GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

SHEET 105F

LEGEND

Map-units 6d, 3a, appear on Map 8-1960, "Finlayson 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

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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 ×Mo
Rock altered to hornfels

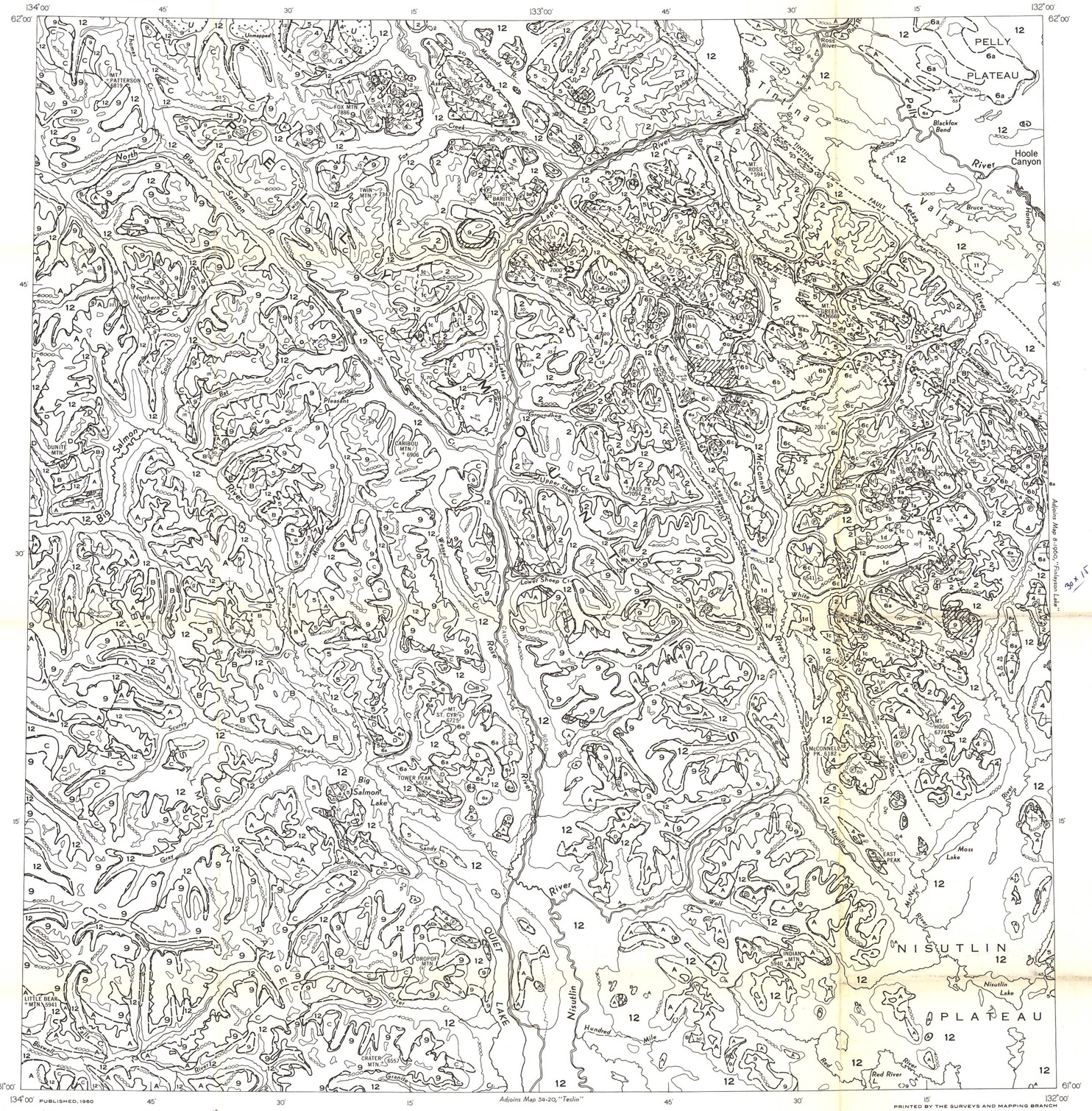
MINERAL SYMBOLS

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

Geology by J.O. Wheeler, 1956, 1958, 1959; L.H. Green, 1959, and J.A. Roddick, 1959

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

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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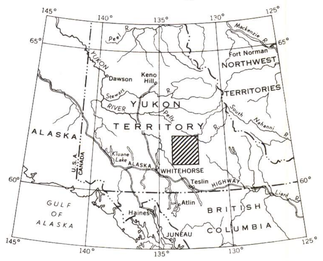

INDEX MAP

MAP 7-1960
GEOLOGY
QUIET LAKE
YUKON TERRITORY

Scale: One Inch to Four Miles = $\frac{1}{253,440}$
Miles

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

inches
centimetres

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.

