GEOLOGY OF THE CENTRAL MACMILLAN FOLD BELT

1050 - 3 MAP AREA

Compiled by M.P. Cecile, 1985

Geology by M.P. Cecile, 1984 and the published map of S.L. Blusson (1974).

LEGEND FOR MAP SYMBOLS

Geological boundary (defined, approximate, assumed, speculative)

Bedding (horizontal, inclined, vertical, overturned)

Cleavage (inclined, vertical)

Normal fault (defined, approximate, assumed; symbol on hanging wall side)
Reverse fault (defined, approximate, assumed; teeth on hanging wall side)

Anticline, syncline (arrow in direction of plunge)
Anticline, syncline (overturned)

Minor fold (showing fold plunge and dip of axial plane)

Granitic dyke (Cretaceous)

Vein deposit: Ba - barite

Ba - n — Barite Nodules in shale or argillite

Ⓕ ⓕ — Fossil locality: F - collection taken, f - no collection taken; g - graptolites, p-vascular plants, s - shelly fauna

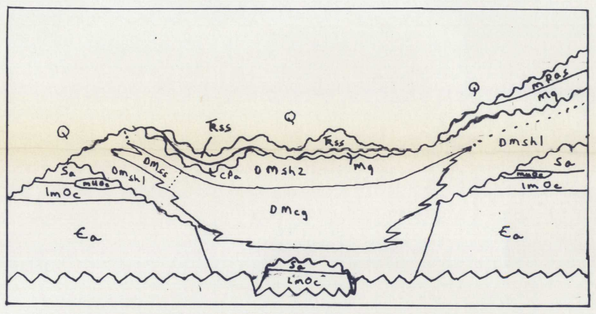
Ⓜ — Microfossil collection taken (for conodont identification)

X — Outcrop in an otherwise extensively covered area (usually shown in valley bottoms)

ACKNOWLEDGEMENTS

This area was mapped by ground traverses positioned by helicopter from MacMillan Pass. Helic opter support was provided by Northern Mountain Helicopters (500D piloted by Norm Smith). Expediting support was provided by Ross River Services in Ross River, Y.T.

SCHEMATIC STRATIGRAPHIC CROSS-SECTION



MAP NOTES

1 - The youngest structural features found in the MacMillan fold belt are north - northeast trending broad, open cross folds and a north to north northeast trending fracture cleavage

2 - Log casts as long as 1 m are found at the base of conglomerate beds along this ridge; vascular plant impressions are also abundant in associated shale beds

3 - Good exposure of the sub-DMsh1a,b, unconformity.

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CRETACEOUS

Alteration halo ; contact metamorphic zone around Kg intrusive rocks; consists of well indurated slightly recrystallized argillite, shale, siltstone, schist, phyllite, crystalline carbonate and skarn

DEVONIAN AND MISSISSIPPIAN
UPPER DEVONIAN AND LOWER MISSISSIPPIAN

DMsh1a,b <DMss — Same unit as shown on the right but now containing mappable units of lithic sandstone and conglomerate (DMss) which may be lateral, "out-of-channel" tongues of the chert pebble conglomerate unit.

0 5 km

1:50 000 SCALE

Q — Covered by unconsolidated Quaternary strata; sub-Quaternary contacts cannot be inferred in this area

CRETACEOUS

Kgr — Quartz monzonite and granite; b - with biotite; bh - with biotite and hornblende

TRIASSIC

TRss — Sandstone, buff weathering; argillite, buff weathering; shale black to brownish grey; sandstone is generally fine grained, calcareous, and extensively ripple cross-laminated; minor orange weathering platy limestone; thickness estimated at 0 to 200 m; unfossiliferous

CARBONIFEROUS AND PERMIAN

CPa — Argillite, green; minor siltstone quartzite, and black shale; often contains abundant and very large round to mammillated barite nodules

MISSISSIPPIAN AND PENNSYLVANIAN

MPas* — Argillite, grey; shale, black; thickness estimated at 10 to 100 m; unfossiliferous

MISSISSIPPIAN

Mq* — Quartzite, massive, grey white; slabby to blocky partings; minor dark grey argillite; estimated to be 200 m thick; unfossiliferous

* found only in northeastern 1050 - 3

DEVONIAN AND MISSISSIPPIAN
UPPER DEVONIAN AND MISSISSIPPIAN

DMsh2a — Shale, black with brown weathering interstratified with 30-50% thin beds of laminated to hummocky cross laminated quarzite; estimated to be 200 to 400 m thick; unfossiliferous

