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TECTONIC ASSEMBLAGES AND PLUTONIC SUITES
(from Wheeler and McFeely, 1991)

Tectonic assemblages represent distinctive successions of stratified rocks, mainly bounded by unconformities or faults, deposited in specific tectonic environments during particular intervals of time. Thus they are fundamental components of Cordilleran geology that reflect its evolution and allow comparisons of the tectonic behaviour of various regions during specific intervals of time.

An assemblage may comprise one or more formations from a single region or from several separate regions. Most assemblages are named for an important constituent or group, although a few are named after the region in which the assemblage is best developed. Very few are not yet named. The age assigned to each assemblage reflects the age range of its components. Each assemblage is characterized in terms of its tectonic or depositional setting, the latter illustrated by descriptions of its principal lithologies, facies variations, source areas and other criteria.

The degrees of confidence in the identification of the associated tectonic or depositional regimes vary considerably and, in some cases are controversial. Most assemblages are categorized in terms of environments currently observable on modern continental margins, island arcs and ocean basins. Others are defined with reference to their positions relative to the orogen (foredeep clastic wedge) or to the craton (passive continental margin sediments).

The plutonic suites are defined mainly by age and subdivided on the basis of composition or other attributes. They are grouped, for the most part, into magmatic episodes (Armstrong, 1985).

REFERENCES

Armstrong, R.L.
1985: Mesozoic - early Cenozoic plutonism in the Canadian Cordillera - distribution in time and space; Geological Society of America, Abstracts and programs, 1985, v. 17, p 338

Wheeler, J.O. and McFeely, P.
1991: Tectonic Assemblage Map of the Canadian Cordillera and adjacent parts of the United States of America; Geological Survey of Canada, Map 1712A, scale 1:2 000 000

SOURCES OF INFORMATION

Geological information contained in the GIS map library and the 1:1,000,000 scale folio series is derived directly from John Wheeler's Tectonic Assemblage Map of the Canadian Cordillera (Wheeler and McFeely, 1991; Map 1712A), and is subject to all Copyright laws for distribution in either digital or hard copy form. This map is a revision of the Geological Survey of Canada Map 1505A by Tipper, Woodsworth, and Gabrielse, published in 1981. It is a compilation of published maps, thesis, and unpublished information from officers of the Geological Survey of Canada; from J.G. Abbott, G.W. Lowey, and J.A. Morin of the Geology Section, Department of Indian and Northern Affairs , Whitehorse, Yukon; from D.A. Brew, J.H. Dover, C. Dusel-Bacon, H.L. Foster, J.E. Harrison, W.J. Nokleberg, G. Plafker, and R.W. Tabor of the U.S. Geological Survey; and from R.L. Armstrong, M.T. Brandon, R.L. Brown, D.S. Cowan, P. Erdmer, J. Fillipone, R.M. Friedman, J.T. Fyles, J.M. Hamilton, C.J.R. Hart, R.A. Haugerud, C.J. Hickson, P.M. Holbek, G.A. Jilson, D.L. Jones, A. Jung, W.C. McLelland, E.W. Mountjoy, J.K. Mortensen, D.C. Murphy, J.S. Oldow, R.A. Price, P.B. Read, T.A. Richards, M.E. Rusmore, C.M. Rubin, P.S. Simony, A. Sutherland Brown, R.S. Tolbert, P. van der Heyden, and W.J. Wolfe. Geological cartography for the original version of this map was by M. Sigouin, Geoscience Information Division.

GIS MAP LIBRARY

The Cordilleran GIS Map Library was initiated in March, 1993 as a collaborative research and development project by the Pacific Division and the Geoscience Information Division (GID) of the Earth Sciences Sector (ESS). The goal is to develop an integrated 1:1,000,000 scale digital geoscience database for the Canadian Cordillera that can be used as an archive and research facility by the Geological Survey of Canada (GSC) and its clients. This map is part of a new series of 1:1,000,000 scale tectonic assemblage maps for the Canadian Cordillera based on the Wheeler and McFeely (1991) Tectonic Assemblage Map of the Canadian Cordillera (Map 1712A). It is one of 19 digital data sets derived from the Cordilleran GIS Map Library CDROM (GSC Open File 2948).

The legend which accompanies Map 1712A was converted to digital format and made available to the GSC by Doug Brownlee, and has been modified and expanded for use as a GIS database. Design and implementation of the digital GIS map library structure, final editing and attributing of all geological and geographic features and cartographic production of the 1:1,000,000 scale folio series were performed by Stephen Williams and Murray Journeay of the GSC Pacific Division, and Richard Allard of the Geoscience Information Division.

