PRELIMINARY OF THE EXCELSIOR PROPERTY

MINERAL INVENTORY ESTIMATE

FOR

STEELHEAD RESOURCES

SEPTEMBER 1, 1987

BY

AMERICAN MINE SERVICES, INC.

ENGINEERS
CONTRACTORS
DRILLERS
SERVING THE MINING INDUSTRY.

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1.0 SUMMARY

The Great Excelsior project is located in Whatcom County, Washington, approximately 36 miles east of Bellingham.

Geostatistics were performed on gold and silver assays from 45 exploration drill holes furnished to AMS by Steelhead Resources. No additional geologic information (rock types, structure) was provided and it is the understanding of AMS that Steelhead Resources wanted the study to proceed without the benefit of additional geologic parameters.

Preliminary global geological ore reserves were derived through Block Model Kriging methods using ten foot composited exploration drill hole assay data and mineral indicator values. The Kriging techniques used are accepted approaches to modeling precious metal deposits. The preliminary conclusions to the evaluations are shown in Tables 1.1.

TABLE 1-1

EXCELSIOR MINERAL INVENTORY

PROBABLE

CUTOFF	TONS	AU OZ/T	AG OZ/T	AUEQ 60	AU OZ	AG OZ
0.010	5,459,968	0.019	1.221	0.039	103,739	6,666,621
0.015	4,742,814	0.021	1.402	0.044	99,599	6,649,425
0.020	3,908,356	0.024	1.634	0.051	93,801	6,386,254
0.025	3,392,485	0.027	1.801	0.057	91,597	6,107,865
0.030	2,867,283	0.029	2.002	0.062	83,151	5,740,301
0.035	2,398,067	0.033	2.194	0.070	79,136	5,261,359
0.040	2,000,833	0.036	2.406	0.076	72,030	4,814,004
0.050	1,519,620	0.042	2.743	0.088	63,824	4,169,318
0.075	637,174	0.060	4.020	0.127	38,230	2,561,439
0.100	277,264	0.078	6.075	0.179	21,627	1,684,379

EXCELSIOR MINERAL INVENTORY

POSSIBLE

CUTOFF	TONS	AU OZ/T	AG OZ/T	AUEQ 60	AU OZ	AG OZ
0.010	6,357,077	0.017	0.671	0.028	108,967	4,264,146
0.015	4,829,459	0.021	0.867	0.035	101,419	4,186,388
0.020	3,585,770	0.024	1.043	0.041	86,058	3,738,311
0.025	3,004,582	0.027	1.126	0.046	81,124	3,383,382
0.030	2,466,050	0.029	1.219	0.049	71,515	3,006,366
0.035	1,900,858	0.035	1.319	0.057	67,027	2,506,798
0.040	1,555,611	0.038	1.395	0.062	59,558	2,170,852
0.050	1,123,719	0.044	1.506	0.069	49,840	1,691,965
0.075	333,250	0.057	2.031	0.091	19,025	676,865
0.100	45,322	0.035	6.402	0.142	1,600	290,170

EXCELSIOR MINERAL INVENTORY

TOTAL

CUTOFF	TONS	AU OZ/T	AG OZ/T	AUEQ 60	AU OZ	AG OZ
0.010	11,817,045	0.018	0.925	0.033	212,707	10,930,767
0.015	9,572,273	0.021	1.132	0.040	201,018	10,835,813
0.020	7,494,126	0.024	1.351	0.047	179,859	10,124,564
0.025	6,397,067	0.027	1.484	0.052	172,721	9,493,247
0.030	5,333,333	0.029	1.640	0.056	154,667	8,746,666
0.035	4,298,925	0.034	1.807	0.064	146,163	7,768,157
0.040	3,556,444	0.037	1.964	0.070	131,508	6,984,856
0.050	2,643,339	0.043	2.217	0.080	113,664	5,860,283
0.075	970,424	0.059	3.337	0.115	57,255	3,238,305
0.100	322,586	0.072	6.121	0.174	23,226	1,974,549

2.0 INTRODUCTION

At the invitation of Steelhead Resources, American Mine Services, Inc. has completed a preliminary evaluation of the mineral inventory for the Great Excelsior Mine Project, Whatcom County, Washington. The purpose of this study was to establish statistical global reserves. This evaluation is based upon drill hole assay data provided to AMS by Steelhead Resources. Geologic rock types or structural discontinuities were not provided or included in the study. AMS was not commissioned to audit the assay data and no check assay data was provided. AMS has completed the following evaluations as per Steelhead Resources Phase I work.

a. Standard statistics (histograms, cumulative frequency) on raw and composited gold and silver assay data.
b. Geostatistics (semi-variograms, kriging) on raw assay data, composited assay data and mineral indicators.
c. Global geologic reserves at various cutoffs.
d. The effect of drill holes, EX-14, EX-24 and EX-27, on global reserves.
e. Global reserves bound by the proposed pit area.

All statistical analyses were performed on personal computers using programs by Minesoft Ltd.

3.0 STUDY PARAMETERS

3.1 Data was obtained from 45 drill hole logs containing gold and silver assay values on five foot increments, collar elevations, drill hole bearings and inclinations. No downhole survey data or geologic rock types were included. Surface topography map showing drill hole locations and a mine coordinate system was provided.

3.2 Ore reserve data calculated by Steelhead Resources using grade thickness intercepts.

3.3 A rock density of 166.7 pounds per cubic yard was used for both ore and waste.

3.4 AMS has not audited any of the project data supplied including land status, rock densities, assays or hole location surveys.

3.5 Mineral indicator variograms were established using either a zero (0) value for composites with Au 0.005 OPT and Ag 0.10 OPT value and a one (1) value for all intervals with a greater value. This was based on sensitivity of the assaying technique.

3.6 Mineral assays were composited on ten foot intervals for modeling.

3.7 Material removed from historic underground mining has not been accounted for in the block modeling.

4.0 LOCATION

The Great Excelsior Mine is located approximately 36 miles east of Bellingham, Washington, within the Mount Baker-Snoqualmie National Forest. The property lies between elevations 1600 feet and 2250 feet, is timber covered and receives approximately 80 inches of rainfall per year. Access to the site from Bellingham is east along Washington State Highway 542 to Glacier, then six miles of gravel logging road to the mine site. AMS personnel did not visit the property.

5.0 GEOLOGICAL RESERVES

All drill hole coordinate information and assay data was furnished by Steelhead Resources on 5¼ inch floppy disks in Lotus 123 spread sheet format. This data was transferred to formats compatible with AMS' software. The data consisted of 45 drill holes numbered EX-1 through EX-45 and EXQ-06. Most of the holes are angle holes drilled from surface with bearings from north, northeast, east, southeast and south. Assays were present on five foot intervals. Assay data from holes on the southern end of the property (Q76-1, Q76-2, Q76-3 and Q76-4) were received as a composited grade - thickness values. The method of assaying is not known.

Statistics and geostatistical evaluations were completed using Techbase, a geo-modeling program by Minesoft Ltd. Standard normal and log-normal statistics were calculated on the input data. The sample and composite data, cumulative frequency and histogram plots are shown in Figures 1 through 8. Drill hole data was composited on ten foot downhole intervals. Standard normal and log-normal statistics were computed on the composited data. The results shown in Figures 9 and 10 indicate that the log-normal fit is not sufficiently reliable to justify the additional complexities involved in using the log-normal method for estimating reserves.

Variograms on the composited assay data were established on 30 degree increments about the horizontal and 30 degrees in the vertical directions. These mineral variograms (in the appendix) show a high degree of scatter and thus are unreliable for establishing sill, nugget and range parameters. Additional variograms, not included, have been run with windows of 20^{o}. One reason for the poor variograms might be a mixing of rock types and/or structural domains.

When grade variograms are poor, an indicator approach can be used successfully, effectively removing the variation of grade above some threshold. Mineral indicators were calculated from the composited assay data using a Au cutoff of 0.005 OPT and a Ag cutoff of 0.1 OPT. The composited assay data was transformed into indicator values of 1 or 0. The indicator variograms shown in Figures 11 through 16 show good trends in mineralization allowing estimates of sill, nugget and range values.

Variograms on composited assay values whose indicators were equal to one are shown in the appendix. Again, the high degree of scatter, results in unreliable variogram parameters indicating that mineral assay trends, if present, are dependent upon geologic parameters such as rock types or structural domains. Therefore AMS chose a moving average type estimation for mineralized blocks but this results in a constant estimation variance. A variable elliptical search range was used for probable and possible categories. The ranges used are shown in the table below. Mineralized tonnages in this report were obtained by taking the kriged block indicators greater than 0.33 (33% of the block is mineralized) times the tons per block. All assay data however was used to calculate the mineralized grade. Refining the model with structural domains and rock types should improve the mineralized grade.

The block model was constructed in the north-south east-west direction. In the north-south direction, a block size of 40 feet was used, 38 blocks long making the model 1520 feet in length. The east-west direction was chosen to be 20 feet long, 60 blocks wide for a total width of 760 feet. The depth of the model consisted of 20 foot blocks, 40 blocks deep for a total of 800 feet in depth. These sizes and directions were chosen to represent practical mining units.

1.0 Indicator Kriging Gold

- Nugget 0.084
- Sill 0.170
- Range at N060 degrees, 0 dip
  Probable = 95 feet; Possible = 315 feet
- Range at N150 degrees, 60 dip
  Probable = 150 feet; Possible = 285 feet
- Range at N330 degrees, 30 dip
  Probable = 31 feet; Possible = 185 feet

2.0 Indicator Kriging Silver

- Nugget 0.160
- Sill 0.028
- Range at N120 degrees, 0 dip, 375 feet
- Range at N030 degrees, 60 dip, 195 feet
- Range at N210 degrees, 30 dip, 185 feet

3.0 Composite Gold Value Kriging

- Nugget 0.012

4.0 Composite Silver Value Kriging

-- Nugget 0.028

The indicator kriged values for each block establishes the portion of that block which is mineralized. The gold kriged values are imposed upon the indicator values and only those blocks with an indicator value greater than 0.33 are considered in the mineral reserves. Table 5.1 shows the global reserves at various cutoffs using a 0.33 Au indicator cutoff. Table 5.2 shows the global reserves bounded by the pit area.

The estimation does not appear to be significantly biased. The mean grade of the original assay data was 0.01478 OPT for gold and 1.3196 OPT for silver. The composite means were 0.01424 OPT and 1.222 OPT for gold and silver respectively. After modeling the deposit, the mean block grade for gold was 0.01273 OPT, and for silver, it was 0.700 OPT. Additional modeling may improve the average silver grade.

Statistics for each can be found in Appendix A.

The effect of removing the high grade holes EX-14, EX-24 and EX-27 is significant. The mean grade of the remaining assays is 0.01076 OPT for gold and 0.8621 OPT for silver. It is anticipated that reduction will also be reflected in the block model with a reduction of the mean grades of gold and silver by 28% and 34% respectively.

