Gold potential of the Meguma Group: New Concepts

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Gold in the Meguma Group was traditionally mined from quartz veins preferentially located in the slate units of turbidite sequences. Detailed field studies at Wine Harbour, Isaac's Harbour, Goldboro, Beaverdam, Cochrane Hill and Forest Hill have demonstrated the following new information:

(1) At some deposits, gold is present within the host-rock slates as deformed wisps of free gold and native gold inclusions in garnet prophyroblasts. This implies significant potential for increased mining widths of low-grade ore comprising both quartz veins and slate.

(2) In greenschist facies zones, eleven different quartz vein polytypes have been characterized on the basis of form, characteristic mineralogy, wall rock alteration and crosscutting relationships to each other and regional structures. However, gold is restricted to structurally early (pre-Acadian) corrugated stratiform veins (exhibiting cross-laminations and columnar structures), boudinaged stratabound veins and associated small side veins. These are cut by K-feldspar bearing cross-veins, displaying arsenopyritization and sericitization of the wall rocks. The other polytypes, which range from syn- to post-Acadian, are apparently barren.

(3) In amphibolite facies zones, Acadian structures are complicated by intrusion of late Acadian granitoids, themselves deformed by at least two post-Acadian (Hercynian ?) dynamo-metamorphic events. All quartz vein types common to the greenschist facies appear to be present. In addition, gold is present in both deformed andalusite-bearing pegmatoid veins. Late Acadian static metamorphism incorporated gold as inclusions in garnet porphyroblasts. These porphyroblasts are, in turn, cut by deformed auriferous, syn-Hercynian (?), stratiform and stratafound quartz veins. The final stage of gold-quartz deposition appears as undeformed, post-Hercynian (?) cross-cutting veinlets.

A polygenetic model for gold is proposed involving initial deposition from submarine hydrothermal vent systems as chemical sea-water precipitates, hydrothermal sills and fault-controlled feeders. Later, polyphase Acadian, Hercynian (?) and post-Hercynian (?) dynamo-thermic solutions remobilized both gold and quartz.