



SYMBOLS
Geological contact (defined, approximate, assumed)
Fault, normal (defined, approximate, assumed)
Fault, normal, down dip/side with beds (defined, approximate, assumed)
Fault, contractional, assumed (both on upright axis)
Shear zone boundary
Shear zone (inclined, vertical)
Anticline (defined and approximate)
Syncline (defined and approximate)
Fold axis
Axial plane
Bedding (type unknown, inclined, type known, overturned, vertical)
Foliation (inclined, vertical)
Joint (inclined, vertical)
Mineral lineation
Stratigraphic lineation
Lineation (unclassified)
Dyke (inclined, vertical)
Geological symbols
Fossil locality with ID number
A-A' age determination locality with ID number
L-L' age determination locality with ID number
Gossan
Landslide scarp
Limit of mapping
Field Station location in pluton where not indicated by other symbol (filiation, etc.)
MINFILE with ID number

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Any revisions or additional geological information known to the user would be endorsed by the Geological Survey of Canada
Digital base map from data compiled by Geomatics Canada modified by Geological Survey of Canada
Mean magnetic declination 2004, 20° 50' E, decreasing 11.1' annually. Readings vary from 21° 14' E in the northwest to 20° 36' E in the southeast corner of the map.
Elevations in metres above mean sea level.
Contour interval 200 metres.

LEGEND
QUATERNARY
Qal Recent alluvium, fill
PALEOGENE
Eocene
Er Rhyolite block-lapilli tuff
LATE CRETACEOUS TO TERTIARY
LKEP Undifferentiated granitic plutons: hornblende-biotite granodiorite to granite, fine- to medium-grained, equigranular
LKFM Muscovite-biotite granite: coarse-grained, equigranular; muscovite 0-1%; locally contains garnet, pink orthoclase megacrysts; apfite dykes with pegmatite; magmatic bearing garnet and muscovite, unfoliated except possibly at margins; forms prominent cliffs characterized by 'iron-skin' exfoliation joints
LATE CRETACEOUS TO TERTIARY
LKTd Undifferentiated dioritic plutons: hornblende-biotite to biotite-hornblende biotite; equigranular; unfoliated; gneiss present locally; fine- to coarse-grained, generally equigranular, unfoliated to weakly foliated
LATE CRETACEOUS
LKF a) Pyroxene-hornblende-biotite quartz diorite to granodiorite; medium- to coarse-grained, equigranular to locally megacrystic with potassium feldspar megacrysts, homogeneous, distinct salt-and-pepper/brin appearance with conspicuous sphene
LKBs Homogeneous, coarse-grained, equigranular, a hornblende-biotite tonalite to granodiorite; inclusions rare
LKMd Mount Daunt pluton (LUPB #1 = 3 Ma)
LKMd Biotite-hornblende tonalite with mylonite to protomylonitic fabric
EARLY CRETACEOUS
Alban
IKS Amphibolite/basalt + hornblende-epiglyclephane andesite porphyry; local reworked volcanic breccias; rare columnar jointing; lesser andesite to rhyolite lapilli tuff, main ton to white; fine- to medium-grained/foliated; andesite, locally cross-stratified and columnar, with shaly (top-clast) andesite; black mudstone to argillite; rounded granitic cobbles to boulder conglomerate locally at base
IKMv >50% andesitic rocks; amphibolite green amphibolite/basalt and basaltic andesite and associated breccias, tuff, and tuff breccias; locally intermingled with these bedded andesite, basal argillite to slate; complexly intermingled with IKMs
IKMs >50% sedimentary rocks; isotropic andesite and andesite; black argillite, locally with thin cross-stratified calcareous sandstone to sandy limestone containing shallow water faunal; pebbles to cobble conglomerate; lapilli tuff and welded ash-flow tuff; lesser andesite and basaltic flow and breccia; rare intraformational conglomerate within sedimentary sequences; rare shallow basaltic complex intermingled with IKMv
EARLY AND MIDDLE JURASSIC
Hazelton Group undifferentiated (LUPB ca. 191-171 Ma)
IKMj Aphanitic basalt, diabase, diorite and quartz diorite; dark green; volcanic breccias, lapilli tuff; lesser welded ash-flow tuff; rhyolite lava flows and breccias; porphyritic green andesite flow; volcanic andesite, siltstone, dark-white tuffaceous mudstone; granule pebble conglomerate
Bajocian to Tithonian
IKMh Non-pyritic assemblage (LUPB ca. 165-160 Ma)
Well stratified volcanoclastic sedimentary rocks with lesser volcanic interbeds; contains volcanic isotropic andesite, andesite, basalt with black laminae; tuffaceous mudstone, granite to pebble conglomerate; monomict breccia, lapilli tuff; lesser welded ash-flow and welded ash-flow tuff; rhyolite, andesite, andesite lava flows and flow domes; porphyritic green andesite flow; sub-volcanic localized quartz-phryic rhyolite dykes; interbeds of felsic ash and welded granites up to 25 m thick
Aalenian to Bajocian
IKMhs Sandstone, siltstone and shale, locally with pebbles to cobble conglomerate; interstratified with welded rhyolite tuff to lapilli tuff; sandstone locally contains diastaseis lag deposits
'Microdiorite' unit
IKMhv Aphanitic basalt, diabase and fine- to medium-grained diorite and lesser quartz diorite; dark green with biotite megacrysts; orthoclase megacrysts; locally reworked mudstone or sandstone; locally contains pyroxene diorite plug-like intrusions; cut by northwest-trending pink pegmatite porphyry and granodiorite dykes
PALEOZOIC TO EARLY JURASSIC
Pjm Undifferentiated basaltic and andesitic metabasaltic and volcanoclastic rocks; rare calc-alkaline rhyolite and marble

