



MAIN PART OF MAP

CENOZOIC

- Q Gravel, sand, silt and mud

PALEOZOIC

TERTIARY PALEOZOIC

- TP PAVY FORMATION: coarse-grained, volcanic sandstone, siltstone, conglomerate, well-sorted clasts of sandstone, siltstone, rhyolite and granite; abundant fossiliferous sandstone and calcareous shale; minor quartz sandstone and rhyolite tuff; minor quartz sandstone and rhyolite tuff; minor quartz sandstone and rhyolite tuff; minor quartz sandstone and rhyolite tuff.

UPPER SILURIAN AND LOWER DEVONIAN (PROBUDU TO PRAGIANY)

- SD12 EDS FORMATION, upper member: fine-grained quartzite, gneiss, and shale, weathering greenish brown and more resistant than the lower member; common coarse-grained and calcareous, radiolarian breccia, and limestone breccia; conglomerate in some sections north of Cape de Fosse.
- SD11 EDS FORMATION, undivided.
- SE1 UPPER SILURIAN (LUDLOW): EDS FORMATION, lower member: black shale, minor fine-grained sandstone; member weathers very resistive. (The top of this unit as indicated on the map is slightly higher than the actual top; it was mapped on a change from strata to aerostereos.)

UPPER SILURIAN (WELLSVILLE)

- SDR CLASHY RIVER FORMATION: very thick-bedded gneiss, calcareous, impure, fine-grained, claylike siltstone, thin sand and siltstone; minor quartzite, quartzite, and calcareous shale; minor quartzite, quartzite, and calcareous shale.

LOWER SILURIAN (LANDSBOY AND WENLOCK)

- SOY CAPE PHILIP FORMATION: thin to very thin-bedded black mudstone, gneiss, and siltstone; thin-bedded black mudstone, gneiss, and siltstone; thin-bedded black mudstone, gneiss, and siltstone; thin-bedded black mudstone, gneiss, and siltstone.

UPPER OROCHOVICAN AND LOWER SILURIAN (ASHGILL TO LANDOVER)

- OSA ALLEN BAY FORMATION: thick-bedded limestone, skeletal wackestone and packstone with burrow motifs.

UPPER OROCHOVICAN (CARADOC; MAYWILLIAN)

- OC1 IRENE BAY FORMATION: thin to medium-bedded, argillaceous and nodular limestone, lime mudstone and wackestone, burrow motifs; fossiliferous, weathers resistant, dark grey.
- OC2 MIDDLE AND UPPER OROCHOVICAN (CARADOC; BLACKWATERHILL TO ESRINIAN): THUMB MOUNTAIN FORMATION (middle part of Comwall Group): thick-bedded to massive limestone, wackestone and packstone, burrow motifs; fossiliferous in upper part; weathers resistant, dark grey.
- OC3 MIDDLE AND UPPER OROCHOVICAN (CARADOC AND ASHGILL): IRENE BAY FORMATION: argillaceous, nodular limestone, lime mudstone and wackestone, medium-bedded to massive, weathers resistant, grey-green; THUMB MOUNTAIN FORMATION: thick-bedded to massive limestone, wackestone and packstone, with burrow motifs, fossiliferous in upper part; weathers resistant, dark grey.

MIDDLE OROCHOVICAN (GARTHILLIAN)

- OC4 BAY FORMATION: lower part of Comwall Group, upper part: medium-bedded dolomite, dolostone and calcarenite, argillaceous, mudstone, siltstone, weathers grey, resistant to weathering, common thin to thick beds of argillaceous dolomite and calcarenite, formation weathers resistive.

LOWER OROCHOVICAN (ARENG)

- OE ELGAMOR RIVER FORMATION: thick-bedded limestone, lime mudstone and wackestone with burrow motifs, formation weathers resistant to a moderately resistive mudstone.

LOWER OROCHOVICAN (TREMADOC)

- OB BALAMAN FIORD FORMATION, upper member: interbedded dolomite and argillaceous limestone, dolostone, nodular limestone, calcarenite, gneiss and calcarenite; lower member: interbedded gneiss and calcarenite.
- OC5 CHRISTIAN ELY FORMATION: interbedded limestone and calcarenite, sandstone in upper part; limestone, dolomite, lime mudstone with burrow motifs, calcarenite with argillaceous and minor fine-grained conglomerate, locally abundant chert; dolomite, fine-grained, quartz sandstone with, thin-grained, thin-bedded.

UPPER CAMBRIAN TO LOWER OROCHOVICAN

- CC1 CAPE ELY FORMATION: medium to thick-bedded limestone, lime mudstone and skeletal wackestone with burrow motifs, dolomite, calcarenite and minor fine-grained conglomerate; interval of thick-bedded calcarenite, calcarenite, and quartz arenite at the base; formation weathers very resistive.

UPPER CAMBRIAN

- CC2 CASEY CORD FORMATION: middle and upper members: interbedded limestone and calcarenite; thin-bedded, thrombolite and spongiolite boundstone and abundant spongiolite; lower member: yellow, crystalline sandstone in upper part; purple intervals in lower part; map unit weathers resistive.

