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GEOLOGICAL SURVEY OF CANADA | COMMISSION GÉOLOGIQUE DU CANADA

LEGEND

STRATIFIED ROCKS

CENOZOIC

QUATERNARY
PLEISTOCENE AND RECENT

Q — *Glacial till, alluvium, and colluvium; unit designators in parentheses are the inferred underlying bedrock units.*

PLEISTOCENE

Pb — *Basalt or andesite flows and minor breccia; similar rocks south of Hoan Creek in 103P/06 yielded a preliminary whole rock $^{40}Ar/^{39}Ar$ age of 175 000 ± 50 000 years (V.J. McNicoll, unpublished data, 1996; see Evenchick et al., 1997).*

MESOZOIC

JURASSIC AND CRETACEOUS
UPPER JURASSIC AND LOWER CRETACEOUS
BOWSER LAKE GROUP

JKBu — *Undivided Bowser Lake Group; predominately sandstone and siltstone.*

JKBCR — *CRANBERRY RIVER ASSEMBLAGE: sections observed or assumed to be at least tens to several hundred metres thick, consisting of >95% dark gray to black siltstone to silty mudstone and <5% very fine grained sandstone to coarse siltstone; siltstone to silty mudstone is generally massive, rarely faintly laminated, pyritic, or bioturbated; very fine-grained sandstone occurs as thick laminations or thin beds, commonly massive, rarely vaguely laminated or slightly normal graded, and locally rippled.*

UPPER MIDDLE TO UPPER JURASSIC
BOWSER LAKE GROUP

JBRA — *RITCHIE-ALGER ASSEMBLAGE (submarine fan assemblage): sandstone, siltstone, and rare conglomerate; approximately equal proportions of sheet-like intervals, up to 50 m thick, dominated either by siltstone, shale, and very fine-grained sandstone, or by medium-grained sandstone; siltstone and/or fine-grained sandstone is dark grey- and black-weathering, sandstone is medium- and light-grey-weathering; abundant turbidite features (e.g. Bouma cycles, flame structures, flute-and-groove casts); conglomerate includes debris-flow units; marine fossils.*

Geological boundary (approximate, assumed or inferred under Q)

Individual outcrop area within belts of sparse outcrop

Trace of individual beds from ground observation and airphoto interpretation

Linear features observed on airphotos; inferred to be joints, faults, or glacial in origin

Linear features in Q, reflecting bedrock and glacial features (see Notes)

Anticline, trace of axial surface (defined, approximate, overturned)

Syncline, trace of axial surface (defined, approximate, overturned)

Bedding (upright top known, overturned, top unknown, vertical)

Cleavage (inclined, vertical)

Intersection of bedding and cleavage (inclined, horizontal)

Joint (inclined, vertical)

Dyke

Glacial striations (direction known, direction unknown)

Fossil locality (catalogue number) — C-1234

DESCRIPTIVE NOTES

This open file replaces Open File 3224 (Evenchick, 1996). It incorporates the new stratigraphic terminology of the Bowser Lake Group, identifies a thick siltstone unit as the Cranberry River assemblage (a new unit of the Bowser Lake Group), and includes the age of the Cenozoic volcanic flows, now known to be Pleistocene. Files used to create this map will be available in digital format for use with GIS and database programs.

