



LEGEND

QUATERNARY
PLEISTOCENE AND RECENT
 Q Glacial till, alluvium, and colluvium; unit designators in parentheses are the inferred underlying bedrock units.

TERTIARY (CENOZOIC)
PLIOCENE
 Tmg Microgabro dyke, possibly correlative with Maitland Volcanics.

CRETACEOUS
UPPER LOWER AND UPPER CRETACEOUS
 SUSTUT GROUP (units KTC and KBP)
 CAMPANIAN AND MAASTRICHTIAN
 KBP BROTHERS PEAK FORMATION: sandstone, siltstone, conglomerate, and tuff; sandstone and siltstone are cream- and grey-weathering; tuff is cream-weathering; conglomerate in laterally continuous sheets is most common near base.
 KTC APTIAN OR ALBIAN TO CAMPANIAN
 TANGO CREEK FORMATION: micaceous sandstone, siltstone, mudstone, and minor quartz grit and pebble conglomerate; sandstone is grey- and green-weathering, occurring as laterally continuous sheets and as lenses; siltstone and mudstone are grey-, black-, and maroon-weathering.

JURASSIC
UPPER MIDDLE TO UPPER JURASSIC
 BOWSER LAKE GROUP (units JBE-JBc)
 EAGLENEST ASSEMBLAGE (deltaic assemblage): conglomerate, sandstone, siltstone, mudstone, and rare coal; arranged in coarsening- and fining-upward cycles of mudstone to pebble or cobble conglomerate, prominently rusty-weathering and 30 to 80% conglomerate; sheets of conglomerate, up to 50 m thick, include planar beds, tabular-planar cross-stratification and trough cross-stratification; sets locally up to tens of metres thick; sandstone is green-, brown-, and grey-weathering, and has planar cross-stratification and hummocky cross-stratification; sparse marine fossils, but abundant plant fossils, including silicified tree fragments.
 JBc MUSHABO CREEK ASSEMBLAGE (shelf assemblage): sandstone, siltstone, and conglomerate; primary lithologies is sandstone, forming laterally continuous, thin- to thick-bedded sheets; less common are siltstone interbedded with sandstone, and lenses of conglomerate; sandstone is green-, brown-, and grey-weathering, thin- to thick-bedded, and locally arranged in coarsening-upward cycles; includes burrows, bivalve coquina, and other marine fossils; common ripple marks and crossbedding, and local hummocky cross-stratification; conglomerate increases in proportion and thickness upsection.
 JBE TODAYIN ASSEMBLAGE (slope assemblage): siltstone, fine-grained sandstone, and conglomerate; mainly laminated siltstone and/or fine-grained sandstone, which is dark grey- to black-weathering and includes thin, orange-weathering claystone beds and syndepositional faults and folds; chert-pebble conglomerate occurs as lenses; marine fossils.

LOWER AND LOWER MIDDLE JURASSIC
 HAZELTON GROUP (units JHsu-JHso)
 PLENSBACHIAN TO BAJOCIAN
 SPATSIZI FORMATION (units JHcu-JHci)
 JHso QUACK MEMBER: siliceous, well bedded (?) siliceous siltstone, siltstone, and limy siltstone; black, cream, rusty-, and pink-weathering.
 JHsu MELISSON MEMBER: siliceous and calcareous siltstone and fine-grained sandstone.
 JHsc WOLF DEN MEMBER: shale, dark grey- to black-weathering, with minor calcareous concretionary beds.
 JHsi JOAM MEMBER: siltstone, with minor mudstone, limestone, and local basal conglomerate.
 JHs Undivided Spatsizi Formation: siltstone, siliceous siltstone, calcareous siltstone, mudstone, fine-grained sandstone.

