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GEOLOGICAL SURVEY OF CANADA | COMMISSION GÉOLOGIQUE DU CANADA

LEGEND

QUATERNARY
- Q — *Unconsolidated sediments*

TERTIARY
PALEOGENE
- Te — *EUREKA SOUND GROUP: sandstone, mudrock, conglomerate; minor coal*

MESOZOIC
- M — *Clastic sediments; minor volcanics*

CARBONIFEROUS AND PERMIAN
- CP — *Carbonate and clastic sediments; minor volcanics*

CARBONIFEROUS, PERMIAN AND MESOZOIC
- CPM — *Undivided*

INTRUSIONS

CRETACEOUS
UPPER CRETACEOUS
- Kbg — *Kbg: mafic and granitoid (bimodal) intrusion*
- Kg — *Kg: granitoid intrusion*

CARBONIFEROUS
LOWER CARBONIFEROUS
- Cg — *Granitoid intrusion*

SHALLOW MARINE SEDIMENTS, CENTRAL ELLESMERE FOLD BELT AND ADJACENT HAZEN FOLD BELT

ORDOVICIAN AND SILURIAN
MIDDLE ORDOVICIAN TO LOWER SILURIAN
- OS — *THUMB MOUNTAIN, IRENE BAY, and ALLEN BAY formations: limestone*

ORDOVICIAN
LOWER AND MIDDLE ORDOVICIAN
- OBL — *BULLEYS LUMP FORMATION: limestone, dolostone; rare mudrock, sandstone (shelf margin carbonate buildup)*

CAMBRIAN AND ORDOVICIAN
MIDDLE CAMBRIAN TO MIDDLE ORDOVICIAN
- CO1 / CO2 / CO3 — *Limestone, mudrock, dolostone; minor sandstone*
  CO1: *CASS FJORD, CAPE CLAY, NINNIS GLACIER, ELEANOR RIVER and BAY FIORD formations*
  CO2: *CASS FJORD, CAPE CLAY and NINNIS GLACIER formations*
  CO3: *CASS FJORD, CAPE CLAY, NINNIS GLACIER and BULLEYS LUMP formations*

CAMBRIAN
LOWER AND MIDDLE CAMBRIAN
- CSB — *SCORESBY BAY FORMATION: dolostone, limestone; rare mudrock (includes map unit Ol)*

LOWER CAMBRIAN
- CE — *ELLESMERE GROUP: sandstone, mudrock; rare conglomerate*

DEEP WATER AND TRANSITIONAL SEDIMENTS, HAZEN FOLD BELT AND ADJACENT CENTRAL ELLESMERE FOLD BELT

DEVONIAN
LOWER DEVONIAN
- DE — *EIDS FORMATION: slaty mudrock; minor sandstone; some sediment gravity flows*

SILURIAN AND DEVONIAN
LOWER TO UPPER SILURIAN, LOWER SILURIAN TO LOWER DEVONIAN, LOWER DEVONIAN
- SDR / SDRu / SDRl — *DANISH RIVER FORMATION: sandstone, slaty mudrock; minor conglomerate; all calcareous-dolomitic (common sediment gravity flows)*

SILURIAN
LOWER TO UPPER SILURIAN
- SCP — *CAPE PHILLIPS FORMATION: mudrock, limestone (resedimented); chert*

CAMBRIAN TO SILURIAN
LOWER CAMBRIAN TO LOWER SILURIAN
- C-SH — *HAZEN FORMATION: mudrock, chert, limestone (resedimented); minor sandstone, chert*

CAMBRIAN
LOWER CAMBRIAN
- CG — *GRANT LAND FORMATION: quartzite (partly arkosic), multicoloured phyllite, slate; minor pebble conglomerate, schist (common sediment gravity flows)*

- CN — *NESMITH BEDS: limestone, calcareous pebble conglomerate, calcareous sandstone and slate (mainly sediment gravity flows); may include Grant Land Formation*

