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CANADIAN GEOSCIENCE MAP 95

GEOLOGY

CARCAJOU CANYON (NORTHEAST)

Northwest Territories



Map Information
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Cover Illustration

View looking east along the Rouge Mountain River from the flank of the Rouge Mountain anticline. Red and orange rocks in the foreground belong to Proterozoic Little Dal Group. The yellow exposure downstream is Cambro-Ordovician Franklin Mountain Formation. Photograph by K.M. Fallas. 2012-146

ABSTRACT

The northeast quadrant of the Carcajou Canyon map area (NTS 96-D) straddles the Mackenzie Mountains and Mackenzie Plain, Northwest Territories, rising from a relatively flat, low-lying plain in the northeast to mountainous terrain in the southwest. Much of the Mackenzie Plain is here underlain by flat or very gently folded Cretaceous to Paleocene siliciclastic strata. Exposures in the Mackenzie Mountains include siliciclastic and carbonate strata ranging in age from Neoproterozoic to Devonian. These older strata have been brought to surface along compressional faults and in the cores of anticlines associated with Cordilleran deformation. Structural features are dominated by a northwest trend, the exception being the northeast-trending Gambill Fault. Public-domain seismic-reflection lines, archived with the National Energy Board, help constrain the location of contacts between sparsely exposed Cretaceous units. Petroleum exploration by private industry in the area targets Cambrian or Devonian strata in the subsurface of the Mackenzie Plain.

RÉSUMÉ

Le quadrant nord-est de la région cartographique de Carcajou Canyon (SNRC 96-D) chevauche les monts Mackenzie et la plaine du Mackenzie (Territoires du Nord-Ouest), où le terrain s'élève depuis une basse plaine relativement plane, au nord-est, à un terrain montagneux, au sud-ouest. La majeure partie de la plaine du Mackenzie repose sur des strates silicoclastiques du Crétacé au Paléocène disposées à plat ou très légèrement plissées. Les affleurements dans les monts Mackenzie comprennent des strates silicoclastiques et carbonatées s'échelonnant en âge du Néoprotérozoïque au Dévonien. Ces strates plus anciennes ont été amenées à la surface le long de failles de compression et dans le cœur d'anticlinaux associés à la déformation cordillèreenne. La tendance des entités structurales est à prédominance nord-ouest, à l'exception de la faille de Gambill de direction nord-est. Des profils de sismique-réflexion du domaine public, archivés par l'Office national de l'énergie, ont aidé à circonscrire les contacts des unités du Crétacé peu représentées en affleurement. Dans la région, l'exploration pétrolière par l'industrie a ciblé les strates du Cambrien ou du Dévonien enfouies dans les profondeurs de la plaine du Mackenzie.

ABOUT THE MAP

General Information

Authors: K.M. Fallas, T. Hadlari, and B.C. MacLean

Geological compilation by K.M. Fallas, T. Hadlari, and B.C. MacLean, 2011–2012

Geological field observations by K.M. Fallas, K. Montgomery, M. Sommers, T. Hadlari, R. Lemiski, R.B. MacNaughton, J. Powell, 2009–2012, C.J. Yorath, D.G. Cook, H.R. Balkwill, and J.D. Aitken, 1969

Seismic data interpretation by B.C. MacLean 2010–2012. Stratigraphic sections measured by R.B. MacNaughton, 2012, C.J. Yorath, R.W. Macqueen 1969, J.D. Aitken, 1977, D.K. Norris, 1983, and A.R. Sweet, 1985 and 1988

Geomatics by K.M. Fallas, S.D. Orzeck, and N. Raska

Cartography by S.D. Orzeck

Scientific editing by E. Inglis

Joint initiative of the Geological Survey of Canada and the Northwest Territories Geoscience Office, conducted under the auspices of the Mackenzie Delta and Corridor 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 as part of its mandate to promote scientific research in the Canadian North. PCSP 02509, 01310, 00411, and 00912

Map projection Universal Transverse Mercator, zone 9.
North America Datum 1983

Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications.
Elevations above mean sea level are expressed in feet north of 64°45' and metres south of 64°45'

Some geographic names on this map are not official.

Mean magnetic declination 2013, 23°9'E, decreasing 30' annually.
Readings vary from 23°18'E in the NW corner of the map to 22°59'E in the SE corner of the map.

