Devono-Carboniferous volcanic and plutonic rocks of the Guysborough area, northern Nova Scotia

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Mapping and petrological studies of inferred Devono-Carboniferous volcanic, sedimentary, and plutonic rocks in the Guysborough area have resulted in new understanding of their stratigraphy and palaeotectonic setting. Volcanic rocks occur widely throughout the area and appear to form the basal part of the stratigraphic sequence. They are dominantly basaltic amygdaloidal flows (locally with peperitic structures) and tuffs, with minor rhyolite. The rhyolite varies from aphyric and eutaxitic to porphyritic with quartz and feldspar phenocrysts, and appears to form domes of limited extent. Although field relations are not certain, the volcanic rocks are probably overlain conformably by clastic sedimentary rocks divided into three units (from oldest to youngest): (1) red conglomerate and sandstone; (2) green-grey siltstone, blue-grey quartz arenite, and minor conglomerate; and (3) grey siltstone with minor shale and conglomerate, and red shale and siltstone. Dykes, sills, and small plutons of gabbro of uncertain age are common in all of these units. The volcanic and sedimentary rocks occur in faulted contact with rocks of the Meguma Terrane on the south and are overlain by younger Carboniferous rocks on the north and west.

Petrological studies show that the mafic rocks are tholeiitic, whereas the felsic rocks are alkalic. Both mafic and felsic rocks are characterized by high zirconium contents. They appear to have formed in a continental within-plate tectonic setting.