NORTHERN HEIBERG FOLD BELT

SILURIAN(?) AND DEVONIAN
UPPER SILURIAN(?) AND LOWER DEVONIAN
- DS — *STALLWORTHY FORMATION: sandstone, mudrock, conglomerate (common redbeds)*

SILURIAN
LOWER SILURIAN
- SSV — *SVARTEVAEG FORMATION: andesitic volcanic flows and tuff, volcanogenic sandstone, mudrock, and minor conglomerate (common sediment gravity flows); minor carbonate olistoliths*

CAMBRIAN TO SILURIAN
LOWER CAMBRIAN TO LOWER SILURIAN
- C-SH — *HAZEN FORMATION: chert; minor mudrock, resedimented carbonates*

CAMBRIAN
LOWER CAMBRIAN
- CG — *GRANT LAND FORMATION: quartzite, multi-coloured phyllite, slate; minor pebble conglomerate (common sediment gravity flows)*

CAMBRIAN AND/OR OLDER
LOWER CAMBRIAN AND/OR OLDER (Stratigraphic order uncertain)
- CA — *AURLAND FIORD FORMATION: dolostone; lesser marble*
- CJ — *JAEGER LAKE FORMATION: mafic metavolcanics, dolostone, marble*

- CJAG — *JAEGER LAKE, AURLAND FIORD and GRANT LAND formations, undivided*

CLEMENTS MARKHAM FOLD BELT

DEVONIAN
MIDDLE AND/OR UPPER DEVONIAN
- DOB — *OSKE BAY FORMATION: sandstone, mudrock; minor conglomerate (redbeds common)*

SUCCESSION B
(overlaps Succession A and part of Pearya)

DEVONIAN OR OLDER
MIDDLE DEVONIAN OR OLDER
- DB — *BOURNE COMPLEX: volcanic flows and tuff, mudrock, sandstone; abundant dykes/sills of different ages*

SILURIAN
UPPER SILURIAN
- SMR / SPP — *MARKHAM RIVER FORMATION: dolostone; minor dolomitic sandstone, conglomerate, spicular chert*
  Spp: *PIPER PASS FORMATION; limestone; minor dolostone, mudrock (partly or entirely correlative with Markham River Formation)*

LOWER TO UPPER SILURIAN
- SL — *LANDS LOKK FORMATION: sandstone, mudrock, variably slaty; rare calcareous pebble conglomerate (common sediment gravity flows)*
- SDR — *DANISH RIVER FORMATION: calcareous-dolomitic sandstone and mudrock, variably slaty (mainly sediment gravity flows)*

- SDRL — *DANISH RIVER and LANDS LOKK formations, undivided*

SUCCESSION A

(five isolated belts with different stratigraphy) Southeastern belt

SILURIAN
LOWER SILURIAN
- SYP — *YELVERTON PASS BEDS: limeston, chert (olistostromes?)*

CAMBRIAN TO SILURIAN
LOWER CAMBRIAN TO LOWER SILURIAN
- C-SH — *HAZEN FORMATION: chert; minor mudrock, resedimented carbonates*

CAMBRIAN
LOWER CAMBRIAN
- CG — *GRANT LAND FORMATION: quartzite, slate, phyllite*
  CG*: *may include fault slices of Yelverton Formation*

CAMBRIAN AND/OR OLDER
LOWER CAMBRIAN AND/OR OLDER
- CY — *YELVERTON FORMATION: mafic volcanics and sills (variably altered or metamorphosed), marble, phyllite; minor chert*

(five isolated belts with different stratigraphy) Southwestern, West-central, Northwestern and Northeastern belts combined

SILURIAN
LOWER SILURIAN
- SF — *FIRE BAY FORMATION: sandstone, mudrock; minor conglomerate (mainly volcanogenic; common sediment gravity flows), volcanics (mafic to felsic, partly alkaline); minor carbonate olistostromes and olistoliths*

SILURIAN AND(?) ORDOVICIAN
LOWER SILURIAN AND(?) ORDOVICIAN
- OSV — *Volcanic flows and tuff (intermediate, partly alkaline)*

