

LEGEND

CRETACEOUS

LOWER CRETACEOUS

FORT ST. JOHN GROUP

- Ksu** SULLY FORMATION: Dark grey shale and siltstone with sideritic concretions; silt content higher in upper part.
- Ksk** SIKANNI FORMATION: Greenish grey sandstone, siltstone, and shale; sandstone is thick-bedded, commonly calcareous or glauconitic, typically finely laminated and cross-laminated.
- Kl** LEPLINE FORMATION: Dark grey mudstone with concretions, silt shale, and black fissile shale; lower part of unit abundantly fossiliferous.
- Ksc** SCATTER FORMATION: Resistant, greenish-grey, glauconitic, laminated sandstone; medium- to thick-bedded; silty, concretionary mudstone common in middle part of unit.
- KGr** GARBLITT FORMATION: Grey shale and siltstone with sideritic concretions; minor thin-bedded, finely laminated sandstone.
- KCh** CHINKEH FORMATION: Chert-pebble conglomerate overlain by bioturbated quartz arenite with variable chert content, and argillaceous siltstone; woody or plant debris common.

PERMIAN

ISHBEL GROUP

- PF** FANTASQUE FORMATION: Dark grey to white, well bedded, spiculate chert; rusty weathering; rhythmically interbedded with minor shale and siliceous siltstone.
- PT** Tika map unit: Buff weathering, light to medium brown, silty and sandy limestone or dolomite grading into calcareous siltstone and sandstone; subordinate lithoclast breccia and shale; medium-bedded, massive to cross-laminated; sparsely fossiliferous; western occurrences rhythmically bedded; rectilinear fracture pattern characteristic.

LOWER CARBONIFEROUS

MATTSOON FORMATION

- CM-u** UPPER MEMBER: Light to medium grey, fine- to coarse-grained, locally calcareous or dolomitic quartz arenite and sub-chert-arenite; subordinate fossiliferous limestone, dolomite, and grey to green shale; sandstone commonly shows large-scale crossbedding; fossils in the limestone are commonly silicified; may include Tika map unit.
- CM-m** MIDDLE MEMBER: Grey to buff to brown, poorly- to well-indurated, fine-grained quartz arenite with subordinate siltstone and dark shale; minor coal and sandy dolomite; sandstone shows fine- to large-scale crossbedding; typically forms sharp-based, thick-bedded, fining-up sequences.
- CM-l** LOWER MEMBER: Greyish-orange weathering, light grey or buff, well-indurated, fine- to very fine-grained quartz arenite interbedded with siltstone and dark grey shale; minor coal, dolomite, and lithoclast breccia; cross-laminated and trace fossils common; typically thin- to medium-bedded with coarsening-up sequences; western occurrences turbiditic.
- CG** GOLATA FORMATION: Dark grey to black shale and silty mudstone; subordinate muddy sandstone and fossiliferous limestone and dolomite; proportion of carbonates decreases and sandstone increases up section.
- CP** FLETT FORMATION: Grey, cherty, skeletal lime wackestone and packstone; subordinate grainstone, calcareous shale, mudstone and spiculate; medial unit comprises sandstone, siltstone and mudstone with subordinate limestone, massive bedding; megascale intraformational truncation surfaces common.
- CP** PROPHET FORMATION: Greyish-orange weathering, dark grey, calcareous to dolomitic, bedded chert and spiculate; subordinate medium to dark grey, cherty dolomite, wackestone, and lithoclast breccia; cross-laminated and trace fossils; well bedded, commonly rhythmic; megascale intraformational truncation surfaces common.

DEVONIAN AND CARBONIFEROUS

- DCBR** BESA RIVER FORMATION: Dark grey to black shale, locally weathers buff; sparsely fossiliferous; minor interbedded greyish- orange weathering sandstone, siltstone.

MAP SYMBOLS

- Geological boundary (defined, approximate, assumed)
- Outcrop stations
- Bedding, dips known (inclined, estimated)
- Crossbedding (dip direction and dip; uncorrected)
- Joints
- Fractures
- Anticline (defined, approximate, assumed)
- Syncline (defined, approximate, assumed)
- Anticlinal kink fold - (defined, approximate, assumed) (See diagram below)
- Synclinal kink fold - (defined, approximate, assumed) (See diagram below)
- Fault, thrust (approximate, assumed)
- Section location (long, short)
- Well (status unknown)

FOLD SYMBOLOGY

Cross-section view: double arrows are used to indicate folds where the dip direction changes across the hinge, and single arrows are used where the dip direction remains the same across a hinge (see Stockmal et al., 2002).

