2015-01

THE TASCHEREAU-AMOS-SENNETERRE SEGMENT AND ITS METALLOGENIC POTENTIAL

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DETAILS

This project led to a geological interpretation of the Archean Taschereau-Amos-Senneterre (STAS) segment of volcanic rocks of in the southern portion of the Abitibi sub-province. The project's main objective was to reinterpret the geology using the most recent geological and geophysical data, including a good proportion that has been acquired since the mapping campaigns undertaken by the Government of Quebec. The new cartographic model of this segment provides a better understanding of the different contexts for mineralization and proposes targets for the exploration for gold, the volcanogenic Zn-Cu-Ag massive sulphides and the magmatic Ni-Cu-PGE.

The STAS is a vast volcanic ensemble bordered by major faults but is the poorest in terms of metal content per km^2. In effect, the old Barvue-Abcourt Zn mine was, until present, the only regional mining operation. Complete analysis of all stratification and polarity (SIGÉOM) data as well as the historical data found on the different geological maps have clarified the position of the axial lines of regional folding and extended their lengths for several kilometres. The main known deformation corridors were specified using geophysics, descriptions of outcrops or drilling, and geological maps.

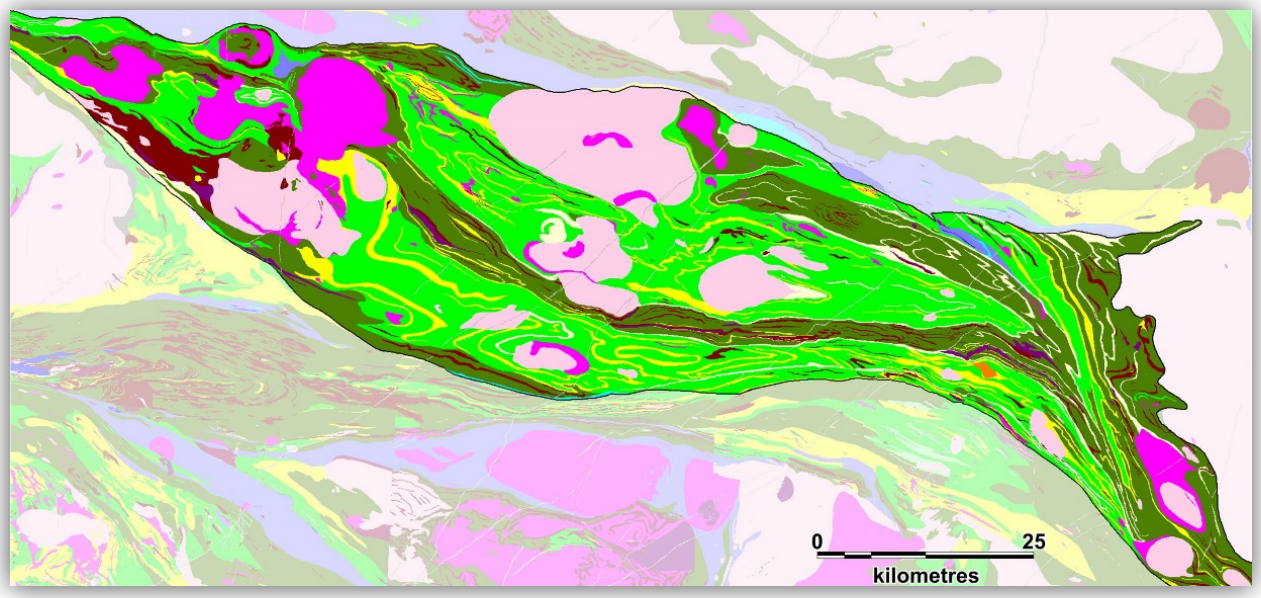
Plutons of unknown age or plutons interpreted as being syntectonic were reinterpreted as synvolcanic based on the geochemical data. Plutons in the Senneterre sector are potentially interesting for the exploration of gold and volcanogenic massive sulphides (VMS). A new pluton is interpreted from the Bolduc corridor, south-east of Senneterre. Stratigraphically, the strong similarities between the volcanic facies and geochemical composition of the four mafic groups (Amos, La Marandière, Béarn, and lower Figuery) raise the possibility that this reflects the same volcanic episode and thus the same stratigraphic level. The Lac Arthur and upper Figuery groups share many similarities, but key elements distinguish the two groups, such as the presence of amygdaloid lavas, transitional volcaniclastic deposits having layers of felsic tholeiitic volcanics.

For the exploration of the VMS, four typically volcanogenic hydrothermal alterations of more than 6 km^2 are identified, including three in the Lac Arthur Group. They are 1) areas surrounding VMS deposits of the Barvue-Abcourt and Amos mines, 2) two zones at the extremities of the STAS, and 3) NW of the STAS, in the Lac Arthur Group between the Guyenne and Berry plutons.

Several known sills of ultramafic rocks are found in the STAS, the massive Dumont Nickel deposit being located within. The first vertical derivative of the total magnetic field clearly highlights the differentiated sills of gabbro and pyroxenite. The major element ratios from geochemical samples allows for locating olivine cumulate that are found at Dumont Nickel.

The majority of NW–SE dextral sliding faults are mineralized in gold. This is the case for deposits found at the heart of the segment, and those along the Macamic, Jolin, and Bolduc faults along the segment boundary. The NW–SE dextral sliding faults that are not known to have gold mineralization are, therefore, considered as being fertile *a priori*. Four areas of interest are proposed for gold exploration in the STAS: 1) the NW–SE structures at the heart of the segment associated with rheological contrasts in the plutons; 2)

the South Chicobi corridor; 3) the Landrienne corridor; and 4) the Bolduc corridor of characterized by a set of ductile N–S faults injected by multitude of dykes.



NEW CARTOGRAPHIC MODEL OF THE TASCHEREAU-AMOS-SENNETERRE (STAS) SEGMENT

SUMMARY SHEET

Objectives	• Revisit the Taschereau-Amos-Senneterre segment to extract new metallogenic elements. • Produce a new cartographic model. • Propose strategies for the exploration of the different types of mineralization.
Results	• Modification and detail added to surfaces covered by the main lithologic units of the region: o Surface area of felsic rocks increases from 194 to 404 km^2. o Surface area of ultramafic rocks increases 22 to 38 km^2. o Clarification of boundaries between the groups based on new drilling and geochemistry data. o Characterization of plutons and deformation corridors. • Identification of four hydrothermal alteration zones of typically volcanogenic of more than 6 km^2. • The majority of NW–SE dextral sliding faults are mineralized in gold. • Four areas of interest are proposed for the gold exploration.
Innovations	• New cartographic model to provide targets and strategies for the exploration for the VMS, gold, and nickel.