UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

ANALYSES OF ROCK AND STREAM-SEDIMENT SAMPLES FROM THE KETCHIKAN A-3 QUADRANGLE, SOUTHEASTERN ALASKA

By

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Open-file report

1973

Analyses of rock and stream-sediment samples from the Ketchikan A-3 quadrangle, southeastern Alaska

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Introduction

Analytical data for 24 rock and 48 stream-sediment samples from the Ketchikan A-3 1:63,360-scale quadrangle are presented in this report, together with a statistical treatment of the data. The samples were collected in 1969 and 1970 in conjunction with reconnaissance geologic mapping in the area.

The most comprehensive discussion of the geology of the study area is a report by A. F. Buddington and Theodore Chapin (1929).

Sampling and analytical procedures

The analytical data for the stream-sediment and rock analyses are given in tables 1 and 3 respectively and the location of analyzed samples are shown in figure 1.

Standard procedures were followed in the collection and preparation of samples. Stream-sediment samples were generally collected from the active stream channel above the highest high tide level; where this was not possible, samples were collected from bank or terrace deposits adjacent to the channel. The samples were dried, sieved, and the -80 mesh fraction was analyzed.

Rock samples are primarily grab samples from mineralized occurrences or outcrops, or they were chosen for analysis to provide data on background

values. Grab samples were selected because they were strongly iron stained or contained visible sulfides. The rock samples were pulverized and a split analyzed.

The -80 mesh fractions of stream-sediment samples and the pulverized rock samples were analyzed for 30 elements by the six-step semiquantitative spectrographic method and for gold by the atomic absorption method. The spectrographic analyses were reported in percentage (PCT) or parts per million (PPM) as geometric midpoints (i.e., 1.0, 0.7, 0.5, 0.3, 0.2, 0.15, 0.1, etc.) of geometric brackets having the boundaries 1.2, 0.83, 0.56, 0.38, 0.26, 0.18, 0.12, 0.083, etc. or some multiple of these. The precision of a reported value is approximately plus 100 percent or minus 50 percent. Analyses for gold by the atomic absorption method are accurate to $\pm$ 100 percent. Minimum limits of determination for each element are given on page 3. The semiquantitative spectrographic analyses were done by K. J. Curry and atomic absorption analyses were done by R. L. Miller and A. L. Meier.

Locations of the stream-sediment samples are shown on figure 1. Stream-sediment sample analyses are listed in table 1. Rock sample descriptions are given in table 2 and analyses listed in table 3.

Explanation of tables 1 and 3

Analytical results from rock and stream-sediment samples are given in tables 1 and 3 as analytical values such as 7.0 ppm, 10.00 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 is

equal to trace but does not occur in these data. Note that the rightmost zero digits for each analytical value may or may not be significant. Because the original computer printout is used in tables 1 and 3, element symbols are in capital letters; for example, the symbol for iron, Fe, becomes FE, magnesium, Mg, becomes MG, and so on. PCT stands for percent, S for spectrographic, and AA for atomic absorption. The specified limits of detection are as follows:

Lower limits of detection

FE PCT	MG PCT	CA PCT	TI PCT	MN PPM	AG PPM
0.05	0.02	0.05	0.002	20	0.1
AS PPM	AU PPM	B PPM	BA PPM	BE PPM	BI PPM
0.2	0.02	10	20	1	10
CO PPM	CR PPM	CU PPM	LA PPM	MO PPM	NB PPM
5	5	2	20	2	10
NI PPM	PB PPM	SB PPM	SC PPM	SN PPM	SR PPM
2	10	0.5	5	10	50
V PPM	W PPM	Y PPM	ZN PPM	ZR PPM	
5	50	5	25	10	

Analyses of rock and stream-sediment samples were processed by a computer program known as GEOSUM and are presented in tables 1 and 3. The GEOSUM program is designed to summarize and tabulate geochemical data--primarily data from semiquantitative spectrographic analyses (also referred to as six-step spectrographic analyses). The program output consists of: (a) a tabulation of all analytical results, (b) a histogram and frequency distribution table for each element, and (c) a statistical summary for all elements, which includes geometric means and geometric deviations.

Semiquantitative spectrographic analyses by the U.S. Geological Survey are reported as geometric midpoints (e.g., 1.0, 0.7, 0.5, 0.3, 0.2, 0.15, 0.1, etc.) of geometric class intervals having the boundaries 1.2, 0.83, 0.56, 0.38, 0.26, 0.18, 0.12, 0.083, etc. The histograms are on a logarithmic scale and are computed using the class intervals shown below.

Reported value (ppm)	Limits	
1.0	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

Decimal numbers are printed by the computer 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 X represents 1 percent of the total number of samples.

The frequency distribution tables, histograms, and statistics for each element were derived using only data values within the range of analytical determination. If data values qualified with N, L, C, T, or H codes are present, the histograms are incomplete and the frequency

tables and statistics are biased. For example, see the histograms and statistics for zinc in table 1, which were calculated from only three samples.

The geometric mean is the antilogarithm of the arithmetic mean of the logarithms of the analyses. It is not an estimate of geochemical abundance. It is an estimate of "central tendency" (or characteristic value) for a frequency distribution that is approximately symmetrical on a logarithmic scale and is, therefore, useful for characterizing many geochemical distributions. The geometric deviation is the antilogarithm of the standard deviation of the logarithms of the analyses.

The statistical summaries at the ends of tables 1 and 3 show which elements have qualified values, as well as the number and type of qualification. The summary also recomputes the geometric mean and standard deviation using a method devised by A. J. Cohen for treating censored distributions. If an element has no qualified data values, the mean and standard deviation will be the same in both this statistical summary and on the page within the table for the particular element. For elements with qualified data, the estimates of mean and standard deviation are unbiased in a strict sense only where the data are derived from a log-normal parent population, but experiments have shown that large departures from this requirement do not usually invalidate the results. Acceptance and use of the estimates, however, is the responsibility of the user.

For further discussion of geometric mean and standard deviation and Cohen's method for censored distributions, see U.S.G.S. Professional Paper 574-B and U.S.G.S. Bulletin 1147-E.

Selected references

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

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TABLE 1--STREAM-SEDIMENT SAMPLES, KETCHIKAN A-3 QUADRANGLES, ALASKA[1/]

	SAMPLE	X-COORD.	Y-COORD.	S-FE %	S-MG %	S-CA %	S-TI %	S-MN	S-AG	AA-AU-P
1	95935	372490	96480	5.0	2.0	5.0	0.7	1500	0.5N	0.02L
2	95934	372100	99480	7.0	2.0	7.0	1.0	2000	0.5N	0.02L
3	95933	373700	100200	7.0	3.0	2.0	0.7	1500	0.5N	0.02L
4	95932	374175	101570	7.0	2.0	5.0	0.7	1000	0.5N	0.02L
5	95931	375175	106900	7.0	1.5	3.0	0.3	1500	0.5N	0.02L
6	95930	378390	94620	15.0	3.0	10.0	1.0	2000	0.5N	0.02L
7	95304	372425	106225	3.0	1.5	3.0	0.5	1500	0.5N	0.02L
8	95300	375700	106525	5.0	1.5	3.0	0.7	1000	0.5N	0.02L
9	95321	377700	105475	10.0	3.0	3.0	0.7	1000	0.5N	0.02L
10	95319	379175	106325	15.0	1.5	3.0	0.5	1000	0.5N	0.02L
11	95297	378175	107600	7.0	2.0	5.0	0.7	1000	0.5N	0.02L
12	95317	380775	107225	10.0	1.5	2.0	0.3	1500	0.5N	0.02L
13	95294	379950	108925	5.0	1.5	3.0	0.3	700	0.5N	0.02L
14	95292	380775	110275	10.0	2.0	5.0	0.7	2000	0.5N	0.02L
15	95291	381575	110800	20.0	5.0	7.0	1.0	3000	0.5N	0.02L
16	95290	382200	110850	15.0	5.0	5.0	0.7	1500	0.5N	0.02L
17	95366	383250	114075	5.0	2.0	3.0	0.3	1500	0.5N	0.02L
18	95367	384050	117900	10.0	2.0	5.0	0.5	1500	0.5N	0.02L
19	95368	384400	116550	5.0	1.5	3.0	0.7	1500	0.5N	0.02L
20	95364	384300	115325	10.0	2.0	3.0	0.5	1500	0.5N	0.02L
21	95363	384300	113800	10.0	3.0	5.0	0.5	1500	0.5N	0.02L
22	95269	385325	109950	10.0	3.0	3.0	1.0	2000	0.5N	0.02L
23	95313	383050	109175	10.0	3.0	3.0	0.7	1500	0.5N	0.02L
24	95312	383725	106750	10.0	3.0	3.0	0.5	1500	0.5N	0.02L
25	95354	384800	103825	7.0	2.0	3.0	0.5	1000	0.5N	0.02L
26	95357	385725	100425	10.0	3.0	3.0	0.7	1500	0.5N	0.02L
27	95358	386025	99475	10.0	2.0	5.0	0.7	1500	0.5N	0.02L
28	95359	386250	99225	10.0	3.0	5.0	0.5	1000	0.5N	0.02L
29	95362	386050	102075	10.0	2.0	3.0	0.7	1500	0.5N	0.02L
30	95211	386050	104250	15.0	3.0	5.0	1.0	3000	0.5N	0.02L
31	95265	387075	106500	15.0	3.0	5.0	1.0	1500	0.5N	0.02L
32	95260	388850	108775	10.0	2.0	2.0	0.7	2000	0.5N	0.02L
33	95258	389550	110650	10.0	3.0	1.5	0.7	2000	0.5N	0.02L
34	95223	392325	108200	7.0	2.0	5.0	0.7	1500	0.5N	0.02L
35	95222	393025	109200	15.0	1.5	3.0	0.7	2000	0.5N	0.02L
36	95239	392550	111525	15.0	3.0	3.0	0.7	1500	0.5N	0.02L
37	95240	392550	111625	15.0	3.0	5.0	1.0	1500	0.5N	0.02L
38	95253	391450	113525	15.0	3.0	3.0	0.7	1500	0.5N	0.02L
39	95243	392950	113200	10.0	3.0	5.0	0.7	1500	0.5N	0.02L
40	95219	391025	106850	10.0	3.0	5.0	1.0	2000	0.5N	0.02L
41	95218	390575	105575	7.0	3.0	3.0	0.7	1500	0.5N	0.02L
42	95204	390200	104225	15.0	3.0	5.0	0.7	2000	0.5N	0.02L
43	95216	391150	103450	15.0	3.0	3.0	1.0	1500	0.5N	0.02L
44	95215	391425	102500	15.0	3.0	3.0	1.0	1500	0.5N	0.02L
45	95353	391850	100575	15.0	3.0	3.0	0.5	1500	0.5N	0.02L
46	95346	391475	99425	5.0	1.5	2.0	0.5	1000	0.5N	0.02L
47	95347	391725	98675	5.0	1.5	2.0	0.5	1000	0.5N	0.02L
48	95348	392250	97850	5.0	1.5	2.0	0.3	1000	0.5N	0.02L

[1/] The following elements were looked for but if present are below the limits of detectability: As, Sb, W.