TABLE 5-1

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CUTOFF	TONS	AU OZ/T	AG OZ/T	AUEQ 60	AU OZ	AG OZ
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0.035	1,900,858	0.035	1.319	0.057	67,027	2,506,798
0.040	1,555,611	0.038	1.395	0.062	59,558	2,170,852
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0.075	333,250	0.057	2.031	0.091	19,025	676,865
0.100	45,322	0.035	6.402	0.142	1,600	290,170

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0.020	7,494,126	0.024	1.351	0.047	179,859	10,124,564
0.025	6,397,067	0.027	1.484	0.052	172,721	9,493,247
0.030	5,333,333	0.029	1.640	0.056	154,667	8,746,666
0.035	4,298,925	0.034	1.807	0.064	146,163	7,748,157
0.040	3,556,444	0.037	1.964	0.070	131,588	6,984,856
0.050	2,643,339	0.043	2.217	0.090	113,664	5,860,283
0.075	970,424	0.059	3.337	0.115	57,255	3,238,305
0.100	322,586	0.072	6.121	0.174	23,226	1,974,549

TABLE 5-2

EXCELSIOR MINERAL INVENTORY IN PIT AREA

PROBABLE

CUTOFF	TONS	AU OZ/T	AG OZ/T	AUEQ 60	AU OZ	AG OZ
0.010	2,406,065	0.023	1.473	0.048	55,339	3,544,134
0.015	2,120,803	0.025	1.685	0.053	53,020	3,573,553
0.020	1,796,884	0.028	1.941	0.060	50,313	3,487,752
0.025	1,636,924	0.029	2.098	0.064	47,471	3,434,267
0.030	1,450,304	0.031	2.296	0.069	44,959	3,329,898
0.035	1,247,688	0.035	2.528	0.077	43,669	3,154,155
0.040	1,057,069	0.038	2.802	0.085	40,169	2,961,907
0.050	783,804	0.045	3.346	0.101	35,271	2,622,608
0.075	397,234	0.059	4.929	0.141	23,437	1,957,966
0.100	209,281	0.077	6.704	0.189	16,115	1,403,020

EXCELSIOR MINERAL INVENTORY IN PIT AREA

POSSIBLE

CUTOFF	TONS	AU OZ/T	AG OZ/T	AUEQ 60	AU OZ	AG OZ
0.010	1,639,590	0.018	0.770	0.031	29,619	1,262,104
0.015	1,241,023	0.022	1.035	0.040	27,664	1,284,286
0.020	913,105	0.025	1.294	0.047	22,857	1,181,559
0.025	770,474	0.029	1.454	0.053	22,344	1,120,530
0.030	663,834	0.031	1.614	0.058	20,579	1,071,737
0.035	535,866	0.032	1.796	0.062	16,972	962,287
0.040	454,553	0.035	1.957	0.067	15,761	889,706
0.050	341,248	0.038	2.186	0.075	13,106	745,798
0.075	113,305	0.041	3.510	0.099	4,643	397,661
0.100	33,325	0.033	6.952	0.149	1,110	231,659

EXCELSIOR MINERAL INVENTORY IN PIT AREA

TOTAL

CUTOFF	TONS	AU OZ/T	AG OZ/T	AUEQ 60	AU OZ	AG OZ
0.010	4,045,655	0.021	1.188	0.041	84,959	4,806,238
0.015	3,361,826	0.024	1.445	0.048	80,684	4,857,839
0.020	2,709,989	0.027	1.723	0.056	73,170	4,669,311
0.025	2,407,398	0.029	1.892	0.061	69,815	4,554,797
0.030	2,114,138	0.031	2.082	0.066	65,538	4,401,635
0.035	1,783,554	0.034	2.308	0.072	60,641	4,116,443
0.040	1,511,622	0.037	2.548	0.079	55,930	3,851,613
0.050	1,125,052	0.043	2.994	0.093	48,377	3,368,406
0.075	510,539	0.055	4.614	0.132	28,080	2,355,627
0.100	242,606	0.071	6.738	0.183	17,225	1,634,679

6.0 RECOMMENDATIONS

6.1 While indicator variograms showed good trends in mineralization, the mineral variograms indicate that mineralization is not predictable with any degree of accuracy. Although AMS has attempted to model the deposit in a representative manner with available data, an attempt should be made to define rock type and structural domains. Future mineral variograms should be computed within the defined domains, and the deposit modeled to those domains. This normally will increase the grade of the deposit.

6.2 Check assays should be performed on drill hole assays to establish validity and accuracy of the samples.

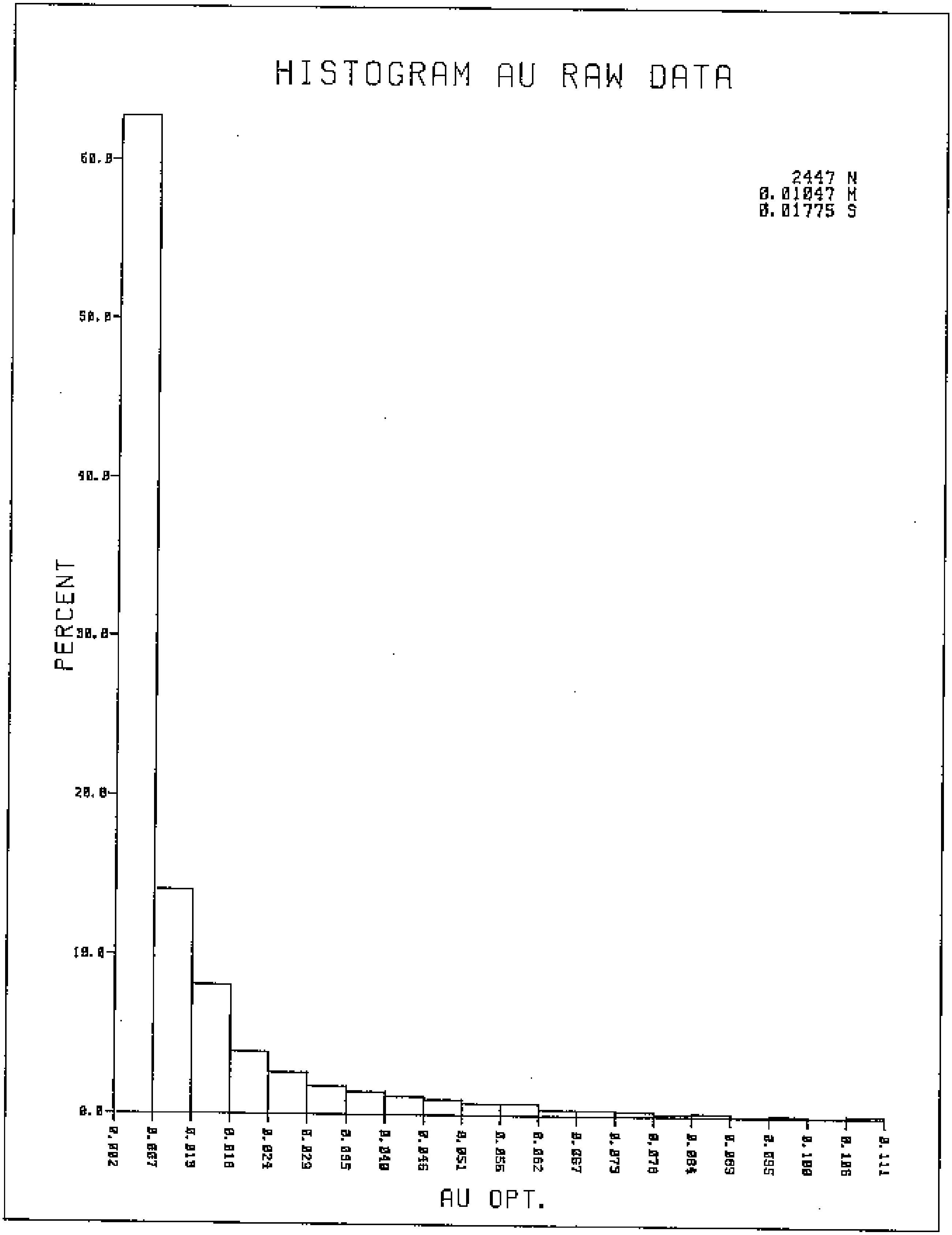
6.3 An effort should be made to obtain the original five foot assay data from holes Q76-1, Q76-2, Q76-3 and Q76-4 on the south end of the orebody. The currently available information is composited data expressed as grade thickness.

6.4 Additional drilling is required to increase the accuracy of the reserve estimation.

6.5 Future metallurgical testwork might look at amenability to leaching low grade ore. The numerous metals and sulfide content may inhibit leaching, but it is worth looking at.

6.6 The underground potential does not look good at this time. Remodeling the deposit may increase the grade enough to make it look attractive. The cost range for mining an orebody of this nature might range from $8 - 40 per ton depending on the characteristics of the rock and mineralization. Milling cost for a 300 - 500 ton per day mill will be $10 - 15 per ton, including general and administrative. The result is a total cost per ton from $18 - 55 which would be a cutoff from 0.044 to 0.136 at $450 per ounce and 90% recovery.

6.7 The open pit potential is better. Mining costs in the open pit will range from 0.80 to 1.20 per ton of material moved depending on tons per day, etc. with a 3 to 1 strip ratio. The costs could range from 3.20 to 4.80 per ton of ore. Milling costs for an 800 - 1200 ton per day mill will range from $7 - 10 per ton. Leaching of low grade can also reduce that cost per ton. The total cost per ton would then range from 10.20 to 14.80 or $10 - 15. This would be equivalent to cutoffs of 0.025 to 0.037.


HISTOGRAM AU RAW DATA
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0.01047 M
0.01775 S
PERCENT
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0.002
0.007
0.013
0.018
0.024
0.029
0.035
0.040
0.046
0.051
0.056
0.062
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0.084
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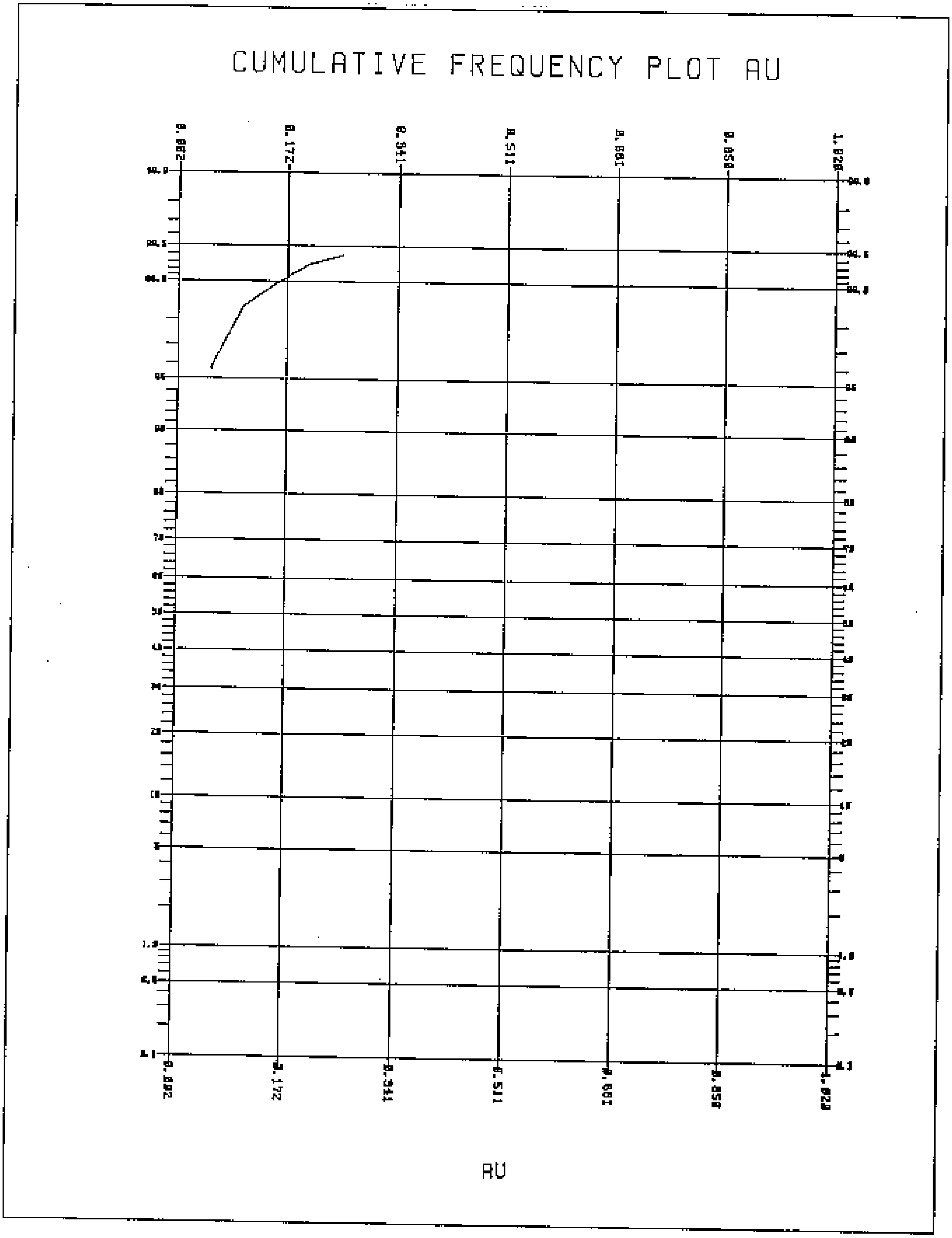
0.095
0.100
0.106
0.111
AU OPT.

