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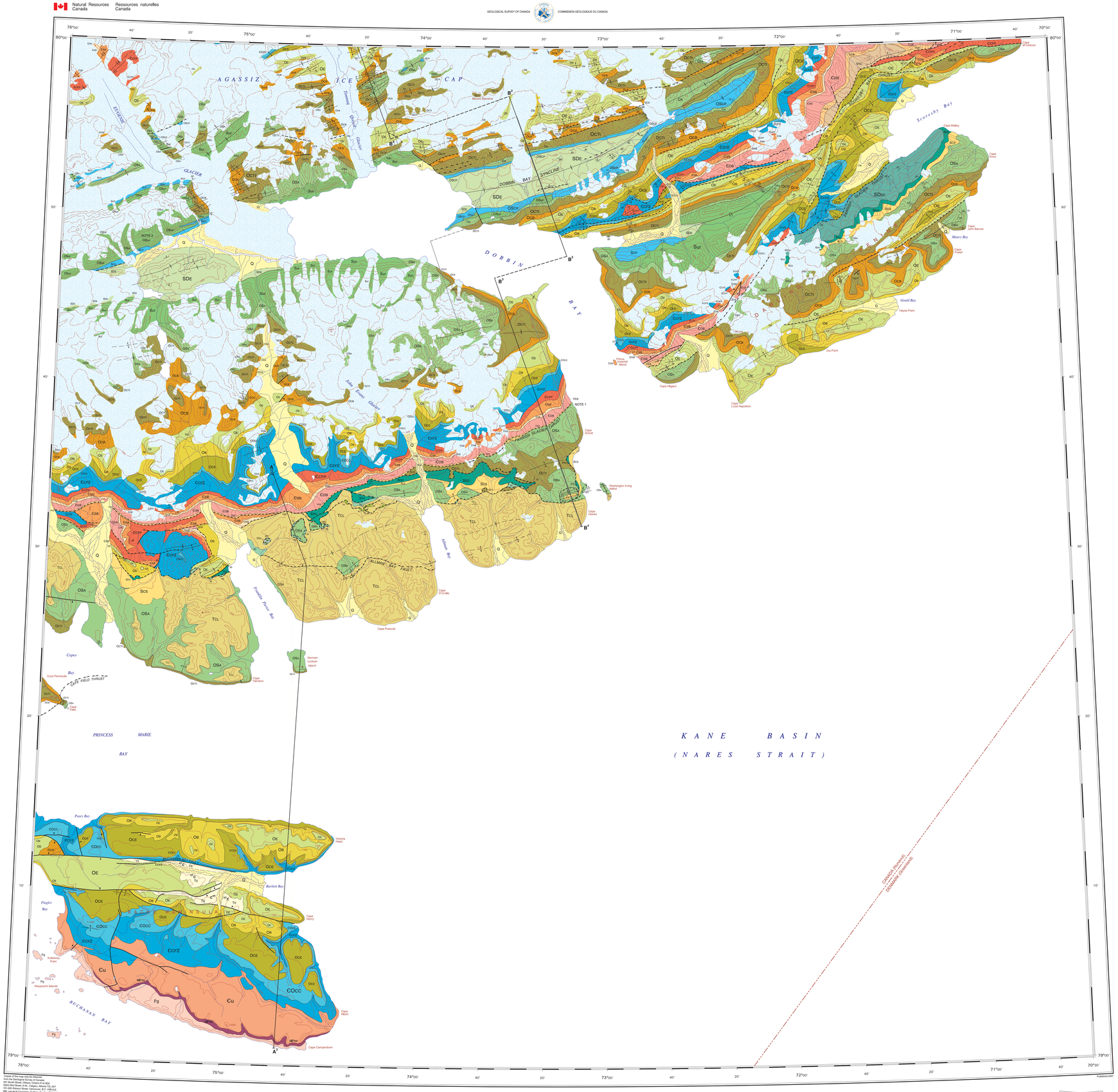


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*Geology based on fieldwork by T.A. de Freitas, 1992, 1996–1997; U. Mayr and J.C. Harrison, 1998–1999; K. Piepjohn and F. Tessensohn (Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover, Germany), 1998*

