

**MAIN PART OF MAP**

**QUATERNARY**  
**Q** Gravel, sand, silt and mud

**PALEOZOIC**

**TERTIARY (PALAEOTERTIARY)**  
**TCB** CAPE BACK FORMATION, upper member: interbedded siltstone, mudstone and siltstone; weathering yellowish to reddish-brown; contains fossiliferous shales in upper part; lower member: fine to medium grained sandstone, weathering buff to brown; consists of yellowish weathering siltstone and shaly greyish weathering mudstone with abundant plant fossils.  
**TP** RAY FORMATION: coarse-grained volcanic sandstone, trough cross-bedded, weathers brown to red; interbedded with mudstone, siltstone and sandstone; conglomeratic weathered clasts of siltstone, sandstone, siltstone and mudstone; contains abundant fossiliferous and plant fossils; the freshwater channel and proglacial river cut across, coiled and silted with minor quartz sandstone; mudstone and magnesian calcarenite; local sedimentary breccia in the lower part of the formation.

**UPPER SILURIAN AND LOWER DEVONIAN (PROBOLY TO PRADGANT)**  
**SDE2** EDS FORMATION, upper member: fine-grained shales, greenish and shaly, weathers greenish brown and more resistant than the lower member; common abundant granular and calcareous, radiolarian siltstone and mudstone; siltstone and mudstone in some sections north of Cape de Foce.  
**SDE** EDS FORMATION, undivided

**UPPER SILURIAN (LUDLOW)**  
**SE1** EDS FORMATION, lower member: dark shale, minor fine-grained sandstone; member weathers very massive. (The top of this unit as indicated on the map is slightly higher than the actual top; it is not regarded as a change from siltstone to sandstone.)

**UPPER SILURIAN (WENLOCK)**  
**SOH** DANISH RIVER FORMATION: very fine-bedded greenish, calcareous, impure, fine grained shaly siltstone, thin beds and weathered shaly mudstone; siltstone mudstone; 15 per cent corundum granitoid and calcarenite in some sections north of Cape de Foce; weathers blue-grey.

**LOWER SILURIAN (LANDSEVERY AND WENLOCK)**  
**SCB** CAPE PHILLIPS FORMATION: thin to very thin bedded dark mudstone, grayish; interbeds of siltstone and shale in upper part of formation. In some sections this formation contains Upper Devonian fossils at the base.

**UPPER ORDOVICIAN AND LOWER SILURIAN (ASHGILL TO LANDSEVERY)**  
**OSA** ALLEN BAY FORMATION: thick-bedded limestone; skeletal calcarenite and calcarenite with burrow motifs.

**UPPER ORDOVICIAN (CARADOC - MAYVILLEAN)**  
**OCL** HAY BAY FORMATION: thin to thick-bedded argillaceous and nodular limestone; fine mudstone and calcarenite, burrow motifs; fossiliferous, weathers massive, grey.

**MIDDLE AND UPPER ORDOVICIAN (CARADOC - BLACKRIVERIAN TO EDWARDS)**  
**OCT** THUMB MOUNTAIN FORMATION (middle part of Cornwallis Group): thick-bedded to massive limestone and calcarenite, burrow-motif, fossiliferous in upper part; weathers resistant, dark grey.

**MIDDLE AND UPPER ORDOVICIAN (CARADOC AND ASHGILL)**  
**OCL1** HAY BAY FORMATION: argillaceous, nodular limestone; fine mudstone and calcarenite, burrow-motif, fossiliferous, nodular, weathers massive, grey.

**MIDDLE ORDOVICIAN (GARHWILLIAN)**  
**OCC** HAY FORMATION (lower part of Cornwallis Group): upper part medium-bedded calcarenite, dolomitic and calcarenite, burrow motifs, mudcracks, weathers grey-green, resistant limestone and shale; lower part argillaceous and interbedded with dolomitic, former weathers massive.

**LOWER ORDOVICIAN (ARENS)**  
**OE** ELGACH RIVER FORMATION: thick-bedded limestone; fine mudstone and calcarenite with burrow motifs; formation weathers resistant with a moderately resistant middle part.

