

MT. MILLIGANAN ALKALINE INTRUSIVE RELATED PORPHYRY GOLD-COPPER DEPOSIT

The Mt. Milligan MBX porphyry gold-copper deposit, 90 miles northwest of Prince George, B.C., (see Figure 1) has a drill inferred geological inventory in the order of 200 million tons. Grades range from 0.010 oz. to 0.09 oz. gold per ton and 0.2% to 1.0% copper, with gold comprising approximately 2/3 of the dollar value.

The MBX deposit is currently being drilled to assess its ultimate size and grade. The deposit, as identified to May of 1989, is 1,900 feet wide 3,200 feet long and is open along strike and to depth.

The project is a joint venture between Continental Gold Corp., with a 70% interest, and BP Resources Canada Limited, with a 30% interest. The joint venture holds a large contiguous block of claims covering 42 square miles of the mineral belt, accessible by an all weather, heavy-duty gravel logging road from Mackenzie, 40 miles to the east.

In 1983 and 1984 BP acquired the property by staking and acquisition and identified a gold-copper soil geochemical anomaly approximately three square miles in extent. In 1985 after IP and magnetic surveys over the geochemical anomaly BP exposed gold mineralization in trenches on the Creek and Esker Zones (see Figure 2).

United Lincoln Resources Inc., (a Continental Gold Corp., subsidiary) optioned the property from BP in 1986. Lincoln, having undertaken extensive trenching within the soil geochemical anomaly and additional magnetic surveys, commenced diamond drilling on the Creek and Esker Zones and discovered the MBX deposit in 1987.

Regionally the property lies within the northwest-trending central volcanic core of the Upper-Triassic Lower-Jurassic Takla Group of the Quesnel Belt. Takla volcanics are dominated by subaqueous alkalic pyroxene porphyritic andesite and basalt flows and pyroclastics with subordinate intercalated tuffs and argillites. Intruding the volcanic stratigraphy are comagmatic alkaline syenite-monzonite-diorite stocks and younger calcalkaline plutons.

At the MBX deposit, a 1500 foot diameter porphyritic monzonite stock has intruded north-northwest striking volcanic strata with shallow to moderate easterly dips. Immediately adjacent to the stock, the volcanic strata is irregularly up-warped into steep attitudes.

At the base of the volcanic section, pyroxene-amphibole porphyritic andesite flow and fragmental units are overlain by a sequence dominated by latite fragmentals. A thinly bedded to massive trachyte tuff separates the latite fragmentals from the overlying sequence of interbedded augite crystal latite tuffs and augite porphyritic latite flows. These latitic units are, in turn, overlain by a second trachyte tuff unit, which is followed by a sequence dominated by massive augite porphyritic latite flows. Occasional thin units of trachyte tuff occur intermittently within the upper-most latite flow sequence.

The porphyritic monzonite stock is fine-grained with 20% to 60% plagioclase laths in an aphanitic matrix of potassium feldspar. Biotite and hornblende are minor constituents. In plan, the roughly equidimensional stock has a highly irregular outline. Drilling indicates that both the east and west contacts dip moderately to steeply to the west-southwest.

The intrusion breccia, comprised of rounded to subangular monzonite clasts in a comminuted monzonite matrix, has formed a partial ring complex around the west, south and east perimeter, (see Figure 3). Rounded latitic volcanic xenoliths occur in portions of the breccia. The contact between the breccia and the volcanics varies from abrupt to gradational across 10 to 50 feet, whereas brecciated and fractured monzonite forms the internal contact with the stock. Small breccia bodies also occur within the core of the stock.

On the east side of the porphyritic monzonite stock, a porphyritic monzonite dyke up to 150 feet thick occupies the plane of the Rainbow Fault, a sinuous, easterly-dipping, low-angle reverse fault. The dyke, which crosscuts the intrusion breccia, extends for 1,300 feet along strike and down dip from the stock before pinching out.

The distribution of the mineralization and related alteration assemblages are spatially associated with the monzonite stock and the Rainbow Fault.