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MAP 2101A

GEOLOGY

# DOBBIN BAY

ELLESMERE ISLAND

NUNAVUT

Scale 1:125 000/Échelle 1/125 000

kilometres 0 1 2 3 4 5 6 7 8 9 10 kilomètres

Universal Transverse Mercator Projection
North American Datum 1983

Projection transverse universelle de Mercator
Système de référence géodésique nord-américain, 1983

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

*Digital base map from data compiled by Geomatics Canada, modified by DDD*

*Some geographical names subject to revision*

*Proximity to the North Magnetic Pole causes the magnetic compass to be erratic in this area*
*Mean magnetic declination 2007, 63°16'W, decreasing 74.5' annually.*
*Readings vary from 60°28'W in the SE corner to 65°50'W in the NW corner of the map*

*Elevations in feet above mean sea level*

NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND INDEX TO ADJOINING GEOLOGICAL SURVEY OF CANADA MAPS

Canada

## LEGEND

### MAIN PART OF MAP

CENOZOIC

QUATERNARY

**Q** — *Gravel, sand, silt and mud.*

PALEOZOIC

TERTIARY (PALEOCENE)

**TCL** — *CAPE LAWRENCE FORMATION: interbedded conglomerate, sedimentary breccia and sandstone; conglomerate, thick-bedded to massive, boulder to granule grade, clasts of limestone, dolostone, and minor sandstone; weathers reddish brown.*

UPPER CRETACEOUS (TURONIAN TO CAMPANIAN)

**Kk** — *KANGUK FORMATION: grey-weathering, poorly consolidated mudrock.*

LOWER CRETACEOUS (ALBIAN)

**Kc** — *CHRISTOPHER FORMATION: black, poorly consolidated mudrock.*

LOWER CRETACEOUS (BARREMIAN AND APTIAN)

**Ki** — *ISACHSEN FORMATION: white-weathering, cross-stratified, poorly consolidated sandstone.*

UPPER SILURIAN AND LOWER DEVONIAN

**SDe** — *EIDS FORMATION: mudrock interbedded with minor sandstone and limestone; mudrock, calcareous, silty and sandy; thin-bedded, weathers light grey; sandstone, fine-grained, thin-bedded, weathers dusky yellow-grey; limestone silty, fossiliferous and bioturbated; weathers yellow-grey.*

**SDGF** — *GOOSE FIORD FORMATION, upper member: limestone, dark grey, silty or sandy, fossiliferous lime mudstone and wackestone, minor sandstone in upper part; member weathers resistant; lower member: grey-green, calcareous shale and/or silty limestone; member weathers recessive.*

UPPER SILURIAN (LUDLOW)

**SGo** — *OQUIRO FORMATION: grey argillaceous limestone; lime mudstone and fossiliferous wackestone; weathers rubbly; minor sandstone interbeds.*

**Scs** — *CAPE STORM FORMATION: medium-bedded dolostone and minor interbedded sandstone; dolostone fine-crystalline, silty and sandy; calcareous; sandstone silty, calcareous, thin-bedded; formation weathers yellow and recessive.*

UPPER ORDOVICIAN TO UPPER SILURIAN (ASHGILL TO LUDLOW)

**OSA** — *ALLEN BAY FORMATION, upper member: thick-bedded limestone, lime mudstone and minor wackestone; member weathers very resistant; middle member: variable dolostone; dolomudstone, wackestone, lesser coralmicrobial boundstone and intraclast conglomerate; lower member: thick-bedded limestone; wackestone and packstone with burrow mottles.*

MIDDLE AND UPPER ORDOVICIAN (CARADOC AND ASHGILL)

**OCtI** — *IRENE BAY AND THUMB MOUNTAIN FORMATIONS (part of Cornwallis Group), IRENE BAY FORMATION: argillaceous, nodular limestone; lime mudstone and wackestone, medium-bedded, fossiliferous, nodular; weathers recessive, grey-green; THUMB MOUNTAIN FORMATION: thick-bedded to massive limestone; wacke and packstone, with burrow mottles, fossiliferous in upper part; weathers resistant, dark grey.*

MIDDLE ORDOVICIAN (ARENIG AND DARRIWILIAN)

