

LEGEND

PRECAMBRIAN

7 Garnetiferous gabbro-diorite

NONACHO GROUP

6 Arkose, quartzite, conglomerate

5 Granulite: garnet-quartz-feldspar gneiss, hypersthene-quartz-feldspar gneiss; includes minor amounts of 1

4 Massive granite and granodiorite; probably of more than one age; includes minor amounts of 1

3 Gneissic granite and granodiorite; commonly includes minor amounts of 1

2 Gabbro, anorthosite; 2a, diorite; probably younger than 3 and 4 in part

1 Paragneiss: biotite-feldspar-quartz gneiss, hornblende-feldspar-quartz gneiss, hornblende-biotite-quartz gneiss, feldspar-quartz gneiss; commonly includes li-p-ar-lit gneiss; includes minor amounts of quartzite

Geological boundary (assumed).....

Limit of geological mapping.....

Limit of area surveyed with aircraft.....

Bedding (dip known, top unknown; inclined, vertical).....

Gneissosity, foliation (inclined, vertical, dip unknown).....

Esker.....

Mineral occurrence (iron)..... Fe x

Geology by F.C. Taylor, 1958

Sand ridge.....

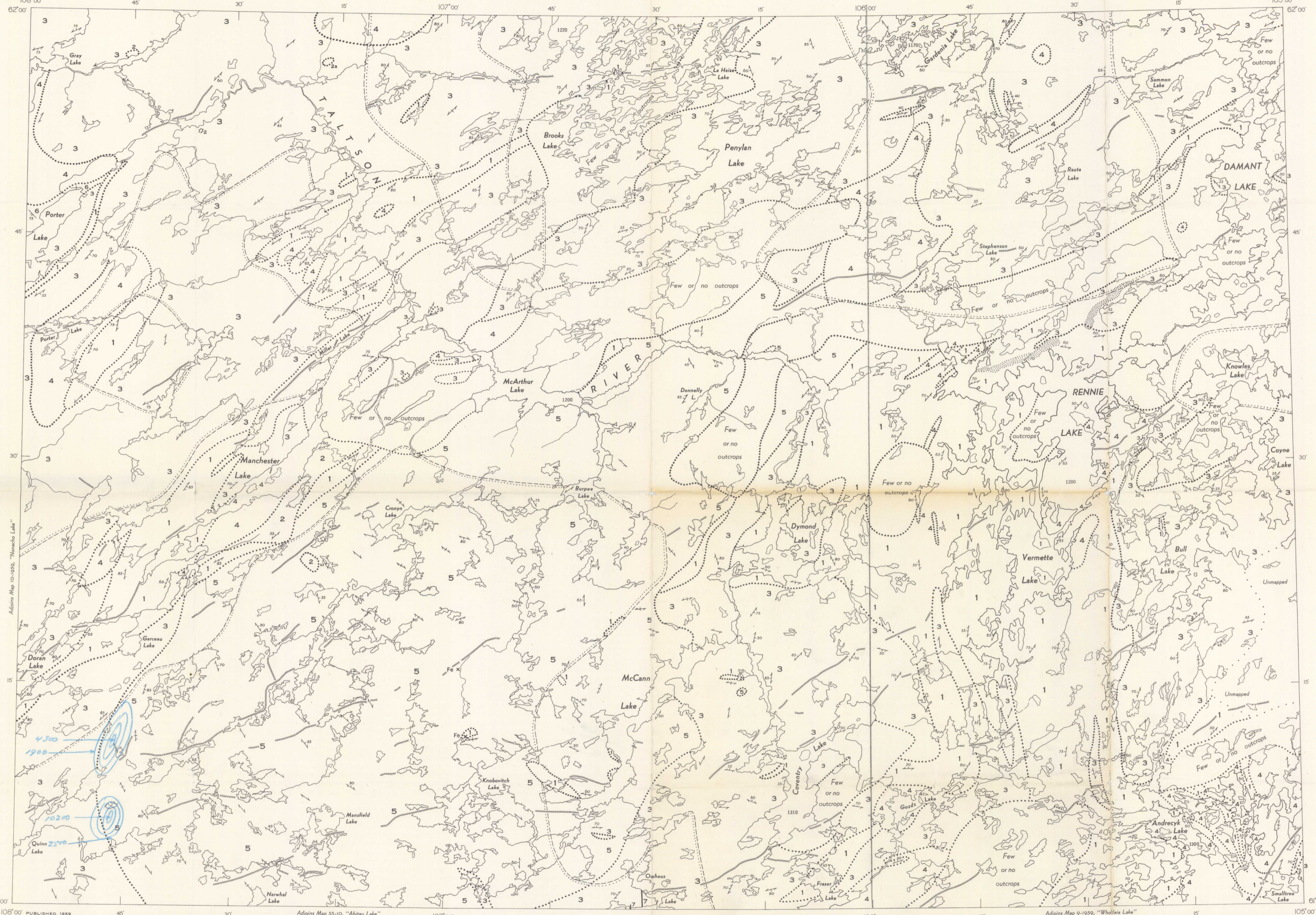
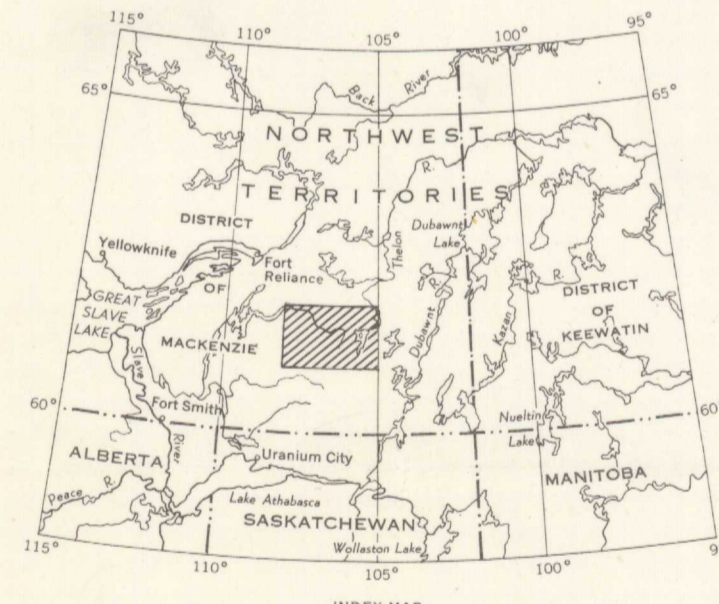
Height in feet above mean sea-level..... 1300