Within the intrusion breccia at the MBX zone, pervasive pink potassium feldspar has flooded both the matrix and clasts. Later cross-cutting potassium feldspar veinlets with minor associated quartz carry chalcopyrite and subordinate pyrite, while finely disseminated grains of chalcopyrite replace altered mafic minerals. Away from the intrusion breccia, alteration is fracture controlled. In the absence of secondary potassium feldspar, sulphides are restricted to disseminated grains of pyrite.

Copper mineralization within the intrusion breccia and fractured monzonite, grading .30% to .45% Cu, carries low gold concentrations in the order of 0.006 oz/ton. In intervals where volcanic xenoliths are abundant, gold concentrations increase. Disseminated and fracture controlled hydrothermal magnetite closely parallels the distribution of chalcopyrite.

On the west side of the stock, alteration in the volcanic strata is weak and is comprised of fracture controlled grey potassium feldspar. Similarly, chalcopyrite is primarily confined to potassium feldspar-calcite veinlets and dry fractures in a zone extending from 100 feet to 500 feet from the stock. Disseminated chalcopyrite is not abundant. A strong quartz stockwork with abundant pyrite and chalcopyrite and above average gold concentrations occurs in the volcanics over a restricted area near the northwest margins of the stock. Virtually no alteration is associated with the formation of these sulphide-rich quartz veins. Beyond the extent of fracture controlled mineralization, the volcanic units (which become increasingly andesitic) are weakly propylitized and carry 1% to 3% disseminated pyrite. Induced polarization surveys indicate the sulphide impregnated zone extends several thousand feet beyond the outer limits of the copper mineralization.

On the east side of the stock, and to the southeast along the monzonite dyke, the potassium rich volcanic strata is strongly altered and extensively mineralized.

In the MBX zone, immediately adjacent to the east side of the stock, sulphine concentrations are the highest, with copper grading between .30% - .80%, and gold frequently exceeding 0.03 oz/ton. In this region, pyrite and chalcopyrite occur in roughly equal concentrations as coarse fracture fillings and as disseminated anhedral grains and coalescing grain aggregates. Local concentrations of bornite are restricted to within 150 feet of the stock. The intensities of hydrothermal biotite, magnetite and secondary potassium feldspar increase toward the stock.

To the north and northeast of the stock, sulphide filled fractures become fine and less frequent and there is a proportionate increase in disseminated pyrite.

In the 66 Zone, southeast of the main MBX deposit, in proximity to the porphyritic monzonite dyke and the Rainbow Fault, the pyrite content increases to 5% - 10% and the pyrite: chalcopyrite ratio is approximately 20:1. This change in the style of mineralization occurs at the transition from potassic to propylitic alteration, where fracture controlled pyrite veinlets with wide calcite selvages overprint the earlier alteration assemblages.

In contrast to the copper-rich volcanic units adjacent to the stock, copper grades in the 66 Zone drop to the 0.04% to 0.15% range. This drop is offset by a sharp increase in gold concentrations, which range from 0.03 oz/ton to 0.09 oz/ton over thicknesses up to 350 feet. Gold mineralization is most persistently developed along and above the Rainbow Fault.

The Creek, Esker and 79 Zones are located within propylitized hornblende-pyroxene porphyritic andesites west and north of the MBX porphyry deposit. These zones are steeply dipping, tabular bodies of semimassive to massive sulphides occupying fracture systems radial to the monzonite stock. Each of the mineralized zones comprises three to five subparallel, sulphide-rich bodies, spaced across 150 feet to 300 feet. Individual structures range from 1 foot to 10 feet in thickness and grade from 0.10 oz/ton to 2.89 oz/ton gold and 0.2% to 10% copper. Each zone is open along strikes and down dip.

Pronounced metal zonation is related to the proximity to the monzonite stock. The MBX porphyry deposit, adjacent to the stock contains less than 20 ppm combined arsenic and antimony. At the Creek and Esker Zones, combined concentrations increase to 300 ppm and to 2,000 ppm respectively. Silver shows a similar relationship with concentrations ranging from 1.5 ppm in the MBX zone, to 10 ppm - 40 ppm in the Creek Zone and 60 ppm - 200 ppm in the Esker Zone.

The current program of delineation diamond drilling and metallurgical testing will provide the data base required for a feasibility study.

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