ANVIL MINING CORPORATION LIMIT[illegible]

000730

MEMORANDUM

TO: W. Krats

FROM: P. M. Pettigrew

SUBJECT: ADJUSTMENTS TO PROJECTED ORE GRADES

DATE: June 29, 1973

Introduction:

As outlined in a number of memoranda including one dated May 8, 1973, some difficulties have been experienced in accurately projecting both Pb- and Zn-grades for ore planning purposes. In the above memorandum it was stated (p. 1) that "Zn does seem to be much more homogeneously distributed than Pb, which is much more zonal ..." The present report attempts to expand somewhat on this.

Summary:

Frequency distributions were compiled from January to May, 1973 blast holes. These lend support to the writer's previous observation that Zn is fairly homogeneously distributed, but has been overestimated in 1965-1970 DDH assays. On the other hand, Pb appears to be zonally distributed: there is a low- and a high-grade Pb zone within the present pit development. The presence of the second, higher grade population has been blurred in DDH assays due partly to the presence of Ba.

Contouring Pb and Zn grades experienced in blast holes on the 3910 bench seems to add further support to this.

DDH VS. BLAST HOLE DATA:

a. Frequency Distributions:

805 blast hole assays for the period January to May, 1973 were classified according to the number of times specific ranges of Pb and Zn percentages were reported.

The DDH data collected for the writer's report of June 25, 1973 was also classified in terms of tonnage projected (from bench plans and in the volume of rock extracted) for each grade-range. A conversion factor was devised in terms of the number of tons assumed to be sampled by each of the 805 blast holes. By dividing this value into each of the tonnages per grade-range, an expected frequency was derived for each.

Figure I is a frequency distribution showing the number of observations reported (i.e. assayed) as being within each of the grade-ranges shown on the x axis.

It is a negatively skewed unimodal distribution with a modal value of 5.5. In 94.9% of the cases, the Zn values are ≤ 7.5%. This approximates to a 95% confidence limit.

Figure I: Frequency Distribution showing the Frequency of Zn assays reported from blast holes dated Jan. - May, 1973

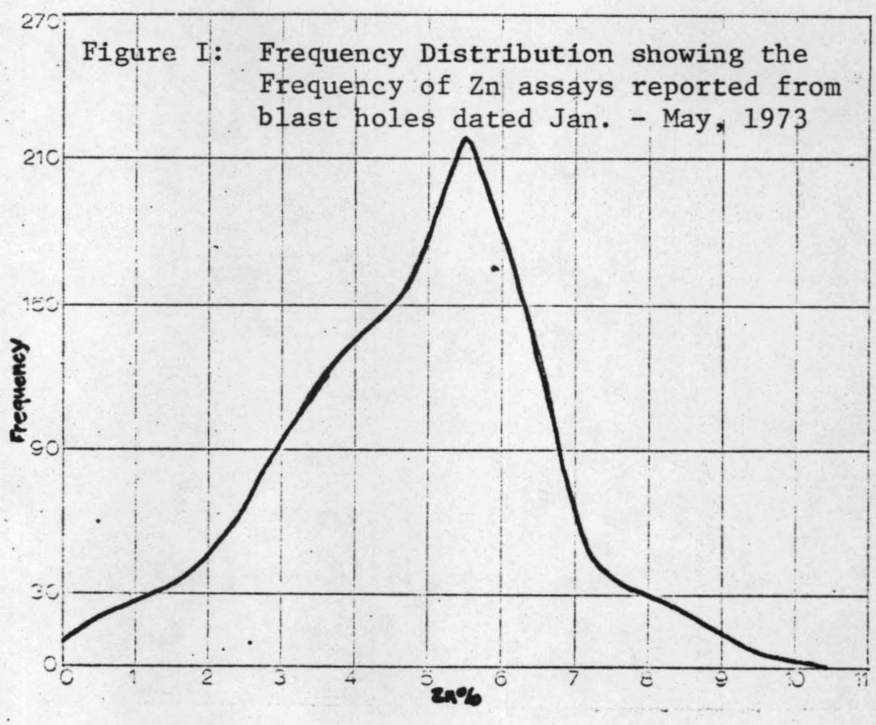

Figure 2 is the expected frequency distribution for the same population of 805 observations (based on the DDH data for the volume of ore extracted).

