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ANALYSES OF ROCK SAMPLES FROM THE CRAIG B-6 QUADRANGLE, ALASKA

By

Allen L. Clark, Henry C. Berg, Donald A. Grybeck,
A. Thomas Ovenshine, and Raymond Wehr

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INTRODUCTION

Analytical data for 10 rock samples from the Craig B-6, 1:63,360-scale quadrangle are presented in this report, together with a statistical treatment of the data. The samples were collected in 1969 as part of the Heavy Metals Program of the U.S. Geological Survey.

The most comprehensive discussion of the geology of the study area is a report by A. F. Buddington and Theodore Chapin (1929). Known metalliferous lodes of the area are described and additional references to specific areas are given by Berg and Cobb (1967). Additional data is given in reports by Condon (1961), Smith (1914), and Wright and Wright (1908). Supplemental publications are being prepared on the general geology and mineral occurrences of the study area.

Procedures and treatment of data

Standard procedures were followed in the collection and preparation of samples.

Rock samples are primarily grab samples from mineral occurrences and outcrops. They were chosen for analysis to provide data on background, because they were in the area of mineral occurrences or stream-sediment anomalies, because they were strongly iron stained, or contained visible sulfides.

Rock samples were crushed and pulverized and the minus 80 mesh fraction analyzed. The minus 80 mesh fractions of the samples were analyzed for 30 elements by the six-step semiquantitative spectrographic method and for gold by the atomic absorption method.[1/]

[1/] Analyses for 29 elements by semiquantitative analyses and for gold by atomic absorption are given in the tables. Semiquantitative analyses for gold are omitted.

The spectrographic analyses were reported in percentage (pct) or parts per million (ppm) to the nearest number in the series 1.0, 0.7, 0.5, 0.3, 0.3, 0.15, 0.1, etc. The precision of the reported value is approximately plus 100 percent or minus 50 percent. Analyses for gold by the atomic absorption method are accurate to ± 100 percent. Minimum limits of determination for each element are given on page 4. Semi-quantitative spectrographic analyses were done by K. J. Curry and atomic absorption analyses were done by R. L. Miller, R. B. Tripp, H. D. King, and A. L. Meier.

Locations of the rock samples are shown on figure 1. Rock samples are numbered sequentially starting in the northeast corner of the map area and are read from west to east and north to south. Rock sample descriptions are given in table 1 and rock sample analyses are tabulated in table 2.

The results of the analyses of the rock analyses have been processed by means of a computer program known as GEOSUM and are presented in tables 1 and 2. The GEOSUM program is designed primarily for summarizing and tabulating geochemical data--especially data from semiquantitative spectrographic analyses (commonly referred to as six-step spectrographic analyses) by the laboratories of the U.S. Geological Survey.

The program output consists of: (a) a tabulation of the data, (b) histograms and cumulative frequency distributions for all elements except tungsten, and (c) a statistical summary which includes geometric means and geometric deviations.

Table 1.--Description of rock, vein, and altered zone samples. (All samples are of representative material.) Sample localities are shown by sample number plotted on the accompanying map, Plate 1.

Sample No.	Lab. No.	Sample Description
1	ACE-700	Argillite
2	-691	Sheared argillite with pyrite
3	ACL-490	Marble with chalcopyrite
3	-491	Marble with chalcopyrite
3	-492	Quartz monzonite
4	-564	Tactite, copper stained
4	-565	Marble
4	-566	Hornfelsed argillite
4	-567	Tactite
5	ACE-696	Sheared greenstone

Explanation of Tables 2 and 3

Analytical results from rock and stream-sediment samples are given in Tables 2 and 3 as analytical values such as 7.0000 ppm, 10.0000 percent, etc., or as qualified values expressed as a letter. These letter codes are N = not detected, L = less than specified limit of detection, G = greater than value shown, B = no data, H = interference. The term T = trace, but does not occur in these data. Note that the right-most zero digits for each analytical value may or may not be significant. The specified limits of detection are as follows:

Specified limits of detection

FE PCT	MG PCT	CA PCT	TI PCT	MN PPM	AG PPM
0.05000	0.02000	0.05000	0.00200	20.00000	0.10000
AS PPM	AU PPM	B PPM	BA PPM	BE PPM	BI PPM
0.20000	0.02000	10.00000	20.00000	1.00000	10.00000
CO PPM	CR PPM	CU PPM	LA PPM	MO PPM	NB PPM
5.00000	5.00000	2.00000	20.00000	2.00000	10.00000
NI PPM	PB PPM	SB PPM	SC PPM	SN PPM	SR PPM
2.00000	10.00000	0.50000	5.00000	10.00000	50.00000
V PPM	W PPM	Y PPM	ZN PPM	ZR PPM	
5.00000	50.00000	5.00000	25.00000	10.00000	

Semiquantitative spectrographic analyses by the U.S. Geological Survey are reported as geometric midpoints (1.0, 0.7, 0.5, 0.3, 0.2, 0.15, 0.1, etc.) of geometric backets having the boundaries 1.2, 0.83, 0.56, 0.38, 0.26, 0.18, 0.12, 0.083, etc. The frequency distributions and histograms are on logarithmic scales and are computed using these brackets as class intervals, for example:

Reported value (ppm)	Limits	
1.0	.83	1.2
1.5	1.2	1.8
2.0	1.8	2.6
3.0	2.6	3.8
5.0	3.8	5.6
7.0	5.6	8.3
10 0	8.3	12.0

On the histograms decimal numbers are shown as powers of 10, for example:

7.0E-01 means 7.0×10^{-1} or 0.7

7.0E 00 means 7.0×10^{0} or 7.0

7.0E 01 means 7.0×10^{1} or 70.0

7.0E 02 means 7.0×10^{2} or 700.0

7.0E 03 means 7.0×10^{3} or 7,000.0

The histograms are constructed of X's, each of which represents 1 percent of the total number (309) of samples.

The histograms and the statistics given below them are derived only from data values within the ranges of analytical determination ("analytical values"). The histograms are, therefore, incomplete, and the statistics are biased if data values qualified with N, L, C, T, or H codes are present. (See the histogram and statistics below it for tin, which are calculated from only one sample.) Statistical estimates that are unbiased in this regard are given at the end of Table 1. The geometric means is the antilogarithm of the arithmetic mean of the logs of the analyses and an estimate of "central tendency," or of a characteristic value, of a frequency distribution that is approximately symmetrical on a log scale, and is therefore useful for characterizing many geochemical distributions. The geometric mean is not an estimate of geochemical abundance. The geometric deviation is the antilogarithm of the standard deviation of the logs of the analyses. See USGS Professional Paper 574-B for further discussion and USGS Bulletin 1147E, p. 20-23, for further discussion and explanation of geometric deviation.

