GEOLOGICAL SURVEY OF CANADA COMMISSION GÉOLOGIQUE DU CANADA

DEPARTMENT OF ENERGY, MINES AND RESOURCES
MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES

LEGEND

CENOZOIC

QUATERNARY
- Q — *Stream, deltaic, glacial and marine beach sediments (mapped only where underlying bedrock geology could not be inferred with reasonable certainty)*

TERTIARY
LOWER TERTIARY
- Te — *EUREKA SOUND FORMATION: sandstone; siltstone; shale; minor conglomerate; dominantly continental*

PALEOZOIC

SILURIAN AND (?)DEVONIAN
UPPER SILURIAN TO (?)LOWER DEVONIAN

SDP — *PEEL SOUND FORMATION: undivided*
- SDP-4 — *PEEL SOUND FORMATION (SDP1 – SDP4)*
  Member 4: conglomerate, polymictic, red; minor sandstone, red
- SDP-3 — *Member 3: sandstone and pebbly sandstone, red; minor conglomerate, polymictic*
- SDP-2 — *Member 2: conglomerate, oligomictic; minor sandstone*
- SDP-1 — *Member 1: sandstone, red, grey or green; interbedded siltstone and mudstone, red, green or variegated*

uPMi — *Igneous rocks: kimberlite diatremes*

SILURIAN
UPPER SILURIAN
- Ss — *SOMERSET ISLAND FORMATION: undivided*
- Ss2 — *SOMERSET ISLAND FORMATION (Ss1 – Ss2)*
  Upper member: dolostone and limestone, grey, greenish or buff, laminated; siltstone, red, green or variegated; rare limestone, bioclastic
- Ss1 — *Lower member: dolostone and limestone, grey, greenish or buff, laminated; limestone, argillaceous or bioclastic, rubby weathering (minor in west, becoming more common eastward)*
- SDo — *DOURO FORMATION: limestone, argillaceous; limestone, dolomitic, mottled, grey to greenish grey; rubbly weathering; minor limestone, bioclastic or intraclastic; distinctive reefoid mounds*
- Scs — *CAPE STORM FORMATION*
  Western areas: dolostone, grey, buff or brown; lesser limestone and sandstone; minor siltstone and shale
  East coast: dolostone, buff brown, parts sandy; limestone, dolomitic, grey, parts sandy; sandstone; rare evaporites
  All lithologies thin to medium bedded, recessive

ORDOVICIAN AND SILURIAN
UPPER ORDOVICIAN TO UPPER SILURIAN
- OSa — *ALLEN BAY FORMATION: dolostone, buff to pale grey, finely crystalline, medium to massive bedded, parts stromatolitic or bioclastic; resistant. Basal part probably includes dolomitized lateral equivalents of the Thumb Mountain Formation in areas where that formation was not recognized*

EAST COAST SILURIAN
LOWER TO UPPER SILURIAN
- Scc — *CAPE CRAUFORD FORMATION: dolostone and limestone, dolomitic; grey, thin bedded; gypsum or anhydrite, white*

Note: the Cape Crauford Formation is an eastward facies equivalent of the upper Allen Bay Formation, as developed in Western Somerset Island

ORDOVICIAN
MIDDLE AND UPPER ORDOVICIAN
CORNWALLIS GROUP (Oca – Oct1)
- Oct1 — *IRENE BAY FORMATION: limestone, argillaceous or dolomitic; shale; greenish grey; recessive*
  THUMB MOUNTAIN FORMATION: limestone, dolomitic; dolostone, calcareous; pale grey, cream or greenish grey; fossiliferous; resistant
- Oca — *BAY FIORD FORMATION: dolostone, dark grey or greenish grey, fissile, very fine grained; recessive*

LOWER TO MIDDLE ORDOVICIAN
- Os — *SHIP POINT FORMATION: dolostone, pale grey or buff, thin- to medium-bedded, parts stromatolitic or bioclastic, rare chert nodules; sandstone common locally*

CAMBRIAN AND ORDOVICIAN
UPPER CAMBRIAN TO LOWER ORDOVICIAN

COu — *CAMBRO-ORDOVICIAN formations: undivided*
- COct2 — *TURNER CLIFFS FORMATION (COct1 – COct2)*
  Upper member: dolostone, pale grey or buff, fine grained, cherty, dominantly thick- to massive-bedded; resistant
- COct1 — *Lower member: dolostone, grey to buff, commonly laminated, thin- to medium-bedded; dolostone, greenish, fissile to thin bedded; sandstone, grey to white, locally red brown; common intraformational breccia and conglomerate; local stromatolitic units. Lithology highly variable laterally*

PROTEROZOIC

HELIKIAN
NEOHELIKIAN
- PH — *HUNTING FORMATION: dolostone, grey, bluish grey, buff or red, thin- to thick-bedded, commonly stromatolitic, parts cherty or interbedded with chert; minor interbedded shale, red to buff; siltstone, purple; and sandstone*
- PA — *ASTON FORMATION: sandstone, red, fine- to medium-grained mature; minor siltstone and shale, red to purple; and conglomerate; distinctive red, stromatolitic dolosiltite marker unit near base*