YUKON GEOLOGICAL SURVEY

DESCRIPTIVE NOTES

The map-area is accessible during the summer months by motor vehicle on the Canol Road as far as Pelly River, by small boat on Big Salmon, Pelly, and Nisutlin rivers, by horse along the major valleys, and by float-equipped aircraft. The Hoole Canyon on Pelly River requires a portage.

Ice covered all or most of the area during the Pleistocene. It moved west and northwest along the major valleys, controlled strongly by topography in the Pelly Mountains.

The quartzites (1a) exposed near the gold property west of Ketza River, and south of White Creek are the oldest unmetamorphosed rocks in the Pelly Mountains. They are at least 1,000 feet thick and are overlain by a few hundred feet of phyllite and slate (1b) containing trilobite fragments. These in turn are overlain by limestone (1c) with Lower Cambrian archeocyathids. The Lower Cambrian limestone, and probable correlatives west of Lapie Lakes are overlain by a extensive unit of phyllite (2) of unknown thickness. Intrusive and extrusive bodies of greenstone occur within the phyllite. Metamorphism to phyllite (2) of the pre-existing shales southwest of the head of Ram Creek was prevented by previous alteration to hornfels.

Unit 2 is separated from unit 4 in several places by black slates, siltones, and, locally, volcanic breccia (3) totalling probably less than 700 feet in thickness. Graptolites collected from different beds in this unit range in age from Lower Ordovician to Middle Silurian. The volcanic breccia (3a) overlying the graptolitic siltstone is characterized by turquoise-green fragments.

Unit 4 consists of three members. Its total thickness is about 3,500 feet near McConnell Peak, 1,000 feet near the head of McConnell River, and perhaps as much as 5,000 feet near Fox Mountain. The basal member is about 2,000 feet thick, except near the head of McConnell River where it is reduced to about 25 feet and north of Pass Peak where it is missing. Near Mount Hogg the basal member comprises sandy and silty dolomites with lenses of massive, grey dolomite containing fossils of Silurian age. The basal member is restricted to fault blocks near peak 6570. The middle member consists of dolomitic sandstone and quartzite, and is about 1,000 feet thick except near the head of McConnell River and west of Seagull Creek, where it is about 300 feet thick. It commonly contains current-bedding and ripple-marks. The upper member, mainly a dark grey dolomite, contains Middle Devonian fossils. It is more than 1,500 feet thick near Fox Mountain, but elsewhere is less than 1,000 feet.

Clastic sedimentary rocks and bedded chert (5) and volcanic rocks (6) lie disconformably, at different localities, on units 2, 3, and 4. Unit 5 contains possible fossil plants 8 miles northwest of Fox Mountain (outside the map-area). Felsic volcanic rocks are restricted to the region east of Seagull Creek, north of White Creek, and southwest of the Porcupine thrust. Most of the volcanic rocks (6) either overlie or are intercalated with rocks of unit 5, and hence are probably Mississippian in age. On the ridge 1½ miles southwest of peak 7001 is a conspicuous plug composed of numerous basalt and felsite feeder dykes.

The several syenitic stocks (7), which occur only in association with the felsic volcanic rocks (6c), are heterogeneous in texture and composition. Areas of fine-grained, leucocratic syenite grade locally into pegmatitic syenite containing ½-inch hornblende crystals. The syenites are cut by slickensided joints, numerous shear zones and carbonated breccia zones, and brown amygdaloidal felsite dykes. Fluorite is an abundant accessory mineral in the syenite body near peak 6541. Being restricted to the felsic volcanic rocks (6) and probably related to them, the syenites are considered Mississippian.

Unit 8 consists chiefly of clastic limestone in beds 2 to 30 feet thick, separated by thin argillaceous layers, but is dolomitic and argillaceous near the edges of the outcrop areas. It was found only in the St. Cyr range where it is invariably associated with unit 5.

