

### **Thrusting of Horton Group over Windsor Group rocks, Cheverie, Nova Scotia**

Stanley K. Johnston and John.W.F. Waldron

*Geology Department, Saint Mary's University, Halifax, Nova Scotia B3H 3C3, Canada*

Strongly deformed Carboniferous rocks of the Horton and lower Windsor groups are exposed along the coastline of the Minas Basin from Cheverie Point eastward towards Truro. The distribution of units has previously been interpreted as resulting mainly from high angle faults.

Detailed mapping of this area shows that Horton Bluff Formation has been strongly deformed, when compared to the younger Cheverie Formation. Horton Bluff Formation black shale and fine grey sandstone show open to tight folds with major fold axes trending northeast to southwest. Most folds are inclined to overturned toward the southeast. Cleavage is absent in the southeast but increases in intensity toward the northwest. There are both thrust and conjugate normal faults. Cheverie Formation red mudstone and sandstone are mildly deformed at Johnson Cove, east of Cheverie. Near the top of the formation at Cheverie Point, duplex and fault-propagation fold structures are seen. Macumber Formation (Windsor Group) laminated limestone and calcareous sandstone are

strongly folded. Pembroke Breccia (Windsor Group) is massively deformed with angular elongate blocks of Macumber Formation. White Quarry Formation gypsum and anhydrite (Windsor Group) show anastomosing ductile (planar and linear) structures, and brittle planar structures. Interconnected diabase dykes and sills intrude the Horton Bluff Formation; thin sections from dyke margins show that the intrusions cross cut the tectonic fabric of the Horton Bluff host rock. There is an unconformable, normally faulted contact between Triassic sandstone and Horton Bluff Formation, which truncates the diabase sill at Johnson Cove. A re-interpretation of the data leads to a conclusion that low angle thrust faulting placed Horton Bluff Formation strata over younger strata of the Cheverie Formation and Windsor Group. Transpressional thrust faults present along the coast of the Minas Basin have a possible relationship with the Cobequid-Chedabucto Fault System, a major zone of tectonic activity near the south margin of the western Maritimes Basin.