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

Data may include additional features 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
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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 authors have updated and revised map unit terminology from the Operation Norman map (Aitken et al., 1974). In general, terminology for Cambrian units is that of Dixon and Stasiuk (1998) with modifications by Fallas and MacNaughton (2012), Silurian and Devonian usage follows that of Morrow (1991), and Cretaceous to Paleocene formation names are those of Dixon (1999). Neoproterozoic to Ordovician units have recently undergone revision to their terminology, as outlined below.

Recent stratigraphic work in the Mackenzie Mountains has formalized the Mackenzie Mountains Supergroup and revised its formation-level nomenclature. Within the Katherine Group, the Eduni, Tawu, Grafe River, Etagechile, and Shattered Range

formations of Long and Turner (2012) correspond to the lower part of the Katherine Group as shown on the GSC maps for Carcajou Canyon (Aitken et al., 1974), and to the K1 to K5 divisions of Aitken et al. (1978) and Long et al. (2008). Delineation of these new formations depends on the ability to recognize the recessive Tawu and Etagechile formations. These formations are seldom exposed in the mapping area and so the five lower formations of the Katherine Group were grouped during mapping. The McClure and Abraham Plains formations correspond to the upper Katherine Group on the Carcajou Canyon map (Aitken et al., 1974), and to the K6 and K7 divisions of Aitken et al. (1978) and Long et al. (2008).

The Little Dal Group previously was mapped in this region as two units: H5, and Little Dal Formation (Aitken et al. 1974). Regionally, those two units were reorganized into seven informal units of formation scale by Aitken (1981). In the present mapping area, Aitken's terminology can be applied as follows: the lower part of H5 corresponds to the "Mudcracked formation"; the upper part of H5 and the Little Dal Formation correspond to the "Basinal Assemblage". Most recently, Turner and Long (2012) have formalized the internal stratigraphy of the Little Dal Group. Their nomenclature applies as follows to the present study area: the Mudcracked formation is now the Dodo Creek Formation; the Basinal Assemblage is now the Stone Knife Formation, consisting of four informal members (1, 2, 3, and 4). In the present series of maps the Dodo Creek Formation and the lower Stone Knife Formation (equivalent to its member 1) have been combined due to similarity of weathering profile and colour. Our middle Stone Knife Formation corresponds to the lower part of member 2 (typically a bright red shale in this area), and the upper Stone Knife Formation encompasses the upper part of member 2 (carbonate dominated).

Previous work by the Geological Survey of Canada in northeast Carcajou Canyon map area (Aitken and Cook, 1974) subdivided the Cambro-Ordovician Franklin Mountain Formation into three informal units. In ascending order they are: Cyclic member, Rhythmic member, and Cherty member (Norford and Macqueen, 1975). On the present maps, these older unit names correspond, in ascending order, to informal lower, middle, and upper members of the Franklin Mountain Formation. These lower, middle, and upper members correspond to the units 1, 2, and 3 of the Franklin Mountain Formation described by Turner (2011).

For detailed information on surficial deposits, here shown as "Quaternary sediment", see Duk-Rodkin and Hughes (2002).

The names Summit Creek Fault, Twentyfive Mile Lake syncline, Mirror Lake anticline, and East Little Bear syncline have been introduced to facilitate discussion of these structural features. The names Gambill Fault and MacDougal anticline have been incorporated from the older Carcajou Canyon map (Aitken et al., 1974). Cordilleran deformation in this map area has generated folds and thrust faults interpreted to be detached within Proterozoic, Cambrian, or Devonian strata. The Gambill Fault is represented as a reverse fault on the basis of seismic-reflection data showing the development of a salt wall above steep faults in Proterozoic strata (MacLean and Cook, 1999).