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STREAM-SEDIMENT SAMPLES, KETCHIKAN A-3 QUADRANGLES, ALASKA

	SAMPLE	S-B	S-BA	S-BE	S-BI	S-CO	S-CR	S-CU	S-LA	S-MO
1	0S935S	10.L	500	1.0	10.N	15	100	50.	100.	5.N
2	0S934S	10.L	700	1.0L	10.N	15	150	15.	500.	5.L
3	0S933S	20.	500	2.0	10.N	30	150	70.	20.	5.L
4	0S932S	10.	300	1.5	10.N	20	150	15.	70.	5.N
5	0S931S	10.L	700	1.0	10.N	15	30	20.	20.	5.L
6	0S930S	10.	300	1.0L	10.N	30	200	50.	70.	5.L
7	9S304	10.L	300	1.0	10.N	20	100	15.	20.	5.N
8	9S300	50.	300	1.5	10.N	20	100	50.	20.	5.N
9	9S321	15.	700	1.0	10.N	30	150	70.	20.	5.
10	9S319	10.	300	1.0L	10.N	30	30	5.	20.N	5.L
11	9S297	10.	500	1.0L	10.N	15	70	10.	20.L	5.L
12	9S317	10.	700	1.0L	10.N	30	70	20.	20.	5.L
13	9S294	10.N	300	1.0L	10.N	15	100	7.	20.N	5.N
14	9S292	10.L	1000	1.0	10.N	30	200	30.	20.	5.
15	9S291	15.	1000	1.0	10.N	70	300	20.	20.L	5.L
16	9S290	15.	1000	1.0	10.N	30	150	30.	20.L	5.
17	9S366	10.	150	1.0L	10.N	15	70	5.	20.N	5.N
18	9S367	10.	300	1.0L	10.N	30	70	7.	50.	5.L
19	9S368	10.	500	1.0	10.N	30	70	30.	50.	5.L
20	9S364	10.	500	1.0L	10.N	30	70	15.	20.L	5.L
21	9S363	10.	500	1.0	10.N	30	150	30.	150.	5.L
22	9S269	15.	300	1.5	10.N	30	150	30.	150.	5.L
23	9S313	15.	700	1.0	10.N	70	500	50.	20.	5.L
24	9S310	15.	1500	1.5	10.N	30	150	30.	20.L	5.
25	9S354	10.	700	1.0	10.N	30	70	10.	20.N	5.L
26	9S357	10.	500	1.0	10.N	30	150	15.	20.	5.L
27	9S358	10.	500	1.0L	10.N	30	150	15.	20.L	5.L
28	9S359	10.	500	1.0L	10.N	20	150	5.	20.L	5.N
29	9S362	10.L	500	1.0N	10.N	20	70	30.	20.L	5.L
30	9S211	15.	300	1.0	10.N	70	150	20.	20.L	5.L
31	9S265	15.	1000	2.0	10.N	30	150	15.	20.L	5.L
32	9S260	15.	500	1.5	10.N	30	100	50.	20.	5.L
33	9S258	15.	700	1.5	10.N	30	150	30.	20.	5.L
34	9S223	15.	500	1.5	10.N	30	50	5.	20.L	5.L
35	9C002	10.	500	1.5	10.N	30	30	10.	20.L	5.L
36	9S239	10.	500	1.5	10.N	30	20	10.	20.L	5.L
37	9S240	15.	1000	1.5	10.N	50	70	10.	150.	5.L
38	9S253	15.	700	1.5	10.N	30	150	20.	30.	10.
39	9S243	15.	300	2.0	10.N	30	30	10.	20.L	5.L
40	9S219	15.	300	1.5	10.N	30	150	30.	50.	5.L
41	9S218	15.	300	1.5	10.N	30	150	15.	70.	5.L
42	9S204	15.	700	1.5	10.N	30	150	15.	100.	5.L
43	9S216	15.	300	1.0	10.N	30	150	20.	70.	5.L
44	9S215	15.	300	1.5	10.N	30	150	20.	100.	5.L
45	9S353	10.L	500	1.0	10.N	30	100	15.	20.L	5.L
46	9S346	10.L	700	1.5	10.N	20	50	5.	20.L	5.L
47	9S347	10.L	500	1.0	10.N	20	30	5.L	20.L	5.L
48	9S348	10.	700	1.0	10.N	15	50	5.	20.N	5.L

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STREAM-SEDIMENT SAMPLES, KETCHIKAN A-3 QUADRANGLES, ALASKA

	SAMPLE	S-NB	S-NI	S-PB	S-SC	S-SN	S-SR	S-V	S-Y	S-ZN
1	059355	10.	30	10.	30	10.N	700	200	30	200.N
2	059345	10.	30	20.	50	10.N	700	300	70	200.N
3	059335	10.	70	30.	30	10.N	300	300	20	200.N
4	059325	10.	50	20.	30	10.N	500	200	50	200.N
5	059315	10.	15	30.	15	10.N	700	150	15	200.N
6	059305	10.	100	150.	50	10.N	1000	300	15	200.L
7	95304	10.	70	20.	15	10.N	300	150	20	200.N
8	95300	10.	50	20.	20	10.N	300	200	30	200.L
9	95321	10.	100	15.	30	10.N	300	500	30	500.
10	95319	10.	15	10.	30	10.N	700	300	30	200.L
11	95297	10.	30	10.	30	10.N	700	300	30	200.L
12	95317	10.	20	20.	20	10.N	700	200	20	200.L
13	95294	10.L	30	10.	20	10.N	300	200	15	200.L
14	95292	15.	70	30.	30	10.N	300	300	30	200.
15	95291	15.	100	15.	30	10.N	300	500	30	200.L
16	95290	10.	70	15.	30	10.N	300	500	30	200.L
17	95366	10.	30	10.N	20	10.N	200	200	20	200.L
18	95367	10.	30	10.L	30	10.N	300	300	20	200.L
19	95368	10.	30	15.	20	10.N	300	200	20	200.N
20	95364	10.	30	10.	30	10.N	200	300	20	200.L
21	95363	15.	50	15.	30	10.N	300	200	50	200.L
22	95269	15.	70	15.	30	10.N	300	300	70	200.L
23	95313	15.	150	30.	30	10.N	300	200	20	200.L
24	95310	10.	70	30.	20	10.N	700	300	20	200.
25	95354	10.	30	15.	20	10.N	500	200	20	200.N
26	95357	10.	50	10.	30	10.N	300	300	30	200.N
27	95358	10.	50	10.L	30	10.N	300	300	20	200.L
28	95359	10.	50	10.L	30	10.N	300	300	20	200.L
29	95362	15.	30	10.L	30	10.N	200	300	30	200.L
30	95211	15.	70	30.	30	10.N	300	300	70	200.L
31	95265	15.	50	15.	30	10.N	700	200	30	200.L
32	95260	15.	30	20.	30	10.N	300	300	30	200.L
33	95258	15.	100	20.	30	10.N	500	300	30	200.L
34	95223	10.	20	15.	30	10.N	300	300	30	200.L
35	90002	15.	15	15.	30	10.N	500	300	30	200.L
36	95239	15.	10	10.	30	10.N	500	300	30	200.L
37	95240	15.	30	15.	50	10.N	700	300	50	200.L
38	95253	15.	70	15.	30	10.N	700	300	30	200.L
39	95243	15.	15	15.	30	10.N	500	300	30	200.L
40	95219	15.	50	30.	30	15.	300	200	70	200.L
41	95218	10.	70	15.	30	10.N	300	200	30	200.L
42	95204	15.	50	20.	30	10.N	700	300	30	200.L
43	95216	15.	70	15.	30	10.N	300	300	50	200.L
44	95215	15.	70	15.	30	10.N	500	200	50	200.L
45	95353	10.	30	10.	20	10.N	500	300	20	200.L
46	95346	10.	15	15.	20	10.N	500	150	20	200.L
47	95347	10.	10	10.	20	10.N	500	150	20	200.L
48	95348	10.	20	10.	20	10.N	500	150	20	200.L

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STREAM-SEDIMENT SAMPLES, KETCHIKAN A-3 QUADRANGLES, ALASKA

	SAMPLE	S-ZR
1	DS935S	150
2	DS934S	100
3	DS933S	200
4	DS932S	300
5	DS931S	300
6	DS930S	150
7	95304	70
8	95300	70
9	95321	70
10	95319	70
11	95297	100
12	95317	70
13	95294	70
14	95292	70
15	95291	100
16	95290	100
17	95366	10
18	95367	70
19	95368	200
20	95364	70
21	95363	70
22	95269	150
23	95313	70
24	95310	70
25	95354	70
26	95357	70
27	95358	70
28	95359	70
29	95362	100
30	95211	70
31	95265	300
32	95260	150
33	95258	200
34	95223	70
35	90002	150
36	95239	1,500
37	95240	200
38	95253	150
39	95243	70
40	95219	100
41	95218	150
42	95204	300
43	95216	100
44	95215	150
45	95353	70
46	95346	150
47	95347	150
48	95348	50

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

THE FREQUENCY DISTRIBUTIONS AND HISTOGRAMS ON THE FOLLOWING PAGES ARE ON LOGARITHMIC SCALES, AND EMPLOY THE SAME CLASS INTERVALS AS USED IN REPORTING 6-STEP SEMIQUANTITATIVE SPECTROGRAPHIC ANALYSES. IMPORTANT NOTE- THE STATISTICS GIVEN BELOW THE HISTOGRAMS ARE DERIVED ONLY FROM DATA VALUES WITHIN THE RANGES OF ANALYTICAL DETERMINATION, AND ARE, THEREFORE, BIASED IF DATA VALUES QUALIFIED WITH N, L, G, T, OR H CODES ARE PRESENT. SEE LATER SECTION OF OUTPUT FOR STATISTICAL ESTIMATES THAT ARE UNBIASED IN THIS REGARD. THE GEOMETRIC MEAN IS 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 AND IS OF NO VALUE IN ESTIMATING RESERVES OR TOTAL AMOUNTS OF ELEMENTS PRESENT. SEE USGS PROFESSIONAL PAPER 574-B FOR FURTHER DISCUSSION. SEE USGS BULLETIN 1147E, PAGE 23, FOR EXPLANATION OF GEOMETRIC DEVIATION.

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TITLE
STREAM-SEDIMENT SAMPLES, KETCH

S-AG CONTAINS NO VALID DATA POINTS. THEREFORE THIS VARIABLE WILL BE SKIPPED.

AA-Au-P CONTAINS NO VALID DATA POINTS. THEREFORE THIS VARIABLE WILL BE SKIPPED.

S-BI CONTAINS NO VALID DATA POINTS. THEREFORE THIS VARIABLE WILL BE SKIPPED.

