Magnetic mineralogy and susceptibility of magnetostratigraphic / stratigraphic units in the Goldenville Group, eastern Meguma terrane

Drew Pelley[1], Rick Horne[2], and Milton Graves[1]
1. Department of Earth Sciences, Dalhousie University, Halifax, NS, B3H 3J5 ¶ 2. Nova Scotia Department of Natural Resources, P.O. Box 698, Halifax, NS, B3J 2T9

The Meguma Group has traditionally been subdivided into the upper Halifax Formation and lower Goldenville Formation. Locally these formations have been further subdivided, prompting their elevation to Group status. Previously, subdivision in the eastern Meguma terrane has been restricted to the Halifax Group. However, high-resolution airborne magnetic data reveal patterns that mimic known stratigraphic trends. This data can be grouped into 'magnetostratigraphic units' that suggest discernible stratigraphic packages exist in the Goldenville Group.

Current mapping was designed to evaluate stratigraphic contrasts between magnetostratigraphic units. Preliminary results suggest three stratigraphic units within the Goldenville Group. The lowermost unit, the Moose River Formation, consists of thinly interbedded grey to black slates and green metasiltstones and displays moderate magnetic response. The Tangier Formation is dominated by metasandstone cycles with predominantly black slate caps. This unit is characterized by low magnetic response. The uppermost Taylors Head Formation is also dominated by metasandstone cycles, however fine-grained caps are predominantly green metasiltstones. Magnetic response of this unit is bimodal, characterized by alternating high and low bands.

Magnetic susceptibility data collected in the field support airborne magnetics. Susceptibility data for the Moose River Formation are moderate and uniform. Data for the Tangier Formation are generally low with few isolated higher values. The Taylors Head Formation has bimodal susceptibility, consistent with airborne patterns. Susceptibility data indicate that the high susceptibility values occur within metasandstones, with the highest values from metaconglomerates. Preliminary petrographic evaluation suggests a correlation between magnetic susceptibility and opaque mineral content. The random distribution and crystal habits of opaques support a mainly metamorphic origin. Preliminary petrographic and electron microprobe data of opaques indicate various species of magnetite, ilmenite, and rutile.