

**Geology of the Stirling volcanogenic massive sulphide deposit,  
southeastern Cape Breton Island, Nova Scotia**

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The Stirling Zn-Pb-Cu-Ag-Au volcanogenic massive sulphide deposit is part of the late Proterozoic Stirling Belt, a mixed sedimentary and volcanic sequence belonging to the Avalon Terrane. Field work in 1991 was concentrated on the northeastern part of the belt, hosting the Stirling deposit. Two main stratigraphic units occur in this area: a lower unit of felsic volcanic rocks, laminated siltstones and carbonates; and an upper unit of epiclastic volcanic rocks. Numerous fine- to coarse-grained, mafic to felsic intrusive rocks cut this sequence.

Mining of the Stirling deposit has yielded 1.06 million tons ( $\approx$  1 million tonnes) of ore grading 6.3% Zn, 1.5% Pb, 0.74% Cu, 2.15 oz./ton Ag (74 g/t), and 0.033 oz./ton Au (1.1

g/t). Composition of the ore places the Stirling deposit in the Zn-Pb-Cu group of volcanogenic massive sulphide deposits along with Kuroko deposits. The Stirling deposit is cut by a fault that has obliterated many of the primary textures of the ore. The ore zone is overlain by siltstone with local pyrite laminae, two felsic pyroclastic units, chert, and carbonates. Mafic and felsic dykes average 30% of the volume.

The River Framboise Middle showing, found during the summer of 1991, lies 2 km northeast of the mine, on top of the same rhyolite flow that occurs at the mine site. It displays a sericite and pyrite alteration zone in the rhyolite underlying bedded pyrite.