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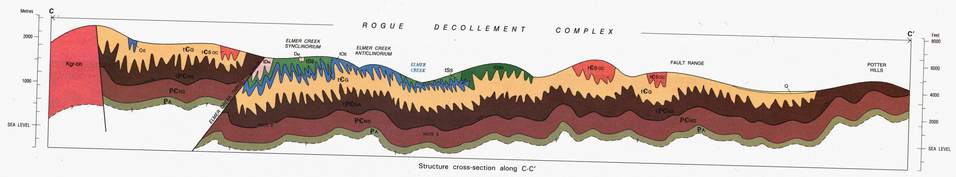
GEOLOGICAL SURVEY OF CANADA | COMMISSION GÉOLOGIQUE DU CANADA



Structure cross-section along C-C'

LEGEND

QUATERNARY
PLEISTOCENE AND RECENT

- T — *Tufa; calcareous*
- Qb — *Boulder and blocky debris; poorly sorted*
- Q — *Undifferentiated*

CRETACEOUS
UPPER CRETACEOUS

- Kgr-b,bh — *Granite; quartz monzonite; (b) with biotite, (bh) with biotite and hornblende*

SOUTHWESTERN FACIES (105-0/7,10,15)

DEVONIAN
LOWER TO MIDDLE DEVONIAN

- DM — *MISFORTUNE FORMATION: chert; dark grey to black; minor black shale; whitish weathering*

SILURIAN

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

ORDOVICIAN

- OE-l — *ELMER CREEK FORMATION: (u) chert and siliceous shale; black, graptolitic; (l) chert, siliceous argillite; grey, upper part bioturbated; minor limestone*

CAMBRIAN TO SILURIAN
LOWER CAMBRIAN TO SILURIAN

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

CAMBRIAN

- CG / COC — *GULL LAKE FORMATION: argillite; buff, green; minor units of shale, chert, quartzite, limestone and volcaniclastic rocks (Gv where volcanics 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 - PCNA)
NARCHILLA FORMATION (PCNS - PCNA)

- PCNA — *Arrowhead Lake Member: argillite; maroon and pale green; minor quartzite, conglomerate, limestone. Lower Cambrian in map-area*
- PCNS — *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

- PA — *ALGAE LAKE FORMATION: limestone, arenaceous limestone; minor dolostone, argillite, breccia; upper part resistant, lower part recessive, thin bedded*
- PY — *YUSEZYU FORMATION: quartzite, calcareous quartzite; thick bedded; thin beds argillite, argillaceous limestone (upper part present immediately west of map area)*

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

(southwest part of area)

(northeast part of area)

CARBONIFEROUS
PENNSYLVANIAN
TSICHU GROUP (CH-CF)

- CF — *FOURWAY FORMATION: calcarenite, calcilitite; siliceous, white; minor quartzite*

MISSISSIPPIAN

- CKC — *KEELE CREEK FORMATION: shale; black calcareous; with limestone*
- CHT — *HERITAGE TRAIL FORMATION: quartzite; minor shale*
- CH — *HAWTHORNE FORMATION: (u) shale with limestone (l) shale with quartzite*

DEVONIAN
UPPER DEVONIAN

- DTH / DHSC — *THOR HILLS FORMATION: shale; black, rusty, with 10-20% brown sandstone; (sh) shale; (ls) siliceous shale (cg) Conglomerate Member: with chert pebbles*

MIDDLE TO UPPER DEVONIAN

- DU / DMS / DM — *MISFORTUNE FORMATION: shale, chert; black (u) shale; black, siliceous, white weathering (l) shale; rusty black*

LOWER TO MIDDLE DEVONIAN

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

DEVONIAN
UPPER DEVONIAN

- DTH / DHSC — *THOR HILLS FORMATION: shale; black, rusty, with 10-20% brown sandstone; (sh) shale; (ls) siliceous shale (cg) Conglomerate Member: with chert pebbles*

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- DU / DMS / DM — *MISFORTUNE FORMATION: shale, chert; black (u) shale; black, siliceous, white weathering (l) shale; rusty black*

LOWER TO MIDDLE DEVONIAN

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

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)

SILURIAN

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

ORDOVICIAN

- OU / OMS / OM — *ELMER CREEK FORMATION: (u) chert and siliceous shale; black, graptolitic; (l) chert, siliceous argillite; grey, upper part bioturbated; minor limestone*

