Cyprus Anvil Mining Corporation

Interoffice Correspondence

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To: See Distribution

From: B.V. Hall/P.I. Clarke

Date: October 26, 1981

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Subject

Specific Gravity Study on Faro and Dy Core

In reference to a memo dated June 26, 1981 by B.V. Hall, the results of the study conducted by D.M. Wyslouzil of Lakefield Research are now in hand. As predicted, the whole core specific gravities are significantly less than both the -10 and -100 mesh samples, due to the destruction of intergranular voids upon crushing.

Unfortunately, laboratory imprecision on the behalf of Lakefield Research has rendered this data unsatisfactory. The reason being is the standard deviation (4.01 ± 0.08) for the whole core based upon 10 replicate determinations on the same piece of core was too high. When three standard deviations are considered each side of the mean (4.01), which is the minimum confidence level (97%) acceptable for engineering work, the range (± 0.24) encompasses the difference obtained between the different methods (Appendix 1). In other words, the range of values obtained by water immersion method on the whole core is greater than the difference between the values of the whole core versus the -10 and -100 mesh air pycnometer determinations. The problem results from the methodology used by Lakefield Research, in that a water displacement method was used. In this method the water level can only be read to ± 2.5 ml with the sample displacing approximately 160 ml of water, consequently a large standard deviation is inherent in the method. This only became apparent the other day when the final report was received from Lakefield Research. Gravimetric methods, using a Jolly balance, are known to be much more accurate than the water displacement method that was employed. Unfortunately, the procedure specified by Cyprus Anvil called for the core to be crushed to -10, then -100 mesh fractions after the specific gravities were determined. This means that we have no sample left and tha data will have to be collected over again on a new set of samples. Because of our past problems, it has been decided to use a facility like U.B.C. or B.C. Research. Preliminary work will soon be undertaken to determine what analytical procedure is best and once this has been determined the study will be repeated.

Appendix 1 shows the results obtained from 38 samples of various ore facies from the Faro Deposit. The difference is evidently greatest in the buckshot facies (approximately 9%) of massive sulphides and generally less in other rock types. This is what one would expect on the basis of the number and size of intergranular voids.

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For the DY Deposit, based upon 52 samples, an average difference of 4.5% was attained, with no large discrepancies evident between the different ore types.

As previously mentioned, the quantity of these differences by deposit and rock type have yet to be determined accurately.

However, based on currently available information, the average differential appears to be approximately 5%.

At the present, the affect on current reserve estimates would be:

Faro - No change. Current estimates include -5% on tons. Difficulty with tonnage estimation was considered probable.

Vangorda - Tonnage reduction of 5%.

Grum - No change. Currently used Kerr-Addison estimates, the best available presently, are probably conservative to the degree that no change is necessary.

DY - Tonnage reduction of approximately 4.5%, which translates to a net loss of approximately 1 million tonnes.

B.V. Hall

P.I. Clarke

APPENDIX 1

Test Results - Lakefield Research

Sample No.	Core No.	A Core Bulk Density g/cm3	B S.G. (Beckman) ACP -10 Mesh	C S.G. (Beckman) ACP -100 Mesh	Difference (C-A)/C	Rock	Av. % Difference By Rock Type	No. of Samples
1	75-3-643	2.76	2.87	2.86	0.035	Graphitic Quartz 2A	3.3	7
2	75-3-658	2.70	2.88	2.86	0.056			
3	75-9-560	3.30	3.32	3.34	0.012			
4	75-9-627	2.87	2.99	2.97	0.034			
5	75-2-620	2.88	2.99	3.01	0.043			
6	75-11-480	2.78	2.85	2.87	0.031			
7	75-11-487	3.30	3.39	3.40	0.029			
8	75-2-609	4.31	4.49	4.50	0.042	Pyrrhotitic M.S. 2H	3.5	4
9	75-2-534	4.35	4.47	4.48	0.029			
10	75-11-520	4.32	4.38	4.40	0.018			
11	75-2-530	4.26	4.47	4.50	0.053			
12	75-9-359	3.32	3.46	3.47	0.043	Pyritic Quartz 2CD	5.1	8
13	75-3-369	3.20	3.55	3.50	0.086			
14	75-4-215	3.06	3.37	3.41	0.103			
15	75-5-591	3.58	3.69	3.71	0.035			
16	75-3-536	3.25	3.21	3.22	0.009			
17	75-11-495	3.47	3.65	3.65	0.049			
18	75-5-392	3.39	3.49	3.49	0.029			
19	75-5-404	3.45	3.64	3.66	0.057			
20	75-5-330	3.46	3.50	3.48	0.006			
21	75-4-306	4.51	4.70	4.72	0.044	Pyritic M.S. 2E	3.3	9
22	75-4-290	4.68	4.70	4.74	0.013			
23	75-2-566	4.56	4.65	4.65	0.019			
23	75-9-390	4.72	4.74	4.74	0.004			
24	75-9-352	4.74	4.82	4.83	0.019			
25	75-2-600	4.62	4.89	4.88	0.053			
26	75-5-427	4.03	4.29	4.32	0.067			
27	75-11-500	4.35	4.51	4.53	0.040			
28	75-9-536	4.44	4.61	4.62	0.039			
29	75-9-329	4.64	4.70	4.72	0.017	Barite M.S. 2G	2.6	4
30	75-9-351	4.72	4.76	4.78	0.013			
31	75-2-587	4.59	4.71	4.74	0.032			
32	75-9-330	4.55	4.73	4.76	0.044			
33	75-11-550	4.46	4.66	4.69	0.049	'Buckshot' M.S. 2F	9.2	6
34	75-2-536	4.62	4.76	4.78	0.033			
35	75-2-540	4.59	4.80	4.83	0.050			
36	75-2-571	4.48	4.94	4.98	0.100			
37	75-2-550	4.03	4.75	4.76	0.153			
38	75-2-520	4.06	4.87	4.88	0.168			