

# Flexural-Slip Folding in the Meguma Group, Southern Nova Scotia<sup>1</sup>

*R. J. Horne and N. Culshaw<sup>2</sup>*

Cambrian-Ordovician turbidities of the Meguma Group, southern Nova Scotia, are folded into kilometre-scale, open to tight, chevron or box folds. Detailed investigation of metasandstone-slate packages around anticlines in the Halifax and Ovens areas indicate that flexural slip contributed significantly to folding. Flexural slip was accommodated by mesoscale thrust-like structures, including bedding-parallel movement horizons and flexural-slip duplexes, ramps, lateral ramps and conjugate shear fractures. At the Ovens, outcrop-scale flexural-slip thrusts, characterized by ramps, flats, ramp anticlines, fault propagation folds and back thrusts, locally occur. Flexural-slip structures are characterized by slickenfibres, striations and quartz veins; shear sense, determined from offset markers, slickenfibres geometry, ramps and domino structures, is invariably consistent with a flexural-slip origin.

Flexural-slip structures are brittle, invariably deform fold-related regional cleavage (ca. 385-405 Ma), locally deform porphyroblasts within the aureole of the South Mountain Batholith (ca. 370 Ma) and movement horizon spacing decreases with increasing limb dip. These

observations suggest that cleavage development and flexural-flow were important in the early stages of folding, under ductile conditions, whereas flexural slip was important at higher limb dips under brittle conditions. Estimates of the amount of flexural slip, determined from offset markers and rotation of domino structures, indicate a significant amount of flexural slip (20-35° limb dip).

Slickenfibres and quartz veins along flexural-slip structures indicate fluid flow during folding. Abundant quartz veins at the Ovens include late, flexural-slip bedding-concordant veins, saddle reefs and discordant hybrid veins. The discordant hybrid veins have mutual cross-cutting relationships with the flexural-slip bedding-concordant veins indicating synchronous emplacement, and the principal stress inferred from their geometry is close to the flexural-slip movement lineation. Both vein sets, therefore, are considered to be related to flexural slip and formed under conditions of high fluid pressure. A flexural-slip interpretation for the origin of auriferous veins in the Ovens Anticline may have implications for other Meguma gold deposits which share a common structural setting.

<sup>1</sup> *In*: Geological Association of Canada - Mineralogical Association of Canada, Joint Annual Meeting May 19-21, 1997, Ottawa, Canada; Program with Abstracts, v. 22, p. A70

<sup>2</sup> Department of Earth Sciences, Dalhousie University, Halifax, Nova Scotia B3H 3J5