Natural Resources Canada | Ressources naturelles Canada

CANADIAN GEOSCIENCE MAP 178

GEOLOGY

INUVIK

Northwest Territories

Map Information Document

Preliminary

Canadian Geoscience Maps

2015

Canada

PUBLICATION

Map Number

Natural Resources Canada, Geological Survey of Canada
Canadian Geoscience Map 178 (Preliminary)

Title

Geology, Inuvik, Northwest Territories

Scale

1:50 000

Catalogue Information

Catalogue No. M183-1/178-2014E-PDF
ISBN 978-1-100-23410-6
doi:10.4095/295655

Copyright

Recommended Citation

Cecile, M.P., Lane, L.S., Dyke, L.D., and Norris, D.K., 2015. Geology, Inuvik, Northwest Territories; Geological Survey of Canada, Canadian Geoscience Map 178 (preliminary), scale 1:50 000. doi:10.4095/295655

Cover Illustration

Aerial view of the town of Inuvik, looking northward past East Channel of the Mackenzie River and the waterfront, taken 11 July 2007. Inuvik is the administrative centre for the lower Mackenzie region, with a population near 3500. Located approximately 200 km north of the Arctic Circle, Inuvik sees continuous sunlight for nearly two months in the summer. Photograph by L.S. Lane. 2014-024

ABSTRACT

The Inuvik map area, NTS 107-B/7 is located in the Northwest Territories on the southeastern edge of the Mackenzie Delta. The western and eastern portions of the map area are underlain by Quaternary fluvial and fluvial fan deposits, and the north central area by hummocky moraine and lacustrine deposits. The south central area is underlain by poorly exposed Cretaceous strata, and fair to poorly exposed Proterozoic and Paleozoic strata. The uplift may be part of an earlier Paleozoic arch. But it presently is part of the Mesozoic Tuk Horst (Wielens, 1992), which centers the Eskimo Lakes Arch. The horst features a complex subcrop of Paleozoic and Proterozoic quartzite, argillite, shale, dolostones and locally volcanics, beneath a pre-Mesozoic unconformity. All strata are openly folded on a scale of tens to hundreds of meters and cut by normal faults. Normal faulting likely has a complex history but is as young as Cretaceous.

RÉSUMÉ

La région cartographique d'Inuvik (SNRC 107-B/7) se trouve dans les Territoires du Nord-Ouest, à l'extrémité sud-est du delta du Mackenzie. Des dépôts fluviaux et des dépôts de cône alluvionnaire d'origine fluviale, d'âge quaternaire, s'étendent sur les secteurs est et ouest de la région, alors que des dépôts de moraine bosselée et des dépôts lacustres reposent sur sa partie centre-nord. Le secteur centre-sud renferme des strates crétacées peu représentées en affleurement, ainsi que des strates protérozoiques et paléozoïques qui affleurent peu à moyennement. Le soulèvement appartient peut-être à une arche paléozoïque plus ancienne, mais il fait présentement partie du horst Tuk, d'âge mésozoïque (Wielens, 1992), qui forme la partie centrale de l'arche d'Eskimo Lakes. Ce horst comprend une succession souterraine complexe comprenant quartzite, argilite, shale, dolomie et (par endroits) roches volcaniques, datant du Paléozoïque et du Protérozoïque, sous une discordance antérieure au Mésozoïque. Toutes les strates ont été affectées par des plis ouverts, à des échelles allant de dizaines à des centaines de mètres, et ont été recoupées par des failles normales. L'histoire des failles normales est probablement complexe, mais elle pourrait s'être terminée aussi récemment qu'au Crétacé.

ABOUT THE MAP

General Information

Authors: M.P. Cecile, L.S. Lane, L.D. Dyke, and D.K. Norris

Geological compilation by M.P. Cecile, L.S. Lane, and L.D. Dyke 2012–13, and D.K. Norris 1981.

Geology conforms to Bedrock Data Model v.3.1

Field observations of area Proterozoic and Paleozoic by M.P. Cecile, 1987, 1988, 1992; L.S. Lane, 1987; and L.D. Dyke, 1974. Geology of the remaining area interpreted from D.K. Norris's 1:250 000 GSC Map 1517A compilation in 1981.

Geomatics and cartography by M. Le

Initiative of the Geological Survey of Canada, conducted under the auspices of the Yukon Sedimentary Basin project as part of Natural Resources Canada's Geo-mapping for Energy and Minerals (GEM) program

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 metres above mean sea level

Magnetic declination 2015, 23º30'E, decreasing 34' annually

The Geological Survey of Canada welcomes corrections or additional information from users.

Data may include additional observations not portrayed on this map.
See documentation accompanying the data.
Additional references are included in the map information document.

This publication is available for free download through
GEOSCAN (http://geoscan.nrcan.gc.ca/).

This map is not to be used for navigational purposes.

Preliminary publications in this series have not been scientifically edited.

Map Viewing Files

The published map is distributed as a Portable Document File (PDF), and may contain a subset of the overall geological data for legibility reasons at the publication scale.