**LOWER ORDOVICIAN (TREMADOC)**  
**OB** BALSAM Fjord FORMATION: upper member: interbedded siltstone and argillaceous limestone; middle member: limestone, argillaceous limestone and siltstone; lower member: interbedded siltstone and calcarenite.

**OCE** CHRISTINA FIAT FORMATION: interbedded limestone and calcarenite, sandstone in upper part; massive calcarenite, fine mudstone with burrow motifs, calcarenite with siltstone and minor fine pebble conglomerate, locally abundant fossiliferous limestone, fossiliferous, quartz sandstone, shaly, greenish, thin-bedded.

**UPPER CAMBRIAN TO LOWER ORDOVICIAN**  
**OCDC** CAPE CLAY FORMATION: medium to thick-bedded limestone, fine mudstone and calcarenite; weathers with burrow motifs, dolomitic calcarenite and minor fine pebble conglomerate; interbeds of thick-bedded calcarenite, calcarenite, and quartz arenite at the base; formation weathers very resistant.

**UPPER CAMBRIAN**  
**OCCL** CAPE CLAY FORMATION: middle and upper members: interbedded limestone and calcarenite, thin-bedded, fossiliferous and fossiliferous calcarenite and abundant fossiliferous calcarenite; yellow cross-bedded sandstone in upper part; purple intervals in lower part; map unit weathers massive.

**MIDDLE CAMBRIAN**  
**OCCL1** CAPE CLAY FORMATION: lower member (local beds): thick-bedded limestone; interbedded calcarenite and calcarenite; burrow-motif fine mudstone, and siltstone; weathers grey and resistant.

**LOWER CAMBRIAN**  
**OCB** SCORESBY BAY FORMATION: thick-bedded calcarenite, calcarenite, calcarenite, medium-massive, some massive in lower part; former weathers yellow-orange and resistant.

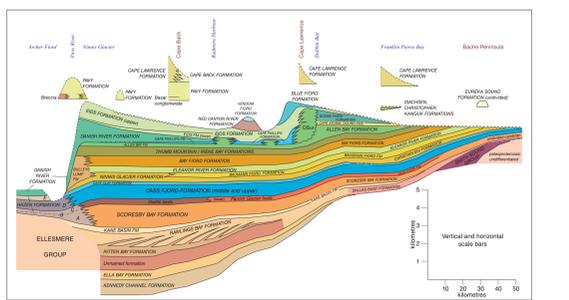
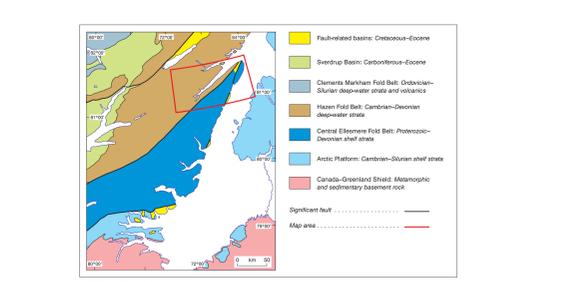
**OCB** KANE BASIN FORMATION: interbedded shaly mudstone, sandstone, and calcarenite; sandstone thin to medium-grained, thin-bedded; laminated; former weathers distinctly dark and resistant.

**OCA** RAWLINGS BAY FORMATION: thin to thick-bedded sandstone; quartz arenite, thin to cross-bedded, cross-bedded; shaly limestone; weathers light grey to pink, interbeds of siltstone, thin-bedded, yellow to rusty weathering; interbeds of dark grey and mudstone.

**OCI** AFTER BAY FORMATION: dark grey shale and calcarenite, locally silty, laminated; former weathers grey and resistant.

**PROTEROZOIC**  
**NEOPROTEROZOIC (VENDIAN) AND LOWER CAMBRIAN**  
**VCL** Unfossiliferous unmetamorphosed formation; lacks met igneous.

