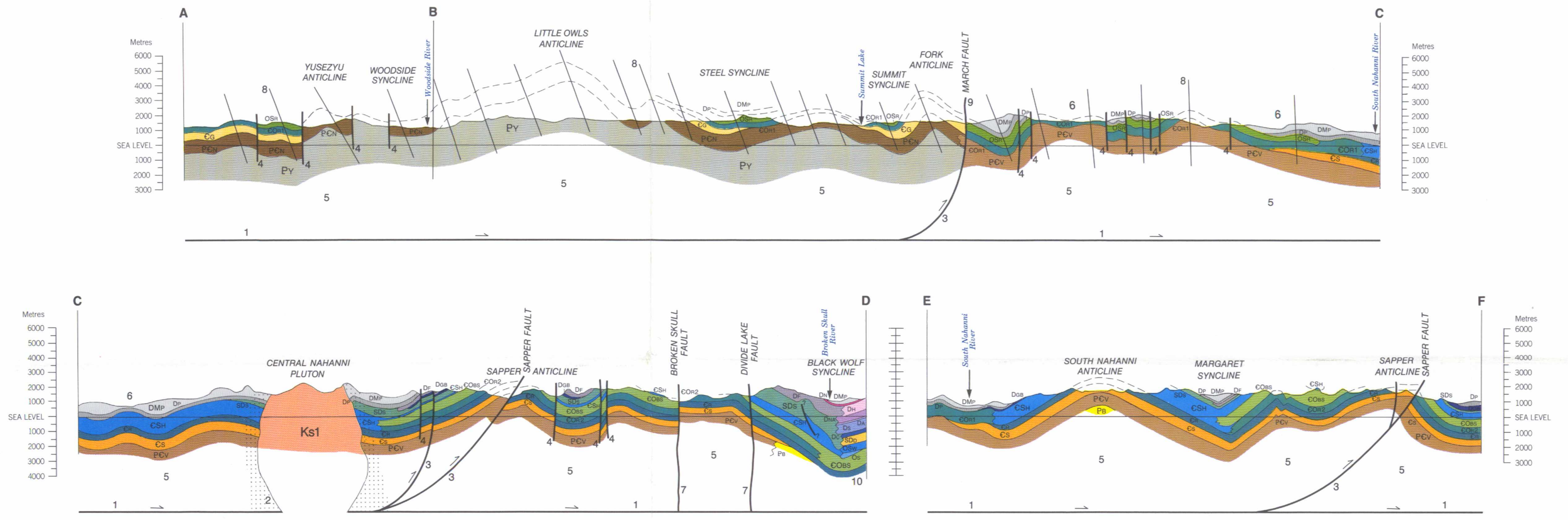
Energy, Mines and Resources Canada — Énergie, Mines et Ressources Canada