Cartography by the Geological Survey of Canada, 1959

Approximate magnetic declination, 26° 42' East

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 now being issued in this simplified form, thereby effecting a substantial saving in time. There is no loss of information, but the maps will be clearer to read if all or some of the map-units are hand-coloured.



DESCRIPTIVE NOTES

The map-area is about 140 miles northeast of Uranium City, Saskatchewan, the nearest aircraft base. Within the area only the Taltson River in the west, and Vermette, Rennie, and Damant Lakes of the Elk River system in the east, provide good water routes. Travel from lake to lake by canoe is arduous, as most lakes are joined only by tiny streams.

Part of the area was examined with the aid of a light aircraft by making spot observations. These were supplemented in some places by ground traverses.

Outcrops are only locally common and large parts of the area are covered with drift and outwash. The northeast part is in the barren grounds, whereas the remainder is lightly forested with black spruce, jack pine tamarack, and rare white birch.

The land surface is flat to gently rolling. In a few places local relief reaches 200 feet. Pattered ground is common in the peat swamps in the northeast part of the area.

The entire area has been glaciated by an ice-sheet flowing west-southwest to west. Eskers, drumlin-like ridges, and moraine ridges are common.

The oldest rocks, which are all highly metamorphosed, are of sedimentary origin. These paragneisses (1) are composed primarily of feldspar and quartz with either or both biotite and hornblende. The proportion of feldspar to quartz covers a wide range but commonly quartz is more abundant. Locally the mafic minerals are dominant and in a few places garnet is present. All these rocks are medium to coarse grained, foliated and grey-brown to grey, locally dark green. Granitization is common and these rocks grade into gneissic granites (3).

Li-p-ar-lit gneiss and migmatite are locally common, particularly north and west of Rennie Lake.

A few plutons of gabbro and diorite (2, 2a) are present in the west third of the area. The largest, lying southeast of Manchester Lake, consists of medium- to coarse-grained, equigranular, grey to greenish grey, weakly foliated hornblende gabbro. Locally mafic minerals are rare and parts of this pluton are anorthositic. Red, medium-grained granite dykes are common on the southeast side of this pluton. The other gabbro bodies are similar but do not contain any anorthosite phases and biotite is locally present. The diorite is medium grained, equigranular, and dark green with abundant hornblende. As most of these basic rocks are gneissic they probably predate the period of folding, but except for the gabbro at Manchester Lake, their age is unknown.

