | 0 |
| QC INITIAL STANDARD POSITION | 1 |
| QC INITIAL BLANK POSITION | 51 |
| QC CONTINUING STANDARD POSITION | 1 |
| QC CONTINUING BLANK POSITION | 51 |
| QC STANDARD VOLUME (fL) | 25 |
| QC STANDARD CONCENTRATION | 25.00 ug/L |
| QC STANDARD LIMITS (%) | 80 TO 120 |
| QC SPIKE RATE | 0 |
| QC SPIKE VOLUME (fL) | 10 |
| QC SPIKE CONCENTRATION | 50.00 ug/L |
| MATRIX SPIKE CONCENTRATION | 0.00 ug/L |
| INSTRUMENT DETECTION LIMIT | 5.00 ug/L |
| REQUIRED DETECTION LIMIT | 5.00 ug/L |

CONDITIONS FOR Tl :
Alternative Wavelengths (nm) : 258.0
Spectral Bandwidths (nm) : 1.0
Maximum Ash Temperature : 400xC
Recommended Atomize Temperature : 2200xC
Recommended Chemical Modifiers :
1% sulphuric acid solution, or
Palladium Chloride solution (2000ug/mL) plus reducing agent such as ascorbic acid.
Response with Argon : 10fL of 75ng/mL gives about 0.2 Abs.

The 1% sulphuric acid overcomes severe interferences from hydrochloric acid, perchloric acid and sodium chloride. The palladium permits higher ashing temperatures.
Use of a multi-element lamp may require a different slit width, lamp current and wavelength to isolate the analytical line.

| SAMPLE | CONC ug/L | %RSD | MEAN ABS | READINGS | |
|---|---|---|---|---|---|
| BLANK | 0.00 | | 0.000 | -0.001 | 0.002 |
| QC | | | | 27Aug90 | 00:15 |
| | | | | CONCENTRATION LESS THAN IDL | |

| SAMPLE | CONC ug/L | %RSD | MEAN ABS | READINGS | |
|---|---|---|---|---|---|
| STANDARD 1 | 2.00 | 14.5 | 0.009 | 0.008 | 0.009 |
| | | | | 27AUG98 | 05:21 |
| | | | | CONCENTRATION LESS THAN IDL | |
| STANDARD 2 | 10.00 | 0.0 | 0.037 | 0.037 | 0.037 |
| | | | | 27AUG98 | 05:27 |
| STANDARD 3 | 20.00 | 1.4 | 0.072 | 0.071 | 0.073 |
| | | | | 27AUG98 | 05:33 |
| STANDARD 4 | 50.00 | 0.4 | 0.160 | 0.160 | 0.159 |
| | | | | 27AUG98 | 05:38 |




| | | | | | |
|---|---|---|---|---|---|
| ICV M-1000 | 20.00 | 2.2 | 0.091 | 0.093 | 0.090 |
| | | | | 27AUG98 | 05:44 |
| ICB | 0.55 | 45.6 | 0.002 | 0.003 | 0.002 |
| | | | | 27AUG98 | 05:49 |
| | | | | CONCENTRATION LESS THAN IDL | |
| BLANK | 0.00 | | -0.004 | -0.004 | -0.004 |
| | | | | 27AUG98 | 05:56 |
| | | | | CONCENTRATION LESS THAN IDL | |
| CCV 1 | 25.02 | 2.0 | [illegible] | [illegible] | 0.061 |
| | | | | 27AUG98 | 06:01 |
| | | | | %R = | 102.5 |

575

210

| SAMPLE | CONC ug/L | %RSD | MEAN ABS | READINGS |
|---|---|---|---|---|
| CCB 1 | 0.04 | 99.9 | 0.000 | -0.001 0.001<br>27Aug98 10:07<br>ABS = -0.001<br>CONCENTRATION LESS THAN IDL |
| BBW A2 | -0.38 | 16.2 | -0.002 | -0.001 -0.002<br>27Aug98 10:12<br>CONCENTRATION LESS THAN IDL |
| LCSW A2 | 25.46 | 1.5 | 0.069 | 0.069 0.070<br>27Aug98 10:18 |
| 0037901 | 0.04 | 99.9 | 0.000 | 0.001 -0.001<br>27Aug98 10:23<br>CONCENTRATION LESS THAN IDL |
| DUP 01 | -0.03 | 99.9 | 0.000 | 0.001 -0.001<br>27Aug98 10:28<br>CONCENTRATION LESS THAN IDL |
| 0038001 | -0.31 | 36.3 | -0.001 | -0.002 -0.001<br>27Aug98 10:34<br>CONCENTRATION LESS THAN IDL |
| 0038020 | -0.22 | 39.5 | 0.001 | -0.001 -0.001<br>27Aug98 10:39<br>CONCENTRATION LESS THAN IDL |
| MS 20 | 24.89 | 0.1 | 0.068 | 0.068 0.068<br>27Aug98 10:44 |
| MSD 20 | 23.92 | 0.4 | 0.065 | 0.065 0.065<br>27Aug98 10:50 |
| 0038021 | -0.05 | 99.9 | -0.000 | 0.000 -0.001<br>27Aug98 10:55<br>CONCENTRATION LESS THAN IDL |
| 0038022 | -0.26 | 13.6 | 0.001 | -0.001 -0.001<br>27Aug98 11:00<br>CONCENTRATION LESS THAN IDL |
| CCV 2 | 25.00 | 1.0 | 0.068 | 0.069 0.068<br>27Aug98 11:06<br>%R = 100.2 |
| CCB 2 | -0.19 | 73.9 | 0.001 | -0.001 -0.000<br>27Aug98 11:11<br>ABS = -0.002<br>CONCENTRATION LESS THAN IDL |
| 0038023 | -0.06 | 99.9 | -0.000 | 0.001 -0.002<br>27Aug98 11:17<br>CONCENTRATION LESS THAN IDL |
| 0038024 | 0.30 | 49.8 | 0.001 | 0.001 0.002<br>27Aug98 11:22<br>CONCENTRATION LESS THAN IDL |

| SAMPLE | CONC ug/L | %RSD | MEAN ABS | READINGS |
|---|---|---|---|---|
| 0836025 | 1.19 | 29.5 | 0.005 | 0.006 0.004<br>27Aug98 11:27<br>CONCENTRATION LESS THAN IDL |
| 0836026 | -0.26 | 99.9 | -0.001 | -0.002 -0.000<br>27Aug98 11:33<br>CONCENTRATION LESS THAN IDL |
| 0836027 | 0.93 | 9.4 | 0.004 | 0.004 0.004<br>27Aug98 11:38<br>CONCENTRATION LESS THAN IDL |
| 0836701 .9 | 0.04 | 99.9 | 0.000 | 0.001 -0.001<br>27Aug98 11:44<br>CONCENTRATION LESS THAN IDL |
| SP 01 | 24.02 | 1.9 | 0.095 | 0.096 0.094<br>27Aug98 11:49 |
| 0836601 | -1.16 | 45.7 | -0.005 | -0.007 -0.003<br>27Aug98 11:55<br>CONCENTRATION LESS THAN IDL |
| DPW SM | -0.10 | 63.4 | -0.000 | -0.000 -0.001<br>27Aug98 12:00<br>CONCENTRATION LESS THAN IDL |
| LCSW SM | 26.69 | 0.6 | [illegible] | [illegible] 0.093<br>27Aug98 12:06 |
| CCV 3 | 26.05 | 0.2 | [illegible] | [illegible] 0.093<br>27Aug98 12:11<br>%R - 100.0 |
| CCB 3 | -0.14 | 99.9 | [illegible] | 0.000 -0.001<br>27Aug98 12:17<br>ABS = -0.001<br>CONCENTRATION LESS THAN IDL |
| 0841701 .9 | 0.17 | 30.7 | [illegible] | 0.001 0.001<br>27Aug98 12:22<br>CONCENTRATION LESS THAN IDL |
| SP 01 | 21.80 | 1.6 | 0.078 | 0.077 0.079<br>27Aug98 12:26 |
| 0842701 | -0.30 | 8.1 | -0.001 | -0.001 -0.001<br>27Aug98 12:33<br>CONCENTRATION LESS THAN IDL |
| DUP 01 | -0.19 | 99.9 | -0.001 | -0.002 0.001<br>27Aug98 12:39<br>CONCENTRATION LESS THAN IDL |
| 0842702 | -0.05 | 99.9 | -0.000 | 0.000 -0.001<br>27Aug98 12:44<br>CONCENTRATION LESS THAN IDL |

| SAMPLE | CONC UG/L | %RSD | MEAN ABS | READINGS |
|---|---|---|---|---|
| MS 02 -05 | 26.16 | 2.4 | 0.092 | 0.093 0.090<br>27AU098 12:[illegible] |
| ECD 02 -06 | 25.83 | 2.7 | 0.091 | [illegible] [illegible]<br>27AU098 [illegible] |
| BRS 0 WG45550-03 | -0.34 | 14.6 | -0.001 | -0.002 -0.001<br>27AU098 13:01<br>CONCENTRATION LESS THAN IDL |
| LCSS 0 -04 | 26.81 | 2.2 | 0.094 | [illegible] [illegible]<br>27AU098 13:06 |
| 0042405 0.99 -01 | 0.64 | 7.7 | [illegible] | 0.003 0.003<br>27AU098 13:11<br>CONCENTRATION LESS THAN IDL |
| CCV 4 | [illegible] | [illegible] | [illegible] | [illegible] [illegible]<br>27AU098 13:17<br>XR - 116.6 |
| BLANK | 0.00 | | [illegible] | -0.000 -0.000<br>27AU098 13:27<br>CONCENTRATION LESS THAN IDL |
| CCV 5 | 26.54 | 2.6 | [illegible] | 0.091 0.095<br>27AU098 13:32<br>XR = 106.1 |
| CCB 5 | -0.46 | 41.5 | -0.002 | -0.001 -0.003<br>27AU098 13:38<br>ABS = -0.003<br>CONCENTRATION LESS THAN IDL |
| SP 05 | 25.62 | 1.6 | [illegible] | 0.091 0.089<br>27AU098 13:43 |
| [illegible] MS 05 -05 | 25.14 | 0.0 | 0.088 | 0.088 0.089<br>27AU098 13:49 |
| [illegible] MSD 05 -06 | 25.38 | 1.9 | 0.089 | 0.090 0.088<br>27AU098 13:54 |
| [illegible] 3.24 -02 | 3.24 | 4.0 | 0.014 | 0.013 0.014<br>27AU098 13:59<br>CONCENTRATION LESS THAN IDL |
| [illegible] DUP 02 -07 | 3.01 | 0.4 | 0.013 | 0.013 0.012<br>27AU098 14:04<br>CONCENTRATION LESS THAN IDL |
| [illegible] 2.25 -03 | 2.25 | 3.4 | 0.010 | 0.009 0.010<br>27AU098 14:10<br>CONCENTRATION LESS THAN IDL |
| [illegible] 2.27 -04 | 2.27 | 0.0 | 0.010 | 0.010 0.010<br>27AU098 14:15<br>CONCENTRATION LESS THAN IDL |

| SAMPLE | CONC ug/L | %RSD | MEAN ABS | READINGS | |
|---|---|---|---|---|---|
| [illegible] | 2.10 | 17.5 | 0.009 | 0.010 | 0.008 |
| | | | | 27Aug98 | 14:21 |
| | | | | CONCENTRATION LESS THAN IDL | |
| [illegible] | 22.56 | 1.5 | 0.060 | 0.079 | 0.081 |
| | | | | 27Aug98 | 14:26 |
| [illegible] | 2.17 | 19.2 | 0.009 | 0.011 | 0.008 |
| | | | | 27Aug98 | 14:31 |
| | | | | CONCENTRATION LESS THAN IDL | |
| CCV 6 | ~~[illegible]~~ | ~~[illegible]~~ | ~~[illegible]~~ | ~~[illegible]~~ | ~~[illegible]~~ |
| | | | | 27Aug98 | 14:37 |
| | | | | %R = | 110.4 |
| CCB 6 | ~~[illegible]~~ | ~~[illegible]~~ | ~~[illegible]~~ | ~~[illegible]~~ | ~~-0.004~~ |
| | | | | 27Aug98 | 14:42 |
| | | | | ABS = | -0.005 |
| | | | | CONCENTRATION LESS THAN IDL | |

| | | | | | |
|---|---|---|---|---|---|
| BLANK | 0.00 | | -0.007 | -0.007 | -0.006 |
| | | | | 27Au98 | 15:16 |
| | | | | CONCENTRATION LESS THAN IDL | |
| BLANK | 0.00 | | 0.002 | 0.002 | 0.002 |
| | | | | 27Au98 | 15:26 |
| | | | | CONCENTRATION LESS THAN IDL | |
| CCV 8 | 27.14 | 0.7 | 0.095 | 0.095 | 0.094 |
| | | | | 27Au98 | 15:31 |
| | | | | XR = | 100.5 |
| CCB 8 | 0.27 | 75.4 | 0.001 | 0.002 | 0.001 |
| | | | | 27Au98 | 15:37 |
| | | | | ABS = | 0.000 |
| | | | | CONCENTRATION LESS THAN IDL | |
| 0043002 1.04 -C142 | 2.01 | 0.3 | 0.009 | 0.009 | 0.008 |
| | | | | 27Au98 | 15:42 |
| | | | | CONCENTRATION LESS THAN IDL | |
| SP 02 | 21.70 | 2.2 | 0.078 | 0.076 | 0.079 |
| | | | | 27Au98 | 15:48 |
| 0043001 1.00 -C143 | 2.05 | 0.0 | 0.009 | 0.010 | 0.008 |
| | | | | 27Au98 | 15:53 |
| | | | | CONCENTRATION LESS THAN IDL | |
| SP 01 | 16.41 | 2.1 | 0.060 | 0.061 | 0.059 |
| | C.C50 | | | 27Au98 | 15:59 |
| 0043001 .1 | 0.82 | 30.7 | 0.004 | 0.003 | 0.004 |
| | | | | 27Au98 | 16:04 |
| | | | | CONCENTRATION LESS THAN IDL | |
| BS 01 0.95 | 41.06 | 0.2 | 0.136 | 0.135 | 0.135 |
| | | | | 27Au98 | 16:09 |
| BBS H | 0.30 | 75.3 | 0.002 | 0.002 | 0.001 |
| | | | | 27Au98 | 16:15 |
| | | | | CONCENTRATION LESS THAN IDL | |
| LCC 0409SC-C3 | | | | | |
| LCSS H 1.00 -C4 | ~~0.55~~ | ~~2.4~~ | ~~0.176~~ | ~~0.177~~ | ~~0.175~~ |
| | | | | 27Au98 | 16:20 |
| | | | | | CRC 5-27-98 |
| | | | | | LCSS Wastewater Spiked. |
| LCSS H 1.00 -C4 | 60.16 | 6.5 | 0.100 | 0.100 | 0.100 |
| | | | | ~~27Au98~~ | ~~16:25~~ |
| | | | | SE = | 2.66 |
| 0043001 1.04 | 1.27 | 72.2 | 0.005 | 0.005 | 0.003 |
| | | | | 27Au98 | 16:30 |
| | | | | CONCENTRATION LESS THAN IDL | |
| CCV 9 | ~~28.07~~ | ~~0.3~~ | ~~0.098~~ | ~~0.097~~ | ~~0.098~~ |
| | | | | 27Au98 | 16:36 |
| | | | | XR = | 112.3 |

CRC 5-27-98 Acceptable

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CONCENTRATION LESS THAN IDL

| SAMPLE | CONC ug/L | %RSD | MEAN ABS | READINGS |
|---|---|---|---|---|
| CCV 10 | 20.00 | 0.3 | 0.094 | 0.094 0.094<br>27Aug98 16:40<br>%R = 107.5 |
| CCB 10 | -0.56 | 15.7 | -0.002 | -0.003 -0.002<br>27Aug98 16:54<br>ABS = -0.003<br>CONCENTRATION LESS THAN IDL |
| SB 01 | 22.46 | 3.2 | 0.090 | 0.078 0.102<br>27Aug98 16:59 |
| 0034003 1.02 | 0.14 | 99.9 | 0.001 | 0.002 -0.001<br>27Aug98 17:04<br>CONCENTRATION LESS THAN IDL |
| 0034005 1.03 | -0.12 | 99.9 | -0.001 | -0.001 -0.000<br>27Aug98 17:10<br>CONCENTRATION LESS THAN IDL |
| 0034007 1.02 | 0.23 | 32.5 | 0.001 | 0.001 0.002<br>27Aug98 17:15<br>CONCENTRATION LESS THAN IDL |
| 0030701 1.01 | 3.46 | 5.6 | 0.014 | 0.015 0.014<br>27Aug98 17:21<br>CONCENTRATION LESS THAN IDL |
| 0030701 .1 | -0.02 | 99.9 | 0.000 | 0.001 -0.001<br>27Aug98 17:26<br>CONCENTRATION LESS THAN IDL |
| BL 01 1.03 | 21.36 | 1.3 | 0.076 | 0.076 0.077<br>27Aug98 17:31 |
| 0030702 1.04 | 1.96 | 0.0 | 0.003 | 0.003 0.003<br>27Aug98 17:37<br>CONCENTRATION LESS THAN IDL |
| SP 02 | 28.34 | 2.0 | 0.098 | 0.097 0.100<br>27Aug98 17:42 |
| 0030703 1.06 | 1.32 | 24.8 | 0.006 | 0.005 0.007<br>27Aug98 17:48<br>CONCENTRATION LESS THAN IDL |
| CCV 11 | 27.21 | 1.0 | 0.095 | 0.094 0.096<br>27Aug98 17:53<br>%R = 106.8 |
| CCB 11 | 0.33 | 36.5 | 0.002 | 0.001 0.002<br>27Aug98 17:59<br>ABS = 0.001<br>CONCENTRATION LESS THAN IDL |

27AUG98 18:35
CONCENTRATION LESS THAN IDL

-67

| SAMPLE | CONC ug/L | %RSD | MEAN ABS | READINGS |
|---|---|---|---|---|
| 9 0840101 1.03 GC | 2.63 | 2.9 | 0.011 | 0.011 0.011<br>27AUG98 18:10<br>CONCENTRATION LESS THAN IDL |
| SP 01 | 24.42 | 2.1 | 0.086 | 0.085 0.087<br>27AUG98 18:16 |
| 0840102 1.06 GC -C1 | 1.52 | 35.6 | 0.007 | 0.008 0.005<br>27AUG98 18:21<br>CONCENTRATION LESS THAN IDL |
| MS 02 1.00 -C2 | 48.39 | 1.8 | 0.156 | 0.154 0.158<br>27AUG98 18:27 |
| MSD 02 1.07 -C2 | 47.48 | 0.3 | 0.153 | 0.153 0.154<br>27AUG98 18:32 |
| 0840103 1.00 | 1.22 | 67.1 | 0.005 | 0.008 0.003<br>27AUG98 18:38<br>CONCENTRATION LESS THAN IDL |
| [illegible] | 24.41 | 0.1 | 0.086 | 0.086 0.086<br>27AUG98 18:43 |
| [illegible] CCB | -1.05 | 9.6 | -0.005 | -0.005 -0.006<br>27AUG98 18:48<br>CONCENTRATION LESS THAN IDL |

# KEMRON ENVIRONMENTAL SERVICES
## MERCURY RUN LOGBOOK

ANALYST Alan L Clark DATE 8/26/98 TIME 1300
METHOD = 245.1 SOP = 405 WORK GROUP = 05154
CAL STD SOURCE VC 88-5441300 ICV/CCV SOURCE K-1046
POST SPK SOURCE 10000 STD / VC 88-5441300

| Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs | Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs |
|---|---|---|---|---|---|---|---|---|---|
| | S0 | | | | 27. | | | | |
| | S 0.2 | | | | 28. | | | | |
| | S1 | | | | 29. | | | | |
| | S2 | | | | 30. | | | | |
| | S5 | | | | 31. | | | | |
| | S10 | | | | 32. | | | | |
| | | | | | 33. | | | | |
| | | | | | 34. | | | | |
| 1. | ICV | | | | 35. | | | | |
| 2. | ICB | | | CCV CCB | 36. | | | | |
| 3. | PBG HG | | | x2 | 37. | | | | |
| 4. | LCSS HG | | 0.6/100 | | 38. | | | | |
| 5. | 09 43001 | 0.9 | | MB49-45-0140 | 39. | | | | |
| 6. | SP01 | | | | 40. | | | | |
| 7. | 09 43201 | 0.9 | | MB49-45-0141 | 41. | | | | |
| 8. | SP01 | | | | 42. | | | | |
| 9. | 02 | | | MB49-05-0142 | 43. | | | | |
| 10. | 09 43301 | 0.9 | | MB49-45-0143 | 44. | | | | |
| 11. | SP01 | | | CCV CCB | 45. | | | | |
| 12. | MS 01 | 1X | | | 46. | | | | |
| 13. | 09 42402 | | | | 47. | | | | |
| 14. | D-02 | | | | 48. | | | | |
| 15. | 03 | 0.9 | | | 49. | | | | |
| 16. | SP 03 | | | | 50. | | | | |
| 17. | 04 | | | | 51. | | | | |
| 18. | 05 | | | | 52. | | | | |
| 19. | MS 05 | | | | 53. | | | | |
| 20. | MSD 05 | | ✓ | CCV CCB | 54. | | | | |
| 21. | | | | | 55. | | | | |
| 22. | | | 1/25 | | 56. | | | | |
| 23. | | | | | 57. | | | | |
| 24. | | | | | 58. | | | | |
| 25. | | | | | 59. | | | | |
| 26. | | | | | 60. | | | | |

Comments:

Note No entry for Dil represents 1X Dilution

Autosampler Run Key

CCV - Continuing Calibration Verification
CCB = Continuing Calibration Blank
*D = Automatic Instrument Rerun due to % RSD > 20%
FRS = Full Recalibration Sequence

ID = Automatic Instrument Dilution
R = Analyst Rerun
BLK = Blank Rerun

Deal Attached Copy

Alan L Clark
8/26/99
VC/082599/300
WG Box HG.

| Date | Wind | Chill | Sd.Fbl | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Standard: 2 Rec: 1 | | | | Sec: 250 | 10:04:00 Da Aug 1995 | | | |
| Hz | 1.01 | ppm | 4145 | | | | | |
| | | | Ave. Int. = | 4145 S. D. = | | | | |
| *** Standard: 3 Rec: 1 | | | | Sec: 251 | 10:17:05 Da Aug 1995 | | | |
| Hz | 1.01 | ppm | 20410 | | | | | |
| | | | Ave. Int. = | 20410 S. D. = | | | | |
| *** Standard: 4 Rec: 1 | | | | Sec: 252 | 10:10:10 Da Aug 1995 | | | |
| Hz | 2.0. | ppm | 29500 | | | | | |
| | | | Ave. Int. = | 29500 S. D. = | | | | |
| *** Standard: 5 Rec: 1 | | | | Sec: 253 | 10:12:51 Da Aug 1995 | | | |
| Hz | 3.. | ppm | 5851 | | | | | |
| | | | Ave. Int. = | 5851 S. D. = | | | | |
| *** Standard: 6 Rec: 1 | | | | Sec: 254 | 10:15:1. Da Aug 1995 | | | |
| Hz | 1.. | ppm | 15240 | | | | | |
| | | | Ave. Int. = | 15240 S. D. = | | | | |

Best Available Copy

```
;
;                    Rev: 2.001   Time: 10:21:17  26 Aug 1988
;
; Folder: 1014        Seq. 204                        Print Q:
;
; User:               Batch:            Id: StopRed:   Cus. 1 18 Seq:
;
; Stator Id:                                          Unit: CM Alternator
;
;
;
; CALIBRATION:  Accepted Values
;
;     Current   Accepted     Type     A              B              C
;
; 1:    Yes   10:21 26-Aug-88  .                  5.15E10-5  -2.704E10-1    .00
;
;
;
```

Wrong ID
Rerun
Oct 18 1976

[illegible]

[illegible]

```
Time   Delta   Units    SD/PSD      1       2       3       4       5
-----------------------------------------------------------------------
*** Sample ID: 08-24.D.F                    Seq:  275    14:47:52 26 Aug 1993 -
 UNSPIKED                                          Dil. weight .0000 .0000
-1    1010    sec        .000  %   1510

*** Sample ID: SPIK                         Seq:  276    14:50:28 26 Aug 1993 -
 SPIKED                                            Dil. weight .0000 .0000
-1    1020    sec        .000  %   1520

*** %Rec.  ID: SPKD                         Seq:  280    14:50:28 26 Aug 1993 -
                        Spiked #1  Unspiked #1
     Series              %Rec.    Avg(U)   SD(U)    Avg(S)    SD(S)
-1    1.0     sec        5.2      8.18     .000     5.14      .000

*** Sample ID: SP-1010                       Seq:  281    14:52:14 26 Aug 1993 -
                                                   Dil. weight .0000 .0000
-1    2010    sec        .000  %   20.5

*** Sample ID: SP-1010                       Seq:  282    14:55:41 26 Aug 1993 -
 UNSPIKED                   Wgt SPIKE                   Dil. weight .0000 .0000
-1    2020    sec        .000  %   22.0

*** Sample ID: [illegible]                   Seq:  283    14:55:28 26 Aug 1993 -
 SPIKED                     Wgt SPIKE                   Dil. weight .0000 .0000
-1    2030    sec        .000  %   23.5

*** [illegible]                             Seq:  284    14:58:27 26 Aug 1993 -
                        Spiked #1  Unspiked #1
     Series              %Rec.    Avg(U)   SD(U)    Avg(S)    SD(S)
-1    [illegible]  sec   [illegible]  [illegible]  .000  [illegible]  [illegible]

*** [illegible]                             Seq:  285    15:00:[illegible] 26 Aug 1993 -
 [illegible]                Wgt SPIKE                   Dil. weight .0000 .0000
-1    [illegible]  sec        .000  %   25.0

*** [illegible]                             Seq:  286    15:02:[illegible] 26 Aug 1993 -
                        Spiked #1  Unspiked #1
     Series              %Rec.    Avg(U)   SD(U)    Avg(S)    SD(S)
-1    [illegible]  sec   [illegible]  [illegible]  [illegible]  [illegible]  [illegible]

*** Spec. [illegible]                        Seq:  287    15:03:47 26 Aug 1993 -
Line  Peak  Area   Peak   True  Units     SD/PSD
-1          [illegible]  .001   1.01   sec       .000  %

*** Spec. [illegible]                        Seq:  288    15:05:49 26 Aug 1993 -
Line  Peak  Area   Peak   True  Units     SD/PSD
-1          [illegible]  [illegible]  [illegible]  sec       .000  %
```

# DIGESTION DATA

# General Digestion Log

Analyst(s): KAS
Date: 8 25 98 @ 300
LCS: 10mL K1617
MS/MSD: 10mL K1619
Witness: JC

ME101 - Method 3005A-Water
ME103 - Method 3050B-Soil
$HNO_3$ Lot #: M22026
HCl Lot #: M03052
$H_2O_2$ Lot #: 151595

Box: N
Date: 8 28 98

Digestion Work Group: WG 45052
Analytical Work Group: WG

| KEMRON Number | Initial Wt/Vol | Final Volume | Metals | Due Date | Comments |
|---|---|---|---|---|---|
| PBS | | 100mL | | | |
| LCSS | 2.00g | | | | |
| ⊕ 09-424-02 | 1.98 | | AgAl,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,V,Zn | 8 28 98 | |
| 020,p | 2.08 | | | | |
| 03 | 2.00 | | | | |
| 04 | 2.00 | | | | |
| 05 | 2.02 | | | | |
| 05MS | 1.98 | | | | |
| 05MSD | 1.45 | | | | |
| 0144 98-0110 08-430-01 ⊕ | 1.97 | | AgAl,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,V | 9-14 98 9-21 98 | LANL |
| -0141 433-01 ⊕ | 2.00 | | | | |
| -0142 02 | 2.06 | | | | |
| -0143 435-01 ⊕ | 2.07 | | | | |
| -0143 * 01MS | 2.07 | | | | |

Comments: * 400mL CLP SPK 1,2,3 MCS 5-15
⊕ LEVEL 4

Reviewed By: [signature]

# Furnace Digestion Log

Analyst(s): MS
Date: 8 25 98
LCS: 30L K1637
MS MSD: 2.5mL K1637
Witness: VC

ME402 - Method 3020A-Water
ME403 - Method 3050B-Soil

Lot #: M22026
$H_2O_2$ Lot #: 2323 95

Box: Q
Date: 8-28-98

Digestion Work Group: WG 45020
Analytical Work Group: WG

| KEMRON Number | Initial Wt/Vol | Final Volume | Metals | Due Date | Comments |
|---|---|---|---|---|---|
| PBS | | 50mL | 03 | | |
| LCSS | 1.00 | | 04 | | |
| @ 02-424 02 | 1.06 | | AS, BA, PB, SB, SE, TL 07 | 8-28-98 | |
| 02D | .98 | | | | |
| 03 | 1.08 | | | | |
| 04 | 1.03 | | | | |
| 05 | .99 | | 05 | | |
| 05MS | .97 | | 06 | | |
| 05MSD | 1.03 | | | 9-14-98 | M049-98-0140 LANL |
| 08-430-01 @ | 1.08 | | TL | 9-21-98 | -0141 |
| 433-01 @ | 1.00 | | | | -0142 |
| 02 | 1.04 | | | | -0143 |
| 435-01 @ | 1.08 | | | | -0143 |
| X 01MS | .95 | | | | |

Comments: * 100mL CLP PSQL LMCS 515
@ LEVEL 4

Reviewed By: [signature]

# KEMRON ENVIRONMENTAL SERVICES
## MERCURY PREPARATION LOG

ME404 - Method 7470A - Water _____
ME405 - Method 7471A - Soil ✓
Work Group # WG-450419

Box Letter HG
Due Date 8-20-98
ADT KAS 1023-98 @ 400

| Sample Number | Initial Wt/Vol | Final Volume | Metals | Date of Analysis | Analyst | TCLP Ext Date | Due Date |
|---|---|---|---|---|---|---|---|
| PRS | | 100ml | -03 | | | | |
| 1655 | .6g | | -04 | | | | |
| CE-434-02 * | | | HG | | | | 8-20-98 |
| 02Dup | | | -07 | | | | |
| 03 | | | | | | | |
| 04 | | | | | | | |
| 05 | | | | | | | |
| 05MS | | | -05 | | | | |
| 05MSD | | | -06 | | | | |
| [illegible] * | | | [illegible] | | | | 9-14-98 |
| [illegible] * | | | | | | | 9-21-98 |
| [illegible] | | | | | | | |
| [illegible] * | | | | | | | |
| [illegible] | - | — | - | | | | — |

Signature [illegible] Date 8-25-98

Comments 1mL K1634 Pressure cooked 15 PSI for 15 minutes

* [illegible]

LCS 1mL K1634
MS/MSD 1mL K1634
Stds - 0, 0.2, 1.0, 5.0, 10, 20 [illegible]
IDV/CCV K [illegible]

Lot #
$HNO_3$ M22026
$H_2SO_4$ M11022
$K_2S_2O_8$ ____ $KMNO_4$ M2L635

# Percent Solids Determination Log

FOUL • MOFFS • FJN
FOUL • MOFFS • FJN

# PERCENT SOLIDS

Workgroup: 45163 Approval:
ADT (on): [illegible] ADT (off): [illegible]

| Sample | Empty Pan WT 1 | WET WT 2 | DRY WT 3A | DRY WT 3B | DRY WT 3C |
|---|---|---|---|---|---|
| 09-416-01 | 1.30 | 20.47 | [illegible] | | |
| -02 | 1.30 | 26.27 | 18.10 | | |
| 09-701-01 | 1.29 | 23.43 | 18.[illegible] | | |
| -02 | 1.29 | 24.05 | 23.11 | | |
| -03 | 1.30 | 24.40 | 21.14 | | |
| 09-413-01 | 1.30 | 20.35 | 21.57 | | |
| -02 | 1.30 | 24.23 | 17.42 | | |
| -03 | 1.29 | 32.33 | 25.64 | | |
| -04 05 | 1.29 | 26.49 | 14.41 | | |
| -10 | 1.29 | 26.39 | 14.51 | | |
| -11 | 1.29 | 26.87 | 25.52 | | |
| 09-441-03 | 1.29 | 27.25 | 22.72 | | |
| -04 | 1.29 | 20.42 | 24.41 | | |
| -05 | 1.29 | 21.49 | 17.62 | | |
| -06 07 | 1.31 | 30.19 | 25.62 | | |
| -10 | 1.29 | 21.30 | 18.31 | | |
| -11 | 1.29 | 22.21 | 14.57 | | |
| -12 | 1.29 | 23.43 | 19.21 | | |
| -13 | 1.29 | 22.43 | 18.31 | | |
| -14 | 1.27 | 22.19 | 23.54 | | |
| Duplicate 09-416-01 | 1.30 | 21.26 | 18.31 | | |

Workgroup: 45164
ADT (on): 09-01-09 0950 2795 Approval:
ADT (off): [illegible]

| Sample | Empty Pan WT 1 | WET WT 2 | DRY WT 3A | DRY WT 3B | DRY WT 3C |
|---|---|---|---|---|---|
| 09-441-15 | 1.30 | 22.00 | 14.03 | | |
| -16 | 1.29 | 22.64 | 22.31 | | |
| -17 | 1.29 | 25.09 | 22.01 | | |
| 09-412-06 | 1.32 | 21.15 | 18.64 | | |
| -07 | 1.32 | 24.29 | 21.74 | | |
| 09-392-09 | 1.32 | 24.24 | 22.11 | | |
| -09 | 1.28 | 23.53 | 16.41 | | |
| 09-302-01 | 1.30 | 21.36 | 18.41 | | |
| 02 | 1.28 | 21.33 | 18.30 | | |
| 03 | 1.30 | 25.09 | 22.08 | | |
| 09-420-01 | 1.29 | 21.37 | 17.14 | | |
| 09-422-01 | 1.31 | 23.43 | 17.62 | | |
| 02 | 1.29 | 20.19 | 19.44 | | |
| 09-435-01 | 1.29 | 26.29 | 12.[illegible] | | |
| 09-411-01 | 1.30 | 23.19 | 18.30 | | |
| -03 | 1.31 | 27.15 | 22.63 | | |
| -03 | 1.29 | 22.20 | 14.65 | | |
| -04 | 1.29 | 23.42 | 19.64 | | |
| -05 | 1.29 | 23.38 | 19.63 | | |
| -06 | 1.30 | 21.06 | 17.29 | | |
| Duplicate 09-441-15 | 1.30 | 30.03 | 21.44 | | |

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H865, Drop Point O1U
Los Alamos, NM 87545
Attention: John Miglio

PO Number:
Account Number: LANL-295

Login #: L9808433
Report Date: 09/14/98
Work ID: 4526R/MR2W05153318
Date Received: 08/25/98

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9808433-01 | MD49-98-0141 | L9808433-02 | MD49-98-0142 |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10661

Maren M Beery
Certified By
Maren M. Beery

COPY
Cohen Hopkins

Mac Nist
10/7/98

Kemron

Order #98-08-433
October 2, 1998 13:05

**KEMRON ENVIRONMENTAL SERVICES**
**REPORT NARRATIVE**

Lab ID# 7797L0014-8M

CLIENT: Los Alamos National Laboratory

LANL SDG/RN: 4526R

Sample Management:
Two soil samples were received at Kemron Environmental Services on 8/24/98.

Client ID:
MD49-98-0141
MD49-98-0142

Quality Control:

METALS - 6010/7000:
A post digestion spike was analyzed with the following recoveries:

| | |
|---|---|
| Sb | 103% recovery |
| Hg | 109% recovery |
| Tl | 90.3% recovery |

A serial dilutions was analyzed for Zn within 10% of the original determination. The selenium detection limit was elevated based on the post digestion spike recovery.

Shipment Conditions:
The samples were received intact. Solid blue ice was present.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and in completeness, except as detailed in this QC Report.

Laboratory Manager

Date: 10/2/98

Login #L9808433
September 14, 1998 12:33 pm

KEMRON ENVIRONMENTAL SERVICES

Lab Sample ID: L9808433-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4526R/MR2W05153318

Matrix: Soil
Collected: 08/21/98 N/A

% Solid: 71
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids..... | % wt. | 71 | | 1.0 | 1 | N/A | DFM | 08/27/98 | 09:50 | D2216-90 |
| Silver, Total..... | mg/kg | | ND | 2.8 | 1 | R-2 | KHA | 09/04/98 | 14:02 | 6010B\3050A |
| Aluminum, Total..... | mg/kg | 28000 | | 7.0 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Arsenic, Total..... | mg/kg | 7.5 | | 0.70 | 1 | N/A | KHA | 09/04/98 | 14:02 | 6010B\3050A |
| Barium, Total..... | mg/kg | 180 | | 0.70 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Beryllium, Total..... | mg/kg | 1.8 | | 0.70 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Calcium, Total..... | mg/kg | 5500 | | 14 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cadmium, Total..... | mg/kg | 1.1 | | 0.70 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cobalt, Total..... | mg/kg | 6.5 | | 1.4 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Chromium, Total..... | mg/kg | 18 | | 1.4 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Copper, Total..... | mg/kg | 36 | | 1.4 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Iron, Total..... | mg/kg | 52000 | | 14 | 5 | R-4 | SLP | 09/03/98 | 22:44 | 6010B\3050A |
| Mercury, Total..... | mg/kg | | ND | 0.14 | 1 | N/A | ALC | 08/26/98 | | 7471A\7471A |
| Potassium, Total..... | mg/kg | 2500 | | 70 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Magnesium, Total..... | mg/kg | 2900 | | 35 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Manganese, Total..... | mg/kg | 420 | | 0.70 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Sodium, Total..... | mg/kg | 160 | | 35 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Nickel, Total..... | mg/kg | 15 | | 2.8 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Lead, Total..... | mg/kg | 570 | | 0.35 | 1 | N/A | KHA | 09/04/98 | 14:02 | 6010B\3050A |
| Antimony, Total..... | mg/kg | | ND | 14 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Selenium, Total..... | mg/kg | | ND,L | 0.53 | 1 | N/A | RSS | 09/08/98 | 10:50 | 7740 |
| Thallium, Total..... | mg/kg | | ND | 0.35 | 1 | N/A | CRC | 08/27/98 | 09:10 | 7841 |
| Vanadium, Total..... | mg/kg | 28 | | 0.70 | 1 | R-2 | KHA | 09/04/98 | 14:02 | 6010B\3050A |
| Zinc, Total..... | mg/kg | 20000 | | 1.4 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |

Lab Sample ID: L9808433-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4526R/MR2W05153318

Matrix: Soil
Collected: 08/21/98 N/A

% Solid: 46
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids..... | % wt. | 46 | | 1.0 | 1 | N/A | DFM | 08/27/98 | 09:50 | D2216-90 |
| Silver, Total..... | mg/kg | | ND | 4.3 | 1 | R-2 | KHA | 09/04/98 | 14:50 | 6010B\3050/ |
| Aluminum, Total..... | mg/kg | 15000 | | 11 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050/ |
| Arsenic, Total..... | mg/kg | 4.8 | | 1.1 | 1 | N/A | KHA | 09/04/98 | 14:50 | 6010B\3050/ |
| Barium, Total..... | mg/kg | 110 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050/ |
| Beryllium, Total..... | mg/kg | | ND | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050/ |

RL = Reporting Limit

Login #L9808433
September 14, 1998 12:33 pm

KEMRON ENVIRONMENTAL SERVICES

Lab Sample ID: L9808433-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4526R/MR2W05153318

Matrix: Soil
Collected: 08/21/98 N/A

% Solid: 46
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium, Total..... | mg/kg | 6000 | | 22 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cadmium, Total..... | mg/kg | 3.1 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cobalt, Total..... | mg/kg | | ND | 2.2 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Chromium, Total..... | mg/kg | 4.9 | | 2.2 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Copper, Total..... | mg/kg | 28 | | 2.2 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Iron, Total..... | mg/kg | 14000 | | 22 | 5 | R-4 | SLP | 09/03/98 | 22:48 | 6010B\3050A |
| Mercury, Total..... | mg/kg | | ND | 0.22 | 1 | N/A | ALC | 08/26/98 | | 7471A\7471A |
| Potassium, Total..... | mg/kg | 770 | | 110 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Magnesium, Total..... | mg/kg | 3200 | | 54 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Manganese, Total..... | mg/kg | 190 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Sodium, Total..... | mg/kg | 150 | | 54 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Nickel, Total..... | mg/kg | 6.8 | | 4.3 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Lead, Total..... | mg/kg | 450 | | 0.54 | 1 | N/A | KHA | 09/04/98 | 14:50 | 6010B\3050A |
| Antimony, Total..... | mg/kg | | ND | 22 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Selenium, Total..... | mg/kg | | ND,L | 0.78 | 1 | N/A | RSS | 09/08/98 | 10:50 | 7740 |
| Thallium, Total..... | mg/kg | | ND | 0.54 | 1 | N/A | CRC | 08/27/98 | 09:10 | 7841 |
| Vanadium, Total..... | mg/kg | 6.5 | | 1.1 | 1 | R-2 | KHA | 09/04/98 | 14:50 | 6010B\3050A |
| Zinc, Total..... | mg/kg | 32000 | | 2.2 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |

RL = Reporting Limit

Order #: 98-08-433
September 14, 1998 12:34 pm

# KEMRON ENVIRONMENTAL SERVICES
## WORK GROUPS

| Work Group | Run ID | Sample | Dil Type | Matrix | Product | Method | Analyst | Date Collected | Run Date | Run Time | Department |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W345049 | R51232 | L9808433-01 | | Soil | Mercury, Total | 7471A\7471A | AIC | 21-AUG-1998 | 26-AUG-1998 | | Digestion |
| W345049 | R51232 | L9808433-02 | | Soil | Mercury, Total | 7471A\7471A | AIC | 21-AUG-1998 | 26-AUG-1998 | | Digestion |
| W345050 | R51385 | L9808433-01 | | Soil | Thallium, Total | 7841 | CKC | 21-AUG-1998 | 27-AUG-1998 | 09:10 | Digestion |
| W345050 | R51385 | L9808433-02 | | Soil | Thallium, Total | 7841 | CKC | 21-AUG-1998 | 27-AUG-1998 | 09:10 | Digestion |
| W345052 | R51920 | L9808433-01 | | Soil | Aluminum, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51920 | L9808433-01 | | Soil | Antimony, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51923 | L9808433-01 | | Soil | Arsenic, Total | 6010B\3050A | KHA | 21-AUG-1998 | 04-SEP-1998 | 14:02 | Digestion |
| W345052 | R51920 | L9808433-01 | | Soil | Barium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51920 | L9808433-01 | | Soil | Beryllium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51920 | L9808433-01 | | Soil | Cadmium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51920 | L9808433-01 | | Soil | Calcium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51920 | L9808433-01 | | Soil | Chromium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51925 | L9808433-01 | R-3 | Soil | Cobalt, Total | 6010B\3050A | MMB | 21-AUG-1998 | 31-AUG-1998 | 09:54 | Digestion |
| W345052 | R51920 | L9808433-01 | | Soil | Copper, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51927 | L9808433-01 | R-4 | Soil | Iron, Total | 6010B\3050A | SLP | 21-AUG-1998 | 03-SEP-1998 | 22:44 | Digestion |
| W345052 | R51923 | L9808433-01 | | Soil | Lead, Total | 6010B\3050A | KHA | 21-AUG-1998 | 04-SEP-1998 | 14:02 | Digestion |
| W345052 | R51920 | L9808433-01 | | Soil | Magnesium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51920 | L9808433-01 | | Soil | Manganese, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51925 | L9808433-01 | R-3 | Soil | Nickel, Total | 6010B\3050A | MMB | 21-AUG-1998 | 31-AUG-1998 | 09:54 | Digestion |
| W345052 | R51925 | L9808433-01 | R-3 | Soil | Potassium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 31-AUG-1998 | 09:54 | Digestion |
| W345052 | R51923 | L9808433-01 | R-2 | Soil | Silver, Total | 6010B\3050A | KHA | 21-AUG-1998 | 04-SEP-1998 | 14:02 | Digestion |
| W345052 | R51920 | L9808433-01 | | Soil | Sodium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51923 | L9808433-01 | R-2 | Soil | Vanadium, Total | 6010B\3050A | KHA | 21-AUG-1998 | 04-SEP-1998 | 14:02 | Digestion |
| W345052 | R51920 | L9808433-01 | | Soil | Zinc, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51920 | L9808433-02 | | Soil | Aluminum, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51920 | L9808433-02 | | Soil | Antimony, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51923 | L9808433-02 | | Soil | Arsenic, Total | 6010B\3050A | KHA | 21-AUG-1998 | 04-SEP-1998 | 14:50 | Digestion |
| W345052 | R51920 | L9808433-02 | | Soil | Barium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51920 | L9808433-02 | | Soil | Beryllium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51920 | L9808433-02 | | Soil | Cadmium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51920 | L9808433-02 | | Soil | Calcium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51920 | L9808433-02 | | Soil | Chromium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51925 | L9808433-02 | R-3 | Soil | Cobalt, Total | 6010B\3050A | MMB | 21-AUG-1998 | 31-AUG-1998 | 09:54 | Digestion |
| W345052 | R51920 | L9808433-02 | | Soil | Copper, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51927 | L9808433-02 | R-4 | Soil | Iron, Total | 6010B\3050A | SLP | 21-AUG-1998 | 03-SEP-1998 | 22:48 | Digestion |
| W345052 | R51923 | L9808433-02 | | Soil | Lead, Total | 6010B\3050A | KHA | 21-AUG-1998 | 04-SEP-1998 | 14:50 | Digestion |
| W345052 | R51920 | L9808433-02 | | Soil | Magnesium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51920 | L9808433-02 | | Soil | Manganese, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51925 | L9808433-02 | R-3 | Soil | Nickel, Total | 6010B\3050A | MMB | 21-AUG-1998 | 31-AUG-1998 | 09:54 | Digestion |
| W345052 | R51925 | L9808433-02 | R-3 | Soil | Potassium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 31-AUG-1998 | 09:54 | Digestion |
| W345052 | R51923 | L9808433-02 | R-2 | Soil | Silver, Total | 6010B\3050A | KHA | 21-AUG-1998 | 04-SEP-1998 | 14:50 | Digestion |
| W345052 | R51920 | L9808433-02 | | Soil | Sodium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345052 | R51923 | L9808433-02 | R-2 | Soil | Vanadium, Total | 6010B\3050A | KHA | 21-AUG-1998 | 04-SEP-1998 | 14:50 | Digestion |



000-10-000-000 000-10-000-000

600

Order #: 98-08-433
September 14, 1998 12:34 pm

# KEMRON ENVIRONMENTAL SERVICES
## WORK GROUPS

| Work Group | Run ID | Sample | Dil Type | Matrix | Product | Method | Analyst | Date Collected | Run Date | Run Time | Department |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W345052 | R51920 | L9808433-02 | | Soil | Zinc, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W345154 | R51232 | L9808433-01 | | Soil | Mercury, Total | 7471A\7471A | AIC | 21-AUG-1998 | 26-AUG-1998 | | Metals - AA |
| W345154 | R51232 | L9808433-02 | | Soil | Mercury, Total | 7471A\7471A | AIC | 21-AUG-1998 | 26-AUG-1998 | | Metals - AA |
| W345164 | R51371 | L9808433-01 | | Soil | Percent Solids | D2216-90 | DFM | 21-AUG-1998 | 27-AUG-1998 | 09:50 | Conventionals |
| W345164 | R51371 | L9808433-02 | | Soil | Percent Solids | D2216-90 | DFM | 21-AUG-1998 | 27-AUG-1998 | 09:50 | Conventionals |
| W345184 | R51385 | L9808433-01 | | Soil | Thallium, Total | 7841 | CRC | 21-AUG-1998 | 27-AUG-1998 | 09:10 | Metals - AA |
| W345184 | R51385 | L9808433-02 | | Soil | Thallium, Total | 7841 | CRC | 21-AUG-1998 | 27-AUG-1998 | 09:10 | Metals - AA |
| W345191 | R51920 | L9808433-01 | | Soil | Aluminum, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51920 | L9808433-01 | | Soil | Antimony, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51923 | L9808433-01 | | Soil | Arsenic, Total | 6010B\3050A | FHA | 21-AUG-1998 | 04-SEP-1998 | 14:02 | Metals - ICP |
| W345191 | R51920 | L9808433-01 | | Soil | Barium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51920 | L9808433-01 | | Soil | Beryllium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51920 | L9808433-01 | | Soil | Cadmium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51920 | L9808433-01 | | Soil | Calcium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51920 | L9808433-01 | | Soil | Chromium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51925 | L9808433-01 | R 3 | Soil | Cobalt, Total | 6010B\3050A | MMB | 21-AUG-1998 | 31-AUG-1998 | 09:54 | Metals - ICP |
| W345191 | R51920 | L9808433-01 | | Soil | Copper, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51927 | L9808433-01 | R 4 | Soil | Iron, Total | 6010B\3050A | SLE | 21-AUG-1998 | 03-SEP-1998 | 22:48 | Metals - ICP |
| W345191 | R51923 | L9808433-01 | | Soil | Lead, Total | 6010B\3050A | FHA | 21-AUG-1998 | 04-SEP-1998 | 14:02 | Metals - ICP |
| W345191 | R51920 | L9808433-01 | | Soil | Magnesium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51920 | L9808433-01 | | Soil | Manganese, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51925 | L9808433-01 | R 3 | Soil | Nickel, Total | 6010B\3050A | MMB | 21-AUG-1998 | 31-AUG-1998 | 09:54 | Metals - ICP |
| W345191 | R51925 | L9808433-01 | R 3 | Soil | Potassium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 31-AUG-1998 | 09:54 | Metals - ICP |
| W345191 | R51923 | L9808433-01 | R 2 | Soil | Silver, Total | 6010B\3050A | FHA | 21-AUG-1998 | 04-SEP-1998 | 14:02 | Metals - ICP |
| W345191 | R51920 | L9808433-01 | | Soil | Sodium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51923 | L9808433-01 | R 2 | Soil | Vanadium, Total | 6010B\3050A | FHA | 21-AUG-1998 | 04-SEP-1998 | 14:02 | Metals - ICP |
| W345191 | R51920 | L9808433-01 | | Soil | Zinc, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51920 | L9808433-02 | | Soil | Aluminum, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51920 | L9808433-02 | | Soil | Antimony, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51923 | L9808433-02 | | Soil | Arsenic, Total | 6010B\3050A | FHA | 21-AUG-1998 | 04-SEP-1998 | 14:50 | Metals - ICP |
| W345191 | R51920 | L9808433-02 | | Soil | Barium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51920 | L9808433-02 | | Soil | Beryllium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51920 | L9808433-02 | | Soil | Cadmium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51920 | L9808433-02 | | Soil | Calcium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51920 | L9808433-02 | | Soil | Chromium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51925 | L9808433-02 | R 3 | Soil | Cobalt, Total | 6010B\3050A | MMB | 21-AUG-1998 | 31-AUG-1998 | 09:54 | Metals - ICP |
| W345191 | R51920 | L9808433-02 | | Soil | Copper, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51927 | L9808433-02 | R 4 | Soil | Iron, Total | 6010B\3050A | SLE | 21-AUG-1998 | 03-SEP-1998 | 22:48 | Metals - ICP |
| W345191 | R51923 | L9808433-02 | | Soil | Lead, Total | 6010B\3050A | FHA | 21-AUG-1998 | 04-SEP-1998 | 14:50 | Metals - ICP |
| W345191 | R51920 | L9808433-02 | | Soil | Magnesium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51920 | L9808433-02 | | Soil | Manganese, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |

Order #: 98-08-433
September 14, 1998 12:34 pm

# KEMRON ENVIRONMENTAL SERVICES
## WORK GROUPS

| Work Group | Run ID | Sample | Dil Type | Matrix | Product | Method | Analyst | Date Collected | Run Date | Run Time | Department |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W345191 | R51925 | 1980433 02 | R-3 | Soil | Nickel, Total | 6010B\3050A | MMB | 21-AUG-1998 | 31-AUG-1998 | 09:54 | Metals - ICP |
| W345191 | R51925 | 1980433 02 | R-3 | Soil | Potassium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 31-AUG-1998 | 09:54 | Metals - ICP |
| W345191 | R51923 | 1980433-02 | R-2 | Soil | Silver, Total | 6010B\3050A | KHA | 21-AUG-1998 | 04-SEP-1998 | 14:50 | Metals - ICP |
| W345191 | R51920 | 1980433 02 | | Soil | Sodium, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345191 | R51923 | 1980433-02 | R-2 | Soil | Vanadium, Total | 6010B\3050A | KHA | 21-AUG-1998 | 04-SEP-1998 | 14:50 | Metals - ICP |
| W345191 | R51920 | 1980433 02 | | Soil | Zinc, Total | 6010B\3050A | MMB | 21-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W345783 | R52176 | 1980433-01 | | Soil | Selenium, Total | 7740 | RSS | 21-AUG-1998 | 08-SEP-1998 | 10:50 | Metals - AA |
| W345783 | R52176 | 1980433-02 | | Soil | Selenium, Total | 7740 | RSS | 21-AUG-1998 | 08-SEP-1998 | 10:50 | Metals - AA |

# KEMRON ANALYST LIST

## Ohio Valley Laboratory

## 07/06/98

---

ALC - - Ann L. Clark
BAD - - Becky A. Diehl
BWH - - Ben W. Haynes
CEB - - Chad E. Barnes
CDB - - Christy D. Burton
CLH - - Chris L. Hurst
CMS - - Crystal M. Stevens
CRC - - Carla R. Cochran
DHH - - Deanna L. Hesson
DKM - - Dewey K. Miller
DLN - - Deanna L. Norton
DLP - - Dorothy L. Payne
ECL - - Eric C. Lawson
FEH - - Fay E. Harmon
HV - - Hema Vilasagar
JLH - - Janice L. Holland
JMM - - Jim M. Monk
JWR - - John W. Richards
JYH - - Ji Y. Hu
KHA - - Kim H. Archer
KMM - - Kevin M. McDonald
KMS - - Kevin M. Stutler
KRA - - Kathy R. Albertson
MDA - - Mike D. Albertson
MDC - - Michael D. Cochran
MES - - Mary E. Schilling
MLS - - Michael L. Schimmel
MMB - - Maren M. Beery
RDC - - Rebecca D. Cutlip
RDS - - Rebecca D. Sutton
REF - - Ron E. Fertile
REK - - Robert E. Kyer
RSS - - Regina S. Simmons
RWC - - Rodney W. Campbell
SJK - - Sindy J. Kinney
SJM - - Shawn J. Marshall
SKH - - Shellie K. Hamrick
SLJ - - Susan L. Johnson
SLP - - Sheri L. Plalzgraf
SLT - - Stephanie L. Tepe
SMW - - Shauna M. Welch
SPL - - Steve P. Learn
TJW - - Thomas J. Ware
TRS - - Todd R. Stack
VC - - Vicki Collier
VMN - - Vincent M. Nedeff

WDS • NO 5505 • ESIN WDS • NO 5505 • ESIN

KEMRON Environmental Services, Inc.
LIST OF VALID QUALIFIERS (qual)
March 9, 1998

| Qualifier | Description |
|---|---|
| (A) | See the report narrative |
| (B) | See the report narrative |
| (C) | See the report narrative |
| + | Correlation coefficient for the MSA is less than 0.995 |
| < | Less than |
| > | Greater than |
| B | Present in the method blank |
| C | Confirmed by GC/MS |
| * | Surrogate or spike compound out of range |
| CG | Confluent growth |
| D | The analyte was quantified at a secondary dilution factor |
| DL | Surrogate or spike was diluted out |
| E | Estimated concentration due to sample matrix interference |
| F | Present below nominal reporting limit (AFCEE only) |
| FL | Free liquid |
| I | Semiquantitative result, out of instrument calibration range |
| J | Present below nominal reporting limit |
| L | Sample reporting limits elevated due to matrix interference |
| M | Duplicate injection precision not met |

| Qualifier | Description |
|---|---|
| N | Tentatively Identified Compound (TIC) |
| NA | Not applicable |
| ND | Not detected at or above the reporting limit (RL) |
| NF | Not found |
| NFL | No free liquid |
| NI | Non-ignitable |
| NR | Analyte is not required to be analyzed |
| NS | Not spiked |
| P | Concentration > 25% difference between the two GC columns |
| QNS | Quantity not sufficient to perform analysis |
| R | Analyte exceeds regulatory limit |
| RA | Reanalysis confirms reported results |
| RE | Reanalysis confirms sample matrix interference |
| S | Analyzed by method of standard addition |
| SMI | Sample matrix interference on surrogate |
| SP | Reported results are for spike compounds only |
| TNTC | Too numerous to count |
| U | Analyzed for but not detected |
| W | Post-digestion spike for furnace AA out of control limits |
| X | Can not be resolved from isomer. See below. |

**Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semiquantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methyphenol and 4-Methyphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.

Monday, August 24, 1998

REQUEST NUMBER: 4526R
ANALYSIS TYPE: INORG

**Los Alamos**
NATIONAL LABORATORY

ATTN: Maren Beery
KEMRON
109 STARLITE PARK
MARIETTA, OH 45750

Please analyze the enclosed samples according to the schedule indicated:

SHIP DATE: 8/24/98
REPORT DUE: 9/24/98
TURN AROUND REQ'D: 30 days

These samples are on:

LANL Request Number: 4526R
Per Agreement Number: 7797L0014-9S
Project Cost Code: MR2W05153318

RAD SCREENING: Yes, Received
COMMENTS: 49 - 1144 , DK:

LANL ER SMO CONTACT: Joylene Valdez MS H865 5056659968

Signature:

| ANALYSIS ORDER CODE | ANALYTE(S) | SAMPLE ID | CONT ID | SAMPLE MATRIX | DATE SAMPLED | COMMENTS |
|---|---|---|---|---|---|---|
| METTAL | | MD49-98-0141 | 05 | S | 8/21/98 | |
| METTAL | | MD49-98-0142 | 06 | S | 8/21/98 | |

Final Page of REQUEST NUMBER 4526R



105

Monday, August 24, 1998

**Los Alamos**
NATIONAL LABORATORY

# CHAIN OF CUSTODY DOCUMENT NUMBER: 4526RC

**REQUEST NUMBER:** 4526R
ANALYSIS TYPE: INORG

ATTN: Maren Beery
KEMRON
109 STARLITE PARK
MARIETTA, OH 45750

| SAMPLE ID | CONT ID | CONTAINER DESCRIPTION | ANALYSIS ORDER CODE | PRESERVATIVE | MATRIX |
|---|---|---|---|---|---|
| MD49-98-0141 | 05 | 125 ml Polyethelyne | METTAL | Ice | S |
| MD49-98-0142 | 06 | 125 ml Polyethelyne | METTAL | Ice | S |

Final Page of CHAIN OF CUSTODY DOCUMENT FOR REQUEST NUMBER 4526R



| Relinquished By: | Date | Time | Received By: | Date | Time |
|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| PRINTED NAME / SIGNATURE | | | PRINTED NAME / SIGNATURE | | |
| PRINTED NAME / SIGNATURE | | | PRINTED NAME / SIGNATURE | | |
| PRINTED NAME / SIGNATURE | | | PRINTED NAME / SIGNATURE | | |

| Received for DISPOSAL By: | Date | Time |
|---|---|---|
| PRINTED NAME / SIGNATURE | | |

Remarks: [illegible]

[illegible]

Work Order 2/806133 Client LADL #of Samples 2 Due Date 9/21 Page 1

| Sample # | Analyses | Reason | Removed By ADT | Removed From | Moved To | Reliq. By | Rel'd by ADT | Rel'd To | Rec'd By | Reason |
|---|---|---|---|---|---|---|---|---|---|---|
| 01,02 | MET | DIG | SIL08SSBP140 | walk in | MET | BJS | SIL08SSBP510 | walkin Archive | BJG | STORE Archive |
| 01,03 | PCBS | test | DRAG/22/95/0930 | walkin | wet | BJG | DRAG/22/95/0930 | Archive | BJG | Archiv |

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H865, Drop Point O1U
Los Alamos, NM 87545
Attention: John Miglio

PO Number:
Account Number: LANL-295

Login #: L9808435
Report Date: 09/15/98
Work ID: 4528R/MR2W05153318
Date Received: 08/25/98

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9808435-01 | MD49-98-0143 | | |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Maren M Beery
Certified By
Maren M. Beery

COPY

Report Sent To: Kari McL
Approved By: 10/1/98
Date Sent:

KEMRON ENVIRONMENTAL SERVICES

RAI

Order #98-08-435
October 2, 1998 14:22

**KEMRON ENVIRONMENTAL SERVICES**
**REPORT NARRATIVE**

Lab ID# 7797L0014-8H

CLIENT: Los Alamos National Laboratory

LANL SDG/RN: 4528R

Sample Management:
One soil sample was received at Kemron Environmental Services on 8/25/98.

Client ID:
MD49-98-0143

Quality Control:

METALS - 6010/7000:
A post digestion spike was analyzed with the following recoveries;

| | |
|---|---|
| Sb | 103% recovery |
| Hg | 109% recovery |
| Tl | 90.3% recovery |

A serial dilution was analyzed for Zn within 10% of the original determination.

Due to poor spike recovery the Se was analyzed by the method of standard addition.

The thallium detection limit was elevated based on the post digestion spike recovery.

Shipment Conditions:
The sample was received intact. Solid blue ice was present.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and in completeness, except as detailed in this QC Report.

Laboratory Manager

Date: 10/1/98

Login #L9808435
September 15, 1998 02:56 pm

KEMRON ENVIRONMENTAL SERVICES

Lab Sample ID: L9808435-01
Client Sample ID: MD49-98-0143
Site/Work ID: 4528R/MR2W05153318

Matrix: Soil
Collected: 08/24/98 N/A

% Solid: 44
COC Info: N/A

| Analyte | Units | Result | Qualifiers | RL | Dil | Type | Analyst | Analysis Date | Time | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Percent Solids..... | % wt. | 44 | | 1.0 | 1 | N/A | DKM | 08/27/98 | 09:50 | D2216-90 |
| Silver, Total..... | mg/kg | | ND | 4.5 | 1 | R-2 | KHA | 09/04/98 | 14:19 | 6010B\3050A |
| Aluminum, Total..... | mg/kg | 31000 | | 11 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Arsenic, Total..... | mg/kg | 21 | | 1.1 | 1 | N/A | KHA | 09/04/98 | 14:19 | 6010B\3050A |
| Barium, Total..... | mg/kg | 130 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Beryllium, Total..... | mg/kg | 2.5 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Calcium, Total..... | mg/kg | 6600 | | 23 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cadmium, Total..... | mg/kg | 4.4 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Cobalt, Total..... | mg/kg | 5.9 | | 2.3 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Chromium, Total..... | mg/kg | 18 | | 2.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Copper, Total..... | mg/kg | 55 | | 2.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Iron, Total..... | mg/kg | 47000 | | 23 | 5 | R-4 | SLP | 09/03/98 | 22:53 | 6010B\3050A |
| Mercury, Total..... | mg/kg | | ND | 0.23 | 1 | N/A | ALC | 08/26/98 | | 7471A\7471A |
| Potassium, Total..... | mg/kg | 2300 | | 110 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Magnesium, Total..... | mg/kg | 4200 | | 57 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Manganese, Total..... | mg/kg | 340 | | 1.1 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Sodium, Total..... | mg/kg | 700 | | 57 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Nickel, Total..... | mg/kg | 18 | | 4.5 | 1 | R-3 | MMB | 08/31/98 | 09:54 | 6010B\3050A |
| Lead, Total..... | mg/kg | 310 | | 0.57 | 1 | N/A | KHA | 09/04/98 | 14:19 | 6010B\3050A |
| Antimony, Total..... | mg/kg | 24 | | 23 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |
| Selenium, Total..... | mg/kg | 3.1 | S | 0.91 | 2 | N/A | RSS | 09/14/98 | 14:00 | 7740 |
| Thallium, Total..... | mg/kg | | ND, (L) | 0.87 | 1 | N/A | CRC | 08/27/98 | 09:10 | 7841 |
| Vanadium, Total..... | mg/kg | 20 | | 1.1 | 1 | R-2 | KHA | 09/04/98 | 14:19 | 6010B\3050A |
| Zinc, Total..... | mg/kg | 38000 | | 2.3 | 1 | N/A | MMB | 08/27/98 | 10:04 | 6010B\3050A |

RL = Reporting Limit

Order #: 98-08-435
September 15, 1998 02:56 pm

# KEMRON ENVIRONMENTAL SERVICES
## WORK GROUPS

| Work Group | Run ID | Sample | Dil Type | Matrix | Product | Method | Analyst | Date Collected | Run Date | Run Time | Department |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W045049 | R51232 | L9808435-01 | | Soil | Mercury, Total | 7471A\7471A | ALC | 24-AUG-1998 | 26-AUG-1998 | | Digestion |
| W045050 | R51385 | L9808435-01 | | Soil | Thallium, Total | 7841 | CRC | 24-AUG-1998 | 27-AUG-1998 | 09:10 | Digestion |
| W045052 | R51920 | L9808435-01 | | Soil | Aluminum, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W045052 | R51920 | L9808435-01 | | Soil | Antimony, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W045052 | R51923 | L9808435-01 | | Soil | Arsenic, Total | 6010B\3050A | KHA | 24-AUG-1998 | 04-SEP-1998 | 14:19 | Digestion |
| W045052 | R51920 | L9808435-01 | | Soil | Barium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W045052 | R51920 | L9808435-01 | | Soil | Beryllium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W045052 | R51920 | L9808435-01 | | Soil | Cadmium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W045052 | R51920 | L9808435-01 | | Soil | Calcium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W045052 | R51920 | L9808435-01 | | Soil | Chromium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W045052 | R51925 | L9808435-01 | R-3 | Soil | Cobalt, Total | 6010B\3050A | MMB | 24-AUG-1998 | 31-AUG-1998 | 09:54 | Digestion |
| W045052 | R51920 | L9808435-01 | | Soil | Copper, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W045052 | R51927 | L9808435-01 | R-4 | Soil | Iron, Total | 6010B\3050A | SLP | 24-AUG-1998 | 03-SEP-1998 | 22:53 | Digestion |
| W045052 | R51923 | L9808435-01 | | Soil | Lead, Total | 6010B\3050A | KHA | 24-AUG-1998 | 04-SEP-1998 | 14:19 | Digestion |
| W045052 | R51920 | L9808435-01 | | Soil | Magnesium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W045052 | R51920 | L9808435-01 | | Soil | Manganese, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W045052 | R51925 | L9808435-01 | R-3 | Soil | Nickel, Total | 6010B\3050A | MMB | 24-AUG-1998 | 31-AUG-1998 | 09:54 | Digestion |
| W045052 | R51925 | L9808435-01 | R-3 | Soil | Potassium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 31-AUG-1998 | 09:54 | Digestion |
| W045052 | R51923 | L9808435-01 | R-2 | Soil | Silver, Total | 6010B\3050A | KHA | 24-AUG-1998 | 04-SEP-1998 | 14:19 | Digestion |
| W045052 | R51920 | L9808435-01 | | Soil | Sodium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W045052 | R51923 | L9808435-01 | R-2 | Soil | Vanadium, Total | 6010B\3050A | KHA | 24-AUG-1998 | 04-SEP-1998 | 14:19 | Digestion |
| W045052 | R51920 | L9808435-01 | | Soil | Zinc, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Digestion |
| W045154 | R51232 | L9808435-01 | | Soil | Mercury, Total | 7471A\7471A | ALC | 24-AUG-1998 | 26-AUG-1998 | | Metals - AA |
| W045164 | R51371 | L9808435-01 | | Soil | Percent Solids | D2216-90 | DKM | 24-AUG-1998 | 27-AUG-1998 | 09:50 | Conventionals |
| W045184 | R51385 | L9808435-01 | | Soil | Thallium, Total | 7841 | CRC | 24-AUG-1998 | 27-AUG-1998 | 09:10 | Metals - AA |
| W045191 | R51920 | L9808435-01 | | Soil | Aluminum, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W045191 | R51920 | L9808435-01 | | Soil | Antimony, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W045191 | R51923 | L9808435-01 | | Soil | Arsenic, Total | 6010B\3050A | KHA | 24-AUG-1998 | 04-SEP-1998 | 14:19 | Metals - ICP |
| W045191 | R51920 | L9808435-01 | | Soil | Barium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W045191 | R51920 | L9808435-01 | | Soil | Beryllium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W045191 | R51920 | L9808435-01 | | Soil | Cadmium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W045191 | R51920 | L9808435-01 | | Soil | Calcium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W045191 | R51920 | L9808435-01 | | Soil | Chromium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W045191 | R51925 | L9808435-01 | R-3 | Soil | Cobalt, Total | 6010B\3050A | MMB | 24-AUG-1998 | 31-AUG-1998 | 09:54 | Metals - ICP |
| W045191 | R51920 | L9808435-01 | | Soil | Copper, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W045191 | R51927 | L9808435-01 | R-4 | Soil | Iron, Total | 6010B\3050A | SLP | 24-AUG-1998 | 03-SEP-1998 | 22:53 | Metals - ICP |
| W045191 | R51923 | L9808435-01 | | Soil | Lead, Total | 6010B\3050A | KHA | 24-AUG-1998 | 04-SEP-1998 | 14:19 | Metals - ICP |
| W045191 | R51920 | L9808435-01 | | Soil | Magnesium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| W045191 | R51920 | L9808435-01 | | Soil | Manganese, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |

Order #: 98-08-435
September 15, 1998 02:56 pm

# KEMRON ENVIRONMENTAL SERVICES
## WORK GROUPS

| Work Group | Run ID | Sample | Dil Type | Matrix | Product | Method | Analyst | Date Collected | Run Date | Run Time | Department |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WG45191 | R51925 | L9808435-01 | R-3 | Soil | Nickel, Total | 6010B\3050A | MMB | 24-AUG-1998 | 31-AUG-1998 | 09:54 | Metals - ICP |
| WG45191 | R51925 | L9808435-01 | R-3 | Soil | Potassium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 31-AUG-1998 | 09:54 | Metals - ICP |
| WG45191 | R51923 | L9808435-01 | R-2 | Soil | Silver, Total | 6010B\3050A | KHA | 24-AUG-1998 | 04-SEP-1998 | 14:19 | Metals - ICP |
| WG45191 | R51920 | L9808435-01 | | Soil | Sodium, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| WG45191 | R51923 | L9808435-01 | R-2 | Soil | Vanadium, Total | 6010B\3050A | KHA | 24-AUG-1998 | 04-SEP-1998 | 14:19 | Metals - ICP |
| WG45191 | R51920 | L9808435-01 | | Soil | Zinc, Total | 6010B\3050A | MMB | 24-AUG-1998 | 27-AUG-1998 | 10:04 | Metals - ICP |
| WG45783 | R52277 | L9808435-01 | | Soil | Selenium, Total | 7740 | RSS | 24-AUG-1998 | 14-SEP-1998 | 14:00 | Metals - AA |

# KEMRON ANALYST LIST

## Ohio Valley Laboratory

## 07/06/98

---

ALC -- Ann L. Clark
BAD -- Becky A. Diehl
BWH -- Ben W. Haynes
CEB -- Chad E. Barnes
CDB -- Christy D. Burton
CLH -- Chris L. Hurst
CMS -- Crystal M. Stevens
CRC -- Carla R. Cochran
DIH -- Deanna I. Hesson
DKM -- Dewey K. Miller
DLN -- Deanna L. Norton
DLP -- Dorothy L. Payne
ECL -- Eric C. Lawson
FEH -- Fay E. Harmon
HV -- Hema Vilasagar
JLH -- Janice L. Holland
JMM -- Jim M. Monk
JWR -- John W. Richards
JYH -- Ji Y. Hu
KHA -- Kim H. Archer
KMM -- Kevin M. McDonald
KMS -- Kevin M. Stutler
KRA -- Kathy R. Albertson
MDA -- Mike D. Albertson
MDC -- Michael D. Cochran
MES -- Mary E. Schilling
MLS -- Michael L. Schimmel
MMB -- Maren M. Beery
RDC -- Rebecca D. Cutlip
RDS -- Rebecca D. Sutton
REP -- Ron E. Pertile
RER -- Robert E. Kyer
RSS -- Regina S. Simmons
RWC -- Rodney W. Campbell
SJK -- Sindy J. Kinney
SJM -- Shawn J. Marshall
SKH -- Shellie K. Hamrick
SLJ -- Susan L. Johnson
SLP -- Sheri L. Pfalzgraf
SLT -- Stephanie L. Tepe
SMW -- Shanna M. Welch
SPL -- Steve P. Learn
TJW -- Thomas J. Ware
TRS -- Todd R. Stack
VC -- Vicki Collier
VMN -- Vincent M. Nedeff

KEMRON Environmental Services, Inc.
LIST OF VALID QUALIFIERS (qual)
March 9, 1998

| Qualifier | Description |
|---|---|
| (A) | See the report narrative |
| (B) | See the report narrative |
| (C) | See the report narrative |
| + | Correlation coefficient for the MSA is less than 0.995 |
| < | Less than |
| > | Greater than |
| B | Present in the method blank |
| C | Confirmed by GC/MS |
| * | Surrogate or spike compound out of range |
| CG | Confluent growth |
| D | The analyte was quantified at a secondary dilution factor |
| DL | Surrogate or spike was diluted out |
| E | Estimated concentration due to sample matrix interference |
| F | Present below nominal reporting limit (AFCEE only) |
| FL | Free liquid |
| I | Semiquantitative result, out of instrument calibration range |
| J | Present below nominal reporting limit |
| L | Sample reporting limits elevated due to matrix interference |
| M | Duplicate injection precision not met |
| N | Tentatively Identified Compound (TIC) |
| NA | Not applicable |
| ND | Not detected at or above the reporting limit (RL) |
| NF | Not found |
| NFL | No free liquid |
| NI | Non-ignitable |
| NR | Analyte is not required to be analyzed |
| NS | Not spiked |
| P | Concentration > 25% difference between the two GC columns |
| QNS | Quantity not sufficient to perform analysis |
| R | Analyte exceeds regulatory limit |
| RA | Reanalysis confirms reported results |
| RE | Reanalysis confirms sample matrix interference |
| S | Analyzed by method of standard addition |
| SMI | Sample matrix interference on surrogate |
| SP | Reported results are for spike compounds only |
| TNTC | Too numerous to count |
| U | Analyzed for but not detected |
| W | Post-digestion spike for furnace AA out of control limits |
| X | Can not be resolved from isomer. See below. |

**Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semiquantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methyphenol and 4-Methyphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.

