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E.L. 27/76

ELLIOTT BAY

NOTES ON A FIELD VISIT

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29.4.83

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29 April 1983.

NOTES ON A VISIT TO GEOPEKO EL 27/76, ELLIOTT BAY

Dr R.R. Large and other geologists of Geopeko arranged a field trip to their EL 27/76 on 14 - 15 April, 1983. The main reason for the visit was to discuss with me the geology of the Wart Hill Pyroclastics at the Voyager 19 Grid, where in recent drilling Geopeko had not encountered at the depth anticipated the continuation of ore bodies discovered at the surface.

During the afternoon of 14 April we examined areas to the south of Wart Hill, where the Wart Hill Pyroclastics consists of rhyolitic quartz-rich lithic and crystal tuffs, agglomerate, lavas and vitric tuffs. Primary compositional layering is occasionally present. Two secondary cleavages occur at all the localities visited and their intersections are marked by strong mineral alignments. The rods resulting from the intersection of cleavages plunge steeply to the south.

In the morning of 15 April we continued examination of outcrops of Wart Hill Pyroclastics north toward Wart Hill. Immediately to the south-west of Wart Hill occurs a folded sequence of quartzites with the two cleavages found in the surrounding areas present. The cleavages were noted as having been superimposed on the unrelated folds of quartzite. Similar relationships were seen in the crystal tuffs on Wart Hill where again the two regional cleavages were not in any way associated with the folded structures on which they had been superimposed. Rods formed by the intersection of the cleavages plunge steeply to the south regardless of the various attitudes of the compositional layering determined by earlier folding.

At Voyager 19 Grid, to the north of Wart Hill, massive galena-sphalerite ore bodies occur within lithic and crystal tuffs, agglomerate and rhyolite. The ore bodies are considered to be parallel to the primary compositional layering in the enclosing rock-units. The overall attitude of the ore bodies is difficult to determine for although compositional layers are steeply dipping in outcrop they may well represent limbs of tight upright

folds, so that the ore bodies may not be found at depth immediately below the surface outcrop. Rods resulting from the intersection of the regionally developed cleavages are present and plunge steeply to the south. However, as demonstrated in the outcrops around Wart Hill, the disposition of the rods is no guide to the three-dimensional distribution of rock-types since the cleavages were superimposed on unrelated folds. Unfortunately no minor structures were seen that could be used to determine rock-unit distribution. In these circumstances only the primary compositional layering can be used to predict structures at depth. It is, therefore, recommended that sufficient of the outcropping ore bodies is dug out to determine beyond doubt the attitude of compositional layering, and this procedure should be followed by shallow drill holes to test any predictions.

In the afternoon of 15 April we walked to the coast in the vicinity of the 1980/81 Sassy Creek camp site, and some observations were made during brief stops at outcrops. It should be noted that the small outcrops of quartz-pebble conglomerates and quartzites near the eastern margin of the Sassy Creek Argillites had many features typical of shallow-water deposits. Conglomerate beds, one of which showed grading in grain size, had continuous framework with patches developed displaying the closest possible packing of pebbles. Imbricate structures, which are diagnostic of traction, are common and indicate variations in current directions during deposition from bed to bed. If the layers examined were part of a sequence brought into the final area of deposition by a submarine slide, then it should be noted that no features which would be expected to be associated with slide-transportation were observed.

At the coast the Sassy Creek Argillites show spectacular widely-spaced, seamed cleavage associated with kink band development. The seams within the cleavage represent residues from considerable volumes of rock that were removed by solution during shortening. However, such structures may be of local development only, and may not have resulted from a greater amount of deformation than that of the rock-units occurring in the Wart Hill Pyroclastics to the east.

Ew.

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