



LEGEND

CRETACEOUS

LOWER CRETACEOUS

FORT ST. JOHN GROUP (units Ks-a - Ks-t)

SCATTER FORMATION (units Ks-a - Ks-t)

Tussock Member

KS-T Sandstone: thin to thick-bedded, greenish grey, thin to thick-bedded, laminated; minor siltstone: grey, interbedded with sandstone. Resistant; *Zoophycos burrows* common.

KS-W Mudstone: brown to dark grey, silty, calcareous. Recessive.

KS-B *Bulwell Member*
Sandstone: thin to thick-bedded, greenish grey, thin to thick-bedded, laminated; minor siltstone: grey, interbedded with sandstone. Resistant; *Zoophycos burrows* common.

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

KCh **CHINKHEH FORMATION**
Sandstone: quartz arenite to lithic wacke with variable chert content, brown to grey, laminated, bitubulated; minor siltstone: argillaceous, grey, interbedded with sandstone; conglomerate: chert-ripple, at base of unit. Woody or plant debris common; locally too thin to map or discontinuous.

TRIASSIC

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

PERMIAN

ISABEL GROUP (units Pt - Pf)

FANTASQUE FORMATION

Pf Chert: dark grey to white, rusty weathering, well-bedded, spicullite; minor shale and siltstone: siliceous, dark grey to dark brown, rhythmically interbedded with chert. Resistant.

Pt **Tika formation**
Limestone and dolostone: 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 dolostone; sandstone: glauconitic, grey, cross-bedded, at base of unit. Facies: irregular pattern typical; rare brachiopods and trace fossils.

CARBONIFEROUS

LOWER AND UPPER CARBONIFEROUS

MATTSON FORMATION (units Cm-1 - Cm-mu)

Cm-mu Sandstone: quartz arenite, grey, massive or cross-bedded; minor limestone: grey, fossiliferous; and shale: dark grey. All lithologies interbedded; resistant. See Note 3.

Cm-u *Upper member*
Sandstone: quartz arenite to sub-chert arenite, locally calcareous or dolomitic, fine to coarse-grained, light to medium grey, commonly shows large-scale cross-bedding; minor limestone: grey, chert nodules and siliceous fossils, typically fossiliferous with crinoids, brachiopods, bryozoans, and corals; dolostone: brown to orange; and shale: grey to green. All lithologies interbedded; resistant.

Cm-m *Middle member*
Sandstone: quartz arenite and lesser sub-chert arenite, fine-grained, grey to buff to brown, thick-bedded, fine to large-scale cross-bedding, poor to well-indurated; minor siltstone and shale: medium to dark grey, interbedded with sandstone. Typically forms sharp-based fining-up sequences; resistant.

Cm-1 *Lower member*
Sandstone: quartz arenite, fine to very fine-grained, light grey or buff, grey to orange weathering, thin to medium-bedded, typically cross-laminated, well-indurated; trace fossils common; minor siltstone and shale: dark grey, interbedded with sandstone; dolostone: orange, massive, lithoclast breccia: variable composition, uncommon. Typically forms coarsening-up sequences; moderately resistant.

DEVONIAN TO CARBONIFEROUS

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; dolostone and limestone: orange to grey, uncommon with increasing proportion upsection. Recessive.

MEASURED SECTIONS

SECTION

- KB-143 Fantasia Fm, reference section - E.D. Kindl (Kindl, 1944)
- KB-187 Fantasia Fm, type locality - P. Harker (Harker, 1983)
- BR-185 Fantasia Fm, type section - E.W. Barber (Barber et al., 1988)
- MWB-01-02 Toad Fm - R.B. MacNaughton (MacNaughton, 2002)

ABSTRACT

The Mount Merrill map area is situated at the southern end of the Franklin Mountains in a foothills physiographic setting. The geology of the area is characterized by sedimentary strata of Late Devonian to Early Cretaceous age, exposed in a series of asymmetrical box or kink folds whose geometry is controlled largely by the competence of the Carboniferous Mattson Formation. West-verging folds are locally cut by west-verging thrust faults of minor displacement. Interference of differing fold trends creates local culminations within the map area and introduces an echelon offset of structures at the regional scale. The Beaverfoot, Merrill and Babich anticlines form one such an echelon set. Stratigraphic refinements include the local recognition of the informal Tika formation above the Mattson Formation and the assignment of Triassic strata to the Grayling and Toad Formations. The Lower Cretaceous Chinkheh Formation found on adjacent map areas is inferred to be present at the base of the Garbutt Formation but was not directly observed within the Mount Merrill area.