FIGURE 1


CUMULATIVE FREQUENCY PLOT AU
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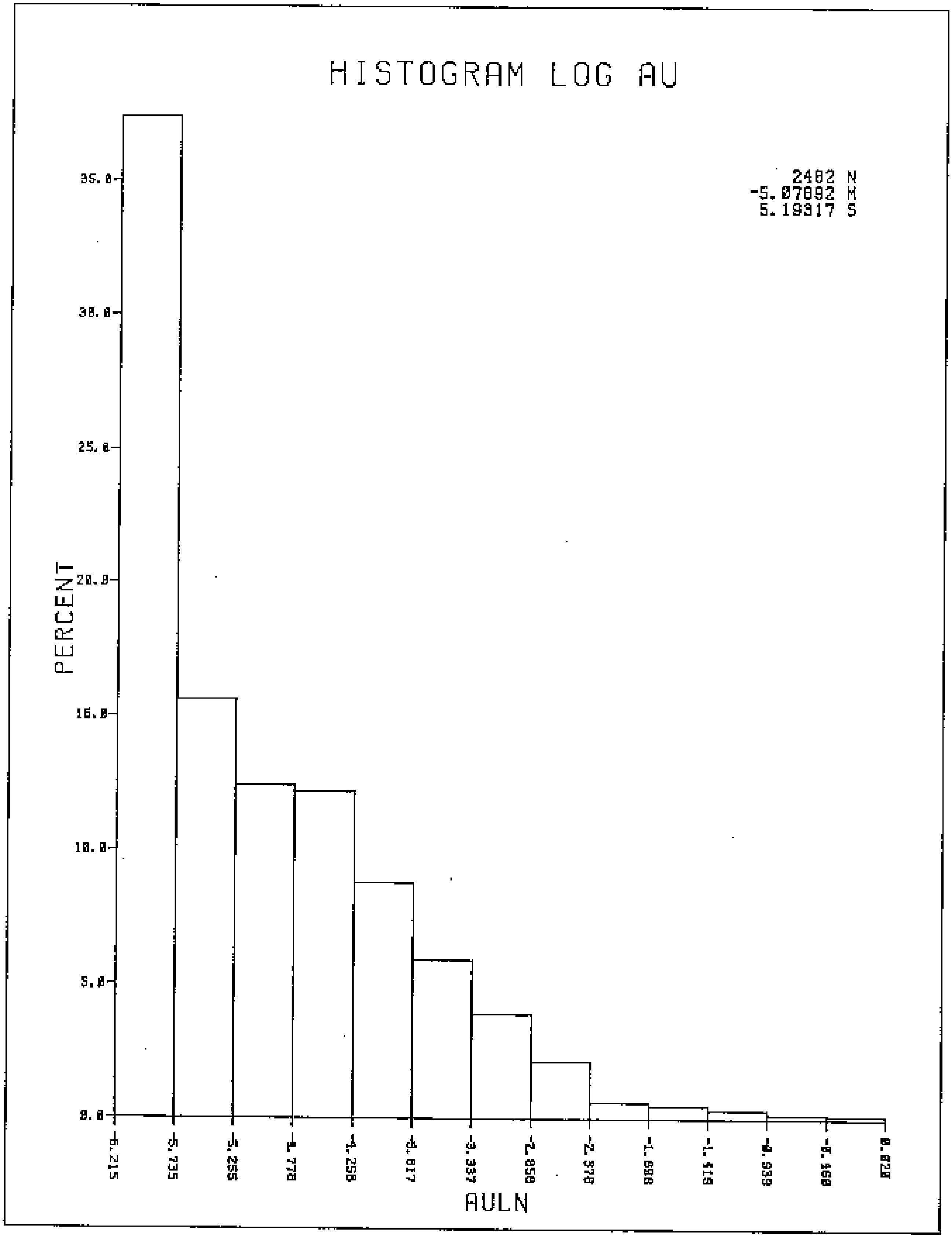
0.172
0.341
0.511
0.681
0.850
1.020
AU

FIGURE 2


HISTOGRAM LOG AU
2482 N
-5.07892 M
5.19317 S
PERCENT
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-6.215
-5.735
-5.255
-4.778
-4.298
-3.817
-3.337
-2.858
-2.378
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-0.939
-0.460
0.020
AULN

FIGURE 3

CUMULATIVE FREQUENCY PLOT LN AU

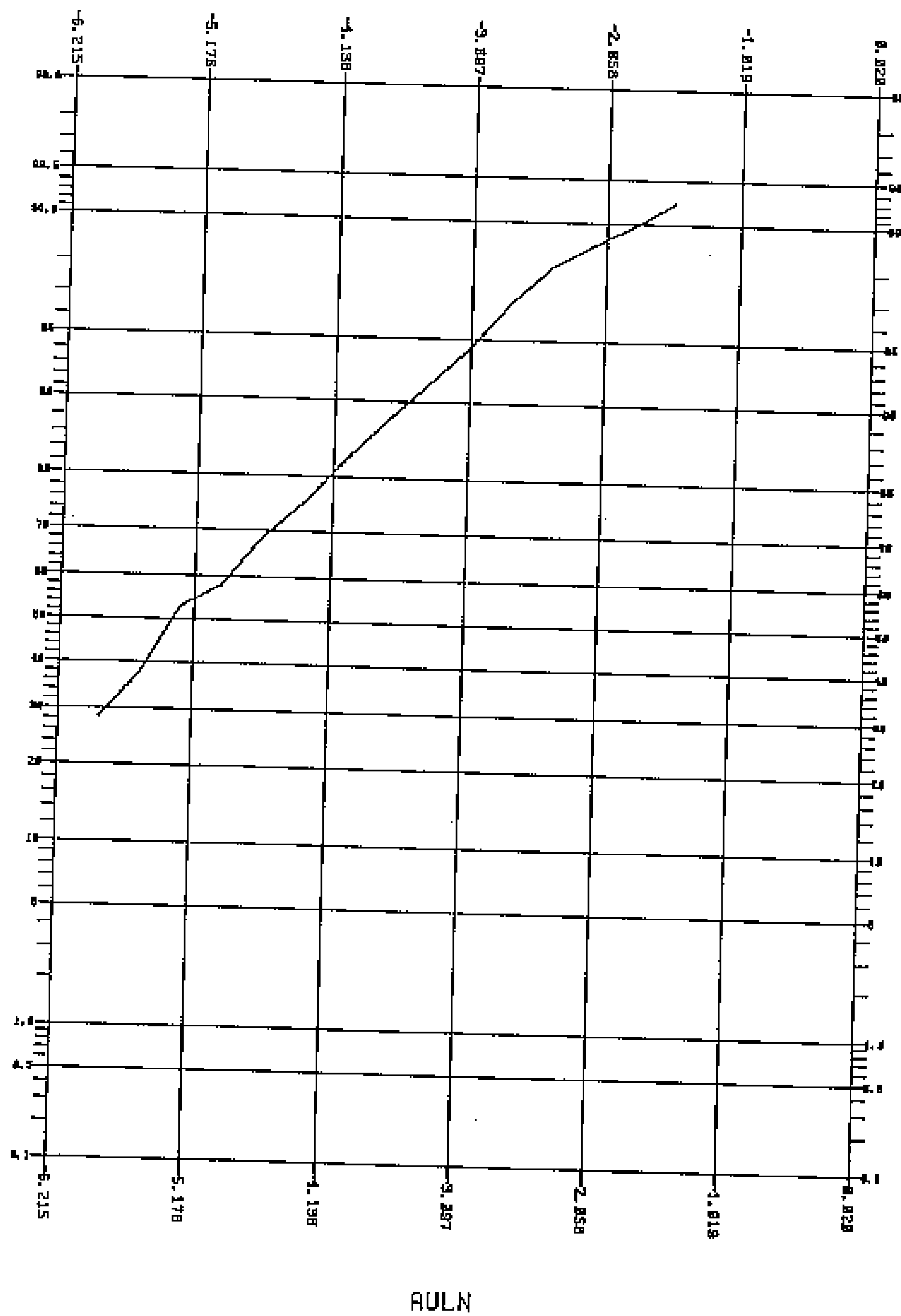
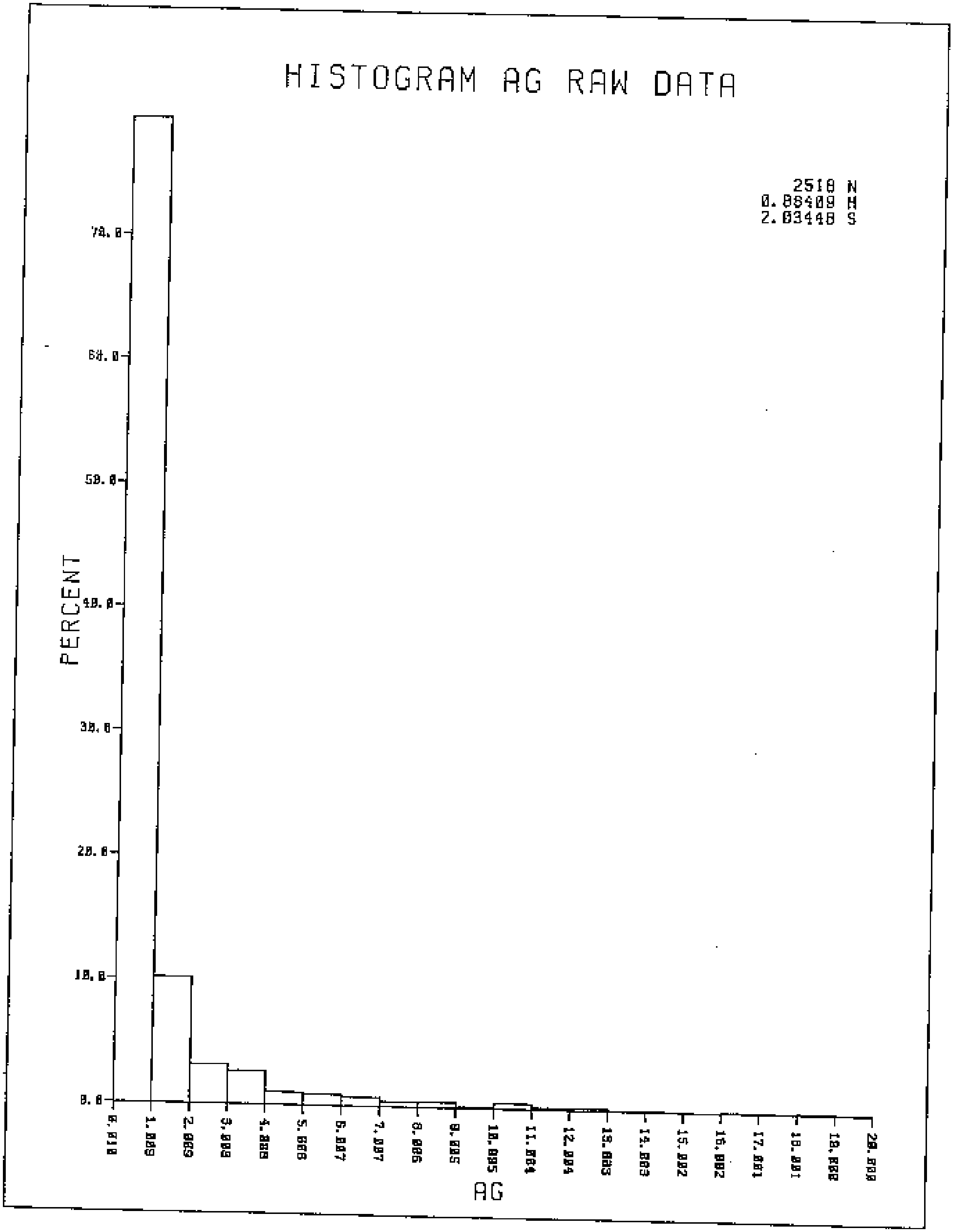