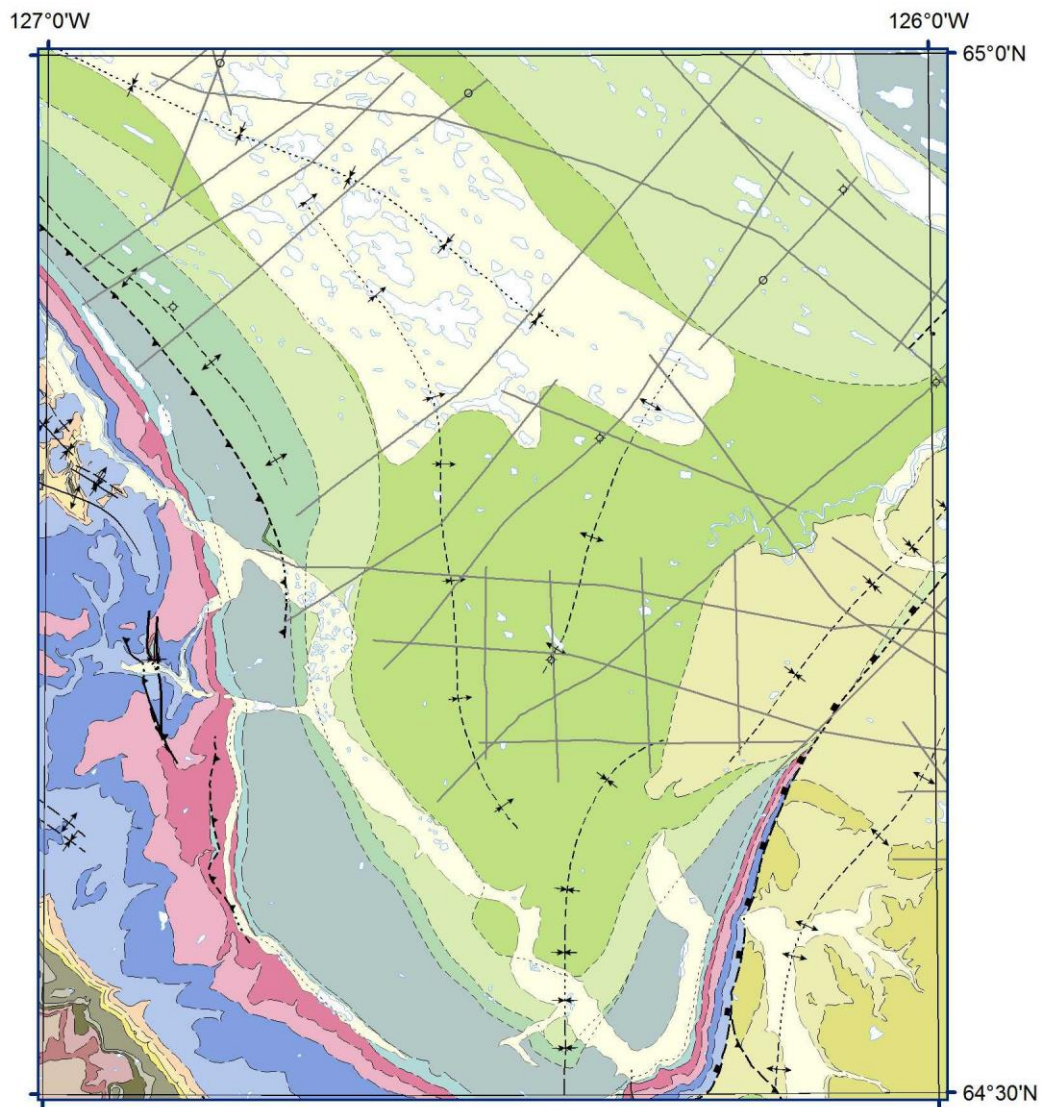


Figure 1. Northeast Carcajou Canyon map area (NTS 96-D/NE) showing seismic lines on record with the National Energy Board (NEB) that were used to augment the bedrock geology interpretation. Line names are provided in the digital data files.

