



LEGEND

CRETACEOUS
LOWER AND UPPER CRETACEOUS
FORT ST. JOHN GROUP (units Kcs - Ksu)
SULLY FORMATION
Ksu Shale: dark grey, sideritic concretions; and siltstone: dark grey, sideritic concretions, interbedded with shale. Recessive; silt content increases in upper part of unit.

LOWER CRETACEOUS
SISKIYOU FORMATION
Ksk Sandstone: lithic wacke, commonly glauconitic or calcareous, greenish grey, thick-bedded, typically thin to medium bedded, minor siltstone, greenish grey or grey, interbedded with sandstone; and shale: dark grey, interbedded with sandstone. Moderately resistant.

LEPINE FORMATION
KL Mudstone: dark grey, sideritic concretions; interbedded with shale: silty, dark grey to black, fissile. Recessive; lower part of unit contains abundant ammonites.

SCATTER FORMATION
Ks Sandstone: lithic wacke, glauconitic, greenish grey, thin to thick-bedded, laminated, locally bioturbated; minor mudstone: brown to dark grey, sideritic concretions. Resistant; zoophytes: burrows common; mudstone more abundant in middle part of unit.

GARBUTT FORMATION
KG Shale and siltstone: dark grey to black, interbedded, sideritic concretions; minor sandstone: brown to grey, thin-bedded, finely laminated. Recessive.

CHINKEH FORMATION
KCh Sandstone: quartz arenite to lithic wacke with variable chert content, brown to grey, laminated, bioturbated; minor siltstone, argillaceous, grey, interbedded with sandstone; conglomerate: chert pebbles, at base of unit. Woody or plant debris common.

TRIASSIC
GRÄYLING AND TOAD FORMATIONS
TGT Shale: grey, red and green, interbedded with sandstone: brown, thin to thick-bedded, laminated or massive, locally bioturbated; minor siltstone: brown to grey, interbedded with shale and sandstone. Locally calcareous or phosphatic; higher proportion of shale and more recessive at base.

PERMIAN
ISHBEL GROUP (units PT - Pf)
FANTASQUE FORMATION
Pf Chert: dark grey to white, rusty weathering, well-bedded, spiculate; minor shale and siltstone: silty, dark grey to dark brown, rhythmically interbedded with chert. Resistant.

Trike formation
PT Limestone and dolomite: silty or sandy, medium to dark brown, buff weathering, medium-bedded, massive to cross-laminated; minor siltstone and shale: calcareous, dark brown or grey, rhythmically interbedded with limestone and dolomite; sandstone: glauconitic, grey, cross-bedded, at base of unit. Rectilinear fracture pattern typical; rare brachiopods and trace fossils.

CARBONIFEROUS
LOWER AND UPPER CARBONIFEROUS
MATTSON FORMATION (units CM4 - CMu)
Upper member
CM-u Sandstone: quartz arenite to sub-chert arenite, locally calcareous or dolomitic, fine- to coarse-grained, light to medium grey, commonly shows large-scale crossbedding; minor limestone: grey, chert nodules and siltstone fossils, typically fossiliferous with corals, brachiopods, bryozoans, and corals; dolomite: brown to orange; and shale: grey to green. All lithologies interbedded, resistant.

Lower member
CM-l Sandstone: quartz arenite and lesser sub-chert arenite, fine-grained, grey to buff to brown, thick-bedded, fine- to large-scale crossbedding, poor- to well-indurated; minor siltstone and shale: medium to dark grey, interbedded with sandstone. Typically forms coarsening-up sequences; moderately resistant.

MIDDLE DEVONIAN TO LOWER CARBONIFEROUS
BESA RIVER FORMATION
DCBR Shale: dark grey to black, locally weathers buff, scattered siderite nodules; minor sandstone, siltstone and lithoclast breccia: brown, grey to orange weathering, interbedded with shale; dolomite and limestone: orange to grey, uncommon with increasing proportion of limestone. Recessive.

MEZOSIC

PALEOZOIC

FOSSIL LOCALITIES

LOCALITY	CATALOGUE NUMBER	FOSSIL	AGE	EASTING, NORTHING (MADRS)	REFERENCE
①	C-419632	conodonts	Early Carboniferous (Sisnifonion)	42427, 6684762	Orchard, 2004
②	C-254952	conodonts	Early to Middle Devonian	420758, 6688465	McCracken, 1999
③	C-417993	brachiopods	latest Carboniferous?	438129, 6694697	Bamber, 2002
④	C-418633	palynomorphs	Early Carboniferous (Miles)	422773, 6687254	Utting, 2004
⑤	C-419635	palynomorphs	Early Permian	429116, 6683987	Utting, 2004
⑥	C-417915	radiolarians	Early Cretaceous	444569, 6692712	Jowett, 2004

NOTE: Fossil locality #2 is a sample taken from peritremium well L-60. The downhole depth is indicated.

LIST OF WELLS

UWID	FULL NAME	SPUD DATE	T(m)	SURFACE LOCATION EASTING, NORTHING (MADRS)
1.300CF6030124000	PAN AM KOTANELEE C-87	19 Nov., 1988	2804	433957, 6701843
2.300L60620214150	PAN AM SHELL MERRILL TT-L60	24 Jan., 1989	1834	420758, 6688465

NOTES

- Bedding orientations are shown at station locations; crossbedding and joint orientations are shown slightly offset from stations for clarity.
- Slumping of large sections of bedrock may locally influence structure orientations and lead to minor variations in strike and dip.