CAMBRIAN TO SILURIAN
LOWER CAMBRIAN TO SILURIAN

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

CAMBRIAN

- CG / COC — *GULL LAKE FORMATION: argillite; buff, green; minor units of shale, chert, quartzite, limestone and volcaniclastic rocks (Gv where volcanics are abundant) (OC) Old Cabin Tongue: basic volcaniclastics, breccias, lapilli tuff, flows, sills, dykes; minor sedimentary rock units*

ORDOVICIAN AND SILURIAN

- OSM — *MARMOT FORMATION: volcanics, basic tuffs, and breccia*

ORDOVICIAN AND SILURIAN
LOWER ORDOVICIAN TO LOWER SILURIAN

- OSD — *DUO LAKES FORMATION: shale; black, graptolitic; minor thin bedded limestone*

CAMBRIAN AND ORDOVICIAN
UPPER CAMBRIAN TO LOWER ORDOVICIAN

- COR — *RABBITKETTLE FORMATION: limestone; pale yellow weathering, thin-bedded*

CAMBRIAN
MIDDLE CAMBRIAN

- CH — *HESS RIVER FORMATION: shale; black, calcareous, marked variation in thickness; minor limestone; locally all chert*

CAMBRIAN
LOWER TO MIDDLE CAMBRIAN

- CS / CSK / CSW — *SEKWI FORMATION: (u) limestone, and slope breccia; ridge-forming, thin bedded (l) limestone, silty limestone, shale and siltstone; recessive, thin bedded*

PROTEROZOIC AND CAMBRIAN
UPPER PROTEROZOIC TO LOWER CAMBRIAN

- PCS — *BACKBONE RANGES FORMATION: quartzite; red-brown, grey-green, massive or laminated, blocky; minor siltstone, maroon weathering*

SILURIAN

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

ORDOVICIAN AND SILURIAN
LOWER ORDOVICIAN TO SILURIAN

- OSD — *DUO LAKES FORMATION: shale; black, graptolitic; minor thin-bedded limestone*

CAMBRIAN AND ORDOVICIAN
UPPER CAMBRIAN TO LOWER ORDOVICIAN

- COR — *RABBITKETTLE FORMATION: limestone; pale yellow weathering, thin-bedded; minor black shale*

CAMBRIAN
MIDDLE CAMBRIAN

- CH — *HESS RIVER FORMATION: shale; black, calcareous, marked variation in thickness; minor limestone; locally all chert*

CAMBRIAN
LOWER TO MIDDLE CAMBRIAN

- CS — *SEKWI FORMATION: limestone, and slope breccia; ridge-forming, thin bedded*
- CG / CF — *GULL LAKE FORMATION: argillite; buff, green; minor units of shale, chert, quartzite, limestone and volcaniclastic rocks (Gv where volcanics are abundant) (K) Keele Member: limestone; conglomerate and breccia*

PROTEROZOIC AND CAMBRIAN
UPPER PROTEROZOIC TO LOWER CAMBRIAN
HYLAND GROUP (PCNA - PCNS)
NARCHILLA FORMATION (PCNS - PCNA)

- PCNA — *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 Selwyn Basin*
- PCNS — *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-O/8,9)

DEVONIAN AND SILURIAN
UPPER SILURIAN TO LOWER DEVONIAN

- SDS — *SAPPER FORMATION: limestone; silty, buff weathering; shale; black; includes volcanic units south of map-area*

COMBINED UNITS

SILURIAN

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

ORDOVICIAN AND SILURIAN
LOWER ORDOVICIAN TO SILURIAN

- OSD — *DUO LAKES FORMATION: shale; black, graptolitic; minor thin-bedded limestone*

CAMBRIAN AND ORDOVICIAN
UPPER CAMBRIAN TO LOWER ORDOVICIAN

- COR — *RABBITKETTLE FORMATION: limestone; pale yellow weathering, thin-bedded; minor black shale*

CAMBRIAN
MIDDLE CAMBRIAN

- CH — *HESS RIVER FORMATION: shale; black, calcareous, marked variation in thickness; minor limestone; locally all chert*

CAMBRIAN
LOWER TO MIDDLE CAMBRIAN

- CS — *SEKWI FORMATION: limestone, and slope breccia; ridge-forming, thin bedded*
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- PCNS — *Senoah Member; argillite; grey, green, buff; minor thick units of quartzite and quartz-pebble conglomerate; also minor units of limestone and silty limestone*

