GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

SHEET 105 J

LEGEND

Map-units A, 2, 6, 7, 8, 9, 10, and 12 appear on Map 13-1961, "Tay River" only

CENOZOIC

QUATERNARY

- **15** 15a, modern unconsolidated alluvial deposits; 15b, unconsolidated glacial and alluvial deposits

TERTIARY

- **14** Grey and dark grey andesite, dacite, and basalt, commonly massive and porphyritic; minor pyroclastic material
- **13** Granodioritic quartz and feldspar porphyry, probably plutonic equivalent of 14

PALEOCENE

- **12** Brown-weathering, brown, impure sandstone with plant remains, grey and brown conglomerate, and brown shale; 12a, rusty weathering conglomerate; minor sandstone and shale, may be equivalent to 12 but age not established, locally interbedded with part of 14

MESOZOIC

CRETACEOUS (?)

- **11** Medium-to coarse-grained quartz monzonite and granodiorite, commonly porphyritic; minor diorite and gneiss

TRIASSIC

- **10** Interbedded, dark grey to black, friable, micaceous sandstone, and shale; minor conglomerate and concretionary shale

PALAEOZOIC

MISSISSIPPIAN (?) AND/OR LATER (?)

- **9** 9a, greenish grey quartzite, commonly thin-bedded; micaceous and silvery graphitic schists; minor dark grey siliceous slate, silty limestone, and grey micaceous quartzite; 9b, conglomerate with pebbles of chert, andesite, quartzite, chlorite schist, and limestone
- **8** Altered, dark green andesite and basalt flows and tuffs, commonly schistose, rarely porphyritic; minor phyllite, dark argillite, and light grey quartzite
- **7** Banded quartzose granulite, green and purplish banded skarn, quartz-sericite schist, hornfels and phyllite; chlorite schist and thin altered andesite (8) common in upper part; minor crystalline limestone

MISSISSIPPIAN

- **6** Dark grey massive limestone

DEVONIAN AND MISSISSIPPIAN
UPPER DEVONIAN AND LOWER (?) MISSISSIPPIAN

- **5** 5a, chert-pebble conglomerate; 5b, black and grey chert, shale, quartzite; minor conglomerate and limestone, 5c, black slate, black and brown siliceous shales, sandstone, greywacke, phyllite; minor conglomerate

SILURIAN AND DEVONIAN

- **4** Grey and buff-weathering, thick-bedded dolomite, buff to reddish weathering, sandy and silty, dolomite and siltstone; buff, grey, and white quartzites

ORDOVICIAN AND SILURIAN

- **3** Black and varicoloured cherts, black, grey, and greenish grey shales; minor chert-pebble conglomerate, quartzite, limestone, and phyllite; 3a, massive chert-pebble conglomerate

CAMBRIAN (?)
MIDDLE AND UPPER CAMBRIAN (?)

- **2** Buff-and grey-weathering, grey, green, and black shales, slates, and phyllites; silty limestone and siltstone

PROTEROZOIC

- **1** 1a, light grey and whitish quartzite, banded hornfels and granulite, grey quartzite, skarn; minor chert and crystalline limestone; 1b, crystalline limestone; 1c, green and maroon shale, slate, phyllite, quartzite; minor andesite; 1d, gritty massive, quartz-pebble quartzite, medium-grained, grey quartzite, and dark slate

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- **A** Quartz-biotite schist, micaceous quartzite, banded, altered, sedimentary and volcanic rocks, hornfels; minor gneiss and crystalline limestone