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 4 (S-FE %)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
2.6E 00 -	3.8E 00	1	1	2.08	2.08
3.8E 00 -	5.6E 00	8	9	16.67	18.75
5.6E 00 -	8.3E 00	8	17	16.67	35.42
8.3E 00 -	1.2E 01	17	34	35.42	70.83
1.2E 01 -	1.8E 01	13	47	27.08	97.92
1.8E 01 -	2.6E 01	1	48	2.08	100.00

HISTOGRAM FOR COLUMN 4 (S-FE %)

```
3.0E 00 XX
5.0E 00 XXXXXXXXXXXXXXXX
7.0E 00 XXXXXXXXXXXXXXXX
1.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1.5E 01 XXXXXXXXXXXXXXXXXXXXXXXXXX
2.0E 01 XX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	48
0.0	0.0			0.0	0.0	

MAXIMUM = 2.00000E 01
MINIMUM = 3.00000E 00
GEOMETRIC MEAN = 9.26987E 00
GEOMETRIC DEVIATION = 1.53588E 00

A470 GEOCHEMICAL SUMMARY – U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 5 (S-MG %)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.2E 00 - 1.8E 00	11	11	22.92	22.92
1.8E 00 - 2.6E 00	13	24	27.08	50.00
2.6E 00 - 3.8E 00	22	46	45.83	95.83
3.8E 00 - 5.6E 00	2	48	4.17	100.00

HISTOGRAM FOR COLUMN 5 (S-MG %)

```
1.5E 00 XXXXXXXXXXXXXXXXXXXXX
2.0E 00 XXXXXXXXXXXXXXXXXXXXXXXXX
3.0E 00 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
5.0E 00 XXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	48
0.0	0.0			0.0	0.0	

MAXIMUM = 5.00000E 00
MINIMUM = 1.50000E 00
GEOMETRIC MEAN = 2.34254E 00
GEOMETRIC DEVIATION = 1.38595E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 6 (S-CA %)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.2E 00 -	1.8E 00	1	1	2.08	2.08
1.8E 00 -	2.6E 00	6	7	12.50	14.58
2.6E 00 -	3.8E 00	22	29	45.83	60.42
3.8E 00 -	5.6E 00	16	45	33.33	93.75
5.6E 00 -	8.3E 00	2	47	4.17	97.92
8.3E 00 -	1.2E 01	1	48	2.08	100.00

HISTOGRAM FOR COLUMN 6 (S-CA %)

```
1.5E 00 XX
2.0E 00 XXXXXXXXXXXX
3.0E 00 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
5.0E 00 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
7.0E 00 XXXX
1.0E 01 XX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	48
0.0	0.0			0.0	0.0	

MAXIMUM = 1.00000E 01
MINIMUM = 1.50000E 00
GEOMETRIC MEAN = 3.54005E 00
GEOMETRIC DEVIATION = 1.47957E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 7 (S-TI %)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
2.6E-01 -	3.8E-01	5	5	10.42	10.42
3.8E-01 -	5.6E-01	11	16	22.92	33.33
5.6E-01 -	8.3E-01	22	38	45.83	79.17
8.3E-01 -	1.2E 00	10	48	20.83	100.00

HISTOGRAM FOR COLUMN 7 (S-TI %)

```
3.0E-01 XXXXXXXXXX
5.0E-01 XXXXXXXXXXXXXXXXXXXXXX
7.0E-01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1.0E 00 XXXXXXXXXXXXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	48
0.0	0.0			0.0	0.0	

MAXIMUM = 1.00000E 00
MINIMUM = 3.00000E-01
GEOMETRIC MEAN = 6.39074E-01
GEOMETRIC DEVIATION = 1.41697E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 8 (S-MN)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
5.6E 02 -	8.3E 02	1	1	2.08	2.08
8.3E 02 -	1.2E 03	10	11	20.83	22.92
1.2E 03 -	1.8E 03	26	37	54.17	77.08
1.8E 03 -	2.6E 03	9	46	18.75	95.83
2.6E 03 -	3.8E 03	2	48	4.17	100.00

HISTOGRAM FOR COLUMN 8 (S-MN)

```
7.0E 02 XX
1.0E 03 XXXXXXXXXXXXXXXXXXXX
1.5E 03 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
2.0E 03 XXXXXXXXXXXXXXXXXX
3.0E 03 XXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	48
0.0	0.0			0.0	0.0	

MAXIMUM = 3.00000E 03
MINIMUM = 7.00000E 02
GEOMETRIC MEAN = 1.47392E 03
GEOMETRIC DEVIATION = 1.33431E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 11 (S-B)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 -	1.2E 01	17	17	35.42	35.42
1.2E 01 -	1.8E 01	19	36	39.58	75.00
1.8E 01 -	2.6E 01	1	37	2.08	77.08
2.6E 01 -	3.8E 01	0	37	0.0	77.08
3.8E 01 -	5.6E 01	1	38	2.08	79.17

HISTOGRAM FOR COLUMN 11 (S-B)

```
1.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1.5E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
2.0E 01 XX
3.0E 01
5.0E 01 XX
```

N	L	H	B	T	G	ANALYTICAL VALUES
1	9	0	0	0	0	38
2.08	18.75			0.0	0.0	

MAXIMUM = 5.00000E 01
MINIMUM = 1.00000E 01
GEOMETRIC MEAN = 1.30124E 01
GEOMETRIC DEVIATION = 1.36367E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 12 (S-BA)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.2E 02 -	1.8E 02	1	1	2.08	2.08
1.8E 02 -	2.6E 02	0	1	0.0	2.08
2.6E 02 -	3.8E 02	14	15	29.17	31.25
3.8E 02 -	5.6E 02	16	31	33.33	64.58
5.6E 02 -	8.3E 02	11	42	22.92	87.50
8.3E 02 -	1.2E 03	5	47	10.42	97.92
1.2E 03 -	1.8E 03	1	48	2.08	100.00

HISTOGRAM FOR COLUMN 12 (S-BA)

```
1.5E 02 XX
2.0E 02
3.0E 02 XXXXXXXXXXXXXXXXXXXXXXXXXX
5.0E 02 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
7.0E 02 XXXXXXXXXXXXXXXXXXXXXX
1.0E 03 XXXXXXXXXX
1.5E 03 XX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	48
0.0	0.0			0.0	0.0	

MAXIMUM = 1.50000E 03
MINIMUM = 1.50000E 02
GEOMETRIC MEAN = 4.99054E 02
GEOMETRIC DEVIATION = 1.58455E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 13 (S-BE)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 - 1.2E 01	0	0	0.0	0.0

HISTOGRAM FOR COLUMN 13 (S-BE)

N	L	H	B	T	G	ANALYTICAL VALUES
1	11	0	0	0	0	36
2.08	22.92			0.0	0.0	

MAXIMUM = 2.00000E 00
MINIMUM = 1.00000E 00
GEOMETRIC MEAN = 1.26867E 00
GEOMETRIC DEVIATION = 1.27254E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 15 (S-CO)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.2E 01 -	1.8E 01	7	7	14.58	14.58
1.8E 01 -	2.6E 01	7	14	14.58	29.17
2.6E 01 -	3.8E 01	30	44	62.50	91.67
3.8E 01 -	5.6E 01	1	45	2.08	93.75
5.6E 01 -	8.3E 01	3	48	6.25	100.00

HISTOGRAM FOR COLUMN 15 (S-CO)

```
1.5E 01 XXXXXXXXXXXXXX
2.0E 01 XXXXXXXXXXXXXX
3.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
5.0E 01 XX
7.0E 01 XXXXXX
```

	N	L	H	B	T	G	ANALYTICAL VALUES
	0	0	0	C	0	0	48
20	0.0	0.0			0.0	0.0	

MAXIMUM = 7.00000E 01
MINIMUM = 1.50000E 01
GEOMETRIC MEAN = 2.72367E 01
GEOMETRIC DEVIATION = 1.44981E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 16 (S-CR)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.8E 01 -	2.6E 01	1	1	2.08	2.08
2.6E 01 -	3.8E 01	5	6	10.42	12.50
3.8E 01 -	5.6E 01	3	9	6.25	18.75
5.6E 01 -	8.3E 01	9	18	18.75	37.50
8.3E 01 -	1.2E 02	6	24	12.50	50.00
1.2E 02 -	1.8E 02	20	44	41.67	91.67
1.8E 02 -	2.6E 02	2	46	4.17	95.83
2.6E 02 -	3.8E 02	1	47	2.08	97.92
3.8E 02 -	5.6E 02	1	48	2.08	100.00

HISTOGRAM FOR COLUMN 16 (S-CR)

```
      2.0E 01 XX
      3.0E 01 XXXXXXXXXX
      5.0E 01 XXXXXX
      7.0E 01 XXXXXXXXXXXXXXXXXX
      1.0E 02 XXXXXXXXXXXX
      1.5E 02 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
      2.0E 02 XXXX
      3.0E 02 XX
      5.0E 02 XX
```


N	L	M	T	G	ANALYTICAL VALUES
0	0	0	0	0	48
0.0	0.0		0.0	0.0	

MAXIMUM = 5.00000E 02
MINIMUM = 2.00000E 01
GEOMETRIC MEAN = 9.85197E 01
GEOMETRIC DEVIATION = 1.93448E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 17 (S-CU)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E 00 -	5.6E 00	6	6	12.50	12.50
5.6E 00 -	8.3E 00	2	8	4.17	16.67
8.3E 00 -	1.2E 01	6	14	12.50	29.17
1.2E 01 -	1.8E 01	10	24	20.83	50.00
1.8E 01 -	2.6E 01	7	31	14.58	64.58
2.6E 01 -	3.8E 01	9	40	18.75	83.33
3.8E 01 -	5.6E 01	5	45	10.42	93.75
5.6E 01 -	8.3E 01	2	47	4.17	97.92

HISTOGRAM FOR COLUMN 17 (S-CU)

```
5.0E 00 XXXXXXXXXXXX
7.0E 00 XXXX
1.0E 01 XXXXXXXXXXXX
1.5E 01 XXXXXXXXXXXXXXXXXXXX
2.0E 01 XXXXXXXXXXXXXX
3.0E 01 XXXXXXXXXXXXXXXXXX
5.0E 01 XXXXXXXXXX
7.0E 01 XXXX
```

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N	L	H	B	T	G	ANALYTICAL VALUES
0	1	0	0	0	0	47
0.0	2.08			0.0	0.0	

MAXIMUM = 7.00000E 01
MINIMUM = 5.00000E 00
GEOMETRIC MEAN = 1.73363E 01
GEOMETRIC DEVIATION = 2.09947E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 18 (S-LA)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.8E 01 - 2.6E 01	11	11	22.92	22.92
2.6E 01 - 3.8E 01	1	12	2.08	25.00
3.8E 01 - 5.6E 01	3	15	6.25	31.25
5.6E 01 - 8.3E 01	4	19	8.33	39.58
8.3E 01 - 1.2E 02	3	22	6.25	45.83
1.2E 02 - 1.8E 02	3	25	6.25	52.08
1.8E 02 - 2.6E 02	0	25	0.0	52.08
2.6E 02 - 3.8E 02	0	25	0.0	52.08
3.8E 02 - 5.6E 02	1	26	2.08	54.17

HISTOGRAM FOR COLUMN 18 (S-LA)

```
2.0E 01 XXXXXXXXXXXXXXXXXXXXXX
3.0E 01 XX
5.0E 01 XXXXXX
7.0E 01 XXXXXXXX
1.0E 02 XXXXXX
1.5E 02 XXXXXX
2.0E 02
3.0E 02
5.0E 02 XX
```

