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CANADIAN SUPERIOR EXPLORATION LIMITED

Jericho Mines Limited Option

Report on 1966 Field Work

SUMMARY

Field work on the Jericho property was carried out between May 20th and September 2nd, 1966. Geological, geophysical and geochemical surveys failed to reveal anything of obvious importance, but residual interest still lies in a vague induced polarization high, some 2,000 feet grid south of the upper adit.

OBJECTIVES

The objective of the work carried out by Canadian Superior was to find a large orebody amenable to low cost open-pit mining. Previous work by Jericho Mines Limited had already shown the existence of a small orebody of some 500,000 tons averaging 1.5% copper and this has been explored via two adits and extensive surface and underground drilling. Although the immediate area of the adits had been adequately explored, the rest of the 158 claims had not been subjected to detailed investigation. It was on these claims that the 1966 work was concentrated.

METHODS

(a) Linecutting

A base line was established along the length of the claim group and cross-lines cut at 800-foot intervals. Some 62 miles of line were cut, 45 miles of this in the area lying southwest of the Jericho camp and 17 miles in the area northeast of the camp.

(b) Geology and Prospecting

The whole grid was mapped geologically and plotted on a scale of 1" = 600 feet and prospecting carried out over the property both along and between lines.

(c) Geochemistry

Soil sampling over the whole grid was carried out at 100-foot intervals. Each sample was tested at the sample site for cold-extractable copper by the dithizone method similar to that described in Paper 63-7 of the Geological Survey of Canada. The samples

were also analyzed for total copper in a laboratory set up at the Jericho camp, by the biquinoline method described in the U.S. Geological Survey Bulletin 1152. Selected samples were also analyzed for total molybdenum by the dithiol method perfected by the Royal School of Mines, London.

Silt samples were taken in all streams crossing the property and many swamps were also sampled.

(d) Induced Polarization

A pulse-type induced polarization survey was carried out over 36 miles of line on the south grid. A three electrode array was employed with a 400-foot electrode spacing, readings being taken at 200-foot intervals. The survey was performed by H.O. Seigel & Associates Limited.

(e) Drilling

A short Winkie hole was drilled in Pete's Creek to test the best section found in a broad area of weak copper-molybdenum mineralization. The depth of the hole was 118 feet. A 100-pound bulk sample was taken in the same area.

DISCUSSION OF RESULTS

(a) General

Field work indicated that the north area, that part of the grid lying north of the camp, was not as favourable as the south area. This conclusion was based on the consideration of the results of prospecting, geochemical and geological work carried out over the whole property.

(b) Geology and Mineralization

Diorite and granodiorite underlie the major part of the property with some meta-sediments occurring in the northeast corner. In the southern part of the property, an apparently later quartz-rich granite is present and contains little or no sulphide minerals in contrast to the other granitic rocks on the property. The rock type has been designated the Minex Granite.

The coarse-grained Guichon Quartz Diorite is exposed in a few places on the western and north-western parts of the property and was found to be devoid of copper mineralization.

The Skeena Granodiorite, underlying the remaining eastern and south-eastern part, is a medium-grained hornblende-biotite rock with a wide compositional range. In the area between Pete's Creek and Moly Creek, this rock type is intruded by quartz veins, pegmatites and aplite dykes varying from 1 inch to over a hundred feet in width. Potash feldspar alteration accompanies the smaller intrusions. In the area between the two creeks, or more exactly, from line 8 south (15 east to 40 east) to line 64 south (20 east to 46 east), chalcopyrite with more or less molybdenite occurs in very widely-spaced joints and fractures trending N20 to N30°E. The fractures are very tight and dip vertically. The mineralization occurs as wafer-thin smears on the planes of the fractures. When mineralized, the fractures are accompanied by a barren set trending N60°W. It should be emphasized that over any substantial width, the grade of this mineralization is extremely low and uneconomic, although in one place in Pete's Creek (see map) a 4-foot long section was found where the mineralized fractures were concentrated. A 100-pound sample of this exposure assayed 0.48% copper and 0.009% molybdenum. A Winkie diamond drill hole down hill from this section intersected some 90 feet assaying .05 to .08% copper and .01% molybdenum only. Careful examination of this area failed to reveal a mineralized area of economic potential or any signs of surface leaching or weathering that might have masked the quality of the mineralization at depth.

The Bornite Ridge showing consists of one or more thin, flatly-dipping quartz veins sprinkled with bornite and chalcopyrite. The showing has been drilled by Berisford Mines with good results. Surface indications gave no encouragement for further work on C.S.E.'s part.

The Malachite Hill showing consists of groups of Skeena granodiorite boulders and some outcrop over a few square feet with malachite-coated fractures. In a trench on the east side of the road, the overburden contains streaks of heavy malachite staining over a width of two feet.