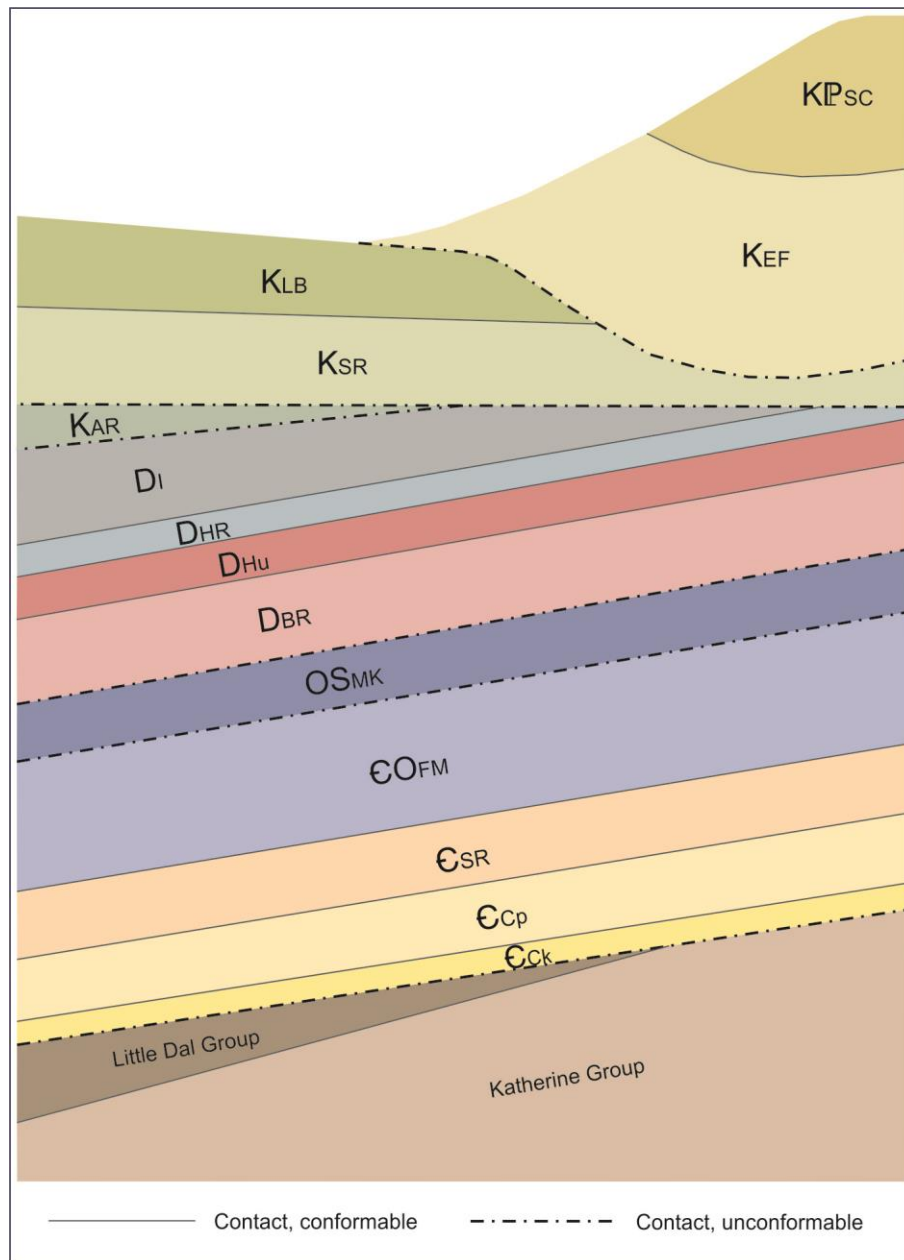


Figure 2. Schematic stratigraphic relationship diagram for northeast Carcajou Canyon map area (NTS 96-D/NE). Erosional unconformities at the base of some Cretaceous units reflect tectonic activity adjacent to the Keele Arch during Cordilleran deformation.

