CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
1520 West Adams St.
Phoenix, AZ 85007
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

The following file is part of the

Arizona Department of Mines and Mineral Resources Mining Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

Kaaterskill Exploration *Geochemistry • Petrology • Structural Analysis*

691 ROBINSON DRIVE • PRESCOTT, ARIZONA 86303 • 602/778-5321

DRAFT

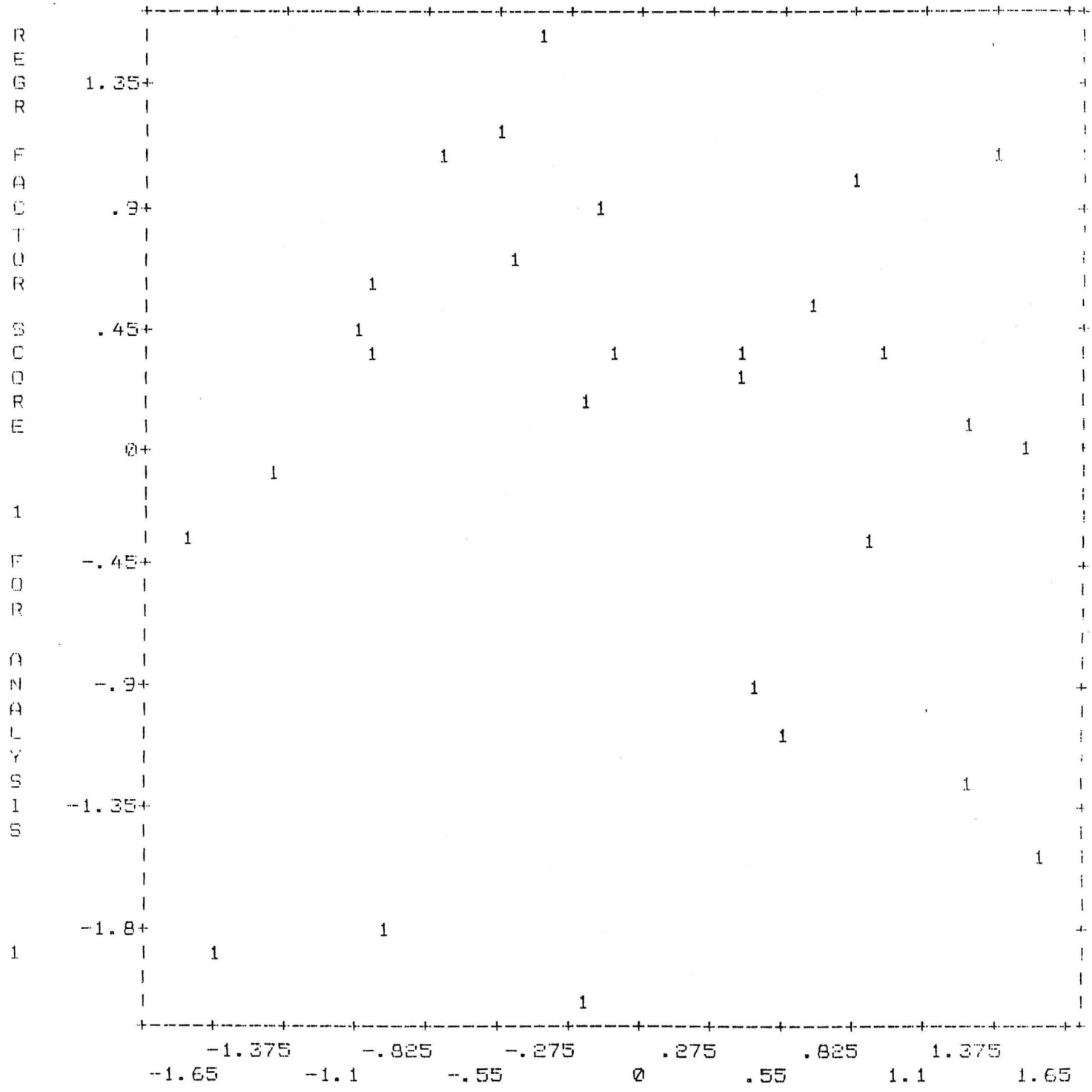
DUPLICATE

PROPERTY EXAMINATION REPORT December 12, 1990

PROPERTY NAME: Roadside Mine Lease	
PRIORITY: high	**COMMODITY:** gold
EXAMINED BY: P. O'Hara	
REPORT REQUESTED BY: Ivy Minerals Inc.	
AMS SHEET: Kingman	**TOPOGRAPHIC MAP:** Davis Dam 7.5' (AZ–NEV) Union Pass 7.5', Burns Spring 7.5' and Spirit Mountain 7.5' (AZ–NEV) (figure 1)
DISTRICT: Katherine	**COUNTY:** Mohave **STATE:** Arizona
TOWNSHIP,RANGE,SECTION:	T21N/R21W/S 1, 2, 3, 10, 11, 12, 13, 14, 24 T22N/R21W/S 25, 26, 27, 34, 35, 36 T21N/R20W/S 4, 6, 7, 18

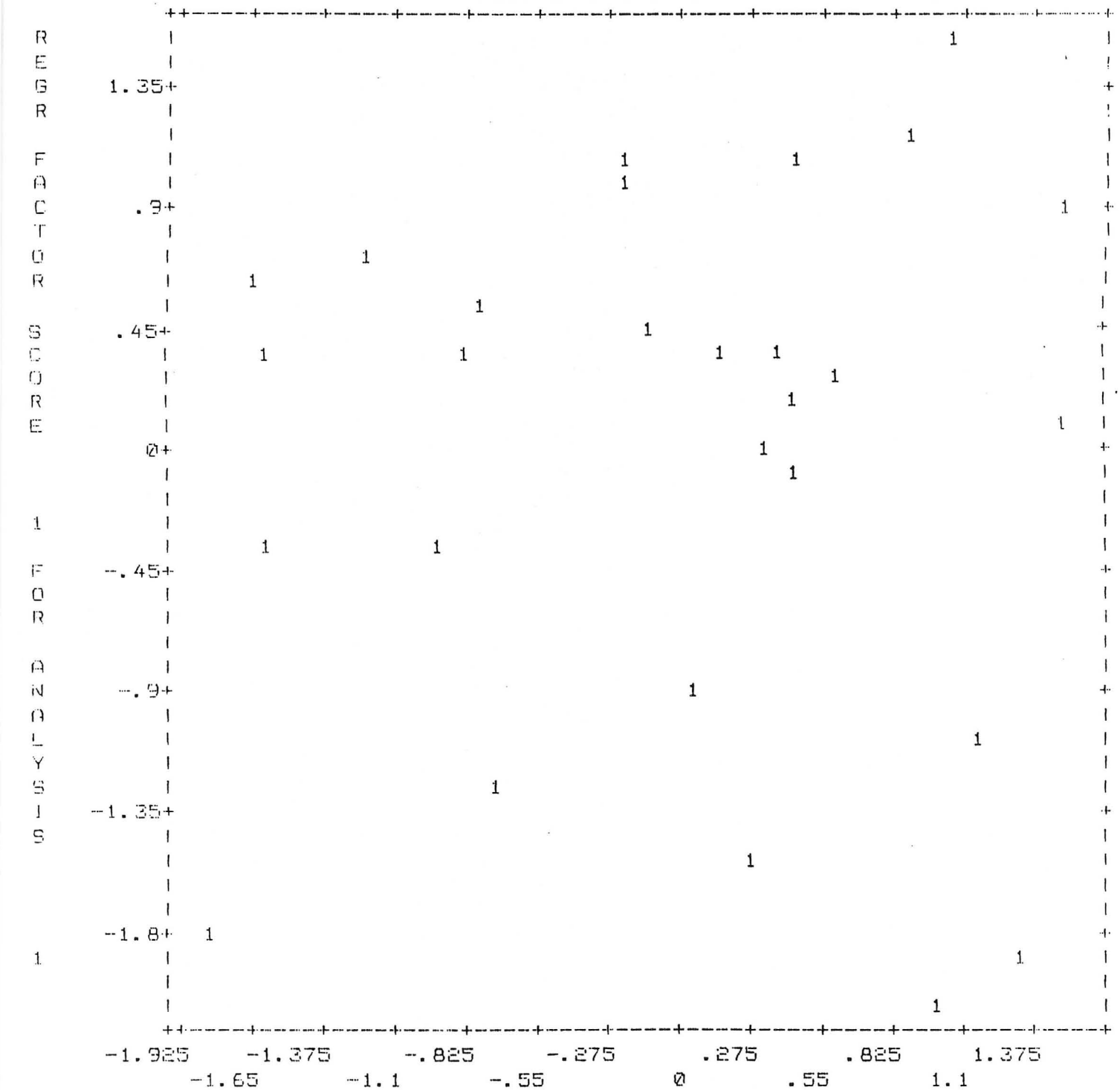
6/2002 JM - Con- of Report 10 of 10 file.

PLOT OF FACT1 WITH FACT2



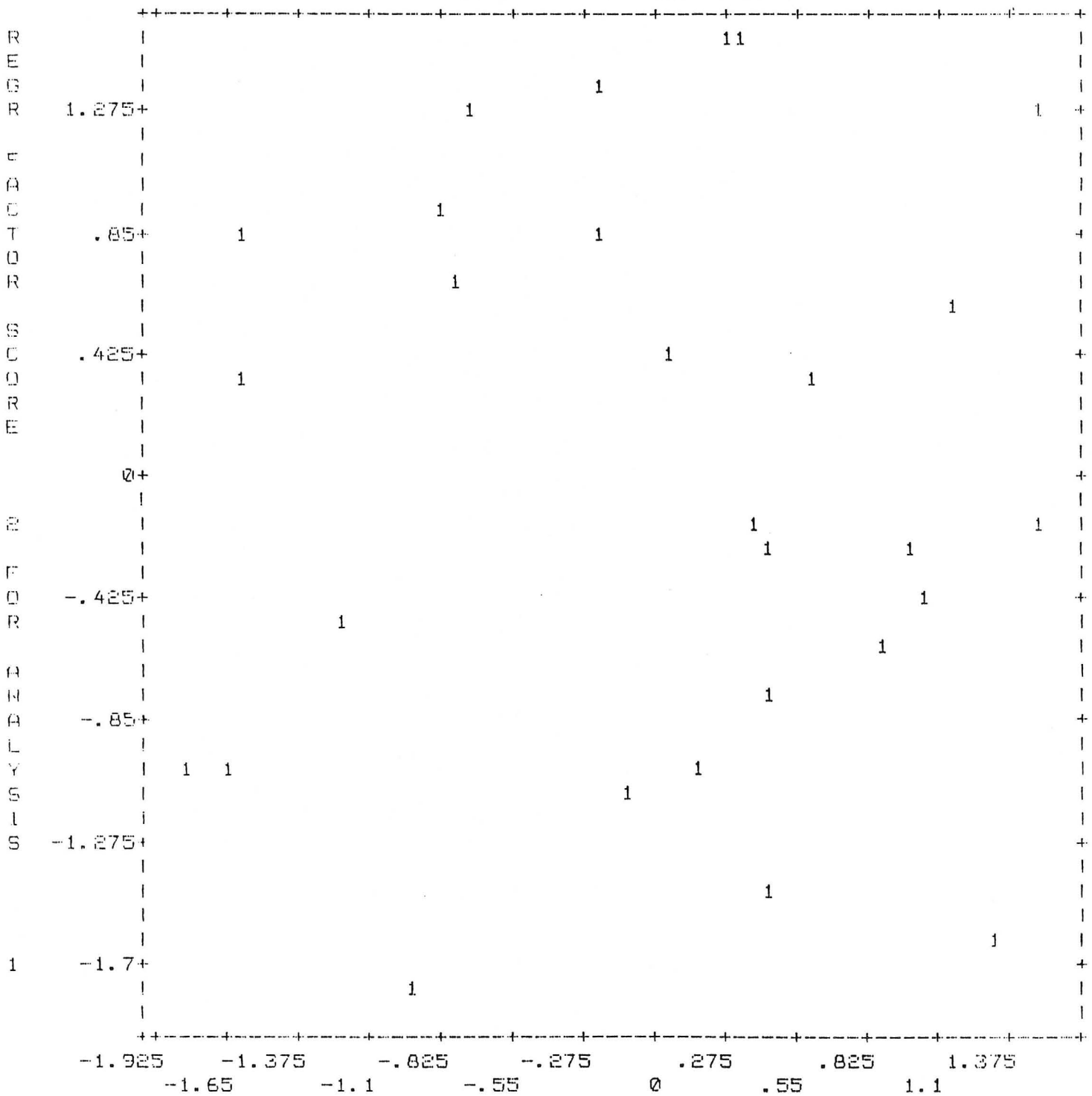
28 cases plotted.

PLOT OF FACT1 WITH FACT3



20 cases plotted.

PLOT OF FACT2 WITH FACT3



28 cases plotted.

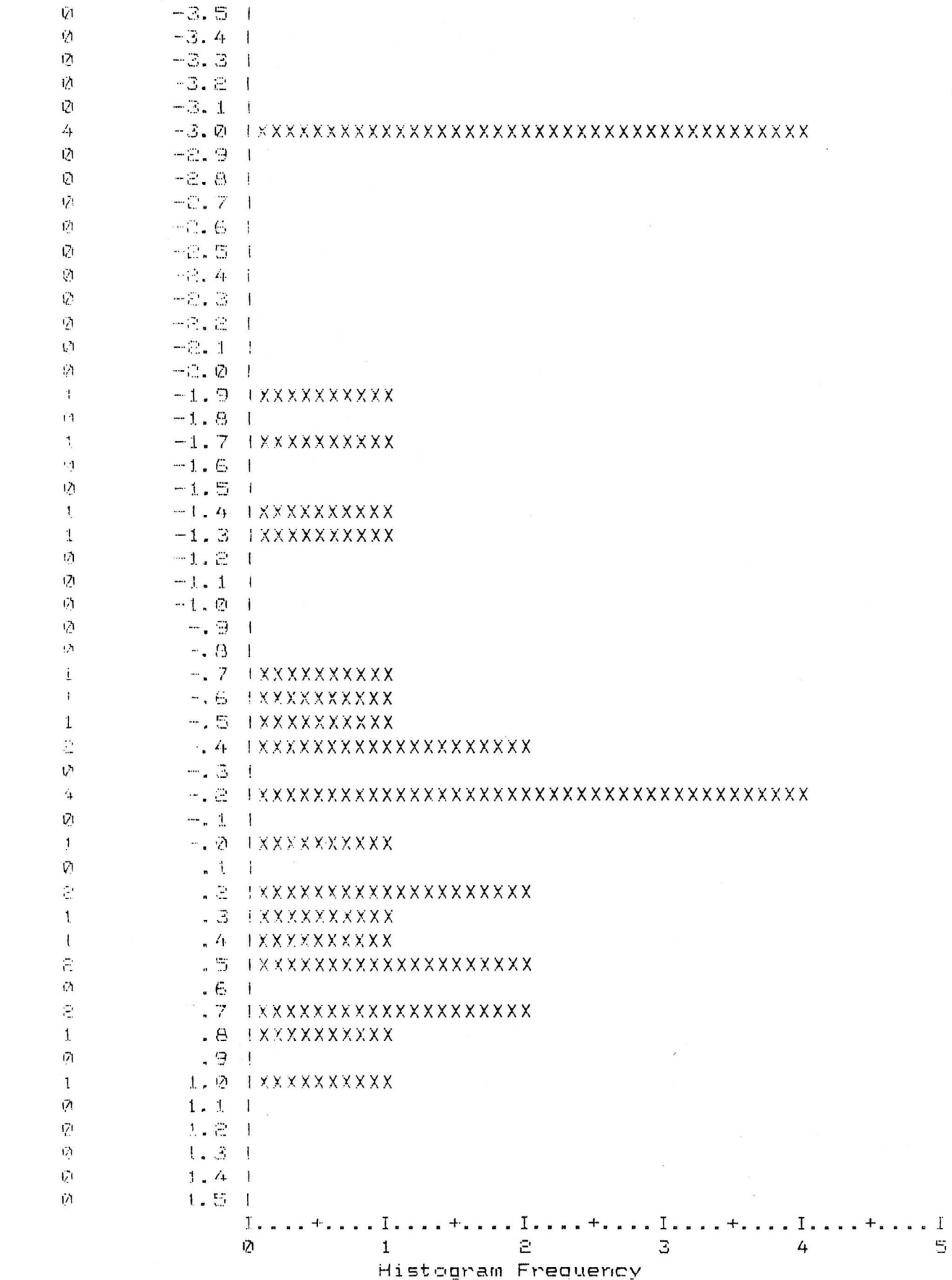
Number of Valid Observations (Listwise) = 28.00