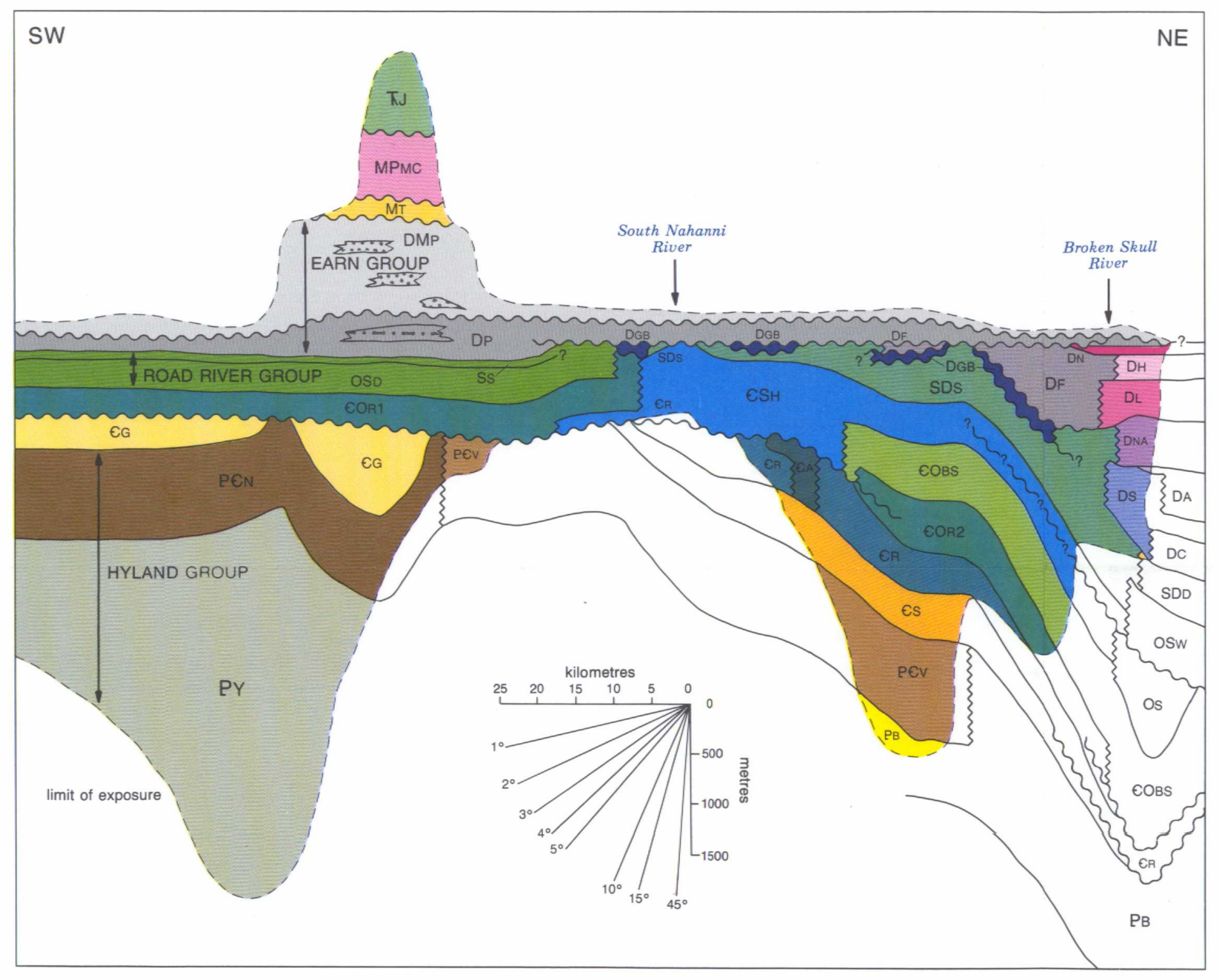
GEOLOGICAL SURVEY OF CANADA — COMMISSION GÉOLOGIQUE DU CANADA

CROSS-SECTION NOTES

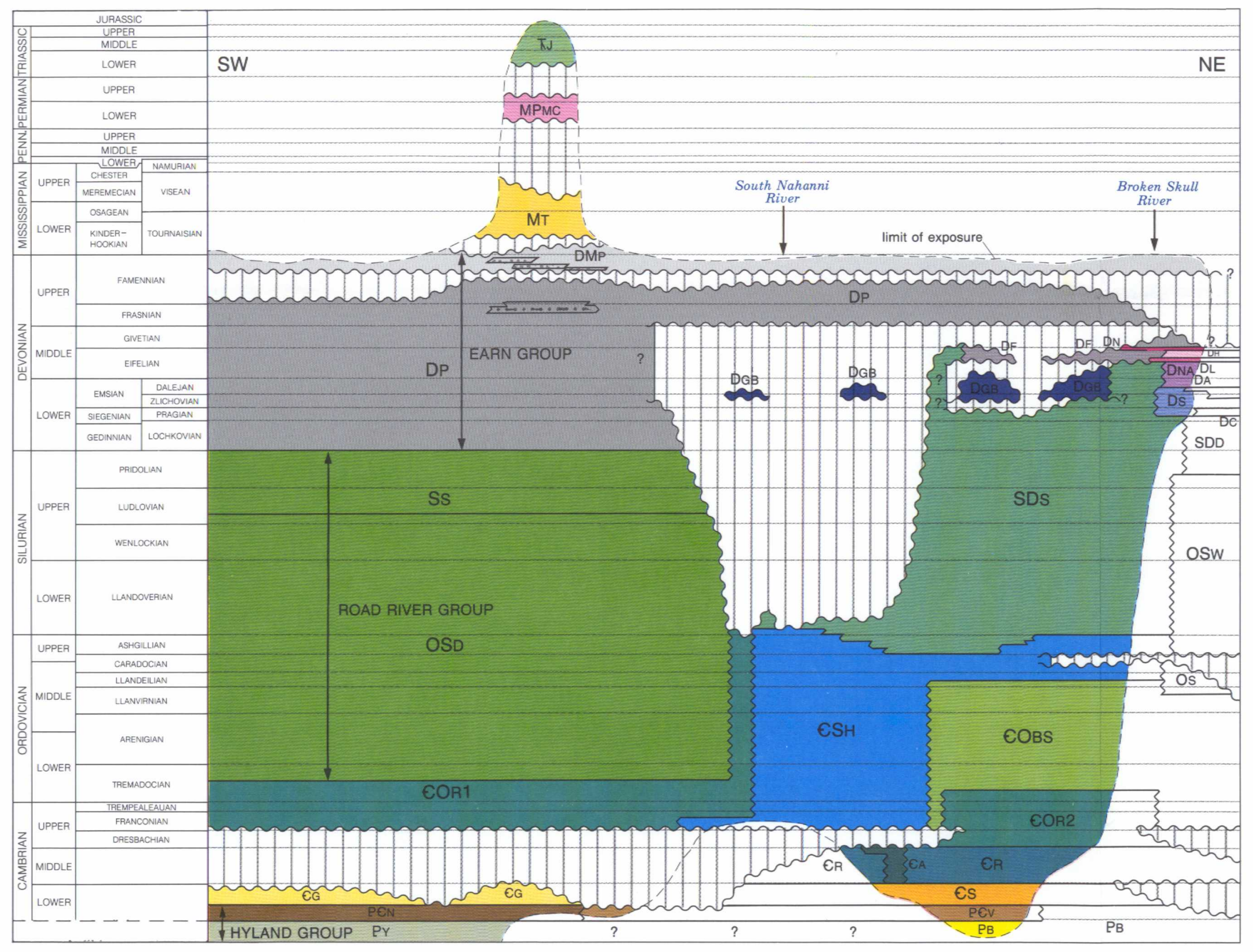
1. Inferred basal detachment for folds and thrust faults in overlying strata. The depth to the detachment is uncertain. The thickness of sediment beneath detachment and above crystalline basement is unknown
2. Pluton is post-tectonic and therefore is shown schematically to cut the basal detachment
3. Thrust fault shown diagrammatically to root in detachment
4. Steep fault whose kinematic relationship to folds, thrust faults and basal detachment is uncertain
5. Geometry of structures at depth is unknown. Anticlinal holes are likely filled by flow of weak rock into anticlinal cores, flow that was accommodated by complicated faulting and folding. Strata that may exist beneath detachment are presumably undeformed
6. Bedding dips portrayed on parts of cross-section are shallower than that indicated on geological map. Average regional bedding attitudes are constrained in cross-section by known stratigraphic thicknesses. Steep attitudes, dominantly in areas where slaty cleavage is indicated, may result from minor folds that cannot be portrayed at scale of cross-section
7. Dextral strike slip fault possibly rooting in detachment
8. Orientation of slaty cleavage
9. Gull Lake Formation is absent in footwall of March Fault. The March Fault may, in part, follow a pre-Rabbitkettle Formation block fault that accommodated pre-Late Cambrian erosion of Gull Lake strata on its northeast side
10. Backbone Ranges (**PB**), Rockslide (**ЄR**), Broken Skull (**ЄOBS**), Whittaker (**OSW**), Delorme (**SDD**), and Sunblood (**OS**) formations projected into cross-section from Glacier Lake map area to the east (see Gabrielse et al., 1973, GSC Memoir 366)



