REGIONAL GEOLOGICAL SETTING OF MINERALIZATION WITHIN THE JUMPING BROOK METAMORPHIC SUITE, WESTERN CAPE BRETON HIGHLANDS

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Geological mapping of the Jumping Brook Metamorphic Suite (JBMS) at 1:10000 and 1:25000, and detailed field studies of associated mineral deposits, have established a regional stratigraphic and structural framework for mineralization. Low- to medium-grade metavolcanic and metasedimentary rocks between the Cheticamp River and Forest Glen Brook have been divided into three informally named lithodemic units. At the base of the sequence, the Faribault Brook metavolcanics consist of schistose metabasites with a sub-alkaline, tholeiitic basaltic composition. This unit is widest in the south and narrows northward, pinching out in the vicinity of Faribault Brook. Structurally overlying the Faribault Brook metavolcanics is the Barren Brook schist, a sequence of sericitic metasedimentary and tuffaceous rocks, characterised by blue "quartz eyes." This unit, which is separated from the Faribault Brook metavolcanics by a boulder conglomerate, also pinches out in the vicinity of Faribault Brook. The Dauphinee Brook schist, which consists of interlayered pelites, semipelites, and psammites, overlies both of these units; it is widespread north of the Cheticamp River but pinches out south of Faribault Brook. Anastomosing ductile shear zones mark the contact between metabasites and metasediments in the Faribault Brook area where very fine-grained, possibly mylonitic, felsic schists separate interleaved metavolcanics, metatuffs, and metasediments.

The JBMS may represent a sequence of island arc mafic volcanics and associated felsic tuffs, thickening to the south, interfingering with and overlain by a sedimentary sequence thickening to the north. Mineralization is spatially associated with the lithological and structural transition from mafic and felsic volcanics to sedimentary rocks. Microstructural evidence that significant mineralization preceeded regional metamorphism and deformation is consistent with previous interpretations that the mineral deposits are hydrothermal and are stratigraphically related to this transition zone. Regional deformation and metamorphism, and ductile shearing in the transition zone, have remobilized some sulphides and masked the original character of the deposits. The age of volcanism, and thus mineralization, is probably Late Ordovician - Silurian.

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