Some features on this map have been projected to surface through younger cover of Quaternary sediments, glacial till, and bodies of water.  
 Geological boundary (defined, approximate, assumed)  
 Limit of field work  
 Marker bed (this 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)  
 Anticline and syncline (defined, approximate, assumed)  
 Anticline and syncline, overturned (defined, approximate)



**NORTHWEST PART OF MAP**

**OCL** BULLEYE LUMP FORMATION: limestone and calcarenite; fossiliferous mudstone; in thin beds; weathers dark grey and reddish brown; resistant granular and calcarenite, thin-bedded to massive, weathers pale grey, fine pebbles, fossiliferous, dolomitic in upper part of formation.

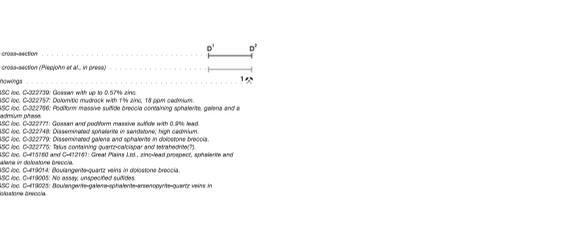
**OCDE** LOWER ORDOVICIAN TO LOWER SILURIAN (TREMADOC TO LANDSEVERY) HAZEN FORMATION, Division E: interbedded limestone, shale and chert; fine mudstone, medium to thin bedded; weathers brown shale, variable, mostly block, laminated, chert block, thin-bedded, minor corundum calcarenite and calcarenite, interbedded with siltstone.

**OCDE** LOWER ORDOVICIAN (TREMADOC) MINNIS GLACIER FORMATION: interbedded fine mudstone and calcarenite, laminated to thin-bedded; abundant shallow-water sedimentary structures; interbeds of calcarenite and far-appearing calcarenite.

**UPPER CAMBRIAN TO LOWER ORDOVICIAN**  
**OCCL** HAZEN FORMATION, Division D: thinly interbedded fine mudstone, calcarenite, grey and reddish brown weathering common thin to thick intervals of fine-mudstone-calcarenite and calcarenite; in part massive; intense granular shaly cleavage.

**OCCL1** HAZEN FORMATION, Division C: thinly interbedded fine mudstone, calcarenite, calcarenite, weathers yellowish grey and forms a distinct resistant member unit; Division A (Hay Cambrian): thinly interbedded calcarenite shale and fine mudstone, one bedded, calcarenite, weathers dark grey and calcarenite, intense granular shaly cleavage.

**NORTHEAST PART OF MAP**  
**OCB** LOWER CAMBRIAN: CALLEBOUT FORMATION: thick-bedded sandstone, red-margined minor interbedded chert and quartz granulate and calcarenite conglomerate; formation weathers whitish and resistant.



**REFERENCES**

Harrison, J.C.  
 Regional variation in elevated strontium isotope ratios, and summary of tectonic history, northeast Ellesmere Island, in *Geology of the High Arctic Region: Ellesmere Island and the Eastern Arctic*, ed. by J.C. Harrison, Geological Survey of Canada, Bulletin 595, 1995.

Plaggin, K., van Gosen, W., Neumann, F., and Selverstone, K.  
 Elongated, tilted, and tilted, northeast Ellesmere Island, and the Eastern Arctic, in *Geology of the High Arctic Region: Ellesmere Island and the Eastern Arctic*, ed. by J.C. Harrison, Geological Survey of Canada, Bulletin 595, 1995.

Recommended citation:  
 Harrison, J.C., May, U., and Plaggin, K.  
 2003. *Geology, Lady Franklin Bay, Ellesmere Island, Nunavut*.  
 Geological Survey of Canada, Map 2105A, Scale 1:125 000.

Cross-sections accompany this map.



MAP 2105A  
**GEOLOGY**  
**LADY FRANKLIN BAY**  
**ELLESMERE ISLAND**  
**NUNAVUT**

Any revisions or additional geological information known to the user would be reflected on the Geological Survey of Canada.

Digital base map from data compiled by Geomatics Canada, modified by DCO.

