Preliminary Report - Elk Group
Northern Vancouver Island

The period Sept. 10th to Sept. 19th was spent in an examination of drill core and surface exposures on the Elk Group of mineral claims near Holberg, Vancouver Island. A number of samples have been submitted for thin-section work, and another sample taken for assay purposes. It will be at least three weeks before work on these samples is complete. Accordingly this brief preliminary report is submitted to cover those points which seem relevant at this time.

Magnetics

Two areas of the property show considerable magnetic relief. Diamond drill hole #1 was put down in 1972 to test the eastern anomaly, designated the Farm anomaly. Drill hole #3 tested the western zone close to the summit of Knob Hill. On the basis of core samples from these holes and from bedrock exposures close to the collar of hole #3, it is evident that this relief is due to the presence, within a sequence of fragmental volcanic rocks, of moderate amounts of strongly magnetic pyrrhotite which occurs as disseminations, thin veinlets and massive fragments. In the areas of low magnetic relief which characterize the greater part of the property, sulfides are absent or represented only by pyrite.

Fragmental Pyrrhotite

A number of rounded to subrounded volcanic fragments in dill hole #1 are composed entirely of pyrrhotite. In one case, a small bleb of chalcopyrite accompanies the pyrrhotite. I take this to indicate that at least one of the episodes of explosive volcanism disrupted a pre-existing massive sulfide body. It can be conjectured that portions of this body might still be found at a stratagraphically lower level within the volcanic pile, and that other such bodies might well exist at a variety of stratigraphic levels. The size and possible economic importance of such bodies can only be conjectural at this time.

Contemporaneous Alteration

Individual fragmental units can often be distinguished from one another in drill core on the basis of lithology and variations in alteration. The variation in alteration intensity from one unit to another is taken to imply that such alteration occurred during the deposition and cooling of individual units.

Biotitic Alteration

Very fine-grained light brown biotite is common within certain sections of the volcanics. On the basis of my experience elsewhere in this general area I feel reasonably certain that this is a secondary feature. It should be noted that such alteration is associated with the zones of highest grade copper at the Island Copper deposit, and that biotitic alteration is the only indicator there of K-metasomatism, there being no recognized zone of secondary K-feldspar.

Volcanic Chert

In the section from 664' to 718' (bottom) of drill hole #1, there exists a rock type which is macroscopically indistinguishable from one of the major host types at Island Copper. During the period of exploration drilling on that deposit, no thin-section work was carried out and the rock type was classed as a fine-grained andesite on the basis of characteristics observable in hand-specimen. However, at the 683' point in the Elk hole, sedimentary laninations are beautifully developed, and the rock is now considered to be a volcanic chert, pending verification by thin-section work now in progress. Veins of dark grey quartz occur sporadically in this rock, another point in common with the Island Copper situation.

The identification of this rock as a sediment indicates that a complete reassessment of Island Copper geology is in order. Such a reinterpretation could have far-reaching implications with regard to the design of exploration programs in this general area. The subject will be dealt with at length in my final report.

Quartz-Sericite Alteration

Mapping by Peter Folk along the southern edge of the Elk Group indicated the presence of a number of areas of intense quartz-sericite alteration of fragmental volcanic rocks. Folk's work has been confirmed by my observations. These occurrences are part of a belt which extends, probably continuously, from southeast of the Island Copper deposit to the mouth of the Stranby River, a distance of approximately 38 miles. Characteristic minerals are quartz, pyrophyllite, clay minerals, sericite, pyrite (generally exceeding 5%) and rarely dumortierite. Although most of the rock was originally extrusive, ranging from fine tuff to coarse breccia, at least some of it was relatively coarse-grained intrusive porphyry.

The genesis, the structural and stratigraphic relations, even the geometry of this mass of rock, have not as yet been defined. Its relation, if any, to copper mineralization is still unknown. The occurrence of the Island Copper deposit and the Red Dog and Utah #1 Anomaly showings in close proximity to this belt imply some relation. Further investigations on a regional scale are certainly warranted.

Possibility of Pre-Cretaceous Secondary Enrichment

In previous discussions, I had proposed the possibility that copper deposits developed within the Bonanza Group might have been exposed by pre-Cretaceous erosion, and that zones of secondary enrichment might have been developed prior to the blanketing of the area by Cretaceous sediments. Examination of the Cretaceous rocks close to the unconformity on the Elk Group has now led me to conclude that such a possibility is highly unlikely. The Cretaceous sediments are composed largely of sand derived from the rapid mechanical erosion of unweathered basalt, and, except where pebbles of other lithologies are present, are indistinguishable in hand specimen from basalt.

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