



Diagenetic Controls on Hydrothermal Fluid Flow in the Osiris, Isis, and Isis East Carlin-type Au showings, Nadaleen Trend, Yukon

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The Rackla Au Belt is located 55 kilometers northeast of Keno City in Central Yukon and contains the Nadaleen Trend, a fault-bounded package of Cambrian to Neoproterozoic aged units. The Nadaleen Trend also contains the first Carlin-type Au showings to be found in Canada; the most significant are the Conrad and Osiris zones. In this project, the cementation history of the Osiris, Isis, and Isis East zones is being studied to gain an understanding of the factors controlling mineralizing fluid flow. This will help in the prediction of the location of Au away from feeder faults and will add to the overall understanding of the geological history of the Nadaleen Trend.

Mineralization in the Osiris, Isis, and Isis East zones is hosted by silty carbonates from the Upper Neoproterozoic Windermere Supergroup, which have been affected by anticlinal folding and thrust faulting. Gold is commonly found in decarbonated, silicified and realgar-mineralized zones commonly associated with faulting. Away from the faults, Au grades are often correlated with large intervals of dolomitization, suggesting matrix permeability is an important factor controlling mineralization. Previous work has suggested that Au is associated with thin rims of “fuzzy”-textured arsenian pyrite overgrowing earlier pyrite, similar to some of the deposits in the Carlin District.

Petrography, Cathodoluminescence, Electron Microprobe analysis, and LA-ICP-MS studies have been used to characterize the carbonate host rocks and the paragenetic phases which have affected them. The host rocks were affected by an early diagenetic stage, a base metal mineralization stage, an intermediate burial stage, an As-(Au)-bearing pyrite ore stage, and a post-ore stage. Stable isotope analyses of carbon, oxygen, sulfur, and strontium were used to determine the source and composition of the fluids and a model of the evolution of the hydrothermal system through time is presented.

All are welcome.

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1:15 -2:05PM

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