The spatial geological data is provided in two file formats, SHP and XML, that may be imported into Geographic Information System (GIS) software for the purposes of viewing, querying, and analysis

ABOUT THE GEOLOGY

Descriptive Notes

The Inuvik map area is located in the Northwest Territories on the eastern edge of the Mackenzie Delta and includes the town of Inuvik. The area was mapped in the 1960's and 1970's 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 (ibid) except that some map unit names have changed, based on new regional stratigraphic observations. The south-central Inuvik map area was remapped in the 1980's and early 1990's. In addition detailed traverse notes of L.D. Dyke from the 1970's have been re-evaluated and incorporated into the current interpretation of the geology.

The south-central map area exposes the northern half of Campbell Uplift. It was first noted as a feature by Norris (1973) and described as Campbell uplift (lower case). It is briefly mentioned in the “Geology of Canada # 5" (Stott and Aitken, 1993) as the Campbell Lake Uplift and Wielens (1992) shortened the name to Campbell Uplift. Norris (1997) and Dyke (1997) provide the first detailed descriptions of the uplift. Dyke (ibid.) described it as 15 km south of Inuvik and consisting of a northeast trending, oval shaped area, roughly 22 km long and 11 km wide and situated between the East channel of the Mackenzie River and Campbell Lake (there are a few kms of uplift exposure east of Campbell Lake in NTS 107-B/2). The uplift consists of block faulted and gently folded Proterozoic and Paleozoic strata surrounded by Cretaceous and Quaternary strata. It plunges northeast below Lower Cretaceous and younger rocks (Norris, 1997) and it continues as outliers to the southwest before it disappears below fluvial sediments of the Mackenzie Delta (Dyke, 1997). On the uplift proper, this map area, there is a local accumulation of terrestrial Cretaceous pebbly quartz lithic sandstone and shale with coaly plant material, and a small area of Horton River Formation shale and siltstone. Wielens (ibid) demonstrated that Campbell Uplift is continuous with a variety of Proterozoic and Paleozoic strata that directly underlie

Cretaceous strata along what he referred to as “Tuk Horst” which trends northeast in the subsurface along the center of Eskimo Lakes Arch (Young et al., 1976). Except for Campbell Uplift, Eskimo Lakes Arch is largely buried under Upper Cretaceous to Quaternary sediments (ibid).

The oldest rocks within the uplift are a succession of buff yellow dolostone, red/maroon and green argillite and quartzite. The age for this succession is based mainly on the fact that they underlie the Upper Cambrian to Lower Ordovician Franklin Mountain Formation. No macrofossils have been recovered from surface exposures of these strata and six samples of various lithologies analysed for acritarchs were either barren or contained non age-diagnostic forms (Asselin, 2012). Molar tooth structure was observed in the dolostone. Molar tooth structure is commonly found in Proterozoic strata, and is rarely found in Paleozoic strata. Norris and Black (1964) report a Late Precambrian age for this unit based on paleomagnetic data, however that result needs to be re-evaluated in the context of current paleomagnetic interpretations. In the Amoco Ulster D-54 well on the northwest side of Inuvik, Chamney (1972) reported algae and cone shaped fossils of probable Paleozoic age from the ‘Upper Clastic Unit’ (see below). New detrital zircon ages from an outcrop of the Quartzite Unit in adjacent Campbell Lake (NTS 107-B/2) indicates that most zircon grains have ages of 1150-2100 Ma, with scattered Paleoproterozoic and Archean ages, as well as one grain dated at 567 Ma (L.S. Lane, unpublished data). Omitting the single grain age (a single grain is not considered reliable), these data indicate a robust depositional age less than 1150 Ma. Further, the overall age distribution is very similar to that of Shaler Supergroup strata (Rayner and Rainbird, 2013) or Ediacaran-Cambrian rocks derived largely from them (Lane and Gehrels, 2014). On the basis of these data we have assigned to these rocks a Proterozoic to Cambrian age.

In a quarry northeast of the center of Dolomite Lake (this map area), what is thought to be the oldest of the Proterozoic-Cambrian uplift succession, the Dolostone Unit, outcrops in the core of a small anticline with strata of the Argillite Unit on both limbs. A Quartzite Unit, found in adjacent 107B/2 to the south of the Invuik map area, is only juxtaposed with the Argillite Unit and therefore is thought to be the youngest in the Proterozoic-Cambrian succession. However the stratigraphic order of Proterozoic-Cambrian units is tentative because it relies on one anticline which exposes only a few meters of the Dolostone Unit. This stratigraphy is very similar to the interpretation of Dyke (1975).

