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CONSOLIDATED COPPERMINES CORPORATION

COPY

MEMORANDUM

FROM R. W. Ludden

CITY Prescott, Arizona

TO J. Hope, Chief Geologist

DATE August 25, 1951

SUBJECT Scouting from Prescott

Scouting of the mineralized region (mentioned in last week's report) south and southwest of the Iron King mine was completed. No indication of a porphyry copper type of deposit was seen; however, three zones comparable in size and shape (roughly 200 feet by 5,000 feet) to the Iron King zone were seen. They lie, with approximately the same strike and dip, about two miles south of Iron King and are roughly one-half mile apart. Their appearance on the surface is similar to the portion of the Iron King outcrop that was examined.

Some scouting was done north of Cleator in the vicinity of the Blue Bell and De Soto mines.

The following mines were visited:

De Soto mine - This mine is located about three miles west and a little north of Cleator (located in the southwest corner of the Mayer quadrangle). The ore bodies mined apparently consisted of lenses or shoots in a mineralized zone approxinately 300 feet wide and 700 feet long. The Yavapai schist in which the zone occurs is predominately a chloritic schist. This zone appears to be the only sizable area of mineralization in that vicinity. From 1890 to 1930 the mine procuced 18.2 million pounds of copper. (ARIZONA METAL PRODUCTION, Arizona Bureau of Mines Bulletin number 140)

Blue Bell mine - This mine is located approximately four miles due south of Mayer on the Mayer quadrangle. The occurrence and type of mineralization and metallization is similar to that of the De Soto. The mineralized zone is approximately 150 feet wide and 2,500 feet long. The host rock is mainly a chloritic schist. Apparently the mineralization in the vicinity of the Blue Bell mine is confined largely to the Blue Bell zone. From 1896 to 1926 production from the mine was 67 million pounds of copper, one million dollars in gold, 1.2 million dollars in silver. (ARIZONA METAL PRODUCTION, Arizona Bureau of Mines Bulletin number 140)

R. W. Ludden

s/ R. W. Ludden

cc: Mr. E. N. Pennebaker

RECEIVED
SEP 9 - 1951
E. N. PENNEBAKER

THE AMERICAN METAL COMPANY, LIMITED
61 BROADWAY
NEW YORK 6, N.Y.

TELEPHONE BOWLING GREEN 9-1800
CABLE ADDRESS: EFFLUX, NEW YORK

PLEASE ADDRESS REPLY TO

SUBJECT:

VIA AIRMAIL

May 2, 1955

Mr. E. N. Pennebaker
P. O. Box 817
Scottsdale, Ariz.

Dear Penny:

I note from your report on the De Soto Copper Mine, Yavapai County, Arizona, dated April 26, that the original story of potential is only twice that you would be willing to accept, although at 2 X value the property still is not attractive as a porphyry copper possibility.

I would say that this 2 X factor is much lower than most of the stories.

We will advise the people presenting this property to us that we are not interested in further exploration at this time.

Kindest regards.

Sincerely,

Jack A. James

Jack A. James

JJ:LL

April 27, 1955

Mr. Jack A. James
Geol. & Explor. Dept.
The American Metal Co., Ltd.
61 Broadway
New York 6, N. Y.

Dear Jack:

Enclosed are two copies of my memo on the Desoto mine, and I am also including the various data that you sent me on this property.

You will note that I am not too enthused about the Desoto and that I have cut down its exploration possibilities to about half the tonnage expected by Colvocoresses. If any further investigation were to be made of this ground, I would suggest a summer job for Larry Beal, who is familiar with leached outcrops of copper ore.

I expect to be out of my office from May 1 to 12, but shall check in with you or John Payne in New York once or twice by telephone during this period.

Still no word from the Greenback people.

With kind regards,

Yours sincerely

E. N. Pennebaker

ENP:mc
encls.