LOWER JURASSIC
 LOWER PLENSBACHIAN
 COLD FISH VOLCANICS (units JHcu-JHca)
 Subaerial mafic lava flows interbedded with felsic air-fall tuff and nonwelded ignimbrite, and minor felsic sills, welded ignimbrite, conglomerate, sandstone, shale, and subaqueous mafic lava.
 JHcu Marine mafic lava, minor sandstone, shale, limestone, tuff, and subaerial mafic lava.
 JHcm Marine mafic lava, minor sandstone, shale, limestone, tuff, and subaerial mafic lava.
 JHci Felsic volcanic rocks, including sills, dykes, welded and nonwelded ignimbrite, air-fall tuff/breccia, and lava, with minor mafic lava and epiclastic rocks. JHci: welded ignimbrite; minor nonwelded ignimbrite and felsic sills. JHci: felsic sills; minor felsic lava and ignimbrite. JHci: felsic dykes.
 JHca Epiclastic and bioclastic rocks: lahar, breccia, conglomerate, sandstone, siltstone, shale, and limestone, with minor tuff and lava. JHca: shale, siltstone, and limestone.
 JHc Limestone, minor siltstone, and shale.
 JHu Undivided Cold Fish Volcanics.

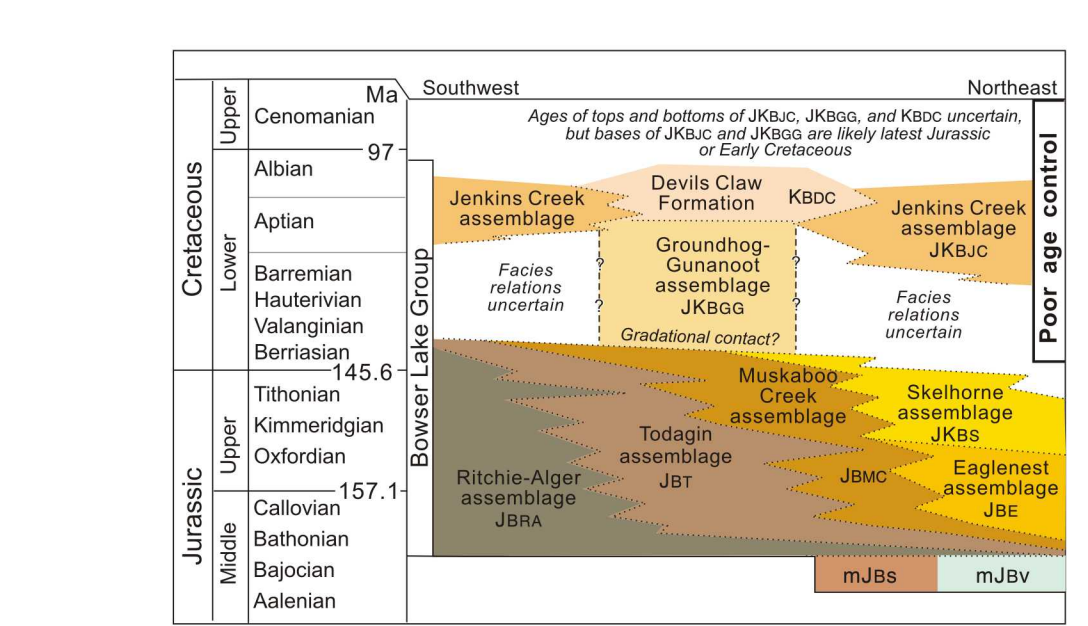
CRETACEOUS
UPPER TRASSIC TO LOWER JURASSIC
 (CYMBRIAN AND (NORIAN TO HETTANGIAN AND/OR LOWER SINEMURIAN)
 TJS Conglomerate, sandstone, shale, mafic to intermediate volcanic breccia, and olistostrome; conglomerate consists of mainly intermediate and plagioclase porphyry andesite, but include augite-phyric mafic lava and other volcanic rocks, and felsic to intermediate granitoid rocks. TJS: conglomerate containing abundant clasts of Norian limestone, and varicoloured chert; older than Griffith Creek volcanics.
 TJ Undivided Stuhni Group, unit TJs, and Griffith Creek volcanics.
 TJI Light grey micrite.
 TJu Undivided Stuhni Group, unit TJs, Griffith Creek volcanics, and Cold Fish Volcanics.

