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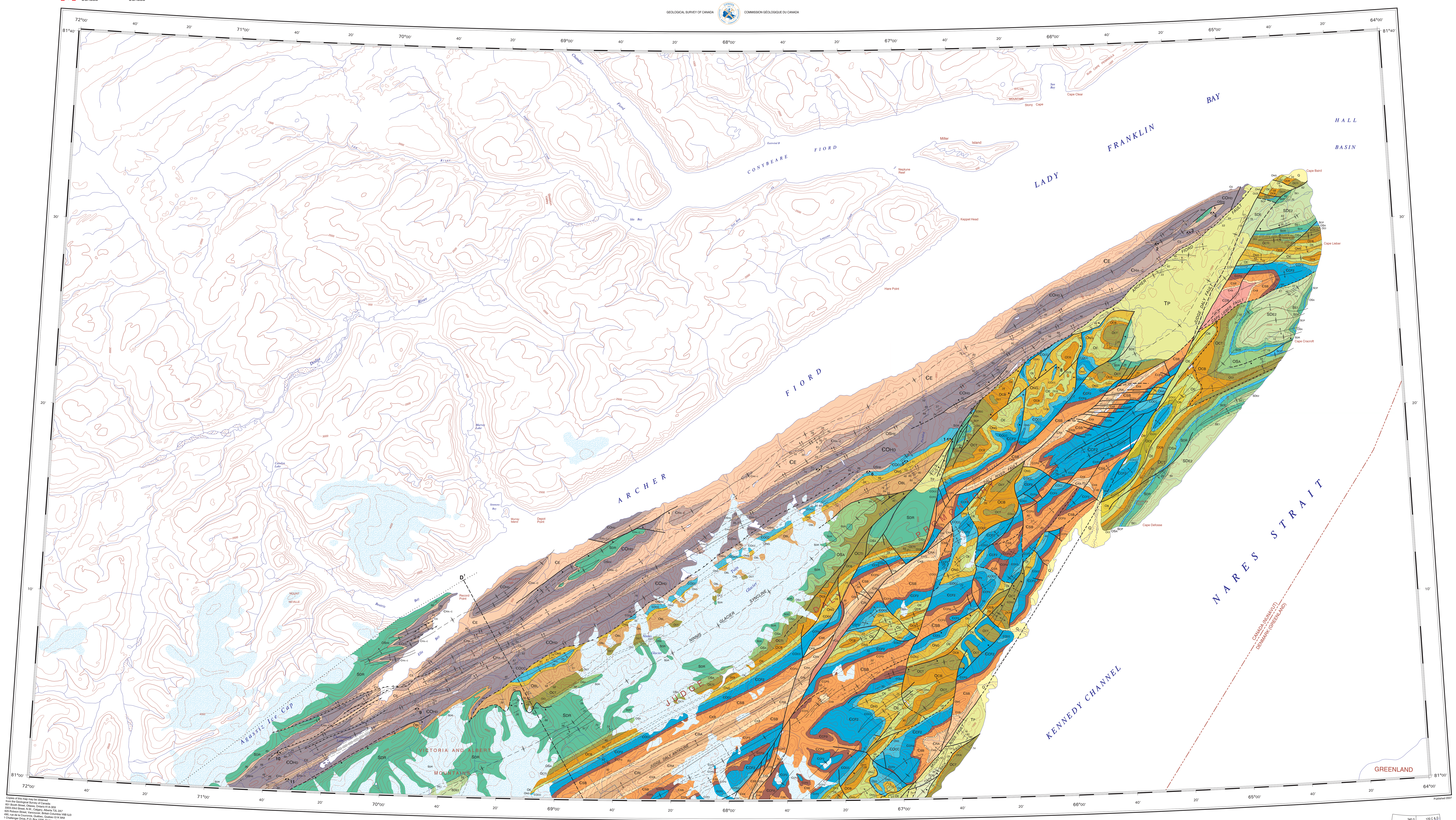
GEOLOGICAL SURVEY OF CANADA / COMMISSION GÉOLOGIQUE DU CANADA



