Geology and Mineral Occurrences of the Faribault Brook Area, Aspy Terrane, Cape Breton Island, Nova Scotia[1]

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The Faribault Brook area of western Cape Breton Island is located in the Aspy terrane, a part of Ganderia in the northern Appalachian orogen. Possibly correlative parts of Ganderia in the Exploits terrane of Newfoundland and in the Annidale belt of New Brunswick are well known for their mainly volcanic-hosted metallic mineral deposits, and hence the Faribault Brook area potentially has similar deposits. Mineral occurrences (Zn, Cu, Pb, Fe, As, Au) around Faribault Brook have been exploration targets since the 1890s, and are hosted by rocks generally assigned to the Jumping Brook Metamorphic Suite (JBMS). Although generally considered to be of Ordovician-Silurian age, geochronological work has indicated that at least some of the metasedimentary and metavolcanic rocks of the JBMS could be as old as Late Neoproterozoic. To assess stratigraphic relations and the possibility of Cambrian-Ordovician volcanic rocks, the area around the Faribault Brook occurrences has been re-mapped at a scale of 1:20 000. Recent trenches not available to earlier workers were examined, as well as all available drill core. Mineralization was observed in both mafic and felsic metavolcanic units, as well as in associated metasedi-mentary rocks. Unit names follow those established by earlier workers, and include the Faribault Brook metavolcanic unit, Dauphinee Brook schist, Barren Brook schist, George Brook amphibolite, and Corney Brook schist. The Faribault Brook metavolcanic unit is mainly mafic flows with less abundant felsic flows and mafic tuff. The George Brook amphibolite appears to represent higher grade metavolcanic or gabbroic rocks. The Dauphinee Brook schist is fine-grained and pelitic, whereas the Barren Brook schist is coarser grained and has a higher quartz content. The high-grade Corney Brook schist includes metasedimentary and meta-igneous units; it may be similar to or part of the Pleasant Bay Complex. The contact between the ca. 550 Ma Cheticamp Pluton and the Dauphinee Brook schist of the JBMS is intrusive, at least in part, rather than a nonconformity or fault as suggested in some earlier interpretations. Hence, at least part of the JBMS is older than ca. 550 Ma. However, felsic porphyry that hosts mineralization at some locations (e.g., Galena Mine) is Silurian based on published U-Pb (zircon) ages. Similar felsic porphyry at the Mountain Top Adit appears to be extrusive rather than intrusive as at the Galena Mine occurrence. Geochemical studies in progress may help in local and regional correlations.

[1]Presentation at the GAC-MAC Joint Annual Meeting, Quebec City, Que., May 25-28, 2008.