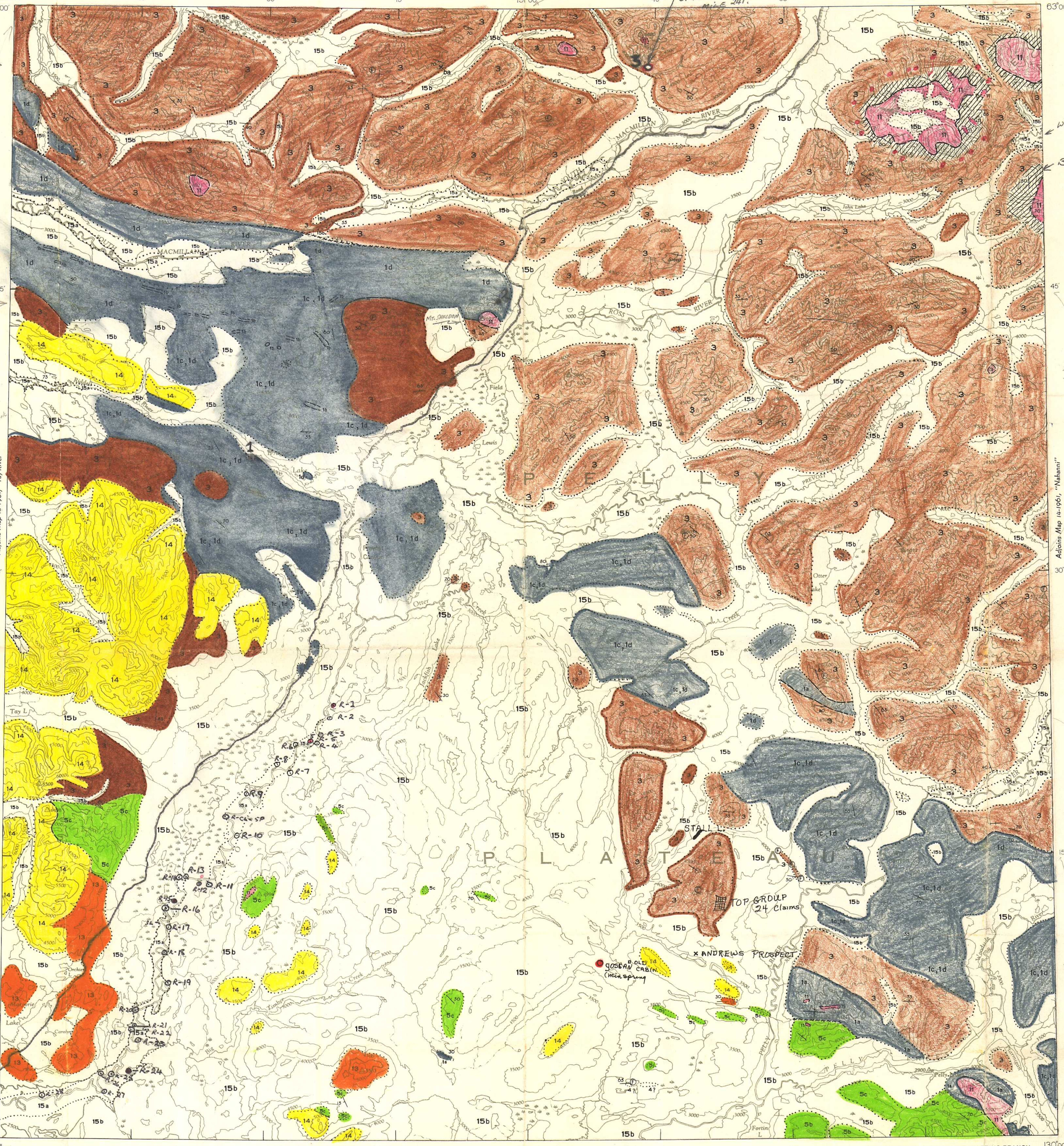
Geological boundary (defined, approximate, assumed)
Bedding (horizontal, inclined, vertical)
Foliation (inclined)
Fault (assumed)
Syncline
Fossil locality
Mineral occurrence or prospect (barite, ba) . . . ba ×
Rock altered to hornfels

Geology by J.A. Roddick, 1958, 1960, and L.H. Green, 1960

Cartography by the Geological Survey of Canada, 1961

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



DESCRIPTIVE NOTES

During the summer the map-area is accessible by small boats using Pelly, Ross, and South Macmillan Rivers. Many scattered lakes, suitable for float-equipped aircraft, lie within the map-area. In summer the Canol Road is passable for motor vehicles, from the Alaska Highway to Pelly River, opposite Ross River trading post, about 15 miles southeast of the map-area. No bridge suitable for motor vehicles, or no ferry is available for crossing Pelly River. Within the map-area the Canol Road has been abandoned, and is unusable owing to numerous washouts.

During the Pleistocene, most if not all of the map-area was covered with ice, which moved west and northwest along the major valleys.