N	L	H	B	T	G	ANALYTICAL VALUES
5	17	0	0	0	0	26
10.42	35.42			0.0	0.0	

MAXIMUM = 5.00000E 02
MINIMUM = 2.00000E 01
GEOMETRIC MEAN = 4.70763E 01
GEOMETRIC DEVIATION = 2.45796E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 19 (S-MO)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E 00 -	5.6E 00	4	4	8.33	8.33
5.6E 00 -	8.3E 00	0	4	0.0	8.33
8.3E 00 -	1.2E 01	1	5	2.08	10.42

HISTOGRAM FOR COLUMN 19 (S-MO)

```
       5.0E 00 XXXXXXXX
       7.0E 00
       1.0E 01 XX
```

N	L	H	B	T	G	ANALYTICAL VALUES
7	36	0	0	0	0	5
14.58	75.00			0.0	0.0	

MAXIMUM = 1.00000E 01
MINIMUM = 5.00000E 00
GEOMETRIC MEAN = 5.74348E 00
GEOMETRIC DEVIATION = 1.36341E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 20 (S-NB)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 - 1.2E 01	28	28	58.33	58.33
1.2E 01 - 1.8E 01	19	47	39.58	97.92

HISTOGRAM FOR COLUMN 20 (S-NB)

```
1.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1.5E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	1	0	0	0	0	47
0.0	2.08			0.0	0.0	

MAXIMUM = 1.50000E 01
MINIMUM = 1.00000E 01
GEOMETRIC MEAN = 1.17809E 01
GEOMETRIC DEVIATION = 1.22287E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 21 (S-NI)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 -	1.2E 01	2	2	4.17	4.17
1.2E 01 -	1.8E 01	5	7	10.42	14.58
1.8E 01 -	2.6E 01	3	10	6.25	20.83
2.6E 01 -	3.8E 01	13	23	27.08	47.92
3.8E 01 -	5.6E 01	9	32	18.75	66.67
5.6E 01 -	8.3E 01	11	43	22.92	89.58
8.3E 01 -	1.2E 02	4	47	8.33	97.92
1.2E 02 -	1.8E 02	1	48	2.08	100.00

HISTOGRAM FOR COLUMN 21 (S-NI)

```
1.0E 01 XXXX
1.5E 01 XXXXXXXXXX
2.0E 01 XXXXXX
3.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXX
5.0E 01 XXXXXXXXXXXXXXXXXX
7.0E 01 XXXXXXXXXXXXXXXXXXXXXX
1.0E 02 XXXXXXXX
1.5E 02 XX
```


N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	48
0.0	0.0			0.0	0.0	

MAXIMUM = 1.50000E 02
MINIMUM = 1.00000E 01
GEOMETRIC MEAN = 3.97128E 01
GEOMETRIC DEVIATION = 1.92533E 00

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TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 22 (S-PB)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 - 1.2E 01	10	10	20.83	20.83
1.2E 01 - 1.8E 01	17	27	35.42	56.25
1.8E 01 - 2.6E 01	8	35	16.67	72.92
2.6E 01 - 3.8E 01	7	42	14.58	87.50
3.8E 01 - 5.6E 01	0	42	0.0	87.50
5.6E 01 - 8.3E 01	0	42	0.0	87.50
8.3E 01 - 1.2E 02	0	42	0.0	87.50
1.2E 02 - 1.8E 02	1	43	2.08	89.58

HISTOGRAM FOR COLUMN 22 (S-PB)

```
1.0E 01 XXXXXXXXXXXXXXXXXXXX
1.5E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
2.0E 01 XXXXXXXXXXXXXXXX
3.0E 01 XXXXXXXXXXXXXX
5.0E 01
7.0E 01
1.0E 02
1.5E 02 XX
```

N	L	H	B	T	G	ANALYTICAL VALUES
1	4	0	0	0	0	43
2.08	8.33			0.0	0.0	

MAXIMUM = 1.50000E 02
MINIMUM = 1.00000E 01
GEOMETRIC MEAN = 1.70074E 01
GEOMETRIC DEVIATION = 1.64061E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 23 (S-SC)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.2E 01 - 1.8E 01	2	2	4.17	4.17
1.8E 01 - 2.6E 01	11	13	22.92	27.08
2.6E 01 - 3.8E 01	32	45	66.67	93.75
3.8E 01 - 5.6E 01	3	48	6.25	100.00

HISTOGRAM FOR COLUMN 23 (S-SC)

```
1.5E 01 XXXX
2.0E 01 XXXXXXXXXXXXXXXXXXXXXX
3.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
5.0E 01 XXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	48
0.0	0.0			0.0	0.0	

MAXIMUM = 5.00000E 01
MINIMUM = 1.50000E 01
GEOMETRIC MEAN = 2.74209E 01
GEOMETRIC DEVIATION = 1.29646E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 25 (S-SR)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.8E 02 - 2.6E 02	3	3	6.25	6.25
2.6E 02 - 3.8E 02	22	25	45.83	52.08
3.8E 02 - 5.6E 02	11	36	22.92	75.00
5.6E 02 - 8.3E 02	11	47	22.92	97.92
8.3E 02 - 1.2E 03	1	48	2.08	100.00

HISTOGRAM FOR COLUMN 25 (S-SR)

```
2.0E 02 XXXXXX
3.0E 02 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
5.0E 02 XXXXXXXXXXXXXXXXXXXXXX
7.0E 02 XXXXXXXXXXXXXXXXXXXXXX
1.0E 03 XX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	48
0.0	0.0			0.0	0.0	

MAXIMUM = 1.00000E 03
MINIMUM = 2.00000E 02
GEOMETRIC MEAN = 4.09419E 02
GEOMETRIC DEVIATION = 1.51356E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 26 (S-V)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.2E 02 -	1.8E 02	5	5	10.42	10.42
1.8E 02 -	2.6E 02	14	19	29.17	39.58
2.6E 02 -	3.8E 02	26	45	54.17	93.75
3.8E 02 -	5.6E 02	3	48	6.25	100.00

HISTOGRAM FOR COLUMN 26 (S-V)

```
1.5E 02 XXXXXXXXXX
2.0E 02 XXXXXXXXXXXXXXXXXXXXXXXXXXXX
3.0E 02 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
5.0E 02 XXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	48
0.0	0.0			0.0	0.0	

30

MAXIMUM = 5.00000E 02
MINIMUM = 1.50000E 02
GEOMETRIC MEAN = 2.56013E 02
GEOMETRIC DEVIATION = 1.35246E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 27 (S-Y)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.2E 01 - 1.8E 01	3	3	6.25	6.25
1.8E 01 - 2.6E 01	16	19	33.33	39.58
2.6E 01 - 3.8E 01	20	39	41.67	81.25
3.8E 01 - 5.6E 01	5	44	10.42	91.67
5.6E 01 - 8.3E 01	4	48	8.33	100.00

HISTOGRAM FOR COLUMN 27 (S-Y)

```
1.5E 01 XXXXXX
2.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
3.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
5.0E 01 XXXXXXXXXX
7.0E 01 XXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	48
0.0	0.0			0.0	0.0	

31

MAXIMUM = 7.00000E 01
MINIMUM = 1.50000E 01
GEOMETRIC MEAN = 2.84039E 01
GEOMETRIC DEVIATION = 1.51488E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 28 (S-ZN)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.8E 02 -	2.6E 02	2	2	4.17	4.17
2.6E 02 -	3.8E 02	0	2	0.0	4.17
3.8E 02 -	5.6E 02	1	3	2.08	6.25

HISTOGRAM FOR COLUMN 28 (S-ZN)

2.0E 02 XXXX
3.0E 02
5.0E 02 XX

N	L	H	B	T	G	ANALYTICAL VALUES
9	36	0	0	0	0	3
18.75	75.00			0.0	0.0	

MAXIMUM = 5.00000E 02
MINIMUM = 2.00000E 02
GEOMETRIC MEAN = 2.71441E 02
GEOMETRIC DEVIATION = 1.69725E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

FREQUENCY TABLE FOR COLUMN 29 (S-ZR)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
2.6E 01 - 3.8E 01	1	1	2.08	2.08
3.8E 01 - 5.6E 01	1	2	2.08	4.17
5.6E 01 - 8.3E 01	20	22	41.67	45.83
8.3E 01 - 1.2E 02	7	29	14.58	60.42
1.2E 02 - 1.8E 02	10	39	20.83	81.25
1.8E 02 - 2.6E 02	4	43	8.33	89.58
2.6E 02 - 3.8E 02	4	47	8.33	97.92
3.8E 02 - 5.6E 02	0	47	0.0	97.92
5.6E 02 - 8.3E 02	0	47	0.0	97.92
8.3E 02 - 1.2E 03	1	48	2.08	100.00

HISTOGRAM FOR COLUMN 29 (S-ZR)

```
       3.0E 01 XX
       5.0E 01 XX
       7.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
       1.0E 02 XXXXXXXXXXXXXXX
       1.5E 02 XXXXXXXXXXXXXXXXXXXX
       2.0E 02 XXXXXXXX
       3.0E 02 XXXXXXXX
       5.0E 02
       7.0E 02
       1.0E 03 XX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	48
0.0	0.0			0.0	0.0	

MAXIMUM = 1.00000E 03
MINIMUM = 3.00000E 01
GEOMETRIC MEAN = 1.09813E 02
GEOMETRIC DEVIATION = 1.84885E 00

TITLE
STREAM-SEDIMENT SAMPLES, KETCH

IN THE COMPUTATIONS PERFORMED TO PRODUCE THE FOLLOWING TABLE OF GEOMETRIC MEANS AND DEVIATIONS, 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 TO 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.

ELEMENT		N	L	H	B	T	G	ANALYTICAL VALUES
S-FE	%	0	0	0	0	0	0	48
S-MG	%	0	0	0	0	0	0	48
S-CA	%	0	0	0	0	0	0	48
S-TI	%	0	0	0	0	0	0	48
S-MN		0	0	0	0	0	0	48
S-B		1	9	0	0	0	0	38
S-BA		0	0	0	0	0	0	48
S-BE		1	11	0	0	0	0	36
S-CO		0	0	0	0	0	0	48
S-CR		0	0	0	0	0	0	48
S-CU		0	1	0	0	0	0	47
S-LA		5	17	0	0	0	0	26
S-MO		7	36	0	0	0	0	5
S-NB		0	1	0	0	0	0	47
S-NI		0	0	0	0	0	0	48
S-PB		1	4	0	0	0	0	43
S-SC		0	0	0	0	0	0	48
S-SR		0	0	0	0	0	0	48
S-V		0	0	0	0	0	0	48
S-Y		0	0	0	0	0	0	48
S-ZN		9	36	0	0	0	0	3
S-ZR		0	0	0	0	0	0	48

ELEMENT		GEOMETRIC MEAN	GEOMETRIC DEVIATION	REMARKS
S-FE	%	9.269862	1.54	48 SAMPLES AND 48 ANALYTICAL VALUES.
S-MG	%	2.342535	1.39	48 SAMPLES AND 48 ANALYTICAL VALUES.
S-CA	%	3.540048	1.48	48 SAMPLES AND 48 ANALYTICAL VALUES.
S-TI	%	0.639074	1.42	48 SAMPLES AND 48 ANALYTICAL VALUES.
S-MN		1473.917480	1.33	48 SAMPLES AND 48 ANALYTICAL VALUES.
S-B		11.279544	1.49	10 NOT DETECTED, LESS THAN, OR TRACE VALUES. 38 REPORTED VALUES.
S-BA		499.053467	1.58	48 SAMPLES AND 48 ANALYTICAL VALUES.

