Chilanko Forks Area Geology

NTS 93C/1

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Scale 1:50 000

0 kilometres 5

LEGEND

LAYERED ROCKS

NEOGENE

MiPlAv — Anahim Volcanic Belt: (up to ~500m) Miocene to Pleistocene, alkaline basalts and peralkaline rhyolite to phonolite (Souther and Souther, 1994); in the Chilanko Forks area, dominantly black or pinkish grey, fine to coarse-grained, crystal-rich trachybasalt blocks up to several metres diameter over large areas, presumably close to outcrop in the subsurface.

EOCENE

EO — Undivided Ootsa Lake Group: (>3000m) Early Eocene, equivalent to 'Clisbako volcanics' with isotopic ages ranging from adjacent areas yielding ca. 53.4 ±0.6 Ma to ca. 44.2 ±0.4 Ma (Metcalfe et al., 1997; Riddell et al., 2007; Mihalynuk, Friedman and Ullrich, unpublished).

EOdvb — Vitreous Black Dacite: Vitreous, black, sparse pyroxene porphyritic dacite flows and breccia, may display distinctive yellow-tan pelagonite rind where weathered. Phenocrysts generally <1% fine, green orthopyroxene < 2 mm; <1% plagioclase as transparent laths <4 mm. Flow tops are commonly vesicular

EOr — Maroon and Grey Banded Rhyolite: Rhyolite with alternating maroon and grey flow bands; typically aphanitic, but feldspar phenocrysts locally up to 1%. Interpreted as coalescing, low-relief dacitic flow domes.

EOdb — Biotite-phyric Dacite Ash Flow: (<~500m) ignimbritic textures common, multiple flows with intercalated breccia and lesser conglomerate. Pink to black, depending upon oxidation state, biotite ubiquitous (5% ±), variable feldspar and lesser hornblende content, may be quartz-phyric (up to 5%).

EOdh — Acicular Hornblende Dacite: Tan to pinkish, platy-weathering, flow banded, hornblende-phyric (4 mm < 3%) dacite flows. Resistant, but forming poker-chip scree. Vesicular flow-top facies (0.5 to 2 m) and autoclastic breccias are locally displayed with flows (2 – 10 m thick)

EOci — Intraformational Conglomerate: Tan to white weathering with mainly locally derived, angular to rounded clasts. Poorly indurated, feldspathic and clast supported. Occurs at multiple stratigraphic levels within the Eocene volcanic succession.

?CRETACEOUS TO EOCENE

KEc — Polymictic conglomerate: (variable to ?500m) includes locally derived, very coarse volcanic boulders and sandstone (e.g. East Tatla Lake, Mihalynuk et al., 2009) and intrusive and volcanosedimentary sources, like near Fit Mountain where it is infolded with tonalite.

KEvf — East Tatla Lake Tuff and Autobreccia: Olive green to maroon tuff and brecciated flow units, typically vesicular with ~20% medium to coarse-grained tabular fledspar crystals. Medium-grained biotite (up to 5%) and minor hornblende are chloritized.

LATE JURASSIC TO CRETACEOUS AND ?OLDER

Tatla Lake Metamorphic Complex - Ductily Sheared Assemblage (Friedman, 1988)

JKTLv — Foliated to Mylonitic Volcano-sedimentary rocks and Jura-Cretaceous intrusions (Friedman, 1988). Volcanic protolith textures are typically obliterated. Includes strongly lineated muscovite-biotite-magnetite-actinolite schist near Tatla Lake.

JKTLt — "Mylonitic Orthogneiss" (Friedman, 1988): Strongly foliated to mylonitic, mainly meta-tonalite.

JURASSIC (AND ?TRIASSIC)

TrJ — Undivided Jurassic volcano-sedimentary strata. Poorly dated, but reported to contain sedimentary rocks with Bajocian ammonites (Middle Jurassic; Tipper, 1969), possibly includes strata as old as Triassic.