Variable	Mean	Std Dev	Skewness	S.E. Skew	Minimum	Maximum	N
OU	1.64	2.42	2.10	.44	.00	10.00	28
OG	2.85	3.84	3.50	.44	.10	20.00	28
PG	.06	.10	5.04	.44	.01	.55	28
CU	14.04	11.75	1.47	.44	2.00	50.00	28
CB	16.04	28.88	3.99	.44	2.00	150.00	28
ZN	56.07	26.22	.55	.44	15.00	110.00	28
CR	205.00	47.88	-.17	.44	110.00	280.00	28
F	846.43	590.79	2.67	.44	200.00	3200.00	28
BA	482.14	347.05	.66	.44	40.00	1350.00	28
U	6.43	1.99	.75	.44	4.00	12.00	28
LOI	-.59	1.24	-.92	.44	-3.00	1.00	28
LOGS	.10	.06	-.61	.44	-1.00	1.30	28
HG	-1.43	.30	2.13	.44	-2.00	-.26	28
LCU	.90	.39	-.33	.44	.30	1.70	28
LPB	.83	.55	.58	.44	.30	2.18	28
LZN	1.70	.22	-.55	.44	1.18	2.04	28
LS	2.30	.11	-.56	.44	2.04	2.45	28
LP	2.86	.24	.46	.44	2.30	3.51	28
LBA	2.54	.41	-.70	.44	1.60	3.13	28
LW	.79	.13	.01	.44	.60	1.08	28

LAU

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	-3.00	4	14.3	14.3	14.3
	-1.92	1	3.6	3.6	17.9
	-1.72	1	3.6	3.6	21.4
	-1.42	1	3.6	3.6	25.0
	-1.30	1	3.6	3.6	28.6
	-.70	1	3.6	3.6	32.1
	-.57	1	3.6	3.6	35.7
	-.51	1	3.6	3.6	39.3
	-.42	1	3.6	3.6	42.9
	-.37	1	3.6	3.6	46.4
	-.23	1	3.6	3.6	50.0
	-.21	1	3.6	3.6	53.6
	-.19	1	3.6	3.6	57.1
	-.19	1	3.6	3.6	60.7
	0.0	1	3.6	3.6	64.3
	.18	1	3.6	3.6	67.9
	.20	1	3.6	3.6	71.4
	.30	1	3.6	3.6	75.0
	.41	1	3.6	3.6	78.6
	.46	1	3.6	3.6	82.1
	.52	1	3.6	3.6	85.7
	.70	1	3.6	3.6	89.3
	.72	1	3.6	3.6	92.9
	.82	1	3.6	3.6	96.4
	1.00	1	3.6	3.6	100.0
	TOTAL	28	100.0	100.0	

LAU


Count Midpoint
0 -3.5
0 -3.4
0 -3.3
0 -3.2
0 -3.1
4 -3.0 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
0 -2.9
0 -2.8
0 -2.7
0 -2.6
0 -2.5
0 -2.4
0 -2.3
0 -2.2
0 -2.1
0 -2.0
1 -1.9 XXXXXXXXXX
1 -1.8
1 -1.7 XXXXXXXXXX
1 -1.6
0 -1.5
1 -1.4 XXXXXXXXXX
1 -1.3 XXXXXXXXXX
0 -1.2
0 -1.1
0 -1.0
0 -.9
0 -.8
1 -.7 XXXXXXXXXX
1 -.6 XXXXXXXXXX
1 -.5 XXXXXXXXXX
2 -.4 XXXXXXXXXXXXXXXXXX
0 -.3
4 -.2 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
0 -.1
1 -.0 XXXXXXXXXX
0 .1
2 .2 XXXXXXXXXXXXXXXXXX
1 .3 XXXXXXXXXX
1 .4 XXXXXXXXXX
2 .5 XXXXXXXXXXXXXXXXXX
0 .6
2 .7 XXXXXXXXXXXXXXXXXX
1 .8 XXXXXXXXXX
0 .9
1 1.0 XXXXXXXXXX
0 1.1
0 1.2
0 1.3
0 1.4
0 1.5
I....+....I....+....I....+....I....+....I....+....I....+....I
0 1 2 3 4 5
Histogram Frequency

AU

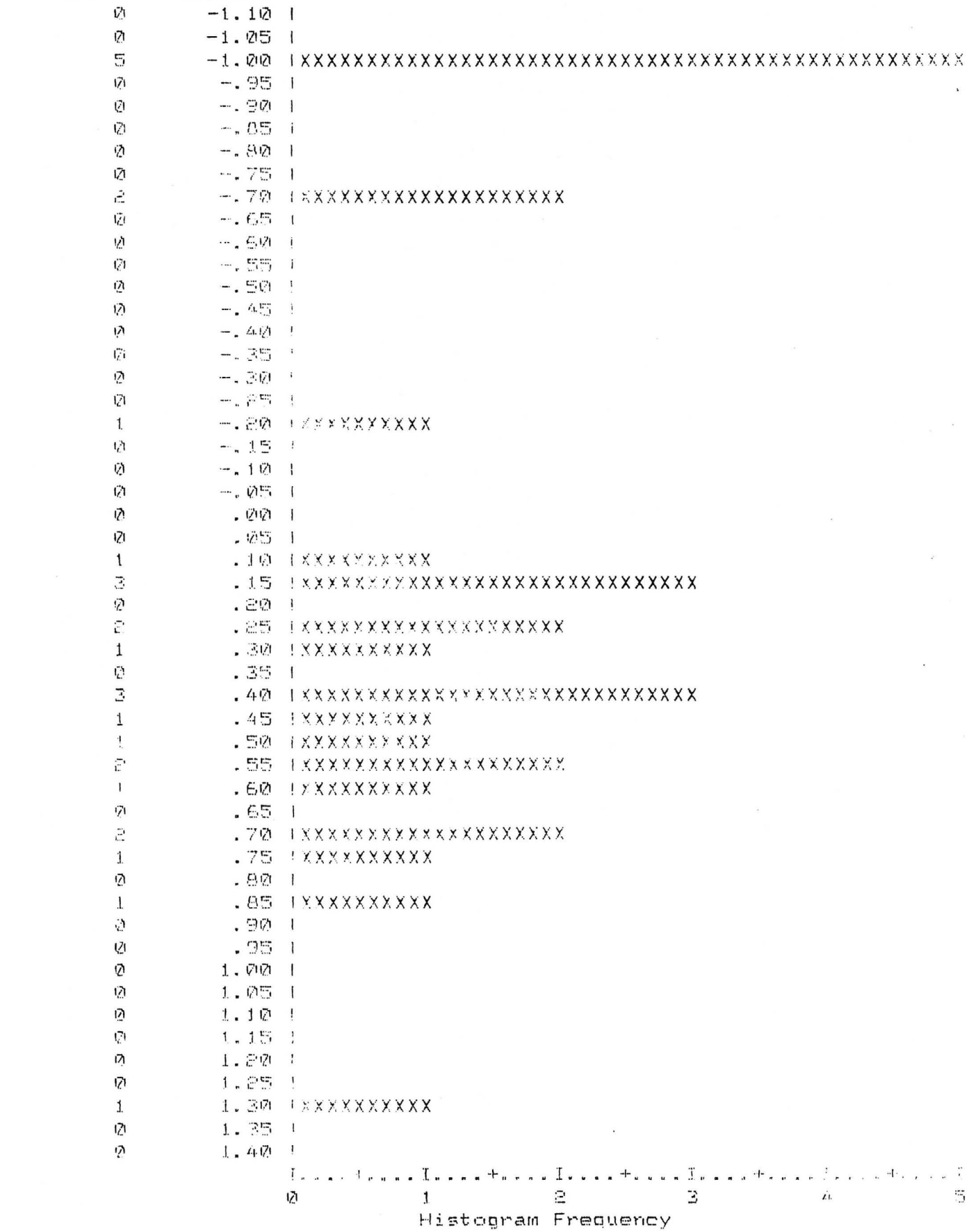
ean	-.587	Std Err	.235	Median	-.218
ode	-3.000	Std Dev	1.244	Variance	1.547
urtosis	-.225	S E Kurt	.858	Skewness	-.918
E Skew	.441	Range	4.000	Minimum	-3.000
aximum	1.000	Sum	-16.432		

alid Cases	28	Missing Cases	0

LAGG

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	-1.00	5	17.9	17.9	17.9
	-.70	2	7.1	7.1	25.0
	-.22	1	3.6	3.6	28.6
	.08	1	3.6	3.6	32.1
	.15	3	10.7	10.7	42.9
	.26	2	7.1	7.1	50.0
	.30	1	3.6	3.6	53.6
	.41	3	10.7	10.7	64.3
	.45	1	3.6	3.6	67.9
	.51	1	3.6	3.6	71.4
	.53	1	3.6	3.6	75.0
	.56	1	3.6	3.6	78.6
	.60	1	3.6	3.6	82.1
	.70	2	7.1	7.1	89.3
	.76	1	3.6	3.6	92.9
	.83	1	3.6	3.6	96.4
	1.30	1	3.6	3.6	100.0
	TOTAL	28	100.0	100.0	

LAGG


Count Midpoint
0 -1.10
0 -1.05
5 -1.00
0 -.95
0 -.90
0 -.85
0 -.80
0 -.75
2 -.70
0 -.65
0 -.60
0 -.55
0 -.50
0 -.45
0 -.40
0 -.35
0 -.30
0 -.25
1 -.20
0 -.15
0 -.10
0 -.05
0 .00
0 .05
1 .10
3 .15
0 .20
2 .25
1 .30
0 .35
3 .40
1 .45
1 .50
2 .55
1 .60
0 .65
2 .70
1 .75
0 .80
1 .85
0 .90
0 .95
0 1.00
0 1.05
0 1.10
0 1.15
0 1.20
0 1.25
1 1.30
0 1.35
0 1.40
0 1 2 3 4 5
Histogram Frequency

LAGG

Mean	.103	Std Err	.125	Median	.278
Mode	-1.000	Std Dev	.664	Variance	.440
Kurtosis	-.684	S E Kurt	.858	Skewness	-.608
S E Skew	.441	Range	2.301	Minimum	-1.000
Maximum	1.301	Sum	2.891		

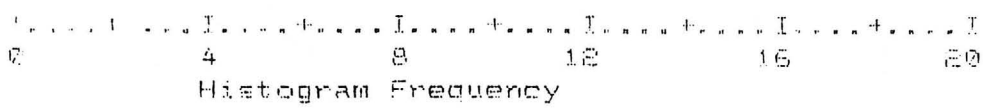
Valid Cases 28 Missing Cases 0

LHG

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	-2.00	1	3.6	3.6	3.6
	-1.70	4	14.3	14.3	17.9
	-1.52	11	39.3	39.3	57.1
	-1.40	5	17.9	17.9	75.0
	-1.30	3	10.7	10.7	85.7
	-1.22	1	3.6	3.6	89.3
	-1.10	1	3.6	3.6	92.9
	-1.05	1	3.6	3.6	96.4
	-.26	1	3.6	3.6	100.0
	TOTAL	28	100.0	100.0	

LHG

Count	Midpoint	
0	-2.13	!
0	-2.09	!
0	-2.05	!
1	-2.01	!XX
0	-1.97	!
0	-1.93	!
0	-1.89	!
0	-1.85	!
0	-1.81	!
0	-1.77	!
0	-1.73	!
4	-1.69	!XXXXXXXXXX
0	-1.65	!
0	-1.61	!
0	-1.57	!
11	-1.53	!XXXXXXXXXXXXXXXXXXXXXXXXXXX
0	-1.49	!
0	-1.45	!
5	-1.41	!XXXXXXXXXXX
0	-1.37	!
0	-1.33	!
3	-1.29	!XXXXXXX
0	-1.25	!
1	-1.21	!XX
0	-1.17	!
0	-1.13	!
1	-1.09	XX
1	-1.05	!XX
0	-1.01	!
0	-.97	!
0	-.93	!
0	-.89	!
0	-.85	!
0	-.81	!
0	.77	!
0	-.73	!
0	-.69	!
0	-.65	!
0	.61	!
0	-.57	!
0	.53	!
0	-.49	!
0	-.45	!
0	-.41	!
0	-.37	!
0	-.33	!
0	-.29	!
1	-.25	XX
0	-.21	!
0	-.17	!
0	-.13	!



Histogram Frequency

LHG

Mean	-1.431	Std Err	.057	Median	-1.523
Mode	-1.523	Std Dev	.300	Variance	.090
Kurtosis	8.263	S E Kurt	.858	Skewness	2.130
S E Skew	.441	Range	1.740	Minimum	-2.000
Maximum	-.260	Sum	-40.064		

Valid Cases 28 Missing Cases 0

LOU

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	.30	4	14.3	14.3	14.3
	.70	5	17.9	17.9	32.1
	1.00	7	25.0	25.0	57.1
	1.18	5	17.9	17.9	75.0
	1.30	2	7.1	7.1	82.1
	1.40	1	3.6	3.6	85.7
	1.48	1	3.6	3.6	89.3
	1.54	2	7.1	7.1	96.4
	1.70	1	3.6	3.6	100.0
	TOTAL	28	100.0	100.0	

LCU

Count	Midpoint	
0	.25	
0	.28	
4	.31	IXXXXXXXXXXXXXXXXXXX
0	.34	
0	.37	
0	.40	
0	.43	
0	.46	
0	.49	
0	.52	
0	.55	
0	.58	
0	.61	
0	.64	
0	.67	
5	.70	IXXXXXXXXXXXXXXXXXXXXXXXX
0	.73	
0	.76	
0	.79	
0	.82	
0	.85	
0	.88	
0	.91	
0	.94	
0	.97	
7	1.00	IXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
0	1.03	
0	1.06	
0	1.09	
0	1.12	
0	1.15	
5	1.18	IXXXXXXXXXXXXXXXXXXXXXX
0	1.21	
0	1.24	
0	1.27	
2	1.30	IXXXXXXXXX
0	1.33	
0	1.36	
1	1.39	IXXXX
0	1.42	
0	1.45	
1	1.48	IXXXXX
0	1.51	
2	1.54	IXXXXXXXXX
0	1.57	
0	1.60	
0	1.63	
0	1.66	
1	1.69	IXXXXX
0	1.72	
0	1.75	

I....+....I....+....I....+....I....+....I....+....I....+....I

0 2 4 6 8 10

Histogram Frequency

LCU

Mean	.994	Std Err	.075	Median	1.000
Mode	1.000	Std Dev	.395	Variance	.156
Kurtosis	-.518	S E Kurt	.858	Skewness	-.334
S E Skew	.441	Range	1.398	Minimum	.301
Maximum	1.699	Sum	27.844		

Valid Cases 28 Missing Cases 0

LPB

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	.30	12	42.9	42.9	42.9
	.70	2	7.1	7.1	50.0
	1.00	5	17.9	17.9	67.9
	1.18	2	7.1	7.1	75.0
	1.30	1	3.6	3.6	78.6
	1.40	2	7.1	7.1	85.7
	1.48	1	3.6	3.6	89.3
	1.60	1	3.6	3.6	92.9
	1.65	1	3.6	3.6	96.4
	2.18	1	3.6	3.6	100.0
	TOTAL	28	100.0	100.0	

LPB

Count	Midpoint	
0	.24	
0	.28	
12	.32	!XXXXXXXXXXXXXXXXXXXXXXXXXXXX
0	.36	
0	.40	
0	.44	
0	.48	
0	.52	
0	.56	
0	.60	
0	.64	
2	.68	!XXXXX
0	.72	
0	.76	
0	.80	
0	.84	
0	.88	
0	.92	
0	.96	
5	1.00	!XXXXXXXXXXX
0	1.04	
0	1.08	
0	1.12	
2	1.16	!XXXXX
0	1.20	
0	1.24	
0	1.28	
1	1.32	!X
0	1.36	
2	1.40	!XXXXX
0	1.44	
1	1.48	!X
0	1.52	
0	1.56	
1	1.60	!X
1	1.64	!X
0	1.68	
0	1.72	
0	1.76	
0	1.80	
0	1.84	
0	1.88	
0	1.92	
0	1.96	
0	2.00	
0	2.04	
0	2.08	
0	2.12	
1	2.16	!X
0	2.20	
0	2.24	