This distribution is distinctly bimodal with modal values of 6.5% and 9.5% Zn.

The writer would interpret these graphs as indicating that the DDH's encountered two populations of Zn values: one being the actual population with modal value of 5.5% and the other being erratic highs due to veins of sphalerite and/or erratic errors in the original assays (see report September 13, 1973, page 5).

As mentioned above, it is possible to predict that the ore will assay ≤ 7.5% with approximately 95% confidence. This observation will be referred to below.

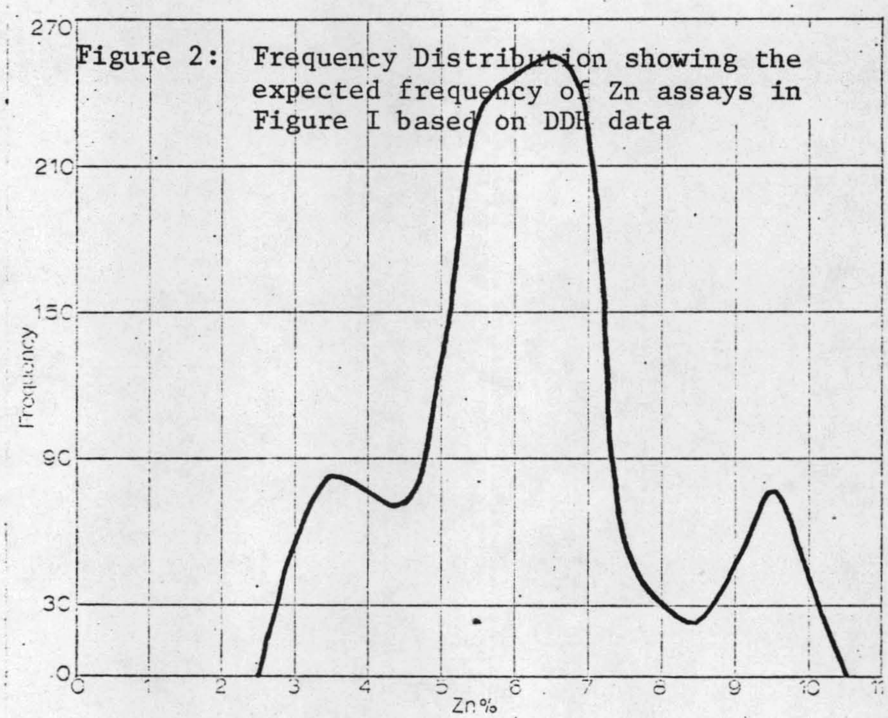

Figure 2: Frequency Distribution showing the expected frequency of Zn assays in Figure I based on DDH data

Figure 3 is the frequency distribution for Pb assays for the 805 blast holes discussed for Figure I.

This distribution is bimodal with modal values of 2.5% and 5.5% Pb.

There would very definitely appear to be two populations of Pb values, i.e. the Pb is distributed zonally. This has been commented on elsewhere (May 8, 1973) and will be further discussed below.

