



Natural Resources
Canada

Ressources naturelles
Canada

CANADIAN GEOSCIENCE MAP 421

BEDROCK GEOLOGY

SANS SAULT RAPIDS SOUTHEAST

Northwest Territories

NTS 106-H/SE



Map Information Document

**Geological Survey of Canada
Canadian Geoscience Maps**

2020

Canada 



MAP NUMBER

Natural Resources Canada, Geological Survey of Canada
Canadian Geoscience Map 421

TITLE

Bedrock geology, Sans Sault Rapids southeast, Northwest Territories, NTS 106-H/SE

SCALE

1:100 000

CATALOGUE INFORMATION

Catalogue No. M183-1/421-2020E-PDF
ISBN 978-0-660-31228-6
<https://doi.org/10.4095/314787>

COPYRIGHT

© Her Majesty the Queen in Right of
Canada, as represented by the
Minister of Natural Resources, 2020

Information contained in this publication or product may be reproduced, in part or in whole, and by any means, for personal or public non-commercial purposes, without charge or further permission, unless otherwise specified.

You are asked to:

- exercise due diligence in ensuring the accuracy of the materials reproduced;
- indicate the complete title of the materials reproduced, and the name of the author organization; and
- indicate that the reproduction is a copy of an official work that is published by Natural Resources Canada (NRCan) and that the reproduction has not been produced in affiliation with, or with the endorsement of, NRCan.

Commercial reproduction and distribution is prohibited except with written permission from NRCan. For more information, contact NRCan at nrcan.copyrightdroitdauteur.nrcan@canada.ca.

RECOMMENDED CITATION

Fallas, K.M. and MacNaughton, R.B., 2020. Bedrock geology, Sans Sault Rapids southeast, Northwest Territories, NTS 106-H/SE; Geological Survey of Canada, Canadian Geoscience Map 421, scale 1:100 000. <https://doi.org/10.4095/314787>

ABSTRACT

The southeast Sans Sault Rapids map area (NTS 106-H/SE) covers the transition from the northern Mackenzie Mountains to the Mackenzie Plain and northwest Franklin Mountains of the Northwest Territories. Bedrock exposures in the area include carbonate and siliciclastic strata ranging from Neoproterozoic (Tonian) to Cretaceous age. These strata were deformed in Cretaceous to Eocene time by folding and contractional faulting associated with Cordilleran deformation. Major structures include the Stony and Imperial anticlines. A minor set of pre-Cordilleran extensional faults are preserved within Neoproterozoic strata of the Mackenzie Mountains Supergroup, and are locally associated with diabase or gabbro dykes assigned to the Gunbarrel magmatic event (~780 Ma). Variable preservation of Neoproterozoic units beneath the sub-Cambrian unconformity indicates tilting or warping of strata before Cambrian time. A second major unconformity between Devonian and Cretaceous strata is marked by low-angle truncation of Paleozoic strata beneath the Cretaceous units.

RÉSUMÉ

La partie sud-est de la région cartographique de Sans Sault Rapids (SNRC 106-H/SE) se situe à la transition de la partie nord des monts Mackenzie à la Plaine Mackenzie et à la partie nord-ouest des monts Franklin, dans les Territoires du Nord-Ouest. Dans la région, les affleurements du substratum rocheux comprennent des strates carbonatées et des strates silicoclastiques dont les âges s'étendent du Néoprotérozoïque (Tonien) au Crétacé. Ces strates ont été déformées lors du Crétacé à l'Éocène par la formation de plis et de failles de compression que l'on peut associer à la déformation cordillèreenne. Les anticlinaux de Stony et d'Imperial constituent des structures d'importance. Dans les strates néoprotérozoïques du Supergroupe de Mackenzie Mountains, subsiste un ensemble d'importance secondaire de failles d'extension antérieures à la déformation cordillèreenne, auxquelles sont associés par endroits des dykes de diabase ou de gabbro attribués à l'épisode magmatique de Gunbarrel (env. 780 Ma). Un degré variable de conservation des unités néoprotérozoïques sous la discordance marquant la base du Cambrien révèle un basculement ou un gauchissement des strates avant le Cambrien. Une seconde discordance d'importance entre les strates dévoniennes et crétacées est soulignée par une ablation suivant un angle faible des strates paléozoïques sous les unités crétacées.

