Structural and ore characterization of the Garrison property, east of Timmins, Ontario, Canada

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The goal of this project is to establish the structural-metallogenic evolution of the Garrison property, within the central Southern Abitibi greenstone belt, ~100km east of Timmins, Ontario. The property lies between two major gold deposits, the Black Fox deposit to the west and the Holt-Holloway deposit to the east, and immediately north of the extensive east-trending subvertical Porcupine-Destor deformation zone (PDdz). The Garrison property comprises two distinct orogenic gold deposits; the Garrcon deposit is hosted in a sedimentary succession and the Jonpol deposit in an older volcanic succession. The Garrcon deposit is characterized by the presence of visible gold in extensional quartz veins that cut across subvertical ENE-trending bedding planes of the Timiskaming sedimentary succession. These veins contain minor sulfides, which are mostly pyrite, and have developed a sericite-hematite alteration envelope. The Jonpol deposit lies along the Munro deformation zone, a splay of the PDdz to the north in which mineralization is represented by highly altered, pyrite-rich albitized dikes hosted within ultramafic volcanic rocks of the Kidd-Munro assemblage that predates the Timiskaming assemblage. The Garrison property also embodies another mineralized area, the 903 zone that occurs to the SW of the Garrcon deposit, which may potentially be related to a syenite intrusion. Detailed surface mapping, drill core analysis and microstructural studies, including backscattered electron analysis have revealed sinistral, NNW-side-up motion along the ENE-trending segment of the Munro deformation zone, along which the Garrison property is located, and the presence of two main foliations trending ENE and NNW. The structural evolution of the study area can be summarized by the following sequence of events: folding of the volcanic succession generating E-trending folds, the formation of a barren vein system and emplacement of intrusive rocks (D_1); deposition of the Timiskaming succession, folding and thrusting of the entire stratigraphic sequence, and the onset of sinistral, NNW-side-up motion along the Munro deformation zone (D_2); generation of gold-bearing quartz vein system and mineralization of intrusive rocks (D_3); post-mineralization N- and NE-trending faults (D_4). The temporal relationships between structures and mineralization will be further investigated through additional drill core and microstructural analysis combined with various isotope geochronology methods to constrain the ages of structures and mineralization. In general, the variation in structural controls, ore grades, and ore mineralogy between the deposits of the Garrison property reflect local variations within a generally connected system, typical of orogenic gold deposits.