

MT MILLIGAN: AN ALKALINE PORPHYRY Au-Cu DEPOSIT

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Over 95,000 m of diamond drilling have defined a large, (approaching 300 million tons) low grade (approximately .3% Cu, .7 g/t Au) associated with several porphyritic monzonite stocks.

The Mt Milligan property is located 150 km northwest of Prince George, B.C., and is accessible by logging road from MacKenzie, B.C. 60 km to the east.

On a regional scale, the deposit lies within the Quesnel trough, a narrow fault bounded volcanogenic basin some 1800 km long, extending in a northwest-southeast direction. The volcanic, pyroclastic and subordinate sedimentary rocks are known as the Takla Group and are thought to be Triassic to lower Jurassic in age.

Locally the volcanics are dominated by subaqueous augite porphyry andesitic to latitic flows, associated pyroclastics, and trachytic flows and tuffs. The latter prove to be good stratigraphic markers. Intruding this sequence are several related monzonite and less frequently syenite stocks, which are thought to be comagmatic with the volcanic pile. Most of the an Irving-Baragar diagram.

The largest and most important Au-Cu deposit encountered is the MBX Zone situated primarily on the eastern side of the MBX stock, a roughly circular 1000 m diameter plagioclase porphyritic monzonite body so named because of the occasional occurrence of small magnetite breccia bodies. The mineralization is hosted largely by the north-easterly dipping volcanic sequence and in a small part by the stock itself. A fault system containing a dyke/sill body is known as the Rainbow Fault and appears to be an important local control on mineralization. As this fault zone is traced to south and slightly east the Cu mineralization diminishes, but the Au persists and is even enriched in what is called the 66 Zone.

The recently discovered Southern Star Zone, west of the 66 Zone, is a significant Cu-Au deposit, hosted largely in a plagioclase porphyritic monzonite stock discrete from the MBX stock, but probably related to it.

Except for the polymetallic veins on the periphery of the deposit the sulphide mineralogy is simple, dominated by chalcopyrite and pyrite.

Bornite occurs in the core of the MBX Zone deposit and in several places in the Southern Star Zone.

The sulphides are found in all three zones as disseminations, blebs and as patchy aggregates; only occasionally are they fracture-controlled, forming veins or stockworks.

The entire deposit has undergone extensive hydrothermal alteration, the style and intensity roughly controlled by distance from the mineralizing stock, the physical and chemical nature of the host, and local structures that influenced the flow of hydrothermal fluids.

Generally two alteration assemblages—the potassic and the propylitic—are recognised. The potassic zone consists of very fine grained biotite, potassium feldspar, and occasionally magnetite. It is the assemblage that hosts most of the economic mineralization and forms the core of the deposit. The propylitic zone consists of epidote, enriched pyrite, and occasionally albite and forms peripherally to, and overprints, the potassic zone. It is enriched in Au in the 66 Zone.

During this past field season approximately 150 drill core samples were collected from the 1000 m level of the deposit at 111 stations. Approximately 200 samples were collected from 143 stations on the 9600 N and 8600 N cross-sections. As a Master's project currently in the early stages of preparation at UBC, thin sections for microscopic, SEM and microprobe study are being prepared in order to better understand the alteration styles and their relation to metal zonation and concentration.