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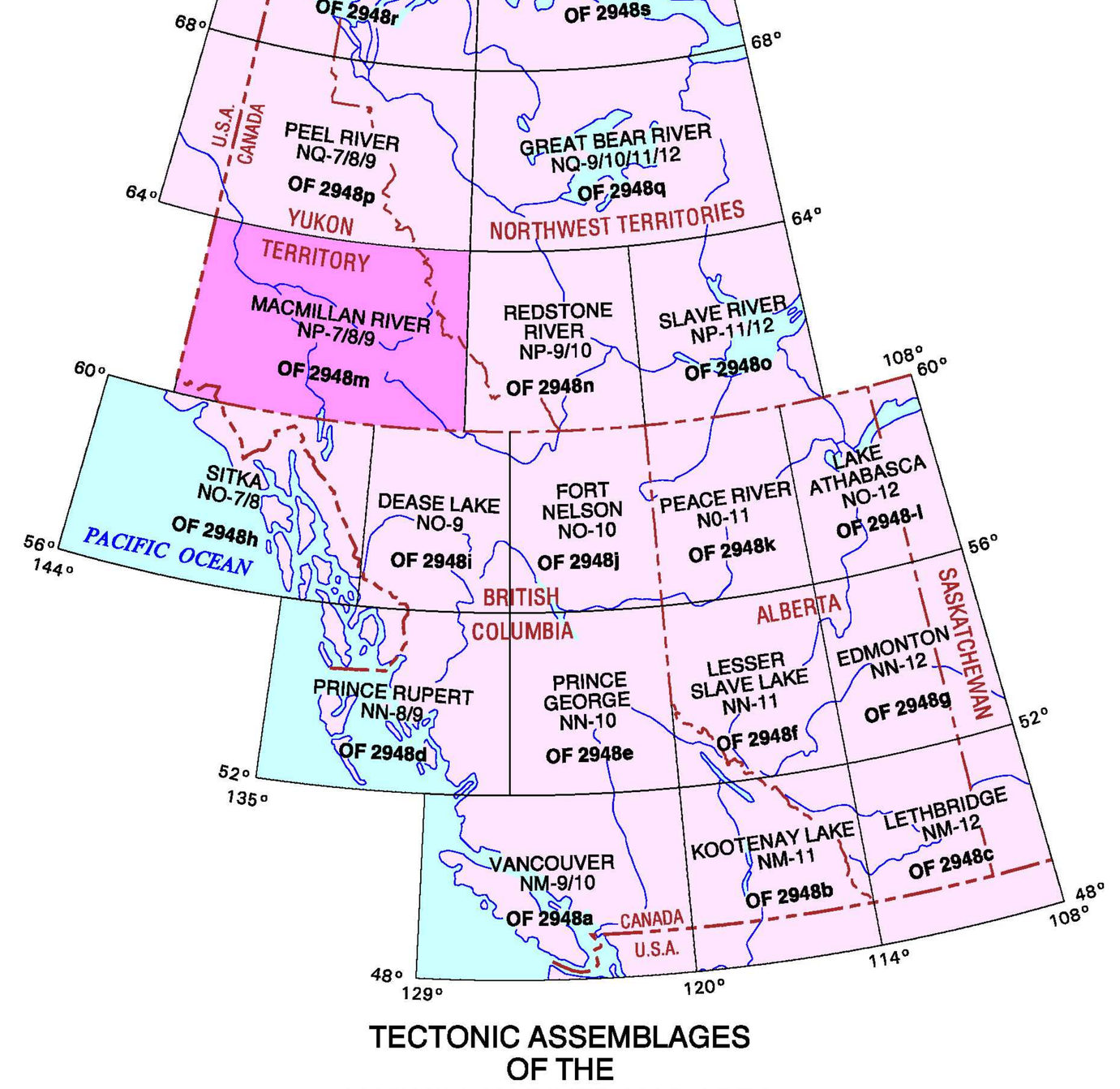
CORDILLERAN TECTONIC ASSEMBLAGE MAP LIBRARY



