MINERAL DEVELOPMENT DIVISION
DEPARTMENT OF MINES AND ENERGY
GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

1 M/9 1:50,000 1 M/9

LEGEND

DEVONIAN (?)

10 *Pink, buff and gray, medium grained granite and granodiorite.*

9 *Gray-green, medium to fine grained diorite and diabase.*

MIDDLE CAMBRIAN

8 *Dark gray to black shale and slate with thin beds and lenses of gray limestone and minor quartz sandstone.*

CAMBRIAN AND EARLIER

7 **Bonavista Formation:** *Reddish brown and pale green slate with nodules and nodular beds of pink limestone.*

6 **Random Formation:** *White orthoquartzite with interbeds of green and gray micaceous siltstone and sandy shale.*

Musgravetown Group

5 **5a,** *Laminated green siltstone and sandstone, well bedded green sandstone with wisps and laminae of black shale, black to gray conglomerate with interbedded sandstone, abundant limestone clasts, breccia, and in places beds;* **5b,** *green to purple basalt and basaltic agglomerate and tuff with interbedded fossiliferous limestone, some hematite phenocrysts;* **5c,** *red to purple graded and cross-bedded sandstone, shale and conglomerate;* **5d,** *coarse grained, red, flattened pebble to boulder conglomerate.*

4 *Green, epidote rich pyroxene basalt, agglomerate and tuff, oxidized red color in places.*

CAMBRIAN OR EARLIER

3 **Swift Current Granite:** *Medium grained, foliated to massive hornblende-biotite granite, granodiorite, and syenite.*

HADRYNIAN OR EARLIER

Love Cove Group

2 **Sandy Harbour River Formation:** *Green graywacke to arkosic sandstone and conglomerate.*

1 **Sound Island Formation:** *Green mafic and pink to purple felsic volcanic pyroclastics and flows altered to chlorite and sericite schist.*

SYMBOLS

Geological boundary (defined, approximate, assumed)

Bedding; tops known (inclined, vertical, overturned)

Fault (defined, approximate, assumed)

Anticlinal axis

Synclinal axis

Schistosity (S_1), slaty cleavage (inclined, vertical)

Schistosity (S_2), (inclined, vertical)

Fossil locality

Geology by C.F. O'Driscoll, 1977.

This map may be subject to revision and correction.

Geological cartography by Mineral Development Division, Department of Mines and Energy, Government of Newfoundland and Labrador.

Approximate magnetic declination, 1969, for centre of map 29°48'W, decreasing 2.8' annually.

Elevations in feet above mean sea level.

Base map at same scale published by the Surveys and Mapping Branch, Department of Energy, Mines and Resources, Ottawa.

Copies of this map may be obtained from the Publications and Information Section, Mineral Development Division, Department of Mines and Energy, P.O. Box 4750, St. John's, Newfoundland A1C 5T7.

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INDEX MAP

Produced by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF ENERGY, MINES AND RESOURCES. Updated from aerial photographs taken in 1966. Printed 1971.

MARGINAL NOTES

The Harbour Buffett map area is physiographically part of the Atlantic upland of Newfoundland (Twenhofel and MacClintock, 1940) and consists of a rugged plateau dotted with ponds and lakes and devoid of vegetation or covered with stunted trees, shrubs and bogs. It has an average elevation of 200 m and has been described as part of the Lawrence peneplain (Twenhofel and MacClintock, 1940). The area is deeply dissected by glacially modified valleys such as those of the Sandy Harbour and Paradise Rivers which, in places, support coniferous forests. Streams display a trellised drainage pattern which has emphasized, and is controlled by, the regional structure of the bedrock. The area has a steep coastline indented by many bays and harbours which are also controlled by and aligned parallel to the regional strike. Glaciation has affected all parts of the map area; the highest hills have been rounded, striated and sprinkled with erratics.

Previous geological investigations include the work of Anderson (1965), McKillop (1953), Schryver (1973) and O'Driscoll (1973).

The map area is divided into two geologically contrasting regions by a fault which extends northeastwards from Paradise Sound. The area northwest of the fault is underlain by chlorite-sericite schists derived from volcanic, sedimentary and intrusive rocks of the Love Cove Group and intrusive rocks of the Swift Current Granite. The area to the southeast is largely underlain by sedimentary rocks of the Bonavista and Random Formations and the Musgravetown Group which have been openly to tightly folded but do not portray a regional penetrative schistosity.

The Love Cove Group has been extended from the belt defined by Jenness (1963) and Anderson (1965) into the present map area. The steeply dipping massive to schistose mafic and silicic flows and pyroclastics which comprise the Sound Island Formation(1) include crystal, lithic and crystal-lithic tuffs, agglomerates, and breccias. Quartz and/or feldspar porphyries are common which may, in part, be intrusive. This formation can be traced into and is correlative with the Deer Park Pond Formation in the adjoining map area (Bradley, 1962). The Sound Island Formation is conformably overlain by the Sandy Harbour River Formation(2) and can be traced into and is correlative with the sedimentary portions of the Southern Hills Formation (Bradley 1962). The stratigraphy of the Love Cove Group as presently defined within the map area is similar to that of nearby map areas (Hussey, 1978; O'Brien, 1978), but is the reverse of the stratigraphy of correlative units in the Terrenceville map area (Bradley, 1962).

