

Petrological and geochemical examination into the Fe-oxide-bearing hydrothermal breccias at the Moran Lake Upper C-Zone deposit, and the Poz Pond, Trout Pond and Armstrong Lake occurrences

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The Central Mineral Belt (CMB) of Labrador is a 260 km-long easterly to northeasterly linear trend of supracrustal sedimentary and volcanic rocks and associated granite extending from the eastern coast of Labrador to the Smallwood reservoir and known for multiple base metal and uranium occurrences. The occurrences seen at Moran Lake C-Zone area are the basis for this project. Bedrock mapping in this area by Ryan in 1984 showed 3 main lithology groups including the Moran Lake Group, Bruce River Group, and the Kanairiktok Intrusive Suite. Mineralization at the Upper C-Zone deposit is recognized by fracturing/shearing, hematitization with chalcopyrite-, pyrite-, and bornite-bearing quartz-carbonate veining of Joe Pond Basalt (Moran Lake Group). Geochemical signatures of mineralized areas include enrichments in K, Nb, and LREE with depletions in HREE and Ti. The goal of this project is to provide a better overall understanding of mineralization relationships at the above occurrences and with the presence of Fe-oxide-bearing breccias, a relation to IOCG-type deposits is plausible.

Fe-oxide altered breccias are diagnostic features of Iron Oxide-Copper-Gold (so-called IOCG) or Olympic Dam-type mineral deposits. They are low-grade, high-tonnage deposits rich in a variety of commodities including iron, copper, gold, and silver with by-product uranium and REEs, and as such they are highly prized exploration targets. A number of Fe-rich breccias have been identified in the Central Mineral Belt (CMB) of Labrador. Detailed information on these CMB occurrences is lacking, this study will characterize mineralogy and geochemistry in particular, of the iron-oxide-rich breccias at the Moran Lake Upper C-Zone deposit. Data will be documented, and then compared with other breccia occurrences along strike including the Poz Pond, Trout Pond and Armstrong Lake occurrences. Emphasis will be focused put on defining the alteration assemblages and the particular assemblage(s) and associated geochemical signatures directly linked with uranium mineralization.

Techniques to be used include: (1) autoradiographs of samples to determine the distribution of radioactive uraniferous phases in the breccias, (2) major and trace element geochemical analyses to determine the signature of the alteration and host rocks, (3) petrographic examination of polished thin sections made from selected samples to examine the mineralogy of the breccias and natures of cross-cutting relationships, and (4) MLA-SEM mapping to determine more detailed mineralogy of the breccias.