TECTONIC ASSEMBLAGES OF THE MACMILLAN RIVER MAP AREA 1:1 000 000 GSC OPEN FILE 2948m

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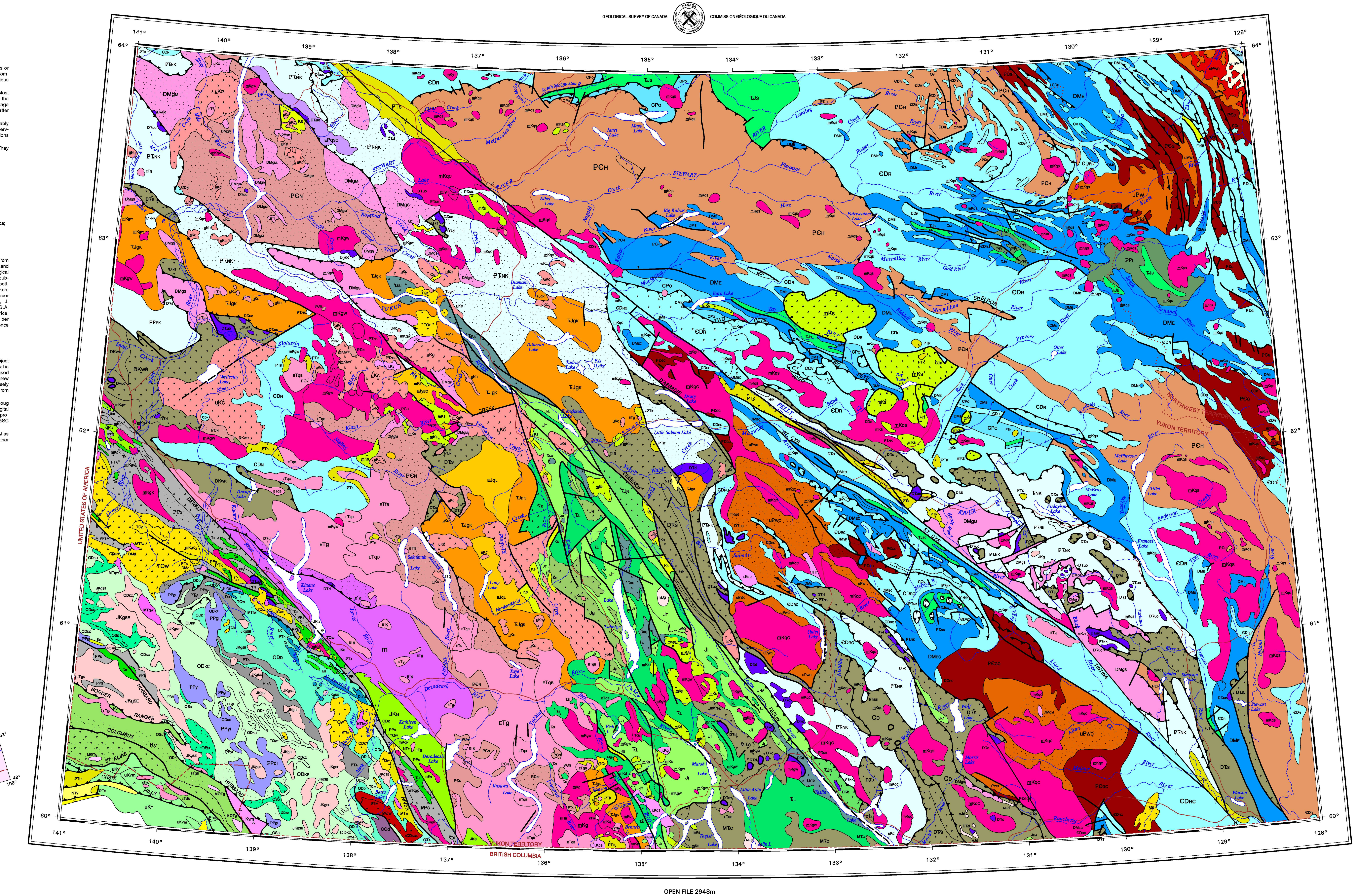

OPEN FILE 2948m

TECTONIC ASSEMBLAGE MAP

MACMILLAN RIVER

YUKON TERRITORY - NORTHWEST TERRITORIES - U.S.A.

Scale 1:1 000 000/Échelle 1/1 000 000

kilometres 25 0 25 50 75 kilomètres

Lambert Conformal Conic Projection
Standard Parallels 60°40' and 63°20'

Projection conique conforme de Lambert
Parallèles d'échelle conservée 60°40' et 63°20'

Canada

LEGEND

TECTONIC ASSEMBLAGES

QUATERNARY

- **Q** — *Undivided Quaternary alluvium and colluvium*
- **Qc** — *CLEARWATER: transtensional back-arc volcanics; alkaline to tholeiitic olivine basalt flows, pyroclastics, volcanoes and cones; contains lherzolite nodules; nonmarine*

TERTIARY AND QUATERNARY

- **TQw** — *WRANGELL: arc and (?) transform volcanics; calc-alkaline andesite, dacite and lesser basalt and rhyolite in E. Alaska; subalkaline basalt, basaltic andesite, lesser dacite, trachyte and rhyolite in Yukon; as lavas, pyroclastics, commonly as dissected volcanoes,* **TQgl** *associated tillite; nonmarine*
- **TQe** — *EDZIZA: transtentional rift volcanics; alkali basalt and peralkaline trachyte-comendite shield volcanoes; alkali olivine basalt cones with lherzolite nodules; flows and tuyas; nonmarine*

NEOGENE

- **NTy** — *YAKATAGA: accretionary prism; interbedded mudstone, siltstone, sandstone, conglomeratic mudstone and conglomerate; marine and nonmarine*
- **NTf** — *FRASER: alluvial sediments; poorly consolidated alluvial conglomerate, sandstone, mudstone, with local lignite, tuff, breccia and diatomite; nonmarine*

PALEOGENE

- **PTa** — *AMPHITHEATRE: easterly derived fault-trough clastic wedge; alluvial lithic sandstone, siltstone, and conglomerate; derived from granitic, metamorphic and volcanic rocks of the Coast Belt; lignite, younger landslide deposits; nonmarine*
- **PTc** — *CARMANAH: overlap assemblage; sandstone, shale, turbidite, conglomerate, conglomeratic mudstone; marine*
- **PTk** — *KAMLOOPS: transtensional arc volcanics; alkali-rich, calc-alkaline andesite, basaltic andesite, dacite, rhyolite and basalt flows, pyroclastics and epiclastic deposits. In south and southeast, highly alkaline rhomb-porphyry flows and breccia; bimodal basalt-rhyolite along Tintina Fault; includes alkaline volcanics east of Foreland Belt; all nonmarine*
- **PTs** — *SIFTON: nonmarine fault-trough clastics (locally includes upper Upper Cretaceous strata); shale, siltstone, sandstone, conglomerate, local lignite, marl and dacitic volcanics; nonmarine*

