PIMS – Porphyry Indicator Minerals from Alkalic Porphyry Cu-Au Deposits in British Columbia

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Abstract

The common occurrence of resistant minerals in mineralized and altered portions of British Columbia's alkalic porphyry copper deposits suggest that these minerals may be utilized as indicators of mineralization, especially in terrains covered by glacial till. Porphyry indicator minerals (PIMS) are chemically stable in weathered environments, heavy, sufficiently coarse-grained and display characteristic features that can directly link them to a specific porphyry related alteration assemblage. The proposed minerals for this study include apatite, garnet, magnetite and titanite. These minerals commonly display unique physical properties such as color, size and shape that allow their presence to be used as a prospecting tool in a similar manner to which kimberlite indicator minerals (KIMS) are used. The purpose of this project, therefore, is to identify the occurrence, types, relative amounts and compositions of selected PIMS at Copper Mountain, Mount Milligan and Mount Polley alkalic porphyry deposits in BC, and evaluate their signatures in proximal tills, stream sediments, and heavy mineral concentrates.