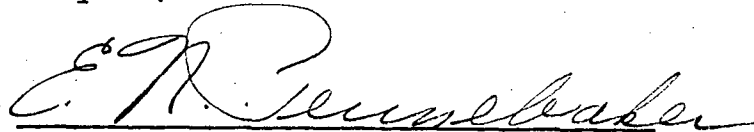


RELIABILITY OF
FARO NO. 1 ORE BODY
GRADE ESTIMATE

-- Submitted to Anvil Mining Corporation
Limited

January 19, 1968

By



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SUMMARY

It is concluded that comparing combined lead and zinc percentages rather than the separate metals gives more satisfactory results and is sound procedure.

It is submitted that most of the evidence supports the conclusion that the surface diamond drilling is conservative and that reserves based on this drilling are dependable.

Gently inclined holes drilled from underground demonstrate that waste lenses do occur between vertical holes put down from the surface. In order to minimize the number of undiscovered waste lenses, it is urged that the holes recommended in the writer's report dated October 11, 1967, be drilled before mining advances to the southeast.

Careful ore control should be exercised to identify waste lenses and send them to the waste dump.

RELIABILITY OF FARO NO. 1 ORE BODY GRADE ESTIMATE

INTRODUCTION

The Faro No. 1 ore body as now defined has been sampled by some 50 diamond drill holes put down vertically from the surface. In addition, the northwesterly one-third has been further tested by the Faro adit, by vertical holes drilled up and down from the adit at 100-foot intervals, and by two holes drilled up from the adit at low inclinations along Section 9.

The following is a comparison of the results obtained from this adit sampling in order to assess the reliability of grade as determined by the vertical holes drilled down from the surface.

The Faro No. 1 deposit of lead, zinc and silver is a lens-like body, for the most part dipping southwesterly at a low inclination. It appears to be about conformable with the encasing metamorphic rocks, and internal sections of waste and low-grade material have about the same attitude. Major grade variations are therefore flatly inclined. The ore lens strikes northwest for 2200 feet from the Faro fault to the northwest tip.

Examination of hand specimens reveals that the sulfide minerals are fine-grained and have a patchy arrangement. Therefore, minor variations in grade over short distances in any direction may be expected. The Faro No. 1 ore body becomes somewhat richer toward the northwest.

The principal exploratory drill holes are from the surface and vertical, and they are located at the corners of a grid system that is 287 feet on a side. Much of the northwesterly one-third

of the ore body is drilled at half-intervals from the surface and is therefore more closely explored. In general the drill core was sampled in 5-foot sections and core recovery was satisfactory.

The Faro adit was driven northerly across the northwestern third of the ore body. It enters the deposit near its top, but most of its course is through the middle part of the sulfide lens. From it three short cross-cuts were driven in sulfides. The length of the adit drift in ore is 670 feet. Grab samples of each round were taken, and each round was put through a sampling plant from which two to four barrel samples were made up. These barrel samples weighed about 800 pounds each. Their average grade for each round is shown on map WA-47, and this map is accepted as a basis for comparison. The length of most rounds varied from three to six feet. The barrel samples and the grab samples are reported to check very well. The writer considers the barrel samples to be more accurate, and these are used in the comparisons in the following discussions.

COMPARISONS OF GRADE

1. The first comparison made is by using the first 5.0 feet up and down of the vertical underground diamond drill holes at each drilling site in the adit. These are averaged and compared with the barrel sample average from the round taken from the adit at the drill sites. It will be noted that here we are not comparing samples from identical locations, but from locations closely nearby.

	<u>% Pb</u>	<u>% Zn</u>	<u>%Pb+Zn</u>	<u>Oz.Ag</u>	<u>% Cu</u>
UG Hole 9	3.600	8.200	11.800	1.640	0.160
Barrel Samples 6	2.600	4.400	7.00	1.090	0.060
UG Holes 10 & 11	5.814	10.500	16.314	1.880	0.134
Barrel Samples 26 & 27	5.411	10.000	15.411	1.393	0.072
UG Holes 12 & 13	5.750	7.000	12.750	1.700	0.025
Barrel Samples 46	6.500	7.700	14.120	2.020	0.230
UG Holes 14 & 15	5.200	6.900	12.100	1.700	0.200
Barrel Samples 64	5.700	7.100	12.800	1.900	0.170
UG Holes 16 & 17	4.250	7.050	11.300	1.410	0.155
Barrel Samples 82	5.900	4.100	10.000	3.110	0.090
UG Holes 18 & 19	3.450	6.000	9.450	0.810	0.210
Barrel Samples 100	4.800	7.000	11.800	1.790	0.150
UG Holes 20 & 21	3.200	5.000	8.200	1.110	0.095
Barrel Samples 119	3.500	6.000	9.500	1.880	0.150

