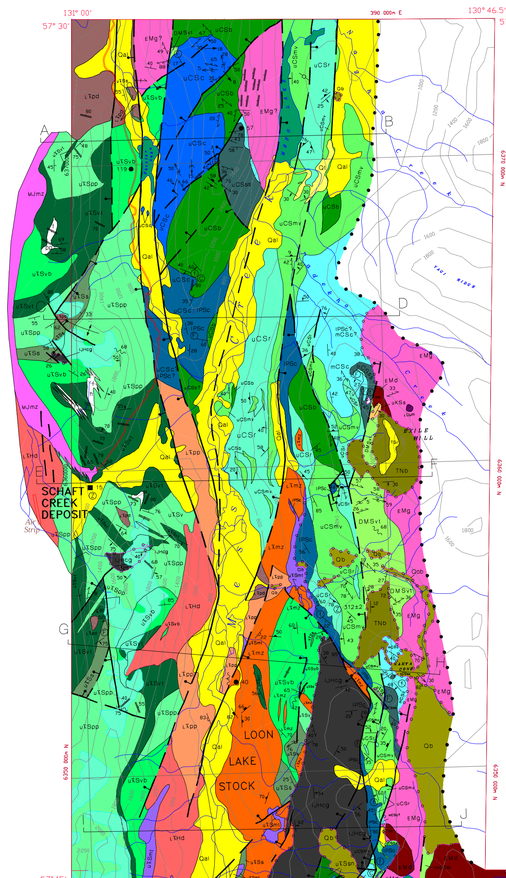

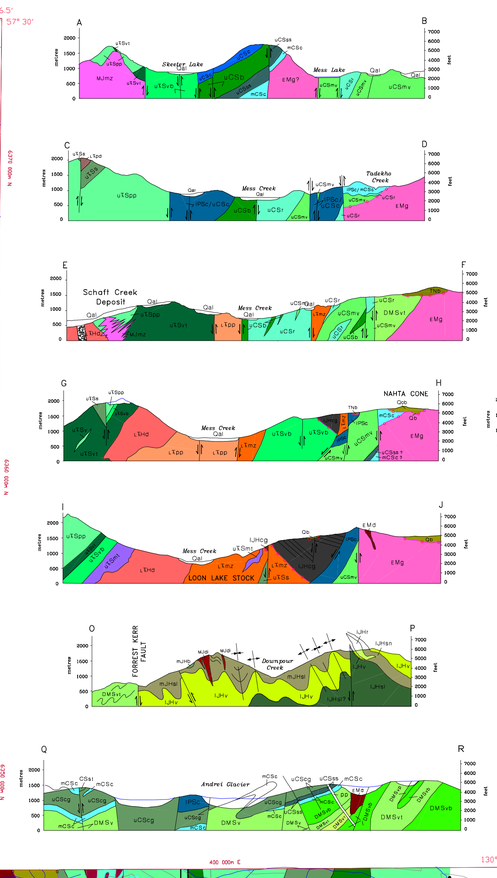

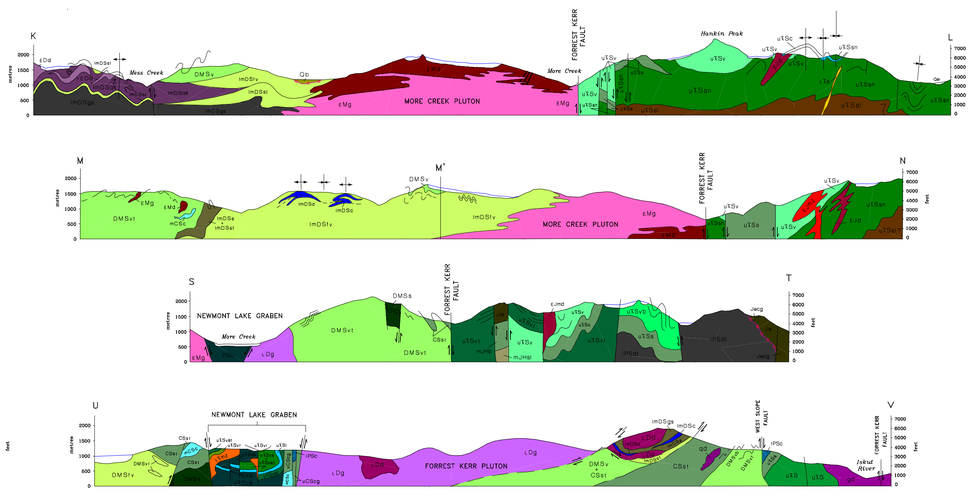

BRITISH COLUMBIA
Ministry of Employment and Investment
Energy and Minerals Division
Geological Survey Branch

Geological Survey Branch

GEOSCIENCE MAP 1997-3

GEOLOGY OF THE FORREST KERR-MESS CREEK AREA, NORTHWESTERN BRITISH COLUMBIA

NTS (104B/10, 15 & 104G/2 & 7W)

Compiled by: J.M. Logan

Geology by: J.M. Logan, J.R. Drobe, V.M. Koyanagi and D.C. Elsby

SCALE 1:100 000

0 2 4 6 8

KILOMETRES

LEGEND

LAYERED ROCKS

QUATERNARY

- **Qt** — *Active hotspring, calcareous tufa deposits*

BIG RAVEN FORMATION

- **Qob** — Nahta Cone: *Plagioclase-olivine phyric basalt, pyroclastic cone, tephra and lava flows*
- **Qal** — *Unconsolidated glacial till and poorly sorted alluvium*

PLEISTOCENE

ARCTIC LAKE FORMATION

- **Qb** — *Olivine-plagioclase-augite basalt, subaerial lava flows, pyroclastic breccia and lenses of alluvium*

TERTIARY- PLIOCENE

SPECTRUM FORMATION

- **TSr** — Eshile Hill Vent: *Leucocratic peralkaline rhyolite and dark grey trachyte flows and subvolcanic intrusions*

NIDO FORMATION (KOUNUGU MEMBER)

- **Tnb** — *Dark grey, aphyric and microporphyritic olivine basalt, subaerial flows, flow breccia and intercalated fluvial gravel*

UPPER CRETACEOUS TO PALEOCENE

SUSTUT GROUP

- **uKSs** — *Chert-pebble conglomerate, quartzose sandstone, siltstone and carbonaceous shale, coaly layers and carbonaceous plant fragments*

MIDDLE TO UPPER JURASSIC

