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Smithers, B. C.
September 23, 1969

Mr. R.J. Springer
Mastodon-Highland Bell Mines Ltd.
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VANCOUVER 1, B. C.

Dear John:

Last week Dave and I spent several days cleaning and washing off a few of the outcrops in the trenches on the Lou Group. This was done in an attempt to get a better idea of the geology and the mineralization. Some blasting was also carried out to obtain fresh specimens for further study, in addition the areas that were cleaned were channel sampled.

Intense quartz-sericite-kaolin alteration within the mineralized area has completely obliterated the original rock textures. As a result no conclusive term can be applied to the host rock at prestn; however for the time being the term altered porphyry will be used. What the original rock was is only of academic interest, and not really that important as far as the mineralization is concerned.

A volcanic breccia was found immediately west of Louise Lake. The fragments have undergone considerable rotation, producing some that are nearly spheroidal and others that are round and flat. The pebbles are composed of silica (chert) and are cemented with a matrix of pyrite, sericite and kaolin. This indicates that the mineralization events on the Lou Group are probably genetically related to this volcanic breccia pipe. A petrographic study (see Chamberlain's Report, page 7, last paragraph) of one specimen of this breccia tends to support this hypothesis. Breccia pipes generally have more exotic mineral suites associated with them, thus the occurrence of tetrahedrite mineralization over a large area in a quartz stockwork and in fractures is not at all unreasonable.

The chief copper mineralization in the trenches consists of tetrahedrite secondary chalcocite and bornite. The latter two minerals have been observed in the southern part of the trench on L-52E (no outcrop could be found in the remaining part of the trench). Chalcocite and bornite have also been observed in the trench on L-68E. Specimens from this area were X-rayed last spring and both of these minerals were identified. Some specimens containing tetrahedrite along fractures were also collected from this trench, and will be brought to Vancouver in case anyone doubts there is tetrahedrite.

Secondary chalcocite and bornite occur principally where the rocks have been well fractured and not recemented together with silica and pyrite. These minerals are notably absent on L-60E and L-64E where the rock has been well sealed along the fractures with quartz and pyrite.

Local zones of post tetrahedrite fracturing in the rock have provided channels for the downward migration of dissolved copper minerals in solution. When these minerals reached a reducing environment at the water table they would precipitate as chalcocite and bornite.

The area has been glaciated as is evidenced by the variety of rounded glacial erratics, boulder clay lenses and the smooth polished surface of the bedrock in the trenches. Although a secondary blanket may have existed at one time it has been almost completely removed, leaving a few isolated zones of secondary copper mineralization where fracturing provided deep channels for the original downward migration of the solutions which contained the dissolved copper minerals. Thus it is believed that the secondary copper minerals noted in the trenches are just remaining deep roots of the original secondary blanket.

A close study of the washed off bedrock in the trenches revealed three ages of quartz veining and at least one age of pyrite veining. Two fracture counts were made, one on L-60E north trench showed 37 quartz or pyrite filled fractures across 5 ft. On L-60E south trench a total of 98 quartz or pyrite filled fractures across 8 ft were counted.

The most prominent trend of the quartz veins is N-30 E with an 80° dip to the northwest. This set of quartz veins represents the first stage of mineralization. These quartz veins vary in width from 1/8 inch to 1/2 inch and are often characterized by hairlike seams of pyrite along the edges. The next stage of mineralization consists of an east-west set of quartz veins that are nearly vertical. These are banded and vary in width from 1/2 inch to 1 1/2 inches. Generally considerable pyrite is associated with this set as thin massive seams along the margins. Scattered grains of tetrahedrite were observed associated with this set. The next stage of mineralization consists of a maze of pyrite filled fractures with some tetrahedrite along the margins of the pyrite. Tetrahedrite also occurs intimately associated with the pyrite along hairline fractures in this set. This fracture set is uniformly thin, generally being less than an 1/8 inch wide. Although wider ones up to 3/4 inch carrying massive pyrite were noted these are not to common. Thes pyrite filled fractures have numerous orientations with the most prominent trends being N 60°W, E-W, N 30°E with steep to vertical dips, in addition one nearly flat set was noted. These three stages of sulphide mineralization are followed by a N-S trending, vertical set of barren white, vuggy, quartz veins. This is based on what little bedrock was washed off in the trenches, no doubt if larger areas were exposed more information could be added.. This is by no means a complete picture of the mineralization events.

The steeply dipping quartz and pyrite filled fractures, plus the uniformly intense quartz-sericite-kaolin alteration indicate that the mineralization is contained within a vertical or steeply dipping zone. The possibilities of its bottoming out at a shallow depth are extremely remote. Holes to a depth of 2,500 feet on Newman Peninsula were still in mineralization, because of the similar geological histories, it is not unreasonably to expect the mineralization to extend 2,000 feet down on the Lou Group.

Yours very truly,

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Signed: Ed
E.R. Wozniak