LICENCE AGREEMENT

View the license agreement at

<http://open.canada.ca/en/open-government-licence-canada>

ACCORD DE LICENCE

Voir l'accord de licence à

<http://ouvert.canada.ca/fr/licence-du-gouvernement-ouvert-canada>

SHEET 1 OF 1, BEDROCK GEOLOGY

GENERAL INFORMATION

Authors: K.M. Fallas and R.B. MacNaughton

Geological compilation by K.M. Fallas and R.B. MacNaughton, 2016–2019

Geological field observations by K.M. Fallas, R.B. MacNaughton, G.S. Stockmal, and P. Kabanov, Geological Survey of Canada, 2009 and 2016; Y. Lemieux, Geological Survey of Canada, 2006 and 2007; T. Hadlari, Northwest Territories Geological Survey, 2006 and 2007; J.D. Aitken, H.R. Balkwill, D.G. Cook, and C.J. Yorath, Geological Survey of Canada, 1968–1971

Stratigraphic sections measured by P. Kabanov and S.A. Gouwy, Geological Survey of Canada, 2016; L.P. Gal and W. Zantvoort, Northwest Territories Geological Survey, 2006–2011; L.J. Pyle and C. Bergquist, contractors, 2006–2011; D.G.F. Long, W.S. MacKenzie, R.W. Macqueen, A.E.H. Pedder, and T.T. Uyeno, Geological Survey of Canada, 1968–1977

Reflection-seismic data interpreted by B.C. MacLean and K.M. Fallas, 2015–2018.

Geological data conforms to Bedrock Data Model v. 4.0.

Geomatics by K.M. Fallas and M. Le

Cartography by M. Le

Scientific editing by A. Weatherston

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

Logistical support provided by the Polar Continental Shelf Program (PCSP) as part of its mandate to promote scientific research in the Canadian north, PCSP 055-16

Map projection Universal Transverse Mercator, zone 9
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

Mean magnetic declination 2020, 20°07'E, decreasing 27.4' W annually
Readings vary from 20°11'E in the NW corner to 20°03'E in the SE corner of the map

This map is not to be used for navigational purposes.

Title photograph: View looking northeast down Fan Creek in the Canyon Ranges of the northern Mackenzie Mountains, Northwest Territories. The creek exposes sandstone-dominated strata of the Neoproterozoic Katherine Group overlain downstream by lighter coloured Paleozoic carbonate strata. Photograph by K.M. Fallas. NRCan photo 2019-003

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

Data may include additional observations not portrayed on this map. See map info document accompanying the downloaded data for more information about this publication.

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

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.

DEFINITION QUERIES USED ON MAP

This map utilizes definition queries in order to customize the display for visualization on the PDF of the map only and does not affect the digital data. The following features have a definition query applied:

- Fossils
- Stations
- Planar
- Linear
- Traces
- Wells
- MeasuredSections

DESCRIPTIVE NOTES

Initial bedrock mapping and stratigraphic studies by the Geological Survey of Canada (GSC) in the Sans Sault Rapids map area (NTS 106-H) were conducted in 1968 as part of Operation Norman. This operation and subsequent stratigraphic work up to 1977 led to the release of a GSC Memoir and 1:250 000 scale map of the area (Aitken et al.,

1982). In the present compilation, observations collected in 2016 to 2018 as part of the Geo-mapping for Energy and Minerals (GEM) program were combined with observations from Operation Norman, along with observations from the Peel Project of the Northwest Territories Geological Survey collected in 2006 to 2007 (Pyle and Jones, 2009; Pierce and Jones, 2009). Stratigraphic information from additional reports of the Northwest Territories Geological Survey and GSC is also incorporated (Pyle and Gal, 2007, 2012; Serié et al., 2013). Petroleum exploration wells and reflection-seismic data drilled or collected since 1970 also helped constrain the map interpretation (Fig. 1). Bedrock units are interpreted beneath local Quaternary cover to provide a seamless bedrock interpretation.