Weighted Average Grades
Barrels vs First 5.0 Feet

	<u>% Pb</u>	<u>% Zn</u>	<u>% Pb+Zn</u>	<u>Oz.Ag</u>	<u>% Cu</u>
UG Holes	4.471	7.000	11.471	1.430	0.175
Barrels	5.041	6.920	11.961	1.881	0.129
Difference	+0.570	-0.080	+ 0.490	+0.451	-0.046

2a. The weighted average of all the barrel samples taken from the adit main drive are next compared for grade with a weighted average of all of the vertical underground drill hole intercepts of massive sulfide ore:

	<u>% Pb</u>	<u>% Zn</u>	<u>% Pb+Zn</u>	<u>Oz.Ag</u>	<u>% Cu</u>
UG Holes 9-24 (817')	4.535	7.639	12.174	1.477	0.159
Main Drive Barrel Samples (609.5')	5.094	7.031	12.125	1.818	0.164
Difference	+0.559	-0.608	- 0.049	+0.341	+0.005

2b. The following compares the average grade of barrel samples taken in the adit main drive plus those from the cross-cuts with the average grade of all of the vertical underground drill hole intercepts of massive sulfide ore.

	<u>% Pb</u>	<u>Z Zn</u>	<u>% Pb+Zn</u>	<u>Oz.Ag</u>	<u>% Cu</u>
UG Holes 9-24 (817')	4.535	7.639	12.174	1.477	0.159
Drift + Cross-cut Barrel	5.255	7.193	12.448	1.837	0.164
Samples (802.0')	+0.720	-0.446	+ 0.314	+0.360	+0.005

3. For the third comparison the adit drive was divided into blocks at the mid-points between underground vertical drill hole sites, and the average grade of each block as derived from barrel samples was compared with the grade of the massive sulfide ore cut by the drill hole at the middle of each block. The comparisons were made for holes going both above and below the drive, as follows:

Blk	Samples From	Ft	% Pb	% Zn	% Pb+Zn	Oz.Ag	% Cu	
A-1	9*	43	5.488	9.291	14.779	1.516	0.078	UG 9
	3-17b	31.0	2.321	4.174	6.495	1.184	0.049	Dft
B-1	11*	30	6.00	9.550	15.550	1.893	0.182	UG 11
	18-38b	97.5	5.419	8.994	14.413	1.448	0.075	Dft
C	12*	35	5.186	7.171	12.357	1.683	0.149	UG 12
	39-54b	88.5	6.399	7.474	13.873	1.890	0.200	Dft
C-1	13*	11	5.145	6.482	11.627	1.709	0.225	UG 13
	39-54b	88.5	6.399	7.474	3.873	1.890	0.200	Dft
D	14*	70	4.893	7.400	12.293	1.554	0.179	UG 14
	55-72b	100.0	5.520	7.121	12.647	1.848	0.235	Dft
D-1	15*	50	4.150	7.990	12.140	1.072	0.145	UG 15
	55-72b	100.0	5.520	7.121	12.641	1.848	0.235	Dft
E	16*	60	5.150	7.783	12.933	1.535	0.195	UG 16
	73-90b	101.5	4.640	6.035	10.675	1.969	0.151	Dft
E-1	17*	70	5.236	8.993	14.229	1.506	0.135	UG 17
	73-90b	101.5	4.640	6.035	10.675	1.969	0.151	Dft
F	18*	70	3.914	7.414	11.328	1.389	0.213	UG 18
	91-109b	99.5	5.301	7.093	12.394	1.838	0.176	Dft
F-1	19*	85	5.729	9.000	14.729	1.349	0.096	UG 19
	91-109b	99.5	5.301	7.093	12.394	1.838	0.176	Dft
<u>G</u>	20*	35	3.471	6.557	10.028	1.994	+ 0.227	UG 20
	110-119b	54.5	4.438	6.547	10.985	2.328	0.219	Dft
<u>G-1</u>	21*	95	5.337	7.742	13.079	1.531	0.163	UG 21
	110-119b	54.5	4.438	6.547	10.985	2.328	0.219	Dft
Aver. UG Holes		572.5	5.000	8.067	13.067	1.507	0.159	
Aver. B Samples			5.168	7.083	<u>12.251</u>	1.816	0.166	
				Diff.	+ 0.816			

* Underground DD Holes
b Barrel Samples

The foregoing compare various kinds of samples taken from the adit. The following seek to compare the underground sampling with that from the holes drilled down from the surface.