BELLA COOLA GEOCHRONOLOGY
MAP # FIELD # AGE (Ma) LITHOLOGY NOTES
1 HFB02-2003 191 +/- 12 (LUPB) Quartz-diorite lapilli tuff Stratigraphically low in the east-dipping homoclinal succession near Jubilee Mountain.
2 HFB02-2020 186 +/- 0.8 Ma (LUPB) Tonalite Cognetic with Hazelton Group?
3 HFB02-1054-1 181.9 +/- 0.8 (LUPB) Foliated biotite tonalite Associated amphibolite indicate a Late Tertiary to Early Tertiary age. Time-stratigraphic with the Bonanza Fire.
4 HFB02-1405-1 176.6 +/- 0.7 (LUPB) Aphanitic diorite flow dome A few metres thick; diorite on the lower slope of Tawehay/Peak which is unconformably overlain by the Hazelton Group.
5 SCB01-0905 171.6 +/- 2.3 (LUPB) Crystalline diorite flow dome A few metres thick; diorite on the lower slope of Tawehay/Peak which is unconformably overlain by the Hazelton Group.
6 HFB02-1404-1 170.2 +/- 1.4 (LUPB) Quartz-rhyolite flow Conglomeratic in this section are associated with lithologically identical deposits associated with the Hazelton Group.
7 SCB01-2502 164.7 +/- 2 (LUPB) Rhyolite ash-flow tuff Welded rhyolite tuff occur sporadically throughout a succession of volcanoclastic-epitaxial tuffite deposits.
8 GRM6-124 164.2 +/- 4.4 (LUPB) Quartz phryic rhyolite dyke This felsic dyke is one of a number of similar dykes trending northeast. They crosscut andesitic country rocks that form much of the hanging wall sequence at Nifty.
9 SCB01-0707-1 163.7 +/- 0.4 (LUPB) Diorite dykes Felsic country rocks that host VMS mineralization at Nifty.
10 V89-56-4 159.8 +/- 0.5 (LUPB) Monzonite granodiorite van der Heyden (2004).
11 HFB02-0601-1 148 +/- 1 (LUPB) Hornblende-biotite granodiorite HBI diorite granodiorite dykes cut an extensive basalt-microdiorite complex. Granodiorite contains portions of microdiorite and also occurs as dykes cutting microdiorite. It in turn is cut by microdiorite-basalt dykes.
12 HFB02-3004-2 148.8 +/- 0.6 (LUPB) Kamega granodiorite Phase cuts older hornblende diorite and is cut in turn by N-S mafic dyke swarm.
13 SCB01-1405-1 141 +/- 1.4 (LUPB 2005) Quartz-phryic granodiorite
14 SCB01-1704-1 138.9 +/- 1.2 (LUPB) Chlorite-silicified biotite granodiorite Biotite granodiorite dykes cross-cut hornblende diorite. Contains maximum age of the hornblende-biotite dykes which cut the granodiorite and also thought to have the Monarch.
15 SCB01-4106-2 134.3 +/- 0.2 (LUPB) Chlorite-silicified hornblende granodiorite Granodiorite is nonconformably overlain by stratified rocks of the Salomon Assemblage.
16 V89-49-1 133.9 +/- 0.2 (LUPB) Hornblende-biotite tonalite van der Heyden (2004). Samples is immediately beneath nonconformable contact with Early K (generally Alban) sedimentary and volcanic rocks.
17 SCB01-1301-3 133.4 +/- 0.2 (LUPB) Foliated quartz diorite Pluton appears to intrude Lower Cretaceous volcanoclastic rocks, yet is cut by shear fabric and an undeformed two mica granite that gives a LUPB age of 72 Ma (SCB01-1209-1).