Formal stratigraphic nomenclature used for the Operation Norman maps in the area (Aitken et al., 1982) is largely still in use, although more recent stratigraphic work has added new formal terms for previously informal units found in southeast Sans Sault Rapids map area. An outline of updated stratigraphic relationships in the northern Mackenzie Mountains was provided by Fallas et al. (2016), and schematic relationships within southeast Sans Sault Rapids map area are illustrated in Figure 2. Within the Mackenzie Mountains Supergroup, the Katherine Group is subdivided into seven formations (Long and Turner, 2012), replacing the “lower” and “upper” subdivisions of Aitken et al. (1982). Although typically not well exposed, these seven formations have been mapped within this area as outlined by Fallas (2019). A gabbro sill that intrudes strata of the Mackenzie Mountains Supergroup southeast of the Sans Sault Rapids map area was dated at 779.5 Ma by Harlan et al. (2003) and assigned to the Gunbarrel mafic magmatic event. Similar intrusions within the Sans Sault Rapids map area are also assigned to the Gunbarrel suite.

Within the Cambrian succession, the Nainlin Formation of MacNaughton and Fallas (2014) is introduced in place of the “basal red beds” of the Franklin Mountain Formation, and is considered to be a lateral equivalent of the Saline River Formation. Nainlin Formation is a clastic-dominated unit beneath the Franklin Mountain dolostone that lacks the evaporite deposits of the Saline River Formation. It lies unconformably on Neoproterozoic (Tonian) strata of the Katherine Group, or Cambrian strata of Mount Clark and Mount Cap formations. Aside from the exclusion of the basal red beds, Franklin Mountain Formation follows the usage of Aitken et al. (1982), as does Mount Kindle Formation. Devonian units in the southeast Sans Sault Rapids map area also follow the usage of Aitken et al. (1982), with some refinement to the relationship between Bear Rock and Landry formations as noted by Morrow (1991).

Unconformably overlying the Devonian succession, the Cretaceous succession was treated as an undivided package of Arctic Red River and Trevor formations by Aitken et al. (1982), largely following the work of Yorath and Cook (1981). Subsequent work by Dixon (1999) and Thomson et al. (2011) provided a basis for subdividing the Cretaceous into six units: the Lower Cretaceous Martin House Formation, Arctic Red Formation, and Sans Sault Member of Arctic Red Formation, and Upper Cretaceous Slater River, Trevor, and Little Bear formations. Trevor and Little Bear formations occupy the same stratigraphic position, but available biostratigraphic data indicate different age ranges for the units (Dixon, 1999; Thomson et al., 2011). In the absence of direct biostratigraphic evidence, assignment to either unit is made based on terminology on adjacent maps (Aitken et al., 1982; Fallas et al., 2013). Subsurface data from petroleum exploration wells and reflection-seismic surveys helped constrain the distribution of these Cretaceous units.

Subsurface data and stratigraphic refinements allow for the addition of structural detail to the major structures identified by Aitken et al. (1982). Evidence from reflection-seismic survey data indicates the presence of a south-dipping thrust fault on the north flank of the Imperial anticline, consistent with the interpretation of Cook and MacLean (1999). This fault appears to be a continuation of the Hoosier Ridge Fault mapped to the east by Fallas et al. (2013). The additional detail provided by mapping the seven units of the Katherine Group reveals thrust fault segments on either side of Imperial River, which are interpreted to connect to the Canyon Fault mapped to the southeast by Fallas and MacNaughton (2014). An additional fold pair, the Cambrian Creek anticline and syncline, is also identified in the Katherine Group and younger units on the north flank of the broader Stony anticline. Aitken et al. (1982) previously identified the north limb of the Cambrian Creek anticline as the Gayna flexure. Other additions include steeply dipping normal faults and north-northwest-trending mafic dykes of the Gunbarrel suite cutting Katherine Group strata west of Mountain River.