I....I....I....+....I....+....I....+....I....+....I....+....I

0 4 8 12 16 20

Histogram Frequency

_PB

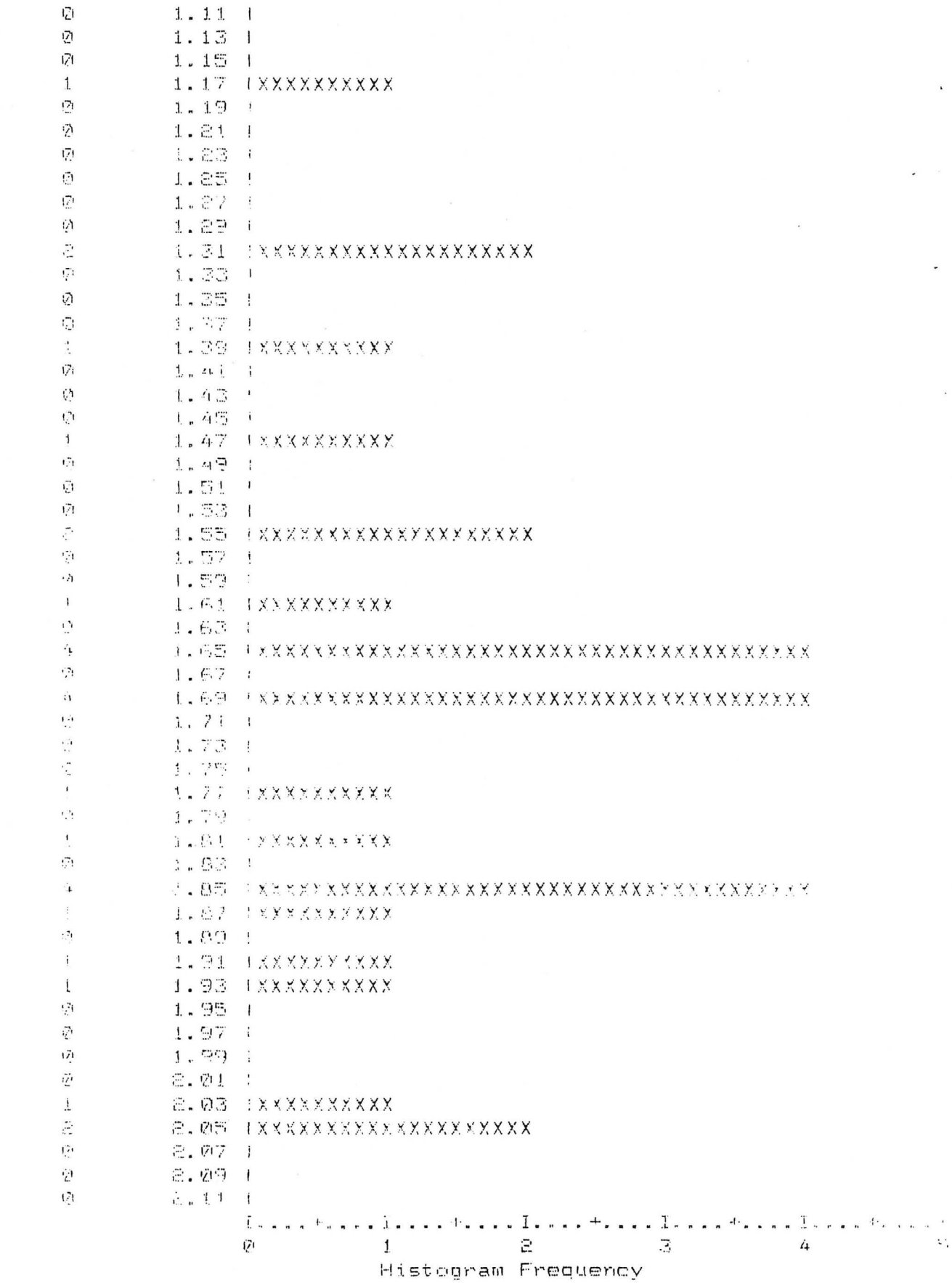
Mean	.835	Std Err	.104	Median	.849
Mode	.301	Std Dev	.549	Variance	.302
Kurtosis	-.591	S E Kurt	.858	Skewness	.581
S E Skew	.441	Range	1.875	Minimum	.301
Maximum	2.176	Sum	23.368		

Valid Cases	28	Missing Cases	0

LZN

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1.10	1	3.6	3.6	3.6
	1.30	2	7.1	7.1	10.7
	1.40	1	3.6	3.6	14.3
	1.48	1	3.6	3.6	17.9
	1.54	2	7.1	7.1	25.0
	1.60	1	3.6	3.6	28.6
	1.65	4	14.3	14.3	42.9
	1.70	4	14.3	14.3	57.1
	1.78	1	3.6	3.6	60.7
	1.81	1	3.6	3.6	64.3
	1.85	4	14.3	14.3	78.6
	1.88	1	3.6	3.6	82.1
	1.90	1	3.6	3.6	85.7
	1.93	1	3.6	3.6	89.3
	2.02	1	3.6	3.6	92.9
	2.04	2	7.1	7.1	100.0
	TOTAL	28	100.0	100.0	

LZN


Count Midpoint
0 1.11
0 1.13
0 1.15
1 1.17 XXXXXXXXXX
0 1.19
0 1.21
0 1.23
0 1.25
0 1.27
0 1.29
2 1.31 XXXXXXXXXXXXXXXXXXX
0 1.33
0 1.35
0 1.37
1 1.39 XXXXXXXXXX
0 1.41
0 1.43
0 1.45
1 1.47 XXXXXXXXXX
0 1.49
0 1.51
0 1.53
2 1.55 XXXXXXXXXXXXXXXXXXX
0 1.57
0 1.59
1 1.61 XXXXXXXXXX
0 1.63
4 1.65 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
0 1.67
4 1.69 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
0 1.71
0 1.73
0 1.75
1 1.77 XXXXXXXXXX
0 1.79
1 1.81 XXXXXXXXXX
0 1.83
4 1.85 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1 1.87 XXXXXXXXXX
0 1.89
1 1.91 XXXXXXXXXX
1 1.93 XXXXXXXXXX
0 1.95
0 1.97
0 1.99
0 2.01
1 2.03 XXXXXXXXXX
2 2.05 XXXXXXXXXXXXXXXXXXX
0 2.07
0 2.09
0 2.11
0 1 2 3 4
Histogram Frequency

.ZN

'ean	1.698	Std Err	.042	Median	1.699
'ode	1.653	Std Dev	.225	Variance	.051
urtosis	-.071	S E Kurt	.858	Skewness	-.549
E Skew	.441	Range	.865	Minimum	1.176
'aximum	2.041	Sum	47.535		

alid Cases	28	Missing Cases	0

Client ID IVY02316	Lab ID	FA/AA Au oz/ton	Au ppb
240-245'	2316- 42	0.002	50

24. Report on statistical study of Roadside Mine data

Kaaterskill Exploration

Geochemistry • Petrology • Structural Analysis

691 ROBINSON DRIVE • PRESCOTT, ARIZONA 86303 • 602/778-5321

To: Peter Kirwin
From: Pat O'Hara
Subject: Preliminary Results of the Geochemical Study of the Roadside Mine Database.
Date October 9, 1989

Dear Peter:

Statistical analysis of the Roadside Mine database demonstrates significant differences between the four preselected subpopulations; namely:

1. mineralized
2. barren
3. above mineralization
4. rhyolite

One hundred-twenty samples were selected from the 1988 IVY reverse circulation drilling program. Thirty samples, which characterize each subpopulation, were chosen and then sent to Bondar-Clegg (Au + 33, INNA) and ACME (ICP + Au + Hg, standard ACNC analyses) for analysis. One pulp from the "above mineralization" subpopulation was lost. Therefore, twenty-nine samples characterize this subpopulation.

Descriptive statistics (Table 1) were calculated for the whole database. Each variable was analysed as an arithmetic population and as a log 10 normalized population. The choice of population for further analysis was made based upon lower skewness.

Figure 1 illustrates the relationship between Bondar-Clegg gold analyses (INNA) and ACME gold analyses (acid leach/AA). Perfect reproducibility (precision) is demonstrated by a straight line which passes through the origin with a slope of 1.0 (illustrated by the line in Figure 1). Although there is more scatter above 1.0 ppm, the results do approximate the straight line. Therefore, the Bondar-Clegg results were used to represent gold for the statistical analyses.

Discriminant analysis is a multivariate technique, which maximizes the differences between two populations using a linear function. Table 2 illustrates the form of the computer printout. Table 2a lists the variables in order of their contribution to the solution; in this case between the mineralized and barren subpopulations. Table 2b illustrates the actual equation which was calculated. This equation takes the form of:

$$D.F. = -.04 (\text{Log } 10\ AS) - .25 (\text{Log } 10\ BA).....$$

where As and Ba are the elemental concentrations reported by the laboratory. Once the equation is deduced, a test is performed, which

Number of Valid Observations (Listwise) = 119.00

Variable	Mean	Std Dev	Skewness	S.E. Skew	Minimum	Maximum	N
CODE	2.50	1.13	.01	.22	1.00	4.00	119
AS	6.49	5.75	7.85	.22	2.00	68.00	119
BA	476.22	445.95	.82	.22	50.00	1700.00	119
CE	88.92	51.48	.98	.22	18.00	270.00	119
FE	2.05	1.39	.63	.22	.25	6.30	119
HF	6.07	2.29	.03	.22	1.00	12.00	119
LA	40.13	22.61	.71	.22	5.00	96.00	119
NA	1.03	.58	-.09	.22	.08	2.40	119
RB	205.29	50.64	.52	.22	80.00	350.00	119
SB	2.94	1.71	.97	.22	.70	8.70	119
SC	6.20	5.30	1.90	.22	.70	35.00	119
SM	6.72	5.22	2.06	.22	.50	30.30	119
TH	17.15	9.08	1.22	.22	3.10	54.80	119
U	3.85	2.51	1.57	.22	.90	13.00	119
W	3.61	2.56	1.63	.22	1.00	14.00	119
MO	2.79	4.30	8.77	.22	1.00	46.00	119
CU	22.44	13.08	1.96	.22	9.00	80.00	119
PB	28.92	18.54	.74	.22	2.00	79.00	119
ZN	61.39	27.11	1.87	.22	10.00	188.00	119
AG	.83	.77	1.43	.22	.10	3.30	119
NI	11.66	13.50	3.43	.22	4.00	89.00	119
CO	5.97	4.76	1.41	.22	1.00	27.00	119
MN	517.11	368.71	3.14	.22	80.00	2603.00	119
SR	20.80	12.62	.86	.22	3.00	60.00	119
V	17.45	14.50	1.50	.22	1.00	75.00	119
CA	.64	.49	1.55	.22	.04	2.99	119
P	.07	.05	.28	.22	.00	.19	119
CR	25.08	26.39	3.32	.22	10.00	155.00	119
MG	.54	.48	1.67	.22	.01	2.68	119
TI	.02	.01	3.74	.22	.01	.09	119
B	4.92	3.80	2.19	.22	2.00	23.00	119
AU	314.16	543.21	2.57	.22	1.00	2750.00	119
HG	75.29	53.28	.61	.22	5.00	280.00	119
LAS	.75	.20	1.42	.22	.30	1.79	119
LBA	2.43	.51	-.15	.22	1.70	3.23	119
LCE	1.88	.26	-.09	.22	1.26	2.43	119
LFE	.19	.36	-.60	.22	-.60	.80	119
LHF	.74	.20	-1.24	.22	0.0	1.08	119
LLA	1.53	.26	-.28	.22	.70	1.98	119
LNA	-.10	.36	-.97	.22	-1.10	.38	119
LRB	2.30	.11	-.38	.22	1.90	2.54	119
LSB	.40	.26	-.03	.22	-.15	.94	119
LSC	.63	.40	-.25	.22	-.15	1.54	119
LSM	.71	.33	-.22	.22	-.30	1.48	119
LTH	1.17	.25	-.56	.22	.49	1.74	119
LU	.51	.26	.26	.22	-.05	1.11	119
LW	.45	.32	-.21	.22	0.0	1.15	119
LMO	.31	.31	.81	.22	0.0	1.66	119
LCU	1.30	.20	.86	.22	.95	1.90	119
LPB	1.36	.33	-.66	.22	.30	1.90	119
LZN	1.75	.18	-.33	.22	1.00	2.27	119
LAGG	-.25	.39	.13	.22	-1.00	.52	119
LNI	.94	.28	1.66	.22	.60	1.95	119
LCO	.68	.39	-.33	.22	0.0	1.43	119
LMN	2.64	.25	.04	.22	1.90	3.42	119
LSR	1.23	.29	-.41	.22	.48	1.78	119
LV	1.07	.42	-.39	.22	0.0	1.88	119
LCA	-.33	.37	-.52	.22	-1.40	.48	119
LP	-1.44	.61	-.87	.22	-3.00	-.72	119
LCR	1.29	.25	2.08	.22	1.00	2.19	119
LMG	-.46	.47	-.81	.22	-2.00	.43	119
LTI	-1.88	.20	1.64	.22	-2.00	-1.05	119
LB	.50	.26	.78	.22	.30	1.36	119
LAU	1.83	.85	.09	.22	0.0	3.44	119
LHG	1.70	.46	-.83	.22	.70	2.45	119

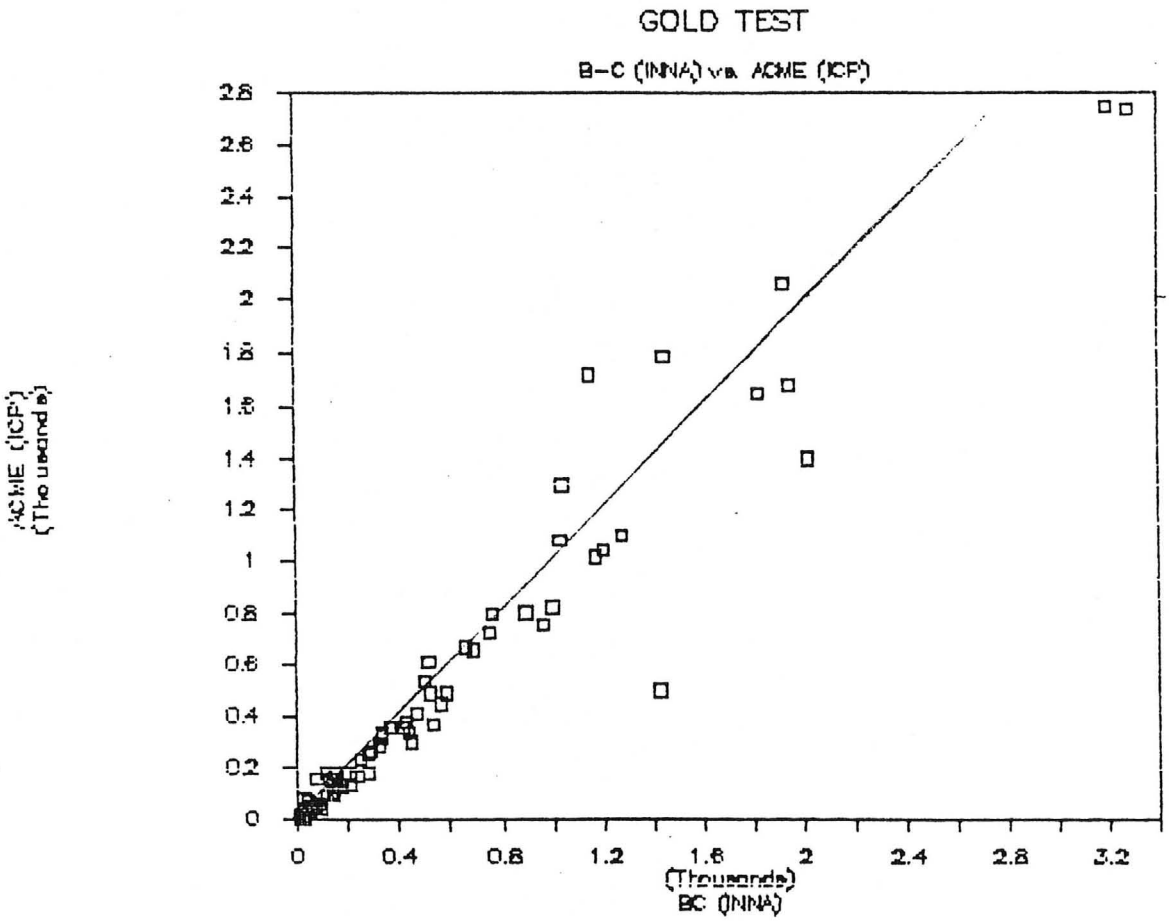

GOLD TEST
B-C (INNA) vs. ACME (ICP)
ACME (ICP)
(Thousands)
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
(Thousands)
BC (INNA)

Figure 1.

