

Descriptive Notes

The Campbell Lake map area (NTS 107-B/2) is located in the Northwest Territories on the eastern edge of the Mackenzie Delta. The area was mapped in the 1960s and 1970s and a compilation of that work was published by D.K. Norris (1981). All Mesozoic rock units on this map are as mapped by Norris (80) except that some unit names have changed based on new regional stratigraphic observations. The central Campbell Lake map area was re-mapped in the 1980s and early 1990s, and additional detailed geologic notes of L.D. Dylke from the 1970s have been re-evaluated and incorporated into the current interpretation of the geology.

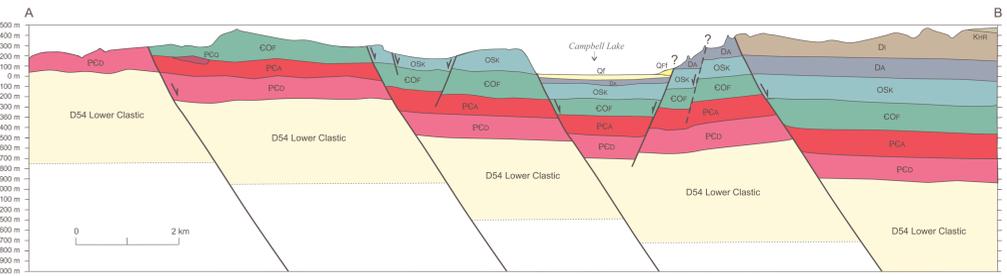


Figure 1. Structural cross-section Campbell Uplift, NTS 107-B/2.

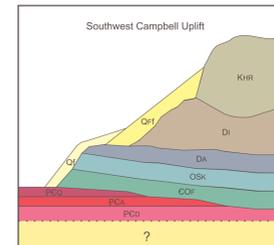
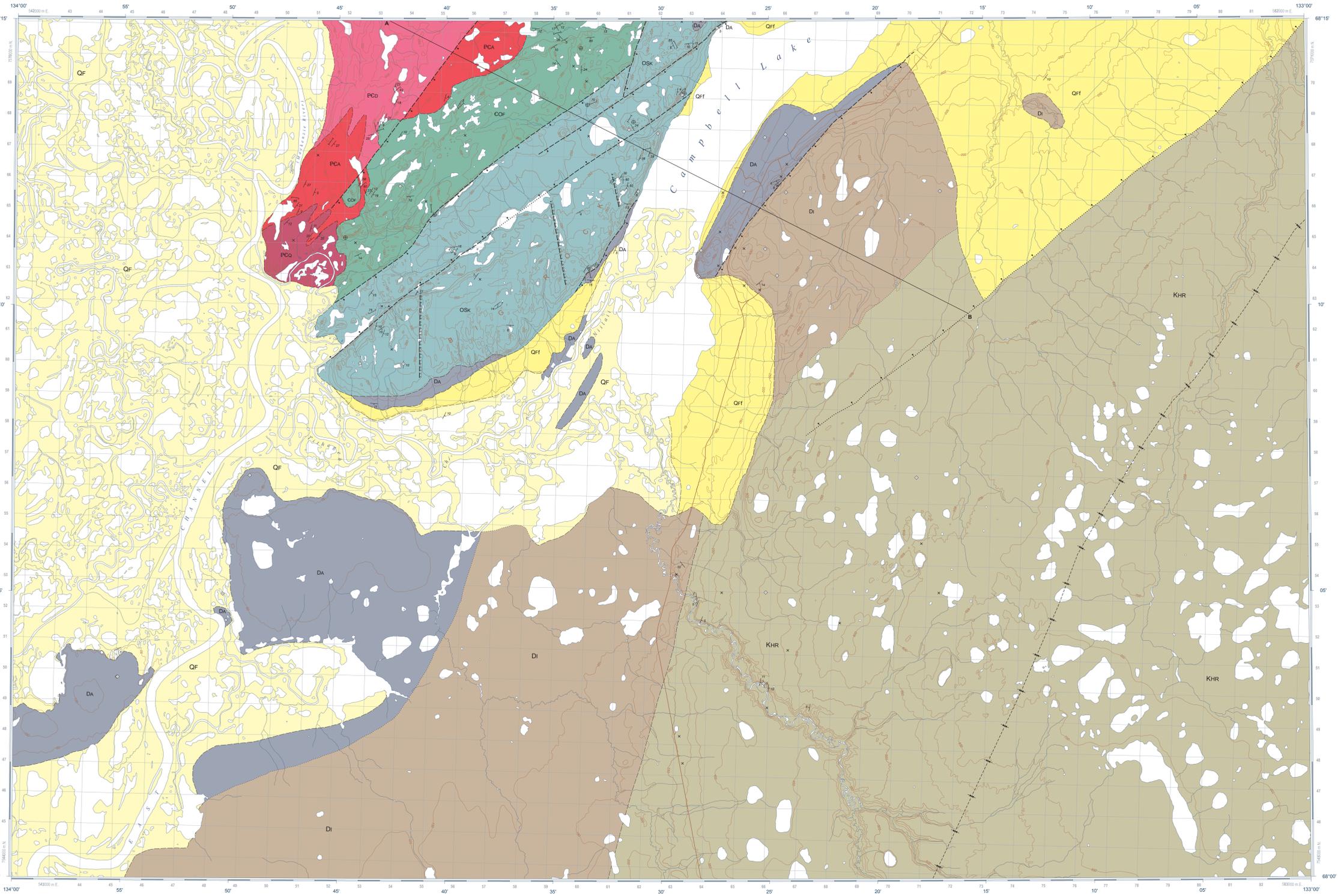


