Investigation of the iron-oxide mineralization at the Iron Range, southeastern BC

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The Iron Range iron oxide occurrence in southeastern British Columbia consists of massive lenses and veins of hematite and martite with lesser magnetite that pinch and swell along the Iron Range fault zone. It is hosted within the Proterozoic Aldridge Formation and Moyie Sills and forms a central massive iron-oxide corridor flanked by albite-quartz iron-oxide breccia. The most common alteration assemblage is albite-chlorite-hematite-magnetite +/- silica, which is locally overprinted by later iron-oxide, silica, sericite or carbonate alteration.

Oxygen isotope analyses in conjunction with fluid inclusions indicate precipitation temperatures for the mineralized zones in the range 340 to 400 °C and 1750 to 4500 bars. The Iron Range iron oxide mineralized rock shares many characteristics of major IOCG deposits and alkali porphyry systems, however the exposed rocks lack economic Cu (+-Au)-concentration. Magnetite trace element chemistry is consistent with IOCG and porphyry mineralization worldwide and recent drilling intersected minor sulphide (chalcopyrite and pyrite) and gold mineralization at 200 m and 20 m depths, respectively. Paleomagnetic studies in conjunction with Ar-Ar dating of regional (magnetite-rich) intrusions support a Cretaceous hydrothermal event responsible for the alteration and mineralization at the Iron Range.