ROBERTS ARM

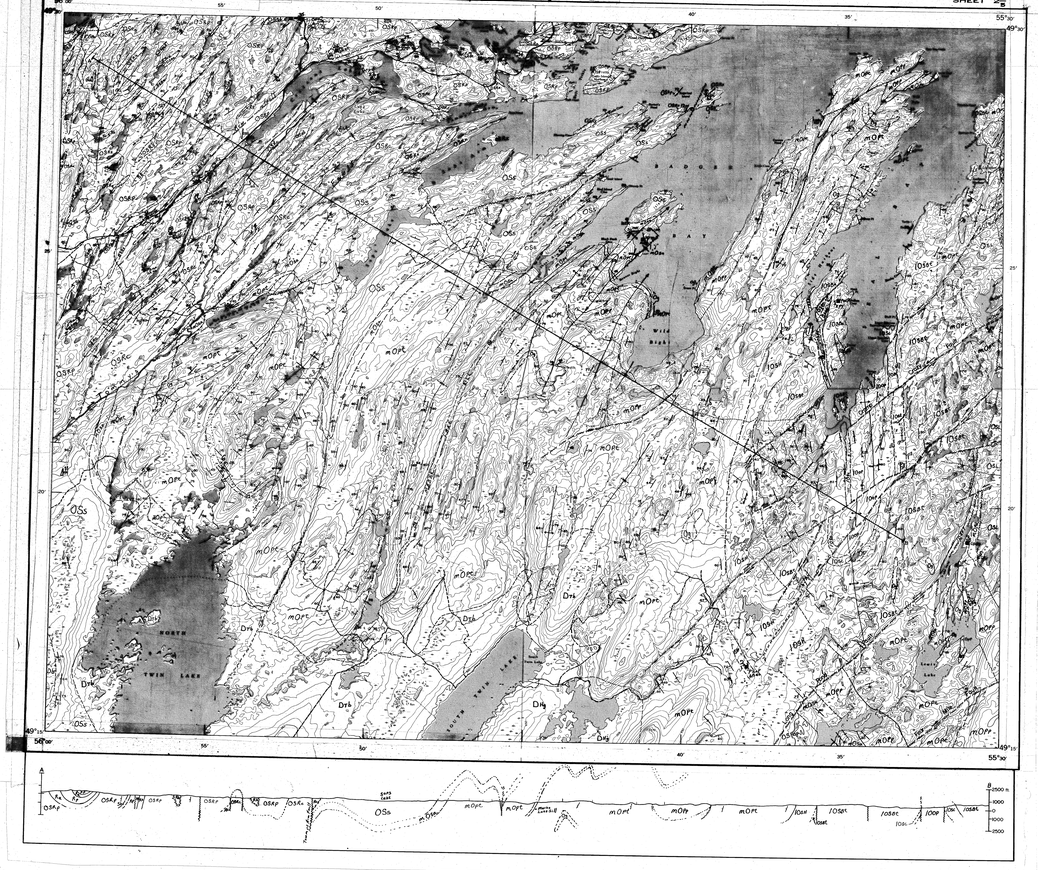
NEWFOUNDLAND

Scale: One Inch to One Mile = 1/63,360

MILES 1 0 1

GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

SHEET 2E/6



Legend - Roberts Arm Map-Area

DEVONIAN

- **Dgh** HALLS BAY PLUTON: Grey-green to greyish-pink, massive and foliated granodiorite, quartz monzonite and granite.
- **Dhg** HODGES HILL GRANITE: Pink to brick-red coarse to medium-grained granite.
- **Db** Light grey to light greenish grey, medium-grained diorite and granodiorite.
- **DTb** TWIN LAKES DIORITE COMPLEX: Cream to dark grey, medium to coarse grained, hornblende diorite, tonalite, granodiorite, gabbro and amphibolite.

SILURIAN

- **Sw** WOODFORDS ARM PLUTON: Pink to brownish-red, medium to fine-grained granite and granodiorite.
- **Sb** Medium to fine-grained gabbro and diabase sills. (Intrude Roberts Arm Group).

ORDOVICIAN AND SILURIAN

ROBERTS ARM GROUP (OSRx, OSRc, OSRp, OSRs, OSRb, OSRa)

- **OSRa** Greyish-green to grey and white rhyolite and dacite flows, agglomerates, tuffs and sills.
- **OSRb** Green to light greenish-grey, intermediate to basic, coarse volcanic breccia and agglomerate (possibly includes some pillow breccia).
- **OSRs** Reddish brown to grey bedded tuff, chert and greywacke.
- **OSRp** Dark greenish-grey to reddish brown and black pillowed basalt, pillow breccia and massive flows; thin lenses and beds of chert, tuff and greywacke.
- **OSRc** CRESCENT LAKE FORMATION: Red and green shale, chert and tuff; grey to black, tuffaceous greywacke, shale; minor conglomerate horizons and basalt flows near the base.
- **OSRx** SOPS HEAD COMPLEX: Chaotically slumped black and grey argillite; - mafic volcanic flows, tuff, greywacke, conglomerate, limestone and chert. V-large volcanic blocks.
- **OSFOp** FROZEN OCEAN GROUP: Dominantly dark green mafic pillow lavas.
- **OSs** SANSOM GREYWACKE: Medium-grey well-bedded graded greywacke; local conglomeratic horizons near top and bottom of the formation.