LJd — Variegated Rusty Dacite tuff and breccia:

LJvb — Basalt: (100m) Dark green, massive, blocky weathering pyroxene basalt ± hyaloclastite. Carbonate-chlorite amygdaloidal. Xenomorphic plagioclase ~15%, and euhedral pyroxene ~5%, secondary epidote and chlorite common.

LJvx — Hyaloclastite: (~200 m) Bright green hyaloclastite consists of monomict aphanitic basalt fragments, but may contain fine-grained pyroxene phenocrysts. Clasts are most commonly lapilli and small blocks with a matrix of sparry calcite.

Jc — Volcanic Conglomerate: Pebble to granule conglomerate mainly derived from volcanic lithologies and may be interbedded with other volcanic or fine-grained sedimentary strata. Probably occurs at multiple stratigraphic levels. East of Pyper Lake it is a coarse facies of unit MJsv.

MJsv — Volcanic Siltstone/Sandstone: (80 m) Green to brown or rust-coloured, commonly recessive, volcanic siltstone and mudstone. Typically laminated to thinly bedded (1–2 cm), with ripples, scours, flutes, and graded bedding locally preserved.

Jfpt — Veined Massive Tuff: (600+ m) Feldspar-phyric breccia and more distal lapili- and ash-dominated facies. Typically weathers into green and orange angular blocks. Extensive sheeted or reticular quartz-epidote vein networks are common. Medium-grained plagioclase comprises 10-15% of the ash and up to 35% of most fragments; hornblende up to 5%.

Jfxt — Feldspar crystal ash tuff and tuffite

INTRUSIVE ROCKS

ETLgd — Eocene "Tatla Lake stock" (Friedman, 1988): biotite granodiorite, medium-grained, grey, non-foliated and not altered. Age determined on biotite by K-Ar method as 47 ±1.5 Ma (Friedman, 1988).

LJqm — Late Jurassic Quartz Monzonite (155.1 ±1.2 Ma, Mihalynuk et al., 2009): Pink to grey, medium to coarse-grained quartz diorite to monzodiorite; hornblende subordinate to biotite. Late fractures may be annealed with K-feldspar, chlorite±epidote alteration and coatings on late joint surfaces are common.

Chilanko igneous complex

LJq1g — Quartz-first Granodiorite: coarse quartz porphyritic granodiorite with holocrystalline biotite-quartz-feldspar matrix. Strongly to non-foliated, white to pink and tan weathering. Generally cuts unit LJCt.

LJCt — Polyphase, syn-tectonic tonalite (gabbro to granodiorite): cut by multiple phases of diking (<1 - 20m thick), and locally displaying weak copper mineralization in chlorite-magnetite altered and epidote-quartz veined zones. Possibly a lopolith. One sample returned an age of 157 ±5 Ma (K-Ar Hornblende; Friedman, 1988) west of the map area.

SYMBOLS

Geological contact; defined, approximate, inferred

Form lines

Unconformity; defined, approximate, inferred

Fault; defined, approximate, inferred

Detachment fault, inferred

Esker, flow known, not known (Kerr and Giles, 1993)

Bedding (top known, inclined, vertical); first phase schistosity (inclined)

First-phase schistosity (vertical); second phase schistosity; dyke (inclined, vertical)

Cleavage; vein; igneous flow banding (inclined, vertical)

Brittle shear (inclined, vertical); shear band (reverse offset);