NOTE: The name Stony anticline was introduced by Aitken et al. (1982) to indicate the broad culmination cored by Tsezotene Formation and Katherine Group, without differentiating individual anticlinal hinges. As refined mapping has revealed that this structure comprises multiple en échelon anticlinal hinges along its full strike length, these are herein differentiated as segments named on the basis of a geographic feature in close proximity to the segment named.

ACKNOWLEDGMENTS

This work was carried out on lands within the Sahtu Settlement Area as identified in the Sahtu Dene and Métis Comprehensive Land Claim Agreement. Field transportation for 2016 was provided by Sahtu Helicopters, based in Norman Wells. G.S. Stockmal is thanked for his ideas and insight in the field. Excellent field assistance was provided by W.C. Chan and T.D. Finley, and the geology team was kept safe by the wildlife monitoring of S. Rabisca and R. Andre. The authors also thank G.S. Stockmal for a critical review of the map.

REFERENCES

Aitken, J.D., Cook, D.G., and Yorath, C.J., 1982. Upper Ramparts River (106-G) and Sans Sault Rapids (106-H) map areas, District of Mackenzie; Geological Survey of Canada, Memoir 388, 48 p. <https://doi.org/10.4095/116165>

Bassett, H.G., 1961. Devonian stratigraphy, central Mackenzie River region, Northwest Territories, Canada; *in* Geology of the Arctic, G.O. Raasch (editor), volume 1, p. 481–498.

Cook, D.G. and MacLean, B.C., 1999. The Imperial anticline, a fault-bend fold above a bedding-parallel thrust ramp, Northwest Territories, Canada; *Journal of Structural Geology*, v. 21, p. 215–228. [https://doi.org/10.1016/S0191-8141\(98\)00119-9](https://doi.org/10.1016/S0191-8141(98)00119-9)

Dixon, J., 1999. Mesozoic-Cenozoic stratigraphy of the Northern Interior Plains and Plateaux, Northwest Territories; Geological Survey of Canada, Bulletin 536, 56 p. <https://doi.org/10.4095/210800>

Fallas, K.M., 2019. A reconnaissance section through the Neoproterozoic Katherine Group of the northern Mackenzie Mountains, Northwest Territories, and implications for mapping its subdivisions; Geological Survey of Canada, Open File 8554, 22 p. <https://doi.org/10.4095/314498>

Fallas, K.M. and MacNaughton, R.B., 2014. Geology, Carcajou Canyon (northwest), Northwest Territories; Geological Survey of Canada, Canadian Geoscience Map 94, scale 1:100 000. <https://doi.org/10.4095/292286>

Fallas, K.M., MacNaughton, R.B., MacLean, B.C., and Hadlari, T., 2013. Geology, Norman Wells (southwest), Northwest Territories; Geological Survey of Canada, Canadian Geoscience Map 101, scale 1:100 000. <https://doi.org/10.4095/292293>

Fallas, K.M., MacNaughton, R.B., Finley, T.D., and Gouwy, S.A., 2016. Report of activities for the GEM 2 Mackenzie Project: Northern Mackenzie Mountains bedrock mapping, stratigraphy, and related studies; Geological Survey of Canada, Open File 8132, 15 p. <https://doi.org/10.4095/299297>

Harlan, S.S., Heaman, L., LeCheminant, A.N., and Premo, W.R., 2003. Gunbarrel mafic magmatic event: a key 780 Ma time marker for Rodinia plate reconstructions; *Geology*, v. 31, p. 1053–1056. <https://doi.org/10.1130/G19944.1>