... variables ordered by size of correlation within function)

	FUNC		
LAU	-.61831	LMG	.09592
LSB	-.40978	LB	-.08581
LAGG	-.36974	LFE	.08422
LHG	.36225	LV	.07817
HF	.20291	LRB	.07784
LLA	.16759	LCO	.07243
LCE	.16450	LMN	.06924
LSM	.15966	LU	.06689
P	.15626	LCR	-.04861
LPB	-.15100	LTI	.04459
LCU	-.15020	LNI	-.04220
NA	.12758	LMO	-.04044
LSC	.12433	LW	.03507
LSR	.11155	LTH	-.02854
LAS	-.10665	LZN	.02032
LBA	.10578	LCA	-.00431

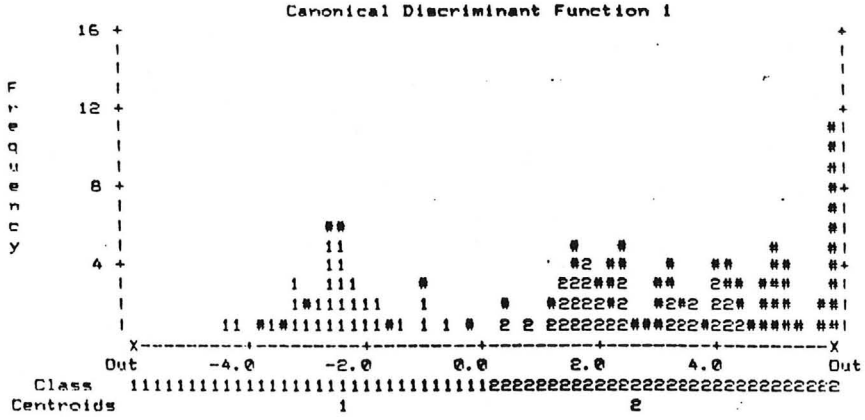
B. Standardized Canonical Discriminant Function Coefficients

	FUNC 1		
LAS	-.04454	LPB	1.02613
LBA	-.24821	LZN	-.51367
LCE	-1.34413	LAGG	-.35597
LFE	.49019	LNI	-1.66944
HF	.21255	LCO	.71349
LLA	1.32958	LMN	-.60829
NA	.21331	LSR	.77954
LRB	.66248	LV	1.83060
LSB	-.00763	LCA	-.26026
LSC	-2.75723	P	.86091
LSM	.14390	LCR	1.14137
LTH	-.59529	LMG	.30370
LU	.51769	LTI	-.50207
LW	-.32878	LB	.18969
LMO	-.24551	LAU	-1.23045
LCU	.33301	LHG	.18099

C.

All-groups stacked Histogram

Canonical Discriminant Function 1



D.

Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 1	2
Group 1	30	30	0
		100.0%	.0%
Group 2	30	0	30
		.0%	100.0%
Ungrouped Cases	59	8	51
		13.6%	86.4%

Percent of "grouped" cases correctly classified: 100.00%

Table 2.

determines the usefullness of the equation. The test uses the sample data set as knowns and applies the equation to each sample. The number of correct assignments is summarized pictorally (Table 2c) and in a chart (Table 2d). Multiple runs were made using various subsets of elements inorder to determine the best "exploration" suits of elements for each test between subpopulations. The functions are summarized below (all results are in Appendix 1):

mineralized vs barren (95% reliability)

D.F. = .84 (Log 10 Au) - Log 10 Sb + .05 (Log 10 Ag) - .34 (Log 10 Hg) + .14 Hf - .17 (Log 10 La)

mineralized vs "above mineralization" (88% reliability)

D.F. = 1.04 (Log 10 Au) - .23 (Log 10 Ag) + .35 (Log 10 Sb) - Log 10 Pb - .09 (Log 10 Cu) - .50 (Log 10 Hg) + .36 (Log 10 Rb) + .18 Hf + 19 Na + .39 P - .29 (Log 10 B)

mineralized vs rhyolite (88% reliability)

D.F. = .48 (Log 10 Au) + j.90 (Log 10 Sb) - .20 (Log 10 Ag) + .45 (Log 10 Hg) - .61 (Log 10 Ba) + .57 (Log 10 Hf)

barren vs "above mineralization" (80% reliability)

D.F. = .79 (Log 10 Ce) - .26 (Log 10 La) - .34 (Log 10 Sm) + .32 (Log 10 ScJ) + .60 (Log 10 Sr) - .15 (Log 10 Sb) - .90 (log 10 B) - .08 (Log 10 Pb) + .31 (Log 10 Ag) - .37 (Log 10 Cu) + .43 (Log 10 Zn) + .25 (Log 10 Mo)

barren vs rhyolite (97% reliability)

D.F. = .96 (Log 10 Sb) + .81 (Log 10 Zn) + .26 (Log 10 Au) + .31 (Log 10 U) - .05 (Log 10 Ni) - .53 (Log 10 Ba) + .17 (Log 10 La) + .51 Na + .17 (Log 10 Ca) + .28 (Log 10 Hg) + .37 Hf

"above mineralization" vs rhyolite (90% reliability)

D.F. = .90 (Log 10 Sb) - .02 (Log 10 Au) + .37 (Log 10 Pb) + .80 (Log 10 Ni) - .10 (Log 10 Cu) + .38 (log 10 B) - .49 (Log 10 Mo) - 1.12 (Log 10 Ba) - 3.39 (log 10 La) + 1.69 (Log 10 Ce) + 4.01 (log 10 Sm) - 1.66 (Log 10 V) + .18 Hf - .20 (Log 10 Hg)

Factor analysis using Principle Component Analysis with a varimax rotation generates elemental assocaition within a database. This procedure was run on the entire databasae, on each of the four subpopulations as well as on a subset of "all samples minus rhyolite." The varimax subroutine was unable to generate a satisfactory conclusion for the sample set "all samples minus rhyolite" after 25 iterations. Therefore, a quartimax rotation was used to generate favorable results.

Table 3 summarizes the results using the entire database (probably an apples and oranges type situation). Gold and silver are related and together are weakly inversly related to mercury plus rubidium (Factor 3). Factor 1 appears to represent the various mineralogical changes

ALL

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7
LOG 10 AS					0.71		
LOG 10 BA	0.74						
LOG 10 CE	0.89						
LOG 10 FE	0.76						
HF	0.79						
LOG 10 LA	0.91						
NA	0.8						
LOG 10 RB			-0.62				
LOG 10 SB	-0.67						
LOG 10 SC	0.85						
LOG 10 SM	0.95						
LOG 10 TH				0.63			
LOG 10 U				0.87			
LOG 10 W							
LOG 10 MO	-0.72						
LOG 10 CU		0.7					
LOG 10 PB	-0.6						
LOG 10 ZN		0.63					
LOG10 AG			0.8				
LOG 10 NI		0.93					
LOG 10 CO	0.79						
LOG 10 MN		0.71					
LOG 10 SR	0.81						
LOG 10 V	0.81						
LOG 10 CA	0.74						
P	0.89						
LOG 10 CR		0.93					
LOG 10 MG	0.79						
LOG 10 TI	0.54						
LOG 10 B							
LOG 10 AU			0.83				
LOG 10 HG	0.57		-0.6				

Table 3

associated with alteration. Ba (barite or substitution in feldspar?), LREE + P (monazite?), Hf (analog for zircon?) are associated with Fe (most likely dominated by FeOx), Mg (dolomite-ankerite with Ca + Fe or with Fe as a ferromagnesian mineral?). Na may be related to the destruction of feldspar with a Na for K exchange. It is interesting to note that all these potential alteration effects vary inversly with antimony, molybdenum and lead.

Table 4 summarizes the factor analysis results on the mineralized subpopulation. Gold is weakly inversly related to tungsten. Ba, Hg, Hf and LRRE (La Ce + Sm) are inversly related to Sb (Factor 2). Aside from the LREE partial partitioning into Factor 2 with Hf, Factor 1 remains similar to Factor 1 for the entire database.

A detailed report on all factor associations will be prepared at a later date. The following description will demonstrate the elements associated with gold in each subpopulation.

In Table 5, which summarizes factor loadings for barren rocks, gold is associated with silver and arsenic. The rhyolite subpopulation illustrates a gold + arsenic association (Table 6). Table 7 illustrates that gold and arsenic are also associated in the "above mineralization" subpopulation. In the "all granodiorite" group (mineralized + barren + "above mineralization") gold and silver are associated and are inversly related to rubidium.

Sincerely,

Pat O'H

Pat O'Hara
PO'H/mab

Appendix 1. Discriminant Function results

a. mineralized vs barren
b. mineralized vs "above mineralization"
c. rhyolite vs mineralized
d. barren vs "above mineralization"
e. barren vs rhyolite
f. "above mineralization" vs rhyolite

MINERALIZED

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7
LOG 10 AS			0.81				
LOG 10 BA		0.66					
LOG 10 CE		0.82					
LOG 10 FE	0.9						
HF		0.83					
LOG 10 LA		0.84					
NA	0.76						
LOG 10 RB	-0.76						
LOG 10 SB		-0.89					
LOG 10 SC	0.91						
LOG 10 SM	0.62	0.74					
LOG 10 TH	-0.6						
LOG 10 U				-0.84			
LOG 10 W	0.63					-0.61	
LOG 10 MO	-0.75						
LOG 10 CU			0.58				
LOG 10 PB			0.69				
LOG 10 ZN	0.6		0.67				
LOG10 AG					-0.74		
LOG 10 NI	0.73						
LOG 10 CO	0.94						
LOG 10 MN	0.73						
LOG 10 SR	0.89						
LOG 10 V	0.94						
LOG 10 CA	0.66						
P	0.79						
LOG 10 CR	0.67						
LOG 10 MG	0.92						
LOG 10 TI							
LOG 10 B							
LOG 10 AU						0.87	
LOG 10 HG		0.81					

Table 4

BARREN

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7
LOG 10 AS				0.55			
LOG 10 BA	0.6		0.65				
LOG 10 CE	0.87						
LOG 10 FE	0.77						
HF							
LOG 10 LA	0.91						
NA	0.73						
LOG 10 RB	-0.75						
LOG 10 SB					-0.58		
LOG 10 SC	0.76						
LOG 10 SM	0.89						
LOG 10 TH						0.68	
LOG 10 U			-0.81				
LOG 10 W		0.55					
LOG 10 MO	-0.67						
LOG 10 CU		-0.67					
LOG 10 PB	-0.62						
LOG 10 ZN		0.79					
LOG10 AG				0.73			
LOG 10 NI		0.92					
LOG 10 CO	0.78						
LOG 10 MN		0.82					
LOG 10 SR	0.76						
LOG 10 V	0.75	0.56					
LOG 10 CA	0.84						
P	0.82						
LOG 10 CR		0.94					
LOG 10 MG	0.73						
LOG 10 TI			0.74				
LOG 10 B			0.69				
LOG 10 AU				0.74			
LOG 10 HG					0.84		

Table 5

RHYOLITE

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7
LOG 10 AS				0.66			
LOG 10 BA	0.74						
LOG 10 CE	0.92						
LOG 10 FE	0.65						
HF	0.83						
LOG 10 LA	0.91						
NA	0.69						
LOG 10 RB		-0.64					
LOG 10 SB	-0.8						
LOG 10 SC	0.78	0.56					
LOG 10 SM	0.91						
LOG 10 TH		-0.91					
LOG 10 U		-0.85					
LOG 10 W					0.83		
LOG 10 MO	-0.57	-0.61					
LOG 10 CU			0.84				
LOG 10 PB		-0.55					
LOG 10 ZN							
LOG10 AG							
LOG 10 NI			0.92		0.78		
LOG 10 CO	0.74	0.56					
LOG 10 MN			0.58				
LOG 10 SR		0.76					
LOG 10 V	0.84						
LOG 10 CA		0.75					
P	0.87						
LOG 10 CR			0.87				
LOG 10 MG	0.78						
LOG 10 TI						0.57	
LOG 10 B					0.56		
LOG 10 AU				0.8			
LOG 10 HG						-0.57	

Table 6

ABOVE ORE

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7
LOG 10 AS				0.63			
LOG 10 BA	0.86						
LOG 10 CE	0.9						
LOG 10 FE	0.91						
HF	0.86						
LOG 10 LA	0.92						
NA	0.89						
LOG 10 RB		0.78					
LOG 10 SB	-0.88						
LOG 10 SC	0.98						
LOG 10 SM	0.97						
LOG 10 TH		0.85					
LOG 10 U		0.78					
LOG 10 W		-0.76					
LOG 10 MO	-0.82						
LOG 10 CU			0.74				
LOG 10 PB	-0.56				0.61		
LOG 10 ZN	0.61				0.7		
LOG10 AG		-0.56					
LOG 10 NI	0.67		0.64				
LOG 10 CO	0.93						
LOG 10 MN	0.88						
LOG 10 SR	0.96						
LOG 10 V	0.96						
LOG 10 CA	0.9						
P	0.9						
LOG 10 CR			0.77				
LOG 10 MG	0.95						
LOG 10 TI	0.84						
LOG 10 B	0.81						
LOG 10 AU				0.79			
LOG 10 HG							

Table 7

ALL GRANODIORITE

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7
LOG 10 AS					0.66		
LOG 10 BA	0.79						
LOG 10 CE	0.86						
LOG 10 FE	0.83						
HF	0.72						
LOG 10 LA	0.88						
NA	0.83						
LOG 10 RB			-0.67				
LOG 10 SB	-0.66						
LOG 10 SC	0.92						
LOG 10 SM	0.96						
LOG 10 TH				0.55			
LOG 10 U				0.85			
LOG 10 W							
LOG 10 MO	-0.74						
LOG 10 CU		0.78					
LOG 10 PB	-0.57						
LOG 10 ZN		0.66					
LOG10 AG			0.77				
LOG 10 NI		0.92					
LOG 10 CO	0.86						
LOG 10 MN	0.61	0.63					
LOG 10 SR	0.89						
LOG 10 V	0.9						
LOG 10 CA	0.79						
P	0.94						
LOG 10 CR		0.94					
LOG 10 MG	0.85						
LOG 10 TI	0.61						
LOG 10 B							
LOG 10 AU			0.78				
LOG 10 HG	0.59						

Table 8

a. mineralized vs barren

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LAS	-.04454
LBA	-.24821
LCE	-1.34413
LFE	.49019
HF	.21255
LLA	1.32958
NA	.21331
LRB	.66248
LSB	-.00763
LSC	-2.75723
LSM	.14390
LTH	-.59529
LU	.51769
LW	-.32878
LMO	-.24551
LCU	.33301
LPB	1.02613
LZN	-.51367
LAGG	-.35597
LNI	-1.66944
LCO	.71349
LMN	-.60829
LSR	.77954
LV	1.83060
LCA	-.26026
P	.86091
LCR	1.14137
LMG	.30370
LTI	-.50207
LB	.18969
LAU	-1.23045
LHG	.18099

Structure Matrix:

Pooled-within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LAU	-.61831
LSB	-.40978
LAGG	-.36974
LHG	.36225
HF	.20291
LLA	.16759
LCE	.16450
LSM	.15966
P	.15626
LPB	-.15100
LCU	-.15020
NA	.12758
LSC	.12433
LSR	.11155
LAS	-.10665
LBA	.10578
LMG	.09592
LB	-.08581
LFE	.08422
LV	.07817
LRB	.07784
LCO	.07243
LMN	.06924
LU	.06689
LCR	-.04861
LTI	.04459
LNI	-.04220
LMO	-.04044
LW	.03507
LTH	-.02854
LZN	.02032
LCA	-.00431