Work Order 198054135 Client LINL #of Samples 01 Due Date 9/21 Page 1

| Sample # | Analyses | Reason | Removed By ADT | Removed From | Moved To | Reliq. By | Rel'd by ADT | Rel'd To | Rec'd By | Reason |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MET | DIG | STK 083598P14W | walk in | MET | DiS | STK 0834560510 | walk in | Big | STORAGE |
| 01 | PCT-S | test | DRM 8/22/98 6030 | walk in | wet | Big | DRM 8/22/98 KSX | Archive | Big | Archive |

Monday, August 24, 1998

REQUEST NUMBER: 4528R
ANALYSIS TYPE: INORG

**Los Alamos**
NATIONAL LABORATORY

ATTN: Maren Beery
KEMRON
109 STARLITE PARK
MARIETTA, OH 45750

Please analyze the enclosed samples according to the schedule indicated:

SHIP DATE: 8/24/98
REPORT DUE: 9/24/98
TURN AROUND REQ'D: 30 days

These samples are on:

LANL Request Number: 4528R
Per Agreement Number: 7797L0014-9S
Project Cost Code: MR2W05153318

RAD SCREENING: Yes, Received
COMMENTS: 49 - 1144 , DK:

LANL ER SMO CONTACT: Joylene Valdez MS H865 5056659968
Signature:

| ANALYSIS ORDER CODE | ANALYTE(S) | SAMPLE ID | CONT ID | SAMPLE MATRIX | DATE SAMPLED | COMMENTS |
|---|---|---|---|---|---|---|
| METTAL | | MD49-98-0143 | 06 | S | 8/24/98 | |

Final Page of REQUEST NUMBER 4528R

Monday, August 24, 1998

**Los Alamos**
NATIONAL LABORATORY

**CHAIN OF CUSTODY DOCUMENT NUMBER: 4528RC**

**REQUEST NUMBER: 4528R**
ANALYSIS TYPE: INORG

ATTN: Maren Beery
KEMRON
109 STARLITE PARK
MARIETTA, OH 45750

| SAMPLE ID | CONT ID | CONTAINER DESCRIPTION | ANALYSIS ORDER CODE | PRESERVATIVE | MATRIX |
|---|---|---|---|---|---|
| MD49-98-0143 | 06 | 125 ml poly | METTAL | none | S |

Final Page of CHAIN OF CUSTODY DOCUMENT FOR REQUEST NUMBER 4528R Page 1

| Relinquished By: | | Date | Time | Received By: | | Date | Time |
|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | 8-24-98 | 14:00 | [illegible] | [illegible] | [illegible] | 1953 |
| PRINTED NAME | SIGNATURE | | | PRINTED NAME | SIGNATURE | | |
| PRINTED NAME | SIGNATURE | | | PRINTED NAME | SIGNATURE | | |
| PRINTED NAME | SIGNATURE | | | PRINTED NAME | SIGNATURE | | |

| Received for DISPOSAL By: | | Date | Time |
|---|---|---|---|
| PRINTED NAME | SIGNATURE | | |

Remarks:
Calc Dried
Sx [illegible]
Solid blue w/ [illegible]

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H865, Drop Point 010
Los Alamos, NM 87545
Attention: Joylene Valdez

Login #: L9811061
Report Date: 11/12/98
Work ID: 4522R/MR2W05153318
Date Received: 08/25/98

ID Number:
Account Number: LANL-295

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9811061-01 | HD10-98-0140 | | |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

HYSCOB ELAP ID: 10861

Certified By
Karen M. Deery

PRELIMINARY

COPY

Login #L9811061
November 12, 1998 07:41 am

KEMRON ENVIRONMENTAL SERVICES

## TCLP METALS

Lab Sample ID: L9811061-01
Client Sample ID: MD49-98-0140
Site/Work ID: 4522R/MR2W05153318

Matrix: Soil
Collected: 08/20/98
Units: mg/L

COC Info: N/A
TCLP Ext. Date: 11/09/98

| Analyte | Result | Qualifiers | RL | Regulatory Limit | Method | Prep. Date | Analysis Date | Time | Dil Type |
|---|---|---|---|---|---|---|---|---|---|
| Silver..... | | ND | 0.10 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |
| Arsenic..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |
| Barium..... | 0.45 | | 0.10 | 100 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |
| Cadmium..... | | ND | 0.10 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |
| Chromium..... | | ND | 0.20 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |
| Mercury..... | | ND | 0.005 | 0.2 | 7470\7470\1311 | 11/10/98 | 11/11/98 | 10:56 | N/A |
| Lead..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |
| Selenium..... | | ND | 1.0 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |

RL = Reporting Limit

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H865, Drop Point OIU
Los Alamos, NM 87545
Attention: Joylene Valdez

PO Number:
Account Number: LANL-295

Login #: L9811061
Report Date: 11/12/98
Work ID: 4522R/MR2K05153318
Date Received: 08/25/98

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9811061-01 | MD49-98-0140 | | |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Certified By
Maren M. Beery

Maren M Beery

11/28/98

COPY

John Hopkins

KEMRON ENVIRONMENTAL SERVICES

OHIO • 740 • 373 • 4071 OHIO • 1-800-533-4033

Order #98-11-061
November 19, 1998
10:24

**KEMRON ENVIRONMENTAL SERVICES**
**REPORT NARRATIVE**

Lab ID# 7797L0014-8M

CLIENT: Los Alamos National Laboratory

LANL SDG/RN: 4522R

Sample Management:
One soil sample ws received at Kemron Environmental Services on 9/25/98 for total metals analysis. TCLP metals analysis was requested on 11/3/98. The twenty-eight day hold time for mercury expired on 9/17/98.

Client ID:
MD49-98-0140

Quality Control:

METALS - 6010/7000:
There were no technical difficulties associated with analysis of this sample set.

Shipment Conditions:
The sample was received intact. Solid blue ice was present.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and in completeness, except as detailed in this QC Report.

Dennis S Lopez
Laboratory Manager

Date: 11-19-98

Login #L9811061
November 12, 1998 07:11 am

KEMRON ENVIRONMENTAL SERVICES

**TCLP METALS**

Lab Sample ID: L9811061-01
Client Sample ID: MD19-98-0140
Site/Work ID: 4522R/MR2W05153318

Matrix: Soil
Collected: 08/20/98
Units: mg/L

COC Info: N/A
TCLP Ext. Date: 11/09/98

| Analyte | Result | Qualifiers | RL | Regulatory Limit | Method | Prep. Date | Analysis Date | Time | Dil Type |
|---|---|---|---|---|---|---|---|---|---|
| Silver..... | | ND | 0.10 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |
| Arsenic..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |
| Barium..... | 0.45 | | 0.10 | 100 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |
| Cadmium..... | | ND | 0.10 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |
| Chromium..... | | ND | 0.20 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |
| Mercury..... | | ND | 0.005 | 0.2 | 7470\7470\1311 | 11/10/98 | 11/11/98 | 10:56 | N/A |
| Lead..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |
| Selenium..... | | ND | 1.0 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:43 | N/A |

RL = Reporting Limit

Order #: 98-11-061
November 12, 1998 07:41 am

# KEMRON ENVIRONMENTAL SERVICES
## WORK GROUPS

| Work Group | Run ID | Sample | Dil Type | Matrix | Product | Method | Analyst | Date Collected | Run Date | Run Time | Department |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W349051 | R55988 | L9811061-01 | | Soil | Mercury, TCLP | 7470\7470\1311 | FFA | 20-AUG-1998 | 11-NOV-1998 | 10:56 | TCLP Prep. |
| W349119 | R55988 | L9811061-01 | | Soil | Mercury, TCLP | 7470\7470\1311 | FFA | 20-AUG-1998 | 11-NOV-1998 | 10:56 | Digestion |
| W349126 | R56040 | L9811061-01 | | Soil | Arsenic, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Digestion |
| W349126 | R56040 | L9811061-01 | | Soil | Barium, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Digestion |
| W349126 | R56040 | L9811061-01 | | Soil | Cadmium, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Digestion |
| W349126 | R56040 | L9811061-01 | | Soil | Chromium, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Digestion |
| W349126 | R56040 | L9811061-01 | | Soil | Lead, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Digestion |
| W349126 | R56040 | L9811061-01 | | Soil | Selenium, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Digestion |
| W349126 | R56040 | L9811061-01 | | Soil | Silver, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Digestion |
| W349154 | R56040 | L9811061-01 | | Soil | Arsenic, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Metals - ICP |
| W349154 | R56040 | L9811061-01 | | Soil | Barium, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Metals - ICP |
| W349154 | R56040 | L9811061-01 | | Soil | Cadmium, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Metals - ICP |
| W349154 | R56040 | L9811061-01 | | Soil | Chromium, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Metals - ICP |
| W349154 | R56040 | L9811061-01 | | Soil | Lead, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Metals - ICP |
| W349154 | R56040 | L9811061-01 | | Soil | Selenium, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Metals - ICP |
| W349154 | R56040 | L9811061-01 | | Soil | Silver, TCLP | 601CB\3015\1311 | SLP | 20-AUG-1998 | 11-NOV-1998 | 00:43 | Metals - ICP |
| W349186 | R55988 | L9811061-01 | | Soil | Mercury, TCLP | 7470\7470\1311 | FFA | 20-AUG-1998 | 11-NOV-1998 | 10:56 | Metals - AA |

# KEMRON ANALYST LIST

## Ohio Valley Laboratory

## 10/28/98

---

ALC -- Ann L. Clark
BAD -- Becky A. Diehl
CEB -- Chad E. Barnes
CDB -- Christy D. Burton
CMS -- Crystal M. Stevens
CRC -- Carla R. Cochran
DHH -- Deanna L. Hesson
DKM -- Dewey K. Miller
DLN -- Deanna L. Norton
DLP -- Dorothy L. Payne
ECL -- Eric C. Lawson
FEH -- Fay E. Harmon
HV -- Hema Vilasagar
JLH -- Janice L. Holland
JWR -- John W. Richards
JYH -- Ji Y. Hu
KHA -- Kim H. Archer
KMS -- Kevin M. Statler
KRA -- Kathy R. Albertson
MDA -- Mike D. Albertson
MDC -- Michael D. Cochran
MES -- Mary E. Schilling
MLS -- Michael L. Schimmel
MMB -- Maren M. Beery
RDC -- Rebecca D. Cutlip
RDS -- Rebecca D. Sutton
REP -- Ron E. Pertile
REK -- Robert E. Kyer
RSS -- Regina S. Simmons
RWC -- Rodney W. Campbell
SJK -- Sindy J. Kinney
SJM -- Shawn J. Marshall
SLP -- Sheri L. Pfalzgraf
SLT -- Stephanie L. Tepe
SMW -- Shauna M. Welch
SPL -- Steve P. Learn
TJW -- Thomas J. Ware
TRS -- Todd R. Stack
VC -- Vicki Collier
VMN -- Vincent M. Nedeff

KEMRON Environmental Services, Inc.
LIST OF VALID QUALIFIERS (qual)
March 9, 1998

| Qualifier | Description |
|---|---|
| (A) | See the report narrative |
| (B) | See the report narrative |
| (C) | See the report narrative |
| + | Correlation coefficient for the MSA is less than 0.995 |
| < | Less than |
| > | Greater than |
| B | Present in the method blank |
| C | Confirmed by GC/MS |
| * | Surrogate or spike compound out of range |
| CG | Confluent growth |
| D | The analyte was quantified at a secondary dilution factor |
| DL | Surrogate or spike was diluted out |
| E | Estimated concentration due to sample matrix interference |
| F | Present below nominal reporting limit (AFCEE only) |
| FL | Free liquid |
| I | Semiquantitative result, out of instrument calibration range |
| J | Present below nominal reporting limit |
| L | Sample reporting limits elevated due to matrix interference |
| M | Duplicate injection precision not met |

| Qualifier | Description |
|---|---|
| N | Tentatively Identified Compound (TIC) |
| NA | Not applicable |
| ND | Not detected at or above the reporting limit (RL) |
| NF | Not found |
| NFL | No free liquid |
| NI | Non-ignitable |
| NR | Analyte is not required to be analyzed |
| NS | Not spiked |
| P | Concentration > 25% difference between the two GC columns |
| QNS | Quantity not sufficient to perform analysis |
| R | Analyte exceeds regulatory limit |
| RC | Reanalysis confirms reported results |
| RE | Reanalysis confirms sample matrix interference |
| S | Analyzed by method of standard addition |
| SMI | Sample matrix interference on surrogate |
| SP | Reported results are for spike compounds only |
| TNTC | Too numerous to count |
| U | Analyzed for but not detected |
| W | Post-digestion spike for furnace AA out of control limits |
| X | Can not be resolved from isomer. See below. |

**Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semiquantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methyphenol and 4-Methyphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.

Work Order L9811061 Client CHAL #of Samples 01 Due Date 11/23 Page 1

| Sample # | Analyses | Reason | Removed By ADT | Removed From | Moved To | Reliq. By | Ret'd by ADT | Ret'd To | Rec'd By | Reason |
|---|---|---|---|---|---|---|---|---|---|---|
| (TRY 8-430) 01 | 18-NE | Relq | Big 11/3/98 1500 | Archive | Walkin | NB | | | | |
| 01 | TCLP | EXT | Rec 11-9-98 0820 | Walkin | TCLP | Big | Rec 11-9-98 0820 | Archive | Big | Archive |

Thursday, November 05, 1998

REQUEST NUMBER: 4522R
ANALYSIS TYPE: INORG

Los Alamos
NATIONAL LABORATORY

AMENDED

ATTN: Maren Beery
KEMRON
109 STARLITE PARK
MARIETTA, OH 45750

Please analyze the enclosed samples according to the schedule indicated:

SHIP DATE: 8/24/98
REPORT DUE: 11/25/98
TURN AROUND REQ'D: 15 days

These samples are on:

LANL Request Number: 4522R
Per Agreement Number: 7797L0014-9S
Project Cost Code: MR2W05153318

RAD SCREENING: Yes, Received

COMMENTS: 49 - 1144 , DK; AMENDED: ADDITIONAL ANALYSIS ADDED, JV 11/3/98.

LANL ER SMO CONTACT: Joylene Valdez MS H865 5056659968

Signature:

| ANALYSIS ORDER CODE | ANALYTE(S) | SAMPLE ID | CONT ID | SAMPLE MATRIX | DATE SAMPLED | COMMENTS |
|---|---|---|---|---|---|---|
| METTAL | | MD49-98-0140 | 01 | S | [illegible] | |
| METTCLP | | MD49-98-0140 | 01 | S | 8/20/98 | |

Final Page of REQUEST NUMBER 4522R

# QC SUMMARY

TABLE OF CONTENTS:


| Description | Page Number |
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| ICP Runlog | 17-18 |
| ICP Data | 19-85 |
| Mercury Runlog | 86 |
| Mercury Data | 87-92 |
| ICP Digestion Log | 93-94 |
| Mercury Digestion Log | 95 |


SMO • 10 6000 • F-JN

SMO • 10 6000 • F-JN

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

Initial Calibration Source: INORGANIC VE

Continuing Calibration Source: INORGANIC VE

Concentration Units: ug/L

| Analyte | Initial Calibration True | Initial Calibration Found | Initial Calibration %R(1) | Continuing Calibration True | Continuing Calibration Found | Continuing Calibration %R(1) | Continuing Calibration Found | Continuing Calibration %R(1) | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | NR |
| Antimony | | | | | | | | | NR |
| Arsenic | 5000.0 | 4957.00 | 99.1 | 5000.0 | 5084.00 | 101.7 | 5229.00 | 104.6 | P |
| Barium | 10000.0 | 10160.00 | 101.6 | 10000.0 | 10330.00 | 103.3 | 10350.00 | 103.5 | P |
| Beryllium | | | | | | | | | NR |
| Cadmium | 2500.0 | 2568.00 | 102.7 | 2500.0 | 2583.00 | 103.3 | 2699.00 | 108.0 | P |
| Calcium | | | | | | | | | NR |
| Chromium | 1000.0 | 1028.00 | 102.8 | 1000.0 | 1041.00 | 104.1 | 1055.00 | 105.5 | P |
| Cobalt | | | | | | | | | NR |
| Copper | | | | | | | | | NR |
| Iron | | | | | | | | | NR |
| Lead | 5000.0 | 5082.00 | 101.6 | 5000.0 | 5083.00 | 101.7 | 5328.00 | 106.6 | P |
| Magnesium | | | | | | | | | NR |
| Manganese | | | | | | | | | NR |
| Mercury | 1.0 | 0.98 | 98.0 | 1.0 | 1.01 | 101.0 | 1.00 | 100.0 | CV |
| Nickel | | | | | | | | | NR |
| Potassium | | | | | | | | | NR |
| Selenium | 5000.0 | 4907.00 | 98.1 | 5000.0 | 4979.00 | 99.6 | 5129.00 | 102.6 | P |
| Silver | 1250.0 | 1277.00 | 102.2 | 1250.0 | 1293.00 | 103.4 | 1302.00 | 104.2 | P |
| Sodium | | | | | | | | | NR |
| Thallium | | | | | | | | | NR |
| Vanadium | | | | | | | | | NR |
| Zinc | | | | | | | | | NR |
| Cyanide | | | | | | | | | NR |

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

Initial Calibration Source: INORGANIC VE

Continuing Calibration Source: INORGANIC VE

Concentration Units: ug/L

| Analyte | Initial Calibration True | Initial Calibration Found | Initial Calibration %R(1) | Continuing Calibration True | Continuing Calibration Found | Continuing Calibration %R(1) | Continuing Calibration Found | Continuing Calibration %R(1) | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | NR |
| Antimony | | | | | | | | | NR |
| Arsenic | | | | 5000.0 | 4992.0 | 99.8 | 5068.00 | 101.4 | P |
| Barium | | | | 10000.0 | 9716.0 | 97.2 | 9882.00 | 98.8 | P |
| Beryllium | | | | | | | | | NR |
| Cadmium | | | | 2500.0 | 2622.00 | 104.9 | 2652.00 | 106.1 | P |
| Calcium | | | | | | | | | NR |
| Chromium | | | | 1000.0 | 1013.00 | 101.3 | 1030.00 | 103.0 | P |
| Cobalt | | | | | | | | | NR |
| Copper | | | | | | | | | NR |
| Iron | | | | | | | | | NR |
| Lead | | | | 5000.0 | 5215.00 | 104.3 | 5260.00 | 105.2 | P |
| Magnesium | | | | | | | | | NR |
| Manganese | | | | | | | | | NR |
| Mercury | | | | 1.0 | 0.97 | 97.0 | 0.97 | 97.0 | CV |
| Nickel | | | | | | | | | NR |
| Potassium | | | | | | | | | NR |
| Selenium | | | | 5000.0 | 4904.00 | 98.1 | 4965.00 | 99.3 | P |
| Silver | | | | 1250.0 | 1243.00 | 99.4 | 1256.00 | 100.5 | P |
| Sodium | | | | | | | | | NR |
| Thallium | | | | | | | | | NR |
| Vanadium | | | | | | | | | NR |
| Zinc | | | | | | | | | NR |
| Cyanide | | | | | | | | | NR |

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

Initial Calibration Source: INORGANIC VE

Continuing Calibration Source: INORGANIC VE

Concentration Units: ug/L

| Analyte | Initial Calibration True | Initial Calibration Found | Initial Calibration %R(1) | Continuing Calibration True | Continuing Calibration Found | Continuing Calibration %R(1) | Continuing Calibration Found | Continuing Calibration %R(1) | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | NR |
| Antimony | | | | | | | | | NR |
| Arsenic | | | | 5000.0 | 5020.00 | 100.4 | 5084.00 | 101.7 | P |
| Barium | | | | 10000.0 | 9653.00 | 96.5 | 9552.00 | 95.5 | P |
| Beryllium | | | | | | | | | NR |
| Cadmium | | | | 2500.0 | 2649.00 | 106.0 | 2710.00 | 108.4 | P |
| Calcium | | | | | | | | | NR |
| Chromium | | | | 1000.0 | 1015.00 | 101.5 | 1025.00 | 102.5 | P |
| Cobalt | | | | | | | | | NR |
| Copper | | | | | | | | | NR |
| Iron | | | | | | | | | NR |
| Lead | | | | 5000.0 | 5174.00 | 103.5 | 5226.00 | 104.5 | P |
| Magnesium | | | | | | | | | NR |
| Manganese | | | | | | | | | NR |
| Mercury | | | | | | | | | NR |
| Nickel | | | | | | | | | NR |
| Potassium | | | | | | | | | NR |
| Selenium | | | | 5000.0 | 5005.00 | 100.1 | 5064.00 | 101.3 | P |
| Silver | | | | 1250.0 | 1230.00 | 98.4 | 1227.00 | 98.2 | P |
| Sodium | | | | | | | | | NR |
| Thallium | | | | | | | | | NR |
| Vanadium | | | | | | | | | NR |
| Zinc | | | | | | | | | NR |
| Cyanide | | | | | | | | | NR |

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

3
BLANKS

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | - | | - | | - | | - | | - | R |
| Antimony | | - | | - | | - | | - | | - | R |
| Arsenic | 41.6 | U | -59.7 | - | -42.1 | - | -46.6 | - | 41.600 | U | P |
| Barium | 1.2 | U | 1.2 | U | 1.2 | U | 1.2 | U | 1.200 | U | P |
| Beryllium | | - | | - | | - | | - | | - | R |
| Cadmium | 1.9 | U | 1.9 | U | 1.9 | U | 1.9 | U | 1.900 | U | P |
| Calcium | | - | | - | | - | | - | | - | R |
| Chromium | 2.6 | U | 2.6 | U | 2.6 | U | 2.6 | U | 2.600 | U | P |
| Cobalt | | - | | - | | - | | - | | - | R |
| Copper | | - | | - | | - | | - | | - | R |
| Iron | | - | | - | | - | | - | | - | R |
| Lead | 61.3 | U | 61.3 | U | 61.3 | U | 61.3 | U | 61.300 | U | P |
| Magnesium | | - | | - | | - | | - | | - | R |
| Manganese | | - | | - | | - | | - | | - | R |
| Mercury | 0.0 | U | 0.0 | U | 0.0 | U | 0.0 | U | 0.030 | U | CV |
| Nickel | | - | | - | | - | | - | | - | R |
| Potassium | | - | | - | | - | | - | | - | R |
| Selenium | -57.6 | - | -37.7 | - | 34.0 | U | -47.0 | - | 34.000 | U | P |
| Silver | 3.9 | U | 3.9 | U | 3.9 | U | 3.9 | U | 3.900 | U | P |
| Sodium | | - | | - | | - | | - | | - | R |
| Thallium | | - | | - | | - | | - | | - | R |
| Vanadium | | - | | - | | - | | - | | - | R |
| Zinc | | - | | - | | - | | - | | - | R |
| Cyanide | | - | | - | | - | | - | | - | R |
| | | - | | - | | - | | - | | - | |



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U.S. EPA - CLP

3
BLANKS

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | | | NR |
| Antimony | | | | | | | | | | | NR |
| Arsenic | | | 41.6 | U | 41.6 | U | 41.6 | U | | | P |
| Barium | | | 1.7 | B | 1.2 | U | 1.2 | U | | | P |
| Beryllium | | | | | | | | | | | NR |
| Cadmium | | | 1.9 | U | 1.9 | U | 1.9 | U | | | P |
| Calcium | | | | | | | | | | | NR |
| Chromium | | | 2.6 | U | 2.6 | U | 2.6 | U | | | P |
| Cobalt | | | | | | | | | | | NR |
| Copper | | | | | | | | | | | NR |
| Iron | | | | | | | | | | | NR |
| Lead | | | 61.3 | U | 61.3 | U | 61.3 | U | | | P |
| Magnesium | | | | | | | | | | | NR |
| Manganese | | | | | | | | | | | NR |
| Mercury | | | 0.0 | U | | | | | | | CV |
| Nickel | | | | | | | | | | | NR |
| Potassium | | | | | | | | | | | NR |
| Selenium | | | 34.0 | U | 34.0 | U | 34.0 | U | | | P |
| Silver | | | 3.9 | U | 3.9 | U | 3.9 | U | | | P |
| Sodium | | | | | | | | | | | NR |
| Thallium | | | | | | | | | | | NR |
| Vanadium | | | | | | | | | | | NR |
| Zinc | | | | | | | | | | | NR |
| Cyanide | | | | | | | | | | | NR |

FORM III - IN ILM03.0



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U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No: _____ SDG No.: 4522R_

ICP ID Number: LEEMAN_____ ICS Source: INORGANIC VE

Concentration Units: ug/L

| Analyte | True Sol. A | True Sol. AB | Initial Found Sol. A | Initial Found Sol. AB | Initial Found %R | Final Found Sol. A | Final Found Sol. AB | Final Found %R |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 500000 | 500000 | 485300 | 482200.0 | 96.4 | 455300 | 452700.0 | 90.5 |
| Antimony | | | | | | | | |
| Arsenic | 500 | 500 | 42 | 486.8 | 97.4 | 8 | 482.0 | 96.4 |
| Barium | 500 | 500 | 2 | 480.3 | 96.1 | 2 | 442.5 | 88.5 |
| Beryllium | | | | | | | | |
| Cadmium | 1000 | 1000 | 0 | 869.6 | 87.0 | 2 | 911.8 | 91.2 |
| Calcium | 500000 | 500000 | 447400 | 443500.0 | 88.7 | 449400 | 449900.0 | 90.0 |
| Chromium | 500 | 500 | 5 | 452.5 | 90.5 | 5 | 440.5 | 88.1 |
| Cobalt | | | | | | | | |
| Copper | | | | | | | | |
| Iron | 200000 | 200000 | 174700 | 173300.0 | 86.6 | 170900 | 170900.0 | 85.4 |
| Lead | 1000 | 1000 | 52 | 951.6 | 95.2 | -17 | 940.4 | 94.0 |
| Magnesium | 500000 | 500000 | 513500 | 508700.0 | 101.7 | 511500 | 511500.0 | 102.3 |
| Manganese | | | | | | | | |
| Mercury | | | | | | | | |
| Nickel | | | | | | | | |
| Potassium | | | | | | | | |
| Selenium | 500 | 500 | -29 | 478.4 | 95.7 | -24 | 494.8 | 99.0 |
| Silver | 1000 | 1000 | 7 | 977.9 | 97.8 | 9 | 924.1 | 92.4 |
| Sodium | | | | | | | | |
| Thallium | | | | | | | | |
| Vanadium | | | | | | | | |
| Zinc | | | | | | | | |

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MD21-0563S

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

Matrix (soil/water): WATER_ Level (low/med): LOW___

% Solids for Sample: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | NR |
| Antimony | | | | | | | | | NR |
| Arsenic | 75-125 | 933.4000 | | 41.6000 | U | 1000.00 | 93.3 | | P |
| Barium | 75-125 | 9113.0000 | | 17.9300 | B | 10000.00 | 91.0 | | P |
| Beryllium | | | | | | | | | NR |
| Cadmium | 75-125 | 974.8000 | | 1.9000 | U | 1000.00 | 97.5 | | P |
| Calcium | | | | | | | | | NR |
| Chromium | 75-125 | 928.5000 | | 2.6000 | U | 1000.00 | 92.8 | | P |
| Cobalt | | | | | | | | | NR |
| Copper | | | | | | | | | NR |
| Iron | | | | | | | | | NR |
| Lead | 75-125 | 957.3000 | | 61.3000 | U | 1000.00 | 95.7 | | P |
| Magnesium | | | | | | | | | NR |
| Manganese | | | | | | | | | NR |
| Mercury | | | | | | | | | NR |
| Nickel | | | | | | | | | NR |
| Potassium | | | | | | | | | NR |
| Selenium | 75-125 | 872.0000 | | 34.0000 | U | 1000.00 | 87.2 | | P |
| Silver | 75-125 | 180.7000 | | 3.9000 | U | 200.00 | 90.4 | | P |
| Sodium | | | | | | | | | NR |
| Thallium | | | | | | | | | NR |
| Vanadium | | | | | | | | | NR |
| Zinc | | | | | | | | | NR |
| Cyanide | | | | | | | | | NR |

Comments:

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MD49-0142S

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

Matrix (soil/water): WATER_ Level (low/med): LOW___

% Solids for Sample: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | |
| Antimony | | | | | | | | | |
| Arsenic | | | | | | | | | |
| Barium | | | | | | | | | |
| Beryllium | | | | | | | | | |
| Cadmium | | | | | | | | | |
| Calcium | | | | | | | | | |
| Chromium | | | | | | | | | |
| Cobalt | | | | | | | | | |
| Copper | | | | | | | | | |
| Iron | | | | | | | | | |
| Lead | | | | | | | | | |
| Magnesium | | | | | | | | | |
| Manganese | | | | | | | | | |
| Mercury | 75-125 | 9.8600 | | 0.0300 | U | 10.00 | 98.6 | | CV |
| Nickel | | | | | | | | | |
| Potassium | | | | | | | | | |
| Selenium | | | | | | | | | |
| Silver | | | | | | | | | |
| Sodium | | | | | | | | | |
| Thallium | | | | | | | | | |
| Vanadium | | | | | | | | | |
| Zinc | | | | | | | | | |
| Cyanide | | | | | | | | | |

Comments:



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U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

MD21-0561D

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | RPD | Q | M |
|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | NR |
| Antimony | | | | | | | | NR |
| Arsenic | | 41.6000 | U | 41.6000 | U | | | P |
| Barium | | 36.0900 | B | 35.3000 | B | 2.2 | | P |
| Beryllium | | | | | | | | NR |
| Cadmium | | 1.9000 | U | [illegible] | U | | | P |
| Calcium | | | | | | | | NR |
| Chromium | | 2.6000 | U | [illegible] | U | | | P |
| Cobalt | | | | | | | | NR |
| Copper | | | | | | | | NR |
| Iron | | | | | | | | NR |
| Lead | | 61.3000 | U | 61.3000 | U | | | P |
| Magnesium | | | | | | | | NR |
| Manganese | | | | | | | | NR |
| Mercury | | | | | | | | NR |
| Nickel | | | | | | | | NR |
| Potassium | | | | | | | | NR |
| Selenium | | 34.0000 | U | 34.0000 | U | | | P |
| Silver | | 3.9000 | U | 3.9000 | U | | | P |
| Sodium | | | | | | | | NR |
| Thallium | | | | | | | | NR |
| Vanadium | | | | | | | | NR |
| Zinc | | | | | | | | NR |
| Cyanide | | | | | | | | NR |

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

MD49-0141D

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | RPD | Q | M |
|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | NR |
| Antimony | | | | | | | | NR |
| Arsenic | | | | | | | | NR |
| Barium | | | | | | | | NR |
| Beryllium | | | | | | | | NR |
| Cadmium | | | | | | | | NR |
| Calcium | | | | | | | | NR |
| Chromium | | | | | | | | NR |
| Cobalt | | | | | | | | NR |
| Copper | | | | | | | | NR |
| Iron | | | | | | | | NR |
| Lead | | | | | | | | NR |
| Magnesium | | | | | | | | NR |
| Manganese | | | | | | | | NR |
| Mercury | | 0.0300 | U | 0.1200 | B | 200.0 | | CV |
| Nickel | | | | | | | | NR |
| Potassium | | | | | | | | NR |
| Selenium | | | | | | | | NR |
| Silver | | | | | | | | NR |
| Sodium | | | | | | | | NR |
| Thallium | | | | | | | | NR |
| Vanadium | | | | | | | | NR |
| Zinc | | | | | | | | NR |
| Cyanide | | | | | | | | NR |

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7

LABORATORY CONTROL SAMPLE

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

Solid LCS Source: _____

Aqueous LCS Source: CLPSPK_____

| Analyte | Aqueous (ug/L) True | Found | %R | Solid (mg/kg) True | Found | C | Limits | | %R |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | |
| Antimony | | | | | | | | | |
| Arsenic | 1000.0 | 985.40 | 98.5 | | | | | | |
| Barium | 10000.0 | 9844.00 | 98.4 | | | | | | |
| Beryllium | | | | | | | | | |
| Cadmium | 1000.0 | 993.50 | 99.4 | | | | | | |
| Calcium | | | | | | | | | |
| Chromium | 1000.0 | 980.60 | 98.1 | | | | | | |
| Cobalt | | | | | | | | | |
| Copper | | | | | | | | | |
| Iron | | | | | | | | | |
| Lead | 1000.0 | 965.90 | 96.6 | | | | | | |
| Magnesium | | | | | | | | | |
| Manganese | | | | | | | | | |
| Mercury | 1.0 | 1.01 | 101.0 | | | | | | |
| Nickel | | | | | | | | | |
| Potassium | | | | | | | | | |
| Selenium | 1000.0 | 939.90 | 94.0 | | | | | | |
| Silver | 200.0 | 193.70 | 96.8 | | | | | | |
| Sodium | | | | | | | | | |
| Thallium | | | | | | | | | |
| Vanadium | | | | | | | | | |
| Zinc | | | | | | | | | |
| Cyanide | | | | | | | | | |

U.S. EPA - CLP

10
Instrument Detection Limits (Quarterly)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

ICP ID Number: LEEMAN_____ Date: 09/23/98

Flame AA ID Number : _____

Furnace AA ID Number : _____

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | 308.22 | | 200 | 40.5 | P |
| Antimony | | | | | NR |
| Arsenic | 193.70 | | 10 | 4..6 | P |
| Barium | 455.40 | | 200 | 1.2 | P |
| Beryllium | | | 5 | | NR |
| Cadmium | 214.44 | | 5 | .9 | P |
| Calcium | 315.89 | | 5000 | 17.[illegible] | P |
| Chromium | 267.72 | | 10 | 2.6 | P |
| Cobalt | | | 50 | | NR |
| Copper | | | 25 | | NR |
| Iron | 259.94 | | 100 | 6.3 | P |
| Lead | 220.35 | | 5 | 61.3 | P |
| Magnesium | 383.23 | | 5000 | 32.1 | P |
| Manganese | | | 15 | | NR |
| Mercury | | | 0.2 | | NR |
| Nickel | | | 40 | | NR |
| Potassium | | | 5000 | | NR |
| Selenium | 196.03 | | 5 | 34.0 | P |
| Silver | 338.29 | | 10 | 3.9 | P |
| Sodium | | | 5000 | | NR |
| Thallium | | | 10 | | NR |
| Vanadium | | | 50 | | NR |
| Zinc | | | 20 | | NR |

Comments:

FORM X - IN ILM03.0

U.S. EPA - CLP

10

Instrument Detection Limits (Quarterly)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

ICP ID Number: _____ Date: 08/12/97

Flame AA ID Number : LEEMAN_HG_AA

Furnace AA ID Number : _____

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | | | 200 | | NR |
| Antimony | | | | | NR |
| Arsenic | | | 10 | | NR |
| Barium | | | 200 | | NR |
| Beryllium | | | 5 | | NR |
| Cadmium | | | 5 | | NR |
| Calcium | | | 5000 | | NR |
| Chromium | | | 10 | | NR |
| Cobalt | | | 50 | | NR |
| Copper | | | 25 | | NR |
| Iron | | | 100 | | NR |
| Lead | | | 5 | | NR |
| Magnesium | | | 5000 | | NR |
| Manganese | | | 15 | | NR |
| Mercury | 253.70 | | 0.2 | 0.0 | CV |
| Nickel | | | 40 | | NR |
| Potassium | | | 5000 | | NR |
| Selenium | | | 5 | | NR |
| Silver | | | 10 | | NR |
| Sodium | | | 5000 | | NR |
| Thallium | | | 10 | | NR |
| Vanadium | | | 50 | | NR |
| Zinc | | | 20 | | NR |
| | | | | | |

Comments:

FORM X - IN ILM03.0

U.S. EPA - CLP

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

ICP ID Number: LEEMAN_____ Date: 01/26/95

| Analyte | Wave-length (nm) | Interelement Correction Factors for : Al | Ca | Fe | Mg | CR_ |
|---|---|---|---|---|---|---|
| Aluminum | 308.22 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Antimony | 206.83 | 0.0000000 | 0.0000000 | 0.0003490 | -0.0000100 | 0.0092070 |
| Arsenic | 193.70 | -0.0006600 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Barium | 455.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Beryllium | 254.86 | 0.0000000 | 0.0000000 | 0.0000440 | 0.0000000 | 0.0000000 |
| Cadmium | 214.44 | 0.0000000 | 0.0000000 | 0.0000200 | 0.0000000 | 0.0000000 |
| Calcium | 315.89 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Chromium | 267.72 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Cobalt | 228.62 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Copper | 324.75 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Iron | 259.94 | 0.0000000 | 0.0000540 | 0.0000000 | 0.0000000 | 0.0000000 |
| Lead | 220.35 | -0.0006600 | 0.0000000 | 0.0001500 | 0.0000000 | 0.0000000 |
| Magnesium | 383.23 | 0.0000000 | 0.0000000 | 0.0002440 | 0.0000000 | 0.0000000 |
| Manganese | 257.61 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000700 | 0.0000000 |
| Mercury | | | | | | |
| Nickel | 231.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Potassium | 766.49 | 0.0000000 | 0.0000000 | -0.0001000 | 0.0000000 | 0.0000000 |
| Selenium | 196.03 | 0.0000600 | 0.0000000 | 0.0003000 | 0.0000000 | 0.0000000 |
| Silver | 338.29 | 0.0000000 | 0.0000000 | -0.0000200 | 0.0000000 | 0.0000000 |
| Sodium | 589.59 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Thallium | | | | | | |
| Vanadium | 309.31 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Zinc | 202.55 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000050 | 0.0000000 |

Comments:

U.S. EPA - CLP

11B
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

ICP ID Number: LEEMAN_____ Date: 01/26/95

| Analyte | Wave-length (nm) | Interelement Correction Factors for : MN_ | NI_ | V__ | ___ | ___ |
|---|---|---|---|---|---|---|
| Aluminum | 308.22 | 0.0000000 | 0.0000000 | -0.1060000 | | |
| Antimony | 206.83 | 0.0000000 | 0.0000000 | -0.0029000 | | |
| Arsenic | 193.70 | 0.0000000 | 0.0000000 | 0.0165000 | | |
| Barium | 455.40 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Beryllium | 254.86 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Cadmium | 214.44 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Calcium | 315.89 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Chromium | 267.72 | 0.0000000 | 0.0000000 | 0.0003000 | | |
| Cobalt | 228.62 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Copper | 324.75 | 0.0000000 | 0.0000000 | -0.0005000 | | |
| Iron | 259.94 | 0.0001000 | 0.0000000 | 0.0000000 | | |
| Lead | 220.35 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Magnesium | 383.23 | 0.0000000 | -0.0039000 | 0.0000000 | | |
| Manganese | 257.61 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Mercury | | | | | | |
| Nickel | 231.60 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Potassium | 766.49 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Selenium | 196.03 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Silver | 338.29 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Sodium | 589.59 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Thallium | | | | | | |
| Vanadium | 309.31 | 0.0000000 | 0.0000000 | 0.0000000 | | |
| Zinc | 202.55 | 0.0000000 | 0.0000000 | 0.0000000 | | |

Comments:

U.S. EPA - CLP

12

ICP LINEAR RANGES (QUARTERLY)

Lab Name: KEMRON_ENVIRONMENTAL_SERV Contract: _____

Lab Code: _____ Case No.: 11061_ SAS No.: _____ SDG No.: 4522R_

ICP ID Number: LEEMAN_____ Date: 02/05/96

| Analyte | Integ. Time (sec.) | Concentration (ug/L) | M |
|---|---|---|---|
| Aluminum | 7.00 | 500000.0 | P |
| Antimony | 7.00 | 100000.0 | P |
| Arsenic | 7.00 | 500000.0 | P |
| Barium | 7.00 | 1000000.0 | P |
| Beryllium | 7.00 | 100000.0 | P |
| Cadmium | 7.00 | 40000.0 | P |
| Calcium | 7.00 | 1000000.0 | P |
| Chromium | 7.00 | 10000.0 | P |
| Cobalt | 7.00 | 50000.0 | P |
| Copper | 7.00 | 50000.0 | P |
| Iron | 7.00 | 100000.0 | P |
| Lead | 7.00 | 100000.0 | P |
| Magnesium | 7.00 | 500000.0 | P |
| Manganese | 7.00 | 100000.0 | P |
| Mercury | | | NR |
| Nickel | 7.00 | 50000.0 | P |
| Potassium | 7.00 | 500000.0 | P |
| Selenium | 7.00 | 1000000.0 | P |
| Silver | 7.00 | 2500.0 | P |
| Sodium | 7.00 | 500000.0 | P |
| Thallium | | | NR |
| Vanadium | 7.00 | 100000.0 | P |
| Zinc | 7.00 | 500000.0 | P |

Comments:

# INSTRUMENT DATA

# KEMRON ENVIRONMENTAL SERVICES
## ICP RUN LOGBOOK

ANALYST SLP DATE 11/10/98 TIME 1753
METHOD # 6010B SOP # ME6000A WORK GROUP # 49002 49001 49153
CAL STD SOURCE SLP101998ICP / SLP111098ICP ICV/CCV SOURCE SLP102098ICV
ICS AB SOURCE JYM101698AB ICS A SOURCE SLP110998A POST SPK SOURCE DSS-02-12

| Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs | Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs |
|---|---|---|---|---|---|---|---|---|---|
| | S0 | | | | 27. | W11-073-01 MS | | 1/50 | |
| | S1 1/200 | | | | 28. | 04 | | | |
| | S2 1/20 | | | | 29. | 05 | | | |
| | S3 1/2 | | | | 30. | ACID BLK | | | CCV/CCB |
| | S4 | | | | 31. | W11-073-08 | | 1/50 | |
| | S0 | | | | 32. | 09 | | | |
| | "R" VALUES | | | | 33. | 11 | | | |
| | S4 X2 | | | | 34. | 088-10 | | | |
| 1. | ICV | | | | 35. | 120-03 | | | |
| 2. | ICB | | | | 36. | 128-01 | | | |
| 3. | ICSA | | | | 37. | ACID BLK | | | |
| 4. | ICSAB | | | CCV/CCB | 38. | ICSA | | | |
| 5. | PBW O | | | W049937-03 | 39. | ICSAB | | | CCV/CCB |
| 6. | LCSW O | | | 04 | 40. | PBW N | | | WG49126-03 |
| 7. | TC11-075-01 | | 5/50 | | 41. | LCSW N | | | 04 |
| 8. | 02 | | | | 42. | TC11-056-01 | | 5/50 | MD21-98-06 |
| 9. | ICSA | | | | 43. | 02 | | | 07 |
| 10. | ICSAB | | | CCV/CCB | 44. | 03 | | | MD21-98-03 |
| 11. | PBW P | | | W049040-03 | 45. | 03 MS | | | 05 |
| 12. | LCSW P | | | 04 | 46. | 03 MSD | | | 06 |
| 13. | TC11-073-02 | | 5/50 | | 47. | [illegible] | 0.01 | 5/50 | W11-073-05 |
| 14. | 02 DUP | | | 07 | 48. | ICSA | | | |
| 15. | 03 | | | | 49. | ICSAB | | | CCV/CCB |
| 16. | 03 MS | | | 05 | 50. | TC11-055-01 | | 5/50 | |
| 17. | 03 MSD | | | 06 | 51. | 01 DUP | | | |
| 18. | TC BLK F 11/10 | | | | 52. | 02 | | | |
| 19. | ICSA | | | | 53. | 04 | | | |
| 20. | ICSAB | | | CCV/CCB | 54. | 05 | | | |
| 21. | TC11-073-06 | | 5/50 | | 55. | 06 | | | |
| 22. | 06 DUP | | | | 56. | 07 | | | |
| 23. | 07 | | | | 57. | 08 | | | |
| 24. | 10 | | | | 58. | TC BLK 11/10 | | | CCV/CCB |
| 25. | 088-11 | | | | 59. | TC11-055-09 | | 5/50 | |
| 26. | W11-073-01 | | 1/50 | | 60. | 09 MS | | | |

Comments:

Note: No entry for Dil represents 1X Dilution

Autosampler Run Key:

CCV - Continuing Calibration Verification
CCB = Continuing Calibration Blank
% D = Automatic Instrument Rerun due to % RSD > 20%
FRS = Full Recalibration Sequence

ID = Automatic Instrument Dilution
R = Analyst Rerun
BLK = Blank Rerun



641

# KEMRON ENVIRONMENTAL SERVICES
# ICP RUN LOGBOOK

ANALYST SLP DATE 11/10/95 TIME 1753
METHOD # 6010B SOP # MEL-001A WORK GROUP # 49002, 49001, 49153
CAL STD SOURCE SLP10199SA ICP/SLP111095ICP ICV/CCV SOURCE SLP102095ICV
ICS AB SOURCE JYH101695AB ICS A SOURCE SLP110995A POST SPK SOURCE 055-07226

| Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs | Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 27. | | | | |
| | | | | | 28. | | | | |
| | | | | | 29. | | | | |
| | | | | | 30. | | | | |
| | | | | | 31. | | | | |
| | | | | | 32. | | | | |
| | | | | | 33. | | | | |
| | | | | | 34. | | | | |
| 1. | FC11-055-12 | | 5/50 | | 35. | | | | |
| 2. | 105-01 | | 1 | | 36. | | | | |
| 3. | 106-01 | | — | | 37. | | | | |
| 4. | W11-122-01 | | 1/50 | | 38. | | | | |
| 5. | 03 | | 1 | | 39. | | | | |
| 6. | 03MS | | — | | 40. | | | | |
| 7. | FC11-055-03 | | 5/50 | MD21-95-0514 | 41. | | | | |
| 8. | ACID BLK | | | CCV/CCB | 42. | | | | |
| 9. | FC11-061-01 | | 5/50 | M049-95-0140 | 43. | | | | |
| 10. | 035-01 | | 1 | M049-95-0141 | 44. | | | | |
| 11. | 02 | | 1 | M049-95-0142 | 45. | | | | |
| 12. | 029-01 | | — | M049-95-0143 | 46. | | | | |
| 13. | ACID BLK | | | | 47. | | | | |
| 14. | ICSA | | | | 48. | | | | |
| 15. | ICSAB | | | CCV/CCB | 49. | | | | |
| 16. | | | | | 50. | | | | |
| 17. | | | | | 51. | | | | |
| 18. | | | | | 52. | | | | |
| 19. | | | | | 53. | | | | |
| 20. | | | | | 54. | | | | |
| 21. | | | | | 55. | | | | |
| 22. | | | | | 56. | | | | |
| 23. | | | | | 57. | | | | |
| 24. | | | | | 58. | | | | |
| 25. | | | | | 59. | | | | |
| 26. | | | | | 60. | | | | |

Comments:

Note: No entry for Dil represents 1X Dilution

Autosampler Run Key:

CCV = Continuing Calibration Verification
CCB = Continuing Calibration Blank
% D = Automatic Instrument Rerun due to % RSD > 20%
FRS = Full Recalibration Sequence

ID = Automatic Instrument Dilution
R = Analyst Rerun
BLK = Blank Rerun

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Standard: 1 Rep: 1 | | | | Seq: 860 | 17:53:41 10 Nov 1998 ICP | | | |
| Ag1 | .0000 | PPM | -2018 | 238 | -1012 | | | |
| | | | Ave. Int. = | -997 | S. D. = | 1228 | | |
| Al3 | .0000 | PPM | 71342 | 71341 | 73553 | | | |
| | | | Ave. Int. = | 72079 | S. D. = | 1277 | | |
| Ba4 | .0000 | PPM | 1851 | 1964 | 2068 | | | |
| | | | Ave. Int. = | 1961 | S. D. = | 109 | | |
| Be2 | .0000 | PPM | -31356 | -32579 | -31590 | | | |
| | | | Ave. Int. = | -31842 | S. D. = | 649 | | |
| Ca3 | .0000 | PPM | 2560 | 2547 | 2707 | | | |
| | | | Ave. Int. = | 2638 | S. D. = | 122 | | |
| Cd1 | .0000 | PPM | 2985 | 2914 | 2851 | | | |
| | | | Ave. Int. = | 2850 | S. D. = | 176 | | |
| Co1 | .0000 | PPM | -2884 | -1073 | -1101 | | | |
| | | | Ave. Int. = | -1486 | S. D. = | 691 | | |
| Cr4 | .0000 | PPM | 4402 | 5372 | 6396 | | | |
| | | | Ave. Int. = | 5390 | S. D. = | 997 | | |
| Cu1 | .0000 | PPM | 11980 | 10411 | 14523 | | | |
| | | | Ave. Int. = | 12438 | S. D. = | 2251 | | |
| Fe3 | .0000 | PPM | 3257 | 3108 | 3590 | | | |
| | | | Ave. Int. = | 3318 | S. D. = | 411 | | |
| K 1 | .0000 | PPM | -2152 | 360 | -242 | | | |
| | | | Ave. Int. = | -676 | S. D. = | 1372 | | |
| Mg4 | .0000 | PPM | 10156 | 9695 | 10058 | | | |
| | | | Ave. Int. = | 9970 | S. D. = | 243 | | |
| Mn4 | .0000 | PPM | 2558 | 2707 | 2439 | | | |
| | | | Ave. Int. = | 2568 | S. D. = | 134 | | |
| Na3 | .0000 | PPM | 22235 | 19333 | 20758 | | | |
| | | | Ave. Int. = | 20775 | S. D. = | 1451 | | |
| Ni3 | .0000 | PPM | 1229 | 1507 | 1016 | | | |
| | | | Ave. Int. = | 1251 | S. D. = | 246 | | |
| Sb1 | .0000 | PPM | 7277 | 6832 | 7652 | | | |
| | | | Ave. Int. = | 7054 | S. D. = | 930 | | |
| V 3 | .0000 | PPM | 287895 | 288419 | 290373 | | | |
| | | | Ave. Int. = | 288896 | S. D. = | 1306 | | |
| Zn3 | .0000 | PPM | 9008 | 10436 | 11151 | | | |
| | | | Ave. Int. = | 10198 | S. D. = | 1091 | | |
| As2 | .0000 | PPM | -1679 | -2541 | -1791 | | | |
| | | | Ave. Int. = | -2070 | S. D. = | 410 | | |
| Pb1 | .0000 | PPM | -11794 | -11038 | -11532 | | | |
| | | | Ave. Int. = | -11455 | S. D. = | 384 | | |
| Se1 | .0000 | PPM | 16513 | 15946 | 16337 | | | |
| | | | Ave. Int. = | 16265 | S. D. = | 290 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Standard: 2 Rep: 1 | | | | Seq: 861 | 17:57:03 10 Nov 1998 IS | | | |
| Ag1 | .0125 | PPM | | 8792 | 8772 | 11468 | | |
| | | | Ave. Int. = | 9677 | S. D. = | 1551 | | |
| Al3 | .1000 | PPM | | 94628 | 90546 | 94268 | | |
| | | | Ave. Int. = | 93147 | S. D. = | 2260 | | |
| Ba4 | .1000 | PPM | | 35355 | 36508 | 36118 | | |
| | | | Ave. Int. = | 36160 | S. D. = | 3[illegible] | | |
| Be2 | .0025 | PPM | | -26516 | -26102 | -25981 | | |
| | | | Ave. Int. = | -26200 | S. D. = | 281 | | |
| Ca3 | .2500 | PPM | | 18702 | 18701 | 19025 | | |
| | | | Ave. Int. = | 18809 | S. D. = | 187 | | |
| Cd1 | .0250 | PPM | | 8298 | 8450 | 8282 | | |
| | | | Ave. Int. = | 8343 | S. D. = | 93 | | |
| Co1 | .0250 | PPM | | 5898 | 4581 | 6597 | | |
| | | | Ave. Int. = | 5692 | S. D. = | 1074 | | |
| Cr4 | .0100 | PPM | | 19093 | 18253 | 17851 | | |
| | | | Ave. Int. = | 18376 | S. D. = | 596 | | |
| Cu1 | .0125 | PPM | | 40703 | 40330 | 41962 | | |
| | | | Ave. Int. = | 41065 | S. D. = | 782 | | |
| Fe2 | .0500 | PPM | | 20341 | 20360 | 19601 | | |
| | | | Ave. Int. = | 20084 | S. D. = | 636 | | |
| K 1 | .2500 | PPM | | 2751 | 2754 | 4233 | | |
| | | | Ave. Int. = | 3246 | S. D. = | 855 | | |
| Mg4 | .2500 | PPM | | 27369 | 29002 | 27672 | | |
| | | | Ave. Int. = | 28114 | S. D. = | 769 | | |
| Mn4 | .0250 | PPM | | 35511 | 35393 | 33634 | | |
| | | | Ave. Int. = | 34839 | S. D. = | 1054 | | |
| Na2 | .2500 | PPM | | 48695 | 52133 | 49019 | | |
| | | | Ave. Int. = | 50016 | S. D. = | 1835 | | |
| Ni3 | .0250 | PPM | | 3919 | 3052 | 3327 | | |
| | | | Ave. Int. = | 3433 | S. D. = | 443 | | |
| Sb1 | .0500 | PPM | | 10053 | 9846 | 9234 | | |
| | | | Ave. Int. = | 9714 | S. D. = | 434 | | |
| V 2 | .0250 | PPM | | 322373 | 321906 | 322964 | | |
| | | | Ave. Int. = | 322415 | S. D. = | 529 | | |
| Zn3 | .0250 | PPM | | 20250 | 20477 | 21025 | | |
| | | | Ave. Int. = | 20584 | S. D. = | 398 | | |
| As2 | .0500 | PPM | | -1158 | -1064 | -1122 | | |
| | | | Ave. Int. = | -1115 | S. D. = | 47 | | |
| Pb1 | .0500 | PPM | | -8102 | -10073 | -10526 | | |
| | | | Ave. Int. = | -9567 | S. D. = | 1289 | | |
| Se1 | .0500 | PPM | | 16813 | 19340 | 17325 | | |
| | | | Ave. Int. = | 17926 | S. D. = | 1290 | | |

66491

Folder: CLP1008 Page -

18:00:26 10 Nov 1995 Protocol: CLP-2 V 15.00

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Standard: 3 Rep: 1 | | | | Seq: 862 | 18:00:26 10 Nov 1995 1.0 | | | |
| Ag1 | .1250 | PPM | 106519 | 106948 | 105239 | | | |
| | | | Ave. Int. = | 107335 | S. D. = | 1871 | | |
| Al3 | 1.000 | PPM | 267147 | 266940 | 270508 | | | |
| | | | Ave. Int. = | 268198 | S. D. = | 2003 | | |
| Ba4 | 1.000 | PPM | 363514 | 366409 | 367268 | | | |
| | | | Ave. Int. = | 365730 | S. D. = | 1967 | | |
| Be2 | .0250 | PPM | 32999 | 32549 | 33133 | | | |
| | | | Ave. Int. = | 32894 | S. D. = | 306 | | |
| Ca3 | 2.500 | PPM | 171437 | 173191 | 171579 | | | |
| | | | Ave. Int. = | 172202 | S. D. = | 898 | | |
| Cd1 | .2500 | PPM | 60735 | 60913 | 60372 | | | |
| | | | Ave. Int. = | 60673 | S. D. = | 276 | | |
| Co1 | .2500 | PPM | 73945 | 74554 | 74953 | | | |
| | | | Ave. Int. = | 74484 | S. D. = | 506 | | |
| Cr4 | .1000 | PPM | 129450 | 132286 | 133740 | | | |
| | | | Ave. Int. = | 131825 | S. D. = | 2182 | | |
| Cu1 | .1250 | PPM | 312937 | 313557 | 316721 | | | |
| | | | Ave. Int. = | 315072 | S. D. = | 1938 | | |
| Fe2 | .3000 | PPM | 184613 | 186110 | 188497 | | | |
| | | | Ave. Int. = | 186363 | S. D. = | 1919 | | |
| K 1 | 3.500 | PPM | 267[illegible]3 | 28908 | 25497 | | | |
| | | | Ave. Int. = | 27048 | S. D. = | 1776 | | |
| Mg4 | 3.500 | PPM | 197204 | 198644 | 194223 | | | |
| | | | Ave. Int. = | 196690 | S. D. = | 1677 | | |
| Mn4 | .2500 | PPM | 338681 | 340647 | 344653 | | | |
| | | | Ave. Int. = | 340794 | S. D. = | 3886 | | |
| Na2 | 2.500 | PPM | 318526 | 319553 | 320547 | | | |
| | | | Ave. Int. = | 319542 | S. D. = | 1011 | | |
| Ni3 | .2500 | PPM | 27629 | 28979 | 29694 | | | |
| | | | Ave. Int. = | 28767 | S. D. = | 1045 | | |
| Sb1 | .5000 | PPM | 22315 | 24607 | 22280 | | | |
| | | | Ave. Int. = | 23067 | S. D. = | 1334 | | |
| V 2 | .2500 | PPM | 624569 | 629745 | 633007 | | | |
| | | | Ave. Int. = | 629107 | S. D. = | 4255 | | |
| Zn3 | .2500 | PPM | 126619 | 130093 | 129754 | | | |
| | | | Ave. Int. = | 128822 | S. D. = | 1915 | | |
| As2 | .5000 | PPM | 12340 | 12134 | 12624 | | | |
| | | | Ave. Int. = | 12366 | S. D. = | 246 | | |
| Pb1 | .5000 | PPM | 6598 | 5398 | 5198 | | | |
| | | | Ave. Int. = | 5728 | S. D. = | 759 | | |
| Se1 | .5000 | PPM | 45294 | 44439 | 44034 | | | |
| | | | Ave. Int. = | 44589 | S. D. = | 643 | | |

Folder: CLP10P6 Page 5

18:03:49 10 Nov 1996 Protocol: CLP-2 Y IS ICP

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| --- Standard: 4 Rep: 1 | | | | Seq: 863 | 18:03:49 10 Nov 1996 ICP | | | |
| Ag1 | 1.250 | PPM | | 974805 | 970105 | 965597 | | |
| | | | Ave. Int. = | 970169 | S. D. = | 4604 | | |
| Al3 | 10.00 | PPM | | 1849271 | 1844691 | 1828339 | | |
| | | | Ave. Int. = | 1840767 | S. D. = | 11004 | | |
| Ba4 | 10.00 | PPM | | 3273706 | 3263126 | 3251318 | | |
| | | | Ave. Int. = | 3263717 | S. D. = | 11387 | | |
| Be2 | .2500 | PPM | | 572191 | 569932 | 566744 | | |
| | | | Ave. Int. = | 569289 | S. D. = | 2741 | | |
| Ca3 | 25.00 | PPM | | 1537661 | 1535333 | 1534779 | | |
| | | | Ave. Int. = | 1535923 | S. D. = | 1531 | | |
| Cd1 | 2.500 | PPM | | 523585 | 522526 | 522505 | | |
| | | | Ave. Int. = | 522872 | S. D. = | 618 | | |
| Co1 | 2.500 | PPM | | 687142 | 682701 | 678795 | | |
| | | | Ave. Int. = | 682879 | S. D. = | 4176 | | |
| Cr4 | 1.000 | PPM | | 1131456 | 1119677 | 1123512 | | |
| | | | Ave. Int. = | 1124882 | S. D. = | 6046 | | |
| Cu1 | 1.250 | PPM | | 2741756 | 2721514 | 2716578 | | |
| | | | Ave. Int. = | 2726616 | S. D. = | 13342 | | |
| Fe2 | 5.000 | PPM | | 1653564 | 1334692 | 1648502 | | |
| | | | Ave. Int. = | 1653386 | S. D. = | 4560 | | |
| K 1 | 25.00 | PPM | | 235957 | 234028 | 237636 | | |
| | | | Ave. Int. = | 235874 | S. D. = | 1845 | | |
| Mg4 | 25.00 | PPM | | 1714695 | 1710144 | 1709636 | | |
| | | | Ave. Int. = | 1711936 | S. D. = | 3063 | | |
| Mn4 | 2.500 | PPM | | 3049773 | 3043198 | 3038377 | | |
| | | | Ave. Int. = | 3045449 | S. D. = | 6175 | | |
| Na2 | 25.00 | PPM | | 2757958 | 2745136 | 2744644 | | |
| | | | Ave. Int. = | 2749246 | S. D. = | 7549 | | |
| Ni3 | 2.500 | PPM | | 255334 | 255622 | 257029 | | |
| | | | Ave. Int. = | 255995 | S. D. = | 907 | | |
| Sb1 | 5.000 | PPM | | 139050 | 139307 | 144644 | | |
| | | | Ave. Int. = | 140834 | S. D. = | 3415 | | |
| V 2 | 2.500 | PPM | | 3354363 | 3352273 | 3348064 | | |
| | | | Ave. Int. = | 3352900 | S. D. = | 5178 | | |
| Zn3 | 2.500 | PPM | | 1104934 | 1112308 | 1103296 | | |
| | | | Ave. Int. = | 1106846 | S. D. = | 4801 | | |
| As2 | 5.000 | PPM | | 130040 | 128559 | 129308 | | |
| | | | Ave. Int. = | 129469 | S. D. = | 797 | | |
| Pb1 | 5.000 | PPM | | 137450 | 137272 | 136401 | | |
| | | | Ave. Int. = | 137041 | S. D. = | 561 | | |
| Se1 | 5.000 | PPM | | 296078 | 297883 | 289945 | | |
| | | | Ave. Int. = | 294635 | S. D. = | 4161 | | |

Folder: CLP10PA Page 5

18:07:12 10 Nov 1998 Protocol: CLP-P Y DS ICP

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Standard: 5 Rep: 1 | | | | Seq: 864 | | 18:07:17 10 Nov 1998 ICP | | |
| Ag1 | 2.500 | PPM | | 1950953 | 1948169 | 1959517 | | |
| | | | Ave. Int. = | 1955546 | S. D. = | 6395 | | |
| Al3 | 20.00 | PPM | | 3653528 | 3636504 | 3634391 | | |
| | | | Ave. Int. = | 3642141 | S. D. = | 10074 | | |
| Ba4 | 20.00 | PPM | | 6542940 | 6520162 | 6537611 | | |
| | | | Ave. Int. = | 6533571 | S. D. = | 11914 | | |
| Be2 | .5000 | PPM | | 1186516 | 1181682 | 1182309 | | |
| | | | Ave. Int. = | 1183502 | S. D. = | 2679 | | |
| Ca3 | 50.00 | PPM | | 3069734 | 3057754 | 3058864 | | |
| | | | Ave. Int. = | 3062117 | S. D. = | 6670 | | |
| Cd1 | 5.000 | PPM | | 1036627 | 1031734 | 1029295 | | |
| | | | Ave. Int. = | 1032552 | S. D. = | 3734 | | |
| Co1 | 5.000 | PPM | | 1358197 | 1350936 | 1349039 | | |
| | | | Ave. Int. = | 1352724 | S. D. = | 4834 | | |
| Cr4 | 2.000 | PPM | | 2243938 | 2240383 | 2220446 | | |
| | | | Ave. Int. = | 2235922 | S. D. = | 13798 | | |
| Cu1 | 2.500 | PPM | | 5476209 | 5438219 | 5441169 | | |
| | | | Ave. Int. = | 5451866 | S. D. = | 21133 | | |
| Fe2 | 10.00 | PPM | | 3297822 | 3263061 | 3288971 | | |
| | | | Ave. Int. = | 3289951 | S. D. = | 7479 | | |
| K 1 | 50.00 | PPM | | 480721 | 478247 | 481640 | | |
| | | | Ave. Int. = | 480269 | S. D. = | 1839 | | |
| Mg4 | 50.00 | PPM | | 3455449 | 3436362 | 3442516 | | |
| | | | Ave. Int. = | 3448109 | S. D. = | 15329 | | |
| Mn4 | 5.000 | PPM | | 6071542 | 6054033 | 6038152 | | |
| | | | Ave. Int. = | 6054876 | S. D. = | 16695 | | |
| Na2 | 50.00 | PPM | | 5549563 | 5524592 | 5551599 | | |
| | | | Ave. Int. = | 5541718 | S. D. = | 14890 | | |
| Ni3 | 5.000 | PPM | | 506701 | 506458 | 501807 | | |
| | | | Ave. Int. = | 504989 | S. D. = | 2758 | | |
| Sb1 | 10.00 | PPM | | 273677 | 271431 | 274382 | | |
| | | | Ave. Int. = | 273830 | S. D. = | 2176 | | |
| V 2 | 5.000 | PPM | | 6435129 | 6401995 | 6432346 | | |
| | | | Ave. Int. = | 6423157 | S. D. = | 18679 | | |
| Zn3 | 5.000 | PPM | | 2192970 | 2199439 | 2183806 | | |
| | | | Ave. Int. = | 2192072 | S. D. = | 7855 | | |
| As2 | 10.00 | PPM | | 253716 | 258655 | 257397 | | |
| | | | Ave. Int. = | 256256 | S. D. = | 745 | | |
| Pb1 | 10.00 | PPM | | 286761 | 287422 | 287751 | | |
| | | | Ave. Int. = | 287978 | S. D. = | 698 | | |
| Se1 | 10.00 | PPM | | 582906 | 573206 | 580426 | | |
| | | | Ave. Int. = | 578846 | S. D. = | 5039 | | |

*** Peak Seq: 865 18:31:57 10 Nov 1998

XAp = 209 YAp = .124 Intensity = 3810797

Folder: CLP1028 Page 7

18:53:37 10 Nov 1998 Protocol: CLP-2 V IS OFF

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Update Intercept (IEC) Seq: 866 18:53:37 10 Nov 1998 IEC

| | | | Corr. | Avg. | SD/RSD | Old |
|---|---|---|---|---|---|---|
| Ag1 | .0000 | PPM | .0021 | -.0021 | .0013 | -.0021 |
| Al3 | .0000 | PPM | .0053 | -.0053 | .0107 | -.0053 |
| Ba4 | .0000 | PPM | .0342 | -.0342 | .0003 | -.0342 |
| Be2 | .0000 | PPM | .0007 | -.0007 | .0002 | -.0007 |
| Ca3 | .0000 | PPM | .0903 | -.0903 | .0029 | -.0903 |
| Cd1 | .0000 | PPM | .0132 | -.0132 | .0011 | -.0132 |
| Co1 | .0000 | PPM | .0123 | -.0123 | .0025 | -.0123 |
| Cr4 | .0000 | PPM | .0035 | -.0035 | .0004 | -.0035 |
| Cu1 | .0000 | PPM | .0043 | -.0043 | .0005 | -.0043 |
| Fe2 | .0000 | PPM | .0206 | -.0206 | .0007 | -.0206 |
| K 1 | .0000 | PPM | .0593 | -.0593 | .0559 | -.0593 |
| Mg4 | .0000 | PPM | .0311 | -.0311 | .0153 | -.0311 |
| Mn4 | .0000 | PPM | .0106 | -.0106 | .0005 | -.0106 |
| Na2 | .0000 | PPM | .0585 | -.0585 | .0226 | -.0585 |
| Ni3 | .0000 | PPM | .0110 | -.0110 | .0079 | -.0110 |
| Sb1 | .0000 | PPM | -.0493 | .0493 | .0603 | .0493 |
| V 2 | .0000 | PPM | .0089 | -.0089 | .0021 | -.0089 |
| Zn3 | .0000 | PPM | .0056 | -.0056 | .0018 | -.0056 |
| As2 | .0000 | PPM | -.0123 | .0123 | .0081 | .0123 |
| Pb1 | .0000 | PPM | -.0157 | .0157 | .0151 | .0157 |
| Se1 | .0000 | PPM | -.0230 | .0230 | .0421 | .0230 |

Protocol: CLP-2 Y IS SEO Power: 1.1 KW
Mode: Simultaneous Rev: 3.003 Time: 18:54:04 10 Nov 1998 Coolant: 15 LPM
Folder: CLP1028 Seq: 867 Plasma: On Print: On Neb: -- PSI
User: Batch: Id: Std5Rep1 Cup: 1 01 Aux1: 0.7 LPM
State: Idle Xmit: Off Autosampler: On

CALIBRATION: Accepted Values

| | Current | Accepted | Type | A | B | C | r |
|---|---|---|---|---|---|---|---|
| Ag1 | Yes | 18:18 10-Nov-98 | L | | 1.26978e-6 | -2.02645e-3 | .999977 |
| Al3 | Yes | 18:18 10-Nov-98 | L | | 5.51706e-6 | -4.21663e-1 | .999975 |
| Ba4 | Yes | 18:18 10-Nov-98 | L | | 3.06862e-6 | -4.06924e-2 | .999985 |
| Be2 | Yes | 18:18 10-Nov-98 | L | | 4.12331e-7 | 1.30277e-2 | .999978 |
| Ca3 | Yes | 18:18 10-Nov-98 | L | | 1.63782e-5 | -1.36721e-1 | .999988 |
| Co1 | Yes | 18:18 10-Nov-98 | L | | 4.85612e-6 | -2.68159e-2 | .999977 |
| Co1 | Yes | 18:18 10-Nov-98 | L | | 3.69523e-6 | -7.56003e-3 | .999975 |
| Cr4 | Yes | 18:18 10-Nov-98 | L | | 8.98147e-7 | -9.91202e-3 | .999983 |
| Cu1 | Yes | 18:18 10-Nov-98 | L | | 4.59587e-7 | -9.85633e-3 | .999984 |
| Fe2 | Yes | 18:18 10-Nov-98 | L | | 3.04781e-6 | -3.06659e-2 | .999986 |
| K 1 | Yes | 18:18 10-Nov-98 | L | | 1.04559e-4 | -4.52485e-2 | .999930 |
| Mg4 | Yes | 18:18 10-Nov-98 | L | | 1.45770e-5 | -1.80303e-1 | .999975 |
| Mn4 | Yes | 18:18 10-Nov-98 | L | | 8.27221e-7 | -1.33235e-2 | .999984 |
| Na2 | Yes | 18:18 10-Nov-98 | L | | 9.08261e-6 | -2.19760e-1 | .999972 |
| Ni3 | Yes | 18:18 10-Nov-98 | L | | 9.92435e-6 | -2.18497e-2 | .999977 |

PgDn

Update coefficients

Protocol: CLP-2 Y IS SEO Power: 1.1 KW
Mode: Simultaneous Rev: 3.003 Time: 18:54:05 10 Nov 1998 Coolant: 15 LPM
Folder: CLP1028 Seq: 867 Plasma: On Print: On Neb: -- PSI
User: Batch: Id: Std5Rep1 Cup: 1 01 Auxil: 0.7 LPM
State: Idle Xmit: Off Autosampler: On

CALIBRATION: Accepted Values Pgup

| | Current | Accepted | Type | A | B | C | r |
|---|---|---|---|---|---|---|---|
| Sb1 | Yes | 18:18 10-Nov-98 | L | | 3.77720e-5 | -3.15136e-1 | .999965 |
| V 2 | Yes | 18:18 10-Nov-98 | L | | 8.16839e-7 | -2.44738e-1 | .999986 |
| Zn3 | Yes | 18:18 10-Nov-98 | L | | 2.28822e-6 | -3.11924e-2 | .999989 |
| As2 | Yes | 18:18 10-Nov-98 | L | | 3.81963e-5 | 6.04569e-2 | .999973 |
| Pb1 | Yes | 18:18 10-Nov-98 | L | | 3.34687e-5 | 3.61809e-1 | .999963 |
| Se1 | Yes | 18:18 10-Nov-98 | L | | 1.77950e-5 | -2.77350e-1 | .999986 |
| Tl1 | Yes | 17:22 06-Oct-98 | L | | 1.59344e-4 | 4.29740e-1 | .999867 |

Update coefficients

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 4 Ck# HI STD Seq: 867 18:56:58 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | L | 69.65 | 1.741 | 2.500 | PPM | 1.310 |
| Al3 | L | 69.40 | 13.88 | 20.00 | PPM | 10.61 |
| Ba4 | L | 69.89 | 13.98 | 20.00 | PPM | 10.56 |
| Be2 | L | 69.29 | .3465 | .5000 | PPM | .2634 |
| Ca3 | L | 68.69 | 34.34 | 50.00 | PPM | 26.17 |
| Cd1 | L | 68.36 | 3.418 | 5.000 | PPM | 2.610 |
| Co1 | L | 68.95 | 3.448 | 5.000 | PPM | 2.620 |
| Cr4 | L | 69.76 | 1.395 | 2.000 | PPM | 1.057 |
| Cu1 | L | 69.95 | 1.749 | 2.500 | PPM | 1.322 |
| Fe2 | L | 68.81 | 6.881 | 10.00 | PPM | 5.233 |
| K 1 | L | 70.02 | 35.01 | 50.00 | PPM | 26.22 |
| Mg4 | L | 69.09 | 34.55 | 50.00 | PPM | 26.35 |
| Mn4 | L | 69.04 | 3.452 | 5.000 | PPM | 2.622 |
| Na2 | L | 69.98 | 34.99 | 50.00 | PPM | 26.57 |
| Ni3 | L | 69.50 | 3.475 | 5.000 | PPM | 2.628 |
| Sb1 | L | 70.10 | 7.010 | 10.00 | PPM | 5.369 |
| V 2 | L | 68.84 | 3.442 | 5.000 | PPM | 2.666 |
| Zn3 | L | 68.49 | 3.424 | 5.000 | PPM | 2.635 |
| As2 | L | 68.85 | 6.885 | 10.00 | PPM | 5.235 |
| Pb1 | L | 67.68 | 6.768 | 10.00 | PPM | 5.130 |
| Se1 | L | 67.80 | 6.780 | 10.00 | PPM | 5.295 |

Ran out of soln SUP 11/10/98

*** Check Standard: 4 Ck# HI STD Seq: 868 19:07:00 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 101.7 | 2.542 | 2.500 | PPM | .0197 |
| Al3 | | 101.6 | 20.33 | 20.00 | PPM | .1584 |
| Ba4 | | 101.3 | 20.26 | 20.00 | PPM | .1432 |
| Be2 | | 101.8 | .5092 | .5000 | PPM | .0032 |
| Ca3 | | 100.6 | 50.29 | 50.00 | PPM | .3302 |
| Cd1 | | 102.3 | 5.116 | 5.000 | PPM | .0290 |
| Co1 | | 100.9 | 5.047 | 5.000 | PPM | .0502 |
| Cr4 | | 101.7 | 2.034 | 2.000 | PPM | .0135 |
| Cu1 | | 101.9 | 2.548 | 2.500 | PPM | .0185 |
| Fe2 | | 100.8 | 10.08 | 10.00 | PPM | .0687 |
| K 1 | | 102.3 | 51.15 | 50.00 | PPM | .7610 |
| Mg4 | | 101.8 | 50.90 | 50.00 | PPM | .3055 |
| Mn4 | | 101.3 | 5.065 | 5.000 | PPM | .0313 |
| Na2 | | 100.0 | 50.98 | 50.00 | PPM | .3779 |
| Ni3 | | 101.1 | 5.053 | 5.000 | PPM | .0623 |
| Sb1 | | 97.21 | 9.721 | 10.00 | PPM | .0569 |
| V 2 | | 101.1 | 5.057 | 5.000 | PPM | .0356 |
| Zn3 | | 102.2 | 5.111 | 5.000 | PPM | .0106 |
| As2 | | 103.0 | 10.30 | 10.00 | PPM | .1060 |
| Pb1 | | 101.5 | 10.15 | 10.00 | PPM | .0551 |
| Se1 | | 101.9 | 10.19 | 10.00 | PPM | .1607 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 6 Ck6 ICV Seq: 869 19:10:43 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 102.2 | 1.277 | 1.250 | PPM | .0042 |
| Al3 | | 102.4 | 10.24 | 10.00 | PPM | .0596 |
| Ba4 | | 101.6 | 10.16 | 10.00 | PPM | .0336 |
| Be2 | | 100.2 | .2505 | .2500 | PPM | .0014 |
| Ca3 | | 101.9 | 25.46 | 25.00 | PPM | .0539 |
| Cd1 | | 102.7 | 2.568 | 2.500 | PPM | .0113 |
| Co1 | | 102.6 | 2.565 | 2.500 | PPM | .0024 |
| Cr4 | | 102.8 | 1.028 | 1.000 | PPM | .0050 |
| Cu1 | | 102.5 | 1.281 | 1.250 | PPM | .0065 |
| Fe2 | | 102.0 | 5.099 | 5.000 | PPM | .0098 |
| K 1 | | 100.4 | 25.10 | 25.00 | PPM | .3712 |
| Mg4 | | 103.0 | 25.75 | 25.00 | PPM | .0388 |
| Mn4 | | 103.1 | 2.578 | 2.500 | PPM | .0055 |
| Na2 | | 100.7 | 25.18 | 25.00 | PPM | .1610 |
| Ni3 | | 102.0 | 2.550 | 2.500 | PPM | .0213 |
| Sb1 | | 98.38 | 4.919 | 5.000 | PPM | .0835 |
| V 2 | | 102.0 | 2.550 | 2.500 | PPM | .0071 |
| Zn3 | | 104.7 | 2.617 | 2.500 | PPM | .0092 |
| As2 | | 99.13 | 4.957 | 5.000 | PPM | .0746 |
| Pb1 | | 101.6 | 5.082 | 5.000 | PPM | .0773 |
| Se1 | | 98.15 | 4.907 | 5.000 | PPM | .0778 |

*** Check Standard: 7 Ck7 ICB Seq: 870 19:14:04 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 13.86 | .0013 | .0100 | PPM | .0036 |
| Al3 | | 10.01 | .0100 | .1000 | PPM | .0254 |
| Ba4 | | 15.03 | .0005 | .0033 | PPM | .0004 |
| Be2 | | 27.38 | .0007 | .0027 | PPM | .0002 |
| Ca3 | | -26.91 | -.0140 | .0522 | PPM | .0011 |
| Cd1 | | -4.455 | -.0002 | .0054 | PPM | .0003 |
| Co1 | | -11.02 | -.0017 | .0153 | PPM | .0003 |
| Cr4 | | 5.439 | .0004 | .0078 | PPM | .0003 |
| Cu1 | | 7.312 | .0006 | .0087 | PPM | .0006 |
| Fe2 | | 4.109 | .0008 | .0186 | PPM | .0002 |
| K 1 | | 2.119 | .0106 | .5000 | PPM | .0432 |
| Mg4 | | -1.762 | -.0017 | .0960 | PPM | .0054 |
| Mn4 | | -7.850 | -.0002 | .0024 | PPM | .0003 |
| Na2 | | -32.03 | -.0419 | .1308 | PPM | .0084 |
| Ni3 | | -7.204 | -.0026 | .0360 | PPM | .0067 |
| Sb1 | | -18.86 | -.0377 | .2000 | PPM | .0413 |
| V 2 | | 20.14 | .0020 | .0100 | PPM | .0010 |
| Zn3 | | -83.36 | -.0167 | .0200 | PPM | .0012 |
| As2 | | -23.51 | -.0235 | .1000 | PPM | .0230 |
| Pb1 | | -10.69 | -.0107 | .1000 | PPM | .0199 |
| Se1 | | -57.59 | -.0576 | .1000 | PPM | .0147 |

