GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

SHEET 105 G

LEGEND

Map-units 10, 7, 2a, B, appear on Map 7-1960 "Quiet Lake" only

CENOZOIC

QUATERNARY

12	Unconsolidated glacial and alluvial deposits

TERTIARY

11	Dark brown and black basalt flows

PALEOCENE

10	Shale, sandstone, and conglomerate

MESOZOIC

JURASSIC AND/OR CRETACEOUS

9	Medium- to coarse-grained, biotite granodiorite and quartz monzonite, in part porphyritic; minor diorite, granite, and gneiss

PALAEOZOIC

MISSISSIPPIAN (?)

8	Current-bedded, ripple-marked, dark grey limestone; minor dark grey and brown argillite, and dolomite

MISSISSIPPIAN (?) OR EARLIER

7	Heterogeneous, shattered hornblende syenite, associated with unit 6
6	6a, partly altered green volcanic rocks, greenstone, meta-diorite; minor serpentine and amphibolite; 6b, green and maroon breccias, tuffs, and flows; minor meta-diorite, slate, chert, and greywacke; 6c, buff, rusty, and pale green felsic breccias and tuffs; minor chert and brown crinoidal limestone; 6d, massive grey and cream limestone
5	Brown and black-weathering, siliceous slate and shale, thin-bedded varicoloured cherts with shaly partings, speckled grey and brownish grey greywacke; minor chert pebble conglomerate

SILURIAN AND DEVONIAN

4	Grey and buff-weathering, thick-bedded dolomite with local lenses of chert; buff to reddish weathering, well-bedded, dark grey dolomite, and sandy and silty dolomites; buff, grey and white, lichen-covered quartzite

ORDOVICIAN AND SILURIAN

3	Black slate, platy black limestone, grey and pink siltstone; 3a, minor volcanic breccia

CAMBRIAN

MIDDLE AND UPPER CAMBRIAN (?)

2	Lustrous phyllite; grey and orange-weathering phyllite, in part limy and dolomitic, and locally changed to hornfels; minor greenstone, limestone, chert, greywacke, and phyllitic quartzite (perhaps younger); 2a, greenstone breccia and tuff

LOWER CAMBRIAN

1	1a, massive grey and buff quartzite; 1b, grey and brownish grey phyllite; 1c, grey, buff, and orange-weathering, grey limestone, locally oolitic; 1d, limestone, quartzite, and phyllite, undivided

A	Quartz-biotite and quartz-chlorite schist, micaceous quartzite, hornfels; minor phyllite and limestone
B	Limestone and minor dolomite associated with A and C
C	Micaceous, quartzose gneiss, granitoid gneiss; minor quartz-biotite schist
D	Dunite; minor peridotite, pyroxenite, and serpentinized equivalents; gabbro and diorite

Geological boundary (defined, approximate or assumed)
Limit of geological mapping, unmapped area
Bedding (horizontal, inclined, vertical, overturned)
Bedding (dip known, tops unknown)
Bedding (estimated attitudes, includes foliation in metamorphic rocks; dip g, gentle, m, medium, s, steep)
Foliation (horizontal, inclined, vertical)
Fault (defined, approximate or assumed)
Thrust fault (defined, approximate or assumed)
Anticline (defined, approximate)
Syncline (defined, approximate)
Fossil locality (F)
Mineral occurrence or prospect × Cu
Rock altered to hornfels

MINERAL SYMBOLS

Asbestos	asb	Lead	Pb
Barite	ba	Molybdenum	Mo
Copper	Cu	Silver	Ag
Gold	Au	Tungsten	W

Geology by J.O. Wheeler, 1958, 1959; L.H. Green and J.A. Roddick, 1959

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

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

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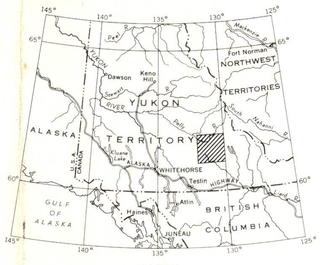

INDEX MAP

MAP 8-1960
GEOLOGY
FINLAYSON LAKE
YUKON TERRITORY

Scale: One Inch to Four Miles = 1/253,440

Miles 4 2 0 4 8 12

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

inches 0 1 2
0 1 2 3 4 5 centimetres

YUKON GEOLOGICAL SURVEY

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

DESCRIPTIVE NOTES

Within the map-area both the Liard and Pelly rivers are navigable by small boat although a portage is required on Pelly River at Hoole Canyon, just west of the map-area. Many of the lakes are suitable for float-equipped aircraft. Horses can travel in the main valleys although timber and soft ground hinder them north of the line marked by Pelly River, Campbell Creek, and Wolverine Lake.

Ice covered all or most of the area during the Pleistocene. It moved west-northwesterly across Pelly Plateau and northwesterly across the mountains near North Lake.

Quartzites (1a) and limestones (1c), which outcrop near the bend in Liard River, are similar to rocks in the Wolf Lake map-area that have been assigned a Lower Cambrian age. Lustrous phyllites (2) bordering Tintina Valley (occupied in the map-area by the Pelly, Hoole, and Black Rivers) continue northwestward into the Quiet Lake map-area, where they lie above Lower Cambrian limestone and beneath graptolitic slates ranging in age from Lower Ordovician to Middle Silurian. Associated with the phyllites in both map-areas are numerous bodies of greenstone. Some appear to be contemporaneous with the phyllites, others are probably younger. Overturned siltstone beds (3), 6 miles southeast of peak 6747, contain Lower Silurian graptolites. Volcanic breccia (3a), occurring northwest of McNeil River, is similar to that overlying Silurian graptolitic beds in Quiet Lake map-area.

