Legend: EXPLOITS MAP-AREA

SILURIAN

Sb Medium- to fine-grained gabbro and diabase sills (intrude Cottrells Cove Group)

ORDOVICIAN AND SILURIAN
UPPER ORDOVICIAN AND LOWER SILURIAN
COTTRELLS COVE GROUP (OS_M, OS_F, OS_C)

OSF FORTUNE HARBOUR FORMATION: volcanic and sedimentary rocks; basal p, green to red pillow lava and pillow breccia with interstitial chert and limestone; c, coarse- to fine-grained acidic pyroclastic rocks, bedded tuff, red to green chert and rhyolite flows

OSM MOORES COVE FORMATION: tuffaceous sandstone, slate, argillite, greywacke, thin lava flows, and red chert

OSB BOONES POINT COMPLEX: chaotically slumped black and grey argillite, pillow lava, mafic volcanic flows, tuff, limestone, conglomerate and chert

EXPLOITS GROUP (O_P, OS_P)

OSP POINT LEAMINGTON FORMATION: medium grey to black thin-bedded greywacke and silty argillite

ORDOVICIAN AND UPPER ORDOVICIAN (CARADOCIAN)
MIDDLE AND UPPER ORDOVICIAN (CARADOCIAN)
Black carbonaceous argillite and argillaceous siltstone; locally chert at base

LOWER AND MIDDLE ORDOVICIAN
WILD BIGHT GROUP

OWBt Red and green thin-bedded tuff, green thick-bedded lapilli tuff, tuffaceous sandstone, argillite and chert

LOWER ORDOVICIAN
MORETONS HARBOUR GROUP ($1O_S$, $1O_B$, $1O_M$)

1OWH WESTERN HEAD FORMATION: Pale green to dark green pillow lava with minor layers of pillow breccia, acidic tuff and chert

1OSb SWEENY ISLAND AND BEACHY COVE TERRANES: coarse- to fine-grained diabase dykes with minor screens of pillow lava and plagioclase-clinopyroxene porphyritic lava

CAMBRIAN AND/OR LOWER ORDOVICIAN
LUSHS BIGHT GROUP

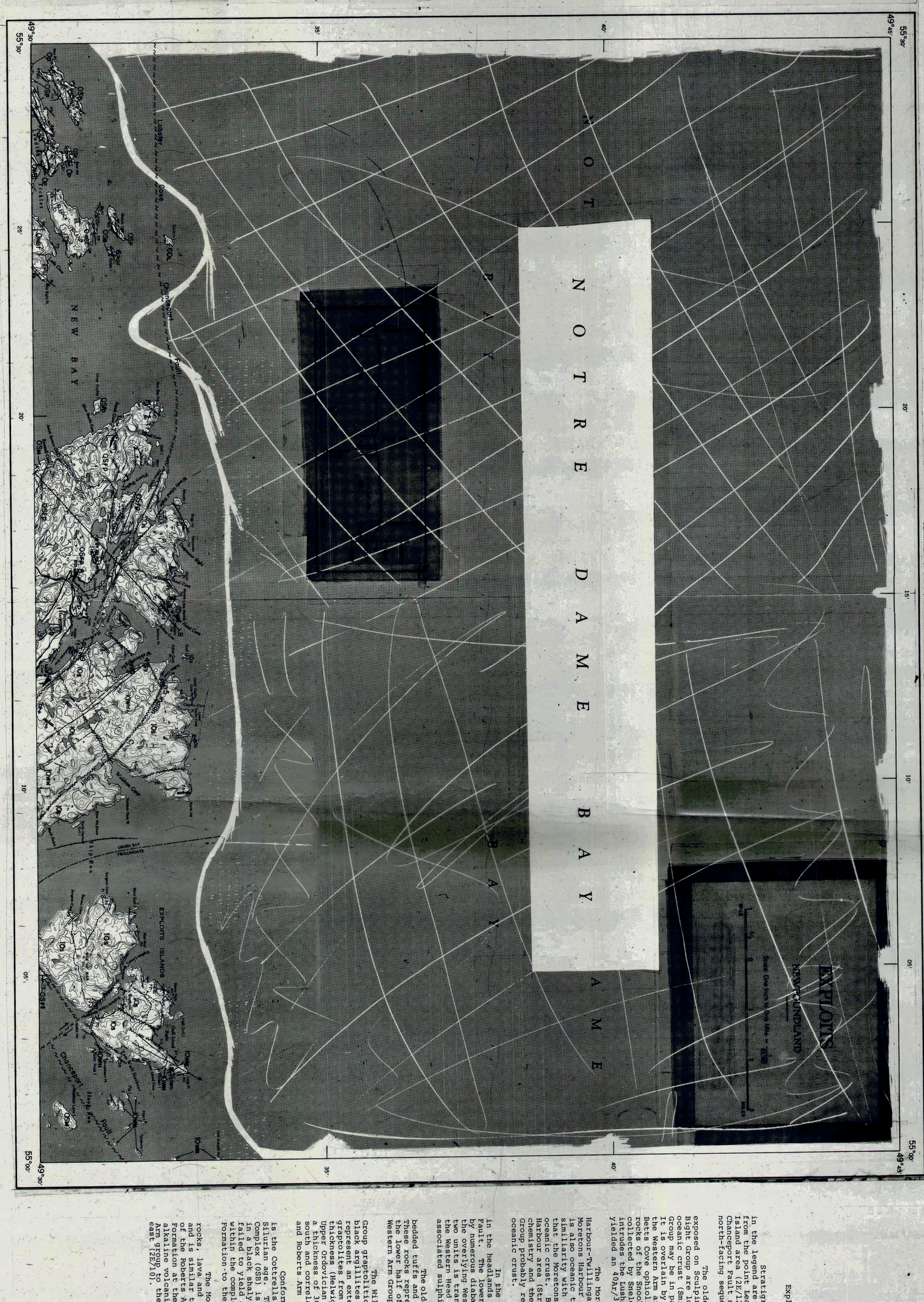
COL Dark to pale green basaltic pillow lavas