BOWSER LAKE GROUP

ASHMAN FORMATION

- **JBp** — *Greywacke, planar-bedded shale and minor crossbedded sandstone, local chert-pebble conglomerate and granule conglomerate lenses*

LOWER TO MIDDLE JURASSIC

HAZELTON GROUP

- **JHu** — *Undifferentiated volcanic and associated sedimentary rocks*

SALMON RIVER FORMATION

- *Brecciated and fractured dark green and grey siliceous siltstone*
- *Polylithic conglomerate containing sedimentary, intermediate and felsic volcanic and subvolcanic clasts*
- **mJHsl** — *Dark grey to black, thin bedded carbonaceous siltstone and fine, rusty-brown bioclastic sandstone, minor intermediate to felsic crystal tuff*
- **mJHlp** — *Pillow basalt, breccia and tuff, interbedded white and grey, thin-laminated siliceous siltstone and tuff*

LOWER JURASSIC

UNUK RIVER - BETTY CREEK - MOUNT DILLWORTH FORMATIONS

- **lJHv** — *Purple, maroon and green, plagioclase and augite phyric andesite, lapilli tuff, crystal tuff and pillowed lava flows*
- **lJHf** — *Felsic welded-ash tuff, rhyolite lava and ashflow tuff*
- **lJHsn** — *Tan-weathering sandstone, plagioclase crystal tuff, peperite flows, siltstone, carbonaceous plant fragments common*
- **lJHms** — *Black, graphitic siltstone, stratiform diagenetic pyrite to several percent*
- **lJHmb** — *Maroon-weathering, polylithic cobble to boulder conglomerate and coarse sandstone, well bedded, poorly-graded and quartz-rich, contains granitoid, volcanic and sedimentary clasts of Stikine assemblage and Stuhini Group strata*

