

UPPER CRETACEOUS Kgr-b,bh and hornblende

DEVONIAN

UPPER DEVONIAN

UPPER PALEOZOIC NORTHEAST OF HESS RIVER (105 - O/9,10,15,16) (southwest part of area) (northeast part of area)

> TSICHU GROUP (CH-CF) FOURWAY FORMATION: calcarenite, calcsiltite; siliceous, white; minor quartzite KEELE CREEK FORMATION: shale; black calcareous; HERITAGE TRAIL FORMATION: quartzite; minor shale HAWTHORNE FORMATION: (u) shale with limestone

LEGEND

Boulder and blocky debris; poorly sorted

Granite; quartz monzonite; (b) with biotite, (bh) with biotite

PLEISTOCENE AND RECENT

Tufa; calcareous

QUATERNARY

CRETACEOUS

CARBONIFEROUS

DEVONIAN

UPPER DEVONIAN

MIDDLE? TO UPPER DEVONIAN

PENNSYLVANIAN

THOR HILLS FORMATION: shale; black, rusty, with IMPERIAL FORMATION: sandstone; quartzose, brown (ss) sandstone (sh1, sh2, sh2a) shale; siliceous, black, white weathering 10-20% brown sandstone; (sh) shale; (si) siliceous shale (cg) Conglomerate Member: with chert pebbles MIDDLE TO UPPER DEVONIAN MISFORTUNE FORMATION: shale, chert; black

(u) shale; black, siliceous, white weathering (I) shale; rusty black LOWER TO MIDDLE DEVONIAN

HAILSTONE FORMATION: limestone; clastic, grey-sooty grey, crinoid ossicles with twin axial canals; minor shale; black; minor breccia and conglomerate

(u) shale; black siliceous white weathering. (I) shale; rusty black LOWER TO MIDDLE DEVONIAN GRIZZLY BEAR FORMATION: limestone; grey cliff-forming, rinoids with twin axial canals

(sh2b) shale; black; minor sandstone

CANOL FORMATION: shale, siliceous shale; black

UPPER SILURIAN TO LOWER DEVONIAN SAPPER FORMATION: limestone; silty, buff weathering; shale; black; includes volcanic units south of map-area

DEVONIAN AND SILURIAN

weathering dolostone

LOWER ORDOVICIAN TO SILURIAN

thin-bedded limestone

UPPER CAMBRIAN TO LOWER ORDOVICIAN

ORDOVICIAN AND SILURIAN

CAMBRIAN AND ORDOVICIAN

MIDDLE CAMBRIAN

LOWER TO MIDDLE CAMBRIAN

ridge-forming, thin bedded

SILURIAN

CAMBRIAN

Noteable Unconformity - Lower Devonian (Hailstone) breccia rests directly on Lower Silurian (Duo Lake) strata

LOWER PALEOZOIC NORTHEAST OF HESS RIVER (105 - O/9,10,15,16)

STEEL FORMATION: argillite; rusty green to buff; minor black shale and chert, and prominent bed of bright orange weathering dolostone

MISFORTUNE FORMATION: chert; dark grey to black;

minor black shale; whiteish weathering

ELMER CREEK FORMATION: (u) chert and siliceous shale; black, graptolitic; (I) chert, siliceous argilite; grey, upper part bioturbated; minor limestone CAMBRIAN TO SILURIAN LOWER CAMBRIAN TO SILURIAN

LOWER TO MIDDLE DEVONIAN

OLD CABIN FORMATION: basic volcaniclastics, breccias, lapilli tuff, flows, sills, dykes; minor sedimentary rock units

GULL LAKE FORMATION: agillite; buff, green; minor units G Coc of shale, chert, quartzite, limestone and volcaniclastic rocks (Gv where volanics are abundant)
(OC) Old Cabin Tongue: basic volcaniclastics, breccias, lapilli tuff, flows, sills, dykes; minor sedimentary rock units

PROTEROZOIC AND CAMBRIAN UPPER PROTEROZOIC TO LOWER CAMBRIAN HYLAND GROUP (PY - P€NA) NARCHILLA FORMATION (PENS - PENA) Arrowhead Lake Member: argillite; maroon and pale green; minor quartzite, conglomerate, limestone. Lower Cambrian

Senoah Member: argillite; grey green buff; minor, thick units of quartzite and quartz-pebble conglomerate; also minor units of limestone and silty limestone **PROTEROZOIC** UPPER PROTEROZOIC