The lower part of unit 1 (1d) consists mainly of thick-bedded, gritty, quartz-pebble quartzite and interbedded dark shale and slate. In places the quartzite is somewhat micaceous and commonly flecked with rusty ankerite. The fine-grained matrix of some of the quartzite beds is partly limy. Where exceptionally coarse-grained and massive, the outcrops of quartzite and the huge, angular, talus blocks derived from it, resemble granite from a distance. The sequence of green, maroon, and dark shales (1c), which mark a conspicuous and consistent horizon in the region, appear to overlie the quartzites (1d) on the ridge northwest of Wolf Canyon on Pelly River. Intense crumpling in many of the individual outcrops, and numerous repetitions of the green and maroon shales both north and south of Dragon Lake, indicate complex structure in the Proterozoic rocks. Between Pelly and Woodside Rivers, near the eastern edge of the map-area, the green and maroon shales appear to be overlain by phyllite and an interbedded sequence of thin-bedded limy shale and silty limestone. These have been included in unit 1c although they resemble parts of the Cambrian strata in Nahanni map-area.

From Mount Sheldon to Mount Selous (in Tay River map-area), the crystalline limestone (1b) forms conspicuous, but discontinuous, white-weathering outcrops. The limestone is grey to dark grey, and mottled with white patches, wherein the carbonate is coarsely crystalline. It is commonly massive to thick bedded, and in places contains thin bands of thinly laminated, pale greenish grey and dark grey chert.

Outcropping at several places, but best exposed on Traffic Mountain, is a sequence (1a) of light-coloured siliceous rocks consisting chiefly of light grey to whitish quartzite, grey quartzite, and light-coloured chert, together with minor hornfels, skarn, and limestone. These rocks appear to comprise the upper part of unit 1 and are commonly closely associated with, and apparently underlie, Ordovician strata.

The Proterozoic rocks are unconformably overlain by a very thick assemblage of Ordovician and Silurian rocks (3), consisting chiefly of chert and shale. Most of the cherts are grey or black, but greyish green, apple-green, white, pink and red varieties were also noted. A particularly bright, apple-green chert bed, outcropping in the northwest corner of the map-area, is believed to have contributed the rare but distinctive fragments to the Devonian conglomerate more than 100 miles to the south. Some of the black chert weathers white along the bedding planes, and produces, locally, spectacular black and white banding. Most of the shales associated with the cherts are black or dark grey, but some are greenish, and a few are red. The shales are interbedded with the cherts, but the proportions vary. The lower part of the section—probably several thousand feet of strata—is dominantly shaly; the upper part is dominantly cherty. Mixtures of the chert and shale are represented in the siliceous shales found throughout the unit. Although other sediments were noted, such as thin-bedded platy limestone, grey quartzite, and conglomerate, they are rare. In their lack of both thick beds of limestone and volcanic rocks, the cherts of Sheldon Lake map-area differ from most other thick, extensive chert deposits. Near the granitic bodies, especially in the Itsi Range, the argillaceous rocks have been silicified and altered to hornfels, forming deep, rusty-red aureoles around the stocks.

The structure in unit 3 is similar to that in the older rocks. Intense folding and crumpling is characteristic of the shales, and pervasive fracturing is common in the cherts. In places the fractures have been healed by later silicification. Unit 3 is in fault contact with the Proterozoic rocks on South Macmillan River, and apparently unconformably overlies them north of Mount Riddell. The total thickness is not known, but is thought to be about 10,000 feet. Graptolites collected from the unit (partly from outside the map-area), range in age from Lower Ordovician to Silurian.

A dark grey, sandy limestone (4?) outcrops in mostly drift covered Pelly Plateau, near the southern edge of the map-area. As it is more or less on strike with beds north of McEvoy Lake in Finlayson Lake map-area, that contain Middle Devonian fossils, it may be of Devonian age. On the other hand the Middle Devonian rocks are commonly dolomitic, so that unit 4? may not be correlative, but rather belongs to the Devono-Mississippian unit 5. Shell fragments and crinoid stems collected from unit 4? were not identifiable.

Unit 5c is exposed south of Traffic Mountain and west of the Canol Road. It consists mainly of black slaty shale and sandstone, but includes considerable quantities of chert-pebble conglomerate, chert, limestone, limy phyllite, phyllitic limestone, siliceous shale, and quartzite. It is at least 7,000 feet thick in the Pelly Lakes area. High on Traffic Mountain it is in fault contact with unit 1c. No fossils were found in unit 5c in Sheldon Lake map-area, and it is placed in the Devono-Mississippian because of its similarities to strata of that age in Tay River map-area. Some older rocks may be included.