PALEOZOIC

- PZ — *Paleozoic strata, undivided*

CAMBRIAN TO SILURIAN
MIDDLE CAMBRIAN TO LOWER SILURIAN

- CSHRD — *HESS RIVER, RABBITKETTLE AND DUO LAKE FORMATIONS, undivided*

MIDDLE CAMBRIAN TO LOWER SILURIAN

- CSHRD — *HESS RIVER AND DUO LAKE FORMATIONS, undivided*

CAMBRIAN AND ORDOVICIAN
MIDDLE CAMBRIAN TO LOWER ORDOVICIAN

- COHR — *HESS RIVER AND RABBITKETTLE FORMATIONS, undivided*

PROTEROZOIC AND CAMBRIAN
UPPER PROTEROZOIC TO LOWER ORDOVICIAN

- PCNA-CG — *Undivided tectonic complexes of Gull Lake Formation and Arrowhead Lake Member, Narchilla Formation*
- PCN — *NARCHILLA FORMATION*

Outcrop in covered area
Geological boundary (defined, approximate, assumed)
Stylized geological boundary
Contact aureole (thermal alteration halo)
Bedding, top known (horizontal, inclined, vertical, overturned)
Bedding, top unknown (inclined, vertical)
Cleavage (inclined, vertical)
Minor fold (with attitude of axial plane and plunge)
Normal fault (solid circle indicates downthrow side; defined, approximate)
Thrust or reverse fault (teeth indicate upthrust side; defined, approximate)
Thrust or reverse fault (teeth indicate upthrust side; assumed, overturned)
Strike slip fault (arrow indicates relative movement)
Anticline (upright, overturned; arrow indicates plunge)
Syncline (upright, overturned; arrow indicates plunge)
Monoclinal bend, anticlinal
Granitic dyke (Cretaceous)
Veins
Boundary across which geological units are combined
Stratigraphic facies boundary
Stratigraphic section or traverse, available from author on request
Line of section
Mineral occurence with major element or composition indicated
Fossil, microfossil; GSC catalogue number; abbreviated age (e.g. IDFa - Late Devonian, Famennian)
Macrofossils observed but not collected; g=graptolites, s=shelly material, p=vascular plant material, t=trace fossils; abbreviated age (e.g. IDFa - Late Devonian, Famennian)
Microfossil collection taken but sample barren of conodonts

NOTES

1. The prefix 'l' designates a map unit that is represented by 70-90% of the stratigraphic unit prefixed, but which is structurally repeated numerous times on small scale, local detachment surfaces. The mapped area can also include fault repetitions, as well as synclinal and anticlinal keels of underlying and overlying stratigraphic units in 10-30% of the area. Units with the 'l' prefix are mapped both as single and tectonic units (e.g. SS or lSs).
2. Rogue detachment surface inferred from the observation that strata above are shortened to 20% of their original length while strata below the detachment are shortened to 60-80% of their original length.
3. Folds of this scale and size are observed north of section. Thinning of the tectonic unit PCNA over PCNS and older unit anticlines is observed west of section.

Compiled from ground traverses by M.P. Cecile (1979, 1980, 1983, 1984, 1985) with assistance by Rob Gibson (1979), Brian Fisher (1980), Hans Smit (1983), Craig Hart (1984), and Peter Mustard (1985). 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 and O. Rhodes (Cominco). Fossil determinations are by B.S. Norford, A.W. Norris, T.T. Uyeno, W.H. Fritz (GSC), and R.S. Tipnis (Sugarland, Texas). Digitizing and initial drafting by M. Deuling and P.J. Neelands.

Digital cartography by E. Macey, Geological Survey of Canada (Calgary)

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 editions covering this map area may be obtained from the Canada Map Office, Natural Resources Canada, Ottawa, Ontario, K1A 0E9

Approximate magnetic declination 1996, 30°10' East, decreasing 14.1' annually

Elevations in metres above mean sea level

MAP 1901A

GEOLOGY

ELMER CREEK

(and part of NTS 105-O/7)

YUKON TERRITORY

Scale 1:50 000 - Échelle 1/50 000

Kilometres 1 0 1 2 3 4 Kilometres

Universal Transverse Mercator Projection
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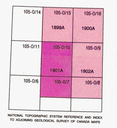

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