MIDDLE AND LOWER ORDOVICIAN

- **mOSa** SHOAL ARM FORMATION: Red to green and black chert; black carbonaceous argillite and argillaceous siltstone; minor siliceous tuff.
- **Og** Fine to coarse-grained, porphyritic to non-porphyritic gabbro and diabase sills. (Intrude Wild Bight Group)
- **OSL** SOUTH LAKE IGNEOUS COMPLEX: Coarse to medium-grained hornblende tonalite, hornblende diorite, trondhjemitic granodiorite and gabbro (some phases intrude Wild Bight Group)

WILD BIGHT GROUP (10Op, 10SC, 10SB, 10SH, mOp)

- **mOP** PENNY'S BROOK FORMATION. (mOPt, mOPp, mOPa)
- **mOPt** Red and green thin bedded tuff; green, thick-bedded lapilli tuff; tuffaceous sandstone, greywacke, argillite and chert.
- **mOPp** Pillow lava, pillow breccia, mafic flows and agglomerate.
- **mOPa** Acidic pyroclastic and flow rocks.
- **10SH** SIDE HARBOUR FORMATION: mafic pillow lava, pillow breccia and mafic flows.Str: rhyolite pyroclastics and flows.
- **10SB** SEAL BAY BROOK FORMATION (10SBt, 10SBa, 10SBb, 10SBs)
- **10SBt** Massive and bedded coarse agglomerate and tuff, containing abundant chert fragments; minor fine-grained tuff, greywacke and chert.
- **10SBa** Acidic pyroclastic and flow rocks.
- **10SBb** Mafic volcanic flows and pillow lava.
- **10SBs** Red and green fine grained tuff, chert and greywacke
- **10SC** SPARROW COVE FORMATION: Black to green mafic pillow lava and pillow breccia.
- **10OP** OMEGA POINT FORMATION: Red and green chert, cherty tuff and argillite; grey to green tuff, tuffaceous sandstone and greywacke.

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

Geological Survey of Canada Open File no. 374 was used as the base map.

REF. or DRAWING No. NFLD / 974 DETAILS Roberts Arm Sheet

Mineral Occurrences, Prospects and Mines

1. Indian Cove: Massive to disseminated pyrite and chalcopyrite in acidic pyroclastic rocks.
2. Point Leamington Deposit: Large massive pyritic sulphide body with copper values around 1% and with sphalerite rich lenses near top of the body.
3. Long Pond: Pyrite and chalcopyrite in veinlets and disseminated throughout acidic volcanic rocks and red cherts.
4. Cramp Crazy Lake: Disseminated pyrite in coarse volcanic agglomerate.
5. Rocky Pond: Veinlets and inclusions of chalcopyrite in medium grained quartz-gabbro.
6. Kippens Ridge: Pyrite and chalcopyrite stringers in argillite near contact with gabbro sill.
7. & 8. Gull Island: Manganiferous cherts at the base of the Shoal Arm Formation.
9. Gull Island: 10 ft. bed of grey recrystallized limestone.
10. Kippens Pond: Lenses, stringers and pod-shaped aggregates of pyrite in black shale, chert and thin felsic volcanic units of the Shoal Arm Formation.
11. O'Brien's showing: Pyrite lenses and disseminations in black shale and chert.
12. Duck Island Tickle: Stringers and heavily disseminated pyrite in a large rhyolite block in the Sops Head Complex.
13. Duck Island: 20' lense of white to grey recrystallized limestone in Sops Head Complex.
14. Kippens Pond North: Pyrite in massive and pillowed basalt.
15. Pretty Island: 10' limestone bed in pillowed basalt.
16. Rust Pond: Massive and stringer sulphides in silicified basalt with thin acidic units.
17. Ghost Pond: Chalcocite stringers with malachite staining in basalt.
18. Round Pond: Disseminated and stringer sulphides in pillow basalt, pillow breccia and chloritic tuff.
19. Fourth Pond: Pyrite in basalt.
20. Fourth Pond Trail: Stringers and disseminations at pyrite and chalcopyrite in banded chert and acidic tuff.
21. M.A.T.O. Showing: Pyrite, chalcopyrite, malachhite and azurite in fractures in basalts and in banded cherts.
22. Island Pond: Pyrite veinlets and disseminations in basalt.
23. Crescent Lake Narrows: Heavily disseminated pyrite with minor chalcopyrite in silicified basalt with thin acid volcanic bands.
24. Crescent Lake, Vein C: Pyrite and chalcopyrite blebs and stringers in a quartz vein.
25. Crescent Lake Mine: Massive and stringer sulphides in quartz veins and in chloritized and silicified basalt.
26. Crescent Lake, Vein D: Blebs and stringers of pyrite, chalcopyrite, sphalerite and galena in quartz veins and silicified basalt.
27. Falconbridge Showing: Pyrite, chalcopyrite, sphalerite and galena blebs and crystals in silicified basalt.
28. Roberts Arm Pond: Massive to disseminated pyrite, chalcopyrite, sphalerite and galena in silicified basalt.
29. Dean's Showing: Blebs and stringers of pyrite, chalcopyrite, sphalerite and galena in quartz veins in altered basalt.
30. Hammer Cove: Stringers and dissemination of pyrite, chalcopyrite, sphalerite and galena in quartz stringers and in silicified and chloritized basalt.
31. Measles Cove: Calcite stringers containing chalcopyrite blebs and disseminations with malachite and azurite stainings.
32. Tilley Cove: Blebs and disseminations of pyrite and chalcopyrite in altered pillow basalt.
33. Tilley Cove North: Blebs and disseminations of pyrite, chalcopyrite and galena in acidic volcanics and in quartz stringers cutting the volcanics.
34. Flat Rock Tickle: Heavily disseminated pyrite in acidic volcanics.
35. Rushy Pond: Pyrite and malachite disseminated in acidic volcanics.
36. Mansfield Cove: Disseminated pyrite in acidic volcanics.