LEGEND

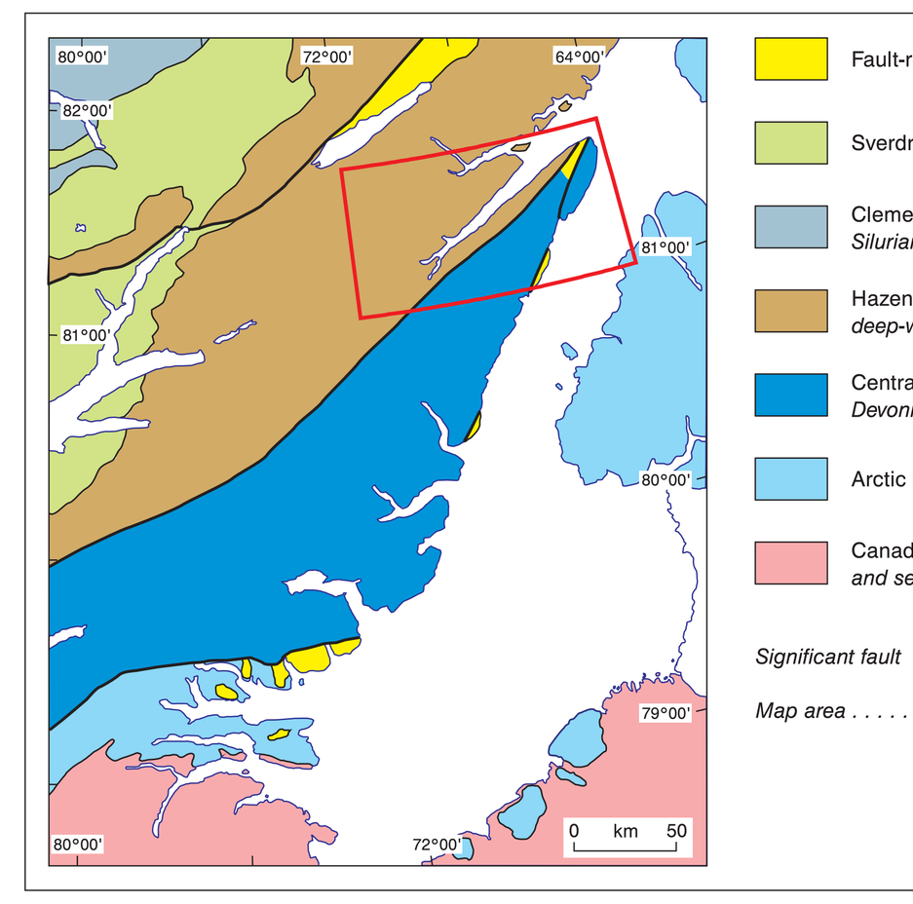


Figure 1: Tectonic index

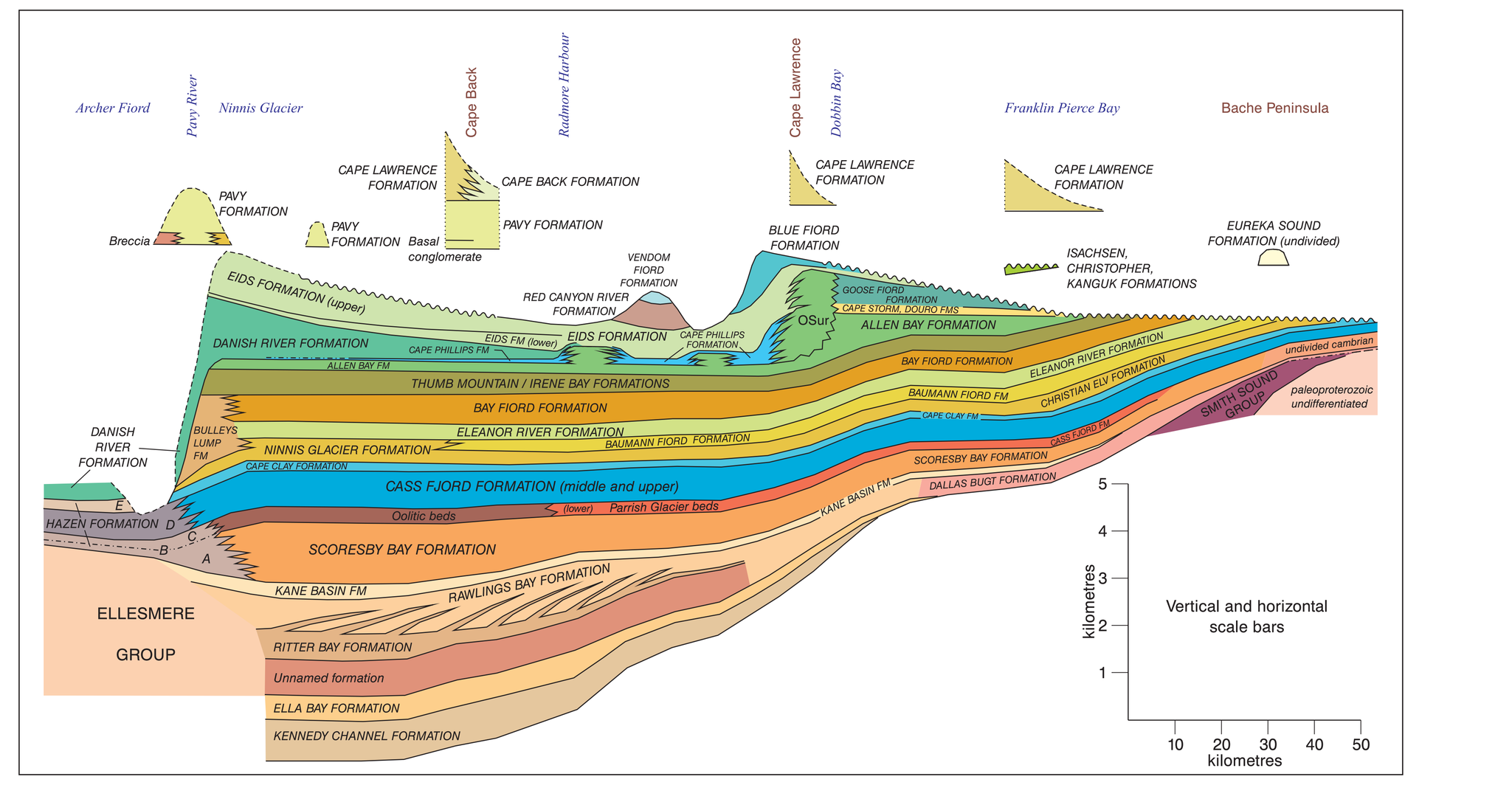


Figure 2: Stratigraphic index

MAIN PART OF MAP

CENOZOIC

QUATERNARY

Q — *Gravel, sand, silt and mud.*

PALEOZOIC

TERTIARY (PALEOCENE)

TCB — *CAPE BACK FORMATION, upper member: interbedded siltstone, mudrock and sandstone, weathers yellow; pebble conglomerate with carbonate clasts in upper part; lower member: fine- to medium-grained sandstone, weathers buff to brown; interbeds of yellow-weathering siltstone and dark-grey-weathering mudrock with abundant plant fossils.*

TP — *PAVY FORMATION: coarse-grained, volcanic sandstone, trough crossbeds, weathers brownish green; interbedded with mudrock, siltstone and pebble conglomerate; well-rounded clasts of alkali basalt, trachyte, rhyolite and granitic gneiss; abundant plant fossils and petrified logs, rare freshwater bivalves and gastropods; rare coal seams, coalified and silicified wood, minor quartz sandstone interbeds and magnetite paleoplacers; local sedimentary breccia in the lower part of the formation.*

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

SDE2 — *EIDS FORMATION, upper member: fine-grained lithic quartz arenite, greywacke and shale, weathers greenish brown and more resistant than the lower member; common crinoidal grainstone and wackestone, sedimentary breccia, and limestone boulder conglomerate in some sections north of Cape de Fosse.*

