GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

SHEET 94 L

LEGEND

CENOZOIC

QUATERNARY
PLEISTOCENE AND RECENT

13 Glacial till; gravel, sand, and silt; lake clay

TERTIARY (?)

12 Glassy, pisolitic, brecciated rhyolite

MESOZOIC

CRETACEOUS (?)

11 Mainly biotite quartz monzonite and granodiorite

JURASSIC (?)

10 Chert-pebble conglomerate, sandstone, argillite, vesicular lava, agglomerate

TRIASSIC (?)

9 Massive greenstone; 9a, bleached and pyritized volcanic rocks; may include some sedimentary rocks

PALAEOZOIC

PERMIAN (?)

8 Greenstone, limestone; minor hornfels

MISSISSIPPIAN
LOWER MISSISSIPPIAN

7 Limestone, chert-nodule limestone, chert

DEVONIAN AND MISSISSIPPIAN
UPPER DEVONIAN AND LOWER MISSISSIPPIAN

6 6a, argillite, siliceous argillite, chert; 6b, agglomerate, vesicular greenstone, tuff; may be younger or older

SILURIAN
MIDDLE SILURIAN

5 Dolomite, chert-nodule dolomite, sandstone, quartzite; 5a, may include some 4; 5b, impure siltstone, age not definitely established

CAMBRIAN AND ORDOVICIAN

4 Limestone, phyllitic limestone, calcareous phyllite, phyllite, argillite, sandstone; slate, black shale; includes sills and dykes of greenstone; 4a, may include younger rocks; 4b, may include younger and older rocks

CAMBRIAN
LOWER CAMBRIAN

3 Limestone, dolomite; minor slate and shale; 3a, may be Precambrian; 3b, limestone, limestone conglomerate, phyllitic limestone, calcareous phyllite; age not definitely established

PRECAMBRIAN

CAMBRIAN AND/OR PRECAMBRIAN

2 2a, quartzite, pebble conglomerate, siltstone, slate, shale; Lower Cambrian; 2b, sandstone, quartzite, argillite, slate, quartz-pebble conglomerate, limestone conglomerate

PRECAMBRIAN

1 Limestone, quartzite, phyllite, schist, slate, argillite; includes small sills and dykes of greenstone; may include some Cambrian rocks

METAMORPHIC ROCKS

A Calcareous phyllite, phyllite, micaceous quartzite, schist, granitic gneiss, crystalline limestone, limestone, greenstone, pegmatite, hornfels; may be Cambro-Ordovician and older

Geological boundary (defined, approximate, assumed)
Limit of geological mapping
Bedding (inclined, vertical, overturned)
Schistosity and gneissosity (inclined, vertical, dip unknown)
Fault (defined, approximate, assumed)
Fault (inclined, arrows indicate relative movement)
Anticline (defined, approximate)
Syncline (defined, approximate)
Anticline, syncline (overturned)
Glacial striae, drift ridge or rock groove (showing direction of ice movement)
Fossil locality
Mineral prospect or occurrence X Cu

Mineral Symbols

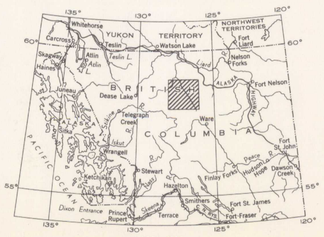
Copper . . . . Cu — Lead . . . . . Pb
Fluorite . . . . fl — Silver . . . . . Ag

Geology by H. Gabrielse, 1957, 1958, 1959

In response to public demand for earlier publication, Preliminary Series maps are issued in this simplified form and will be clearer to read if all or some of the map-units are hand-coloured

Air photographs covering this area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa

PUBLISHED, 1960
COPIES OF THIS MAP MAY BE OBTAINED FROM THE DIRECTOR, GEOLOGICAL SURVEY OF CANADA, OTTAWA



MAP 57-1959
GEOLOGY
KECHIKA
CASSIAR DISTRICT
BRITISH COLUMBIA

Scale: One Inch to Four Miles = 1/253,440
Miles
4 2 0 4 8 12

PRINTED BY THE SURVEYS AND MAPPING BRANCH

LEGEND

Cabin
Trail
Intermittent stream
Marsh
Glacier
Contours (interval 1,000 feet)
Height in feet above mean sea-level + 6375

Cartography by the Geological Survey of Canada, 1960

Approximate magnetic declination, 30° 50' East

DESCRIPTIVE NOTES

Long pack-train routes lead to the map-area from the Alaska Highway, McDame Post, Dease Lake, and Fort Ware. Good horse-trails are abundant except southwest of the Dall Lake-Ludwig Creek valley. Kechika River, Gataga River up to the rapids about 2½ miles below Through Creek, and Frog River up to Jackstone Creek are all navigable. Boats brought upstream from mile 539.3, Alaska Highway, however, must pass hazardous stretches on Liard River and lower Kechika River. Numerous lakes and parts of Kechika and Gataga Rivers can be used by float-equipped aircraft based at Watson Lake, Yukon Territory, and wheel-equipped aircraft have landed in a large meadow in the Rocky Mountain Trench west of Terminus Mountain.

The Rocky Mountain Trench separates the Cassiar Mountains to the southwest from the Rocky Mountains to the northeast. The divide between Pacific and Arctic drainage winds irregularly through the southwest part of the map-area.

A metamorphic terrain (A), lying between the Dall Lake-Ludwig Creek valley and the Cassiar batholith (11), includes three units of lithologically contrasting rocks. Southwesterly from a point about 10 miles south of the upper end of Dall Lake, a band of granitic gneiss as much as 2 miles wide flanks the eastern contact of the Cassiar batholith. The granitic gneiss is bordered to the northeast by a belt of gneissic feldspathic quartzite, quartzite, schist, and crystalline limestone that attains a maximum width of about 8 miles north and south of Rainbow River. These rocks grade easterly into calcareous phyllites, phyllitic limestones, and limestones forming a belt as much as 6 miles wide along Jackstone Creek. The phyllitic rocks contain some greenstone bodies, and in general resemble rocks of Cambrian and Ordovician age to the northwest in Cry Lake map-area.

Well-bedded Precambrian strata (1), probably more than 3,500 feet thick, outcrop in two southeasterly trending belts between the Rocky Mountain Trench and the Dall Lake-Ludwig Creek valley. Limestone predominates in the exposures along Frog River, whereas schist, phyllite, and impure quartzite are the most abundant rocks near Moodie Lakes.

A thick sequence of well-bedded, clastic sedimentary rocks (2b), underlying an extensive area northeast of Netson Lake, may be of Cambrian and/or Precambrian age.

Lower Cambrian strata (2a, 3) east and southeast of Dall Lake comprise a lower quartzite unit (2a) as much as 2,000 feet thick and an upper, fossiliferous limestone unit (3) at least 1,000 feet thick. These rocks are apparently conformable with underlying Precambrian rocks and the boundary has been drawn arbitrarily at the top of a conspicuous red and green slate and shale sequence. Near Hisaza Creek the upper part of the quartzite unit contains much argillite and impure, dark-weathering quartzite, whereas the lower part consists essentially of white, vitreous quartzite.

Prominent limestone ribs (3) east of Kechika River and along Gataga River are believed to be of Lower Cambrian age although fossils have been found only on Terminus Mountain. These rocks include minor amounts of sandstone, quartzite, and argillite. Calcareous rocks on the limbs of the anticlinorium northeast of Netson Lake may be of Cambrian age but conclusive evidence has not been obtained.

Thin-bedded, incompetent strata of Cambrian and Ordovician age (4), at least 2,500 feet thick and possibly more than 5,000 feet thick, are widespread in the northwestern and eastern parts of the map-area. Both older and younger rocks may be included in this unit in the structurally complex area between Kechika and Gataga Rivers and the Netson Lake valley.

