



- LEGEND**
- 8 Massive, sheeted, and gneissic granitoid rocks, probably of several ages
 - 7 Meta-gabbro, meta-diorite
 - 6 Biotite granite-gneiss with inclusions of 5
 - 5 Complex of hornblende granite-gneiss, amphibolite, hornblende; meta-diorite dykes and sills
 - 4 Quartzite, feldspathic quartzite; 4a, glassy quartzite
 - 3 Biotite-quartz-feldspar gneisses, hornblende-quartz-feldspar gneisses; hybrid gneiss and migmatite; minor calcareous quartzite
 - 2 Garnet-cordierite gneiss, plagioclase-cordierite gneiss; minor tremolite schist and skarn rocks
 - 1 Biotite-plagioclase schist, typically containing plagioclase augen; minor biotite gneiss; may be equivalent in part to 5

- Drift-covered area
- Geological boundary (approximate)
- Limit of geological mapping, unmapped area
- Gneissosity, schistosity, foliation (inclined, vertical, dip unknown)
- Structural trend
- Fault (approximate)
- Anticline, normal, overturned (position approximate)
- Syncline, normal, overturned (position approximate)
- Glacial striae (direction of ice-movement known)
- Drumlins, drift ridges (direction of ice-movement known)
- Esker

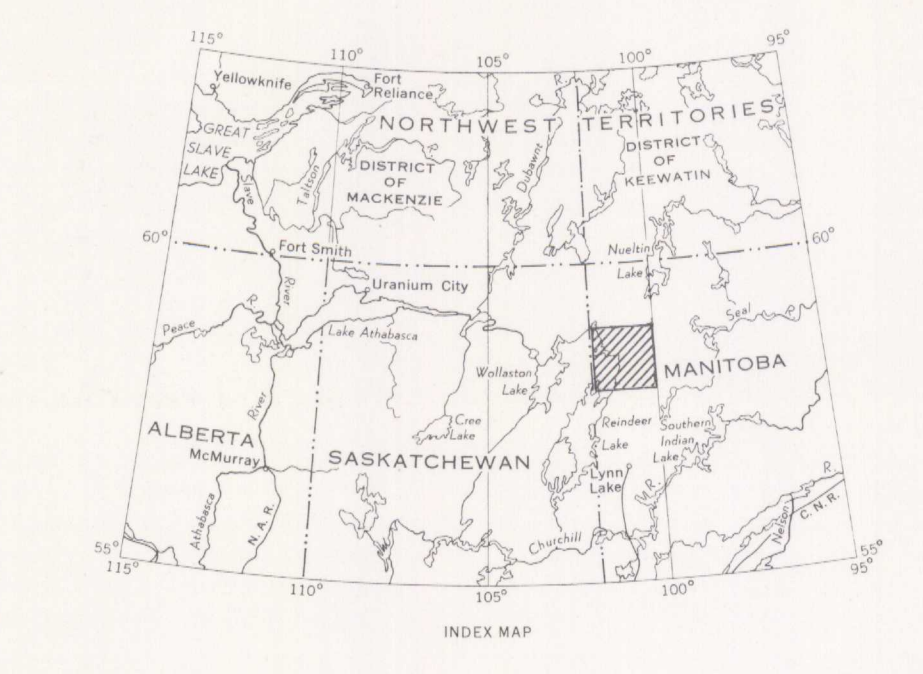
- Portage
- Stream (position approximate)
- Fall and rapid
- Swamp or muskeg
- Sand

Cartography by the Geological Survey of Canada, 1961

Approximate magnetic declination, 17° 48' East

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



PUBLISHED 1961
COPIES OF THIS MAP MAY BE OBTAINED FROM THE DIRECTOR, GEOLOGICAL SURVEY OF CANADA, OTTAWA

DESCRIPTIVE NOTES

This uninhabited area is conveniently reached by chartered aircraft from Lynn Lake, 130 miles south of Lac Brochet. Much of the area is accessible by canoe from Reindeer Lake, via Cochrane River.

The drift-covered areas consist largely of swamp and swampy muskeg, with lesser amounts of bouldery fluted till. The prominent eskers locally are 200 feet high. Abandoned beaches are common along Cochrane River and around Reindeer Lake. The direction of glaciation, which is remarkably constant over the map-area, is S25°W.

Biotite-plagioclase schist (1) typically contains tabular augen of quartz and feldspar set in a matrix of biotite, quartz, and plagioclase. This rock occurs in elongate belts terminated by zoned alteration where the plagioclase is replaced by orthoclase and the rock becomes a feldspar-biotite porphyry. Locally the biotite schist contains cordierite and/or garnet, and grades to garnet-cordierite schist.

Around Misty Lake, garnet-cordierite gneiss (2) occurs as lenses in biotite-plagioclase schist (1), but farther east it forms a continuous unit. Cordierite occurs as augen-shaped porphyroblasts up to 2 inches in diameter, set in a matrix of biotite and plagioclase. The larger porphyroblasts contain needles of anthophyllite. Calcite occurs in accessory amounts together with associated lime silicates, chiefly diopside and tremolite.