Kabanov, P., Gouwy, S.A., and Chan, W.C., 2016. Report on field activity for Devonian studies in the Mackenzie Mountains in 2016, GEM 2 Mackenzie project; Geological Survey of Canada, Open File 8131, 16 p. <https://doi.org/10.4095/299288>

Lenz, A.C. and Pedder, A.E.H., 1972. Lower and Middle Paleozoic sediments and paleontology of Royal Creek and Peel River, Yukon, and Powell Creek, N.W.T.; Field excursion A14, guidebook, XXIV International Geological Congress.

Long, D.G.F. and Turner, E.C., 2012. Formal definition of the Neoproterozoic Mackenzie Mountains Supergroup (Northwest Territories), and formal stratigraphic nomenclature for terrigenous clastic units of the Katherine Group; Geological Survey of Canada Open File 7113, (ed. rev.), 118 p. <https://doi.org/10.4095/293417>

MacNaughton, R.B. and Fallas, K.M., 2014. Nainlin Formation, a new Middle Cambrian map unit from the Mackenzie Mountains, Northwest Territories; *Bulletin of Canadian Petroleum Geology*, v. 62, p. 37–67. <https://doi.org/10.2113/gscpgbull.62.2.37>

Morrow, D.W., 1991. The Silurian-Devonian sequence in the northern part of the Mackenzie Shelf, Northwest Territories; Geological Survey of Canada, Bulletin 413, 121 p. <https://doi.org/10.4095/132170>

Pierce, K.L. and Jones, A.L. (compilers), 2009. ArcGIS® 9.x Digital atlas to accompany regional geoscience studies and petroleum potential, Peel Plateau and Plain, Northwest Territories and Yukon: project volume; Northwest Territories Geoscience Office, NWT Open File 2009-03. Digital files.

Pyle, L.J. and Gal, L.P., 2007. Lower to Middle Paleozoic stratigraphy and measured sections, NTS 106F, G, H, I, Northwest Territories; Northwest Territories Geoscience Office, NWT Open Report 2007-004, 95 p.

Pyle, L.J. and Jones, A.L. (editors), 2009. Regional geoscience studies and petroleum potential, Peel Plateau and Plain, Northwest Territories and Yukon: project volume; Northwest Territories Geoscience Office and Yukon Geological Survey, NWT Open File 2009-02 and YGS Open File 2009-25, 549 p.

Pyle, L.J., and Gal, L.P., 2012. Measured sections and petroleum potential data (conventional and unconventional) of Horn River Group outcrops, NTS 95-M, 95-N, 96-C, 96-D, 96-E, 106-H, and 106-I, Northwest Territories – Part II; Northwest Territories Geoscience Office, NWT Open Report 2012-008, 114 p.

Sérié, C., Bergquist, C.L., and Pyle, L.J., 2013. Seventeen measured sections of Cambrian Mount Clark and Mount Cap formations, northern Mackenzie Mountains and Franklin Mountains, Northwest Territories; Geological Survey of Canada, Open File 6148 (Revised), 81 p. <https://doi.org/10.4095/292553>

Thomson, D., Schroder-Adams, C.J., Hadlari, T., Dix, G., and Davis, W.J., 2011. Albian to Turonian stratigraphy and palaeoenvironmental history of the northern Western Interior Sea in the Peel Plateau Region, Northwest Territories, Canada; *Palaeogeography, Palaeoclimatology, Palaeoecology*, v. 302, p. 270–300. <https://doi.org/10.1016/j.palaeo.2011.01.017>

Uyeno, T.T., 1978. Devonian conodont biostratigraphy of Powell Creek and adjacent areas, western District of Mackenzie; *in* Western and Arctic Canadian Biostratigraphy, edited by C.R. Stelck and B.D.E. Chatterton; Geological Association of Canada Special Paper 18, p. 233–257