Beneath the extensive Quaternary cover, bedrock in Cranberry River map area is sandstone and siltstone of the Jurassic to Early Cretaceous Bowser Lake Group and Cenozoic volcanic rock. Sandstone occurs as thin to thick beds of medium- to fine-grained lithic to arkosic arenite, forming resistant weathering sheets tens of metres thick. Siltstone to silt-rich mudstone (locally pyritic) occurs as laminated and massive units up to tens of metres thick and as the tops of fining upward beds in dominantly sandstone units. Common sedimentary structures are normal grading, flute casts, grooves, cross-lamination, rip-up clasts, and synsedimentary folds. Sedimentary structures and overall succession are the basis for interpretation of these strata as turbidites. The strata are part of a large belt of turbiditic rocks in the western Bowser Basin known as the Ritchie-Alger assemblage of the Bowser Lake Group (Evenchick *et al.*, 2004; Evenchick and Thorkelson, 2005). Strata and structural geometry are similar to those in Brown Bear Lake area to the north (Evenchick and Mustard, 2006) and neighbouring parts of Kiteen River map area to the south (Haggart, 1998). Interpretation of the structure there results in an estimate of 1500 m for the minimum thickness of the turbidites. Areas flanking Cranberry River are underlain by a unit of siltstone up to several 100 metres thick. The informal name Cranberry River assemblage (of the Bowser Lake Group) is herein proposed for these strata.

Structure in the turbidites is dominated by northwest-trending, gently plunging, chevron-style folds tens to several hundred metres in wavelength. Folds are upright, overturned to the northeast and to the southwest. Folds in the southwest corner of the map trend more northerly than elsewhere, and are part of a transition to northeast-trending structures which dominate regions farther southwest (Evenchick and Mustard, 1996). Cleavage is common in siltstone and rare in sandstone. The grade of metamorphism is sub-greenschist facies.

The youngest consolidated rocks in the map area are basalt or andesite lava flows exposed in three areas. The columnar-jointed flows form conspicuous cliffs in areas of otherwise low relief. The volcanic rocks appear to be erosional remnants of originally much more extensive flows that were extruded on an irregular paleovalley surface at elevations up to about 150 m above the present Nass River level. The flows are undeformed but are locally glacially grooved, striated, and covered with glacial deposits. The glacial cover, extensive erosion, and lack of deformation, suggest a Pliocene or Quaternary age for the volcanics. Similar rocks south of Hoan Creek, about 50 km southwest of the flows on this map, yielded a preliminary whole rock $^{40}Ar/^{39}Ar$ age of 175 000 ± 50 000 years (V.J. McNicoll, unpublished data, in Evenchick *et al.*, 1997).

Most bedrock is covered by poorly sorted surficial deposits, mainly till. These deposits are up to tens of metres thick in the lowest elevations of the map area, and variably thinner over most of the rest of the area below treeline. Lineaments in areas covered mainly by surficial deposits are shown on the map by grey lines. Northwest-trending ones are parallel with the dominant topographic grain in the north half of the area, they are parallel with, and inferred to be controlled by, bedrock structure. Regularly spaced north-trending lineaments in the north-central map area, and northeast-trending ones in the northwest and central part of the map reflect drumlinized topography. Other wider and irregularly space northeast-trending lineaments may be related to a common joint set in the bedrock which is perpendicular to fold axes (“a-c” joints). Widely spaced, east-trending (E10N) lineaments are several kilometres long and have significant topographic expression.

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Geology by C.A. Evenchick and P.S. Mustard, with the assistance of C. Huggins and K. Holm (1995), and contributions from G.J. Woodsworth (1995)

Map compilation by C.A. Evenchick and P.S. Mustard (1996, 2005)

Digital geological cartography by C.A. Evenchick and D. McKee, Geological Survey of Canada, and C.L. Wagner, Earth Sciences Sector Information Division (ESS Info),

Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada

OPEN FILE 5303

GEOLOGY

CRANBERRY RIVER

BRITISH COLUMBIA

Scale 1:50 000/Échelle 1/50 000

kilometres 1 0 1 2 3 4 kilomètres

Universal Transverse Mercator Projection
North American Datum 1927

Projection transverse universelle de Mercator
Système de référence géodésique nord-américain, 1927

Digital base map from data compiled by Geomatics Canada modified by ESS Info

Mean magnetic declination 2006, 21°39'E, decreasing 17.7' annually

Elevations in metres above mean sea level

Contour interval 20 metres

OPEN FILE
DOSSIER PUBLIC
5303
GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA
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