ALGAE LAKE FORMATION: limestone, arenaceous limestone; minor dolostone, argillite, breccia; upper part resistant, lower part recessive, thin bedded YUSEZYU FORMATION: quartzite, calcareous quartzite; Py thick bedded; thin beds argillite, argillaceous limestone

130°30′

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101-605 Robson Street, Vancouver, B.C. V6B 5J3

(upper part present immediately west of map area)

ORDOVICIAN AND SILURIAN

ORDOVICIAN AND SILURIAN LOWER ORDOVICIAN TO LOWER SILURIAN DUO LAKES FORMATION: shale; black, graptolitic; OSM MARMOT FORMATION: volcanics, basic tuffs, and breccia

minor thin bedded limestone CAMBRIAN AND ORDOVICIAN UPPER CAMBRIAN TO LOWER ORDOVICIAN RABBITKETTLE FORMATION: limestone; pale yellow eathering, thin-bedded

CAMBRIAN MIDDLE CAMBRIAN HESS RIVER FORMATION: shale; black, calcareous, CH marked variation in thickness; minor limestone; locally

CAMBRIAN LOWER TO MIDDLE CAMBRIAN SEKWI FORMATION: (u) limestone, and slope breccia; (I) limestone, silty limestone, shale and siltstone; recessive, thin bedded

NOTES

stratigraphic unit prefixed, but which is structurally repeated numerous times

fault repetitions, as well as synclinal and anticlinal keels of underlying and

and overlying stratigraphic units in 10-30% of the area. Units with the "t"

3. Rogue detachment surface inferred from the observation that strata above are

5. Sub-P€NA member detachment displacement dissipates to zero; this is the

C-089252 - F eO, C-089098 - F eO, C-089099 - F eO, C-089097 - F eO,

C-089253 - F IO, C-089254 - F m-IO, C-089256 - F IS, C-089255 - F IO,

C-089257 - F IS, C-089068 - F IS, C-089069 - F IO, C-089258 - F mO,

C-089261 - F IS, C-089259 - F eS, C-089260 - F eS, C-089262 - F IO,

C-089265 - F IS, C-089263 - F IS?, C-089266 - F eS, C-089267 - F IO, C-089268 - F IO, C-089269 - F eS, C-089270 - F S, C-089271 - F IO,

C-089272 - F eS, C-089273 - F m-IO, C-089274 - F IS, C-089275 - F IO,

C-089070 - F eD, C-089071 - F m-IO, C-089276 - F eS, C-089277 - F e-mS,

C-089096 - F m-IO, C-089100 - F eO?, C-089095 - F mO, C-089251 - F eO.

shortened to 20% of their original length while strata below the detachment

prefix are mapped both as single and tectonic units (e.g. SS or tSs).

Detailed structure based on measured traverses.

are shortened to 60-80% of their original length.

front of the Rogue Décollement Complex.

6. Section 18 - Fossils (from east to west)

7. Section 19 - Fossils (from east to west)

on small scale, local detachment surfaces. The mapped area can also include

1. The prefix "t" designates a map unit that is represented by 70-90% of the

PROTEROZOIC AND CAMBRIAN PROTEROZOIC AND CAMBRIAN UPPER PROTEROZOIC TO LOWER CAMBRIAN BACKBONE RANGES FORMATION: quartzite; red-brown, P€B grey-green, massive or laminated, blocky; minor siltstone, maroon weathering

UPPER PROTEROZOIC TO LOWER CAMBRIAN HYLAND GROUP (P€NS - P€NA)

NARCHILLA FORMATION (PENS - PENA) Arrowhead Lake Member: argillite; maroon and pale green; minor quartzite, conglomerate, limestone. Lower Cambrian in map-area but ranges into Proterozoic in other parts of

STEEL FORMATION: argillite; rusty to green buff; minor black shale and chert and prominent bed of bright orange

DUO LAKES FORMATION: shale; black, graptolitic; minor

RABBITKETTLE FORMATION: limestone; pale yellow

marked variation in thickness; minor limestone; locally

SEKWI FORMATION: limestone, and slope breccia;

GULL LAKE FORMATION: argillite; buff, green; minor units EG EK of shale, chert, quartzite, limestone and volcaniclastic rocks

(Gv where volcanics are abundant) (K) Keele Member: limestone; conglomerate and breccia

veathering, thin-bedded; minor black shale

HESS RIVER FORMATION: shale; black, calcareous,

Senoah Member: argillite; grey, green, buff; minor thick units of quartzite and quartz-pebble conglomerate; also minor units of limestone and silty limestone

SOUTHEASTERN FACIES (105-0/8,9)