Proterozoic-Cambrian strata were also intersected in the Inuvik D-54 well which is 10–15 km north of the northern Campbell Uplift. That well encountered pre-Mesozoic strata at 320 m, below Cretaceous shale and siltstone, that are described by Wielens (1992) as consisting of a Lower Clastic Unit, a Dolostone Unit and an Upper Clastic Unit. Both the Upper Clastic and Lower Clastic units have thick successions of quartzite. Wielens (ibid) details a log of the Lower Clastic Unit showing it to be greater than 410 m thick. It consists of a complex succession with dolomitic quartzite, quartzitic sandstone, quartzite, green, red, and grey-black shale, including a 3m interval with sandstone and dark green and maroon volcanics. This D-54 Lower Clastic Unit is not exposed on Campbell Uplift. The D 54 Lower Clastic Unit is overlain by the D-54 Dolostone Unit which Wielens (ibid) describes as 759 m thick, and consisting of brown, grey, tan, black and pinkish dolostone, with quartzitic sandstone, grey shale, and white and buff chert. It likely correlates with the Campbell Uplift Dolostone Unit. The D-54 Upper Clastic unit is described by Wielens (ibid) as consisting of 240 m of pink, red and apple green shales with a few chert pebbles, units

of quartzite (there are two quartzite units, 11 and 14 m thick), sandstone, siltstone and quartzitic dolomite and dolomite. As noted above Chamney (1972) reported fossils of probable Paleozoic age in the upper part of the D-54 Upper Clastic Unit. The Argillite and Quartzite 107B/2 units on the Campbell Lake Uplift are likely equivalent to the D-54 Upper Clastic Unit. Cook et al. (1987) identify what they believe to be 15 km of Proterozoic strata below Paleozoic strata under the uplift.

Pre-Devonian Paleozoic carbonate strata exposed on Campbell Uplift were lumped together as the Vunta Formation in the map compilation of Norris (1981, 1997) and Dyke (1997). However Dyke (1975, 1997) noted the existence of two distinct units within the Vunta Formation. More detailed mapping in the 1980's and 1990's, together with a review of detailed notes taken by L.D. Dyke in the 1970's, shows that the two carbonate units identified by Dyke (ibid.) are easily mapped. In terms of colour, texture, fossil content and associated chert, the lower unit strongly resemble the Franklin Mountain Formation, and the upper unit, the Mount Kindle Formation, as described in the Mackenzie Plains and Mountains (Norford and MacQueen, 1975; Cecile, 1982) and therefore these units names are used here in place of Vunta Formation for consistency with regional mapping.

The Franklin Mountain Formation is a typically light grey or white crystalline, often buff weathering dolostone barren of fossils, and rarely yields microfossils. Its upper part has abundant white-grey replacement chert. The Mount Kindle Formation is typically grey to dark grey, fine to medium crystalline, with some black chert and is commonly fossiliferous featuring chain and solitary corals. It often yields microfossils (conodonts). Dyke (1975,1997) noted that in the Inuvik D54 well there were 750 m of Paleozoic carbonates above the Proterozoic-Cambrian clastics. However it would appear that, although initially in early well logs this 750m of dolostone was identified as Paleozoic, this 750 m succession is in fact the same dolostones identified as Proterozoic by Wielens (1992), and they do strongly resemble the Proterozoic dolostones mapped at the surface in NTS 107-B map area.

Devonian strata consist of the Arnica and Imperial formations. The Arnica Formation was originally mapped as Gossage Formation by Norris (1981) and also called Cranswick Formation by Dyke (1997). However, the Gossage Formation is mainly used to refer to subsurface strata, and on the surface Gossage has been replaced by Arnica and Landry formations (Hills, 1981). In the opinion of D. W. Morrow (personal communication 2012) the Campbell Uplift strata are more typical of Arnica Formation. On the uplift, it consists of dolostone with units of limestone, is grey white and often crystalline. It is also typically fossiliferous with abundant poorly preserved stromatoporoids, stromatolites, stromatactis and locally solitary and colonial corals, brachipods and twin canal crinoid ossicles. The Imperial Formation outcrops in the Campbell Lake map area (NTS 107-B/2) south of the Inuvik map area. There it consists of black-grey and rusty weathering shale and grey weathering sandstone in alternating thick beds and units. Sandstones are often laminated and cross-laminated, and have flutes, load casts and plant impressions.

The oldest Mesozoic unit in the map area is a pebbly quartz-lithic sandstone with coaly plant material. This unit is found east of Dolomite Lake and northeast of Campbell Lake in this map area. It is inferred to underly the Horton River Formation but there is no direct contact between the two. The Horton River Formation is a marine Lower Cretaceous unit described by Norris (1981) as consisting of shale and

siltstone. In this map area, the Horton River Formation is overlain by the shallow marine Upper Cretaceous Smoking Hills Formation. On the map of Norris (1981) it is described as Tent Island Formation consisting of shallow marine mudstone, conglomerate and sandstone. Later stratigraphic work in the Mackenzie Delta area indicates that these exposures comprise Smoking Hills Formation (Dixon et al., 1992, p. 45) and that nomeclature is used here.

All pre-Mesozoic strata are found in normal-fault bounded slabs with a tendancy for south and east dips. Open folds, on a scale of tens to hundreds of meters, can be oberserved. Folds typically have a northeast trends in all Proterozoic-Paleozoic Units. Cretaceous strata are poorly exposed and we have very few data on their structural characteristics. Norris's 1981 map shows a few horizontal and few gentle dips in the Mesozoic. There is also a widespread northeast trending steeply dipping fracture cleavage in Proterozoic and Paleozoic units.

Certainly the current uplift exposure of the Campbell Uplift is mainly the result of Mesozoic-Tertiary block faulting (see cross-section). This block faulting is likely continuous with the Eskimo Lakes Arch, where most Paleozoic and Proterozoic strata are buried under Cretaceous strata.