UPPER TRIASSIC

STUHINI GROUP

- **uTSu** — *Undifferentiated volcanic and arc-derived sedimentary rocks*

NEWMONT LAKE GRABEN

- **uTSnf** — *Felsic and intermediate lapilli and plagioclase crystal tuff and pink flow-layered rhyolite*
- **uTSnm** — *Intermediate volcanic conglomerate, sandstone and minor thin bedded siliceous limestone lenses*
- **uTSnl** — *Algal limestone, laminated, dark grey to black*
- **uTSnb** — *Maroon hornblende-plagioclase porphyritic andesite breccia flows*
- **uTSnbl** — *Maroon lapilli and plagioclase crystal tuff and epiclastic rocks*

MESS LAKE VOLCANIC FACIES

- **uTSmp** — *Maroon and dark green pyroxene porphyritic, plagioclase porphyritic and aphyric-basalt flows and fragmental rocks*
- **uTSmt** — *Massive to weakly stratified, grey and mauve lapilli and crystal tuff*
- **uTSmb** — *Dark grey, massive plagioclase porphyritic basalt flows and coarse-bladed plagioclase and pyroxene porphyry dikes*
- **uTSmrt** — *Dun-weathering mafic olivine lapilli tuff, includes some serpentinized peridotite*

MORE CREEK SEDIMENTARY FACIES

- **uTSv** — *Medium bedded, pale green tuff and epiclastic rocks, orange-weathering augite phyric and aphyric basalt flows and sills*
- **uTSs** — *Thick bedded augite-bearing volcaniclastic sandstone, interbeds of sharpstone conglomerate*
- **uTSc** — *Limestone, grey to black, sparse crinoid fragments, minor argillaceous limestone and silty shale*
- **uTSgn** — *Khaki, well bedded feldspathic sandstone, limestone-bearing conglomerate and thin bedded siltstone*
- **uTSsh** — *Massive, thin laminated black and brown calcareous siltstone, interbedded with fine grained orange sandstone*

MIDDLE TRIASSIC

- *Black, thin bedded carbonaceous and pyritic silty shale, grey sandstone and siliceous siltstone*

STIKINE ASSEMBLAGE

- *Undifferentiated Paleozoic foliated volcanic and associated sedimentary rock*

LOWER PERMIAN

- **lPSdc** — *Medium bedded to massive fossiliferous carbonate; deformed, thin layered carbonate of probable Permian age (lPSdc)*
- *Deformed, interlayered intermediate siliceous tuff and sedimentary rocks*

CARBONIFEROUS

- **CSst** — *Grey to light green phyllitic siltstone, graphitic argillite, siliceous phyllite/tuff and thin lenses of dark brown limestone*

UPPER CARBONIFEROUS

- **uCSc** — *Grey, thin bedded, fetid and dolomitic limestone, minor interbeds of maroon and green tuff and cherty siltstone*
- **uCSr** — *Pink flow-layered and spherulitic rhyolite, sparsely feldspar porphyritic lava and quartz feldspar-phyric flow breccia*
- **uCSmv** — *Maroon andesitic feldspar-phyric lapilli and crystal tuff, includes unwelded to weakly welded ash-flow tuff beds*
- **uCSp** — *Massive amygdaloidal, aphyric to plagioclase and pyroxene-phyric basalt and breccia flows*
- **uCScg** — *Thick bedded, maroon volcanic conglomerate, clasts are augite and plagioclase-phyric mafic and intermediate volcanic and subvolcanic rocks and limestone, poorly sorted with tuff interbeds*
- **uCSss** — *Thin bedded, siltstone, poorly bedded tuff, tuffaceous wacke and sandstone, lesser chert*

MID CARBONIFEROUS (SERPUKHOVIAN - BASHKIRIAN)

- **mCSc** — *Grey, medium bedded to massive bioclastic limestone, locally with buff, silty dolomitic layers*

