

Thin-skinned Thrust Tectonics along the Grenville Front, Western Labrador

Dennis L. Brown

*Department of Earth Sciences, Memorial University of Newfoundland
St. John's, Newfoundland A1B 3X5*

The Emma Lake area lies within the Grenville Front Zone in the parautochthon of the Grenville Province in western Labrador. In the Emma Lake area Archean crystalline basement rocks of the Ashuanipi Metamorphic Complex and Lower Proterozoic supracrustal sequences of the Knob Lake Group were folded and thrust northward during the Grenville Orogeny. The map pattern represents an oblique section through the thrust stack, allowing for the construction of true profiles of the stack using down-plunge view projection. The geometry of the thrust stack is that of a northeast-plunging duplex with extensive basement involvement. This is the first time a duplex has been recognized in the Grenville Front Zone.

Horses in the duplex are thickest, typically 50 to 100 m, where they contain basement rocks; the combined duplex thick-

ness is less than 400 m. Thrusts developed as ductile shear zones with southeast-dipping, southeast-plunging penetrative C-S-L fabrics. Northwest-verging, northeast-plunging mesoscopic F_1 folds above hangingwall ramps have a fold nappe geometry. Locally, mesoscopic F_2 folds re-fold earlier F_1 folds about a shallow, northeast-plunging fold axis.

Grenvillian metamorphic grade in the Emma Lake duplex is upper-greenschist facies. Kenoran granulite facies basement rocks were retrogressed along shear zones to biotite-rich mylonites and phyllonites, whereas the Lower Proterozoic cover sequence underwent prograde metamorphism. Exchange geothermobarometry was conducted on the Menihek Formation, a biotite - chlorite - garnet semipelitic schist of the Knob Lake Group.