Folder: CLP1028 Page 10

19:25:44 10 Nov 1998 Protocol: CLP-2 Y IS STD

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Peak Seq: 871 19:25:44 10 Nov 1998

XAp = 209 YAp = 124 Intensity = 3849741

*** Sample ID: ICSA Seq: 872 19:27:24 10 Nov 1998 ICP

| | | | | | | |
|---|---|---|---|---|---|---|
| Ag1 | .0072 | PPM | .0012 | .0082 | .0059 | .0076 |
| Al3 | 485.3 | PPM | 1.210 | 486.5 | 485.2 | 484.1 |
| Ba4 | .0020 | PPM | .0001 | .0020 | .0020 | .0019 |
| Be2 | .0024 | PPM | .0000 | .0024 | .0024 | .0023 |
| Ca3 | 447.4 | PPM | .3109 | 447.7 | 447.3 | 447.1 |
| Cd1 | -.0004 | PPM | .0008 | -.0003 | .0003 | -.0013 |
| Co1 | .0029 | PPM | .0019 | .0001 | .0036 | .0029 |
| Cr4 | .0049 | PPM | .0007 | .0041 | .0054 | .0051 |
| Cu1 | .0110 | PPM | .0015 | .0109 | .0126 | .0095 |
| Fe2 | 174.7 | PPM | .1702 | 174.8 | 174.7 | 174.5 |
| K 1 | -.1428 | PPM | .2975 | .0497 | -.4255 | .0073 |
| Mg4 | 513.5 H | PPM | .5927 | 514.1 | 513.0 | 513.3 |
| Mn4 | .0085 | PPM | .0010 | .0096 | .0081 | .0077 |
| Na2 | .0224 | PPM | .0402 | .0669 | -.0116 | .0120 |
| Ni3 | .0117 | PPM | .0040 | .0147 | .0071 | .0133 |
| Sb1 | -.0404 | PPM | .0313 | -.0906 | -.0453 | -.1054 |
| V 2 | -.0033 | PPM | .0037 | -.0010 | -.0012 | -.0076 |
| Zn3 | -.0061 | PPM | .0007 | -.0059 | -.0056 | -.0069 |
| As2 | .0416 | PPM | .0726 | .0985 | .1202 | -.0232 |
| Pb1 | .0525 | PPM | .0053 | .0467 | .0535 | .0572 |
| Se1 | -.0288 | PPM | .0457 | -.0341 | .0194 | -.0715 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: IC9AB | | | | Seq: 873 | 19:30:41 10 Nov 1998 ICP | | | |
| Ag1 | .9779 | PPM | .0020 | .9758 | .9798 | .9740 | | |
| Al3 | 480.2 | PPM | 1.568 | 482.3 | 483.7 | 480.5 | | |
| Ba4 | .4803 | PPM | .0018 | .4817 | .4810 | .4783 | | |
| Be2 | .4816 | PPM | .0006 | .4818 | .4821 | .4809 | | |
| Ca3 | 443.5 | PPM | .7641 | 442.7 | 444.2 | 443.6 | | |
| Cd1 | .8696 | PPM | .0038 | .8655 | .8701 | .8731 | | |
| Co1 | .4479 | PPM | .0053 | .4466 | .4434 | .4538 | | |
| Cr4 | .4525 | PPM | .0021 | .4505 | .4547 | .4524 | | |
| Cu1 | .4882 | PPM | .0018 | .4863 | .4900 | .4864 | | |
| Fe2 | 173.3 | PPM | .3508 | 173.1 | 173.6 | 173.2 | | |
| K 1 | 5.016 | PPM | .0824 | 4.930 | 5.025 | 5.093 | | |
| Mg4 | 508.7 H | PPM | .8639 | 508.1 | 509.7 | 508.4 | | |
| Mn4 | .4622 | PPM | .0007 | .4619 | .4618 | .4630 | | |
| Na2 | 2.495 | PPM | .0072 | 2.471 | 2.489 | 2.524 | | |
| Ni3 | .6712 | PPM | .0066 | .6764 | .6736 | .6638 | | |
| Sb1 | .8998 | PPM | .0330 | .8707 | .8931 | .9357 | | |
| V 2 | .4600 | PPM | .0030 | .4625 | .4567 | .4608 | | |
| Zn3 | .8650 | PPM | .0036 | .8658 | .8612 | .8652 | | |
| As2 | .4669 | PPM | .0737 | .5394 | .4690 | .4120 | | |
| Pb1 | .9516 | PPM | .0144 | .9673 | .9389 | .9487 | | |
| Se1 | .4784 | PPM | .0504 | .4991 | .4210 | .5152 | | |

*** Check Standard: 6 CK6 Seq: 874 19:34:00 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 103.4 | 1.293 | 1.250 | PPM | .0095 |
| Al3 | | 104.3 | 10.43 | 10.00 | PPM | .0314 |
| Ba4 | | 103.3 | 10.33 | 10.00 | PPM | .0421 |
| Be2 | | 101.6 | .2539 | .2500 | PPM | .0004 |
| Ca3 | | 102.7 | 25.67 | 25.00 | PPM | .0611 |
| Cd1 | | 103.3 | 2.583 | 2.500 | PPM | .0079 |
| Co1 | | 103.9 | 2.598 | 2.500 | PPM | .0086 |
| Cr4 | | 104.1 | 1.041 | 1.000 | PPM | .0014 |
| Cu1 | | 103.5 | 1.294 | 1.250 | PPM | .0031 |
| Fe2 | | 103.7 | 5.185 | 5.000 | PPM | .0140 |
| K 1 | | 102.1 | 25.53 | 25.00 | PPM | .4198 |
| Mg4 | | 104.1 | 26.03 | 25.00 | PPM | .0469 |
| Mn4 | | 104.6 | 2.616 | 2.500 | PPM | .0050 |
| Na2 | | 101.8 | 25.46 | 25.00 | PPM | .0977 |
| Ni3 | | 104.4 | 2.610 | 2.500 | PPM | .0100 |
| Sb1 | | 99.66 | 4.983 | 5.000 | PPM | .0798 |
| V 2 | | 103.8 | 2.594 | 2.500 | PPM | .0072 |
| Zn3 | | 106.4 | 2.661 | 2.500 | PPM | .0055 |
| As2 | | 101.7 | 5.084 | 5.000 | PPM | .0546 |
| Pb1 | | 101.7 | 5.083 | 5.000 | PPM | .0354 |
| Se1 | | 99.58 | 4.979 | 5.000 | PPM | .0864 |

680
30

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 7 Ck7 Seq: 875 19:37:21 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 5.170 | .0005 | .0100 | PPM | .0015 |
| Al3 | | 22.95 | .0230 | .1000 | PPM | .0230 |
| Ba4 | | 16.83 | .0006 | .0033 | PPM | .0005 |
| Be2 | | 26.50 | .0007 | .0027 | PPM | .0001 |
| Ca3 | | -6.762 | -.0035 | .0522 | PPM | .0018 |
| Cd1 | | 7.196 | .0004 | .0054 | PPM | .0004 |
| Co1 | | 7.785 | .0012 | .0153 | PPM | .0007 |
| Cr4 | | 21.32 | .0017 | .0078 | PPM | .0013 |
| Cu1 | | 9.672 | .0008 | .0087 | PPM | .0010 |
| Fe2 | | 37.39 | .0070 | .0186 | PPM | .0011 |
| K 1 | | -4.148 | -.0207 | .5000 | PPM | .1618 |
| Mg4 | | 7.365 | .0071 | .0960 | PPM | .0163 |
| Mn4 | | 7.679 | .0002 | .0024 | PPM | .0001 |
| Na2 | | -26.73 | -.0376 | .1308 | PPM | .0112 |
| Ni3 | | -7.425 | -.0027 | .0360 | PPM | .0041 |
| Sb1 | | -30.82 | -.0616 | .2000 | PPM | .0256 |
| V 2 | | 38.70 | .0039 | .0100 | PPM | .0018 |
| Zn3 | | -79.75 | -.0159 | .0200 | PPM | .0023 |
| As2 | | -58.74 | -.0587 | .1000 | PPM | .0180 |
| Pb1 | | -5.157 | -.0052 | .1000 | PPM | .0161 |
| Se1 | | -37.70 | -.0377 | .1000 | PPM | .0396 |

*** Peak Seq: 876 19:39:26 10 Nov 1998

XAb = 209 YAb = 124 Intensity = 3872480

1006.1-10.5006.5JB
1006.1-13.1005.5JB

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: PBW 0 | | | | Seq: 877 | | 19:41:05 10 Nov 1998 ICP | | |
| | | | WG48927-03 | | | | | |
| Ag1 | .0001 | PPM | .0013 | -.0003 | .0016 | -.0008 | | |
| Al3 | .0124 | PPM | .0124 | .0044 | .0036 | .0061 | | |
| Ba4 | -.0005 | PPM | .0003 | -.0002 | -.0006 | -.0007 | | |
| Be2 | .0003 | PPM | .0002 | .0001 | .0003 | .0005 | | |
| Ca3 | .0074 | PPM | .0035 | .0069 | .0043 | .0111 | | |
| Cd1 | .0001 | PPM | .0007 | -.0006 | .0002 | .0007 | | |
| Co1 | .0012 | PPM | .0020 | -.0004 | .0035 | .0003 | | |
| Cr4 | .0002 | PPM | .0009 | .0002 | -.0007 | .0011 | | |
| Cu1 | .0006 | PPM | .0007 | .0000 | .0004 | .0014 | | |
| Fe2 | .0041 | PPM | .0018 | .0045 | .0022 | .0057 | | |
| K 1 | .0511 | PPM | .0474 | .1057 | .0275 | .0002 | | |
| Mg4 | .0031 | PPM | .0079 | -.0057 | .0056 | .0096 | | |
| Mn4 | -.0002 | PPM | .0007 | -.0010 | -.0001 | .0004 | | |
| Na2 | -.0784 | PPM | .0256 | -.1079 | -.0636 | -.0637 | | |
| Ni3 | -.0004 | PPM | .0016 | -.0021 | .0009 | .0001 | | |
| Sb1 | -.0301 | PPM | .0197 | -.0215 | -.0527 | -.0162 | | |
| V 2 | -.0054 | PPM | .0034 | -.0016 | -.0065 | -.0082 | | |
| Zn3 | -.0147 | PPM | .0025 | -.0169 | -.0151 | -.0121 | | |
| As2 | -.0447 | PPM | .0173 | -.0647 | -.0361 | -.0334 | | |
| Pb1 | -.0047 | PPM | .0237 | -.0028 | -.0293 | .0180 | | |
| Se1 | -.0465 | PPM | .0202 | -.0721 | -.0280 | -.0453 | | |
| *** Sample ID: LCSW 0 | | | | Seq: 878 | | 19:44:22 10 Nov 1998 ICP | | |
| | | | WG48927-04 | | | | | |
| Ag1 | .1835 | PPM | .0036 | .1864 | .1795 | .1846 | | |
| Al3 | 9.072 | PPM | .0758 | 9.159 | 9.039 | 9.019 | | |
| Ba4 | 9.445 | PPM | .0791 | 9.536 | 9.394 | 9.406 | | |
| Be2 | .9015 | PPM | .0063 | .9085 | .8962 | .8998 | | |
| Ca3 | 9.216 | PPM | .0466 | 9.257 | 9.166 | 9.225 | | |
| Cd1 | .9260 | PPM | .0069 | .9337 | .9205 | .9240 | | |
| Co1 | .9389 | PPM | .0168 | .9557 | .9222 | .9389 | | |
| Cr4 | .9369 | PPM | .0066 | .9445 | .9333 | .9329 | | |
| Cu1 | .9215 | PPM | .0097 | .9319 | .9138 | .9197 | | |
| Fe2 | .9402 | PPM | .0082 | .9489 | .9325 | .9394 | | |
| K 1 | 45.88 | PPM | .3479 | 46.38 | 45.63 | 45.72 | | |
| Mg4 | 9.033 | PPM | .0664 | 9.098 | 8.966 | 9.034 | | |
| Mn4 | .9337 | PPM | .0084 | .9433 | .9294 | .9283 | | |
| Na2 | 46.37 | PPM | .2767 | 46.69 | 46.18 | 46.24 | | |
| Ni3 | .9221 | PPM | .0178 | .9151 | .9423 | .9088 | | |
| Sb1 | .8942 | PPM | .0471 | .8791 | .8565 | .9470 | | |
| V 2 | .9270 | PPM | .0081 | .9363 | .9215 | .9231 | | |
| Zn3 | .9160 | PPM | .0039 | .9133 | .9205 | .9142 | | |
| As2 | .8872 | PPM | .0299 | .8900 | .8560 | .9157 | | |
| Pb1 | .9195 | PPM | .0222 | .8974 | .9195 | .9417 | | |
| Se1 | .8607 | PPM | .0236 | .8461 | .8430 | .8879 | | |

MOD • 19:50:00 • 5/JN

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: TC1107501 | | | | Seq: 879 | | 19:47:40 10 Nov 1998 ICP | | |
| | | | | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0034 | PPM | .0128 | -.0112 | .0084 | .0130 | | |
| Al3 | .3185 | PPM | .1002 | .2296 | .4070 | .2988 | | |
| Ba4 | .2608 | PPM | .0095 | .2531 | .2714 | .2578 | | |
| Be2 | .0086 | PPM | .0014 | .0103 | .0087 | .0075 | | |
| Ca3 | 183.5 | PPM | 2.700 | 180.4 | 185.3 | 184.8 | | |
| Cd1 | .0031 | PPM | .0073 | .0115 | -.0021 | .0001 | | |
| Co1 | .0916 | PPM | .0130 | .0058 | .1065 | .0825 | | |
| Cr4 | .0196 | PPM | .0216 | .0341 | .0300 | -.0052 | | |
| Cu1 | .1531 | PPM | .0169 | .1749 | .1416 | .1428 | | |
| Fe2 | .1450 | PPM | .0190 | .1568 | .1526 | .1234 | | |
| K 1 | 6.956 | PPM | 2.219 | 6.459 | 9.703 | 10.71 | | |
| Mg4 | 6.435 | PPM | .2360 | 6.178 | 6.643 | 6.484 | | |
| Mn4 | .1009 | PPM | .0033 | .1034 | .1021 | .0971 | | |
| Na2 | 1283. | H PPM | 19.42 | 1261. | 1297. | 1292. | | |
| Ni3 | .1007 | PPM | .0304 | .0923 | .1344 | .0754 | | |
| Sb1 | .2805 | PPM | .3637 | .6905 | .1541 | -.0030 | | |
| V 2 | .4368 | PPM | .0256 | .4292 | .4457 | .4157 | | |
| Zn3 | .0435 | PPM | .0332 | -.0143 | .0374 | .0476 | | |
| As2 | .4046 | PPM | .1932 | .3381 | .2545 | .6213 | | |
| Pb1 | .0705 | PPM | .4217 | .2280 | .3906 | -.4072 | | |
| Se1 | -.1314 | PPM | .1284 | -.0450 | -.2491 | -.1500 | | |
| *** Sample ID: TC1107502 | | | | Seq: 880 | | 19:50:58 10 Nov 1998 ICP | | |
| | | | | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0040 | PPM | .0101 | .0150 | .0022 | -.0050 | | |
| Al3 | .1542 | PPM | .0984 | .2668 | .1113 | .0646 | | |
| Ba4 | .6299 | PPM | .0091 | .6308 | .6305 | .6204 | | |
| Be2 | .0074 | PPM | .0011 | .0068 | .0068 | .0087 | | |
| Ca3 | 42.86 | PPM | .2446 | 43.08 | 42.90 | 42.60 | | |
| Cd1 | -.0012 | PPM | .0076 | .0056 | -.0093 | .0002 | | |
| Co1 | .0255 | PPM | .0167 | .0085 | .0455 | .0226 | | |
| Cr4 | .0089 | PPM | .0087 | .0065 | .0017 | .0185 | | |
| Cu1 | .0199 | PPM | .0069 | .0265 | .0205 | .0127 | | |
| Fe2 | .1531 | PPM | .0070 | .1573 | .1571 | .1451 | | |
| K 1 | 4.414 | PPM | .5097 | 3.767 | 5.455 | 4.022 | | |
| Mg4 | 1.716 | PPM | .0267 | 1.687 | 1.740 | 1.720 | | |
| Mn4 | .0358 | PPM | .0037 | .0386 | .0372 | .0316 | | |
| Na2 | 1254. | H PPM | 10.15 | 1262. | 1258. | 1243. | | |
| Ni3 | -.0297 | PPM | .0350 | -.0317 | .0363 | -.0536 | | |
| Sb1 | -.7206 | PPM | .7984 | -.8183 | -1.466 | .1222 | | |
| V 2 | .1514 | PPM | .0233 | .1728 | .1548 | .1265 | | |
| Zn3 | -.1371 | PPM | .0165 | -.1342 | -.1548 | -.1222 | | |
| As2 | -.2591 | PPM | .3008 | -.6027 | -.0432 | -.1315 | | |
| Pb1 | -.2779 | PPM | .4917 | .2032 | -.2574 | -.7795 | | |
| Se1 | -.0355 | PPM | .3261 | -.6694 | -.0566 | .0895 | | |

0000 • JJ.FOS • F-JB
0000 • JJ.FOS • F-JB

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: ICSA | | | | Seq: 881 | | 19:54:16 10 Nov 1996 ICP | | |
| Ag1 | .0077 | PPM | .0017 | .0094 | .0060 | .0077 | | |
| Al3 | 493.9 | PPM | 3.402 | 490.6 | 497.4 | 493.8 | | |
| Ba4 | .0017 | PPM | .0007 | .0012 | .0015 | .0025 | | |
| Be2 | .0025 | PPM | .0008 | .0018 | .0034 | .0025 | | |
| Ca3 | 452.4 | PPM | 2.332 | 449.5 | 455.2 | 452.5 | | |
| Cd1 | -.0008 | PPM | .0012 | .0002 | -.0021 | -.0004 | | |
| Co1 | .0023 | PPM | .0015 | .0019 | .0010 | .0039 | | |
| Cr4 | .0041 | PPM | .0008 | .0033 | .0047 | .0045 | | |
| Cu1 | .0096 | PPM | .0005 | .0090 | .0100 | .0097 | | |
| Fe2 | 176.4 | PPM | 1.151 | 175.3 | 177.6 | 176.5 | | |
| K 1 | -.0593 | PPM | .1243 | -.1160 | -.1434 | .0834 | | |
| Mg4 | 520.6 H | PPM | 3.561 | 517.0 | 524.2 | 520.6 | | |
| Mn4 | .0084 | PPM | .0004 | .0085 | .0087 | .0080 | | |
| Na2 | .0348 | PPM | .0353 | .0708 | .0335 | .0002 | | |
| Ni3 | .0092 | PPM | .0053 | .0076 | .0049 | .0152 | | |
| Sb1 | -.0589 | PPM | .0886 | -.0805 | .0385 | -.1346 | | |
| V 2 | -.0002 | PPM | .0009 | -.0009 | -.0006 | .0008 | | |
| Zn3 | -.0056 | PPM | .0037 | -.0025 | -.0097 | -.0045 | | |
| As2 | .0062 | PPM | .0788 | -.0656 | .0905 | -.0064 | | |
| Pb1 | .0782 | PPM | .0543 | .0174 | .1214 | .0959 | | |
| Se1 | -.0050 | PPM | .0145 | -.0034 | -.0202 | .0087 | | |
| *** Sample ID: ICSAB | | | | Seq: 882 | | 19:57:34 10 Nov 1996 ICP | | |
| Ag1 | .9749 | PPM | .0049 | .9794 | .9698 | .9755 | | |
| Al3 | 479.9 | PPM | 5.233 | 483.9 | 474.0 | 481.8 | | |
| Ba4 | .4781 | PPM | .0053 | .4820 | .4721 | .4803 | | |
| Be2 | .4814 | PPM | .0053 | .4850 | .4753 | .4838 | | |
| Ca3 | 443.2 | PPM | 3.720 | 446.0 | 439.0 | 444.7 | | |
| Cd1 | .8767 | PPM | .0096 | .8858 | .8667 | .8778 | | |
| Co1 | .4456 | PPM | .0104 | .4573 | .4374 | .4421 | | |
| Cr4 | .4529 | PPM | .0057 | .4582 | .4469 | .4536 | | |
| Cu1 | .4858 | PPM | .0058 | .4916 | .4799 | .4859 | | |
| Fe2 | 172.7 | PPM | 1.518 | 173.8 | 171.0 | 173.3 | | |
| K 1 | 5.007 | PPM | .2507 | 5.142 | 4.718 | 5.162 | | |
| Mg4 | 509.1 H | PPM | 4.425 | 512.4 | 504.0 | 510.8 | | |
| Mn4 | .4594 | PPM | .0053 | .4622 | .4534 | .4628 | | |
| Na2 | 2.478 | PPM | .0206 | 2.487 | 2.455 | 2.493 | | |
| Ni3 | .8836 | PPM | .0135 | .8955 | .8690 | .8865 | | |
| Sb1 | .8225 | PPM | .0413 | .8702 | .7970 | .8003 | | |
| V 2 | .4582 | PPM | .0038 | .4618 | .4543 | .4587 | | |
| Zn3 | .8726 | PPM | .0153 | .8808 | .8550 | .8820 | | |
| As2 | .4905 | PPM | .0543 | .5482 | .4827 | .4405 | | |
| Pb1 | .9662 | PPM | .0316 | .9937 | .8957 | 1.009 | | |
| Se1 | .4562 | PPM | .0057 | .4564 | .4618 | .4504 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 6 Ck6 Seq: 863 20:00:53 10 Nov 1996 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 103.0 | 1.287 | 1.250 | PPM | .0043 |
| Al3 | | 104.7 | 10.47 | 10.00 | PPM | .0394 |
| Ba4 | | 103.8 | 10.38 | 10.00 | PPM | .0351 |
| Be2 | | 101.5 | .2538 | .2500 | PPM | .0002 |
| Ca3 | | 102.3 | 25.57 | 25.00 | PPM | .0392 |
| Cd1 | | 103.1 | 2.578 | 2.500 | PPM | .0052 |
| Co1 | | 104.2 | 2.606 | 2.500 | PPM | .0066 |
| Cr4 | | 104.1 | 1.041 | 1.000 | PPM | .0037 |
| Cu1 | | 103.6 | 1.295 | 1.250 | PPM | .0057 |
| Fe2 | | 103.2 | 5.159 | 5.000 | PPM | .0038 |
| K 1 | | 102.8 | 25.70 | 25.00 | PPM | .0745 |
| Mg4 | | 103.7 | 25.93 | 25.00 | PPM | .0120 |
| Mn4 | | 104.6 | 2.616 | 2.500 | PPM | .0046 |
| Na2 | | 101.9 | 25.49 | 25.00 | PPM | .1058 |
| Ni3 | | 104.2 | 2.606 | 2.500 | PPM | .0116 |
| Sb1 | | 100.5 | 5.027 | 5.000 | PPM | .0304 |
| V 2 | | 103.8 | 2.596 | 2.500 | PPM | .0062 |
| Zn3 | | 106.8 | 2.670 | 2.500 | PPM | .0143 |
| As2 | | 101.1 | 5.057 | 5.000 | PPM | .0584 |
| Pb1 | | 101.6 | 5.078 | 5.000 | PPM | .0502 |
| Se1 | | 99.8[illegible] | 4.991 | 5.000 | PPM | .0584 |

*** Check Standard: 7 Ck7 Seq: 864 20:04:14 10 Nov 1996 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 9.259 | .0009 | .0100 | PPM | .0024 |
| Al3 | | 18.17 | .0181 | .1000 | PPM | .0117 |
| Ba4 | | 31.49 | .0010 | .0033 | PPM | .0010 |
| Be2 | | 16.17 | .0004 | .0027 | PPM | .0001 |
| Ca3 | | -3.403 | -.0018 | .0532 | PPM | .0011 |
| Cd1 | | 12.36 | .0007 | .0054 | PPM | .0003 |
| Co1 | | 5.998 | .0009 | .0153 | PPM | .0014 |
| Cr4 | | 12.64 | .0010 | .0078 | PPM | .0012 |
| Cu1 | | 9.064 | .0008 | .0087 | PPM | .0004 |
| Fe2 | | 31.94 | .0059 | .0186 | PPM | .0008 |
| K 1 | | 22.34 | .1117 | .5000 | PPM | .1721 |
| Mg4 | | 13.31 | .0128 | .0960 | PPM | .0140 |
| Mn4 | | 2.734 | .0001 | .0024 | PPM | .0001 |
| Na2 | | -27.86 | -.0364 | .1308 | PPM | .0154 |
| Ni3 | | -2.196 | -.0008 | .0360 | PPM | .0005 |
| Sb1 | | -14.75 | -.0295 | .2000 | PPM | .0647 |
| V 2 | | -28.91 | -.0029 | .0100 | PPM | .0023 |
| Zn3 | | -87.67 | -.0175 | .0200 | PPM | .0071 |
| As2 | | 2.219 | .0022 | .1000 | PPM | .0143 |
| Pb1 | | 30.86 | .0309 | .1000 | PPM | .0294 |
| Se1 | | -36.91 | -.0369 | .1000 | PPM | .0058 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Peak Seq: 885 20:05:54 10 Nov 1996

XAp = 210 YAp = 124 Intensity = 3368615

*** Sample ID: PBW P Seq: 886 20:07:34 10 Nov 1996 ICP

WR49040-03

| | | | | | | |
|---|---|---|---|---|---|---|
| Ag1 | .0019 | PPM | .0007 | .0026 | .0030 | .0011 |
| Al3 | -.0094 | PPM | .0040 | -.0111 | -.0048 | -.0123 |
| Ba4 | -.0008 | PPM | .0008 | -.0013 | .0001 | -.0013 |
| Be2 | .0004 | PPM | .0002 | .0003 | .0003 | .0006 |
| Ca3 | -.0016 | PPM | .0016 | .0001 | -.0031 | -.0016 |
| Cd1 | -.0001 | PPM | .0006 | .0001 | -.0008 | .0003 |
| Co1 | -.0027 | PPM | .0018 | -.0043 | -.0030 | -.0008 |
| Cr4 | -.0009 | PPM | .0003 | -.0013 | -.0009 | -.0006 |
| Cu1 | .0013 | PPM | .0007 | .0014 | .0015 | .0005 |
| Fe2 | .0060 | PPM | .0002 | .0062 | .0057 | .0060 |
| K 1 | .0192 | PPM | .0236 | .0223 | .0411 | -.0059 |
| Mg4 | .0021 | PPM | .0122 | .0036 | -.0108 | .0134 |
| Mn4 | -.0003 | PPM | .0005 | -.0008 | .0000 | .0000 |
| Na2 | -.0507 | PPM | .0265 | -.0811 | -.0328 | -.0383 |
| Ni3 | .0004 | PPM | .0037 | .0038 | -.0036 | .0010 |
| Sb1 | -.0946 | PPM | .0201 | -.0727 | -.1128 | -.0987 |
| V 2 | .0020 | PPM | .0046 | .0063 | .0025 | -.0028 |
| Zn3 | -.0152 | PPM | .0024 | -.0177 | -.0151 | -.0129 |
| As2 | .0036 | PPM | .0128 | -.0046 | .0134 | -.0029 |
| Pb1 | -.0436 | PPM | .0308 | -.0263 | -.0791 | -.0252 |
| Se1 | -.0061 | PPM | .0087 | -.0098 | -.0123 | .0039 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: LCSW 5 | | | | Seq: 867 | | 20:10:52 10 Nov 1998 ICP | | |
| | | | WG49040-04 | | | | | |
| Ag1 | .1865 | PPM | .0037 | .1870 | .1899 | .1825 | | |
| Al3 | 9.229 | PPM | .0961 | 9.303 | 9.268 | 9.118 | | |
| Ba4 | 9.601 | PPM | .1028 | 9.688 | 9.627 | 9.487 | | |
| Be2 | .9229 | PPM | .0089 | .9311 | .9240 | .9135 | | |
| Ca3 | 9.374 | PPM | .0722 | 9.445 | 9.376 | 9.300 | | |
| Cd1 | .9437 | PPM | .0062 | .9502 | .9429 | .9380 | | |
| Co1 | .9436 | PPM | .0095 | .9497 | .9486 | .9376 | | |
| Cr4 | .9481 | PPM | .0035 | .9542 | .9490 | .9412 | | |
| Cu1 | .9444 | PPM | .0074 | .9519 | .9441 | .9371 | | |
| Fe2 | .9927 | PPM | .0086 | .9996 | .9955 | .9830 | | |
| K 1 | 46.00 | PPM | .3145 | 46.33 | 45.97 | 45.70 | | |
| Mg4 | 9.149 | PPM | .0871 | 9.239 | 9.144 | 9.065 | | |
| Mn4 | .9466 | PPM | .0066 | .9464 | .9522 | .9394 | | |
| Na2 | 47.46 | PPM | .4949 | 47.92 | 47.52 | 46.94 | | |
| Ni3 | .9267 | PPM | .0250 | .9366 | .9452 | .8982 | | |
| Sb1 | .8523 | PPM | .0395 | .8656 | .8836 | .8079 | | |
| V 2 | .9485 | PPM | .0057 | .9526 | .9509 | .9420 | | |
| Zn3 | .9217 | PPM | .0031 | .9252 | .9194 | .9205 | | |
| As2 | .9345 | PPM | .0076 | .9432 | .9302 | .9300 | | |
| Pb1 | .8851 | PPM | .0345 | .9339 | .8707 | .8628 | | |
| Se1 | .8781 | PPM | .0412 | .8492 | .9253 | .8598 | | |
| *** Sample ID: TC1107302 | | | | Seq: 868 | | 20:14:10 10 Nov 1998 ICP | | |
| | | | | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0231 | PPM | .0211 | .0117 | .0474 | .0101 | | |
| Al3 | -.0081 | PPM | .1774 | -.0817 | -.1368 | .1943 | | |
| Ba4 | .0121 | PPM | .0056 | .0178 | .0122 | .0065 | | |
| Be2 | .0068 | PPM | .0048 | .0035 | .0128 | .0103 | | |
| Ca3 | 3.265 | PPM | .0131 | 3.258 | 3.280 | 3.257 | | |
| Cd1 | .0079 | PPM | .0096 | .0157 | .0107 | -.0028 | | |
| Co1 | .0117 | PPM | .0214 | .0116 | -.0097 | .0331 | | |
| Cr4 | .0001 | PPM | .0182 | -.0025 | -.0121 | .0210 | | |
| Cu1 | .0142 | PPM | .0094 | .0135 | .0051 | .0239 | | |
| Fe2 | .0571 | PPM | .0060 | .0635 | .0481 | .0596 | | |
| K 1 | 177.2 | PPM | 3.203 | 175.7 | 180.9 | 175.0 | | |
| Mg4 | 3.352 | PPM | .2768 | 3.364 | 3.623 | 3.070 | | |
| Mn4 | .0026 | PPM | .0040 | -.0020 | .0055 | .0043 | | |
| Na2 | 40.21 | PPM | .9201 | 39.72 | 41.27 | 39.64 | | |
| Ni3 | -.0453 | PPM | .1044 | .0532 | -.1450 | -.0541 | | |
| Sb1 | -.5025 | PPM | .6807 | .2185 | -1.134 | -.5918 | | |
| V 2 | .1078 | PPM | .0263 | .0738 | .1143 | .1302 | | |
| Zn3 | -.1641 | PPM | .0129 | -.1647 | -.1768 | -.1510 | | |
| As2 | -.0983 | PPM | .1121 | -.0492 | -.0192 | -.2267 | | |
| Pb1 | -.4353 | PPM | .1332 | -.5812 | -.3002 | -.4046 | | |
| Se1 | -.0163 | PPM | .2558 | -.1063 | -.2149 | .2725 | | |

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| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: 02 DUP | | | | Seq: 889 | | 20:17:28 10 Nov 1998 ICP | | |
| DUP | | | WG49040-07 | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | -.0041 | PPM | .0178 | .0100 | -.0241 | .0017 | | |
| Al3 | -.0205 | PPM | .1739 | -.1958 | .1520 | -.0178 | | |
| Ba4 | .0127 | PPM | .0036 | .0144 | .0152 | .0085 | | |
| Be2 | .0077 | PPM | .0016 | .0059 | .0088 | .0084 | | |
| Ca3 | 3.600 | PPM | .0161 | 3.618 | 3.587 | 3.594 | | |
| Cd1 | .0094 | PPM | .0030 | .0130 | .0061 | .0102 | | |
| Co1 | .0061 | PPM | .0194 | .0284 | -.0036 | -.0067 | | |
| Cr4 | .0069 | PPM | .0057 | .0057 | .0130 | .0019 | | |
| Cu1 | .0275 | PPM | .0062 | .0196 | .0360 | .0270 | | |
| Fe2 | .2734 | PPM | .0196 | .2509 | .2956 | .2638 | | |
| K 1 | 191.4 | PPM | 2.303 | 188.8 | 192.1 | 193.2 | | |
| Mg4 | 3.553 | PPM | .0532 | 3.549 | 3.462 | 3.648 | | |
| Mn4 | .0038 | PPM | .0017 | .0022 | .0038 | .0055 | | |
| Na2 | 43.43 | PPM | .3121 | 43.60 | 43.06 | 43.61 | | |
| Ni3 | .0778 | PPM | .0625 | .0064 | .1225 | .1044 | | |
| Sb1 | -.4819 | PPM | .4566 | -.7033 | -.7057 | .0435 | | |
| V 2 | .1538 | PPM | .0145 | .1687 | .1531 | .1397 | | |
| Zn3 | -.1484 | PPM | .0116 | -.1364 | -.1457 | -.1610 | | |
| As2 | -.2178 | PPM | .1477 | -.0855 | -.1907 | -.3772 | | |
| Pb1 | -.5468 | PPM | .0890 | -.4440 | -.6007 | -.5955 | | |
| Se1 | -.3750 | PPM | .3302 | -.5772 | .0061 | -.5539 | | |

*** DUP ID: 02 DUP Seq: 890 20:17:28 10 Nov 1998 ICP

| | RPD | | Orig. | Dup. |
|---|---|---|---|---|
| Ag1 | 287.2 | % | .0231 | -.0041 |
| Al3 | 87.32 | % | -.0081 | -.0205 |
| Ba4 | 4.448 | % | .0121 | .0127 |
| Be2 | 13.56 | % | .0088 | .0077 |
| Ca3 | 9.740 | % | 3.265 | 3.600 |
| Cd1 | 18.48 | % | .0079 | .0094 |
| Co1 | 63.43 | % | .0117 | .0061 |
| Cr4 | 193.1 | % | .0001 | .0069 |
| Cu1 | 64.10 | % | .0142 | .0275 |
| Fe2 | 130.9 | % | .0571 | .2734 |
| K 1 | 7.688 | % | 177.2 | 191.4 |
| Mg4 | 5.816 | % | 3.362 | 3.553 |
| Mn4 | 38.78 | % | .0026 | .0038 |
| Na2 | 7.688 | % | 40.21 | 43.43 |
| Ni3 | 758.6 | % | -.0453 | .0778 |
| Sb1 | 4.166 | % | -.5025 | -.4819 |
| V 2 | 35.21 | % | .1078 | .1538 |
| Zn3 | 10.11 | % | -.1641 | -.1484 |
| As2 | 75.59 | % | -.0583 | -.2178 |
| Pb1 | 23.70 | % | -.4353 | -.5468 |
| Se1 | 163.4 | % | -.0163 | -.3750 |

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| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: 10:107303 | | | | Seq: 891 | | 20:20:46 10 Nov 1998 ICP | | |
| UNSPIKED | | | | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0159 | PPM | .0260 | -.0115 | .0190 | .0401 | | |
| Al3 | -.1545 | PPM | .0628 | -.1777 | -.0834 | -.2024 | | |
| Ba4 | .0187 | PPM | .0026 | .0159 | .0189 | .0211 | | |
| Be2 | .0068 | PPM | .0026 | .0096 | .0052 | .0045 | | |
| Ca3 | 50.73 | PPM | .1285 | 50.71 | 50.87 | 50.62 | | |
| Cd1 | -.0016 | PPM | .0019 | -.0023 | .0006 | -.0030 | | |
| Co1 | .0129 | PPM | .0185 | .0047 | .0341 | -.0000 | | |
| Cr4 | -.0021 | PPM | .0177 | .0161 | -.0095 | -.0149 | | |
| Cu1 | .0061 | PPM | .0081 | .0137 | -.0025 | .0070 | | |
| Fe2 | .1063 | PPM | .0095 | .0972 | .1054 | .1162 | | |
| K 1 | 10.75 | PPM | 1.350 | 10.97 | 11.97 | 9.302 | | |
| Mg4 | 2.434 | PPM | .1244 | 2.334 | 2.394 | 2.573 | | |
| Mn4 | .0283 | PPM | .0055 | .0321 | .0307 | .0220 | | |
| Na2 | 33.75 | PPM | .5605 | 34.19 | 33.09 | 33.97 | | |
| Ni3 | -.0201 | PPM | .0660 | .0399 | -.0908 | -.0094 | | |
| Sb1 | -.5857 | PPM | .4685 | -.6565 | -1.015 | -.0859 | | |
| V 2 | .1389 | PPM | .0123 | .1368 | .1521 | .1377 | | |
| Zn3 | -.1346 | PPM | .0265 | -.1192 | -.1377 | -.1639 | | |
| As2 | -.1276 | PPM | .4130 | -.2491 | -.4973 | .3634 | | |
| Pb1 | -.2140 | PPM | .0524 | -.2472 | -.2412 | -.1536 | | |
| Se1 | -.4027 | PPM | .1675 | -.5677 | -.2329 | -.4074 | | |
| *** Sample ID: 03 MS | | | | Seq: 892 | | 20:24:06 10 Nov 1998 ICP | | |
| SPIKED | | | W#90040-05 | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | 1.846 | PPM | .0362 | 1.884 | 1.813 | 1.841 | | |
| Al3 | 90.34 | PPM | .5372 | 90.81 | 90.46 | 89.75 | | |
| Ba4 | 94.54 | PPM | .3304 | 94.75 | 94.71 | 94.16 | | |
| Be2 | 9.177 | PPM | .0432 | 9.198 | 9.205 | 9.127 | | |
| Ca3 | 141.9 | PPM | .2384 | 142.0 | 142.0 | 141.6 | | |
| Cd1 | 9.293 | PPM | .0288 | 9.310 | 9.309 | 9.260 | | |
| Co1 | 9.318 | PPM | .0563 | 9.306 | 9.376 | 9.267 | | |
| Cr4 | 9.292 | PPM | .0497 | 9.348 | 9.253 | 9.276 | | |
| Cu1 | 9.284 | PPM | .0445 | 9.329 | 9.264 | 9.239 | | |
| Fe2 | 9.392 | PPM | .0369 | 9.409 | 9.418 | 9.350 | | |
| K 1 | 464.6 | PPM | 2.327 | 466.8 | 464.7 | 462.1 | | |
| Mg4 | 92.57 | PPM | .2290 | 92.78 | 92.60 | 92.33 | | |
| Mn4 | 9.368 | PPM | .0278 | 9.349 | 9.400 | 9.356 | | |
| Na2 | 504.9 | PPM | 2.476 | 506.7 | 506.0 | 502.1 | | |
| Ni3 | 9.232 | PPM | .0379 | 9.266 | 9.239 | 9.191 | | |
| Sb1 | 8.493 | PPM | .5245 | 8.613 | 8.948 | 7.919 | | |
| V 2 | 9.379 | PPM | .0596 | 9.418 | 9.409 | 9.311 | | |
| Zn3 | 9.003 | PPM | .0429 | 8.989 | 8.970 | 9.052 | | |
| As2 | 9.254 | PPM | .3418 | 9.427 | 8.860 | 9.475 | | |
| Pb1 | 9.135 | PPM | .1416 | 9.171 | 9.283 | 9.000 | | |
| Se1 | 8.814 | PPM | .3822 | 9.237 | 8.493 | 8.712 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** %Rec. ID: 03 MS Seq: 893 20:24:06 10 Nov 1998 ICP

Spikes =1 Unspiked =1

| | Spike | | %Rec. | Avg(U) | SD(U) | Avg(S) | SD(S) |
|---|---|---|---|---|---|---|---|
| Ag1 | .2000 | PPM | 91.50 | .0016 | .0000 | .1846 | .0000 |
| Al3 | 10.00 | PPM | 90.49 | -.0155 | .0000 | 9.034 | .0000 |
| Ba4 | 10.00 | PPM | 94.52 | .0019 | .0000 | 9.454 | .0000 |
| Be2 | 1.000 | PPM | 91.70 | .0007 | .0000 | .9177 | .0000 |
| Ca3 | 10.00 | PPM | 91.13 | 5.073 | .0000 | 14.19 | .0000 |
| Cd1 | 1.000 | PPM | 92.94 | -.0002 | .0000 | .9293 | .0000 |
| Co1 | 1.000 | PPM | 93.05 | .0013 | .0000 | .9318 | .0000 |
| Cr4 | 1.000 | PPM | 92.94 | -.0002 | .0000 | .9292 | .0000 |
| Cu1 | 1.000 | PPM | 92.78 | .0006 | .0000 | .9284 | .0000 |
| Fe2 | 1.000 | PPM | 92.86 | .0106 | .0000 | .9392 | .0000 |
| K 1 | 50.00 | PPM | 90.76 | 1.075 | .0000 | 45.46 | .0000 |
| Mg4 | 10.00 | PPM | 90.14 | .2434 | .0000 | 9.257 | .0000 |
| Mn4 | 1.000 | PPM | 93.40 | .0028 | .0000 | .9368 | .0000 |
| Na2 | 50.00 | PPM | 94.24 | 3.375 | .0000 | 50.49 | .0000 |
| Ni3 | 1.000 | PPM | 92.52 | -.0020 | .0000 | .9232 | .0000 |
| Sb1 | 1.000 | PPM | 90.79 | -.0586 | .0000 | .8493 | .0000 |
| V 2 | 1.000 | PPM | 92.40 | .0139 | .0000 | .9379 | .0000 |
| Zn3 | 1.000 | PPM | 91.38 | -.0135 | .0000 | .9103 | .0000 |
| As2 | 1.000 | PPM | 93.82 | -.0128 | .0000 | .9254 | .0000 |
| Pb1 | 1.000 | PPM | 93.49 | -.0214 | .0000 | .9135 | .0000 |
| Se1 | 1.000 | PPM | 92.17 | -.0403 | .0000 | .8314 | .0000 |

*** Sample ID: 03 MSD Seq: 894 20:27:25 10 Nov 1998 ICP

DUP W6490040-06 Dil. Weight 5.0000 Volume 50.000

| | | | | | | |
|---|---|---|---|---|---|---|
| Ag1 | 1.770 | PPM | .0140 | 1.771 | 1.784 | 1.756 |
| Al3 | 88.33 | PPM | .3939 | 88.45 | 88.57 | 87.96 |
| Ba4 | 92.65 | PPM | .4195 | 93.14 | 92.43 | 92.39 |
| Be2 | 8.945 | PPM | .0479 | 8.978 | 8.966 | 8.890 |
| Ca3 | 139.6 | PPM | .4570 | 139.8 | 139.9 | 139.1 |
| Cd1 | 9.093 | PPM | .0662 | 9.123 | 9.138 | 9.017 |
| Co1 | 9.038 | PPM | .1206 | 9.134 | 9.078 | 8.903 |
| Cr4 | 9.079 | PPM | .0507 | 9.128 | 9.027 | 9.080 |
| Cu1 | 9.032 | PPM | .0448 | 9.077 | 9.033 | 8.987 |
| Fe2 | 9.192 | PPM | .0414 | 9.201 | 9.229 | 9.147 |
| K 1 | 455.7 | PPM | 2.867 | 458.2 | 456.3 | 452.5 |
| Mg4 | 90.11 | PPM | .2311 | 90.35 | 90.09 | 89.89 |
| Mn4 | 9.167 | PPM | .0361 | 9.208 | 9.156 | 9.138 |
| Na2 | 493.8 | PPM | 2.402 | 495.8 | 494.3 | 491.1 |
| Ni3 | 9.023 | PPM | .1871 | 9.230 | 8.970 | 8.867 |
| Sb1 | 8.598 | PPM | .1905 | 8.740 | 8.672 | 8.382 |
| V 2 | 9.167 | PPM | .0335 | 9.160 | 9.204 | 9.138 |
| Zn3 | 8.817 | PPM | .0627 | 8.845 | 8.867 | 8.739 |
| As2 | 9.197 | PPM | .1933 | 8.968 | 9.320 | 9.304 |
| Pb1 | 8.678 | PPM | .1763 | 8.881 | 8.579 | 8.573 |
| Se1 | 8.250 | PPM | .2515 | 8.016 | 8.516 | 8.219 |

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| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| ⟹ Sample ID: ICSA | | | | Seq: 897 | | 20:34:01 10 Nov 1998 ICP | | |
| Ag1 | .0065 | PPM | .0028 | .0094 | .0064 | .0037 | | |
| Al3 | 472.3 | PPM | 4.699 | 469.2 | 469.7 | 477.6 | | |
| Ba4 | .0020 | PPM | .0004 | .0016 | .0024 | .0021 | | |
| Be2 | .0023 | PPM | .0002 | .0025 | .0024 | .0020 | | |
| Ca3 | 445.6 | PPM | 3.717 | 442.8 | 444.0 | 449.8 | | |
| Cd1 | -.0001 | PPM | .0003 | -.0004 | -.0001 | .0002 | | |
| Co1 | .0007 | PPM | .0019 | -.0010 | .0003 | .0027 | | |
| Cr4 | .0045 | PPM | .0015 | .0049 | .0028 | .0057 | | |
| Cu1 | .0118 | PPM | .0003 | .0116 | .0117 | .0121 | | |
| Fe2 | 172.0 | PPM | 1.553 | 170.9 | 171.4 | 173.8 | | |
| K 1 | -.0748 | PPM | .0464 | -.0799 | -.1194 | -.0260 | | |
| Mg4 | 509.9 | H PPM | 5.366 | 505.9 | 507.8 | 516.0 | | |
| Mn4 | .0035 | PPM | .0008 | .0003 | .0078 | .0093 | | |
| Na2 | -.0219 | PPM | .0024 | -.0279 | -.0256 | -.0173 | | |
| Ni3 | .0090 | PPM | .0011 | .0101 | .0091 | .0079 | | |
| Sb1 | -.0523 | PPM | .0673 | -.0425 | -.1689 | -.0055 | | |
| V 2 | .0096 | PPM | .0030 | .0056 | .0071 | .0120 | | |
| Zn3 | -.0058 | PPM | .0011 | -.0060 | -.0047 | -.0068 | | |
| As2 | -.0446 | PPM | .0548 | -.0553 | -.0932 | .0148 | | |
| Pb1 | .0579 | PPM | .0503 | .0036 | .1039 | .0671 | | |
| Se1 | .0077 | PPM | .0278 | .0113 | -.0217 | .0335 | | |
| ⟹ Sample ID: ICSAB | | | | Seq: 898 | | 20:37:18 10 Nov 1998 ICP | | |
| Ag1 | .9365 | PPM | .0028 | .9353 | .9346 | .9397 | | |
| Al3 | 461.1 | PPM | 1.915 | 459.0 | 461.4 | 462.8 | | |
| Ba4 | .4563 | PPM | .0013 | .4550 | .4575 | .4566 | | |
| Be2 | .4680 | PPM | .0019 | .4661 | .4680 | .4699 | | |
| Ca3 | 434.9 | PPM | 2.065 | 432.5 | 435.6 | 436.5 | | |
| Cd1 | .8616 | PPM | .0063 | .8535 | .8596 | .8687 | | |
| Co1 | .4266 | PPM | .0044 | .4236 | .4254 | .4269 | | |
| Cr4 | .4392 | PPM | .0036 | .4353 | .4400 | .4424 | | |
| Cu1 | .4710 | PPM | .0010 | .4704 | .4705 | .4722 | | |
| Fe2 | 168.0 | PPM | .7087 | 167.2 | 168.3 | 168.6 | | |
| K 1 | 4.612 | PPM | .3273 | 4.317 | 4.554 | 4.964 | | |
| Mg4 | 495.7 | PPM | 2.473 | 492.9 | 497.0 | 497.3 | | |
| Mn4 | .4449 | PPM | .0029 | .4415 | .4465 | .4466 | | |
| Na2 | 2.384 | PPM | .0270 | 2.354 | 2.392 | 2.406 | | |
| Ni3 | .8537 | PPM | .0047 | .8530 | .8494 | .8587 | | |
| Sb1 | .8823 | PPM | .0724 | .9181 | .9298 | .7990 | | |
| V 2 | .4375 | PPM | .0048 | .4341 | .4430 | .4355 | | |
| Zn3 | .8435 | PPM | .0071 | .8367 | .8510 | .8427 | | |
| As2 | .4631 | PPM | .0247 | .4388 | .4622 | .4881 | | |
| Pb1 | .9085 | PPM | .0452 | .9202 | .8537 | .9467 | | |
| Se1 | .4333 | PPM | .0163 | .4516 | .4278 | .4204 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 6 Ck6 Seq: 899 20:40:37 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 100.0 | 1.251 | 1.250 | PPM | .0136 |
| Al3 | | 100.4 | 10.04 | 10.00 | PPM | .0589 |
| Ba4 | | 99.81 | 9.981 | 10.00 | PPM | .0684 |
| Be2 | | 99.25 | .2481 | .2500 | PPM | .0010 |
| Ca3 | | 101.2 | 25.30 | 25.00 | PPM | .1987 |
| Cd1 | | 102.8 | 2.571 | 2.500 | PPM | .0218 |
| Co1 | | 100.9 | 2.523 | 2.500 | PPM | .0149 |
| Cr4 | | 102.1 | 1.021 | 1.000 | PPM | .0118 |
| Cu1 | | 100.7 | 1.259 | 1.250 | PPM | .0107 |
| Fe2 | | 100.9 | 5.047 | 5.000 | PPM | .0405 |
| K 1 | | 98.55 | 24.64 | 25.00 | PPM | .0795 |
| Mg4 | | 102.1 | 25.52 | 25.00 | PPM | .2312 |
| Mn4 | | 102.1 | 2.551 | 2.500 | PPM | .0200 |
| Na2 | | 99.16 | 24.79 | 25.00 | PPM | .1426 |
| Ni3 | | 101.3 | 2.531 | 2.500 | PPM | .0158 |
| Sb1 | | 98.50 | 4.925 | 5.000 | PPM | .0754 |
| V 2 | | 100.0 | 2.501 | 2.500 | PPM | .0091 |
| Zn3 | | 104.8 | 2.619 | 2.500 | PPM | .0153 |
| As2 | | 98.94 | 4.947 | 5.000 | PPM | .0160 |
| Pb1 | | 99.57 | 4.979 | 5.000 | PPM | .0711 |
| Se1 | | 98.93 | 4.947 | 5.000 | PPM | .0780 |

*** Peak Sec: 900 20:42:18 10 Nov 1998

XAb = 210 YAb = 124 Intensity = 3899773

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| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 7 Ck7 Seq: 901 20:43:58 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 14.36 | .0014 | .0100 | PPM | .0003 |
| Al3 | | 3.639 | .0036 | .1000 | PPM | .0290 |
| Ba4 | | 6.013 | .0002 | .0033 | PPM | .0003 |
| Be2 | | 16.79 | .0005 | .0027 | PPM | .0004 |
| Ca3 | | -4.143 | -.0022 | .0572 | PPM | .0016 |
| Cd1 | | 21.52 | .0012 | .0054 | PPM | .0013 |
| Co1 | | 7.329 | .0011 | .0153 | PPM | .0037 |
| Cr4 | | 3.320 | .0003 | .0078 | PPM | .0012 |
| Cu1 | | 8.001 | .0008 | .0067 | PPM | .0007 |
| Fe3 | | 39.23 | .0073 | .0166 | PPM | .0011 |
| K 1 | | 33.98 | .1699 | .5000 | PPM | .0433 |
| Mg4 | | 15.46 | .0148 | .0960 | PPM | .0152 |
| Mn4 | | 24.15 | .0006 | .0024 | PPM | .0004 |
| Na2 | | -41.39 | -.0541 | .1308 | PPM | .0138 |
| Ni3 | | 5.624 | .0020 | .0360 | PPM | .0058 |
| Sb1 | | -23.73 | -.0475 | .2000 | PPM | .0379 |
| V 2 | | 23.10 | .0023 | .0100 | PPM | .0034 |
| Zn3 | | -75.49 | -.0151 | .0200 | PPM | .0015 |
| As2 | | 2.705 | .0027 | .1000 | PPM | .0178 |
| Pb1 | | -37.19 | -.0372 | .1000 | PPM | .0098 |
| Se1 | | -29.13 | -.0291 | .1000 | PPM | .0129 |

*** Peak Seq: 902 20:46:01 10 Nov 1998

XAp = 210 YAp = 124 Intensity = 3993289

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20:47:40 10 Nov 1998 Protocol: CLP-2 Y IS 550

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: TC1107306 | | | | Seq: 903 | | 20:47:40 10 Nov 1998 ICP | | |
| UNSPIKED | | | 0.9 | | | Dil. Weight 5.0000 Volume 55.000 | | |
| Ag1 | .0030 | PPM | .0141 | .0161 | .0392 | .0136 | | |
| Al3 | .2677 | PPM | .1218 | .4075 | .1847 | .2108 | | |
| Ba4 | .0371 | PPM | .0081 | .0280 | .0398 | .0435 | | |
| Be2 | .0021 | PPM | .0042 | .0070 | -.0005 | -.0001 | | |
| Ca3 | 56.35 | PPM | 1.430 | 57.75 | 56.40 | 54.89 | | |
| Cd1 | .0343 | PPM | .0056 | .0333 | .0404 | .0293 | | |
| Co1 | -.0136 | PPM | .0374 | -.0018 | .0164 | -.0555 | | |
| Cr4 | .0076 | PPM | .0126 | -.0027 | .0039 | .0218 | | |
| Cu1 | .0316 | PPM | .0024 | .0339 | .0291 | .0317 | | |
| Fe2 | .4985 | PPM | .0158 | .5138 | .4994 | .4822 | | |
| K 1 | 41.58 | PPM | 1.835 | 42.14 | 42.97 | 39.46 | | |
| Mg4 | 6.299 | PPM | .1249 | 6.442 | 6.211 | 6.245 | | |
| Mn4 | .0260 | PPM | .0063 | .0202 | .0327 | .0258 | | |
| Na2 | 52.15 | PPM | .3940 | 53.10 | 52.22 | 51.12 | | |
| Ni3 | .0467 | PPM | .0406 | .0246 | .0218 | .0935 | | |
| Sb1 | -.6055 | PPM | .3476 | -.3391 | -.5993 | -1.068 | | |
| V 2 | -.0652 | PPM | .0243 | -.0856 | -.0718 | -.0383 | | |
| Zn3 | .2215 | PPM | .3585 | -.0524 | .0896 | .6273 | | |
| As2 | -.0756 | PPM | .1579 | -.1643 | .1067 | -.1693 | | |
| Pb1 | -.4627 | PPM | .0457 | -.4523 | -.4606 | -.5352 | | |
| Se1 | -.0364 | PPM | .1087 | -.0374 | .0691 | -.1484 | | |
| *** Sample ID: 06 SP | | | | Seq: 904 | | 20:50:57 10 Nov 1998 ICP | | |
| SPIKED | | | | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | 1.938 | PPM | .2666 | 1.676 | 1.930 | 2.209 | | |
| Al3 | 95.13 | PPM | 13.53 | 83.01 | 92.66 | 109.7 | | |
| Ba4 | 97.57 | PPM | 14.04 | 85.06 | 94.89 | 112.8 | | |
| Be2 | 9.628 | PPM | 1.382 | 8.396 | 9.365 | 11.12 | | |
| Ca3 | 148.6 | PPM | 12.98 | 137.1 | 146.0 | 162.7 | | |
| Cd1 | 10.09 | PPM | 1.405 | 8.855 | 9.801 | 11.62 | | |
| Co1 | 9.914 | PPM | 1.344 | 8.692 | 9.696 | 11.35 | | |
| Cr4 | 9.931 | PPM | 1.435 | 8.629 | 9.697 | 11.47 | | |
| Cu1 | 9.730 | PPM | 1.336 | 8.518 | 9.461 | 11.21 | | |
| Fe2 | 10.27 | PPM | 1.407 | 9.013 | 10.01 | 11.79 | | |
| K 1 | 509.5 | PPM | 64.71 | 453.8 | 494.1 | 580.5 | | |
| Mg4 | 102.7 | PPM | 14.01 | 90.80 | 99.27 | 118.2 | | |
| Mn4 | 9.836 | PPM | 1.343 | 8.699 | 9.555 | 11.40 | | |
| Na2 | 531.6 | PPM | 68.69 | 471.4 | 517.0 | 606.5 | | |
| Ni3 | 9.983 | PPM | 1.291 | 8.807 | 9.778 | 11.36 | | |
| Sb1 | 9.426 | PPM | 1.265 | 8.489 | 8.928 | 10.87 | | |
| V 2 | 9.725 | PPM | 1.424 | 8.499 | 9.390 | 11.29 | | |
| Zn3 | 9.899 | PPM | 1.410 | 8.638 | 9.637 | 11.42 | | |
| As2 | 9.780 | PPM | 1.170 | 8.592 | 9.816 | 10.93 | | |
| Pb1 | 9.823 | PPM | 1.583 | 8.274 | 9.756 | 11.44 | | |
| Se1 | 9.403 | PPM | 1.315 | 8.282 | 9.077 | 10.85 | | |

GN

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** %Rec. ID: 06 SP Seq: 905 20:50:57 10 Nov 1998 ICP

Spikes =1 Unspiked =1

| | Spike | | %Rec. | Avg(U) | SD(U) | Avg(S) | SD(S) |
|---|---|---|---|---|---|---|---|
| Ag1 | .2000 | PPM | 95.88 | .0021 | .0000 | .1938 | .0000 |
| Al3 | 10.00 | PPM | 94.89 | .0243 | .0000 | 9.513 | .0000 |
| Ba4 | 10.00 | PPM | 97.54 | .0034 | .0000 | 9.757 | .0000 |
| Be2 | 1.000 | PPM | 96.26 | .0002 | .0000 | .9628 | .0000 |
| Ca3 | 10.00 | PPM | 97.38 | 5.123 | .0000 | 14.86 | .0000 |
| Cd1 | 1.000 | PPM | 100.6 | .0031 | .0000 | 1.009 | .0000 |
| Co1 | 1.000 | PPM | 99.26 | -.0012 | .0000 | .9914 | .0000 |
| Cr4 | 1.000 | PPM | 99.25 | .0007 | .0000 | .9931 | .0000 |
| Cu1 | 1.000 | PPM | 97.01 | .0025 | .0000 | .9730 | .0000 |
| Fe2 | 1.000 | PPM | 98.18 | .0453 | .0000 | 1.027 | .0000 |
| K 1 | 50.00 | PPM | 94.35 | 3.775 | .0000 | 50.95 | .0000 |
| Mg4 | 10.00 | PPM | 97.02 | .5726 | .0000 | 10.27 | .0000 |
| Mn4 | 1.000 | PPM | 98.62 | .0024 | .0000 | .9886 | .0000 |
| Na2 | 50.00 | PPM | 96.85 | 4.741 | .0000 | 53.16 | .0000 |
| Ni3 | 1.000 | PPM | 99.41 | .0042 | .0000 | .9933 | .0000 |
| Sb1 | 1.000 | PPM | 100.5 | -.0623 | .0000 | .9428 | .0000 |
| V 2 | 1.000 | PPM | 97.85 | -.0059 | .0000 | .9725 | .0000 |
| Zn3 | 1.000 | PPM | 96.97 | .0201 | .0000 | .9899 | .0000 |
| As2 | 1.000 | PPM | 98.46 | -.0069 | .0000 | .9730 | .0000 |
| Pb1 | 1.000 | PPM | 102.6 | -.0439 | .0000 | .9823 | .0000 |
| Se1 | 1.000 | PPM | 94.38 | -.0035 | .0000 | .9403 | .0000 |

*** Sample ID: TC1107307 Seq: 906 20:54:17 10 Nov 1998 ICP

Dil. Weight 5.0000 Volume 50.000

| | | | | | | |
|---|---|---|---|---|---|---|
| Ag1 | .0695 | PPM | .0251 | .0559 | .0541 | .0864 |
| Al3 | -.1104 | PPM | .1450 | .0235 | -.0905 | -.2643 |
| Ba4 | .0083 | PPM | .0051 | .0025 | .0108 | .0118 |
| Be2 | .0025 | PPM | .0030 | .0025 | -.0004 | .0055 |
| Ca3 | .8502 | PPM | .0390 | .8176 | .8396 | .8934 |
| Cd1 | .0873 | PPM | .0127 | .0919 | .0971 | .0730 |
| Co1 | .0453 | PPM | .0446 | .0282 | .0118 | .0959 |
| Cr4 | .0055 | PPM | .0045 | .0078 | .0003 | .0084 |
| Cu1 | .2170 | PPM | .0114 | .2047 | .2224 | .2038 |
| Fe2 | 8.775 | PPM | .1968 | 8.597 | 8.742 | 8.987 |
| K 1 | 365.3 | PPM | 11.85 | 354.1 | 364.0 | 377.7 |
| Mg4 | .1955 | PPM | .0498 | .0592 | .0991 | .1582 |
| Mn4 | .0283 | PPM | .0046 | .0294 | .0323 | .0233 |
| Na2 | 226.4 | PPM | 5.867 | 221.3 | 225.2 | 232.8 |
| Ni3 | .3617 | PPM | .0505 | .3004 | .4128 | .3119 |
| Sb1 | .0432 | PPM | .3358 | .2666 | -.3429 | .2059 |
| V 2 | -.0190 | PPM | .0296 | -.0465 | -.0232 | .0126 |
| Zn3 | .4409 | PPM | .0324 | .4741 | .4393 | .4094 |
| As2 | -.4482 | PPM | .4086 | -.3556 | -.3952 | -.0939 |
| Pb1 | -.5733 | PPM | .2770 | -.8485 | -.5768 | -.2945 |
| Se1 | 3.932 | PPM | .3101 | 3.586 | 4.185 | 4.024 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| ---> Sample ID: TC1107310 | | | | Seq: 907 | 20:57:35 10 Nov 1998 ICP | | | |
| | | | | | Dil. Weight 5.0000 Volume 50.000 | | | |
| Ag1 | .0102 | PPM | .0136 | -.0055 | .0136 | .0175 | | |
| Al3 | .9728 | PPM | .1767 | 1.108 | .7729 | 1.037 | | |
| Ba4 | .0295 | PPM | .0009 | .0284 | .0300 | .0301 | | |
| Be2 | .0052 | PPM | .0012 | .0064 | .0039 | .0053 | | |
| Ca3 | 11.88 | PPM | .0708 | 11.84 | 11.84 | 11.96 | | |
| Cd1 | .0210 | PPM | .0058 | .0176 | .0276 | .0177 | | |
| Co1 | .0065 | PPM | .0075 | .0077 | .0163 | -.0246 | | |
| Cr4 | .0137 | PPM | .0076 | .0079 | .0109 | .0223 | | |
| Cu1 | .0645 | PPM | .0045 | .0695 | .0607 | .0633 | | |
| Fe2 | 1.730 | PPM | .0372 | 1.725 | 1.696 | 1.770 | | |
| K 1 | 7.444 | PPM | .5576 | 7.509 | 6.857 | 7.966 | | |
| Mg4 | 1.712 | PPM | .1069 | 1.724 | 1.599 | 1.812 | | |
| Mn4 | .0276 | PPM | .0025 | .0277 | .0301 | .0250 | | |
| Na2 | 304.6 | PPM | 1.236 | 303.2 | 305.4 | 305.3 | | |
| Ni3 | .0022 | PPM | .0710 | .0115 | .0661 | -.0730 | | |
| Sb1 | -.7117 | PPM | .4055 | -1.173 | -.4133 | -.5484 | | |
| V 2 | -.0255 | PPM | .0067 | -.0276 | -.0131 | -.0309 | | |
| Zn3 | .1129 | PPM | .0247 | .1174 | .0863 | .1351 | | |
| As2 | -.1691 | PPM | .2759 | .1147 | -.2577 | -.4243 | | |
| Pb1 | -.2731 | PPM | .5115 | -.7959 | -.2496 | .2262 | | |
| Se1 | -.0566 | PPM | .0876 | -.0463 | -.1489 | .0254 | | |
| ---> Sample ID: TC1106811 | | | | Seq: 908 | 21:00:53 10 Nov 1998 ICP | | | |
| | | | | | Dil. Weight 5.0000 Volume 50.000 | | | |
| Ag1 | -.0223 | PPM | .0171 | -.0413 | -.0003 | -.0172 | | |
| Al3 | 5.181 | PPM | .0367 | 5.139 | 5.207 | 5.197 | | |
| Ba4 | .2761 | PPM | .0069 | .2863 | .2784 | .2816 | | |
| Be2 | .0052 | PPM | .0024 | .0075 | .0062 | .0119 | | |
| Ca3 | 54.00 | PPM | .1413 | 53.83 | 54.08 | 54.08 | | |
| Cd1 | .0545 | PPM | .0104 | .0616 | .0425 | .0594 | | |
| Co1 | .0250 | PPM | .0355 | .0298 | .0641 | -.0070 | | |
| Cr4 | .0974 | PPM | .0102 | .0982 | .1072 | .0869 | | |
| Cu1 | 101.4 | H PPM | .0774 | 101.5 | 101.5 | 101.4 | | |
| Fe2 | 1.833 | PPM | .0060 | 1.827 | 1.835 | 1.839 | | |
| K 1 | 33190 | H PPM | 92.47 | 33030 | 33250 | 33230 | | |
| Mg4 | 2.292 | PPM | .0761 | 2.261 | 2.237 | 2.379 | | |
| Mn4 | 12.04 | PPM | .0278 | 12.07 | 12.01 | 12.05 | | |
| Na2 | 2448. | H PPM | 7.879 | 2439. | 2454. | 2450. | | |
| Ni3 | .3425 | PPM | .0511 | .4014 | .3101 | .3160 | | |
| Sb1 | 17.56 | PPM | .8168 | 16.94 | 18.48 | 17.25 | | |
| V 2 | .1178 | PPM | .0325 | .0920 | .1294 | .1322 | | |
| Zn3 | 54.61 | PPM | .8421 | 54.87 | 55.29 | 53.67 | | |
| As2 | .4334 | PPM | .3920 | .1177 | .4432 | .3962 | | |
| Pb1 | 43.60 | PPM | .5264 | 43.32 | 44.21 | 43.28 | | |
| Se1 | 2.635 | PPM | .0040 | 2.630 | 2.638 | 2.635 | | |

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| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: W1107301 UNSPIKED | | | | Seq: 909 | | 21:04:11 10 Nov 1998 ICP Dil. Weight 1.0000 Volume 50.000 | | |
| Ag1 | .0393 | PPM | .0659 | -.0241 | .1075 | .0344 | | |
| Al3 | -.4760 | PPM | .9174 | .5522 | -1.211 | -.7698 | | |
| Ba4 | .7141 | PPM | .0364 | .6721 | .7356 | .7345 | | |
| Be2 | .0173 | PPM | .0107 | .0136 | .0284 | .0070 | | |
| Ca3 | 18.77 | PPM | .3076 | 18.45 | 18.80 | 19.06 | | |
| Cd1 | .4453 | PPM | .0217 | .4322 | .4333 | .4703 | | |
| Co1 | -.1022 | PPM | .1180 | -.1043 | -.2192 | .0168 | | |
| Cr4 | .0377 | PPM | .0621 | -.0340 | .0724 | .0747 | | |
| Cu1 | 19.12 | PPM | .2207 | 19.10 | 18.91 | 19.35 | | |
| Fe2 | 17.88 | PPM | .3879 | 17.54 | 17.80 | 18.31 | | |
| K 1 | 143.4 | PPM | 59.56 | 205.1 | 138.9 | 86.24 | | |
| Mg4 | 2.371 | PPM | 1.035 | 1.105 | 3.096 | 2.829 | | |
| Mn4 | .1754 | PPM | .0368 | .1831 | .1773 | .1657 | | |
| Na2 | 16.53 | PPM | 4.890 | 22.03 | 14.89 | 12.67 | | |
| Ni3 | -.0190 | PPM | .2045 | -.2[illegible] | .1[illegible] | .0[illegible] | | |
| Sb1 | -2.650 | PPM | [illegible] | -1.[illegible] | -3.[illegible] | [illegible] | | |
| V 2 | -.3703 | PPM | .1746 | -.5[illegible] | -.4094 | -.1795 | | |
| Zn3 | 9.891 | PPM | .1977 | 9.6[illegible] | [illegible] | [illegible] | | |
| As2 | -.3953 | PPM | .9847 | -.0370 | -1.4[illegible] | .2546 | | |
| Pb1 | 23.74 | PPM | .2679 | 23.44 | 23.97 | 23.80 | | |
| Se1 | -1.866 | PPM | .2852 | -2.215 | -1.730 | -1.713 | | |
| *** Sample ID: 01 MS SPIKED | | | | Seq: 910 | | 21:07:29 10 Nov 1998 ICP Dil. Weight 1.0000 Volume 50.000 | | |
| Ag1 | 9.911 | H PPM | .0338 | 8.922 | 8.937 | 8.973 | | |
| Al3 | 437.5 | PPM | 3.534 | 436.4 | 435.4 | 442.0 | | |
| Ba4 | 459.4 | PPM | 4.263 | 457.3 | 456.6 | 464.3 | | |
| Be2 | 43.90 | PPM | .3601 | 43.80 | 43.60 | 44.30 | | |
| Ca3 | 469.8 | PPM | 3.971 | 469.3 | 465.2 | 473.0 | | |
| Cd1 | 46.34 | H PPM | .2630 | 46.35 | 46.05 | 46.62 | | |
| Co1 | 45.36 | PPM | .3619 | 45.99 | 45.46 | 46.14 | | |
| Cr4 | 45.84 | H PPM | .4437 | 45.79 | 45.42 | 46.31 | | |
| Cu1 | 63.44 | H PPM | .4463 | 63.40 | 63.02 | 63.91 | | |
| Fe2 | 64.36 | PPM | .3506 | 64.29 | 64.05 | 64.74 | | |
| K 1 | 2249. | H PPM | 6.275 | 2241. | 2251. | 2253. | | |
| Mg4 | 445.0 | PPM | 3.795 | 444.2 | 441.7 | 449.2 | | |
| Mn4 | 45.82 | PPM | .4571 | 45.69 | 45.45 | 46.33 | | |
| Na2 | 2321. | H PPM | 17.12 | 2318. | 2306. | 2340. | | |
| Ni3 | 45.56 | PPM | .4617 | 45.46 | 45.16 | 46.06 | | |
| Sb1 | 44.37 | PPM | 3.647 | 44.47 | 40.68 | 47.97 | | |
| V 2 | 45.11 | PPM | .3270 | 45.00 | 44.64 | 45.68 | | |
| Zn3 | 57.79 | PPM | .2337 | 57.95 | 57.52 | 57.91 | | |
| As2 | 44.43 | PPM | 1.530 | 42.90 | 44.42 | 45.96 | | |
| Pb1 | 75.78 | PPM | 3.296 | 77.00 | 72.05 | 78.30 | | |
| Se1 | 44.61 | PPM | .9529 | 44.39 | 43.79 | 45.65 | | |

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| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** %Rec. ID: 01 MS Seq: 911 21:07:29 10 Nov 1998 ICP
Spikes =1 Unspiked =1

| | Spike | | %Rec. | Avg(U) | SD(U) | Avg(S) | SD(S) |
|---|---|---|---|---|---|---|---|
| Ag1 | .2000 | PPM | 38.71 | .0008 | .0000 | .1782 | .0000 |
| Al3 | 10.00 | PPM | 87.68 | -.0095 | .0000 | 8.759 | .0000 |
| Ba4 | 10.00 | PPM | 91.73 | .0143 | .0000 | 9.188 | .0000 |
| Be2 | 1.000 | PPM | 87.76 | .0003 | .0000 | .8779 | .0000 |
| Ca3 | 10.00 | PPM | 90.02 | .3754 | .0000 | 9.377 | .0000 |
| Cd1 | 1.000 | PPM | 91.79 | .0009 | .0000 | .9268 | .0000 |
| Co1 | 1.000 | PPM | 91.93 | -.0020 | .0000 | .9173 | .0000 |
| Cr4 | 1.000 | PPM | 91.61 | .0006 | .0000 | .9168 | .0000 |
| Cu1 | 1.000 | PPM | 86.64 | .3424 | .0000 | 1.269 | .0000 |
| Fe2 | 1.000 | PPM | 92.96 | .3577 | .0000 | 1.287 | .0000 |
| K 1 | 50.00 | PPM | 84.21 | 2.369 | .0000 | 44.97 | .0000 |
| Mg4 | 10.00 | PPM | 88.53 | .0474 | .0000 | 8.900 | .0000 |
| Mn4 | 1.000 | PPM | 91.29 | .0035 | .0000 | .9164 | .0000 |
| Na2 | 50.00 | PPM | 92.18 | .3305 | .0000 | 46.42 | .0000 |
| Ni3 | 1.000 | PPM | 91.16 | -.0004 | .0000 | .9112 | .0000 |
| Sb1 | 1.000 | PPM | 94.04 | -.0530 | .0000 | . 74 | .0000 |
| V 2 | 1.000 | PPM | 90.95 | -.0074 | .0000 | .9[illegible] | .0000 |
| Zn3 | 1.000 | PPM | 95.80 | .1976 | .0000 | 1.156 | .0000 |
| As2 | 1.000 | PPM | 89.65 | -.0079 | .0000 | .8956 | .0000 |
| Pb1 | 1.000 | PPM | 104.1 | .4747 | .0000 | 1.516 | .0000 |
| Se1 | 1.000 | PPM | 92.99 | -.0377 | .0000 | .8922 | .0000 |