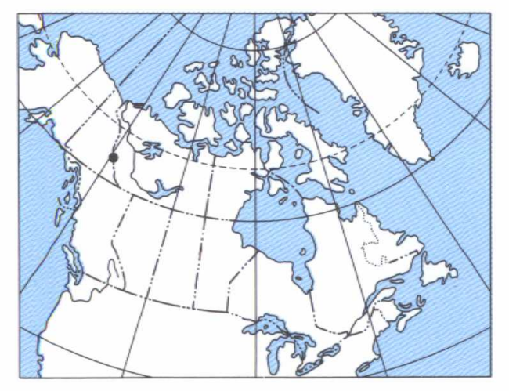
Cross-sections along A-B-C, C-D, E-F



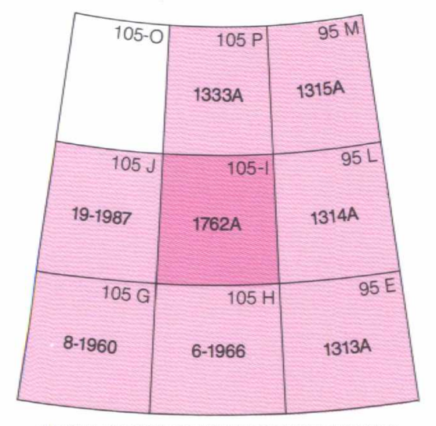
Rock stratigraphic cross-section



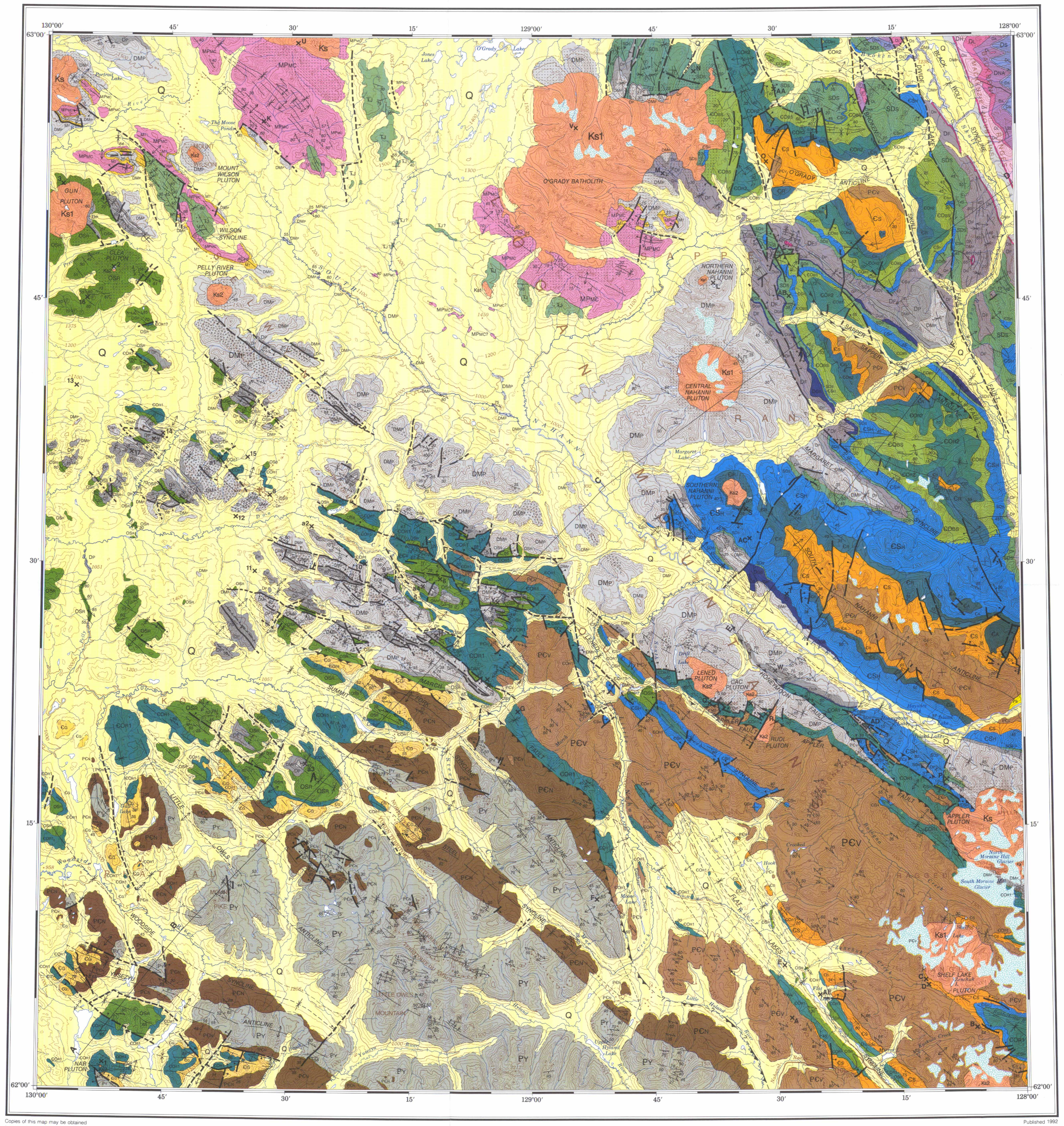
Time stratigraphic cross-section



LOCATION MAP



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



Copies of this map may be obtained
from the Geological Survey of Canada:
601 Booth Street, Ottawa, Ontario K1A 0E8
3303-33rd Street, N.W., Calgary, Alberta T2L 2A7
100 West Pender Street, Vancouver, B.C. V6B 1R8

Published 1992

MAP 1762A

GEOLOGY

LITTLE NAHANNI RIVER

NORTHWEST TERRITORIES–YUKON TERRITORY

Scale 1:250 000 - Échelle 1/250 000

Kilometres 5 0 5 10 15 20 Kilomètres

Universal Transverse Mercator Projection — Projection transverse universelle de Mercator

LEGEND

SW

PALEOZOIC

ORDOVICIAN AND SILURIAN (OSD - OSR)

ROAD RIVER GROUP

OSR *Undivided: Steel Formation and Duo Lake Formation*

UPPER SILURIAN (time and rock-stratigraphic figures only)

SS *STEEL FORMATION: orange weathering and dolomitic bioturbated silty mudstone*

LOWER ORDOVICIAN TO MIDDLE SILURIAN (time and rock-stratigraphic figures only)

OSD *DUO LAKE FORMATION: black, gun-blue, or silvery white weathering shale; black, thin- to medium-bedded black chert*

CAMBRIAN AND ORDOVICIAN (ЄG - ЄOR1)

UPPER CAMBRIAN AND LOWER ORDOVICIAN

ЄOR1 *RABBITKETTLE FORMATION: **ЄOR1** (southwest of South Nahanni River) white to buff weathering limestone, locally nodular; local volcanic tuff*

LOWER AND MIDDLE? CAMBRIAN

ЄG *GULL LAKE FORMATION: orange-brown weathering, recessive shale and siltstone with minor sandstone; tan weathering, resistant bioturbated siltstone and mudstone; local basal member of limestone conglomerate and limestone*

