
**Fracture studies in the Horton Group,
Windsor-Kennetcook subbasin, Nova Scotia**

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The Mississippian Horton Bluff Formation dominantly consists of sandstone and shale, commonly interpreted to have been deposited in a lacustrine environment. The formation occurs in both the hanging wall and the footwall of the Kennetcook thrust system, a transpressional structure associated with dextral motion on the Cobequid-Chedabucto Fault Zone. Rocks in the footwall of the Kennetcook Thrust are possible targets for hydrocarbon exploration. Fracture studies permit a better understanding of deformation history of footwall rocks exposed on the east and west sides of the Avon River, Nova Scotia; the type locality of the Horton Bluff Formation. The area between Horton Bluff and Blue Beach has two kilometres of continuous cliff and wave-cut platform with continuous exposure; the rocks in this section have fractures in a variety of orientations. Fracture studies were performed at ten localities in this section on large areas of exposed sandstone. Circular scan-lines were measured using two measurement techniques to avoid directional sampling bias. At most localities, two orthogonal fracture sets are predominant, with mean strikes of 165° and 075°. This indicates that there was a common stress regime throughout the area. In other locations, dominant fractures are interpreted as conjugate sets, with dominant strike directions of 160° and 090°. In rose diagrams with two dominant orthogonal strikes, a third peak is commonly observed with a roughly E-W strike, which may be related to overall strike-slip movement on the predominantly dextral Cobequid-Chedabucto Fault to the north. It is likely that these fracture systems extend eastward in the footwall of the Kennetcook thrust system, where their orientations may affect fluid migration pathways.