S-BE	********	******	36 VALUES LESS THAN SPECIFIED LIMIT OF DETECTION. NO COMPUTATIONS.
S-CO	27.236618	1.45	48 SAMPLES AND 48 ANALYTICAL VALUES.
S-CR	98.519440	1.93	48 SAMPLES AND 48 ANALYTICAL VALUES.
S-CU	16.694366	2.18	1 NOT DETECTED, LESS THAN, OR TRACE VALUES. 47 REPORTED VALUES.
S-LA	18.878769	3.68	22 NOT DETECTED, LESS THAN, OR TRACE VALUES. 26 REPORTED VALUES.
S-MO	1.352215	2.28	43 NOT DETECTED, LESS THAN, OR TRACE VALUES. 5 REPORTED VALUES.
S-NB	11.672657	1.23	1 NOT DETECTED, LESS THAN, OR TRACE VALUES. 47 REPORTED VALUES.
S-NI	39.712738	1.93	48 SAMPLES AND 48 ANALYTICAL VALUES.
S-PB	15.305692	1.76	5 NOT DETECTED, LESS THAN, OR TRACE VALUES. 43 REPORTED VALUES.
S-SC	27.420868	1.30	48 SAMPLES AND 48 ANALYTICAL VALUES.
S-SR	409.418701	1.51	48 SAMPLES AND 48 ANALYTICAL VALUES.
S-V	256.012207	1.35	48 SAMPLES AND 48 ANALYTICAL VALUES.
S-Y	28.403778	1.51	48 SAMPLES AND 48 ANALYTICAL VALUES.
S-ZN	********	******	COHEN'S TABLE EXCEEDED. H(0.9) OR GAMMA(1.6) GTR THAN ALLOW. NO COMPUTATIONS.
S-ZR	109.812500	1.85	48 SAMPLES AND 48 ANALYTICAL VALUES.

Table 2.--Description of background and mineralized rock samples from the Ketchikan A-3 quadrangle. Sample localities are shown by sample number on the accompanying map, figure 1.

No.	Sample	Type[1/]	Description
1	0S932	B	Biotite-quartz schist; composite sample.
2	9S304	B	Quartz-mica schist; chips across 30-foot interval.
3	9S300	B	Pyrite-bearing mica schist; chip sample.
4	9S321	B	Biotite-chlorite-quartz schist; chip sample.
5	9S298	M	Slightly mineralized mica schist; grab sample of most mineralized rock.
6	9S296	M	Pyrite-bearing biotite-quartz schist; selected sample of most mineralized rock.
7	9S295	M	Quartz-mica-garnet-zoisite schist and quartzite; composite selected sample of most mineralized rock.
8	9S315	M	Pegmatitic alaskite intrusive into schists and gneisses; composite selected sample of most mineralized rock.
9	9S312	B	Pyrite-bearing biotite-garnet-kyanite gneiss and amphibolite; chips across 40 of outcrop.
10	9S290	M	Weakly mineralized (pyrite) garnet-kyanite schist; selected sample of most mineralized part of 6-inch-wide zone.
11	9S289	B	Quartz-hornblende-biotite schist; chips across 50 feet of outcrop.
12	9S270C	B	Fine-grained amphibolite; chip sample across amphibolite 30 feet away from 270B.
13	9S270B	M	Pyritized biotite-quartz schist layer in amphibolite; layer is 10 feet thick; selected sample of most mineralized rock.
14	9S308	B	Amphibolite; chip sample.
15	9S210	B	Biotite hornblende gneiss.
16	9S260	M	Pyrite-bearing biotite-garnet-quartz schist; composite selected sample of most mineralized rock.
17	9S258	M	Pyrite-bearing biotite-garnet-sillimanite quartz gneiss; composite selected sample across 75 feet of outcrop of most mineralized rock.
18	9S257	M	Pyrite-bearing biotite quartz schist; composite selected sample of most mineralized rock across 75 feet of outcrop.
19	9S255	M	Fine-grained pyrite-bearing calc-silicate layer in biotite quartz-plagioclase gneiss; chip sample.
20	9S236	B	Biotite-hornblende gneiss; chip sample.
21	9S221	B	Biotite-quartz-garnet gneiss; chip sample across 30 feet of outcrop.
22	9S204	B	Quartz-biotite-garnet gneiss; chip sample across 20 feet of outcrop.
23	9S217	B	Biotite-quartz gneiss; chip samples across 30 feet.
24	9S347	B	Biotite-plagioclase gneiss; chip samples every foot across 20 feet of outcrop.

[1/] B = background sample
M = mineralized sample

DATE 3/10/73

TABLE 3--ROCK SAMPLES, KETCHIKAN A-3 QUADRANGLE, ALASKA[1/]

	SAMPLE	X-COORD.	Y-COORD.	S-FE %	S-MG %	S-CA %	S-TI %	S-MN	S-AG	AA-AU-P
1	0S932	374175	101570	7.[illegible]	1.5	0.5	0.70	700	0.5N	0.02L
2	9S304	372450	106225	2.0	1.0	0.5	0.15	300	0.5N	0.02L
3	9S300	375700	106500	7.0	1.5	0.7	0.70	700	0.5N	0.02L
4	9S321	377725	105425	7.0	1.5	1.0	0.50	200	0.5L	0.02L
5	9S298	377575	107250	3.0	0.7	0.7	0.30	200	0.5N	0.02L
6	9S296	379000	107875	7.0	1.0	1.5	0.70	700	0.5L	0.02L
7	9S295	379575	108450	3.0	1.0	1.0	0.30	300	10.0	0.02L
8	9S315	381700	108800	20.0	5.0	1.0	0.70	1500	0.5L	0.02L
9	9S312	383250	109325	15.0	3.0	7.0	1.00	1500	0.5N	0.02L
10	9S290	382200	110850	5.[illegible]	1.0	1.0	0.70	150	0.5L	0.02L
11	9S289	382925	111025	7.0	1.0	1.0	0.50	500	0.5N	0.02L
12	9S270C	384900	110600	10.0	3.0	7.0	0.30	1000	0.5N	0.02L
13	9S270B	384900	110600	5.0	2.0	3.0	0.50	1000	0.7	0.02L
14	9S308	384725	104375	10.0	3.0	5.0	0.50	1500	0.5N	0.02L
15	9S210	386575	104325	5.0	2.0	1.5	0.30	500	0.5N	0.02L
16	9S260	388850	108775	3.0	1.5	7.0	0.50	2000	0.5	0.02L
17	9S258	389525	110500	7.0	1.5	1.5	0.50	1500	0.5L	0.02L
18	9S257	390050	110675	3.0	1.5	1.5	0.30	500	1.0	0.02L
19	9S255	390875	112350	1.5	0.7	1.5	0.15	200	0.5N	0.02L
20	9S236	391350	109900	15.0	3.0	3.0	0.70	1000	0.5N	0.02L
21	9S221	390650	108050	7.0	1.5	3.0	0.30	500	0.5L	0.02L
22	9S204	390200	104225	10.0	1.0	1.0	0.50	1500	0.5L	0.02L
23	9S217	390875	104125	7.0	2.0	2.0	0.70	1000	0.5N	0.02L
24	9S347	391725	98675	3.0	1.5	1.5	0.30	700	0.5N	0.02L

[1/]The following elements were looked for but if present are below the limits of detectability: As, Sb, W.

DATE 3/10/73

ROCK SAMPLES, KETCHIKAN A-3 QUADRANGLE, ALASKA

	SAMPLE	S-B	S-BA	S-BE	S-BI	S-CO	S-CR	S-CU	S-LA	S-MO
1	0S932	20.	700.	1.0L	10.N	50.	100.	100	20.	5.N
2	9S304	10.N	700.	1.0L	10.N	5.L	5.L	50	20.N	5.N
3	9S300	10.	300.	1.5	10.N	30.	70.	100	20.L	5.
4	9S321	50.	1500.	1.5	10.N	30.	70.	100	20.L	5.
5	9S298	15.	300.	1.0	10.N	15.	70.	5	20.L	5.N
6	9S296	10.L	1500.	1.0	10.N	50.	30.	30	20.L	5.
7	9S295	10.L	1500.	1.0N	20.	50.	70.	150	20.N	5.L
8	9S315	10.	100.	1.0L	10.N	50.	30.	100	20.L	5.L
9	9S312	15.	700.	1.0L	10.N	30.	300.	100	30.	5.L
10	9S290	10.	500.	1.0	10.N	30.	70.	70	20.L	5.L
11	9S289	10.	700.	1.0N	10.N	20.	30.	70	20.N	7.
12	9S270C	10.N	20.L	1.0N	10.N	50.	300.	50	20.N	5.N
13	9S270B	10.	1500.	1.0L	10.N	30.	150.	150	20.N	5.
14	9S308	15.	700.	1.0L	10.N	70.	100.	20	20.N	5.L
15	9S21D	10.N	300.	1.0N	10.N	30.	100.	50	20.N	5.L
16	9S260	15.	200.	1.0L	10.N	20.	70.	50	20.L	5.
17	9S258	10.N	700.	1.5	10.N	20.	70.	30	20.	5.L
18	9S257	10.N	1500.	1.0L	10.N	15.	150.	100	20.N	5.L
19	9S255	10.N	300.	1.0	10.N	5.L	15.	7	20.L	5.N
20	9S236	10.	1000.	1.0L	10.N	30.	30.	30	20.	5.L
21	9S221	15.	1000.	1.0	10.N	30.	70.	70	50.	5.L
22	9S204	15.	1500.	1.0	10.N	50.	70.	70	50.	5.
23	9S217	15.	1000.	1.0	10.N	30.	70.	15	20.	5.L
24	9S347	10.L	1000.	1.0	10.N	10.	20.	10	20.N	5.N

DATE 3/10/73

ROCK SAMPLES, KETCHIKAN A-3 QUADRANGLE, ALASKA

	SAMPLE	S-NB	S-NI	S-PB	S-SC	S-SN	S-SR	S-V	S-Y	S-ZN
1	0S932	10.	50	20.	20	10.N	150.	150	20	200.N
2	9S304	10.L	5	10.N	7	10.N	200.	30	15	200.N
3	9S300	15.	50	20.	20	10.N	150.	200	15	200.L
4	9S321	10.	50	10.L	30	10.N	300.	500	15	1500.
5	9S298	15.	30	10.N	7	10.N	200.	70	10	200.N
6	9S296	10.	30	10.N	30	10.N	300.	200	30	200.L
7	9S295	10.L	70	700.	15	10.N	100.L	100	10	200.L
8	9S315	10.	30	10.L	30	10.N	200.	500	20	200.
9	9S312	10.	100	15.	30	10.N	300.	300	30	200.L
10	9S290	10.	50	10.	30	10.N	200.	200	15	200.L
11	9S289	10.	30	10.N	15	10.N	150.	200	20	200.N
12	9S270C	10.	100	10.N	30	10.N	100.	200	15	200.N
13	9S270B	10.	150	10.L	30	10.N	300.	500	30	300.
14	9S308	10.	70	10.	30	10.N	300.	300	15	200.L
15	9S210	10.	70	10.L	20	10.N	200.	150	15	200.N
16	9S260	10.	150	10.N	15	10.N	700.	200	30	300.
17	9S258	10.	100	10.L	20	10.N	200.	150	30	200.
18	9S257	10.	50	15.	15	10.N	150.	150	10	200.L
19	9S255	10.L	15	15.	5	10.N	300.	30	10	200.N
20	9S236	10.	30	10.	30	10.N	700.	300	30	200.L
21	9S221	15.	70	30.	15	10.N	300.	150	20	200.N
22	9S204	15.	150	10.L	15	10.N	200.	150	50	200.L
23	9S217	15.	30	10.L	15	10.N	500.	150	20	200.L
24	9S347	10.L	15	15.	7	10.N	500.	150	15	200.