THE DESOTO COPPER MINE
YAVAPAI COUNTY, ARIZONA

SUMMARY

The presently inactive Desoto mine is of interest because the possibility has been advanced that it may contain 6 million tons of low-grade copper ore suitable for open pit mining. A visit to the property, however, leads to the view that about half this tonnage is a more reasonable expectation, which would need to be proved by actual drilling.

INTRODUCTION

This old property was visited by me on April 23, 1955, in company with Mr. L. G. Marshall. It is located near the little settlement of Cleator at an elevation of about 6,200 feet. The Desoto mine is reached by traveling 50 miles north of Phoenix on the Black Canyon highway, thence through Cordes and Cleator on narrow graveled road for about 15 miles, and finally by a steep mountain trail for two miles to the abandoned mine workings.

The general features of the property are set forth in a report by George M. Colvocoresses under date of February 5, 1946, to which reference should be made. There is no other information on this mine, except short accounts of its geology in old publications, and Colvocoresses probably

knew more about this deposit than anyone else at the time of his death several years ago. The property, consisting of 18 patented lode mining claims, has been inactive since about 1931.

Although only a few hours were spent at the Desoto mine, this type of copper deposit in and near the Bradshaw Mountains is familiar, because of examinations of similar deposits made a few years ago for the Joint Venture. Among others these included the Binghampton and Zonia occurrences.

THE DESOTO MINE

The Desoto mineralized zone is found along a commanding ridge that strikes about N20E with the trend of steeply inclined Yavapai schist. The mineralized zone is stated by Colvocoresses to be 6000 feet long and 3000 feet wide, of which an inner section 600 feet long and 300 feet wide is stated by him to have possibilities of containing 6 or 7 million tons of about 1% copper ore to a depth of about 550 feet (below which it appears that the ore body may die out). It is proposed that this could be mined cheaply by open cut side-hill benches, concentrating the ore in a mill to be newly constructed and shipping the concentrates to a custom smelter.

The general mineralized zone is marked by staining, bleaching, and silicification in the Yavapai schist. The more limited copper-bearing section is in part bleached and silicified and cut by small veinlets and seams of oxidized

copper minerals which give way in depth to sulphides. Although the entire zone, as described by Colvocoresses, was not covered on this examination, my impression was that copper metallization is confined to the more limited section just mentioned.

The Desoto mine was opened by a group of tunnels on 6 or 7 levels to a depth of about 700 feet below the summit of the ridge. This work developed and extracted ore from several detached shoots that plunge steeply south within the zone that now is pointed to as having possibilities for containing 6 or 7 million tons of low-grade ore.

Past production is reported to amount to 280,000 tons at about 3.00% copper, 0.05 oz. gold, and 1.20 oz. silver. Mining was carried to a 2-3% cut-off grade, and it is believed that the extracted ore shoots are surrounded by unmined shells of 2% copper ore with the remainder of the zone filled in by 1% and lower grade material to give the total possibility of 6 or 7 million tons mentioned above.

Oxidation is stated by Colvocoresses to extend down from 100 to 200 feet below surface, and the oxidized ore contains malachite, azurite, chrysocolla, copper pitch, and residuals of chalcopyrite. The sulphide ore is reported to carry chalcopyrite and pyrite; however, the leached croppings suggest that some chalcocite is to be expected, and a few pieces of chalcocite ore were found scattered over the surface. According to Colvocoresses, "The greatest individual length of any one shoot of 3% copper ore was slightly over 200 feet with maximum width of about 40 feet. The maximum

vertical height is about 1,000 feet for while all of the shoots outcrop on the surface none was found to persist to any great depth below the main fault which cut through the mine between the 400 and 600 foot levels. Two of the ore bodies were followed down for an additional 300 feet but as depth was gained, the dimensions of the pay ore rapidly decreased while the copper minerals gradually gave place to barren quartz. These ore bodies may be considered to represent the roots of original shoots.....".

The lowermost tunnel level (6th level) is partly under water and inaccessible; the upper tunnels appear to be open.

