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Geology of the Baie Kasipasikatch (33C09) and Lac Janin (33C16) areas

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Abstract

A new geologic survey, at the 1/50 000 scale, was carried out in 2006 in the Opinaca reservoir area (NTS 33C09 and 33C16). The objectives of this work were as follows: 1) to update geologic knowledge of the sector; 2) to document the boundary between the La Grande and the Opinaca geologic subprovinces; 3) to assess the regional extension of the sedimentary sequence hosting gold occurrences in the Roberto zone; and 4) to identify geological contexts favourable for the discovery of new mineral deposits.

The La Grande subprovince is characterized by the volcano-sedimentary rocks of the Kasak and Low formations, both of which belong to the Eastmain Group. The Kasak Formation is composed of pillowed, brecciated or vesicular basalts, overlain by intermediate to felsic tuffs. The Low Formation is a non-migmatized sedimentary sequence of kilometric thickness.

The Opinaca subprovince consists essentially of bands of migmatized paragneiss belonging to the Laguiche Complex. These E-W trending bands are injected with the pegmatitic migmatites of the intrusive Janin Suite.

In the region, the metamorphic grade increases in a northerly direction from greenschist facies, in the La Grande subprovince, to upper amphibolite facies in the Opinaca subprovince. We defined the boundary between the two provinces on the basis of the metamorphic isograd separating the middle and upper amphibolite facies. This boundary is also characterized by the presence of tourmaline-bearing white pegmatites and by granodiorite and granite intrusions.

The discovery of gold occurrences in the Roberto zone points to the region's strong potential for gold mineralization. The new deposit, which is rich in Au, As, B and Sb, is hosted in non-migmatized wackes. With estimated resources of 3 to 5 million ounces of gold, this deposit is one of the most significant discoveries made over the past 15 years in North America. Porphyry Au, Cu and Ag occurrences are also found in the region, on the margins of tonalitic and dioritic intrusions.

Our work served to update the Fliszár showing, which is rich in rare elements. The showing is associated with tourmaline-bearing white pegmatite injected into the volcanic rocks of the Kasak Formation. We also identified nine types of gold occurrences which are associated with hydrothermal alteration: 1) Roberto-type Au occurrences; 2) porphyry Au, Cu and Ag occurrences; 3) Au occurrences associated with tourmalinized volcano-sedimentary sequences; 4) Au occurrences associated with hydrothermal breccias; 5) Au occurrences associated with basalts; 6) Au occurrences located at the contact between basalts and quartz feldspar porphyry dikes; 7) Au, Cu and Zn occurrences associated with silicified mudstones; 8) Au occurrences associated with conglomerates; and 9) Au and Ag occurrences associated with regional deformation zones containing a network of quartz veins with disseminated sulphides.