Yorath, C.J. and Cook, D.G., 1981. Cretaceous and Tertiary stratigraphy and paleogeography, Northern Interior Plains, District of Mackenzie; Geological Survey of Canada, Memoir 398, 76 p. <https://doi.org/10.4095/109299>

Geological Survey of Canada Paleontological Reports (available from GSC Calgary):

Asselin, E., 2009. Palynological report on 15 samples from the Katherine Group and the Mount Cap Formation of the Peel Sequence, Northwest Territories and Yukon (NTS 96-C/08, D/07, 11, 13, 14, 15, E/04 and 106-H/01). As requested by L. Pyle (GSC-Pacific); Geological Survey of Canada, Paleontological Report 01-EA-2009, 23 p.

Gouwy, S.A., 2017. Report on 20 conodont samples from the Bear Rock, Landry, Hume and Canol formations from Powell Creek, Mackenzie Mountains (N.W.T.) NTS 106-H, collected by Pavel Kabanov and Sofie Gouwy and submitted by Pavel Kabanov (Con No. 1810-1 to 1810-8 and 1810-17) and under R.B. MacNaughton's Northern Mackenzie Mountains bedrock mapping and stratigraphic studies project (GEM2 Shield-to-Selwyn) (Con No. 1813-1 to 1813-11); Geological Survey of Canada, Paleontological Report 3-SAG-2017, 17 p.

Gouwy, S.A., 2018. Report on thirteen conodont samples from the Hume and Hare Indian formations from Powell Creek Tributary, northern Mackenzie Mountains (N.W.T.) NTS 106-H, collected by Pavel Kabanov and Sofie Gouwy and submitted by Pavel Kabanov (Con No. 1810-19 to 1810-29) and under R.B MacNaughton's northern Mackenzie Mountains bedrock mapping and stratigraphic studies project (GEM2 Shield-to-Selwyn) (Con No. 1813-12 and 1813-13); Geological Survey of Canada, Paleontological Report 3-SAG-2018, 14 p.

McCracken, A.D., 2007. Report on the preparation results for 46 conodont samples from Northwest Territories collected in 2006 as part of the collaborative GSC-NTGO study and submitted by L. Pyle (GSC-P) and E. Martel (Northwest Territories Geoscience Office); Geological Survey of Canada, Paleontological Report 2-ADM-2007, 15 p.

McGregor, D.C., 1971. Palynomorphs in sample submitted by W.S. Mackenzie from Powell Creek, District of Mackenzie (NTS 106-H); Geological Survey of Canada, Paleontological Report FI-14-1971-DCM, 1 p.

McGregor, D.C., 1974. Palynology of samples from the western District of Mackenzie (NTS 96, 106), submitted by W.S. Mackenzie; Geological Survey of Canada, Paleontological Report FI-14-1974-DCM, 6 p.

Norford, B.S., 1970. Report on 47 lots of fossils from the Mackenzie Mountains and the Franklin Mountains, northwest District of Mackenzie; collected by Drs. R.W. Macqueen and B.S. Norford, Operation Norman, 1969 (NTS 96-D, 96-F, 106-G, 106-H); Geological Survey of Canada, Paleontological Report C-S 1 BSN 1970, 9 p.

Norris, A.W., 1971. Report on Devonian fossils from Powell Creek section, District of Mackenzie at approximately 65°16'N, 128°46'W (NTS 106-H); submitted by W.S. Mackenzie, August 1971; Geological Survey of Canada, Paleontological Report D3-1971-AWN, 1 p.

Norris, A.W., 1982. Report on three lots of Devonian fossils from section at Powell Creek (NTS 106-H) and Arctic Red River (NTS 106-G), District of Mackenzie; submitted by Drs. L.V. Hills and D.R. Braman; Geological Survey of Canada, Paleontological Report 6-AWN-1982, 2 p.