FIGURE 4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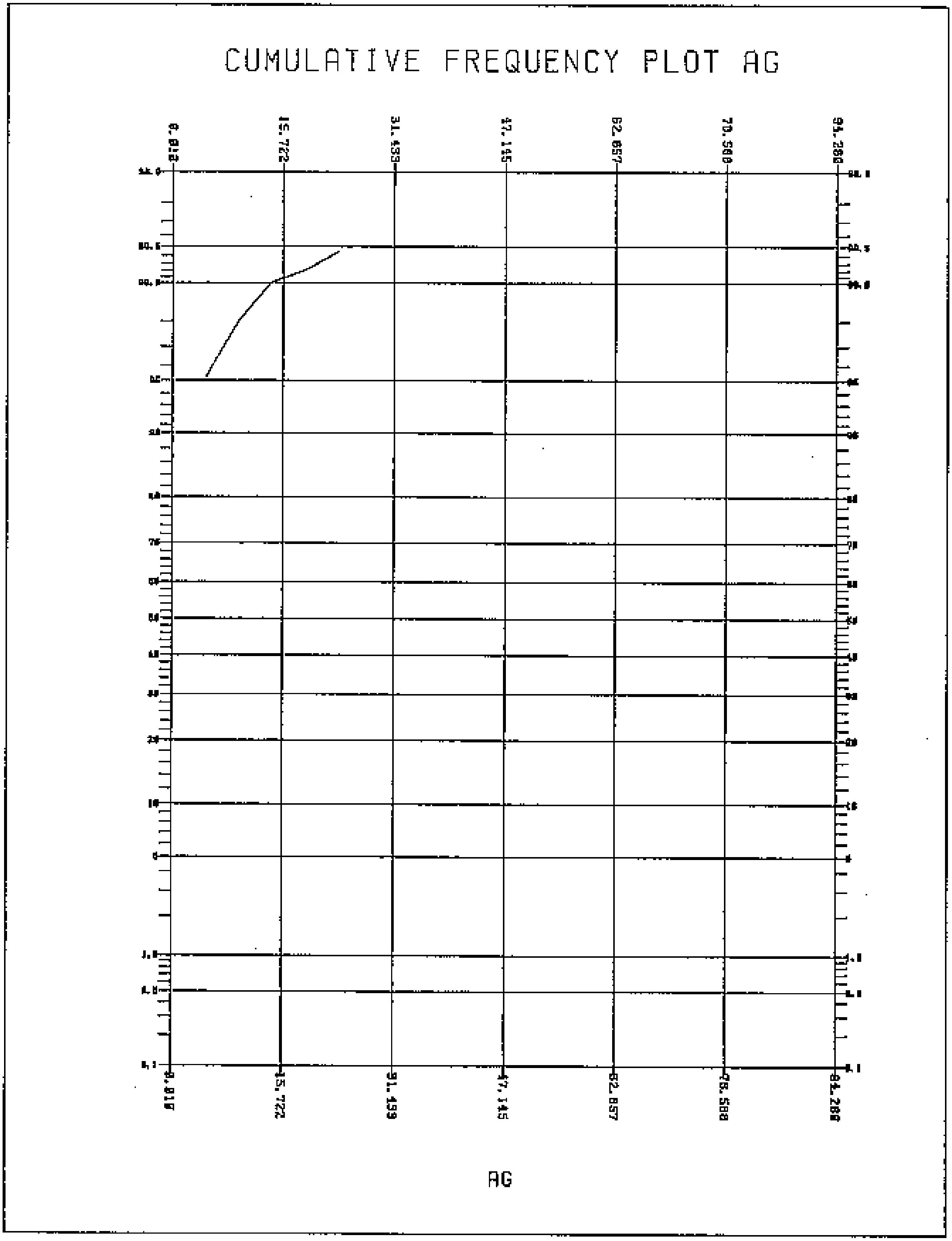
40.0
30.0
20.0
10.0
0.0
PERCENT
AG

FIGURE 5


CUMULATIVE FREQUENCY PLOT AG
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31.433
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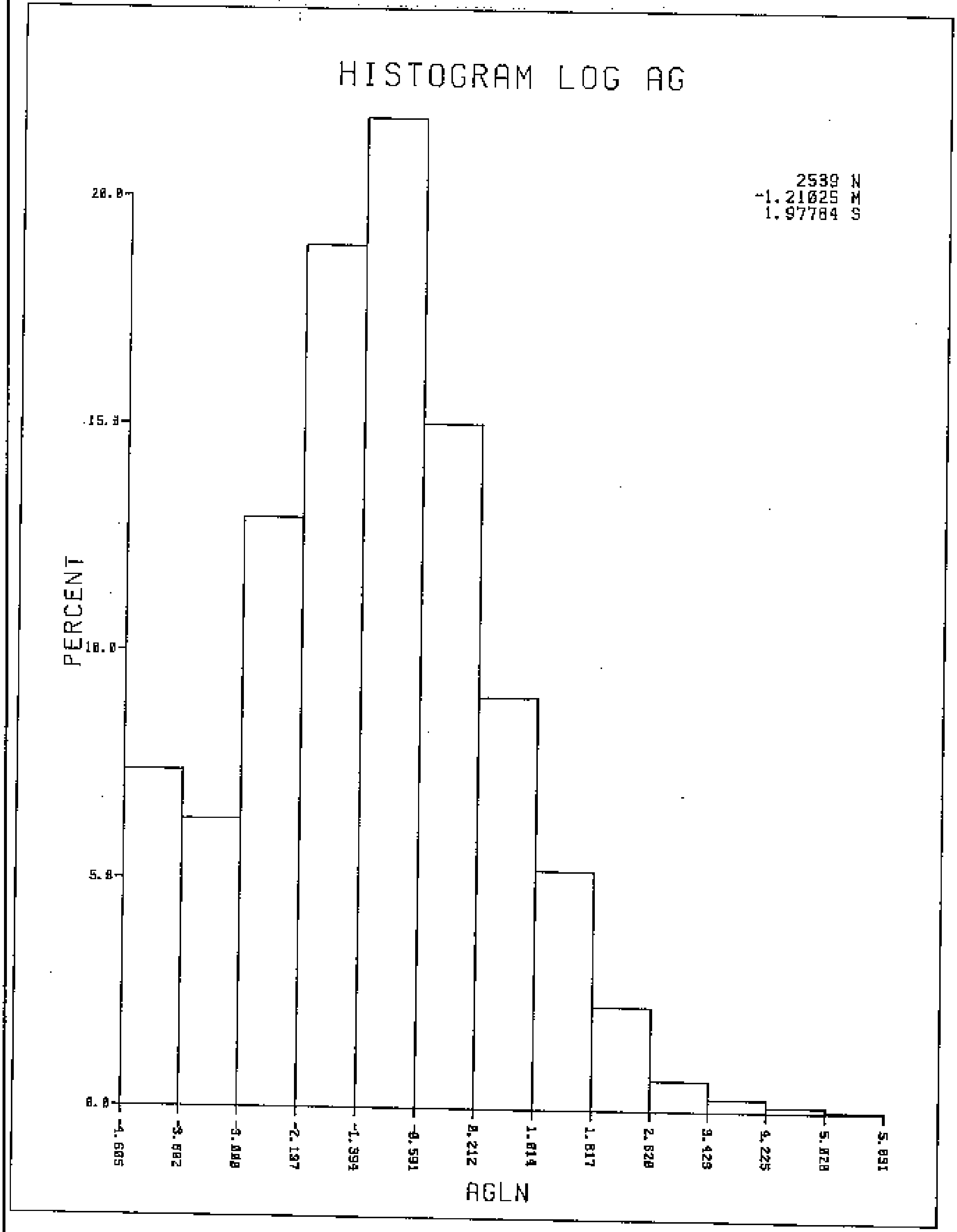
62.857
78.568
94.280
AG

FIGURE 6


HISTOGRAM LOG AG
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-1.21025 M
1.97784 S
PERCENT
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15.0
10.0
5.0
0.0
-4.605
-3.802
-3.000
-2.197
-1.394
-0.591
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1.014
1.817
2.620
3.423
4.225
5.028
5.831
AGLN

