

or change in width. These morphological changes appear to be controlled by the interaction of multiple structural elements including vertical E-W fractures and s-c fabrics within the gneiss.

The Eastern Deeps sulphide deposit is located within the base of a magma chamber where sub-horizontal sill-like intrusions branch from the sub-vertical dyke and enter the chamber. The geometry of the sill-like intrusions and the distribution of sulphide minerals appear to be controlled by structural weaknesses produced through intersecting sub-vertical faults.

The Reid Brook zone is located adjacent to, and west of the Discovery Hill deposit. Unlike the other known sulphide deposits contained within the dyke, massive sulphide minerals in the Reid Brook deposit occur not only within the dyke, but proximal to and within the adjacent paragneiss country rocks. The massive sulphide deposit appear to ascend through the dyke as the last stage of a major mineralizing event. Mineralization propagates up through the dyke along a trajectory defined and constrained by pre to syn-tectonic faults. During the last stage of mineralization, massive sulphide minerals are injected into the country rocks along open-space, sub-horizontal fractures. The open-space fractures appear to be produced by the intersection of multiple syn-tectonic brittle faults. The massive sulphide body located within the paragneiss in the Reid Brook zone represent a unique mineral domain not yet observed within other Voisey's Bay deposits. However, analogous structural relationships have been observed elsewhere along the mineralized trend and will be re-examined in light of the discovery of massive sulphide deposits along them at Reid Brook.

The Reid Brook zone: new insights into the Voisey's Bay Ni-Cu-Co deposit

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The Voisey's Bay Ni-Cu-Co sulphide deposit occurs within troctolites and olivine gabbros of the 1.34 Ga. Voisey's Bay Intrusion. The Voisey's Bay Intrusion is a member of the Nain Plutonic Suite and straddles the ca. 1.85 Ga. suture between Archean orthogneisses of the Nain Province to the east and Paleoproterozoic paragneisses of the Churchill Province to the west. The Voisey's Bay intrusion consists of troctolite to olivine gabbro in two large magma chambers connected by an east-west trending dyke.

The Discovery Hill, Mini-Ovoid, and Ovoid sulphide deposits occur within the sub-vertical dyke system. The distribution of sulphide minerals appear to be controlled by conduit morphology, sulphide traps occur where the dike has a flexure