*** Sample ID: W110730- Seq: 912 21:10:50 10 Nov 1998 ICP
Dil. Weight 1.0000 Volume 50.000

| | | | | | | |
|---|---|---|---|---|---|---|
| Ag1 | .1785 | PPM | .0744 | .0076 | .1935 | .2442 |
| Al3 | .5303 | PPM | 1.046 | 1.143 | 1.125 | -.6777 |
| Ba4 | .6355 | PPM | .1134 | .8076 | .6655 | .5834 |
| Be2 | .0368 | PPM | .0076 | .0416 | .0280 | .0407 |
| Ca3 | 263.9 | PPM | 1.744 | 265.0 | 264.7 | 261.9 |
| Cd1 | 1.027 | PPM | .0408 | 1.003 | 1.069 | .9950 |
| Co1 | -.0948 | PPM | .1717 | -.1253 | -.0491 | .0901 |
| Cr4 | .0335 | PPM | .0326 | .0460 | -.0034 | .0581 |
| Cu1 | 11.65 | PPM | .1122 | 11.98 | 11.93 | 11.77 |
| Fe2 | 20.63 | PPM | .1913 | 20.83 | 20.59 | 20.45 |
| K 1 | 14.63 | PPM | 3.273 | 11.52 | 14.32 | 18.05 |
| Mg4 | 8.678 | PPM | .7418 | 9.535 | 8.238 | 8.262 |
| Mn4 | .2268 | PPM | .0373 | .2564 | .2218 | .1922 |
| Na2 | 7.699 | PPM | .8947 | 7.419 | 8.701 | 6.978 |
| Ni3 | .0383 | PPM | .2606 | .0430 | -.1461 | .3690 |
| Sb1 | -3.962 | PPM | 6.100 | -10.98 | .0750 | -.9823 |
| V 2 | -.1023 | PPM | .0263 | -.0728 | -.1110 | -.1232 |
| Zn3 | 272.6 | PPM | 1.697 | 274.2 | 272.8 | 270.8 |
| As2 | -1.261 | PPM | .7979 | -2.181 | -.7636 | -.3320 |
| Pb1 | 2.895 | PPM | .5003 | 3.260 | 3.101 | 2.325 |
| Se1 | -.8424 | PPM | 1.008 | -.8106 | .1495 | -1.866 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: W1107305 | | | | Seq: 913 | | 21:14:08 10 Nov 1998 ICP | | |
| | | | | | | Dil. Weight 1.0000 Volume 50.000 | | |
| Ag1 | -.0016 | PPM | .1107 | .0710 | .0533 | -.1291 | | |
| Al3 | 1.549 | PPM | 1.651 | 3.435 | .8455 | .3669 | | |
| Ba4 | .5379 | PPM | .0181 | .5358 | .5570 | .5210 | | |
| Be2 | .0796 | PPM | .0161 | .0364 | .0410 | .0112 | | |
| Ca3 | 213.7 | PPM | 2.493 | 211.0 | 214.4 | 215.9 | | |
| Cd1 | .1712 | PPM | .0225 | .1862 | .1821 | .1453 | | |
| Co1 | .0605 | PPM | .0461 | .0533 | .1097 | .0184 | | |
| Cr4 | .0790 | PPM | .0985 | .1302 | -.0346 | .1413 | | |
| Cu1 | 10.18 | PPM | .1948 | 9.957 | 10.27 | 10.32 | | |
| Fe2 | 57.40 | PPM | .7905 | 56.54 | 57.55 | 58.10 | | |
| K 1 | 19.60 | PPM | 10.33 | 25.21 | 7.678 | 25.92 | | |
| Mg4 | 40.92 | PPM | .9146 | 40.09 | 40.77 | 41.90 | | |
| Mn4 | .2547 | PPM | .0161 | .2368 | .2600 | .2592 | | |
| Na2 | 18.43 | PPM | .5101 | 17.88 | 18.[illegible] | 18.89 | | |
| Ni3 | .0076 | PPM | .3443 | .3417 | -.3[illegible] | .0271 | | |
| Sb1 | -6.361 | PPM | 2.760 | -3.166 | -7.[illegible] | -8.[illegible] | | |
| V 2 | .0579 | PPM | .0375 | .0710 | -.0157 | .1178 | | |
| Zn3 | 176.5 | PPM | 1.389 | 174.9 | 177.[illegible] | [illegible] | | |
| As2 | -1.457 | PPM | 1.205 | -.4376 | -2.793 | -1.1[illegible] | | |
| Pb1 | 15.86 | PPM | .1526 | 15.73 | 15.82 | 16.03 | | |
| Se1 | -.6247 | PPM | .5487 | -1.148 | -.0533 | -.6734 | | |
| *** Sample ID: ACID BLK | | | | Seq: 914 | | 21:17:27 10 Nov 1998 ICP | | |
| Ag1 | .0036 | PPM | .0011 | .0043 | .0024 | .0042 | | |
| Al3 | .0053 | PPM | .0204 | .0275 | -.0128 | .0013 | | |
| Ba4 | .0002 | PPM | .0004 | .0003 | .0006 | -.0002 | | |
| Be2 | .0002 | PPM | .0002 | .0004 | .0002 | .0001 | | |
| Ca3 | .0037 | PPM | .0001 | .0038 | .0036 | .0037 | | |
| Cd1 | .0002 | PPM | .0006 | -.0004 | .0008 | .0002 | | |
| Co1 | .0003 | PPM | .0030 | .0022 | -.0032 | .0020 | | |
| Cr4 | -.0006 | PPM | .0011 | -.0018 | -.0003 | .0002 | | |
| Cu1 | .0015 | PPM | .0007 | .0009 | .0013 | .0022 | | |
| Fe2 | .0030 | PPM | .0018 | .0048 | .0030 | .0013 | | |
| K 1 | .0769 | PPM | .1539 | -.0019 | .2543 | -.0217 | | |
| Mg4 | .0027 | PPM | .0177 | .0132 | -.0175 | .0104 | | |
| Mn4 | -.0004 | PPM | .0010 | -.0011 | .0007 | -.0007 | | |
| Na2 | -.0173 | PPM | .0327 | -.0385 | -.0338 | .0203 | | |
| Ni3 | -.0007 | PPM | .0091 | .0000 | .0080 | -.0102 | | |
| Sb1 | -.0587 | PPM | .1032 | -.1217 | .0504 | -.1149 | | |
| V 2 | .0021 | PPM | .0014 | .0012 | .0037 | .0015 | | |
| Zn3 | -.0010 | PPM | .0018 | -.0009 | .0008 | -.0028 | | |
| As2 | -.0409 | PPM | .0166 | -.0486 | -.0219 | -.0522 | | |
| Pb1 | -.0345 | PPM | .0464 | -.0261 | -.0846 | .0072 | | |
| Se1 | -.0420 | PPM | .0013 | -.0406 | -.0422 | -.0432 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 6 Ck6 Seq: 915 21:20:46 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 103.3 | 1.292 | 1.250 | PPM | .0066 |
| Al3 | | 104.5 | 10.45 | 10.00 | PPM | .0480 |
| Ba4 | | 103.3 | 10.33 | 10.00 | PPM | .0515 |
| Be2 | | 103.3 | .2582 | .2500 | PPM | .0021 |
| Ca3 | | 104.9 | 26.21 | 25.00 | PPM | .1388 |
| Cd1 | | 106.6 | 2.666 | 2.500 | PPM | .0121 |
| Co1 | | 105.3 | 2.633 | 2.500 | PPM | .0070 |
| Cr4 | | 105.5 | 1.055 | 1.000 | PPM | .0068 |
| Cu1 | | 103.9 | 1.299 | 1.250 | PPM | .0055 |
| Fe2 | | 104.6 | 5.230 | 5.000 | PPM | .0384 |
| K 1 | | 103.3 | 25.82 | 25.00 | PPM | .0782 |
| Mg4 | | 105.7 | 26.43 | 25.00 | PPM | .0974 |
| Mn4 | | 106.1 | 2.652 | 2.500 | PPM | .0133 |
| Na2 | | 102.7 | 25.68 | 25.00 | PPM | .2167 |
| Ni3 | | 106.1 | 2.651 | 2.500 | PPM | .0187 |
| Sb1 | | 102.5 | 5.127 | 5.000 | PPM | .0639 |
| V 2 | | 104.4 | 2.609 | 2.500 | PPM | .0066 |
| Zn3 | | 109.6 | 2.739 | 2.500 | PPM | .0060 |
| As2 | | 103.0 | 5.150 | 5.000 | PPM | .0610 |
| Pb1 | | 105.4 | 5.268 | 5.000 | PPM | .0430 |
| Se1 | | 103.3 | 5.165 | 5.000 | PPM | .0235 |

*** Check Standard: 7 Ck7 Seq: 916 21:24:07 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 14.72 | .0015 | .0100 | PPM | .0010 |
| Al3 | | .3138 | .0003 | .1000 | PPM | .0193 |
| Ba4 | | 4.680 | .0002 | .0033 | PPM | .0006 |
| Be2 | | 13.35 | .0004 | .0027 | PPM | .0005 |
| Ca3 | | -4.398 | -.0023 | .0522 | PPM | .0001 |
| Cd1 | | 10.08 | .0005 | .0054 | PPM | .0001 |
| Co1 | | -3.413 | -.0005 | .0153 | PPM | .0042 |
| Cr4 | | .2262 | .0000 | .0076 | PPM | .0012 |
| Cu1 | | 2.620 | .0002 | .0087 | PPM | .0025 |
| Fe2 | | 19.43 | .0036 | .0186 | PPM | .0042 |
| K 1 | | 50.52 | .2526 | .5000 | PPM | .3505 |
| Mg4 | | 8.541 | .0082 | .0960 | PPM | .0067 |
| Mn4 | | 24.09 | .0006 | .0024 | PPM | .0004 |
| Na2 | | -36.65 | -.0479 | .1308 | PPM | .0092 |
| Ni3 | | -12.13 | -.0044 | .0360 | PPM | .0033 |
| Sb1 | | -17.17 | -.0343 | .2000 | PPM | .0082 |
| V 2 | | 16.54 | .0017 | .0100 | PPM | .0023 |
| Zn3 | | -86.76 | -.0174 | .0200 | PPM | .0006 |
| As2 | | -4.101 | -.0041 | .1000 | PPM | .0444 |
| Pb1 | | -44.47 | -.0445 | .1000 | PPM | .0545 |
| Se1 | | -6.869 | -.0069 | .1000 | PPM | .0068 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Peak Seq: 917 21:40:34 10 Nov 1998

XAp = 210 YAp = 124 Intensity = 3925273

*** Sample ID: W1107308 Seq: 918 21:42:14 10 Nov 1998 ICP
Dil. Weight 1.0000 Volume 50.000

| | | | | | | |
|---|---|---|---|---|---|---|
| Ag1 | .1024 | PPM | .0575 | .1593 | .1036 | .0443 |
| Al3 | .5918 | PPM | .8790 | 1.113 | .9407 | -.4803 |
| Ba4 | .0938 | PPM | .0101 | .0995 | .0999 | .0821 |
| Be3 | .0766 | PPM | .0137 | .0305 | .0381 | .0114 |
| Ca3 | 75.40 | PPM | .3970 | 75.05 | 75.32 | 75.83 |
| Cd1 | .7524 | PPM | .0094 | .7605 | .7439 | .7508 |
| Co1 | .0703 | PPM | .0505 | .0764 | .1175 | .0169 |
| Cr4 | .0830 | PPM | .0374 | .0529 | .0712 | .1249 |
| Cu1 | 2.076 | PPM | .0572 | 2.095 | 2.012 | 2.122 |
| Fe3 | 38.42 | PPM | .1060 | 38.30 | 38.45 | 38.49 |
| K 1 | -3.857 | PPM | 10.81 | 6.089 | -15.35 | -2.302 |
| Mg4 | 26.25 | PPM | .3093 | 26.03 | 26.13 | 26.61 |
| Mn4 | .2706 | PPM | .0035 | .2732 | [illegible] | [illegible] |
| Na3 | -2.368 | PPM | .3445 | -2.276 | -2.665 | [illegible] |
| Ni3 | .0535 | PPM | .0108 | .0237 | .3303 | [illegible] |
| Sb1 | -1.727 | PPM | 1.569 | -3.531 | -.6810 | [illegible] |
| V 3 | .0307 | PPM | .0115 | .0616 | .0718 | .0489 |
| Zn3 | 274.5 | PPM | 1.264 | 273.7 | 273.9 | 276.0 |
| As2 | -.2630 | PPM | 1.029 | .5518 | -1.436 | .0203 |
| Pb1 | 4.404 | PPM | .8859 | 4.515 | 5.930 | 3.462 |
| Se1 | -1.522 | PPM | 1.685 | -2.106 | -2.637 | .3768 |

Best Available Copy

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: W1107309 | | | | Seq: 919 | | 21:45:39 10 Nov 1998 ICP | | |
| | | | | | | Dil. Weight 1.0000 Volume 50.000 | | |
| Ag1 | .3028 | PPM | .1723 | .5046 | .5021 | .3018 | | |
| Al3 | 1810. H | PPM | 7.185 | 1816. | 1809. | 1810. | | |
| Ba4 | 6428. H | PPM | 33.30 | 6436. | 6409. | 6407. | | |
| Be2 | -.0476 | PPM | .0040 | -.0518 | -.0474 | -.0437 | | |
| Ca3 | 4867. H | PPM | 28.79 | 4844. | 4856. | 4899. | | |
| Cd1 | .0329 | PPM | .0651 | -.0323 | .0980 | .0309 | | |
| Co1 | 2.118 | PPM | .0767 | 2.114 | 2.043 | 2.196 | | |
| Cr4 | 8390. H | PPM | 33.21 | 8397. | 8306. | 8358. | | |
| Cu1 | 5.321 | PPM | .0043 | 5.320 | 5.326 | 5.317 | | |
| Fe2 | 485.6 H | PPM | 1.660 | 485.6 | 484.0 | 487.3 | | |
| K 1 | 88.74 | PPM | 7.732 | 85.77 | 95.90 | 80.54 | | |
| Mg4 | 106.0 | PPM | 2.195 | 105.9 | 103.8 | 108.2 | | |
| Mn4 | 7.108 | PPM | .0697 | 7.051 | 7.038 | 7.186 | | |
| Na2 | 303.6 | PPM | 1.582 | 304.8 | 301.8 | 304.1 | | |
| Ni3 | 2.716 | PPM | .5634 | 2.505 | 2.268 | 3.276 | | |
| Sb1 | 23.75 | PPM | 2.260 | 20.23 | 23.43 | 24. | | |
| V 2 | 5.101 | PPM | .0780 | 5.140 | 5.152 | 5.011 | | |
| Zn3 | 27.66 | PPM | .2338 | 27.40 | 27.72 | 27. | | |
| As2 | 8.751 | PPM | 1.009 | 8.374 | 7.935 | 9.892 | | |
| Pb1 | -.3044 | PPM | 1.832 | -1.946 | 1.671 | -.6386 | | |
| Se1 | 1.469 | PPM | 1.234 | 2.332 | 2.030 | .0548 | | |
| *** Sample ID: W1107311 | | | | Seq: 920 | | 21:49:51 10 Nov 1998 ICP | | |
| | | | | | | Dil. Weight 1.0000 Volume 50.000 | | |
| Ag1 | .0592 | PPM | .0509 | .0418 | .1165 | .0193 | | |
| Al3 | .8944 | PPM | .6340 | 1.020 | .2071 | 1.456 | | |
| Ba4 | 5.203 | PPM | .0731 | 5.237 | 5.169 | 5.154 | | |
| Be2 | .0584 | PPM | .0114 | .0488 | .0555 | .0710 | | |
| Ca3 | 1.549 | PPM | .0440 | 1.599 | 1.516 | 1.532 | | |
| Cd1 | .7816 | PPM | .0181 | .7806 | .8002 | .7641 | | |
| Co1 | .0454 | PPM | .0985 | .0354 | -.0477 | .1485 | | |
| Cr4 | .4264 | PPM | .0870 | .5234 | .3554 | .4005 | | |
| Cu1 | 8.701 | PPM | .0257 | 8.672 | 8.720 | 8.712 | | |
| Fe2 | 6.608 | PPM | .0338 | 6.575 | 6.643 | 6.608 | | |
| K 1 | 4.695 | PPM | 3.165 | 2.978 | 8.347 | 2.759 | | |
| Mg4 | .5362 | PPM | .5855 | .9651 | -.1308 | .7743 | | |
| Mn4 | .0636 | PPM | .0210 | .0760 | .0394 | .0756 | | |
| Na2 | -1.438 | PPM | .8348 | -.5301 | -2.173 | -1.611 | | |
| Ni3 | .3153 | PPM | .3645 | .2767 | -.0285 | .6975 | | |
| Sb1 | -1.970 | PPM | 2.609 | .1213 | -1.138 | -4.694 | | |
| V 2 | .0801 | PPM | .0332 | .0325 | .1120 | .0457 | | |
| Zn3 | .3718 | PPM | .0728 | .4552 | .3207 | .3395 | | |
| As2 | -1.975 | PPM | 2.253 | .6210 | -3.123 | -3.423 | | |
| Pb1 | -.8235 | PPM | .3392 | -.8506 | -.4716 | -1.148 | | |
| Se1 | -.6426 | PPM | 1.957 | .3817 | -2.899 | .5898 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: W1108810 | | | | Seq: 921 | | 21:52:10 10 Nov 1998 ICP | | |
| | | | | | | Dil. Weight 1.0000 Volume 50.000 | | |
| Ag1 | .0094 | PPM | .0560 | .0248 | .1192 | .1243 | | |
| Al3 | 1.318 | PPM | .0963 | 1.208 | 1.389 | 1.356 | | |
| Ba4 | .0446 | PPM | .0163 | .0557 | .0347 | .0334 | | |
| Be2 | .0290 | PPM | .0195 | .0400 | .0404 | .0064 | | |
| Ca3 | .3499 | PPM | .1115 | .7438 | .9661 | .3400 | | |
| Cd1 | .3340 | PPM | .0392 | .3042 | .3785 | .3193 | | |
| Co1 | .0060 | PPM | .0839 | -.0375 | .0308 | .0748 | | |
| Cr4 | .0652 | PPM | .1322 | .0230 | .2134 | -.0407 | | |
| Cu1 | .3166 | PPM | .0632 | .2270 | .3915 | .3312 | | |
| Fe2 | 3.289 | PPM | .1025 | 3.376 | 3.176 | 3.314 | | |
| K 1 | 3.937 | PPM | 3.412 | 5.090 | 6.622 | .0976 | | |
| Mg4 | .0155 | PPM | .3426 | .1429 | .2762 | -.3726 | | |
| Mn4 | .0248 | PPM | .0176 | .0295 | .0396 | .0054 | | |
| Na2 | -1.628 | PPM | 1.176 | -2.305 | -2.309 | -.2695 | | |
| Ni3 | -.2036 | PPM | .4572 | -.6350 | .2236 | -.1674 | | |
| Sb1 | -3.304 | PPM | 1.055 | -2.915 | -2.499 | -4.499 | | |
| V 2 | -.0930 | PPM | .0487 | -.1490 | -.0687 | -.0613 | | |
| Zn3 | -.2120 | PPM | .0664 | -.1150 | -.2403 | -.2806 | | |
| As2 | -.3629 | PPM | 1.306 | .5963 | .1657 | -1.851 | | |
| Pb1 | -.4101 | PPM | 1.453 | .4354 | -2.088 | .4220 | | |
| Se1 | -2.745 | PPM | 1.033 | -3.937 | -2.111 | -2.187 | | |
| *** Sample ID: W1112003 | | | | Seq: 922 | | 21:55:29 10 Nov 1998 ICP | | |
| | | | | | | Dil. Weight 1.0000 Volume 50.000 | | |
| Ag1 | .1905 | PPM | .0377 | .1765 | .2332 | .1618 | | |
| Al3 | 1.062 | PPM | .7984 | .3297 | .9442 | 1.913 | | |
| Ba4 | .0162 | PPM | .0342 | .0208 | .0479 | -.0201 | | |
| Be2 | .0316 | PPM | .0108 | .0420 | .0323 | .0204 | | |
| Ca3 | .0052 | PPM | .1637 | -.0306 | -.1233 | .1895 | | |
| Cd1 | .0252 | PPM | .0404 | -.0016 | .0717 | .0056 | | |
| Co1 | .0548 | PPM | .0524 | .0657 | -.0426 | .1413 | | |
| Cr4 | .0317 | PPM | .0403 | .0569 | -.0148 | .0531 | | |
| Cu1 | .0125 | PPM | .0564 | -.0052 | -.0350 | .0776 | | |
| Fe2 | .7622 | PPM | .0864 | .8052 | .6627 | .8188 | | |
| K 1 | -1.068 | PPM | 4.051 | 2.152 | -5.617 | .2597 | | |
| Mg4 | .7154 | PPM | 1.101 | .4964 | -.2597 | 1.909 | | |
| Mn4 | .0064 | PPM | .0321 | -.0302 | .0196 | .0297 | | |
| Na2 | -3.034 | PPM | .6533 | -3.773 | -2.532 | -2.798 | | |
| Ni3 | -.1434 | PPM | .3062 | -.2924 | .2033 | -.3560 | | |
| Sb1 | -2.304 | PPM | 1.284 | -1.021 | -2.304 | -3.588 | | |
| V 2 | .0490 | PPM | .1731 | -.1508 | .1547 | .1431 | | |
| Zn3 | -.7844 | PPM | .0084 | -.7932 | -.7835 | -.7766 | | |
| As2 | -.7597 | PPM | 1.012 | -1.043 | .3643 | -1.600 | | |
| Pb1 | -1.216 | PPM | .1440 | -1.297 | -1.302 | -1.050 | | |
| Se1 | -1.038 | PPM | .3994 | -.6920 | -1.778 | -.7948 | | |

Folder: CLP1028 Page 53

23:42:15 10 Nov 1998 Protocol: CLP-2 Y IS STD

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: TC BLK | | | | Seq: 953 | | 23:42:15 10 Nov 1998 ICP | | |
| | | | 11/9/98 | | | | | |
| Ag1 | .0032 | PPM | .0004 | .0033 | .0035 | .0028 | | |
| Al3 | -.0132 | PPM | .0112 | -.0219 | -.0172 | -.0006 | | |
| Ba4 | .0036 | PPM | .0003 | .0037 | .0033 | .0039 | | |
| Be2 | .0004 | PPM | .0001 | .0005 | .0003 | .0003 | | |
| Ca3 | .0138 | PPM | .0016 | .0120 | .0146 | .0148 | | |
| Cd1 | .0004 | PPM | .0004 | -.0001 | .0007 | .0006 | | |
| Co1 | -.0001 | PPM | .0013 | .0011 | -.0015 | -.0000 | | |
| Cr4 | .0001 | PPM | .0003 | .0003 | -.0002 | .0003 | | |
| Cu1 | -.0002 | PPM | .0007 | .0001 | -.0010 | .0003 | | |
| Fe2 | .0132 | PPM | .0033 | .0165 | .0133 | .0098 | | |
| K 1 | .0736 | PPM | .2272 | .3336 | -.0870 | -.0258 | | |
| Mg4 | -.0044 | PPM | .0104 | -.0164 | .0013 | .0019 | | |
| Mn4 | .0007 | PPM | .0001 | .0006 | .0008 | .0008 | | |
| Na2 | 1098. H | PPM | 5.741 | 1104. | 1092. | 1097. | | |
| Ni3 | .0032 | PPM | .0013 | .0018 | .0042 | .0035 | | |
| Sb1 | -.1059 | PPM | .0234 | -.0971 | -.0362 | -.1325 | | |
| V 2 | -.0057 | PPM | .0010 | -.0060 | -.0046 | -.0066 | | |
| Zn3 | -.0146 | PPM | .0035 | -.0154 | -.0109 | -.0176 | | |
| As2 | -.0348 | PPM | .0129 | -.0425 | -.0419 | -.0199 | | |
| Pb1 | -.0327 | PPM | .0275 | -.0569 | -.0026 | -.0383 | | |
| Se1 | -.0410 | PPM | .0118 | -.0325 | -.0359 | -.0545 | | |

*** Check Standard: 6 Ck6 Seq: 954 23:45:36 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 104.4 | 1.305 | 1.250 | PPM | .0125 |
| Al3 | | 105.2 | 10.52 | 10.00 | PPM | .0881 |
| Ba4 | | 102.8 | 10.28 | 10.00 | PPM | .0704 |
| Be2 | | 105.0 | .2624 | .2500 | PPM | .0019 |
| Ca3 | | 108.6 | 27.14 | 25.00 | PPM | .2261 |
| Cd1 | H | 111.1 | 2.778 | 2.500 | PPM | .0234 |
| Co1 | | 107.9 | 2.698 | 2.500 | PPM | .0271 |
| Cr4 | | 107.0 | 1.070 | 1.000 | PPM | .0092 |
| Cu1 | | 104.8 | 1.310 | 1.250 | PPM | .0092 |
| Fe2 | | 106.8 | 5.340 | 5.000 | PPM | .0376 |
| K 1 | | 103.1 | 25.77 | 25.00 | PPM | .0770 |
| Mg4 | | 109.7 | 27.44 | 25.00 | PPM | .2335 |
| Mn4 | | 108.5 | 2.712 | 2.500 | PPM | .0256 |
| Na2 | | 103.6 | 25.90 | 25.00 | PPM | .1785 |
| Ni3 | | 108.7 | 2.717 | 2.500 | PPM | .0158 |
| Sb1 | | 105.8 | 5.292 | 5.000 | PPM | .0394 |
| V 2 | | 105.8 | 2.644 | 2.500 | PPM | .0217 |
| Zn3 | H | 113.4 | 2.834 | 2.500 | PPM | .0273 |
| As2 | | 106.6 | 5.331 | 5.000 | PPM | .0902 |
| Pb1 | | 109.1 | 5.457 | 5.000 | PPM | .0870 |
| Se1 | | 106.2 | 5.310 | 5.000 | PPM | .0996 |

Reran to verify SJP 11/10/98

CSY

Folder: CLP1000 Page 52

23:54:30 10 Nov 1998 Protocol: CLP-2 Y IS 550

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Peak Seq: 955 23:54:30 10 Nov 1998

XAp = 209 YAp = 124 Intensity = 3957513

*** Check Standard: 6 Ck6 Seq: 956 23:56:10 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 100.5 | 1.256 | 1.250 | PPM | .0046 |
| Al3 | | 100.6 | 10.06 | 10.00 | PPM | .0230 |
| Ba4 | | 98.82 | 9.882 | 10.00 | PPM | .0509 |
| Be2 | | 99.23 | .2481 | .2500 | PPM | .0007 |
| Ca3 | | 103.1 | 25.77 | 25.00 | PPM | .0508 |
| Cd1 | | 106.1 | 2.652 | 2.500 | PPM | .0053 |
| Co1 | | 104.3 | 2.606 | 2.500 | PPM | .0081 |
| Cr4 | | 103.0 | 1.030 | 1.000 | PPM | .0024 |
| Cu1 | | 99.45 | 1.243 | 1.250 | PPM | .0072 |
| Fe2 | | 102.2 | 5.108 | 5.000 | PPM | .0097 |
| K 1 | | 97.84 | 24.46 | 25.00 | PPM | .1479 |
| Mg4 | | 104.7 | 26.18 | 25.00 | PPM | .0479 |
| Mn4 | | 103.8 | 2.595 | 2.500 | PPM | .0095 |
| Na2 | | 97.22 | 24.31 | 25.00 | PPM | .1659 |
| Ni3 | | 105.1 | 2.627 | 2.500 | PPM | .0205 |
| Sb1 | | 104.3 | 5.014 | 5.000 | PPM | .1194 |
| V 3 | | 101.6 | 2.539 | 2.500 | PPM | .0066 |
| Zn3 | M | 110.2 | 2.754 | 2.500 | PPM | .0076 |
| As2 | | 101.4 | 5.068 | 5.000 | PPM | .0313 |
| Pb1 | | 105.2 | 5.260 | 5.000 | PPM | .0616 |
| Se1 | | 99.31 | 4.965 | 5.000 | PPM | .0562 |

23:59:31 10 Nov 1998 Protocol: CLP-2 Y IS SID

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 7 Ck7 Seq: 957 23:59:31 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 33.80 | .0034 | .0100 | PPM | .0022 |
| Al3 | | 47.05 | .0470 | .1000 | PPM | .0031 |
| Ba4 | | 50.96 | .0017 | .0033 | PPM | .0007 |
| Be2 | | -.1018 | -.0000 | .0027 | PPM | .0004 |
| Ca3 | | -7.926 | -.0041 | .0522 | PPM | .0025 |
| Cd1 | | 21.13 | .0011 | .0054 | PPM | .0007 |
| Co1 | | 11.53 | .0018 | .0153 | PPM | .0018 |
| Cr4 | | 17.97 | .0014 | .0078 | PPM | .0006 |
| Cu1 | | 1.004 | .0001 | .0027 | PPM | .0004 |
| Fe2 | | 24.85 | .0046 | .0186 | PPM | .0008 |
| K 1 | | 3.102 | .0155 | .5000 | PPM | .1999 |
| Mg4 | | 32.06 | .0303 | .0950 | PPM | .0094 |
| Mn4 | | -.3473 | -.0000 | .0024 | PPM | .0002 |
| Na2 | | -11.05 | -.0145 | .1308 | PPM | .0223 |
| Ni3 | | 9.391 | .0034 | .0360 | PPM | .0034 |
| Sb1 | | 9.676 | .0194 | .2000 | PPM | .0142 |
| V 2 | | -88.90 | -.0089 | .0100 | PPM | .0007 |
| Zn3 | | -63.07 | -.0126 | .0200 | PPM | .0029 |
| As2 | | -29.45 | -.0294 | .1000 | PPM | .0436 |
| Pb1 | | -32.03 | -.0320 | .1000 | PPM | .0130 |
| Se1 | | -21.38 | -.0214 | .1000 | PPM | .0107 |

*** Peak Seq: 958 00:01:12 11 Nov 1998

XAp = 210 YAp = 124 Intensity = 3949019

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: IC1108009 | | | | Seq: 959 | | 00:02:52 11 Nov 1998 ICP | | |
| UNSPIKED | | | | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0302 | PPM | .0309 | .0341 | .0590 | -.0024 | | |
| Al3 | .4169 | PPM | .0733 | .4743 | .4419 | .3344 | | |
| Ba4 | .2082 | PPM | .0031 | .2062 | .2118 | .2067 | | |
| Be2 | .0039 | PPM | .0032 | .0100 | .0053 | .0115 | | |
| Ca3 | 20.13 | PPM | .1848 | 20.00 | 20.05 | 20.34 | | |
| Cd1 | .4797 | PPM | .0121 | .4669 | .4812 | .4910 | | |
| Co1 | .0198 | PPM | .0165 | .0239 | .0017 | .0339 | | |
| Cr4 | .0265 | PPM | .0071 | .0207 | .0243 | .0344 | | |
| Cu1 | .0994 | PPM | .0075 | .1014 | .1057 | .0912 | | |
| Fe2 | 8.315 | PPM | .0979 | 8.224 | 8.302 | 8.419 | | |
| K 1 | 6.619 | PPM | .3975 | 6.368 | 6.411 | 7.077 | | |
| Mg4 | 4.603 | PPM | .0757 | 4.378 | 4.543 | 4.688 | | |
| Mn4 | .0766 | PPM | .0050 | .0734 | .0741 | .0824 | | |
| Na2 | 1384. H | PPM | 18.69 | 1367. | 1381. | 1404. | | |
| Ni3 | .0426 | PPM | .0686 | .0215 | .1193 | -.0130 | | |
| Sb1 | -.6193 | PPM | .6382 | -.2157 | -.2232 | -1.414 | | |
| V 2 | -.0238 | PPM | .0043 | -.0238 | -.0281 | -.0195 | | |
| Zn3 | 1.350 | PPM | .0484 | 1.296 | 1.363 | 1.391 | | |
| As2 | .0289 | PPM | .2248 | .2754 | -.0238 | -.1649 | | |
| Pb1 | -.0978 | PPM | .2452 | -.0533 | -.3616 | .1234 | | |
| Se1 | .0031 | PPM | .1859 | .0083 | -.1253 | .2464 | | |
| *** Sample ID: 06 MS | | | | Seq: 960 | | 00:06:13 11 Nov 1998 ICP | | |
| SPIKED | | | | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | 1.620 | PPM | .0570 | 1.630 | 1.545 | 1.755 | | |
| Al3 | 89.21 | PPM | 1.533 | 88.30 | 90.98 | 88.34 | | |
| Ba4 | 89.61 | PPM | 1.398 | 89.61 | 91.21 | 89.02 | | |
| Be2 | 9.095 | PPM | .1436 | 8.988 | 9.258 | 9.041 | | |
| Ca3 | 116.2 | PPM | 1.878 | 114.9 | 116.4 | 115.5 | | |
| Cd1 | 10.34 | PPM | .1571 | 10.23 | 10.52 | 10.26 | | |
| Co1 | 9.452 | PPM | .1435 | 9.330 | 9.617 | 9.359 | | |
| Cr4 | 9.399 | PPM | .1321 | 9.286 | 9.544 | 9.365 | | |
| Cu1 | 9.076 | PPM | .1757 | 8.936 | 9.278 | 8.983 | | |
| Fe2 | 9.932 | PPM | .1306 | 9.898 | 10.08 | 9.822 | | |
| K 1 | 450.9 | PPM | 7.560 | 445.1 | 459.4 | 448.1 | | |
| Mg4 | 99.12 | PPM | 1.962 | 98.11 | 101.4 | 97.87 | | |
| Mn4 | 9.444 | PPM | .1670 | 9.304 | 9.629 | 9.399 | | |
| Na2 | 1847. H | PPM | 33.18 | 1823. | 1885. | 1832. | | |
| Ni3 | 9.559 | PPM | .0960 | 9.541 | 9.663 | 9.473 | | |
| Sb1 | 9.092 | PPM | .9020 | 8.064 | 9.461 | 9.752 | | |
| V 2 | 9.132 | PPM | .1694 | 9.056 | 9.375 | 9.115 | | |
| Zn3 | 11.23 | PPM | .1413 | 11.17 | 11.39 | 11.13 | | |
| As2 | 9.534 | PPM | .4347 | 9.130 | 10.02 | 9.403 | | |
| Pb1 | 9.174 | PPM | .3199 | 9.154 | 9.504 | 8.865 | | |
| Se1 | 9.070 | PPM | .2004 | 8.939 | 9.130 | 9.191 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** %Rec. ID: 09 MS Seq: 961 00:06:13 11 Nov 1998 ICP

Spikes =1 Unspiked =1

| | Spike | | %Rec. | Avg(U) | SD(U) | Avg(S) | SD(S) |
|---|---|---|---|---|---|---|---|
| Ag1 | .2000 | PPM | 89.50 | .0030 | .0000 | .1320 | .0000 |
| Al3 | 10.00 | PPM | 88.79 | .0417 | .0000 | 8.921 | .0000 |
| Ba4 | 10.00 | PPM | 89.41 | .0208 | .0000 | 8.961 | .0000 |
| Be2 | 1.000 | PPM | 90.87 | .0009 | .0000 | .9095 | .0000 |
| Ca3 | 10.00 | PPM | 96.11 | 2.013 | .0000 | 11.62 | .0000 |
| Cd1 | 1.000 | PPM | 98.58 | .0480 | .0000 | 1.034 | .0000 |
| Co1 | 1.000 | PPM | 94.32 | .0020 | .0000 | .9452 | .0000 |
| Cr4 | 1.000 | PPM | 93.72 | .0026 | .0000 | .9399 | .0000 |
| Cu1 | 1.000 | PPM | 89.76 | .0099 | .0000 | .9076 | .0000 |
| Fe2 | 1.000 L | PPM | 16.18 | .8315 | .0000 | .9932 | .0000 |
| K 1 | 50.00 | PPM | 88.35 | .6619 | .0000 | 43.09 | .0000 |
| Mg4 | 10.00 | PPM | 94.52 | .4603 | .0000 | 9.912 | .0000 |
| Mn4 | 1.000 | PPM | 93.67 | .0077 | .0000 | .9444 | .0000 |
| Na2 | 50.00 | PPM | 92.48 | 138.4 | .0000 | 184.7 | .0000 |
| Ni3 | 1.000 | PPM | 95.16 | .0043 | .0000 | .9559 | .0000 |
| Sb1 | 1.000 | PPM | 97.12 | -.0619 | .0000 | .9092 | .0000 |
| V 2 | 1.000 | PPM | 92.06 | -.0024 | .0000 | .9182 | .0000 |
| Zn3 | 1.000 | PPM | 96.80 | .1350 | .0000 | 1.123 | .0000 |
| As2 | 1.000 | PPM | 95.05 | .0029 | .0000 | .9534 | .0000 |
| Pb1 | 1.000 | PPM | 92.72 | -.0098 | .0000 | .9174 | .0000 |
| Se1 | 1.000 | PPM | 90.07 | .0063 | .0000 | .9070 | .0000 |

*** Sample ID: TC1100812 Seq: 962 00:09:38 11 Nov 1998 ICP

Dil. Weight 5.0000 Volume 50.000

| | | | | | | |
|---|---|---|---|---|---|---|
| Ag1 | .0248 | PPM | .0070 | .0261 | .0311 | .0173 |
| Al3 | .1218 | PPM | .0070 | .1196 | .1162 | .1296 |
| Ba4 | .0527 | PPM | .0058 | .0526 | .0585 | .0470 |
| Be2 | .0104 | PPM | .0010 | .0115 | .0096 | .0100 |
| Ca3 | 326.2 | PPM | 1.850 | 326.8 | 327.6 | 324.1 |
| Cd1 | .0095 | PPM | .0108 | .0029 | .0020 | .0036 |
| Co1 | -.0107 | PPM | .0149 | -.0024 | -.0159 | .0061 |
| Cr4 | .0101 | PPM | .0041 | .0102 | .0060 | .0141 |
| Cu1 | .0274 | PPM | .0160 | .0129 | .0446 | .0248 |
| Fe2 | 1.754 | PPM | .0195 | 1.745 | 1.776 | 1.741 |
| K 1 | 4.203 | PPM | 1.186 | 4.432 | 5.257 | 2.919 |
| Mg4 | 200.8 | PPM | .7363 | 200.8 | 201.5 | 200.0 |
| Mn4 | .6626 | PPM | .0091 | .6699 | .6524 | .6654 |
| Na2 | 1395. H | PPM | 9.483 | 1390. | 1406. | 1390. |
| Ni3 | .0653 | PPM | .0432 | .1331 | .0491 | .0736 |
| Sb1 | -.9200 | PPM | .2676 | -.7042 | -1.219 | -.8365 |
| V 2 | -.0496 | PPM | .0266 | -.0356 | -.0329 | -.0803 |
| Zn3 | -.0077 | PPM | .0156 | -.0200 | .0098 | -.0130 |
| As2 | -.1302 | PPM | .1320 | -.0721 | -.0373 | -.2813 |
| Pb1 | -.2205 | PPM | .1029 | -.1105 | -.2366 | -.3143 |
| Se1 | -.2050 | PPM | .3664 | -.5623 | .1700 | -.2226 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: TC1110501 | | | | Seq: 963 | | 00:13:00 11 Nov 1998 ICP | | |
| | | | | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0279 | PPM | .0069 | .0316 | .0323 | .0199 | | |
| Al3 | .5114 | PPM | .2264 | .6182 | .2492 | .6669 | | |
| Ba4 | 7.782 | PPM | .0606 | 7.850 | 7.734 | 7.763 | | |
| Be2 | .0103 | PPM | .0032 | .0117 | .0066 | .0127 | | |
| Ca3 | 10.18 | PPM | .1086 | 10.29 | 10.08 | 10.16 | | |
| Cd1 | .0195 | PPM | .0094 | .0303 | .0152 | .0130 | | |
| Co1 | .0132 | PPM | .0023 | .0111 | .0129 | .0157 | | |
| Cr4 | .0087 | PPM | .0116 | .0060 | .0215 | -.0013 | | |
| Cu1 | .0154 | PPM | .0242 | .0198 | -.0107 | .0371 | | |
| Fe2 | 44.14 | PPM | .3031 | 44.46 | 43.85 | 44.13 | | |
| K 1 | 1.231 | PPM | 1.499 | 1.183 | 2.753 | -.2440 | | |
| Mg4 | .8027 | PPM | .0847 | .8993 | .7674 | .7414 | | |
| Mn4 | .1297 | PPM | .0024 | .1323 | .1292 | .1275 | | |
| Na2 | 1354. H | PPM | 12.08 | 1367. | 1343. | 1352. | | |
| Ni3 | .0088 | PPM | .0137 | .0212 | -.0059 | .0110 | | |
| Sb1 | .0698 | PPM | .5570 | -.1432 | .7019 | -.3493 | | |
| V 2 | -.0575 | PPM | .0065 | -.0636 | -.0508 | -.0581 | | |
| Zn3 | 351.0 | PPM | 2.191 | 353.3 | 348.9 | 350.7 | | |
| As2 | .1415 | PPM | .4061 | -.1467 | .6060 | -.0347 | | |
| Pb1 | -.0238 | PPM | .1537 | .0659 | .0650 | -.2008 | | |
| Se1 | -.2734 | PPM | .2744 | -.5409 | -.1056 | -.0537 | | |
| *** Sample ID: TC1110601 | | | | Seq: 964 | | 00:16:22 11 Nov 1998 ICP | | |
| | | | | | | Dil. Weight 1.0000 Volume 50.000 | | |
| Ag1 | .2236 | PPM | .0570 | .1699 | .2329 | .2836 | | |
| Al3 | 2.718 | PPM | 1.211 | 1.735 | 4.070 | 2.349 | | |
| Ba4 | .9326 | PPM | .0162 | .9179 | .9300 | .9499 | | |
| Be2 | .0706 | PPM | .0121 | .0728 | .0815 | .0576 | | |
| Ca3 | 542.8 | PPM | 6.230 | 536.0 | 548.2 | 544.2 | | |
| Cd1 | .0710 | PPM | .0312 | .0353 | .0852 | .0927 | | |
| Co1 | .0519 | PPM | .0529 | .0025 | .0454 | .1077 | | |
| Cr4 | .9552 | PPM | .0548 | .9331 | 1.018 | .9149 | | |
| Cu1 | .3643 | PPM | .0747 | .3415 | .3038 | .4478 | | |
| Fe2 | 125.8 | PPM | 1.513 | 124.1 | 127.1 | 126.3 | | |
| K 1 | 6.124 | PPM | 3.838 | 2.942 | 10.39 | 5.043 | | |
| Mg4 | 49.64 | PPM | .5210 | 49.37 | 50.24 | 49.30 | | |
| Mn4 | 1.411 | PPM | .0177 | 1.393 | 1.429 | 1.412 | | |
| Na2 | 6801. H | PPM | 78.57 | 6723. | 6880. | 6802. | | |
| Ni3 | .3067 | PPM | .3431 | -.0185 | .2733 | .6653 | | |
| Sb1 | -4.584 | PPM | 3.096 | -1.029 | -6.028 | -6.693 | | |
| V 2 | -.1827 | PPM | .1495 | -.2957 | -.0131 | -.2392 | | |
| Zn3 | 14.21 | PPM | .2237 | 13.96 | 14.29 | 14.38 | | |
| As2 | -.0268 | PPM | 1.268 | 1.188 | .0586 | -1.343 | | |
| Pb1 | .6855 | PPM | 1.679 | 2.514 | -.7872 | .3292 | | |
| Se1 | -2.561 | PPM | 1.773 | -3.369 | -.5285 | -3.786 | | |

Folder: CLP1028
Protocol: CLP-2 Y IS :SD

00:26:28 11 Nov 1998

Seq: 967 00:26:28 11 Nov 1998 ICP
Dil. Weight 1.0000 Volume 50.000

*** Sample ID: 03 MS

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| SPIKED | | | | | | | | |
| Ag1 | 9.780 | H PPM | .1900 | 9.961 | 9.582 | 9.797 | | |
| Al3 | 525.7 | PPM | 4.930 | 531.3 | 522.1 | 523.7 | | |
| Ba4 | 1545. | H PPM | 11.21 | 1558. | 1537. | 1540. | | |
| Be2 | 48.78 | PPM | .3718 | 49.19 | 48.68 | 48.47 | | |
| Ca3 | 961.4 | PPM | 8.575 | 991.2 | 978.2 | 975.0 | | |
| Cd1 | 50.38 | H PPM | .5099 | 51.46 | 50.67 | 50.51 | | |
| Co1 | 49.85 | PPM | 1.005 | 51.00 | 49.14 | 49.40 | | |
| Cr4 | 55.19 | H PPM | .3864 | 55.64 | 55.03 | 54.92 | | |
| Cu1 | 72.52 | H PPM | .5564 | 73.16 | 72.13 | 72.27 | | |
| Fe2 | 668.1 | H PPM | 5.072 | 673.9 | 665.7 | 664.6 | | |
| K 1 | 2410. | H PPM | 14.13 | 2426. | 2406. | 2399. | | |
| Mg4 | 516.9 | H PPM | 3.535 | 521.0 | 514.9 | 514.8 | | |
| Mn4 | 70.23 | PPM | .6171 | 70.94 | 69.90 | 69.85 | | |
| Na2 | 2808. | H PPM | 24.01 | 2836. | 2794. | 2795. | | |
| Ni3 | 56.69 | H PPM | .4254 | 57.16 | 56.33 | 56.58 | | |
| Sb1 | 45.00 | PPM | .6695 | 45.58 | 44.00 | 45.42 | | |
| V 2 | 54.34 | PPM | .6571 | 55.10 | 53.99 | 53.93 | | |
| Zn3 | 185.0 | PPM | 1.846 | 186.9 | 185.0 | 183.2 | | |
| As2 | 51.17 | PPM | 1.380 | 52.74 | 50.62 | 50.14 | | |
| Pb1 | 2735. | H PPM | 23.73 | 2748. | 2733. | 2702. | | |
| Se1 | 49.47 | PPM | .5493 | 49.63 | 48.87 | 49.93 | | |

Seq: 969 00:26:28 11 Nov 1998 ICP

*** %Rec. ID: 03 MS

Spikes =1 Unspiked =1

| | Spike | | %Rec. | Avg(U) | SD(U) | Avg(S) | SD(S) |
|---|---|---|---|---|---|---|---|
| Ag1 | .2000 | PPM | 97.06 | .0015 | .0000 | .1956 | .0000 |
| Al3 | 10.00 | PPM | 96.95 | .8197 | .0000 | 10.51 | .0000 |
| Ba4 | 10.00 | PPM | 104.8 | 20.42 | .0000 | 30.90 | .0000 |
| Be2 | 1.000 | PPM | 97.39 | .0017 | .0000 | .9755 | .0000 |
| Ca3 | 10.00 | PPM | 101.8 | 9.444 | .0000 | 19.63 | .0000 |
| Cd1 | 1.000 | PPM | 100.5 | .0122 | .0000 | 1.018 | .0000 |
| Co1 | 1.000 | PPM | 99.20 | .0049 | .0000 | .9969 | .0000 |
| Cr4 | 1.000 | PPM | 99.34 | .1105 | .0000 | 1.104 | .0000 |
| Cu1 | 1.000 | PPM | 99.49 | .4554 | .0000 | 1.450 | .0000 |
| Fe2 | 1.000 | H PPM | 182.3 | 11.54 | .0000 | 13.36 | .0000 |
| K 1 | 50.00 | PPM | 95.44 | .4826 | .0000 | 48.20 | .0000 |
| Mg4 | 10.00 | PPM | 97.38 | .5998 | .0000 | 10.34 | .0000 |
| Mn4 | 1.000 | PPM | 100.9 | .3953 | .0000 | 1.405 | .0000 |
| Na2 | 50.00 | PPM | 100.3 | 6.020 | .0000 | 56.16 | .0000 |
| Ni3 | 1.000 | PPM | 99.04 | .1435 | .0000 | 1.134 | .0000 |
| Sb1 | 1.000 | PPM | 93.17 | -.0318 | .0000 | .3999 | .0000 |
| V 2 | 1.000 | PPM | 100.6 | .0805 | .0000 | 1.087 | .0000 |
| Zn3 | 1.000 | PPM | 105.3 | 2.648 | .0000 | 3.701 | .0000 |
| As2 | 1.000 | PPM | 100.6 | .0177 | .0000 | 1.023 | .0000 |
| Pb1 | 1.000 | H PPM | 313.6 | 51.42 | .0000 | 54.56 | .0000 |
| Se1 | 1.000 | PPM | 100.5 | -.0154 | .0000 | .9895 | .0000 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: 701105603 | | | | Seq: 969 | | 00:29:53 11 Nov 1998 ICP | | |
| | | | MD21900564 | | | Oil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0323 | PPM | .0262 | .0106 | .0615 | .0250 | | |
| Al3 | 1.671 | PPM | .0443 | 1.606 | 1.466 | 1.941 | | |
| Ba4 | .3481 | PPM | .0023 | .3455 | .3500 | .3488 | | |
| Be2 | .0116 | PPM | .0015 | .0110 | .0133 | .0105 | | |
| Ca3 | 18.87 | PPM | .0599 | 18.83 | 18.83 | 18.94 | | |
| Cd1 | .0118 | PPM | .0061 | .0138 | .0086 | .0079 | | |
| Co1 | -.0059 | PPM | .0033 | .0006 | -.0155 | -.0029 | | |
| Cr4 | -.0027 | PPM | .0063 | -.0063 | .0040 | -.0038 | | |
| Cu1 | .0037 | PPM | .0057 | .0072 | .0068 | .0171 | | |
| Fe2 | .9063 | PPM | .0158 | .8947 | .9243 | .8998 | | |
| K 1 | 4.814 | PPM | 1.689 | 4.847 | 6.487 | 3.109 | | |
| Mg4 | 3.814 | PPM | .1724 | 3.964 | 3.625 | 3.853 | | |
| Mn4 | .4164 | PPM | .0019 | .4144 | .4181 | .4169 | | |
| Na2 | 1323. H | PPM | 5.302 | 1325. | 1317. | 1327. | | |
| Ni3 | -.0029 | PPM | .0765 | -.0089 | .0617 | -.0400 | | |
| Sb1 | -1.026 | PPM | .3781 | -.8395 | -.7517 | -1.457 | | |
| V 2 | -.0344 | PPM | .0173 | -.0371 | -.0159 | -.0502 | | |
| Zn3 | -.0763 | PPM | .0030 | -.0749 | -.0798 | -.0743 | | |
| As2 | -.0743 | PPM | .4017 | .2119 | .0089 | -.5335 | | |
| Pb1 | -.1674 | PPM | .3277 | -.4257 | .0039 | -.0804 | | |
| Se1 | -.3266 | PPM | .3263 | .1286 | -.2695 | -.5189 | | |
| *** Sample ID: ACID BLK | | | | Seq: 970 | | 00:33:16 11 Nov 1998 ICP | | |
| Ag1 | .0044 | PPM | .0015 | .0060 | .0030 | .0043 | | |
| Al3 | -.0057 | PPM | .0125 | .0081 | -.0133 | -.0089 | | |
| Ba4 | .0006 | PPM | .0002 | .0004 | .0008 | .0006 | | |
| Be2 | .0012 | PPM | .0002 | .0012 | .0010 | .0014 | | |
| Ca3 | -.0131 | PPM | .0023 | -.0147 | -.0142 | -.0104 | | |
| Cd1 | .0006 | PPM | .0002 | .0003 | .0006 | .0008 | | |
| Co1 | -.0023 | PPM | .0016 | -.0008 | -.0041 | -.0019 | | |
| Cr4 | .0008 | PPM | .0005 | .0006 | .0005 | .0013 | | |
| Cu1 | .0016 | PPM | .0007 | .0013 | .0012 | .0025 | | |
| Fe2 | .0044 | PPM | .0014 | .0030 | .0058 | .0046 | | |
| K 1 | -.1052 | PPM | .1456 | -.1212 | -.2422 | -.0476 | | |
| Mg4 | -.0079 | PPM | .0139 | .0048 | -.0057 | -.0227 | | |
| Mn4 | .0000 | PPM | .0004 | .0001 | -.0004 | .0003 | | |
| Na2 | -.0136 | PPM | .0194 | -.0063 | -.0035 | -.0409 | | |
| Ni3 | .0068 | PPM | .0099 | .0165 | -.0033 | .0072 | | |
| Sb1 | -.0532 | PPM | .0478 | -.1038 | -.0468 | -.0089 | | |
| V 2 | .0029 | PPM | .0016 | .0003 | .0035 | .0027 | | |
| Zn3 | -.0153 | PPM | .0006 | -.0160 | -.0150 | -.0149 | | |
| As2 | -.0062 | PPM | .0218 | -.0233 | -.0494 | -.0060 | | |
| Pb1 | -.0276 | PPM | .0452 | -.0032 | -.0793 | .0047 | | |
| Se1 | -.0337 | PPM | .0266 | -.0613 | -.0049 | -.0357 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 6 Ck6 Seq: 971 00:36:37 11 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 98.44 | 1.230 | 1.250 | PPM | .0041 |
| Al3 | | 99.23 | 9.923 | 10.00 | PPM | .0140 |
| Ba4 | | 96.53 | 9.653 | 10.00 | PPM | .0257 |
| Be2 | | 98.71 | .2468 | .2500 | PPM | .0016 |
| Ca3 | | 103.2 | 25.80 | 25.00 | PPM | .0412 |
| Cd1 | | 105.0 | 2.649 | 2.500 | PPM | .0060 |
| Co1 | | 102.0 | 2.551 | 2.500 | PPM | .0027 |
| Cr4 | | 101.5 | 1.015 | 1.000 | PPM | .0056 |
| Cu1 | | 98.75 | 1.234 | 1.250 | PPM | .0005 |
| Fe2 | | 101.2 | 5.060 | 5.000 | PPM | .0136 |
| K 1 | | 96.01 | 24.00 | 25.00 | PPM | .1992 |
| Mg4 | | 104.0 | 25.99 | 25.00 | PPM | .0275 |
| Mn4 | | 102.4 | 2.560 | 2.500 | PPM | .0040 |
| Na2 | | 96.91 | 24.23 | 25.00 | PPM | .0975 |
| Ni3 | | 101.9 | 2.549 | 2.500 | PPM | .0063 |
| Sb1 | | 98.78 | 4.939 | 5.000 | PPM | .0794 |
| V 2 | | 99.17 | 2.479 | 2.500 | PPM | .0103 |
| Zn3 | | 107.0 | 2.675 | 2.500 | PPM | .0086 |
| As2 | | 100.4 | 5.020 | 5.000 | PPM | .0173 |
| Pb1 | | 103.5 | 5.174 | 5.000 | PPM | .0448 |
| Se1 | | 100.1 | 5.005 | 5.000 | PPM | .1040 |

*** Peak Seq: 972 00:39:18 11 Nov 1998

XAp = 209 YAp = 124 Intensity = 3947076

Line Conc. Units SD/RSD 1 2 3 4 5

*** Check Standard: 7 Ck7 Seq: 973 00:39:58 11 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 46.72 | .0047 | .0100 | PPM | .0017 |
| Al3 | | 36.17 | .0362 | .1000 | PPM | .0115 |
| Ba4 | | 30.35 | .0010 | .0033 | PPM | .0002 |
| Be2 | | -8.639 | -.0002 | .0027 | PPM | .0004 |
| Ca3 | | -12.79 | -.0067 | .0522 | PPM | .0018 |
| Cd1 | | 26.99 | .0015 | .0054 | PPM | .0014 |
| Co1 | | 1.495 | .0002 | .0153 | PPM | .0009 |
| Cr4 | | 18.41 | .0014 | .0078 | PPM | .0012 |
| Cu1 | | -.7252 | -.0001 | .0087 | PPM | .0012 |
| Fe2 | | 16.86 | .0031 | .0186 | PPM | .0013 |
| K 1 | | 11.38 | .0569 | .5000 | PPM | .0477 |
| Mg4 | | 18.45 | .0177 | .0960 | PPM | .0197 |
| Mn4 | | -9.271 | -.0002 | .0024 | PPM | .0001 |
| Na2 | | -33.79 | -.0442 | .1308 | PPM | .0272 |
| Ni3 | | 11.25 | .0040 | .0360 | PPM | .0054 |
| Sb1 | | -.7029 | -.0014 | .2000 | PPM | .0252 |
| V 2 | | -136.4 | -.0136 | .0100 | PPM | .0027 |
| Zn3 | | -82.52 | -.0165 | .0200 | PPM | .0011 |
| As2 | | -19.35 | -.0193 | .1000 | PPM | .0127 |
| Pb1 | | -33.84 | -.0338 | .1000 | PPM | .0214 |
| Se1 | | -13.46 | -.0135 | .1000 | PPM | .0386 |

*** Peak Seq: 974 00:41:38 11 Nov 1998

XAp = 210 YAp = 124 Intensity = 3908201

*** Sample ID: TC1106101 Seq: 975 00:43:18 11 Nov 1998 ICP
MD49980140 Dil. Weight 5.0000 Volume 50.000

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| Ag1 | .0035 | PPM | .0158 | .0115 | .0414 | .0175 | | |
| Al3 | .4101 | PPM | .0259 | .3930 | .4126 | .4346 | | |
| Ba4 | .4544 | PPM | .0076 | .4471 | .4623 | .4539 | | |
| Be2 | .0042 | PPM | .0035 | .0081 | .0011 | .0036 | | |
| Ca3 | 17.22 | PPM | .1527 | 17.04 | 17.28 | 17.33 | | |
| Cd1 | .0267 | PPM | .0092 | .0372 | .0229 | .0201 | | |
| Co1 | .0056 | PPM | .0239 | .0310 | -.0164 | .0023 | | |
| Cr4 | .0027 | PPM | .0028 | .0054 | .0029 | -.0002 | | |
| Cu1 | .0083 | PPM | .0093 | .0065 | .0184 | .0001 | | |
| Fe2 | .2171 | PPM | .0049 | .2119 | .2215 | .2178 | | |
| K 1 | 5.753 | PPM | 1.302 | 4.249 | 6.485 | 6.523 | | |
| Mg4 | 2.565 | PPM | .0077 | 2.335 | 2.739 | 2.620 | | |
| Mn4 | 2.513 | PPM | .0451 | 2.461 | 2.535 | 2.543 | | |
| Na2 | 1260. H | PPM | 12.30 | 1246. | 1264. | 1270. | | |
| Ni3 | -.0182 | PPM | .0819 | -.0386 | .0720 | -.0800 | | |
| Sb1 | -.3687 | PPM | .0254 | -.4130 | -.3738 | -.3742 | | |
| V 2 | -.0692 | PPM | .0181 | -.0594 | -.0581 | -.0901 | | |
| Zn3 | 13.77 | PPM | .0665 | 13.67 | 13.83 | 13.81 | | |
| As2 | -.2633 | PPM | .0570 | -.2686 | -.3175 | -.2038 | | |
| Pb1 | -.2861 | PPM | .0215 | -.0300 | -.4115 | -.4168 | | |
| Se1 | -.1740 | PPM | .4815 | -.4920 | -.4811 | .3809 | | |

*** Sample ID: TC1107801 Seq: 976 00:46:36 11 Nov 1998 ICP
MD49980141 Dil. Weight 5.0000 Volume 50.000

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| Ag1 | .0004 | PPM | .0220 | .0457 | .0057 | .0098 | | |
| Al3 | .8768 | PPM | .1656 | 1.059 | .8370 | .7348 | | |
| Ba4 | 1.355 | PPM | .0039 | 1.351 | 1.356 | 1.358 | | |
| Be2 | .0055 | PPM | .0008 | .0062 | .0058 | .0047 | | |
| Ca3 | 160.4 | PPM | .9757 | 160.5 | 159.4 | 161.3 | | |
| Cd1 | .0590 | PPM | .0043 | .0540 | .0613 | .0617 | | |
| Co1 | .0372 | PPM | .0224 | .0175 | .0516 | .0325 | | |
| Cr4 | .0060 | PPM | .0058 | .0128 | .0026 | .0027 | | |
| Cu1 | .0285 | PPM | .0115 | .0198 | .0416 | .0240 | | |
| Fe2 | .6972 | PPM | .0115 | .6997 | .7073 | .6847 | | |
| K 1 | 7.030 | PPM | 1.930 | 5.368 | 5.965 | 9.258 | | |
| Mg4 | 9.316 | PPM | .1171 | 9.182 | 9.373 | 9.394 | | |
| Mn4 | 5.242 | PPM | .0245 | 5.244 | 5.216 | 5.265 | | |
| Na2 | 1256. H | PPM | 6.827 | 1257. | 1249. | 1263. | | |
| Ni3 | .1547 | PPM | .0108 | .1424 | .1529 | .1587 | | |
| Sb1 | -.5765 | PPM | .5139 | -.1117 | -1.128 | -.4896 | | |
| V 2 | -.0622 | PPM | .0257 | -.0327 | -.0805 | -.0732 | | |
| Zn3 | 201.1 | PPM | 1.191 | 201.1 | 199.8 | 202.2 | | |
| As2 | .1016 | PPM | .1815 | .1754 | -.1051 | .2347 | | |
| Pb1 | -.1899 | PPM | .3436 | -.4940 | .1829 | -.2586 | | |
| Se1 | -.3300 | PPM | .1373 | -.3952 | -.1719 | -.4189 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: TC1107800 | | | | Seq: 977 | | 00:49:54 11 Nov 1998 ICP | | |
| | | | MD49980142 | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0390 | PPM | .0168 | .0531 | .0204 | .0437 | | |
| Al3 | .2746 | PPM | .1316 | .4594 | .1547 | .2106 | | |
| Ba4 | .6897 | PPM | .0074 | .6979 | .6835 | .6876 | | |
| Be2 | .0027 | PPM | .0044 | -.0014 | .0074 | .0022 | | |
| Ca3 | 129.4 | PPM | .7409 | 130.3 | 129.0 | 128.9 | | |
| Cd1 | .0723 | PPM | .0070 | .0788 | .0731 | .0649 | | |
| Co1 | -.0096 | PPM | .0310 | .0168 | -.0018 | -.0438 | | |
| Cr4 | .0027 | PPM | .0021 | .0019 | .0051 | .0013 | | |
| Cu1 | .1316 | PPM | .0091 | .1212 | .1385 | .1351 | | |
| Fe2 | .2043 | PPM | .0174 | .2165 | .2121 | .1844 | | |
| K 1 | 4.655 | PPM | 1.016 | 3.606 | 5.634 | 4.726 | | |
| Mg4 | 17.45 | PPM | .2325 | 17.68 | 17.22 | 17.46 | | |
| Mn4 | .7779 | PPM | .0092 | .7881 | .7755 | .7701 | | |
| Na2 | 1228. H | PPM | 8.126 | 1238. | 1225. | 1222. | | |
| Ni3 | .0111 | PPM | .1234 | -.0135 | .1451 | -.0981 | | |
| Sb1 | -.2328 | PPM | .5050 | -.5313 | .2963 | -.6154 | | |
| V 2 | -.0739 | PPM | .0279 | -.0759 | -.0451 | -.1008 | | |
| Zn3 | 394.0 | PPM | 2.172 | 396.2 | 393.9 | 391.9 | | |
| As2 | -.1883 | PPM | .3431 | .2009 | -.3186 | -.4471 | | |
| Pb1 | .4749 | PPM | .7908 | 1.381 | -.2995 | .4432 | | |
| Se1 | .0709 | PPM | .4064 | .4758 | -.3141 | -.0991 | | |
| *** Sample ID: TC1107901 | | | | Seq: 978 | | 00:53:12 11 Nov 1998 ICP | | |
| | | | MD49980143 | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0035 | PPM | .0158 | .0185 | -.0130 | .0052 | | |
| Al3 | 2.467 | PPM | .0986 | 2.522 | 2.536 | 2.353 | | |
| Ba4 | .6599 | PPM | .0102 | .6712 | .6569 | .6515 | | |
| Be2 | .0051 | PPM | .0015 | .0038 | .0068 | .0049 | | |
| Ca3 | 111.5 | PPM | .6651 | 112.3 | 111.6 | 110.6 | | |
| Cd1 | .0806 | PPM | .0060 | .0869 | .0800 | .0749 | | |
| Co1 | .0006 | PPM | .0224 | -.0207 | .0240 | -.0016 | | |
| Cr4 | .0030 | PPM | .0113 | .0139 | -.0087 | .0037 | | |
| Cu1 | .0331 | PPM | .0188 | .0390 | .0983 | .0621 | | |
| Fe2 | 3.283 | PPM | .0180 | 3.288 | 3.298 | 3.263 | | |
| K 1 | 7.258 | PPM | 1.705 | 9.219 | 6.428 | 6.127 | | |
| Mg4 | 16.47 | PPM | .3259 | 16.65 | 16.66 | 16.09 | | |
| Mn4 | 1.775 | PPM | .0218 | 1.781 | 1.793 | 1.751 | | |
| Na2 | 1168. H | PPM | 10.68 | 1177. | 1171. | 1156. | | |
| Ni3 | .0526 | PPM | .0913 | .1494 | .0403 | -.0319 | | |
| Sb1 | -.1605 | PPM | .4339 | .0587 | -.6603 | .1201 | | |
| V 2 | -.0679 | PPM | .0168 | -.0489 | -.0743 | -.0805 | | |
| Zn3 | 328.0 | PPM | 2.682 | 330.4 | 328.4 | 325.1 | | |
| As2 | .0612 | PPM | .4220 | .4576 | -.3324 | .1085 | | |
| Pb1 | .0780 | PPM | .2378 | -.1727 | .1064 | .3004 | | |
| Se1 | -.1151 | PPM | .2560 | .1303 | -.2717 | -.2540 | | |

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00:56:30 11 Nov 1998 Protocol: CLP-2 Y IS 550

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: ACID BLK | | | | Seq: 979 | | 00:56:30 11 Nov 1998 ICP | | |
| Ag1 | .0036 | PPM | .0025 | .0042 | .0058 | .0009 | | |
| Al3 | -.0095 | PPM | .0106 | .0001 | -.0076 | -.0209 | | |
| Ba4 | -.0001 | PPM | .0002 | -.0001 | -.0003 | .0001 | | |
| Be2 | .0000 | PPM | .0003 | -.0003 | .0000 | .0004 | | |
| Ca3 | -.0147 | PPM | .0019 | -.0127 | -.0165 | -.0148 | | |
| Cd1 | -.0002 | PPM | .0011 | -.0014 | .0008 | .0001 | | |
| Co1 | -.0023 | PPM | .0018 | -.0004 | -.0041 | -.0023 | | |
| Cr4 | .0001 | PPM | .0007 | .0007 | .0003 | -.0007 | | |
| Cu1 | .0015 | PPM | .0008 | .0007 | .0016 | .0023 | | |
| Fe2 | .0016 | PPM | .0019 | -.0003 | .0034 | .0017 | | |
| K 1 | .1415 | PPM | .1937 | -.0528 | .1548 | .3225 | | |
| Mg4 | .0118 | PPM | .0170 | .0146 | -.0064 | .0272 | | |
| Mn4 | -.0002 | PPM | .0000 | -.0002 | -.0002 | -.0001 | | |
| Na2 | -.0494 | PPM | .0234 | -.0504 | -.0723 | -.0255 | | |
| Ni3 | .0072 | PPM | .0077 | .0158 | .0048 | .0009 | | |
| Sb1 | -.0492 | PPM | .0226 | -.0363 | -.0359 | -.0753 | | |
| V 2 | -.0008 | PPM | .0016 | -.0015 | -.0019 | .0010 | | |
| Zn3 | -.0139 | PPM | .0020 | -.0154 | -.0147 | -.0116 | | |
| As2 | -.0263 | PPM | .0083 | -.0139 | -.0343 | -.0318 | | |
| Pb1 | -.0546 | PPM | .0382 | -.0707 | -.0472 | -.0959 | | |
| Se1 | -.0123 | PPM | .0153 | .0041 | -.0147 | -.0262 | | |
| *** Sample ID: ICSA | | | | Seq: 980 | | 00:59:49 11 Nov 1998 ICP | | |
| Ag1 | .0088 | PPM | .0026 | .0108 | .0097 | .0059 | | |
| Al3 | 455.3 | PPM | 4.622 | 455.7 | 459.8 | 450.6 | | |
| Ba4 | .0021 | PPM | .0002 | .0020 | .0024 | .0019 | | |
| Be2 | .0014 | PPM | .0003 | .0012 | .0017 | .0013 | | |
| Ca3 | 449.4 | PPM | 2.998 | 448.6 | 452.7 | 446.9 | | |
| Cd1 | .0019 | PPM | .0014 | .0011 | .0036 | .0012 | | |
| Co1 | .0002 | PPM | .0007 | -.0006 | .0004 | .0008 | | |
| Cr4 | .0047 | PPM | .0012 | .0040 | .0040 | .0061 | | |
| Cu1 | .0121 | PPM | .0014 | .0115 | .0137 | .0110 | | |
| Fe2 | 170.9 | PPM | 1.202 | 170.6 | 172.2 | 169.9 | | |
| K 1 | .0274 | PPM | .0297 | .0199 | .0022 | .0601 | | |
| Mg4 | 511.5 H | PPM | 3.770 | 510.4 | 515.7 | 508.4 | | |
| Mn4 | .0083 | PPM | .0004 | .0079 | .0082 | .0088 | | |
| Na2 | .0031 | PPM | .0042 | .0039 | .0039 | -.0015 | | |
| Ni3 | .0114 | PPM | .0092 | .0210 | .0105 | .0026 | | |
| Sb1 | -.0546 | PPM | .0453 | -.0055 | -.0357 | -.0126 | | |
| V 2 | .0003 | PPM | .0010 | .0003 | -.0008 | .0012 | | |
| Zn3 | -.0003 | PPM | .0026 | -.0027 | .0028 | -.0011 | | |
| As2 | .0080 | PPM | .0501 | -.0306 | .0646 | -.0101 | | |
| Pb1 | -.0171 | PPM | .0477 | -.0721 | .0133 | .0075 | | |
| Se1 | -.0244 | PPM | .0139 | -.0253 | -.0100 | -.0378 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: ICSAB | | | | Seq: 981 | | 01:05:08 11 Nov 1998 ICP | | |
| Ag1 | .9241 | PPM | .0078 | .9311 | .9157 | .9255 | | |
| Al3 | 452.7 | PPM | 1.919 | 454.9 | 451.3 | 452.0 | | |
| Ba4 | .4425 | PPM | .0011 | .4433 | .4413 | .4431 | | |
| Be2 | .4668 | PPM | .0003 | .4672 | .4666 | .4667 | | |
| Ca3 | 449.9 | PPM | .3207 | 449.4 | 449.5 | 450.9 | | |
| Cd1 | .9118 | PPM | .0054 | .9074 | .9103 | .9178 | | |
| Co1 | .4338 | PPM | .0051 | .4373 | .4347 | .4444 | | |
| Cr4 | .4405 | PPM | .0008 | .4402 | .4399 | .4415 | | |
| Cu1 | .4578 | PPM | .0009 | .4585 | .4582 | .4568 | | |
| Fe2 | 170.9 | PPM | .2927 | 171.0 | 170.5 | 171.0 | | |
| K 1 | 4.620 | PPM | .0791 | 4.695 | 4.537 | 4.629 | | |
| Mg4 | 511.5 H | PPM | .7231 | 511.1 | 511.1 | 512.4 | | |
| Mn4 | .4494 | PPM | .0017 | .4514 | .4489 | .4481 | | |
| Na2 | 2.301 | PPM | .0317 | 2.325 | 2.313 | 2.265 | | |
| Ni3 | .8775 | PPM | .0185 | .8981 | .8724 | .8621 | | |
| Sb1 | .9056 | PPM | .0615 | .8353 | .9495 | .9320 | | |
| V 2 | .4362 | PPM | .0018 | .4359 | .4346 | .4381 | | |
| Zn3 | .8766 | PPM | .0099 | .8652 | .8813 | .8832 | | |
| As2 | .4320 | PPM | .0190 | .4037 | .4921 | .4601 | | |
| Pb1 | .9404 | PPM | .0194 | .9530 | .9500 | .9100 | | |
| Se1 | .4946 | PPM | .0278 | .4662 | .4955 | .5217 | | |