ORDOVICIAN AND(?) SILURIAN
MIDDLE ORDOVICIAN (OR OLDER) TO UPPER ORDOVICIAN OR LOWER SILURIAN
- OK / OR — *KULUTINGWAK FORMATION: volcanic flows and tuff (felsic to mafic, in part alkaline), volcanogenic sandstone and phyllite, marble, schist, amphibolite*
  OK*: *includes Phillips Inlet Formation (Lower Silurian or Ordovician); serpentinite sandstone, mudrock and minor conglomerate (common sediment gravity flows); minor polymict conglomerate*
  OR: *MOUNT RAWLINSON COMPLEX: volcanic flows and tuff (intermediate to felsic, in part alkaline); minor marble, phyllite, chert (partly or entirely correlative with Kulutingwak Formation)*

PEARYA

ORDOVICIAN AND SILURIAN
UPPER ORDOVICIAN TO UPPER SILURIAN
- OSP5 — *SUCCESSION 5 (TACONITE RIVER, ZEBRA CLIFFS, LORIMER RIDGE, OOBLOOYAH CREEK, CRANSTONE and MARVIN formations, and CRASH POINT BEDS): limestone, sandstone, mudrock; minor conglomerate, dolostone*

ORDOVICIAN
UPPER ORDOVICIAN
- OP4 — *SUCCESSION 4 (CAPE DISCOVERY, M'CLINTOCK and AYLES formations): volcanic flows and tuffs (felsic to mafic, in part alkaline), sandstone, mudrock, conglomerate (partly volcanogenic), dolostone, limestone*

ORDOVICIAN (OR OLDER)
PRE-LATE MIDDLE ORDOVICIAN (PROBABLY LOWER ORDOVICIAN)
- OP3 — *SUCCESSION 3 (MASKELL INLET COMPLEX): volcanic tuffs and flows (intermediate and mafic), limestone, chert, phyllite; minor dolostone, sandstone, schist*

NEOPROTEROZOIC TO ORDOVICIAN
NEOPROTEROZOIC TO LOWER ORDOVICIAN
- P-OP2 — *SUCCESSION 2: marble, dolostone, quartzite, phyllite, schist, diamictite, metavolcanics (mafic and felsic); minor meta-chert*

MESOPROTEROZOIC AND NEOPROTEROZOIC
LATE MESOPROTEROZOIC - EARLY NEOPROTEROZOIC (Age of granitoid plutonism and metamorphism)
- PP1 — *SUCCESSION 1: gneiss; minor amphibolite, schist, marble, quartzite*

SILURIAN
LOWER AND UPPER SILURIAN
- SL — *LANDS LOKK FORMATION: siltstone*

LOWER SILURIAN
- SDR — *DANISH RIVER FORMATION: calcareous-dolomitic sandstone and mudrock, variably slaty; minor conglomerate (mainly sediment gravity flows)*

DEVONIAN
UPPER DEVONIAN
- uDg — *Granitoid intrusion*
  uDg*: *includes metamorphic rocks*
  uDg': *porphyritic felsite*

MIDDLE DEVONIAN
- Dg — *Granitoid intrusion*

DEVONIAN OR OLDER
LOWER DEVONIAN OR OLDER (ORDOVICIAN?)
- O?b — *Mafic intrusion*

ORDOVICIAN
MIDDLE ORDOVICIAN
- mOg — *Granitoid intrusion*

LOWER ORDOVICIAN
- Oum — *Ultramafic complexes (including mafic and granitoid rocks)*
  Oum*: *includes O?s*

AGE UNKNOWN
- b — *Mafic intrusion*
- um — *Serpentinite*
- g — *Metamorphosed granitoid intrusion*

Geological boundary (defined)
Geological boundary (projected under cover)
Thrust fault (teeth on hanging wall)
Normal fault (teeth on hanging wall)
Strike slip fault (arrows indicate motion)
Fault (nature unspecified; solid circle on downthrow side)
Fault (projected under cover)
Anticline (upright, overturned; arrow indicates plunge)
Syncline (upright, overturned; arrow indicates plunge)