Colvocoresses' estimate of remaining 3% ore is 10,000 tons positive ore and 32,000 probable ore. As regards lower grade ores, on the basis of samples from around old shoots he has information on 7 blocks which leads to his estimate of about 1.5 million tons @ 2% copper and $1.00 in precious metals. This ore is said to occur as shells around the old ore shoots, and there is some basis of sampling and measurements to indicate its existence.

According to Colvocoresses, filling the zone around these shells is low-grade material of such value as to give a general average of about 1% copper for the 6 or 7 million tons encompassed by a zone 600 feet long and 300 wide to a depth of about 550 feet.

DISCUSSION

It is the existence of this substantial amount of

low-grade copper-bearing rock that is required to give the tonnage postulated, and it must average about 0.7% copper in order to provide the tenor predicted by Colvocoresses. In other words:

1.5 million	x	2.00% = 3.0	(shells surrounding old shoots)
4.5 "	x	.67% = 3.00	(associated low-grade material)
6.0 "	x	1.00% = 6.00	(general average)

At present there are only two lines of evidence that bear on the possible existence of low-grade material with a tenor of 0.67% Cu. Diamond drilling and channel sampling in only one block is reported to indicate 275,000 tons @ 1.28% Cu. This was then diluted by Colvocoresses and extrapolated to 4.5 million tons @ 0.67% Cu. This is the only positive evidence advanced as to the actual existence of the associated low-grade. On the other hand, the character of the leached croppings on the surface suggests that zones of very low-grade to barren chloritic schist occur within the productive zone and along its margins, and it is very doubtful that this material at depth has the required tenor of 0.67% Cu. As regards the tonnage of low-grade material, Colvocoresses has used a general width of 300 feet, although his map of the workings above 2nd level indicates a width of about 180 feet. The writer's impression on the surface was that the promising copper-bearing zone was about 150 feet wide, although making an estimate was admittedly difficult

because of poor outcrops and slide rock below the ridge.

CONCLUSIONS

The writer seriously doubts the existence of sufficient low-grade material (at 0.67% Cu) to bring the 1.5 million tons @ 2% up to a total of 6 million tons averaging 1% Cu, assuming, of course, that we grant the existence of the 1.5 million tons @ 2% Cu.

Colvococresses' estimate of this 1.5 million tons at 2% Cu as shells surrounding the old shoots appears to have a fairly substantial basis of sampling and measurements. I believe that there is some chance of outlining such a tonnage by diamond drilling.

I think it possible that there may be enough low-grade material associated with this to give a maximum potential of around 3 or 4 million tons at 1.00% to 1.25% Cu. down to the 6th level tunnel, and drilling with this objective would have reasonable expectation of success. In my opinion the development of 6 or 7 million tons at 1.00% Cu is an extravagant hope, and I see little liklihood of expanding the deposit to a really substantial porphyry copper tonnage.

Furthermore, some oxidation is reported to extend to a depth of 100 to 200 feet. This in conjunction with post-mine oxidation would give a considerable fraction that is difficult to concentrate by flotation.

The probable reduction in total copper potential discussed above would substantially increase capital costs

per pound of copper for access road, mill, water supply for milling, stripping, and other mine preparation.

Should it be desired to further investigate the Desoto mine, it would be necessary to map and sample the available underground workings and to map and sample the surface. Study of the surface should include delineation of the several types of leached outcrops that are present.

With the above information available, zones of low-grade material can be tested by a thousand feet or less of drilling, after which a future program of exploration would be in order if results were favorable.

E. N. Pennebaker

Scottsdale, Arizona
April 26, 1955

Massive
Porph Cu + veins
Faulted gone - in porous { West of Castle Dome
Broad open gone of porous rock

2nd or 3rd week

Mined out 3%
LG between lenses
7 × 10⁶ - 1% to 1.25%

Desoto Mine -
in Yavapai Co.
Copper - pyrite
5 mi S of Blue Bell
once owned
by S.W. metals.

Early report
by Geo. Calvo.
Feb 5 - '46

Mar. 3 - 55 -

Presented by L. G. Marshall made report to Stanley Weiner
Texas

THE DESOTO COPPER MINE
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