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MEMORANDUM

DATE: March 31, 1986

À TO: H. L. Gibson

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DE FROM: A. J. Davidson

SUJET SUBJECT: Notes on Buttle Lake trip

Sicker volcanics represent an ocean-ocean subduction zone and are calc-alkaline in nature. However tholeites do exist at Buttle Lake as well as mafic rocks of strange composition.

Nitinat is composed of calcalkaline basalts and andesites and is represented by andesites (footwall) at Buttle Lake which exhibit cumulate pyroxene layers. The Nitinat is also represented by matrix rich agglomeratic clastics which are poorly sorted and which may be pillow breccias.

Bedded rocks are consiered to be MYRA Fm while unbedded rocks are Nitinat. However the Myra does contain some pyroxene porphyry basalt and pillows can be found in both the Myra and the Nitinat. The Nitinat represents a uniform calcalkaline basalt whereas the Myra is a differentiated sequence which ranges from basalt to andesite to rhyolite. The Myra also contains massive dacites (Low K rhyolites) and rhyolites (associated with the ores).

The Buttle Lake Fm which caps the sequences includes limestone, chert and greywacke and rare orthoquartzite.

The Sicker as a Group appears to have progressed from a deeperto shallow-water environment upwards from the Nitinat basalts to the Myra differentiated volcanics & volcaniclastics to the carbonates of the Buttle Lake Fm.

The Buttle Lake limestone is folded strongly. The ore at Buttle is aligned along a NWSE 4 mile trend.

The Mine Sequence is 1500' thick and contains all the rhyolite and ore known so far. The Myra is 4500' thick between the Mine Sequence and the Buttle Lake Limestone. At least 1000' of pyroxene porphyry andesite lies below the HW rhyolite.

However the HW shaft bottomed in rhyolite (shaft is the deepest hole on the property) although this lowest rhyolite has a different REE pattern + is probably a true rhyolite. Quartz phenos are the only criteria for distinguishing a true rhyolite at B.L.

The HW trend on the HW rhyolite can be identified by differences in the alteration + mineralization and a synclinal axis or grabenlike structure. It can also be identified by QP domal material along the edge of the graben or structure. The HW rhyolite is quite extensive across strike as well.

Domes are typically 400' thick by 300' across and are Qtz feldspar porphyry, quartz kerotophyre or non porphyritic dacite domes.

The dip length of the Lynx-Myra rhyolite varies from 1000'-3500' from the SE to the NW. It is quite easy to pick the bottom of the Mine Sequence but the thickness is quite variable and the HW Rhyolite can expand to occupy the entire Mine Sequence.

The ores are in areas marginal to the main felsic centres and the whole Mine Sequence becomes rhyolite at the felsic centres. The HW orebody occurs below and in the HW rhyolite and sits on Nitinat Andesites. The fold hinges along the Myra (anticline) and HW (syncline) trends mirror primary structures. Potassic rich rocks deforms best and become sericite schist. The HW sits in a synclinal depression.

The domes are quite extensive along strike but limited across strike. They actually form a QFP (Low K) ridge. Abundace and size of quartz eyes can distinguish different zones. The domes may be related to Horst Graben structures.

Both tholeiitic and calc-alkaline mafics exist. The tholeiites lie immediately above the Myra Rhyolite. Tholeiitic felsics may also exist. The Upper Rhyolite is purple and green (shallower?) occurs with QFP and chert and lies at the top of the Mine Sequence (above the Lynx Myra rhyolite). The stringer zone to the HW is Ba enriched (1000-2000). The ore body and area is strongly zoned. Zn, Ba, Pb tends to increase from the HW Rhyolite to the Lynx Myra rhyolite and from the core of the HW orebody to the fringe. Au is uniform throughout. At HW, floater lenses lie in the HW rhyolite above the main lens. The Myra lens is exactly the same composition as one of the floater HW lense. There is bornite at HW as at Kuroko. Black argillite exists in the HW rhyolite immediately above the ore but still in the HW rhyolite. About 500' of stratigraphy exists between the HW Horizon and the Lynx Myra Horizon.

Strong alteration exists in the footwall to the HW. High silica exists immediate below the ore i.e. >70% in Nitinat andesite. There is also a quartz-pyrite stringer zone. K_2O enrichment zones (4-5%) occur on the flank of the core stringer zone i.e. on he flanks of the high silica zone. On the flanks of

the high SiO_2 are quartz-albite (dumping) zones. There is also Ba enrichment below the HW TiO_2 is also depleted (.7 to .35) in the stringer zone i.e. only in the Qtz-sericite zone. TiO_2 shows no change in the Qtz Albite zone.

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