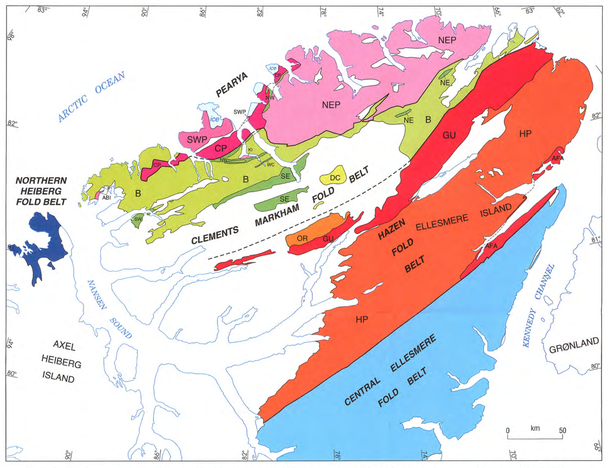


Figure 1b. Pre-carboniferous stratigraphic-structural provinces: generalized outcrop areas and subdivisions.

PEARYA
- NEP — *Northeast Pearya*
- KI — *Kulutingwak Inlier*
- CP — *Central Pearya*
- SWP — *Southwest Pearya*
- ABI — *Audhild Bay Inliers*

CLEMENTS MARKHAM FOLD BELT
- DC — *Middle-Upper Devonian clastics*
- B — *Succession B*
- SE SW NW WC NE — *Succession A (SE: Southeastern belt; SW: Southwestern belt; NW: Northwestern belt; WC: West-Central belt; NE: Northeastern belt)*

HAZEN FOLD BELT
- OR — *Osborne Range belt*
- GU — *Grantland Uplift*
- HP — *Hazen Plateau belt*
- AFA — *Archer Fiord Anticlinorium*

NORTHERN HEIBERG FOLD BELT

CENTRAL ELLESMERE FOLD BELT

Stratigraphic-structural boundary
Major boundary fault

Compiled by H.P. Trettin from maps shown in Figure 1c

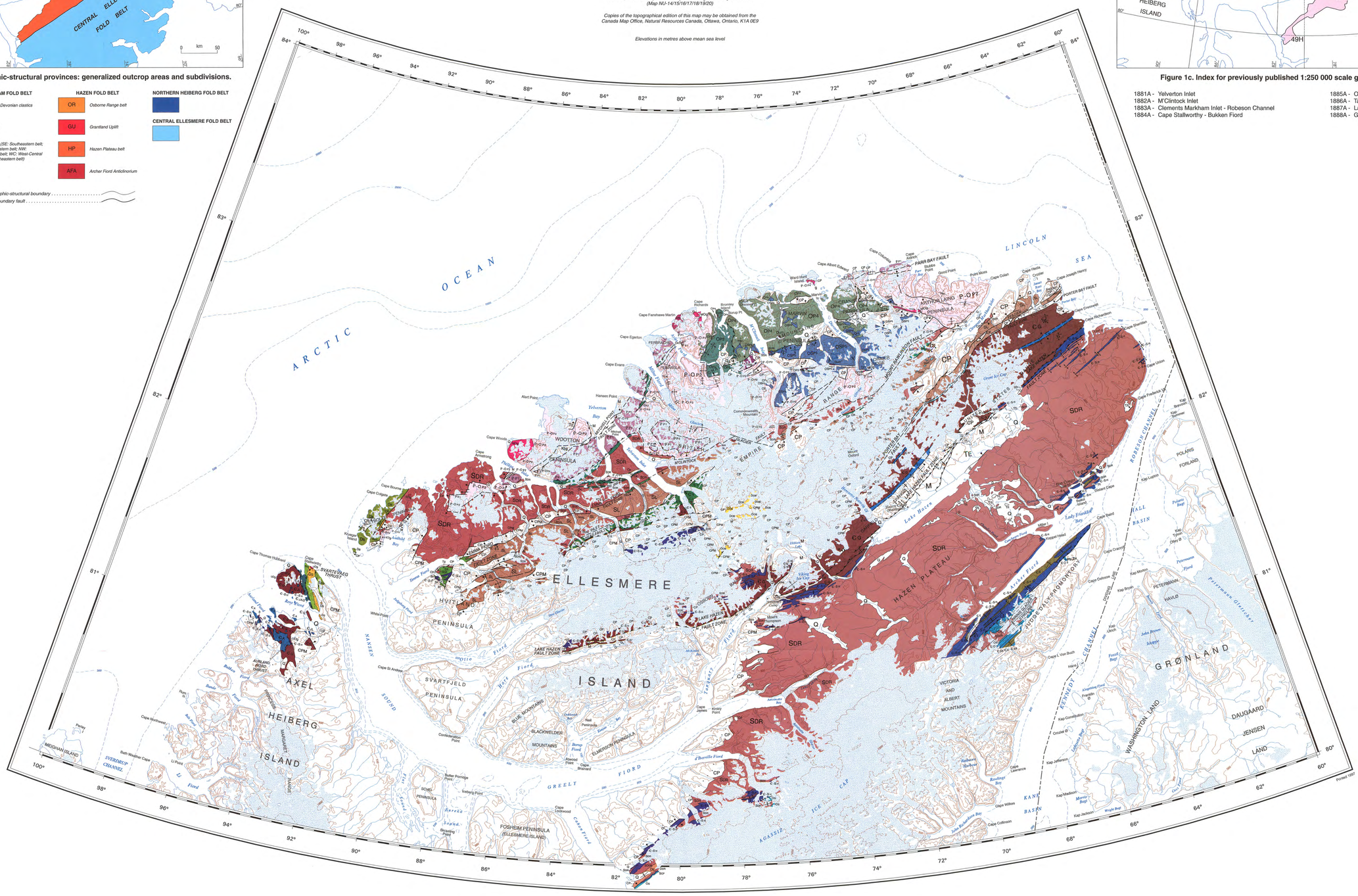
Geological cartography by the Geological Survey of Canada (Calgary)