PROTEROZOIC

PROTEROZOIC AND CAMBRIAN

UPPER PROTEROZOIC AND LOWER CAMBRIAN

HYLAND GROUP (PY - PЄN)

PЄN *NARCHILLA FORMATION: maroon, dark blue-grey, and green weathering shale; minor sandstone*

UPPER PROTEROZOIC

PY *YUSEZYU FORMATION: grey to brown weathering, coarse quartz sandstone and quartz-pebble conglomerate; brown to pale green shale; local limestone member at top of formation*

CENOZOIC

PLEISTOCENE AND RECENT

Q *unconsolidated glacial and alluvial deposits*

MESOZOIC

CRETACEOUS

KS *SELWYN PLUTONIC SUITE: undivided; **Ks1**, hornblende-biotite granite and granodiorite; **Ks2**, biotite granite and granodiorite; patterning of country rock adjacent to pluton shows extent of hornfels*

TRIASSIC

ƬJ *JONES LAKE FORMATION: shale, ripple cross-laminated siltstone and sandstone*

PALEOZOIC

MISSISSIPPIAN TO PERMIAN

MPMC *MOUNT CHRISTIE FORMATION: pale green shale, siltstone, and chert; minor quartz sandstone*

MISSISSIPPIAN

MT *TSICHU FORMATION: resistant, thick-bedded quartz arenite; minor brown to black shale*

DEVONIAN AND MISSISSIPPIAN (DP - DMP)

UPPER DEVONIAN TO MIDDLE MISSISSIPPIAN

EARN GROUP

DMP *PREVOST FORMATION: chert-quartz sandstone, chert-pebble conglomerate, and minor shale (patterned); brown weathering shale and minor chert-quartz sandstone (unpatterned)*

LOWER TO UPPER DEVONIAN

DP *PORTRAIT LAKE FORMATION: chert-quartz wacke, and massive pebbly mudstone (patterned); black siliceous shale and chert (unpatterned)*

DEVONIAN (DGB - DF)

MIDDLE DEVONIAN

DF *FUNERAL FORMATION: buff-orange weathering silty limestone*

LOWER DEVONIAN

DGB *GRIZZLY BEAR FORMATION: resistant crinoidal limestone*

SILURIAN TO LOWER DEVONIAN

SDS *SAPPER FORMATION: blue-grey weathering, black limestone (lower Sapper); tan, buff, or dark grey weathering silty limestone (upper Sapper)*

UPPER CAMBRIAN TO LOWER SILURIAN

ЄSH *HAYWIRE FORMATION: white to dark-grey dolostone locally cherty; rare amygdaloidal basalt and tuff; basal member of grey-white dolostone, quartz arenite, and maroon mudstone*

UPPER CAMBRIAN AND LOWER ORDOVICIAN (ЄOR2 - ЄOBS)

ЄOBS *BROKEN SKULL FORMATION: grey to black dolostone (lower Broken Skull); dark grey to black limestone (upper Broken Skull); local basal member of maroon dolostone and sandstone*

ЄOR2 *RABBITKETTLE FORMATION: **ЄOR2**, (northeast of South Nahanni River) tan to orange-brown weathering, nodular blue-grey limestone*

CAMBRIAN (ЄS - ЄR)

MIDDLE CAMBRIAN

ЄR *ROCKSLIDE FORMATION: tan to brown weathering, recessive grey limestone*

ЄA *AVALANCHE FORMATION: light grey weathering dolostone*

LOWER CAMBRIAN

ЄS *SEKWI FORMATION: limestone, locally wavy bedded and nodular; massive grey dolostone; medium- to thick-bedded quartz sandstone; purple siltstone and dolomitic siltstone; bright orange weathering, fine crystalline dolostone*

PROTEROZOIC

PROTEROZOIC AND CAMBRIAN (PB - PЄV)

UPPER PROTEROZOIC AND LOWER CAMBRIAN

PЄV *VAMPIRE FORMATION: greenish-grey siltstone, very fine grained quartz sandstone and shale*

