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**Geology and Mineralization
of the Clisbako Gold-Silver Deposit,
Fraser Plateau, B.C.**

by

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The Clisbako deposit is a volcanic-hosted, shallow-level epithermal gold-silver deposit of probable Miocene age, located in the Fraser Plateau area of British Columbia. The deposit was discovered in 1990 by Eighty-Eight Resources and is currently being explored by Minnova Inc.

Regional stratigraphy consists mainly of Eocene rhyolite flows and pyroclastics, with lesser andesite flows, overlain by Late Miocene basalt flows. The dominance of felsic flows and breccias implies a dome field setting similar to that observed at the Ilgachuz and Itcha Ranges west of the deposit. Regional structure is dominated by north to north-east trending normal faults, which reflect extensional tectonics during the Tertiary. The deposit is hosted by rhyolite tuffs and andesite flows preserved in a graben formed by north trending faults.

Mineralization consists of several silica stockwork-breccia zones localized by north trending graben faults. These are surrounded by wide envelopes of argillic alteration near surface. Discrete stockwork veins (up to 1m) commonly show a paragenetic sequence of: white massive to banded quartz-chalcedony; bladed quartz (pseudomorphing calcite); and banded black, brown and white chalcedony. Multiphase breccias within stockwork zones consist of fragments of argillized wall rock, quartz, chalcedony and opal cemented by black sulphidic quartz. Stratified hydrothermal vent eruption breccias of similar material have also been observed.

The highest gold-silver grades (8g Au, 85g Ag) have been obtained from black and white micro-banded chalcedony and pyritic black matrix breccias. Silver mineralization (acanthite and ruby silver) is directly associated with sulphide content in the black breccias, and is typically coincident with anomalous Hg, Ba and As values. Gold shows no correlation and the best grades are recovered from black banded chalcedony. Geochemical values for Cu, Pb and Zn are consistently low.

The presence of vein adularia, a low sulphur mineral assemblage and lack of hypogene alunite indicate that Clisbako represents an adularia-sericite type epithermal deposit. Observed hydrothermal vent breccia blankets, widespread argillic alteration and elevated Hg, As and Sb are typical of a hot spring type sub-class. The preservation of these paleosurface characteristics indicates that the deposit has not been deeply eroded. Other features, such as hydrothermal vein breccias, gel textured opaline silica and bladed quartz replacing calcite, are strong evidence for throttling and boiling of the hydrothermal fluid, wherein gold deposition is promoted by increasing pH and oxygen fugacity, and loss of HS^- . Taken together, these features indicate that the Clisbako deposit has great potential to host near-surface, bulk mineable reserves of high grade gold and silver.