Proximity to the North Magnetic Pole causes the magnetic compass to be erratic in the area.  
 Mean magnetic declination 2007: 67°34'W, increasing 70.2' annually.  
 Headings may vary from 0°00' to the SE corner at 0°20' in the NW corner of the map.

Scale 1:125 000/Echelle 1/125 000

Universal Transverse Mercator Projection  
 Réseau géodésique canadien, 1983  
 © Her Majesty the Queen in Right of Canada 2007

Projections transverse universelles de Mercator  
 Système de référence géodésique canadien, 1983  
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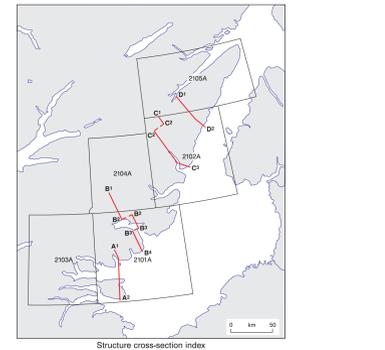
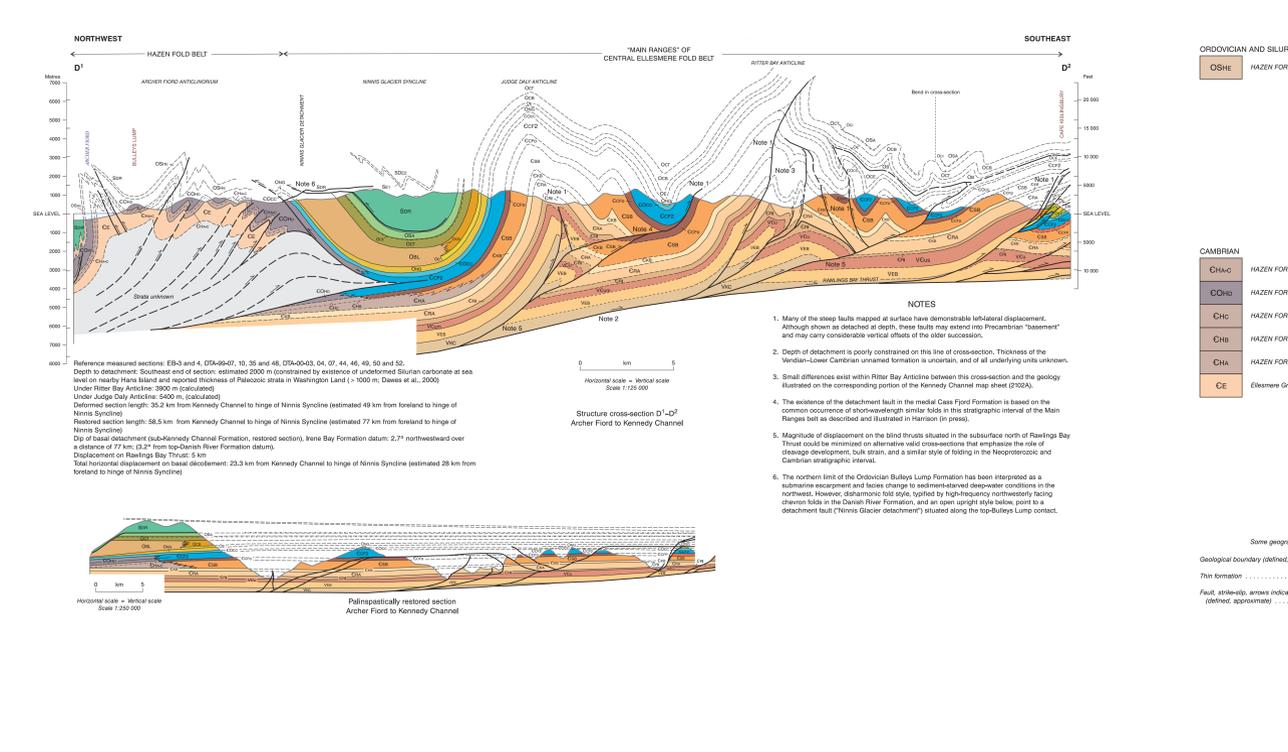
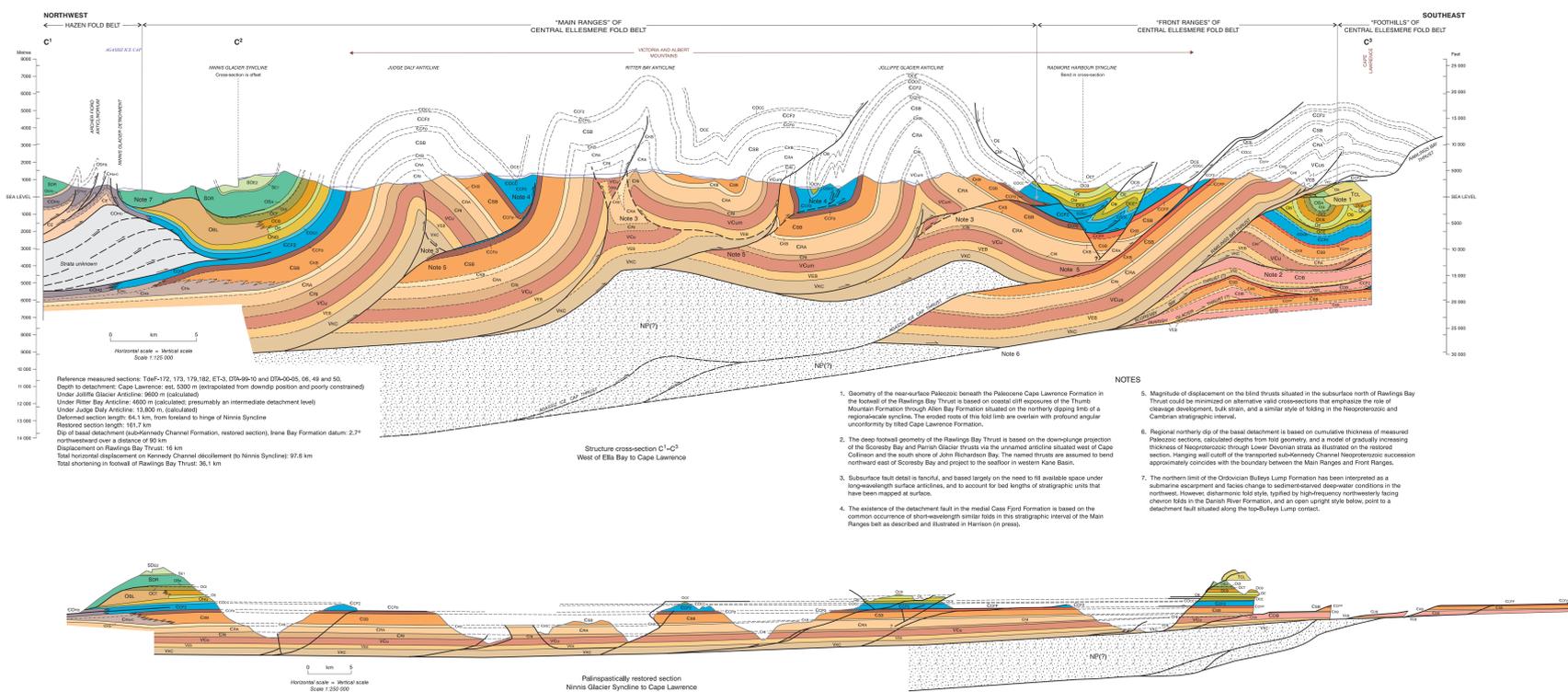
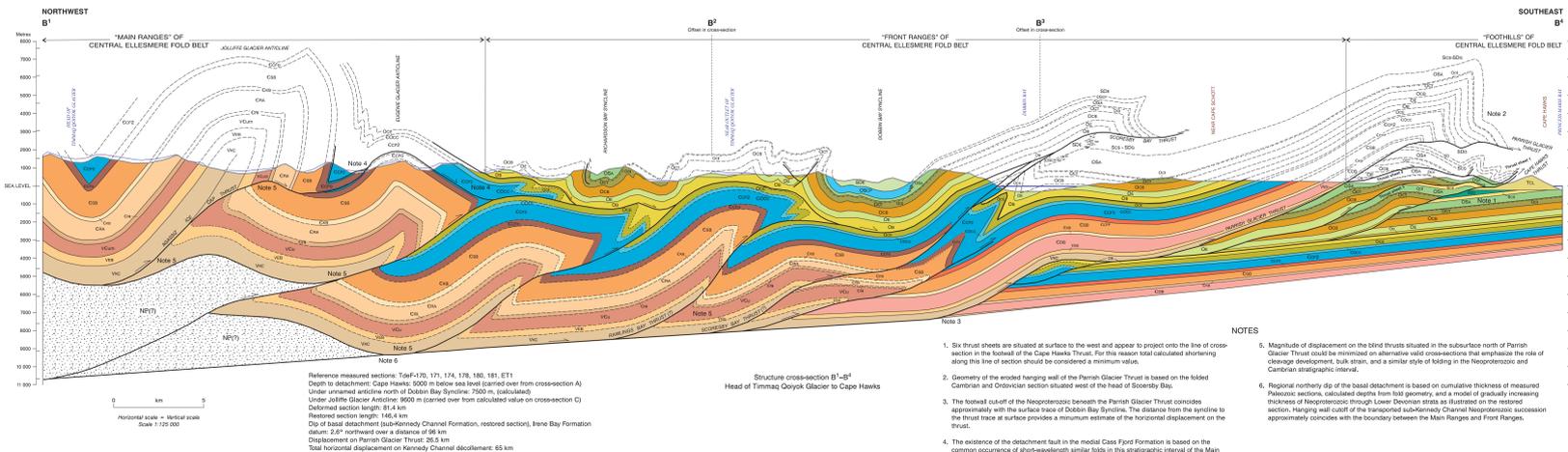
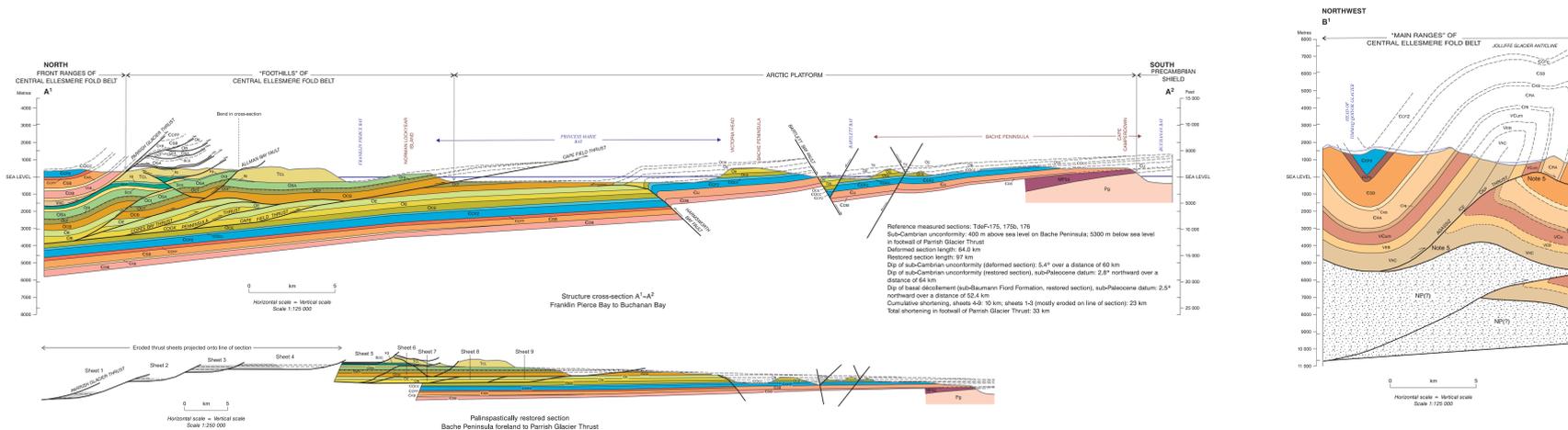
Errors in feet above mean sea level

