

A preliminary report on the Eastern Highlands shear zone, Cape Breton Island, Nova Scotia

Shoufa Lin and Paul F. Williams

Department of Geology, University of New Brunswick, Fredericton, New Brunswick E3B 5A3

The Eastern Highlands shear zone (E.H.S.Z.) is the boundary between the Aspy Terrane and the Bras d'Or Terrane in Cape Breton Island. It extends mainly in a NE direction but turns to an EW direction to the north of Warren Lake.

The rocks around the E.H.S.Z. are strongly deformed. At least three generations of ductile deformation have been recognized on the basis of overprinting relationships or fold styles. Regional folds (F1) are tight to isoclinal with axial planar cleavage. They are overprinted by the E.H.S.Z. with associated F2 folds. F2 folds are also tight to isoclinal, but no associated axial planar cleavage is developed. F2 folds are in turn overprinted by F3 folds, which are open and fold the mylonitic foliation associated with the E.H.S.Z. Brittle faults, probably as

the reactivation results of the E.H.S.Z., are also developed.

Mylonitic rocks, including mylonite, ultramylonite and phyllonite, are widespread in the shear zone. Mylonitic foliation has a constant orientation with respect to the shear zone boundary, except in the area around the east Clyburn Brook, where mylonitic foliation forms a girdle, probably reflecting the later deformation (F3). Stretching lineation mainly trends W-SW, with a plunge between 40° and 70°. All available kinematic indicators (S-C relationships, drag folds, mica fish, oblique shape fabrics and shear bands) show an oblique movement with a dextral horizontal component and a NW or N side up vertical component, not influenced by the curving of the shear zone.

Some small scale sinistral shear zones have also been found.