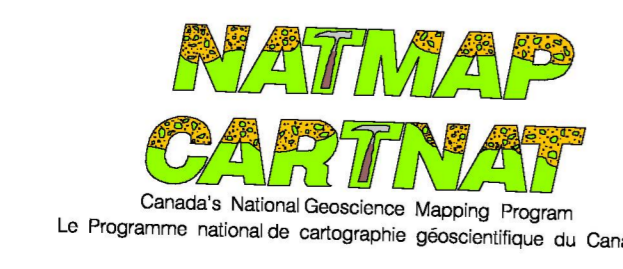
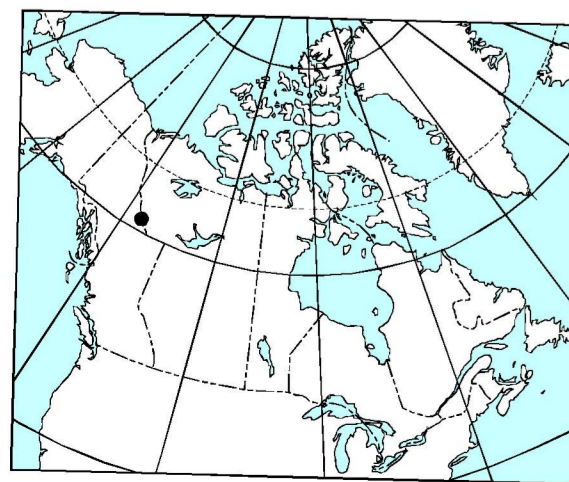
LIST OF WELLS

| UWID | FULL NAME | SPUD DATE | SURFACE LOCATION (Easting, Northing) |
|--------------------|------------------------------|-------------|--------------------------------------|
| 1 300L636100124150 | NORTHCOR ET AL JACKFISH L-63 | 24 Mar 1984 | 420333, 6750068 |

STRATIGRAPHIC SECTIONS

| SECTION | NOTES |
|---------------|---|
| 1. Section 1 | Lower Cretaceous (lower part, base approx.) D. F. Stott (Stott, 1960) |
| 2. Section 8 | Lower Carboniferous P. Harker (Harker, 1963) |
| 3. 76RAH5 | Prophet, Golata, Lower Mattson B. C. Richards (Richards, 1989) |
| 4. L19 (A, B) | Chinkeh D. A. Leckie (Leckie et al., 1991) |
| 5. 2004RAH9 | Mattson Fm. B. C. Richards (unpublished, 2002) |

- ### References:
- Harker, P., 1963: Carboniferous and Permian rocks, southwestern District of Mackenzie; Geological Survey of Canada Bulletin 95, 91p.
 - Leckie, D.A., Potocki, D.J., and Visser, K., 1991: The Lower Cretaceous Chinkeh Formation: A frontier-type play in the Liard Basin of Western Canada, AAPG Bulletin, v. 7 no 8, p. 1324-1352.
 - Richards, B. C., 1989: Uppermost Devonian and Lower Carboniferous stratigraphy, sedimentation and diagenesis, southwestern District of Mackenzie and southeastern Yukon Territory; Geological Survey of Canada Bulletin 390, 135p.
 - Stockmal, G.S., Kubli, T.E., Currie, L.D., and McDonough, M.R., 2002: Map symbology and analysis of box- and polycylindrical folds, with examples from the Rocky Mountain Foothills of northeastern British Columbia and the Liard Ranges of southeastern Yukon Territory and southwestern Northwest Territories; Canadian Journal of Earth Sciences, vol. 39, pp. 145-155.
 - Stott, D. F., 1960: Cretaceous Rocks in the region of Liard and Mackenzie Rivers, Northwest Territories; Geological Survey of Canada Bulletin 63, 36p.



GEOLOGY
ETANDA LAKES (95C/16)
 NORTHWEST TERRITORIES - YUKON TERRITORY
 Scale 1:50 000 Echelle 1/50 000
 Kilometres 1 0 1 2 3 Kilomètres
 Universal Transverse Mercator Projection / Projection transverse universelle de Mercator
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 2003

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| 95F/02 | 95F/01 | 95G/04 |
|--------------|---------------|----------------------|
| no title | Clausen Creek | The Twisted Mountain |
| 95C/15 | 95C/16 | 95B/13 |
| Dendale Lake | Etanda Lakes | Sawmill Mountain |
| GSC OF 1460 | GSC OF 1676 | |
| 95C/10 | 95C/09 | 95B/12 |
| Tika Creek | Chinkeh Creek | Mount Flett |
| GSC OF 1980 | GSC OF 1674 | |

Geological cartography by K. M. Fallas and S. J. Hinds
 Any revisions or additional geological information from the user would be welcomed by the Geological Survey of Canada
 Base map at the same scale published Surveys and Mapping Branch in 1971
 Compilation by G.F. Hynes, K.M. Fallas, and L.S. Lane based on fieldwork and studies of vertical air photographs 2001-2002.
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 Geology from field work by G.F. Hynes, K.M. Fallas, L.S. Lane and A.K. Khudoley 2001-2002.
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 Hynes, G.F., Fallas, K.M., and Lane, L.S., 2003: Geology, Etanda Lakes (95C/16), Northwest Territories and Yukon Territory; Geological Survey of Canada, Open File 1676, scale 1:50 000.