Within Campbell Uplift (in NTS 107-B/2 and NTS 107-B/7), the Cambro-Ordovician Franklin Mountain Formation lies locally on all three Proterozoic-Cambrian Units suggesting uplift and exposure of these strata before the Late Cambrian. This was noted by Dyke (1997) as an irregular boundary. Dyke (1975, 1997) also suggested an angular unconformity between the Proterozoic and Paleozoic because of dips up to 55^{o} within the Proterozoic, and shallower in the Paleozoic. However our observations show structural attitudes in the Proterozoic and Paleozoic are very similar. This would suggest instead a paraconformity or slight angular unconformity.

The Proterozoic and Paleozoic exposures of the uplift are asymmetric in that the oldest rocks exposed beneath Mesozoic and Quaternary strata are on the north side of current exposure. Thus, the central axis of an ancestral arch likely runs on the north side or even farther north of the axis of the Mesozoic-Tertiary Eskimo Lakes Arch. We interpret this older version of the uplift as a local expression of the ancestral Aklavik Arch complex, which is part of a system of sub-aerial highs that included the Mackenzie and Ogilvie arches (Aitken et al., 1973; Morrow, 1999). In addition, Coflin et al. (1990) and Cook et al. (1987) hypothesize that the area was folded and faulted during Ellesmerian orogenesis and that some of the positive structure of the Campbell Uplift itself is the result of a structural culmination due to an Ellesmerian-age duplex, in the subsurface. Unpublished thermochronology data suggest that much of the uplift/cooling occurred in pre-Mesozoic time.

Also on the uplift (in NTS 107-B/2 and NTS 107-B/7), different Cretaceous strata sit directly on the Proterozoic-Cambrian Argillite Unit and the Devonian Arnica and Imperial formations. Campbell Uplift area and Eskimo Lakes Arch exerted an important control on sedimentation and facies throughout the Early Cretaceous and underwent active uplift from Late Hauterivian through Albian time (Dixon, 1986), coincident with important phases of continental rifting preceding development of the Beaufort-Mackenzie Basin (Dixon, 1993). The area of Campbell Lake proper is part of Norris' (1981) Sitidgi Graben. The graben and associated normal faults are related to major basin-bounding faults of Jurassic to Albian age (e.g. Cook et al., 1987; Embry and Dixon, 1990).

Quaternary deposits consist of fluvial and lacustrine clays, silts, sands and gravels and fluvial fan and fan aprons of clays silts, sands and gravel (Norris, 1981). Finally, glacial and glacial-fluvial features are common in the area and fault scarps have fans of quaternary fluvial material.

Acknowledgments

Field Observations of the area mainly underlain by Proterozoic and Paleozoic strata, south central map area, by M.P. Cecile, 1987,1988, 1992 ; L.S. Lane 1987, and L.D. Dyke 1974.
In the geological compilation of D.K. Norris 1981, for the entire 107B map area, he gives the following acknowledgements: “Geological synthesis based on field observations and/or paleontological determinations made by the following geologists and industry geological departments, listed alphabetically, with corresponding year of field activity where applicable: Geological Survey of Canada - W.W. Brideaux; T.P. Chamney; L.D. Dyke, 1974; W.S. Hopkins, O.L. Hughes, 1962; J.A. Jelestky, 1955; 1958; D.C. Mcgregor; E.W. Mountjoy, 1962; A.W. Norris, 1962, 1970; D.K. Norris, 1962, 1970, 1973, 1975; R.A. Price, 1962; R.M. Proctor, 1962; A.R. Sweet; G.R. Turnquist. 1962; J.H. Wall. Industry geological departments - Gulf Oil Canada Ltd.; Texaco Exploration Ltd., 1959; Petro-Canada Exploration Inc., 1977.

Paleontological ages and information *(see* additional references in the map information document) were provided by: E. Asselin, W.W. Brideaux, T.P. Chamney, M.J. Copeland, S.P. fowler, W.S. Hopkins, A.D. McCracken, D.C. McGregor, D.J. McLaren, B.S. Norford, A.W. Norris, G.S. Nowlan, A.R. Ormiston, A.E.H. Pedder, A.R. Sweet, T.T Uyeno, J.H. Wall. Fossil samples collected by G.S.C. personnel as well as, K.E. Leigh (University of Western Ontario), F. Duffaud (Elf Oil), Texaco Geologists 1959, W.S. Mackenzie and Petropar, R.A. Price, and samples from the Amoco Ulster Scurry Inuvik D54 Well.

References

Aitken, J.D., Macqueen, R.W., and Usher, J.L. 1973. Reconnaissance studies of Proterozoic and Cambrian stratigraphy, lower Mackenzie River area (Operation Norman), District of Mackenzie; Geological Survey of Canada Paper 73-9, 178 p.

Asselin, E.A. 2012. Palynological report on 16 samples collected by L. Lane (GSC-Calgary) from the clastic successions of the Campbell Uplift, near Inuvik, the White Uplift in the northern Richardson Mountains and a Late Silurian?- Early Devonian clastic succession in the northernmost Yukon. Geological Survey of Canada, Paleontological Report, 01-EA-2012, 11p.