*** Check Standard: 6 CK6 Seq: 982 01:06:28 11 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 98.16 | 1.227 | 1.250 | PPM | .0029 |
| Al3 | | 98.16 | 9.816 | 10.00 | PPM | .0818 |
| Ba4 | | 95.52 | 9.552 | 10.00 | PPM | .0377 |
| Be2 | | 98.53 | .2463 | .2500 | PPM | .0025 |
| Ca3 | | 104.9 | 26.22 | 25.00 | PPM | .1297 |
| Cd1 | | 106.4 | 2.710 | 2.500 | PPM | .0103 |
| Co1 | | 102.6 | 2.565 | 2.500 | PPM | .0138 |
| Cr4 | | 102.5 | 1.025 | 1.000 | PPM | .0054 |
| Cu1 | | 97.78 | 1.222 | 1.250 | PPM | .0062 |
| Fe2 | | 102.4 | 5.120 | 5.000 | PPM | .0196 |
| K 1 | | 97.02 | 24.25 | 25.00 | PPM | .2506 |
| Mg4 | | 106.2 | 26.56 | 25.00 | PPM | .0754 |
| Mn4 | | 102.9 | 2.572 | 2.500 | PPM | .0072 |
| Na2 | | 95.60 | 23.90 | 25.00 | PPM | .0774 |
| Ni3 | | 103.1 | 2.579 | 2.500 | PPM | .0093 |
| Sb1 | | 100.2 | 5.009 | 5.000 | PPM | .0276 |
| V 2 | | 99.34 | 2.483 | 2.500 | PPM | .0116 |
| Zn3 | | 109.4 | 2.734 | 2.500 | PPM | .0118 |
| As2 | | 101.7 | 5.084 | 5.000 | PPM | .0227 |
| Pb1 | | 104.5 | 5.226 | 5.000 | PPM | .0735 |
| Se1 | | 101.3 | 5.064 | 5.000 | PPM | .0387 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 7 Ck7 Seq: 983 01:09:49 11 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 19.38 | .0019 | .0100 | PPM | .0018 |
| Al3 | | .4955 | .0005 | .1000 | PPM | .0112 |
| Ba4 | | 17.39 | .0006 | .0033 | PPM | .0003 |
| Be2 | | 6.180 | .0002 | .0037 | PPM | .0002 |
| Ca3 | | -24.33 | -.0127 | .0522 | PPM | .0031 |
| Cd1 | | 31.57 | .0017 | .0054 | PPM | .0004 |
| Co1 | | 12.29 | .0019 | .0153 | PPM | .0014 |
| Cr4 | | -.9196 | -.0001 | .0078 | PPM | .0001 |
| Cu1 | | 38.28 | .0033 | .0067 | PPM | .0005 |
| Fe2 | | 27.70 | .0052 | .0166 | PPM | .0018 |
| K 1 | | 41.33 | .2066 | .5000 | PPM | .1920 |
| Mg4 | | 13.71 | .0132 | .0960 | PPM | .0123 |
| Mn4 | | -7.852 | -.0002 | .0024 | PPM | .0001 |
| Na2 | | -33.93 | -.0509 | .1308 | PPM | .0165 |
| Ni3 | | 20.19 | .0073 | .0360 | PPM | .0033 |
| Sb1 | | -20.76 | -.0415 | .2000 | PPM | .0315 |
| V 2 | | 42.43 | .0042 | .0100 | PPM | .0010 |
| Zn3 | | -89.42 | -.0179 | .0200 | PPM | .0034 |
| As2 | | -4.839 | -.0048 | .1000 | PPM | .0268 |
| Pb1 | | -53.75 | -.0538 | .1000 | PPM | .0220 |
| Se1 | | -28.62 | -.0286 | .1000 | PPM | .0159 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: W1117801 | | | | Seq: 923 | | 21:58:48 10 Nov 1998 ICP | | |
| | | | | | | Dil. Weight 1.0000 Volume 50.000 | | |
| Ag1 | .0395 | PPM | .1205 | .1252 | -.0448 | .1882 | | |
| Al3 | .7020 | PPM | 1.013 | -.4637 | 1.196 | 1.373 | | |
| Ba4 | 1.377 | PPM | .0130 | 1.362 | 1.385 | 1.384 | | |
| Be2 | .0345 | PPM | .0138 | .0384 | .0191 | .0459 | | |
| Ca3 | 86.19 | PPM | .5364 | 86.78 | 86.05 | 85.73 | | |
| Cd1 | .9219 | PPM | .0190 | .9399 | .9020 | .9239 | | |
| Co1 | .0121 | PPM | .0825 | -.0821 | .0716 | .0469 | | |
| Cr4 | .0695 | PPM | .0646 | .1316 | .0026 | .0745 | | |
| Cu1 | 6.711 | PPM | .0904 | 6.792 | 6.727 | 6.613 | | |
| Fe2 | 24.02 | PPM | .1529 | 24.15 | 24.06 | 23.85 | | |
| K 1 | 20.83 | PPM | 10.90 | 21.09 | 9.795 | 31.59 | | |
| Mg4 | 8.674 | PPM | .5364 | 8.545 | 8.214 | 9.263 | | |
| Mn4 | .1344 | PPM | .0096 | .1443 | .1335 | .1252 | | |
| Na2 | 9.767 | PPM | .7277 | 9.005 | 9.912 | 10.44 | | |
| Ni3 | -.1303 | PPM | .1656 | -.0503 | -.3207 | -.0200 | | |
| Sb1 | -.1042 | PPM | 5.066 | 3.948 | -5.783 | 1.593 | | |
| V 2 | .1072 | PPM | .0230 | .0800 | .1359 | .1055 | | |
| Zn3 | 77.23 | PPM | .6347 | 77.68 | 77.50 | 76.50 | | |
| As2 | -1.060 | PPM | .8194 | -1.160 | -.1958 | -1.825 | | |
| Pb1 | 20.84 | PPM | .2917 | 20.92 | 20.51 | 21.06 | | |
| Se1 | -2.794 | PPM | .3704 | -3.129 | -2.358 | -2.396 | | |
| *** Sample ID: ACID BLK | | | | Seq: 924 | | 22:02:07 10 Nov 1998 ICP | | |
| Ag1 | .0036 | PPM | .0025 | .0043 | .0008 | .0057 | | |
| Al3 | -.0046 | PPM | .0061 | -.0039 | .0048 | -.0096 | | |
| Ba4 | .0003 | PPM | .0003 | .0002 | .0007 | .0001 | | |
| Be2 | .0006 | PPM | .0001 | .0005 | .0007 | .0007 | | |
| Ca3 | -.0081 | PPM | .0026 | -.0051 | -.0098 | -.0095 | | |
| Cd1 | .0010 | PPM | .0005 | .0010 | .0004 | .0014 | | |
| Co1 | -.0007 | PPM | .0013 | -.0008 | .0013 | -.0010 | | |
| Cr4 | .0005 | PPM | .0018 | .0013 | -.0016 | .0018 | | |
| Cu1 | -.0001 | PPM | .0011 | .0003 | .0008 | -.0014 | | |
| Fe2 | .0035 | PPM | .0012 | .0027 | .0030 | .0049 | | |
| K 1 | .0350 | PPM | .1704 | -.1329 | .2078 | .0302 | | |
| Mg4 | -.0107 | PPM | .0160 | -.0068 | -.0283 | .0030 | | |
| Mn4 | -.0007 | PPM | .0003 | -.0008 | -.0010 | -.0004 | | |
| Na2 | -.0546 | PPM | .0205 | -.0475 | -.0776 | -.0386 | | |
| Ni3 | .0010 | PPM | .0077 | -.0078 | .0041 | .0067 | | |
| Sb1 | -.0343 | PPM | .0527 | -.0158 | .0066 | -.0938 | | |
| V 2 | .0038 | PPM | .0007 | .0033 | .0036 | .0046 | | |
| Zn3 | -.0099 | PPM | .0011 | -.0089 | -.0097 | -.0110 | | |
| As2 | -.0730 | PPM | .0123 | -.0126 | -.0200 | -.0366 | | |
| Pb1 | -.0301 | PPM | .0174 | -.0502 | -.0207 | -.0193 | | |
| Se1 | -.0344 | PPM | .0387 | -.0616 | .0099 | -.0515 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: ICSA | | | | Seq: 925 | 22:05:26 10 Nov 1998 ICP | | | |
| Ag1 | .0090 | PPM | .0014 | .0103 | .0076 | .0091 | | |
| Al3 | 486.5 | PPM | 1.737 | 464.7 | 486.8 | 488.1 | | |
| Ba4 | .0016 | PPM | .0003 | .0012 | .0016 | .0018 | | |
| Be2 | .0021 | PPM | .0003 | .0018 | .0020 | .0023 | | |
| Ca3 | 461.6 | PPM | 1.035 | 460.5 | 461.9 | 462.5 | | |
| Cd1 | -.0004 | PPM | .0010 | -.0012 | .0007 | -.0007 | | |
| Co1 | .0045 | PPM | .0053 | -.0014 | .0058 | .0090 | | |
| Cr4 | .0061 | PPM | .0016 | .0043 | .0072 | .0069 | | |
| Cu1 | .0114 | PPM | .0022 | .0091 | .0117 | .0135 | | |
| Fe2 | 177.9 | PPM | .3822 | 177.5 | 177.9 | 178.3 | | |
| K 1 | -.1037 | PPM | .2559 | -.1071 | -.3655 | .1464 | | |
| Mg4 | 531.4 H | PPM | 1.718 | 529.5 | 531.6 | 533.0 | | |
| Mn4 | .0084 | PPM | .0004 | .0080 | .0088 | .0083 | | |
| Na2 | .0170 | PPM | .0219 | .0308 | .0285 | -.0083 | | |
| Ni3 | .0063 | PPM | .0034 | .0156 | .0042 | -.0008 | | |
| Sb1 | -.0796 | PPM | .0306 | -.0496 | -.0786 | -.1108 | | |
| V 2 | .0012 | PPM | .0023 | .0024 | .0027 | -.0015 | | |
| Zn3 | -.0052 | PPM | .0047 | -.0000 | -.0093 | -.0063 | | |
| As2 | .0055 | PPM | .0395 | .0125 | .0411 | -.0371 | | |
| Pb1 | .0906 | PPM | .0352 | .1299 | .0618 | .0800 | | |
| Se1 | -.0160 | PPM | .0555 | -.0057 | .0303 | -.0787 | | |
| *** Sample ID: ICSAB | | | | Seq: 926 | 22:08:45 10 Nov 1998 ICP | | | |
| Ag1 | .9756 | PPM | .0057 | .9785 | .9691 | .9793 | | |
| Al3 | 481.7 | PPM | 4.705 | 486.7 | 477.3 | 481.1 | | |
| Ba4 | .4744 | PPM | .0049 | .4791 | .4694 | .4747 | | |
| Be2 | .4900 | PPM | .0033 | .4930 | .4864 | .4906 | | |
| Ca3 | 454.5 | PPM | 2.944 | 457.5 | 451.6 | 454.3 | | |
| Cd1 | .9115 | PPM | .0069 | .9176 | .9039 | .9124 | | |
| Co1 | .4584 | PPM | .0064 | .4599 | .4639 | .4513 | | |
| Cr4 | .4537 | PPM | .0028 | .4567 | .4512 | .4532 | | |
| Cu1 | .4891 | PPM | .0070 | .4950 | .4814 | .4910 | | |
| Fe2 | 175.5 | PPM | 1.259 | 176.8 | 174.3 | 175.3 | | |
| K 1 | 4.780 | PPM | .1708 | 4.976 | 4.702 | 4.662 | | |
| Mg4 | 521.8 H | PPM | 3.547 | 525.4 | 518.3 | 521.7 | | |
| Mn4 | .4652 | PPM | .0044 | .4695 | .4607 | .4655 | | |
| Na2 | 2.458 | PPM | .0702 | 2.530 | 2.455 | 2.390 | | |
| Ni3 | .8902 | PPM | .0094 | .8931 | .8797 | .8978 | | |
| Sb1 | .9094 | PPM | .0360 | .9105 | .9655 | .9523 | | |
| V 2 | .4576 | PPM | .0050 | .4621 | .4522 | .4585 | | |
| Zn3 | .9027 | PPM | .0020 | .9049 | .9020 | .9011 | | |
| As2 | .4853 | PPM | .0355 | .4965 | .5139 | .4456 | | |
| Pb1 | 1.009 | PPM | .0372 | .9851 | 1.052 | .9896 | | |
| Se1 | .4712 | PPM | .0482 | .5265 | .4383 | .4487 | | |

CLP1028 . 00037

Line Conc. Units SD/RSD 1 2 3 4 5

*** Check Standard: 6 Ck6 Seq: 927 22:12:05 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 104.2 | 1.302 | 1.250 | PPM | .0043 |
| Al3 | | 104.6 | 10.46 | 10.00 | PPM | .0701 |
| Ba4 | | 103.5 | 10.35 | 10.00 | PPM | .0469 |
| Be2 | | 102.9 | .2573 | .2500 | PPM | .0015 |
| Ca3 | | 105.9 | 26.48 | 25.00 | PPM | .1016 |
| Cd1 | | 108.0 | 2.699 | 2.500 | PPM | .0154 |
| Co1 | | 106.3 | 2.658 | 2.500 | PPM | .0209 |
| Cr4 | | 105.5 | 1.055 | 1.000 | PPM | .0024 |
| Cu1 | | 104.2 | 1.303 | 1.250 | PPM | .0084 |
| Fe2 | | 105.8 | 5.289 | 5.000 | PPM | .0165 |
| K 1 | | 103.5 | 25.87 | 25.00 | PPM | .3259 |
| Mg4 | | 107.0 | 26.74 | 25.00 | PPM | .1051 |
| Mn4 | | 107.1 | 2.676 | 2.500 | PPM | .0134 |
| Na2 | | 102.3 | 25.57 | 25.00 | PPM | .1019 |
| Ni3 | | 106.6 | 2.666 | 2.500 | PPM | .0170 |
| Sb1 | | 103.1 | 5.153 | 5.000 | PPM | .0781 |
| V 2 | | 105.2 | 2.631 | 2.500 | PPM | .0148 |
| Zn3 | H | 111.0 | 2.776 | 2.500 | PPM | .0246 |
| As2 | | 104.6 | 5.229 | 5.000 | PPM | .0151 |
| Pb1 | | 106.6 | 5.328 | 5.000 | PPM | .0469 |
| Se1 | | 102.6 | 5.129 | 5.000 | PPM | .0392 |

*** Check Standard: 7 Ck7 Seq: 928 22:15:26 10 Nov 1998 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 17.60 | .0018 | .0100 | PPM | .0021 |
| Al3 | | 15.09 | .0151 | .1000 | PPM | .0065 |
| Ba4 | | 15.62 | .0005 | .0033 | PPM | .0006 |
| Be2 | | 17.23 | .0005 | .0027 | PPM | .0000 |
| Ca3 | | -1.077 | -.0006 | .0522 | PPM | .0006 |
| Cd1 | | -1.218 | -.0001 | .0054 | PPM | .0008 |
| Co1 | | 10.93 | .0017 | .0153 | PPM | .0024 |
| Cr4 | | 5.088 | .0004 | .0078 | PPM | .0001 |
| Cu1 | | 8.089 | .0007 | .0087 | PPM | .0005 |
| Fe2 | | 29.24 | .0054 | .0186 | PPM | .0011 |
| K 1 | | 6.322 | .0316 | .5000 | PPM | .1502 |
| Mg4 | | -13.00 | -.0125 | .0960 | PPM | .0148 |
| Mn4 | | 4.646 | .0001 | .0024 | PPM | .0001 |
| Na2 | | -54.09 | -.0708 | .1308 | PPM | .0138 |
| Ni3 | | -6.285 | -.0023 | .0360 | PPM | .0047 |
| Sb1 | | -30.50 | -.0610 | .2000 | PPM | .0433 |
| V 2 | | 65.13 | .0065 | .0100 | PPM | .0024 |
| Zn3 | | -80.64 | -.0161 | .0200 | PPM | .0023 |
| As2 | | -42.14 | -.0421 | .1000 | PPM | .0190 |
| Pb1 | | -55.36 | -.0554 | .1000 | PPM | .0109 |
| Se1 | | 9.552 | .0096 | .1000 | PPM | .0177 |

*** Peak Seq: 929 22:31:12 10 Nov 1998

XAp = 210 YAp = 124 Intensity = 3951146

*** Sample ID: PBW N Seq: 930 22:32:51 10 Nov 1998 ICP

WF49126-03

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| Ag1 | .0016 | PPM | .0023 | .0004 | .0002 | .0044 | | |
| Al3 | .0130 | PPM | .0070 | .0063 | .0122 | .0203 | | |
| Ba4 | -.0003 | PPM | .0008 | -.0001 | .0004 | -.0013 | | |
| Be2 | .0006 | PPM | .0002 | .0006 | .0005 | .0009 | | |
| Ca3 | -.0098 | PPM | .0023 | -.0111 | -.0072 | -.0112 | | |
| Cd1 | .0004 | PPM | .0009 | -.0006 | .0010 | .0009 | | |
| Co1 | -.0022 | PPM | .0026 | -.0007 | -.0052 | -.0007 | | |
| Cr4 | .0014 | PPM | .0007 | .0020 | .0015 | .0007 | | |
| Cu1 | .0009 | PPM | .0001 | .0010 | .0009 | .0008 | | |
| Fe2 | .0006 | PPM | .0003 | .0003 | .0006 | .0008 | | |
| K 1 | .1261 | PPM | .1923 | -.0256 | .3424 | .0615 | | |
| Mg4 | .0041 | PPM | .0061 | -.0018 | .0133 | .0007 | | |
| Mn4 | -.0003 | PPM | .0002 | -.0002 | -.0005 | -.0002 | | |
| Na2 | -.0566 | PPM | .0060 | -.0487 | -.0563 | -.0647 | | |
| Ni3 | .0049 | PPM | .0059 | -.0019 | .0039 | .0077 | | |
| Sb1 | -.0467 | PPM | .0405 | -.0168 | -.0528 | -.0306 | | |
| V 2 | -.0003 | PPM | .0014 | -.0005 | -.0016 | .0012 | | |
| Zn3 | -.0189 | PPM | .0033 | -.0227 | -.0175 | -.0166 | | |
| As2 | -.0195 | PPM | .0182 | -.0206 | -.0008 | -.0371 | | |
| Pb1 | -.0131 | PPM | .0181 | -.0329 | -.0089 | .0026 | | |
| Se1 | -.0210 | PPM | .0295 | .0102 | -.0248 | -.0484 | | |

702

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: LCSW N | | | | Seq: 931 | | 22:36:10 10 Nov 1998 ICP | | |
| | | | WG49126-04 | | | | | |
| Ag1 | .1937 | PPM | .0039 | .1981 | .1927 | .1904 | | |
| Al3 | 9.518 | PPM | .1402 | 9.676 | 9.410 | 9.468 | | |
| Ba4 | 9.844 | PPM | .1448 | 10.01 | 9.743 | 9.779 | | |
| Be2 | .9583 | PPM | .0114 | .9709 | .9468 | .9553 | | |
| Ca3 | 9.839 | PPM | .1090 | 9.961 | 9.751 | 9.806 | | |
| Cd1 | .9935 | PPM | .0096 | 1.003 | .9842 | .9930 | | |
| Co1 | .9899 | PPM | .0127 | 1.005 | .9812 | .9840 | | |
| Cr4 | .9906 | PPM | .0091 | .9909 | .9740 | .9768 | | |
| Cu1 | .9660 | PPM | .0133 | .9813 | .9587 | .9579 | | |
| Fe2 | 1.095 | PPM | .0125 | 1.109 | 1.085 | 1.090 | | |
| K 1 | 47.45 | PPM | .7701 | 48.31 | 46.83 | 47.21 | | |
| Mg4 | 9.662 | PPM | .1035 | 9.776 | 9.574 | 9.635 | | |
| Mn4 | .9658 | PPM | .0117 | .9991 | .9771 | .9813 | | |
| Na2 | 48.85 | PPM | .8044 | 49.75 | 48.18 | 48.63 | | |
| Ni3 | .9771 | PPM | .0232 | 1.004 | .9663 | .9613 | | |
| Sb1 | .9491 | PPM | .1350 | 1.031 | .7932 | 1.023 | | |
| V 2 | .9808 | PPM | .0167 | .9999 | .9694 | .9730 | | |
| Zn3 | .9730 | PPM | .0121 | .9905 | .9664 | .9770 | | |
| As2 | .9854 | PPM | .0164 | .9750 | .9768 | 1.004 | | |
| Pb1 | .9859 | PPM | .0257 | .9431 | .9954 | .9543 | | |
| Se1 | .9339 | PPM | .0204 | .9353 | .9621 | .9222 | | |
| *** Sample ID: TC1105601 | | | | Seq: 932 | | 22:39:29 10 Nov 1998 ICP | | |
| | | | MD2198056) | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0353 | PPM | .0168 | .0235 | .0545 | .0277 | | |
| Al3 | 3.403 | PPM | .0324 | 3.366 | 3.424 | 3.421 | | |
| Ba4 | .3609 | PPM | .0126 | .3618 | .3730 | .3479 | | |
| Be2 | .0066 | PPM | .0024 | .0111 | .0063 | .0064 | | |
| Ca3 | 19.60 | PPM | .1531 | 19.60 | 19.75 | 19.44 | | |
| Cd1 | .0010 | PPM | .0077 | .0094 | -.0006 | -.0058 | | |
| Co1 | -.0150 | PPM | .0091 | -.0229 | -.0050 | -.0171 | | |
| Cr4 | .0016 | PPM | .0172 | -.0180 | .0091 | .0138 | | |
| Cu1 | .0129 | PPM | .0103 | .0128 | .0232 | .0026 | | |
| Fe2 | 1.812 | PPM | .0177 | 1.794 | 1.829 | 1.812 | | |
| K 1 | 1.585 | PPM | .3709 | 1.366 | .8445 | 2.545 | | |
| Mg4 | 4.477 | PPM | .0855 | 4.442 | 4.575 | 4.415 | | |
| Mn4 | .1502 | PPM | .0104 | .1522 | .1595 | .1389 | | |
| Na2 | 1409. H | PPM | 10.65 | 1411. | 1418. | 1397. | | |
| Ni3 | -.0277 | PPM | .0630 | .0408 | -.0953 | -.0284 | | |
| Sb1 | -.3363 | PPM | .2171 | -.3305 | -.1223 | -.5563 | | |
| V 2 | .0038 | PPM | .0077 | .0126 | .0007 | -.0018 | | |
| Zn3 | -.0306 | PPM | .0106 | -.0236 | -.0254 | -.0428 | | |
| As2 | -.2836 | PPM | .1129 | -.3452 | -.3523 | -.1533 | | |
| Pb1 | -.2090 | PPM | .2020 | -.0108 | -.4147 | -.2015 | | |
| Se1 | -.3004 | PPM | .2207 | -.4652 | -.0497 | -.3865 | | |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: 01 DUP | | | | Seq: 933 | | 22:42:48 10 Nov 1998 ICP | | |
| | | | WG49126-07 | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0325 | PPM | .0199 | .0290 | .0539 | .0147 | | |
| Al3 | 3.610 | PPM | .1778 | 3.540 | 3.813 | 3.479 | | |
| Ba4 | .3530 | PPM | .0012 | .3529 | .3542 | .3519 | | |
| Be2 | .0092 | PPM | .0037 | .0063 | .0133 | .0079 | | |
| Ca3 | 19.61 | PPM | .0194 | 19.63 | 19.60 | 19.61 | | |
| Cd1 | .0032 | PPM | .0066 | .0055 | .0083 | -.0043 | | |
| Co1 | .0050 | PPM | .0196 | -.0103 | .0066 | .0238 | | |
| Cr4 | .0066 | PPM | .0098 | .0178 | .0028 | -.0007 | | |
| Cu1 | -.0002 | PPM | .0080 | .0050 | -.0093 | .0058 | | |
| Fe2 | 1.767 | PPM | .0419 | 1.823 | 1.741 | 1.796 | | |
| K 1 | 3.282 | PPM | 1.107 | 3.499 | 4.265 | 2.082 | | |
| Mg4 | 4.517 | PPM | .1192 | 4.654 | 4.455 | 4.441 | | |
| Mn4 | .1644 | PPM | .0048 | .1594 | .1689 | .1649 | | |
| Na2 | 1393. H | PPM | 1.865 | 1394. | 1394. | 1391. | | |
| Ni3 | -.0720 | PPM | .0706 | -.0727 | -.0518 | .0586 | | |
| Sb1 | -.4960 | PPM | .7459 | -.9122 | -.9409 | .3651 | | |
| V 2 | -.0107 | PPM | .0209 | .0037 | -.0347 | -.0011 | | |
| Zn3 | -.1162 | PPM | .0182 | -.1352 | -.1145 | -.0968 | | |
| As2 | -.3036 | PPM | .2219 | -.3306 | -.0663 | -.5059 | | |
| Pb1 | -.2730 | PPM | .2632 | -.1295 | -.5992 | -.0904 | | |
| Se1 | -.4204 | PPM | .0098 | -.3869 | -.3966 | -.4776 | | |
| *** Sample ID: TC1105602 | | | | Seq: 934 | | 22:46:07 10 Nov 1998 ICP | | |
| | | | MDP1980563 | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0335 | PPM | .0243 | .0122 | .0599 | .0285 | | |
| Al3 | 1.316 | PPM | .0973 | 1.218 | 1.317 | 1.413 | | |
| Ba4 | .1793 | PPM | .0033 | .1801 | .1821 | .1756 | | |
| Be2 | .0126 | PPM | .0019 | .0127 | .0147 | .0110 | | |
| Ca3 | 10.81 | PPM | .0320 | 10.80 | 10.84 | 10.80 | | |
| Cd1 | .0088 | PPM | .0024 | .0092 | .0063 | .0110 | | |
| Co1 | .0032 | PPM | .0062 | -.0013 | .0007 | .0102 | | |
| Cr4 | .0019 | PPM | .0121 | -.0079 | -.0018 | .0154 | | |
| Cu1 | .0003 | PPM | .0070 | -.0062 | .0077 | -.0006 | | |
| Fe2 | .5432 | PPM | .0109 | .5488 | .5307 | .5502 | | |
| K 1 | 2.737 | PPM | 1.951 | 1.742 | 4.985 | 1.484 | | |
| Mg4 | 1.800 | PPM | .0766 | 1.938 | 1.793 | 1.909 | | |
| Mn4 | .2011 | PPM | .0056 | .2041 | .1946 | .2046 | | |
| Na2 | 1366. H | PPM | 7.930 | 1374. | 1366. | 1358. | | |
| Ni3 | -.0546 | PPM | .1022 | .0328 | -.0297 | -.1670 | | |
| Sb1 | -.1400 | PPM | .6217 | -.4736 | .5773 | -.5236 | | |
| V 2 | -.0030 | PPM | .0209 | -.0193 | -.0103 | .0206 | | |
| Zn3 | -.0578 | PPM | .0131 | -.0473 | -.0537 | -.0725 | | |
| As2 | -.1375 | PPM | .1700 | -.0140 | -.0571 | -.3314 | | |
| Pb1 | -.1656 | PPM | .2056 | .0151 | -.1227 | -.3893 | | |
| Se1 | -.5428 | PPM | .2422 | -.7097 | -.3055 | -.5331 | | |

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| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: 02 MS | | | | Seq: 935 | | 22:49:26 10 Nov 1998 ICP | | |
| | | | WG49126-05 | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | 1.807 | PPM | .0331 | 1.781 | 1.797 | 1.844 | | |
| Al3 | 90.18 | PPM | .0876 | 90.27 | 90.10 | 90.16 | | |
| Ba4 | 91.13 | PPM | .3427 | 90.88 | 91.00 | 91.52 | | |
| Be2 | 9.061 | PPM | .0151 | 9.053 | 9.051 | 9.078 | | |
| Ca3 | 105.2 | PPM | .3831 | 104.8 | 105.1 | 105.6 | | |
| Cd1 | 9.748 | PPM | .0681 | 9.670 | 9.775 | 9.798 | | |
| Co1 | 9.455 | PPM | .0598 | 9.416 | 9.426 | 9.524 | | |
| Cr4 | 9.285 | PPM | .0270 | 9.316 | 9.271 | 9.269 | | |
| Cu1 | 8.979 | PPM | .0256 | 8.956 | 8.973 | 9.006 | | |
| Fe2 | 9.858 | PPM | .0274 | 9.826 | 9.873 | 9.874 | | |
| K 1 | 445.3 | PPM | 3.344 | 449.0 | 442.5 | 444.5 | | |
| Mg4 | 94.89 | PPM | .6947 | 93.95 | 95.00 | 95.73 | | |
| Mn4 | 9.594 | PPM | .0472 | 9.551 | 9.585 | 9.644 | | |
| Na2 | 1782. | H PPM | 5.154 | 1778. | 1782. | 1788. | | |
| Ni3 | 9.354 | PPM | .1725 | 9.156 | 9.474 | 9.432 | | |
| Sb1 | 8.053 | PPM | 1.027 | 6.915 | 8.909 | 8.335 | | |
| V 2 | 9.266 | PPM | .0293 | 9.247 | 9.252 | 9.300 | | |
| Zn3 | 9.670 | PPM | .0516 | 9.729 | 9.633 | 9.648 | | |
| As2 | 9.334 | PPM | .4244 | 9.486 | 8.854 | 9.661 | | |
| Pb1 | 9.573 | PPM | .5465 | 8.943 | 9.901 | 9.876 | | |
| Se1 | 8.720 | PPM | .2518 | 8.916 | 8.436 | 8.809 | | |
| *** Sample ID: 02 MSD | | | | Seq: 936 | | 22:52:46 10 Nov 1998 ICP | | |
| | | | WG49126-06 | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | 1.816 | PPM | .0422 | 1.857 | 1.772 | 1.819 | | |
| Al3 | 90.36 | PPM | .1912 | 90.30 | 90.21 | 90.58 | | |
| Ba4 | 91.40 | PPM | .2622 | 91.55 | 91.10 | 91.55 | | |
| Be2 | 9.072 | PPM | .0182 | 9.092 | 9.057 | 9.066 | | |
| Ca3 | 104.6 | PPM | .3220 | 104.9 | 104.2 | 104.6 | | |
| Cd1 | 9.629 | PPM | .0221 | 9.654 | 9.620 | 9.613 | | |
| Co1 | 9.403 | PPM | .0427 | 9.449 | 9.397 | 9.364 | | |
| Cr4 | 9.307 | PPM | .0261 | 9.313 | 9.279 | 9.330 | | |
| Cu1 | 8.995 | PPM | .0561 | 9.036 | 8.931 | 9.018 | | |
| Fe2 | 9.828 | PPM | .0738 | 9.819 | 9.906 | 9.759 | | |
| K 1 | 445.0 | PPM | 1.356 | 446.3 | 443.5 | 445.1 | | |
| Mg4 | 94.35 | PPM | .2071 | 94.53 | 94.38 | 94.12 | | |
| Mn4 | 9.566 | PPM | .0403 | 9.606 | 9.525 | 9.566 | | |
| Na2 | 1791. | H PPM | 5.313 | 1795. | 1785. | 1793. | | |
| Ni3 | 9.270 | PPM | .0333 | 9.272 | 9.302 | 9.235 | | |
| Sb1 | 8.999 | PPM | 1.086 | 8.472 | 10.25 | 8.278 | | |
| V 2 | 9.241 | PPM | .0420 | 9.279 | 9.196 | 9.248 | | |
| Zn3 | 9.595 | PPM | .0342 | 9.633 | 9.587 | 9.567 | | |
| As2 | 9.169 | PPM | .2977 | 9.235 | 9.429 | 8.844 | | |
| Pb1 | 9.121 | PPM | .3745 | 8.689 | 9.345 | 9.329 | | |
| Se1 | 9.002 | PPM | .2447 | 8.844 | 8.878 | 9.284 | | |

185
C 1

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Peak Seq: 937 22:56:56 10 Nov 1998

XAp = 209 YAp = 124 Intensity = 3907807

*** Sample ID: W1107309 Seq: 938 22:53:36 10 Nov 1998 ICP

0.01 Dil. Weight 1.0000 Volume 5000.0

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ag1 | 20.32 | H | PPM | 8.757 | 27.32 | 23.14 | 10.50 |
| Al3 | 1988. | H | PPM | 51.94 | 2047. | 1968. | 1949. |
| Ba4 | 6724. | H | PPM | 99.84 | 6745. | 6615. | 6812. |
| Be2 | 3.520 | | PPM | 1.640 | 3.820 | 1.750 | 4.989 |
| Ca3 | 5462. | H | PPM | 54.34 | 5508. | 5402. | 5476. |
| Cd1 | .8663 | | PPM | 4.331 | 1.867 | 4.629 | -3.868 |
| Co1 | 10.48 | | PPM | 7.565 | 7.310 | 19.12 | 5.019 |
| Cr4 | 8997. | H | PPM | 121.1 | 9054. | 8858. | 9079. |
| Cu1 | 5.825 | | PPM | 3.254 | 2.591 | 9.097 | 5.785 |
| Fe2 | 540.5 | H | PPM | 22.30 | 541.5 | 517.7 | 562.3 |
| K 1 | 1399. | H | PPM | 637.8 | 2434. | 1297. | 1365. |
| Mg4 | 190.7 | | PPM | 27.44 | 221.2 | 168.0 | 183.0 |
| Mn4 | 5.900 | | PPM | 3.200 | 9.590 | 3.904 | 4.205 |
| Na2 | 376.4 | | PPM | 67.68 | 419.7 | 411.1 | 298.4 |
| Ni3 | -45.55 | | PPM | 35.75 | -13.36 | -39.27 | -84.03 |
| Sb1 | -132.8 | | PPM | 243.3 | 82.37 | -396.9 | -83.61 |
| V 2 | -65.91 | | PPM | 3.105 | -69.34 | -63.29 | -65.11 |
| Zn3 | 253.1 | | PPM | 14.30 | 263.5 | 251.3 | 235.2 |
| As2 | -129.5 | | PPM | 100.5 | -61.96 | -61.36 | -245.0 |
| Pb1 | 210.4 | H | PPM | 131.3 | 290.4 | 56.87 | 281.9 |
| Se1 | -256.4 | | PPM | 208.1 | -60.78 | -347.6 | -450.9 |

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| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: ICSA | | | | Seq: 939 | | 23:01:56 10 Nov 1998 ICP | | |
| Ag1 | .0106 | PPM | .0032 | .0096 | .0141 | .0000 | | |
| Al3 | 465.6 | PPM | 4.416 | 466.5 | 469.4 | 460.7 | | |
| Ba4 | .0025 | PPM | .0006 | .0020 | .0031 | .0024 | | |
| Be2 | .0027 | PPM | .0002 | .0029 | .0025 | .0025 | | |
| Ca3 | 450.5 | PPM | 3.775 | 451.2 | 453.9 | 446.5 | | |
| Cd1 | .0004 | PPM | .0007 | .0000 | .0012 | .0001 | | |
| Co1 | .0034 | PPM | .0030 | .0053 | .0051 | -.0001 | | |
| Cr4 | .0065 | PPM | .0016 | .0072 | .0064 | .0049 | | |
| Cu1 | .0060 | PPM | .0012 | .0030 | .0091 | .0068 | | |
| Fe2 | 172.8 | PPM | 1.427 | 173.0 | 174.0 | 171.2 | | |
| K 1 | .1164 | PPM | .1238 | .0209 | .0623 | .2580 | | |
| Mg4 | 518.0 H | PPM | 4.616 | 518.6 | 522.3 | 513.1 | | |
| Mn4 | .0079 | PPM | .0004 | .0083 | .0079 | .0076 | | |
| Na2 | -.0219 | PPM | .0042 | -.0202 | -.0188 | -.0267 | | |
| Ni3 | .0056 | PPM | .0013 | .0056 | .0068 | .0043 | | |
| Sb1 | -.0360 | PPM | .0507 | -.0519 | .0487 | -.1109 | | |
| V 2 | -.0140 | PPM | .0008 | -.0146 | -.0131 | -.0143 | | |
| Zn3 | -.0023 | PPM | .0058 | -.0078 | -.0029 | .0032 | | |
| As2 | .0201 | PPM | .0190 | .0342 | .0277 | -.0015 | | |
| Pb1 | .0696 | PPM | .0243 | .0418 | .0823 | .0868 | | |
| Se1 | -.0247 | PPM | .0177 | -.0064 | -.0255 | -.0417 | | |
| *** Sample ID: ICSAB | | | | Seq: 940 | | 23:05:17 10 Nov 1998 ICP | | |
| Ag1 | .9290 | PPM | .0116 | .9331 | .9381 | .9159 | | |
| Al3 | 449.7 | PPM | 6.489 | 452.1 | 454.6 | 442.3 | | |
| Ba4 | .4453 | PPM | .0068 | .4487 | .4498 | .4375 | | |
| Be2 | .4613 | PPM | .0065 | .4632 | .4667 | .4541 | | |
| Ca3 | 435.6 | PPM | 4.740 | 437.1 | 439.4 | 430.3 | | |
| Cd1 | .8760 | PPM | .0101 | .8739 | .8843 | .8648 | | |
| Co1 | .4331 | PPM | .0090 | .4330 | .4422 | .4242 | | |
| Cr4 | .4380 | PPM | .0033 | .4392 | .4405 | .4343 | | |
| Cu1 | .4505 | PPM | .0058 | .4531 | .4545 | .4438 | | |
| Fe2 | 167.1 | PPM | 2.065 | 167.7 | 168.7 | 164.8 | | |
| K 1 | 4.506 | PPM | .1565 | 4.589 | 4.326 | 4.604 | | |
| Mg4 | 499.8 | PPM | 5.566 | 501.2 | 504.5 | 493.6 | | |
| Mn4 | .4447 | PPM | .0053 | .4444 | .4501 | .4395 | | |
| Na2 | 2.247 | PPM | .0340 | 2.245 | 2.281 | 2.213 | | |
| Ni3 | .8750 | PPM | .0237 | .8600 | .9015 | .8555 | | |
| Sb1 | .8576 | PPM | .0167 | .8743 | .8577 | .8408 | | |
| V 2 | .4203 | PPM | .0064 | .4258 | .4246 | .4107 | | |
| Zn3 | .8827 | PPM | .0057 | .8893 | .8797 | .8792 | | |
| As2 | .4534 | PPM | .0774 | .3682 | .5194 | .4775 | | |
| Pb1 | .9292 | PPM | .0694 | .9139 | 1.003 | .8655 | | |
| Se1 | .4397 | PPM | .0175 | .4220 | .4400 | .4570 | | |

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| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Check Standard: 6 Ck6 Seq: 941 23:04:37 10 Nov 1996 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 99.42 | 1.243 | 1.250 | PPM | .0198 |
| Al3 | | 99.30 | 9.930 | 10.00 | PPM | .1296 |
| Ba4 | | 97.16 | 9.716 | 10.00 | PPM | .1205 |
| Be2 | | 97.72 | .2443 | .2500 | PPM | .0030 |
| Ca3 | | 101.6 | 25.39 | 25.00 | PPM | .2475 |
| Cd1 | | 104.9 | 2.622 | 2.500 | PPM | .0290 |
| Co1 | | 103.1 | 2.578 | 2.500 | PPM | .0367 |
| Cr4 | | 101.3 | 1.013 | 1.000 | PPM | .0096 |
| Cu1 | | 97.82 | 1.223 | 1.250 | PPM | .0143 |
| Fe2 | | 100.4 | 5.020 | 5.000 | PPM | .0604 |
| K 1 | | 96.89 | 24.22 | 25.00 | PPM | .3968 |
| Mg4 | | 103.6 | 25.89 | 25.00 | PPM | .2764 |
| Mn4 | | 102.4 | 2.559 | 2.500 | PPM | .0253 |
| Na2 | | 95.66 | 23.91 | 25.00 | PPM | .2721 |
| Ni3 | | 103.8 | 2.595 | 2.500 | PPM | .0144 |
| Sb1 | | 100.0 | 5.001 | 5.000 | PPM | .0766 |
| V 2 | | 100.1 | 2.502 | 2.500 | PPM | .0295 |
| Zn3 | | 109.3 | 2.733 | 2.500 | PPM | .0234 |
| As2 | | 99.83 | 4.992 | 5.000 | PPM | .0501 |
| Pb1 | | 104.3 | 5.215 | 5.000 | PPM | .0555 |
| Se1 | | 98.07 | 4.904 | 5.000 | PPM | .0717 |

*** Check Standard: 7 Ck7 Seq: 942 23:11:58 10 Nov 1996 ICP

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Ag1 | | 30.26 | .0030 | .0100 | PPM | .0015 |
| Al3 | | 48.70 | .0487 | .1000 | PPM | .0135 |
| Ba4 | | 24.92 | .0008 | .0033 | PPM | .0002 |
| Be2 | | -2.179 | -.0001 | .0027 | PPM | .0002 |
| Ca3 | | 19.38 | .0101 | .0522 | PPM | .0020 |
| Cd1 | | 13.70 | .0007 | .0054 | PPM | .0005 |
| Co1 | | 6.151 | .0009 | .0153 | PPM | .0027 |
| Cr4 | | 19.41 | .0015 | .0078 | PPM | .0019 |
| Cu1 | | 5.789 | .0005 | .0087 | PPM | .0011 |
| Fe2 | | 45.28 | .0084 | .0186 | PPM | .0009 |
| K 1 | | -18.72 | -.0936 | .5000 | PPM | .0556 |
| Mg4 | | 19.37 | .0186 | .0960 | PPM | .0142 |
| Mn4 | | -12.13 | -.0003 | .0024 | PPM | .0005 |
| Na2 | | -25.56 | -.0334 | .1308 | PPM | .0189 |
| Ni3 | | 1.921 | .0007 | .0360 | PPM | .0074 |
| Sb1 | | -12.25 | -.0245 | .2000 | PPM | .0329 |
| V 2 | | -130.6 | -.0131 | .0100 | PPM | .0018 |
| Zn3 | | -49.06 | -.0098 | .0200 | PPM | .0014 |
| As2 | | -46.62 | -.0466 | .1000 | PPM | .0353 |
| Pb1 | | -39.41 | -.0394 | .1000 | PPM | .0153 |
| Se1 | | -46.99 | -.0470 | .1000 | PPM | .0250 |

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Folder: CLP102R
Protocol: CLP-2 Y IS 200

23:13:46 10 Nov 1998

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Peak | | | | Seq: 943 | 23:13:46 10 Nov 1998 | | | |
| XAp = 210 YAp = 124 Intensity = 3934407 | | | | | | | | |
| *** Sample ID: TC1106801 | | | | Seq: 944 | 23:15:25 10 Nov 1998 ICP | | | |
| UNSPIKED | | | 0.9 | | Dil. Weight 5.0000 Volume 55.000 | | | |
| Ag1 | .0394 | PPM | .0302 | .0221 | .0743 | .0218 | | |
| Al3 | .2242 | PPM | .1077 | .2592 | .3101 | .1034 | | |
| Ba4 | .0979 | PPM | .0013 | .0965 | .0986 | .0987 | | |
| Be2 | .0090 | PPM | .0053 | .0037 | .0090 | .0144 | | |
| Ca3 | 62.82 | PPM | 1.330 | 64.24 | 62.73 | 61.49 | | |
| Cd1 | .0111 | PPM | .0114 | .0235 | .0090 | .0010 | | |
| Co1 | -.0263 | PPM | .0173 | -.0239 | -.0103 | -.0446 | | |
| Cr4 | .0198 | PPM | .0071 | .0117 | .0226 | .0249 | | |
| Cu1 | .0052 | PPM | .0146 | -.0093 | .0050 | .0200 | | |
| Fe2 | .4407 | PPM | .0104 | .4524 | .4375 | .4323 | | |
| K 1 | .6303 | PPM | 1.279 | .0491 | 2.096 | -.2546 | | |
| Mg4 | 1.710 | PPM | .0046 | 1.525 | 1.676 | 1.930 | | |
| Mn4 | .0535 | PPM | .0069 | .0467 | .0535 | .0604 | | |
| Na2 | 1279. H | PPM | 31.32 | 1313. | 1272. | 1251. | | |
| Ni3 | -.0305 | PPM | .0177 | -.0464 | -.0337 | -.0115 | | |
| Sb1 | -.7469 | PPM | .3494 | -.7303 | -1.104 | -.4062 | | |
| V 2 | -.0542 | PPM | .0060 | -.0603 | -.0540 | -.0482 | | |
| Zn3 | 13.43 | PPM | .4210 | 13.89 | 13.36 | 13.06 | | |
| As2 | -.2906 | PPM | .0656 | -.2238 | -.2931 | -.3550 | | |
| Pb1 | -.2430 | PPM | .3954 | -.6611 | .1249 | -.1929 | | |
| Se1 | -.5174 | PPM | .2621 | -.2619 | -.8202 | -.4700 | | |

*** Sample ID: 01 SP Seq: 945 23:18:46 10 Nov 1998 ICP
SPIKED Dil. Weight 5.0000 Volume 50.000

| Line | Conc. | | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|
| Ag1 | 2.024 | | PPM | .1338 | 1.899 | 2.007 | 2.165 | | |
| Al3 | 99.39 | | PPM | 7.051 | 92.66 | 98.78 | 106.7 | | |
| Ba4 | 100.8 | | PPM | 6.809 | 94.42 | 100.0 | 108.0 | | |
| Be2 | 10.15 | | PPM | .6860 | 9.510 | 10.05 | 10.88 | | |
| Ca3 | 162.5 | | PPM | 6.945 | 156.2 | 161.5 | 169.9 | | |
| Cd1 | 10.90 | | PPM | .8114 | 10.17 | 10.76 | 11.77 | | |
| Co1 | 10.60 | | PPM | .7242 | 9.983 | 10.41 | 11.39 | | |
| Cr4 | 10.38 | H | PPM | .6953 | 9.729 | 10.29 | 11.11 | | |
| Cu1 | 9.986 | | PPM | .6638 | 9.366 | 9.906 | 10.69 | | |
| Fe2 | 10.82 | | PPM | .7221 | 10.16 | 10.71 | 11.59 | | |
| K 1 | 497.6 | | PPM | 33.95 | 466.3 | 492.8 | 533.6 | | |
| Mg4 | 106.2 | | PPM | 7.322 | 99.96 | 104.4 | 114.3 | | |
| Mn4 | 10.53 | | PPM | .7241 | 9.856 | 10.43 | 11.29 | | |
| Na2 | 1680. | H | PPM | 27.08 | 1650. | 1687. | 1703. | | |
| Ni3 | 10.33 | | PPM | .6322 | 9.809 | 10.15 | 11.03 | | |
| Sb1 | 9.831 | | PPM | .3034 | 9.581 | 9.743 | 10.17 | | |
| V 2 | 10.31 | | PPM | .6973 | 9.659 | 10.21 | 11.04 | | |
| Zn3 | 22.91 | | PPM | .5696 | 22.38 | 22.83 | 23.51 | | |
| As2 | 10.81 | | PPM | .7728 | 10.31 | 10.43 | 11.70 | | |
| Pb1 | 11.01 | | PPM | .7419 | 10.51 | 10.66 | 11.87 | | |
| Se1 | 10.09 | | PPM | .9828 | 9.116 | 10.06 | 11.06 | | |

*** %Rec. ID: 01 SP Seq: 946 23:18:46 10 Nov 1998 ICP
Spikes =1 Unspiked =1

| | Spike | | %Rec. | Avg(U) | SD(U) | Avg(S) | SD(S) |
|---|---|---|---|---|---|---|---|
| Ag1 | .2000 | PPM | 99.41 | .0036 | .0000 | .2024 | .0000 |
| Al3 | 10.00 | PPM | 99.18 | .0204 | .0000 | 9.939 | .0000 |
| Ba4 | 10.00 | PPM | 100.7 | .0009 | .0000 | 10.08 | .0000 |
| Be2 | 1.000 | PPM | 101.4 | .0008 | .0000 | 1.015 | .0000 |
| Ca3 | 10.00 | PPM | 105.4 | 5.711 | .0000 | 16.25 | .0000 |
| Cd1 | 1.000 | PPM | 103.9 | .0010 | .0000 | 1.050 | .0000 |
| Co1 | 1.000 | PPM | 106.2 | -.0024 | .0000 | 1.060 | .0000 |
| Cr4 | 1.000 | PPM | 103.6 | .0018 | .0000 | 1.038 | .0000 |
| Cu1 | 1.000 | PPM | 99.82 | .0005 | .0000 | .9986 | .0000 |
| Fe2 | 1.000 | PPM | 104.2 | .0401 | .0000 | 1.082 | .0000 |
| K 1 | 50.00 | PPM | 99.40 | .0573 | .0000 | 49.76 | .0000 |
| Mg4 | 10.00 | PPM | 104.7 | .1555 | .0000 | 10.62 | .0000 |
| Mn4 | 1.000 | PPM | 104.8 | .0049 | .0000 | 1.053 | .0000 |
| Na2 | 50.00 | PPM | 103.5 | 116.3 | .0000 | 169.0 | .0000 |
| Ni3 | 1.000 | PPM | 103.6 | -.0028 | .0000 | 1.033 | .0000 |
| Sb1 | 1.000 | PPM | 105.1 | -.0379 | .0000 | .9931 | .0000 |
| V 2 | 1.000 | PPM | 103.5 | -.0049 | .0000 | 1.031 | .0000 |
| Zn3 | 1.000 | PPM | 107.0 | 1.321 | .0000 | 2.291 | .0000 |
| As2 | 1.000 | PPM | 110.8 | -.0264 | .0000 | 1.081 | .0000 |
| Pb1 | 1.000 | PPM | 112.4 | -.0221 | .0000 | 1.101 | .0000 |
| Se1 | 1.000 | PPM | 105.6 | -.0470 | .0000 | 1.009 | .0000 |

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| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: TC1100800 | | | | Seq: 947 | | 23:22:09 10 Nov 1996 ICP | | |
| | | | | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0247 | PPM | .0075 | .0286 | .0294 | .0161 | | |
| Al3 | .4922 | PPM | .0564 | .4272 | .5201 | .5293 | | |
| Ba4 | .0834 | PPM | .0044 | .0794 | .0881 | .0827 | | |
| Be2 | .0055 | PPM | .0004 | .0053 | .0059 | .0052 | | |
| Ca3 | 33.44 | PPM | .2128 | 33.67 | 33.40 | 33.25 | | |
| Cd1 | .0042 | PPM | .0061 | .0037 | .0105 | -.0018 | | |
| Co1 | -.0086 | PPM | .0120 | .0047 | -.0135 | -.0121 | | |
| Cr4 | .0032 | PPM | .0055 | -.0014 | .0094 | .0017 | | |
| Cu1 | -.0039 | PPM | .0176 | .0137 | -.0036 | -.0214 | | |
| Fe2 | 9.221 | PPM | .0587 | 9.236 | 9.271 | 9.156 | | |
| K 1 | .3367 | PPM | 1.294 | 1.582 | .9396 | -.9111 | | |
| Mg4 | 1.750 | PPM | .0523 | 1.805 | 1.686 | 1.758 | | |
| Mn4 | .0840 | PPM | .0022 | .0826 | .0829 | .0866 | | |
| Na2 | 1321. H | PPM | 7.141 | 1327. | 1323. | 1313. | | |
| Ni3 | .0428 | PPM | .1109 | .0081 | -.0437 | .1669 | | |
| Sb1 | -.4522 | PPM | .2061 | -.2261 | -.5008 | -.6296 | | |
| V 2 | -.0552 | PPM | .0116 | -.0438 | -.0670 | -.0547 | | |
| Zn3 | 22.04 | PPM | .1604 | 22.21 | 22.00 | 21.90 | | |
| As2 | -.1734 | PPM | .2904 | -.5056 | -.0466 | .0319 | | |
| Pb1 | .0114 | PPM | .1485 | -.1297 | .1663 | -.0024 | | |
| Se1 | -.4872 | PPM | .2150 | -.5163 | -.2592 | -.6663 | | |
| *** Sample ID: TC1100804 | | | | Seq: 948 | | 23:26:30 10 Nov 1996 ICP | | |
| | | | | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0339 | PPM | .0272 | .0653 | .0170 | .0195 | | |
| Al3 | .0560 | PPM | .1764 | -.1381 | .2065 | .0995 | | |
| Ba4 | .0491 | PPM | .0017 | .0496 | .0472 | .0506 | | |
| Be2 | .0148 | PPM | .0023 | .0124 | .0169 | .0152 | | |
| Ca3 | 11.40 | PPM | .0934 | 11.50 | 11.32 | 11.40 | | |
| Cd1 | .0846 | PPM | .0053 | .0790 | .0896 | .0851 | | |
| Co1 | .0351 | PPM | .0158 | .0170 | .0428 | .0455 | | |
| Cr4 | .0094 | PPM | .0023 | .0073 | .0116 | .0092 | | |
| Cu1 | .0299 | PPM | .0043 | .0311 | .0336 | .0252 | | |
| Fe2 | 531.9 H | PPM | 5.974 | 538.7 | 527.3 | 529.8 | | |
| K 1 | 5.038 | PPM | .1303 | 5.219 | 5.163 | 4.883 | | |
| Mg4 | .7487 | PPM | .1135 | .6182 | .8037 | .8242 | | |
| Mn4 | 1.906 | PPM | .0331 | 1.944 | 1.832 | 1.893 | | |
| Na2 | 1269. H | PPM | 17.34 | 1288. | 1256. | 1262. | | |
| Ni3 | .1432 | PPM | .0502 | .1503 | .1341 | .0872 | | |
| Sb1 | -.9336 | PPM | .0485 | -.9167 | -.8958 | -.9863 | | |
| V 2 | -.0650 | PPM | .0103 | -.0571 | -.0741 | -.0538 | | |
| Zn3 | 1.071 | PPM | .0404 | 1.117 | 1.045 | 1.056 | | |
| As2 | -.0913 | PPM | .5004 | -.5460 | .0461 | .3261 | | |
| Pb1 | -.1637 | PPM | .1497 | .0038 | -.2844 | -.2105 | | |
| Se1 | -.2527 | PPM | .2522 | -.2318 | -.4992 | .0228 | | |

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*** Sample ID: TC1100005 Seq: 949 23:28:51 10 Nov 1998 ICP
Dil. Weight 5.0000 Volume 50.000

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| Ag1 | .0407 | PPM | .0033 | .0408 | .0374 | .0440 | | |
| Al3 | -.1070 | PPM | .1414 | -.2438 | .0386 | -.1158 | | |
| Ba4 | .0572 | PPM | .0007 | .0576 | .0576 | .0564 | | |
| Be2 | .0137 | PPM | .0026 | .0138 | .0162 | .0110 | | |
| Ca3 | 16.96 | PPM | .1339 | 17.12 | 16.89 | 16.89 | | |
| Cd1 | -.0046 | PPM | .0047 | -.0007 | .0005 | -.0056 | | |
| Co1 | .0241 | PPM | .0046 | -.0019 | .0274 | .0469 | | |
| Cr4 | .0024 | PPM | .0087 | .0089 | .0057 | -.0075 | | |
| Cu1 | .0200 | PPM | .0086 | .0101 | .0255 | .0244 | | |
| Fe2 | 450.9 H | PPM | 4.798 | 455.7 | 447.5 | 449.5 | | |
| K 1 | 7.686 | PPM | 2.031 | 9.360 | 8.271 | 5.426 | | |
| Mg4 | .8877 | PPM | .1413 | .8199 | 1.050 | .7931 | | |
| Mn4 | 1.145 | PPM | .0225 | 1.169 | 1.125 | 1.139 | | |
| Na2 | 1229. H | PPM | 14.39 | 1245. | 1218. | 1224. | | |
| Ni3 | .1400 | PPM | .0327 | .1432 | .1711 | .1059 | | |
| Sb1 | -.5742 | PPM | .3699 | -.1269 | -.7540 | -.8418 | | |
| V 2 | -.0537 | PPM | .0370 | -.0118 | -.0816 | -.0678 | | |
| Zn3 | .2108 | PPM | .0290 | .2423 | .1852 | .2050 | | |
| As2 | -.2245 | PPM | .3164 | -.3391 | -.4676 | .1332 | | |
| Pb1 | .0673 | PPM | .0492 | .0509 | .0884 | .1226 | | |
| Se1 | -.2541 | PPM | .1025 | -.1714 | -.2220 | -.3688 | | |

*** Sample ID: TC1100006 Seq: 950 23:32:12 10 Nov 1998 ICP
Dil. Weight 5.0000 Volume 50.000

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Ag1 | .0455 | PPM | .0020 | .0472 | .0433 | .0460 | | |
| Al3 | .0337 | PPM | .1735 | -.0970 | -.0324 | .2306 | | |
| Ba4 | .0505 | PPM | .0037 | .0469 | .0502 | .0544 | | |
| Be2 | .0114 | PPM | .0005 | .0111 | .0120 | .0110 | | |
| Ca3 | 51.34 | PPM | .3702 | 52.50 | 51.54 | 51.48 | | |
| Cd1 | -.0178 | PPM | .0108 | -.0303 | -.0116 | -.0114 | | |
| Co1 | .0120 | PPM | .0228 | .0027 | .0381 | -.0046 | | |
| Cr4 | .0376 | PPM | .0122 | .0244 | .0485 | .0399 | | |
| Cu1 | .0241 | PPM | .0114 | .0212 | .0144 | .0367 | | |
| Fe2 | 521.0 H | PPM | 7.405 | 529.5 | 517.5 | 515.9 | | |
| K 1 | .8340 | PPM | 1.504 | 1.428 | 1.951 | -.8766 | | |
| Mg4 | 1.474 | PPM | .0729 | 1.468 | 1.549 | 1.403 | | |
| Mn4 | 1.436 | PPM | .0064 | 1.442 | 1.438 | 1.429 | | |
| Na2 | 1391. H | PPM | 21.81 | 1417. | 1379. | 1379. | | |
| Ni3 | .0942 | PPM | .0810 | .0341 | .0622 | .1864 | | |
| Sb1 | .0611 | PPM | .6272 | .6114 | .1937 | -.6218 | | |
| V 2 | -.0572 | PPM | .0151 | -.0539 | -.0737 | -.0440 | | |
| Zn3 | 10.46 | PPM | .0520 | 10.52 | 10.41 | 10.46 | | |
| As2 | -.1887 | PPM | .1588 | -.0607 | -.1390 | -.3664 | | |
| Pb1 | -.3063 | PPM | .1674 | -.2026 | -.4994 | -.2168 | | |
| Se1 | -.2766 | PPM | .1370 | -.3603 | -.3510 | -.1185 | | |

712

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| *** Sample ID: TC1108807 | | | | Seq: 951 | | 23:35:33 10 Nov 1998 ICP | | |
| | | | | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0490 | PPM | .0350 | .0109 | .0567 | .0796 | | |
| Al3 | .2013 | PPM | .2201 | .0109 | .4422 | .1508 | | |
| Ba4 | .1303 | PPM | .0038 | .1275 | .1288 | .1347 | | |
| Be2 | .0079 | PPM | .0021 | .0055 | .0089 | .0094 | | |
| Ca3 | 9.546 | PPM | .0405 | 9.567 | 9.499 | 9.571 | | |
| Cd1 | .3560 | PPM | .0103 | .3520 | .3483 | .3678 | | |
| Co1 | .0208 | PPM | .0261 | .0247 | -.0070 | .0446 | | |
| Cr4 | .0234 | PPM | .0057 | .0295 | .0181 | .0226 | | |
| Cu1 | .0861 | PPM | .0220 | .0732 | .0736 | .1115 | | |
| Fe2 | .6982 | PPM | .0225 | .7200 | .6997 | .6750 | | |
| K 1 | -.3722 | PPM | 1.114 | -1.035 | -.9947 | .9135 | | |
| Mg4 | 3.674 | PPM | .1503 | 3.773 | 3.501 | 3.749 | | |
| Mn4 | .0257 | PPM | .0023 | .0259 | .0230 | .0234 | | |
| Na2 | 1345. H | PPM | 12.34 | 1356. | 1332. | 1347. | | |
| Ni3 | -.0539 | PPM | .0828 | -.0755 | .0309 | -.1321 | | |
| Sb1 | -.5750 | PPM | .3647 | -.9506 | -.2221 | -.5548 | | |
| V 2 | -.0289 | PPM | .0074 | -.0224 | -.0273 | -.0369 | | |
| Zn3 | .4754 | PPM | .0166 | .4847 | .4563 | .4853 | | |
| As2 | -.3236 | PPM | .2350 | -.5905 | -.0234 | -.3571 | | |
| Pb1 | .5684 | PPM | .3960 | .1871 | .5404 | .9777 | | |
| Se1 | -.1863 | PPM | .2664 | -.0613 | -.0031 | -.4943 | | |
| *** Sample ID: TC1108808 | | | | Seq: 952 | | 23:38:54 10 Nov 1998 ICP | | |
| | | | | | | Dil. Weight 5.0000 Volume 50.000 | | |
| Ag1 | .0447 | PPM | .0212 | .0381 | .0276 | .0684 | | |
| Al3 | -.0992 | PPM | .2350 | -.2430 | .1720 | -.2267 | | |
| Ba4 | .1344 | PPM | .0032 | .1312 | .1376 | .1345 | | |
| Be2 | .0072 | PPM | .0007 | .0068 | .0081 | .0069 | | |
| Ca3 | 34.63 | PPM | .1606 | 34.81 | 34.51 | 34.56 | | |
| Cd1 | .0130 | PPM | .0063 | .0131 | .0212 | .0047 | | |
| Co1 | .0373 | PPM | .0130 | .0484 | .0229 | .0405 | | |
| Cr4 | .0058 | PPM | .0030 | .0033 | .0050 | .0092 | | |
| Cu1 | .0285 | PPM | .0068 | .0183 | .0333 | .0337 | | |
| Fe2 | 2.882 | PPM | .0236 | 2.898 | 2.855 | 2.894 | | |
| K 1 | 2.966 | PPM | .4940 | 3.479 | 2.987 | 2.491 | | |
| Mg4 | 5.177 | PPM | .0992 | 5.291 | 5.133 | 5.108 | | |
| Mn4 | .0594 | PPM | .0037 | .0595 | .0630 | .0556 | | |
| Na2 | 1349. H | PPM | 13.06 | 1364. | 1340. | 1343. | | |
| Ni3 | -.0348 | PPM | .0552 | -.0630 | .0289 | -.0703 | | |
| Sb1 | -.5341 | PPM | .6072 | -1.146 | -.5240 | .0680 | | |
| V 2 | -.0767 | PPM | .0164 | -.0879 | -.0579 | -.0844 | | |
| Zn3 | .1653 | PPM | .0054 | .1666 | .1593 | .1699 | | |
| As2 | .0960 | PPM | .1327 | .2426 | -.0159 | .0612 | | |
| Pb1 | -.2765 | PPM | .8220 | .6714 | -.7929 | -.7081 | | |
| Se1 | -.3022 | PPM | .2415 | -.1744 | -.5308 | -.1515 | | |

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# KEMRON ENVIRONMENTAL SERVICES
# MERCURY RUN LOGBOOK

ANALYST Kathy R Albertson DATE 11/11/98 TIME 1056
METHOD # 7470 SOP # 404 LA13 WORK GROUP # L9186
CAL STD SOURCE DSS 03 09 ICV/CCV SOURCE DSS 03 10
POST SPK SOURCE 10 µg/L (DSS 03 09)

| Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs | Cup # | Sample No. | Dil | Prep Conc | Autosampler Runs |
|---|---|---|---|---|---|---|---|---|---|
| [illegible] | S0 | | | | 27. | TC 11-058-12 | | 5150 | |
| [illegible] | S0.2 | | | | 28. | TC 11-105-01 | | | |
| [illegible] | S1.0 | | | | 29. | TC 11906-01 | | | CCV.CCB |
| [illegible] | S2.0 | | | | 30. | | | | |
| [illegible] | S5.0 | | | | 31. | | | | |
| [illegible] | S10.0 | | | | 32. | | | | |
| [illegible] | | | | | 33. | | | | |
| [illegible] | | | | | 34. | | | | |
| 1. | ICV | | | | 35. | | | | |
| 2. | ICB | | | ICV CCB | 36. | | | | |
| 3. | PBW 0 (WS 49119-05) | | | | 37. | | | | |
| 4. | LCSW 0 (WS 49119-04) | | | | 38. | | | | |
| 5. | TC [illegible] 11119 | | | | 39. | | | | |
| 6. | TC 11-036-01 MDW [illegible] | | 5150 | | 40. | | | | |
| 7. | S001 | | 1 | | 41. | | | | |
| 8. | 02 MDW [illegible] | | 1 | | 42. | | | | |
| 9. | 03 MDW [illegible] | | 1 | | 43. | | | | |
| 10. | TC 11-061-01 MDW [illegible] | | 1 | | 44. | | | | |
| 11. | TC 11-038-01 MDW [illegible] | | 1 | | 45. | | | | |
| 12. | 0001 (WS 49119-[illegible]) | | 1 | CCV.CCB | 46. | | | | |
| 13. | 02 MDW [illegible] | | 1 | | 47. | | | | |
| 14. | MS02 | | 1 | | 48. | | | | |
| 15. | TC 11-044-01 MDW [illegible] | | 1 | | 49. | | | | |
| 16. | TC 11-047 01 | 0.9 | 1 | | 50. | | | | |
| 17. | S001 | | 1 | | 51. | | | | |
| 18. | 02 | | 1 | | 52. | | | | |
| 19. | 04 | | 1 | | 53. | | | | |
| 20. | 05 | | 1 | | 54. | | | | |
| 21. | 06 | | 1 | | 55. | | | | |
| 22. | 07 | | 1 | CCV.CCB | 56. | | | | |
| 23. | 08 | | 1 | | 57. | | | | |
| 24. | 09 | | 1 | | 58. | | | | |
| 25. | (WS 49119-05) MS09 | | 1 | | 59. | | | | |
| 26. | (WS 49119-06) MSD09 | | ✓ | | 60. | | | | |

Comments:

Note: No entry for Dil represents 1X Dilution

Autosampler Run Key:

CCV - Continuing Calibration Verification
CCB = Continuing Calibration Blank
% D = Automatic Instrument Rerun due to % RSD > 20%
FRS = Full Recalibration Sequence

ID = Automatic Instrument Dilution
R = Analyst Rerun
BLK = Blank Rerun

10:56:23 11 Nov 1998 Folder: 1111 Protocol: clp2 CLP2 Page

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Standard: 1 Rep: 1 Seq: 53 10:56:23 11 Nov 1998 HG

Hg .000 ppb -56
Ave. Int. = -56 S. D. = 0 -

*** Standard: 2 Rep: 1 Seq: 54 10:58:59 11 Nov 1998 HG

Hg .200 ppb 4754
Ave. Int. = 4754 S. D. = 0

*** Standard: 3 Rep: 1 Seq: 55 11:01:35 11 Nov 1998 HG

Hg 1.00 ppb 22105
Ave. Int. = 22105 S. D. = 0

*** Standard: 4 Rep: 1 Seq: 56 11:04:11 11 Nov 1998 HG

Hg 2.00 ppb 44907
Ave. Int. = 44907 S. D. = 0

*** Standard: 5 Rep: 1 Seq: 57 11:06:49 11 Nov 1998 HG

Hg 5.00 ppb 114012
Ave. Int. = 114012 S. D. = 0

*** Standard: 6 Rep: 1 Seq: 58 11:09:27 11 Nov 1998 HG

Hg 10.0 ppb 226840
Ave. Int. = 226840 S. D. = 0

x
o

IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;
M:
: Protocol: clp2 CLP2
:
: Rev: 3.001 Time: 11:09:40 11 Nov 1998
:
: Folder: 1111 Seq: 59 Print: On
:
: User: Batch: Id: Std6Rep1 Cup: 1 29 Gas: 0.25 LP
:
: State: Idle Xmit: Off Autosampler: Cr
:
LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;
M9
: CALIBRATION: Accepted Values

| Current | Accepted | Type | A | B | C | |
|---|---|---|---|---|---|---|
| Hg Yes | 11:09 11-Nov-98 | L | | 4.40214e-5 | 6.40502e-3 | .99998 |

LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;
M9
: Update coefficients
:
HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;
M<

SS
716

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Sample ID: ICV Seq: 59 11:12:07 11 Nov 1998 HG

Hg .976 ppb .000 % .976

*** Sample ID: ICB Seq: 60 11:14:38 11 Nov 1998 HG

Hg -.005 ppb .000 % -.005

*** Check Standard: 3 Ck2 Seq: 61 11:17:11 11 Nov 1998 HG

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Hg | | 101. | 1.01 | 1.00 | ppb | .000 % |

*** Check Standard: 3 Ck3 Seq: 62 11:19:45 11 Nov 1998 HG

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Hg | | 1.44 | .003 | .200 | ppb | .000 % |

*** Sample ID: PBW G Seq: 63 11:22:17 11 Nov 1998 HG
WG49119-03

Hg .013 ppb .000 % .013

*** Sample ID: LCSW G Seq: 64 11:24:48 11 Nov 1998 HG
WG49119-04

Hg 1.01 ppb .000 % 1.01

*** Sample ID: TC BLK Seq: 65 11:27:19 11 Nov 1998 HG
11/19

Hg .007 ppb .000 % .007

*** Sample ID: TC 1105601 M021-96-0541 Seq: 66 11:29:50 11 Nov 1998 HG
UNSPIKED .9 Dil. Weight 5.0000 Volume 50.00

Hg .061 ppb .000 % .061

*** Sample ID: SP01 Seq: 67 11:32:21 11 Nov 1998 HG
SPIKED Dil. Weight 5.0000 Volume 50.00

Hg 10.8 ppb .000 % 10.8

*** %Rec. ID: SP01 Seq: 68 11:32:21 11 Nov 1998 HG
Spikes =1 Unspiked =1

| | Spike | | %Rcv. | Avg(U) | SD(U) | Avg(S) | SD(S) |
|---|---|---|---|---|---|---|---|
| Hg | 1.00 | ppb | 107. | .006 | .000 | 1.08 | .000 |

*** Sample ID: TC 1105602 M021-96-0543 Seq: 69 11:34:53 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

Hg .042 ppb .000 % .042

*** Sample ID: TC 1105603 M021-98-0544 Seq: 70 11:37:24 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

Hg .081 ppb .000 % .081

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Sample ID: TC 1106101 m049-98-0140 Seq: 71 11:39:55 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

| | | | | | |
|---|---|---|---|---|---|
| Hg | .094 | ppb | .000 | % | .094 |

*** Sample ID: TC 1107801 m049-98-0141 Seq: 72 11:42:26 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

| | | | | | |
|---|---|---|---|---|---|
| Hg | .022 | ppb | .000 | % | .022 |

*** Sample ID: DU01 Seq: 73 11:44:58 11 Nov 1998 HG
WG49119-07 Dil. Weight 5.0000 Volume 50.00

| | | | | | |
|---|---|---|---|---|---|
| Hg | .120 | ppb | .000 | % | .120 |

*** Check Standard: 2 Ck2 Seq: 74 11:47:30 11 Nov 1998 HG

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Hg | | 100. | 1.00 | 1.00 | ppb | .000 % |

*** Check Standard: 3 Ck3 Seq: 75 11:50:04 11 Nov 1998 HG

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Hg | | .693 | .001 | .200 | ppb | .000 % |

*** Sample ID: TC 1107802 m049-98-0142 Seq: 76 11:52:36 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

| | | | | | |
|---|---|---|---|---|---|
| Hg | .015 | ppb | .000 | % | .015 |

*** Sample ID: MS02 Seq: 77 11:55:06 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

| | | | | | |
|---|---|---|---|---|---|
| Hg | 9.86 | ppb | .000 | % | 9.86 |

*** Sample ID: TC 1107901 m049-98-0143 Seq: 78 11:57:36 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

| | | | | | |
|---|---|---|---|---|---|
| Hg | .067 | ppb | .000 | % | .067 |

*** Sample ID: TC 1108801 Seq: 79 12:00:06 11 Nov 1998 HG
UNSPIKED .9 Dil. Weight 5.0000 Volume 50.00

| | | | | | |
|---|---|---|---|---|---|
| Hg | .157 | ppb | .000 | % | .157 |

*** Sample ID: SP01 Seq: 80 12:02:36 11 Nov 1998 HG
SPIKED Dil. Weight 5.0000 Volume 50.00

| | | | | | |
|---|---|---|---|---|---|
| Hg | 10.4 | ppb | .000 | % | 10.4 |

*** %Rec. ID: SP01 Seq: 81 12:02:36 11 Nov 1998 HG
Spikes =1 Unspiked =1

| | Spike | | %Rcv. | Avg(U) | SD(U) | Avg(S) | SD(S) |
|---|---|---|---|---|---|---|---|
| Hg | 1.00 | ppb | 103. | .016 | .000 | 1.04 | .000 |

*** Sample ID: TC 1108802 Seq: 82 12:05:07 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

| | | | | | |
|---|---|---|---|---|---|
| Hg | .006 | ppb | .000 | % | .006 |

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Sample ID: TC 1108804 Seq: 83 12:07:37 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

Hg .124 ppb .000 % .124

*** Sample ID: TC 1108805 Seq: 84 12:10:08 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

Hg .164 ppb .000 % .164

*** Sample ID: TC 1108806 Seq: 85 12:12:39 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

Hg .079 ppb .000 % .079

*** Sample ID: TC 1108807 Seq: 86 12:15:10 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

Hg 2.75 ppb .000 % 2.75

*** Check Standard: 2 Ck2 Seq: 87 12:17:43 11 Nov 1998 HG

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Hg | | 97.3 | .973 | 1.00 | ppb | .000 % |

*** Check Standard: 3 Ck3 Seq: 88 12:20:17 11 Nov 1998 HG

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Hg | | .979 | .002 | .200 | ppb | .000 % |

*** Sample ID: TC 1108808 Seq: 89 12:22:48 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

Hg .087 ppb .000 % .087

*** Sample ID: TC 1108809 Seq: 90 12:25:16 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

Hg .356 ppb .000 % .356

*** Sample ID: MS09 Seq: 91 12:27:44 11 Nov 1998 HG
WG49119-05 Dil. Weight 5.0000 Volume 50.00

Hg 9.59 ppb .000 % 9.59

*** Sample ID: MSD09 Seq: 92 12:30:12 11 Nov 1998 HG
WG49119-06 Dil. Weight 5.0000 Volume 50.00

Hg 9.32 ppb .000 % 9.32

*** Sample ID: TC 1108812 Seq: 93 12:32:40 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

Hg -.054 ppb .000 % -.054

*** Sample ID: TC 1110501 Seq: 94 12:35:08 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

Hg .029 ppb .000 % .029

| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|

*** Sample ID: TC 1110601 Seq: 95 12:37:37 11 Nov 1998 HG
Dil. Weight 5.0000 Volume 50.00

Hg -.003 ppb .000 % -.003

*** Check Standard: 2 Ck2 Seq: 96 12:40:09 11 Nov 1998 HG

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Hg | | 97.4 | .974 | 1.00 | ppb | .000 % |

*** Check Standard: 3 Ck3 Seq: 97 12:42:43 11 Nov 1998 HG

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|---|---|---|---|---|---|---|
| Hg | | 2.28 | .005 | .200 | ppb | .000 % |

# DIGESTION DATA

# KEMRON ENVIRONMENTAL SERVICES
## MICROWAVE PREPARATION LOG

Page 1 of 2

ME407 - Method ~~3005A~~ 3050B - Water & Extract ✓
ME406 - Method 3050B - Soil _____
Work Group # 49126

Box Letter N
Due Date 11-13-97
ADT 11-10-97 8:00

| Sample Number | Initial Weight | Initial Volume | Final Volume | Metals | Final Weight | TCLP Date | Due Date |
|---|---|---|---|---|---|---|---|
| PBW | 41.33 g | 50 mL | 50 mL | (Cd) | 41.26 g | | |
| LCSW | 40.66 | | | (Cd) | 40.47 | | |
| [illegible] | 41.[illegible] | | | | 41.[illegible] | 11-5 | |
| [illegible] | 40.67 | 5 | | TCLP MD21-49-0.05 | [illegible] | | 11-23 |
| [illegible] | [illegible] | | | (Cd) | [illegible] | | |
| [illegible] | 40.57 | | | 0563 | 40.27 | | |
| [illegible] | 41.29 | | | (Cd) | [illegible] | | |
| [illegible] | 40.36 | | | (Cd) | [illegible] | | |
| [illegible] | [illegible] | | | [illegible] | [illegible] | | |
| [illegible] | [illegible] | | | MD49-77-0.40 | [illegible] | | 11-14 |
| [illegible] | [illegible] | | | [illegible] | [illegible] | | |
| [illegible] | [illegible] | | | [illegible] | [illegible] | | |
| [illegible] | [illegible] | | | [illegible] | [illegible] | | 11-[illegible] |
| [illegible] | [illegible] | | | | [illegible] | | 11-[illegible] |
| [illegible] | [illegible] | | | | [illegible] | | |
| [illegible] | [illegible] | | | | [illegible] | | |
| [illegible] | [illegible] | | | | [illegible] | | |
| [illegible] | [illegible] | | | | [illegible] | | |
| [illegible] | [illegible] | | | | [illegible] | | |
| [illegible] | [illegible] | | | | [illegible] | | |
| [illegible] | [illegible] | | | | [illegible] | | |
| [illegible] | [illegible] | | | | [illegible] | | |
| [illegible] | [illegible] | | | | [illegible] | | |
| [illegible] | [illegible] | | | | [illegible] | | |
| [illegible] | [illegible] | | | | [illegible] | | |
| [illegible] | [illegible] | | | | [illegible] | | 11-13 |
| [illegible] | [illegible] | ✓ | | [illegible] | [illegible] | [illegible] | 11-13 |
| [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] | | 11-13 |

Signature [illegible] Date 11-10-97

Comments [illegible]

LCS [illegible]
MS/MSD [illegible]
IDV/CCVK _____

Lot #
$HNO_3$ [illegible]

122
93

Volume # 17
Page # 46

# KEMRON ENVIRONMENTAL SERVICES
## MICROWAVE PREPARATION LOG

Page 2 of 2

ME407 - Method 3005A - Water & Extract _____
ME406 - Method 3050B - Soil _____
Work Group # _____

Box Letter N
Due Date _____
ADT _____

| Sample Number | Initial Weight | Initial Volume | Final Volume | Metals | Final Weight | TCLP Date | Due Date |
|---|---|---|---|---|---|---|---|
| W 11- 12203 | 405.02 | 1 ea | 50 mL | Ag As Al Ba Ca Cr Cu Pb Mg Se Na | 405.26 | | |
| 1 03 MS | 401.78 | 1 | 1 | ✓ | 401.78 | | |

Signature _____ Date _____

Comments _____

LCS _____
MS/MSD _____
IDV/CCV K _____

Lot #
$HNO_3$ _____

723

94

# MERCURY PREPARATION LOG

Analyst(s): SJK
Date: 11-10-98
LCS: .5ml DSS-02-23
MS/MSD: .5ml DSS-02-23
Witness: VC

ME404 - Method 7470A - Water [✓]
ME405 - Method 7471A - Soil [ ]
$H_2SO_4$ Lot #: 1211034
$K_2S_2O_8$ Lot #: 103777
$KMnO_4$ Lot #: 1104635
$HNO_3$ Lot #: 1122025

Box: G
Due Date: 11-13-98
Digestion Work Group #: WG49119
Pressure & Time —
Bath Temp @ start: 95°C
Bath Temp @ end: 95°C

| KEMRON Number | Initial Wt/Vol | Final Volume | Hg, TC Hg, Hg-D | Comments | Due Date |
|---|---|---|---|---|---|
| TBW | 50ml | 50ml | -03 | | |
| LCSW | ↓ | ↓ | -01 | | |
| TBLK 11/9 | ↓ | ↓ | | | |
| IC-11-056-01 | 5ml | ↓ | IC-Hg | 11021-98-0561 Level 4- | 11-23 |
| -02 | ↓ | ↓ | ↓ | -0563 ↓ | |
| -03 | ↓ | ↓ | ↓ | -0564 ↓ | |
| IC-11-061-01 | ↓ | ↓ | ↓ | 11049-98-0140 Level 4- | 11-19 |
| IC-11-075-01 | ↓ | ↓ | ↓ | -0141 Level 4- | 11-20 |
| -01dup | ↓ | ↓ | -07 | ↓ ↓ | ↓ |
| -02 | ↓ | ↓ | ↓ | -0142 ↓ | ↓ |
| -02ms | ↓ | ↓ | ↓ | ↓ ↓ | ↓ |
| IC-11-079-01 | ↓ | ↓ | ↓ | -0143 Level 4- | 11-20 |
| IC-11-055-01 | ↓ | ↓ | ↓ | | 11-13 |
| -03 | ↓ | ↓ | ↓ | | ↓ |
| -04 | ↓ | ↓ | ↓ | | ↓ |
| -05 | ↓ | ↓ | ↓ | | ↓ |
| -06 | ↓ | ↓ | ↓ | | ↓ |
| -07 | ↓ | ↓ | ↓ | | ↓ |
| -08 | ↓ | ↓ | ↓ | | ↓ |
| -09 | ↓ | ↓ | ↓ | | ↓ |
| -09ms | ↓ | ↓ | -05 | | ↓ |
| -09msd | ↓ | ↓ | -06 | | ↓ |
| -12 | ↓ | ↓ | ↓ | | ↓ |
| IC-11-105-01 | ↓ | ↓ | ↓ | | 11-13 |
| IC-11-106-01 | ↓ | ↓ | ↓ | | 11-13 |

ICV / CCV: DSS-03-10
Stds: 0, 0.2, 1.0, 2.0, 5.0, 10: DSS-03-09
Reviewed By: [illegible]

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS B865, Drop Point 010
Los Alamos, NM 87545
Attention: Joylene Valdez

PO Number:
Account Number: LANL-295

Login #: L9811078
Report Date: 11/12/98
Work ID: 4526R/MR2W05153318
Date Received: 08/25/98

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9811078-01 | MD19-98-0141 | L9811078-02 | MD19-98-0142 |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Certified By
Maren M. Beery

PRELIMINARY

COPY

Login #L9811078
November 12, 1998 07:41 am

KEMRON ENVIRONMENTAL SERVICES

## TCLP METALS

Lab Sample ID: L9811078-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4526R/MR2W05153318

Matrix: Soil
Collected: 08/21/98
Units: mg/L

COC Info: N/A
TCLP Ext. Date: 11/09/98

| Analyte | Result | Qualifiers | RL | Regulatory Limit | Method | Prep. Date | Analysis Date | Time | Dil Type |
|---|---|---|---|---|---|---|---|---|---|
| Silver..... | | ND | 0.10 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |
| Arsenic..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |
| Barium..... | 1.4 | | 0.10 | 100 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |
| Cadmium..... | | ND | 0.10 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |
| Chromium..... | | ND | 0.20 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |
| Mercury..... | | ND | 0.005 | 0.2 | 7470\7470\1311 | 11/10/98 | 11/11/98 | 10:56 | N/A |
| Lead..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |
| Selenium..... | | ND | 1.0 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |

## TCLP METALS

Lab Sample ID: L9811078-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4526R/MR2W05153318

Matrix: Soil
Collected: 08/21/98
Units: mg/L

COC Info: N/A
TCLP Ext. Date: 11/09/98

| Analyte | Result | Qualifiers | RL | Regulatory Limit | Method | Prep. Date | Analysis Date | Time | Dil Type |
|---|---|---|---|---|---|---|---|---|---|
| Silver..... | | ND | 0.10 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |
| Arsenic..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |
| Barium..... | 0.69 | | 0.10 | 100 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |
| Cadmium..... | | ND | 0.10 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |
| Chromium..... | | ND | 0.20 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |
| Mercury..... | | ND | 0.005 | 0.2 | 7470\7470\1311 | 11/10/98 | 11/11/98 | 10:56 | N/A |
| Lead..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |
| Selenium..... | | ND | 1.0 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |

RL = Reporting Limit

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H865, Drop Point 01U
Los Alamos, NM 87545
Attention: Joylene Valdez

PO Number:
Account Number: LANL-295

Login #: L9811078
Report Date: 11/12/98
Work ID: 4526R/MR2W05153318
Date Received: 08/25/98

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9811078-01 | MD19-98-0141 | L9811078-02 | MD19-98-0142 |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Certified By
Maren M. Beery

Maren M Beery

11/23/98

COPY

KEMRON

Order #98-11-078
November 19, 1998
14:33

**KEMRON ENVIRONMENTAL SERVICES**
**REPORT NARRATIVE**

Lab ID# 7797L0014-8M

CLIENT: Los Alamos National Laboratory

LANL SDG/RN: 4526R

Sample Management:
Two soil samples were received at Kemron Environmental Services on 8/25/98 for total metals analysis. TCLP metals analysis was requested on 11/5/98. The twenty eight day holding time for mercury expired on 9/18/98.