FIGURE 7

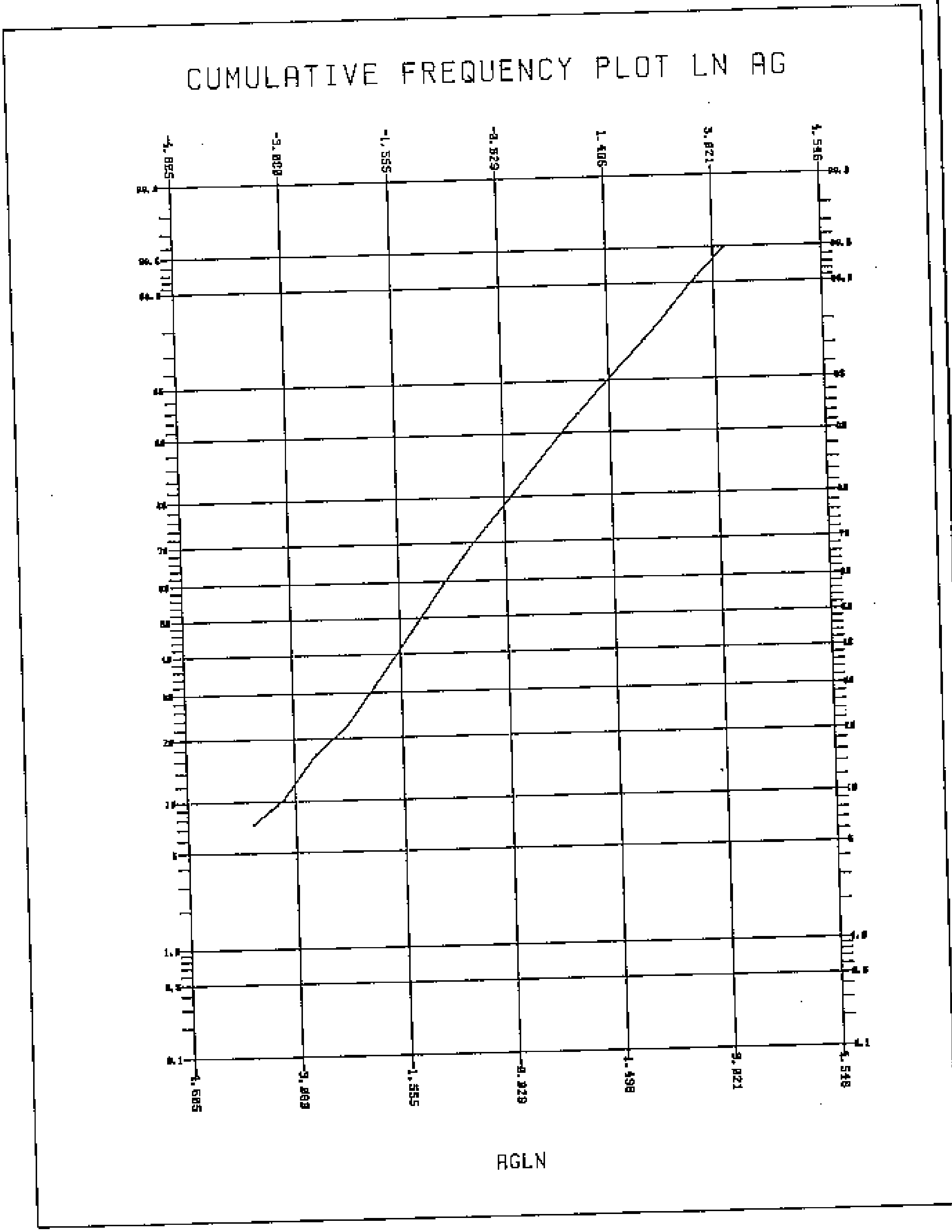
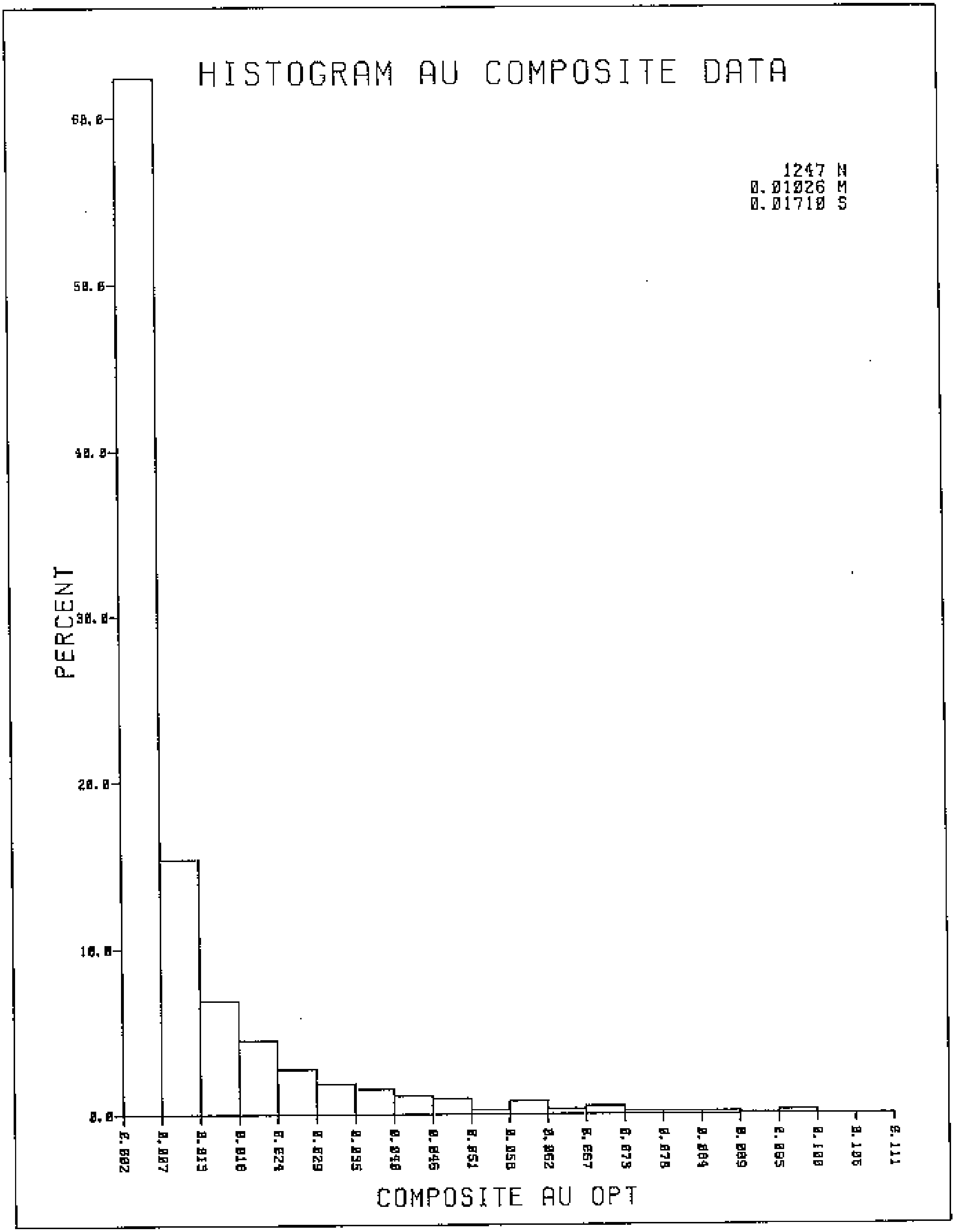

CUMULATIVE FREQUENCY PLOT LN AG
-4.695
-3.089
-1.555
-0.029
1.498
3.021
4.548
99.9
99.5
99.0
95
90
80
70
60
50
40
30
20
10
5
1.0
0.5
0.1
AGLN

FIGURE 8


HISTOGRAM AU COMPOSITE DATA
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0.01026 M
0.01710 S
PERCENT
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50.0
40.0
30.0
20.0
10.0
0.0
COMPOSITE AU OPT

FIGURE 9

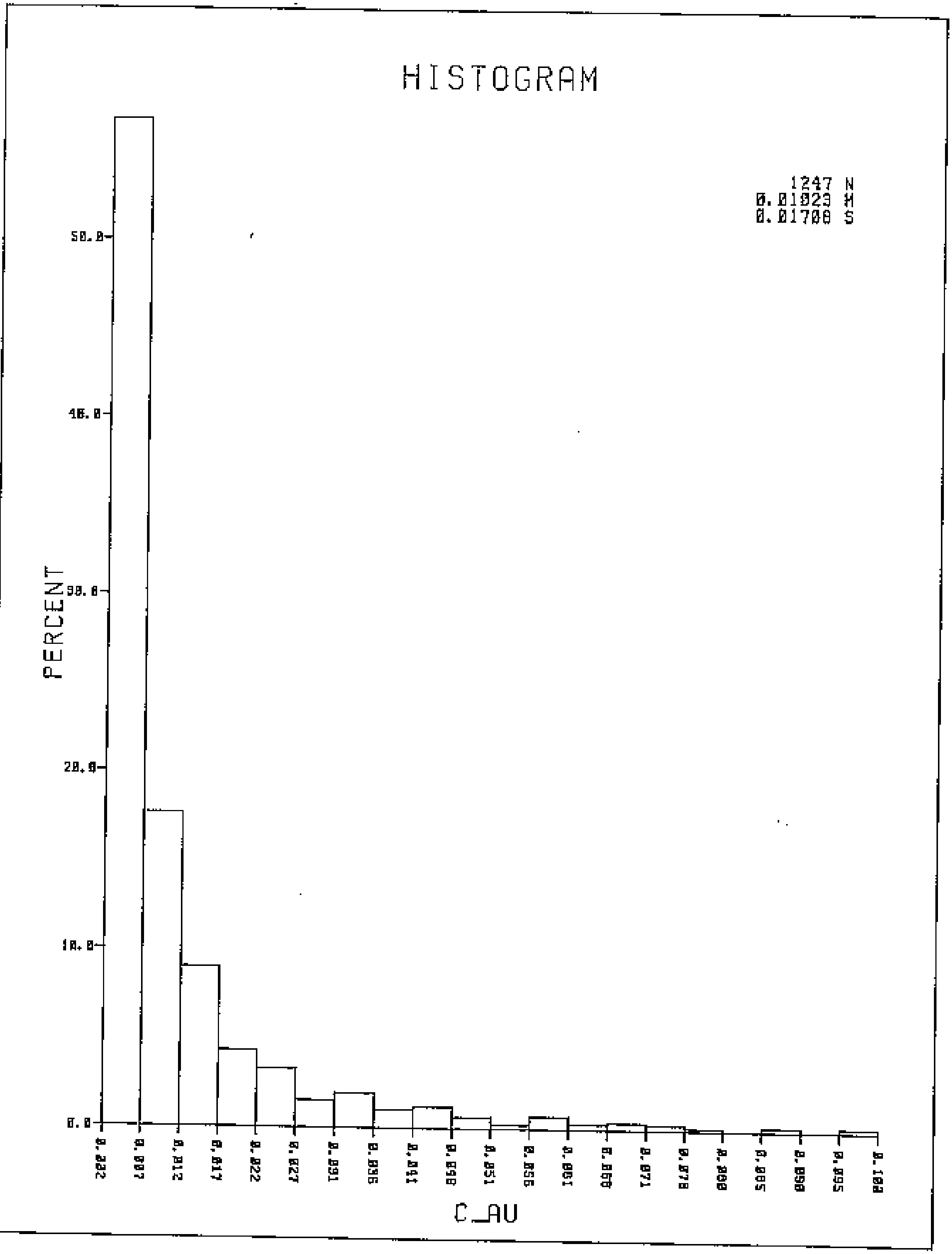
HISTOGRAM
1247 N
0.01023 M
0.01708 S
PERCENT
50.0
40.0
30.0
20.0
10.0
0.0
C_AU

