

For General Information Only

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November, 1963

The President and Directors

Mastodon-Highland Bell Mines Ltd.
Vancouver, B.C.

Leitch Gold Mines Limited
Toronto, Ontario

Gentlemen:

We herewith submit a plan relative to placing the Burnaby Island Iron Ore deposit into production at the rate of 3,000 short dry tons of ore to be processed per calendar day.

This property is situated in the Southern Queen Charlotte Islands, British Columbia, in the Skeena Mining Division and consists of 57 located mineral claims.

It is planned that the concentrator would commence operation early in 1966, and the first shipment of 50,000 long dry tons of iron concentrate, assaying approximately 62% Fe., would be available for loading into an ore carrier by the 1st of June, 1966. The production plan is based on the construction of a deep-sea dock together with ship-loading facilities on the south shore of Burnaby Island. This dock would be capable of accommodating ore carriers of the 50,000 long ton capacity type, so that full advantage may be taken regarding deep-sea freight rates.

During 1964 an underground exploration program would be undertaken in order to extend the present ore reserves, to determine underground rock and water conditions, and to obtain proper samples for metallurgical and material handling design. A review of results so obtained would establish the economics related to placing the property into production by the end of 1965.

Respectfully submitted,

J. J. Crowhurst

GEOLOGY

The geologic environment of the Burnaby Island deposits is typical of the more important iron deposits on the B. C. coast.* The magnetite occurs mainly in metamorphosed andesite (greenstone) adjacent to thick deposits of sugary-white, Triassic limestone, all of which are in close proximity to a granitic stock of the Coast intrusions (Jurassic). (See geological plan on next page.)

The area of interest was originally defined by an aeromagnetic survey in which a fixed-wing aircraft flew northwesterly lines at quarter mile intervals with a terrain clearance of 500 feet. Subsequent surface investigation confirmed the presence of substantial magnetic anomalies in a sequence of Triassic limestones and greenstones.

These layered rocks undulate flatly, dipping westward and northward at angles to 25 degrees along the shore, and eastward (under Hecate Strait) at angles to 30 degrees in the area tested by drilling. As the magnetite has formed mainly at greenstone-limestone contacts, its occurrence is essentially conformable to the enclosing rocks.

No mineralization of consequence outcrops. The deposit which has been investigated by 12,208 feet of diamond drilling during 1963 underlies the limestone outcropping on shore and overlies the principal limestone layer. It has been explored by this drilling over a strike length of 760' by drilling at approximately 100' intervals. Maps and details concerning the geology and the diamond drilling may be found in the Appendix. The main part of this deposit, the "Overlime" deposit, is roughly tabular, dipping eastward from the shore line with a greater slope than that of the rocky ocean bottom. The "Overlime" deposit occurs at depths from 110 feet to 300 feet and more below the rock surface.

Occurring in an area of block faulting, the "Overlime" deposit owes its presence to the fact that it occurs in a graben. The graben is bounded, north and south, by northeasterly striking, pre-mineral faults. A number of northwesterly and northerly faults are also evident in the sediments along the shoreline, but the resultant movement along these faults is considered to be minor in view of the fact that correlations from drill hole to drill hole were made with little difficulty or apparent complication.

The ore varies from a dense magnetite in which little impurity other than flecks of calcite and occasional chlorite and quartz are evident, to a patchy rock in which crystals of brown garnet form the dominant gangue. Pyrite, chalcopyrite, and hematite occur sporadically in certain ore sections but not in significant quantities.

Analyses of drill core samples indicate that, on average, the ore can be expected to contain the following impurities:-

Cu	-	0.02%
S	-	0.2
SiO ₂	-	7.5
Al ₂ O ₃	-	1.5
TiO ₂	-	0.08
P	-	0.05

Metallurgical tests have shown that a concentrate can be produced containing not more than the above percentages of impurities.

Generally, the ore cored very well (Standard "A" core) and it is considered to be a competent unit. Similarly, core recovery in the limestone was very high. This rock is apparently free of solution cavities and other voids, and is also considered to be a competent rock. The greenstone caused minor difficulties in drilling due to the prevalence of fractures, resulting in shorter runs than those obtained in ore and limestone.

POTENTIAL AREAS NOT CONSIDERED IN ORE CALCULATIONS

1. Offshore magnetic anomaly centred at Co-ordinates 3650N, 6050E.

Because of the location of this substantial anomaly, no attempt was made to investigate it by drilling from the shore. The writer considers it most probable that the anomaly represents a seaward continuation of the "overlime" deposit, and that it probably reflects a reversal in dip (westward) to this deposit. In other words, the deposit, on Sections 16 to 20, is probably gently U-shaped.

A deep sea diver, retained to investigate the ocean bottom in the vicinity of this anomaly, found only unmineralized greenstone in place. Hence it is proven that the source of the anomaly does not outcrop on the ocean bottom.

The extent of this anomaly suggests a considerable tonnage of magnetite is involved.

2. The Underlime Deposit:

The most promising untested possibility lies immediately below the deeper or principal limestone layer. Hole 6 was deepened to test this possibility and cut 60.3 feet of 46.17% iron at the lower contact of this limestone - from 789.0' to 849.3'.



- X IRON DEPOSITS**
- 1 TASU
 - 2 BURNABY ISLAND
 - 3 JEDWAY
 - 4 [unclear]
 - 5 [unclear]
 - 6 TEXADA