TRIASSIC
UPPER TRIASSIC
 (CYMBRIAN TO NORIAN)
 STUHNI GROUP (unit Uss)
 Uss Mudstone, shale, sandstone, and olistostrome; minor conglomerate and mafic lava.
 G Gossan.

Geological boundary (defined, approximate, assumed or inferred beneath unit Q)
 Trace of individual beds from ground observation and airphoto interpretation
 Fault, unknown displacement (defined, approximate, assumed or inferred beneath unit Q)
 Thrust fault (defined, approximate, assumed or inferred beneath unit Q); symbol on hanging-wall side
 Normal fault (defined, approximate, assumed or inferred beneath unit Q); symbol on downthrown side
 Steeply dipping fault, dip unknown (defined, approximate, assumed or inferred beneath unit Q); U on upthrown side, D on downthrown side
 Anticline, trace of axial surface (defined, approximate); arrow on line indicates direction of plunge
 Syncline, trace of axial surface (defined, approximate, overturned); arrow on line indicates direction of plunge
 Open, inclined anticline, trace of axial surface (defined); long arrow points in direction of dip of axial surface
 Open, inclined syncline, trace of axial surface (defined, approximate); long arrow points in direction of dip of axial surface
 Mafic dyke
 Cross-section location. The cross-sections for this map area are shown in Figure 171 of GSC Bulletin 577 (Evenschick and Thorkelson, in press)
 Bedding (horizontal, inclined, vertical, overturned)
 Cleavage (inclined)
 Fault
 Fossil location
 Mineral occurrence (from British Columbia MINFILE; see Table 1 below)
 Radiometric age (in Ma)
 Conglomerate
 Icefield

ID	MINFILE	NAMES	EASTING	NORTHING	COMMODITY	STATUS
18	104H 017	NATION PEAK	506500	6387700	Barite, Pb	Showing

Table 1. Mineral occurrence data for Cold Fish Lake area.



Note: not all units on this figure appear on this map; refer to Evenschick and Thorkelson (in press) for descriptions.
 Figure 1. Approximate ages and relationships of units in the Bowser Lake Group.

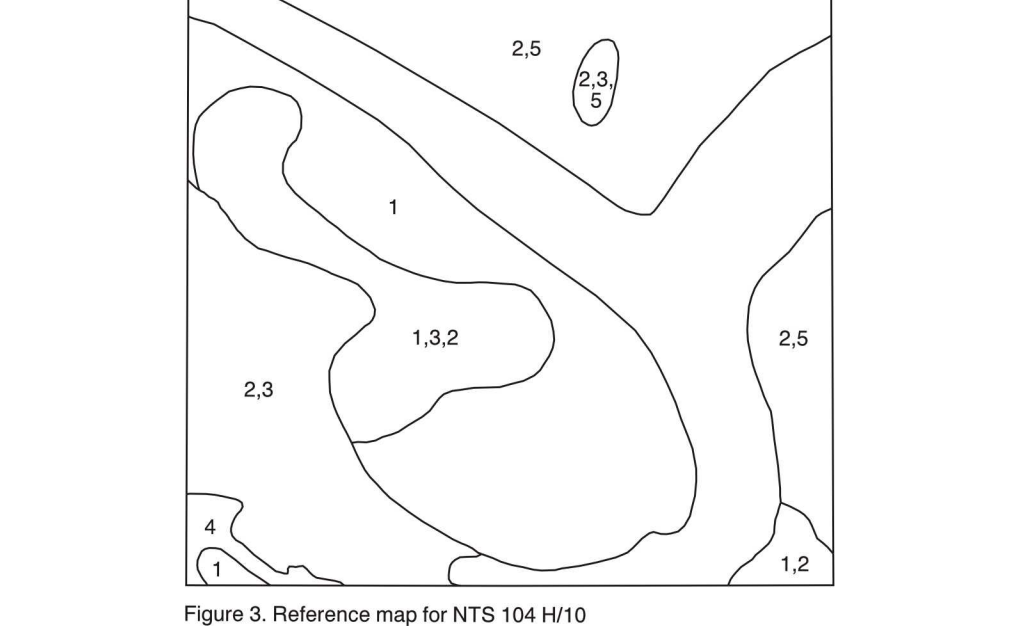


Figure 3. Reference map for NTS 104 H/10.