FIGURE 10

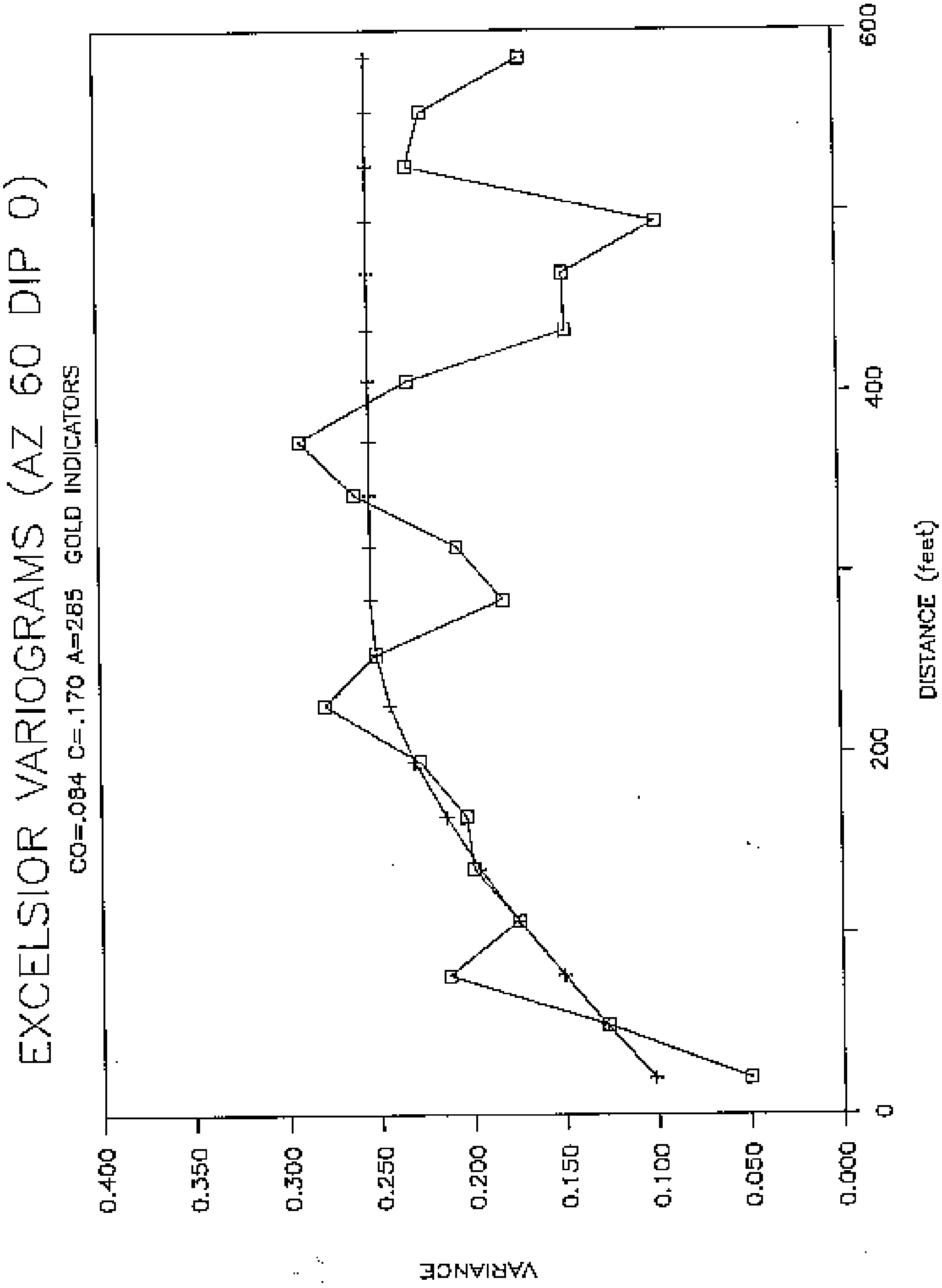
EXCELSIOR VARIOGRAMS (AZ 60 DIP 0)
CO=.084 C=.170 A=285 GOLD INDICATORS
VARIANCE
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
0
200
400
600
DISTANCE (feet)

FIGURE 11

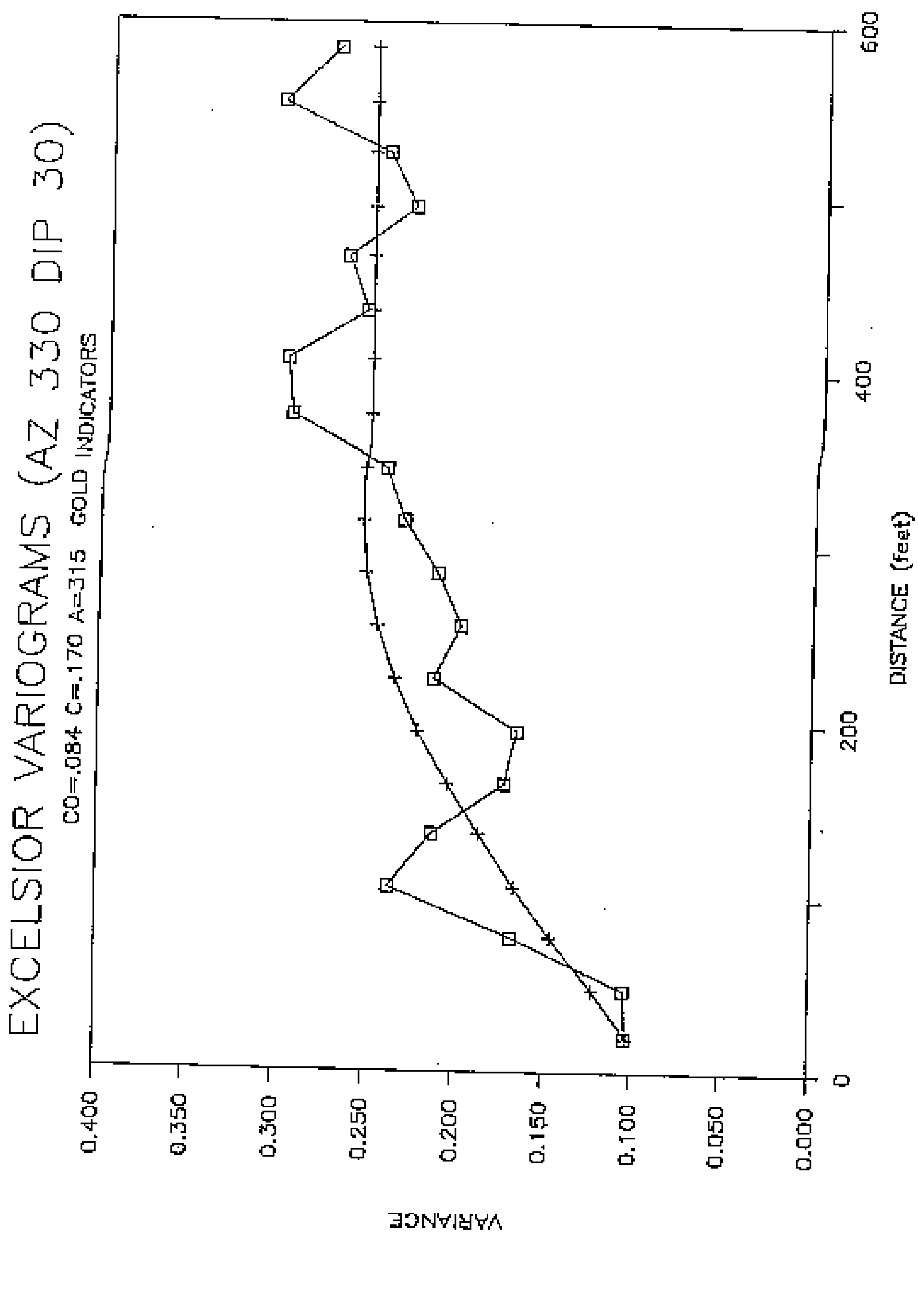
EXCELSIOR VARIOGRAMS (AZ 330 DIP 30)
CO=.084 C=.170 A=315 GOLD INDICATORS
VARIANCE
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
DISTANCE (feet)
0
200
400
600

FIGURE 12

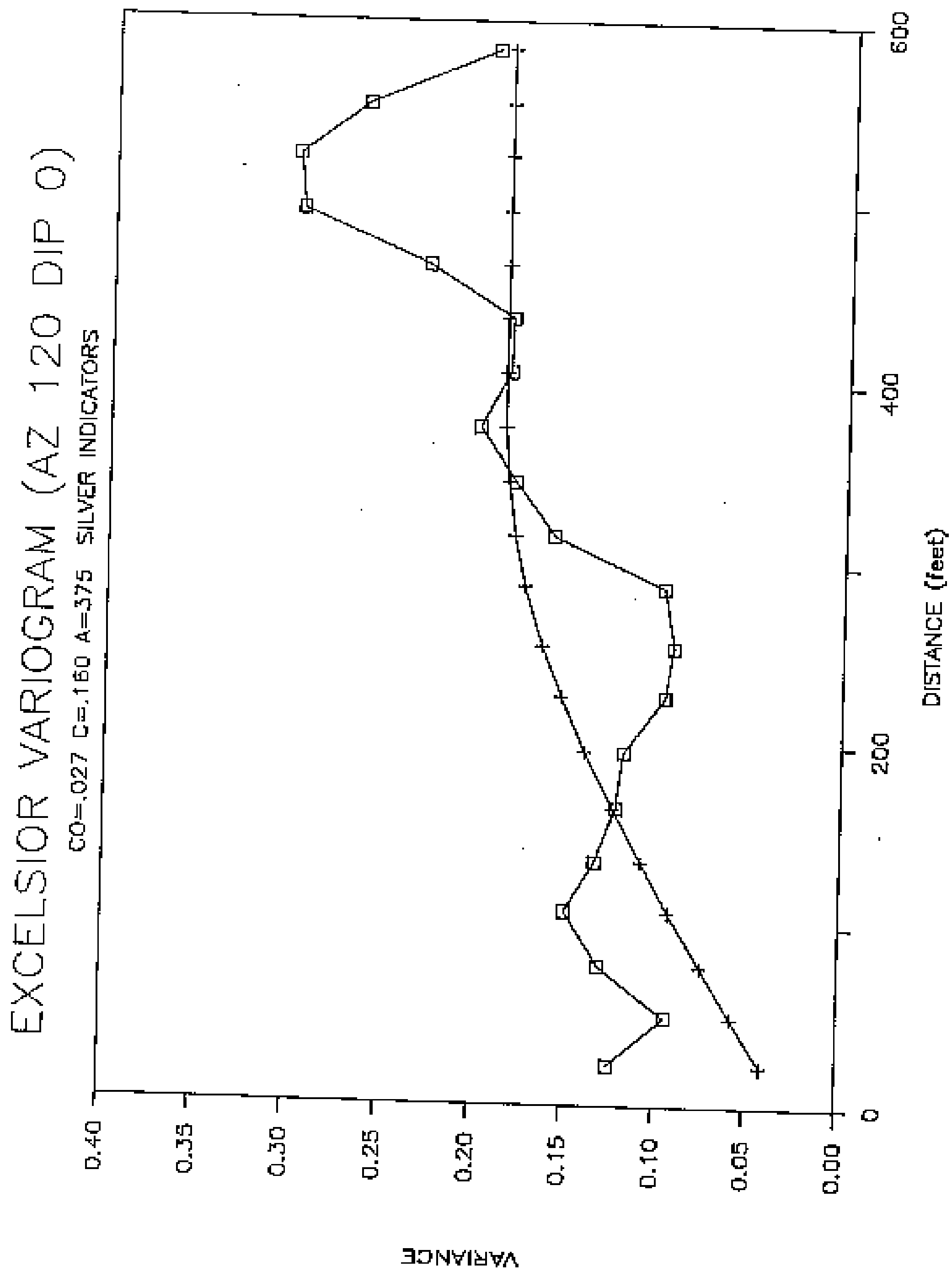
EXCELSIOR VARIOGRAM (AZ 120 DIP 0)
CO=.027 C=.160 A=375 SILVER INDICATORS
VARIANCE
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
200
400
600
DISTANCE (feet)