18 V89-67 133.4 +/- 4.3 (LUPB) Chlorite-silicified hornblende granodiorite van der Heyden (2004).
19 B8C-9 132.0 +/- 0.6 (LUPB) Aphanitic granodiorite van der Heyden (2004). Precise age can not be assigned, but minimum age and a 136 Ma upper intercept age suggest rocks are similar to 132-134 Ma samples of Tawehay Peak.
20 SCB01-2306-1 122.8 +/- 1.4 (LUPB) Biotite-quartz diorite/tonalite The tonalite is foliated only within the shear zones and therefore records deformation associated with the shear zones. Samples the basal part of the Hazelton Group.
21 91C01001 119.9 +/- 2 (LUPB) Biotite-quartz diorite Gehrke and Boghosian (2003).
22 HFBW02-0905 118.9 +/- 0.4 (LUPB) Tonalite
23 HFBW02-0902-2 110.3 +/- 0.5 (LUPB) Granite Local contact with Monarch Assemblage(?) volcanic is a fault on west, but appears intrusive on north side of Melban Mt.
24 SCB01-0408 104.6 +/- 2.1 Ma (ArAr [Bz]) Aphanitic phryic andesite The 100% rock sample from Tawehay/Peak contains a rare, thin rhyolite tuff interbedded about 150m above the base which give an inconclusive 113 Ma (minimum) LUPB age. An interval of monzonite volcanic conglomerate separates the succession from underlying volcanic sedimentary strata that yield several LUPB dates ranging from 165 to 112 Ma.
25 HFB02-0101-2 88.8 +/- 0.9 (LUPB) Biotite granodiorite Plutons cut an eclogite zone of intensely strained metavolcanic and metasedimentary rocks north and south of the Bella Coola River valley. Date constrains the youngest episode of Pacific subduction.
26 SCB01-0505-1 79.4 +/- 0.6 (LUPB) Granodiorite to quartz diorite Note: age is based on lower intercept, Jurassic inheritance.
27 SCB01-1209-1 72.9 +/- 0.5 (LUPB) Biotite-quartz diorite This pluton crosscuts shear fabric in diorite that gives a LUPB age of 13.4 Ma (SCB01-1301-3).
28 SCB01-0701-1 72.1 +/- 0.3 (LUPB) Garnet-muscovite granite Good date on 4 Ma scale.
29 OUB003 72.1 +/- 0.3 (LUPB)
30 HFB02-2201-1 68.2 +/- 1.0 (LUPB) Biotite tonalite Pluton cuts granitoids containing metavolcanic screens at Mt Moore and in E. Bendick Arm and is locally deformed within a NW-trending shear zone. In Labrador Channel area (SCD), muscovite-garnet pegmatite and apfite dykes, believed to represent a phase of the Pacific subduction.
31 HFB02-1003-1 67.2 +/- 0.3 (ArAr [Bz]) Muscovite-biotite granite, trans-mylonite The pluton clearly cuts mylonitic rocks of the Porteus shear zone.
32 HFBW02-1203-1 63.9 +/- 0.2 (ArAr [Bz]) Biotite tonalite Quartz olig-biotite-sphene
33 HFB02-0903 63 +/- 0.1 (LUPB) Biotite-quartz rhyolite flow dome The Eocene age of this rhyolite flow and related lapilli-bloc tuff suggest correlation with the Ootsa Lake Group.
34 HFBW02-0201-2 62.9 +/- 0.2 (ArAr [Bz]) Muscovite-biotite granite Provides cooling constraints on this post-tectonic pluton.