Norris, A.W., 1987. Report on sixteen lots of Devonian fossils from eight localities in the lower Mackenzie Valley area, District of Mackenzie; collected by R.L. McKellar and F. Monnier, 1986, Geologists Of Canterra Energy Ltd., 505-5Th Avenue S.W., Calgary T2P 2K7. NTS 92-L, M, 96-E, 106-H; Geological Survey of Canada, Paleontological Report 6-AWN-1987, 7 p.

Pedder, A.E.H., 1968. Report on sixty-two lots of Devonian fossils from the Yukon Territory and District of Mackenzie; collected by Dr. W.S. Mackenzie, 1967 (NTS 96-B, C, E, 106-E-H, 116-H); Geological Survey of Canada, Paleontological Report WSM 1 AEHP 1968, 9 p.

Pedder, A.E.H., 1969. Report on nine lots of Middle Devonian fossils from the District of Mackenzie collected by D.K. Norris, 1968 (NTS 96-D, 106-G, H); Geological Survey of Canada, Paleontological Report DKN 11 AEHP 1969, 3 p.

Pedder, A.E.H., 1970; Report on 158 lots of Devonian fossils collected by W.S. Mackenzie and A.E.H. Pedder on Operation Norman, 1968, 1969 (NTS 95-C-E, L, M, and 106-A, G-J, O); Geological Survey of Canada, Paleontological Report WSM 18 AEHP 70, 39 p.

Pedder, A.E.H., 1970. Three Middle Devonian fossil lots from District of Mackenzie submitted by W.S. Mackenzie, 1970 (NTS 106-H/07); Geological Survey of Canada, Paleontological Report WSM 22 AEHP 70, 1 p.

Pedder, A.E.H., 1971. Reports on 17 lots of Middle and Upper Devonian megafossils from Powell Creek area, District of Mackenzie (NTS 106-H/07); Geological Survey of Canada, Paleontological Report WSM 37 AEHP 71, 5 p.

Pedder, A.E.H., 1972. Report on one lot of Middle Devonian fossils submitted by T.T. Uyeno from Powell Creek (NTS 106-H/07); Geological Survey of Canada, Paleontological Report TTU 40 AEHP 72, 1 p.

Pedder, A.E.H., 1973. Report on four lots of Middle Devonian fossils from Bell Creek collected in 1972 during field work for Project 700060 (NTS 106-H/07); Geological Survey of Canada, Paleontological Report WSM 56 AEHP 1973, 2 p.

Pedder, A.E.H., 1974. Report on five Middle Devonian fossil lots from Oscar Creek and Rainbow Arch collected for Project 700060 (NTS 96-E, 106-H); Geological Survey of Canada, Paleontological Report WSM 61 AEHP 1974, 2 p.

Pedder, A.E.H., 1979. Report on two lots of Middle Devonian fossils from Sans Sault Rapids and Bonnet Plume Lake map sheets, submitted by D.W. Morrow (NTS 106-B, H); Geological Survey of Canada, Paleontological Report DWM-98-AEHP-79, 1 p.

Pedder, A.E.H., 1987. Report on 12 lots of Middle Devonian fossils submitted by R.L. McKellar, Canterra Energy Ltd., from the District of Mackenzie, NTS 96-E, 96-F, 96-L, 96-M and 106-H; Geological Survey of Canada, Paleontological Report RLM-128-AEHP-87, 6 p.

Raasch and Associates, 1970. Slave Point Datum Project, Phase I, investigation of outcrops, Raasch and Associates, Ltd.; Geological Survey of Canada, Paleontological Report MISC-1-GOR-1970 PHASE I, 75 p.

Sweet, A.R., 1974. Report on presence or absence of algal cysts in four samples from the Hare Indian Formation, Powell Creek locality, 62°16'40"N, 128°46'30"W (NTS 106-H), District of Mackenzie for W.S. MacKenzie; Geological Survey of Canada, Paleontological Report AS-6-74, 1 p.

