Post-Horton Group, pre-Windsor Group recumbent folding and cleavage deformation in the St. Peters area, Nova Scotia

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The Carboniferous Horton Group and overlying strata overlap the Avalon-Meguma boundary, so their deposition post-dates deformation associated with the primary terrane suturing, however subsequent periods of deformation have variably affected these cover rocks. Preliminary structural mapping and microfabric data in the St. Peters area indicates that a remarkably strong pulse of deformation has produced a map scale recumbent fold with associated shallow northwest dipping cleavage in the Horton Group. Finer-grained rocks exhibit a complex cleavage consisting of spaced, dark selvages and very fine-grained, moderately well-oriented muscovite fabric parallel to selvages. In one example, interlithons between selvages display an earlier, fine muscovite cleavage at a high angle to the regional, shallow cleavage. Coarser rocks, including conglomerate, display clast interpenetration by pressure solution with accompanying insoluble selvages. Buckled pre-cleavage veins and bed thickness changes around an outcrop scale recumbent fold indicate 30-40% flattening strain due to cleavage development. This deformation is consistent in orientation and intensity across strike for at least 7 kilometres within the regionally overturned, lower limb of the recumbent fold. However, the basal Windsor Group impure limestone exposed immediately north of the Horton Group has no detectable cleavage and fossils show original textures. These outcrops show large kinks in steep bedding but only brittle features were noted.

These observations are consistent with a localized but intense compressional event followed by uplift and erosion after Horton Group deposition but prior to Windsor Group deposition. One possibility is that this area was in a compressional jog in the dextral terrane boundary fault that was briefly reactivated at this time. Elsewhere, such reactivation would produce more subtle effects across the Horton Group-Windsor Group contact.

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