**OCB** — *BAY FIORD FORMATION (part of Cornwallis Group), upper part: medium-bedded dolostone; dolomudstone and dolosiltstone, laminae, mudcracks, weathers grey-green, resistant limestone unit at base of upper part; lower part: gypsum and anhydrite, interbedded with dolomudstone; formation weathers recessive.*

LOWER ORDOVICIAN (ARENIG)

**OE** — *ELEANOR RIVER FORMATION: thick-bedded limestone; lime mudstone and wackestone with burrow mottles; formation weathers resistant with moderately recessive middle part.*

LOWER ORDOVICIAN (TREMADOC)

**OB** — *BALMANN FIORD FORMATION: upper member: interbedded dolostone and gypsum; laminated dolomudstone; middle member: limestone; skeletal grainstone and rudstone; lower member: interbedded gypsum and dolostone.*

**OCE** — *CHRISTIAN ELY FORMATION: interbedded limestone and dolostone; sandstone in upper part: limestone dolomitic, lime mudstone with burrow mottles, calcisiltite with laminae and minor flat-pebble conglomerate; locally abundant thrombolites; dolostone fine-crystalline; quartz sandstone white, fine-grained, thin-bedded.*

UPPER CAMBRIAN AND LOWER ORDOVICIAN

**CDCC** — *CAPE CLAY FORMATION: medium- to thick-bedded limestone; lime mudstone and skeletal wackestone with burrow mottles; dolomitic calcisiltite and minor flat-pebble conglomerate; thick-bedded stromatolitic boundstone; formation weathers very resistant.*

UPPER CAMBRIAN

**CCF2** — *CASS FJORD FORMATION, middle and upper members: interbedded limestone and dolostone; thin-bedded thrombolitic and stromatolitic boundstone and abundant intraformational conglomerate; yellow, crossbedded sandstone in uppermost part; purple intervals in lower part; map unit weathers recessive.*

MIDDLE CAMBRIAN

**CCFP** — *CASS FJORD FORMATION, lower member (Parrish Glacier beds): interbedded limestone and dolostone; medium- and thick-bedded, burrow mottles, laminae, flat-pebble conglomerate; purple intervals; unit weathers moderately resistant.*

LOWER CAMBRIAN

**CSB** — *SCORESBY BAY FORMATION: thick-bedded dolostone; calcareous, medium-crystalline; some limestone in lower part; formation weathers yellow-orange and resistant.*

**CKB** — *KANE BASIN FORMATION: interbedded sandstone and siltstone; sandstone fine- to medium-grained, thin-bedded, laminated; minor mudstone in lower part; formation weathers distinctly dark and recessive.*

**CDB** — *DALLAS BUGT FORMATION: thick-bedded sandstone; fine- to medium-grained; minor conglomerate; formation weathers white-rusty, hematitic red and resistant.*

PROTEROZOIC

NEOPROTEROZOIC (VENDIAN)

**VEB** — *ELLA BAY FORMATION: dolostone and limestone; in upper part dolostone, coarse-crystalline, thick-bedded; weathers resistant; in lower part interbedded dolostone, laminated lime mudstone and sandy calcisiltite; some flat-pebble conglomerate and oncolites; locally red weathering.*

**VKC** — *KENNEDY CHANNEL FORMATION: interbedded siltstone and shale; laminated, black, white sheen on weathered surfaces, minor interbedded sandstone; formation weathers recessive.*

### BACHE PENINSULA AREA

PALEOCENE

**Te** — *EUREKA SOUND FORMATION: poorly consolidated sandstone; medium-grained, cross-stratified; interbedded with coal.*

### DOBBIN BAY SYNCLINE AND AREA NORTH

UPPER ORDOVICIAN AND SILURIAN, OR SILURIAN

**OSur/Sur** — *ALLEN BAY, CAPE STORM, OQUIRO AND GOOSE FIORD FORMATIONS undivided, reefal facies: limestone and dolostone interbedded; coralmicrobial boundstone, stromatoporoid boundstone, megalodont rudstone, skeletal grainstone; includes reef-slope debris, allochthonous blocks and beds of finer material of coralmicrobial boundstone interbedded with dark gray shale; reef-slope debris facies gradational to Cape Phillips Formation.*