UPPER DEVONIAN AND LOWER CARBONIFEROUS (MISSISSIPPIAN)

- *Undifferentiated foliated sedimentary rocks*
- **DMSv** — *Undifferentiated basalt and andesite, hyaloclastite, pillowed and flow breccia rocks*
  - **DMSvb** — *Massive to weakly foliated, dark green amygdaloidal basalt and related hyaloclastite, pillowed flows (p) and scoriaceous tephra*
  - **DMSvr** — *Pale pink, quartz-eye rhyolite and aphyric to weakly porphyritic rhyodacite flows and flow breccias, includes orange-weathering, pyritic plagioclase porphyritic subvolcanic bodies*
  - **DMSlv** — *Pale grey and green, intermediate to felsic, fine tuff, aphyric-dacite flows and volcaniclastic rocks*
  - **DMSvt** — *Pale to dark green, well bedded siliceous dust and ash tuff, scoriaceous mafic tuff and minor pyritic felsic welded tuff*

LOWER AND MIDDLE DEVONIAN

- **lmDSlv** — *Green and grey intermediate to felsic plagioclase crystal tuff, breccia and flow rocks*
- **lmDSc** — *Deformed grey and buff thin layered to massive coralline marble and limestone*
- **lmDSst** — *Pale green and grey thin bedded siltstone, sandstone and cherty tuff*
- **lmDSsd** — *Bright green chlorite and red-purple schistose tuff and minor basalt flows, interbedded dust tuff and thin layered recrystallized limestone*
- **lmDSms** — *White and pale green quartz sericite schist, well foliated and tightly crenulated*
- *Graphitic schist, black siliceous phyllite and chert*

INTRUSIVE ROCKS

TERTIARY AND OLDER DIKES

- **ty** — *Aphyric andesite and basalt, (a); mafic plagioclase ± pyroxene porphyry, (pp); lamprophyre, (l); felsic, (f); porphyritic syenite, (sy); basalt, (b)*

MIDDLE JURASSIC

THREE SISTERS PLUTONIC SUITE (179 - 176 Ma)

- **MJmz** — Yehiniko Pluton: *Pink, medium to coarse-grained, equigranular hornblende-biotite monzonite to granite*
- **MJgb** — *Dark green, medium-grained seriate-textured diorite, pyroxene gabbro*

EARLY JURASSIC AND YOUNGER

- **EJdg** — *Medium-grained equigranular augite-plagioclase diorite and gabbro*

EARLY JURASSIC

TEXAS CREEK PLUTONIC SUITE (195 - 189 Ma)

- **eJmz** — *Equigranular, pink, medium grained monzonite, grading to syenite at base*
- **eJg** — *Hornblende-biotite potassium feldspar megacrystic monzogranite and syenite*

LATE TRIASSIC TO EARLY JURASSIC

COPPER MOUNTAIN PLUTONIC SUITE (210 - 200 Ma)

- **L>s** — *Grey and pink, hornblende biotite syenite, orthoclase porphyry with large zoned phenocrysts*
- **L>mz** — Loon Lake Stock: *Salmon-orange, crowded plagioclase-pyroxene monzonite porphyry, trachytic and equigranular phases*
  Newmont Lake plugs: *Fine-grained and potassium feldspar porphyritic monzonite, granodiorite*

MIDDLE TO LATE TRIASSIC

STIKINE PLUTONIC SUITE (228 - 221 Ma)

- **L>Hd** — Hickman Pluton: *Medium to fine-grained, equigranular hornblende diorite, hornblende monzonite*
- **L>pd** — *Medium-grained equigranular augite diorite and gabbro*
- **L>pp** — *Pale green, stubby-plagioclase porphyritic hornblende-pyroxene diorite*

EARLY MISSISSIPPIAN

MORE CREEK PLUTONIC SUITE (~ 355 Ma)

- **eMg** — *Equigranular to quartz-porphyritic biotite granite*
- *Coarse to medium-grained, hornblende diorite, hornblende quartz monzonite*