Granitic rocks are divided into two types on a textural basis, whether predominantly gneissic (3) or massive (4). Mineralogical division is not practical, particularly in the gneissic rocks, as the mineral content changes markedly over short distances. Both types range in composition from granite to granodiorite. They are medium to coarse grained, pink to grey, rarely red or white, and locally porphyritic or with augen of alkali feldspar. Biotite and hornblende are common either together or separately. Locally the massive granite (4) shows intrusive relationships with the gneissic rocks so that in part at least the massive granites are younger. Inclusions of older rocks (1) are common in both types of granitic rocks in the east part of the area. Small irregular pegmatite dykes are common particularly in the gneissic rocks.

Granulite (5) occupies a large part of the south-central part of the map-area. Most of it is light grey to brownish grey and well-foliated, although locally it is massive, medium grained, and granular. The reddish brown garnet commonly occurs in clots of tiny grains that stand out well against the white weathered surface that is characteristic of much of this rock. The quartz of the granulite is commonly blue, rarely smoky, and is also a characteristic feature.

Small bodies of paragneiss (1) are widely scattered throughout the map-area. In a few places narrow dykes of granulite cut 1, 2 and 3 so that in part at least it is younger than those rocks.

The Nonacho group (6) is represented near Porter Lake chiefly by arkose together with small amounts of quartzite and slate. The arkose is medium to coarse grained, poorly bedded to massive, pale brown to greyish orange-pink. The quartzite is grey and medium grained. A small amount of arkosic conglomerate with pebbles and cobbles, chiefly of granitic rocks, is interbedded with the arkose. The relative age of this group to the other rocks in the area is unknown. Elsewhere granite and granodiorite is known to be both younger and older than Nonacho group rocks.

Near Orpheus Lake dark green, medium-grained, garnetiferous gabbro-diorite dykes up to 1,000 feet thick strike north and dip vertically. These are probably the youngest rocks in the area.

Only the main structural trends are known. Within these trends local variations are common and undoubtedly complex. Foliation commonly change from vertical to nearly flat in short distances, and the east part of the map-area is in places horizontal.

No faults were mapped, but many lineaments visible on air photographs may be the loci of faults. Extensive drift cover and the absence of horizon markers makes the recognition of faults difficult.

No mineral deposits of economic value are known in the area. Aeromagnetic maps² show several anomalies which are commonly caused by disseminated magnetite in paragneiss (1) and in gneissic granite (3). None of these occurrences shows any concentration of magnetite. A small amount of magnetite iron-formation is present 5 miles north of Knobovitch Lake and a still smaller amount, 5/2 miles north of this occurrence. Small areas of goossan derived from pyrite are common in the paragneiss (1), but none showed any ore minerals.

¹ Henderson, J.F.: Nonacho Lake, Geol. Surv., Canada, Map 526A, 1939

² Geol. Surv., Canada, Aeromagnetic Maps: Geophysics Papers: 75G Coventry Lake, 75G1, 692G Knobovitch Lake, 75G2, 684G Mansfield Lake, 75G3, 685G Cronyn Lake, 75G6, 693G Burpee Lake, 75G7, 707G Dymond Lake, 75G8, 704G Donnelly Lake, 75G9, 694G McArthur Lake, 75G10, 686G Miller Lake, 75G11, 687C Lamarre Lake, 75G14, 695G Brooks Lake, 75G15, 705G Penylan Lake, 75G16, 395G Andreczyk Lake, 75H3, 394G Godz Lake, 75H4, 395G Vermette Lake, 75H5, 396G Bull Lake, 75H6, 401G Knowles Lake, 75H11, 402G Stephenson Lake, 75H12, 403G Raula Lake, 75H13, 404G Sammon Lake, 75H14

MAP 8-1959
GEOLOGY
PENYLAN LAKE - FIREDRAKE LAKE
DISTRICT OF MACKENZIE
NORTHWEST TERRITORIES

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

4 2 0 4 8 12

Magnetic Anomaly
East of Quinn Lake
Map 1027 G, 1961

my
this block.

8-1959
C.3