4. The next comparison is made where the underground flatly inclined holes (UG 25 & 26) cross the course of certain diamond drill holes put down from the surface (66-20, 66-32 and 66-24). This gives a satisfactory comparison for UG 26 vs. holes 66-32 and 66-20, but a 3-degree flattening in the course of hole UG 25 must be assumed to obtain comparable values in 66-32. This is not an unreasonable amount of deviation, and the following comparison is made on this assumption:

	<u>% Pb</u>	<u>% Zn</u>	<u>% Pb+Zn</u>	<u>Oz.Ag</u>	<u>% Cu</u>
UG Hole 25 (260'-270')	3.600	6.900	10.500	0.580	0.155
Surface DDH 66-24 (325'-335')	2.800	7.150	9.950	0.650	0.190
UG Hole 25 (130'-140')	3.850	6.550	10.400	2.440	0.235
Surface DDH 66-32 (335'-345')	4.050	6.300	10.350	2.160	0.105
UG Hole 26 (265'-275')	8.300	10.100	18.400	2.740	0.345
Surface DDH 66-20 (308'-318')	7.750	9.400	17.150	2.560	0.335

Weighted Average

UG Holes	5.250	7.850	13.100	1.920	0.245
Surface Holes	4.867	7.617	12.484	1.790	0.210
Difference	+0.383	0.233	0.616	0.130	0.035

5. The next step is to compare the underground flat holes with nearby vertical holes drilled down from the surface. This is done in the following manner (see Drawing WB-50):

- a - Take a block of ore between 66-20 and 65-11 that is 35-40 feet in height and inclined with the drill hole. This is approximately inclined with the slope of the ore body. Compute the grade of this block by averaging 66-20 and 65-11 for lengths of 35 and 40 feet respectively and compare with the average assay value of UG 26, but delete 30 feet of low-grade waste that lies between 66-20 and 65-11 because these surface holes can be expected to give no information regarding erratic waste lenses between them.
- b - Compare UG 25 (0-140') with a similar 40-foot block between 65-11 and 66-32, making it a little flatter than UG 25 to better conform with the inclination of the ore body.
- c - The remainder of UG 25 partly cross-cuts the block defined by 66-32 (315' to 485') and 66-24 (205' to 373'). Compare UG 25 (140' - 320') with this block between 66-32 and 66-24.

	<u>% Pb</u>	<u>% Zn</u>	<u>% Pb+Zn</u>	<u>Oz. Ag</u>	<u>% Cu</u>
a - DDH 66-20 (293'-328')	6.734	9.229		2.145	0.178
DDH 65-11 (335'-375')	6.388	5.163		2.555	0.140
Aver. 66-20 & 65-11	6.549	7.060	13.609	2.364	0.158
UG 26 (0-335') with 30' L.G. deleted	4.982	7.633	12.615	1.752	0.215
Difference			- 0.994	+0.616	
b - DDH 65-11 (335'-375')	6.388	5.163		2.555	0.140
DDH 66-32 (325'-365')	3.638	7.013		1.815	0.068
Aver. 65-11 & 66-32	5.082	5.669	10.751	2.468	0.131
UG 25 (0-140')	4.916	6.849	11.765	1.777	0.221
Difference			+ 1.014	+0.691	
c - DDH 66-32 (315'-485')	3.406	5.941		1.965	0.129
DDH 66-24 (205'-373')	3.204	6.263		1.556	0.085
Aver. 66-32 & 65-11	3.306	6.101	9.407	1.762	0.107
UG 25 (140'-320')	3.239	6.736	9.975	1.486	0.126
Difference			+0.568	+0.276	

6. Next is a comparison of grades from pairs of vertical diamond drill holes (up and down from a single site) with comparable intercepts in vertical diamond drill holes put down nearby. It will be noted that the samples compared are not from identical places, although they are nearby. The following are compared:

a - UG 14 (0-90') with DDH 66-16 (260'-330').
Projected 38' to bring them together.

b - UG 15 (0.50') with DDH 66-16 (340'-350').
This is too short a column and the comparison is not made.

c - UG 18 (0-80') with DDH 65-11 (285-350').
Projected 32' to bring them together.

d - UG 19 (0-85') with DDH 65-11 (360'-445').
Projected 32' to bring them together.

e - UG 20 (0-35') with DDH 66-32 (315'-355').
Projected 85' to bring them together.

f - UG 21 (0-95') with 66-32 (370'-450') but delete 20' waste. Projected 85' to bring them together.