SDE — *EIDS FORMATION, undivided.*

UPPER SILURIAN (LUDLOW)

SE1 — *EIDS FORMATION, lower member: black shale; minor fine-grained sandstone; member weathers very recessive. (The top of this unit as indicated on the map is slightly higher than the actual top. It was mapped at a change from siltstone to sandstone.)*

UPPER SILURIAN (WENLOCK)

SDR — *DANISH RIVER FORMATION: very thick-bedded greywacke, calcareous, impure, fine-grained, climbing ripples, flute casts and related sole markings; slaty mudrock; 15 per cent crinoidal grainstone and wackestone in some sections north of Cape de Fosse; weathers brown.*

LOWER SILURIAN (LLANDOVERY AND WENLOCK?)

SCP — *CAPE PHILLIPS FORMATION: thin- to very thin-bedded black mudstone, graptolitic; interbeds of argillaceous dolostone and black chert in lower part of formation; interbeds of brown siltstone in upper part of formation. In some sections this formation contains Upper Ordovician strata at the base.*

UPPER ORDOVICIAN AND LOWER SILURIAN (ASHGILL TO LLANDOVERY)

OSA — *ALLEN BAY FORMATION: thick-bedded limestone; skeletal wackestone and packstone with burrow mottles.*

UPPER ORDOVICIAN (CARADOC; MAYSVILLIAN)

OCI — *IRENE BAY FORMATION: thin- to medium-bedded, argillaceous and nodular limestone; lime mudstone and wackestone, burrow mottles; fossiliferous; weathers recessive, grey-green.*