FOSSIL LOCALITIES

LOCALITY	CATALOGUE NUMBER	FOSSIL	AGE	EASTING (NAD83)	NORTHING (NAD83)	REFERENCE
1	C-118587	conodonts	Carboniferous to Early Permian	413942	667052	Orchard, 2004
2	C-118582	conodonts	Carboniferous to Triassic	385546	665892	Orchard, 2004
3	C-118584	polymorphs	Early to Middle Permian	395675	665891	Ulling, 2005
4	C-117681	polymorphs	Early to Middle Permian	390416	665695	Ulling, 2005

NOTES

- Bedding orientations are shown at station locations; cross-bedding and joint orientations are shown slightly offset from stations for clarity.
- Bedding of large sections of bedrock, particularly along the Beaver River, may lead to locally inaccurate structure orientations and/or buried contacts.
- Middle and upper members of the Mattson Formation are not divided in parts of the western half of the map area because of difficulties in delineating the characteristic carbonate beds of the Upper Mattson under heavy bush cover.
- The similarity of the Tika formation and the upper member of the Mattson Formation, combined with the recessive character of the former, have limited its recognisability to shallow-dipping fold limbs with relatively good exposure.

REFERENCES

Barber, E.W., Taylor, G.C., and Probst, R.M., 1988: Carboniferous and Permian stratigraphy of northeastern British Columbia. Geological Survey of Canada, Paper 68-15, 25 p.

Harker, P., 1983: Carboniferous and Permian rocks of SW District of Mackenzie; Geological Survey of Canada, Bulletin 95.

Kindl, E.D., 1944: Geological reconnaissance along Fort Nelson, Liard, and Beaver Rivers, northeastern British Columbia and southeastern Yukon. Geological Survey of Canada, Paper 44-10.

MacNaughton, R.B., 2002: Sedimentology of Triassic siliclastic strata, Mount Merrill and Mount Merrill map areas, Yukon Territory. Geological Survey of Canada, Current Research 2002-ADA, 10 p.

Orchard, M.J., 2004: Report on conodonts and other microfossils, Tulu (D4), Fort Nelson (B4), Fort Lard (S6B), and LaSche River (S6C), 38 samples (10 specimens) collected by L. Lane, L. Page, A. Klusky, and K. Falls. Geological Survey of Canada, Internal Paleontological Report MJG-2004-5.

Stockmal, G.B., Kuhl, T.E., Currie, L.D., and McDonough, M.R., 2002: Map symbology and analysis of cross-sectional folds, 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.

Ulling, J., 2005: Paleontological examination of 27 outcrop samples from the Liard area of southwest Yukon and southwest Northwest Territories submitted by L. Lane, GSC (Calgary) INTS 958, C, F, GJ. Geological Survey of Canada, Internal Paleontological Report 02-JU-2005.

FOLD SYMBOLOGY

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

Geological cartography by S.D. Orzech

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°40' East, decreasing 23' annually

Elevations in feet above mean sea level

NATMAP CARTNAT

Canada's National Geoscientific Mapping Program / Le Programme national de cartographie géoscientifique du Canada

Copies of this map may be obtained from the Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario K1A 0S8, 3800 St-Jacques Street, N.W., Calgary, Alberta T2C 2A7, 603 Robson Street, Vancouver, British Columbia V6B 5J3, 460, rue de la Commission, Québec, Québec G1S 4R6, 1 Challenger Drive, Dartmouth, Nova Scotia B2Y 4A2



MAP 2091A
GEOLOGY
MOUNT MERRILL
YUKON TERRITORY—BRITISH COLUMBIA

Scale 1:50 000 / Échelle 1/50 000

Universal Transverse Mercator Projection / Projection transverse universelle de Mercator
North American Datum 1983 / Système de référence géodésique nord-américain, 1983
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95 C6	95 C7	95 C8
2083A	2086A	2087A
95 C9	95 C2	95 G1
2091A	2087A	
94 N14	94 N15	94 N16