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

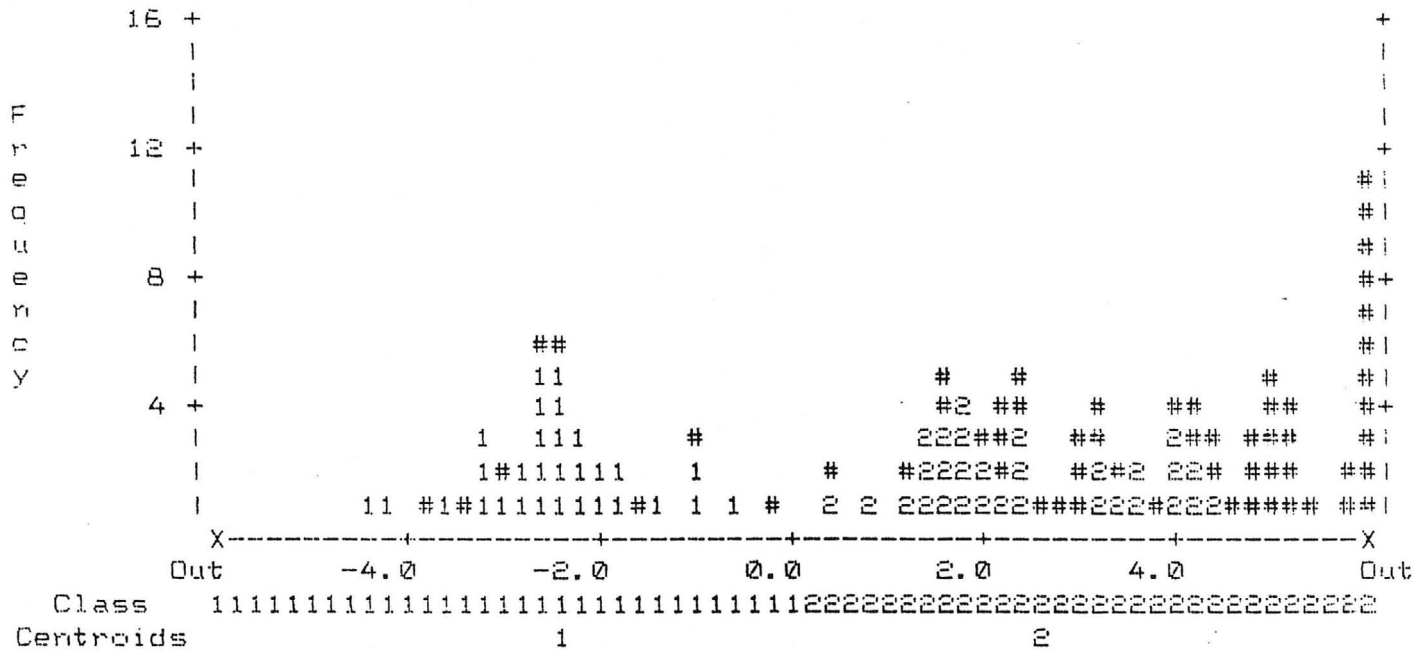
Group	FUNC 1
1	-2.45337
2	2.45337

Symbols used in Plots

Symbol	Group	Label
1	1	
2	2	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 1	2
Group 1	30	30	0
		100.0%	.0%
Group 2	30	0	30
		.0%	100.0%
Ungrouped Cases	59	8	51
		13.6%	86.4%

Percent of "grouped" cases correctly classified: 100.00%

Classification Processing Summary
119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.

- - - - - - - - - D I S C R I M I N A N T A N A L Y S I S - - - - - - - - -

On groups defined by CODE

Analysis number 1
Direct method: All variables passing the tolerance test are entered.
Minimum Tolerance Level..... .00100

Canonical Discriminant Functions

Maximum number of functions..... 1
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

Prior probability for each group is .50000

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chisquare	DF	Sig
					: 0	.2324	76.619	11	.000
1*	3.3034	100.00	100.00	.8761	:				

* marks the 1 canonical discriminant functions remaining in the analysis.

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LAU	.82186
AP	.06629
LAGG	.18784
PR	-.11882
LCU	.02271
PG	-.33783
HP	.03704
LO	-1.29571
LDE	1.13473
SM	.06743
P	-.84147

Structure Matrix:

Pooled-within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LAU	.84889
LSB	.56259
LAGG	.50762
LHG	-.49734
HF	-.27858
LLA	-.23009
LDE	-.22584
LSM	-.21919
S	-.21453
LPB	.20732
LDU	.20622

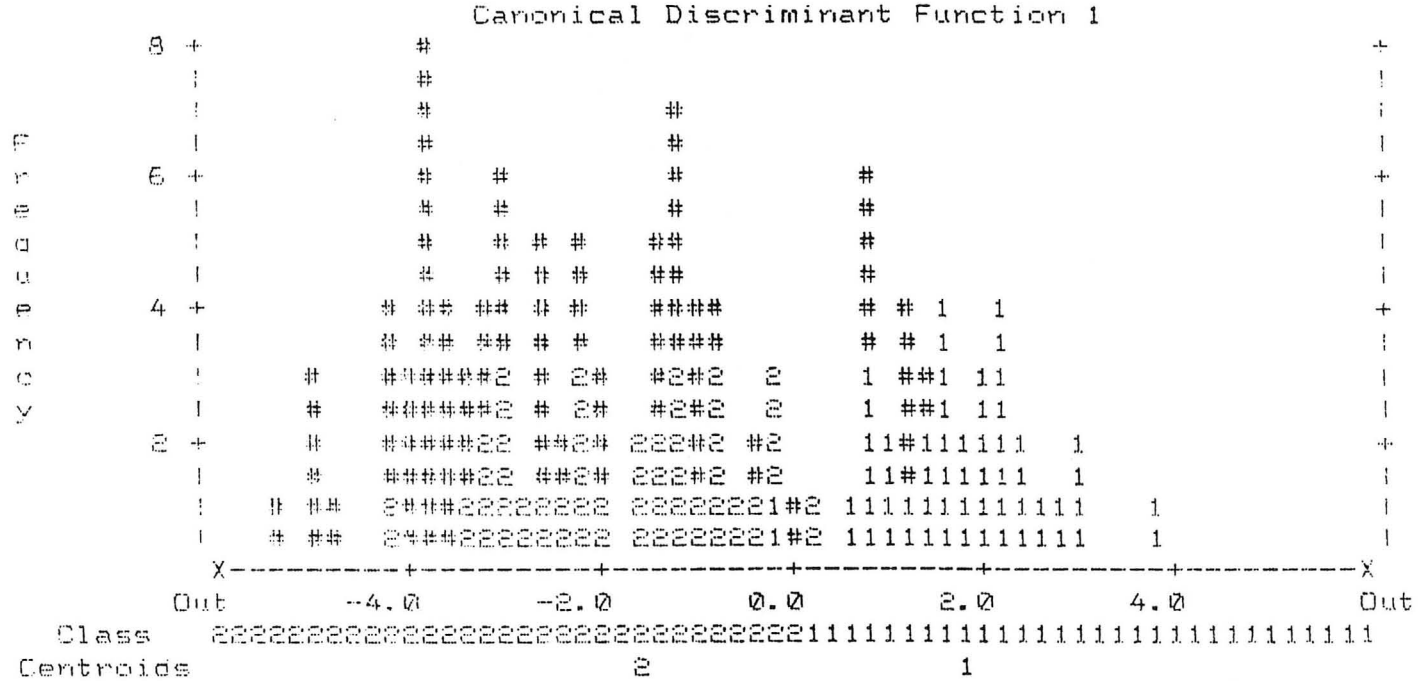
Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

Group	FUNC 1
1	1.78697
2	-1.78697

Symbols used in Plots

Symbol	Group	Label
1	1	
2	2	
#		All Ungrouped Cases

All-groups stacked Histogram



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 1	2
Group 1	30	29 96.7%	1 3.3%
Group 2	30	1 3.3%	29 96.7%
Ungrouped Cases	59	7 11.9%	52 88.1%

Percent of "grouped" cases correctly classified: 96.67%

Classification Processing Summary

119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.

- - - - - - - - - D I S C R I M I N A N T A N A L Y S I S - - - - - - - - -

On groups defined by CODE

Analysis number 1
Direct method: All variables passing the tolerance test are entered.
Minimum Tolerance Level..... .00100

Canonical Discriminant Functions

Maximum number of functions..... 1
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

Prior probability for each group is .50000

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chisquare	DF	Sig
					: 0	.2656	72.922	6	.02?
1*	2.7654	100.00	100.00	.8570	:				

* marks the 1 canonical discriminant functions remaining in the analysis.

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LAU	.84782
LSB	-.00445
LAGG	.05387
LHG	-.34356
HF	.14304
LLA	-.17338

Structure Matrix:

Pooled-within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LAU	.98780
LSB	.61489
LAGG	.55480
LHG	-.54357
HF	-.30447
LLA	-.25147

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

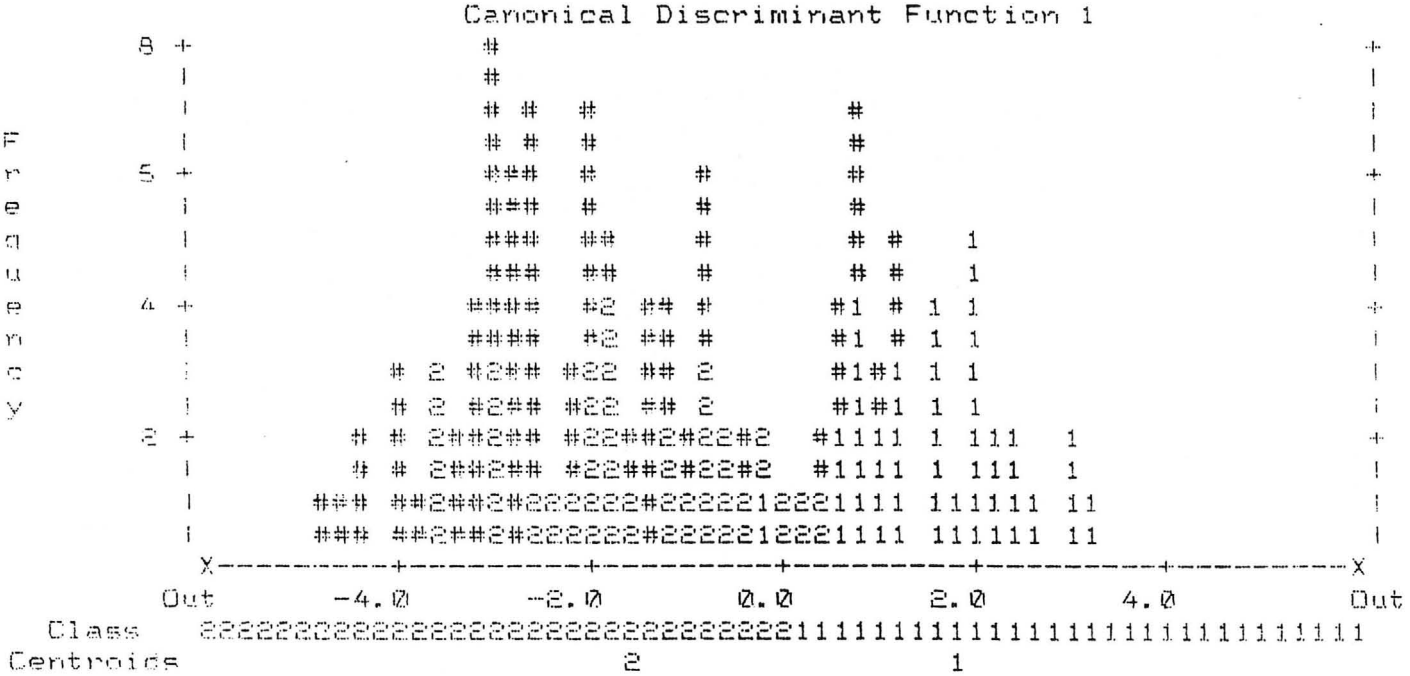
Group	FUNC 1
1	1.63500
2	-1.63500

Symbols used in Plots

Symbol	Group	Label
1	1	
2	2	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 1	2
Group 1	30	29 96.7%	1 3.3%
Group 2	30	2 6.7%	28 93.3%
Ungrouped Cases	59	9 15.3%	50 84.7%

Percent of "grouped" cases correctly classified: 95.00%

Classification Processing Summary

119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.

b. mineralized vs "above mineralization"

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LAS	-.04954
LBA	.17536
LCE	.44998
LFE	.04799
HF	-.20234
LLA	-2.12271
NA	-.17850
LRB	.08491
LSB	-.05588
LSC	4.04406
LSM	2.25618
LTH	1.11906
LU	.00730
LW	-.11273
LMO	.39915
LCU	.13207
LPB	-.67302
LZN	.38010
LAGG	-.26716
LNI	-1.22446
LCO	-2.21795
LMN	.29159
LSR	1.23904
LV	-.48840
LCA	-.39436
P	-.38735
LCR	1.01128
LMG	-1.15251
LTI	-.76672
LB	-.25243
LAU	1.42935
LHG	-1.11753

Structure Matrix:

Pooled-within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LAU	.47371
LHG	-.26034
LAGG	.23569
LSB	.18219
LAS	.13612
LPB	.11594
LCU	.11495
LZN	.10816
LCA	.09055
LRB	-.08790
HF	-.07897
NA	-.05809
LCR	.04977
LMN	.04964
P	-.03639
LSR	.03506
LV	.03432
LW	.03124
LTH	.02963
LLA	.02879
LNI	.02666
LMG	.02647
LSC	.02598
LSM	.02398
LCO	.02018
LB	-.01890
LCE	.01296
LTI	-.01241
LU	.01219
LBA	.01191
LMO	.00707
LFE	-.00130

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

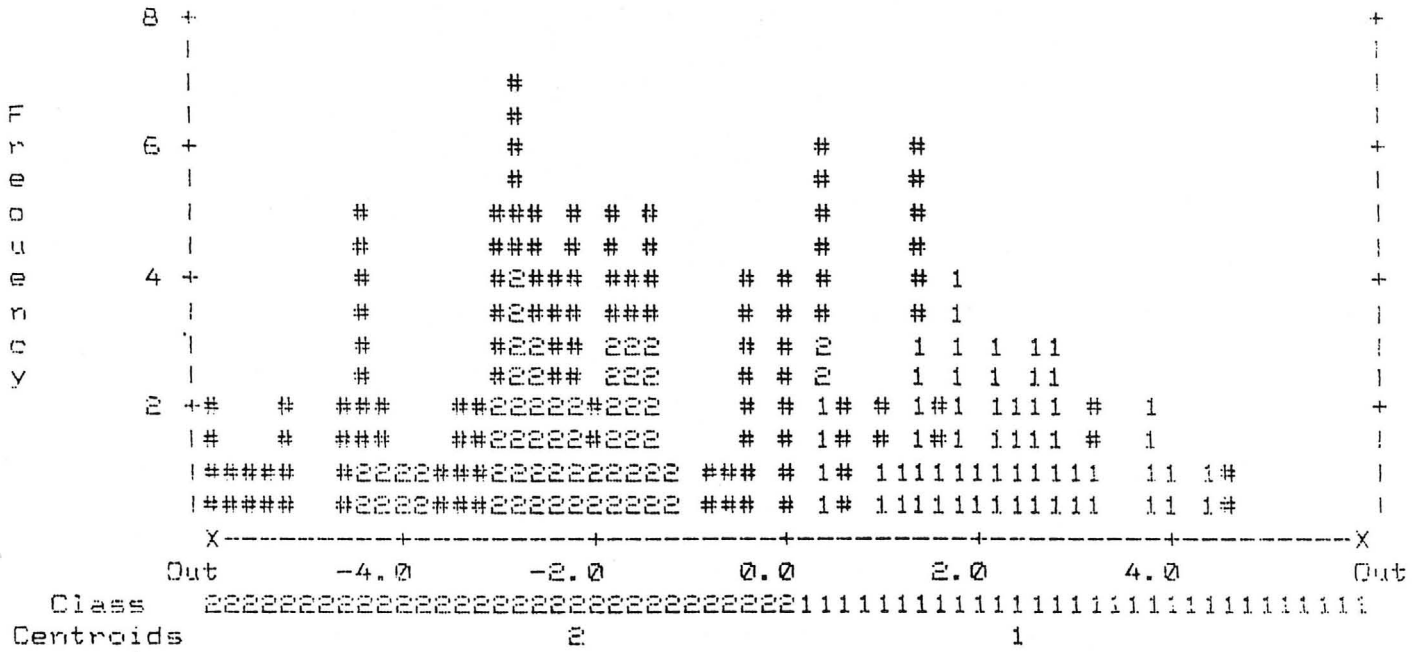
Group	FUNC 1
5	2.24667
6	-2.32415

Symbols used in Plots

Symbol	Group	Label
1	5	
2	6	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 5	6
Group 5	30	30	0
		100.0%	.0%
Group 6	29	1	28
		3.4%	96.6%
Ungrouped Cases	60	16	44
		26.7%	73.3%

Percent of "grouped" cases correctly classified: 98.31%

Classification Processing Summary

119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.

- - - - - - - - - D I S C R I M I N A N T A N A L Y S I S - - - - - - - - -

On groups defined by CODE

Analysis number 1
Direct method: All variables passing the tolerance test are entered.
Minimum Tolerance Level..... .00100

Canonical Discriminant Functions

Maximum number of functions..... 1
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

Prior probability for each group is .50000

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chisquare	DF	Sig
					: 0	.3664	51.206	12	.000
1*	1.7293	100.00	100.00	.7960	:				

* marks the 1 canonical discriminant functions remaining in the analysis.

