

FLUID INCLUSION AND OXYGEN ISOTOPE STUDIES OF HIGH-  
GRADE QUARTZ-SCHEELITE VEINS AT THE CANTUNG MINE,  
NORTHWEST TERRITORIES, CANADA: PRODUCTS OF A LATE-  
STAGE MAGMATIC-HYDROTHERMAL EVENT

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ABSTRACT

High-grade quartz-scheelite veins in the Open Pit orebody, Cantung occur 300 m above a limestone-monzogranite contact where the E-Zone orebody, a world-class tungsten skarn, is developed. Adjacent to these veins, alteration selvages overprint earlier skarn alteration, indicating that the veins are not part of the skarn event, but represent a distinct event.

Oxygen isotope data yield temperatures of 430<sup>o</sup> to 595<sup>o</sup>C, indicating that the quartz veins are distal expressions of a protracted magmatic-hydrothermal skarn event.

A conceptual model for Cantung involves ore-grade tungsten deposits forming where fluids emerging from the granite encounter rocks favorable for skarn development. Due to the geometry of the sedimentary sequence, in areas along the contact, magmatic fluids encounter strata less favorable for skarn development. Where units are breached by fracture systems, potential ore fluids gained access to rocks conducive to ore development vertically from the contact. This model has significant implications for mineral resource assessment.