REFERENCES

Bamber, E.W., 2002: Report on ten collections of invertebrate fossils from the Trutch, Fort Liard and La Biche River map areas, northeastern British Columbia, southwest District of Mackenzie and southeastern Yukon, submitted by L.S. Lane, NTS 840, 850, 860. Geological Survey of Canada, Internal Paleontological Report 5-ENB-2002.

Jowett, D.M.S., 2004: Foraminiferal biostratigraphy and sequence stratigraphy of Lower Cretaceous strata in the Liard basin, British Columbia, Yukon Territory, and Northwest Territories; PhD Thesis, Carleton University, Ottawa, Ontario.

McCracken, A.D., 1999: Report on 17 Middle Devonian conodont samples (Con. No. 1556) from the subsurface of the Yukon and Northwest Territories, collected by A.D. McCracken (GSC-C) for J. Taylor (Canadian Forest Oil Ltd.) and P. Graham (Ranger Oil Ltd.) in 1988. NTS 8489, 8612, 8621, 8622, 8623, 8624, 8625, 8626, 8627, 8628, 8629, 8630, 8631, 8632, 8633, 8634, 8635, 8636, 8637, 8638, 8639, 8640, 8641, 8642, 8643, 8644, 8645, 8646, 8647, 8648, 8649, 8650, 8651, 8652, 8653, 8654, 8655, 8656, 8657, 8658, 8659, 8660, 8661, 8662, 8663, 8664, 8665, 8666, 8667, 8668, 8669, 8670, 8671, 8672, 8673, 8674, 8675, 8676, 8677, 8678, 8679, 8680, 8681, 8682, 8683, 8684, 8685, 8686, 8687, 8688, 8689, 8690, 8691, 8692, 8693, 8694, 8695, 8696, 8697, 8698, 8699, 8700. Geological Survey of Canada, Internal Paleontological Report 5-AM-1999.

Orchard, M.J., 2004: Report on conodonts and other microfossils, Trutch (M40), Fort Liard (84J), Fort Liard (86B), and La Biche River (85C), 38 samples (130 specimens) collected by L. Lane, L. Poppel, A. Khudoley and K. Falles. Geological Survey of Canada, Internal Paleontological Report M40-2004-5.

Stockmal, G.S., Kubli, T.E., Currie, L.D., and McDonough, M.R., 2002: Map symbology and analysis of box and polygonal faults, with examples from the Rocky Mountain foothills of northeastern British Columbia and the Liard Ranges of southeastern Yukon Territory and southwestern Northwest Territories, Canadian Journal of Earth Sciences, v. 39, p. 145-155.

Utting, J., 2004: Palynological examination of 3 outcrop samples from the Liard area of southeast Yukon and southwest Northwest Territories, submitted by K. Falles (NTS 8502); Geological Survey of Canada, Internal Paleontological Report 5-JU-2004.

Authors: K.M. Falles and L.S. Lane
 Geological compilation by K.M. Falles and L.S. Lane, 2002

Geology by K.M. Falles, L.S. Lane, and A.K. Khudoley, 2000-2002; L.D. Currie, T.E. Kubli, M.P. Coe, and M.R. McDonough, 1995-1997, based on fieldwork and studies of vertical air photographs. This map is a product of the Central Foreland Natmap Project

Geological cartography by S.D. Orzcek

Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada

Digital base map from data compiled by Geomatics Canada, modified by the Geological Survey of Canada (Calgary)

A GIS dataset with additional structural and lithological information is also available with this map

Mean magnetic declination 2006, 23°15' East, decreasing 24.8' annually

Elevations in feet above mean sea level

FOLD SYMBOLOLOGY

Fold symbols as used on the map apply to folds having cross-sectional geometries depicted in this diagram (see Stockmal et al., 2002)

SCHEMATIC STRATIGRAPHIC RELATIONSHIPS

NOTE: Stratigraphic relations below the Mattson Formation are established from well logs. These logs indicate that the shale mapped as Besa River (unit DCBR) on the Kotanelee Range may overlie strata equivalent to a remnant of the Carboniferous Propheet Formation (unit Cp), making the mapped interval equivalent to the Carboniferous Grotto Formation (unit Cg). As the extent of the Propheet Formation has not been mapped in this area, shale below the Mattson Formation is included in the Besa River Formation.

Copies of this map may be obtained from the Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario K1A 0E8, 2500 Blvd. Street, N.W., Calgary, Alberta T2E 2A7, 101-050 Robinson Street, Vancouver, B.C. V6B 6L3, 960, rue de la Croix, Québec, Québec Q1K 8A9, 1 Challenger Drive, P.O. Box 1006, Dartmouth, Nova Scotia B2Y 4A2



MAP 2088A
GEOLOGY
BABICHE MOUNTAIN
YUKON TERRITORY-NORTHWEST TERRITORIES
 Scale 1:50 000/Échelle 1/50 000
 Kilometres 1 0 2 3 4 Kilomètres

Universal Transverse Mercator Projection
 North American Datum 1983
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Projection transversale universelle de Mercator
 Système de référence géodésique nord-américain, 1983
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95 C10	95 C9	95 B12
95 C7	95 C8	95 B5
2083A	2088A	
95 C2	95 C1	95 B4
2091A (in press)	2087A (in press)	

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 Falles, K.M. and Lane, L.S., 2006: Geology, Babiche Mountain, Yukon Territory-Northwest Territories; Geological Survey of Canada, Map 2088A, scale 1:50 000.