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

Digital base map at the same scale from Geomatics Canada, Natural Resources Canada, modified for publication by the Geological Survey of Canada (Map NU-14/15/16/17/18/19/20)

Copies of the topographical edition of this map may be obtained from the Canada Map Office, Natural Resources Canada, Ottawa, Ontario, K1A 0E9

Elevations in metres above mean sea level



Scale 1:1 000 000 - Échelle 1/1 000 000

Kilometres 25 0 25 50 75 Kilometres

Polar Stereographic Projection
Projection Stéréographique Polaire

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Figure 1a. Simplified pre-Carboniferous geology of the northern parts of Ellesmere and Axel Heiberg islands.

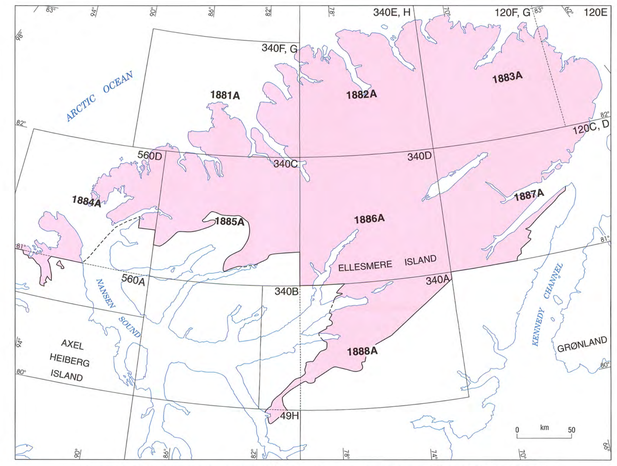

Figure 1c. Index for previously published 1:250 000 scale geological Maps 1881A to 1888A.

1881A - Yelverton Inlet
1882A - M'Clintock Inlet
1883A - Clements Markham Inlet - Robeson Channel
1884A - Cape Stallworthy - Bukken Fiord
1885A - Otto Fiord
1886A - Tanquary Fiord
1887A - Lady Franklin Bay
1888A - Greely Fiord East - Greely Fiord West - Cañon Fiord

Canada

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