Digital compilation by D. Naves, 2002

Digital cartography by M.L. Coulthart, Data Dissemination Division

Revised and updated from the *Geological Survey of Canada* 1983-1985

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



**LEGEND**

<b>PALEOCENE</b>	TCL	CAPE LAWRENCE FORMATION
<b>CRETACEOUS</b>	K	(SACHEN, CHRISTOPHER, and KANGUK FORMATIONS) (undivided)
<b>SILURIAN</b>	SDE1	EIDS FORMATION (upper part)
	SDE2	EIDS FORMATION (lower part)
	SDE3	EIDS FORMATION (undivided)
<b>SILURIAN AND DEVONIAN</b>	SDO	GOOSE FORD FORMATION
<b>SILURIAN</b>	SDP	DANISH RIVER FORMATION
	DSOP	CAPE PHILLIPS FORMATION
<b>ORDOVICIAN AND SILURIAN</b>	OSH	HAZEN FORMATION; member E
<b>ORDOVICIAN</b>	OSL	BULLEYS LUMP FORMATION
	ONC	NINNIS GLACIER FORMATION
<b>ORDOVICIAN</b>	OSA	ALLEN BAY FORMATION
	OCI	IRENE BAY FORMATION
	OCT	THAMES MOUNTAIN FORMATION
	OCB	BAUMANN FORD FORMATION
	OC	ELEANOR RIVER FORMATION
	OB	BAUMANN FORD FORMATION
	OCE	CHRISTIAN ELY FORMATION
<b>CAMBRIAN</b>	CCP	CASS FJORD FORMATION (upper part)
	CCP1	CASS FJORD FORMATION (Parrish Glacier beds)
	CCP2	CASS FJORD FORMATION (undivided)
	CCF	CASS FJORD FORMATION (poorly bedded)
	CSB	SCORESBY BAY FORMATION
	CXB	KANE BASIN FORMATION
	CRA	RAWLINGS BAY FORMATION
	CHI	RITZER BAY FORMATION
<b>NEOPROTEROZOIC(?) - CAMBRIAN</b>	VCS	Unnamed formation; notes not known
	VCS1	Unnamed formation; anastomosing facies
	VCS2	Unnamed formation; mixed facies
<b>NEOPROTEROZOIC(?)</b>	VEB	ELLA BAY FORMATION
	VWC	KENNEDY CHANNEL FORMATION
<b>MESOPROTEROZOIC</b>	MPSS	Smith Sound group
<b>PALEOPROTEROZOIC</b>	EG	Undifferentiated granulate Inglefield Supergroup (Canadian Shield area)

Some geographical names subject to revision  
Geological boundary (defined, approximate, assumed)  
Thin formation  
Fault, strike-slip, arrows indicate relative movement (defined, approximate)

**REFERENCES**

Dawes, P.R., Frisch, T., Davis, A.A., et al., 2000. The East Basin 180° magnetic anomaly: tectonic structure and tectonic assessment of Precambrian and Lower Paleozoic provinces in northwestern Greenland. *Geology of Greenland Survey Bulletin* 188, p. 11-26.

Harrison, J.C., 1998. Regional variation in structural style, deformation kinematics, and tectonic history, northeast Ellesmere Island, in: *Geology of the Arctic Region* (eds. J.C. Harrison and J.C. Cook), Geological Survey of Canada Bulletin 562.

Structure cross-sections A<sup>1</sup>-A<sup>2</sup>, B<sup>1</sup>-B<sup>4</sup>, C<sup>1</sup>-C<sup>3</sup> and D<sup>1</sup>-D<sup>2</sup> to accompany maps 2101A, 2102A, 2104A, 2105A