HELIKIAN AND HADRYNIAN
- Pi — *Igneous rocks: diabase and gabbro dykes, sills and plugs. At least two periods of intrusion: Mackenzie (ca. 1240 Ma) and Franklin (ca. 750 Ma)*

ARCHEAN-APHEBIAN
- A — *Crystalline rocks: predominantly gneiss; minor metapegmatite, metabasite, granite and diabase; distinctive calc-silicate and marble bands*

Geological boundary (defined, approximate, assumed)
Geological boundary, fold axis, fault or flexure (inferred under water or Quaternary sediment cover)
Boundary of Quaternary sediments
Trace of distinctive marker bed (approximate, assumed)
Lines of facies change (approximate, assumed)
Bedding, tops known (horizontal; inclined, showing measured dip; vertical; overturned, showing measured dip)
Bedding, observed from aircraft (gentle, 0–10°; moderate, 10–30°; steep, 30–60°; very steep, 60–90°)
Foliation (inclined, showing measured dip; vertical; dip estimated from aircraft)
Fault, extension (solid circle indicates apparent downthrow side; defined, approximate, assumed)
Fault, sense of displacement unknown (defined, approximate, assumed)
Fault line scarp (defined)
Monoclinal flexure (arrow indicates downflexed side; defined, approximate, assumed)
Dyke with fault displacement (solid circle indicates downthrow side)
Joint (vertical)
Anticline (trace of axial surface; defined, approximate; assumed; arrow indicates plunge)
Syncline (trace of axial surface; defined, approximate; assumed; arrow indicates plunge)
Antiform (in crystalline Precambrian Shield rocks; trace of axial surface defined; arrow indicates plunge)
Synform (in crystalline Precambrian Shield rocks; trace of axial surface, defined)
Radiometric age in millions of years — 670 ± 15
Fossil locality, showing GSC locality number — C-41702
Dry and abandoned exploratory well
Location of measured section (showing section number and location or line of traverse; index to sections given in accompanying G.S.C. Paper 83-26) — 35

Geological map compilation by W.D. Stewart and J.Wm. Kerr, 1981-1982, based on geological mapping by J.Wm. Kerr, 1975-1976, and on published and unpublished sources

To accompany GSC Paper 83-26 by W.D. Stewart and J.Wm. Kerr

ACKNOWLEDGMENTS

Operation Boothia sections measured by G.E. Reinson, 1975; and A.D. Miall, 1976. Additional G.S.C sections measured by R. Thorsteinsson, 1972, 1973. University of Ottawa sections measured by J. Dixon, 1970; B. Jones, 1971-1973, 1975, 1976; M.R. Gibling, 1973-1974, 1976; J.M. Savelle, 1973; and G.M. Narbonne, 1975, 1976. Kimberlite diatremes studied by R.H. Mitchell.

NOTES

1. The Turner Cliffs, Ship Point and Bay Fiord formations were not differentiated for mapping purposes south of this arbitrary boundary.
2. The two members of the Somerset Island Formation were not differentiated for mapping purposes beyond this arbitrary boundary.
3. Measured sections 3, 4, 7, 11, 12, 21, 25, 29, 31, 36, 41 and 46 are composite sections, components of which were measured at more than one locality.
4. Schematic facies change indicating area in which contact between formations changes from one stratigraphic level to another.

Geological cartography by B.H. Ortman, Institute of Sedimentary and Petroleum Geology, Geological Survey of Canada

Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada

Base map from 1:250 000 scale maps "Somerset Island" 58C and parts of "Cape Clarence" 58D, "Maxwell Bay" 58E and "Resolute" 58F, published by the Army Survey Establishment, R.C.E. in 1966

Copies of the topographical edition of these maps may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa

Magnetic declination 1983 varies from 30°52.8' westerly at the centre of the west edge to 65°40.7' westerly at the centre of the east edge. Mean annual change 35.8' westerly.

Elevation in feet above mean sea level

Recommended citation:
Stewart, W.D. and Kerr, J.Wm.
1984: Geology of Somerset Island North, District of Franklin; Geological Survey of Canada, Map 1595A, scale 1:250,000.

SCHEMATIC REGIONAL STRATIGRAPHIC RELATIONSHIPS ALONG EASTERN FLANK OF BOOTHIA UPLIFT BETWEEN 73°35' AND 70°45'N LATITUDE

SCHEMATIC STRATIGRAPHIC RELATIONSHIPS NORTH OF 73°30'N LATITUDE

Unconformity (defined, projected, possible)

SCHEMATIC STRATIGRAPHIC RELATIONSHIPS SOUTH OF 73°30'N LATITUDE

Canada

MAP 1595A
GEOLOGY

SOMERSET ISLAND NORTH

DISTRICT OF FRANKLIN

Scale 1:250 000

Kilometres 6 0 6 12 18 Kilometres

Universal Transverse Mercator Projection

INDEX MAP

MAP 1595A
SOMERSET ISLAND NORTH
DISTRICT OF FRANKLIN