Cecile, M.P., 1982. The Lower Paleozoic Misty Creek Embayment; Geological Survey of Canada Bulletin 335, 78 p.

Chamney, T.P., 1972. Generalized Biostratigraphic Subdivisions on 36 Subsurface Drill Cutting Samples From Inuvik D-54, Amoco-Scurry Mackenzie River Delta (NTS 107B/07); Geological Survey of Canada, Paleontological Report 7 Mes.-Paleoz. TPC 1972, 5 p.

Coflin, K.C., Cook, F.A., and Geis, W.T., 1990. Evidence for Ellesmerian convergence in the subsurface east of the Mackenzie Delta; Marine Geology, v. 93, p. 289–301.

Cook, F.A., Coflin, K.C., Lane, L.S., Dietrich, J.R., and Dixon, J., 1987. Structure of

the southeast margin of the Beaufort-Mackenzie Basin; Arctic Canada. Geology, v. 15, p. 931–935.

Dixon, J., 1986. Cretaceous to Pleistocene stratigraphy and paleogeography, northern Yukon and northwestern District of Mackenzie; Bulletin of Canadian Petroleum Geology, v. 34 (1), p. 49–70.

Dixon, J., 1993. Cretaceous Tectonics and Sedimentation in Northwest Canada; *In*: Caldwell, W.G.E., and Kauffman, E.G., ed., Evolution of the Western Interior Basin, Geological Association of Canada Special Paper 39, p. 119–129.

Dixon, J., Dietrich J.R., and McNeil, D.H., 1992. Upper Cretaceous to Pleistocene sequence stratigraphy of the Beaufort-Mackenzie and Banks Island areas, northwest Canada; Geological Survey of Canada, Bulletin 407, 90 p. doi:10.4095/133237

Dyke, L.D., 1997. Chapter 13: White, Barn and Campbell Uplifts; *In*, D.K. Norris (ed.) Geology and Mineral and Hydrocarbon Potential of Northern Yukon Territory and Northwestern District of Mackenzie; Geological Survey of Canada, Bulletin 422, pp. 333–358. doi:10.4095/208886

Dyke, L.D., 1975. Structural investigations in Campbell Uplift, District of Mackenzie. *In* Report of Activities, Part A. Geological Survey of Canada, Paper 75-1A, pp 525–532. doi:10.4095/247867

Embry, A.F. and Dixon J., 1990. The breakup unconformity of the Amerasia Basin, Arctic Ocean: evidence from Arctic Canada; Geological Society of America Bulletin, v. 102, pp. 1526–1534.

Hills, L.V., 1981. Gossage Formation, Great Slave Group. *In* L.V. Hills, K.V. Sangster, and L.B. Suneby ed., Lexicon of Canadian Stratigraphy, V. 2, Yukon Mackenzie, Canadian Society of Petroleum Geologists, Calgary, pp's 71–72.

Lane, L.S. and Gehrels, G.E., 2014. Detrital zircon lineages of Late Neoproterozoic and Cambrian strata, northwest Laurentia. Geological Society of America Bulletin, v. 126, pp.398–414.

Morrow, D. W., 1999, Lower Paleozoic stratigraphy of northern Yukon Territory and northwestern District of Mackenzie; Geological Survey of Canada, Bulletin 538, 202p. doi:10.4095/210998

Norford, B.S. and MacQueen, R.W., 1975. Lower Paleozoic Franklin Mountain and Mount Kindle Formations, District of Mackenzie: their type sections and regional development; Geological Survey of Canada, Paper 74-34, 37 p.

Norris, D.K., 1981. Geology of Aklavik, District of Mackenzie; Geological Survey of Canada, Map 1517A, scale 1:250 000. doi:10.4095/109706

Norris, D.K., 1973. Tectonic Styles of Northern Yukon Territory and Northwestern District of Mackenzie, Canada; *in*, Max G. Pitcher (ed.) Arctic Geology, AAPG Memoir 19, Arctic Geology, pp. 23–40.

Norris, D.K., 1997. Chapter 3: Geological Setting; *In*, D.K. Norris (ed.) Geology and

Mineral and Hydrocarbon Potential of Northern Yukon Territory and Northwestern District of Mackenzie; Geological Survey of Canada, Bulletin 422, pp. 21–64. doi:10.4095/208886

Norris, D. K. and Black, R. F., 1964. Palaeomagnetic Age of the Pre-ordovician Rocks near Inuvik, Northwest Territories; In, Summary of Activities, Office and Laboratory, 1963, Geological Survey of Canada, Paper no. 64-2, 1964; p. 47–51. doi:10.4095/121849

Rayner, N.M. and Rainbird, R.H., 2013. U-Pb Geochronology of the Shaler Supergroup, Victoria Island, northwest Canada: 2009-2013; Geological Survey of Canada, Open File 7419, 62p. doi:10.4095/292694

Stott, D.F. and Aitken, J.D. ed., 1993. Sedimentary Cover of the Craton in Canada, Geological Survey of Canada, Geology of Canada #5 and Geological Society of America v D-1, 826 p.