In the computations performed to produce the statistical summary at the end of Tables 2 and 3 all elements are ignored where one or more of the unqualified data values is less than the analytical limit of detection specified on input or where any data values are qualified with the G (greater than) code. Data values qualified with B or H are not used in the computations. Where none of the data values for an element are qualified the mean and deviation should be the same as those given in the preceding section. Where data are qualified with the codes N, L, or T, the estimates of geometric mean and deviation are based on a method by A. J. Cohen for treating censored distributions. The application of this method of geochemical problems is described in USGS Professional Paper 574-B. The estimates are unbiased in a strict sense only where the data are derived from a lognormal parent population, but experiments have shown that large departures from this requirement may not greatly invalidate the results. Acceptance and use of the estimates, however, is the responsibility of the individual.

Selected References

Berg, H. C., and Cobb, E. H., 1967, Metalliferous lode deposits of Alaska: U.S. Geol. Survey Bull. 1246, p. 164-184.

Buddington, A. F., and Chapin, Theodore, 1929, Geology and mineral deposits of southeastern Alaska: U.S. Geol. Survey Bull. 800, 398 p.

Condon, W. H., 1961, Geology of the Craig quadrangle, Alaska: U.S. Geol. Survey Bull. 1108-B, 43 p.

Miesch, A. T., 1963, Distribution of elements in Colorado Plateau uranium deposits--A preliminary report: U.S. Geol. Survey Bull. 1147-E, 57 p.

_____1967, Methods of computation for estimating geochemical abundance: U.S. Geol. Survey Prof. Paper 574-B, 15 p.

Smith, P. S., 1914, Lode mining in the Ketchikan region, Alaska in Mineral resources of Alaska: U.S. Geol. Survey Bull. 592, p. 75-84.

Wright, F. E., and Wright, C. W., 1908, The Ketchikan and Wrangell mining districts, Alaska: U.S. Geol. Survey Bull. 347, 210 p.

TABLE 2. CRAIG B-6 ROCK SAMPLES

MAP NUMBER	SAMPLE	FE PCT	MG PCT	CA PCT	TI PCT	MN PPM	AG PPM	AS PPM	AU PPM	B PPM	BA PPM
1	ACE700	10.0000	2.0000	1.0000	0.5000	700.0000	0.0 N	0.0 N	0.0 N	70.0000	500.0000
2	ACE691	10.0000	5.0000	10.0000	0.3000	1500.0000	0.0 N	0.0 N	0.0 N	20.0000	0.0 L
3	ACL490	20.0000	3.0000	20.0000	0.1500	3000.0000	70.0000	0.0 N	0.0 N	0.0 L	70.0000
3	ACL491	20.0000	3.0000	7.0000	1.0000	1000.0000	0.0 N	0.0 N	0.0 N	0.0 L	150.0000
3	ACL492	5.0000	1.5000	3.0000	0.3000	1000.0000	0.0 N	0.0 N	0.0 N	0.0 L	500.0000
4	ACL564	3.0000	7.0000	15.0000	1.0000	700.0000	3.0000	0.0 N	0.0 N	0.0 N	70.0000
4	ACL565	0.3000	2.0000	20.00000G	0.0150	200.0000	0.0 N	0.0 N	0.0 N	0.0 N	0.0 L
4	ACL566	15.0000	5.0000	10.0000	1.0000G	1500.0000	0.0 N	0.0 N	0.0 N	0.0 L	300.0000
4	ACL567	3.0000	1.5000	20.0000	0.0300	3000.0000	0.0 N	0.0 N	0.0 N	0.0 N	70.0000
5	ACE696	15.0000	3.0000	2.0000	1.0000	1500.0000	0.0 N	0.0 N	0.0 N	20.0000	150.0000

CRAIG B-6 ROCK SAMPLES

	SAMPLE	BE PPM	BI PPM	CD PPM	CO PPM	CR PPM	CU PPM	LA PPM	MO PPM	NB PPM	NI PPM
1	ACE700	0.0 N	0.0 N	0.0 N	15.0000	10.0000	70.0000	0.0 N	0.0 L	0.0 L	15.0000
2	ACE691	0.0 N	0.0 N	0.0 N	30.0000	100.0000	15.0000	0.0 N	10.0000	10.0000	30.0000
3	ACL490	0.0 N	0.0 N	0.0 N	150.0000	30.0000	20001.0000G	0.0 L	5.0000	15.0000	1500.0000
3	ACL491	0.0 L	0.0 N	0.0 N	50.0000	150.0000	300.0000	0.0 N	10.0000	15.0000	50.0000
3	ACL492	1.0000	0.0 N	0.0 N	7.0000	10.0000	5.0000	0.0 L	0.0 N	10.0000	0.0 N
4	ACL564	0.0 L	0.0 N	0.0 N	70.0000	300.0000	7000.0000	0.0 L	0.0 L	10.0000	150.0000
4	ACL565	0.0 N	0.0 N	0.0 N	0.0 N	0.0 L	20.0000	0.0 L	0.0 N	0.0 L	0.0 L
4	ACL566	0.0 L	0.0 N	0.0 N	70.0000	100.0000	150.0000	50.0000	0.0 L	30.0000	100.0000
4	ACL567	0.0 N	0.0 N	0.0 N	0.0 L	0.0 L	0.0 N	0.0 N	0.0 N	10.0000	5.0000
5	ACE696	0.0 N	0.0 N	0.0 N	30.0000	150.0000	50.0000	0.0 L	7.0000	10.0000	50.0000

CRAIG B-6 ROCK SAMPLES

	SAMPLE	PB PPM	SB PPM	SC PPM	SN PPM	SR PPM	V PPM	W PPM	Y PPM	ZN PPM	ZR PPM
1	ACE700	15.0000	0.0 N	20.0000	0.0 N	300.0000	200.0000	0.0 N	15.0000	0.0 L	70.0000
2	ACE691	0.0 N	0.0 N	20.0000	0.0 N	0.0 L	150.0000	0.0 N	10.0000	0.0 N	30.0000
3	ACL490	0.0 N	0.0 N	5.0000	0.0 N	100.0000	30.0000	0.0 N	10.0000	200.0000	20.0000
3	ACL491	0.0 N	0.0 N	20.0000	0.0 N	200.0000	150.0000	0.0 N	15.0000	0.0 L	70.0000
3	ACL492	0.0 L	0.0 N	7.0000	0.0 N	200.0000	70.0000	0.0 N	15.0000	0.0 N	150.0000
4	ACL564	0.0 N	0.0 N	20.0000	0.0 N	200.0000	150.0000	0.0 N	15.0000	700.0000	70.0000
4	ACL565	0.0 N	0.0 N	0.0 N	0.0 N	300.0000	15.0000	0.0 N	10.0000	0.0 N	20.0000
4	ACL566	0.0 N	0.0 N	15.0000	0.0 N	300.0000	150.0000	0.0 N	30.0000	0.0 L	150.0000
4	ACL567	0.0 N	0.0 N	0.0 N	0.0 N	0.0 N	15.0000	0.0 N	10.0000	0.0 N	30.0000
5	ACE696	10.0000	0.0 N	30.0000	0.0 N	300.0000	200.0000	0.0 N	30.0000	0.0 L	70.0000

