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SIGNIFICANCE OF SMALL SCALE STRUCTURES IN THE SICKER GROUP, MOUNT SICKER - IMPRESSIONS

by: Gary Benvenuto
4699 Strathcona Place
North Vancouver, B.C.
V7G 1H1. phone: 9297641

for: Corporation Falconbridge Ltd.

September 22, 1986

I spent two days (September 18 and 19, 1986) on Mount Sicker with Harold Gibson, where he showed me a number of outcrops displaying small scale structures in the schistose, Sicker Group volcanic rock succession. The purpose of my visit was to discuss with Harold, the significance of these small scale structures in terms of resolving the nature of the larger scale structures that involve the rocks on Mount Sicker. This note summarizes some of the opinions and observations I expressed during my visit.

Resolution of the larger scale structures, particularly folds, on Mount Sicker necessitates synthesis of information on smaller scale structures, lithologic unit contact relationships and diamond drill sections. It is clear that the smaller scale structures are too sparse and commonly not explicit enough to provide the sole basis for resolving the larger scale structures. It has been my experience that more confidence can be placed on an interpretation based on mapping out unit contacts through areas of significant topographic relief, in conjunction with mean orientations of bedding and tops indicators. Small scale structures, as asymetric folds and bedding - schistosity or cleavage relationships may be useful in placing confidence limits on this interpretation and in resolving structures within smaller areas.

There is compelling evidence, both large and small scale, to support the working hypothesis of a large anticline dominating the gross structure of Mount Sicker. It is reasonable to infer that bedding in the core of the anticline

may be gently dipping overall, but at least locally rotated into steeper dipping, axial planar schistosity. An important question in interpreting mesoscopic scale observations is whether the dip of schistosity-parallel bedding is indicative of the overall dip of lithologic units or represents local rotation of bedding into schistosity within intervals of units that overall, dip less steeply than schistosity. My impression of the schists exposed along the Chemainus River, perhaps forming the axial zone of the inferred major anticline comprising Mount Sicker, is that bedding and layering are generally parallel to schistosity and steeply to moderately dipping. However, locally at least, layering is gently dipping. I concede that, on the other hand, there may be tight folding of layering within units that overall are gently dipping.

It is a major problem determining whether discontinuous lithologic units and beds result from tight, possibly recumbent folding, or reflect originally discontinuous lithologies and facies transitions. It appears to me that facies transitions and major and minor unconformities are the rule rather than exception within the Sicker Group successions at Westmin Resources' Thistle property near Port Alberni, and at their Buttle Lake property. Lithologic unit contacts are commonly sheared which may mask evidence for original discontinuity of units and beds.

My impression of the rocks exposed along the Chemainus River in the area of the Copper Canyon adit, is that they represent a continuous succession facing southwards, and dipping parallel to schistosity. There are, however, small scale, tight folds that fold schistosity and appear late in the deformation history, as well as more open, somewhat larger scale folds that have been sheared and locally tightly refolded. The interval of complexly interlayered rhyolitic and basaltic or andesitic tuffs, in my opinion, does not represent a few units

repeated by complex folding (except locally). The variation in textures and thicknesses from unit to unit suggests there is a progression through the succession. The apparent lack of epidote-nodule-bearing mafic tuffs on trend to the east on Mount Sicker may reflect a change of facies rather than structural closure within an anticline. Mapping of the west slope of Mount Sicker down to the Chemnainus River, may help resolve the overall structure. The time consuming documentation of bedding top facings in the River would provide important clues to the structure. It is unfortunate that Canamera's budget did not allow for drilling fans of holes to determine the overall dip of units in the river valley.