Fold hinge; mineral lineation; slickenside

Glacial striae (uni-, bidirectional

New mineral occurrence — Fit

Geochronological sample; macrofossil, radiometric — F 159.3 Ma

Thick Quaternary cover, approximate limit

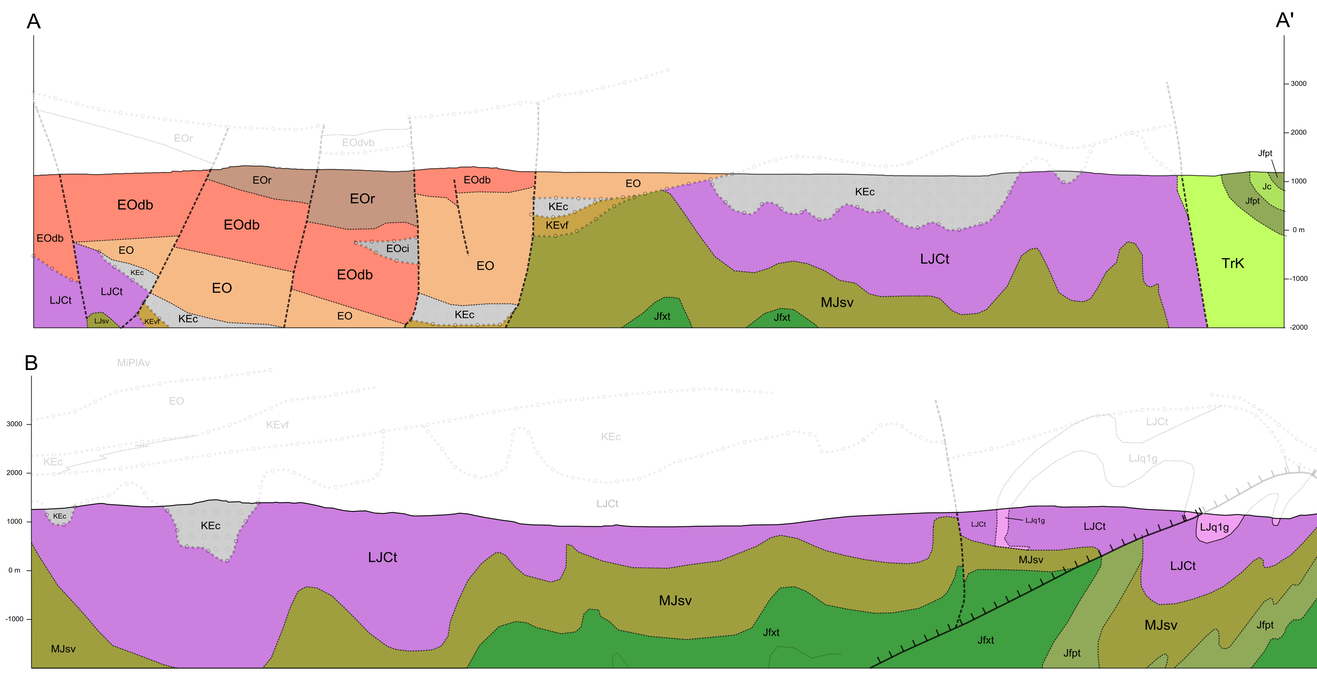
Road (Highway 20, major gravel road, gravel road)

Lakes; Wetlands (swamps and marshes)

Outcrop

Topographic contour (20 metre intervals) — 1200

SCHEMATIC CROSS SECTIONS



PROJECTION: Universal Transverse Mercator Zone 10

DATUM: North American 1983 mean for CONUS)

MAGNETIC DECLINATION: 18 degrees 51 minutes East, at center of map, January, 2009

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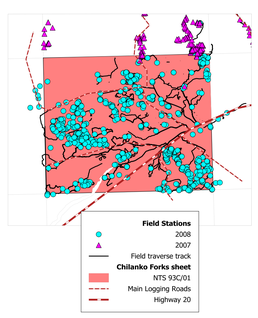
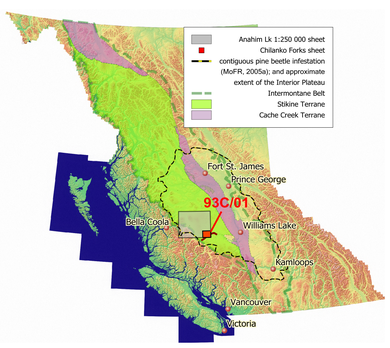
RELIABILITY DIAGRAM



LOCATION



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