The Swift Current Granite (3) intrudes rocks of the Love Cove Group and extends northwards into and across the Sound Island map area. Samples from that area have yielded a whole rock Rb/Sr age of 500 ± 30 Ma using a decay constant of 1.47×10^{11} yr^{-1} for ^{87}Rb (Bell *et al.*, 1977). However, the mean square of weighted deviates is 12.8, indicating that the isochron model is not a valid interpretation of the data. Hussey (1978) suggested that there may be a genetic link between the Swift Current Granite and the Love Cove volcanic pile.

The Musgravetown Group (4 and 5) is well exposed along the eastern coastal sections of the map area. It has been interpreted to overlie the Love Cove Group with angular unconformity based on relationships in Bonavista Bay (Jenness, 1963). Unit 5 overlies unit 4 conformably and consists of a conformable sequence of sedimentary and volcanic rocks. Unit 5a is the most extensive and may represent flysheoid or turbidite sequences. In some areas scattered subangular to rounded pebbles, cobbles and boulders are embedded in a dark gray shaly matrix, suggesting possible downslope slumping or a glaciomarine environment. Conglomerates contain clasts of intrusive, extrusive and sedimentary rocks. Limestone clasts, nodules, breccia and beds are common throughout the sequence. Unit 5b is interbedded with unit 5a and, at Prowseton, contains interbedded limestone beds which host possible skeletal remains (D. Kobluk, personal communication). Unit 5c overlies unit 5a conformably, but the nature of the contacts of unit 5d could not be determined except where faulted. It is thought to overlie or be interbedded with unit 5a. Unit 5d is similar to rocks at North Harbour (O'Driscoll, 1977) which are believed to be part of the Love Cove Group.

The Precambrian to Eocambrian Random Formation (6) conformably overlies units 5a and 5c of the Musgravetown Group. The siltstone members contain trace fossils in the form of worm trails and burrows. These pass conformably upwards into fossiliferous rocks of the Bonavista Formation (7), which is Lower Cambrian in age. The limestones of this formation contain fossils consisting mainly of the shelly fauna hyolithids. Some rocks included in the Bonavista Formation may be equivalent to the lithologically similar Briggs Formation. The dark gray to black shales and siltstones exposed on Bar Haven Island (8) contain trilobite fragments indicating a Middle Cambrian age (D. Boyce, personal communication).

Intrusive rocks (9, 10) of possible Devonian age exposed on Bar Haven Island intrude rocks of the Musgravetown Group and the Random Formation. These are lithologically similar, and may be equivalent, to the Sall the Maid Granite exposed in the Sound Island map area (O'Driscoll,1977; Rose, 1948).

The deformed and metamorphosed intrusive, volcanic and sedimentary rocks of the northwestern belt contrast sharply with the mildly metamorphosed and folded sedimentary and volcanic rocks to the southeast. They have been isoclinally folded and regionally overprinted by a strong, penetrative north to northeast trending steeply dipping schistosity defined by chlorite, sericite and epidote. The schistosity in the intrusive rocks is well defined by elongated quartz, feldspar and aligned chloritized mafic minerals. The regional foliation is folded and crenulated in places and is locally overprinted by a strain-slip fabric.

Rocks of the southeastern belt are gently to steeply dipping and have been folded into open to tight upright to overturned folds with northeast trending axes. A steeply to moderately dipping phyllitic cleavage has been developed in most units. The conglomerate of unit 5d is atypical of the southeastern belt in that it has a well defined foliation with clasts flattened into the plane of the fabric.

Attitudes of faults could not always be determined. Some are definite thrust faults; e.g. those on Bar Haven Island. The major fault which extends northeastward from Paradise Sound possibly has a reverse component of movement. Although the fault plane was not observed, associated shear zones dipping steeply northwestwards were noted. Beds and cleavages in rocks of the Musgravetown Group and the Random Formation are tightly folded close to the fault.

The map area contains few mineral deposits. Some minor malachite staining was noted along joint surfaces and cleavage planes in unit 4 of the Musgravetown Group. Specular hematite and associated alunite and pyrophyllite occur along the eastern margin of the Swift Current Granite.

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MAP 7873

HARBOUR BUFFETT

NEWFOUNDLAND

Scale 1:50,000 Échelle

Miles 0 1 2 3 Milles

Metres 0 1000 2000 3000 4000 Mètres

Yards 0 1000 2000 3000 4000 Verges

Roads: Routes:

loose or stabilized surface, all weather ... gravier aggloméré, toute saison ... 2 lanes or more, 2 voies ou plus; less than 2 lanes, moins de 2 voies

loose surface, dry weather and unclassified streets ... de gravier, temps sec et rues hors classe

cart track ... de terre

trail or portage ... sentier ou portage

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