Sources of information for this compilation are geological mapping by: 1) D.J. Thorkelson, 1986, 1987; 2) C.A. Evenschick, 1986, 1988, 1988 (with P.S. Mustard), 1989; 3) H. Gabrielse and H.W. Tipper, 1979, 1981, 1983, (1984); 4) Thorkelson et al. (1986), and 5) Eisbacher (1974). Dates in parentheses are years of publication. Other dates are years of feedback from which geologists are the source of information.

Previous geological maps of the region are by Geological Survey of Canada (1957), Eisbacher (1974), Gabrielse and Tipper (1984), Thomson et al. (1986), and Thorkelson (1992).

Geology of the surrounding region (NTS 104 H) and descriptive notes are given by Evenschick and Thorkelson (in press).

REFERENCES

Eisbacher, G.H.
 1974: Sedimentary history and tectonic evolution of the Sustut and Silton basins, north-central British Columbia; Geological Survey of Canada, Paper 73-31, 57 p.

Evenschick, C.A. and Thorkelson, D.J.
 In press: Geology of the Spatsizi River map area, north-central British Columbia; Geological Survey of Canada, QJus577.

Gabrielse, H. and Tipper, H.W.
 1984: Bedrock geology of Spatsizi map area (104 H); Geological Survey of Canada, Open File '005, scale 1:250,000.

Geological Survey of Canada
 1957: Spatsizi River area, Cassiar District, British Columbia; Geological Survey of Canada, Map 9-1907, scale 1:254,440.

Thorkelson, D.J., Smith, P.L., and Tipper, H.W.
 1986: Lower to Middle Jurassic (Plensbachian to Bajocian) stratigraphy of the northern Spatsizi area, north-central British Columbia; Canadian Journal of Earth Sciences, v. 23, p. 1963-1973.

Thorkelson, D.J.
 1992: Kinematic and tectonic evolution of the Hazelton Group in Spatsizi River (104 H) map area, north-central British Columbia; Ph.D. thesis, Carleton University, Ottawa, Ontario, 299 p.



Figure 2. Tectonic elements of Spatsizi River map area (NTS 104 H) and location of NTS 104 H/10 (Map 2030A).

Recommended citation:
 Evenschick, C.A. and Thorkelson, D.J.
 2004: Geology, Cold Fish Lake, British Columbia; Geological Survey of Canada, Map 2030A, scale 1:50 000.

Geology by C.A. Evenschick (1985-1989), D.J. Thorkelson (1986, 1987), P.S. Mustard (1988), H. Gabrielse and H.W. Tipper (1979, 1981, 1983), R.C. Thomson (1983), and G.H. Eisbacher (1974).

Map compilation by C.A. Evenschick and D.J. Thorkelson

Digital geological cartography by C.L. Wagner, S. Churchill, and R. Cocksing, Earth Science Sector Information Division (ESS info), D. Durne and C. Evenschick, Geological Survey of Canada

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

MAP 2030A
GEOLOGY
COLD FISH LAKE
BRITISH COLUMBIA
 Scale 1:50 000 / Echelle 1/50 000

Universal Transverse Mercator Projection
 North American Datum 1927
 © Her Majesty the Queen in Right of Canada 2004

Projection transversale universelle de Mercator
 Système de référence géodésique nord-américain, 1927
 © Sa Majesté la Reine du chef du Canada 2004

Digital base map from data compiled by Geomatics Canada, modified by ESS info

Mean magnetic declination 2004, 23°48' E, decreasing 15.5' annually

Elevations in feet above mean sea level

Contour interval 100 feet

104 H14	104 H15	104 H16
104 H11	104 H10	104 H9
2029A	2030A	2031A
104 H8	104 H7	104 H6
2034A	2033A	2032A

NETS TOPOGRAPHIC SYSTEM REFERENCE AND INDEX TO GEOLOGICAL SURVEY OF CANADA MAPS