DMsh2b — Shale, black and chert, black; both are blu ish white weathering; estimated to be 0 to 200 m thick; unfossiliferous

DMcg — Conglomerate, chert-pebble, dull brownish grey at a distance; minor beds and units of lithic sandstone, brown weathering black shale, and bluish weathering siliceous black shale; conglomerate generally moderate to poorly sorted, medium to thick bedded; conglomerate framework is generally intact, but can be impacted or suspended in a sandstone matrix; clasts are mainly chert but locally as much as 5 - 10% are argillite, shale, and/or quartzite; chert clasts are black, grey, white and green; clast colours are variable and this variation follows colour changes in near-by outcrops of the lmOc which is the source for most of the chert clasts; thickness measured in the 105 O - 4 map area is 750 m, estimated range is 0 to 1000 m; associated shale beds often contain abundant vascular plant fragments and in the northwestern 105 O - 3 map area large meter scale log casts are found at the base of thick conglomerate beds

DMsh1a — Shale, black with brown weathering interstratified with beds of lithic sandstone and chert pebble conlomerate; estimated to be 200 to 400 m thick; unfossiliferous

DMsh1b <eDl — Shale, black and chert, black; both are blu ish white weathering; estimated to be 0 to 200 m thick; unfossiliferous; eDl - local unit of shaly limestone; calcareous black shale; estimated to be 20 - 100 m thick; contains graptolites, and shelly fauna

SILURIAN
LOWER TO UPPER SILURIAN

Sa — Argillite, rusty dark green, buff weathering; minor black shale and chert; locally includes a very distinctive bright orange weathering, thick dolostone bed; thickness measured at 20-30 m in the 1050 - 15 map area; graptolites are often found in associated shale beds

ORDOVICIAN
MIDDLE AND UPPER ORDOVICIAN

muOc — Chert, black, thin to medium bedded; shale siliceous, black with blu ish-white weathering; thickness measured at, 15-25 m in the 1050 - 15 map area; abundantly graptolitic especially Diplograptids; this unit was rarely distinguished from the lmOc and Sa in the 1050 - 3 map area

LOWER AND MIDDLE ORDOVICIAN

lmOc — Chert, white, green, dark grey and black; upper one half medium to thick bedded, resistant and often with extensively bioturbated beds; thin to medium bedded, recessive argillaceous chert in the lower one half; minor shale and argillite; upper part locally hosts meter scale grey limestone nodules; thickness measured at 80 - 130 m in the 1050 - 15 map area; graptolitic in the 1050 - 15 map area, however elsewhere graptolites are rare, in the adjacent 105J - 15 map area Early Ordovician (late Tremadoc to Arenig) were collected from beneath the upper resistant part (B.S. Norford and S.P.Gordey, persn. comm., 1985)

CAMBRIAN
LOWER TO UPPER? CAMBRIAN

Ea — Argillite, buff, green, pale green, thin bedded; minor quartzite and siltstone, and in the southwest corner of 1050 - 3 a unit of platy to slabby grey limestone, argillite and shale underlain by a paraconglomerate containing shale, limestone, and sandstone clasts; the limestone and paraconglomerate are close to or at the top of this succession; thickness estimated at 400 m, in the northeastern 1050 - 14 map area, however in 1050 - 3 the unit is tectonically thickened on the order of 300%; has the trace fossil Planolites, and 1/4 cm wide criss-crossing, bedding plane parallel, grazing traces; a single Archeocyathid was collected from an associated volcanic unit in the 1050 - 14 map area; multi-branched graptolites were found with the limestone in southwest 1050 - 3

TECTONO-STRATIGRAPHIC MAP-UNIT PREFIX 't'

't'

Except in the northeastern corner of the 1050 - 14 map area virtually all map-units are structurally thickened by about 300%; the only exceptions are the very thick and brittle Dcg unit (chert-pebble conglomerate) and some immediately adjacent strata; these rocks have detached from underlying and overlying strata and are open to tightly folded, and faulted. Structural repetition is achieved by stacking of folds, isoclinal folds, and thrust fault repeats. Internally there are multiple detach ments in which most stratigraphic units detach from each other resulting in a succession of tectonic units which mimic the original stratigraphy. Such a unit is distinguished by the prefix 't' meaning: a tectono-stratigraphic unit composed of structural repeats of mainly one stratigraphic unit (the one designated behind the prefix) but which contains fault slices, anticlinal fold noses and synclinal fold keels of other stratigraphic units.