CRAIG B-6 ROCK SAMPLES

	SAMPLE	AU PPM
1	ACE700	0.0200L
2	ACE691	0.0200L
3	ACL490	0.0200L
3	ACL491	0.8000
3	ACL492	0.0200L
4	ACL564	0.4000
4	ACL565	0.0200L
4	ACL566	0.0200L
4	ACL567	0.0200L
5	ACE696	0.0400L

FREQUENCY TABLE FOR COLUMN) (FE PCT)

LIMITS LOWER	~ UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E-02 -	5.6E-02	0	0	0.0	0.0
5.6E-02 -	8.3E-02	0	0	0.0	0.0
8.3E-02 -	1.2E-01	0	0	0.0	0.0
1.2E-01 -	1.8E-01	0	0	0.0	0.0
1.8E-01 -	2.6E-01	0	0	0.0	0.0
2.6E-01 -	3.8E-01	1	1	10.00	10.00
3.8E-01 -	5.6E-01	0	1	0.0	10.00
5.6E-01 -	8.3E-01	0	1	0.0	10.00
8.3E-01 -	1.2E 00	0	1	0.0	10.00
1.2E 00 -	1.8E 00	0	1	0.0	10.00
1.8E 00 -	2.6E 00	0	1	0.0	10.00
2.6E 00 -	3.8E 00	2	3	20.00	30.00
3.8E 00 -	5.6E 00	1	4	10.00	40.00
5.6E 00 -	8.3E 00	0	4	0.0	40.00
8.3E 00 -	1.2E 01	2	6	20.00	60.00
1.2E 01 -	1.8E 01	2	8	20.00	80.00
1.8E 01 -	2.6E 01	2	10	20.00	100.00

HISTOGRAM FOR COLUMN L (FE PCT)

```
3.0E-01 XXXXXXXXXX

5.0E-01

7.0E-01

1.0E 00

1.5E 00

2.0E 00

3.0E 00 XXXXXXXXXXXXXXXXXXXX

5.0E 00 XXXXXXXXXX

7.0E 00

1.0E 01 XXXXXXXXXXXXXXXXXXXX

1.5E 01 XXXXXXXXXXXXXXXXXXXX

2.0E 01 XXXXXXXXXXXXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	10
0.0	0.0			0.0	0.0	

MAXIMUM = 2.00000E 01

MINIMUM = 3.00000E-01

GEOMETRIC MEAN = 6.43364E 00

GEOMETRIC DEVIATION = 3.63953E 00

FREQUENCY TABLE FOR COLUMN 2 (MG PCT)

LIMITS LOWER	- UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.6E-02 -	2.6E-02	0	0	0.0	0.0
2.6E-02 -	3.8E-02	0	0	0.0	0.0
3.8E-02 -	5.6E-02	0	0	0.0	0.0
5.6E-02 -	8.3E-02	0	0	0.0	0.0
8.3E-02 -	1.2E-01	0	0	0.0	0.0
1.2E-01 -	1.8E-01	0	0	0.0	0.0
1.8E-01 -	2.6E-01	0	0	0.0	0.0
2.6E-01 -	3.8E-01	0	0	0.0	0.0
3.8E-01 -	5.6E-01	0	0	0.0	0.0
5.6E-01 -	8.3E-01	0	0	0.0	0.0
8.3E-01 -	1.2E 00	0	0	0.0	0.0
1.2E 00 -	1.8E 00	2	2	20.00	20.00
1.8E 00 -	2.6E 00	2	4	20.00	40.00
2.6E 00 -	3.8E 00	3	7	30.00	70.00
3.8E 00 -	5.6E 00	2	9	20.00	90.00
5.6E 00 -	8.3E 00	1	10	10.00	100.00

HISTOGRAM FOR COLUMN 2 (MG PCT)

```
1.5E 00 XXXXXXXXXXXXXXXXXXX

2.0E 00 XXXXXXXXXXXXXXXXXXX

3.0E 00 XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

5.0E 00 XXXXXXXXXXXXXXXXXXX

7.0E 00 XXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	10
0.0	0.0			0.0	0.0	

MAXIMUM = 7.00000E 00

MINIMUM = 1.50000E 00

GEOMETRIC MEAN = 2.90311E 00

GEOMETRIC DEVIATION = 1.69726E 00

FREQUENCY TABLE FOR COLUMN 3 (CA PCT)

LIMITS LOWER	- UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E-02 -	5.6E-02	0	0	0.0	0.0
5.6E-02 -	8.3E-02	0	0	0.0	0.0
8.3E-02 -	1.2E-01	0	0	0.0	0.0
1.2E-01 -	1.8E-01	0	0	0.0	0.0
1.8E-01 -	2.6E-01	0	0	0.0	0.0
2.6E-01 -	3.8E-01	0	0	0.0	0.0
3.8E-01 -	5.6E-01	0	0	0.0	0.0
5.6E-01 -	8.3E-01	0	0	0.0	0.0
8.3E-01 -	1.2E 00	1	1	10.00	10.00
1.2E 00 -	1.8E 00	0	1	0.0	10.00
1.8E 00 -	2.6E 00	1	2	10.00	20.00
2.6E 00 -	3.8E 00	1	3	10.00	30.00
3.8E 00 -	5.6E 00	0	3	0.0	30.00
5.6E 00 -	8.3E 00	1	4	10.00	40.00
8.3E 00 -	1.2E 01	2	6	20.00	60.00
1.2E 01 -	1.8E 01	1	7	10.00	70.00
1.8E 01 -	2.6E 01	2	9	20.00	90.00

HISTOGRAM FOR COLUMN 3 (CA PCT)

```
1.0E 00 XXXXXXXXXX

1.5E 00

2.0E 00 XXXXXXXXXX

3.0E 00 XXXXXXXXXX

5.0E 00

7.0E 00 XXXXXXXXXX

1.0E 01 XXXXXXXXXXXXXXXXXXXX

1.5E 01 XXXXXXXXXX

2.0E 01 XXXXXXXXXXXXXXXXXXXX
```

N	L	H	R	T	G	ANALYTICAL VALUES
0	0	0	0	0	1	9
0.0	0.0			0.0	10.00	

MAXIMUM = 2.00000E 01

MINIMUM = 1.00000E 00

GEOMETRIC MEAN = 6.64319E 00

GEOMETRIC DEVIATION = 2.90339E 00

FREQUENCY TABLE FOR COLUMN 4 (TI PCT)