Geological boundary (defined, approximate and assumed).....
Bedding, tops known (horizontal, inclined, vertical, overturned).....
Bedding, tops unknown (inclined, vertical).....
Dyke trend (inclined, vertical).....
Schistosity, gneissosity, cleavage, foliation (horizontal, inclined, vertical).....
Fault (defined, approximate, assumed).....
Anticline (upright, overturned).....
Syncline (upright, overturned).....
Fossil locality.....
Mineral occurrence.....
Mineral prospect, test pit or trench.....
Shaft or quarry (exploration, abandoned production, production, producing).....
Adit or tunnel.....

Mineral Occurrences, Prospects and Mines

1. Long Point. Pyrite and hematite in a thin bed of red cherty sediments at the base of the Western Head Formation.
2. Western Head Cove. Pyrite and magnetite. Same setting as 1.
3 & 4. Webber Bight. Pyrite. Same setting as 1 and 2.
5. Indian Cove. Pyrite in sheared basalt along the Indian Cove Fault.
6. Green Island. Limestone lens 3 to 5 m. wide in Boones Point Complex.
7. Peter Mitchell's Iron Prospect. Hematite in a red ferruginous chert bed approximately 10 m. thick in pillow lavas of the Fortune Harbour Formation.
8. Sweeny's Manganese Prospect. 4 to 6 m. thick manganiferous chert bed in pillow lavas of the Fortune Harbour Formation.
9. Fortune Harbour. Pyrite in acidic volcanics of the Fortune Harbour Formation.
10. Cook Iron Mine. Ferruginous and manganiferous chert in tuffs and pyroclastic rocks at the top of the Fortune Harbour Formation.
11. Grey Copper Mine. Dominantly chalcocite in a 30 cm. zone along the contact of a Cretaceous? lamprophyre dyke with pillow lavas and tuffs of the Fortune Harbour Formation.

Note: The mineral symbols key and a mineral classification table is contained in the accompanying report.



SHEET 2E/11

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 in age. It is overlain by Lower Ordovician sedimentary and volcanic rocks in the Western Arm area (2E/12) and similar rocks of the Betts Cove ophiolite are overlain by later volcanic and sedimentary rocks of the Snooks Arm Group (Upper Ordovician). The Brighton gabbro complex which collected by Smelgrove (1931) from which Arenig graptolites were intrudes the Lushs Bight Group in the Pilleys Island area (2E/12) has yielded an $^{40}Ar/^{39}Ar$ 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 headlands of the Fortune Harbour Peninsula north of the Chanceport Fault. The lower unit, the Sweeny Island Terrane (1Os) is characterized by numerous diabase dykes which act as feeders to the pillow lavas of the overlying Western Head Formation (1OWH). 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 (OWBt). 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 mapArea (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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Geological Survey of Canada open file no. 377
was used as the base map.