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MEMORANDUM
on
CARIBOO-BELL

by: W.R. Bacon, Ph.D, P.Eng.

Aug. 15, 1973.

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During the past month on behalf of Quintana Minerals Exploration, I retained Mr. N.D. McKechnie, Consulting Geologist, to make an examination of the Cariboo-Bell drill core for the purpose of determining the mode of occurrence of the copper mineralization and any geological facts that might have a bearing on the possibilities of substantially increasing the known reserves of the property.

At the same time, I reviewed what I considered the main facts concerning the property and attempted to document them from the Teck files. This was only partially successful.

I shall list first what I consider the facts and deal later with McKechnie's report.

FACTS

1. Cariboo-Bell is a typical 'porphyry copper' in a syenite-monzonite environment.

Chalcopyrite, very fine grained, is the only sulphide of economic consequence. Pyrite is present and is particularly abundant in zones peripheral to the recognized 'ore' zones. Several strong IP anomalies are caused by disseminated pyrite.

The upper parts of the 'ore' zones are irregularly oxidized but, generally, the oxidation disappears rapidly with depth and is minimal below depths of 150 feet. Secondary minerals consist of malachite, conichalcite, chalcocite, cuprite and native copper.

The commonest alteration feature of the 'granitic' rocks is extensive potash metasomatism which has imparted a bright salmon colour to large volumes of rock.

The best published geological report on the property is in the 1966 Annual Report of the Minister of Mines and Petroleum Resources, pp. 126-131.

2. Reserves

I could find no plans or pit outlines at the Teck Office to back up the following figures:

(a) Cariboo-Bell Copper Mines Ltd., 1967. (J.J. Crowhurst and staff)

33,000,000 T. - 0.50% Cu, 0.015 oz. Au, of which 10,000,000 T. contains substantial oxide copper. Cut-off grade - 0.30% Cu.

(b) Teck Corp., 1970. (R. Verzosa, who also worked on the 1967 calculation)

48,000,000 T. - 0.445% Cu. Cut-off grade - 0.30% Cu.

Both calculations (a) and (b) were based on 3 zones, one of which (No. 4) involved only 1-2 million tons.

(c) Teck Corp., 1972. (L. Bilheimer)

30,000,000 T. - 0.49% Cu. Cut-off grade - 0.30% Cu.

Zone '2', the lesser oxidized of Zones '2' and '3', contains Holes S-12, 104, 10, 11, 215, 109, 7, 8, 9, 106, 108, 223, 6, 5, 4, 110, 222, 28, 3, 2, 1, 105 (22 holes).

Zone '3', west and downhill from '2' - somewhat more oxidized - contains Holes S-24, 220, 21, 113, 112, 200, 201, 202, 211, 212, 111, 39, 209, 49 (14 holes).

These holes are BX diamond drill holes and 60 per cent of them warrant deepening solely on a mathematical basis - they were stopped in interesting mineralization. (This is the most obvious way to increase reserves.) On an exploratory basis, 1 hole in 4 of these should be extended to depths of 2000 feet or until a geological limit or 'bottom' is established for the mineralization.

Around the known zones, particularly to the south, are extensive areas of low grade mineralization. The whole hill merits another look by a geologist or geologists experienced in porphyry copper exploration. Such personnel have been noticeably absent in previous exploration efforts by both Highland Bell and Teck.

3. Gold Content

(a) Cariboo-Bell prepared approximately 250 composite samples from pulps; most samples represented 50 foot drill sections in the 'ore' zones. Assays of these composites ranged from Tr to 0.06 ounces - using the standard fire assay method.

The average assay obtained was in the 0.01-0.02 oz. range.

(b) Teck Corporation went through a similar procedure with 33 composite pulps, using instead, however, a geochemical assaying technique. The assays were reported to three places of decimals and averaged 0.025 oz. Au/ton.

L. Bilheimer of Teck Corporation in a property evaluation assumes a gold recovery of 75% and 90% smelter payment as probable. At $65 dollar gold, the gold credit would therefore be $1.10 per ton of ore mined.

McKECHNIE REPORT

Mr. McKechnie examined a total footage of 9,131 feet during the periods June 29 - July 7 and July 14 - 27.

Between the aforementioned periods, on July 13th, a meeting was held between McKechnie, Ney and myself - during which it was obvious that McKechnie needed more rigorous direction for the following reasons:

1. McKechnie, during his first period, examined core from drill holes beyond (N) the recognized 'ore' zones. Moreover, his legend involved too many units to be at all practical, particularly in view of the fact that no petrographic work had been done or was contemplated.

2. McKechnie inexplicably formed certain negative conclusions concerning the potential of the property - on the basis of this minor amount of work.

Returning to the property, McKechnie logged a number of holes at the north end of the two main zones - 5,521 feet in all. He arrived at two conclusions which were not justified on the basis of the work he had done:

1. That the mineralization was so irregularly distributed that holes would have to be drilled at 50 foot intervals to establish reliable tonnage and grade figures.

In actual fact, the very complete nature of the sampling in drill holes and trenches indicates the opposite - a widespread, rather uniform mineralization.

2. McKechnie suggests there is evidence in the core he examined that the barren syenodiorite "broadens southward from the surface contact" when in fact he has not worked far enough south to make such a comprehensive statement. (Cross-section N13800 was as far south as he worked.) Again, in actual fact, a geological 'bottom' to the potential environment has yet to be established.

CONCLUSION

There are two principal favourable features concerning Cariboo-Bell that have always impressed me:

1. The widespread mineralization plus the fact that so many holes in the two main zones were not drilled deep enough. In other words, an intelligent program of exploration could add substantial tonnages.

2. There is definitely an unusual gold content associated with the copper mineralization. From geochemical assays, it could be as much as 0.025 oz. per ton.

Respectfully submitted,

BACON & CROWHURST LTD.

W.R. Bacon, Ph.D, P.Eng.