LIMITS LOWER	- UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.8E-03 -	2.6E-03	0	0	0.0	0.0
2.6E-03 -	3.8E-03	0	0	0.0	0.0
3.8E-03 -	5.6E-03	0	0	0.0	0.0
5.6E-03 -	8.3E-03	0	0	0.0	0.0
8.3E-03 -	1.2E-02	0	0	0.0	0.0
1.2E-02 -	1.8E-02	1	1	10.00	10.00
1.8E-02 -	2.6E-02	0	1	0.0	10.00
2.6E-02 -	3.8E-02	1	2	10.00	20.00
3.8E-02 -	5.6E-02	0	2	0.0	20.00
5.6E-02 -	8.3E-02	0	2	0.0	20.00
8.3E-02 -	1.2E-01	0	2	0.0	20.00
1.2E-01 -	1.8E-01	1	3	10.00	30.00
1.8E-01 -	2.6E-01	0	3	0.0	30.00
2.6E-01 -	3.8E-01	2	5	20.00	50.00
3.8E-01 -	5.6E-01	1	6	10.00	60.00
5.6E-01 -	8.3E-01	0	6	0.0	60.00
8.3E-01 -	1.2E 00	3	9	30.00	90.00

HISTOGRAM FOR COLUMN 4 (TI PCT)

```
1.5E-02 XXXXXXXXXX

2.0E-02

3.0E-02 XXXXXXXXXX

5.0E-02

7.0E-02

1.0E-01

1.5E-01 XXXXXXXXXX

2.0E-01

3.0E-01 XXXXXXXXXXXXXXXXXXXX

5.0E-01 XXXXXXXXXX

7.0E-01

1.0E 00 XXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	1	9
0.0	0.0			0.0	10.00	

MAXIMUM = 1.00000E 00

MINIMUM = 1.50000E-02

GEOMETRIC MEAN = 2.43751E-01

GEOMETRIC DEVIATION = 4.66564E 00

FREQUENCY TABLE FOR COLUMN 5 (MN PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 -	1.2E 01	0	0	0.0	0.0
1.2E 01 -	1.8E 01	0	0	0.0	0.0
1.8E 01 -	2.6E 01	0	0	0.0	0.0
2.6E 01 -	3.8E 01	0	0	0.0	0.0
3.8E 01 -	5.6E 01	0	0	0.0	0.0
5.6E 01 -	8.3E 01	0	0	0.0	0.0
8.3E 01 -	1.2E 02	0	0	0.0	0.0
1.2E 02 -	1.8E 02	0	0	0.0	0.0
1.8E 02 -	2.6E 02	1	1	10.00	10.00
2.6E 02 -	3.8E 02	0	1	0.0	10.00
3.8E 02 -	5.6E 02	0	1	0.0	10.00
5.6E 02 -	8.3E 02	2	3	20.00	30.00
8.3E 02 -	1.2E 03	2	5	20.00	50.00
1.2E 03 -	1.8E 03	3	8	30.00	80.00
1.8E 03 -	2.6E 03	0	8	0.0	80.00
2.6E 03 -	3.8E 03	2	10	20.00	100.00

HISTOGRAM FOR COLUMN 5 (MN PPM)

```
2.0E 02 XXXXXXXXXX

3.0E 02

5.0E 02

7.0E 02 XXXXXXXXXXXXXXXXXXX

1.0E 03 XXXXXXXXXXXXXXXXXXX

1.5E 03 XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

2.0E 03

3.0E 03 XXXXXXXXXXXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	10
0.0	0.0			0.0	0.0	

MAXIMUM = 3.00000E 03

MINIMUM = 2.00000E 02

GEOMETRIC MEAN = 1.11524E 03

GEOMETRIC DEVIATION = 2.20601E 00

FREQUENCY TABLE FOR COLUMN 6 (AG PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E-01 -	5.6E-01	0	0	0.0	0.0
5.6E-01 -	8.3E-01	0	0	0.0	0.0
8.3E-01 -	1.2E 00	0	0	0.0	0.0
1.2E 00 -	1.8E 00	0	0	0.0	0.0
1.8E 00 -	2.6E 00	0	0	0.0	0.0
2.6E 00 -	3.8E 00	1	1	10.00	10.00
3.8E 00 -	5.6E 00	0	1	0.0	10.00
5.6E 00 -	8.3E 00	0	1	0.0	10.00
8.3E 00 -	1.2E 01	0	1	0.0	10.00
1.2E 01 -	1.8E 01	0	1	0.0	10.00
1.8E 01 -	2.6E 01	0	1	0.0	10.00
2.6E 01 -	3.8E 01	0	1	0.0	10.00
3.8E 01 -	5.6E 01	0	1	0.0	10.00
5.6E 01 -	8.3E 01	1	2	10.00	20.00

HISTOGRAM FOR COLUMN 6 (AG PPM)

```
3.0E 00 XXXXXXXXXX

5.0E 00

7.0E 00

1.0E 01

1.5E 01

2.0E 01

3.0E 01

5.0E 01

7.0E 01 XXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
8	0	0	0	0	0	2
80.00	0.0			0.0	0.0	

MAXIMUM = 7.00000E 01

MINIMUM = 3.00000E 00

GEOMETRIC MEAN = 1.44913E 01

GEOMETRIC DEVIATION = 9.27482E 00

FREQUENCY TABLE FOR COLUMN 7 (AS PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM	ANALYTICAL VALUES
N	L	H	B	T	G	
10	0	0	0	0	0	0
*****	0.0			0.0	0.0	

MAXIMUM = -9.99900E 48

MINIMUM = 9.99900E 48

GEOMETRIC MEAN = 9.99900E 48

GEOMETRIC DEVIATION = 9.99900E 48

FREQUENCY TABLE FOR COLUMN 8 (AU PPM)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM		ANALYTICAL VALUES
N	L	H	B	T	G	
10	0	0	0	0	0	0
*****	0.0			0.0	0.0	

MAXIMUM = -9.99900E 46

MINIMUM = 9.99900E 48

GEOMETRIC MEAN = 9.99900E 48

GEOMETRIC DEVIATION = 9.99900E 48

FREQUENCY TABLE FOR COLUMN 9 (B PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 -	1.2E 01	0	0	0.0	0.0
1.2E 01 -	1.8E 01	0	0	0.0	0.0
1.8E 01 -	2.6E 01	2	2	20.00	20.00
2.6E 01 -	3.8E 01	0	2	0.0	20.00
3.8E 01 -	5.6E 01	0	2	0.0	20.00
5.6E 01 -	8.3E 01	1	3	10.00	30.00

HISTOGRAM FOR COLUMN 9 (B PPM)

```
2.0E 01 XXXXXXXXXXXXXXXXXXXX

3.0E 01

5.0E 01

7.0E 01 XXXXXXXXXX
```

N	L	M	B	T	G	ANALYTICAL VALUES
3	4	0	0	0	0	3
30.00	40.00			0.0	0.0	

MAXIMUM = 7.00000E 01

MINIMUM = 2.00000E 01

GEOMETRIC MEAN = 3.03658E 01

GEOMETRIC DEVIATION = 2.06118E 00

FREQUENCY TABLE FOR COLUMN 10 (BA PPM)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.8E 01 - 2.6E 01	0	0	0.0	0.0
2.6E 01 - 3.8E 01	0	0	0.0	0.0
3.8E 01 - 5.6E 01	0	0	0.0	0.0
5.6E 01 - 8.3E 01	3	3	30.00	30.00
8.3E 01 - 1.2E 02	0	3	0.0	30.00
1.2E 02 - 1.8E 02	2	5	20.00	50.00
1.8E 02 - 2.6E 02	0	5	0.0	50.00
2.6E 02 - 3.8E 02	1	6	10.00	60.00
3.8E 02 - 5.6E 02	2	8	20.00	80.00

HISTOGRAM FOR COLUMN 10 (BA PPM)

