

Geological History of the Antigonish Highlands, Nova Scotia

*J.B. Murphy, Geology Department, St. Francis Xavier University
Antigonish, Nova Scotia B2G 1C0*

*J.D. Kepple, Nova Scotia Department of Mines and Energy
P.O. Box 1087, Halifax, Nova Scotia B3J 2X1*

The Antigonish Highlands is bounded by major tectonic lineaments to the north and west (Hollow Fault) and to the south (Chedebucto Fault) and is unconformably overlain by Devonocarboniferous rocks to the east. The highlands are predominantly underlain by Precambrian rocks of the Georgeville Group with Cambro-Lr. Ordovician (Iron Brook (IB) and MacDonald Brook Group (MB)) and Upper Ordovician-Lower Devonian (Arisalg Group, AG) distributed at the margins of the highlands.

Precambrian rocks consist of subaerially deposited interlayered rhyolites, basalts and basaltic andesites overlain by a thick sequence of turbidites and minor basalts. The stratigraphic content and geochemistry of volcanic rocks suggests deposition in a basin in an extensional environment. Closure of the basin in the latest Precambrian resulted in polydeformation and greenschist facies metamorphism. Late Precambrian intrusive

rocks are post-tectonic and consist of appinite (hornblende gabbro), alaskite, and mafic dyke swarms. The appinites are spatially associated with major faults.

Cambro-Lr. Ordovician rocks consist of fluvialite to shallow marine red clastics and fossiliferous limestones (IB) and a laterally equivalent sequence of bimodal volcanics (MB). These rocks unconformably overlie the Georgeville Group. They were deposited in a small pull-apart basin which was formed in a period of transpression during the latest stages of the late Precambrian orogeny. These rocks were polydeformed probably in the middle Ordovician.

The Arisalg group consists of a bimodal volcanic sequence interlayered with red fluvialite conglomerates and oolites and overlain by fossiliferous siliciclastics and minor rhyolites. The sequence records a marine transgression. The rocks were deposited in

a extensional tectonic environment. The southern highlands was deformed by NW and NE trending conjugate shear zones and intruded by granite plutons

in the middle Devonian. The deformation and plutonism may be attributed to the docking of the Meguma Terrane to the south along the Chedabucto Fault.