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AND 8-1

017402



Golder Associates
CONSULTING GEOTECHNICAL AND MINING ENGINEERS

E/81/1396

August 10th, 1981

Cyprus Anvil Mining Corporation
330 - 355 Burrard Street
Vancouver, BC
V6C 2G8

ATTENTION: Mr. R. K. Irani

Re: Uniaxial Compression Tests
for DY Deposit

Dear Sir:

Enclosed is a copy of the results of the uniaxial compression tests performed on core samples collected from the 'DY' deposit. It should be noted that some of the strengths were effected by foliation planes and other discontinuities. The actual intact strength of these samples may be slightly higher than indicated.

No interpretation of the results in terms of the proposed mine development have been made at this time.

Yours very truly,

GOLDER ASSOCIATES

R. D. Hammett, P. Eng.

RDH/bjh
812-1565

UNIAXIAL COMPRESSION TESTS ON
CORE SAMPLES FROM 'DY' DEPOSIT

A total of 10 uniaxial compression tests were conducted on samples of different rock types and from different holes drilled as part of the 'DY' deposit exploration program. All core samples were 47.5 mm (1.875 inches) diameter (NQ core) and in most tests the ratio of sample length to sample diameter was 2. The sample ends were cut and polished on a milling machine so that they were flat and normal to the core axis. A spherical seat was placed between the platen of the testing machine and the sample to prevent eccentric loading of the sample. The load applied during the test was monitored using an electrical (strain gauge type) load cell placed between the testing machine platen and the sample. Sample displacements were not measured during the test.

A summary of the test results is presented in the attached table. The strength of some of the samples was influenced by the presence of prominent foliation planes and other discontinuities. The foliation was usually angled to the core axis and the strength represents a lower bound to the intact strength. Foliation normal or parallel to the core axis has a small effect on the sample strength, but foliation angled to the core axis may reduce the strength. Not all of the samples were influenced by foliation, and those which are felt to be representative of the intact strength are noted in the attached table.

RESULTS OF UNIAXIAL COMPRESSION TESTS OF
CORE SAMPLES FROM DY DEPOSIT

Sample No.	Hole	Depth (m)	Lithostatic Code	Rock Type	Strength MPa (lb/sq.inch)	Comments
1	79-X-06	256	0D2	<i>Altered Dyke</i>	74.8 (10,850)	Representative of intact strength
2	79-X-06	427	5D3	chloritic phyllite	39.6 (5,740)	Representative of intact strength
3	79-X-06	647	5A3	graphitic phyllite	86.0 (12,480)	Failure along foliation L/D = 1.6*
4	79-X-06	713	4L	chloritic phyllite		Damaged sample
5	79-X-06	766	4A0	graphitic quartzite	153.0 (22,200)	Representative of intact strength
6	79-X-06	851	4L	chloritic phyllite	32.5 (4,720)	Failure along foliation
7	79-X-07	362	0D2	<i>Dyke</i>	250.1 (36,370)	Representative of intact strength
8	79-X-07	385	5B7	muscovite-chlorite phyllite	51.0 (7,400)	Failure along foliation
9	79-x-07	414	5D3	chloritic phyllite	74.7 (10,830)	Representative of intact failure. L/D = 1.7
10	79-X-07	563	5A3	graphitic phyllite	122.3 (17,740)	Failure along foliation
11	79-X-07	654	5B0	muscovite-chlorite phyllite	86.2 (12,500)	Representative of intact strength

* L = sample length
D = sample diameter
Standard test L/D = 2. Smaller L/D will have small effect on strength



Golder Associates

CONSULTING GEOTECHNICAL AND MINING ENGINEERS

E/81/1395

August 10th, 1981

Atlas Copco Jarva Inc.
29125 Hall Street
Solon
Ohio 44139

ATTENTION: Mr. M. Antochow

Re: Core Samples for Cirque Property

Dear Sir:

Mr. R. K. Irani of Cyprus Anvil Mining Corporation requested that I forward to you core samples representative of the rock to be encountered in constructing the access tunnel for the proposed Cirque underground mine in north-eastern British Columbia. A list of the enclosed examples is attached.

We have performed some uniaxial compression tests on similar samples to those enclosed and a copy of the results from these tests is attached. The strength of a number of samples was affected by foliation planes, and partially healed discontinuities angled to the core axis. Samples affected in this way are noted in the table of strengths. Even making allowance for this, the strength of all the rock to be encountered will be less than 140 kPa (20,000 lb/sq.inch). One of the limestone samples was stronger than this, but this material is below the proposed tunnel horizon.

Geological sections along the proposed alignment have not been prepared yet and it is difficult to give an indication of the proportion of each material to be encountered. One possible alignment appears as though it may be predominantly in siltstone and another possible alignment predominantly in shale. The siltstone is relatively strong, massive, and RQD is typically 80 to 100 per cent. The shale is strongly foliated and weaker than the siltstone. The RQD is generally 0 to 20 per cent, partly as a result of the foliation but in some cases also as a result of fractures angled to the foliation. Close to the ore body, the shale is very weak, and contains low strength graphitic shear planes. Porcellonite is also prominent close to the ore body. This is a very hard rock although the mass strength may not be very high due to foliation and the presence of partially healed fractures.

The mine area and adjacent rock is highly faulted. In the core that we have inspected, the faults do not contain very much clay, but rather consist of highly fractured and broken rock. The rock bounding the faults is also generally highly fractured. The location and number of faults likely to be encountered has not been fully investigated yet. The ground water flow from the faults is likely to be quite high, although this cannot be quantified yet.

Please do not hesitate to contact me if you have any further questions.

Yours very truly,

GOLDER ASSOCIATES

R. Hammett, P. Eng.

RH/bjh
812-1546

cc: R. K. Irani

SAMPLES SENT TO ATLAS COPCO JARVA INC.

<u>Sample</u>	<u>Hole</u>	<u>Depth (m)</u>	<u>Rock Type</u>
1	80-C-16	290	siltstone
2	79-C-14	386.1	siltstone
3	79-C-14	387.7	siltstone
4	79-C-14	387.2	siltstone
5	80-C-15	160.0	shaly siltstone
6	80-C-23	277	porcellonite
7	79-C-23	395	procellonite
8	80-C-26	248.7	shale
9	80-C-23	294.7	shale
10	80-C-26	285.3	shale
11	80-C-26	233.3	shale
12	80-C-23	261.8	shale