UPPER UPPER CRETACEOUS

- **uKc** — *CARMACKS: transtensional arc volcanics; potassic, alkaline, mainly porphyritic andesite flows and pyroclastics with lesser rhyolite, trachyte, and dacite; mainly basalt in upper part; nonmarine*
- **uKy** — *YAKUTAT: accretionary prism; flysch of greywacke-conglomerate channels in shale-siltstone turbidite;* **uKym** *mélange of Upper Triassic to Valanginian blocks in a Berriasian to Campanian matrix; marine*

CRETACEOUS

- **Kv** — *VALDEZ: accretionary prism; interbedded argillite-greywacke flysch containing Campanian and Maastrichtian fossils, pillowed greenstone, breccia and tuff, and metamorphic equivalents; mélange (Kvm) of Triassic to Lower Cretaceous blocks in a Lower Cretaceous matrix; marine*
- **Ks** — *SKEENA: easterly derived back-arc clastics; mostly easterly derived clastics; volcanic wacke, sandstone with detrital mica, siltstone, shale, conglomerate, with granitic clasts, chert-pebble conglomerate, ironstone lenses, coal; marine and nonmarine*

MID-CRETACEOUS

- **mKs** — *SOUTH FORK: transtensional cauldron-subsidence and arc volcanics; calc-alkaline basaltic andesite, latite, rhyodacite and rhyolite flows, pyroclastics, ignimbrite, epiclastic rocks in calderas and fault troughs; nonmarine*
- **mKb** — *BLAIRMORE: foredeep clastic wedge; mainly eastward prograding deltaic clastics: basal chert-pebble conglomerate, sandstone, locally with metamorphic, granitic and volcanic detritus, shale, coal; alkaline volcanics at top; marine and nonmarine*

UPPER JURASSIC - LOWER CRETACEOUS

- **JKg** — *GAMBIER: arc and locally, rift volcanics; upper unit: Albian greywacke, siltstone, argillite, conglomerate with granitic clasts, minor rhyolite lower unit: Barremian-Hauterivian and older basal granitic conglomerate; calc-alkaline dacite-andesite fragmental volcanics, greywacke-argillite flysch; marine and nonmarine*

LOWER AND MIDDLE JURASSIC

- **Jh** — *HAZELTON: volcanic arc complexes in Stikinia; south of Bowser Basin: low alkali calc-alkaline subaerial basalt to rhyolite, mainly andesite-dacite pyroclastics, grading northeast into more alkalic pillowed basalt and farther east into clastic volcanics. North of Bowser Basin: calc-alkaline dacite-latite porphyry, andesite, rhyolite pyroclastics and flows with basalt and basaltic andesite at the top; marine and nonmarine*
- **Jt** — *TAKWAHONI: Stikinia arc-derived clastics; interbedded conglomerate, greywacke, siltstone and shale derived from Triassic volcanics and granites in Stikinia; marine and nonmarine*
- **Ji** — *INKLIN: arc clastics above Cache Creek Terrane; siltstone-shale-greywacke turbidite, minor conglomerate, derived from Cache Creek and Quesnel terranes; limestone; marine*
- **Jha** — *HALL: Quesnellia arc-derived clastics; carbonaceous shale, siltstone, greywacke and conglomerate derived from volcanic and granitic rocks of Quesnellia; marine*

TRIASSIC - JURASSIC

- **TrJs** — *SPRAY RIVER: continental margin prism; TrJsc in Cassiar Terrane; Jurassic shale, organic-rich paper shale, sandstone, phosphatic and cherty limestone; Triassic shoaling-upward marine siltstone, sandstone, limestone, dolostone, collapse breccia, rare gypsum; marine*

UPPER TRIASSIC - LOWER JURASSIC

- **TrJn** — *NICOLA: arc volcanics in Quesnellia; calc-alkaline andesite, dacite, rhyolite subaerial flows, ignimbrite, minor limestone passing eastwards into augite and feldspar porphyry, andesite and dacite flows, and volcanic clastics grading further eastward into relatively alkaline augite porphyry flows, analcite trachybasalt and trachyandesite, volcanic clastics and finally into shale, siltstone, limestone and minor quartzite; marine and nonmarine*

UPPER TRIASSIC

- **Trk** — *KARMUTSEN: rift volcanics in Wrangellia; pillowed, brecciated and layered tholeiitic lavas, subaerial tholeiite in eastern Alaska, overlain by bioclastic and reefoid limestone; marine and nonmarine*
- **Trh** — *HYD: bimodal rift volcanics in Alexander Terrane; basalt pillow lava, rhyolite flows, breccia and tuffs; interbedded limestone, siltstone and sandstone; basal polymictic conglomerate and coarse breccia. Rhyolite east of Dixon Entrance yields a concordant U-Pb age of 188 Ma*
- **Trs** — *STUHINI: arc volcanics in Stikinia; calc-alkaline, locally subaerial, augite and feldspar porphyritic andesite and basaltic andesite flows, breccia, tuff and minor ignimbrite interbedded with more easterly volcanic clastics. Western Takla facies: more alkaline augite porphyry pillow lava, volcanic sandstone, siltstone, and local subaerial volcanic clastics; marine and nonmarine*
- **TrL** — *LEWES RIVER: arc clastics, in part in Cache Creek Terrane; mainly westerly derived breccia, tuff, volcanic sandstone and siltstone, and limestone, locally interbedded with radiolarian chert above Cache Creek Group; marine*
- **Trku** — *KUTCHO: arc volcanics in Cache Creek Terrane; bimodal calc-alkaline flow-banded rhyolite or rhyodacite, silicic tuff, and basalt or basaltic andesite, phyllite, greywacke and limestone, metamorphosed to greenschist; marine*