REFERENCES
Gehrke, G.E. and Boghosian, N.D. 2000. Reevaluation geology and U-Pb geochronology of the west flank of the Coast Mountains between Bella Coola and Prince Rupert, central British Columbia. In: Nelson, H.K. and McClelland, W.C., eds., Tectonics of the Coast Mountains, Southern Alaska and British Columbia. Geological Society of America, Special Paper 343, pp. 61-75.
Strak, L.C., Hussey, M.G., Mahoney, J.B., Diakov, L.J., Sparks, H.A., Kaiser, E.A., Gleason, T.P. and Woodworth, G.J. 2003. Geology, Neotectonics River area, British Columbia (SD70) and part of (SD57). Geological Survey of Canada, Open File 1463, geologic map, scale 1:50 000, 18 sheets.
van der Heyden, P. 2004. Laramide and post-Laramide orogeny from eastern Bella Coola and adjacent parts of Anahim Lake and Mount Waddington map areas, west-central British Columbia. Geological Survey of Canada, Current Research 2004-02, 14 pp.

BELLA COOLA MINFILE
MAP # MINFILE # NAME COMMODITY STATUS DEPOSIT PROFILE CODE
1 93D0 001 RUSS MO, CU Showing
2 93D0 003 MALACHITE CLIFF CU, AG, MO Showing
3 93D0 005 CU Showing
4 93D0 008 NIFTY AG, CU, AU, ZN, BA, PB Prospect D03 G06
5 93D0 007 KEIN CU, ZN, PB, AS Prospect G06
6 93D0 009 BELLA COOLA CHIEF (L-176) CU, AU, AU Showing
7 93D0 010 SURE COPPER CU Showing
8 93D0 011 BELLA COOLA CU, AU Showing
9 93D0 013 BELLA COOLA AG, AU, CU, PB, ZN Showing
10 93D0 014 NULMAY CU, MO Showing
11 93D0 016 BELLA COOLA VALLEY AG Showing M08
12 93D0 022 SMITLY-COY AU, AG, CU, MO Showing I06
13 93D0 023 JAMTART PB, ZN Showing
14 93D0 027 BELTRICK ARM GT Showing
15 93D0 030 BURNIT BRIDGE MO, PB, CU Showing
16 93D0 035 SWALLOW CREEK KY, BA, CU Showing P02

BELLA COOLA PALEONTOLOGY
MAP # GSC # DATE FOSSILS AGE IDENTIFIER REPORT #
1 65044 1964 Diptera (Linné) ex gr. Staber Cox Early to Middle Jurassic? J.A. Jekelky Km-7-1965-JAU
2 C2-11801 2106001 Rhynchonella (s. str.) ex aff. albanica Ruller Early Jurassic? J.W. Haggart JWH-2001-07
3 C-30641 0106001 Eurypterus (Eurypterus) Eurypterus (Eurypterus) Early Jurassic? J.W. Haggart Pers. Comm., 2003
4 C-30642 0106001 Rhynchonella (s. str.) ex aff. albanica Ruller Early Jurassic? J.W. Haggart Pers. Comm., 2003
5 65045 1964 Diptera (Linné) ex gr. Staber Cox Early to Middle Jurassic? J.A. Jekelky Km-7-1965-JAU
6 65046 1964 Diptera (Linné) ex gr. Staber Cox Early to Middle Jurassic? J.A. Jekelky Km-7-1965-JAU
7 C-306281 1980 Rhynchonella (s. str.) ex aff. albanica Ruller Early to Middle Jurassic? J.A. Jekelky Km-7-1965-JAU
8 C-3061509 2001 Probable calcareous ammonite Probably Bajocian or Callovian T.P. Poolton Pers. Comm., 2002
9 C-306160 170701 Diptera (Linné) ex gr. Staber Cox Late Valangian J.W. Haggart JWH-2001-07
10 C-306162 270701 Diptera (Linné) ex gr. Staber Cox Late Valangian J.W. Haggart JWH-2001-07
11 C-306165 130601 Diptera (Linné) ex gr. Staber Cox Late Valangian J.W. Haggart JWH-2001-07
12 C-306166 130601 Diptera (Linné) ex gr. Staber Cox Late Valangian J.W. Haggart JWH-2001-07
13 C-306168 080601 Polypterid (Polypterid) ammonite fragments Probably Jurassic to Early Cretaceous J.W. Haggart JWH-2001-07
14 C-306169 170701 Diptera (Linné) ex gr. Staber Cox Late Valangian J.W. Haggart JWH-2001-07
15 C-404725 1806002 Trilobites westermanni Poulton & Tipper Earliest Aalenian T.P. Poolton Pers. Comm., 2003
16 C-404726 1906002 Trilobites westermanni Poulton & Tipper Earliest Aalenian T.P. Poolton Pers. Comm., 2003



GSC OPEN FILE 4639
IC 65DB OPEN FILE 2004-13
GEOLOGY
BELLA COOLA AREA
(PARTS OF 93D/01, D/02, D/06, D/07, D/08, D/09, D/10, D/11, D/15 AND D/16)
BRITISH COLUMBIA
Scale 1:150 000/Échelle 1/150 000
Home 2 4 6 8 10 12 Kilometers

OPEN FILE
DOSSIER PUBLIC
4639
Geological Survey of Canada
2004