Wielens, J.B.W., 1992. The Pre-Mesozoic Stratigraphy and Structure of the Tuktoyaktuk Peninsula; Geological Survey of Canada Paper 90-22, 90 p.

Young, F.G., Myhr, D.W., and Yorath, C.J., 1976. Geology of the Beaufort Mackenzie basin; Geological Survey of Canada, Paper 76-11.

PALEONTOLOGICAL REPORT REFERENCES

Asselin, E., 2012. Palynological Report on 16 Samples Collected by L. Lane (GSC-Calgary) from the Clastic Successions of the Campbell Uplift, near Inuvik, the White Uplift in the Northern Richardson Mountains and a Late Silurian?-Early Devonian Clastic Succession in the Northernmost Yukon Geological Survey of Canada, Paleontological Report 01-EA-2012

Brideaux, W.W., 1971. Report on the Palynologic Examination of a Sample Collected by A.W. Norris West of Sitidgi Lake, District Of Mackenzie, and Submitted for Examination by D.K. Norris (Operation Porcupine) on March 18, 1971 (NTS 107B); Geological Survey of Canada, Paleontological Report 5-WWB-71, 1 p.

Brideaux, W.W., 1973. Palynological Analysis of One Shot Hole Sample Collected By D.K. Norris from the Campbell Lake Area, District of Mackenzie, Submitted to W.S. Hopkins Jr. and referred to W.W. Brideaux for further examination (NTS 107B/02); Geological Survey of Canada, Paleontological Report K7-WWB-1973, 2 p.

Brideaux, W.W., 1974. Palynologic Age Determinations on Six Field Samples from Southeast and East of the Mackenzie Delta, District Of Mackenzie, collected and submitted for Analysis by D.K. Norris in January, 1974. (NTS 106N, 107B); Geological Survey of Canada, Paleontological Report WWB-1974-1 (Gen.), 2 p.

Brideaux, W.W., 1975. Palynologic Report on Three Outcrop Samples from The Willow River Region, two from the Beatty Pit at Inuvik, and one from the Peel River Region (NTS 106M), District Of Mackenzie, Collected by D.K. Norris; Geological Survey of Canada, Paleontological Report WWB-20-1975 (K), 3 p.

Chamney, T.P., 1972. Generalized Biostratigraphic Subdivisions on 36 Subsurface Drill Cutting Samples from Inuvik D-54, Amoco-Scurry Mackenzie River Delta (NTS 107B/07); Geological Survey of Canada, Paleontological
Report 7 Mes.-Paleoz. TPC 1972, 5 p.

Copeland, M.J., 1964. Report on Devonian Ostracoda from Operation Porcupine, Submitted by Dr. A.W. Norris; Geological Survey of Canada, Paleontological Report MP-7/64-MC, 9 p.

Fowler, S.P., 1988. Micropaleontology Report on 83 Outcrop Samples from Jurassic and Lower Cretaceous Sections in the Richardson Mountains Yukon and Northwest Territories (NTS 106M, 107B, 117A, And 117D). Report requested by J. Dixon and D.H. McNeil; Geological Survey of Canada, Paleontological Report 3-SPF-1988, 32 p.

Hopkins, W.S., 1971. Palynology Report on a Sample from the Yukon Territory, Submitted by D.K. Norris, 1971 (NTS 107B); Geological Survey of Canada, Paleontological Report K-11-WSH-1971, 1 p.

Hopkins, W.S., 1973. Palynology Report on 16 Shot Hole Samples from the Campbell Lake Area, District Of Mackenzie, N.W.T., Submitted by D.K. Norris, 1973 (NTS 107B); Geological Survey of Canada, Paleontological Report K-09-WSH-1973, 2 p.

McCracken, A.D., 1994. Report on 17 Early Ordovician-Silurian Conodont Samples (Con. No. 1308) from the Barn Uplift and British Mountains, Northern Yukon Territory, Campbell and Cache Uplifts, District Of Mackenzie, N.W.T., Submitted by M.P. Cecile (GSC-ISPG) in 1993. NTS 106M/13, 107B/2, 107B/7, 117A/6, 117A/11, 117C/1, 117D/5; Geological Survey of Canada, Paleontological Report 002-ADM-1994, 8 p.

McGregor, D.C., 1986. Devonian Spores in Sample of rock submitted for Study by D.K. Norris, from the Campbell Uplift, N.W. District Of Mackenzie (NTS 107B); Geological Survey of Canada, Paleontological Report Fl-3-1986-DCM, 1 p.

McLaren, D.J., 1959. Report on Fossils from Northwest Territories, Collected by Geologists of Texaco Exploration Company in 1959; Geological Survey of Canada, Paleontological Report D10-59/60, McL-N, 12 p.

Norford, B.S., 1966. Report on Seven Lots of Fossils from the Northern Yukon, Collected by Dr. R.A. Price, Operation Porcupine, 1962; (Copy To Dr. D.K. Norris). (NTS 106E, 106F, 107B); Geological Survey of Canada, Paleontological Report O-D 12 BSN 1966, 1 p.

