

Structure and significance of the Acadian deformation front, western Newfoundland

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Structures formed at the Acadian deformation front are exposed in the western Port au Port Peninsula, Newfoundland, and are also seen in seismic profiles to the north of the peninsula.

Cambro-Ordovician carbonate platform units in cliff exposures show west-facing folds of several hundred metres amplitude, cut by west-vergent thrust faults. Farther north, the poorly exposed Round Head structure has similar geometry. Between these two areas of west-vergent structures is a zone in which strata of the Cape Cormorant and Mainland formations (Taconian syntectonic sediments) contain numerous east-vergent faults. These faults are at low angles to bedding, regardless of the attitude imposed by the later, large-scale, west-vergent folds. We interpret them to represent an early, eastward episode of Acadian thrusting that affected the upper part of the platform succession.

Limestones of the post-Taconian Long Point Group contain deformation zones dipping moderately NW, with local duplica-

tion of stratigraphy. West-vergent sub-horizontal discrete faults overprint the earlier east-vergent zones. The critical contact at the base of the Long Point Group was dug out. A very sharp uneven contact separates Long Point Group sandstone from underlying highly sheared green plastic mudstone of the Humber Arm Allochthon with an anastomosing 'scaly fabric' on a millimetre scale. The contact surface is marked by strong slickenside striations plunging steeply northwest. We interpret the contact as a thrust, not an unconformity, marking the upper, east-vergent detachment of an Acadian 'triangle zone', within the Cambro-Ordovician platform succession and Humber Arm Allochthon were transported substantially to the west. The triangle was subsequently over-printed by west-vergent structures. These relationships indicate that carbonate platform units of western Newfoundland must be substantially allochthonous.