DATE 3/10/73

ROCK SAMPLES, KETCHIKAN A-3 QUADRANGLE, ALASKA

	SAMPLE	S-ZR
1	0S932	300.
2	95304	70.
3	95300	100.
4	95321	70.
5	95298	150.
6	95296	100.
7	95295	50.
8	95315	10.L
9	95312	70.
10	95290	100.
11	95289	70.
12	9527CC	10.L
13	952708	70.
14	95308	50.
15	95210	70.
16	95260	70.
17	95258	150.
18	95257	70.
19	95255	30.
20	95236	70.
21	95221	70.
22	95204	70.
23	95217	200.
24	95347	70.

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

THE FREQUENCY DISTRIBUTIONS AND HISTOGRAMS ON THE FOLLOWING PAGES ARE ON LOGARITHMIC SCALES,AND EMPLOY THE SAME CLASS INTERVALS AS USED IN REPORTING 6-STEP SEMIQUANTITATIVE SPECTROGRAPHIC ANALYSES. IMPORTANT NOTE- THE STATISTICS GIVEN BELOW THE HISTOGRAMS ARE DERIVED ONLY FROM DATA VALUES WITHIN THE RANGES OF ANALYTICAL DETERMINATION, AND ARE, THEREFORE, BIASED IF DATA VALUES QUALIFIED WITH N, L, G, T, OR H CODES ARE PRESENT. SEE LATER SECTION OF OUTPUT FOR STATISTICAL ESTIMATES THAT ARE UNBIASED IN THIS REGARD. THE GEOMETRIC MEAN IS 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 AND IS OF NO VALUE IN ESTIMATING RESERVES OR TOTAL AMOUNTS OF ELEMENTS PRESENT. SEE USGS PROFESSIONAL PAPER 574-B FOR FURTHER DISCUSSION. SEE USGS BULLETIN 1147E, PAGE 23, FOR EXPLANATION OF GEOMETRIC DEVIATION.

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TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

AA-AU-P CONTAINS NO VALID DATA POINTS. THEREFORE THIS VARIABLE WILL BE SKIPPED.

THE MAX AND MIN 0.20000E 02 FOR S-BI ARE THE SAME. THEREFORE THIS VARIABLE WILL BE SKIPPED.

S-SN CONTAINS NO VALID DATA POINTS. THEREFORE THIS VARIABLE WILL BE SKIPPED.

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 4 (S-FE %)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.2E 00 -	1.8E 00	1	1	4.17	4.17
1.8E 00 -	2.6E 00	1	2	4.17	8.33
2.6E 00 -	3.8E 00	5	7	20.83	29.17
3.8E 00 -	5.6E 00	3	10	12.50	41.67
5.6E 00 -	8.3E 00	8	18	33.33	75.00
8.3E 00 -	1.2E 01	3	21	12.50	87.50
1.2E 01 -	1.8E 01	2	23	8.33	95.83
1.8E 01 -	2.6E 01	1	24	4.17	100.00

HISTOGRAM FOR COLUMN 4 (S-FE %)

```
1.5E 00 XXXX
2.0E 00 XXXX
3.0E 00 XXXXXXXXXXXXXXXXXXXX
5.0E 00 XXXXXXXXXXXX
7.0E 00 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1.0E 01 XXXXXXXXXXXX
1.5E 01 XXXXXXXX
2.0E 01 XXXX
```


N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	24
0.0	0.0			0.0	0.0	

MAXIMUM = 2.00000E 01
MINIMUM = 1.50000E 00
GEOMETRIC MEAN = 5.82862E 00
GEOMETRIC DEVIATION = 1.91522E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 5 (S-MG %)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
5.6E-01 -	8.3E-01	2	2	8.33	8.33
8.3E-01 -	1.2E 00	6	8	25.00	33.33
1.2E 00 -	1.8E 00	8	16	33.33	66.67
1.8E 00 -	2.6E 00	3	19	12.50	79.17
2.6E 00 -	3.8E 00	4	23	16.67	95.83
3.8E 00 -	5.6E 00	1	24	4.17	100.00

HISTOGRAM FOR COLUMN 5 (S-MG %)

```
7.0E-01 XXXXXXXX
1.0E 00 XXXXXXXXXXXXXXXXXXXXXXXX
1.5E 00 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
2.0E 00 XXXXXXXXXXXX
3.0E 00 XXXXXXXXXXXXXXXX
5.0E 00 XXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	24
0.0	0.0			0.0	0.0	

MAXIMUM = 5.00000E 00
MINIMUM = 7.00000E-01
GEOMETRIC MEAN = 1.55618E 00
GEOMETRIC DEVIATION = 1.64767E 00

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 6 (S-CA %)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E-01 -	5.6E-01	2	2	8.33	8.33
5.6E-01 -	8.3E-01	2	4	8.33	16.67
8.3E-01 -	1.2E 00	6	10	25.00	41.67
1.2E 00 -	1.8E 00	6	16	25.00	66.67
1.8E 00 -	2.6E 00	1	17	4.17	70.83
2.6E 00 -	3.8E 00	3	20	12.50	83.33
3.8E 00 -	5.6E 00	1	21	4.17	87.50
5.6E 00 -	8.3E 00	3	24	12.50	100.00

HISTOGRAM FOR COLUMN 6 (S-CA %)

```
5.0E-01 XXXXXXXX
7.0E-01 XXXXXXXX
1.0E 00 XXXXXXXXXXXXXXXXXXXXXXXX
1.5E 00 XXXXXXXXXXXXXXXXXXXXXXXX
2.0E 00 XXXX
3.0E 00 XXXXXXXXXXXX
5.0E 00 XXXX
7.0E 00 XXXXXXXXXXXX
```


N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	24
0.0	0.0			0.0	0.0	

MAXIMUM = 7.00000E 00
MINIMUM = 5.00000E-01
GEOMETRIC MEAN = 1.63295E 00
GEOMETRIC DEVIATION = 2.21110E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 7 (S-TI %)

LIMITS LOWER	- UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.2E-01 -	1.8E-01	2	2	8.33	8.33
1.8E-01 -	2.6E-01	0	2	0.0	8.33
2.6E-01 -	3.8E-01	7	9	29.17	37.50
3.8E-01 -	5.6E-01	7	16	29.17	66.67
5.6E-01 -	8.3E-01	7	23	29.17	95.83
8.3E-01 -	1.2E 00	1	24	4.17	100.00

HISTOGRAM FOR COLUMN 7 (S-TI %)

```
1.5E-01 XXXXXXXX
2.0E-01
3.0E-01 XXXXXXXXXXXXXXXXXXXXXXXXXXX
5.0E-01 XXXXXXXXXXXXXXXXXXXXXXXXXXX
7.0E-01 XXXXXXXXXXXXXXXXXXXXXXXXXXX
1.0E 00 XXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	24
0.0	0.0			0.0	0.0	

MAXIMUM = 1.00000E 00
MINIMUM = 1.50000E-01
GEOMETRIC MEAN = 4.42441E-01
GEOMETRIC DEVIATION = 1.64079E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 8 (S-MN)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.2E 02 -	1.8E 02	1	1	4.17	4.17
1.8E 02 -	2.6E 02	3	4	12.50	16.67
2.6E 02 -	3.8E 02	2	6	8.33	25.00
3.8E 02 -	5.6E 02	4	10	16.67	41.67
5.6E 02 -	8.3E 02	4	14	16.67	58.33
8.3E 02 -	1.2E 03	4	18	16.67	75.00
1.2E 03 -	1.8E 03	5	23	20.83	95.83
1.8E 03 -	2.6E 03	1	24	4.17	100.00

HISTOGRAM FOR COLUMN 8 (S-MN)

```
1.5E 02 XXXX
2.0E 02 XXXXXXXXXXXX
3.0E 02 XXXXXXXX
5.0E 02 XXXXXXXXXXXXXXXX
7.0E 02 XXXXXXXXXXXXXXXX
1.0E 03 XXXXXXXXXXXXXXXX
1.5E 03 XXXXXXXXXXXXXXXXXXXX
2.0E 03 XXXX
```

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N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	24
0.0	0.0			0.0	0.0	

MAXIMUM = 2.00000E 03
MINIMUM = 1.50000E 02
GEOMETRIC MEAN = 6.42630E 02
GEOMETRIC DEVIATION = 2.13992E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 9 (S-AG)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E-01 -	5.6E-01	1	1	4.17	4.17
5.6E-01 -	8.3E-01	1	2	4.17	8.33
8.3E-01 -	1.2E 00	1	3	4.17	12.50
1.2E 00 -	1.8E 00	0	3	0.0	12.50
1.8E 00 -	2.6E 00	0	3	0.0	12.50
2.6E 00 -	3.8E 00	0	3	0.0	12.50
3.8E 00 -	5.6E 00	0	3	0.0	12.50
5.6E 00 -	8.3E 00	0	3	0.0	12.50
8.3E 00 -	1.2E 01	1	4	4.17	16.67

HISTOGRAM FOR COLUMN 9 (S-AG)

```
5.0E-01 XXXX
7.0E-01 XXXX
1.0E 00 XXXX
1.5E 00
2.0E 00
3.0E 00
5.0E 00
7.0E 00
1.0E 01 XXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
13	7	0	0	0	0	4
54.17	29.17			0.0	0.0	

MAXIMUM = 1.00000E 01
MINIMUM = 5.00000E-01
GEOMETRIC MEAN = 1.36778E 00
GEOMETRIC DEVIATION = 3.88111E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 11 (S-B)

LIMITS LOWER	- UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 -	1.2E 01	6	6	25.00	25.00
1.2E 01 -	1.8E 01	7	13	29.17	54.17
1.8E 01 -	2.6E 01	1	14	4.17	58.33
2.6E 01 -	3.8E 01	0	14	0.0	58.33
3.8E 01 -	5.6E 01	1	15	4.17	62.50

HISTOGRAM FOR COLUMN 11 (S-B)