```
7.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

1.0E 02

1.5E 02 XXXXXXXXXXXXXXXXXXX

2.0E 02

3.0E 02 XXXXXXXXXX

5.0E 02 XXXXXXXXXXXXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	2	0	0	0	0	8
0.0	20.00			0.0	0.0	

MAXIMUM = 5.00000E 02

MINIMUM = 7.00000E 01

GEOMETRIC MEAN = 1.660796E 02

GEOMETRIC DEVIATION = 2.336036E 00

FREQUENCY TABLE FOR COLUMN 11 (BE PPM)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E-01 - 1.2E 00	1	1	10.00	10.00

HISTOGRAM FOR COLUMN 11 (BE PPM)

1.0E 00 XXXXXXXXXX

N	L	H	B	T	G	ANALYTICAL VALUES
6	3	0	0	0	0	1
60.00	30.00			0.0	0.0	

MAXIMUM = 1.00000E 00

MINIMUM = 1.00000E 00

GEOMETRIC MEAN = 1.00000E 00

GEOMETRIC DEVIATION = 9.99900E 48

FREQUENCY TABLE FOR COLUMN 12 (BI PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM	ANALYTICAL VALUES
N	L	H	B	I	G	
10	0	0	0	0	0	0
*****	0.0			0.0	0.0	

MAXIMUM = -9.99900E 48

MINIMUM = 9.99900E 48

GEOMETRIC MEAN = 9.99900E 48

GEOMETRIC DEVIATION = 9.99900E 48

FREQUENCY TABLE FOR COLUMN 13 (CD PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM	ANALYTICAL VALUES
N	L	H	A	T	G	
10	0	0	0	0	0	0
*****	0.0			0.0	0.0	

MAXIMUM = -9.99900E 48

MINIMUM = 9.99900E 48

GEOMETRIC MEAN = 9.99900E 48

GEOMETRIC DEVIATION = 9.99900E 48

FREQUENCY TABLE FOR COLUMN 14 (CO PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E 00 -	5.6E 00	0	0	0.0	0.0
5.6E 00 -	8.3E 00	1	1	10.00	10.00
8.3E 00 -	1.2E 01	0	1	0.0	10.00
1.2E 01 -	1.8E 01	1	2	10.00	20.00
1.8E 01 -	2.6E 01	0	2	0.0	20.00
2.6E 01 -	3.8E 01	2	4	20.00	40.00
3.8E 01 -	5.6E 01	1	5	10.00	50.00
5.6E 01 -	8.3E 01	2	7	20.00	70.00
8.3E 01 -	1.2E 02	0	7	0.0	70.00
1.2E 02 -	1.8E 02	1	8	10.00	80.00

HISTOGRAM FOR COLUMN 14 (CO PPM)

```
7.0E 00 XXXXXXXXXX

1.0E 01

1.5E 01 XXXXXXXXXX

2.0E 01

3.0E 01 XXXXXXXXXXXXXXXXXXXX

5.0E 01 XXXXXXXXXX

7.0E 01 XXXXXXXXXXXXXXXXXXXX

1.0E 02

1.5E 02 XXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
1	1	0	0	0	0	8
10.00	10.00			0.0	0.0	

MAXIMUM = 1.50000E 02

MINIMUM = 7.00000E 00

GEOMETRIC MEAN = 3.69475E 01

GEOMETRIC DEVIATION = 2.62860E 00

FREQUENCY TABLE FOR COLUMN 15 (CR PPM)

LIMITS LOWER	- UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E 00 -	5.6E 00	0	0	0.0	0.0
5.6E 00 -	8.3E 00	0	0	0.0	0.0
8.3E 00 -	1.2E 01	2	2	20.00	20.00
1.2E 01 -	1.8E 01	0	2	0.0	20.00
1.8E 01 -	2.6E 01	0	2	0.0	20.00
2.6E 01 -	3.8E 01	1	3	10.00	30.00
3.8E 01 -	5.6E 01	0	3	0.0	30.00
5.6E 01 -	8.3E 01	0	3	0.0	30.00
8.3E 01 -	1.2E 02	2	5	20.00	50.00
1.2E 02 -	1.8E 02	2	7	20.00	70.00
1.8E 02 -	2.6E 02	0	7	0.0	70.00
2.6E 02 -	3.8E 02	1	8	10.00	80.00

HISTOGRAM FOR COLUMN 15 (CR PPM)

```
1.0E 01 XXXXXXXXXXXXXXXXXXXX

1.5E 01

2.0E 01

3.0E 01 XXXXXXXXXX

5.0E 01

7.0E 01

1.0E 02 XXXXXXXXXXXXXXXXXXXX

1.5E 02 XXXXXXXXXXXXXXXXXXXX

2.0E 02

3.0E 02 XXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	7	0	0	0	0	8
0.0	20.00			0.0	0.0	

MAXIMUM = 3.00000E 02

MINIMUM = 1.00000E 01

GEOMETRIC MEAN = 6.14189E 01

GEOMETRIC DEVIATION = 3.64073E 00

FREQUENCY TABLE FOR COLUMN 16 (CU PPM)

LIMITS LOWER	-	UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E 00	-	5.6E 00	1	1	10.00	10.00
5.6E 00	-	8.3E 00	0	1	0.0	10.00
8.3E 00	-	1.2E 01	0	1	0.0	10.00
1.2E 01	-	1.8E 01	1	2	10.00	20.00
1.8E 01	-	2.6E 01	1	3	10.00	30.00
2.6E 01	-	3.8E 01	0	3	0.0	30.00
3.8E 01	-	5.6E 01	1	4	10.00	40.00
5.6E 01	-	8.3E 01	1	5	10.00	50.00
8.3E 01	-	1.2E 02	0	5	0.0	50.00
1.2E 02	-	1.8E 02	1	6	10.00	60.00
1.8E 02	-	2.6E 02	0	6	0.0	60.00
2.6E 02	-	3.8E 02	1	7	10.00	70.00
3.8E 02	-	5.6E 02	0	7	0.0	70.00
5.6E 02	-	8.3E 02	0	7	0.0	70.00
8.3E 02	-	1.2E 03	0	7	0.0	70.00
1.2E 03	-	1.8E 03	0	7	0.0	70.00
1.8E 03	-	2.6E 03	0	7	0.0	70.00
2.6E 03	-	3.8E 03	0	7	0.0	70.00
3.8E 03	-	5.6E 03	0	7	0.0	70.00
5.6E 03	-	8.3E 03	1	8	10.00	80.00