Acknowledgments

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References

- Aitken, J.D., 1981. Stratigraphy and sedimentology of the upper Proterozoic Little Dal Group, Mackenzie Mountains, Northwest Territories; *in* Proterozoic Basins of Canada; (ed.) F.H.A. Campbell; Geological Survey of Canada, Paper 81-10, p. 47–71.
- Aitken, J.D. and Cook, D.G., 1974. Carcajou Canyon map-area, District of Mackenzie, Northwest Territories; Geological Survey of Canada, Paper 74-13, 28 p.
- Aitken, J.D., Cook, D.G., Balkwill, H.R., and Yorath, C.J., 1974. Geology, Carcajou Canyon, District of Mackenzie; Geological Survey of Canada, Map 1390A, scale 1:250 000. doi:10.4095/109026
- Aitken, J.D., Long, D.G.F., and Semikhatov, M.A., 1978. Progress in Helikian stratigraphy, Mackenzie Mountains; *in* Current Research, Part A; Geological Survey of Canada, Paper 78-1A, p. 481–484.
- Aitken, J.D., Turner, E.C., and MacNaughton, R.B., 2011. Thirty-six archival stratigraphic sections in the Katherine, Little Dal, Coates Lake, and Rapitan groups (Neoproterozoic), Mackenzie Mountains, Northwest Territories; Geological Survey of Canada, Open File 6391, 1 CD-ROM. doi:10.4095/288059
- Dixon, J., 1999. Mesozoic-Cenozoic stratigraphy of the northern Interior Plains and plateaux, Northwest Territories; Geological Survey of Canada, Bulletin 536, 56 p.
- Dixon, J. and Stasiuk, L.D., 1998. Stratigraphy and hydrocarbon potential of Cambrian strata, northern Interior Plains, Northwest Territories; Bulletin of Canadian Petroleum Geology, v. 46, no. 3, p. 445–470.
- Duk-Rodkin, A. and Hughes, O.L., 2002. Surficial geology, Carcajou Canyon, Northwest Territories; Geological Survey of Canada, Map 1988A, scale 1:250 000. doi:10.4095/213616
- Fallas, K.M. and MacNaughton, R.B., 2012. Distribution of Cambrian formations in the eastern Mackenzie Mountains, Northwest Territories; Geological Survey of Canada, Current Research 2012-12, 12 p. doi:10.4095/289498
- Long, D.G.F. and Turner, E.C., 2012. Formal definition of the Neoproterozoic Mackenzie Mountains Supergroup (NWT), and formal stratigraphic nomenclature for terrigenous clastic units of the Katherine Group; Geological Survey of Canada, Open File 7113, 40 p. doi:10.4095/292168
- Long, D.G.F., R.H. Rainbird, R.H., Turner, E.C., and MacNaughton, R.B. 2008. Early Neoproterozoic strata (Sequence B) of mainland Northern Canada and Victoria and Banks Islands: a contribution to the Geological Atlas of the Northern Canadian Mainland Sedimentary Basin; Geological Survey of Canada, Open File 5700, 27 p., 1 CD-ROM. doi:10.4095/226070

MacLean, B.C. and Cook, D.G., 1999. Salt tectonism in the Fort Norman area, Northwest Territories, Canada; *Bulletin of Canadian Petroleum Geology*, v. 47, no. 2, p. 104–135.

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.

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.

Sweet, A.R., Ricketts, B.D., Cameron, A.R., and Norris, D.K., 1989. An integrated analysis of the Brackett coal basin, Northwest Territories; *in* Current Research Part G, Frontier Geoscience Program, Arctic Canada; *Geological Survey of Canada, Paper* 89-1G, p. 85–99.

Turner, E.C., 2011. A lithostratigraphic transect through the Cambro-Ordovician Franklin Mountain Formation in NTS 96D (Carcajou Canyon) and 96E (Norman Wells), Northwest Territories; *Geological Survey of Canada, Open File* 6994, 28 p.
doi:10.4095/289612

Turner, E.C. and Long, D.G.F., 2012. Formal definition of the Neoproterozoic Mackenzie Mountains Supergroup (NWT), and formal stratigraphic nomenclature for its carbonate and evaporate formations; *Geological Survey of Canada, Open File* 7112, 57 p. doi:10.4095/292167

Yorath, C.J. and Cook, D.G., 1981. Cretaceous and Tertiary stratigraphy and paleogeography, northern Interior Plain, District of Mackenzie; *Geological Survey of Canada, Memoir* 398, 76 p.

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

Brideaux, W.W., 1971. Report on the palynologic analysis of 6 samples from a section of the Little Bear Formation on Little Bear River, District Of Mackenzie, collected by C.J. Yorath in 1969, and submitted for examination on February 1, 1971. (NTS 96D); *Geological Survey of Canada, Paleontological Report* 3-WWB-71, 4 p.

Brideaux, W.W., 1973. Report on the palynologic analysis of sixteen samples from East Fork Little Bear River, Little Bear River and Redstone River areas, District Of Mackenzie, collected by C.J. Yorath in 1969 and submitted for analysis on March 20, 1973. (NTS 95N, 96D, parts of); *Geological Survey of Canada, Paleontological Report* K5 WWB 1973, 5 p.

Chamney, T.P., 1971. Microfossil report on two lots of samples collected by Dr. C.J. Yorath, 1970, map-sheet Norman, District Of Mackenzie (NTS 96D); *Geological Survey of Canada, Paleontological Report* Gen. 5-TPC-1971, 1 p.

Jeletzky, J.A., 1985. Report on Upper Cretaceous fossils collected by Dr. A. Sweet of the Institute of Sedimentary and Petroleum Geology, Calgary, Alberta, in 1985 from the Little Bear Formation in the Mackenzie District, N.W.T. (NTS 96D-16) and submitted for identification on September 4, 1985; Geological Survey of Canada, Paleontological Report Km-9-1985-JAJ, 2 p.