Client ID:
MD49-98-0141
MD49-98-0142

Quality Control:

METALS - 6010/7000:
There were no technical difficulties associated with analysis of this sample set.

Shipment Conditions:
The samples were received intact. Solid blue ice was present.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and in completeness, except as detailed in this QC Report.

Dave T. Byrne
Laboratory Manager

Date: 11/19/98

28

Login #L9811078
November 12, 1998 07:41 am

KEMRON ENVIRONMENTAL SERVICES

## TCLP METALS

Lab Sample ID: L9811078-01
Client Sample ID: MD49-98-0141
Site/Work ID: 4526R/MR2W05153318

Matrix: Soil
Collected: 08/21/98
Units: mg/L

COC Info: N/A
TCLP Ext. Date: 11/09/98

| Analyte | Result | Qualifiers | RL | Regulatory Limit | Method | Prep. Date | Analysis Date | Time | Dil Type |
|---|---|---|---|---|---|---|---|---|---|
| Silver..... | | ND | 0.10 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |
| Arsenic..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |
| Barium..... | 1.4 | | 0.10 | 100 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |
| Cadmium..... | | ND | 0.10 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |
| Chromium..... | | ND | 0.20 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |
| Mercury..... | | ND | 0.005 | 0.2 | 7470\7470\1311 | 11/10/98 | 11/11/98 | 10:56 | N/A |
| Lead..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |
| Selenium..... | | ND | 1.0 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:46 | N/A |

## TCLP METALS

Lab Sample ID: L9811078-02
Client Sample ID: MD49-98-0142
Site/Work ID: 4526R/MR2W05153318

Matrix: Soil
Collected: 08/21/98
Units: mg/L

COC Info: N/A
TCLP Ext. Date: 11/09/98

| Analyte | Result | Qualifiers | RL | Regulatory Limit | Method | Prep. Date | Analysis Date | Time | Dil Type |
|---|---|---|---|---|---|---|---|---|---|
| Silver..... | | ND | 0.10 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |
| Arsenic..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |
| Barium..... | 0.69 | | 0.10 | 100 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |
| Cadmium..... | | ND | 0.10 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |
| Chromium..... | | ND | 0.20 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |
| Mercury..... | | ND | 0.005 | 0.2 | 7470\7470\1311 | 11/10/98 | 11/11/98 | 10:56 | N/A |
| Lead..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |
| Selenium..... | | ND | 1.0 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:49 | N/A |

RL = Reporting Limit

Order #: 98-11-078
November 12, 1998 07:41 am

# KEMRON ENVIRONMENTAL SERVICES
## WORK GROUPS

| Work Group | Run ID | Sample | Dil Type | Matrix | Product | Method | Analyst | Date Collected | Run Date | Run Time | Department |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W349051 | R55988 | L9811078 | C1 | Soil | Mercury, TCLP | 7470\7470\1311 | FFA | 21-AUG-1998 | 11-NOV-1998 | 10:56 | TCLP Prep. |
| W349051 | R55988 | L9811078 | C2 | Soil | Mercury, TCLP | 7470\7470\1311 | FFA | 21-AUG-1998 | 11-NOV-1998 | 10:56 | TCLP Prep. |
| W349119 | R55988 | L9811078 | C1 | Soil | Mercury, TCLP | 7470\7470\1311 | FFA | 21-AUG-1998 | 11-NOV-1998 | 10:56 | Digestion |
| W349119 | R55988 | L9811078 | C2 | Soil | Mercury, TCLP | 7470\7470\1311 | FFA | 21-AUG-1998 | 11-NOV-1998 | 10:56 | Digestion |
| W349126 | R56040 | L9811078 | C1 | Soil | Arsenic, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Digestion |
| W349126 | R56040 | L9811078 | C1 | Soil | Barium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Digestion |
| W349126 | R56040 | L9811078 | C1 | Soil | Cadmium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Digestion |
| W349126 | R56040 | L9811078 | C1 | Soil | Chromium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Digestion |
| W349126 | R56040 | L9811078 | C1 | Soil | Lead, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Digestion |
| W349126 | R56040 | L9811078 | C1 | Soil | Selenium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Digestion |
| W349126 | R56040 | L9811078 | C1 | Soil | Silver, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Digestion |
| W349126 | R56040 | L9811078 | C2 | Soil | Arsenic, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Digestion |
| W349126 | R56040 | L9811078 | C2 | Soil | Barium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Digestion |
| W349126 | R56040 | L9811078 | C2 | Soil | Cadmium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Digestion |
| W349126 | R56040 | L9811078 | C2 | Soil | Chromium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Digestion |
| W349126 | R56040 | L9811078 | C2 | Soil | Lead, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Digestion |
| W349126 | R56040 | L9811078 | C2 | Soil | Selenium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Digestion |
| W349126 | R56040 | L9811078 | C2 | Soil | Silver, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Digestion |
| W349154 | R56040 | L9811078 | C1 | Soil | Arsenic, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Metals - ICP |
| W349154 | R56040 | L9811078 | C1 | Soil | Barium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Metals - ICP |
| W349154 | R56040 | L9811078 | C1 | Soil | Cadmium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Metals - ICP |
| W349154 | R56040 | L9811078 | C1 | Soil | Chromium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Metals - ICP |
| W349154 | R56040 | L9811078 | C1 | Soil | Lead, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Metals - ICP |
| W349154 | R56040 | L9811078 | C1 | Soil | Selenium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Metals - ICP |
| W349154 | R56040 | L9811078 | C1 | Soil | Silver, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:46 | Metals - ICP |
| W349154 | R56040 | L9811078 | C2 | Soil | Arsenic, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Metals - ICP |
| W349154 | R56040 | L9811078 | C2 | Soil | Barium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Metals - ICP |
| W349154 | R56040 | L9811078 | C2 | Soil | Cadmium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Metals - ICP |
| W349154 | R56040 | L9811078 | C2 | Soil | Chromium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Metals - ICP |
| W349154 | R56040 | L9811078 | C2 | Soil | Lead, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Metals - ICP |
| W349154 | R56040 | L9811078 | C2 | Soil | Selenium, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Metals - ICP |
| W349154 | R56040 | L9811078 | C2 | Soil | Silver, TCLP | 601CB\3015\1311 | SLP | 21-AUG-1998 | 11-NOV-1998 | 00:49 | Metals - ICP |
| W349186 | R55988 | L9811078 | C1 | Soil | Mercury, TCLP | 7470\7470\1311 | FFA | 21-AUG-1998 | 11-NOV-1998 | 10:56 | Metals - AA |
| W349186 | R55988 | L9811078 | C2 | Soil | Mercury, TCLP | 7470\7470\1311 | FFA | 21-AUG-1998 | 11-NOV-1998 | 10:56 | Metals - AA |

# KEMRON ANALYST LIST

## Ohio Valley Laboratory

## 10/28/98

---

ALC -- Ann L. Clark
BAD -- Becky A. Diehl
CEB -- Chad E. Barnes
CDB -- Christy D. Burton
CMS -- Crystal M. Stevens
CRC -- Carla R. Cochran
DIH -- Deanna I. Hesson
DKM -- Dewey K. Miller
DLN -- Deanna L. Norton
DLP -- Dorothy L. Payne
ECL -- Eric C. Lawson
FEH -- Fay E. Harmon
HV -- Hema Vilasagar
JLH -- Janice L. Holland
JWR -- John W. Richards
JYH -- Ji Y. Hu
KHA -- Kim H. Archer
KMS -- Kevin M. Stutler
KRA -- Kathy R. Albertson
MDA -- Mike D. Albertson
MDC -- Michael D. Cochran
MES -- Mary E. Schilling
MLS -- Michael L. Schimmel
MMB -- Maren M. Beery
RDC -- Rebecca D. Cutlip
RDS -- Rebecca D. Sutton
REF -- Ron E. Fertile
REK -- Robert E. Kyer
RSS -- Regina S. Simmons
RWC -- Rodney W. Campbell
SJK -- Sindy J. Kinney
SJM -- Shawn J. Marshall
SLP -- Sheri L. Pfalzgraf
SLT -- Stephanie L. Tepe
SMW -- Shanna M. Welch
SPL -- Steve P. Learn
TJW -- Thomas J. Ware
TRS -- Todd R. Stack
VC -- Vicki Collier
VMN -- Vincent M. Nedeff

KEMRON Environmental Services, Inc.
LIST OF VALID QUALIFIERS (qual)
March 9, 1998

| Qualifier | Description |
|---|---|
| (A) | See the report narrative |
| (B) | See the report narrative |
| (C) | See the report narrative |
| + | Correlation coefficient for the MSA is less than 0.995 |
| < | Less than |
| > | Greater than |
| B | Present in the method blank |
| C | Confirmed by GC/MS |
| * | Surrogate or spike compound out of range |
| CG | Confluent growth |
| D | The analyte was quantified at a secondary dilution factor |
| DL | Surrogate or spike was diluted out |
| E | Estimated concentration due to sample matrix interference |
| F | Present below nominal reporting limit (AFCEE only) |
| FL | Free liquid |
| I | Semiquantitative result, out of instrument calibration range |
| J | Present below nominal reporting limit |
| L | Sample reporting limits elevated due to matrix interference |
| M | Duplicate injection precision not met |

| Qualifier | Description |
|---|---|
| N | Tentatively Identified Compound (TIC) |
| NA | Not applicable |
| ND | Not detected at or above the reporting limit (RL) |
| NF | Not found |
| NFL | No free liquid |
| NI | Non-ignitable |
| NR | Analyte is not required to be analyzed |
| NS | Not spiked |
| P | Concentration > 25% difference between the two GC columns |
| QNS | Quantity not sufficient to perform analysis |
| R | Analyte exceeds regulatory limit |
| RA | Reanalysis confirms reported results |
| RE | Reanalysis confirms sample matrix interference |
| S | Analyzed by method of standard addition |
| SMI | Sample matrix interference on surrogate |
| SP | Reported results are for spike compounds only |
| TNTC | Too numerous to count |
| U | Analyzed for but not detected |
| W | Post-digestion spike for furnace AA out of control limits |
| X | Can not be resolved from isomer. See below. |

**Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semiquantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methyphenol and 4-Methyphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.

Work Order L-9811078 Client LANL #of Samples 2 Due Date 11/20 Page 1

| Sample # | Analyses | Reason | Removed By ADT | Removed From | MovedTo | Reliq. By | Ret'd by ADT | Ret'd To | Rec'd By | Reason |
|---|---|---|---|---|---|---|---|---|---|---|
| PRT. 8-435 01-02 | TP-ME | Relog | JB 11-5-98 10:00 | Cutcher | WALKIN | Big | | | | |
| 01,02 | TCLP | EAT | Rec 11-9-98 @8.30 | WALK IN | TCLP | Big | Rec 11-9-98 01,20 | Archive | Big | Archive |

733

Thursday, November 05, 1998

REQUEST NUMBER: 4526R
ANALYSIS TYPE: INORG

Los Alamos
NATIONAL LABORATORY

ATTN: Maren Beery
KEMRON
109 STARLITE PARK
MARIETTA, OH 45750

AMENDED

Please analyze the enclosed samples according to the schedule indicated:

These samples are on:

SHIP DATE: 8/24/98
REPORT DUE: 11/25/98
TURN AROUND REQ'D: 15 days

LANL Request Number: 4526R
Per Agreement Number: 7797L0014-9S
Project Cost Code: MR2W05153318

RAD SCREENING: Yes, Received

COMMENTS: 49 - 1144 , DK; AMENDED: ADDITIONAL ANALYSIS ADDED, JV 11/4/98.

LANL ER SMO CONTACT: Joylene Valdez MS H865 5056659968

Signature:

| ANALYSIS ORDER CODE | ANALYTE(S) | SAMPLE ID | CONT ID | SAMPLE MATRIX | DATE SAMPLED | COMMENTS |
|---|---|---|---|---|---|---|
| METTAL | | MD49-98-0141 | 05 | S | 8/21/98 | |
| METTCLP | | MD49-98-0141 | 05 | S | 8/21/98 | |
| METTAL | | MD49-98-0142 | 06 | S | 8/21/98 | |
| METTCLP | | MD49-98-0142 | 06 | S | 8/21/98 | |

Final Page of REQUEST NUMBER 4526R



734

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
ENO, TA-3, Bldg. 271
MS H865, Drop Point OIU
Los Alamos, NM 87545
Attention: Joylene Valdez

PO Number:
Account Number: LANL-295

Login #: L9811079
Report Date: 11/12/98
Work ID: 4528R/MR2N05153318
Date Received: 08/25/98

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9811079-01 | MD19-98-0143 | | |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Certified By
Karen M. Beety

PRELIMINARY

COPY

Jane Hopkins

Login #L9811079
November 12, 1998 07:40 am

# KEMRON ENVIRONMENTAL SERVICES

## TCLP METALS

Lab Sample ID: L9811079-01
Client Sample ID: MD49-98-0143
Site/Work ID: 4528R/MR2W05153318

Matrix: Soil
Collected: 08/24/98
Units: mg/L

COC Info: N/A
TCLP Ext. Date: 11/09/98

| Analyte | Result | Qualifiers | RL | Regulatory Limit | Method | Prep. Date | Analysis Date | Time | Dil Type |
|---|---|---|---|---|---|---|---|---|---|
| Silver..... | | ND | 0.10 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |
| Arsenic..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |
| Barium..... | 0.66 | | 0.10 | 100 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |
| Cadmium..... | | ND | 0.10 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |
| Chromium..... | | ND | 0.20 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 10:56 | N/A |
| Mercury..... | | ND | 0.005 | 0.2 | 7470\7470\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |
| Lead..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |
| Selenium..... | | ND | 1.0 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |

RL = Reporting Limit

KEMRON Environmental Services
109 Starlite Park
Marietta, Ohio 45750
Phone: (740) 373-4071

Los Alamos National Laboratory
SMO, TA-3, Bldg. 271
MS H865, Drop Point O1U
Los Alamos, NM 87545
Attention: Joylene Valdez

PO Number:
Account Number: LANL-295

Login #: L9811079
Report Date: 11/12/98
Work ID: 4528R/MR2W05153318
Date Received: 08/25/98

SAMPLE IDENTIFICATION

| Sample Number | Sample Description | Sample Number | Sample Description |
|---|---|---|---|
| L9811079-01 | MD49-98-0143 | | |

All results on solids/sludges are reported on a dry weight basis, where applicable, unless otherwise specified. This report shall not be reproduced, except in full, without the written approval of KEMRON.

NYSDOH ELAP ID: 10861

Maren M Beery

Certified By
Maren M. Beery

Augusta Garcia

11/23/98

COPY

FILE

COPY

KEMRON ENVIRONMENTAL SERVICES

Order #98-11-079
November 19, 1998
13:16

**KEMRON ENVIRONMENTAL SERVICES**
**REPORT NARRATIVE**

Lab ID# 7797L0014-8M

CLIENT: Los Alamos National Laboratory

LANL SDG/RN: 4528R

Sample Management:
One soil sample was received at Kemron Environmental Services on 8/25/98 for total metals. TCLP metals analysis was requested on 11/05/98. The twenty-eight day holding time for mercury expired on 9/21/98.

Client ID:
MD49-98-0143

Quality Control:

METALS - 6010/7000:
There was no technical difficulties associated with analysis of this sample set.

Shipment Conditions:
The sample was received intact. Solid blue ice was present.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and in completeness, except as detailed in this QC Report.

Laboratory Manager

Date: 11-19-98

Login #L9811079
November 12, 1998 07:40 am

KEMRON ENVIRONMENTAL SERVICES

## TCLP METALS

Lab Sample ID: L9811079-01
Client Sample ID: MD49-98-0143
Site/Work ID: 4528R/MR2W05153318

Matrix: Soil
Collected: 08/24/98
Units: mg/L

COC Info: N/A
TCLP Ext. Date: 11/09/98

| Analyte | Result | Qualifiers | RL | Regulatory Limit | Method | Prep. Date | Analysis Date | Time | Dil Type |
|---|---|---|---|---|---|---|---|---|---|
| Silver..... | | ND | 0.10 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |
| Arsenic..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |
| Barium..... | 0.66 | | 0.10 | 100 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |
| Cadmium..... | | ND | 0.10 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |
| Chromium..... | | ND | 0.20 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |
| Mercury..... | | ND | 0.005 | 0.2 | 7470\7470\1311 | 11/10/98 | 11/11/98 | 10:56 | N/A |
| Lead..... | | ND | 1.0 | 5 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |
| Selenium..... | | ND | 1.0 | 1 | 6010B\3015\1311 | 11/10/98 | 11/11/98 | 00:53 | N/A |

RL = Reporting Limit

Order #: 98-11-079
November 12, 1998 07:40 am

# KEMRON ENVIRONMENTAL SERVICES
## WORK GROUPS

| Work Group | Run ID | Sample | Dil Type | Matrix | Product | Method | Analyst | Date Collected | Run Date | Run Time | Department |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W349051 | R55988 | L9811079-01 | | Soil | Mercury, TCLP | 7470\7470\1311 | KRA | 24-AUG-1998 | 11-NOV-1998 | 10:56 | TCLP Prep. |
| W349119 | R55988 | L9811079-01 | | Soil | Mercury, TCLP | 7470\7470\1311 | KRA | 24-AUG-1998 | 11-NOV-1998 | 10:56 | Digestion |
| W349126 | R56040 | L9811079-01 | | Soil | Arsenic, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Digestion |
| W349126 | R56040 | L9811079-01 | | Soil | Barium, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Digestion |
| W349126 | R56040 | L9811079-01 | | Soil | Cadmium, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Digestion |
| W349126 | R56040 | L9811079-01 | | Soil | Chromium, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Digestion |
| W349126 | R56040 | L9811079-01 | | Soil | Lead, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Digestion |
| W349126 | R56040 | L9811079-01 | | Soil | Selenium, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Digestion |
| W349126 | R56040 | L9811079-01 | | Soil | Silver, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Digestion |
| W349154 | R56040 | L9811079-01 | | Soil | Arsenic, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Metals - ICP |
| W349154 | R56040 | L9811079-01 | | Soil | Barium, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Metals - ICP |
| W349154 | R56040 | L9811079-01 | | Soil | Cadmium, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Metals - ICP |
| W349154 | R56040 | L9811079-01 | | Soil | Chromium, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Metals - ICP |
| W349154 | R56040 | L9811079-01 | | Soil | Lead, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Metals - ICP |
| W349154 | R56040 | L9811079-01 | | Soil | Selenium, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Metals - ICP |
| W349154 | R56040 | L9811079-01 | | Soil | Silver, TCLP | 601CB\3015\1311 | SLP | 24-AUG-1998 | 11-NOV-1998 | 00:53 | Metals - ICP |
| W349186 | R55988 | L9811079-01 | | Soil | Mercury, TCLP | 7470\7470\1311 | KRA | 24-AUG-1998 | 11-NOV-1998 | 10:56 | Metals - AA |

# KEMRON ANALYST LIST

## Ohio Valley Laboratory

## 10/28/98

---

ALC -- Ann L. Clark
BAD -- Becky A. Diehl
CEB -- Chad E. Barnes
CDB -- Christy D. Burton
CMS -- Crystal M. Stevens
CRC -- Carla R. Cochran
DIH -- Deanna I. Hesson
DKM -- Dewey K. Miller
DLN -- Deanna L. Norton
DLP -- Dorothy L. Payne
ECL -- Eric C. Lawson
FEH -- Fay E. Harmon
HV -- Hema Vilasagar
JLH -- Janice L. Holland
JWR -- John W. Richards
JYH -- Ji Y. Hu
KHA -- Kim H. Archer
KMS -- Kevin M. Stutler
KRA -- Kathy R. Albertson
MDA -- Mike D. Albertson
MDC -- Michael D. Cochran
MES -- Mary E. Schilling
MLS -- Michael L. Schimmel
MMB -- Maren M. Beery
RDC -- Rebecca D. Cutlip
RDS -- Rebecca D. Sutton
REF -- Ron E. Fertile
REK -- Robert E. Kyer
RSS -- Regina S. Simmons
RWC -- Rodney W. Campbell
SJK -- Sindy J. Kinney
SJM -- Shawn J. Marshall
SLP -- Sheri L. Pfalzgraf
SLT -- Stephanie L. Tepe
SMW -- Shanna M. Welch
SPL -- Steve P. Learn
TJW -- Thomas J. Ware
TRS -- Todd R. Stack
VC -- Vicki Collier
VMN -- Vincent M. Nedeff

KEMRON Environmental Services, Inc.
LIST OF VALID QUALIFIERS (qual)
March 9, 1998

| Qualifier | Description |
|---|---|
| (A) | See the report narrative |
| (B) | See the report narrative |
| (C) | See the report narrative |
| + | Correlation coefficient for the MSA is less than 0.995 |
| < | Less than |
| > | Greater than |
| B | Present in the method blank |
| C | Confirmed by GC/MS |
| * | Surrogate or spike compound out of range |
| CG | Confluent growth |
| D | The analyte was quantified at a secondary dilution factor |
| DL | Surrogate or spike was diluted out |
| E | Estimated concentration due to sample matrix interference |
| F | Present below nominal reporting limit (AFCEE only) |
| FL | Free liquid |
| I | Semiquantitative result, out of instrument calibration range |
| J | Present below nominal reporting limit |
| L | Sample reporting limits elevated due to matrix interference |
| M | Duplicate injection precision not met |
| N | Tentatively Identified Compound (TIC) |
| NA | Not applicable |
| ND | Not detected at or above the reporting limit (RL) |
| NF | Not found |
| NFL | No free liquid |
| NI | Non-ignitable |
| NR | Analyte is not required to be analyzed |
| NS | Not spiked |
| P | Concentration > 25% difference between the two GC columns |
| QNS | Quantity not sufficient to perform analysis |
| R | Analyte exceeds regulatory limit |
| RA | Reanalysis confirms reported results |
| RE | Reanalysis confirms sample matrix interference |
| S | Analyzed by method of standard addition |
| SMI | Sample matrix interference on surrogate |
| SP | Reported results are for spike compounds only |
| TNTC | Too numerous to count |
| U | Analyzed for but not detected |
| W | Post-digestion spike for furnace AA out of control limits |
| X | Can not be resolved from isomer. See below. |

**Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semiquantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methyphenol and 4-Methyphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.

Work Order L9811079 Client CHOL # of Samples 01 Due Date 11/20 Page 1

| Sample # | Analyses | Reason | Removed By ADT | Removed From | Moved To | Reliq. By | Rel'd by ADT | Rel'd To | Rec'd By | Reason |
|---|---|---|---|---|---|---|---|---|---|---|
| TKT. 8-435 01 | TC-ME | Relog | AD 11-5-98 1100 | Cuchine | WALKIN | Big | | | | |
| 01 | TCLP | EXT | Rec 11-07-98 @820 | WALKIN | TCLP | Big | Rec 11-9-98 @1120 | Archive | Big | Archive |

Thursday, November 05, 1998

REQUEST NUMBER: 4528R
ANALYSIS TYPE: INORG

**Los Alamos**
NATIONAL LABORATORY

AMENDED

ATTN: Maren Beery
KEMRON
109 STARLITE PARK
MARIETTA, OH 45750

Please analyze the enclosed samples according to the schedule indicated:

These samples are on:

SHIP DATE: 8/24/98
REPORT DUE: 11/25/98
TURN AROUND REQ'D: 15 days

LANL Request Number: 4528R
Per Agreement Number: 7797L0014-9S
Project Cost Code: MR2W05153318

RAD SCREENING: Yes, Received

COMMENTS: 49 - 1144 , DK; AMENDED: ADDITIONAL ANALYSIS ADDED, JV 11/4/98.

LANL ER SMO CONTACT: Joylene Valdez MS H865 5056659968

Signature: Joylene Valdez

| ANALYSIS ORDER CODE | ANALYTE(S) | SAMPLE ID | CONT ID | SAMPLE MATRIX | DATE SAMPLED | COMMENTS |
|---|---|---|---|---|---|---|
| METTAL | | MD49-98-0143 | 06 | S | 8/24/98 | |
| METTCLP | | MD49-98-0143 | 06 | S | 8/24/98 | |

Final Page of REQUEST NUMBER 4528R



744

KEERS ENVIRONMENTAL®

11/30/98

To: Rene Evans @ MK

From: Dan Gay @ Keers

RE: TA 49 spill analyticals

Rene,

Here are the reports from the lab on the TA 49 truck incident. It looks to me that we still should excavate some soil from the contaminated area. The results for the closure samples are high in both oil and diesel ranges.

The state regulatory limit for landfilling is <1000 PPM and for landfarming it is <100 PPM. I would assume that LANL would like to see clean up at <100 PPM.

I have already talked to John DeJola and we have tentatively agreed to remove another 10-15 CY of soil and ship it to our landfarm.

The ethylene glycol is <50 PPM and should be sufficient for clean closure, but again it depends on the LANL requirements.

I also included copies of the initial landfarm analytical and a signed manifest for your files.

Call me at (800) 823-2766 ext 126 if you have any questions.

DG

CORPORATE OFFICE
KEERS Environmental, Inc.
5904 Florence Avenue NE
Albuquerque, New Mexico 87113
Telephone: 505/823-9006
Fax: 505/823-2766

745

**Hall Environmental Analysis Laboratory**

RECEIVED NOV 13 1998 KEERS

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Suite A
Albuquerque, NM 87109

11/11/98

Keers
5904 Florence
Albuquerque, NM 87113

Dear Mr. Dan Gay,

Enclosed are the results for the analyses that were requested. These were done according to EPA procedures or equivalent.

Detection limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman
Assistant Lab Manager

Project: 9811032 - LANL TA 49

4901 Hawkins NE, Suite A, Albuquerque, NM 87109
Ph (505) 345-3975, Fax (505) 345-4107

7/16

landfarming data

**Hall Environmental Analysis Laboratory**

| | | | |
|---|---|---|---|
| **Client:** | Keers | **Date Collected:** | 11/6/98 |
| **Project:** | LANL TA 49 | **Date Received:** | 11/6/98 |
| **Project Manager:** | Dan Gay | **Sample Matrix:** | Soil |
| **Project Number:** | | **Extraction Date** | 11/10/98 |

## EPA Method - 418.1

| HEAL ID | Client ID | Dilution | TPH (mg/kg) | Analysis Date |
|---|---|---|---|---|
| 9811032-1 | TA 49 #1 | 10 | 7,700 | 11/11/98 |
| 9811032-2 | TA 49 #2 | 40 | 24,000 | 11/11/98 |
| Extraction Blank | - | 1 | ND | 11/11/98 |

| | | MRL | 20 | |
|---|---|---|---|---|
| **QA/QC** | | | | |
| Sample ID: | Sample Amount | Spike | Recovery | % Recovery |
| Blank Spike 11/10 | <20 | 100 | 98 | 98 |
| Sample ID: | Sample Amount | Duplicate | RPD | |
| Blank Duplicate 11/10 | <20 | <20 | NA | |

4901 Hawkins NE Suite A, Albuquerque, NM 87109
Ph (505) 345-3975, Fax (505) 345-4107

747

# CHAIN-OF-CUSTODY RECORD

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE, Suite A
Albuquerque, New Mexico 87109
505.345.3975
Fax 505.345.4107

Client: KEERS

Address: 5904 Florence
ALB NM
87113

Phone #: 823 9006

Fax #: 823 2766

Project Name: LANL TA 49

Project #: " "

Project Manager: Dan Gay

Sampler: DG

Samples Cold?: Yes No

| Date | Time | Matrix | Sample ID. No. | Number/Volume | Preservative: $H_2SO_4$ | Preservative: HCl | | HEAL No | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gasoline Only) | TPH Method 8015B MOD (Gas/Diesel) | TPH (Method 418.1) | Volatiles Full List (8021) | EDB (Method 504.1) | EDC (Method 8021) | 8310 (PNA or PAH) | RCRA 8 Metals | Cations (Na, K, Ca, Mg) | Anions (F, Cl, $NO_3$, $NO_2$, $PO_4$, $SO_4$) | 8081 Pesticides / PCB's (8082) | 8260 (VOA) | 8270 (Semi-VOA) | | | Air Bubbles or Headspace (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/6/98 | 1:00 | S | TA 49 #1 | 4 oz | | | | 9811032-1 | | | | X | | | | | | | | | | | | | |
| 11/6/98 | 1:00 | S | TA 49 #2 | " " | | | | -2 | | | | X | | | | | | | | | | | | | |

| Date | Time | Relinquished By: (Signature) | Received By: (Signature) |
|---|---|---|---|
| 11/9/98 | 1:00 | | 11/6 |
| Date: | Time: | Relinquished By: (Signature) | Received By: (Signature) |

Remarks:

NOV.30.1998 3:55PM KEER ENVIRONMENTAL NO.622 P.5/12

KEERS ENVIRONMENTAL

# NMED GROUND WATER DISCHARGE PERMIT

5904 FLORENCE AVE. NE
ALBUQUERQUE, NM 87113
(505) 823-9006
1-800-327-2766
FAX (505) 823-2766

KEERS HYDROCARBON SOIL LAND FARM
14 MILES SOUTH ON HWY 55 FROM
MOUNTAINAIR, NEW MEXICO

GROUND WATER DISCHARGE PERMIT
MANIFEST 00587

## HYDROCARBON CONTAMINATED SOIL MANIFEST

PART I

GENERATOR NAME Keers Environmental
GENERATOR ADDRESS 5904 Florence Ave NE
CITY/STATE/ZIP Albuquerque New Mexico 87113
TELEPHONE 505 823-9006 FAX 823-2766
TECHNICAL FIRM
TECHNICAL CONTACT Dan Gray
TELEPHONE 505 823-9006 FAX 823-2766
KEERS HYDROCARBON CONTAMINATED SOIL PROFILE SHEET NUMBER

QUANTITY ____ CUBIC YARDS 16 DRUMS ____ OTHER ____

GENERATORS CERTIFICATION: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIAL IS NOT A HAZARDOUS WASTE AS DEFINED BY US EPA AND/OR STATE AND LOCAL REGULATIONS, DOES NOT CONTAIN REGULATED RADIOACTIVE MATERIALS OR REGULATED CONCENTRATIONS OF PCB'S (POLYCHLORINATED BIPHENYLS), AND THIS MATERIAL DOES NOT CONTAIN FREE LIQUIDS. I ALSO CERTIFY THAT THE MATERIAL BEING REPRESENTED IN THIS MANIFEST CORRESPONDS WITH AND IS THE SAME AS THE MATERIAL REFERENCED IN THE HYDROCARBON CONTAMINATED SOIL PROFILE SHEET SHOWN ABOVE.

NAME OF GENERATOR OR AUTHORIZED AGENT (PRINT) Keers Environmental
SIGNATURE OF GENERATOR OR AUTHORIZED AGENT Ray Hendrickson
RECEIPT DATE 11/4/98

PART II

TRANSPORTER CERTIFICATION: I HEREBY CERTIFY THAT NO OTHER MATERIAL HAS BEEN PLACED IN THIS TRUCK SINCE ACCEPTANCE OF THE MATERIAL AS DESCRIBED IN PART I OF THIS DOCUMENT.

NAME OF TRANSPORTER (PRINT) Keers Transport Services
SIGNATURE OF TRANSPORTER Rick Ogan
RECEIPT DATE 11/4/98

PART III

THIS IS TO CERTIFY THAT KEERS HYDROCARBON CONTAMINATED SOIL LAND FARM, OPERATING UNDER N.M.E.D GROUND WATER DISCHARGE PERMIT #DP-1012 HAS ACCEPTED THE ABOVE MATERIAL.

NAME OF AUTHORIZED AGENT (PRINT) Keers Land Farm
SIGNATURE OF AUTHORIZED AGENT Ray Hendrickson
RECEIPT DATE 11/5/98
MATERIAL DEPOSITED IN CELL # Active Area #2 Cell 2 LOCATION middle of Cell 2

78/19

# Hall Environmental Analysis Laboratory, Inc.

Hall Environmental Analysis Laboratory
4901 Hawkins N.E. Suite A
Albuquerque, NM 87109
(505) 345-3975

11/24/98

Keers Environmental
5904 Florence Ave. NE
Albuquerque, NM 87113

Dear Mr. Dan Gay:

Enclosed are the results for the analyses that were requested. These were done according to EPA procedures or the equivalent.

Detection limits are determined by EPA methodology. No determination of compounds below these levels (denoted by nd or the < sign) has been made.

Please don't hesitate to contact me for any additional information or clarifications.

Sincerely,

11/24/98

Scott Hallenbeck, Lab Manager

Project: 9811033/TA-49/E.G. Spill Closeout Samples



750

# Hall Environmental Analysis Laboratory, Inc.

| | | | |
|---|---|---|---|
| Client: | Keers Environmental | Date Collected: | 11/5/98 |
| Project: | TA-49/E.G. Spill Closeout Samples | Date Received: | 11/6/98 |
| Sample Matrix: | Non-aqueous | Date Extracted: | 11/6/98 |

Volatile Organic Compounds
Units: PPM (mg/kg)

| | | | | |
|---|---|---|---|---|
| Sample Name: | | 49-981105-03 | 49-981105-04 | Extraction Blank |
| Lab Code: | | 9811033-2 | 9811033-3 | |
| Date Analyzed: | | 11/10/98 | 11/10/98 | 11/10/98 |
| EPA Method 8015 Modified-DRO | | | | |
| Compound | MRL | Result | Result | Result |
| Diesel Range Organics | 5.0 | 140 | nd | nd |
| Motor Oil Range Organics | 50 | 800 | 319 | nd |
| DNOP (Surrogate) Recovery | | 118% | 112% | 104% |
| Dilution Factor | | 4 | 2 | 1 |

unit?

MRL = method recovery limit

no standard deviation



751

# Hall Environmental Analysis Laboratory, Inc.

| | | | |
|---|---|---|---|
| Client: | Keers Environmental | Date Collected: | NA |
| Project: | TA-49/E.G. Spill Closeout Samples | Date Received: | NA |
| Sample Matrix: | Non-aqueous | Date Extracted: | 11/6/98 |
| | | Date Analyzed: | 11/10/98 |

Volatile Organic Compounds
Units: PPM (mg/kg)
BS/BSD 11/10

EPA Method 8015 Modified - DRO

| Compound | Sample Result | Amount Added | Blank Spike | BS % | BS Dup | BSD % | RPD |
|---|---|---|---|---|---|---|---|
| Diesel | <5.0 | 50 | 49 | 98 | 48 | 96 | 2 |



252

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

# ESH-19 CHAIN OF CUSTODY RECORD



Hazardous and Solid Waste Group
Mail Stop K498 Phone 667-0666

Project Name:
TA-49 TPH/E.G. Spill Closeout Sampler

(*) Sampling Team:
Rene Evans (HK/PMC) Dan Gay (KEERS)
Harvey Decker (LANL/ESH-18)

SR 11033

| Date | Time | | | Matrix of Material | no. of containers | volume of container | TA | Bldg # | | | SAM ID# | REMARKS | ANALYSIS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/5/98 | 14:27 | | ✓ | Soil/fill/clay rich | 1 | 4oz | 49 | FH | 114 | | 49981105-01 | Eth. Glycol (1) | SR11033 |
| 11/5/98 | | | | Soil/fill CANCELED | 1 | 4oz | 49 | FH | 114 | | 49-981105-02 | Eth. Glycol | SEE 11/6 KEER ENVIRONMENTAL |
| 11/5/98 | 14:15 | 4V | | Soil/fill/clay rich | 1 | 4oz | 49 | FH | 114 | | 49-981105-03 | DRO TPH (2) | SR11033 |
| 11/5/98 | 14:21 | 4V | | Soil/fill/clay rich | 1 | 4oz | 49 | FH | 114 | | 49-981105-04 | DRO TPH (2) | SR11033 |

(1) E. Glycol anal = ASTM D2982 mod

(2) TPH DRO anal = DRO 8015m
~~TPH DRO m~~

SEE 11/5/98

(*) Send results to each person on the sampling team.

| Relinquished by: | Date / Time: | Received by: | Relinquished by: | Date / Time: | Received by: |
|---|---|---|---|---|---|
| [signature] | 11/5/98 15:53 | [signature] R. Rendal | | | [signature] 11/6/98 1428 |
| [signature] R. Rendal | 5 NOV 98 16:30 | [signature] | | | |

Remarks

Original Accompanies Shipment. Copy to Field Files.

[signature] 11/6

NOV. 30. 1998 3:57PM NO. 622 P. 10/12

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ENERGY LABORATORIES, INC.
P.O. BOX 30916 • 1120 SOUTH 27TH STREET • BILLINGS, MT 59107-0916 • PHONE (406) 252-6325
FAX (406) 252-6069 • 1-800-735-4489 • E-MAIL energylab.com

# LABORATORY REPORT

TO: Nancy McDuffie
ADDRESS: Hall Environmental Laboratory
4901 Hawkins NE, Suite A
Albuquerque, NM 87109

LAB NO.: 98-72565
DATE: 11/18/98 fs

## SOIL ANALYSIS

Proj. #9811033
TA-49, 49-981105-01
Sampled 11/05/98 @ 1427
Submitted 11/11/98
Analyzed 11/17/98

Ethylene Glycol ..... <50 µg/g(ppm)

Analysis done by ASTM D2982 Modified by MS.

FEB-1-1999 ENERGY LAB

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# CHAIN-OF-CUSTODY RECORD

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE, Suite A
Albuquerque, New Mexico 87109
505.345.3975
Fax 505.345.4107

H1151
75470

Client: SEE RIGHT

Address:

Phone #:

Fax #:

Project Name: TA-49

Project #: 981103.3

Project Manager: Nancy McDuffie

Sampler:

Samples Cold?: ☒ Yes ☐ No

| Date | Time | Matrix | Sample ID No | Number/Volume | Preservative $H_2O_2$ | Preservative HCl | | HEAL No. | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gasoline Only) | TPH Method 8015B MOD (Gas/Diesel) | TPH (Method 418.1) | Volatiles Full List (8021) | EDB (Method 504.1) | EDC (Method 8021) | 8310 (PNA or PAH) | RCRA 8 Metals | Cations (Na, K, Ca, Mg) | Anions (F, Cl, $NO_3$, $NO_2$, $PO_4$, $SO_4$) | 8081 Pesticides / PCB's (8082) | 8260 (VOC) | 8270 (Semi-VOA) | X Algae | Air Bubbles or Headspace (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/5 | 1411 | Soil | ~~Soil Gas~~ 49-981105-01 | 1 spil | | | | 98-7385 | | | | | | | | | | | | | | | X | |

Date: 11/5 Time: 1520 Relinquished By: (Signature) Nancy McDuffie

Date: Time: Relinquished By: (Signature)

Received By: (Signature)

Received By: (Signature) Linda Hoelscher 11/11/98 @ 1400

Remarks:

NOV.30.1998 3:58PM KEEP ENVIRONMENTAL NO.622 P.12/12

DOE/NMED OS Water Sample Results
TA49 Sampling Station MB-2

# Paragon Analytics, Inc.

## PCBs Case Narrative

### NMED DOE Oversight Bureau

TA-49 7.29.98-25(SW)

Order Number - 9807229

1. This report consists of 1 water sample received by Paragon on 07/30/98.

2. The sample was extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water sample was extracted using continuous liquid-liquid extractors, based on Method 3520. The extract was then processed using sulfuric acid cleanup by Method 3665 in an attempt to remove potential interferences.

3. The extract was then analyzed using GC/ECD (electron capture detectors) with a RTX-CLPesticides capillary column according to protocols based on Method 8081. All positive results were then confirmed on a RTX-50 column. The quantitation of each analyte is the lower of the concentrations obtained from each column. This minimizes the chances of reporting elevated results based on interferences.

4. All initial and continuing calibration criteria were within acceptance criteria.

5. The method blank associated with this project was below the reporting limits for all analytes.

6. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

7. Matrix spikes and matrix spike duplicates could not be performed because of insufficient sample. A laboratory control spike and laboratory control spike duplicate were performed instead.

8. All samples were analyzed within the established holding times.

9. All surrogate recoveries were within acceptable limits with the following exceptions:

| Surrogate | Sample | Direction |
|---|---|---|
| DCB | -2 | low |

The method states that one surrogate may be outside control limits without further action.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Judith Melson
GC Analyst

8-12-98
Date

RRB
Reviewer's Initials

8-18-98
Date

# Paragon Analytics, Incorporated

## Sample Number(s) Cross-Reference Table

Paragon OrderNum: 9807229
Client Name: NMED DOE Oversight Bureau
Client Project Name: TA-49
Client Project Number: 7.29.98-25 (SW)
Client PO Number:

| Client Sample | Lab Sample Number | COC Number | Matrix | Date Collected | Time Collected |
|---|---|---|---|---|---|
| AB2 | 9807229-1 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-2 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-3 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-4 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-5 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-6 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-7 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-8 | | Soil | 7/28/98 | 14:00 |
| AB2 | 9807229-9 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-10 | | Soil | 7/28/98 | 14:00 |

# AROCLORS
Method 8081

Sample ID

**Reagent Blank**

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 7.29.98-25(SW)

Lab Sample ID: WRB1 07/31/98

Date Collected: N/A
Date Extracted: 7/31/98
Date Analyzed: 8/10/98

Sample Matrix: Water
Cleanup: Sulfuric Acid

Sample Volume: 1000 mL
Final Volume: 10 mL
Dilution Factor: 1

| Analyte | Conc (ug/L) | Reporting Limit (ug/L) |
|---|---|---|
| Aroclor 1016 | ND | 1.0 |
| Aroclor 1221 | ND | 2.0 |
| Aroclor 1232 | ND | 1.0 |
| Aroclor 1242 | ND | 1.0 |
| Aroclor 1248 | ND | 1.0 |
| Aroclor 1254 | ND | 1.0 |
| Aroclor 1260 | ND | 1.0 |

## SURROGATE RECOVERY

| Analyte | % Recovery | % Rec Limits |
|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 85 | 44 - 131 |
| Decachlorobiphenyl | 64 | 48 - 143 |

ND = Not Detected at or above client requested reporting limit.

# AROCLORS
Method 8081

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 7.29.98-25(SW)

Lab Sample ID: 9807229-2

Sample Matrix: Water
Cleanup: Sulfuric Acid

Sample ID

AB2

Date Collected: 7/28/98
Date Extracted: 7/31/98
Date Analyzed: 8/10/98

Sample Volume: 1000 mL
Final Volume: 10 mL
Dilution Factor: 1

| Analyte | Conc (ug/L) | Reporting Limit (ug/L) |
|---|---|---|
| Aroclor 1016 | ND | 1.0 |
| Aroclor 1221 | ND | 2.0 |
| Aroclor 1232 | ND | 1.0 |
| Aroclor 1242 | ND | 1.0 |
| Aroclor 1248 | ND | 1.0 |
| Aroclor 1254 | ND | 1.0 |
| Aroclor 1260 | ND | 1.0 |

## SURROGATE RECOVERY

| Analyte | % Recovery | % Rec Limits |
|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 77 | 44 - 131 |
| Decachlorobiphenyl | 13 * | 48 - 143 |

ND = Not Detected at or above client requested reporting limit.

# AROCLOR BLANK SPIKE

Method 8081

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 7.29.98-25(SW)

Lab Sample ID: WBS1 07/31/98

Sample Matrix: Water
Cleanup: Sulfuric Acid

Sample ID

Blank Spike

Date Extracted: 7/31/98
Date Analyzed: 8/10/98

Sample Volume: 1000 mL
Final Volume: 10 mL

| Analyte | Spike Added (ug/L) | BS Concentration (ug/L) | BS Percent Recovery | QC Limits % Rec |
|---|---|---|---|---|
| Aroclor 1260 | 5.00 | 4.01 | 80 | 80 - 112 |

| Analyte | Spike Added (ug/L) | BSD Concentration (ug/L) | BSD Percent Recovery | RPD | QC Limits RPD |
|---|---|---|---|---|---|
| Aroclor 1260 | 5.00 | 4.08 | 82 | 2 | 20 |

## SURROGATE RECOVERY BS/BSD

| Analyte | % Recovery MS | % Recovery MSD | % Rec Limits |
|---|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 88 | 89 | 44 - 131 |
| Decachlorobiphenyl | 63 | 67 | 48 - 143 |

# Paragon Analytics, Inc.

## Radiochemistry Case Narrative
## Gamma Spectroscopy

---

### NMED DOE Oversight Bureau
TA-49 / 7.29.98-25 (SW)

Paragon Work Order 9807229

1. This report consists of analysis results for 1 water sample and 1 soil sample received by Paragon on 07/30/98.

2. These samples were prepared according to Paragon Analytics, Inc. procedure PAI SOP739R2.

3. The samples were analyzed for the presence of gamma emitting radionuclides according to Paragon Analytics, Inc. procedure PAI SOP713R4. The analyses were completed on 08/16/98.

4. Because of the small volume of sample available for the sediment phase of AB2 (9807229-10), the sample was dissolved and analyzed in liquid form. Also for this reason, no duplicate could be prepared. A duplicate count was performed in lieu of a preparation duplicate.

5. No further problems were encountered with either the client samples or the associated quality control samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Michael E. Goodwill — 8-23-98
Radiochemistry Instrument Technician — Date

Radiochemistry Final Data Review — 8/25/98
Date

Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: Duplicate

Lab Sample ID: 98-07-229-D1
Sample Matrix: Water
Count Duration: 120 Min.

Date Collected: 07/28/98 10:00
Date Analyzed: 08/04/98 15:42
Aliquot: 1.00

| Nuclide | Activity (pCi/Liter) | % Uncertainty | Flag |
|---|---|---|---|
| Be-7 | < 68 | BDL | U |
| Na-22 | < 8.9 | BDL | U |
| K-40 | < 140 | BDL | U |
| Sc-46 | < 10 | BDL | U |
| Cr-51 | < 63 | BDL | U |
| Mn-54 | < 9.5 | BDL | U |
| Co-56 | < 20 | BDL | U |
| Co-57 | < 3.8 | BDL | U |
| Co-58 | < 11 | BDL | U |
| Fe-59 | < 27 | BDL | U |
| Co-60 | < 11 | BDL | U |
| Zn-65 | < 20 | BDL | U |
| Sr-85 | < 14 | BDL | U |
| Nb-95 | < 10 | BDL | U |
| Ru-106 | < 89 | BDL | U |
| Ag-110m | < 8.4 | BDL | U |
| Sb-124 | < 9.7 | BDL | U |
| Sb-125 | < 28 | BDL | U |
| I-131 | < 13 | BDL | U |
| Cs-134 | < 9.1 | BDL | U |
| Cs-137 | < 9.6 | BDL | U |
| Ce-139 | < 6.2 | BDL | U |
| Ce-144 | < 30 | BDL | U |
| Eu-152 | < 55 | BDL | U |
| Eu-154 | < 27 | BDL | U |
| Eu-155 | < 16 | BDL | U |
| Tl-208 | < 7.9 | BDL | U |
| Pb-210 | < 440 | BDL | U |
| Bi-212 | < 120 | BDL | U |
| Pb-212 | < 11 | BDL | U |
| Bi-214 | < 19 | BDL | U |
| Pb-214 | < 15 | BDL | U |

Data stored in file 10000551.SPC

Continued on next page...



M6

Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: Duplicate

Lab Sample ID: 98-07-229-D1 Date Collected: 07/28/98 10:00
Sample Matrix: Water Date Analyzed: 08/04/98 15:42
Count Duration: 120 Min. Aliquot: 1.00

| Nuclide | Activity (pCi/Liter) | % Uncertainty | Flag |
|---|---|---|---|
| Th-227 | < 44 | BDL | U |
| Ac-228 | < 38 | BDL | U |
| Pa-234m | < 1300 | BDL | U |
| Th-234 | < 84 | BDL | U |
| U-235 | < 32 | BDL | U |
| Am-241 | < 38 | BDL | U |

Data stored in file 10000551.SPC

Reported Uncertainties are the Estimated Total Propagated Uncertainty (2σ). See PAI SOP 743 for details of the TPU determination.

BDL = Below Detection Limit; see method for DL determination

Flags:
U = Result is less than the sample specific minimum detectable activity or less than the 2-sigma total propagated uncertainty.

Remarks: Sample 98-07-229-D1 is a duplicate of 98-07-229-07.

Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau

Client Project Id: TA-49

Client Sample ID: AB2

Lab Sample ID: 98-07-229-07

Sample Matrix: Water

Count Duration: 150 Min.

Date Collected: 07/28/98 12:00

Date Analyzed: 08/04/98 12:52

Aliquot: 1.00

| Nuclide | Activity (pCi/Liter) | % Uncertainty | Flag |
|---|---|---|---|
| Be-7 | < 66 | BDL | U |
| Na-22 | < 12 | BDL | U |
| K-40 | 90 ± 110 | 121.2 | U |
| Sc-46 | < 10 | BDL | U |
| Cr-51 | < 62 | BDL | U |
| Mn-54 | < 9.0 | BDL | U |
| Co-56 | < 20 | BDL | U |
| Co-57 | < 4.3 | BDL | U |
| Co-58 | < 7.4 | BDL | U |
| Fe-59 | < 19 | BDL | U |
| Co-60 | < 11 | BDL | U |
| Zn-65 | < 20 | BDL | U |
| Sr-85 | < 12 | BDL | U |
| Nb-95 | < 9.3 | BDL | U |
| Ru-106 | < 83 | BDL | U |
| Ag-110m | < 6.7 | BDL | U |
| Sb-124 | < 8.7 | BDL | U |
| Sb-125 | < 20 | BDL | U |
| I-131 | < 12 | BDL | U |
| Cs-134 | < 8.9 | BDL | U |
| Cs-137 | < 9.3 | BDL | U |
| Ce-139 | < 4.5 | BDL | U |
| Ce-144 | < 31 | BDL | U |
| Eu-152 | < 55 | BDL | U |
| Eu-154 | < 33 | BDL | U |
| Eu-155 | < 19 | BDL | U |
| Tl-208 | < 8.7 | BDL | U |
| Pb-210 | < 370 | BDL | U |
| Bi-212 | < 92 | BDL | U |
| Pb-212 | < 10 | BDL | U |
| Bi-214 | < 17 | BDL | U |
| Pb-214 | < 15 | BDL | U |

Data stored in file 10000550.SPC

Continued on next page...

Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: AB2

Lab Sample ID: 98-07-229-07 Date Collected: 07/28/98 12:00
Sample Matrix: Water Date Analyzed: 08/04/98 12:52
Count Duration: 150 Min. Aliquot: 1.00

| Nuclide | Activity (pCi/Liter) | % Uncertainty | Flag |
|---|---|---|---|
| Th-227 | < 34 | BDL | U |
| Ac-228 | < 42 | BDL | U |
| Pa-234m | < 1500 | BDL | U |
| Th-234 | < 80 | BDL | U |
| U-235 | < 33 | BDL | U |
| Am-241 | < 38 | BDL | U |

Data stored in file 10000550.SPC

Reported Uncertainties are the Estimated Total Propagated Uncertainty ($2\sigma$). See PAI SOP 743 for details of the TPU determination.

BDL = Below Detection Limit; see method for DL determination

Flags:
U = Result is less than the sample specific minimum detectable activity or less than the 2-sigma total propagated uncertainty.

Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: AB2

Lab Sample ID: 98-07-229-10
Sample Matrix: Soil
Count Duration: 800 Min.

Date Collected: 07/28/98 12:00
Date Analyzed: 08/13/98 18:46
Aliquot: 5.10

| Nuclide | Activity (pCi/Gram) | % Uncertainty | Flag |
|---|---|---|---|
| Be-7 | 10.6 ± 3.7 | 34.7 | |
| Na-22 | < 0.39 | BDL | U |
| K-40 | 5.9 ± 6.7 | 114.4 | U |
| Sc-46 | < 0.35 | BDL | U |
| Cr-51 | < 2.4 | BDL | U |
| Mn-54 | < 0.34 | BDL | U |
| Co-56 | < 0.70 | BDL | U |
| Co-57 | < 0.15 | BDL | U |
| Co-58 | < 0.35 | BDL | U |
| Fe-59 | < 0.92 | BDL | U |
| Co-60 | < 0.35 | BDL | U |
| Zn-65 | < 0.84 | BDL | U |
| Sr-85 | < 0.53 | BDL | U |
| Nb-95 | < 0.37 | BDL | U |
| Ru-106 | < 2.8 | BDL | U |
| Ag-110m | < 0.28 | BDL | U |
| Sb-124 | < 0.38 | BDL | U |
| Sb-125 | < 0.75 | BDL | U |
| I-131 | < 0.85 | BDL | U |
| Cs-134 | < 0.32 | BDL | U |
| Cs-137 | < 0.29 | BDL | U |
| Ce-139 | < 0.17 | BDL | U |
| Ce-144 | < 1.1 | BDL | U |
| Eu-152 | < 2.1 | BDL | U |
| Eu-154 | < 1.1 | BDL | U |
| Eu-155 | < 0.60 | BDL | U |
| Tl-208 | < 0.32 | BDL | U |
| Pb-210 | < 9.0 | BDL | U |
| Bi-212 | < 4.3 | BDL | U |
| Pb-212 | 0.90 ± 0.65 | 72.1 | |
| Bi-214 | < 0.64 | BDL | U |
| Pb-214 | < 0.46 | BDL | U |

Data stored in file 10000632.SPC

Continued on next page...



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Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: AB2

Lab Sample ID: 98-07-229-10
Sample Matrix: Soil
Count Duration: 800 Min.

Date Collected: 07/28/98 12:00
Date Analyzed: 08/13/98 18:46
Aliquot: 5.10

| Nuclide | Activity (pCi/Gram) | % Uncertainty | Flag |
|---|---|---|---|
| Th-227 | < 1.3 | BDL | U |
| Ac-228 | < 1.2 | BDL | U |
| Pa-234m | < 47 | BDL | U |
| Th-234 | < 3.1 | BDL | U |
| U-235 | < 1.1 | BDL | U |
| Am-241 | < 1.2 | BDL | U |

Data stored in file 10000632.SPC

Reported Uncertainties are the Estimated Total Propagated Uncertainty ($2\sigma$). See PAI SOP 743 for details of the TPU determination.

BDL = Below Detection Limit; see method for DL determination

Flags:
U = Result is less than the sample specific minimum detectable activity or less than the 2-sigma total propagated uncertainty.

Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: Duplicate

Lab Sample ID: 98-07-229-D8
Sample Matrix: Filter
Count Duration: 800 Min.

Date Collected: 07/28/98 12:00
Date Analyzed: 08/14/98 18:38
Aliquot: 5.10

| Nuclide | Activity (pCi/Gram) | % Uncertainty | Flag |
|---|---|---|---|
| Be-7 | 7.7 ± 3.6 | 46.0 | |
| Na-22 | < 0.51 | BDL | U |
| K-40 | 7.6 ± 7.9 | 104.3 | U |
| Sc-46 | < 0.39 | BDL | U |
| Cr-51 | < 2.8 | BDL | U |
| Mn-54 | < 0.36 | BDL | U |
| Co-56 | < 0.76 | BDL | U |
| Co-57 | < 0.12 | BDL | U |
| Co-58 | < 0.35 | BDL | U |
| Fe-59 | < 0.87 | BDL | U |
| Co-60 | < 0.37 | BDL | U |
| Zn-65 | < 0.79 | BDL | U |
| Sr-85 | < 0.58 | BDL | U |
| Nb-95 | < 0.40 | BDL | U |
| Ru-106 | < 3.0 | BDL | U |
| Ag-110m | < 0.28 | BDL | U |
| Sb-124 | < 0.42 | BDL | U |
| Sb-125 | < 0.83 | BDL | U |
| I-131 | < 0.99 | BDL | U |
| Cs-134 | < 0.33 | BDL | U |
| Cs-137 | < 0.38 | BDL | U |
| Ce-139 | < 0.19 | BDL | U |
| Ce-144 | < 0.97 | BDL | U |
| Eu-152 | < 2.2 | BDL | U |
| Eu-154 | < 1.4 | BDL | U |
| Eu-155 | < 0.60 | BDL | U |
| Tl-208 | < 0.35 | BDL | U |
| Pb-210 | < 40 | BDL | U |
| Bi-212 | < 4.5 | BDL | U |
| Pb-212 | 0.41 ± 0.72 | 173.1 | U |
| Bi-214 | < 0.69 | BDL | U |
| Pb-214 | < 0.50 | BDL | U |

Data stored in file 20000282.SPC

Continued on next page...



MG

Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: Duplicate

Lab Sample ID: 98-07-229-D8 Date Collected: 07/28/98 12:00
Sample Matrix: Filter Date Analyzed: 08/14/98 18:38
Count Duration: 800 Min. Aliquot: 5.10

| Nuclide | Activity (pCi/Gram) | % Uncertainty | Flag |
|---|---|---|---|
| Th-227 | < 1.5 | BDL | U |
| Ac-228 | < 1.3 | BDL | U |
| Pa-234m | < 61 | BDL | U |
| Th-234 | < 2.9 | BDL | U |
| U-235 | < 0.95 | BDL | U |
| Am-241 | < 1.6 | BDL | U |

Data stored in file 20000282.SPC

Reported Uncertainties are the Estimated Total Propagated Uncertainty ($2\sigma$). See PAI SOP 743 for details of the TPU determination.

BDL = Below Detection Limit; see method for DL determination

Flags:
U = Result is less than the sample specific minimum detectable activity or less than the 2-sigma total propagated uncertainty.

Remarks: Sample 98-07-229-D8 is a duplicate of 98-07-229-10.



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Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: Blank

Lab Sample ID: 98-07-229-B1
Sample Matrix: Water
Count Duration: 120 Min.

Date Collected: 08/04/98 12:00
Date Analyzed: 08/04/98 15:40
Aliquot: 1.00

| Nuclide | Activity (pCi/Liter) | % Uncertainty | Flag |
|---|---|---|---|
| Be-7 | < 63 | BDL | U |
| Na-22 | < 8.8 | BDL | U |
| K-40 | < 120 | BDL | U |
| Sc-46 | < 7.8 | BDL | U |
| Cr-51 | < 45 | BDL | U |
| Mn-54 | < 9.5 | BDL | U |
| Co-56 | < 19 | BDL | U |
| Co-57 | < 3.7 | BDL | U |
| Co-58 | < 8.9 | BDL | U |
| Fe-59 | < 23 | BDL | U |
| Co-60 | < 11 | BDL | U |
| Zn-65 | < 18 | BDL | U |
| Sr-85 | < 13 | BDL | U |
| Nb-95 | < 9.3 | BDL | U |
| Ru-106 | < 76 | BDL | U |
| Ag-110m | < 7.9 | BDL | U |
| Sb-124 | < 9.3 | BDL | U |
| Sb-125 | < 17 | BDL | U |
| I-131 | < 6.5 | BDL | U |
| Cs-134 | < 8.6 | BDL | U |
| Cs-137 | < 8.8 | BDL | U |
| Ce-139 | < 5.0 | BDL | U |
| Ce-144 | < 32 | BDL | U |
| Eu-152 | < 51 | BDL | U |
| Eu-154 | < 25 | BDL | U |
| Eu-155 | < 19 | BDL | U |
| Tl-208 | < 10 | BDL | U |
| Pb-210 | < 310 | BDL | U |
| Bi-212 | < 120 | BDL | U |
| Pb-212 | < 11 | BDL | U |
| Bi-214 | 22 ± 22 | 100.3 | U |
| Pb-214 | < 14 | BDL | U |

Data stored in file 10000549.SPC

Continued on next page...



Mb

Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: Blank

Lab Sample ID: 98-07-229-B1
Sample Matrix: Water
Count Duration: 120 Min.

Date Collected: 08/04/98 12:00
Date Analyzed: 08/04/98 15:40
Aliquot: 1.00

| Nuclide | Activity (pCi/Liter) | % Uncertainty | Flag |
|---|---|---|---|
| Th-227 | < 39 | BDL | U |
| Ac-228 | < 36 | BDL | U |
| Pa-234m | < 1600 | BDL | U |
| Th-234 | < 95 | BDL | U |
| U-235 | < 34 | BDL | U |
| Am-241 | < 42 | BDL | U |

Data stored in file 10000549.SPC

Reported Uncertainties are the Estimated Total Propagated Uncertainty ($2\sigma$). See PAI SOP 743 for details of the TPU determination.

BDL = Below Detection Limit; see method for DL determination

Flags:
U = Result is less than the sample specific minimum detectable activity or less than the 2-sigma total propagated uncertainty.

505-1-1465-0-5-98

Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: Blank

Lab Sample ID: 98-07-229-B8
Sample Matrix: Water
Count Duration: 800 Min.

Date Collected: 08/12/98 12:00
Date Analyzed: 08/14/98 19:21
Aliquot: 5.10

| Nuclide | Activity (pCi/Gram) | % Uncertainty | Flag |
|---|---|---|---|
| Be-7 | < 2.2 | BDL | U |
| Na-22 | < 0.36 | BDL | U |
| K-40 | < 4.0 | BDL | U |
| Sc-46 | < 0.29 | BDL | U |
| Cr-51 | < 1.7 | BDL | U |
| Mn-54 | < 0.34 | BDL | U |
| Co-56 | < 0.57 | BDL | U |
| Co-57 | < 0.13 | BDL | U |
| Co-58 | < 0.29 | BDL | U |
| Fe-59 | < 0.68 | BDL | U |
| Co-60 | < 0.37 | BDL | U |
| Zn-65 | < 0.72 | BDL | U |
| Sr-85 | < 0.46 | BDL | U |
| Nb-95 | < 0.30 | BDL | U |
| Ru-106 | < 2.7 | BDL | U |
| Ag-110m | < 0.28 | BDL | U |
| Sb-124 | < 0.33 | BDL | U |
| Sb-125 | < 0.75 | BDL | U |
| I-131 | < 0.26 | BDL | U |
| Cs-134 | < 0.32 | BDL | U |
| Cs-137 | < 0.31 | BDL | U |
| Ce-139 | < 0.15 | BDL | U |
| Ce-144 | < 1.0 | BDL | U |
| Eu-152 | < 2.0 | BDL | U |
| Eu-154 | < 1.1 | BDL | U |
| Eu-155 | < 0.56 | BDL | U |
| Tl-208 | < 0.32 | BDL | U |
| Pb-210 | < 8.7 | BDL | U |
| Bi-212 | < 4.2 | BDL | U |
| Pb-212 | < 0.32 | BDL | U |
| Bi-214 | < 0.62 | BDL | U |
| Pb-214 | < 0.48 | BDL | U |

Data stored in file 10000638.SPC

Continued on next page...

Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: Blank

Lab Sample ID: 98-07-229-B8 Date Collected: 08/12/98 12:00
Sample Matrix: Water Date Analyzed: 08/14/98 19:21
Count Duration: 800 Min. Aliquot: 5.10

| Nuclide | Activity (pCi/Gram) | % Uncertainty | Flag |
|---|---|---|---|
| Th-227 | < 1.2 | BDL | U |
| Ac-228 | < 1.2 | BDL | U |
| Pa-234m | < 52 | BDL | U |
| Th-234 | < 2.9 | BDL | U |
| U-235 | < 1.1 | BDL | U |
| Am-241 | < 1.2 | BDL | U |

Data stored in file 10000638.SPC

Reported Uncertainties are the Estimated Total Propagated Uncertainty (2σ). See PAI SOP 743 for details of the TPU determination.

BDL = Below Detection Limit; see method for DL determination

Flags:
U = Result is less than the sample specific minimum detectable activity or less than the 2-sigma total propagated uncertainty.

Paragon Analytics, Inc.

GAMMA SPECTROMETRY QA RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: Lab Control

Lab Sample ID: 98-07-229-S1
Sample Matrix: Water
Count Duration: 30 Min.

Date Collected: 10/01/96 10:00
Date Analyzed: 08/04/98 15:45
Aliquot: 1.00

| Nuclide | Reported (pCi/Liter) | Known Value | Percent Recovery | Flag |
|---|---|---|---|---|
| Co-57 | 30400 | 31000 | 99 | Pass |
| Co-60 | 65000 | 64000 | 101 | Pass |
| Cd-109 | 1520000 | 1400000 | 110 | Pass |
| Cs-137 | 41400 | 39000 | 106 | Pass |
| Ce-139 | 47200 | 47000 | 101 | Pass |
| Am-241 | 105000 | 100000 | 102 | Pass |

Data stored in file 10000552.SPC

PAI sets control limits for gamma spectroscopy as follows :
Control Limits = Known ± 15%

Flags:



ML

Paragon Analytics, Inc.

GAMMA SPECTROMETRY QA RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: Paragon Analytics, Inc.
Client Project Id: TA-49
Client Sample ID: Lab Control

Lab Sample ID: 98-07-229-S8
Sample Matrix: Soil
Count Duration: 30 Min.

Date Collected: 01/01/97 10:00
Date Analyzed: 08/16/98 15:26
Aliquot: 100.00

| Nuclide | Reported (pCi/Gram) | Known Value | Percent Recovery | Flag |
|---|---|---|---|---|
| Co-57 | 286 | 310 | 92 | Pass |
| Co-60 | 610 | 650 | 95 | Pass |
| Cd-109 | 13400 | 14000 | 98 | Pass |
| Cs-137 | 406 | 400 | 101 | Pass |
| Am-241 | 890 | 990 | 90 | Pass |

Data stored in file 10000645.SPC

PAI sets control limits for gamma spectroscopy as follows :
Control Limits = Known ± 15%

Flags:

# Paragon Analytics, Inc.

## METALS CASE NARRATIVE

### NMED DOE Oversight Bureau

TA-49 -- 7.29-98-25 (SW)

Order Number - 9807229

1. This Order Number consisted of 1 water sample which contained sediment.
2. The sample was received cool and intact on 07/30/98.
3. The sample had not been preserved. The sediment was separated from the water phase by centrifuging the sample and removing the sediment. An oven dried aliquot of the sediment sample was used for the digestions. An unfiltered aliquot of the water phase was analyzed for total recoverable analytes and another aliquot was filtered through a 0.45 micron filter and analyzed for dissolved analytes.
4. The resulting samples were prepared for analysis based on SW-846, 3rd Edition procedures.

   For analysis by Trace and conventional ICPs, the water samples were digested following method 3005A and the sediment sample was digested following method 3050B.

   For analysis by Cold Vapor AA (CVAA), the water sample was digested following method 7470A and the sediment sample was digested following method 7471A.
5. The samples were analyzed following SW-846 protocols by Trace and conventional ICPs (Method 6010B) and CVAA (Methods 7470A and 7471A).
6. All standards and solutions are NIST traceable and were used within their recommended shelf life.
7. The samples were prepared and analyzed within the established hold times.
8. Sample results which are below PAI's standard reporting limits are reported as "ND" on the enclosed report.

All in house quality control procedures were followed, as described below.

9. General quality control procedures.
   - A preparation (method) blank and laboratory control sample were digested and analyzed with the samples in each digestion batch. There were not more than 20 samples in each digestion batch.

- The preparation (method) blank results associated with each batch were below the reporting limits for the requested analytes. This indicates that no contaminants were introduced to the samples during the digestion procedures.
- The laboratory control samples associated with each batch were within acceptance limits. This indicates complete digestions according to the method.
- All initial and continuing calibration blanks associated with each batch were below the reporting limits for the requested analytes. This indicates a valid calibration and stable instrument conditions.
- All initial and continuing calibration verifications associated with each batch were within acceptance criteria for the requested analytes. This indicates a valid calibration and stable instrument conditions.
- The interference check samples, and high standard readbacks associated with Method 6010B analyses were within acceptance criteria.

10. A sample from another Order Number was used as the QC sample for each batch.

- A matrix spike and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for accuracy were met with the following exceptions.

| | Analyte | Sample ID |
|---|---|---|
| Water: | Boron | 9808045-2MS & MSD |
| | Selenium | 9808045-2MS & MSD |
| Sediment: | Cadmium | 9808048-1MS & MSD |
| | Copper | 9808048-1MS & MSD |
| | Lead | 9808048-1MS & MSD |

Associated sample results are flagged for boron, cadmium, lead and selenium, which resulted in the analysis of a post digestion analytical spike. Results of the spike were acceptable indicating that the matrix was not significantly affecting quantitation of the analytes.

The concentration of copper in the native sample was greater than 4 times the concentration of matrix spike added during the digestion. When sample concentration is that much greater than the spike added, spike recoveries may not be accurate. The laboratory control sample results are included to show that the digestion and anaysis were in control.

- A matrix duplicate and spike duplicate were digested and analyzed with this batch. All acceptance criteria for precision were met with the following exception.

| | Analyte | Sample ID |
|---|---|---|
| Water: | Boron | 9808045-2D |

The associated sample results are flagged on the report.

- A serial dilution was analyzed with this batch. All acceptance criteria were met

The data contained in the following report have been reviewed and approved by the personnel listed below:

| | |
|---|---|
| Darryl Patrick<br>Senior Inorganic Chemist | 8/31/98<br>Date |
| SW<br>Reviewer's Initials | 8/31/98<br>Date |

CERTIFICATION

Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

# Paragon Analytics, Incorporated

## Sample Number(s) Cross-Reference Table

Paragon OrderNum: 9807229
Client Name: NMED DOE Oversight Bureau
Client Project Name: TA-49
Client Project Number: 7.29.98-25 (SW)
Client PO Number:

| Client Sample | Lab Sample Number | COC Number | Matrix | Date Collected | Time Collected |
|---|---|---|---|---|---|
| AB2 | 9807229-1 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-2 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-3 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-4 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-5 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-6 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-7 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-8 | | Soil | 7/28/98 | 14:00 |
| AB2 | 9807229-9 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-10 | | Soil | 7/28/98 | 14:00 |



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# TOTAL METALS

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 -- 7.29.98-25 (SW)
Lab Sample ID: RB 9807229

Sample ID

Reagent Blank

Date Collected: N/A
Prep Date: 08/18, 24/98
Date Analyzed: 08/19,26,31/98

Samples are reported on a dry weight basis.

| Analyte | Concentration mg/kg | Reporting Limit mg/kg |
|---|---|---|
| Beryllium | ND | 0.5 |
| Cadmium | ND | 0.5 |
| Chromium | ND | 1 |
| Copper | ND | 1 |
| Lead | ND | 0.3 |
| Mercury | ND | 0.1 |

ND = Not detected at or above the reporting limit.

# TOTAL METALS

Sample ID

AB2

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 – 7.29.98-25 (SW)
Lab Sample ID: 9807229-10

Date Collected: 07/28/98
Prep Date: 08/18, 24/98
Date Analyzed: 08/19,26,31/98

Sample Matrix: Sediment
Samples are reported on a dry weight basis.

| Analyte | | Concentration mg/kg | Reporting Limit mg/kg |
|---|---|---|---|
| Beryllium | | 2.0 | 0.5 |
| Cadmium | * | ND | 1 |
| Chromium | | 21 | 1 |
| Copper | | 18 | 1 |
| Lead | * | 28 | 0.6 |
| Mercury | | ND | 0.1 |

ND = Not detected at or above the reporting limit.
* Detection limit raised. Dilution required due to matrix interferences.

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# TOTAL METALS
# MATRIX SPIKE

Sample ID

In House

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Lab Sample ID: 980804S-1

Prep Date: 08/18, 24/98
Date Analyzed: 08/19,26,31/98

Sample Matrix: Sediment
Results on this page are reported on a wet weight basis.

| Analyte | Spike Added mg/kg | Sample Conc. mg/kg | MS Conc. mg/kg | % Rec. (limits 80-120%) | Flags |
|---|---|---|---|---|---|
| Beryllium | 5.0 | <0.5 | 5.5 | 110 | |
| Cadmium | 5.0 | <0.5 | 3.9 | 78 | N |
| Chromium | 20 | 11 | 31 | 100 | |
| Copper | 25 | 123 | 141 | 72 | See Note |
| Lead | 50.0 | 5.1 | 41.4 | 73 | N |

| Analyte | MSD Conc. | MSD % Rec. (limits 80-120%) | Relative % Difference (limits 0-20%) | Flags |
|---|---|---|---|---|
| Beryllium | 5.4 | 108 | 2 | |
| Cadmium | 3.9 | 78 | 0 | N |
| Chromium | 31 | 100 | 0 | |
| Copper | 152 | 116 | 8 | See Note |
| Lead | 42.8 | 75 | 3 | N |

N: Matrix spike recovery outside the acceptance limits. A post-digestion spike was performed to evaluate matrix effect.

Note: Due to the large concentration of analyte in the sample, matrix spike recoveries may not be accurate. The Laboratory Control Sample (LCS) is included on a separate page to show that the digestion and analysis were in control.

# TOTAL METALS
# MATRIX SPIKE

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Lab Sample ID: 9808119-5

| Sample ID |
|---|
| In House |

Prep Date: 08/18/98
Date Analyzed: 08/19/98

Sample Matrix: Sediment
Results on this page are reported on a wet weight basis.

| Analyte | Spike Added mg/kg | Sample Conc. mg/kg | MS Conc. mg/kg | % Rec. (limits 80-120%) | Flags |
|---|---|---|---|---|---|
| Mercury | 0.8 | < 0.1 | 0.8 | 100 | |

| Analyte | MSD Conc. mg/kg | MSD % Rec. (limits 80-120%) | Relative % Difference (limits 0-20%) | Flags |
|---|---|---|---|---|
| Mercury | 0.8 | 100 | 0 | |

# TOTAL METALS
# POST SPIKE

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Lab Sample ID: 9S0S048-1

Sample ID
In House

Prep Date: 08/24/98
Date Analyzed: 08/31/98

Sample Matrix: Sediment
Results on this page are reported on a wet weight basis.

| Analyte | Spike Added mg/kg | Sample Conc. mg/kg | PS Conc. mg/kg | % Rec (limits 85-115%) | Flags |
|---|---|---|---|---|---|
| Cadmium | 5.0 | 0.4 | 4.9 | 98 | |
| Lead | 50.0 | 5.1 | 53.2 | 96 | |

Although matrix spike recovery was outside the control limits, the post spike indicates that the matrix is not significantly affecting quantitation of the analyte.

