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Golden Bear Project Report - June, 1992

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Dated: June 28, 1992

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General

Fieldwork on the Golden Bear project began on June 17, with a three man crew: myself, and two assistants, Todd Parsons and Dean Barron. We were joined subsequently on June 22 by Jonathon Rouse. A base camp was set up on the Samotua River, just above its confluence with Bearskin Creek. This is about 15 minutes by truck to the Golden Bear mine, where the Trans North helicopter is based.

Mapping has been aided by excellent weather. At lower elevations, work is being carried out by two-man crews, as bears are numerous in the area. Snow has prevented us from doing much at higher elevations. As of June 28, 23 traverses have been completed, including 11 by myself, 6 by Rouse, 4 by Barron and 2 by Parsons.

Supplies are coming in from Smithers on a weekly basis. Mine personnel have been extremely helpful and cooperative. Our only complaint is our Ministry truck, which is not capable of 4-low, and which experiences severe transfer case rattling at times. A heartfelt plea to those responsible for inspecting vehicles to do their job... the nearest service station is five hours drive from here.

Stratigraphy and Structure

Our work so far has focussed primarily on the Samotua River valley. The valley contains two exposures of limestone of probable Permian age (Souther, 1972). Limestone in both exposures is strongly recrystallized, and no fossils have been found. In the northern exposure (the "Samotua antiform", in NTS 104K/08), the limestone is overlain by foliated mafic volcanics above a sheared conformable contact. The lowermost mafic tuffs contain thin calcareous beds, and the uppermost thin bedded limestone contains thin chloritic folia, suggesting a continuous stratigraphic succession.

The sequence overlying the Permian limestone consists of intercalated mafic volcanics (primarily tuffs), argillaceous and volcanogenic marine sediments, and minor limestone. Lithologies are commonly thin bedded, and are deformed and metamorphosed to chloritic and siliceous phyllites, and slates. No radiolarian chert has been identified. Thin, lensoidal carbonate beds occur in the upper part of the sequence; these have been sampled for conodonts. Interbedded tuffaceous sandstones, siltstones and argillites locally display excellent sedimentary structures, giving unequivocal facing indicators.

Strata in the valley have been deformed into a series of tight, upright folds with north-northeast trending fold axes. Plunge reversals indicate that a later phase of deformation overprints these folds. A possible earlier phase is suggested by the presence of uncommon intrafolial isoclines with a bedding parallel axial planar fabric. The principle north-northeast trending folds are accompanied by a locally intense linear fabric, as indicated by pronounced pebble elongation in conglomerates. The linear fabric is subparallel to the major fold axes, consistent with a transpressional tectonic regime.

Above the Golden Bear Mine road, slates and limestones interpreted as the uppermost unit in this lower sedimentary-volcanic sequence, are overlain by strongly foliated mafic flows and pyroclastics. Pillowed flows and lapilli tuffs are characterized by a strong flattening fabric, which is generally not seen in volcanics at higher structural levels.

Massive mafic flows, pyroclastics and intrusives structurally overlie the foliated volcanics and are interpreted provisionally as Stuhini Group. The nature of the base of the Stuhini here is not yet known. Although chlorite schists are common in this package, a strong flattening fabric is not seen. The contrast in structural style between the lower foliated volcanics and sediments and overlying Stuhini is consistent with Souther's Middle Triassic "Tahltanian orogeny". Volcanic siltstones and argillites within the Stuhini on Muse Ridge (south of Bearskin Lake) do not have the distinct foliations and linear fabrics seen in the lower volcanic-sedimentary sequence.

<u>Faulting</u>

The north-northeast trending folds in Samotua valley are cut by high angle faults subparallel to the fold axial trend. These are accompanied by epithermal quartz-carbonate veining and alteration. A subparallel fault cuts diorite of probable Triassic age, and is associated with younger (Tertiary ?) porphyritic dykes.

Northwest-trending faults appear to bound a large quartz-carbonate alteration zone on Muse Ridge. One of those may be an extension of the "Ultramafic fault", which has been traced to the north on the Tatsamenie sheet by Jim Oliver. A brief reconnaissance turned up protomylonitic float and amphibolite in outcrop along the Ultramafic fault trend.

A brief survey of minor faults in Stuhini volcanics on the north side of Bearskin Lake showed that shallowly plunging dextral fault lineations are the rule, consistent with strike-slip on the major faults. Steeply plunging fault lineations have been seen only on a fault at the west end of Bearskin Lake separating Permian limestone and possible Stuhini (?) volcanics. Normal faulting may be the latest phase of faulting in the area.

Economic

The most significant finding in the first two weeeks is a large stratabound pyrite-quartz-sericite alteration zone southeast of the Samotua antiform (104K/08). This occurs in a tightly folded sequence of mafic volcanics and siliceous argillite overlying the Permian limestone. It attains a maximum exposed thickness of at least 10 metres, and is exposed along strike for about 100 metres. The zone has all the earmarks of a distal portion of a volcanogenic massive sulphide system. If this is the case, it presents exciting new implications for VMS exploration in the sub-Stuhini. It is not in MINFILE, although there are signs of old staking. The claims in the area have lapsed.

JB