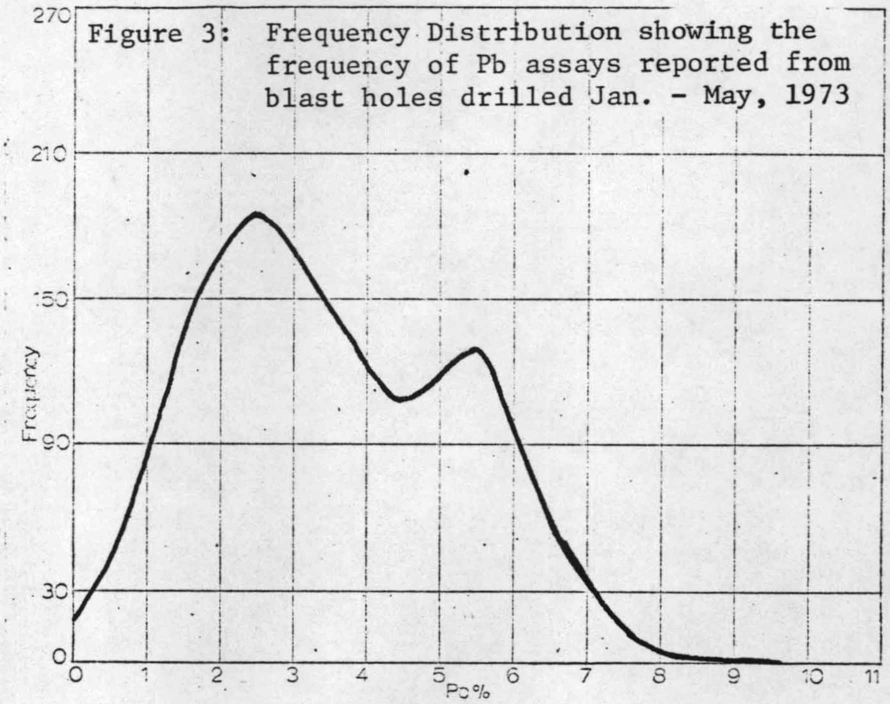

Figure 3: Frequency Distribution showing the frequency of Pb assays reported from blast holes drilled Jan. - May, 1973

Figure 4 is an expected frequency distribution for Pb assays in the volume of rock removed in January to May, 1973. It was derived in a similar manner to the distribution in Figure 2. It is unimodal with a modal value of 2.5.

The second, higher grade population is not at all clearly defined. That is, the DDH's do not appear to have delineated the zonation observed in the blast holes. This could be due to the higher grade Pb zone having a greater proportion of Ba than the lower Pb- grade zone, thus interfering with a sufficient number of the initial assays to blur the difference between the two populations. On the other hand, there could have been some other factor(s) involved in interfering with both the Pb and Zn assays in 1965-1970. This will prove difficult to establish.