```
1.0E 01 XXXXXXXXXXXXXXXXXXXXXXX
1.5E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXX
2.0E 01 XXXX
3.0E 01
5.0E 01 XXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
6	3	0	0	0	0	15
25.00	12.50			0.0	0.0	

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MAXIMUM = 5.00000E 01
MINIMUM = 1.00000E 01
GEOMETRIC MEAN = 1.40877E 01
GEOMETRIC DEVIATION = 1.52066E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 12 (S-8A)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 01 -	1.2E 02	1	1	4.17	4.17
1.2E 02 -	1.8E 02	0	1	0.0	4.17
1.8E 02 -	2.6E 02	1	2	4.17	8.33
2.6E 02 -	3.8E 02	4	6	16.67	25.00
3.8E 02 -	5.6E 02	1	7	4.17	29.17
5.6E 02 -	8.3E 02	6	13	25.00	54.17
8.3E 02 -	1.2E 03	4	17	16.67	70.83
1.2E 03 -	1.8E 03	6	23	25.00	95.83

HISTOGRAM FOR COLUMN 12 (S-8A)

```
1.0E 02 XXXX
1.5E 02
2.0E 02 XXXX
3.0E 02 XXXXXXXXXXXXXXXX
5.0E 02 XXXX
7.0E 02 XXXXXXXXXXXXXXXXXXXXXXXX
1.0E 03 XXXXXXXXXXXXXXXX
1.5E 03 XXXXXXXXXXXXXXXXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	1	0	0	0	0	23
0.0	4.17			0.0	0.0	

MAXIMUM = 1.50000E 03
MINIMUM = 1.00000E 02
GEOMETRIC MEAN = 6.72405E 02
GEOMETRIC DEVIATION = 2.11215E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 13 (S-BE)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E-01 - 1.2E 00	8	8	33.33	33.33
1.2E 00 - 1.8E 00	3	11	12.50	45.83

HISTOGRAM FOR COLUMN 13 (S-BE)

1.0E 00 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1.5E 00 XXXXXXXXXXXX

N	L	H	B	T	G	ANALYTICAL VALUES
4	9	0	0	0	0	13
16.67	37.50			0.0	0.0	

MAXIMUM = 1.50000E 00
MINIMUM = 1.00000E 00
GEOMETRIC MEAN = 1.11693E 00
GEOMETRIC DEVIATION = 1.20852E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 15 (S-CO)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 -	1.2E 01	1	1	4.17	4.17
1.2E 01 -	1.8E 01	2	3	8.33	12.50
1.8E 01 -	2.6E 01	3	6	12.50	25.00
2.6E 01 -	3.8E 01	9	15	37.50	62.50
3.8E 01 -	5.6E 01	6	21	25.00	87.50
5.6E 01 -	8.3E 01	1	22	4.17	91.67

HISTOGRAM FOR COLUMN 15 (S-CO)

```
1.0E 01 XXXX
1.5E 01 XXXXXXXX
2.0E 01 XXXXXXXXXXXX
3.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
5.0E 01 XXXXXXXXXXXXXXXXXXXXXXXX
7.0E 01 XXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	2	0	0	0	0	22
0.0	8.33			0.0	0.0	

MAXIMUM = 7.00000E 01
MINIMUM = 1.00000E 01
GEOMETRIC MEAN = 3.02887E 01
GEOMETRIC DEVIATION = 1.62449E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 16 (S-CR)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.2E 01 -	1.8E 01	1	1	4.17	4.17
1.8E 01 -	2.6E 01	1	2	4.17	8.33
2.6E 01 -	3.8E 01	4	6	16.67	25.00
3.8E 01 -	5.6E 01	0	6	0.0	25.00
5.6E 01 -	8.3E 01	10	16	41.67	66.67
8.3E 01 -	1.2E 02	3	19	12.50	79.17
1.2E 02 -	1.8E 02	2	21	8.33	87.50
1.8E 02 -	2.6E 02	0	21	0.0	87.50
2.6E 02 -	3.8E 02	2	23	8.33	95.83

HISTOGRAM FOR COLUMN 16 (S-CR)

```
      1.5E 01 XXXX
      2.0E 01 XXXX
      3.0E 01 XXXXXXXXXXXXXXXXX
      5.0E 01
      7.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
      1.0E 02 XXXXXXXXXXXXX
      1.5E 02 XXXXXXXX
      2.0E 02
      3.0E 02 XXXXXXXX
```

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N	L	H	B	T	G	ANALYTICAL VALUES
0	1	0	0	0	0	23
0.0	4.17			0.0	0.0	

MAXIMUM = 3.00000E 02
MINIMUM = 1.50000E 01
GEOMETRIC MEAN = 6.79674E 01
GEOMETRIC DEVIATION = 2.12975E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 17 (S-CU)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E 00 -	5.6E 00	1	1	4.17	4.17
5.6E 00 -	8.3E 00	1	2	4.17	8.33
8.3E 00 -	1.2E 01	1	3	4.17	12.50
1.2E 01 -	1.8E 01	1	4	4.17	16.67
1.8E 01 -	2.6E 01	1	5	4.17	20.83
2.6E 01 -	3.8E 01	3	8	12.50	33.33
3.8E 01 -	5.6E 01	4	12	16.67	50.00
5.6E 01 -	8.3E 01	4	16	16.67	66.67
8.3E 01 -	1.2E 02	6	22	25.00	91.67
1.2E 02 -	1.8E 02	2	24	8.33	100.00

HISTOGRAM FOR COLUMN 17 (S-CU)

```
       5.0E 00 XXXX
       7.0E 00 XXXX
       1.0E 01 XXXX
       1.5E 01 XXXX
       2.0E 01 XXXX
       3.0E 01 XXXXXXXXXXXX
       5.0E 01 XXXXXXXXXXXXXXXX
       7.0E 01 XXXXXXXXXXXXXXXX
       1.0E 02 XXXXXXXXXXXXXXXXXXXXXXXX
       1.5E 02 XXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	24
0.0	0.0			0.0	0.0	

MAXIMUM = 1.50000E 02
MINIMUM = 5.00000E 00
GEOMETRIC MEAN = 4.63308E 01
GEOMETRIC DEVIATION = 2.56698E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 18 (S-LA)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.8E 01 -	2.6E 01	4	4	16.67	16.67
2.6E 01 -	3.8E 01	1	5	4.17	20.83
3.8E 01 -	5.6E 01	2	7	8.33	29.17

HISTOGRAM FOR COLUMN 18 (S-LA)

```
2.0E 01 XXXXXXXXXXXXXXXX
3.0E 01 XXXX
5.0E 01 XXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
9	8	0	0	0	0	7
37.50	33.33			0.0	0.0	

MAXIMUM = 5.00000E 01
MINIMUM = 2.00000E 01
GEOMETRIC MEAN = 2.75348E 01
GEOMETRIC DEVIATION = 1.54279E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 19 (S-MO)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E 00 -	5.6E 00	6	6	25.00	25.00
5.6E 00 -	8.3E 00	1	7	4.17	29.17

HISTOGRAM FOR COLUMN 19 (S-MO)

5.0E 00 XXXXXXXXXXXXXXXXXXXXXXX
7.0E 00 XXXX

N	L	H	B	T	G	ANALYTICAL VALUES
6	11	0	0	0	0	7
25.00	45.83			0.0	0.0	

MAXIMUM = 7.00000E 00
MINIMUM = 5.00000E 00
GEOMETRIC MEAN = 5.24620E 00
GEOMETRIC DEVIATION = 1.13562E 00

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 20 (S-NB)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 - 1.2E 01	15	15	62.50	62.50
1.2E 01 - 1.8E 01	5	20	20.83	83.33

HISTOGRAM FOR COLUMN 20 (S-NB)

```
1.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1.5E 01 XXXXXXXXXXXXXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	4	0	0	0	0	20
0.0	16.67			0.0	0.0	

MAXIMUM = 1.50000E 01
MINIMUM = 1.00000E 01
GEOMETRIC MEAN = 1.10667E 01
GEOMETRIC DEVIATION = 1.19741E 00

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A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 21 (S-NI)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E 00 - 5.6E 00	1	1	4.17	4.17
5.6E 00 - 8.3E 00	0	1	0.0	4.17
8.3E 00 - 1.2E 01	0	1	0.0	4.17
1.2E 01 - 1.8E 01	2	3	8.33	12.50
1.8E 01 - 2.6E 01	0	3	0.0	12.50
2.6E 01 - 3.8E 01	6	9	25.00	37.50
3.8E 01 - 5.6E 01	5	14	20.83	58.33
5.6E 01 - 8.3E 01	4	18	16.67	75.00
8.3E 01 - 1.2E 02	3	21	12.50	87.50
1.2E 02 - 1.8E 02	3	24	12.50	100.00

HISTOGRAM FOR COLUMN 21 (S-NI)

```
5.0E 00 XXXX
7.0E 00
1.0E 01
1.5E 01 XXXXXXXX
2.0E 01
3.0E 01 XXXXXXXXXXXXXXXXXXXXXXXX
5.0E 01 XXXXXXXXXXXXXXXXXXXX
7.0E 01 XXXXXXXXXXXXXXXX
1.0E 02 XXXXXXXXXXXX
1.5E 02 XXXXXXXXXXXX
```

ST

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	24
0.0	0.0			0.0	0.0	

MAXIMUM = 1.50000E 02
MINIMUM = 5.00000E 00
GEOMETRIC MEAN = 4.78506E 01
GEOMETRIC DEVIATION = 2.25670E 00

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 22 (S-PB)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 -	1.2E 01	3	3	12.50	12.50
1.2E 01 -	1.8E 01	4	7	16.67	29.17
1.8E 01 -	2.6E 01	2	9	8.33	37.50
2.6E 01 -	3.8E 01	1	10	4.17	41.67
3.8E 01 -	5.6E 01	0	10	0.0	41.67
5.6E 01 -	8.3E 01	0	10	0.0	41.67
8.3E 01 -	1.2E 02	0	10	0.0	41.67
1.2E 02 -	1.8E 02	0	10	0.0	41.67
1.8E 02 -	2.6E 02	0	10	0.0	41.67
2.6E 02 -	3.8E 02	0	10	0.0	41.67
3.8E 02 -	5.6E 02	0	10	0.0	41.67
5.6E 02 -	8.3E 02	1	11	4.17	45.83

HISTOGRAM FOR COLUMN 22 (S-PB)

```
1.0E 01 XXXXXXXXXXXX
1.5E 01 XXXXXXXXXXXXXXXX
2.0E 01 XXXXXXXX
3.0E 01 XXXX
5.0E 01
7.0E 01
1.0E 02
1.5E 02
2.0E 02
3.0E 02
5.0E 02
7.0E 02 XXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
6	7	0	0	0	0	11
25.00	29.17			0.0	0.0	

