



Explanatory Notes - Exploits Map-Area

Stratigraphic relationships of the various rock units listed in the legend are not well exposed in the map-area but are well known from the point Leamington area (2E/6) to the south and the Little Bay Island area (2E/12) to the west. A major fault, the Lobster Cove-Chanceport Fault separates older rocks to the north from a younger, north-facing sequence to the south.

The oldest rocks are pillow lavas of the Lushs Bight Group exposed on Sculpin Island. These rocks and other rocks of the Lushs Bight Group are low-potash oceanic tholeiites analogous to modern oceanic crust (Smitheringale, 1972; Strong, 1973). The Lushs Bight Group may be in part Lower Ordovician but is probably Cambrian in age. It is overlain by Lower Ordovician sedimentary and volcanic rocks in the Western Arm area (2E/12) (Marten 1971) and similar rocks of the Betts Cove ophiolite are overlain by later volcanic and sedimentary rocks of the Snooks Arm Group from which Arenig graptolites were collected by Snelgrove (1931). The Brighton gabbro complex which intrudes the Lushs Bight Group in the Pillays Island area (2E/12) has yielded an $40\text{Ar}/^{39}\text{Ar}$ age of 495 ± 5 m.y. (Stukas and Reynolds, 1974).

The Moretons Harbour Group is best exposed in the Moretons Harbour-Twillingate area to the east (2E/10). The basal unit of the Moretons Harbour Group in that area is the Sleepy Cove Formation which is also oceanic tholeiite like the Lushs Bight Group. By lithologic similarity with the Western Arm and Cutwell Groups (2E/12) we conclude that the Moretons Harbour Group is Lower Ordovician in age and overlies oceanic crust. Because of its great thickness (8 km) in the Moretons Harbour area (Strong and Payne 1973), its dominantly island-arc tholeiite chemistry and the abundance of diabase dykes, the Moretons Harbour Group probably represents the core of a volcanic island arc built on oceanic crust.

In the map-area, the Moretons Harbour Group is well exposed in the headlands of the Fortune Harbour Peninsula north of the Chanceport Fault. The lower unit, the Sweeny Island Terrane (IOs) is characterized by numerous diabase dykes which act as feeders to the pillow lavas of the overlying Western Head Formation (IOwh). The contact between the two units is transitional over 30 m and the lowermost pillow lavas of the Western Head Formation often have thin lenses of red chert and associated sulphide showings.

The oldest rocks south of the Chanceport Fault are the well bedded tuffs and sedimentary rocks of the Wild Bight Group (OWB). These rocks represent the uppermost portion of the Wild Bight Group, the lower half of which correlates very well with the Cutwell and Western Arm Groups of island arc assemblages.

The Wild Bight Group is overlain conformably by Exploits Group graptolitic black argillites of Caradocian age (Op). The black argillites are generally less than 100 m thick but probably represent an extensive pause in volcanism and sedimentation since graptolites from at least three zones are often found within this thickness (Helwig, 1967). These argillites are conformably overlain by Upper Ordovician greywackes of the Point Leamington (OSP), which reach a thickness of 3000 m on the Point Leamington map-area (2E/6) to the south and correlate with the Sansom Formation on the Twillingate (2E/10) and Roberts Arm (2E/5) map-areas.

Conformably overlying the Exploits Group sedimentary rocks is the Cottrells Cove Group of dominantly volcanic rocks of probably Silurian age. The lowermost unit of this group, the Boones Point Complex (OSB) is an olistostrome of dominantly mafic volcanic rocks in a black shaly matrix. Fossiliferous limestone on Green Island failed to yield any datable material but coarse conglomerate horizons within the complex are identical to the lower Silurian Goldson Formation to the south (2E/6).

The Moores Cove Formation (OSM) of tuffaceous sedimentary rocks, lava and chert conformably overlies the Boones Point Complex and is similar to the Crescent Lake Formation which is near the base of the Roberts Arm volcanics to the west (2E/5). The Fortune Harbour Formation at the top of the Cottrells Cove Group is a bimodal calc-alkaline volcanic assemblage identical to the volcanics of the Robert Arm group to the west (2E/5, 2E/12) and the Chanceport Group to the east (2E/10).

The major structural feature in the area is the Lobster Cove-Chanceport Fault which forms the major topographic depression occupied by Fortune Harbour. This fault is interpreted to be an early Acadian thrust with the Moretons Harbour and Lushs Bight Groups thrust from the northwest upon the Cottrells Cove Group. The Indian Cove fault is another thrust fault within these transported rocks.

Later Acadian trends parallel the Lobster Cove-Chanceport Fault for a considerable distance south of the fault until trends become northeast along more typical Acadian fold-axes. One such major fold axis within the Wild Bight Group is located just north of Wild Bight.

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