PERMIAN - TRIASSIC

- **PTrA** — *Undivided Alexander Terrane sediments and volcanics; andesitic to basaltic flows, breccia, and tuff; felsic tuff, greywacke, shale, chert, conglomerate, limestone, and metamorphic equivalents; marine*

PENNSYLVANIAN - PERMIAN

- **PPs** — *SKOLAI arc volcanics and sediments in Wrangellia; upper volcanic sandstone, argillite, chert and limestone unconformably overlying gabbro (DMd) and lower, alkaline to tholeiitic basalt, basaltic andesite, minor andesite and dacite flows and pyroclastics, intruded by* **PPgl** *granitoids; marine*
- **PPi** — *ISHBEL: faulted passive continental margin sediments; Permian siltstone, sandstone, dolomitic siltstone, chert chert, phosphate, siliceous mudstone; Pennsylvanian breccia, sandstone, orthoquartzite; marine*

MISSISSIPPIAN - UPPER TRIASSIC

- **MTrc** — *CACHE CREEK; oceanic volcanics and sediments and local accretionary prism mélange; mainly MORB-like tholeiite to alkaline basalt, some alkali-enriched seamount basalt, serpentinized peridotite and dunite, gabbro, trondhjemite and diabase; most sub-greenschist, local blueschist; mélange with blocks of Upper Triassic Nicola Assemblage; radiolarian ribbon chert, argillite, volcanic sandstone, and limestone, locally as bank, reef and lagoon complexes with Tethyan fossils; includes Jurassic radiolarian east of Fraser River fault; marine*

DEVONIAN - TRIASSIC

- **DTrs** — *SLIDE MOUNTAIN: oceanic marginal basin volcanics and sediments; variably sheared, ophiolite-like assemblage of oceanic, alkalic to transitional pillowed basalt, tuff, breccia, serpentinized peridotite and gabbro, radiolarian chert, argillite and volcanic clastics; marine - east of McLeod Lake Fault - fragmental basalt, diorite, volcanic clastics and limestone that may be a distal North American assemblage*

CARBONIFEROUS - PERMIAN

- **CPo** — *Outer detrital clastics; intertonguing shelf carbonate, shale, chert and sandstone*

CARBONIFEROUS

- **Cd** — *DORSEY: marginal basin chert and clastics; upper unit of chert, quartzite, slate-clast conglomerate, grit, quartzite, ribbon chert and slate and a lower unit of quartzite, argillite and chert interbeds separated by crinoidal and chert-nodule limestone; marine*
- **Cm** — *MATTSON: distal, northerly derived clastic wedge; includes Endicott Group in Arctic Alaska Terrane; northward and northeastly derived, mainly south- and southwestward prograding deltaic quartz sandstone, shale, minor quartz- and chert-pebble conglomerate, limestone and coal; includes Endicott clastics basal to Lisburne Assemblage; marine and nonmarine*

DEVONIAN - MISSISSIPPIAN

- **DMe** — *EARN: fault-trough clastic wedge;* **DMec** *in Cassiar Terrane; westerly derived, chert-pebble conglomerate, chert-quartz sandstone, pebbly mudstone, blue-black siliceous shale, locally containing barite, brown shale, alkaline trachyte and rhyolite flows, breccia, tuff, pillow basalt and breccia; chert, and limestone; marine and nonmarine*
- **DMb** — *BESA RIVER: most distal part of northerly derived Imperial Assemblage and westerly derived Earn Assemblage; upper Devonian shale partly derived from craton; shale, mudstone, and siltstone; marine*

DEVONIAN - CRETACEOUS

- **DKwr** — *WHITE RIVER: mixed assemblage of Paleozoic-lower Mesozoic oceanic rocks including undated clastics like those in the Gambier Assemblage; oceanic rocks comprising cherty argillite, chert, phyllite, mafic volcanics, ultramafics and numerous Devonian limestone bodies mixed with phyllite, sandstone and conglomerate similar to Cretaceous clastics in the Windy and McKinley terranes of Alaska; marine*

DEVONIAN

- **Dc** — *CEDAR COVE: platform carbonate and rift volcanics; thick- and thin-bedded limestone underlain by argillite, arkosic greywacke, and conglomerate containing Silurian syenite and other granitic clasts; overlain by andesite and basalt flows, breccia, tuff and subordinate clastics; marine*