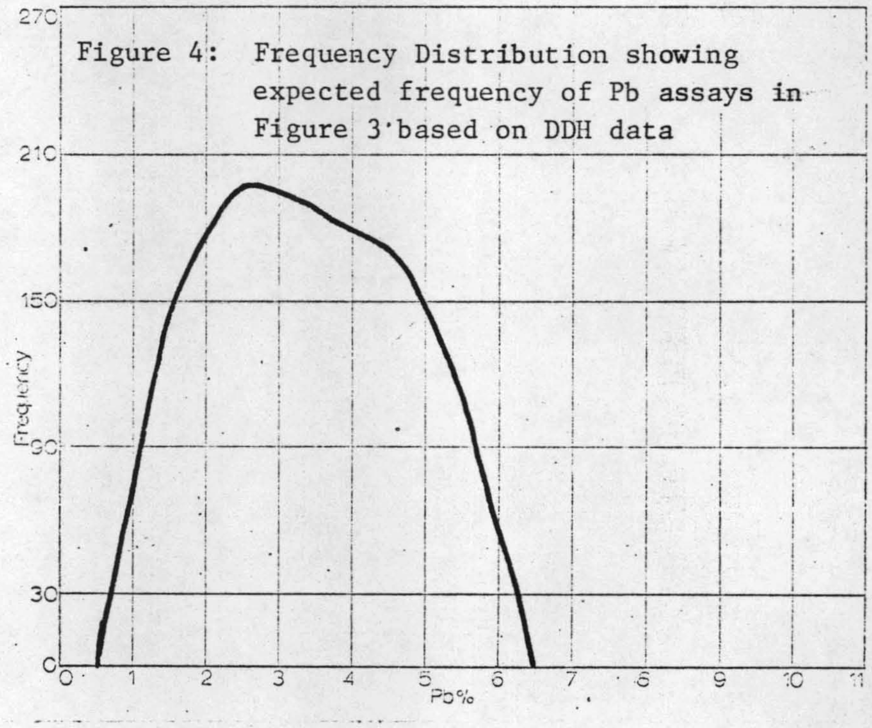

Figure 4: Frequency Distribution showing expected frequency of Pb assays in Figure 3 based on DDH data

b. Pb-Zn Zonation:

Blast holes drilled for 3910 bench ore between July, 1972 and April, 1973 inclusive were contoured for Pb, Zn and Pb + Zn assays and compared to the original DDH assays. These are presented below as Figures 5, 6 and 7 respectively.

Figure 5 seems to demonstrate quite clearly a bipartite zonation defined by the line A-B: the ore to the north is largely $< 4\%$ Pb, that to the south is $\geqslant 4\%$.

There are tonnage blocks in the southern zone which are greatly enhanced in Pb over the original DDH assays. These may be equivalent to the 5.5% modal value observed in Figure 3.