HISTOGRAM FOR COLUMN 16 (CU PPM)

```
5.0E 00 XXXXXXXXXX

7.0E 00

1.0E 01

1.5E 01 XXXXXXXXXX

2.0E 01 XXXXXXXXXX

3.0E 01

5.0E 01 XXXXXXXXXX

7.0E 01 XXXXXXXXXX

1.0E 02

1.5E 02 XXXXXXXXXX

2.0E 02

3.0E 02 XXXXXXXXXX

5.0E 02

7.0E 02

1.0E 03

1.5E 03

2.0E 03
```

```
3.0E 03

5.0E 03

7.0E 03 XXXXXXXXXX

                                                                ANALYTICAL
   N          L          H          B          T          G     VALUES
   1          0          0          0          0          1          8
 10.00       0.0                              0.0       10.00

MAXIMUM =  7.00000E 03

MINIMUM =  5.00000E 00

GEOMETRIC MEAN =  7.98559E 01

GEOMETRIC DEVIATION =  9.29305E 00
```

FREQUENCY TABLE FOR COLUMN 17 (LA PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.6E 01 -	2.6E 01	0	0	0.0	0.0
2.6E 01 -	3.8E 01	0	0	0.0	0.0
3.8E 01 -	5.6E 01	1	1	10.00	10.00

HISTOGRAM FOR COLUMN 17 (LA PPM)

5.0E 01 XXXXXXXXXX

N	L	H	B	T	G	ANALYTICAL VALUES
4	5	0	0	0	0	1
40.00	50.00			0.0	0.0	

MAXIMUM = 5.00000E 01

MINIMUM = 5.00000E 01

GEOMETRIC MEAN = 4.99999E 01

GEOMETRIC DEVIATION = 9.99900E 43

FREQUENCY TABLE FOR COLUMN 18 (MO PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E 00 -	5.6E 00	1	1	10.00	10.00
5.6E 00 -	8.3E 00	1	2	10.00	20.00
8.3E 00 -	1.2E 01	2	4	20.00	40.00

HISTOGRAM FOR COLUMN 18 (MO PPM)

```
5.0E 00 XXXXXXXXXX

7.0E 00 XXXXXXXXXX

1.0E 01 XXXXXXXXXXXXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
3	3	0	0	0	0	4
30.00	30.00			0.0	0.0	

MAXIMUM = 1.00000E 01

MINIMUM = 5.00000E 00

GEOMETRIC MEAN = 7.69159E 00

GEOMETRIC DEVIATION = 1.39478E 00

FREQUENCY TABLE FOR COLUMN 19 (NB PPM)

LIMITS LOWER	- UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
6.3E 00 -	1.2E 01	5	5	50.00	50.00
1.2E 01 -	1.8E 01	2	7	20.00	70.00
1.8E 01 -	2.6E 01	0	7	0.0	70.00
2.6E 01 -	3.8E 01	1	8	10.00	80.00

HISTOGRAM FOR COLUMN 19 (NB PPM)

```
1.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

1.5E 01 XXXXXXXXXXXXXXXXXXXX

2.0E 01

3.0E 01 XXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	2	0	0	0	0	6
0.0	20.00			0.0	0.0	

MAXIMUM = 3.00000E 01

MINIMUM = 1.00000E 01

GEOMETRIC MEAN = 1.26958E 01

GEOMETRIC DEVIATION = 1.48111E 00

FREQUENCY TABLE FOR COLUMN 20 (NI PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E 00 -	5.6E 00	1	1	10.00	10.00
5.6E 00 -	8.3E 00	0	1	0.0	10.00
8.3E 00 -	1.2E 01	0	1	0.0	10.00
1.2E 01 -	1.8E 01	1	2	10.00	20.00
1.8E 01 -	2.6E 01	0	2	0.0	20.00
2.6E 01 -	3.8E 01	1	3	10.00	30.00
3.8E 01 -	5.6E 01	2	5	20.00	50.00
5.6E 01 -	8.3E 01	0	5	0.0	50.00
8.3E 01 -	1.2E 02	1	6	10.00	60.00
1.2E 02 -	1.8E 02	1	7	10.00	70.00
1.8E 02 -	2.6E 02	0	7	0.0	70.00
2.6E 02 -	3.8E 02	0	7	0.0	70.00
3.8E 02 -	5.6E 02	0	7	0.0	70.00
5.6E 02 -	8.3E 02	0	7	0.0	70.00
8.3E 02 -	1.2E 03	0	7	0.0	70.00
1.2E 03 -	1.8E 03	1	8	10.00	80.00

HISTOGRAM FOR COLUMN 20 (NI PPM)

```
5.0E 00 XXXXXXXXXX

7.0E 00

1.0E 01

1.5E 01 XXXXXXXXXX

2.0E 01

3.0E 01 XXXXXXXXXX

5.0E 01 XXXXXXXXXXXXXXXXXXXX

7.0E 01

1.0E 02 XXXXXXXXXX

1.5E 02 XXXXXXXXXX

2.0E 02

3.0E 02

5.0E 02

7.0E 02

1.0E 03

1.5E 03 XXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
1	1	0	0	0	0	8
10.00	10.00			0.0	0.0	

```
MAXIMUM =  1.50000E 03
MINIMUM =  5.00000E 00
GEOMETRIC MEAN =  5.79145E 01
GEOMETRIC DEVIATION =  5.44295E 00
```

FREQUENCY TABLE FOR COLUMN 21 (PB PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 -	1.2E 01	1	1	10.00	10.00
1.2E 01 -	1.8E 01	1	2	10.00	20.00

HISTOGRAM FOR COLUMN 21 (PB PPM)

```
1.0E 01 XXXXXXXXXX

1.5E 01 XXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
7	1	0	0	0	0	2
70.00	10.00			0.0	0.0	

MAXIMUM = 1.50000E 01

MINIMUM = 1.00000E 01

GEOMETRIC MEAN = 1.22474E 01

GEOMETRIC DEVIATION = 1.33205E 00

FREQUENCY TABLE FOR COLUMN 22 (SB PPM)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM	ANALYTICAL VALUES
N	L	H	B	Y	C
LO	0	0	0	0	0
*****	0.0		0.0	0.0	

MAXIMUM = -9.99900E 48

MINIMUM = 9.99900E 48

GEOMETRIC MEAN = 9.99900E 48

GEOMETRIC DEVIATION = 9.99900E 48

FREQUENCY TABLE FOR COLUMN 23 (SC PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.9E 00 -	5.6E 00	1	1	10.00	10.00
5.6E 00 -	8.3E 00	1	2	10.00	20.00
8.3E 00 -	1.2E 01	0	2	0.0	20.00
1.2E 01 -	1.8E 01	1	3	10.00	30.00
1.8E 01 -	2.6E 01	4	7	40.00	70.00
2.6E 01 -	3.8E 01	1	8	10.00	80.00