	<u>% Pb</u>	<u>% Zn</u>	<u>% Pb+Zn</u>	<u>Oz. Ag</u>	<u>% Cu</u>
a - UG 14 (0-90')	4.356	6.917	11.273	1.420	0.155
DDH 66-16 (260'-370')	4.743	6.500	11.243	1.191	0.124
b - Not compared					
c - UG 18 (0-80')	3.731	7.275	11.006	1.333	0.218
DDH 65-11 (288'-350')	5.742	4.669	10.411	2.078	0.149
d - UG 19 (0-85')	5.729	9.000	14.729	1.349	0.096
DDH 65-11 (360'-445')	6.706	7.502	14.208	1.538	-
e - UG 20 (0-35')	3.471	6.557	10.028	1.994	0.227
DDH 66-32 (315'-355')	3.775	6.175	9.950	2.380	0.121
f - UG 21 (0-95')	5.337	7.742	13.079	1.531	0.163
66-32 (370'-450')					
Deleting 20' L.G. Waste to give 60' ore	3.942	6.925	10.867	1.580	0.140

Weighted Average

UG Holes	4.691	7.622	12.313	1.466	0.164
Surface Holes	5.196	6.433	11.629	1.685	0.099
Difference	-0.505	+1.189	+0.684	-0.219	+0.065

7. The Faro adit cuts into Sections 8, 9 and 9½ of the writer's ore reserve estimate dated October 11, 1967. Therefore, a comparison of the average grade for all the blocks on these sections with all of the adit barrel samples is in order. This is:

	<u>% Pb</u>	<u>% Zn</u>	<u>% Pb+Zn</u>	<u>Oz. Ag</u>	<u>% Cu</u>
Drift + Cross-cut Barrel Samples	5.255	7.193	12.448	1.837	0.164
Aver. Grade of Ore Blocks on Sections 8, 9 & 9½	4.453	6.789	11.242	1.431	
Difference	+0.802	+0.404	+ 1.206	+0.406	

8. On July 5, 1967, the writer submitted a memo comparing the general average of barrel samples from segments of the adit with nearby holes drilled down from the surface. Of the latter, two lay outside of the adit for distances of 30 and 60 feet. The geometry of this comparison was clumsy in attempting to subdivide the ore body into layers for the comparison. The conclusion reached was that in this limited area the results from surface diamond drilling were about 1.00% higher for combined lead and zinc than were the results from sampling the adit main drive by barrel lots. The foregoing comparisons do not lead to this conclusion, as will be noted in the last section of this report.

COMMENTS ON THE COMPARISONS

Comparison No. 1. This comparison, made between the average grade of the first five feet up and down from the drill sites in the adit and the barrel sample average at these sites, shows 11.961% for the barrels vs. 11.471% in combined lead and zinc for the drill holes. Inasmuch as the two sets of samples are not from identical locations, but closely nearby, this is considered by the writer to be a satisfactory check for this type of patchy ore.

Comparison No. 2a. Here the average grade of the barrel samples from the adit main drive are compared with the weighted average grade of all of the underground diamond drill hole intercepts of massive sulfide ore. This gives a close check for the combined lead and zinc (0.049) but is low for the barrel samples.

Comparison No. 2b. This is similar to the above, but the barrel samples from the cross-cuts are included. Here the barrel samples are a little higher (0.314% combined lead and zinc).

Comparison No. 3. Grades derived from the vertical underground vertical drill holes are compared with stretches of the main adit drive whose grade is derived from barrel sample average grades. It will be noted that grades for combined lead and zinc are variously up and down where compared. The general weighted average, however, gives the following:

Aver. grade from underground holes	13.067%
Aver. grade from barrel samples	12.251%
Difference	+ 0.816%

Comparison No. 4. This is a comparison between underground flatly inclined drill holes where they approximately cross vertical holes drilled down from the surface. In order to make the comparison it is unfortunately necessary to assume a 3-degree flattening of one of the holes. This gives a comparison of 13.100% combined lead and zinc for the underground holes vs. 12.484% for the intercepts of the surface holes. This is considered satisfactory for this type of ore.