ORDOVICIAN - TRIASSIC

- **OTrA** — *Undivided phyllite in Alexander Terrane; undivided calcareous mudstone, siltstone, thin-bedded limestone, subordinate mafic to felsic volcanics, carbonate, chert, minor ultramafics; locally metamorphosed to slate, phyllite, schist, gneiss and marble; marine*

ORDOVICIAN - DEVONIAN

- **ODk** — *KASKAWULSH: back-arc carbonate and pelite; thick-bedded limestone, interbeds of shale and local lenses of conglomerate (ODkc); laminated limestone, calcareous mudstone, siltstone and phyllite (ODkp); marine*
- **ODd** — *DONJEK: back-arc volcanic clastics; khaki, quartz-rich, micaceous, calcareous siltstone and sandstone, slate, phyllite, schist, buff and green greywacke, volcanic sandstone, siltstone and argillite; basic flows, breccia, tuff, marble, limestone; marine*

ORDOVICIAN - SILURIAN

- **OSd** — *DESCON: oceanic arc volcanics and sediments; basaltic to andesitic pillow lava, pillow breccia, tuff breccia; subordinate rhyolite, pyroclastic breccia, tuff and domes; argillite, mudstone, siltstone, greywacke, minor limestone; mainly marine*

UPPER PROTEROZOIC - PALEOZOIC

- **PPek** — *EAGLE BAY: clastics and volcanics of pericratonic Kootenay Terrane and Devonian and older magmatic arc rocks in Yukon-Tanana Terrane; Paleozoic phyllite, siltstone, sandstone, grit, minor limestone, which near Quesnel Lake contains fossil fragments, Devonian felsic metavolcanics and older magmatic arc rocks and fragmentals overlying black siliceous argillite, ribbon chert, quartzite, and local archeocyathid-bearing limestone in mafic metavolcanics, Proterozoic olive green and grey grit, quartzite and carbonate, and metamorphic equivalents; mainly marine*

UPPER PROTEROZOIC - TRIASSIC

- **PTrnk** — *NISUTLIN: cataclastic sediments and volcanics of pericratonic Kootenay Terrane; sheared conglomerate (Trnk) with lenses of Upper Triassic limestone and sandstone and clasts of gneissic granites and metamorphic rocks and Upper Triassic and Paleozoic carbonate; Pennsylvanian and Permian carbonate, and chloritic quartz grit; Lower Mississippian felsic metavolcanics, dark grey phyllite and quartzite, and older micaceous feldspathic quartzite, schist, marble; all variably mylonitized; marine*

CAMBRIAN - DEVONIAN

- **ЄDn** — *NASINA: partly metamorphosed carbonaceous and siliceous offshelf sediments; dark grey to black graphitic and micaceous quartzite with interfoliated graphitic, biotite-muscovite schist; includes lenses of grey laminated marble; marine*
- **ЄDr** — *ROCKY MOUNTAINS: passive continental margin sediments;* **ЄDrc** *in Cassiar displaced passive margin terrane; resistant dolomite, limestone, and local sandstone interbedded with recessive red, green, and grey shale and detrital carbonate that together form several carbonate-shale grand cycles. These pass westward into offshelf shale, siltstone and thin-bedded carbonate with minor, alkalic tuff, breccia and amygdaloidal basalt of Cambrian (Єv), Cambro-Ordovician (ЄOv), Silurian (Sv), and Devonian ages but mainly of Ordovician (Ov) age; marine*

UPPER PROTEROZOIC - LOWER CAMBRIAN

- **PЄw** — *WALES: metamorphosed oceanic arc volcanics; greenschist and amphibolite facies schist and gneiss derived from basaltic to andesitic pillow lava, breccia and tuff and graded-bedded greywacke, minor marble and metarhyolite; mainly marine*
- **PЄn** — *NISLING: metamorphosed passive continental margin assemblage; muscovite-biotite schist, phyllite, slate, micaceous quartzite, marble, skarn, greenstone and amphibolite; marine*
- **PЄh** — *HYLAND: mainly clastic offshelf passive continental margin sediments; upper unit: blue-grey, apple-green and maroon slate with minor siltstone and sandstone; lower unit: interbedded graded sequence of sandstone, locally conglomeratic, and shale with limestone in upper part; marine*
- **PЄg** — *GOG: rifted and passive continental margin sediments;* **PЄgc** *in Cassiar Terrane; shallow-water crossbedded orthoquartzite, feldspathic quartzite, locally graded-bedded quartzite, quartz-pebble conglomerate, mafic flows, breccia and tuff overlain by interbedded quartzite, siltstone, shale, and limestone with archeocyathid reefs; metamorphic equivalents; marine*

UPPER PROTEROZOIC

- **uPw** — *WINDERMERE: mainly clastic continental margin sediments;* **uPwc** *in Cassiar Terrane; graded-bedded assemblage of interbedded quartz-feldspar grit, sandstone, siltstone and shale, commonly maroon and green; diamictite in Rocky Mountains, limestone in upper part, local greenstone flows, breccia and tuff, and metamorphic equivalents; marine*
- **uPwr** — *RAPITAN: rift assemblage; Rapitan: upper tillite, hematite-jaspilite iron formation, silicic turbidite and red, maroon and green argillite, lower tillite; local tholeiite above calc-alkaline basalt and minor felsite; Toby: andesite flows and tuffs above diamictite and conglomerate; marine*