FIGURE 13

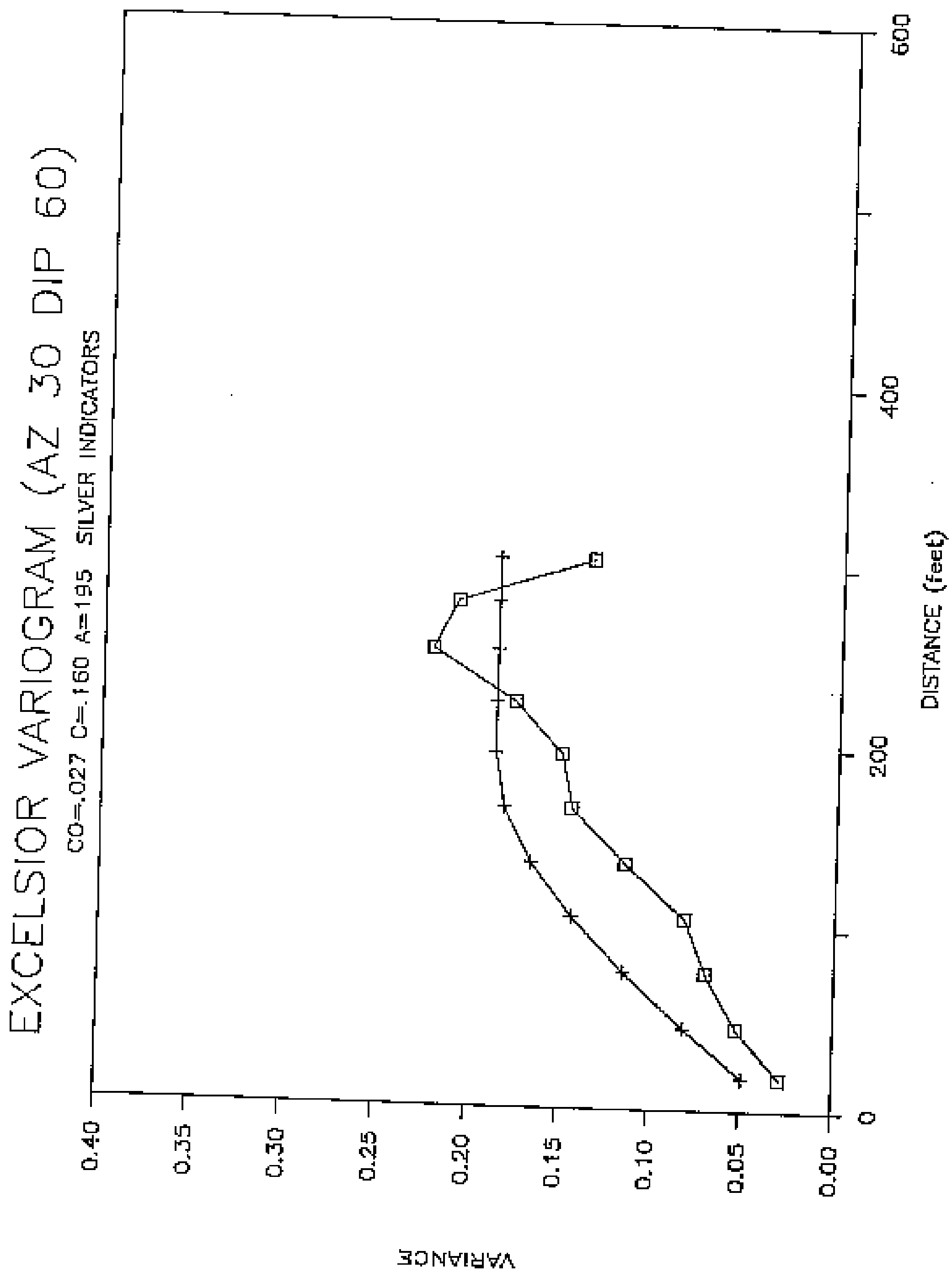
EXCELSIOR VARIOGRAM (AZ 30 DIP 60)
CO=.027 C=.160 A=195 SILVER INDICATORS
VARIANCE
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
DISTANCE (feet)
0
200
400
600

FIGURE 14

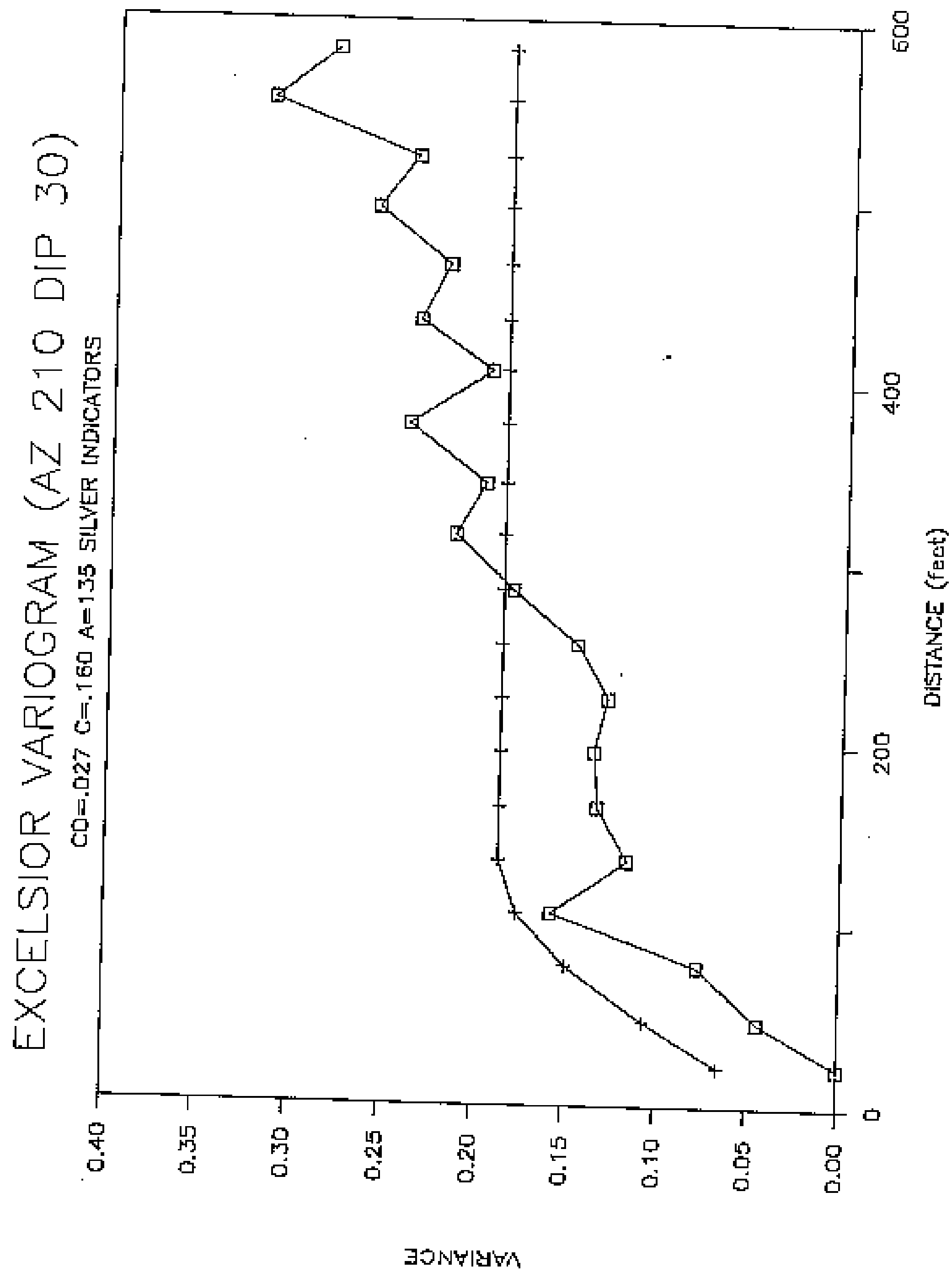
EXCELSIOR VARIOGRAM (AZ 210 DIP 30)
C0=.027 C=.160 A=135 SILVER INDICATORS
VARIANCE
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
DISTANCE (feet)
0
200
400
600

FIGURE 15

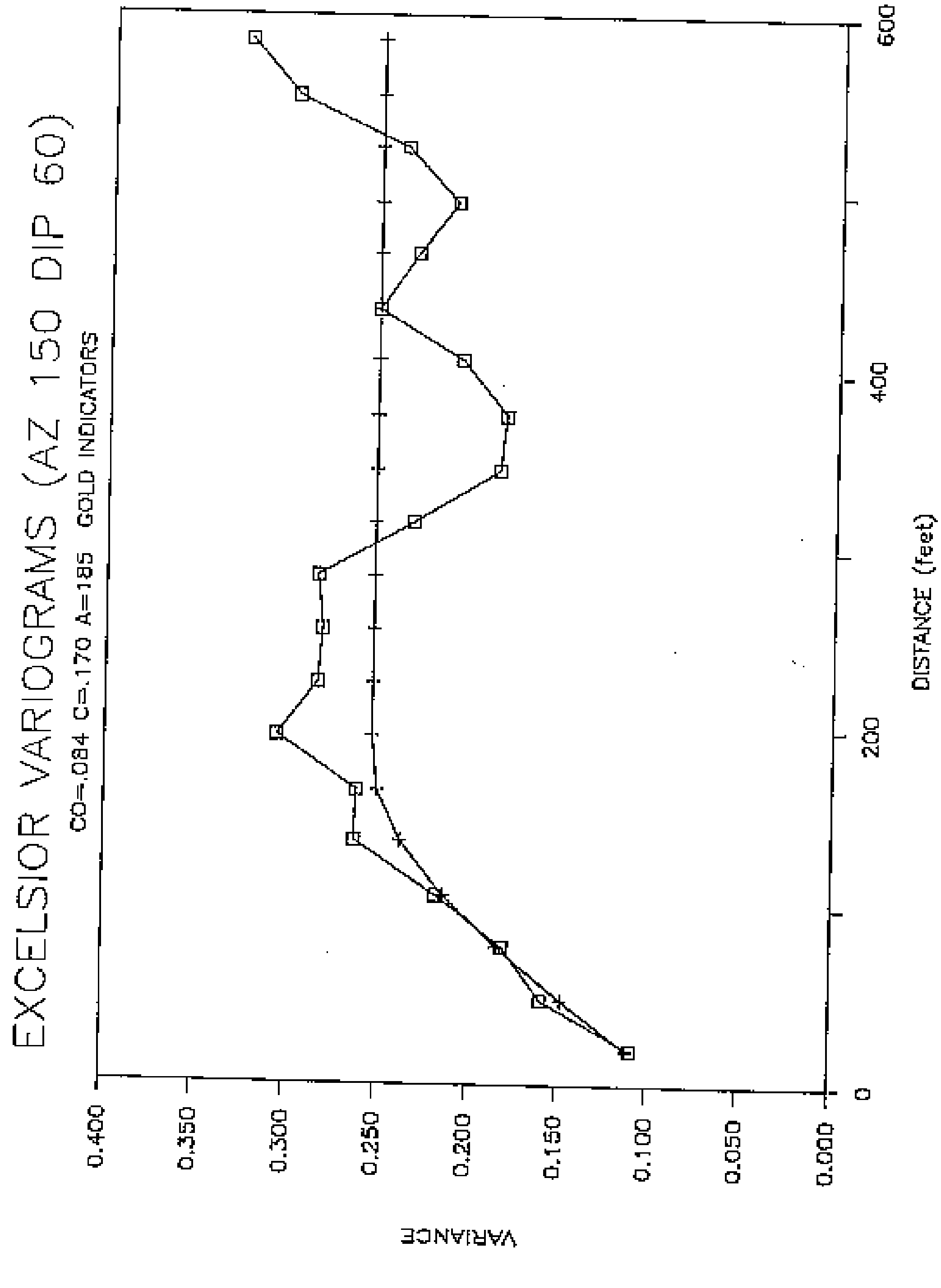
EXCELSIOR VARIOGRAMS (AZ 150 DIP 60)
CO=.084 C=.170 A=185 GOLD INDICATORS
VARIANCE
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
DISTANCE (feet)
0
200
400
600

