

### Timing of Sulphide Mineralization, Faribault Brook Area, Western Cape Breton Highlands

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Two sulphide associations, distinguished on the basis of mineralogy, style, and timing relative to metamorphism, are recognized in the vicinity of Faribault Brook near Cheticamp, Cape Breton Island. Early polymetallic Zn-Cu-Pb mineralization is associated with felsic volcanogenic metasedimentary rocks of probable Silurian age. Metamorphic textures indicate that galena, sphalerite, chalcopyrite, and pyrite were present prior to Late Silurian - Early Devonian regional metamorphism, and were probably deposited during or soon after their host rocks. Later arsenopyrite-pyrite-chalcopyrite mineralization overprints the polymetallic style. This arsenopyrite-dominated association occurs disseminated with rare, deformed felsic intrusions, disseminated in felsic metasediments, and as disseminated grains

and in veins hosted by biotite- and chlorite-rich shear zones in metabasites. Arsenopyrite commonly forms post-foliation porphyroblasts, and is rarely found as inclusions in garnet, although it is intergrown with garnet rims in some localities. These textures suggest that the arsenopyrite-dominated association formed during the later stages of Late Silurian-Early Devonian regional metamorphism. The pattern of mineralization is complicated by mobilization and deformation of earlier-formed sulphides during post-metamorphic deformation. The abundance of arsenopyrite-bearing shear zones near the metabasite-metasediment contact, and the close association of arsenopyrite and gold, suggest that a structural analysis of this transition zone would be useful for future mineral exploration.