Norford, B.S., 1968. Report on Eight Lots of Fossils from the Northern Yukon and adjacent District Of Mackenzie Collected by Dr. W.S. Mackenzie and Petropar Canada Limited, 1967. (NTS 106E, G, H; 107B); Geological Survey of Canada, Paleontological Report C-D3 BSN 1968, 2 p.

Norford, B.S., 1975. Report on Eighteen Collections of Fossils from the Campbell Uplift, Northwest District Of Mackenzie, Collected by Mr. L. D. Dyke, 1974. (NTS 107B); Geological Survey of Canada, Paleontological Report S-3 BSN 1975, 3 p.

Norford, B.S., 1983. Report on One Collection of Fossils from The Campbell Lake Uplift, District Of Mackenzie; Collected by Dr. A.W. Norris, 1962 (NTS 107B);

Geological Survey of Canada, Paleontological Report S-8-BSN-1983, 1 p.

Norford, B.S., 1991. Report on Seven Collections of Fossils from the Aklavik and Blow River Map-Areas, Northern Yukon and Adjacent District of Mackenzie, Collected by Dr. M. P. Cecile, 1987 and 1988 and a submitted in 1991 (NTS 107B And 117A); Geological Survey of Canada, Paleontological Report O-D 3 BSN 1991, 2 p.

Norford, B.S., 1992. Report on Eight Lots of Fossils from the Campbell Uplift, Aklavik Map Area, Northwestern District of Mackenzie, Collected by Dr. M.P. Cecile, 1992 (NTS 107B); Geological Survey of Canada, Paleontological Report O-S 4 BSN 1992, 2 p.

Norris, A.W., 1963. Report on Fossils from Northern Yukon And Northwestern District of Mackenzie, Operation Porcupine, 1962; Submitted by R.A. Price; Geological Survey of Canada, Paleontological Report 6D-63/ AWN, 5 p.

Norris, A.W., 1968. Report on Fossils from Campbell River/Lake Area, Collected by Dr. W.S. Mackenzie and Petropar Canada Ltd., 1967. (NTS-106G, 107B); Geological Survey of Canada, Paleontological Report D2-1968-AWN, 1 p.

Norris, A.W., 1975. Report on one Lot of Devonian Fossils from Campbell Lake Uplift Area (NTS 107B), District of Mackenzie; Submitted by Mr. Larry Dyke, 1974, for Dr. D.K. Norris, Institute of Sedimentary And Petroleum Geology, Calgary; Geological Survey of Canada, Paleontological Report D5-1975-AWN, 1 p.

Norris, A.W., 1978. Report on Five Lots of Devonian Fossils from The Campbell Lake Uplift (NTS 107B); Collected by A.E. Calverley, Atlantic Ritchfield Canada Ltd. (Petrocan), 1976: Submitted by Dr. F.G. Young, February 10, 1978; Geological Survey of Canada, Paleontological Report 6-AWN-78, 3 p.

Norris, A.W., 1991. Report on Two Lots of Devonian Fossils from the Cranswick Formation of the Campbell Lake Uplift Area, NTS 107 B, District Of Mackenzie; Submitted By A. D. McCracken, 1991; Geological Survey of Canada, Paleontological Report 3-AWN-91, 3 p.

Nowlan, G.S., 1994. Report on Two Samples from Ordovician - Silurian Strata on the Campbell Uplift, District Of Mackenzie, Northwest Territories Submitted for Conodont Analysis By Dr. M. P. Cecile (Institute of Sedimentary and Petroleum Geology); NTS 107B/02W; Con # 1327; Geological Survey of Canada, Paleontological Report 005-GSN-1994, 3 p.

Nowlan, G.S., 1994. Report on Four Samples from Lower Paleozoic Strata from the Mount Burden Section, Southern British Columbia (2) and Campbell Uplift, District Of Mackenzie, Northwest Territories (2) Collected by R.I. Thompson, B.S. Norford and M.P. Cecile and Submitted for Conodont Analysis by Dr. B.S. Norford (Institute of Sedimentary and Petroleum Geology); NTS 94B/03, 107B/02, 107B/0; Con # 1278 and 1337; Geological Survey of Canada, Paleontological Report 009-GSN-1994, 4 p.

Ormiston, A.R. 1966. Trilobite Identifications, Northwestern District Of Mackenzie, Paleontological Report 1-1966- Ormiston, 1 p.

Pedder, A.E.H., 1971. Report on Four Lots of Devonian Fossils Submitted by F. Duffaud, Elf Oil (NTS107B/02, 116P/15); Geological Survey of Canada, Paleontological Report FD 29 AEHP 71, 1 p.

Pedder, A.E.H., 1983. Report on Three Lots of Middle Devonian Fossils from Northwestern District of Mackenzie, Submitted by A.W. Norris, NTS 106G, 107B; Geological Survey of Canada, Paleontological Report AWN-108-AEHP-1983, 2 p.

Pedder, A.E.H., 1983. Report on 95 Lots of Silurian and Devonian Fossils from Yukon Territory Submitted by A.W. Norris, NTS 106D, E, F, 107B, 116F, G, H, J, P; Geological Survey of Canada, Paleontological Report AWN-117-AEHP-1983, 21 p.