HISTOGRAM FOR COLUMN 23 (SC PPM)

```
5.0E 00 XXXXXXXXXX

7.0E 00 XXXXXXXXXX

1.0E 01

1.5E 01 XXXXXXXXXX

2.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

3.0E 01 XXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
2	0	0	0	0	0	8
20.00	0.0			0.0	0.0	

MAXIMUM = 3.00000E 01

MINIMUM = 5.00000E 00

GEOMETRIC MEAN = 1.49683E 01

GEOMETRIC DEVIATION = 1.83926E 00

FREQUENCY TABLE FOR COLUMN 24 (SN PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM	ANALYTICAL VALUES
N	L	H	B	T	G	
10	0	0	0	0	0	0
*****	0.0			0.0	0.0	

MAXIMUM = -9.99900E 48

MINIMUM = 9.99900E 49

GEOMETRIC MEAN = 9.99900E 48

GEOMETRIC DEVIATION = 9.99900E 48

FREQUENCY TABLE FOR COLUMN 25 (SR PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 01 -	1.2E 02	1	1	10.00	10.00
1.2E 02 -	1.8E 02	0	1	0.0	10.00
1.8E 02 -	2.6E 02	3	4	30.00	40.00
2.6E 02 -	3.8E 02	4	8	40.00	80.00

HISTOGRAM FOR COLUMN 25 (SR PPM)

```
1.0E 02 XXXXXXXXXX

1.5E 02

2.0E 02 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

3.0E 02 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
1	1	0	0	0	0	8
10.00	10.00			0.0	0.0	

MAXIMUM = 3.00000E 02

MINIMUM = 1.00000E 02

GEOMETRIC MEAN = 2.24618E 02

GEOMETRIC DEVIATION = 1.46773E 00

FREQUENCY TABLE FOR COLUMN 26 (V PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 -	1.2E 01	0	0	0.0	0.0
1.2E 01 -	1.8E 01	2	2	20.00	20.00
1.8E 01 -	2.6E 01	0	2	0.0	20.00
2.6E 01 -	3.8E 01	1	3	10.00	30.00
3.8E 01 -	5.6E 01	0	3	0.0	30.00
5.6E 01 -	8.3E 01	1	4	10.00	40.00
8.3E 01 -	1.2E 02	0	4	0.0	40.00
1.2E 02 -	1.8E 02	4	8	40.00	80.00
1.8E 02 -	2.6E 02	2	10	20.00	100.00

HISTOGRAM FOR COLUMN 26 (V PPM)

```
1.5E 01 XXXXXXXXXXXXXXXXXXXX

2.0E 01

3.0E 01 XXXXXXXXXX

5.0E 01

7.0E 01 XXXXXXXXXX

1.0E 02

1.5E 02 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

2.0E 02 XXXXXXXXXXXXXXXXXXXX
```

N	L	H	B	F	G	ANALYTICAL VALUES
0	0	0	0	0	0	10
0.0	0.0			0.0	0.0	

MAXIMUM = 2.00000E 02

MINIMUM = 1.50000E 01

GEOMETRIC MEAN = 7.90827E 01

GEOMETRIC DEVIATION = 2.64554E 00

FREQUENCY TABLE FOR COLUMN 27 (W PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM	ANALYTICAL VALUES
N	L	H	B	T	G	
LO	0	0	0	0	0	0
*****	0.0			0.0	0.0	

MAXIMUM = -9.99900E 48

MINIMUM = 9.99900E 48

GEOMETRIC MEAN = 9.99900E 48

GEOMETRIC DEVIATION = 9.99900E 48

FREQUENCY TABLE FOR COLUMN 26 (Y PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 -	1.2E 01	4	4	40.00	40.00
1.2E 01 -	1.8E 01	4	8	40.00	80.00
1.8E 01 -	2.6E 01	0	8	0.0	80.00
2.6E 01 -	3.8E 01	2	10	20.00	100.00

HISTOGRAM FOR COLUMN 26 (Y PPM)

```
1.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

1.5E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

2.0E 01

3.0E 01 XXXXXXXXXXXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	10
0.0	0.0			0.0	0.0	

MAXIMUM = 3.00000E 01

MINIMUM = 1.00000E 01

GEOMETRIC MEAN = 1.46507E 01

GEOMETRIC DEVIATION = 1.52706E 00

FREQUENCY TABLE FOR COLUMN 29 (ZN PPM)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.8E 02 - 2.6E 02	1	1	10.00	10.00
2.6E 02 - 3.8E 02	0	1	0.0	10.00
3.8E 02 - 5.6E 02	0	1	0.0	10.00
5.6E 02 - 8.3E 02	1	2	10.00	20.00

HISTOGRAM FOR COLUMN 29 (ZN PPM)

```
2.0E 02 XXXXXXXXXX

3.0E 02

5.0E 02

7.0E 02 XXXXXXXXXX
```

N	L	M	R	T	G	ANALYTICAL VALUES
4	4	0	0	0	0	2
40.00	40.00			0.0	0.0	

MAXIMUM = 7.00000E 02

MINIMUM = 2.00000E 02

GEOMETRIC MEAN = 3.74165E 02

GEOMETRIC DEVIATION = 2.42500E 00

FREQUENCY TABLE FOR COLUMN 30 (ZR PPM)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.9E 00 -	1.2E 01	0	0	0.0	0.0
1.2E 01 -	1.8E 01	0	0	0.0	0.0
1.8E 01 -	2.6E 01	2	2	20.00	20.00
2.6E 01 -	3.8E 01	2	4	20.00	40.00
3.8E 01 -	5.6E 01	0	4	0.0	40.00
5.6E 01 -	8.3E 01	4	8	40.00	80.00
8.3E 01 -	1.2E 02	0	8	0.0	80.00
1.2E 02 -	1.8E 02	2	10	20.00	100.00

HISTOGRAM FOR COLUMN 30 (ZR PPM)

```
2.0E 01 XXXXXXXXXXXXXXXXXXX

3.0E 01 XXXXXXXXXXXXXXXXXXX

5.0E 01

7.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

1.0E 02

1.5E 02 XXXXXXXXXXXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	10
0.0	0.0			0.0	0.0	

MAXIMUM = 1.50000E 02

MINIMUM = 2.00000E 01

GEOMETRIC MEAN = 5.35655E 01

GEOMETRIC DEVIATION = 2.11039E 00

FREQUENCY TABLE FOR COLUMN 31 (AU PPM)