Figure 2. Stratigraphic schematic Campbell River, NTS 107-B/2.



- QUATERNARY
QF Quaternary fluvial and lacustrine clay, silt, sand and gravel. Mostly covered in organic deposits.
QFI Quaternary alluvial fan and fan apron deposits, clay, silt, sand and gravel. Mostly covered in organic deposits.
LOWER CRETACEOUS
KHR Horne River Formation (Arctic Red Subfacies): shale and siltstone.
UPPER DEVONIAN
DI Imperial Formation: shale, silt, clay, black to rusty weathering, and sandstone. Poorly weathering. Shale and sandstone in a succession of thick alternating beds. Sandstones laminated and cross-stratified with fines, coarse-grained and planar impressions.
LOWER DEVONIAN TO MIDDLE DEVONIAN
DA Anzac Formation: siltstone, with units of limestone, grey fine to white, often coarse crystalline. Poorly preserved stromatolites/stromatolites and stromatolites abundant. Locally fossiliferous with stony and colonial corals, brachiopods, and thin-coral crinoid ossicles. Some low-angle crinoid splaylets.
UPPER ORDOVICIAN TO LOWER SILURIAN
OSK Mount Kindle Formation: siltstone, grey to dark grey, fine to medium crystalline. Local silt replacement. Chert and sandy corals, and other local fossiliferous. Rare crinoid stems and ossicles and brachiopods. Massive, laminated and cross-bedded, calcareous and/or calcareous breccias.
LOWER ORDOVICIAN TO UPPER CAMBRIAN
COF Franklin Mountain Formation: dolomite, grey and white, some weathering bluish. Mostly coarse (saurian?) crystalline, minor chert. Local orange weathering stain. Usually thickly bedded, coarse to medium crystalline. Replacement high in the section. Minor zebra dolomite and vugs with calcite.
PROTEROZOIC TO CAMBRIAN
PCD Quartzite unit: quartzite, massive to platy buff and green, minor siltstone, and argillite green and red, locally spotted with hematite.
PCA Argillite unit: multistage, argillite, redmarl and green, locally calcareous or siliceous. Units of limestone, dolomite and quartzite. Locally with pencil concretion.
PCD Dolomite unit: dolomite, buff-yellow weathering, grey fine to medium grained. Thin grey chert and argillite. Local red and purple coloration. Rarely fossiliferous. Laminated, wavy and ripple cross-stratified, rare stromatolites, molar shell, desiccation cracks, beak-like structures. Local thick beds of intraformational conglomerate, and beds of thin-rip concretion.

- Geological contacts:
Approximate
Concealed
Syncline, upright, approximate
Horizontal
Inclined, no evidence for younging direction
Cleavage, spaced:
Vertical
Inclined
Fossil
Station
Cross-section
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The geological compilation of D.K. Norris 1981 for the entire NTS 107-B map area, he gives the following acknowledgements: "Geological synthesis based on field observations and/or paleogeological determinations made in the following geographic areas: industry geologists' reports listed alphabetically, with corresponding year of field activity where applicable; Geological Survey of Canada - W. W. Brindley, J.P. Chamney, L.D. Dylke, 1974; W.S. Hopkins, G.L. Hughes, 1962; J.A. Jessley, 1955, 1956; D.C. Montgomery, E.W. Moutroy, 1962; A.W. Norris, 1962, 1970; D.K. Norris, 1962, 1970, 1973, 1975; R.A. Price, 1962; R.M. Proctor, 1962; A.S. Sweet, G.R. Turnbull, 1962; J.H. Wall, Industry geological departments, Gulf of Canada Ltd., Texaco Exploration Ltd., 1960; Petro-Canada Exploration Inc., 1977.
Paleontological ages and information (see references in map information document) were provided by: E. Asseff, W.W. Brindley, J.P. Chamney, M.J. Cooper, S.P. Fowler, W.S. Hopkins, A.D. McCracken, D.C. McCreagh, D.J. McLaren, B.S. Norford, A.W. Norris, G.S. Nowlan, A.R. Ormiston, A.E.H. Paster, A.R. Sweet, T.J. Uyeno, and J.H. Wall. Fossil samples collected by Geological Survey of Canada personnel as well as: K.E. Leigh (University of Western Ontario), F. Duffaud (ERDC), Texaco Geologists 1950; W.S. Mackenzie and Preppar, R.A. Price, and samples from the Amoco Ulster Sourby Inuvik D-54 well.
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Preliminary publications in this series have not been scientifically edited.