MIDDLE CAMBRIAN

- CC3 CASEY CORD FORMATION, lower member (south half): thick-bedded limestone; interbedded calcarenite and calcarenite, burrow motifs; thin limestone, and shale; map unit weathers dark grey and resistive.

LOWER CAMBRIAN

- CC4 SCONE BAY FORMATION: thick-bedded, calcareous dolomite, medium to coarse, some massive in lower part; formation weathers yellow-orange and resistive.
- CC5 KANE BASIN FORMATION: interbedded siltstone, sandstone, and calcarenite; sandstone fine to medium-grained, thin-bedded, laminated; formation weathers distinctly dark and resistive.
- CC6 RAYNES BAY FORMATION: thin to thick-bedded sandstone; quartz arenite, fine to coarse-grained, cross-bedded; blue-grey, weathers light grey to pink; intervals of calcarenite, thin-bedded, yellow to rusty weathering; intervals of dark grey and mudstone.
- CC7 BITTER BAY FORMATION: dark grey shale and silt, locally silty, laminated; formation weathers dark and resistive.

PHOTOTERZOZOIC (YENDIAN) AND LOWER CAMBRIAN

- VC1 Unmetamorphosed unstratified formation, facies not known.

PROTEROZOIC

- CR1 Unmetamorphosed unstratified formation, facies not known.

Some features on this map have been projected to surface through younger cover of Quaternary sediments, glacial 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, with or without evidence relative movement (defined, approximate)

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

Fault, unmetamorphosed (defined, approximate; assumed; add note indicating displacement only)

Anticline and syncline (defined, approximate, assumed)

Anticline and syncline, overturned (defined, approximate)

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

Metre (approximate)

- 1 GSD No. C-32778: Gneiss with up to 0.5% zinc.
- 2 GSD No. C-32779: Dolomite mudstone with 1% zinc, 18 ppm cadmium.
- 3 GSD No. C-32780: Dolomite mudstone with 1% zinc, 18 ppm cadmium, and a calcarenite phase.
- 4 GSD No. C-32777: Gneiss and dolomite massive sulfide with 0.5% lead.
- 5 GSD No. C-32776: Dolomite calcarenite in sandstone, high cadmium.
- 6 GSD No. C-32775: Dolomite calcarenite and dolomite in dolomite breccia.
- 7 GSD No. C-32774: Thin concretionary quartz-calciferous and barium-rich.
- 8 GSD No. C-41916 and C-41917: Gneiss, thin-bedded, quartz-calciferous, sulfidic and calcarenite.
- 9 GSD No. C-41914: Dolomite-quartz siltstone in dolomite breccia.
- 10 GSD No. C-41915: Thin-bedded, quartz-calciferous, sulfidic and calcarenite.
- 11 GSD No. C-41913: Dolomite-quartz-calciferous-sulfidic-sandstone-quartz veins in dolomite breccia.

REFERENCES

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Pappalardo, G., van Oost, W., Tessenow, F., and Rasmussen, K. Regional geology, tectonics, and summary of historic history, northeast Ellesmere Island, in *Geology of Northern Ellesmere Island Adjacent to Kane Basin and Nares Strait*, Report 1011, Geological Survey of Canada, Ottawa, 1982.

Plappalardo, G., van Oost, W., Tessenow, F., and Rasmussen, K. Regional geology, tectonics, and summary of historic history, northeast Ellesmere Island, in *Geology of Northern Ellesmere Island Adjacent to Kane Basin and Nares Strait*, Report 1011, Geological Survey of Canada, Ottawa, 1982.

REVISIONS

1. Revised geology, tectonics, and summary of historic history, northeast Ellesmere Island, in *Geology of Northern Ellesmere Island Adjacent to Kane Basin and Nares Strait*, Report 1011, Geological Survey of Canada, Ottawa, 1982.

2. Revised geology, tectonics, and summary of historic history, northeast Ellesmere Island, in *Geology of Northern Ellesmere Island Adjacent to Kane Basin and Nares Strait*, Report 1011, Geological Survey of Canada, Ottawa, 1982.

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19. Revised geology, tectonics, and summary of historic history, northeast Ellesmere Island, in *Geology of Northern Ellesmere Island Adjacent to Kane Basin and Nares Strait*, Report 1011, Geological Survey of Canada, Ottawa, 1982.

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MAP 2105A
GEOLOGY
LADY FRANKLIN BAY
ELLESMERE ISLAND
NUNAVUT

Any revisions of 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 DOD.

Proximity to the North Magnetic Pole causes the magnetic compass to be erratic in this area. Mean magnetic declination 2007: 67°50' W, increasing 70.72' annually. Headings may vary 60°00' W in the SE corner or 47°00' W in the NW corner of the map.

Elevation in feet above mean sea level

Universal Transverse Mercator Projection
North American Datum 1983
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Projections Transverse Mercator
North American Datum 1983
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Geology based on fieldwork by J.C. Harrison, 1999-2001; U. May and K. Pappalardo (Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover, Germany), 1999-2000
Geological compilation by U. May, 2002
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