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LAU	1.04414
LORG	-.23105
LSB	.35556
LAV	.04235
LDR	-.00327
LCU	-.08655
LHG	-.50259
LSS	.35586
LL	.18362
LG	.19175
D	.38890
LB	-.29094

Structure Matrix:

Pooled-within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LAU	.83747
LHG	-.46024
LAGG	.41668
LSB	.32209
LAS	.24064
LPB	.20496
LCU	.20321
LRB	-.15540
HF	-.13960
NA	-.10270
S	-.06433
LB	-.03341

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

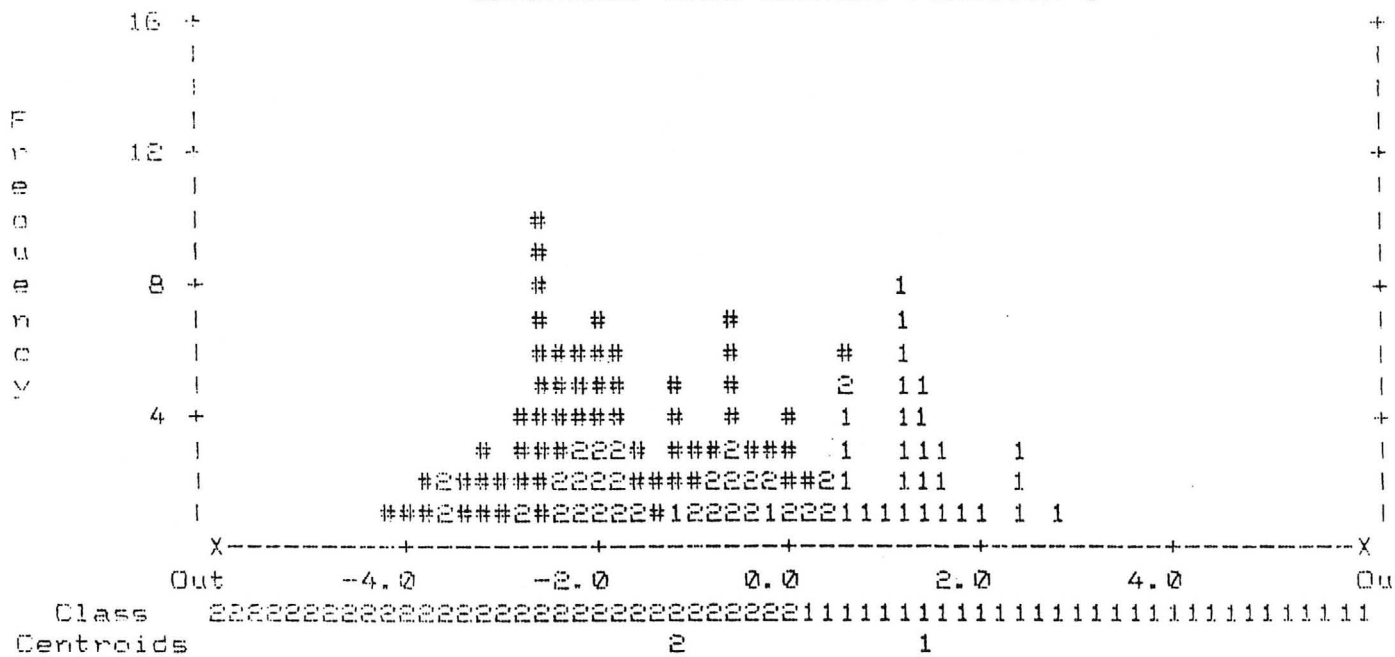
Group	FUNC 1
5	1.27082
6	-1.31464

Symbols used in Plots

Symbol	Group	Label
1	5	
2	6	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



c. rhyolite vs mineralized

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LAS	-.34766
LBA	.67698
LCE	1.36088
LFE	-.24856
HF	.11589
LLA	.04058
NA	.60654
LRB	1.07503
LSB	.79769
LSC	1.56056
LSM	.23950
LTH	-.02967
LU	-.20529
LW	.04220
LMO	-.01131
LCU	-.17417
LPB	-.45831
LZN	1.31855
LAGG	.38540
LNI	-.11880
LCO	-.29480
LMN	-1.98614
LSR	.05374
LV	-4.70088
LCA	.43665
P	.02313
LCR	2.23931
LMG	2.07133
LTI	.00785
LB	.01611
LAU	.94081
LHG	-.51129

Structure Matrix:

Pooled-within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LAU	.5307*
LSB	.3752*
LAGG	.3239*
LHG	-.2502*
LBA	-.1806*
LPB	.1755*
LCU	.1719*
HF	-.1362*
LLA	-.1353*
LB	.1157*
LMO	.1105*
LU	.1077*
LCE	-.1074*
LNI	.1029*
NA	-.1025*
LZN	.1016*
P	-.0953*
LCR	.0948*
LSM	-.0908*
LAS	.0722*
LV	-.0668*
LSR	-.0472*
LSC	-.0409*
LRB	-.0394*
LCO	-.0342*
LMG	-.0257*
LFE	-.0250*
LCA	-.0221*
LTH	.0068*
LTI	.0061*
LMN	.0047*
LW	.0006*

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

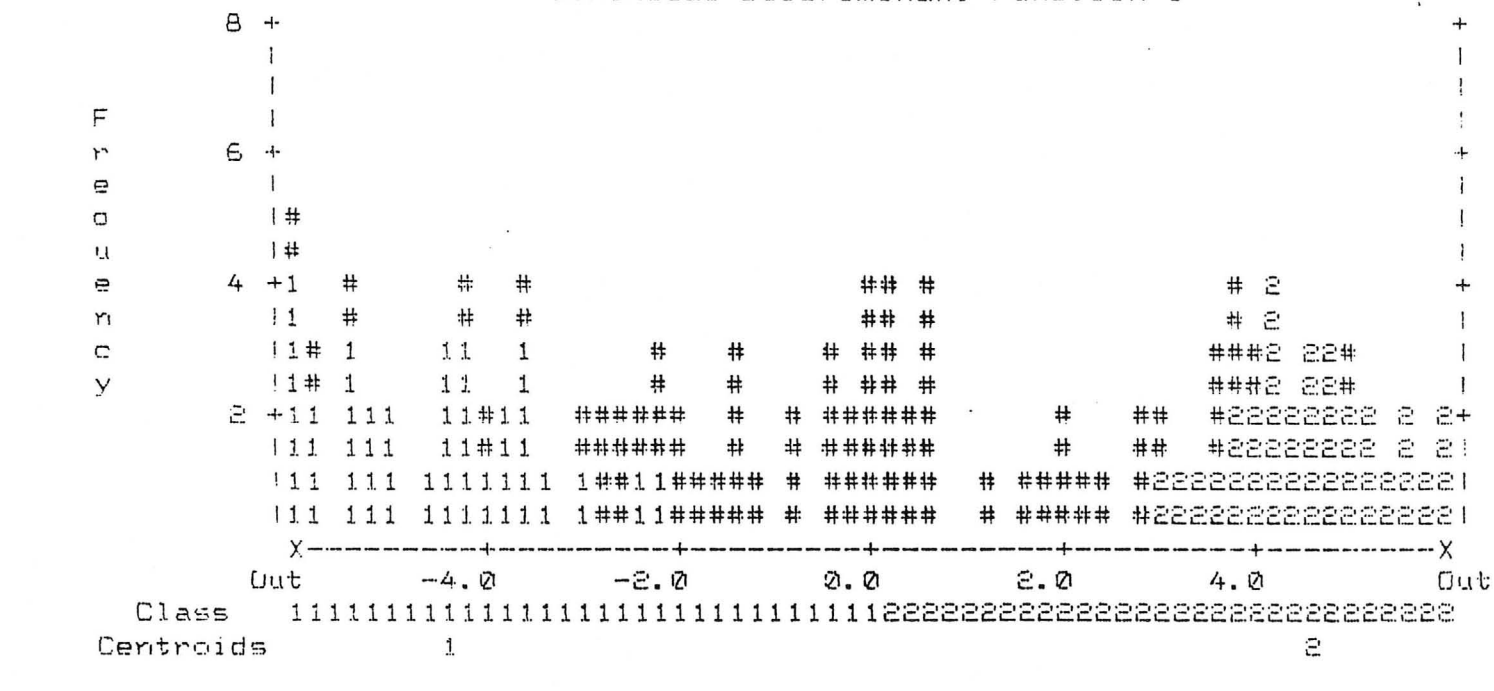
Group	FUNC 1
4	-4.5911
5	4.5911

Symbols used in Plots

Symbol	Group	Label
1	4	
2	5	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 4	5
Group 4	30	30	0
		100.0%	.0%
Group 5	30	0	30
		.0%	100.0%
Ungrouped Cases	59	32	27
		54.2%	45.8%

Percent of "grouped" cases correctly classified: 100.00%

Classification Processing Summary

119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.

- - - - - - - - - D I S C R I M I N A N T A N A L Y S I S - - - - - - - - -

On groups defined by CODE

Analysis number 1
Direct method: All variables passing the tolerance test are entered.
Minimum Tolerance Level..... .00100

Canonical Discriminant Functions

Maximum number of functions..... 1
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

Prior probability for each group is .50000

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chisquare	DF	Sig
					: 0	.0846	130.889	10	.00
1*	10.8178	100.00	100.00	.9568	:				

* marks the 1 canonical discriminant functions remaining in the analysis.

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LHG	-.37842
LBA	-.00517
HF	.12677
LLA	-.43679
LCE	1.02793
LAU	.59736
LSB	.52422
LAGG	.46729
LPB	.13460
LCU	-.06460

Structure Matrix:

Pooled-within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LAU	.75346
LSB	.53277
LAGG	.45897
LHG	-.35525
LBA	-.25651
LPB	.24920
LCU	.24406
HF	-.19349
LLA	-.19215
LCE	-.15252

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

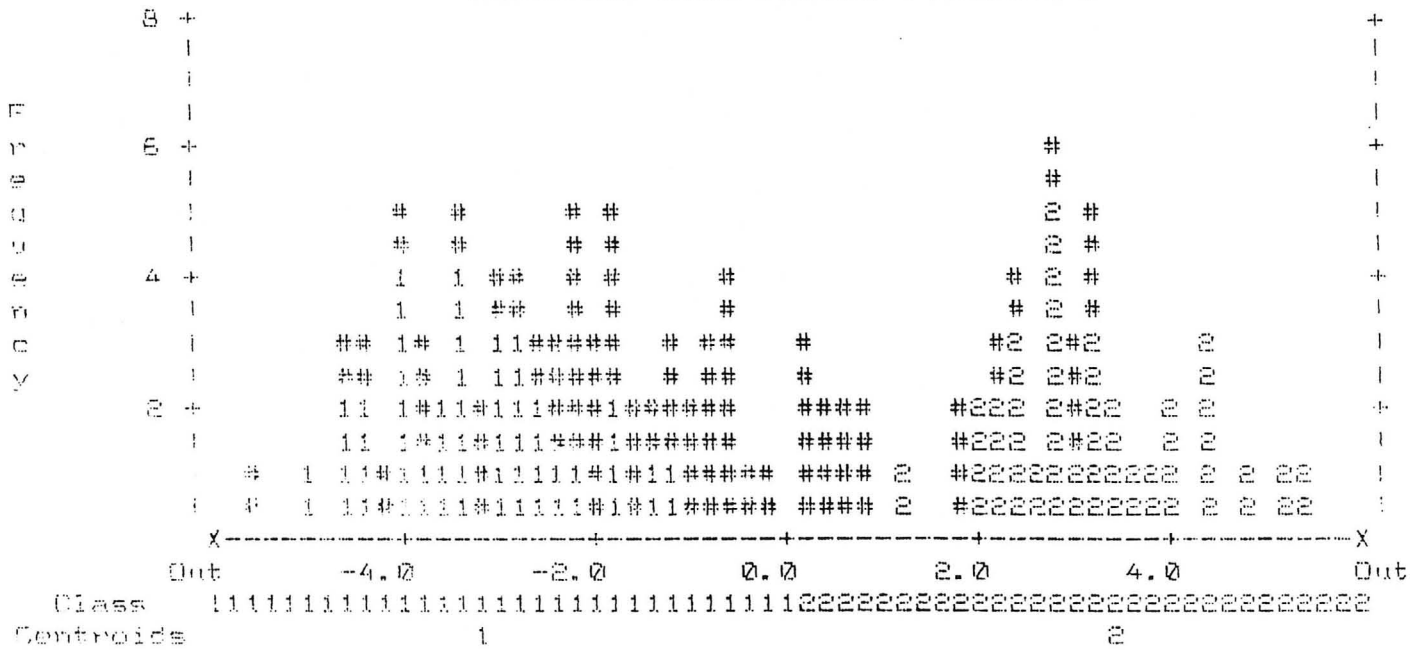
Group	FUNC 1
4	-3.23376
5	3.23376

Symbols used in Plots

Symbol	Group	Label
1	4	
2	5	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 4	5
Group 4	30	30 100.0%	0 .0%
Group 5	30	0 .0%	30 100.0%
Ungrouped Cases	59	41 69.5%	18 30.5%

Percent of "grouped" cases correctly classified: 100.00%

Classification Processing Summary

119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.

- - - - - - - - - D I S C R I M I N A N T A N A L Y S I S - - - - - - - - -

On groups defined by CODE

Analysis number 1
Direct method: All variables passing the tolerance test are entered.
Minimum Tolerance Level..... .00100

Canonical Discriminant Functions

Maximum number of functions..... 1
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

Prior probability for each group is .50000

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chisquare	DF	Sig
					: 0	.4877	39.493	6	.00
1*	1.0504	100.00	100.00	.7157	:				

* marks the 1 canonical discriminant functions remaining in the analysis.

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LAU	.47537
LSS	.90159
LAGG	-.20125
LHG	.44563
LBA	-.60561
LHF	.56662

Structure Matrix:

Pooled-within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LSS	.62021
LAU	.59306
LBA	-.48046
LAGG	.15518
LHF	-.10217
LHG	-.09723

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

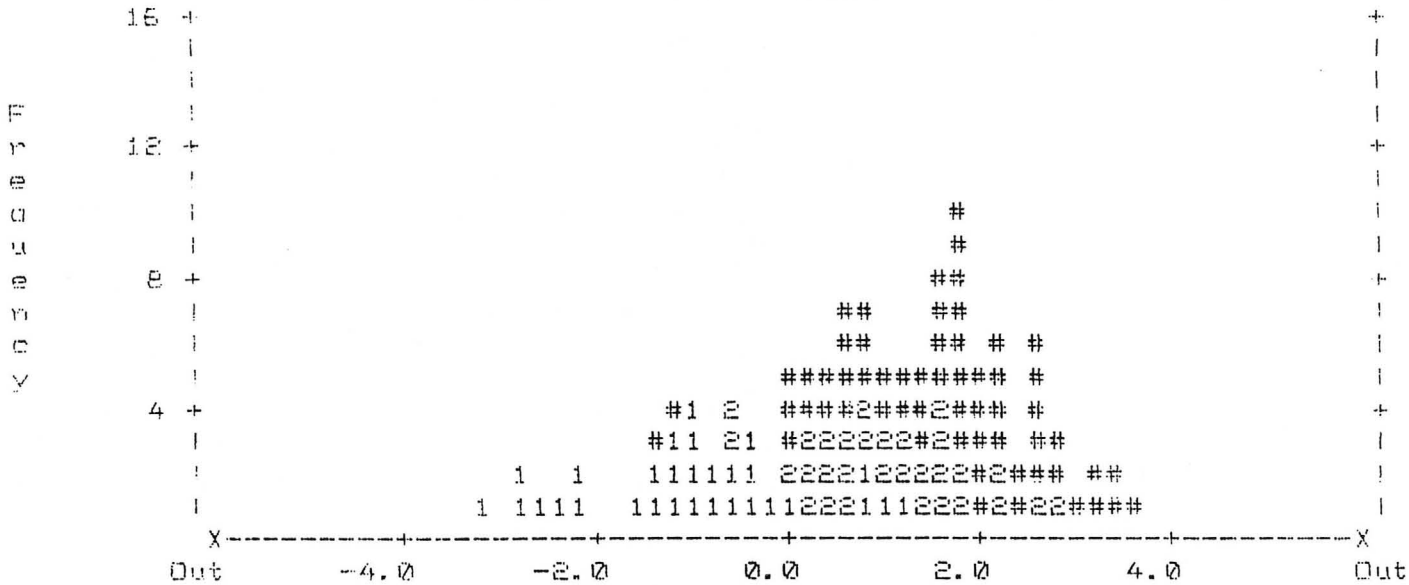
Group	FUNC 1
4	-1.00767
5	1.00767

Symbols used in Plots

Symbol	Group	Label
1	4	
2	5	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 4	5
Group 4	30	26	4
		86.7%	13.3%
Group 5	30	3	27
		10.0%	90.0%
Ungrouped Cases	59	3	56
		5.1%	94.9%