UPPER PROTEROZOIC

PB *BACKBONE RANGES FORMATION: buff weathering dolostone*

NE

PALEOZOIC

DEVONIAN (DC - DN)

MIDDLE DEVONIAN

DN *NAHANNI FORMATION: light grey weathering, resistant limestone*

DH *HEADLESS FORMATION: orange-brown weathering limestone*

DL *LANDRY FORMATION: light grey to brown-grey weathering, resistant limestone*

LOWER DEVONIAN

DNA *NATLA FORMATION: dark grey weathering, recessive limestone, in part crinoidal*

DA *ARNICA FORMATION: dark grey weathering, cherty dolostone*

DS *SOMBRE FORMATION: light grey dolostone (lower Sombre); dark grey dolostone, in part crinoidal (middle Sombre); alternating light and dark grey dolostone (upper Sombre)*

DC *CAMSELL FORMATION: grey, black, and white weathering dolostone*

UPPER SILURIAN AND LOWER DEVONIAN (cross-section only)

SDD *DELORME FORMATION: orange-buff weathering dolostone*

UPPER ORDOVICIAN AND SILURIAN (cross-section only)

OSW *WHITTAKER FORMATION: dark grey weathering dolostone and minor limestone*

MIDDLE ORDOVICIAN (cross-section only)

OS *SUNBLOOD FORMATION: dark and light grey dolomite; pink, mottled limestone; orange-brown sandstone*

Geological boundary (defined, approximate, assumed or extrapolated beneath overburden) . . . .
Facies boundary (schematic and approximate) . . . .
Bedding, top known (horizontal, inclined, vertical, overturned) 25 25
Bedding top unknown (inclined) 45
Slaty cleavage (inclined, vertical) 35
Lineation, intersection of slaty cleavage and bedding (inclined) 15
Lineation, axis of minor fold (inclined) 25
Fault, steeply dipping (defined, approximate, assumed or extrapolated beneath overburden, solid circle indicates downthrow side) . . . .
Thrust fault (defined, approximate, assumed or extrapolated beneath overburden; teeth indicate upthrust side) . . . .
Fault, strike slip (defined, approximate, assumed or extrapolated beneath overburden; arrows indicate relative movement) . . . .
Anticline (defined, approximate, extrapolated beneath overburden) . . . .
Syncline (defined, approximate, extrapolated beneath overburden) . . . .
Anticline, syncline (overturned) . . . .
Monocline (defined, approximate, extrapolated beneath overburden) . . . .
Fossil locality . . . . Ⓕ
Location of measured section . . . .
Mineral occurrence . . . . ×1
Hornfels . . . .

Geology by S.P. Gordey 1977-1981, with contributions by S.L. Blusson, L.H. Green and J.A. Roddick

Geological cartography by J.L. Froescul, Geological Survey of Canada

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

Colour separations were produced using digital methods

Base map at the same scale published by the Surveys and Mapping Branch in 1987

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

Mean magnetic declination 1992, 30°44′ East, decreasing 12.9′ annually. Readings vary from 30°13′ E in the SW corner to 31°15′ E in the NE corner of the map