FIGURE 16

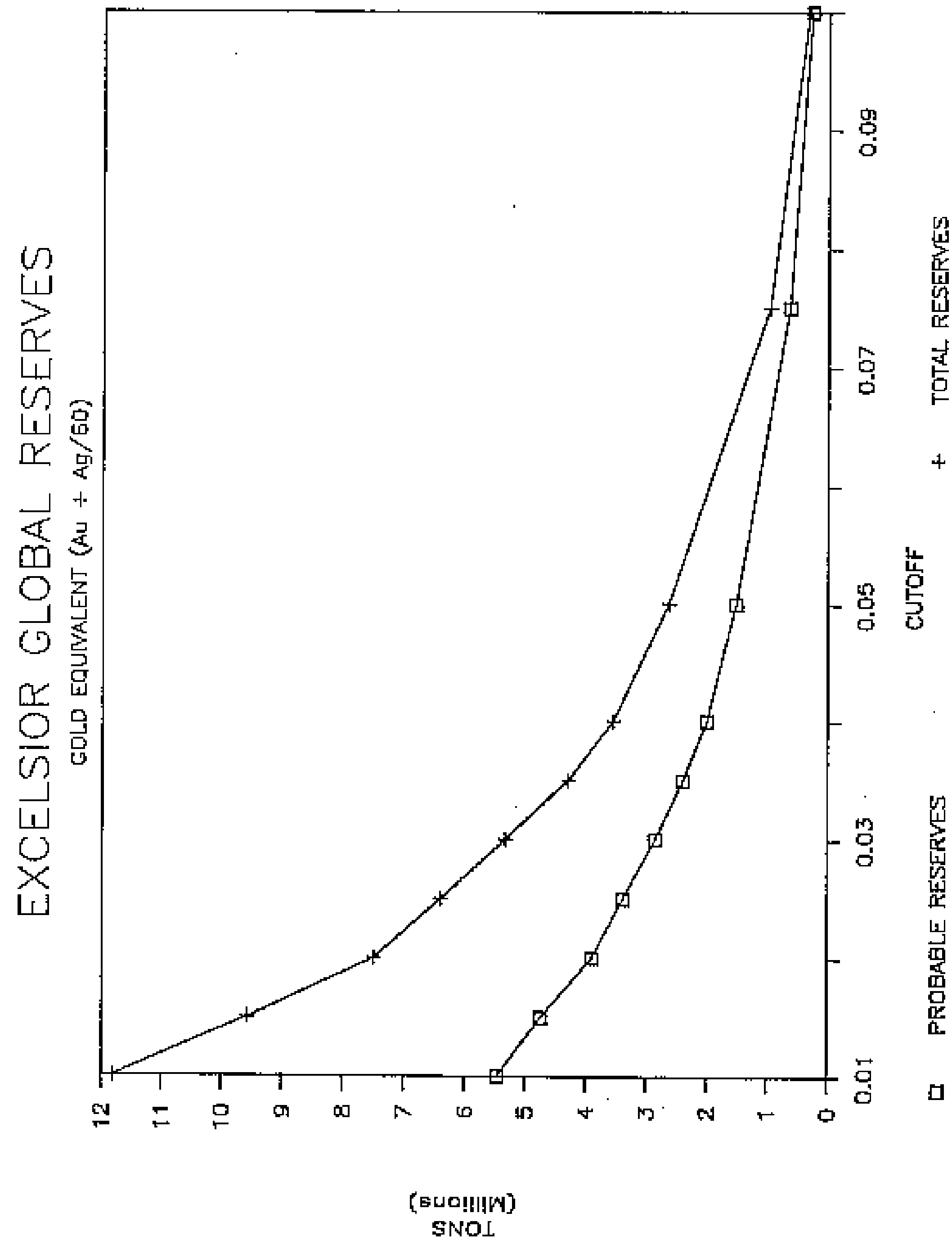
EXCELSIOR GLOBAL RESERVES
GOLD EQUIVALENT (Au + Ag/60)
TONS
(Millions)
0
1
2
3
4
5
6
7
8
9
10
11
12
0.01
0.03
0.05
0.07
0.09
CUTOFF
PROBABLE RESERVES
+ TOTAL RESERVES

FIGURE 17

AMERICAN MINE SERVICES, INC.

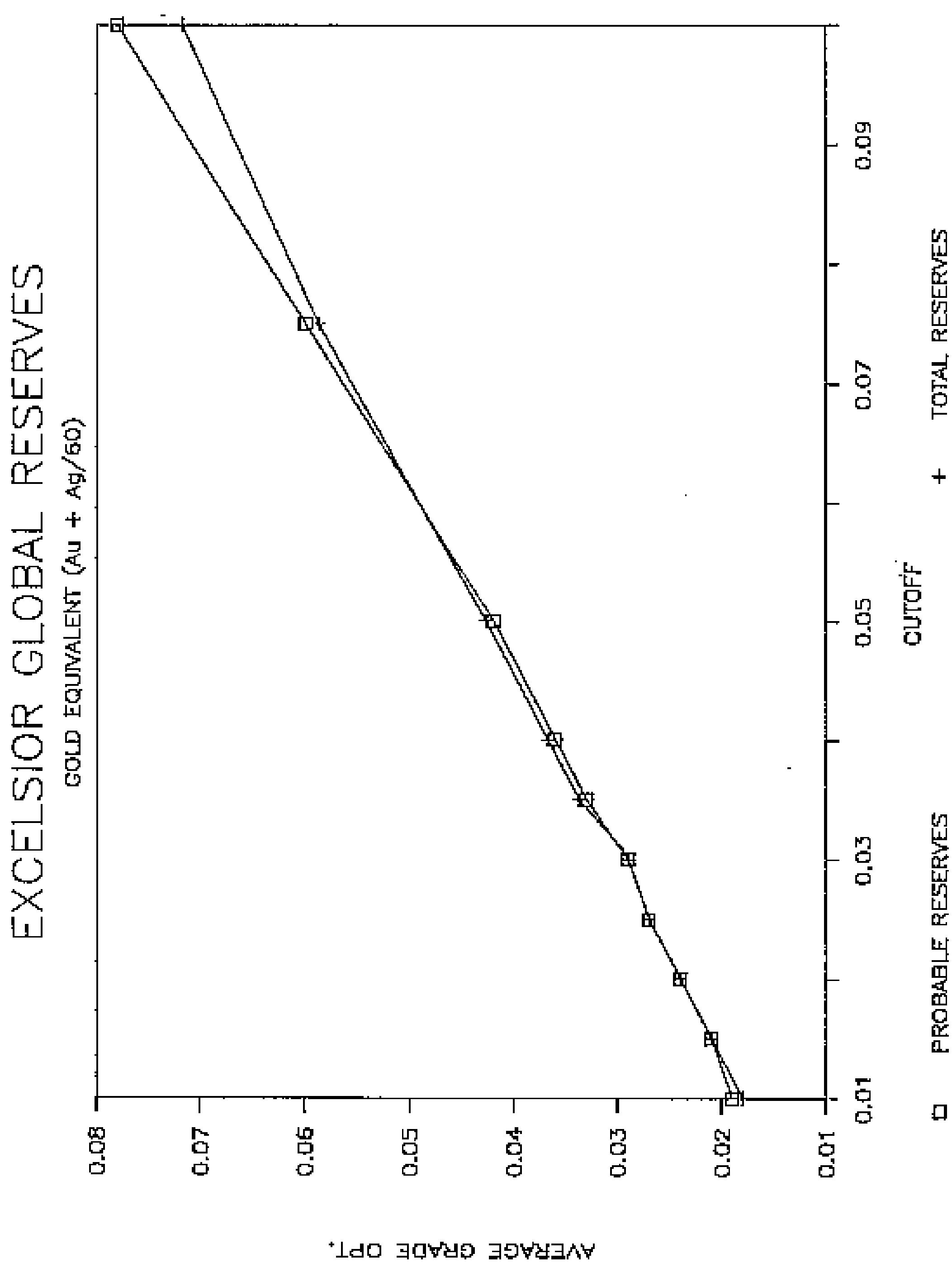

FIGURE 18

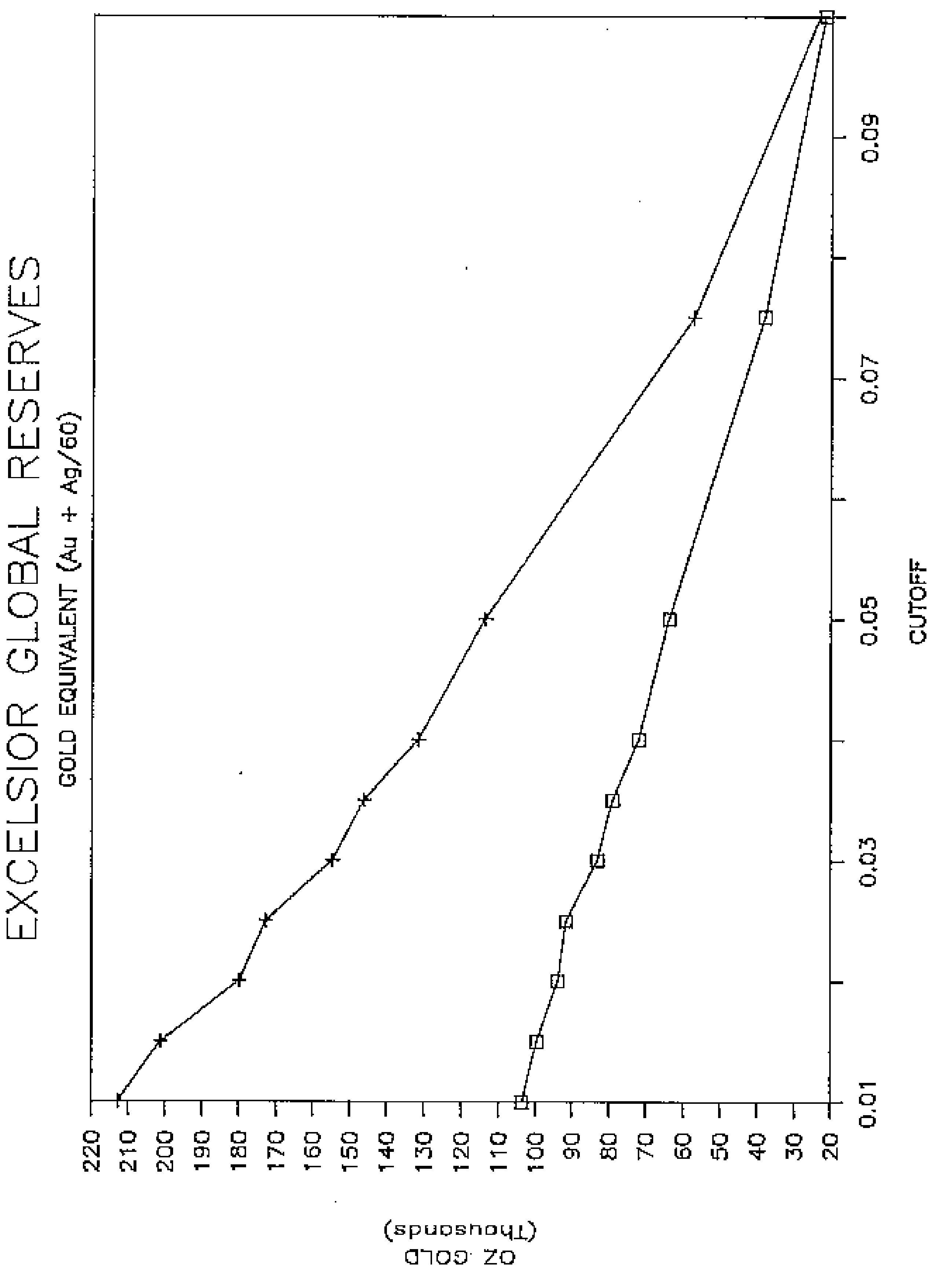
EXCELSIOR GLOBAL RESERVES
GOLD EQUIVALENT (Au + Ag/60)
OZ GOLD
(Thousands)
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
CUTOFF
0.01
0.03
0.05
0.07
0.09

FIGURE 19