Percent of "grouped" cases correctly classified: 88.33%

Classification Processing Summary

119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.

d. barren vs "above mineralization"

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LAS	.01048
LBA	-.29605
LCE	-1.16165
LFE	1.01523
HF	1.02959
LLA	1.01766
NA	.58999
LRB	.18036
LSB	.88603
LSC	-2.98505
LSM	-1.01792
LTH	.22381
LU	-1.60664
LW	-.69333
LMO	.75735
LCU	.44719
LPB	1.15162
LZN	-1.60326
LAGG	.97813
LNI	2.90233
LCO	.72546
LMN	-.84322
LSR	-1.61330
LV	.53798
LCA	.43168
P	.23825
LCR	-2.84686
LMG	3.90275
LTI	.66952
LB	.44480
LAU	-.89236
LHG	.31984

Structure Matrix:

Pooled-within-groups correlations between discriminating variables
and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LCE	-.23864
LLA	-.23605
LSM	-.20979
LSB	.18601
LSC	-.17676
LSR	-.17484
LZN	-.16763
LMN	-.15577
LMG	-.15007
HF	-.14674
LBA	-.14548
LV	-.13640
P	-.12068
LHG	-.11785
LCO	-.11519
LB	.11326
LFE	-.10154
LU	-.09520
LCA	-.09417
LW	-.08681
LPB	.08321
LAGG	.07413
NA	-.07195
LCU	.05918
LTI	-.05035
LMO	.04330
LAS	-.03197
LNI	.02636
LAU	.02576
LRB	.01479
LCR	.01236
LTH	.00084

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

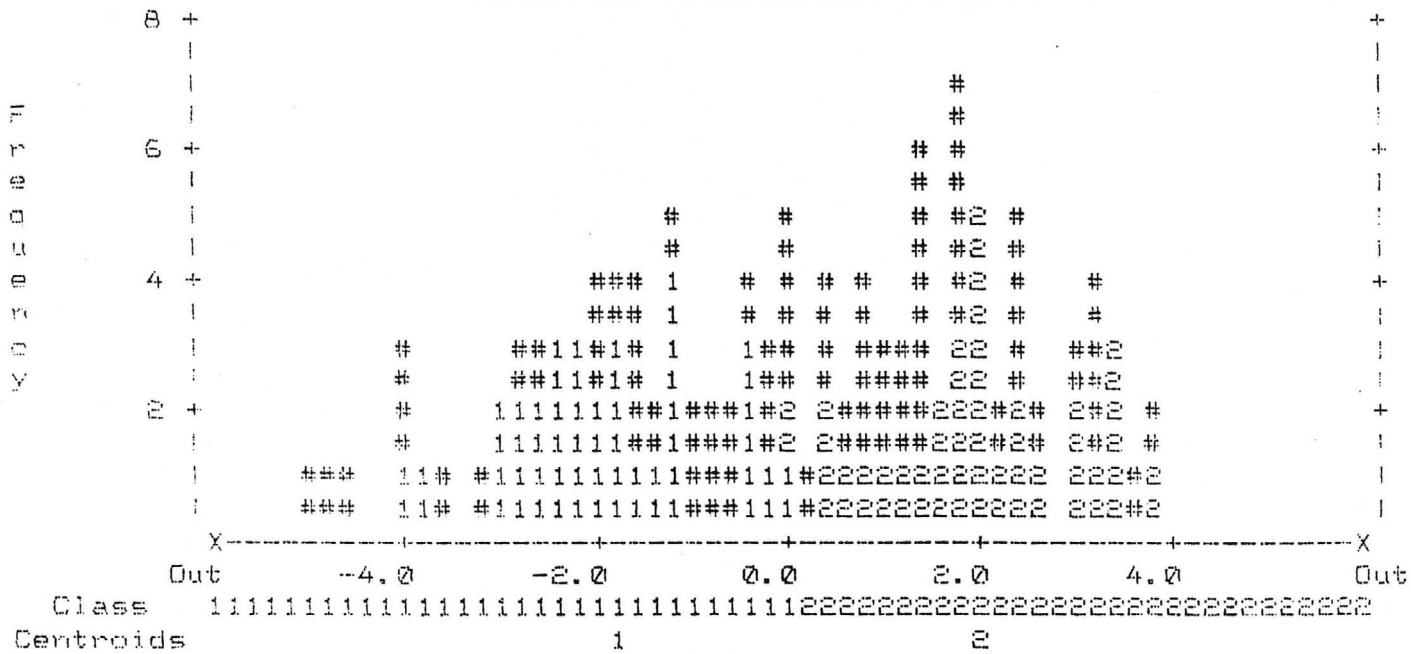
Group	FUNC 1
2	-1.09885
3	1.96433

Symbols used in Plots

Symbol	Group	Label
1	2	
2	3	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 2	3
Group 2 borrow	30	30 100.0%	0 .0%
Group 3 about	29	0 .0%	29 100.0%
Ungrouped Cases	60	26 43.3%	34 56.7%

Percent of "grouped" cases correctly classified: 100.00%

Classification Processing Summary

119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.

- - - - - - - - - D I S C R I M I N A N T A N A L Y S I S - - - - - - - - -

On groups defined by CODE

Analysis number 1
Direct method: All variables passing the tolerance test are entered.
Minimum Tolerance Level..... .00100

Canonical Discriminant Functions

Maximum number of functions..... 1
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

Prior probability for each group is .50000

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chisquare	DF	Sig
					: 0	.6016	25.917	12	.01
1*	.6622	100.00	100.00	.6312	:				

* marks the 1 canonical discriminant functions remaining in the analysis.

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LCE	.79350
LLA	-.25762
LSM	-.34233
LSC	.32232
LSR	.59615
LSB	-.15208
LB	-.89579
LPB	-.08083
LAGG	.30926
LCU	-.36731
LZN	.42780
LMO	.25217

Structure Matrix:

Pooled-within-groups correlations between discriminating variables
and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LCE	.57621
LLA	.56995
LSM	.50655
LSB	-.44912
LSC	.42678
LSR	.42216
LZN	.40474
LB	-.27347
LPB	-.20090
LAGG	-.17899
LCU	-.14288
LMO	-.10456

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

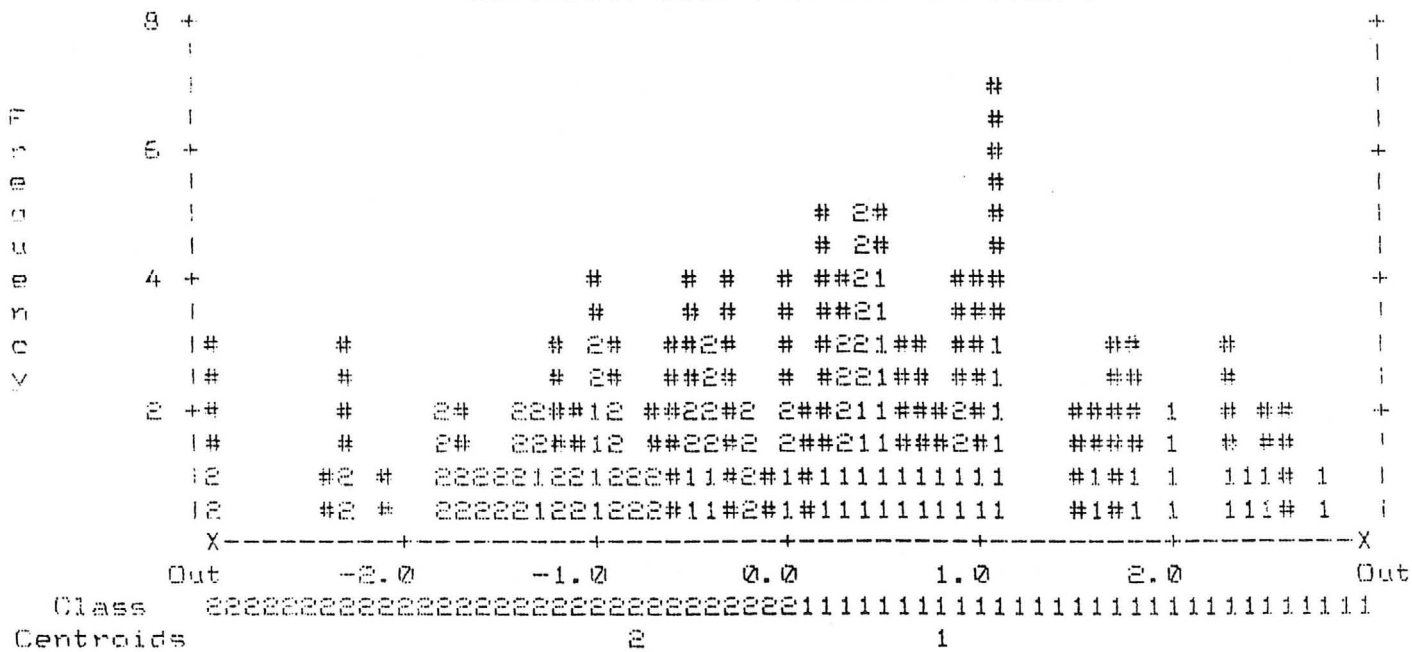
Group	FUNC 1
2	.78643
3	-.81355

Symbols used in Plots

Symbol	Group	Label
1	2	
2	3	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 2	3
Group 2	30	25 83.3%	5 16.7%
Group 3	29	7 24.1%	22 75.9%
Ungrouped Cases	60	36 60.0%	24 40.0%

Percent of "grouped" cases correctly classified: 79.66%

Classification Processing Summary

119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.

e. barren vs rhyolite

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LAS	-.84578
LBA	.04405
LCE	1.11842
LFE	.10555
HF	-.61556
LLA	-.60972
NA	-.83303
LRB	-1.17106
LSB	.29269
LSC	4.46519
LSM	-1.48458
LTH	1.30621
LU	.27685
LW	.10856
LMO	-.73725
LCU	-.81292
LPB	.32153
LZN	.94483
LAGG	-.99475
LNI	-1.13407
LCO	-.09694
LMN	-.26205
LSR	2.08937
LV	-7.11695
LCA	-1.03297
P	1.94045
LCR	2.62818
LMG	1.31584
LTI	.31337
LB	.26006
LAU	.82943
LHG	.37837

Structure Matrix:

Pooled-within-groups correlations between discriminating variables
and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LSB	.10785
LZN	.10408
LAU	.17987
LU	.16306
LBA	-.14552
LNI	.11394
LCU	.09640
LB	.09494
LCR	.09140
LMO	.08761
LPB	.07847
LMN	.07827
LSC	.06008
LMG	.05550
LLA	-.05098
LTI	.04984
LAGG	.04700
LFE	.04337
NA	-.04131
LSR	.03209
LCA	-.03075
LW	.03025
LHG	-.02945
HF	-.02360
LV	-.02295
LSM	.02212
LCO	.02005
LAS	.01659
LCE	-.01528
LTH	-.01222
P	.00923
LRB	-.00050

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

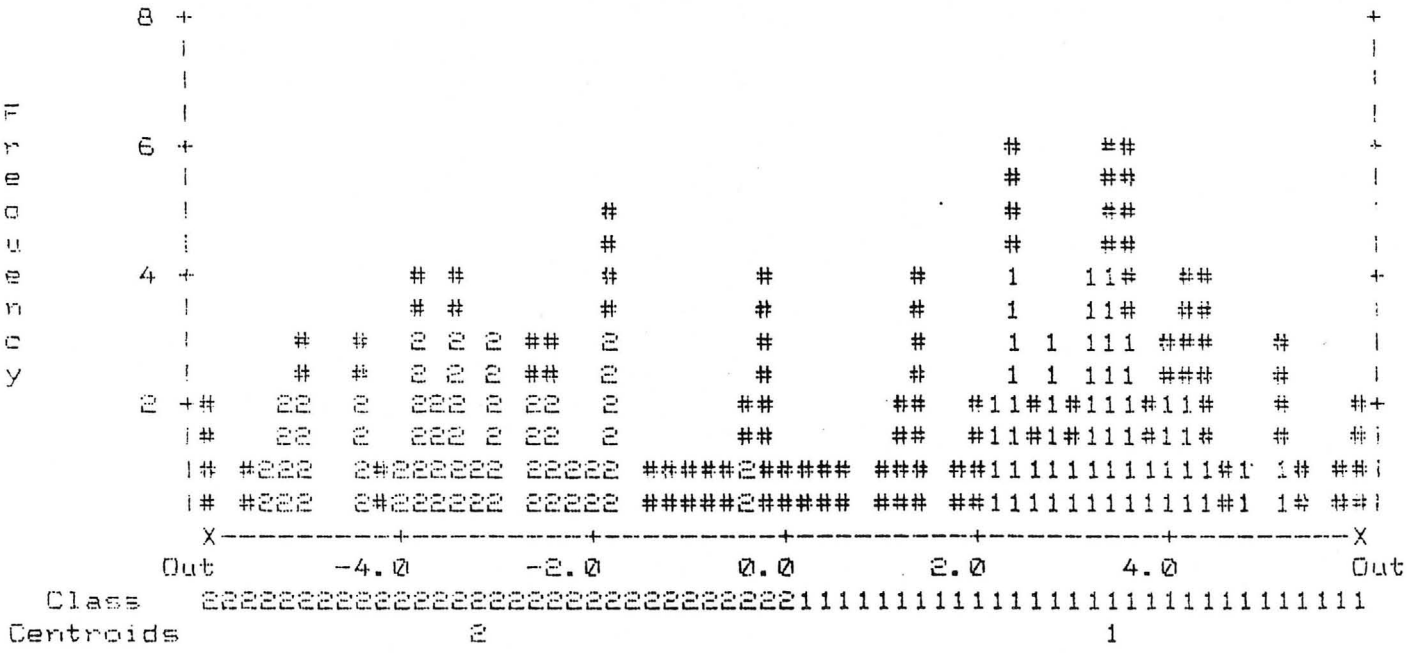
Group	FUNC 1
7	3.32692
8	-3.32692

Symbols used in Plots

Symbol	Group	Label
1	7	
2	8	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 7	8
Group 7	30	30	0
		100.0%	.0%
Group 8	30	0	30
		.0%	100.0%
Ungrouped Cases	59	36	23
		61.0%	39.0%

Percent of "grouped" cases correctly classified: 100.00%

Classification Processing Summary

119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.

- - - - - - - - - D I S C R I M I N A N T A N A L Y S I S - - - - - - - - -

On groups defined by CODE

Analysis number 1
Direct method: All variables passing the tolerance test are entered.
Minimum Tolerance Level..... .00100

Canonical Discriminant Functions

Maximum number of functions..... 1
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

Prior probability for each group is .50000

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chisquare	DF	Sig
					: 0	.3220	58.926	12	.000
1*	2.1055	100.00	100.00	.8234	:				

* marks the 1 canonical discriminant functions remaining in the analysis.

