

# Characteristics of epithermal-style gold occurrences at the Goldy and Irene showings, Dawson Range, Yukon Territory, Canada: towards a first model

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The objective of this study is to characterize and compare epithermal quartz-Au-sulfide vein mineralization that occurs on Triumph Gold Corporation's Goldy and Irene showings in the Dawson Range, Yukon Territory. Specific goals of the study will be to (i) determine if the two showings constitute part of a single hydrothermal system that had several mineralizing centers along common structures or in relation to a common heat source, (ii) to determine the fluid characteristics and crustal depth of the gold mineralizing process(es), and (iii) to characterize the mineralogy expressed at the showings leading to a classification of the P-T regime of the mineralization.

Both mineral showings contain economically significant concentrations of gold in quartz- sulfide veins that are focused along fault-modified contacts between the metamorphic rocks of the Yukon Tanana Terrane and intrusive bodies that are Jurassic to Cretaceous in age. The Goldy showing comprises a roughly 160 × 160 m elliptical area of quartz-carbonate veining at a contact between biotite schist/gneiss and Jurassic syenite. The Irene showing, located 9.5 km NW of Goldy, comprises a greater than 3 m-thick quartz-sulfide vein exposed over 150 m strike- length at a contact between biotite schist/gneiss and biotite-hornblende granodiorite to granite of probable middle- to late-Cretaceous age. At both showings, roughly fault/contact-parallel quartz- feldspar-porphry dykes are present and are interpreted to occur along segments or splays associated with the regionally important Big Creek Fault.

Preliminary petrographic microscopy, BSE-SEM, and electron probe analysis have identified the following key similarities between the two showings, suggesting a genetic kinship: (i) the mineralize assemblage consists of electrum-arsenopyrite-pyrite-boulangerite-tetrahedrite/tennantite-stibnite-galena, reflecting an ambiguous (both low and high) sulfidation epithermal signature, and (ii) arsenopyrite thermometry (by electron microprobe) shows a very similar, and high, crystallization temperature for the earliest mineral assemblages in the veins (Irene: 380–430 °C; Goldie: 390–430 °C). This mineralogical work will be complemented by fluid inclusion analyses (petrography and microthermometry) of the vein-hosted minerals, in order to constrain fluid composition and origin, as well as the crustal depth and temperature of the mineralizing event(s). The value of this study will be to ultimately establish robust geochemical criteria to aid in mineral exploration within this under-characterized region. [Poster]