Comparison No. 5. This seeks to compare the grades of flatly inclined underground holes with blocks of ground through which they pass, the grades of these blocks also being indicated by vertical diamond drill holes from the surface. For comparison "a" this can only be accomplished by deleting 30 feet of waste cut by UG 26 between vertical surface holes 66-20 and 65-11. On this basis we obtain the following comparisons for combined lead and zinc:

	<u>a</u>	<u>b</u>	<u>c</u>
Surface holes	13.609%	10.751%	9.407%
Underground holes	12.615%	11.765%	9.975%
Difference	- 0.994%	+ 1.014%	+0.568%

Comparison "c" is the most indicative because the underground hole does considerable cross-cutting, the surface holes are only 141 feet apart, and a fair-sized block is involved. The variation of about 0.500% seems to be a more or less normal amount.

Comparison 6 is important because it seeks to compare underground drill hole grades with grades as determined by vertical drilling from the surface. Unfortunately the holes have to be projected from 32 to 85 feet to bring them together; nevertheless the comparisons are satisfactory with one exception. Here the spread of the

averages is 0.684% combined lead and zinc, the underground holes being the higher.

Comparison 7. This compared the weighted average grade for Ore Reserve Blocks 8, 9 and 9½ with all of the adit barrel samples (from main drive and cross-cuts). Here the barrel samples are high (+1.206%). This is to be expected because the vertical holes down from the surface cut somewhat lower grade ore above and below the adit horizons.

CONCLUSIONS

It will be noted in the foregoing comparisons that where we compare lead or zinc from one group of samples with lead or zinc from another group that they seldom check closely. However, if we compare combined lead and zinc with combined lead and zinc, the comparison is generally much closer. Perhaps there is a geological reason for this, but if so, it is not now apparent. Nevertheless, it is concluded that comparing combined lead and zinc rather than the separate metals, is sound procedure.

Comparisons 1, 2a and 2b between barrel sampling and underground test drilling indicates that underground drill sampling is in accord with barrel sampling, the barrel sampling being from 0.490% higher in combined lead and zinc to 0.049% lower. Comparison 3 indicates that barrel sampling is 0.816% higher, probably because the underground holes do more cross-cutting and thus sample somewhat lower grade layers. In general, the writer believes that the method of drilling and sampling the underground diamond drill holes was reasonably accurate as shown by these comparisons with barrel samples. Inasmuch as the surface drill holes were drilled and sampled by the same procedure, it is believed that they, too, are reasonably accurate.

Comparisons 4, 5, 6 and 7 relate holes drilled from the surface with sampling from the adit by barrel lots and by underground diamond drilling, with the following results:

- Comparison 4 - Underground holes are 0.616% higher in Pb+Zn
- Comparison 5a - Underground holes are 0.994% lower in Pb+Zn
- Comparison 5b - Underground holes are 1.014% higher in Pb+Zn
- Comparison 5c - Underground holes are 0.568% higher in Pb+Zn
- Comparison 6 - Underground holes are 1.189% higher in Pb+Zn
- Comparison 7 - Barrel samples are 1.206% higher in Pb+Zn

These comparisons also show that the underground samples, with one exception, are generally somewhat higher in silver:

- Comparison 4 - Underground holes are 0.130 oz/ton higher in Ag
- Comparison 5a - Underground holes are 0.616 oz/ton higher in Ag
- Comparison 5b - Underground holes are 0.691 oz/ton higher in Ag
- Comparison 5c - Underground holes are 0.276 oz/ton higher in Ag
- Comparison 6 - Underground holes are 0.219 oz/ton lower in Ag
- Comparison 7 - Barrel samples are 0.406 oz/ton higher in Ag

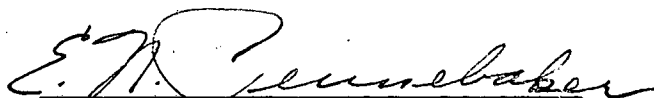
It appears that the Faro adit horizon follows approximately along a good layer of ore and that holes cross-cutting down from the surface cross some horizons of lower grade and give a better picture of the ore body. Comparison 5a tends the other way, probably due to an improper correlation of layers in the ore.

Therefore it is submitted that most of the evidence supports the conclusion that the surface diamond drilling is conservative and that reserves based on this drilling are reliable, provided:

We note that UG 26 cut a 30-foot lens of waste between surface holes 66-20 and 65-11 that was not indicated by these holes. This will likely happen again elsewhere and will serve to somewhat lower the general average grade unless these waste lenses are identified by sharp ore control and sent to the waste dump.

In order to minimize the number of undiscovered waste lenses, it is urged that the holes recommended in the writer's report dated October 11, 1967, be drilled before mining advances to the southeast.

In general it can be said that sampling of nearby areas may vary from 0.50 to 1.50% in most places, but that larger areas will check out fairly well.



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January 19, 1968