MIDDLE AND UPPER ORDOVICIAN (CARADOC; BLACKRIVERIAN TO EDENIAN)

OCT — *THUMB MOUNTAIN FORMATION (middle part of Cornwallis Group): thick-bedded to massive limestone; wackestone and packstone, burrow-mottled, fossiliferous in upper part; weathers resistant, dark grey.*

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 (DARRIWILLIAN)

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

LOWER ORDOVICIAN (TREMADOC)

OB — *BAUMANN 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 ELV 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 TO LOWER ORDOVICIAN

ЄOCC — *CAPE CLAY FORMATION: medium- to thick-bedded limestone; lime mudstone and skeletal wackestone with burrow mottles; dolomitic calcisiltite and minor flat-pebble conglomerate; intervals of thick-bedded stromatolitic boundstone, and quartz arenite at the base; formation weathers very resistant.*

UPPER CAMBRIAN

ЄCF2 — *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 upper part; purple intervals in lower part; map unit weathers recessive.*

MIDDLE CAMBRIAN

ЄCFo — *CASS FJORD FORMATION, lower member (oolitic beds): thick-bedded limestone; interbedded oolitic and oncolitic grainstone, burrow-mottled lime mudstone, and shale; map unit weathers dark grey and resistant.*

LOWER CAMBRIAN

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

ЄKB — *KANE BASIN FORMATION: interbedded slaty mudstone, sandstone, and siltstone; sandstone fine- to medium-grained, thin-bedded, laminated; formation weathers distinctly dark and recessive.*

ЄRA — *RAWLINGS BAY FORMATION: thin- to thick-bedded sandstone: quartz arenite, fine- to coarse-grained, crossbedding,* ***Skolithos*** *burrows, weathers light grey to pink; interbeds of siltstone, thin-bedded, yellow to rusty weathering; interbeds of dark grey slaty mudstone.*

ЄRI — *RITTER BAY FORMATION: dark grey shale and slate, locally silty, laminated; formation weathers dark and recessive.*

PROTEROZOIC

NEOPROTEROZOIC (VENDIAN)? AND LOWER CAMBRIAN

VЄu — *Undifferentiated unnamed formation; facies not known.*

NORTHWEST PART OF MAP

LOWER AND MIDDLE ORDOVICIAN (ARENIG TO CARADOC)

OBL — *BULLEYS LUMP FORMATION: limestone and dolostone; fenestral mudstone, medium- to thick-bedded, weathers pale grey and relatively recessive; intraclast grainstone and packstone, thick-bedded to massive, weathers pale grey, pale yellowish brown and resistant, dominant in upper part of formation.*

LOWER ORDOVICIAN TO LOWER SILURIAN (TREMADOC TO LLANDOVERY)

OSHE — *HAZEN FORMATION, Division E: interbedded limestone, shale and chert; lime mudstone, medium- to thick-bedded, weathers brown; shale variable, mostly black, laminated; chert black, thin-bedded; minor crinoidal wackestone and sedimentary breccia; intense penetrative slaty cleavage.*

LOWER ORDOVICIAN (TREMADOC)

ONG — *NINNIS GLACIER FORMATION: interbedded lime mudstone and dolosiltite, laminated to thin-bedded, abundant shallow-water sedimentary structures; interbeds of calcarenite and flat-pebble conglomerate.*

UPPER CAMBRIAN TO LOWER ORDOVICIAN

ЄOHD — *HAZEN FORMATION, Division D: thinly interbedded lime mudstone, dolomudstone, grey and yellowish brown weathering; common thin to thick interbeds of lime-mudstone-clast conglomerate and sedimentary breccia, in part arenaceous; intense penetrative slaty cleavage.*

LOWER AND MIDDLE CAMBRIAN

ЄHA–C — *HAZEN FORMATION, Divisions A to C: Division C (Middle Cambrian), thinly interbedded, black, pyritic, slaty shale and dark grey lime mudstone; minor interbeds of fine-grained quartz arenite and black chert; Division B (Middle? Cambrian), dolostone breccia, weathers yellowish grey and forms a distinct resistant marker unit; Division A (Early Cambrian), thinly interbedded slaty calcareous shale and lime mudstone; rare* ***olenellid*** *trilobites; weathers dark grey and recessive; intense penetrative slaty cleavage.*

ELLESMERE GROUP

ЄE — *(RAWLINGS BAY AND KANE BASIN FORMATIONS) undivided; sandstone and slate with intense penetrative slaty cleavage.*