McCracken, A.D., 2011. Report on 20 conodont samples from the Cambrian-Ordovician Franklin Mountain Formation, the Ordovician-Silurian Mount Kindle, and the Devonian Bear Rock, Hume and Ramparts Formations, and the Bluefish Member (Hare Indian Fm.), Franklin and Mackenzie Mountains areas, NWT, submitted by Karen Fallas (Geological Survey of Canada - Calgary) in 2009. Con. No. 1747. NTS 096C/04, 096D/09, D/10, 096E/01, E/04, E/08, E/09, E/10, E/12, E/13, 096F/12, F/13, F/15, 106H/16; Geological Survey of Canada, Paleontological Report 4-ADM-2011, 15 p.

McIntyre, D.J., 1988. Report on dinoflagellates from nine outcrop samples from the Brackett Basin, NWT. Requested by D.K. Norris; Geological Survey of Canada, Paleontological Report 6-DJM-1988, 3 p.

McNeil, D.H., 2010. Micropaleontology report on 6 outcrop samples from Devonian strata of the Franklin and McKenzie Mountains, Northwest Territories (NTS 96D, E); Geological Survey of Canada, Paleontological Report DHM-2010-03, 4 p.

Norford, B.S., 1969. Report on four lots of fossils from the Mackenzie Mountains, District of Mackenzie; collected by D.K. Norris, project 660020, 1968. (NTS 96D, 96E, 106G); Geological Survey of Canada, Paleontological Report O-S 5 BSN 1969, 2 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 96D, 106G,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 95C-E, L, M, and 106A, G-J, O); Geological Survey of Canada, Paleontological Report WSM 18 AEHP 70, 39 p.

Sweet, A.R., 1984. Applied research report on 45 samples from the Little Bear Formation and immediately contiguous strata Brackett Basin, Northwest Territories (NTS 96D, 96C) as requested by D.K. Norris; Geological Survey of Canada, Paleontological Report 8-ARS-1984, 26 p.

Sweet, A.R., 2010. Applied research report on 14 outcrop samples from the Brackett Basin (NTS map sheets 096D/09, 096C/16, 096E/04, 096C/05 and 106H/05); Geological Survey of Canada, Paleontological Report ARS-2010-01, 12 p.

Sweet, A.R., 2010. Applied research report on 3 Cretaceous samples from the Brackett Basin, Northwest Territories (NTS 96-D-09); report compiled for Karen Fallas

(Geological Survey of Canada, Calgary); Geological Survey of Canada, Paleontological Report ARS-2010-02, 4 p.

Utting, J., 2009. Palynological investigation of 11 outcrop samples from the Devonian and Cretaceous of the Mackenzie Corridor, N.W.T. submitted by K. Fallas, Geological Survey of Canada (Calgary) (NTS 96D And 96E); Geological Survey of Canada, Paleontological Report JU-2009-07, 6 p.

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 33rd Street N.W.
Calgary, Alberta
T2L 2A7

Karen.Fallas@NRCan-RNCan.gc.ca

Coordinate System

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

Bounding Coordinates

Western longitude: 127°00'00" W
Eastern longitude: 126°00'00" W
Northern latitude: 65°00'00" N
Southern latitude: 64°30'00" 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,

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2.0 CESSION D'UNE LICENCE

1. 2.1 Sous réserve des modalités du présent Accord, le Canada octroie au Détenteur de licence une licence non exclusive, sans frais ni redevances exigibles, et le droit d'exercer tous les Droits de propriété intellectuelle sur les Données. Ceci comprend le droit d'utiliser, incorporer, accorder des licences d'utilisation (avec droit subséquent d'accorder des licences d'utilisation), modifier, améliorer, développer et distribuer les Données; et de fabriquer ou distribuer des Produits dérivés.
2. Les Droits de propriété intellectuelle découlant de toute modification, amélioration, développement ou traduction des Données, ou de la fabrication de Produits dérivés, effectués par ou pour le Détenteur de licence seront détenus par le Détenteur de licence ou tout substitut identifié par le Détenteur de licence.