The plutonic rocks (9) are clearly intrusive in most places. The contacts are commonly sharp, although in places gradational through complex zones of migmatite. The origin of the plutonic rocks was not established.

Ultramafic rocks (D) occur in two main localities, Dunite Mountain and Tower Peak. Dunite is the chief primary rock in both occurrences although little is present in the Tower Peak area. Minor amounts of pyroxenite were noted near the margins of the Dunite Mountain body. Serpentine is concentrated around the margin of this body, but is rather ubiquitous at Tower Peak. At Dunite Mountain the metamorphic rocks dip gently under the dunite, suggesting a lopolithic body. The structure is obscure around Tower Peak. The volcanic breccias (6b) at the head of Ram Creek contain fragments of serpentine. This suggests an age not younger than Mississippian for at least some of the ultramafic rocks. No significant amount of asbestos was noted in the map-area.

Major structures in the map-area trend northwest. They may be divided into four belts, which are from southwest to northeast: 1) a broad belt of granitic and metamorphic rocks (containing an area of unmetamorphosed Palaeozoic rocks around Big Salmon Lake), 2) a belt of folded and faulted Palaeozoic rocks, 3) and intensely deformed zone between the Porcupine thrust and Tintina Valley (here occupied by Pelly River, and marking the en echelon continuation of the Rocky Mountain Trench), and 4) area of metamorphic rocks and Palaeozoic volcanic rocks northeast of the Tintina fault.

The metamorphic rocks (A, B, C) in the southwestern part of the map-area are characterized by northwest trends and moderate northeast dips. Departures from this attitude are confined mostly to contact zones, a broad area within the bend of Big Salmon River where gentle dips prevail, and the zone between Big Salmon River and the granitic rocks to the northeast, characterized by southwest dips.

The belt of unmetamorphosed Palaeozoic rocks is divided by the Seagull fault. West of the fault extensive areas of phyllite (2) are overlain by numerous bodies of dolomite (4). Some of these are conformable on the phyllites, whereas others (near peak 7000) are probably parts of folded thrust sheets (direction of movement uncertain). East of Seagull fault, structural trends are obscure, as the volcanic rocks (6) commonly have gentle dips and units 1 and 4 are in places folded to overturned and recumbent positions. The zone, furthermore, is broken into numerous blocks by both thrust and normal faults, and is characterized, east of Seagull Creek, by isolated klippes of unit 4. The western margin of the zone is marked around McConnell Peak by folds overturned to the southwest, and west of Lapie Lakes by a northeast-dipping reverse fault which brings limestone of unit 1 onto crystalline rocks of unit A. The eastern margin is defined by the northeast-directed Porcupine thrust. The carbonate rocks of unit 4 in the upper plate of the Porcupine thrust are deformed into synclines and faulted anticlines cut by northeast-trending faults that are restricted to the upper plate.

The intensely deformed zone between the Porcupine thrust and the Tintina fault is divided by the St. Cyr fault. West of the St. Cyr fault are incompetent sediments (5, 8) which are deformed into tight, irregular, essentially upright folds containing steeply dipping fault slices of unit 4. The western outcrops of this zone reveal folds overturned to the northeast. East of the St. Cyr fault is a southwest-tapering belt of disharmoniously folded phyllites (2).

The Paleocene sedimentary rocks (10), found only in Tintina Valley, have dips as steep as 45°. The Tertiary basalts (11) are flat-lying. The structure of the metamorphic and volcanic rocks northeast of Tintina Valley is not known.

No operating mines exist in the map-area. Development work has been conducted on the molybdenite property near the head of Upper Sheep Creek, on the gold and base-metal properties near the head of Ketza River, and on the asbestos property on Tower Peak. Although the metamorphic rocks in the southwestern part of the map-area appear favourable for metalliferous deposits, no significant mineralization was noted. Widely scattered, but not abundant, mineral occurrences are present in the Lower Palaeozoic rocks. The Lower Cambrian limestone is probably the most favourable for detailed prospecting.

LEGEND

Road
Trail
Intermittent stream
Contours (interval 1000 feet)
Height in feet above mean sea-level 7886

Cartography by the Geological Survey of Canada, 1960

Approximate magnetic declination, 33° 20' East

Geographical names subject to revision

MAP 7-1960
QUIET LAKE
YUKON TERRITORY
SHEET 105F

G14413