UPPER ORDOVICIAN TO LOWER SILURIAN, OR SILURIAN

**OSc/rf/Scf** — *CAPE PHILLIPS FORMATION: limestone and shale interbedded; limestone argillaceous, thick- to thin-bedded, dark grey; weathers light grey, platy.*

UPPER ORDOVICIAN (ASHGILL)

**OA** — *ALLEN BAY FORMATION: thick-bedded limestone; grey, skeletal wackestone and packstone, oncolitic, intervals of nodular limestone in lower part.*

LOWER AND MIDDLE CAMBRIAN

**Cu** — *Undivided Cambrian formations*
*CAPE WOOD FORMATION: interbedded limestone and dolostone; limestone dolomitic, thick-bedded dolostone medium-crystalline, medium-bedded; minor flatpebble conglomerate and sandstone; formation weathers light grey-yellow and accounts for about half of the thickness of the undivided Cambrian unit.*
*CAPE KENT FORMATION: thick-bedded dolostone; variably crystalline, weathers orange to brown.*
*POLICE POST FORMATION: medium-bedded dolostone; variably argillaceous and arenaceous, formation weathers recessive, dark and forms thin stratigraphic marker in the coastal cliffs.*
*CAPE CLEVELAND FORMATION: thick-bedded dolostone; medium- and coarse-crystalline; lower part of formation forms distinct ledge.*
*CAPE LEIPER FORMATION: medium- to thick-bedded dolostone, medium-crystalline; burrow mottles; rare flatpebble conglomerate; formation weathers yellow-orange and resistant.*
*DALLAS BUGT FORMATION: medium- to thick-bedded sandstone, coarse-grained, conglomeratic, crossbedded; formation weathers pale yellow-orange.*

LOWER CAMBRIAN

**CRa** — *RAWLINGS BAY FORMATION: thick-bedded sandstone; medium-grained; minor conglomerate; formation weathers white-rusty, hematitic red and resistant.*

MESOPROTEROZOIC

SMITH SOUND GROUP

**MPSS** — *Thick-bedded quartz sandstone, medium-grained, pebbly, crossbedded; minor shale, algal and stromatolitic dolostone and quartz-pebble conglomerate; formation weathers redbrown; intruded by Neoproterozoic gabbro sills.*

PALEOPROTEROZOIC

**Pg** — *Undifferentiated granulite facies, plutonic and sedimentary gneisses, marble and granite.*

*Some features on this map have been projected to surface through younger cover of Quaternary sediments, glacier ice, and bodies of water.*

*Geological boundary (defined, approximate, assumed)*

*Bedding, top known (overturned, inclined, vertical, horizontal)* — 10° 10° 10° 10°

*Bedding, estimated from distance (overturned, inclined)* — 10° 10°

*Thrust fault (defined, approximate, assumed; teeth indicate upthrust side)*

*Fault, undetermined (defined, approximate; solid circle indicates downthrown side)*

*Anticline and syncline (defined, approximate; arrow indicates plunge)*

*Anticline and syncline overturned (defined, approximate)*

*Structure cross-section* — A A²

*Structure cross-section (Piepjohn et al., in press)* — C-A

*Occurrence of coal*

## NOTES

1. Ella Bay Formation is believed to be present intermittently at the base of the Parrish Glacier Thrust sheet, it is very thin and poorly exposed.
2. Immediately north of Dobbin Bay and of the big valley west of the head of Dobbin Bay is a large area where the shale of the Cape Phillips Formation and the reefal debris of unit OSur interfinger. This area has been mapped as OSur.

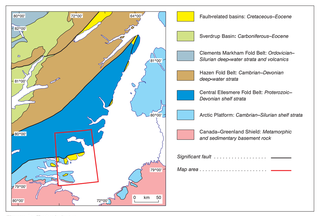


**Figure 1:** Tectonic index

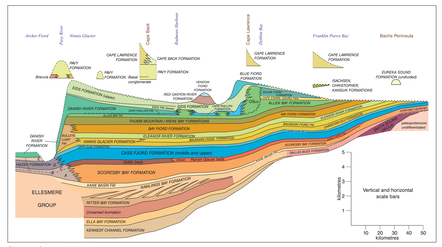


**Figure 2:** Stratigraphic index

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Cross-sections accompany this map

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