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DEPARTMENT OF NATIONAL DEVELOPMENT

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GEOLOGICAL STRUCTURE.

Investigations into the geological structure of the immediate area of the mine are not complete. Various structural controls have been recognized in the Main lode. The South lode is mostly hidden under alluvium, but similar structures trend across the area.

The possibility of a repetition copper lode in the South lode area is hopeful.

THE LODES AND THEIR ORE RESERVES

Main lode

The surface outcrop of the Main lode is now obscured, but R. Blanchard (1936) gives an average horizontal width of about 8' along 550' of lode. This is equal to a true width of 7 feet.

On the 140' level recent development shows the lode to be split into two main ore shoots, the Western Shoot and the Main Shoot. The average horizontal width is approximately 10' along 450' of lode, with workable ore still showing in the west drive face.

On the 200' level driving has partly exposed the Main Shoot. The lode walls are not fully exposed but the lode appears to be averaging approximately 8'. The west drive on this lode has apparently turned North West on a stringer, and the West Shoot has not been proved.

Diamond drill holes Nos. 1 and 3 have intersected the Main Shoot at 280' showing widths of 9 to 10'. No. 4 diamond drill hole has not cut ore of any thickness at this depth, but may only have cut the north West stringers encountered on the 140' and 200' levels. Structurally the West Shoot can be expected to occur at this depth. The Main lode is a steeply pitching structure (between 55° and 70°) and should be workable to at least 350'. Assuming an average lode thickness of 7' between the 120' and 350' levels, a workable length of 450', and the ore running 10 cubic feet to the ton, the indicated tonnage of sulphide ore is approximately 72,000 tons. About 5,000 tons have been shipped from this lode and 5,000 tons remain in the surface dump.

Actual reserves to a depth of 350 feet are:-

- (a) At surface 5,000 tons
- (b) Blocked out in the mine 15,000 tons
- (c) Indicated and inferred 47,000 tons

Oxidised Ore

Assuming an average width of 10' over a length of 480' and an average depth of 90' remaining in the lode, at 11 cubic feet to the ton, the reserves of oxidised ore are approximately 40,000 tons.

THE LOVECHILD LODE

This western end of the South lode line appears to consist of a single lode split and offset by a fault. This composite lode, from surface and underground measurements appears to be 10', in length with an average width of 10'. This agrees with

measurements made by E. Blanchard in 1936. It has only been exposed in three places, (a) in the adit, where it is 12' wide, (b) on the 50' level, where it varies from a few feet to 20' wide, and (c) on the 109' level where it is 8' or more wide. At the 109' level on the 28th May a cut was made into typical leached zone ore carrying a good deal of water. Sulphide ore comparable to the West Shoot of the Main Lode can thus be expected, at the 120' level. Inferred ore reserves are 20,000 tons.

THE SOUTH LODGE

Whether the Lovechild Lode continues into the South Lode is yet not known. The South Lode outcrop consists of a hematite blow 250' long and up to 50' wide. It shows signs of fracturing and gossanizing. The hematite blow itself is not fully exposed, and any soft copper gossan could well be covered by alluvium. (The blow is not a copper lode but may be in part impregnated with ore).

The known limits of mineralisation in this line extend from the Lovechild through the hematite outcrops to the old well, a distance of 800'.

ORE GRADE IN THE MAIN LODGE

Sulphide Ore.

Over 5,000 tons of ore have been extracted from the Main Shoot with an average assay of approximately 20% copper. A bulk assay taken from the dump at the surface showed 13% copper. The ore remaining in the Main Shoot above the 200' level may therefore average more than 10% copper.

Chipping and cut samples have been taken in the West Shoot on the 140' level. These include sufficient wall and country material to represent average extractable grades. The average assay is approximately 8% copper, 3.6% zinc and 1.8% lead. The diamond drill holes indicated values of between 4 and 5% copper with zinc.

Oxidised Ore

Previous estimates of grade in the oxidised ore are as low as 4% copper. They were based upon samples taken at three restricted localities, the 50' and 86' levels in the old No.1 shaft, and the 50' level in the old No.2 Shaft. Since that period ore of over 20% copper has been shipped from old No.2 Shaft, and recent samples show the oxidised ore near the surface in the West Shoot to average over 8% copper. It is probable that below 50' level leaching will reduce the grade of oxidised ore considerably, and an average grade of 6% is therefore suggested for the oxidised zone.

DEVELOPMENT REQUIRED.

Main Lode

In the Main Lode some 100' of development is required on the 200' level to prove the West Shoot at this depth. Sinking and further driving will be later required on the lower levels to fully prove the ore reserves.

South Lode System.

Further boring and shaft sinking is urgently required to explore the South Lode which could substantially increase the mines ore reserves. The west ore shoot (Lovechild) requires the exploration below the 109' Level to prove the grade of the secondary sulphide ore. Limited driving in the sulphide zone east towards the hematite blow could be made from the No.3 shaft, but a new shaft is needed to prove the main area. If good sulphide ore is found below the 109' level in this shaft, diamond drilling on the South Lode line would be justified, followed by a further shaft(s) if good ore intersections are found.

SUMMARY.

Development on the 140' level has proved a continuous lode of length similar to the surface showing. Work on the 200' level supports structural evidence that this lode will continue to be of mineable thickness for some depth below.

Recent development work on the western end of the South Lode line indicates this lode to have a similar structure to the Main Lode. The ore shows similar characteristics and grade as in the Main Lode.

The greater part of the South Lode is as yet unexplored, and as this area could substantially increase the ore reserves of the mine, development work is urgently required. No satisfactory estimate of reserves can be made until further development is undertaken.

(A.D.M. Bell).
RESIDENT GEOLOGIST.

Alice Springs, N.T.
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