Near Turnagain River Middle Silurian rocks (5), more than 1,500 feet thick, overlie disconformably Cambrian and Ordovician strata (4). Well-bedded, impure siltstones underlying part of Forsberg Ridge may be of the same age but conclusive evidence for this is lacking.

Devonian and Mississippian rocks (6) overlie unconformably Silurian rocks northwest of Turnagain River. Volcanic rocks (6b) of possible Devonian and/or Mississippian age are preserved in a northeasterly overturned syncline on Gataga Mountain.

Northwest of Moodie Creek fossiliferous carbonate rocks of Mississippian age (7) occur as tight infolds in the underlying strata (4a).

Greenstone and hornfels of Permian (?) age (8) form a belt of rocks that trends easterly through the Cassiar batholith (11) south of Tucho Lake and Lamarque Pass. Greenstone and minor limestone outcrop in the southern part of the map-area west of Frog River.

In the southwesternmost part of the map-area two small areas are underlain by Mesozoic volcanic and sedimentary rocks (9,10).

Cretaceous (?) granitic rocks (11) of the Cassiar batholith occupy much of the southwestern part of the area.

Small bodies of Tertiary (?) volcanic rocks (12) outcrop northwest of Turnagain River near the mouth of Dall River.

Glacial, glacio-fluvial, and fluvial deposits (13) locally form thick overburden in the major valleys.

During Pleistocene time an ice-sheet advanced northeasterly in the Cassiar Mountains and deposited glacial erratics to an elevation of at least 7,200 feet between Denetiah Lake and Frog River. Apparently, ice reaching the Kechika valley south of Terminus Mountain was deflected to the northwest by the barrier of the Rocky Mountains. North of Terminus Mountain the movement of ice was again northeasterly. Within the map-area the Rocky Mountains were affected only by local alpine and valley glaciation except for the relatively low-lying terrain north of Terminus Mountain.

Asymmetrical and overturned folds, whose axial planes dip steeply to the southwest, are prominent in both the Rocky and Cassiar Mountains. Plunging, overturned and asymmetrical folds are particularly evident in the Lower Cambrian and Precambrian rocks between Dall Lake and the Rocky Mountain Trench. Tight, northeasterly overturned folds, possibly complicated by thrusting, are inferred from the rock distribution in the range between Kechika River and the Netson Lake valley and in the range between Kechika and Gataga Rivers. East of Netson Lake the major structure appears to be an anticlinorium, the northeast limb of which is overturned to the northeast.

Northwesterly trending faults appear to be abundant in the Cassiar Mountains. Strata and structures in the Cassiar and Rocky Mountains are truncated at acute angles by the Rocky Mountain Trench. The general trend of strata in the Rocky Mountains is more northerly than that in the Cassiar Mountains.

Exploration work has been carried out on a lead-silver-copper showing in calcareous phyllite and phyllitic limestone 9.6 miles south of the confluence of Jackstone Creek and Frog River. Fluorite was noted in a greenstone body about 10 miles east-northeast up a creek that flows into Dall River 2 miles north of Dall Lake. Greenstones and associated metamorphosed sedimentary rocks southwest of Tucho Lake have been bleached and pyritized as have greenstones south of Pitman River. Minor copper stain occurs in a north-northwesterly trending shear zone in granitic rocks on the west side of a peak, elevation 7,950 feet, near the headwaters of Jackstone Creek. Minor chalcopyrite was noted in veinlets cutting silicified limestone on the east shore of Dall Lake about 3 miles from the south end of the lake. Copper minerals have been found in the mountains immediately northeast of the mouth of Gataga River. Minor tremolitic asbestos forms veinlets in greenstone on Gataga Mountain.

MAP 57-1959
KECHIKA
BRITISH COLUMBIA
SHEET 94 L

5.1.2
A, Geol.
Kechika, B.C.
Map. 57-1959 Prelim. ser.