Utting, J., 1983. Palynological investigation of three outcrop samples from Powell Creek, District of Mackenzie, Northwest Territories; submitted for analysis by T.T. Uyeno for Ian Muir, University of Ottawa (NTS 106-H); Geological Survey of Canada, Paleontological Report JU-4-1983, 2 p.

Utting, J., 2008. Palynological investigation of 69 outcrop samples from the Devonian and Cretaceous, western District of Mackenzie; submitted by W.G. Zantvoort, Geoscience Office, Northwest Territories, Canada (NTS 96-D/14; 96-E/4; 106-A; 106-F/8; 106-F/9; 106-F/10; 106-F/11; 106-G/6; 106-G/7; 106-G/11; 106-H/5; 106-H/7); Geological Survey of Canada, Paleontological Report 03-JU-2008, 26 p.

Uyeno, T.T., 1971. Report on 27 lots of conodont samples from Powell Creek, District of Mackenzie, lat. 65°16'N, long. 128°46'W, collected by A.E.H. Pedder and W.S. Mackenzie, 1969 (NTS 106-H); Geological Survey of Canada, Paleontological Report MP3 TTU 1971, 6 p.

Uyeno, T.T., 1972. Report on 32 lots of conodont samples from 1) Prohibition Creek (NTS 96-E), 2) Powell Creek area (NTS 106-H), and 3) Bosworth Creek (NTS 96-E), submitted in part by A.E.H. Pedder; Geological Survey of Canada, Paleontological Report 16 TTU 72, 5 p.

Uyeno, T.T., 1986. Report on 177 conodont samples from the Hume, Hare Indian, Ramparts (Kee Scarp) and Canol Formations from 12 sections at Mountain River and vicinity, Mackenzie Mountains, District of Mackenzie (NTS 106-H), submitted by Ian Muir, Department of Geology, University of Ottawa; Geological Survey of Canada, Paleontological Report 1-TTU-86, 43 p.

Uyeno, T.T., 1986. Report on 2 conodont samples from the Hare Indian Formation, west-central District of Mackenzie (NTS 96-E, 106-H), collected by T.T. Uyeno and Dr. D.K. Norris, and requested by Dr. W.W. Nassichuk; Geological Survey of Canada, Paleontological Report 3-TTU-86, 2 p.

Uyeno, T.T., 2008. Report on ten Devonian conodont samples from northern Mackenzie Mountains, collected for the Peel Petroleum project, submitted by Dr. Leanne Pyle, Geological Survey of Canada - Pacific, NTS 106-G, H., Con. No. 1719; Geological Survey of Canada, Paleontological Report 1-TTU-2008, 6 p.

Yochelson, E.L., 1971. Report on mollusk fossils from Northwest Territories. Referred by B.S. Norford; Geological Survey of Canada, Paleontological Report Misc. ELY-1-1971, 5 p.

ADDITIONAL INFORMATION

The Additional Information folder of this product's digital download contains figures and tables that appear in the map surround as well as additional geological information not depicted on the map, nor this document, nor the geodatabase.

-PDF of each figure/table that appears in the CGM surround.

-Excel file of the Master Legend Table (legend symbols, descriptions, headings, etc.).

AUTHOR CONTACT

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

K.M. Fallas
Geological Survey of Canada
3303 33 Street NW
Calgary AB
T2L 2A7
Karen.Fallas@canada.ca

COORDINATE SYSTEM

Projection: Universal Transverse Mercator
Units: metres
Zone: 9
Horizontal Datum: NAD83
Vertical Datum: mean sea level

BOUNDING COORDINATES

Western longitude: 129°00'00"W
Eastern longitude: 128°00'00"W
Northern latitude: 65°30'00"N
Southern latitude: 65°00'00"N

SOFTWARE VERSION

Data has been originally compiled and formatted for use with ArcGIS™ desktop version 10.6 developed by ESRI®.

DATA MODEL INFORMATION

Bedrock (Calgary)

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.