

Revised stratigraphy of the Rollingham area, (NTS 21 G/6), southwestern New Brunswick

L.R. Fyffe

New Brunswick Geological Surveys Branch, P.O. Box 6000, Fredericton, New Brunswick E3B 5H1, Canada

Stratigraphic relationships suggest that sedimentation was continuous in the Rollingham area from the early Ordovician to mid-Silurian, a time span of some 80 million years. Deposition of the fine grained turbidites of the Woodland Formation took place in a back-arc basin that separated chains of peri-Gondwanan island arcs from the Avalon Platform. Grain-flow deposition of thick-bedded, quartz-rich sandstones of the Kendall Mountain Formation marks the cessation of rifting and consequent filling of the back-arc basin in the mid-Ordovician. Abundance of coarse, volcanic and subvolcanic detritus in feldspathic wackes of the Digdeguash Formation and calcareous wackes of the Flume Ridge Formation reflect tectonic uplift and erosion of the outlying volcanic islands during the transformation from a back-arc to a deepening foreland basin environment. Detrital mica from the Digdeguash Formation has a relatively uniform Ar-Ar age of 484 Ma suggesting that the remnant Annidale volcanic

arc, with a U-Pb date of 493 Ma, is a possible source. An Ar-Ar date of 453 Ma on detrital mica from the relatively fine grained Flume Ridge Formation indicates that a change in source occurred between the latter part of the Ordovician and the mid-Silurian. The Tetagouche back-arc volcanic complex of central and northern New Brunswick provides a suitable source since mica-bearing granites from that area have yielded U-Pb ages ranging from 479 to 451 Ma.

Decreasing intensity of deformation up-section from the Woodland Formation to the Flume Ridge Formation suggests that the foreland sedimentary wedge containing these rocks was thrust over the Avalon Platform along a major detachment zone in mid-Silurian time. Subsequent extension in the accreted wedge led to the development of listric faults and deposition of the late Silurian Oak Bay-Waweig successor sequence.