# TOTAL METALS
# LABORATORY CONTROL SAMPLE

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 – 7.29.98-25 (SW)
Order Number: 9807229 Date Analyzed: 08/26/98

Control limits: 80 - 120%
Results on this page are reported on a wet weight basis.

| Analyte | LCS Result mg/kg | LCS True Value mg/kg | LCS % Recovery |
|---|---|---|---|
| Copper | 27 | 25 | 108 |

# METALS

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 -- 7.29.98-25 (SW)
Lab Sample ID: RB 9807229

Sample ID

Reagent Blank

Date Collected: N/A
Prep Date: 08/10/98
Date Analyzed: 08/10, 11/98

| Analyte | Concentration mg/L | Reporting Limit mg/L |
|---|---|---|
| Aluminum | ND | 0.2 |
| Arsenic | ND | 0.01 |
| Beryllium | ND | 0.005 |
| Boron | ND | 0.1 |
| Cadmium | ND | 0.005 |
| Chromium | ND | 0.01 |
| Cobalt | ND | 0.01 |
| Copper | ND | 0.01 |
| Lead | ND | 0.003 |
| Mercury | ND | 0.0002 |
| Nickel | ND | 0.02 |
| Selenium | ND | 0.005 |
| Silver | ND | 0.01 |
| Vanadium | ND | 0.01 |
| Zinc | ND | 0.02 |

ND = Not detected at or above the reporting limit.

# TOTAL RECOVERABLE METALS

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 -- 7.29.98-25 (SW)
Lab Sample ID: 9807229-4

Sample Matrix: Water

Sample ID

AB2

Date Collected: 07/28/98
Prep Date: 08/10/98
Date Analyzed: 08/10, 11/98

| Analyte | Concentration mg/L | Reporting Limit mg/L |
|---|---|---|
| Mercury | ND | 0.0002 |
| Selenium | 0.007 | 0.005 |

ND = Not detected at or above the reporting limit.

# DISSOLVED METALS

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 -- 7.29.98-25 (SW)
Lab Sample ID: 9807229-9

Sample Matrix: Water

Sample ID

AB2

Date Collected: 07/28/98
Prep Date: 08/10/98
Date Analyzed: 08/10, 11/98

| Analyte | Concentration mg/L | Reporting Limit mg/L |
|---|---|---|
| Aluminum | 3.1 | 0.2 |
| Arsenic | ND | 0.01 |
| Beryllium | ND | 0.005 |
| Boron * | 0.1 | 0.1 |
| Cadmium | ND | 0.005 |
| Chromium | ND | 0.01 |
| Cobalt | ND | 0.01 |
| Copper | ND | 0.01 |
| Lead | ND | 0.003 |
| Nickel | ND | 0.02 |
| Silver | ND | 0.01 |
| Vanadium | ND | 0.01 |
| Zinc | ND | 0.02 |

ND = Not detected at or above the reporting limit.
* Duplicate precision not within control limits.

# METALS
# MATRIX SPIKE

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Lab Sample ID: 9808045-2

Sample ID: In House

Sample Matrix: Water

Prep Date: 08/10/98
Date Analyzed: 08/11/98

| Analyte | Spike Added mg/L | Sample Conc. mg/L | MS Conc. mg/L | % Rec. (limits 80-120%) | Flags |
|---|---|---|---|---|---|
| Aluminum | 2.0 | < 0.2 | 1.8 | 90 | |
| Arsenic | 2.00 | < 0.01 | 2.29 | 115 | |
| Beryllium | 0.050 | < 0.005 | 0.052 | 104 | |
| Boron | 1.0 | 1.5 | 2.0 | 50 | N |
| Cadmium | 0.050 | < 0.005 | 0.049 | 98 | |
| Chromium | 0.20 | < 0.01 | 0.19 | 95 | |
| Cobalt | 0.50 | < 0.01 | 0.49 | 98 | |
| Copper | 0.25 | < 0.01 | 0.23 | 92 | |
| Lead | 0.500 | < 0.060 | 0.429 | 86 | |
| Nickel | 0.50 | 0.02 | 0.51 | 98 | |
| Selenium | 2.00 | 0.256 | 2.77 | 126 | N |
| Silver | 0.05 | < 0.01 | 0.05 | 100 | |
| Vanadium | 0.50 | < 0.01 | 0.46 | 92 | |
| Zinc | 0.50 | < 0.02 | 0.59 | 118 | |

| Analyte | MSD Conc. mg/L | MSD % Rec. (limits 80-120%) | Relative % Difference (limits 0-20%) | Flags |
|---|---|---|---|---|
| Aluminum | 1.9 | 95 | 5 | |
| Arsenic | 2.32 | 116 | 1 | |
| Beryllium | 0.051 | 102 | 2 | |
| Boron | 2.0 | 50 | 0 | N |
| Cadmium | 0.049 | 98 | 0 | |
| Chromium | 0.19 | 95 | 0 | |
| Cobalt | 0.49 | 98 | 0 | |
| Copper | 0.23 | 92 | 0 | |
| Lead | 0.454 | 91 | 6 | |
| Nickel | 0.51 | 98 | 0 | |
| Selenium | 2.70 | 122 | 3 | N |
| Silver | 0.05 | 100 | 0 | |
| Vanadium | 0.46 | 92 | 0 | |
| Zinc | 0.59 | 118 | 0 | |

N: Matrix spike recovery outside the acceptance limits. A post-digestion spike was performed to evaluate matrix effect.

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# METALS
# POST SPIKE

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Lab Sample ID: 9808045-2

Sample ID: In House

Prep Date: 08/10/98
Date Analyzed: 08/10, 11/98

Sample Matrix: Water

| Analyte | Spike Added mg/L | Sample Conc. mg/L | PS Conc. mg/L | % Rec (limits 75-125%) | Flags |
|---|---|---|---|---|---|
| Boron | 3.0 | 1.5 | 4.0 | 83 | |
| Selenium | 2.00 | 0.256 | 2.68 | 121 | |

Although matrix spike recovery was outside the control limits, the post spike indicates that the matrix is not significantly affecting quantitation of these analytes.

# TOTAL RECOVERABLE MERCURY
## MATRIX SPIKE

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Lab Sample ID: 9808045-2

Sample ID: In House

Sample Matrix: Water

Prep Date: 08/10/98
Date Analyzed: 08/10/98

| Analyte | Spike Added mg/L | Sample Conc. mg/L | MS Conc. mg/L | % Rec. (limits 80-120%) | Flags |
|---|---|---|---|---|---|
| Mercury | 0.0020 | < 0.0002 | 0.0020 | 100 | |

| Analyte | MSD Conc. mg/L | MSD % Rec. (limits 80-120%) | Relative % Difference (limits 0-20%) | Flags |
|---|---|---|---|---|
| Mercury | 0.0020 | 100 | 0 | |

# Paragon Analytics, Inc.

## Radiochemistry Case Narrative
## Gross Alpha/Beta

---

### NMED DOE Oversight Bureau

7.29.98-25 (SW) \ TA-49

PAI WO98-07-229

1. This report consists of 1 water and 1 soil samples received by Paragon on 7/30/98.

2. These samples were prepared according to Paragon Analytics, Inc. procedure PAI SOP702R11.

3. The samples were analyzed for gross alpha and beta activity by gas flow proportional counting according to Paragon Analytics, Inc. procedure PAI SOP705R2. The analyses were completed on 8/29/98. Gross alpha results are referenced to $^{241}$Am. Gross beta results are referenced to $^{90}$Sr/Y.

4. The results for the water sample is reported in units of pCi/l and the results for the soil sample is reported on a dry weight basis in units of pCi/gram.

5. The soil sample associated with this work order was flamed, as prescribed in EPA Methods 900.0 and 9310 for samples which demonstrate hygroscopicity. This could reduce the beta activity if the samples contained $^{137}$Cs, or other beta emitters, that may be volatile under the conditions associated with flaming.

6. No anomalous situations were encountered during the preparation or analysis of these samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Kim Itzen — 8-31-98
Kim Itzen, Radiochemistry Instrument Technician — Date

Radiochemistry Final Data Review — 8/31/98
Date

ALPHA/BETA ANALYSIS RESULTS SUMMARY
Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc.

Date Collected: 07/28/98

Client Name: NMED DOE Oversight Bureau

Date Analyzed : 08/19/98

Client Project ID: TA-49

Sample Matrix : Water

Lab Sample ID Series: 98-07-229

Count Duration: 360 Min.

Analyzed By : KI

| Client Sample ID | Lab Sample ID | Gross Alpha (pCi/liter) | Gross Beta (pCi/liter) |
|---|---|---|---|
| AB2 | 98-07-229-07 | 8.0 ± 1.5 | 13.5 ± 2.0 |

Reported Uncertainties are the Estimated Total Propagated Uncertainties (2σ). See PAI SOP 743FC for TPU determinations.

These samples were prepared using PAI SOP702FC and analyzed using PAI SOP705FC.

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ALPHA/BETA ANALYSIS RESULTS SUMMARY
Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc.

Date Collected: 07/28/98

Client Name: NMED DOE Oversight Bureau

Date Analyzed : 08/29/98

Client Project ID: TA-49

Sample Matrix : Soil

Lab Sample ID Series: 98-07-229

Count Duration: 30 Min.

Analyzed By : KI

| Client Sample ID | Lab Sample ID | Gross Alpha (pCi/gram) | Gross Beta (pCi/gram) |
|---|---|---|---|
| AB2 | 98-07-229-10 | 5.2 ± 2.0 | 10.5 ± 2.0 |
| AB2 | 98-07-229-D1 | 5.4 ± 2.1 | 13.9 ± 2.4 |

Reported Uncertainties are the Estimated Total Propagated Uncertainties (2σ). See PAI SOP 743FC for TPU determinations.

These samples were prepared using PAI SOP721FC and PAI SOP763FC and analyzed using PAI SOP705FC.

Remarks:

Sample 98-07-229-D1 is a duplicate of sample 98-07-229-10.

ALPHA/BETA ANALYSIS MDA SUMMARY
Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc.

Date Collected: 07/28/98

Client Name: NMED DOE Oversight Bureau

Date Analyzed : 08/19/98

Client Project ID: TA-49

Sample Matrix : Water

Lab Sample ID Series: 98-07-229

Count Duration: 360 Min.

Analyzed By : KI

| Client Sample ID | Lab Sample ID | Gross Alpha MDA (pCi/liter) | Gross Beta MDA (pCi/liter) |
|---|---|---|---|
| AB2 | 07-229-07 | 1.3 | 2.0 |

Reported Uncertainties are the Estimated Total Propagated Uncertainties (2σ). See PAI SOP 743FC for TPU determinations.

These samples were prepared using PAI SOP702FC and analyzed using PAI SOP705FC.

ALPHA/BETA ANALYSIS MDA SUMMARY
Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc.

Date Collected: 07/28/98

Client Name: NMED DOE Oversight Bureau

Date Analyzed : 08/29/98

Client Project ID: TA-49

Sample Matrix : Soil

Lab Sample ID Series: 98-07-229

Count Duration: 30 Min.

Analyzed By : KI

| Client Sample ID | Lab Sample ID | Gross Alpha MDA (pCi/gram) | Gross Beta MDA (pCi/gram) |
|---|---|---|---|
| AB2 | 07-229-10 | 1.9 | 1.9 |

Reported Uncertainties are the Estimated Total Propagated Uncertainties ($2\sigma$). See PAI SOP 743FC for TPU determinations.

These samples were prepared using PAI SOP721FC and PAI SOP763FC and analyzed using PAI SOP705FC.

ALPHA/BETA ANALYSIS RESULTS SUMMARY
Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc. Date Collected: 08/13/98

Client Name: Shared QC Date Analyzed : 08/19/98

Client Project ID: Blank Sample Matrix : Water

Lab Sample ID Series: 98-07-179 Count Duration: 480 Min.

Analyzed By : KI

| Client Sample ID | Lab Sample ID | Gross Alpha (pCi/liter) | Gross Beta (pCi/liter) |
|---|---|---|---|
| Blank | 98-07-179-B1 | < 1.2(BDL) | < 1.7(BDL) |

Reported Uncertainties are the Estimated Total Propagated Uncertainties (2σ). See PAI SOP 743FC for TPU determinations.

These samples were prepared using PAI SOP702FC and analyzed using PAI SOP705FC.

BDL = Below Detection Limit; see method for DL determination

Remarks:

QC shared between work orders 98-07-179, 98-07-229, and 98-07-236.

ALPHA/BETA ANALYSIS RESULTS SUMMARY
Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc. Date Collected: 08/26/98

Client Name: NMED DOE Oversight Bureau Date Analyzed : 08/29/98

Client Project ID: TA-49 Sample Matrix : Soil

Lab Sample ID Series: 98-07-229 Count Duration: 30 Min.

Analyzed By : KI

| Client Sample ID | Lab Sample ID | Gross Alpha (pCi/gram) | Gross Beta (pCi/gram) |
|---|---|---|---|
| Blank | 98-07-229-B1 | < 0.40(BDL) | < 0.49(BDL) |

Reported Uncertainties are the Estimated Total Propagated Uncertainties ($2\sigma$). See PAI SOP 743FC for TPU determinations.

These samples were prepared using PAI SOP721FC and PAI SOP763FC and analyzed using PAI SOP705FC.

BDL = Below Detection Limit; see method for DL determination

GROSS ALPHA/BETA BLANK SPIKE RESULTS
Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc. Date Collected: 08/13/98

Client Name: Shared QC Date Analyzed : 08/19/98

Client Project ID : Blank Spike Sample Matrix : Water

Lab Workorder Number : 98-07-179 Units : pCi/l

Alpha Recovery Data

| Lab Sample ID | Alpha Spike Added | Alpha Reported | Percent Recovery | Flag |
|---|---|---|---|---|
| 98-07-179-S1 | 211.1 | 205.3 | 97.3 | Pass |

Beta Recovery Data

| Lab Sample ID | Beta Spike Added | Beta Reported | Percent Recovery | Flag |
|---|---|---|---|---|
| 98-07-179-S1 | 270.0 | 286.2 | 106.0 | Pass |

PAI sets control limits for gross alpha/beta measurements based on EPA/EMSL Laboratory Intercomparison Control Limits.

Acceptance Range for Percent Recovery of blank spike samples is known ± 30%.

Remarks:

QC shared between work orders 98-07-179, 98-07-229, and 98-07-236.

GROSS ALPHA/BETA BLANK SPIKE RESULTS
Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc. Date Collected: 08/26/98

Client Name: NMED DOE Oversight Bureau Date Analyzed : 08/29/98

Client Project ID : TA-49 Sample Matrix : Soil

Lab Workorder Number : 98-07-229 Units : pCi/g

Alpha Recovery Data

| Lab Sample ID | Alpha Spike Added | Alpha Reported | Percent Recovery | Flag |
|---|---|---|---|---|
| 98-07-229-S1 | 14.1 | 13.9 | 98.3 | Pass |

Beta Recovery Data

| Lab Sample ID | Beta Spike Added | Beta Reported | Percent Recovery | Flag |
|---|---|---|---|---|
| 98-07-229-S1 | 18.0 | 19.3 | 107.2 | Pass |

PAI sets control limits for gross alpha/beta measurements based on EPA/EMSL Laboratory Intercomparison Control Limits.

Acceptance Range for Percent Recovery of blank spike samples is known ± 30%.

# Paragon Analytics, Inc.

## Explosives by HPLC Case Narrative

### NMED DOE Oversight Bureau

TA-49 7.29.98-25(SW)

Order Number - 9807229

1. This report consists of 1 water sample received by Paragon on 07/30/98.

2. This sample was extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the sample QC and were extracted and analyzed using procedures based on the protocols given in Method 8330.

3. The extracts was then mixed in a 1:1 ratio with reagent grade water to make a final volume of 3 ml. The extracts were analyzed using HPLC with a UV detector and a C-18 column according to protocols based on Method 8330. All positive results were then confirmed on a CN column. Quantitations were taken from the primary column.

4. All initial and continuing calibration criteria were within acceptance criteria.

5. The method blank associated with this project was below the reporting limits for all analytes.

6. All laboratory control spike and laboratory control spike duplicate criteria were met with the following exceptions:

| Spiked Compound | QC Sample | Direction |
|---|---|---|
| 2,4,6-TRINITROTOLUENE | RPD | high |

The above compound was not detected above the reporting limit in the sample. As no sample quantitations are compromised and reporting limits are defensible, data are submitted.

7. Matrix spikes and matrix spike duplicates could not be performed because of insufficient sample. A laboratory control spike and laboratory control spike duplicate were performed instead.

8. All samples were analyzed within the established holding times.

9. All surrogate recoveries were within acceptance criteria.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Eddy Hammerquist — 9-2-98
Eddy Hammerquist
Senior Organic Chemist
Date

Reviewer's Initials — 9/3/98
Date

# Paragon Analytics, Incorporated

## Sample Number(s) Cross-Reference Table

Paragon OrderNum: 9807229
Client Name: NMED DOE Oversight Bureau
Client Project Name: TA-49
Client Project Number: 7.29.98-25 (SW)
Client PO Number:

| Client Sample | Lab Sample Number | COC Number | Matrix | Date Collected | Time Collected |
|---|---|---|---|---|---|
| AB2 | 9807229-1 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-2 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-3 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-4 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-5 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-6 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-7 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-8 | | Soil | 7/28/98 | 14:00 |
| AB2 | 9807229-9 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-10 | | Soil | 7/28/98 | 14:00 |



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# Nitroaromatics And Nitramines

## Method SW8330

## Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.20.98-25 (SW)

Reported on: Thursday, September 03, 1998

Field ID: LABQC
Lab ID: EX980802-1MB

Sample Matrix: liquid
% Moisture: N/A
Cleanup Method: NONE
Report Basis: NA

Date Collected: 02-Aug-98
Date Extracted: 02-Aug-98
Date Analyzed: 12-Aug-98
Prep Batch: EX980802-1

Sample Aliquot: 350
Final Volume: 3
Dilution: 1

| CASNO | Target Analyte | Result | Units | Reporting Limit | Result Qualifier | Result Footnote |
|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 1 | ug/L | 1 | U | |
| 121-82-4 | RDX | 0.84 | ug/L | 0.84 | U | |
| 99-35-4 | 1,3,5-TRINITROBENZENE | 0.26 | ug/L | 0.26 | U | |
| 99-65-0 | 1,3-DINITROBENZENE | 0.25 | ug/L | 0.25 | U | |
| 479-45-8 | TETRYL | 1 | ug/L | 1 | U | |
| 98-95-3 | NITROBENZENE | 1 | ug/L | 1 | U | |
| 118-96-7 | 2,4,6-TRINITROTOLUENE | 0.25 | ug/L | 0.25 | U | |
| 1946-51-0 | 4-AMINO-2,6-DNT | 0.25 | ug/L | 0.25 | U | |
| 35572-78-2 | 2-AMINO-4,6-DNT | 0.25 | ug/L | 0.25 | U | |
| 606-20-2 | 2,6-DINITROTOLUENE | 0.25 | ug/L | 0.25 | U | |
| 121-14-2 | 2,4-DINITROTOLUENE | 0.25 | ug/L | 0.25 | U | |
| 88-72-2 | 2-NITROTOLUENE | 1 | ug/L | 1 | U | |
| 99-99-0 | 4-NITROTOLUENE | 1 | ug/L | 1 | U | |
| 99-08-1 | 3-NITROTOLUENE | 1 | ug/L | 1 | U | |

## Surrogate Recovery

| CASNO | Surrogate Analyte | Result | Units | Spike Amount | Percent Recovery | Control Limits |
|---|---|---|---|---|---|---|
| 100-25-4 | 1,4-DINITROBENZENE | 3.75 | ug/l | 4.29 | 88 | 34 - 106 |

U = Less than the Reporting Limit

# Nitroaromatics And Nitramines

## Method SW8330

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)

Reported on: Thursday, September 03, 1998

| | | | | | |
|---|---|---|---|---|---|
| Field ID: AB2 | Sample Matrix: liquid | Date Collected: 28-Jul-98 | Sample Aliquot: 350 |
| Lab ID: 9807229-3 | % Moisture: N/A | Date Extracted: 02-Aug-98 | Final Volume: 3 |
| | Cleanup Method: NONE | Date Analyzed: 12-Aug-98 | Dilution: 1 |
| | Report Basis: AS RECEIVED | Prep Batch: EX980802-1 | |

| CASNO | Target Analyte | Result | Units | Reporting Limit | Result Qualifier | Result Footnote |
|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 1 | ug/L | 1 | U | |
| 121-82-4 | RDX | 0.84 | ug/L | 0.84 | U | |
| 99-35-4 | 1,3,5-TRINITROBENZENE | 0.26 | ug/L | 0.26 | U | |
| 99-65-0 | 1,3-DINITROBENZENE | 0.25 | ug/L | 0.25 | U | |
| 479-45-8 | TETRYL | 1 | ug/L | 1 | U | |
| 98-95-3 | NITROBENZENE | 1 | ug/L | 1 | U | |
| 118-96-7 | 2,4,6-TRINITROTOLUENE | 0.25 | ug/L | 0.25 | U | |
| 1946-51-0 | 4-AMINO-2,6-DNT | 0.25 | ug/L | 0.25 | U | |
| 35572-78-2 | 2-AMINO-4,6-DNT | 0.25 | ug/L | 0.25 | U | |
| 606-20-2 | 2,6-DINITROTOLUENE | 0.25 | ug/L | 0.25 | U | |
| 121-14-2 | 2,4-DINITROTOLUENE | 0.25 | ug/L | 0.25 | U | |
| 88-72-2 | 2-NITROTOLUENE | 1 | ug/L | 1 | U | |
| 99-99-0 | 4-NITROTOLUENE | 1 | ug/L | 1 | U | |
| 99-08-1 | 3-NITROTOLUENE | 1 | ug/L | 1 | U | |

## Surrogate Recovery

| CASNO | Surrogate Analyte | Result | Units | Spike Amount | Percent Recovery | Control Limits |
|---|---|---|---|---|---|---|
| 100-25-4 | 1,4-DINITROBENZENE | 3.09 | ug/l | 4.29 | 72 | 34 - 106 |

U = Less than the Reporting Limit

# Nitroaromatics And Nitramines

## Blank Spike and Blank Spike Duplicate

## Method SW8330

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9807229

Client Name: NMED DOE Oversight Bureau

ClientProject ID: 7.29.98-25 (SW)

Reported on: Thursday, September 03, 1998

BS ID: EX980802-1LCS
BSD ID: EX980802-1LCSD

| | | | | | |
|---|---|---|---|---|---|
| Sample Matrix: | liquid | Date Collected: | 02-Aug-98 | Sample Aliquot: | 350 |
| % Moisture: | N/A | Date Extracted: | 02-Aug-98 | Final Volume: | 3 |
| Cleanup Method: | NONE | Date Analyzed: | 12-Aug-98 | Dilution: | 1 |
| Report Basis: | N/A | Prep Batch: | EX980802-1 | | |

| CASNO | Target Analyte | Spike Added | BS Result | Units | Reporting Limit | BS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 4.29 | 3.99 | ug/L | 1 | 93 | 30 - 101 |
| 121-82-4 | RDX | 4.29 | 4.06 | ug/L | 0.84 | 95 | 34 - 101 |
| 99-35-4 | 1,3,5-TRINITROBENZENE | 4.29 | 2.82 | ug/L | 0.26 | 66 | 33 - 108 |
| 99-65-0 | 1,3-DINITROBENZENE | 4.29 | 4.11 | ug/L | 0.25 | 96 | 30 - 97 |
| 98-95-3 | NITROBENZENE | 4.29 | 3.24 | ug/L | 1 | 76 | 32 - 87 |
| 118-96-7 | 2,4,6-TRINITROTOLUENE | 4.29 | 2.9 | ug/L | 0.25 | 68 | 42 - 100 |
| 35572-78-2 | 2-AMINO-4,6-DNT | 4.29 | 3.95 | ug/L | 0.25 | 92 | 35 - 108 |
| 121-14-2 | 2,4-DINITROTOLUENE | 4.29 | 3.79 | ug/L | 0.25 | 88 | 33 - 99 |

| CASNO | Target Analyte | Spike Added | BSD Result | Units | Reporting Limit | BSD % Rec. | RPD | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 4.29 | 4.13 | ug/L | 1 | 96 | 3 | 30 |
| 121-82-4 | RDX | 4.29 | 4.17 | ug/L | 0.84 | 97 | 2 | 30 |
| 99-35-4 | 1,3,5-TRINITROBENZENE | 4.29 | 4.02 | ug/L | 0.26 | 94 | 35 | 30 |
| 99-65-0 | 1,3-DINITROBENZENE | 4.29 | 4.41 | ug/L | 0.25 | 103 | 7 | 30 |
| 98-95-3 | NITROBENZENE | 4.29 | 3.63 | ug/L | 1 | 85 | 11 | 30 |
| 118-96-7 | 2,4,6-TRINITROTOLUENE | 4.29 | 3.53 | ug/L | 0.25 | 82 | 19 | 30 |
| 35572-78-2 | 2-AMINO-4,6-DNT | 4.29 | 4.02 | ug/L | 0.25 | 94 | 2 | 30 |
| 121-14-2 | 2,4-DINITROTOLUENE | 4.29 | 4.05 | ug/L | 0.25 | 94 | 7 | 30 |

## Surrogate Recovery BS/BSD

| CASNO | Target Analyte | Spike Added | BS % Rec. | BSD % Rec. | RPD | Control Limits |
|---|---|---|---|---|---|---|
| 100-25-4 | 1,4-DINITROBENZENE | 4.29 | 78 | 86 | 10 | 34 - 106 |

# Paragon Analytics, Inc.

## INORGANICS CASE NARRATIVE

### NMED DOE Oversight Bureau

TA-49 – 7.29.98-25 (SW)

Order Number - 9807229

1. This report consists of data for one water sample.
2. The sample was received cool and intact on 07/30/98.
3. The sample had been correctly preserved for the requested analyses.
4. The sample was prepared for analysis based on Methods for the Chemical Analysis of Waters and Wastes (MCAWW), May 1994 procedures.
5. The sample was analyzed following MCAWW procedures for the following methods:

| Analyte | Method |
|---|---|
| Chloride | 300.0 |
| Sulfate | 300.0 |
| TDS | 160.1 |

6. All standards and solutions were used within their recommended shelf life.
7. The sample was prepared and analyzed within the established hold times for all analyses.

All in house quality control procedures were followed, as described below.

8. General quality control procedures.
   - A preparation (method) blank and laboratory control sample (LCS) were prepared and analyzed with the samples in the TDS preparation batch. There were not more than 20 samples in each preparation batch.
   - The initial calibration verification (ICV) and initial calibration blank (ICB) are reported as the LCS and method blank for the IC tests as these tests do not require a preparation step.

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- The method blank associated with each batch was below the reporting limits for the requested analytes. This indicates that no contaminants were introduced to the sample during analysis.
- The LCS was within acceptance limits for all analyses.
- All initial and continuing calibration blanks associated with each appropriate batch were below the reporting limits for the requested analytes.
- All initial and continuing calibration verifications associated with each appropriate batch were within acceptance criteria for the requested analytes. This indicates a valid calibration and stable instrument conditions.

9. Matrix specific quality control procedures.

The lab designated PAI sample ID 9808009-6 as the quality control sample for the the IC batch. The lab designated PAI sample ID 9807219-1 as the quality control sample for the TDS batch but the empty beaker tare weight was inadvertently lost for sample 9807219-1. Therefore, the results for 9807219-1dup were used for the native sample. A measure of precision for this batch is indicated by the RPD calculated from the LCS/LCSD results.

- A matrix spike (MS) and matrix spike duplicate (MSD) were prepared and analyzed with the IC batch. All guidance criteria for accuracy were met with the following exception.

| Analyte | Sample ID |
|---|---|
| Chloride | 9808009-6 MS & MSD |

It was necessary to dilute the sample selected for the MS/MSD in order to bring the chloride concentration into the analytical range of this analyte on the ion chromatograph. Therefore, accurate quantitation of MS/MSD recoveries for chloride was not possible. The MS/MSD results were within acceptance limits for all other associated analyses.

The data contained in the following report have been reviewed and approved by the personnel listed below:

Rachel Pierce — 9/8/98
Reporter's Name — Date

NP — 9/8/98
Reviewer's Initials — Date

CERTIFICATION

# Paragon Analytics, Incorporated

## Sample Number(s) Cross-Reference Table

Paragon OrderNum: 9807229
Client Name: NMED DOE Oversight Bureau
Client Project Name: TA-49
Client Project Number: 7.29.98-25 (SW)
Client PO Number:

| Client Sample | Lab Sample Number | COC Number | Matrix | Date Collected | Time Collected |
|---|---|---|---|---|---|
| AB2 | 9807229-1 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-2 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-3 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-4 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-5 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-6 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-7 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-8 | | Soil | 7/28/98 | 14:00 |
| AB2 | 9807229-9 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-10 | | Soil | 7/28/98 | 14:00 |

# Total Dissolved Solids

## Method EPA160.1

## Sample Results

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 7.29.98-25 (SW)
Work Order Number: 9807229 Final Volume: 100 ML
Reporting Basis: As Received Matrix: Water

| Client Sample ID | Lab ID | Date Collected | Date Prepared | Date Analyzed | Percent Moisture | Dilution Factor | Result | Units | Detection Limit | Flag | Sample Aliquot |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AB2 | 9807229-6 | 7/28/98 | 8/4/98 | 8/5/98 | N/A | 1 | 220 | MG/L | 20 | | 100 ML |

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

# Ion Chromatography

## Method EPA300.0

## Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: TA-49 7.29.98-25 (SW)

Field ID: AB2
Lab ID: 9807229-6

Sample Matrix: Water
% Moisture: N/A
Date Collected: 28-Jul-98
Date Extracted: 07-Aug-98
Date Analyzed: 07-Aug-98

Prep Batch: IC980807-1
QCBatchID: IC980807-1-1
Run ID: IC980807-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML

| CASNO | Target Analyte | DF | Result | Units | Reporting Limit | Result Qualifier | EPA Qualifier |
|---|---|---|---|---|---|---|---|
| 16887-00-6 | CHLORIDE | 1 | 0.39 | MG/L | 0.2 | | |
| 14808-79-8 | SULFATE | 1 | 1 | MG/L | 1 | U | |

# Total Dissolved Solids

## Method EPA160.1

## Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: TA-49 7.29.93-25 (SW)

Lab ID: TD980804-1MB

Sample Matrix: Water
% Moisture: N/A
Date Collected: N/A
Date Extracted: 04-Aug-98
Date Analyzed: 05-Aug-98

Prep Batch: TD980804-1
QCBatchID: TD980804-1-1
Run ID: TD980805-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 200 ML
Final Volume: 200 ML

| Lab ID | Date Collected | Date Prepared | Date Analyzed | Percent Moisture | Dilution Factor | Result | Units | Detection Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| TD980804-1MB | 8/4/98 | 8/4/98 | 8/5/98 | N/A | 1 | 10 | MG/L | 10 | U |

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

# Total Dissolved Solids

## Method EPA160.1

## Blank Spike and Blank Spike Duplicate

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: TA-49 7.29.98-25 (SW)

Lab ID: TD980804-1LCS

Sample Matrix: Water
% Moisture: N/A
Date Collected: 04-Aug-98
Date Extracted: 04-Aug-98
Date Analyzed: 05-Aug-98

Prep Batch: TD980804-1
QCBatchID: TD980804-1-1
Run ID: TD980805-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 100 ML
Final Volume: 100 ML

| CASNO | Target Analyte | Spike Added | BS Result | Units | Reporting Limit | Result Qualifier | BS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|---|
| 10-33-3 | TOTAL DISSOLVED SOLIDS | 400 | 401 | MG/L | 20 | | 100 | 85 - 115 |

BSD ID: TD980804-1LCSD

| CASNO | Target Analyte | Spike Added | BSD Result | Units | Reporting Limit | BSD % Rec. | RPD | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| 10-33-3 | TOTAL DISSOLVED SOLIDS | 400 | 402 | MG/L | 20 | 100 | 0 | 15 |

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# Ion Chromatography

## Method EPA300.0

## Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: TA-49 7.29.98-25 (SW)

Lab ID: IC980807-1MB

Sample Matrix: Water
% Moisture: N/A
Date Collected: N/A
Date Extracted: 07-Aug-98
Date Analyzed: 07-Aug-98

Prep Batch: IC980807-1
QCBatchID: IC980807-1-1
Run ID: IC980807-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 ML
Final Volume: 5 ML

| CASNO | Target Analyte | DF | Result | Units | Reporting Limit | Result Qualifier | EPA Qualifier |
|---|---|---|---|---|---|---|---|
| 16887-00-6 | CHLORIDE | 1 | 0.2 | MG/L | 0.2 | U | |
| 14808-79-8 | SULFATE | 1 | 1 | MG/L | 1 | U | |

# Ion Chromatography

## Method EPA300.0

## Blank Spike

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: TA-49 7.29.98-25 (SW)

Lab ID: IC980807-1LCS

Sample Matrix: Water
% Moisture: N/A
Date Collected: 07-Aug-98
Date Extracted: 07-Aug-98
Date Analyzed: 07-Aug-98

Prep Batch: IC980807-1
QCBatchID: IC980807-1-1
Run ID: IC980807-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 ML
Final Volume: 5 ML

| CASNO | Target Analyte | Spike Added | LCS Result | Units | Reporting Limit | Result Qualifier | LCS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|---|
| 16887-00-6 | CHLORIDE | 4 | 4.18 | MG/L | 0.2 | | 105 | 75 - 115% |
| 14808-79-8 | SULFATE | 20 | 20.6 | MG/L | 1 | | 103 | 85 - 115% |

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# Ion Chromatography

## Method EPA300.0

## Matrix Spike And Matrix Spike Duplicate

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: TA-49 7.29.98-25 (SW)

Field ID: SHARED QC
Lab ID: 9808009-6MS

Sample Matrix: Water
% Moisture: N/A
Date Collected: 28-Jul-98
Date Extracted: 07-Aug-98
Date Analyzed: 07-Aug-98

Prep Batch: IC980807-1
QCBatchID: IC980807-1-1
Run ID: IC980807-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML

| Target Analyte | Sample Result | MS Result | Units | Reporting Limit | Result Qualifier | Spike Added | MS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|---|
| SULFATE | 1300 | 3220 | MG/L | 100 | | 2000 | 97 | 85 - 115% |

MSD Lab ID: 9808009-6MSD

| Target Analyte | Spike Added | MSD Result | Units | Reporting Limit | MSD % Rec. | RPD | RPD Limits |
|---|---|---|---|---|---|---|---|
| SULFATE | 2000 | 3210 | MG/L | 100 | 96 | 0 | 15 |

000010

# Paragon Analytics, Inc.

## Nitroglycerin and PETN by HPLC Case Narrative

### NMED DOE Oversight Bureau

TA-49 7.29.98-25(SW)

Order Number - 9807229

1. This report consists of 1 water sample received by Paragon on 07/30/98.

2. This sample and the QC were extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the samples were extracted and analyzed using procedures based on the protocols given in Method 8330.

3. The extracts were mixed in a 1:1 ratio with reagent grade water to make a final volume of 3 ml. Then the extracts were analyzed using an HPLC with a UV detector and a C-18 column according to protocols based on Method 8330. All positive results were then confirmed on a CN column. Quantitations were taken from the primary column.

4. All initial and continuing calibration criteria were within acceptance criteria.

5. The method blank associated with this project was below the reporting limits for all analytes.

6. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

7. Matrix spikes and matrix spike duplicates could not be performed because of insufficient sample. A laboratory control spike and laboratory control spike duplicate were performed instead.

8. All samples were analyzed within the established holding times.

9. All surrogate recoveries were within acceptance criteria.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Eddy Hammerquist 9-4-98

Eddy Hammerquist — Date

Senior Organic Chemist

9/4/98

Reviewer's Initials — Date

# Nitroglycerin and PETN

## Method SW8330

## Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)

Reported on: Friday, September 04, 1998

| | |
|---|---|
| Field ID: | LABQC |
| Lab ID: | EX980802-2MB |

| | | | | | |
|---|---|---|---|---|---|
| Sample Matrix: | Liquid | Date Collected: | 02-Aug-98 | Sample Aliquot: | 350 |
| % Moisture: | N/A | Date Extracted: | 02-Aug-98 | Final Volume: | 3 |
| Cleanup Method: | NONE | Date Analyzed: | 14-Aug-98 | Dilution: | 1 |
| Report Basis: | NA | Prep Batch: | EX980802-2 | | |

| CASNO | Target Analyte | Result | Units | Reporting Limit | Result Qualifier | Result Footnote |
|---|---|---|---|---|---|---|
| 55-63-0 | NITROGLYCERIN | 5 | ug/L | 5 | U | |
| 78-11-5 | PETN | 5 | ug/L | 5 | U | |

## Surrogate Recovery

| CASNO | Surrogate Analyte | Result | Units | Spike Amount | Percent Recovery | Control Limits |
|---|---|---|---|---|---|---|
| 528-29-0 | 1,2-DINITROBENZENE | 2.5 | ug/l | 4.29 | 58 | 40 - 140 |

U = Less than the Reporting Limit

# Nitroglycerin and PETN

## Method SW8330

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)

Reported on: Friday, September 04, 1998

| | | | | | |
|---|---|---|---|---|---|
| Field ID: | AB2 | Sample Matrix: Liquid | Date Collected: 28-Jul-98 | Sample Aliquot: | 350 |
| Lab ID: | 9807229-3 | % Moisture: N/A | Date Extracted: 02-Aug-98 | Final Volume: | 3 |
| | | Cleanup Method: NONE | Date Analyzed: 14-Aug-98 | Dilution: | 1 |
| | | Report Basis: AS RECEIVED | Prep Batch: EX980802-2 | | |

| CASNO | Target Analyte | Result | Units | Reporting Limit | Result Qualifier | Result Footnote |
|---|---|---|---|---|---|---|
| 55-63-0 | NITROGLYCERIN | 5 | ug/L | 5 | U | |
| 78-11-5 | PETN | 5 | ug/L | 5 | U | |

## Surrogate Recovery

| CASNO | Surrogate Analyte | Result | Units | Spike Amount | Percent Recovery | Control Limits |
|---|---|---|---|---|---|---|
| 528-29-0 | 1,2-DINITROBENZENE | 3.16 | ug/l | 4.29 | 74 | 40 - 140 |

U = Less than the Reporting Limit

# Nitroglycerin and PETN

## Blank Spike and Blank Spike Duplicate

## Method SW8330

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)

Reported on: Friday, September 04, 1998

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BS ID: | EX980802-2LCS | Sample Matrix: | Liquid | Date Collected: | 02-Aug-98 | Sample Aliquot: | 350 |
| BSD ID: | EX980802-2LCSD | % Moisture: | N/A | Date Extracted: | 02-Aug-98 | Final Volume: | 3 |
| | | Cleanup Method: | NONE | Date Analyzed: | 14-Aug-98 | Dilution: | 1 |
| | | Report Basis: | N/A | Prep Batch: | EX980802-2 | | |

| CASNO | Target Analyte | Spike Added | BS Result | Units | Reporting Limit | BS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|
| 55-63-0 | NITROGLYCERIN | 14.3 | 11.6 | ug/L | 5 | 81 | 40 - 140 |
| 78-11-5 | PETN | 14.3 | 11.6 | ug/L | 5 | 81 | 40 - 140 |

| CASNO | Target Analyte | Spike Added | BSD Result | Units | Reporting Limit | BSD % Rec. | RPD | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| 55-63-0 | NITROGLYCERIN | 14.3 | 12.6 | ug/L | 5 | 88 | 8 | 20 |
| 78-11-5 | PETN | 14.3 | 13.3 | ug/L | 5 | 93 | 14 | 20 |

## Surrogate Recovery BS/BSD

| CASNO | Target Analyte | Spike Added | BS % Rec. | BSD % Rec. | RPD | Control Limits |
|---|---|---|---|---|---|---|
| 528-29-0 | 1,2-DINITROBENZENE | 4.29 | 78 | 81 | 4 | 40 - 140 |

PARAGON
ANALYTICS, INC.
AN EMPLOYEE OWNED SMALL BUSINESS

# QUALITY ASSURANCE
# DATA REVIEW

Date: 9-11-98

Project: 7.29.98-25 (SW)

PAI Workorder: 98-07-229

Analysis: TKN, NH3, NO3/NO2, Total Phophorus.

The data contained in the following report have been reviewed and approved by the personnel listed below:

Lance Steere
Senior Project Manager

CERTIFICATION

Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

A case narrative ___ is X is not included with this report. This work was done at Stewart Environmental Consultants, Inc. in Ft. Collins, CO.

# INORGANICS

Sample ID

BLANK

Lab Name: Paragon Analytics, Inc.

Client Name: New Mexico Environmental Dept.

Client Project ID: 7.29.98-25 (SW)

Lab Sample ID: 98-07-229

Date Collected: N/A

Date Analyzed: 08/10/98-8/17/98

Sample Matrix: Water

| Analyte | Client ID | Method | Tested Values (ppm) | QC Acceptance Limit (ppm) |
|---|---|---|---|---|
| Ammonia as N | N/A | 4500NH3 F/2 | <0.10 | <0.10 |
| Nitrate + Nitrite as N | N/A | 4500NO3 E/2 | <0.010 | <0.010 |
| TKN as N | N/A | 4500Norg B/2 | <0.20 | <0.20 |
| Total Phosphorous | N/A | 4500p B E/2 | <0.010 | <0.010 |

ND = Not Detected

INORGANICS

Sample ID

AB2

Lab Name: Paragon Analytics, Inc.

Client Name: New Mexico Environmental Dept.

Client Project ID: 7.29.98-25 (SW)

Lab Sample ID: 98-07-229-05

Date Collected: 07/28/98

Date Analyzed: 08/10/98-8/17/98

Sample Matrix: Water

| Analyte | Method | Concentration (ppm) | Detection Limit (ppm) |
|---|---|---|---|
| Ammonia as N | 4500NH3 F/2 | 0.58 | 0.1 |
| Nitrate + Nitrite as N | 4500NO3 E/2 | 4.2 | 0.50 |
| TKN as N | 4500Norg B/2 | 12.2 | 1.0 |
| Total Phosphorous | 4500p B E/2 | 0.43 | 0.10 |

ND = Not Detected

# INORGANICS
## Sample Duplicate Report

Date Collected: 7/28/98

Date Analyzed: 8/14/98

Sample Matrix: Water

.ab Name: Paragon Analytics, Inc.

:lient Name: New Mexico Environmental Dept.

:lient Project ID: 7.29.98-25 (SW)

.ab Project ID: 98-07-229

| Analyte | Method | Client Sample ID | Sample Conc (ppm) | Duplicate Conc (ppm) | Relative Percent Deviation (%) | QC Acceptence Limits |
|---|---|---|---|---|---|---|
| .mmonia as N | 4500NH3-F | AB2 | 0.58 | 0.60 | 3.4 | <20 |
| 'KN as N | 4500Norg B/ | AB2 | 12.2 | 13.1 | 3.05 | <20 |

:D = Not Detected

# INORGANICS MATRIX SPIKE REPORT

Lab Name: Paragon Analytics, Inc.

Client Name: New Mexico Environmental Dept.

Client Project ID: 7.20.98-22(SW)

Lab Sample ID: 98-07-179

Date Collected: 07/28/97

Date Analyzed: 8/10/98-8/14/9

Sample Matrix: Water

| Parameter | Client ID | Spike Amount (ppm) | QC Acceptanc Limits (%) | Percent Recovery (%) |
|---|---|---|---|---|
| Ammonia as Nitrogen | AB2 | 10.0 | 80-120 | 96.6 |
| TKN as Nitrogen | AB2 | 10.0 | 80-120 | 98.0 |

# INORGANICS : LAB CONTROL SAMPLES

Lab Name: Paragon Analytics, Inc.

Client Name: New Mexico Environmental Dept.

Client Project ID: 7.29.98 9 (SW)

Lab Sample ID: 98-07-229

Sample ID

LAB QC

Date Collected: 07-28-98

Date Analyzed: 08/10/98-8/17/98.

Sample Matrix: Water

| Sample ID | Tested Value (ppm) | Refrence Value (ppm) | Confidence Interval (ppm) |
|---|---|---|---|
| Ammonia as N | 16.3 | 17 | 15.3-18.7 |
| Nitrate + Nitrite as N | 5.69 | 5.96 | 5.36-6.56 |
| TKN as N | 7.15 | 7.05 | 6.34 - 7.76 |
| Total Phosphorous | 5.15 | 5.17 | 4.65-5.69 |

ND = Not Detected

# Paragon Analytics, Inc.

## GC/MS Semivolatiles Case Narrative

### NMED DOE Oversight Bureau

TA-49 / 7.29.98-25 (SW)

Order Number - 9807229

1. This report consists of 1 water sample received by Paragon on 07/30/98.

2. The sample was prepared and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water sample was extracted using continuous liquid-liquid extractors, based on Method 3520.

3. The sample was analyzed using GC/MS with a DB-5.625 capillary column according to protocols based on SW-846 Method 8270C. All positive results were quantitated against the initial calibration standards using the internal standard technique. The identification of positive results was achieved by a comparison of the retention time and mass spectrum of the sample versus the daily calibration standard.

4. All initial calibration criteria were met. Method 8270C states any compound exceeding 15% RSD is to be quantitated with a higher order curve. Several compounds from the curve were within the acceptance limit but exceeded the 15% RSD criteria and should be analyzed with a higher curve such as quadratic. We quantitated these compounds using the average response factor due to a software programming problem associated with Hewlett-Packard MSDs. The manufacturer is now aware of the problem and is working on a solution.

5. All continuing calibration criteria were met.

6. There were no target compounds detected in the method blank.

7. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

8. Matrix spikes and matrix spike duplicates were not designated for this sample delivery group. A laboratory control spike and laboratory control spike duplicate were performed instead.

9. The sample was extracted and analyzed within the established holding times.

10. All surrogate recoveries were within acceptance criteria.

11. All internal standard recoveries were within acceptance criteria.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

| | |
|---|---|
| Ann Biegelsen<br>Organic Chemist | 9.30.98<br>Date |
| Reviewer's Initials | 9.30.98<br>Date |

# Paragon Analytics, Incorporated

## Sample Number(s) Cross-Reference Table

Paragon OrderNum: 9807229
Client Name: NMED DOE Oversight Bureau
Client Project Name: TA-49
Client Project Number: 7.29.98-25 (SW)
Client PO Number:

| Client Sample | Lab Sample Number | COC Number | Matrix | Date Collected | Time Collected |
|---|---|---|---|---|---|
| AB2 | 9807229-1 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-2 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-3 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-4 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-5 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-6 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-7 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-8 | | Soil | 7/28/98 | 14:00 |
| AB2 | 9807229-9 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-10 | | Soil | 7/28/98 | 14:00 |

Project # 7.24.48-20(SW)
Project Manager: ALICE MAYER-HEATON
Phone: 1-505-672-0447

# Chain-of-Custody Attachment

9807229

Sample ID:
Date/Time Collected:

NOTE: CIRCLED CONSTITUENTS/PARAMETERS ARE TO BE ANALYZED

000004

## METALS

Filtered
Sample vol: 2x2L plastic
Preservation:
Nonfiltered
Sample vol:
Preservation:

Ca, K, Mg, Na, Ag, Al, As, B, Ba, Be, Cd, Cr, Co, Cu, Fe, Total Hg, Li, Mn, Mo, Ni, Pb, Sb, Total Se, Si, Sn, Sr, Tl, V, Zn

* PLEASE FILTER PRIOR (before) TO ACIDIFICATION WITH $HNO_3$

## RADIONUCLIDES

Filtered
Sample vol:
Preservation:
Nonfiltered
Sample vol: 1x2L plastic
Preservation: $HNO_3$

$^{90}Sr$, $^{241}Am$, Iso Pu, Iso U, $^{237}Np$, Gross Alpha/Beta, Gamma Spec, Total U

* Hold remaining sample until you get preliminary results to us

Others:

Nonfiltered
Sample vol:
Preservation:

$^{3}H$ (normal det), $^{3}H$ (low level/Miami)

## ADDITIONAL IONS

Filtered
Sample vol: 1 x 250ml plastic
Preservation: NF/NA
Nonfiltered
Sample vol:
Preservation:

Cl, $CO_3$, $HCO_3$, F, $SO_4$, Br, $ClO_3$, I

Others: TDS

Filtered
Sample vol:
Preservation:
Nonfiltered
Sample vol: 1x500ml plastic
Preservation: $H_2SO_4$

$NO_3$, $NO_2$ as N, $PO_4$, $NH_4$, TKN

Others:

## VOCs

Nonfiltered
Sample vol: NA
Preservation:

## SVOCs

Nonfiltered
Sample vol: 1 x 1L glass amber
Preservation: NF/NA

## PCBS

Nonfiltered
Sample vol: 1x1L glass amber
Preservation: NF/NA

## OTHER ORGANICS

Nonfiltered
Sample vol:

## HIGH EXPLOSIVES

Nonfiltered
Sample vol: 1x1L
Preservation: NF/NA

2 AMINO-4,6 DNT & 4 AMINO-2,6 DNT
OCTAHYDRO-1,3,5,7-TETRANITRO-1,3,5,7-TETRAZOCINE (HMX)
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE (RDX)
1,3,5-TRINITROBENZENE (1,3,5-TNB)
1,3-DINITROBENZENE (1,3-DNB)
TETRYL
NITROBENZENE (NB)
2,4,6-TRINITROTOLUENE (2,4,6-TNT)
2,4-DINITROTOLUENE (2,4-DNT) & 2,6-DINITROTOLUENE (2,6-DNT)
o-NITROTOLUENE (2-NT)
p-NITROTOLUENE (4-NT)
m-NITROTOLUENE (3-NT)
Others:
* PETN

* CALL US BEFORE ANALYSIS BEGINS!!

Additional comments:
We want to analyze the suspended sediment fraction from the 2x2L containers - please airdry sediment and analyze for: Sn, Se, Iodine or TSS
Be, Pb, Cu, Hg, Cr, Cd
and/or Gamma Spec

**PARAGON ANALYTICS, INC.**
225 Commerce Drive Ft. Collins, CO 80524

(800) 443-1511 or (970) 490-1511
(970) 490-1522 - Fax

# CHAIN OF CUSTODY

DATE 7-29-98 Page 1 of 1

ACCESSION NUMBER (LAB ID) [illegible]

REPORT TO: Alice Mayer-Heaton
COMPANY: NMED DOE OB
ADDRESS: P.O. Box 1663 MS J993
Los Alamos, NM 87545
SAMPLER: Alice Mayer-Heaton
(505) 672-0447 (505) 672-0466
PHONE NO. FAX NO.

ANALYSIS REQUESTED

| SAMPLE ID | DATE | TIME | MATRIX | Oil & Grease SO70/SO71/4132 | 418.1 - TRPH | 8015 Mod. - Gasoline | 8015 Mod. - Diesel | 8015m/8020 - Gasoline/BETX | 8020 - BETX only | 8240/8260 - GC/MS VOC's | 8270 - GC/MS SVOC's | 8080 - Pesticides/PCB's | 8080 - PCB's only | 8310/610 - HPLC PNA's | 8150 - Herbicides | 8141/614 - OP Pesticides | TOX - EOX - AOX - TX | Total Metals *specify in comments | TCLP: *specify parameters in comments | Gross Alpha / Beta | Gross Gamma | Gamma Spec | Isotopic Plutonium | Isotopic Uranium | Total Uranium (KPA) | Radium 226/228 | Tritium (H3) | Strontium 89/90 | 8315 - Formaldehyde | % Moisture | | | | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | See List | | | | | | | See List | | See List | | | | | | | | | | | | |
| AB2 | 7/28/98 | 2:00 pm | H2O | | | | | | | | | | X | | | | | X | | X | | X | | | | | | | | X | X | X | | 2 |

PROJECT INFORMATION
PROJECT NUMBER: 7-29.98-25 (SW)
PROJECT NAME: TA-49
P.O. NUMBER:
TAT: STANDARD RUSH DUE
SAMPLE DISPOSAL: FAP WASTE $5.00 ea RAD CLEAN $15.00 ea RETURN

COMMENTS:

★ PLEASE SEE SPECIAL INSTRUCTIONS ON ATTACHED LIST
★ ANY QUESTIONS! PLEASE CALL US ASAP!!

| RELINQUISHED BY: 1 | RELINQUISHED BY: 2 | RELINQUISHED BY: 3 |
|---|---|---|
| Sign [illegible] Time 1:30p | Sign Time | Sign Time |
| Print STEVE YANUK Date 7-29-98 | Print Date | Print Date |
| Company NMED DOE OB | Company Jedy | Company |

| RECEIVED BY: 1 | RECEIVED BY: 2 | RECEIVED BY: 3 |
|---|---|---|
| Sign Time | Sign Time 1000 | Sign Time |
| Print Date | Print 7-30-98 | Print Date |
| Company Jedy | Company PAI | Company |

Paragon Analytics, Inc. • Fort Collins, Colorado

# CONDITION OF SAMPLE UPON RECEIPT

CLIENT: NMED

SHIPPING CONTAINER #: Cooler PAI

WORKORDER NO. 9807229

INITIALS: H

DATE: 7/30/98

| | | | | |
|---|---|---|---|---|
| 1. | Does this project require special handling according to NEESA, Level 3, or CLP protocols?<br>If yes, complete a. and b.<br>a. Cooler Temperature_____<br>b. Lot No's._____<br>c. Airbill Number | | Yes | No |
| 2. | Are custody seals on the cooler intact? If so, how many | N/A | Yes | No |
| 3. | Are custody seals on sample containers intact? | N/A | Yes | No |
| 4. | Is there a Chain of Custody (COC) or other representative documents, letters or shipping memos? | | Yes | No |
| 5. | Is the COC complete?<br>Relinquished: Yes ✓ No Requested Analysis: Yes ✓ No | N/A | Yes | No |
| 6. | Is the COC in agreement with the samples received?<br>No. of Samples: Yes ✓ No___ Sample ID's: Yes ✓ No___<br>Matrix Yes ✓ No No. of Containers: Yes ✓ No | | Yes | No |
| 7. | Are the samples requiring chemical preservation preserved correctly? | N/A | Yes | No |
| 8. | Is there enough sample? If so, are they in the proper containers? | | Yes | No |
| 9. | Are all samples within holding times for the requested analyses? | | Yes | No |
| 10. | Were the sample(s) shipped on ice? | N/A | Yes | No |
| 11. | Were all sample containers received intact? (not broken or leaking, etc.) | | Yes | No |
| 12. | Are samples requiring no headspace, headspace free? | N/A | Yes | No |
| 13. | Do the samples require quarantine? | | Yes | No |
| 14. | Do samples require Paragon disposal? | | Yes | No |
| 15. | Did the client return any unused bottles? | | Yes | No |

Describe "NO" items (except No's 1, 13, & 14):_____

Was the client contacted? Yes____ No____

If yes, Date:_____ Name of person contacted:_____

Describe actions taken or client instructions:_____

Group Leader's Signature:_____ Date:_____

Cooler Temperature: 4°

RM 201FC7 (30/7/97)



795

# Semi-volatile Organics by GC/MS

## Method SW8270

## Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)

Reported on: Friday, September 04, 1998

Field ID: LABQC
Lab ID: EX980803-6MB

Sample Matrix: liquid
% Moisture: N/A
Cleanup Method: NONE
Report Basis: NA

Date Collected: 03-Aug-98
Date Extracted: 03-Aug-98
Date Analyzed: 31-Aug-98
Prep Batch: EX980803-6

Sample Aliquot: 1000
Final Volume: 1
Dilution: 1

| CASNO | Target Analyte | Result | Units | Reporting Limit | Result Qualifier | Result Footnote |
|---|---|---|---|---|---|---|
| 110-86-1 | PYRIDINE | 10 | ug/L | 10 | U | |
| 62-75-9 | N-NITROSODIMETHYLAMINE | 10 | ug/L | 10 | U | |
| 62-53-3 | ANILINE | 25 | ug/L | 25 | U | |
| 108-95-2 | PHENOL | 10 | ug/L | 10 | U | |
| 111-44-4 | BIS(2-CHLOROETHYL)ETHER | 10 | ug/L | 10 | U | |
| 95-57-8 | 2-CHLOROPHENOL | 10 | ug/L | 10 | U | |
| 541-73-1 | 1,3-DICHLOROBENZENE | 10 | ug/L | 10 | U | |
| 106-46-7 | 1,4-DICHLOROBENZENE | 10 | ug/L | 10 | U | |
| 95-50-1 | 1,2-DICHLOROBENZENE | 10 | ug/L | 10 | U | |
| 100-51-6 | BENZYL ALCOHOL | 10 | ug/L | 10 | U | |
| 108-60-1 | BIS(2-CHLOROISOPROPYL)ETHER | 10 | ug/L | 10 | U | |
| 95-48-7 | 2-METHYLPHENOL | 10 | ug/L | 10 | U | |
| 621-64-7 | N-NITROSO-DI-N-PROPYLAMINE | 10 | ug/L | 10 | U | |
| 106-44-5 | 4-METHYLPHENOL | 10 | ug/L | 10 | U | |
| 67-72-1 | HEXACHLOROETHANE | 10 | ug/L | 10 | U | |
| 98-95-3 | NITROBENZENE | 10 | ug/L | 10 | U | |
| 78-59-1 | ISOPHORONE | 10 | ug/L | 10 | U | |
| 88-75-5 | 2-NITROPHENOL | 10 | ug/L | 10 | U | |
| 105-67-9 | 2,4-DIMETHYLPHENOL | 10 | ug/L | 10 | U | |
| 111-91-1 | BIS(2-CHLOROETHOXY)METHANE | 10 | ug/L | 10 | U | |
| 120-83-2 | 2,4-DICHLOROPHENOL | 10 | ug/L | 10 | U | |
| 65-85-0 | BENZOIC ACID | 50 | ug/L | 50 | U | |
| 120-82-1 | 1,2,4-TRICHLOROBENZENE | 10 | ug/L | 10 | U | |
| 91-20-3 | NAPHTHALENE | 10 | ug/L | 10 | U | |
| 106-47-8 | 4-CHLOROANILINE | 25 | ug/L | 25 | U | |
| 87-68-3 | HEXACHLOROBUTADIENE | 10 | ug/L | 10 | U | |
| 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 10 | ug/L | 10 | U | |
| 91-57-6 | 2-METHYLNAPHTHALENE | 10 | ug/L | 10 | U | |
| 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 10 | ug/L | 10 | U | |
| 88-06-2 | 2,4,6-TRICHLOROPHENOL | 10 | ug/L | 10 | U | |
| 95-95-4 | 2,4,5-TRICHLOROPHENOL | 10 | ug/L | 10 | U | |
| 91-58-7 | 2-CHLORONAPHTHALENE | 10 | ug/L | 10 | U | |
| 88-74-4 | 2-NITROANILINE | 50 | ug/L | 50 | U | |
| 131-11-3 | DIMETHYL PHTHALATE | 10 | ug/L | 10 | U | |
| 606-20-2 | 2,6-DINITROTOLUENE | 10 | ug/L | 10 | U | |
| 208-96-8 | ACENAPHTHYLENE | 10 | ug/L | 10 | U | |
| 99-09-2 | 3-NITROANILINE | 50 | ug/L | 50 | U | |

000007

# Semi-volatile Organics by GC/MS

## Method SW8270

## Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)

Reported on: Friday, September 04, 1998

Field ID: LABQC
Lab ID: EX980803-GMB

Sample Matrix: liquid
% Moisture: N/A
Cleanup Method: NONE
Report Basis: NA

Date Collected: 03-Aug-98
Date Extracted: 03-Aug-98
Date Analyzed: 31-Aug-98
Prep Batch: EX980803-G

Sample Aliquot: 1000
Final Volume: 1
Dilution: 1

| | | | | | | |
|---|---|---|---|---|---|---|
| 83-32-9 | ACENAPHTHENE | 10 | ug/L | 10 | U | |
| 51-28-5 | 2,4-DINITROPHENOL | 50 | ug/L | 50 | U | |
| 100-02-7 | 4-NITROPHENOL | 50 | ug/L | 50 | U | |
| 132-64-9 | DIBENZOFURAN | 10 | ug/L | 10 | U | |
| 121-14-2 | 2,4-DINITROTOLUENE | 10 | ug/L | 10 | U | |
| 84-66-2 | DIETHYL PHTHALATE | 10 | ug/L | 10 | U | |
| 86-73-7 | FLUORENE | 10 | ug/L | 10 | U | |
| 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 10 | ug/L | 10 | U | |
| 100-01-6 | 4-NITROANILINE | 50 | ug/L | 50 | U | |
| 103-33-3 | AZOBENZENE | 10 | ug/L | 10 | U | |
| 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 50 | ug/L | 50 | U | |
| 86-30-6 | N-NITROSODIPHENYLAMINE | 10 | ug/L | 10 | U | |
| 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 10 | ug/L | 10 | U | |
| 118-74-1 | HEXACHLOROBENZENE | 10 | ug/L | 10 | U | |
| 58-90-2 | 2,3,4,6-TETRACHLOROPHENOL | 50 | ug/L | 50 | U | |
| 87-86-5 | PENTACHLOROPHENOL | 50 | ug/L | 50 | U | |
| 85-01-8 | PHENANTHRENE | 10 | ug/L | 10 | U | |
| 120-12-7 | ANTHRACENE | 10 | ug/L | 10 | U | |
| 86-74-8 | CARBAZOLE | 10 | ug/L | 10 | U | |
| 84-74-2 | DI-N-BUTYL PHTHALATE | 10 | ug/L | 10 | U | |
| 206-44-0 | FLUORANTHENE | 10 | ug/L | 10 | U | |
| 129-00-0 | PYRENE | 10 | ug/L | 10 | U | |
| 85-68-7 | BUTYL BENZYL PHTHALATE | 10 | ug/L | 10 | U | |
| 56-55-3 | BENZO(A)ANTHRACENE | 10 | ug/L | 10 | U | |
| 91-94-1 | 3,3'-DICHLOROBENZIDINE | 50 | ug/L | 50 | U | |
| 218-01-9 | CHRYSENE | 10 | ug/L | 10 | U | |
| 117-81-7 | BIS(2-ETHYLHEXYL)PHTHALATE | 10 | ug/L | 10 | U | |
| 117-84-0 | DI-N-OCTYL PHTHALATE | 10 | ug/L | 10 | U | |
| 205-99-2 | BENZO(B)FLUORANTHENE | 10 | ug/L | 10 | U | |
| 207-08-9 | BENZO(K)FLUORANTHENE | 10 | ug/L | 10 | U | |
| 50-32-8 | BENZO(A)PYRENE | 10 | ug/L | 10 | U | |
| 193-39-5 | INDENO(1,2,3-CD)PYRENE | 10 | ug/L | 10 | U | |
| 53-70-3 | DIBENZO(A,H)ANTHRACENE | 10 | ug/L | 10 | U | |
| 191-24-2 | BENZO(G,H,I)PERYLENE | 10 | ug/L | 10 | U | |

# Semi-volatile Organics by GC/MS

## Method SW8270

## Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)

Reported on: Friday, September 04, 1998

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Field ID: | LABQC | Sample Matrix: | liquid | Date Collected: | 03-Aug-98 | Sample Aliquot: | 1000 |
| Lab ID: | EX980803-6MB | % Moisture: | N/A | Date Extracted: | 03-Aug-98 | Final Volume: | 1 |
| | | Cleanup Method: | NONE | Date Analyzed: | 31-Aug-98 | Dilution: | 1 |
| | | Report Basis: | NA | Prep Batch: | EX980803-6 | | |

## Surrogate Recovery

| CASNO | Surrogate Analyte | Result | Units | Spike Amount | Percent Recovery | Control Limits |
|---|---|---|---|---|---|---|
| 118-79-6 | 2,4,6-TRIBROMOPHENOL | 56.8 | ug/l | 75 | 76 | 23 - 100 |
| 321-60-8 | 2-FLUOROBIPHENYL | 36 | ug/l | 50 | 72 | 21 - 106 |
| 367-12-4 | 2-FLUOROPHENOL | 55.4 | ug/l | 75 | 74 | 21 - 100 |
| 4165-60-0 | NITROBENZENE-D5 | 33.9 | ug/l | 50 | 68 | 34 - 111 |
| 4165-62-2 | PHENOL-D5 | 61.2 | ug/l | 75 | 82 | 15 - 104 |
| 1718-51-0 | TERPHENYL-D14 | 35.4 | ug/l | 50 | 71 | 33 - 111 |

U = Less than the Reporting Limit

# Semi-volatile Organics by GC/MS

## Method SW8270

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)

Reported on: Friday, September 04, 1998

Field ID: AB2
Lab ID: 9807229-1

Sample Matrix: liquid
% Moisture: N/A
Cleanup Method: NONE
Report Basis: AS RECEIVED

Date Collected: 28-Jul-98
Date Extracted: 03-Aug-98
Date Analyzed: 02-Sep-98
Prep Batch: EX980803-6

Sample Aliquot: 1000
Final Volume: 1
Dilution: 1

| CASNO | Target Analyte | Result | Units | Reporting Limit | Result Qualifier | Result Footnote |
|---|---|---|---|---|---|---|
| 110-86-1 | PYRIDINE | 10 | ug/L | 10 | U | |
| 62-75-9 | N-NITROSODIMETHYLAMINE | 10 | ug/L | 10 | U | |
| 62-53-3 | ANILINE | 25 | ug/L | 25 | U | |
| 108-95-2 | PHENOL | 10 | ug/L | 10 | U | |
| 111-44-4 | BIS(2-CHLOROETHYL)ETHER | 10 | ug/L | 10 | U | |
| 95-57-8 | 2-CHLOROPHENOL | 10 | ug/L | 10 | U | |
| 541-73-1 | 1,3-DICHLOROBENZENE | 10 | ug/L | 10 | U | |
| 106-46-7 | 1,4-DICHLOROBENZENE | 10 | ug/L | 10 | U | |
| 95-50-1 | 1,2-DICHLOROBENZENE | 10 | ug/L | 10 | U | |
| 100-51-6 | BENZYL ALCOHOL | 10 | ug/L | 10 | U | |
| 108-60-1 | BIS(2-CHLOROISOPROPYL)ETHER | 10 | ug/L | 10 | U | |
| 95-48-7 | 2-METHYLPHENOL | 10 | ug/L | 10 | U | |
| 621-64-7 | N-NITROSO-DI-N-PROPYLAMINE | 10 | ug/L | 10 | U | |
| 106-44-5 | 4-METHYLPHENOL | 10 | ug/L | 10 | U | |
| 67-72-1 | HEXACHLOROETHANE | 10 | ug/L | 10 | U | |
| 98-95-3 | NITROBENZENE | 10 | ug/L | 10 | U | |
| 78-59-1 | ISOPHORONE | 10 | ug/L | 10 | U | |
| 88-75-5 | 2-NITROPHENOL | 10 | ug/L | 10 | U | |
| 105-67-9 | 2,4-DIMETHYLPHENOL | 10 | ug/L | 10 | U | |
| 111-91-1 | BIS(2-CHLOROETHOXY)METHANE | 10 | ug/L | 10 | U | |
| 120-83-2 | 2,4-DICHLOROPHENOL | 10 | ug/L | 10 | U | |
| 65-85-0 | BENZOIC ACID | 50 | ug/L | 50 | U | |
| 120-82-1 | 1,2,4-TRICHLOROBENZENE | 10 | ug/L | 10 | U | |
| 91-20-3 | NAPHTHALENE | 10 | ug/L | 10 | U | |
| 106-47-8 | 4-CHLOROANILINE | 25 | ug/L | 25 | U | |
| 87-68-3 | HEXACHLOROBUTADIENE | 10 | ug/L | 10 | U | |
| 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 10 | ug/L | 10 | U | |
| 91-57-6 | 2-METHYLNAPHTHALENE | 10 | ug/L | 10 | U | |
| 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 10 | ug/L | 10 | U | |
| 88-06-2 | 2,4,6-TRICHLOROPHENOL | 10 | ug/L | 10 | U | |
| 95-95-4 | 2,4,5-TRICHLOROPHENOL | 10 | ug/L | 10 | U | |
| 91-58-7 | 2-CHLORONAPHTHALENE | 10 | ug/L | 10 | U | |
| 88-74-4 | 2-NITROANILINE | 50 | ug/L | 50 | U | |
| 131-11-3 | DIMETHYL PHTHALATE | 10 | ug/L | 10 | U | |

# Semi-volatile Organics by GC/MS

## Method SW8270

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)
Reported on: Friday, September 04, 1998

| | | | | | |
|---|---|---|---|---|---|
| Field ID: | AB2 | Sample Matrix: liquid | Date Collected: 28-Jul-98 | Sample Aliquot: | 1000 |
| Lab ID: | 9807229-1 | % Moisture: N/A | Date Extracted: 03-Aug-98 | Final Volume: | 1 |
| | | Cleanup Method: NONE | Date Analyzed: 02-Sep-98 | Dilution: | 1 |
| | | Report Basis: AS RECEIVED | Prep Batch: EX980803-6 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 606-20-2 | 2,6-DINITROTOLUENE | 10 | ug/L | 10 | U | |
| 208-96-8 | ACENAPHTHYLENE | 10 | ug/L | 10 | U | |
| 99-09-2 | 3-NITROANILINE | 50 | ug/L | 50 | U | |
| 83-32-9 | ACENAPHTHENE | 10 | ug/L | 10 | U | |
| 51-28-5 | 2,4-DINITROPHENOL | 50 | ug/L | 50 | U | |
| 100-02-7 | 4-NITROPHENOL | 50 | ug/L | 50 | U | |
| 132-64-9 | DIBENZOFURAN | 10 | ug/L | 10 | U | |
| 121-14-2 | 2,4-DINITROTOLUENE | 10 | ug/L | 10 | U | |
| 84-66-2 | DIETHYL PHTHALATE | 10 | ug/L | 10 | U | |
| 86-73-7 | FLUORENE | 10 | ug/L | 10 | U | |
| 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 10 | ug/L | 10 | U | |
| 100-01-6 | 4-NITROANILINE | 50 | ug/L | 50 | U | |
| 103-33-3 | AZOBENZENE | 10 | ug/L | 10 | U | |
| 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 50 | ug/L | 50 | U | |
| 86-30-6 | N-NITROSODIPHENYLAMINE | 10 | ug/L | 10 | U | |
| 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 10 | ug/L | 10 | U | |
| 118-74-1 | HEXACHLOROBENZENE | 10 | ug/L | 10 | U | |
| 87-86-5 | PENTACHLOROPHENOL | 50 | ug/L | 50 | U | |
| 58-90-2 | 2,3,4,6-TETRACHLOROPHENOL | 50 | ug/L | 50 | U | |
| 85-01-8 | PHENANTHRENE | 10 | ug/L | 10 | U | |
| 120-12-7 | ANTHRACENE | 10 | ug/L | 10 | U | |
| 86-74-8 | CARBAZOLE | 10 | ug/L | 10 | U | |
| 84-74-2 | DI-N-BUTYL PHTHALATE | 10 | ug/L | 10 | U | |
| 206-44-0 | FLUORANTHENE | 10 | ug/L | 10 | U | |
| 129-00-0 | PYRENE | 10 | ug/L | 10 | U | |
| 85-68-7 | BUTYL BENZYL PHTHALATE | 10 | ug/L | 10 | U | |
| 56-55-3 | BENZO(A)ANTHRACENE | 10 | ug/L | 10 | U | |
| 91-94-1 | 3,3'-DICHLOROBENZIDINE | 50 | ug/L | 50 | U | |
| 218-01-9 | CHRYSENE | 10 | ug/L | 10 | U | |
| 117-81-7 | BIS(2-ETHYLHEXYL)PHTHALATE | 10 | ug/L | 10 | U | |
| 117-84-0 | DI-N-OCTYL PHTHALATE | 10 | ug/L | 10 | U | |
| 205-99-2 | BENZO(B)FLUORANTHENE | 10 | ug/L | 10 | U | |
| 207-08-9 | BENZO(K)FLUORANTHENE | 10 | ug/L | 10 | U | |
| 50-32-8 | BENZO(A)PYRENE | 10 | ug/L | 10 | U | |
| 193-39-5 | INDENO(1,2,3-CD)PYRENE | 10 | ug/L | 10 | U | |
| 53-70-3 | DIBENZO(A,H)ANTHRACENE | 10 | ug/L | 10 | U | |

# Semi-volatile Organics by GC/MS

## Method SW8270

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)

Reported on: Friday, September 04, 1998

Field ID: AB2
Lab ID: 9807229-1

Sample Matrix: liquid
% Moisture: N/A
Cleanup Method: NONE
Report Basis: AS RECEIVED

Date Collected: 28-Jul-98
Date Extracted: 03-Aug-98
Date Analyzed: 02-Sep-98
Prep Batch: EX980803-6

Sample Aliquot: 1000
Final Volume: 1
Dilution: 1

| | | | | | | |
|---|---|---|---|---|---|---|
| 191-24-2 | BENZO(G,H,I)PERYLENE | 10 | ug/L | 10 | U | |

## Surrogate Recovery

| CASNO | Surrogate Analyte | Result | Units | Spike Amount | Percent Recovery | Control Limits |
|---|---|---|---|---|---|---|
| 118-79-6 | 2,4,6-TRIBROMOPHENOL | 69.4 | ug/l | 75 | 93 | 23 - 100 |
| 321-60-8 | 2-FLUOROBIPHENYL | 30.9 | ug/l | 50 | 62 | 21 - 106 |
| 367-12-4 | 2-FLUOROPHENOL | 43 | ug/l | 75 | 57 | 21 - 100 |
| 4165-60-0 | NITROBENZENE-D5 | 28.3 | ug/l | 50 | 57 | 34 - 111 |
| 4165-62-2 | PHENOL-D5 | 46.8 | ug/l | 75 | 62 | 15 - 104 |
| 1718-51-0 | TERPHENYL-D14 | 28.3 | ug/l | 50 | 57 | 33 - 111 |

U = Less than the Reporting Limit

# Semi-volatile Organics by GC/MS

## Blank Spike and Blank Spike Duplicate

## Method SW8270

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9807229

Client Name: NMED DOE Oversight Bureau

ClientProject ID: 7.29.98-25 (SW)

Reported on: Friday, September 04, 1998

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BS ID: | EX980803-6LCS | Sample Matrix: | liquid | Date Collected: | 03-Aug-98 | Sample Aliquot: | 1000 |
| BSD ID: | EX980803-6LCSD | % Moisture: | N/A | Date Extracted: | 03-Aug-98 | Final Volume: | 1 |
| | | Cleanup Method: | NONE | Date Analyzed: | 31-Aug-98 | Dilution: | 1 |
| | | Report Basis: | N/A | Prep Batch: | EX980803-6 | | |

| CASNO | Target Analyte | Spike Added | BS Result | Units | Reporting Limit | BS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|
| 108-95-2 | PHENOL | 75 | 52.9 | ug/L | 10 | 71 | 25 - 105 |
| 95-57-8 | 2-CHLOROPHENOL | 75 | 52.7 | ug/L | 10 | 70 | 23 - 106 |
| 106-46-7 | 1,4-DICHLOROBENZENE | 50 | 27.3 | ug/L | 10 | 55 | 13 - 113 |
| 621-64-7 | N-NITROSO-DI-N-PROPYLAMINE | 50 | 34.1 | ug/L | 10 | 68 | 25 - 113 |
| 120-82-1 | 1,2,4-TRICHLOROBENZENE | 50 | 29.8 | ug/L | 10 | 60 | 22 - 106 |
| 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 75 | 52.4 | ug/L | 10 | 70 | 34 - 104 |
| 83-32-9 | ACENAPHTHENE | 50 | 35.9 | ug/L | 10 | 72 | 24 - 110 |
| 100-02-7 | 4-NITROPHENOL | 75 | 51.3 | ug/L | 50 | 68 | 18 - 114 |
| 121-14-2 | 2,4-DINITROTOLUENE | 50 | 35 | ug/L | 10 | 70 | 28 - 109 |
| 87-86-5 | PENTACHLOROPHENOL | 75 | 52.4 | ug/L | 50 | 70 | 23 - 112 |
| 129-00-0 | PYRENE | 50 | 32.3 | ug/L | 10 | 65 | 23 - 119 |

# Semi-volatile Organics by GC/MS

## Blank Spike and Blank Spike Duplicate

## Method SW8270

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9807229

Client Name: NMED DOE Oversight Bureau

ClientProject ID: 7.29.98-25 (SW)

Reported on: Friday, September 04, 1998

| CASNO | Target Analyte | Spike Added | BSD Result | Units | Reporting Limit | BSD % Rec. | RPD | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| 108-95-2 | PHENOL | 75 | 56.1 | ug/L | 10 | 75 | 5 | 40 |
| 95-57-8 | 2-CHLOROPHENOL | 75 | 53.5 | ug/L | 10 | 71 | 1 | 42 |
| 106-46-7 | 1,4-DICHLOROBENZENE | 50 | 27.9 | ug/L | 10 | 56 | 2 | 50 |
| 621-64-7 | N-NITROSO-DI-N-PROPYLAMINE | 50 | 40.4 | ug/L | 10 | 81 | 17 | 44 |
| 120-82-1 | 1,2,4-TRICHLOROBENZENE | 50 | 28.6 | ug/L | 10 | 57 | 5 | 42 |
| 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 75 | 56.4 | ug/L | 10 | 75 | 7 | 35 |
| 83-32-9 | ACENAPHTHENE | 50 | 35.4 | ug/L | 10 | 71 | 1 | 43 |
| 100-02-7 | 4-NITROPHENOL | 75 | 54.7 | ug/L | 50 | 73 | 7 | 48 |
| 121-14-2 | 2,4-DINITROTOLUENE | 50 | 37.2 | ug/L | 10 | 74 | 6 | 40 |
| 87-86-5 | PENTACHLOROPHENOL | 75 | 57.8 | ug/L | 50 | 77 | 10 | 44 |
| 129-00-0 | PYRENE | 50 | 34.1 | ug/L | 10 | 68 | 5 | 48 |

## Surrogate Recovery BS/BSD

| CASNO | Target Analyte | Spike Added | BS % Rec. | BSD % Rec. | RPD | Control Limits |
|---|---|---|---|---|---|---|
| 118-79-6 | 2,4,6-TRIBROMOPHENOL | 75 | 74 | 78 | 5 | 23 - 100 |
| 321-60-8 | 2-FLUOROBIPHENYL | 50 | 69 | 69 | 0 | 21 - 106 |
| 367-12-4 | 2-FLUOROPHENOL | 75 | 70 | 67 | 4 | 21 - 100 |
| 4165-60-0 | NITROBENZENE-D5 | 50 | 70 | 67 | 4 | 34 - 111 |
| 4165-62-2 | PHENOL-D5 | 75 | 74 | 77 | 4 | 15 - 104 |
| 1718-51-0 | TERPHENYL-D14 | 50 | 68 | 70 | 3 | 33 - 111 |

SET UP DATE/ TIME: 8-3-98

WORKORDER #: 9807229

BATCH #: EA980803-6

SURROGATE CODE A: 1283-[illegible]

MATRIX SPIKE A: 1283-79-03E

SVP

| PREP | | | | | | EXTRACTION | | | | | EXTRACT | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INITIALS | CX | | | | | SURROGATE | | MATRIX SPIKE | | | | | | | | |
| SAMPLE | | pH ADJUST | | | | | | | | TIME OFF | INIT KD DATE | GPC DATE | FINAL KD DATE | FINAL VOL | VIAL DATE | |
| NUMBER | AMOUNT | INIT. | 11-13 | <2 | FINAL | A VOL | SPKR/MT | A VOL | SPKR/MT | | | | | | | |
| WMB2 | 1000ml | 5 | 12 | 1.3 | 12 | 1ml | CX/JB | | | 8:00 | 8/5/98 | | | 1ml. | 8/5/98 | |
| 229 01 | | | | | | | | 1ml | CX/JB | | | | | | | |
| WLCS2 | | | | | | | | | | | | | | | | |
| WLCSD | | | | | | | | | | | | | | | | |

8/5/98

ATIFRM.609FC

DGM Lot #: 38036

RECIEVED BY/DATE: J Jones 8-5-98

PARAGON ANALYTICS, INC.
AN EMPLOYEE OWNED SMALL BUSINESS
225 Commerce Drive, Fort Collins CO 80524

159237

000015

ESPANOLA DESERT PAVEMENT

# LABORATORY WORK SHEET

Client: ETMI

Address:

Project: QC

Location: DASH PLANT

Source of Sample: STOCKPILE

Material: COARSE AGGREGATE (CONCRETE)

Req'd By: RICHARD COOK Date: 11-30-92

Sam'd By: [illegible] Date: 11-30-92

Sub'd By: Date:

Lab. No.:

Job. No.:

## TESTS REQUESTED

| AGGREGATE | SOIL | ASPHALT | OTHER |
|---|---|---|---|
| Crush | Sieve | Percent | Comp. |
| Sieve (Req'd) X | P.I. | Sieve | Dim. |
| Crushed | V.C. | Density | Unit Wt. |
| P.I. | Proctor | Drawn | Moisture |
| Abrasion | Type | Stability | |
| Soundness | Moisture | | |
| Sp. Gr. X | Hydro. | | |
| Absorp. X | | | |

Liquid Limit:

Tare

Container

Wet Wt. and Cont.