Unit 4 consists of three members having a total thickness of more than 3,500 feet southeast of peak 6747. The basal member, exposed south of Indigo Lake, west of McNeil Lake, and northwest of peak 6747, is composed of about 1,000 feet of sandy and silty dolomite and minor red slate which grades upward into at least 400 feet of thick-bedded dolomite. Dolomite breccia and thick-bedded dolomite with chert lenses contain Silurian fossils 4½ miles north of the upper end of McNeil Lake. The middle member comprises interbedded dolomitic sandstones and quartzite characterized by current-bedding and ripple-marks. It is probably over 1,000 feet thick southeast of peak 6747. The upper member consists of dark grey to black dolomite containing Middle Devonian fossils. The principal occurrence in the northeastern part of the St. Cyr Range is about 800 feet thick. Thin sections of all three members are present near McEvoy Lake. North of the lake the rocks are chiefly sandy and silty dolomites and quartzites. South of the lake, on the eastern boundary of the map-area, the quartzites are overlain by fossiliferous buff and light grey dolomites.

Dark, clastic sedimentary rocks and bedded cherts (5) lie disconformably on units 2 and 4. The sedimentary rocks are similar to rocks containing possible fossil plants in the southwestern part of the Tay River map-area. Between Fortin Creek and Pelly River, unit 5 is characterized by dark cherts in beds a few inches thick separated by thin layers of black phyllite. East of Fortin Creek it comprises black shales, greywackes, and minor chert-pebble conglomerate.

North of Tintina Valley the volcanic rocks (6a) vary considerably. On the ridge northeast of Wolverine Lake they consist of foliated, fine-grained, pale greenstone. Northwest from this ridge to north of Pelly River they consist of sheared and altered basic flows, diorite, and minor serpentine. Small areas of limestone (6d) associated with the volcanic rocks are believed to be contemporaneous with them. The age of unit 6a could not be established north of Tintina Valley but close spatial relationship with unit 5 suggests a Mississippian age. South of Tintina Valley both greenstones and felsic volcanic rocks overlie lustrous phyllite (2) and, less commonly, Silurian to Devonian carbonates (4) and clastic sedimentary rocks (5).

The map-area can be divided structurally into six northwest-trending belts. From southwest to northeast these are: 1) a belt of thrust- and block-faulted Palaeozoic and metamorphic rocks around McNeil Lake, 2) highly folded and thrust-faulted Palaeozoic rocks adjacent to Tintina Valley, 3) Tintina fault or fault zone, 4) metamorphic and granitic rocks with apparent open folding, 5) an area underlain by Mississippian volcanic and sedimentary rocks where the structure is unknown, and 6) a broad arch composed of granitic and Palaeozoic sedimentary rocks around McEvoy Lake.

The structure of the rocks around McNeil Lake is obscure. Structureless volcanic rocks (6) overlying phyllites (2) contain slices of competent carbonate rocks (4). West, south, and southeast of McNeil Lake a gently warped plate of medium-grade metamorphic rocks is thrust over broad areas of unit 5. Within the area underlain by unit 5 are fault blocks of unit 4 that are themselves cut by northeast-directed thrust faults.

The disturbed belt southwest of Tintina Valley consists of lustrous phyllite (2) adjacent to Tintina Valley and Palaeozoic rocks (2, 4, 5, and 8) farther southwest. The structure of the lustrous phyllites (2) is complex and much of the bedding has been destroyed by the development of cleavage. The Palaeozoic rocks (2, 4, 5, and 8) appear to consist of segments of tight folds that have been broken by thrust faults. Near the headwaters of Black River this disturbed belt is terminated by granitic rocks.

The dominant structure in the map-area is the Tintina fault. It separates two distinctly different geological terranes, the folded and faulted but relatively unmetamorphosed Palaeozoic strata to the southwest, and the metamorphic and granitic rocks to the northeast. As the fault (or fault zone) is approached from either side, steeper dips and more shearing, parallel with the trench, are visible. Although well-marked topographically by Tintina Valley, the fault is not exposed in the map-area. Tertiary flows and Pleistocene and Recent deposits in the valley appear to be undisturbed by movement on the Tintina fault, but Paleocene rocks near Ross River in Quiet Lake map-area are tilted.

The metamorphic rocks northeast of Tintina Valley dip steeply near the valley, but elsewhere, rather gently. Large recumbent folds such as that exposed on the west face of peak 7721 may be common in this belt. Northwest trends, parallel with the Tintina fault, predominate except in the area of schist and granitic gneisses (C) between North River and peak 7184, where east and northeast trends are common.

The structure of the Mississippian (?) sedimentary (5) and volcanic (6) rocks is unknown. Some outcrops are sheared and mylonite is developed.

Near McEvoy Lake lustrous phyllite (2) is exposed in an arch intruded by granitic rocks (9). North of McEvoy Lake younger Palaeozoic rocks outcrop in narrow bands parallel with the arch. South of the lake isolated outcrops of Silurian to Devonian rocks (4) appear to be detached blocks thrust on to both metamorphosed lustrous phyllite (2) and Mississippian sedimentary rocks (5).

No mineral deposits are being developed at the present time in the map-area. Chalcopyrite has replaced hornfels at the head of Old Gold Creek on a property explored by Newmont Corp., from 1955 to 1957. Scattered base-metal minerals were noted in the older Palaeozoic rocks southwest of Tintina Valley. The Lower Cambrian limestone appears to be the most favourable host rock and probably warrants detailed prospecting.

LEGEND

Intermittent stream
Marsh
Contours (interval 1000 feet)
Height in feet above mean sea-level 7184

Cartography by the Geological Survey of Canada, 1960

Approximate magnetic declination, 33° 54' East

Geographical names subject to revision

MAP 8-1960
FINLAYSON LAKE
YUKON TERRITORY
SHEET 105 G

013885