LATE DEVONIAN

FORREST KERR PLUTONIC SUITE (~ 370 Ma)

- **lDg** — *Medium to coarse-grained pink, biotite granite, monzonite and tonalite*
- **lDgp** — *Heterogeneous, medium-grained hornblende diorite, quartz diorite mainly equigranular, gneissic in places*
- **lDgb** — *Coarse-grained gabbro, hornblendite, clinopyroxenite*

DEVONIAN

- **mDq** — *Foliated to equigranular, green pyroxene quartz diorite, locally chlorite schist*

AGE UNKNOWN

- **gD** — *Pink, equigranular biotite granite, monzonite, monzodiorite*
- **pD** — *Aphanitic altered, granitoid rocks west of Forrest Kerr Creek and small isolated granodiorite plugs*

SYMBOLS

- Geological boundary (defined, approximate, assumed)
- Unconformity (defined, assumed)
- Bedding; tops unknown (inclined, vertical) — 50, 75
- Bedding; tops observed (inclined, overturned) — 55, 75
- Igneous flow layering (inclined, vertical) — 75
- Dominant foliation (inclined, vertical) — 45, 75
- Foliation; generation indicated by number of ticks — 65, 75
- Lineation; bedding-cleavage intersection, m=mineral, s=stretching, ss=slickensides — 25, 75
- Crenulation lineation; ages indicated by number of ticks (plunge indicated) — 20, 30
- Joint (inclined, vertical) — 60, 75
- Dike (inclined, vertical) — 75, 75
- Vein (inclined, vertical) — 50, 75
- Axial trace of overturned antiform, synform (arrow indicates plunge)
- Axial trace of upright antiform, synform (arrow indicates plunge)
- Fold axis of minor fold (arrow indicates plunge) m, s and z asymmetry
- Brittle fault zone (inclined, vertical) — 75
- Extension fault; downthrown side indicated (defined, approximate, assumed) — 75
- Contraction fault; teeth indicate upthrust side (defined, approximate, assumed) — 75
- Cross-section line — O P
- Limit of mapped area
- Fossil locality (macrofossil, conodont, foraminifera, radiolarian) — F 37, C 38, M 39, R 40
- Isotopic age locality (U/Pb, Ar/Ar, K/Ar, Rb/Sr) — U 41, Ar 42, K 43, Rb 44
- MINFILE occurrence; developed prospect, prospect, showing, number — ■ 22 ● 104G378
- Surface work; adit, trench
- Topographic contour (200 metre interval) — 1200
- Cart track

Fossil Identifications:

Mike J. Orchard, E. Wayne Bamber, Tim E. Tozer and Terry P. Poulton of the Geological Survey of Canada; Bernard L. Mamet of the University of Montreal and Fabrice Cordey.

Age Determinations:

Uranium-lead geochronology by Bill C. McClelland at University of California, Santa Barbara; potassium-argon determinations by Joe Harakal at The University of British Columbia; argon-argon dating by Peter Reynolds at Dalhousie University.

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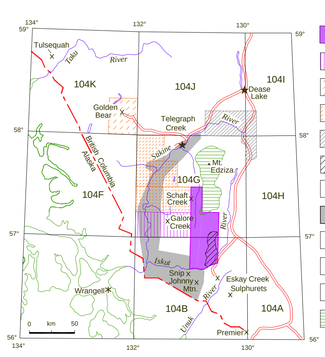
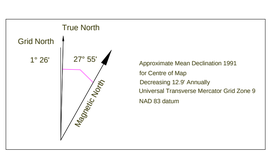


GEOSCIENCE MAP 1997-3
see also (Open File Maps 1990-2, 1992-5, 1993-6)

- Logan and Koyanagi (1989, 1994)
- Bradford and Brown (1993)
- Stikine Project - Geoscience Maps 1993-3 to 1993-6
- Read (1983, 1984)
- Read et al. (1989)
- 104J Gabrielse (1980)
- Kerr (1948)
- 104K Souther (1971)
- 104G Souther (1972)
- 104F Souther (1959)
- Souther (1992)
- Mine or Developed prospect



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