LIMITS LOWER	- UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.8E-02 -	2.6E-02	0	0	0.0	0.0
2.6E-02 -	3.8E-02	0	0	0.0	0.0
3.8E-02 -	5.6E-02	0	0	0.0	0.0
5.6E-02 -	8.3E-02	0	0	0.0	0.0
8.3E-02 -	1.2E-01	0	0	0.0	0.0
1.2E-01 -	1.8E-01	0	0	0.0	0.0
1.8E-01 -	2.6E-01	0	0	0.0	0.0
2.6E-01 -	3.8E-01	0	0	0.0	0.0
3.8E-01 -	5.6E-01	1	1	10.00	10.00
5.6E-01 -	8.3E-01	1	2	10.00	20.00

HISTOGRAM FOR COLUMN 31 (AU PPM)

```
5.0E-01 XXXXXXXXXX

7.0E-01 XXXXXXXXXX
```

N	L	M	B	T	G	ANALYTICAL VALUES
0	8	0	0	0	0	2
0.0	80.00			0.0	0.0	

MAXIMUM = 8.00000E-01

MINIMUM = 4.00000E-01

GEOMETRIC MEAN = 5.65685E-01

GEOMETRIC DEVIATION = 1.63253E 00

A470 STATISTICAL SUMMARY DATE 4/20/70

ELEMENT	N	L	H	P	T	G	ANALYTICAL VALUES
FE PCT	0	0	0	0	0	0	10
MG PCT	0	0	0	0	0	0	10
CA PCT	0	0	0	0	0	1	9
TI PCT	0	0	0	0	0	1	9
MN PPM	0	0	0	0	0	0	10
AG PPM	8	0	0	0	0	0	2
AS PPM	10	0	0	0	0	0	0
AU PPM	10	0	0	0	0	0	0
B PPM	3	4	0	0	0	0	3
BA PPM	0	2	0	0	0	0	8
BE PPM	6	3	0	0	0	0	1
BI PPM	10	0	0	0	0	0	0
CD PPM	10	0	0	0	0	0	0
CO PPM	1	1	0	0	0	0	8
CR PPM	0	2	0	0	0	0	8
CU PPM	1	0	0	0	0	1	8
LA PPM	4	5	0	0	0	0	1
MO PPM	3	3	0	0	0	0	4
NB PPM	0	2	0	0	0	0	8
NI PPM	1	1	0	0	0	0	8
PB PPM	7	1	0	0	0	0	2
SB PPM	10	0	0	0	0	0	0
SC PPM	2	0	0	0	0	0	8
SN PPM	10	0	0	0	0	0	0
SR PPM	1	1	0	0	0	0	8
V PPM	0	0	0	0	0	0	10
W PPM	10	0	0	0	0	0	0
Y PPM	0	0	0	0	0	0	10
ZN PPM	4	4	0	0	0	0	2
ZR PPM	0	0	0	0	0	0	10
AU PPM	0	8	0	0	0	0	2

ELEMENT	GEOMETRIC MEAN	GEOMETRIC DEVIATION	REMARKS
FE PCT	6.433623	3.64	10 SAMPLES AND 10 ANALYTICAL VALUES.
MG PCT	2.903107	3.70	10 SAMPLES AND 10 ANALYTICAL VALUES.
CA PCT	********	******	1 GREATER THAN VALUES. NO COMPUTATIONS.
TI PCT	********	******	1 GREATER THAN VALUES. NO COMPUTATIONS.
MN PPM	1115.241943	2.21	10 SAMPLES AND 10 ANALYTICAL VALUES.
AG PPM	0.002690	*****	8 NOT DETECTED, LESS THAN, OR TRACE VALUES. 2 REPORTED VALUES.
AS PPM	********	******	10 NOT DETECTED, LESS THAN, OR TRACE VALUES. 0 REPORTED VALUES. NO COMPUTATIONS.
AU PPM	********	******	10 NOT DETECTED, LESS THAN, OR TRACE VALUES. 0 REPORTED VALUES. NO COMPUTATIONS.
B PPM	3.332314	6.32	7 NOT DETECTED, LESS THAN, OR TRACE VALUES. 3 REPORTED VALUES.
BA PPM	92.224884	4.16	2 NOT DETECTED, LESS THAN, OR TRACE VALUES. 8 REPORTED VALUES.
BE PPM	********	******	9 NOT DETECTED, LESS THAN, OR TRACE VALUES. 1 REPORTED VALUES. NO COMPUTATIONS.
BI PPM	********	******	10 NOT DETECTED, LESS THAN, OR TRACE VALUES. 0 REPORTED VALUES. NO COMPUTATIONS.
CD PPM	********	******	10 NOT DETECTED, LESS THAN, OR TRACE VALUES. 0 REPORTED VALUES. NO COMPUTATIONS.
CO PPM	20.126434	4.57	2 NOT DETECTED, LESS THAN, OR TRACE VALUES. 8 REPORTED VALUES.
CR PPM	28.851044	6.96	2 NOT DETECTED, LESS THAN, OR TRACE VALUES. 8 REPORTED VALUES.
CU PPM	********	******	1 GREATER THAN VALUES. NO COMPUTATIONS.
LA PPM	********	******	9 NOT DETECTED, LESS THAN, OR TRACE VALUES. 1 REPORTED VALUES. NO COMPUTATIONS.
MO PPM	3.259074	2.32	6 NOT DETECTED, LESS THAN, OR TRACE VALUES. 4 REPORTED VALUES.
NB PPM	11.006425	1.59	2 NOT DETECTED, LESS THAN, OR TRACE VALUES. 8 REPORTED VALUES.
NI PPM	26.242661	9.40	2 NOT DETECTED, LESS THAN, OR TRACE VALUES. 8 REPORTED VALUES.
PB PPM	4.688499	1.97	8 NOT DETECTED, LESS THAN, OR TRACE VALUES. 2 REPORTED VALUES.

SB PPM	********	******	10 NOT DETECTED, LESS THAN, OR TRACE VALUES.	0 REPORTED VALUES. NO COMPUTATIONS.
SC PPM	10.756082	2.55	2 NOT DETECTED, LESS THAN, OR TRACE VALUES.	8 REPORTED VALUES.
SN PPM	********	******	10 NOT DETECTED, LESS THAN, OR TRACE VALUES.	0 REPORTED VALUES. NO COMPUTATIONS.
SR PPM	172.511032	1.90	2 NOT DETECTED, LESS THAN, OR TRACE VALUES.	8 REPORTED VALUES.
V PPM	79.082458	2.85	10 SAMPLES AND 10 ANALYTICAL VALUES.	
W PPM	********	******	10 NOT DETECTED, LESS THAN, OR TRACE VALUES.	0 REPORTED VALUES. NO COMPUTATIONS.
Y PPM	14.650689	1.53	10 SAMPLES AND 10 ANALYTICAL VALUES.	
ZN PPM	********	******	8 NOT DETECTED, LESS THAN, OR TRACE VALUES.	2 REPORTED VALUES. NO COMPUTATIONS.
ZR PPM	53.565369	2.11	10 SAMPLES AND 10 ANALYTICAL VALUES.	
AU PPM	0.000293	*****	8 NOT DETECTED, LESS THAN, OR TRACE VALUES.	2 REPORTED VALUES.