Pedder, A.E.H., 1989. Report on Three Lots of Corals from the White Mountains, Yukon Territory and Campbell Hills, District of Mackenzie, Submitted by K.E. Leigh, University of Western Ontario. NTS 116P/15, 107B/02; Geological Survey of Canada, Paleontological Report KEL-139-AEHP-89, 2 p.

Pedder, A.E.H., 1990. Report on Two Lots of Devonian Fossils from the Campbell Lake Region, District Of Mackenzie. Submitted by K.E. Leigh. University of Western Ontario. NTS 107B; Geological Survey of Canada, Paleontological Report KEL-144-AEHP-90, 2 p.

Pedder, A.E.H., 1991. Report on Five Lots of Middle Devonian Fossils from Campbell Lake Area, N.W. District Of Mackenzie, Submitted by A.D. McCracken. NTS 107 B; Geological Survey of Canada, Paleontological Report ADM-147-AEHP-91, 3 p.

Pedder, A.E.H., 1992. Report on Three Lots of Stromatoporoids and Corals from the Campbell Uplift, District of Mackenzie, Submitted by M.P. Cecile. NTS 107B/02; Geological Survey of Canada, Paleontological Report MPC-153-AEHP-92, 2 p.

Sweet, A.R., 1989. Applied Research Report on 2 Samples from the Campbell Uplift, Mackenzie District, N.W.T. (68 18 N, 133 19 W; NTS107B) as Requested by D.K. Norris; Geological Survey of Canada, Paleontological Report AS-89-09, 1 p.

Uyeno, T.T., 1972. Report on 6 Lots of Conodont Samples from 1) I.O.E. Eskimo J-07 Well and 2) Amoco-Ulster-Scurry A1 Inuvik Well, Western Dist. Of Mackenzie, Submitted by C.J. Yorath (NTS 107B and C); Geological Survey of Canada, Paleontological Report MP7 TTU 72, 1 p.

Uyeno, T.T., 1977. Report on 16 Lots of Conodont Samples from Northern Yukon Territory, Submitted by D.K. Norris (NTS 106E, 107B, 116A, D, F, G, K, O, 117C, D); Geological Survey of Canada, Paleontological Report 3-TTU-77, 2 p.

Uyeno, T.T., 1978. Report on Five Lots of Conodont Samples from Upper Mackenzie River, Northwestern District Of Mackenzie, Collected by Atlantic Richfield Canada Ltd., and Submitted by D.K. Norris (NTS 107B); Geological Survey of Canada, Paleontological Report 5-TTU-78, 2 p.

Uyeno, T.T., 1988. Report on 50 Conodont Samples from 24 Wells in the Mackenzie Delta Area, District of Mackenzie Submitted by H. Wielens. NTS 107B, C, D, E; Geological Survey of Canada, Paleontological Report 01-TTU-88, 12 p.

Uyeno, T.T., 1989. Report on Two Conodont Samples from Devonian Strata at Campbell Hills, District of Mackenzie, and White Mountains, Yukon Territory, (NTS 107B/07 And 116P/15), Submitted by K.E. Leigh, Dept. Of Geology, University of Western Ontario, London, Ontario; Geological Survey of Canada, Paleontological Report 10-TTU-89, 2 p.

Uyeno, T.T., 1991. Report on Eight Devonian Conodont Samples from Northwestern District of Mackenzie, and from Nevada, USA, Submitted By A.E.H. Pedder. (NTS 97A, 106H, 106I, 107B); Geological Survey of Canada, Paleontological Report 01-TTU-91, 4 p.

Wall, J.H., 1975. Micropaleontology Report on 2 Outcrop Samples from the Campbell Uplift Southeast Inuvik, District Of Mackenzie, Collected by L. D. Dyke and A. D. Hedinger, and requested by Dr. D.K. Norris. (NTS 107B - Aklavik); Geological Survey of Canada, Paleontological Report 1 JHW 1975, 2 p.

Author Contact

Questions, suggestions, and comments regarding the geological information contained in the data sets should be addressed to:

M.P. Cecile
Geological Survey of Canada
3303 33 Street NW
Calgary AB
T2L 2A7
Mike.Cecile@NRCan-RNCan.gc.ca

Coordinate System

Projection: Universal Transverse Mercator
Units: metres
Zone: 8
Horizontal Datum: NAD83
Vertical Datum: mean sea level

Bounding Coordinates

Western longitude: 134°00’00” W
Eastern longitude: 133°30’00” W
Northern latitude: 68°30’00” N
Southern latitude: 68°15’00” N

Data Model Information

Surface bedrock data are organized into feature classes and themes consistent with logical groupings of geological features. All field observation point data are related

through the Station_ID property of the Station theme. These feature attribute names and definitions are identical in the shapefiles and the XML files.

Consult PDFs in Data folder for complete description of the feature classes, feature attributes, and attribute domains.

The Bedrock Data Model and the Bedrock Domains documents are intended to describe all bedrock features which may be compiled at the 1:50 000 scale. Therefore, some of the feature classes and feature attributes described in these documents may not be present.

LICENCE AGREEMENT

ACCORD DE LICENCE