Compiled from ground traverses by M.P. Cecile (1979, 1980, 1983, 1984, 1985) with assistance by Rob Gibsun (1979), Brian Fisher (1980), Hans Smit (1983), and Craig Hart (1984). Helicopter support was given by Northern Mountain Helicopters (1979, 1983, 1984, 1985), Kenting Helicopters and La Verendrye Helicopters (1980). Expediting was provided by Ross River Services. The understanding of the geology was greatly assisted by discussions with J.G. Abbott (DIAND), S.P. Gordey, W.D. Goodfellow (GSC), E. Debicki, B. Robertson (Canadian Nickel), K. Taylor (Hudson's Bay Mining), R. Bailes, P. Hubachek, G. McArthur (Norcen-Ogilvie), and D. Rhodes (Cominco). Fossil determinations are by B.S. Norford, A.W. Norris, T.T. Uyeno, W.H. Fritz (GSC), D.E. Jackson (University of London), H.J. Hofmann (University of Montreal), and R.S. Tipnis (Sugarland, Texas). Digitizing and initial drafting by M. Dueling and P.J. Neelands.

4. Folds of this scale and size are observed north of section. Thinning of the Digital cartography by S.D. Orzeck, Geological Survey of Canada (Calgary) tectonic unit P€NA over P€NS and older unit anticlines is observed west of

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

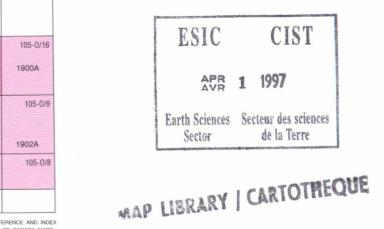
Digital base map at the same scale from Geomatics Canada, Natural Resources Canada, modified for publication by the Geological Survey of Canada

Copies of the topographical edition of this map may be obtained from the Canada Map Office, Natural Resources Canada, Ottawa, Ontario, K1A 0E9

Approximate magnetic declination 1996, 30°26' East, decreasing 14.3' annually Elevations in metres above mean sea level

MAP 1899A **GEOLOGY** THOR HILLS

1901A 1902A NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND INDEX TO ADJOINING GEOLOGICAL SURVEY OF CANADA MAPS





Recommended citation: Cecile, M.P. 1996: Geology and structure cross-section, Thor Hills, Yukon Territory-Northwest Territories; Geological Survey of Canada, Map 1899A, scale 1:50 000 NOT TO BE TAKEN FROM LIBRARY NE PAS SORTIR DE LA BIBLIOTHÈQUE

COMBINED UNITS

Paleozoic strata, undivided

MIDDLE CAMBRIAN TO LOWER SILURIAN

MIDDLE CAMBRIAN TO LOWER SILURIAN

MIDDLE CAMBRIAN TO LOWER ORDOVICIAN

FORMATIONS, undivided

Narchilla Formation

NARCHILLA FORMATION

HESS RIVER AND RABBITKETTLE

UPPER PROTEROZOIC TO LOWER ORDOVICIAN

Undivided tectonic complexes of Gull Lake

Formation and Arrowhead Lake Member,

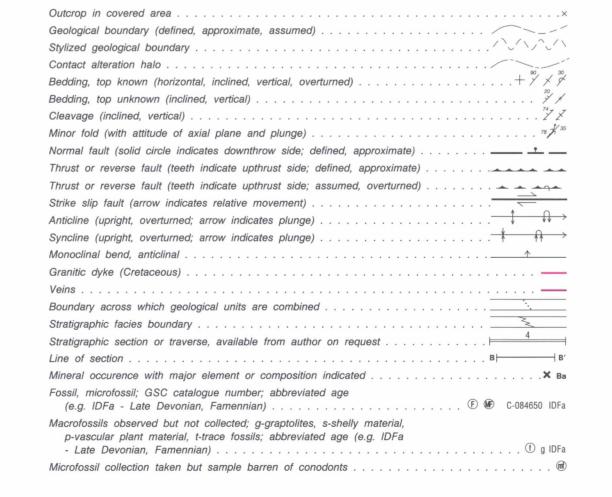
HESS RIVER, RABBITKETTLE AND DUO LAKE FORMATIONS, undivided

HESS RIVER AND DUO LAKE FORMATIONS,

CAMBRIAN TO SILURIAN

CAMBRIAN AND ORDOVICIAN

PROTEROZOIC AND CAMBRIAN





C-089278 - F eS.

YUKON TERRITORY-NORTHWEST TERRITORIES

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Canadä

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