

The search for the Fredericton Fault: new exposures along the Longs Creek to Fredericton section of the (toll-free) Trans-Canada Highway

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New exposures along the 23 km stretch of the Longs Creek (Kings Landing) to Fredericton section of the Trans Canada Highway provide a transect through all the major lithological units of the Fredericton area, including: multi-deformed Silurian Kingsclear Formation turbidites; post-Silurian mafic dykes and Pennsylvanian sandstones, conglomerates and red siltstones.

Two generations of macroscopic structures and related fabrics dominate most of the Silurian outcrops. F_2 folds are open to tight upright structures, often approximating a chevron profile heavily modified by accommodation structures in the form of minor faults. The F_2 fold axes vary from horizontal to a moderate plunge towards the northeast or southwest. An axial planar cleavage (S_2) is locally developed in the more pelitic lithologies. Intersection of S_2 with bedding usually creates a prominent crenulation lineation ($L_{1/2}$), and an earlier fabric (S_1) is generally bedding-parallel or sub-parallel. Locally, F_1 closures can be identified, and here a discrete S_1 cleavage occurs oblique to bedding. In such closure areas bedding can be inverted. At least two sets of post- F_2 kink

bands are present, and very locally a set of F_3 folds with horizontal axial planes, horizontal axes, and chevron profiles are present.

The southwestern-most unconformable contact between the Kingsclear Formation and the overlying shallowly dipping Pennsylvanian sedimentary rocks is located near Mountain Road, at the southern extent of Longs Creek, but is not exposed. The northeastern-most contact of the Pennsylvanian and Silurian rocks is defined to within 20 m along the southwest-bound carriageway, 4.3 km northeast of Mazzerole Settlement Road. Here the Pennsylvanian beds are vertical and even locally overturned, though curiously, the structures in the adjacent Silurian rocks indicate that they have not been rotated relative to their correlatives to the southwest of the Carboniferous cover.

The Fredericton Fault, a major fault zone that extends into New England, is not exposed in the new exposures. However, we have defined its position to within a few metres in a stream gully 100 m to the northeast of the bridge at Deerwood Drive.