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

- 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

Explanatory Notes - Roberts Arm Map-Area

The stratigraphic succession within the map area constitutes the thickest, most continuous and best exposed section of Lower Paleozoic rocks in central Newfoundland. The base of the succession is exposed in the core of the Seal Bay Anticline and the entire coastal section west of that point is dominantly a northwest-facing continuous sequence. The oldest rocks in the area are the Lower to Middle Ordovician volcanic and sedimentary rocks of the Wild Bight Group which probably represent an island arc sequence. These rocks can be correlated lithologically and stratigraphically with the Catwell and Western Arm Groups to the north (2E/12). The lowest unit of the Wild Bight Group, the Omega Point Formation, is correlated with the Skeleton Pond Tuff unit of the Western Arm Group (Marten 1971) which is Lower Ordovician in age and conformably overlies the Cambro-Ordovician oceanic crust of the Lushs Bight Group (Strong, 1973). The uppermost unit of the Wild Bight Group, the Penny's Brook Formation, is correlated with the Long Tickle Formation of the Catwell Group which is Middle Ordovician in age (Kean and Strong, 1975). All other formations of the Wild Bight Group are assigned to the Lower Ordovician.

The Wild Bight Group is intruded by two types of intrusive rocks which do not intrude younger rocks and are believed to be of Ordovician age: (1) the South Lake Igneous Complex, which is in part ophiolitic and (2) large gabbro and diabase sills.

The Wild Bight Group is conformably overlain by cherts and argillaceous sediments of the Shoal Arm Formation. Argillites of this formation have yielded graptolites identified by Dr. John Riva of Universite Laval as belonging to the early Caradocian Nemagraptus gracilis Zone. This unit is identical to other Caradocian argillites in Central Newfoundland which occur at the same stratigraphic horizon immediately above the Lower to Middle Ordovician island arc phase of volcanism and sedimentation.

In the southwest part of the map-area the Shoal Arm Formation is overlain by pillow lavas of the Frozen Ocean Group which was previously mapped as part of the Wild Bight Group (Williams, 1962). In the north, the Shoal Arm Formation is overlain by a thick succesion of greywacke turbidites known as the Sansom Greywacke. This turbidite succession was previously mapped as the Gull Island sandstone and the Julies Harbour and Burtons Head Groups by Espenshade (1937) and as undivided sediments of the Catwell Group by Williams (1963). These are now all included in the Sansom Greywacke Formation because of lithological identity with the Sansom Greywacke in its type area in eastern Notre Dame Bay and its same stratigraphic position above Caradocian argillites.

The Sansom Greywacke is overlain by a complex mélange, the Sops Head Complex, which includes part of Espenshade's Burtons Head Group. The mélange contains abundant lava similar to the overlying Roberts Arm volcanics and is included in the Roberts Arm Group. Polymictic conglomerate lenses within the Sops Head Complex are lithologically and stratigraphically similar to the Lower Silurian Goldson Conglomerates in eastern Notre Dame Bay (2E/6, 2E/10). The Sops Head Complex can also be correlated stratigraphically and lithologically with the Boones Point Complex to the east (2E/6,2E/11).

The Sops Head Complex is apparently overlain by sedimentary rocks of the Crescent Lake Formation which is in turn overlain by volcanic rocks of the Roberts Arm Group. This thick sequence of volcanic rocks consists dominantly of mafic pillow lavas and pillow breccia in the lower parts of the section, with acidic volcanics, bedded tuffs and volcanic sediments being more common in the upper section.

The Roberts Arm Group is intruded by mafic sills which appear to be cogenetic with the mafic volcanics and by the Woodfords Arm Pluton which appears to have been genetically related to more acidic volcanics.

Large Devonian intrusive bodies cut all rock types in the area.

The main structural features in the area are north to northeast trending, steeply plunging fold axis. Fold trends are more north-south in the eastern part of the area and trend progressively more eastward to the northeast. There is a suggestion of dome like structures in the area of the Seal Bay Anticline and north of North Twin Lake. Large northeast-trending faults are generally post folding and post-Devonian intrusion.

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