Dry Wt. and Cont.

Wt. Water =

Dry Wt. and Cont.

Wt. Cont.

Wt. Dry Soil =

$\frac{\text{Wt. Water} \times 100}{\text{Wt. Dry Soil}}$ =

Plastic Limit:

Container

Wet Wt. and Cont.

Dry Wt. and Cont.

Wt. Water =

Dry Wt. and Cont.

Wt. Cont.

Wt. Dry Soil =

$\frac{\text{Wt. Water} \times 100}{\text{Wt. Dry Soil}}$ =

L.L. — P.L. = P.I.

Classification =

Moisture Content, %: F.M.

Sp. Gr.: Absorption (%)

Unit Wt.: Dry Rodded

Loose

L.A. Abrasion (% of Wear)

Grading: Rev.

Soundness (% Loss): Organic Imp.

Bit. Binder Req'd. (%): Type

Bit. Content (% of Dry Aggregate): Total Sample

| Sieve | Wt. Ret. | % Ret. | % Pass | Specs. |
|---|---|---|---|---|
| | | | | UNSND |
| | | | TREM | 510-E |
| 3 | | | APPR. 1- | 1949 |
| 2 | | | | |
| 1½ | | | | 100 |
| 1 | 0 | 0 | 100 | 95-100 |
| ¾ | 1624.7 | 36.3 | 64 | |
| ½ | 3271.7 | 73.0 | 27 | 35-60 |
| ⅜ | 4315.0 | 96.3 | 4 | |
| ¼, 3 | | | | |
| #4 | 4433.4 | 99.0 | 1 | 0-10 |
| Ret. #4 | | W B W (W) | | |
| Pass W | | W B W (D) | 4480.4 | |
| #4 D | | W A W | | |
| Total | | Elut. | | |
| 8 | 4440.5 | 99.1 | 1 | 0-5 |
| 10 | | | | |
| 16 | | | | |
| 30 | | | | |
| 40 | | | | |
| 50 | | | | |
| 100 | | | | |
| 200 | 4458.2 | 99.5 | 0.5 | 0-1 |
| Pass 200 | | | | |
| Total | | | | |

Technician

SOV

# LABORATORY WORK SHEET

60477

Client: ETM

Address:

Project: QC

Location: CRUSHER

Source of Sample:

Material: COARSE AGG (ASPHALT) "

Req'd By: Date: 12-1-99

Sam'd By: Date:

Sub'd By: Date:

Lab. No.:

Job. No.:

## TESTS REQUESTED

| AGGREGATE | SOIL | ASPHALT | OTHER |
|---|---|---|---|
| Crush | Sieve | Percent | Comp. |
| Sieve (Rec'd) X | P.I. | Sieve | Den. |
| Crushed | V.C. | Density | Unit Wt. |
| P.I. | Proctor | Drugs | Moisture |
| Abrasion | Type | Stability | |
| Soundness | Moisture | | |
| Sp. Gr. X | Hydro. | | |
| Absorp. X | | | |

| Sieve | Wt. Ret. | % Ret. | % Pass | Specs. |
|---|---|---|---|---|
| | | | | |
| | | | | |
| 3 | | | | |
| 2 | | | | |
| 1½ | | | | |
| 1 | 0 | 0 | 100 | |
| ¾ | 1632.8 | 30.5 | 69 | |
| ½ | 4452.4 | 83.3 | 17 | |
| ⅜ | 5142.0 | 96.2 | 4 | |
| ¼, 3 | | | | |
| #4 | 5279.4 | 98.7 | 1.3 | |
| Ret. #4 | | W B W (W) | | |
| Pass W | | W B W (D) | 5347.0 | |
| #4 D | | W A W | | |
| Total | | Elut. | | |
| 8 | 5301.8 | 99.8 | 1.2 | |
| 10 | | | | |
| 16 | | | | |
| 30 | | | | |
| 40 | | | | |
| 50 | | | | |
| 100 | | | | |
| 200 | 5314.2 | 99.4 | 0.6 | |
| Pass 200 | | | | |
| Total | | | | |

Liquid Limit:

Tare

Container

Wet Wt. and Cont.

Dry Wt. and Cont.

Wt. Water =

Dry Wt. and Cont.

Wt. Cont.

Wt. Dry Soil =

$\frac{\text{Wt. Water} \times 100}{\text{Wt. Dry Soil}}$ =

Plastic Limit:

Container

Wet Wt. and Cont.

Dry Wt. and Cont.

Wt. Water =

Dry Wt. and Cont.

Wt. Cont.

Wt. Dry Soil =

$\frac{\text{Wt. Water} \times 100}{\text{Wt. Dry Soil}}$ =

LL — PL = PI

Classification =

Moisture Content, %: F.M.:

Sp. Gr.: Absorption (%):

Unit Wt.: Dry Rodded:

Loose:

L.A. Abrasion (% at Wear):

Grading: Rev.:

Soundness (% Loss): Organic Imp.:

Bit. Binder Req'd. (%): Type:

Bit. Content (% of) Dry Aggregate: Total Sample:

Haverville Technicians

801

SURV-TEK INC. SURVEYORS
5643 PARADISE BOULEVARD N.W., ALBUQUERQUE, NM 87114 505-897-3366

JOB NUMBER: LANL-71

03-09-1998
14:17:25

TA-49, AREAS 2, 2A, 2B
Stake Prior Disposal Shaft Sites - Grid
March, 1998

| PT.# | NORTHING | EASTING | ELEVATION | DESCRIPTION |
|---|---|---|---|---|
| 1 | 1755395.9257 | 1626003.2853 | | Reference Pt. 1 |
| 2 | 1755496.2502 | 1625912.9527 | | Reference Pt. 2 |
| 3 | 1755437.3829 | 1625861.7801 | 0.0000 | Reference Pt. 3 |
| 4 | 1755528.1774 | 1625821.2565 | | Reference Pt. 4 |
| 5 | 1755237.4430 | 1625911.7853 | 7135.3400 | #5 CP TA-41 |
| 10 | 1755395.1400 | 1625765.5900 | 7141.4700 | 1-2-A |
| 11 | 1755394.0500 | 1625790.5700 | 7140.8900 | 1-2-B |
| 12 | 1755392.9600 | 1625815.5400 | 7140.4500 | 1-2-C |
| 13 | 1755391.8700 | 1625840.5200 | 7139.9400 | 1-2-D |
| 14 | 1755390.7900 | 1625865.4900 | 7139.3700 | 1-2-E |
| 15 | 1755370.1700 | 1625764.5000 | 7142.0300 | 1-2-F |
| 16 | 1755367.9900 | 1625814.4500 | 7140.9200 | 1-2-H |
| 17 | 1755366.9000 | 1625839.4300 | 7140.3700 | 1-2-I |
| 18 | 1755365.8100 | 1625864.4000 | 7139.8100 | 1-2-J |
| 19 | 1755345.1900 | 1625763.4100 | 7142.2300 | 1-2-K |
| 20 | 1755344.1000 | 1625788.3900 | 7141.8300 | 1-2-L |
| 21 | 1755343.0100 | 1625813.3600 | 7141.1700 | 1-2-M |
| 22 | 1755341.9200 | 1625838.3400 | 7140.7500 | 1-2-N |
| 23 | 1755340.8300 | 1625863.3200 | 7140.0700 | 1-2-O |
| 24 | 1755320.2100 | 1625762.3200 | 7142.4900 | 1-2-P |
| 25 | 1755319.1200 | 1625787.3000 | 7142.1100 | 1-2-Q |
| 26 | 1755316.9500 | 1625837.2500 | 7141.0100 | 1-2-S |
| 27 | 1755315.8600 | 1625862.2300 | 7140.2900 | 1-2-T |
| 28 | 1755295.2400 | 1625761.2300 | 7142.5900 | 1-2-U |
| 29 | 1755294.1500 | 1625786.2100 | 7142.2300 | 1-2-V |
| 30 | 1755293.0600 | 1625811.1800 | 7141.7300 | 1-2-W |
| 31 | 1755291.9700 | 1625836.1600 | 7141.2900 | 1-2-X |
| 32 | 1755290.8800 | 1625861.1400 | 7140.5900 | 1-2-Y |
| 33 | 1755410.1500 | 1625731.2100 | 7139.1900 | 1-2A-E |
| 34 | 1755385.1800 | 1625730.1200 | 7139.9700 | 1-2A-J |
| 35 | 1755359.2000 | 1625728.9900 | 7140.7700 | 1-2A-O |
| 36 | 1755335.2300 | 1625727.9400 | 7140.5900 | 1-2A-T |
| 37 | 1755310.2500 | 1625726.8500 | 7140.2300 | 1-2A-Y |
| 38 | 1755284.7700 | 1625725.7400 | 7140.8300 | 1-2A-Z |
| 39 | 1755232.0300 | 1625833.5500 | 7136.7900 | 1-2B-A |
| 40 | 1755230.9400 | 1625858.5200 | 7137.4500 | 1-2B-B |
| 41 | 1755229.8500 | 1625883.5000 | 7135.5300 | 1-2B-C |
| 42 | 1755185.2100 | 1625759.4400 | 7138.0900 | 1-2B-H |
| 43 | 1755183.0300 | 1625809.3900 | 7136.8100 | 1-2B-J |
| 44 | 1755180.8500 | 1625859.3400 | 7135.8900 | 1-2B-L |
| 45 | 1755136.9100 | 1625719.2900 | 7138.4100 | 1-2B-T |
| 46 | 1755135.1700 | 1625759.2600 | 7137.8700 | 1-2B-V |
| 47 | 1755132.9900 | 1625809.2100 | 7136.7500 | 1-2B-X |
| 48 | 1755131.9000 | 1625834.1900 | | 1-2B-Y |

| T.# | NORTHING | EASTING | ELEVATION | DESCRIPTION |
|---|---|---|---|---|
| 49 | 1755156.9800 | 1625718.1700 | 7138.8100 | 1-2B-Z |
| 50 | 1755342.4900 | 1625825.3500 | 7141.0700 | 1-CH-2 |
| 51 | 1755329.7402 | 1625824.9568 | 7141.1500 | proposed BH |
| 52 | 1755354.7481 | 1625825.8744 | 7140.8900 | proposed BH |
| 53 | 1755383.6250 | 1625849.3934 | 7139.9900 | proposed BH |
| 54 | 1755374.4246 | 1625857.5706 | 7139.8300 | proposed BH |
| 55 | 1755407.0017 | 1625873.9899 | 7138.5500 | proposed BH |
| 56 | 1755389.7039 | 1625887.7900 | 7138.6500 | proposed BH |
| 70 | 1755091.5299 | 1625643.4744 | 7138.7700 | grid point |
| 71 | 1755184.9918 | 1625679.0395 | | geophysical grid |
| 72 | 1755278.4537 | 1625714.6046 | | geophysical grid |
| 73 | 1755371.9156 | 1625750.1696 | | geophysical grid |
| 74 | 1755418.6466 | 1625767.9522 | | geophysical grid |
| 75 | 1755112.8690 | 1625587.3973 | | geophysical grid |
| 76 | 1755070.1909 | 1625699.5516 | | geophysical grid |
| 77 | 1755048.8519 | 1625755.6287 | | geophysical grid |
| 78 | 1755032.8476 | 1625797.6865 | | geophysical grid |
| 79 | 1755206.3309 | 1625622.9624 | | geophysical grid |
| 80 | 1755163.6528 | 1625735.1166 | | geophysical grid |
| 81 | 1755142.3137 | 1625791.1938 | | geophysical grid |
| 82 | 1755126.3095 | 1625833.2516 | | geophysical grid |
| 83 | 1755299.7928 | 1625658.5274 | | geophysical grid |
| 84 | 1755257.1147 | 1625770.6817 | | geophysical grid |
| 85 | 1755235.7756 | 1625826.7588 | | geophysical grid |
| 86 | 1755219.7714 | 1625868.8167 | | geophysical grid |
| 87 | 1755393.2547 | 1625694.0925 | | geophysical grid |
| 88 | 1755350.5766 | 1625806.2468 | | geophysical grid |
| 89 | 1755329.2375 | 1625862.3239 | | geophysical grid |
| 90 | 1755397.3075 | 1625824.0293 | | geophysical grid |
| 91 | 1755375.9685 | 1625880.1065 | | geophysical grid |
| 92 | 1755288.6024 | 1625748.2613 | 7142.1900 | sw cor. asp. pad |
| 93 | 1755413.9392 | 1625749.5965 | 7140.4900 | nw cor. asp. pad |
| 94 | 1755405.8856 | 1625910.1885 | 7137.0000 | ne cor. asp. pad |
| 95 | 1755275.5713 | 1625922.5546 | 7135.4900 | se cor. asp. pad |
| 100 | 1755112.8690 | 1625587.3973 | -99999.0000 | GRID_PT. |
| 101 | 1755108.6012 | 1625598.6127 | -99999.0000 | GRID_PT. |
| 102 | 1755104.3334 | 1625609.8281 | -99999.0000 | GRID_PT. |
| 103 | 1755100.0656 | 1625621.0436 | -99999.0000 | GRID_PT. |
| 104 | 1755095.7978 | 1625632.2590 | -99999.0000 | GRID_PT. |
| 105 | 1755091.5299 | 1625643.4744 | -99999.0000 | GRID_PT. |
| 106 | 1755087.2621 | 1625654.6898 | -99999.0000 | GRID_PT. |
| 107 | 1755082.9943 | 1625665.9053 | -99999.0000 | GRID_PT. |
| 108 | 1755078.7265 | 1625677.1207 | -99999.0000 | GRID_PT. |
| 109 | 1755074.4587 | 1625688.3361 | -99999.0000 | GRID_PT. |
| 110 | 1755070.1909 | 1625699.5516 | -99999.0000 | GRID_PT. |
| 111 | 1755065.9231 | 1625710.7670 | -99999.0000 | GRID_PT. |
| 112 | 1755061.6553 | 1625721.9824 | -99999.0000 | GRID_PT. |
| 113 | 1755057.3875 | 1625733.1978 | -99999.0000 | GRID_PT. |
| 114 | 1755053.1197 | 1625744.4133 | -99999.0000 | GRID_PT. |
| 115 | 1755048.8519 | 1625755.6287 | -99999.0000 | GRID_PT. |
| 116 | 1755044.5840 | 1625766.8441 | -99999.0000 | GRID_PT. |
| 117 | 1755040.3162 | 1625778.0595 | -99999.0000 | GRID_PT. |

**Western Technologies Inc.**
The Quality People
Since 1955

8305 Washington Place, N.E.
Albuquerque, New Mexico 87113
(505) 823-4486 • fax 821-2963

From LOS ALAMOS

# PHYSICAL PROPERTIES OF AGGREGATES

Date of Report: 08/12/98
Job No. 3248JA01S
Event / Invoice No 32480823 — Lab No.
Authorized By L.TRUJILLO — Date 06/01/98
Sampled By GALLEGOS — Date 06/01/98
Submitted By GALLEGOS — Date 06/01/98

Client LOS ALAMOS TRANSIT MIX
POST OFFICE BOX 747
LOS ALAMOS, NEW MEXICO 87544

Project GENERAL PROJECT SUBMITTAL
Contractor VARIOUS
Type / Use of Aggregate COARSE AGGREGATE
Sample Source / Location ESPANOLA, NEW MEXICO
Reference: ASTMC-33 #56
Special Instructions.

Location ALBUQUERQUE LABORATORY
Arch. / Engr N/A
Supplier / Source ESPANOLA TRANSIT MIX PIT
Source / Location Desig. By L. TRUJILLO — Date 06/01/98

## TEST RESULTS

SIEVE ANALYSIS ☒ ASTM C136 ☐ AASHTO T27

| SIEVE SIZE | ACCUMULATIVE % PASSING | SPECIFICATION |
|---|---|---|
| 4 IN. | | |
| 3 | | |
| 1 1/2 | | |
| 1 1/8 | | |
| 1 | 100 | 90-100 |
| 3/4 | 65 | 40-85 |
| 1/2 | 20 | 10-40 |
| 3/8 | 8 | 0-15 |
| 1/4 | | |
| NO. 4 | 1 | 0-5 |
| 8 | | |
| 10 | | |
| 16 | | |
| 30 | | |
| 40 | | |
| 50 | | |
| 100 | | |
| FINER THAN NO. 200 ☐ ASTM C117 ☐ AASHTO T11 | 0.2 | 0-1 |

FINENESS MODULUS, ASTM C125 →

LIQUID & PLASTIC PROPERTIES
☒ ASTM D4318 ☐ AASHTO T89 & T90

| METHOD ☒ A ☐ B | RESULT | SPECIFICATION |
|---|---|---|
| LIQUID LIMIT | | |
| PLASTIC LIMIT | N/A | |
| PLASTICITY INDEX | N/A | |

SAMPLE AIR DRIED: ☒ YES ☐ NO

CLEANNESS VALUE CA227 →

ORGANIC IMPURITIES ☒ ASTM C40 ☐ AASHTO T21
ORGANIC PLATE NO. → 1

| PHYSICAL PROPERTIES | | | TEST RESULTS | SPECIFICATION |
|---|---|---|---|---|
| UNIT WEIGHT & VOIDS ☒ ASTM C29 ☐ AASHTO T19 ☒ RODDING ☐ JIGGING ☐ LOOSE | FINE AGGREGATE | UNIT WEIGHT, PCF → | | |
| | | VOIDS, % → | | |
| | COARSE AGGREGATE | UNIT WEIGHT, PCF → | 100.2 | |
| | | VOIDS, % → | | |
| SPECIFIC GRAVITY & ABSORPTION | FINE AGGREGATE ☐ ASTM C128 ☐ AASHTO T84 AGGREGATE DRIED ☐ YES ☐ NO | BULK SPECIFIC GRAVITY → | | |
| | | BULK SPECIFIC GRAVITY (SSD) → | | |
| | | APPARENT SPECIFIC GRAVITY → | | |
| | | ABSORPTION, % → | | |
| | COARSE AGGREGATE ☒ ASTM C127 ☐ AASHTO T85 AGGREGATE DRIED ☒ YES ☐ NO | BULK SPECIFIC GRAVITY → | 2.572 | |
| | | BULK SPECIFIC GRAVITY (SSD) → | 2.601 | |
| | | APPARENT SPECIFIC GRAVITY → | 2.646 | |
| | | ABSORPTION, % → | 1.1 | |
| SAND EQUIVALENT VALUE ☐ ASTM D2419 ☐ AASHTO T176 | | % → | | |
| RESISTANCE TO DEGRADATION | SMALL COARSE AGGREGATE ☒ ASTM C131 ☐ AASHTO T96 GRADING | 100 REV., % LOSS → | | |
| | | 500 REV., % LOSS → | 23.2 | 50 MAX |
| | LARGE COARSE AGGREGATE ☐ ASTM C535 GRADING | 200 REV., % LOSS → | | |
| | | 1000 REV., % LOSS → | | |
| LIGHTWEIGHT PIECES ☒ ASTM C123 ☐ AASHTO T113 | | FINE AGGREGATE, % → | | |
| | | COARSE AGGREGATE, % → | 2.2 | 3 MAX |
| CLAY LUMPS & FRIABLE PARTICLES ☒ ASTM C142 ☐ AASHTO T112 | | FINE AGGREGATE, % → | | |
| | | COARSE AGGREGATE, % → | 0.5 | 2 MAX |
| FRACTURED FACES COARSE AGGREGATE BY WEIGHT ☐ AZ 212 ☐ FLH T507 ☐ FAA | | ONE OR MORE FACES, % → | | |
| | | TWO OR MORE FACES, % → | | |
| DURABILITY INDEX ☐ ASTM D3744 ☐ AASHTO T210 PROCEDURE A ☐ COARSE B ☐ FINE C ☐ COARSE & FINE | | $D_c$ → | | |
| | | $D_f$ → | | |
| UNCOMPACTED VOID CONTENT ☐ AZ 247 ☐ ASTM C1252 METHOD | | % → | | |

Comments:

Copies To: CLIENT (3)

THE SERVICES REFERRED TO HEREIN WERE PERFORMED IN ACCORDANCE WITH THE STANDARD OF CARE PRACTICED LOCALLY FOR THE REFERENCED METHOD(S) AND RELATE ONLY TO THE CONDITION(S) OBSERVED OR SAMPLE(S) TESTED AT THE TIME AND PLACE ASSERTED IN WESTERN TECHNOLOGIES INC. MAKES NO OTHER WARRANTY OR REPRESENTATION, EXPRESSED OR IMPLIED, AND HAS NOT CONFIRMED INFORMATION INCLUDING SOURCE OF MATERIALS SUBMITTED BY OTHERS.

REVIEWED BY

8N4

426695WT1
631198

To: farley
From: rene@fimad.lanl.gov (Rene Evans)
Subject: TA-49 FM-114 spill clean up sample results and request for response
Cc: dejoia, decker, wilson, martinez
X-Attachments: :Macintosh HD:53184:49-114 spill cu sams:

Dwain,

The results of the TA-49 FM-114 spill close-out sample analyses, provided by Dan Gay of Keers Environmental, are attached in an Excel file. I am faxing to you a schematic of the sample locations at the spill clean up site. Note that sample 49-981105-3 and sample 49-981105-4 are composed of four-part composite samples, per Harvey Decker's (ESH-18) recommendation.

Because only anti-freeze, diesel fuel, and motor oil could have leaked from the truck, one sample (49-981105-1) was collected for ethylene glycol (anti-freeze) and 2 four-part composite samples (49-981105-3 and 49-981105-4) were collected for Total Petroleum Hydrocarbons (TPH). The TPH samples were analyzed only for the diesel and motor oil ranges of TPH. Harvey Decker's goal for clean up at the spill site is 100 ppm TPH.

The ethylene glycol sample (49-981105-2, located underneath the vicinity of the radiator) was below detection limits for the analysis in soil.

In the eastern composite sample (49-981105-3, located toward the front end of the tractor) both the diesel and the motor oil ranges exceeded 100 ppm TPH. In the western composite sample (49-981105-4, located toward the sleeper end of the tractor) only the motor oil range exceeded the TPH clean up goal.

Harvey Decker is out of town until Dec. 3, 1998. Dan Gay, John Dejoia, and I agree that further excavation is recommended at the site, per Harvey's TPH clean up goal. Dan estimates 15 to 18 cubic yards. Keers Environmental will handle the excavation and disposal of the excavated soil at no cost to the Laboratory.

With a possible weather front moving into the area later this week, we would like to proceed with additional excavation, followed by two more samples for TPH to be collected early next week with concurrence from Harvey (I have left a voice mail with Harvey, to please contact me upon his return).

This e-mail is intended to be an informational transmittal of data. Please let me know, if we should proceed with additional soil removal. If you want us to proceed with the additional soil removal, would it be appropriate for you to contact Brad Lounsbury?

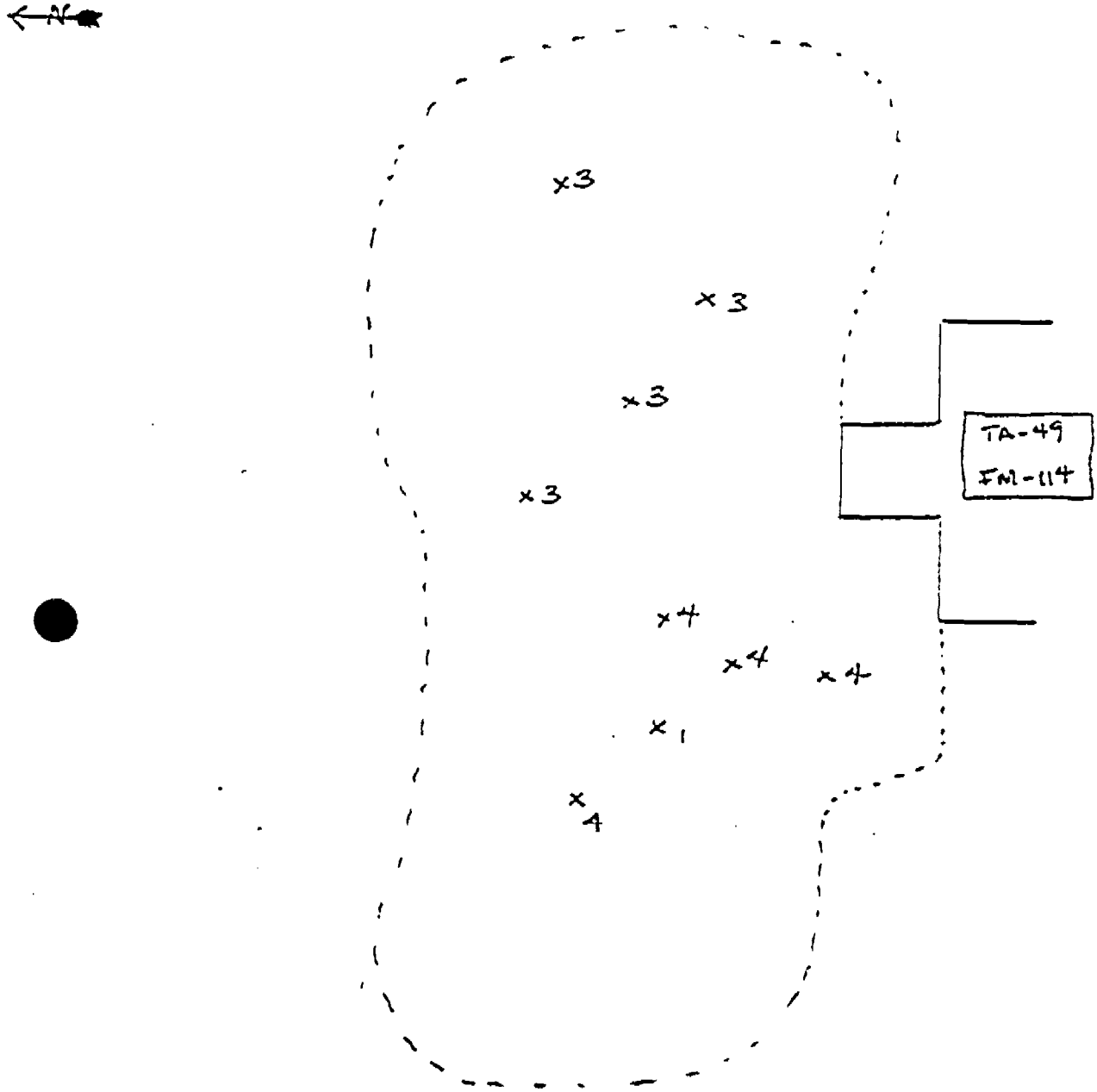
If you have any questions, please contact me at 662-1337.

Cheers,
Rene'

49-114 Spill Clean Up
Sample Results

| Sam ID # : | 49-981105-01 | 49-981105-03 | 49-981105-04 | Method Recovery Limit |
|---|---|---|---|---|
| Compound (ppm): | | | | |
| Ethylene Glycol | < 50 | na | na | 50 |
| Diesel Range Organics | na | 140 | ND | 5 |
| Motor Oil Range Organics | na | 800 | 319 | 50 |
| | | | | |
| | | | | |
| na = not applicable | | | | |
| ND = not detected | | | | |

49-114 Spill Clean Up Schematic

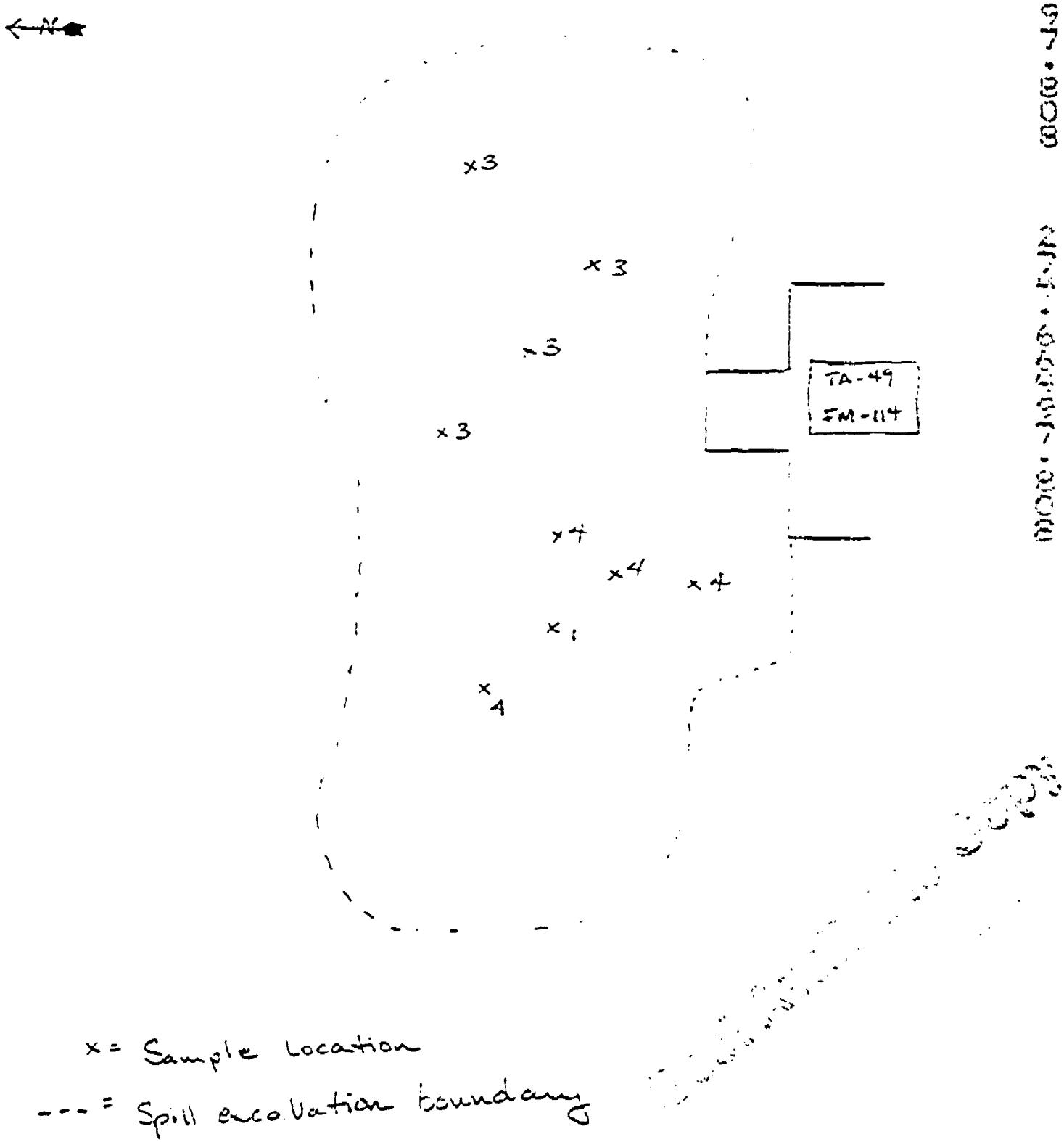



x = Sample Location

● = Spill excavation boundary

□ = Building 49-114

49-114 Spill Clean Up Schematic




x = Sample Location

--- = Spill excavation boundary

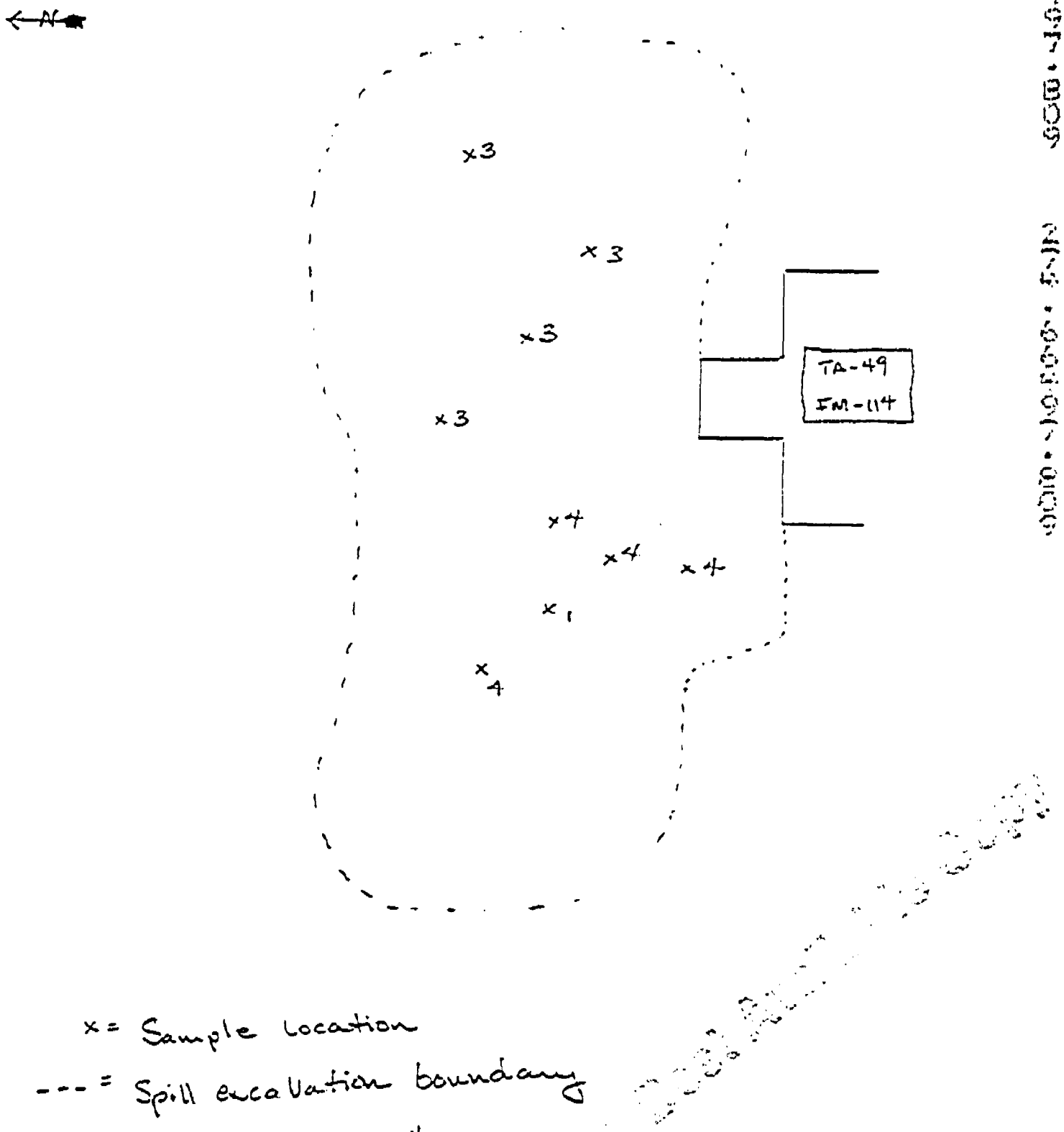
□ = Building 49-114

DOE • LANL • 000

LANL PAGER: 665-9800-->104-3968
FAX: (505) 662-1398

.....

49-114 Spill Clean Up Schematic



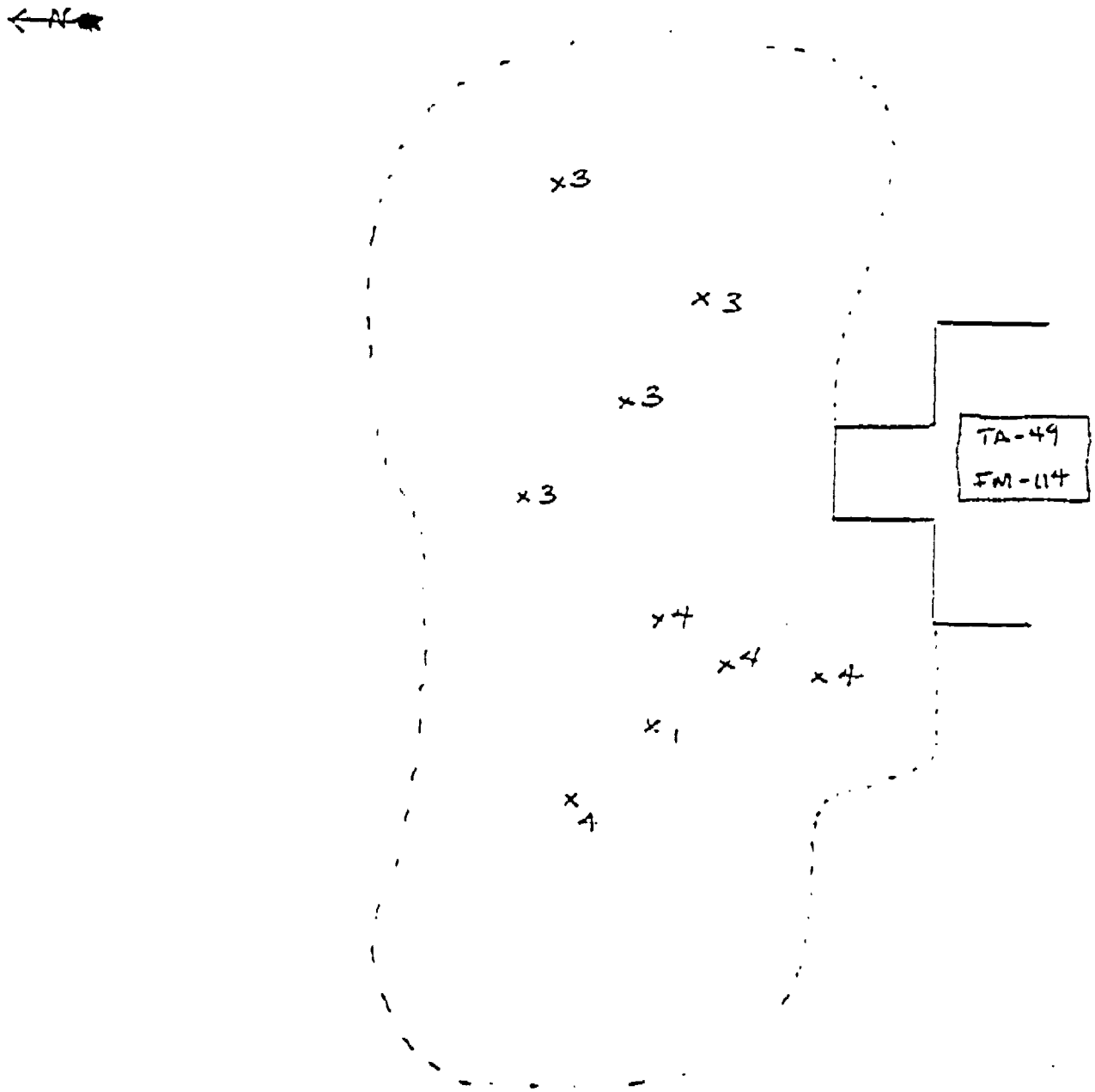

x = Sample location

--- = Spill excavation boundary

□ = Buildings 49-114

80/1

49-114 Spill Clean Up Schematic



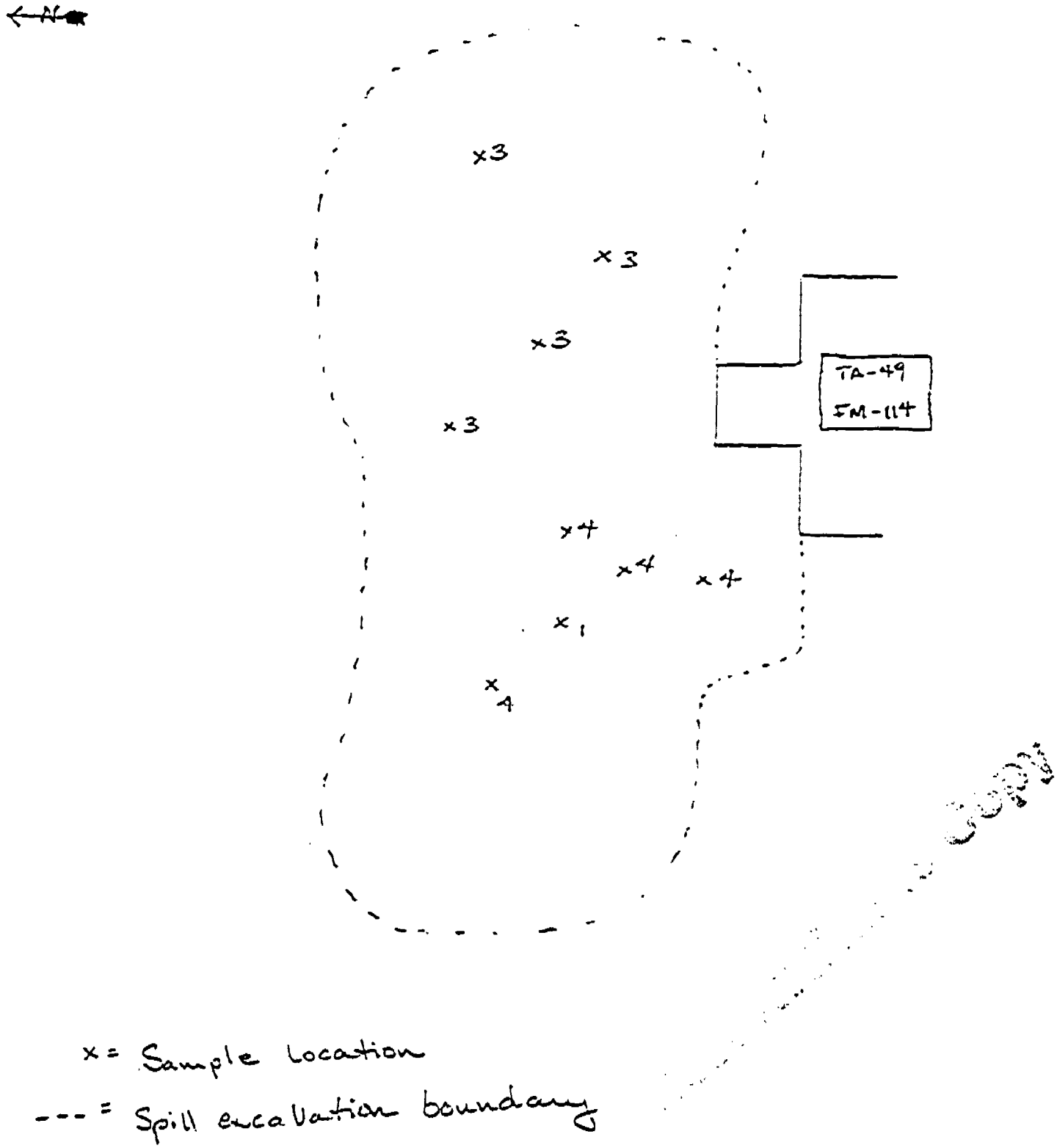

x = Sample Location

--- = Spill excavation boundary

□ = Building 49-114

50

49-114 Spill Clean Up Schematic




x = Sample Location

--- = Spill excavation boundary

□ = Building 49-114

# MEMORANDUM

From: C.R. Wilson, MK/PMC Team
To: TA-49 MDA AB Area 2 SWPP
Date: 16 December 1998

Subject: RESULTS OF STORM WATER SAMPLE TAKEN ON 7/28/98 BY NMED-DOE OVERSIGHT BUREAU AT SAMPLING POINT AB-2 NORTHWEST OF TA-49, MDA AB AREA 2

The attached analytical results are for a sample of storm water discharge from the culvert at sampling point AB-2 at TA-49. The sample was analyzed for gross alpha, gross beta, gamma spectrometry, total recoverable metals, dissolved metals, aroclors, nitoraromatics and nitramines, total dissolved solids, nitroglycerin and PETN, major ions, and SVOCs.

Cc: Dwain Farley, LANL
John DeJoia, MK/PMC
Project File

812

# Paragon Analytics, Incorporated

## Sample Number(s) Cross-Reference Table

Paragon OrderNum: 9807229
Client Name: NMED DOE Oversight Bureau
Client Project Name: TA-49
Client Project Number: 7.29.98-25 (SW)
Client PO Number:

| Client Sample | Lab Sample Number | COC Number | Matrix | Date Collected | Time Collected |
|---|---|---|---|---|---|
| AB2 | 9807229-1 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-2 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-3 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-4 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-5 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-6 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-7 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-8 | | Soil | 7/28/98 | 14:00 |
| AB2 | 9807229-9 | | Water | 7/28/98 | 14:00 |
| AB2 | 9807229-10 | | Soil | 7/28/98 | 14:00 |



000003 S13

# AROCLORS

Method 8081

Sample ID

| AB2 |
|---|

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 7.29.98-25(SW)

Lab Sample ID: 9807229-2

Date Collected: 7/28/98
Date Extracted: 7/31/98
Date Analyzed: 8/10/98

Sample Matrix: Water
Cleanup: Sulfuric Acid

Sample Volume: 1000 mL
Final Volume: 10 mL
Dilution Factor: 1

| Analyte | Conc (ug/L) | Reporting Limit (ug/L) |
|---|---|---|
| Aroclor 1016 | ND | 1.0 |
| Aroclor 1221 | ND | 2.0 |
| Aroclor 1232 | ND | 1.0 |
| Aroclor 1242 | ND | 1.0 |
| Aroclor 1248 | ND | 1.0 |
| Aroclor 1254 | ND | 1.0 |
| Aroclor 1260 | ND | 1.0 |

## SURROGATE RECOVERY

| Analyte | % Recovery | % Rec Limits |
|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 77 | 44 - 131 |
| Decachlorobiphenyl | 13 • | 48 - 143 |

ND = Not Detected at or above client requested reporting limit.

Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: Duplicate

Lab Sample ID: 98-07-229-D1
Sample Matrix: Water
Count Duration: 120 Min.

Date Collected: 07/28/98 10:00
Date Analyzed: 08/04/98 15:42
Aliquot: 1.00

| Nuclide | Activity (pCi/Liter) | % Uncertainty | Flag |
|---|---|---|---|
| Be-7 | < 68 | BDL | U |
| Na-22 | < 8.9 | BDL | U |
| K-40 | < 140 | BDL | U |
| Sc-46 | < 10 | BDL | U |
| Cr-51 | < 63 | BDL | U |
| Mn-54 | < 9.5 | BDL | U |
| Co-56 | < 20 | BDL | U |
| Co-57 | < 3.8 | BDL | U |
| Co-58 | < 11 | BDL | U |
| Fe-59 | < 27 | BDL | U |
| Co-60 | < 11 | BDL | U |
| Zn-65 | < 20 | BDL | U |
| Sr-85 | < 14 | BDL | U |
| Nb-95 | < 10 | BDL | U |
| Ru-106 | < 89 | BDL | U |
| Ag-110m | < 8.4 | BDL | U |
| Sb-124 | < 9.7 | BDL | U |
| Sb-125 | < 28 | BDL | U |
| I-131 | < 13 | BDL | U |
| Cs-134 | < 9.1 | BDL | U |
| Cs-137 | < 9.6 | BDL | U |
| Ce-139 | < 6.2 | BDL | U |
| Ce-144 | < 30 | BDL | U |
| Eu-152 | < 55 | BDL | U |
| Eu-154 | < 27 | BDL | U |
| Eu-155 | < 16 | BDL | U |
| Tl-208 | < 7.9 | BDL | U |
| Pb-210 | < 440 | BDL | U |
| Bi-212 | < 120 | BDL | U |
| Pb-212 | < 11 | BDL | U |
| Bi-214 | < 19 | BDL | U |
| Pb-214 | < 15 | BDL | U |

Data stored in file 10000551.SPC

Continued on next page...

Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: Duplicate

Lab Sample ID: 98-07-229-D1 Date Collected: 07/28/98 10:00
Sample Matrix: Water Date Analyzed: 08/04/98 15:42
Count Duration: 120 Min. Aliquot: 1.00

| Nuclide | Activity (pCi/Liter) | % Uncertainty | Flag |
|---|---|---|---|
| Th-227 | < 44 | BDL | U |
| Ac-228 | < 38 | BDL | U |
| Pa-234m | < 1300 | BDL | U |
| Th-234 | < 84 | BDL | U |
| U-235 | < 32 | BDL | U |
| Am-241 | < 38 | BDL | U |

Data stored in file 10000551.SPC

Reported Uncertainties are the Estimated Total Propagated Uncertainty (2σ). See PAI SOP 743 for details of the TPU determination.

BDL = Below Detection Limit; see method for DL determination

Flags:
U = Result is less than the sample specific minimum detectable activity or less than the 2-sigma total propagated uncertainty.

Remarks: Sample 98-07-229-D1 is a duplicate of 98-07-229-07.



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Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: AB2

Lab Sample ID: 98-07-229-07 Date Collected: 07/28/98 12:00
Sample Matrix: Water Date Analyzed: 08/04/98 12:52
Count Duration: 150 Min. Aliquot: 1.00

| Nuclide | Activity (pCi/Liter) | % Uncertainty | Flag |
|---|---|---|---|
| Be-7 | < 66 | BDL | U |
| Na-22 | < 12 | BDL | U |
| K-40 | 90 ± 110 | 121.2 | U |
| Sc-46 | < 10 | BDL | U |
| Cr-51 | < 62 | BDL | U |
| Mn-54 | < 9.0 | BDL | U |
| Co-56 | < 20 | BDL | U |
| Co-57 | < 4.3 | BDL | U |
| Co-58 | < 7.4 | BDL | U |
| Fe-59 | < 19 | BDL | U |
| Co-60 | < 11 | BDL | U |
| Zn-65 | < 20 | BDL | U |
| Sr-85 | < 12 | BDL | U |
| Nb-95 | < 9.3 | BDL | U |
| Ru-106 | < 83 | BDL | U |
| Ag-110m | < 6.7 | BDL | U |
| Sb-124 | < 8.7 | BDL | U |
| Sb-125 | < 20 | BDL | U |
| I-131 | < 12 | BDL | U |
| Cs-134 | < 8.9 | BDL | U |
| Cs-137 | < 9.3 | BDL | U |
| Ce-139 | < 4.5 | BDL | U |
| Ce-144 | < 31 | BDL | U |
| Eu-152 | < 55 | BDL | U |
| Eu-154 | < 33 | BDL | U |
| Eu-155 | < 19 | BDL | U |
| Tl-208 | < 8.7 | BDL | U |
| Pb-210 | < 370 | BDL | U |
| Bi-212 | < 92 | BDL | U |
| Pb-212 | < 10 | BDL | U |
| Bi-214 | < 17 | BDL | U |
| Pb-214 | < 15 | BDL | U |

Data stored in file 10000550.SPC

Continued on next page...

Paragon Analytics, Inc.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1 (Modified)

Client Name: NMED DOE Oversight Bureau
Client Project Id: TA-49
Client Sample ID: AB2

Lab Sample ID: 98-07-229-07 Date Collected: 07/28/98 12:00
Sample Matrix: Water Date Analyzed: 08/04/98 12:52
Count Duration: 150 Min. Aliquot: 1.00

| Nuclide | Activity (pCi/Liter) | % Uncertainty | Flag |
|---|---|---|---|
| Th-227 | < 34 | BDL | U |
| Ac-228 | < 42 | BDL | U |
| Pa-234m | < 1500 | BDL | U |
| Th-234 | < 80 | BDL | U |
| U-235 | < 33 | BDL | U |
| Am-241 | < 38 | BDL | U |

Data stored in file 10000550.SPC

Reported Uncertainties are the Estimated Total Propagated Uncertainty (2σ). See PAI SOP 743 for details of the TPU determination.

BDL = Below Detection Limit; see method for DL determination

Flags:
U = Result is less than the sample specific minimum detectable activity or less than the 2-sigma total propagated uncertainty.

# TOTAL RECOVERABLE METALS

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 -- 7.29.98-25 (SW)
Lab Sample ID: 9807229-4

Sample Matrix: Water

Sample ID

AB2

Date Collected: 07/28/98
Prep Date: 08/10/98
Date Analyzed: 08/10, 11/98

| Analyte | Concentration mg/L | Reporting Limit mg/L |
|---|---|---|
| Mercury | ND | 0.0002 |
| Selenium | 0.007 | 0.005 |

ND = Not detected at or above the reporting limit.

# DISSOLVED METALS

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 -- 7.29.98-25 (SW)
Lab Sample ID: 9807229-9

Sample Matrix: Water

Sample ID

AB2

Date Collected: 07/28/98
Prep Date: 08/10/98
Date Analyzed: 08/10, 11/98

| Analyte | Concentration mg/L | Reporting Limit mg/L |
|---|---|---|
| Aluminum | 3.1 | 0.2 |
| Arsenic | ND | 0.01 |
| Beryllium | ND | 0.005 |
| Boron * | 0.1 | 0.1 |
| Cadmium | ND | 0.005 |
| Chromium | ND | 0.01 |
| Cobalt | ND | 0.01 |
| Copper | ND | 0.01 |
| Lead | ND | 0.003 |
| Nickel | ND | 0.02 |
| Silver | ND | 0.01 |
| Vanadium | ND | 0.01 |
| Zinc | ND | 0.02 |

ND = Not detected at or above the reporting limit.
* Duplicate precision not within control limits.

ALPHA/BETA ANALYSIS RESULTS SUMMARY
Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc.

Date Collected: 07/28/98

Client Name: NMED DOE Oversight Bureau

Date Analyzed : 08/19/98

Client Project ID: TA-49

Sample Matrix : Water

Lab Sample ID Series: 98-07-229

Count Duration: 360 Min.

Analyzed By : KI

| Client Sample ID | Lab Sample ID | Gross Alpha (pCi/liter) | Gross Beta (pCi/liter) |
|---|---|---|---|
| AB2 | 98-07-229-07 | 8.0 ± 1.5 | 13.5 ± 2.0 |

Reported Uncertainties are the Estimated Total Propagated Uncertainties (2σ). See PAI SOP 743FC for TPU determinations.

These samples were prepared using PAI SOP702FC and analyzed using PAI SOP705FC.

ALPHA/BETA ANALYSIS MDA SUMMARY
Method 900.0/9310 (Modified)

Lab Name: Paragon Analytics, Inc.

Date Collected: 07/28/98

Client Name: NMED DOE Oversight Bureau

Date Analyzed : 08/19/98

Client Project ID: TA-49

Sample Matrix : Water

Lab Sample ID Series: 98-07-229

Count Duration: 360 Min.

Analyzed By : KI

| Client Sample ID | Lab Sample ID | Gross Alpha MDA (pCi/liter) | Gross Beta MDA (pCi/liter) |
|---|---|---|---|
| AB2 | 07-229-07 | 1.3 | 2.0 |

Reported Uncertainties are the Estimated Total Propagated Uncertainties (2σ). See PAI SOP 743FC for TPU determinations.

These samples were prepared using PAI SOP702FC and analyzed using PAI SOP705FC.

# Nitroaromatics And Nitramines

## Method SW8330

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)

Reported on: Thursday, September 03, 1998

| | |
|---|---|
| Field ID: | AB2 |
| Lab ID: | 9807229-3 |

Sample Matrix: liquid
% Moisture: N/A
Cleanup Method: NONE
Report Basis: AS RECEIVED

Date Collected: 28-Jul-98
Date Extracted: 02-Aug-98
Date Analyzed: 12-Aug-98
Prep Batch: EX980802-1

Sample Aliquot: 350
Final Volume: 3
Dilution: 1

| CASNO | Target Analyte | Result | Units | Reporting Limit | Result Qualifier | Result Footnote |
|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 1 | ug/L | 1 | U | |
| 121-82-4 | RDX | 0.84 | ug/L | 0.84 | U | |
| 99-35-4 | 1,3,5-TRINITROBENZENE | 0.26 | ug/L | 0.26 | U | |
| 99-65-0 | 1,3-DINITROBENZENE | 0.25 | ug/L | 0.25 | U | |
| 479-45-8 | TETRYL | 1 | ug/L | 1 | U | |
| 98-95-3 | NITROBENZENE | 1 | ug/L | 1 | U | |
| 118-96-7 | 2,4,6-TRINITROTOLUENE | 0.25 | ug/L | 0.25 | U | |
| 1946-51-0 | 4-AMINO-2,6-DNT | 0.25 | ug/L | 0.25 | U | |
| 35572-78-2 | 2-AMINO-4,6-DNT | 0.25 | ug/L | 0.25 | U | |
| 606-20-2 | 2,6-DINITROTOLUENE | 0.25 | ug/L | 0.25 | U | |
| 121-14-2 | 2,4-DINITROTOLUENE | 0.25 | ug/L | 0.25 | U | |
| 88-72-2 | 2-NITROTOLUENE | 1 | ug/L | 1 | U | |
| 99-99-0 | 4-NITROTOLUENE | 1 | ug/L | 1 | U | |
| 99-08-1 | 3-NITROTOLUENE | 1 | ug/L | 1 | U | |

## Surrogate Recovery

| CASNO | Surrogate Analyte | Result | Units | Spike Amount | Percent Recovery | Control Limits |
|---|---|---|---|---|---|---|
| 100-25-4 | 1,4-DINITROBENZENE | 3.09 | ug/l | 4.29 | 72 | 34 - 106 |

U = Less than the Reporting Limit

# Total Dissolved Solids

## Method EPA160.1

## Sample Results

Lab Name: Paragon Analytics, Inc.
Client Name: NMED DOE Oversight Bureau
Client Project ID: TA-49 7.29.98-25 (SW)
Work Order Number: 9807229 Final Volume: 100 ML
Reporting Basis: As Received Matrix: Water

| Client Sample ID | Lab ID | Date Collected | Date Prepared | Date Analyzed | Percent Moisture | Dilution Factor | Result | Units | Detection Limit | Flag | Sample Aliquot |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AB2 | 9807229-6 | 7/28/98 | 8/4/98 | 8/5/98 | N/A | 1 | 220 | MG/L | 20 | | 100 ML |

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

# Ion Chromatography

## Method EPA300.0

## Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: TA-49 7.29.98-25 (SW)

Field ID: A02
Lab ID: 9807229-6

Sample Matrix: Water
% Moisture: N/A
Date Collected: 28-Jul-98
Date Extracted: 07-Aug-98
Date Analyzed: 07-Aug-98

Prep Batch: IC980807-1
QCBatchID: IC980807-1-1
Run ID: IC980807-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML

| CASNO | Target Analyte | DF | Result | Units | Reporting Limit | Result Qualifier | EPA Qualifier |
|---|---|---|---|---|---|---|---|
| 16887-00-6 | CHLORIDE | 1 | 0.39 | MG/L | 0.2 | | |
| 14808-79-8 | SULFATE | 1 | 1 | MG/L | 1 | U | |

# Nitroglycerin and PETN

## Method SW8330

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)

Reported on: Friday, September 04, 1998

| Field ID: | AB2 |
|---|---|
| Lab ID: | 9807229-3 |

Sample Matrix: Liquid
% Moisture: N/A
Cleanup Method: NONE
Report Basis: AS RECEIVED

Date Collected: 28-Jul-98
Date Extracted: 02-Aug-98
Date Analyzed: 14-Aug-98
Prep Batch: EX980802-2

Sample Aliquot: 350
Final Volume: 3
Dilution: 1

| CASNO | Target Analyte | Result | Units | Reporting Limit | Result Qualifier | Result Footnote |
|---|---|---|---|---|---|---|
| 55-63-0 | NITROGLYCERIN | 5 | ug/L | 5 | U | |
| 78-11-5 | PETN | 5 | ug/L | 5 | U | |

## Surrogate Recovery

| CASNO | Surrogate Analyte | Result | Units | Spike Amount | Percent Recovery | Control Limits |
|---|---|---|---|---|---|---|
| 528-29-0 | 1,2-DINITROBENZENE | 3.16 | ug/l | 4.29 | 74 | 40 - 140 |

U = Less than the Reporting Limit

INORGANICS

Sample ID

AB2

Lab Name: Paragon Analytics, Inc.

Client Name: New Mexico Environmental Dept.

Client Project ID: 7.29.98-25 (SW)

Lab Sample ID: 98-07-229-05

Date Collected: 07/28/98

Date Analyzed: 08/10/98-8/17/98

Sample Matrix: Water

| Analyte | Method | Concentration (ppm) | Detection Limit (ppm) |
|---|---|---|---|
| Ammonia as N | 4500NH3 F/2 | 0.58 | 0.1 |
| Nitrate + Nitrite as N | 4500NO3 E/2 | 4.2 | 0.50 |
| TKN as N | 4500Norg B/2 | 12.2 | 1.0 |
| Total Phosphorous | 4500p B E/2 | 0.43 | 0.10 |

ND = Not Detected

INORGANICS
Sample Duplicate Report

ab Name: Paragon Analytics, Inc.

Date Collected: 7/28/98

lient Name: New Mexico Environmental Dept.

Date Analyzed: 8/14/98

lient Project ID: 7.29.98-25 (SW)

Sample Matrix: Water

ab Project ID: 98-07-229

| Analyte | Method | Client Sample ID | Sample Conc (ppm) | Duplicate Conc (ppm) | Relative Percent Deviation (%) | QC Acceptance Limits |
|---|---|---|---|---|---|---|
| mmonia as N | 4500NH3-F | AB2 | 0.58 | 0.60 | 3.4 | <20 |
| KN as N | 4500Norg B/ | AB2 | 12.2 | 13.1 | 3.05 | <20 |

D = Not Detected

# Semi-volatile Organics by GC/MS

## Method SW8270

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)

Reported on: Friday, September 04, 1998

| | |
|---|---|
| Field ID: | AB2 |
| Lab ID: | 9807229-1 |

Sample Matrix: liquid
% Moisture: N/A
Cleanup Method: NONE
Report Basis: AS RECEIVED

Date Collected: 28-Jul-98
Date Extracted: 03-Aug-98
Date Analyzed: 02-Sep-98
Prep Batch: EX980803-6

Sample Aliquot: 1000
Final Volume: 1
Dilution: 1

| CASNO | Target Analyte | Result | Units | Reporting Limit | Result Qualifier | Result Footnote |
|---|---|---|---|---|---|---|
| 110-86-1 | PYRIDINE | 10 | ug/L | 10 | U | |
| 62-75-9 | N-NITROSODIMETHYLAMINE | 10 | ug/L | 10 | U | |
| 62-53-3 | ANILINE | 25 | ug/L | 25 | U | |
| 108-95-2 | PHENOL | 10 | ug/L | 10 | U | |
| 111-44-4 | BIS(2-CHLOROETHYL)ETHER | 10 | ug/L | 10 | U | |
| 95-57-8 | 2-CHLOROPHENOL | 10 | ug/L | 10 | U | |
| 541-73-1 | 1,3-DICHLOROBENZENE | 10 | ug/L | 10 | U | |
| 106-46-7 | 1,4-DICHLOROBENZENE | 10 | ug/L | 10 | U | |
| 95-50-1 | 1,2-DICHLOROBENZENE | 10 | ug/L | 10 | U | |
| 100-51-6 | BENZYL ALCOHOL | 10 | ug/L | 10 | U | |
| 108-60-1 | BIS(2-CHLOROISOPROPYL)ETHER | 10 | ug/L | 10 | U | |
| 95-48-7 | 2-METHYLPHENOL | 10 | ug/L | 10 | U | |
| 621-64-7 | N-NITROSO-DI-N-PROPYLAMINE | 10 | ug/L | 10 | U | |
| 106-44-5 | 4-METHYLPHENOL | 10 | ug/L | 10 | U | |
| 67-72-1 | HEXACHLOROETHANE | 10 | ug/L | 10 | U | |
| 98-95-3 | NITROBENZENE | 10 | ug/L | 10 | U | |
| 78-59-1 | ISOPHORONE | 10 | ug/L | 10 | U | |
| 88-75-5 | 2-NITROPHENOL | 10 | ug/L | 10 | U | |
| 105-67-9 | 2,4-DIMETHYLPHENOL | 10 | ug/L | 10 | U | |
| 111-91-1 | BIS(2-CHLOROETHOXY)METHANE | 10 | ug/L | 10 | U | |
| 120-83-2 | 2,4-DICHLOROPHENOL | 10 | ug/L | 10 | U | |
| 65-85-0 | BENZOIC ACID | 50 | ug/L | 50 | U | |
| 120-82-1 | 1,2,4-TRICHLOROBENZENE | 10 | ug/L | 10 | U | |
| 91-20-3 | NAPHTHALENE | 10 | ug/L | 10 | U | |
| 106-47-8 | 4-CHLOROANILINE | 25 | ug/L | 25 | U | |
| 87-68-3 | HEXACHLOROBUTADIENE | 10 | ug/L | 10 | U | |
| 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 10 | ug/L | 10 | U | |
| 91-57-6 | 2-METHYLNAPHTHALENE | 10 | ug/L | 10 | U | |
| 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 10 | ug/L | 10 | U | |
| 88-06-2 | 2,4,6-TRICHLOROPHENOL | 10 | ug/L | 10 | U | |
| 95-95-4 | 2,4,5-TRICHLOROPHENOL | 10 | ug/L | 10 | U | |
| 91-58-7 | 2-CHLORONAPHTHALENE | 10 | ug/L | 10 | U | |
| 88-74-4 | 2-NITROANILINE | 50 | ug/L | 50 | U | |
| 131-11-3 | DIMETHYL PHTHALATE | 10 | ug/L | 10 | U | |

# Semi-volatile Organics by GC/MS

## Method SW8270

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)
Reported on: Friday, September 04, 1998

Field ID: AB2
Lab ID: 9807229-1

Sample Matrix: liquid
% Moisture: N/A
Cleanup Method: NONE
Report Basis: AS RECEIVED

Date Collected: 28-Jul-98
Date Extracted: 03-Aug-98
Date Analyzed: 02-Sep-98
Prep Batch: EX980803-6

Sample Aliquot: 1000
Final Volume: 1
Dilution: 1

| | | | | | | |
|---|---|---|---|---|---|---|
| 606-20-2 | 2,6-DINITROTOLUENE | 10 | ug/L | 10 | U | |
| 208-96-8 | ACENAPHTHYLENE | 10 | ug/L | 10 | U | |
| 99-09-2 | 3-NITROANILINE | 50 | ug/L | 50 | U | |
| 83-32-9 | ACENAPHTHENE | 10 | ug/L | 10 | U | |
| 51-28-5 | 2,4-DINITROPHENOL | 50 | ug/L | 50 | U | |
| 100-02-7 | 4-NITROPHENOL | 50 | ug/L | 50 | U | |
| 132-64-9 | DIBENZOFURAN | 10 | ug/L | 10 | U | |
| 121-14-2 | 2,4-DINITROTOLUENE | 10 | ug/L | 10 | U | |
| 84-66-2 | DIETHYL PHTHALATE | 10 | ug/L | 10 | U | |
| 86-73-7 | FLUORENE | 10 | ug/L | 10 | U | |
| 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 10 | ug/L | 10 | U | |
| 100-01-6 | 4-NITROANILINE | 50 | ug/L | 50 | U | |
| 103-33-3 | AZOBENZENE | 10 | ug/L | 10 | U | |
| 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 50 | ug/L | 50 | U | |
| 86-30-6 | N-NITROSODIPHENYLAMINE | 10 | ug/L | 10 | U | |
| 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 10 | ug/L | 10 | U | |
| 118-74-1 | HEXACHLOROBENZENE | 10 | ug/L | 10 | U | |
| 87-86-5 | PENTACHLOROPHENOL | 50 | ug/L | 50 | U | |
| 58-90-2 | 2,3,4,6-TETRACHLOROPHENOL | 50 | ug/L | 50 | U | |
| 85-01-8 | PHENANTHRENE | 10 | ug/L | 10 | U | |
| 120-12-7 | ANTHRACENE | 10 | ug/L | 10 | U | |
| 86-74-8 | CARBAZOLE | 10 | ug/L | 10 | U | |
| 84-74-2 | DI-N-BUTYL PHTHALATE | 10 | ug/L | 10 | U | |
| 206-44-0 | FLUORANTHENE | 10 | ug/L | 10 | U | |
| 129-00-0 | PYRENE | 10 | ug/L | 10 | U | |
| 85-68-7 | BUTYL BENZYL PHTHALATE | 10 | ug/L | 10 | U | |
| 56-55-3 | BENZO(A)ANTHRACENE | 10 | ug/L | 10 | U | |
| 91-94-1 | 3,3'-DICHLOROBENZIDINE | 50 | ug/L | 50 | U | |
| 218-01-9 | CHRYSENE | 10 | ug/L | 10 | U | |
| 117-81-7 | BIS(2-ETHYLHEXYL)PHTHALATE | 10 | ug/L | 10 | U | |
| 117-84-0 | DI-N-OCTYL PHTHALATE | 10 | ug/L | 10 | U | |
| 205-99-2 | BENZO(B)FLUORANTHENE | 10 | ug/L | 10 | U | |
| 207-08-9 | BENZO(K)FLUORANTHENE | 10 | ug/L | 10 | U | |
| 50-32-8 | BENZO(A)PYRENE | 10 | ug/L | 10 | U | |
| 193-39-5 | INDENO(1,2,3-CD)PYRENE | 10 | ug/L | 10 | U | |
| 53-70-3 | DIBENZO(A,H)ANTHRACENE | 10 | ug/L | 10 | U | |

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# Semi-volatile Organics by GC/MS

## Method SW8270

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9807229
Client Name: NMED DOE Oversight Bureau
ClientProject ID: 7.29.98-25 (SW)

Reported on: Friday, September 04, 1998

| | | | | | |
|---|---|---|---|---|---|
| Field ID: A02 | Sample Matrix: liquid | Date Collected: 28-Jul-98 | Sample Aliquot: | 1000 |
| Lab ID: 9807229-1 | % Moisture: N/A | Date Extracted: 03-Aug-98 | Final Volume: | 1 |
| | Cleanup Method: NONE | Date Analyzed: 02-Sep-98 | Dilution: | 1 |
| | Report Basis: AS RECEIVED | Prep Batch: EX980803-6 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 191-24-2 | BENZO(G,H,I)PERYLENE | 10 | ug/L | 10 | U | |

## Surrogate Recovery

| CASNO | Surrogate Analyte | Result | Units | Spike Amount | Percent Recovery | Control Limits |
|---|---|---|---|---|---|---|
| 118-79-6 | 2,4,6-TRIBROMOPHENOL | 69.4 | ug/l | 75 | 93 | 23 - 100 |
| 321-60-8 | 2-FLUOROBIPHENYL | 30.9 | ug/l | 50 | 62 | 21 - 100 |
| 367-12-4 | 2-FLUOROPHENOL | 43 | ug/l | 75 | 57 | 21 - 100 |
| 4165-60-0 | NITROBENZENE-D5 | 28.3 | ug/l | 50 | 57 | 34 - 111 |
| 4165-62-2 | PHENOL-D5 | 46.8 | ug/l | 75 | 62 | 15 - 104 |
| 1718-51-0 | TERPHENYL-D14 | 28.3 | ug/l | 50 | 57 | 33 - 111 |

U = Less than the Reporting Limit