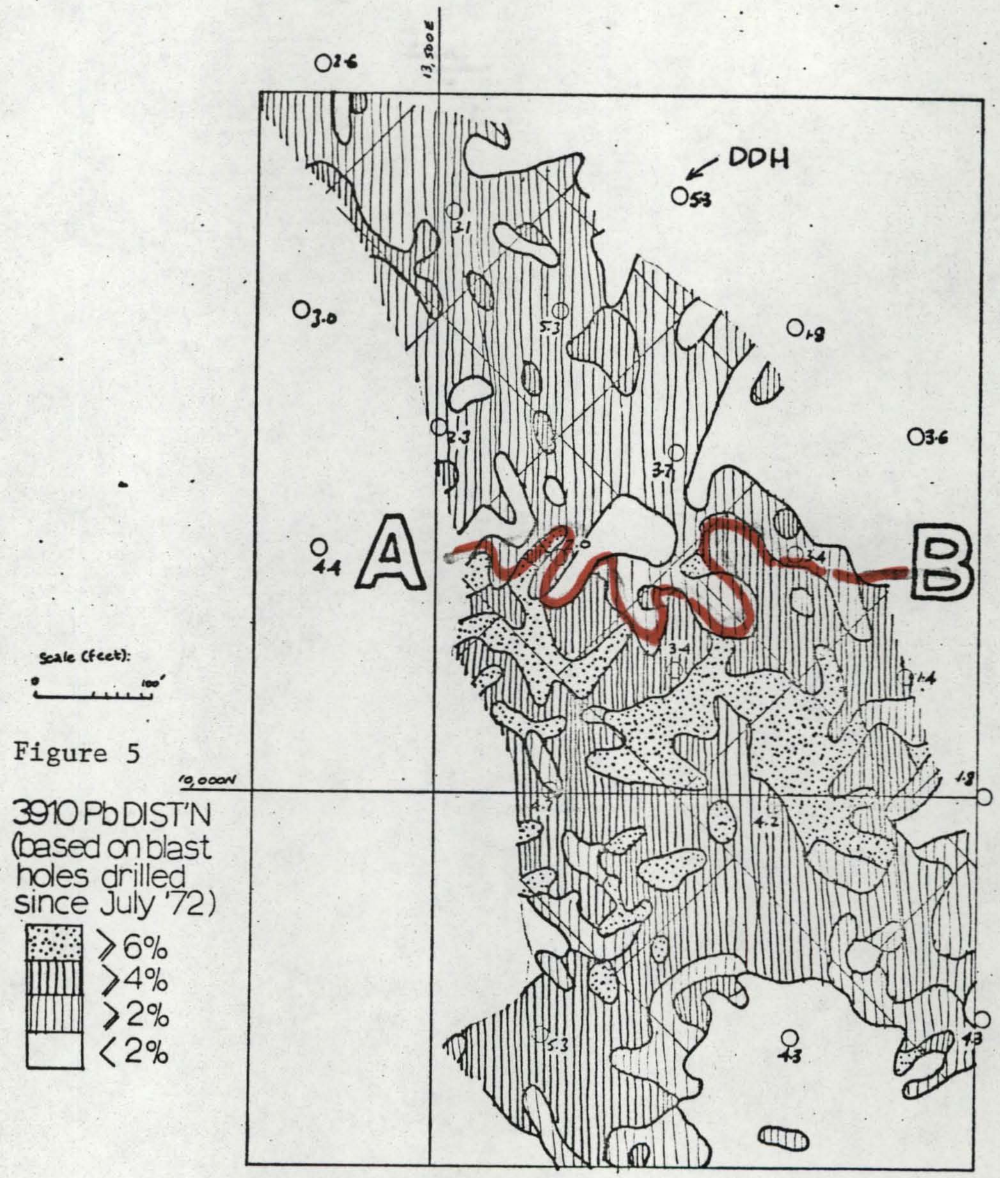

Figure 5

In Figure 6 there is no obvious trend as there seems to be a broad distribution of ≥ 5% Zn with a slight bias towards the southern area being very slightly better endowed with zinc.

Occurrences of ≥ 7% Zn are much rarer than occurrences of ≥ 6% Pb and are much more broadly distributed.

There is an association of ≥ 7% Zn with ≥ 3% Zn suggesting localized remobilization which has been partly to blame for the erratic highs observed in Figure 2.