MIDDLE AND UPPER PROTEROZOIC

- **umPm** — *MACKENZIE MOUNTAINS: platformal continental margin sediments (equivalent to Rae Group - on the craton); shallow-water platformal assemblage of red and green mudcracked shale, siltstone and sandstone, gypsum and anhydrite, basinal limestone, rhythmite, nodular limestone, stromatolite reefs, platform carbonate grainstone, fluvial-deltaic orthoquartzite and mudstone, stromatolitic and argillaceous dolomite; marine and nonmarine*

PLUTONIC AND ULTRAMAFIC ROCKS

Plutonic Suite....Seward Pluton....(Dycer Creek)

MIOCENE (5.3 - 16)

- **MT** — **MTfw** *- Wrangell: subvolcanic, creamy white, hornblende and/or biotite rhyolite, rhyodacite, dacite and trachyte dykes*; **MTqw** *- granite, leucogranite, alaskite, quartz monzonite, monzonite, granophyre*

MIOCENE - OLIGOCENE (17 - 29 Ma)

- **MOT** — **MOTg** *- hornblende-biotite tonalite and granodiorite*

EARLY TERTIARY (40 - 64 Ma)

- **ET** — **ETgs** *- Seward: discordant and concordant, calc-alkaline biotite-hornblende tonalite, quartz diorite and local biotite-muscovite granodiorite and quartz monzonite;* **ETfs** *- felsite;* **ETds** *- diorite, quartz diorite;* **ETqb** *- Bennett: high-level, yellowish orange, smoky quartz-bearing alaskite;* **ETfb** *- feldspar porphyry dykes;* **ETg** *- undivided granodiorite and quartz diorite; commonly has concordant U-Pb and K-Ar ages in Coast Plutonic Complex;* **ETq** *- undivided granite;* **ETf** *- undivided felsite, quartz feldspar porphyry;* **ETd** *- undivided diorite, monzodiorite, gabbro, diabase, amphobolite*

CRETACEOUS - TERTIARY

- **KT** — *Diverse suite of generally foliated and layered granodiorite and quartz monzonite; includes* **KTf** *- undivided felsite, quartz feldspar porphyry;* **KTd** *- undivided diorite, monzodiorite, gabbro, diabase, amphobolite*

LATE CRETACEOUS (64 - 87 Ma)

- **LK** — **LKqs** *- Surprise Lake: discordant, locally foliated, grey and light brown, smoky quartz- and fluorite-bearing, miarolitic leucocratic alaskite, hornblende granite and quartz monzonite temporarily equivalent to Carmacks assemblage; includes* **LKy** *- high-level plugs and laccoliths of pale mauve hornblende syenite and granite, commonly as crowded porphyry, diorite and gabbro related to Carmacks volcanics;* **LKg** *- granodiorite, leucogranodiorite, quartz monzonite, quartz diorite, tonalite;* **LKqd** *- (Dycer Creek) granite, leucogranite, alaskite, quartz monzonite, monzonite, granophyre*

MID-CRETACEOUS (87 - 130 Ma)

- **mK** — **mKqc** *- Cassiar: mainly elongate, partly discordant plutons of grey and pinkish grey, biotite quartz monzonite and granodiorite whose western margins are sheared and altered to muscovite-quartz-feldspar mylonite;* **mKgc** *- undivided granodiorite, leucogranodiorite, quartz monzonite, quartz diorite, tonalite;* **mKyc** *- undivided syenite, syenodiorite, nepheline syenite, sodalite syenite, jacupirangite, ijolite, urtite;* **mKgk** *- Kluane: elongate concordant calc-alkaline biotite-hornblende granodiorite and quartz diorite, hornblende diorite and rarer biotite-hornblende quartz monzonite;* **mKdk** *- undivided diorite, monzodiorite, gabbro, diabase, amphibolite;* **mKgw** *- Whitehorse: mainly discordant, dark grey, hornblende granodiorite, dark grey, green, and mauve hornblende-biotite granodiorite and quartz diorite, pink granophyric biotite quartz monzonite, leucogranite, and dykes of feldspar quartz porphyry;* **mKfw** *- undivided felsite, quartz feldspar porphyry;* **mKqw** *- undivided granite, leucogranite, alaskite, quartz monzonite, monzonite, granophyre;* **mKyw** *- undivided syenite, syenodiorite, nepheline syenite, sodalite syenite, jacupirangite, ijolite, urtite;* **mKyt** *- Tombstone: discordant alkali syenite cores, containing sodic amphibole, rimmed by hornblende-biotite quartz monzonite and quartz diorite;* **mKgt** *- undivided granodiorite, leucogranodiorite, quartz monzonite, quartz diorite, tonalite;* **mKqs** *- Selwyn: subalkaline, calc-alkaline, discordant, biotite- and lesser muscovite or hornblende-bearing quartz monzonite; granite, and granodiorite;* **mKys** *- alkaline to calc-alkaline hornblende-clinopyroxene quartz syenite and syenite;* **mKg** *- variably foliated hornblende quartz diorite, tonalite, and hornblende diorite intrusive into Gravina-Nutzotin rocks of S. E. Alaska and forming part of Western Coast Plutonic Complex;* **mKd** *- undivided diorite, monzodiorite, gabbro, diabase, amphibolite;* **mKq** *- undivided granite, leucogranite, alaskite, quartz monzonite, monzonite, granophyre*