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LSB	.96459
LZN	.81210
LAU	.26049
LU	.30955
LNI	-.04607
LCU	-.53400
LBA	-.75454
LLA	.17265
NA	.51958
LCA	.16812
LHG	.28270
HF	.37306

Structure Matrix:

Pooled-within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LSB	.43807
LZN	.42926
LAU	.41946
LU	.38024
LBA	-.33936
LNI	.26570
LCU	.22480
LLA	-.11888
NA	-.09633
LCA	-.07171
LMG	-.05868
MF	-.05504

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

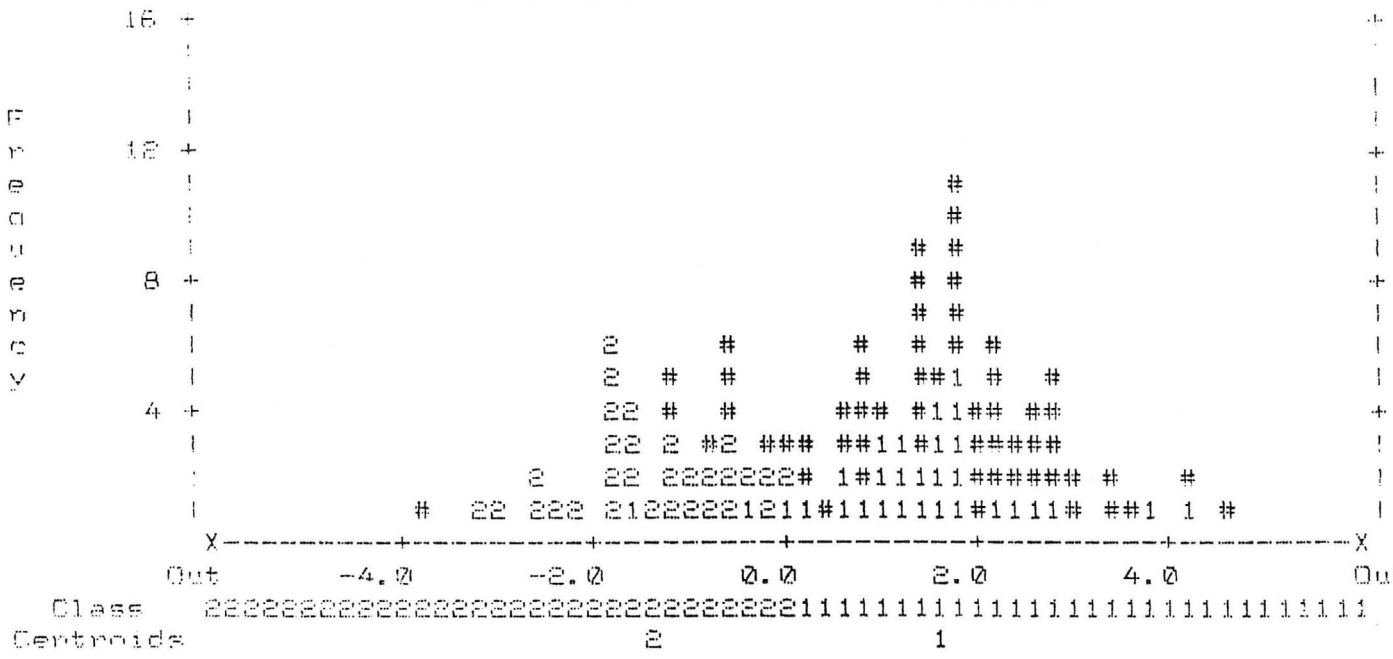
Group	FUNC 1
7	1.42665
8	-1.42665

Symbols used in Plots

Symbol	Group	Label
1	7	
2	8	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 7	8
Group 7	30	28 93.3%	2 6.7%
Group 8	30	0 .0%	30 100.0%
Ungrouped Cases	59	51 86.4%	8 13.6%

Percent of "grouped" cases correctly classified: 96.67%

Classification Processing Summary

119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.

f. "above mineralization" vs rhyolite

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LAS	-.34317
LBA	-1.25486
LCE	2.60951
LFE	.58232
HF	.12525
LLA	-4.65377
NA	.41824
LRB	-.49281
LSB	.88309
LSC	-2.85661
LSM	3.02609
LTH	.44753
LU	.72886
LW	-.16848
LMO	.03148
LCU	-.51249
LPB	.21676
LZN	1.14449
LAGG	-1.10408
LNI	2.18492
LCO	.65853
LMN	-2.09570
LSR	.28636
LV	-2.48215
LCA	.59893
P	3.21144
LCR	-.93985
LMG	1.16799
LTI	-.14436
LB	.19739
LAU	.77601
LHG	-.08027

Structure Matrix:

Pooled-within-groups correlations between discriminating variables
and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LSB	.23626
LBA	-.22642
LLA	-.17669
LCE	-.15297
LAU	.14034
LPB	.13763
LNI	.13066
LCU	.12909
LB	.12684
LMO	.12577
LU	.12537
LCR	.11724
LSM	-.11312
LV	-.10303
HF	-.10219
LHG	-.09564
LCA	-.08122
LSR	-.07A30
LAGG	.07450
NA	-.07083
LSC	-.06442
P	-.06394
LCO	-.05683
LMG	-.05024
LZN	.04495
LMN	-.03712
LFE	-.02829
LW	-.02091
LTI	.01949
LTH	-.01038
LRB	.00669
LAS	-.00491

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

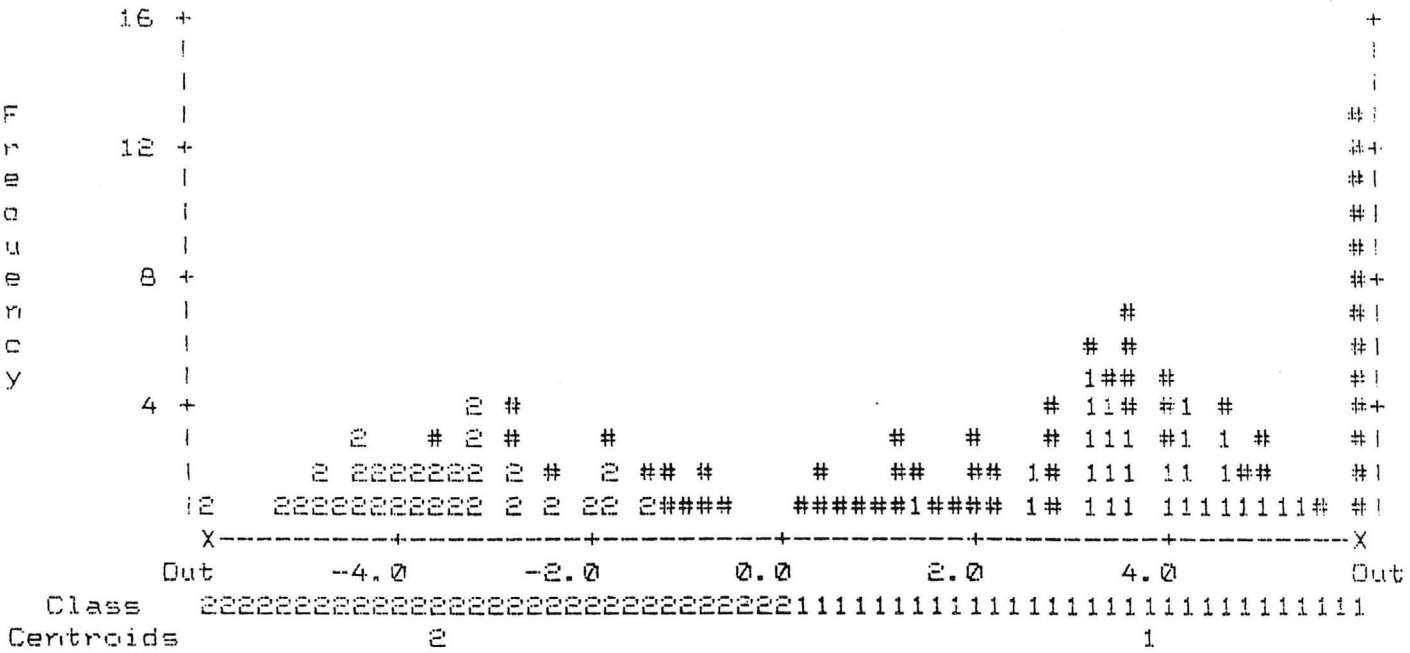
Group	FUNC 1
3	3.70340
4	-3.65729

Symbols used in Plots

Symbol	Group	Label
1	3	
2	4	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 3	4
Group 3 above	29	29 100.0%	0 .0%
Group 4 rhy	30	0 .0%	30 100.0%
Ungrouped Cases	60	48 80.0%	12 20.0%

Percent of "grouped" cases correctly classified: 100.00%

Classification Processing Summary

119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.

- - - - - - - - - D I S C R I M I N A N T A N A L Y S I S - - - - - - - - -

On groups defined by CODE

Analysis number 1
Direct method: All variables passing the tolerance test are entered.
Minimum Tolerance Level..... .00100

Canonical Discriminant Functions

Maximum number of functions..... 1
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

Prior probability for each group is .50000

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chisquare	DF	Sig
					: 0	.1407	98.057	14	.0000
1*	6.1075	100.00	100.00	.9270	:				

* marks the 1 canonical discriminant functions remaining in the analysis.

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LSB	.89825
LOJ	-.02121
LDB	.37300
LNT	.80437
LCU	-.09748
LB	.38033
LMO	-.48065
LSA	-1.12223
LLA	-3.39422
LDF	1.69951
LSM	4.00002
LV	-1.55904
LF	.17962
LHS	-.19580

Structure Matrix:

Pooled-within-groups correlations between discriminating variables
and canonical discriminant functions.
(Variables ordered by size of correlation within function)

	FUNC 1
LSR	.36180
LBA	-.34673
LLA	-.27057
LDE	-.23425
LAU	.21491
LDB	.21076
LNI	.20009
LCU	.19768
LB	.19424
LMO	.19260
LSM	-.17323
LV	-.15777
LF	-.15649
LHG	-.14646

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

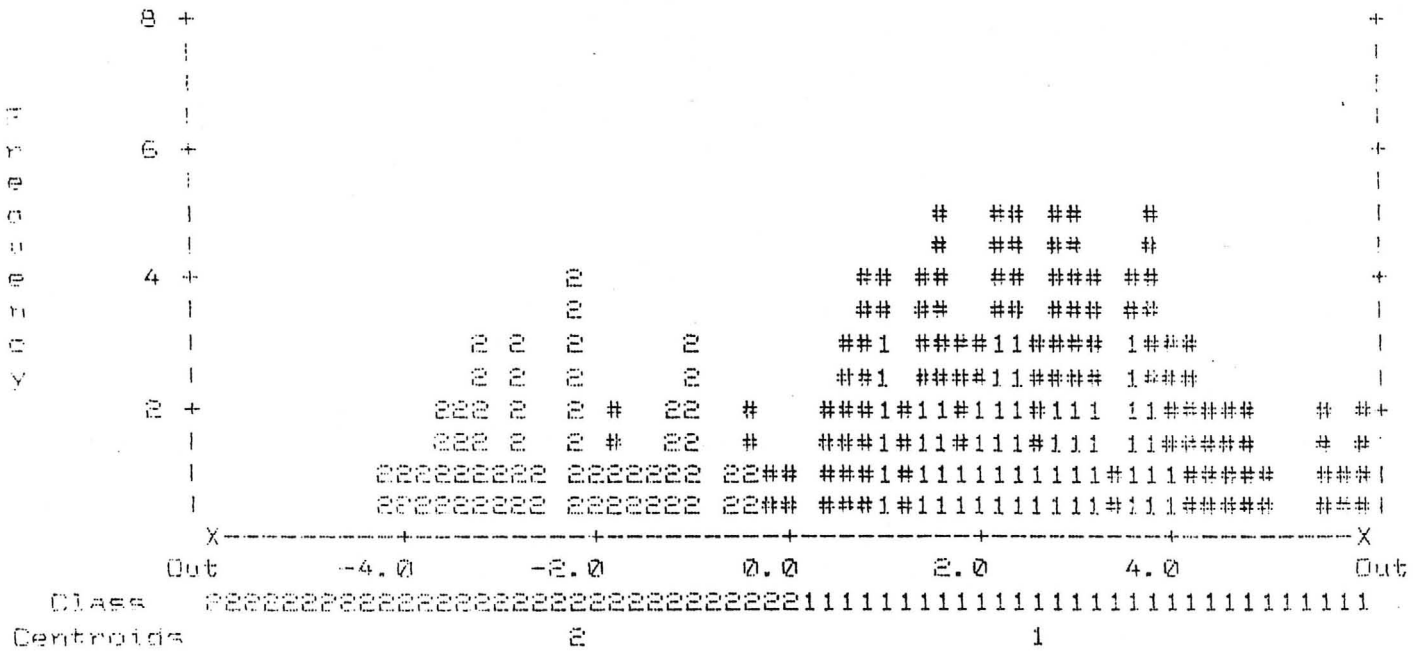
Group	FUNC 1
3	2.47061
4	-2.38825

Symbols used in Plots

Symbol	Group	Label
1	3	
2	4	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 3	4
Group 3	29	29 100.0%	0 .0%
Group 4	30	0 .0%	30 100.0%
Ungrouped Cases	60	56 93.3%	4 6.7%

Percent of "grouped" cases correctly classified: 100.00%

Classification Processing Summary

119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.

- - - - - - - - - D I S C R I M I N A N T A N A L Y S I S - - - - - - - - -

On groups defined by CODE

Analysis number 1
Direct method: All variables passing the tolerance test are entered.
Minimum Tolerance Level..... .00100

Canonical Discriminant Functions

Maximum number of functions..... 1
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

Prior probability for each group is .50000

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chisquare	DF	Sig
					: 0	.3997	49.522	6	.000
1*	1.5020	100.00	100.00	.7748	:				

* marks the 1 canonical discriminant functions remaining in the analysis.

Standardized Canonical Discriminant Function Coefficients

	FUNC 1
LSB	.64854
LBA	-.88245
LLA	-.91412
LCE	1.69176
LAU	.57731
LPB	-.09406

Structure Matrix:

Pooled-within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1
LSB	.72958
LBA	-.69918
LLA	-.54560
LCE	-.47236
LAU	.43338
LPB	.42499

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

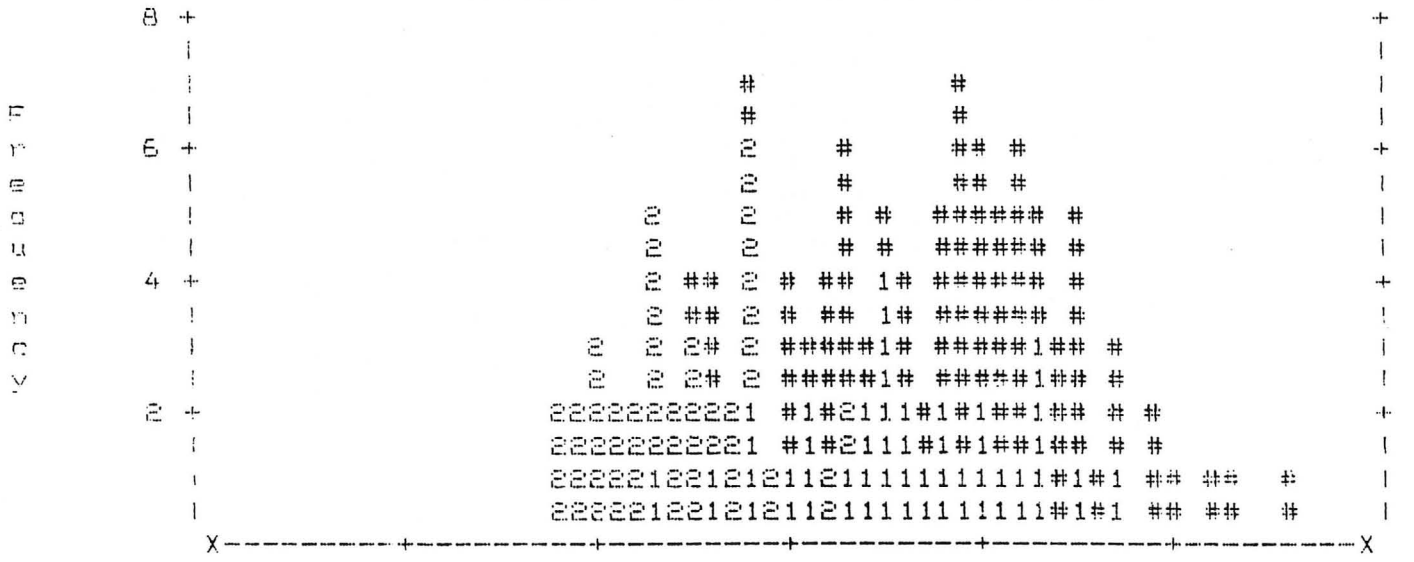
Group	FUNC 1
3	1.22519
4	-1.18435

Symbols used in Plots

Symbol	Group	Label
1	3	
2	4	
#		All Ungrouped Cases

All-groups stacked Histogram

Canonical Discriminant Function 1



Classification Results -

Actual Group	No. of Cases	Predicted Group Membership 3	4
Group 3	29	25	4
		86.2%	13.8%
Group 4	30	2	28
		6.7%	93.3%
Ungrouped Cases	60	53	7
		88.3%	11.7%

Percent of "grouped" cases correctly classified: 89.83%

Classification Processing Summary

119 Cases were processed.
0 Cases were excluded for missing or out-of-range group codes.
0 Cases had at least one missing discriminating variable.
119 Cases were used for printed output.