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Title: GENESIS OF THE GALORE CREEK COPPER-GOLD-SILVER PORPHYRY SYSTEM

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Abstract: The Galore Creek alkalic Cu-Au-Ag porphyry deposit, operated by NovaGold Canada Inc., is located within the Stikine Arch at the western margin of the Intermontane Belt in north-western British Columbia, Canada. Upper Triassic volcanoclastic strata of the Stuhini group contain mud-matrix debris flows derived from resedimented pyroclastic material and pillowed lavas. Interbedded D-E turbidites and bedded chert reveal a sub-wave base depositional environment, and lack of terrigenous material suggests deposition in a protected basin isolated from a continental sediment source. A deep extensional basin located adjacent to an island arc eruptive center represents the tectono-stratigraphic setting envisaged at Galore. Multiple alkali syenite intrusive phases form a complex of sills, dykes, and stocks which intrude partially lithified sediments. Subzones of younger hydrothermal brecciation are located peripheral to orthoclase megacrystic syenite sills and stocks. Alteration mineralogy suites are spatially distributed around the intrusive complex and display moderate chemical control by protolith chemistry. While the causative intrusion remains undiscovered, field mapping and drilling document alteration and metal zonation. The main alteration event is characterized by Ca-K-silicate alteration, consisting of dark brown garnet with locally occurring diopside, biotite, magnetite, anhydrite, epidote, plagioclase, chalcopryrite, bornite, and pyrite is flanked by a potassic K-silicate assemblage associated with higher bornite and gold concentrations. Propylitic alteration, characterized by the presence of chlorite, epidote, and pyrite forms peripheral to the main copper deposits. Hydration of pervasive anhydrite by meteoric waters results in near surface open sheet fracturing (Allen, 1971). The Stuhini sediments, hypabyssal intrusions, and hydrothermal breccias host replacement and disseminated chalcopryrite and bornite mineralization. Multiple identified fluid phases, including an eruptive phase, a fluid exsolution phase, and hydrothermal brecciation are responsible for Cu-Au-Ag mineralization which is hosted in 12 discreet zones; the most important being the Central, Southwest, West Fork, and Junction Zones, which as of October, 2006, based on a CA\$ 3.82/t Net Smelter Return (NSR) or roughly 0.25% Cueq. Cutoff grade, have Proven and Probable Reserves estimated at 540.7 million tonnes containing 6.6 billion pounds of copper, 5.3 million ounces of gold and 92.6 million ounces of silver.