Granitic rocks (11) form stocks in the Itsi Range and south of Pelly Lakes, and minor intrusive bodies elsewhere in the map-area. They are commonly biotite granodiorite, but vary in texture and composition. Locally, they contain large crystals of potassium feldspar and in places, significant amounts of hornblende. Xenoliths are not common. In the Itsi Range, the granodiorite exhibits a gently wavy, nearly vertical jointing. The contacts with the country rock are normally sharp, crosscutting, and dip steeply outward. Silicified rocks, hornfels, and minor pyrite are found near the contacts, but rarely beyond a few tens of feet. The granitic rocks are clearly intrusive. The University of Alberta determined the age of a granodiorite specimen (potassium-argon method on biotite) from the Itsi Range to be about 96 m.y. (Middle Cretaceous).

Quartz and feldspar porphyries (13) of granodioritic composition and commonly of plutonic appearance, outcrop in the southwest corner of the map-area, where they are closely associated with Tertiary volcanic rocks (14). These bodies possibly were feeders to, or intrusive equivalents of the volcanic sequence.

Massive, dark, andesite, dacite, and basalt flows (14) unconformably overlie deformed Palaeozoic strata west of Canol Road. The aggregate thickness exceeds 5,000 feet. Individual flows, although rarely well-defined, appear to be from 10 to 300 feet thick. Pyroclastic rocks and interbedded sediments are very rare in the assemblage. The lower part is mainly andesitic and basaltic, commonly containing feldspar phenocrysts. The upper part is characterized by dark dacites with phenocrysts of quartz and biotite. Only gentle deformation, with maximum dips of about 30°, was noted. The elevation of the unconformity at the base of the volcanic sequence varies through about 2,000 feet. This may be accounted for by faulting and deformation, but probably, the flows were extruded onto a surface of at least moderate relief.

No mineral deposits of economic significance are known in the area. Barite was noted at several places in the cherts and shales (3) north of South Macmillan River. It was found north of the small stock north of the river, in a dark grey massive bed of unknown thickness, and, above this bed, in concretionary nodules in chert. The laminae in the chert bend around the nodules, which are commonly about an inch in diameter. Barite and several rare barium silicates are known to exist in the cirque southeast of Wilson Lake on the east edge of the map-area.

105 - J
SHELDON LAKE

PUBLISHED, 1961
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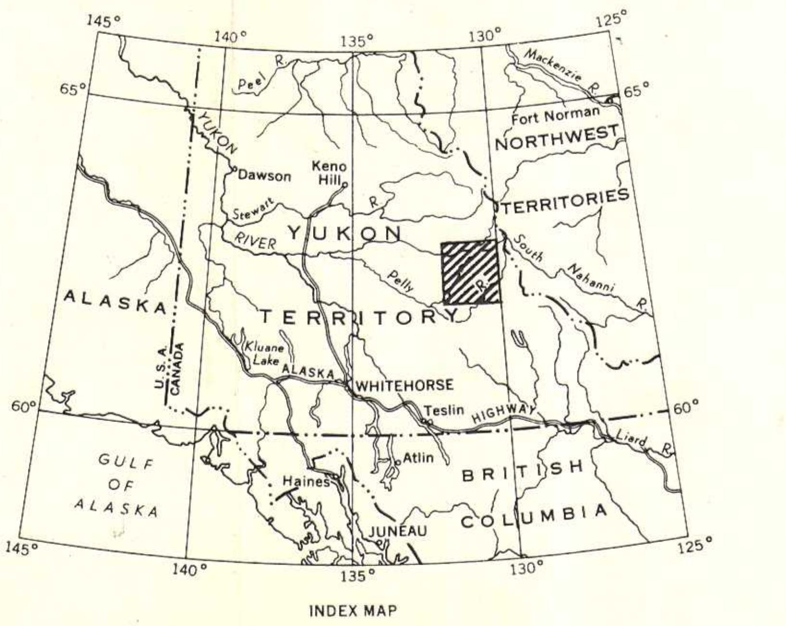

INDEX MAP

MAP 12-1961
GEOLOGY
SHELDON LAKE
YUKON TERRITORY

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

Miles 4 2 0 4 8 12

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

LEGEND

Road (abandoned)
Horizontal control point
Intermittent stream
Marsh
Contours (interval 500 feet)
Height in feet above mean sea-level . . . 5267

Base-map prepared by the Army Survey Establishment, R.C.E., Department of National Defence 1949-1951

Approximate magnetic declination, 34° 36' East

MAP 12-1961
SHELDON LAKE
YUKON TERRITORY
SHEET 105 J

005662

1 - S Slope Dragon Lake
2 - El. 5400' 2' Qz Vein Au 0.015
3 - Rust Seep

SHELDON LAKE 105 J

from Stream Silt Sampling File (Squamish area)

Van office copy