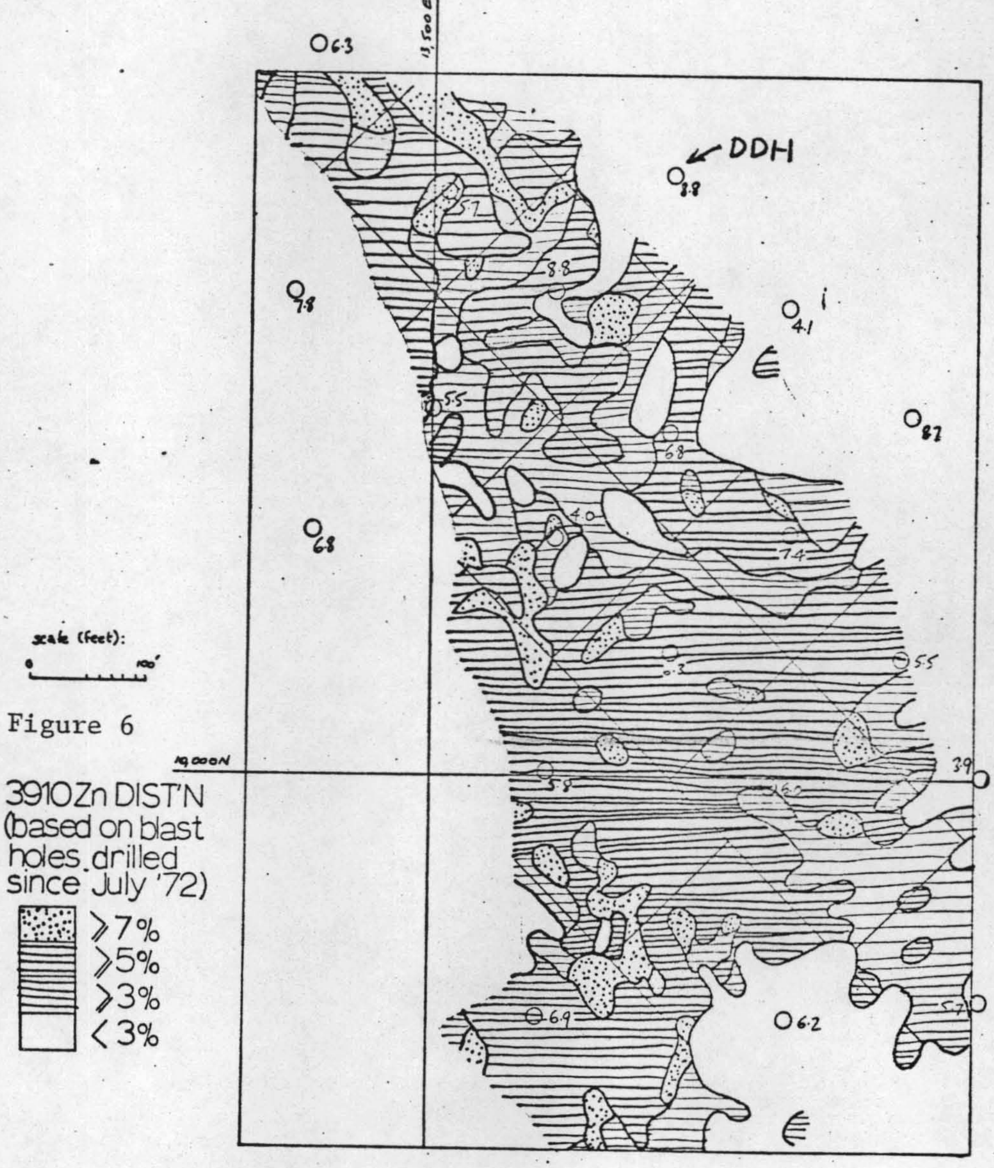

Figure 6

All of this data is synthesized after a fashion in Figure 7. It demonstrates the composite effect of these distributions and the complexity inherent in it.

This distribution is based on ore control classification and as a means of assessing the net effect of Figures 5 and 6 is of some interest. It will be noted that the trend-line C-D roughly divides the ore into stockpile ore (to the north) and crusher ore (to the south). It is a resultant of the interaction of the other two distributions.

CURRAGH RESOURCES INC.
Lithologic Log

Date: Dec 21/87 Logged By: SBC

Code	From	To	Recov.	No.	Unit	Description
L	362.1	365.0	2.9	14	2F48	1 minor Pyritic massive sulphide. Pyrite, medium to coarse grained, patchy to sub-euhedral xstals. Porphyritic pyrite shows good 'buckshot' texture in PbS/ZnS matrix. Qtz is dark to black and occurs in 2 pieces (possibly brecciated) approx 2 inches across. Magnetite is present as disseminations of subeuhedral xstals. Estimated grade: 12-15% Pb+Zn. TOI-EOI slightly broken, recovery good.
L	365.0	396.0	31.0	15	2E1	(2C) (2E4) 85:10:5 8 locally Semi-massive pyritic/siliceous sulphide. Pyrite is again fine to coarsely grained, patchy to incipient 'buckshot' texture locally. Qtz is grey to white and interstitially related to pyrite. Qtz content increases locally up to 80% - these sections are usually better in grade and have been designated as 2C. Sphalerite and galena occur in bands up to 2cm wide // S2 with incipient 'buckshot' texture to pyrite. Minor coarse grained galena hosted by grey qtz. Grade improves greatly in last 4 feet of interval (transition to unit 16→2D4). Estimated grade: 4% Pb+Zn. TOI-372 mod. broken, rubble @ 372 (3 inches) / 372-376.8 mod. broken to rubble from 376.8-377 / 377-EOI mod. broken, recovery okay. Unit appears to be moderately fractured.

Recommendations:

1. Zn can be modified with some chance of success.

2. Resampling of old DDH shall be done on a systematic basis. This is at present under way.

P.M. Pettigrew

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PMP/mm