Figure 1. Structural cross-section Campbell Uplift, NTS 107-B/2. The figure shows a geological cross-section with various units labeled (PCD, PCA, COF, OSK, DA, KHR). A scale bar indicates 0 to 2 km. The section shows the Campbell Uplift and the D54 Lower Clastic units. The units are color-coded: PCD (red), PCA (dark red), COF (green), OSK (blue), DA (brown), and KHR (grey). The section is oriented north-south, showing the Campbell Uplift and the D54 Lower Clastic units. A scale bar indicates 0 to 2 km.

Abstract
The Campbell Lake map area, NTS 107-B/2 is located in the Northwest Territories on the southwestern edge of the Mackenzie Delta. The western map area is underlain by Quaternary fluvial deposits and parts of the central and northern areas by fossil and fossiliferous deposits. The eastern area is underlain by poorly exposed Proterozoic and Paleozoic strata which comprise the Campbell Uplift. These Proterozoic and Paleozoic strata may be part of an Archaean or older crustal fragment. The eastern part of the Tuk Horst (Welters, 1992), which centers the Eskimo Lakes Arch. The horst features a complex subunit of Paleozoic and Proterozoic sedimentary strata and local volcanic rocks. The Paleozoic units are uniformly, all strata are openly folded on a scale of tens to hundreds of meters and cut by normal faults. Faulting is highly complex, and much of the Cretaceous.

Résumé
Le région cartographique de Campbell Lake (SMRC 107-B/2) est située dans les Territoires du Nord-Ouest, à la bordure sud-est de delta du Mackenzie. Le secteur occidental de la région cartographique est occupé par des dépôts quaternaires. Le reste de la région est occupé par des strates du Crétacé, peu exposées et les strates du Paléozoïque et du Protérozoïque. Ces strates du Paléozoïque et du Protérozoïque pourraient être des restes d'un craton archaïque ou plus ancien. Toutefois, cette entité est maintenant une constitutive du nord de Tuk Horst (Welters, 1992), qui constitue la partie centrale de l'Archipel des Lacs Eskimo. Sous une déformation pré-mésozoïque, le horst présente un agencement complexe de strates sédimentaires, et localement de strates volcaniques, du Paléozoïque et du Protérozoïque. Toutes les strates sont représentées dans de grands plis couverts à l'échelle de dizaines ou de centaines de mètres et elles sont recoupées par des failles normales. Le jeu de ces failles normales est visiblement complexe et remonte principalement au Crétacé.

National Topographic System reference and index to adjoining published Geological Survey of Canada maps
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CANADIAN GEOSCIENCE MAP 179
BEDROCK GEOLOGY
CAMPBELL LAKE
Northwest Territories
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Authors: M.P. Cecile, L.S. Lane, L.D. Dylke, and D.K. Norris
Map projection Universal Transverse Mercator, zone 8, North American Datum 1983
Base map at the scale of 1:50,000 from Natural Resources Canada, with modifications.
Elevations in feet above mean sea level.
Magnetic declination 2017, 21°59'E, decreasing 33.1" annually.
This map is not to be used for navigational purposes.
BEDROCK GEOLOGY
CAMPBELL LAKE
Northwest Territories
1:50 000
Title photograph: Aerial view southwestward across Campbell Lake toward the Mackenzie River. The lake occupies a segment of the Sledge Craton, part of an extensive block fault system that was active leading to the initial formation of the Beaufort Sea in Cretaceous time, more than 100 million years ago. The lake features an unusual reverse delta. Normally, the stream drains water from Campbell Lake into the Mackenzie River. But during the spring flood when the water level in the river is high, the flow reverses, bringing silt-laden water from the river into the lake. Over time the silt has built up this reverse delta, filling up the centre of the lake. Photograph by L.S. Lane, 2014-02-23.
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