MAXIMUM = 7.00000E 02
MINIMUM = 1.00000E 01
GEOMETRIC MEAN = 2.13735E 01
GEOMETRIC DEVIATION = 3.33791E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 23 (S-SC)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
3.8E 00 -	5.6E 00	1	1	4.17	4.17
5.6E 00 -	8.3E 00	3	4	12.50	16.67
8.3E 00 -	1.2E 01	0	4	0.0	16.67
1.2E 01 -	1.8E 01	7	11	29.17	45.83
1.8E 01 -	2.6E 01	4	15	16.67	62.50
2.6E 01 -	3.8E 01	9	24	37.50	100.00

HISTOGRAM FOR COLUMN 23 (S-SC)

```
5.0E 00 XXXX
7.0E 00 XXXXXXXXXXXX
1.0E 01
1.5E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXX
2.0E 01 XXXXXXXXXXXXXXXX
3.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	24
0.0	0.0			0.0	0.0	

MAXIMUM = 3.00000E 01
MINIMUM = 5.00000E 00
GEOMETRIC MEAN = 1.77232E 01
GEOMETRIC DEVIATION = 1.73185E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 25 (S-SR)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 01 - 1.2E 02	1	1	4.17	4.17
1.2E 02 - 1.8E 02	4	5	16.67	20.83
1.8E 02 - 2.6E 02	7	12	29.17	50.00
2.6E 02 - 3.8E 02	7	19	29.17	79.17
3.8E 02 - 5.6E 02	2	21	8.33	87.50
5.6E 02 - 8.3E 02	2	23	8.33	95.83

HISTOGRAM FOR COLUMN 25 (S-SR)

```
1.0E 02 XXXX
1.5E 02 XXXXXXXXXXXXXXXX
2.0E 02 XXXXXXXXXXXXXXXXXXXXXXXXXXXX
3.0E 02 XXXXXXXXXXXXXXXXXXXXXXXXXXXX
5.0E 02 XXXXXXXX
7.0E 02 XXXXXXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	1	0	0	0	0	23
0.0	4.17			0.0	0.0	

MAXIMUM = 7.00000E 02
MINIMUM = 1.00000E 02
GEOMETRIC MEAN = 2.52182E 02
GEOMETRIC DEVIATION = 1.65216E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 26 (S-V)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
2.6E 01 -	3.8E 01	2	2	8.33	8.33
3.8E 01 -	5.6E 01	0	2	0.0	8.33
5.6E 01 -	8.3E 01	1	3	4.17	12.50
8.3E 01 -	1.2E 02	1	4	4.17	16.67
1.2E 02 -	1.8E 02	8	12	33.33	50.00
1.8E 02 -	2.6E 02	6	18	25.00	75.00
2.6E 02 -	3.8E 02	3	21	12.50	87.50
3.8E 02 -	5.6E 02	3	24	12.50	100.00

HISTOGRAM FOR COLUMN 26 (S-V)

```
3.0E 01 XXXXXXXX
5.0E 01
7.0E 01 XXXX
1.0E 02 XXXX
1.5E 02 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
2.0E 02 XXXXXXXXXXXXXXXXXXXXXXXX
3.0E 02 XXXXXXXXXXXXX
5.0E 02 XXXXXXXXXXXXX
```

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N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	24
0.0	0.0			0.0	0.0	

MAXIMUM = 5.00000E 02
MINIMUM = 3.00000E 01
GEOMETRIC MEAN = 1.70190E 02
GEOMETRIC DEVIATION = 2.04872E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 27 (S-Y)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
8.3E 00 -	1.2E 01	4	4	16.67	16.67
1.2E 01 -	1.8E 01	8	12	33.33	50.00
1.8E 01 -	2.6E 01	5	17	20.83	70.83
2.6E 01 -	3.8E 01	6	23	25.00	95.83
3.8E 01 -	5.6E 01	1	24	4.17	100.00

HISTOGRAM FOR COLUMN 27 (S-Y)

```
1.0E 01 XXXXXXXXXXXXXXXX
1.5E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
2.0E 01 XXXXXXXXXXXXXXXXXXXX
3.0E 01 XXXXXXXXXXXXXXXXXXXXXXXX
5.0E 01 XXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	0	0	0	0	0	24
0.0	0.0			0.0	0.0	

29

MAXIMUM = 5.00000E 01
MINIMUM = 1.00000E 01
GEOMETRIC MEAN = 1.86127E 01
GEOMETRIC DEVIATION = 1.53990E 00

A470 GEOCHEMICAL SUMMARY - U S G S STATPAC (08/02/71) DATE 12/26/72

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 28 (S-ZN)

LIMITS LOWER - UPPER		FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
1.8E 02 -	2.6E 02	3	3	12.50	12.50
2.6E 02 -	3.8E 02	2	5	8.33	20.83
3.8E 02 -	5.6E 02	0	5	0.0	20.83
5.6E 02 -	8.3E 02	0	5	0.0	20.83
8.3E 02 -	1.2E 03	0	5	0.0	20.83
1.2E 03 -	1.8E 03	1	6	4.17	25.00

HISTOGRAM FOR COLUMN 28 (S-ZN)

```
2.0E 02 XXXXXXXXXXXX
3.0E 02 XXXXXXXX
5.0E 02
7.0E 02
1.0E 03
1.5E 03 XXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
8	10	0	0	0	0	6
33.33	41.67			0.0	0.0	

MAXIMUM = 1.50000E 03
MINIMUM = 2.00000E 02
GEOMETRIC MEAN = 3.20309E 02
GEOMETRIC DEVIATION = 2.18582E 00

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

FREQUENCY TABLE FOR COLUMN 29 (S-ZR)

LIMITS LOWER - UPPER	FREQ	FREQ CUM	PERCENT FREQ	PERCENT FREQ CUM
2.6E 01 - 3.8E 01	1	1	4.17	4.17
3.8E 01 - 5.6E 01	2	3	8.33	12.50
5.6E 01 - 8.3E 01	12	15	50.00	62.50
8.3E 01 - 1.2E 02	3	18	12.50	75.00
1.2E 02 - 1.8E 02	2	20	8.33	83.33
1.8E 02 - 2.6E 02	1	21	4.17	87.50
2.6E 02 - 3.8E 02	1	22	4.17	91.67

HISTOGRAM FOR COLUMN 29 (S-ZR)

```
3.0E 01 XXXX
5.0E 01 XXXXXXXX
7.0E 01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1.0E 02 XXXXXXXXXXXX
1.5E 02 XXXXXXXX
2.0E 02 XXXX
3.0E 02 XXXX
```

N	L	H	B	T	G	ANALYTICAL VALUES
0	2	0	0	0	0	22
0.0	8.33			0.0	0.0	

MAXIMUM = 3.00000E 02
MINIMUM = 3.00000E 01
GEOMETRIC MEAN = 8.23660E 01
GEOMETRIC DEVIATION = 1.63896E 00

TITLE
ROCK SAMPLES, KETCHIKAN A-3 QU

IN THE COMPUTATIONS PERFORMED TO PRODUCE THE FOLLOWING TABLE OF GEOMETRIC MEANS AND DEVIATIONS, 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 TO 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.

ELEMENT		N	L	H	B	T	G	ANALYTICAL VALUES
S-FE	%	0	0	0	0	0	0	24
S-MG	%	0	0	0	0	0	0	24
S-CA	%	0	0	0	0	0	0	24
S-TI	%	0	0	0	0	0	0	24
S-MN		0	0	0	0	0	0	24
S-AG		13	7	0	0	0	0	4
S-B		6	3	0	0	0	0	15
S-BA		0	1	0	0	0	0	23
S-BE		4	9	0	0	0	0	11
S-CO		0	2	0	0	0	0	22
S-CR		0	1	0	0	0	0	23
S-CU		0	0	0	0	0	0	24
S-LA		9	8	0	0	0	0	7
S-MO		6	11	0	0	0	0	7
S-NB		0	4	0	0	0	0	20
S-NI		0	0	0	0	0	0	24
S-PB		6	7	0	0	0	0	11
S-SC		0	0	0	0	0	0	24
S-SR		0	1	0	0	0	0	23
S-V		0	0	0	0	0	0	24
S-Y		0	0	0	0	0	0	24
S-ZN		8	10	0	0	0	0	6
S-ZR		0	2	0	0	0	0	22

ELEMENT		GEOMETRIC MEAN	GEOMETRIC DEVIATION	REMARKS
S-FE	%	5.828614	1.92	24 SAMPLES AND 24 ANALYTICAL VALUES.
S-MG	%	1.556184	1.65	24 SAMPLES AND 24 ANALYTICAL VALUES.
S-CA	%	1.632948	2.21	24 SAMPLES AND 24 ANALYTICAL VALUES.
S-TI	%	0.442441	1.64	24 SAMPLES AND 24 ANALYTICAL VALUES.
S-MN		642.628418	2.14	24 SAMPLES AND 24 ANALYTICAL VALUES.
S-AG		********	******	COHEN'S TABLE EXCEEDED. HI 0.81 OR GAMMA(1.1) GTR THAN ALLOW. NO COMPUTATIONS.

S-B	9.819305	1.84	9 NOT DETECTED, LESS THAN, OR TRACE VALUES.	15 REPORTED VALUES.	
S-BA	608.448730	2.40	1 NOT DETECTED, LESS THAN, OR TRACE VALUES.	23 REPORTED VALUES.	
S-BE	0.804535	1.44	13 NOT DETECTED, LESS THAN, OR TRACE VALUES.	11 REPORTED VALUES.	
S-CO	26.620834	1.89	2 NOT DETECTED, LESS THAN, OR TRACE VALUES.	22 REPORTED VALUES.	
S-CR	62.408493	2.33	1 NOT DETECTED, LESS THAN, OR TRACE VALUES.	23 REPORTED VALUES.	
S-CU	46.330750	2.57	24 SAMPLES AND 24 ANALYTICAL VALUES.		
S-LA	11.525841	2.13	17 NOT DETECTED, LESS THAN, OR TRACE VALUES.	7 REPORTED VALUES.	
S-MO	3.086188	1.53	17 NOT DETECTED, LESS THAN, OR TRACE VALUES.	7 REPORTED VALUES.	
S-NB	10.325225	1.26	4 NOT DETECTED, LESS THAN, OR TRACE VALUES.	20 REPORTED VALUES.	
S-NI	47.850479	2.26	24 SAMPLES AND 24 ANALYTICAL VALUES.		
S-PB	********	******	COHEN'S TABLE EXCEEDED. H(0.5) OR GAMMA(1.6) GTR THAN ALLOW. NO COMPUTATIONS.		
S-SC	17.723175	1.73	24 SAMPLES AND 24 ANALYTICAL VALUES.		
S-SR	238.552933	1.75	1 NOT DETECTED, LESS THAN, OR TRACE VALUES.	23 REPORTED VALUES.	
S-V	170.189468	2.05	24 SAMPLES AND 24 ANALYTICAL VALUES.		
S-Y	18.612701	1.54	24 SAMPLES AND 24 ANALYTICAL VALUES.		
S-ZN	********	******	COHEN'S TABLE EXCEEDED. H(0.8) OR GAMMA(1.8) GTR THAN ALLOW. NO COMPUTATIONS.		
S-ZR	73.274261	1.85	2 NOT DETECTED, LESS THAN, OR TRACE VALUES.	22 REPORTED VALUES.	