NORTHEAST PART OF MAP

LOWER CAMBRIAN

ЄDB — *DALLAS BUGT FORMATION: thick-bedded sandstone, medium-grained; minor interbedded chert and quartz granulate and pebble conglomerate; formation weathers white-rusty and resistant.*

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)

Limit of field work

Marker bed (thin formation)

Bedding, top known (overturned, inclined, vertical)

Bedding, estimated from distance (inclined)

Fault, strike-slip, arrows indicate relative movement (defined, approximate)

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

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

Anticline and syncline (defined, approximate, assumed)

Anticline and syncline, overturned (defined, approximate)

Structure cross-section — D[1] D[2]

Structure cross-section (Piepjohn et al., in press)

Mineral showings

1. *GSC loc. C-322739: Gossan with up to 0.57% zinc.*
2. *GSC loc. C-322757: Dolomitic mudrock with 1% zinc, 18 ppm cadmium.*
3. *GSC loc. C-322766: Podiform massive sulfide breccia containing sphalerite, galena and a cadmium phase.*
4. *GSC loc. C-322771: Gossan and podiform massive sulfide with 0.9% lead.*
5. *GSC loc. C-322748: Disseminated sphalerite in sandstone; high cadmium.*
6. *GSC loc. C-322779: Disseminated galena and sphalerite in dolostone breccia.*
7. *GSC loc. C-322775: Talus containing quartz-calcispar and tetrahedrite(?).*
8. *GSC loc. C-415160 and C-412161: Great Plains Ltd., zinc-lead prospect, sphalerite and galena in dolostone breccia.*
9. *GSC loc. C-419014: Boulangerite-quartz veins in dolostone breccia.*
10. *GSC loc. C-419005: No assay, unspecified sulfides.*
11. *GSC loc. C-419025: Boulangerite-galena-sphalerite-arsenopyrite-quartz veins in dolostone breccia.*

LOCATION MAP

Authors: J.C. Harrison, U. Mayr, and K. Piepjohn

Geology based on fieldwork by J.C. Harrison, 1999–2001; U. Mayr and K. Piepjohn (Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover, Germany), 1999–2000

Geological compilation by U. Mayr, 2002

Digital compilation by D. Nunez, 2002

Digital cartography by M.J. Coulthart, Data Dissemination Division (DDD)

This map was produced from processes that conform to the Scientific and Technical Publishing Services Subdivision (DDD) Quality Management System, registered to the ISO 9001: 2000 standard

MAP 2105A

GEOLOGY

LADY FRANKLIN BAY

ELLESMERE ISLAND

NUNAVUT

Scale 1:125 000/Échelle 1/125 000

kilometres 2 0 2 4 6 8 10 kilomètres

Universal Transverse Mercator Projection
North American Datum 1983

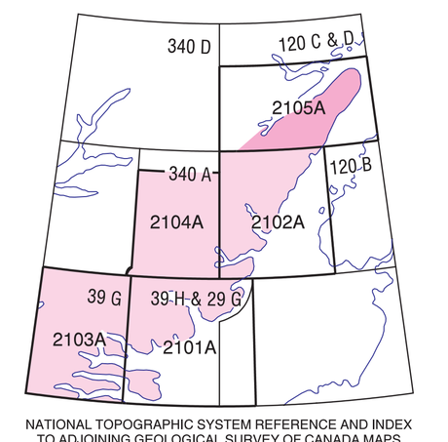
Projection transverse universelle de Mercator
Système de référence géodésique nord-américain, 1983

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

Proximity to the North Magnetic Pole causes the magnetic compass to be erratic in this area
Mean magnetic declination 2007, 63°34'W, decreasing 70.2' annually.
Readings vary from 60°00'W in the SE corner to 67°03'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

REFERENCES

Harrison, J.C.
in press: Regional variation in structural style, deformation kinematics, and summary of tectonic history, northeast Ellesmere Island; *in* Geology of Northeast Ellesmere Island Adjacent to Kane Basin and Nares Strait, Nunavut, (ed.) U. Mayr; Geological Survey of Canada, Bulletin 592.

Piepjohn, K., von Gosen, W., Tessensohn, F., and Saalmann, K.
in press: Ellesmerian Fold-and-Thrust Belt, northeast Ellesmere Island, and its Eurekan overprint; *in* Geology of Northeast Ellesmere Island Adjacent to Kane Basin and Nares Strait, Nunavut, (ed.) U. Mayr; Geological Survey of Canada, Bulletin 592.

Cross-sections accompany this map

Recommended citation:
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2007: Geology, Lady Franklin Bay, Ellesmere Island, Nunavut; Geological Survey of Canada, Map 2105A, scale 1:125 000.

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