The quartz-poor rocks (1, 2) pass gradually into quartz-rich gneisses (3). These are three distinct types of gneisses: (1) the quartzitic gneiss, which is the most abundant, recognizable sedimentary rocks in the map-area. Outcrops show a characteristic pink-grey, lenticular or irregular banding. Along North Seal River these rocks contain abundant epidote, but elsewhere they consist of quartz-rich biotite or hornblende gneisses grading to quartzite (4). There are three distinct types of quartzite in the map-area: southwest of Lac Brochet are pink or buff feldspathic quartzites overlying (7) the gneisses and grading to sheeted quartzitic granite; calcareous quartzite with minor diopside occurs in numerous unmappable lenses in the gneisses (3); and south of Maria Lake are two areas of pure, coarse, white quartzite which does not seem to be associated with the other meta-sedimentary rocks.

Units 1-4 form a natural group, representing an original sedimentary series. Relict bedding is locally recognizable especially in the quartzite but all other primary sedimentary features have been eliminated. The rocks are much softer than the granitic rocks, and are thus found around the basins of the larger rivers.

The complex of basic rocks (5) includes finely laminated amphibolite schists and sheared hornblende, both rock types containing biotite. Grain size varies from aphanitic to coarsely porphyritic, with clots of hornblende an inch across. The schists occur in thin layers, a few hundred feet across, interspersed with equal amounts of hornblende granite-gabbro bodies and with, and cutting a complex, are shattered bodies of meta-diorite composed of approximately equal amounts of hornblende, plagioclase, and quartz. These rocks have a massive texture. The hornblende grains commonly have a core of strongly altered augite. Typically, the meta-diorite occurs in fragments 20 to 100 feet long and a few feet wide, apparently remnants of shattered dykes. A large sill of similar material occurs along the east bank of Cochrane River. A few marble boulders occur near the hornblende. Minor amounts of pyrite and magnetite occur in the laminated schists and in the hornblende.

Granite-gneisses (6) represent altered equivalents of units (1-5). The rocks are mostly white or pale orange, in contrast to the bright red and grey shades of the massive granitic rocks. Mineralogically the rocks are very simple, consisting of a granular quartz-feldspar fabric with tabular aggregates of biotite up to an inch in diameter. Lesser amounts of flinty, pink crush-rocks and feldspar gneisses are included with the granite-gneiss. In some places it is difficult to distinguish the rocks of unit 6 from the metasedimentary rocks (1-4). The granite-gneisses show a coarser grain size and more homogeneous texture, as well as a much higher content of orthoclase, but gradations from metasedimentary rocks to granitic rocks are very common. Partial replacement of cordierite and plagioclase by orthoclase is common. Inclusions of meta-diorite occur throughout the granite-gneiss.

The bodies of meta-gabbro (7) are essentially similar to the massive parts of unit 5 but they contain less quartz and more unaltered augite. They seem to be sill-like, elongate masses.

Massive, sheeted, and faintly gneissic granitoid rocks (8) underlie 60% of the map-area. One of the two principal types, which is found in the southern part of the map-area, is typically very red, due to a content of jasperoid quartz. The other type, found north of the North Seal River, is grey and contains microcline, rather than orthoclase. Both are coarse-grained massive rocks, containing little mafic material. Typically, biotite is the mafic mineral, but hornblende and augite were also noted. Garnet and partly replaced cordierite occur locally, suggesting that part of the granite may have originated by alteration of sedimentary rocks. Xenoliths of meta-diorite, similar to that of unit 5 are common near the edges of the granite. The granitoid rocks range in composition from alaskite to granodiorite, with granitic rocks predominating. Pegmatite is rare, occurring mainly as local patches. Gradations from granite-gneiss to granite are common, particularly in the noses of folds. Barren quartz stockworks and minor pyritized zones occur in granite south and west of Lac Brochet. The granites are probably of several ages. Along North Seal River, the metasedimentary rocks clearly overlie the grey granite, but southwest of Lac Brochet they grade upward into overlying alaskitic granite.

Structurally the area is complex. Two directions of folding are clearly marked along North Seal River; where east-trending folds in the metasediments cut off northeast-trending folds in the granite. There are also two pronounced directions of faulting—N80°W and N45°E. The high degree of metamorphism and scarcity of outcrops make the elucidation of the structure very difficult. The degree of metamorphism seems to decline slightly from southwest to northeast, judging from the general appearance of the rocks.

No mineral occurrences of economic interest were observed, and there is little prospecting interest in the area at present. The generally granitic character of the rocks is unfavorable for most types of ore deposits.

MAY 19 1961

MAP 52-1960
GEOLOGY
WHISKEY JACK LAKE
MANITOBA

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

Geographical names subject to revision

Library
Geological Survey of Canada

MAP 52-1960
WHISKEY JACK LAKE
MANITOBA
SHEET 64K