The adit zone is described in detail by Alrae Exploration Ltd. in a report dated November 22, 1965. Examination confirmed that the mineralized zones, as exposed in the lower adit, consist of thin quartz veins with heavy but patchy bornite and chalcopyrite in zones of faulting, accompanied by soft gouge and intense chlorite and sericite alteration.

Other showings found on the property did not seem to be of significance except to indicate the presence of both copper and molybdenite in the Skeena granodiorite and to encourage an induced polarization survey over parts of the property in the hope of finding a change in conditions leading to a concentration

of the ore minerals. One of the disappointing features of the exposures throughout the property, excluding the well fractured adit area, was the absence of widespread alteration and intense fracturing, the mineralization seen being confined to blocky jointing and/or fracturing too widely-spaced to approach economic proportions.

(c) Geochemistry

Due probably in part to the variable character of the overburden, the geochemical soil pattern evolved consisted for the most part of erratic highs interspersed with lows, making contouring of the results both difficult and misleading. The presence of mineralized boulders within the overburden and the varying terrain also contributed to the complexing of the pattern. After attempting several methods of interpretation, the final one consisted of raising the copper threshold to 200 p.p.m. and plotting only values exceeding this where two or more adjacent samples were anomalous. In this way much of the background "noise" was eliminated, the most definite trends only being interpreted. The anomalous trends were interpreted in the light of topographic conditions, some being attributed to drainage systems (indicated by arrows on the geochemical map), others being interpreted as either related to mineralized boulder trains or bedrock.

The most significant result was an area of anomalous copper zones trending NW-SE, from the west end of line 64S to the east end of 136S, with some coincident anomalous molybdenum zones (+3 p.p.m. Mo.). The occurrence of quartz porphyry float, sparsely mineralized with bornite and chalcopyrite, in the same area suggests that this broad area of high values is derived from a glacial boulder train. Bulldozer trenching of specific highs was carried in the vicinity of line 88S (22+50W), 88+50S (20+00W), line 96S (9+00W), line 128S (18+00W) and line 160S (42+00E). The trenches on line 88S revealed some minor chalcopyrite and bornite in fractures. The occurrence was not sufficiently interesting to justify further work. The trench on line 160S revealed a thin malachite-stained shear of no importance. The other trenches failed to reveal any signs of mineralization.

Stream and swamp results were used mainly to guide prospecting. Highly anomalous values in Pete's and Moly Creeks led to the discovery of the sparse chalcopyrite-molybdenite mineralization in these areas, the high results being due to exposure of mineralized joint planes to the side-hill drainage.

It should be mentioned that the north part of the grid -

i.e. north of the camp - yielded no important geochemical anomalies as defined by the method described above. Spot highs were detected and some limited stream anomalies but when viewed in comparison with the results to the south, these did not seem of any significance.

(d) Induced Polarization

The I.P. survey failed to reveal a significant zone of high chargeability (see report by H.O. Seigel) and thereby eliminated the possibility of the occurrence of a broad dissemination of 1% metallic sulphides by volume in the area covered. 0.5% copper by weight is equivalent to 1% chalcopyrite by volume and there is usually some associated pyrite in the typical Highland Valley porphyry copper deposit. Against a general background in the order of 1 to 3 milliseconds, a significant anomaly would be from 4 to 6 milliseconds, preferably larger than this to account for accessory pyrite.

However, molybdenite is only detectable at high economic concentrations and for this reason a closer look was given to slightly anomalous areas of +3 milliseconds chargeability. Of the zones thus defined, the one centred on line 96S (2+00E) seems of most interest in view of its location within the belt of NW-trending copper anomalies referred to above and its proximity (900' west) to the Malachite Hill showing.

Other zones defined are either of limited extent or narrow except for a broad zone towards the east end of lines 16S and 24S. This latter is open to question, however, due to poor electrode contacts in this and other areas as mentioned by Dr. Seigel.

CONCLUSIONS & RECOMMENDATIONS

1. Geological mapping and prospecting revealed a broad area of chalcopyrite and molybdenite mineralization of extremely low grade. I.P. surveys failed to show an improvement in tenor in the parts of this zone masked by overburden. Diamond drilling of the best exposed zone was disappointing. (one 90' Vinkei hole)

2. Geochemical work yielded a complex pattern but revealed a major zone of highs trending NW across the southern part of the property. It is probably related to a glacial boulder train.

3. I.P. results failed to show any significant areas of high chargeability but one slightly anomalous zone seems of some importance when viewed in conjunction with the geological and geochemical data.

4. That part of the property lying north of the camp does not seem worth further exploration for bodies of the porphyry copper type.

5. Diamond drilling or bulldozer trenching of the I.P. zone on line 96S should be considered and further surface examination of the suspect I.P. anomaly on lines 16S and 24S is warranted.

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