LATE JURASSIC - EARLY CRETACEOUS (130 - 155 Ma)

- **JK** — **JKgse** *- St. Elias: concordant and discordant hornblende, biotite granodiorite and quartz diorite, minor quartz monzonite and diorite;* **JKg** *- gabbro-diorite-migmatic complex; hornblende-biiotite quartz diorite, respectively, in W. Coast Plutonic Complex*

MIDDLE JURASSIC (155 - 187 Ma)

- **MJ** — **MJd**; **MJg** *- foliated diorite, diorite-tonalite complex; foliated hornblende-biotite quartz diorite and granodiorite, respectively in Central Coast Plutonic Complex, altered to greenschist-facies along E. margin*

EARLY JURASSIC (187 - 214 Ma)

- **EJ** — **EJql** *- Long Lake: porphyritic biotite-hornblende quartz monzonite with pink potash feldspar phenocrysts; pink leucocratic and biotite quartz monzonite, occurs in clasts in Lower Jurassic conglomerates;* **EJybc** *- (Big Creek) foliated buff saussuritized hornblende syenite;* **EJq** *- undivided granite, leucogranite, alaskite, quartz monzonite, monzonite, granophyre*

LATE TRIASSIC - EARLY JURASSIC

- **TrJ** — **TrJgk** *- Klotassin: grey and dark grey commonly foliated locally altered hornblende-biotite granodiorite, quartz diorite lesser diorite and quartz monzonite; occurs as clasts in Lower Jurassic conglomerates*

PERMIAN

- **P** — **EPqsc** *- (Sulphur Cr.) foliated pink biotite-muscovite quartz monzonite gneiss with compositional layering*

PENNSYLVANIAN - PERMIAN

- **PP** — **PPgi** *- Icefield Ranges: alkaline to calc-alkalin, agmatitic and multiphase plutons in which diorite-quartz diorite phases are veined and intruded by leucocratic syenite-granodiorite; Steele Glacier and Fisher plutons are uniform porphyritic hornblende-biotite quartz monzonite to granodiorite;* **PPdi** *- undivided diorite, monzonite, gabbro, diabase, amphibolite;* **PPyi** *- undivided syenite, syenodiorite, nepheline syenite, sodalite syenite, jacupirangite, ijolite, urtite,*

DEVONIAN - TRIASSIC

- **DTr** — **DTruo** *- oceanic ultramafic rocks commonly elongate plutons of reddish brown to khaki weathering dunite, olivine-orthopyroxene peridotite (harzburgite), pyroxene; commonly serpentinized;* **DTrd** *- diorite and amphibolite of Slide Mountain Terrane, Yukon*

DEVONIAN - MISSISSIPPIAN

- **DM** — **DMgs** *- Simpson Range: older, megacrystic, hornblende-biotite granodiorite and quartz diorite and younger, pinkish, hornblende-biotite quartz monzonite of Simpson Allochthon; variably foliated biotite-hornblende granodiorite (Sewlyn Gneiss); and banded, gneissic biotite quartz monzonite with potash feldspar augen (Fifty Mile). Affinities with I-type granites;* **DMgm** *- Mink Cr.: muscovite-biotite granite or leucogranite augen gneiss; biotite quartz monzonite orthogneiss and related augen gneiss from Yukon Tanana Terrane in eastern Alaska. All have affinities with S-type granites;* **DMyp** *- (Pelly Mts.): miarolitic syenite;* **DMd** *- gabbro*

CAMBRIAN - ORDOVICIAN

- **ЄO** — **ЄOd** *- foliated and metamorphosed, hornblende diorite and biotite-hornblende granodiorite*

VOLCANIC ROCKS

- *Calc-alkaline volcanic rocks*
- *Tholeiitic volcanic rocks*
- *Alkaline volcanic rocks*
- *Bimodal volcanic rocks*
- *Mixed tholeiitic volcanic and sedimentary rocks*
- *Bimodal alkaline volcanic rocks*

METAMORPHIC ROCKS (protolith uncertain)

- **m** — *metamorphic rocks (undivided)*
- *protolith metamorphosed to amphibolite facies*

SYMBOLS

- *Geological contact (defined)*
- *Thrust fault (teeth on upper plate)*
- *Extension fault (solid circle indicates downthrow side)*
- *Right lateral transcurrent fault*
- *Fault of unknown displacement*
- *Submerged faults and those buried by younger strata*
- *Mélange*

British Columbia Mineral Development Agreement Canada

Contribution to Canada - British Columbia Agreement on Mineral Development (1991 - 1995), a subsidiary agreement under the Canada - British Columbia Economic and Regional Development Agreement.

Contribution à l'Entente Canada - Colombie Britannique sur l'exploitation minérale (1991 - 1995), entente auxiliaire négociée en vertu de l'Entente Canada - Colombie Britannique de développement économique et régional.

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