

Footprint of the Canadian Malartic Gold Deposit, QC, Canada: Mafic Dyke Alteration

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The Pontiac Group meta-sedimentary rocks that host the Canadian Malartic gold deposit (over 14 Moz of gold, past production and current resources) were intruded by numerous mafic dykes before the mineralization event(s). The mafic rocks, being more reactive to the hydrothermal fluids than the Pontiac sediments, allow for a better characterization of the fluid-rock interactions from the proximal (ore zones) to the distal parts (footprint) of this ore system. A preliminary alteration footprint of the Canadian Malartic deposit has been interpreted based on the alteration of the mafic dykes. Mineralogy evolves progressively across the footprint of the deposit from a distal (>1.5 km) amphibole-rich assemblage to a proximal (<0.3 km) amphibole-biotite-quartz-chlorite-pyrite-carbonate mineral association. Petrophysical properties and geochemical signatures are consistent with the mineralogical observations and indicate a decrease in density (silica and carbonate alteration) and an increase in K (potassic alteration) with decreasing distance from the gold deposit. Mineralogical, lithochemical and hyperspectral data aid in distinguishing the alteration features (e.g., potassic alteration) and provide a combination of tools that can be used to define and target the footprint of similar systems.

CMIC-NSERC Exploration Footprints Network Contribution 037.