3.0 PROTECTION ET IDENTIFICATION DE LA SOURCE

1. L'utilisation des Données ne constitue en aucune façon une reconnaissance par le Canada d'un Produit dérivé. Le Détenteur doit identifier la source de données, de la façon suivante, lorsque toute partie des Données est redistribuée ou comprise dans un Produit dérivé :
© Le ministère des Ressources naturelles Canada. Tous droits réservés.

4.0 GARANTIE, EXCLUSION ET INDEMNISATION

1. Le Canada ne fait aucune représentation ou garantie, expresse ou tacite, découlant de la loi ou d'autres sources, en ce qui concerne entre autres l'exactitude, l'utilité, la nouveauté, la validité, l'étendue, l'intégralité ou l'actualité des Données et rejette expressément toute garantie implicite de qualité loyale et marchande ou l'à propos à une fin particulière des Données. Le Canada n'assure ni ne garantit la compatibilité du site qui contient les Données avec les versions antérieures, actuelles et futures de n'importe quel fureteur.
2. Le Canada ne peut être tenu responsable par le Détenteur de licence en ce qui a trait à toute réclamation, revendication ou action en justice, quelle qu'en soit la cause, concernant toute perte ou tout préjudice ou dommage ou frais, direct ou indirect, qui pourrait résulter de la possession ou de l'utilisation des Données par le Détenteur de licence.
3. Le Détenteur de licence tiendra le Canada et ses représentants, employés, agents et exécutants, indemnes et à couvert à l'égard de toute réclamation, revendication ou action en justice, quelle qu'en soit la cause, alléguant toute perte, tout frais, toute dépense, tout dommage ou toute blessure (y compris toute blessure mortelle) qui pourrait résulter de la possession ou de l'utilisation des Données par le Détenteur de licence.
4. Le Détenteur de licence devra accorder des licences d'utilisation à toute personne ou partie qui obtient les Données ou des Produits dérivés au moyen d'un accord de licence, et cet accord devra imposer à ces personnes ou parties les mêmes modalités que celles qui sont énoncées dans la section 4.0 de cet Accord.
5. L'obligation du Détenteur de licence d'indemniser le Canada selon cet Accord ne peut affecter ni empêcher le Canada d'exercer tout autre droit selon la loi.

5.0 DURÉE

1. Cet Accord entre en vigueur à partir de la date et de l'heure d'acceptation des modalités de l'Accord (Heure de l'Est) et restera en vigueur pour une période d'un (1) an, en vertu de la sous-section 5.2 et de la section 6.0 qui suivent.
2. À la fin du premier terme, cet Accord sera automatiquement renouvelé pour des termes successifs d'un (1) an, en vertu de la section 6.0 qui suit.

6.0 RÉSILIATION

1. 6.1 Nonobstant la section 5.0, cet Accord peut être résilié :
 - i. automatiquement et sans préavis, si le Détenteur de licence manque à ses engagements ou obligations selon cet Accord;
 - ii. par un préavis écrit de résiliation émis par le Détenteur de licence, en tout temps, et cette résiliation prendra effet trente (30) jours suivant la réception d'un tel préavis par le Canada; ou
 - iii. par consentement mutuel des parties.

2. Lors de la résiliation de cet Accord, pour quelque raison que ce soit, les obligations qui incombent au Détenteur de licence en vertu de la section 4.0 continueront de s'appliquer et les droits du Détenteur de licence en vertu de la section 2.0 cesseront immédiatement.
3. Lors de la résiliation de cet Accord, pour quelque raison que ce soit, le Détenteur de licence devra immédiatement effacer ou détruire toutes les Données obtenues en vertu de cet Accord, ou à l'intérieur d'un délai raisonnable lorsque les Données sont nécessaires pour terminer la livraison de Produits dérivés commandés avant la résiliation de cet Accord.

7.0 GÉNÉRAL

1. **Lois d'application**

Le présent Accord est régi et interprété en vertu des lois en vigueur dans la province de l'Ontario. Les parties acceptent de tomber sous la juridiction de la Cour supérieure de la Province de l'Ontario.

2. **Totalité de l'Accord**

Le présent Accord constitue l'intégralité de l'entente conclue entre les parties relativement à l'objet du présent Accord. Toute modification à cet Accord ne peut être que par écrit, doit porter la signature de chaque partie et exprimer clairement l'intention de modifier cet Accord.

3. **Solution des litiges**

Si un litige survient à propos de cet Accord, les parties tenteront de le résoudre par des négociations de bonne foi.