Elevations in metres above mean sea level

MINERAL OCCURRENCES

Property	Mineralization	Host
Northwest Territories		
A HAT	vein Cu, Pb, Zn	Rabbitkettle Fm.
B unnamed	vein Pb	Vampire Fm.
C JAY	vein Pb, Zn, Au, Ag	Vampire Fm.
D unnamed	skarn W	Sekwi Fm.
E HUG	geochem (Zn) anomaly	Duo Lake Fm.
F unnamed	pegmatite Li	Yusezyu Fm.
G FERN	skarn Pb, Zn	Rabbitkettle Fm.
H CINQ	stratiform Zn, Pb, Cu	Duo Lake or Portrait Lake fm.
I CAC	skarn W	Rabbitkettle Fm.
J NANCY	vein Pb, Zn	Haywire Fm.
K CAM	vein Pb, Zn	Mount Christie Fm.
L PR	replacement Cu	Prevost Fm.
M CAN	skarn Cu, Pb, Zn	Funeral Fm.
N RA	vein Sb, Cu, Pb	Sapper Fm.
O SAND, GUN	replacement Zn	Broken Skull? Fm.
P VULCAN	stratiform Pb, Zn	Sapper Fm.
Q LENED	skarn W	Rabbitkettle Fm.
R RUDI	skarn W	Rabbitkettle Fm.
S BLUE	skarn W	Rockslide Fm.
T BIG RED	vein Pb, Zn	Grizzly Bear Fm., Haywire Fm.
U unnamed	vein Pb, Zn	Cretaceous granodiorite
V unnamed	vein Pb	Cretaceous granodiorite
W GHMS	stratiform Ba	Portrait Lake Fm.
X GRAND	stratiform Pb, Zn	Duo Lake Fm.?
Y CMC	stratiform Ba, Pb, Zn	Portrait Lake Fm.
Z JOLI GREEN	vein Zn	Haywire?, Sapper?, or Broken Skull fm.
AA SKULL	vein Pb, Zn, Ag	Broken Skull or Sapper fm.
AB HAN	stratiform Zn, Cu	Sapper Fm.
AC BONNIE	replacement? Zn	Haywire Fm.
AD unnamed	stratiform U, P, Pb, Zn, Ba	Duo Lake or Portrait Lake fm.
AE PAB	stratiform Pb, Zn, V, Cu, Ag	Duo Lake Fm.
Yukon Territory		
1 NAR	skarn W, Cu, Pb, Zn, Ag	Rabbitkettle Fm.
2 CLEA	skarn W, Cu, Zn	Duo Lake Fm.
3 BIRR	skarn Cu, Fe	Mount Christie? Fm.
4 NOM	vein Au	Portrait Lake Fm.
5 HOWARDS PASS	stratiform Pb, Zn	Duo Lake Fm.
6 SHIELD	stratiform Pb, Zn	Duo Lake Fm.
7 ORO	stratiform Ba	Portrait Lake Fm.
8 ANNIV	stratiform Pb, Zn	Duo Lake Fm.
9 WINKIE	stratiform? Pb, Zn	Duo Lake Fm.
10 NESS	vein Cu	Prevost? Fm.
11 DIANNE	stratiform? Ba, Zn	Portrait Lake Fm.
12 RITZ	geochem (Pb-Zn) anomaly	Prevost? Fm.
13 ABBEY	stratiform Pb, Zn	Duo Lake Fm.
14 TANG	stratiform Ba	Portrait Lake Fm.
15 OHNO	geophysical anomaly	Duo Lake? Fm.
16 ROOK	geochem (Zn-Ba) anomaly	Duo Lake Fm.
17 FAST	unclassified work target	Earn Group
a1 OP	stratiform Pb, Zn	Duo Lake Fm.
a2 TROIS	stratiform Ba; Zn-rich breccia	Portrait Lake Fm.
a3 unnamed	stratiform Ba	Portrait Lake Fm.
a4 unnamed	stratiform Ba	Portrait Lake Fm.
a5 unnamed	stratiform Ba	Portrait Lake Fm.

MINERALS

Antimony	Sb	*Phosphorus*	P
Barium	Ba	*Silver*	Ag
Copper	Cu	*Tungsten*	W
Gold	Au	*Uranium*	U
Iron	Fe	*Vanadium*	V
Lead	Pb	*Zinc*	Zn
Lithium	Li		

REFERENCE

Green, L.H., Roddick, J.A., and Blusson, S.L.
1968: Geology, Nahanni, District of Mackenzie and Yukon Territory; Geological Survey of Canada, Map 8-1967

To accompany GSC Memoir 428 by S.P. Gordey

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