CANADA
DEPARTMENT
OF
MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

SHEET 75B

LEGEND

PROTEROZOIC

5 — *Diabase*

4 — *Massive to poorly foliated pink granitic rocks, including coarse to finely crystalline granite, granodiorite, and quartz monzonite; in part of magmatic origin but probably includes much granitized equivalent of 2*

ARCHÆAN

3 — *Massive to poorly foliated, dark brown to black weathering, highly biotitic granite, grading to syenite; locally cut by pegmatite dykes and containing poorly defined pegmatitic segregations; probably older than 4, relationship to 2 uncertain*

2 — *Grey, pink, and white quartz-feldspar gneiss interbanded with greywacke-type rocks or their metamorphosed equivalents; dominantly migmatitic due to the introduction of much 4;* **2a**, *feldspathic quartz-biotite paragneiss*

1 — *Grey, greenish grey, white, brown, and red quartzite*

Boulder field . . . B
Outcrops from ground observation . . . ×
Outcrops from air observation (from 100 to 700 feet altitude) . . . ×
Areas of outcrop without × or ×, from air photographs
Foliation (inclined, vertical, dip unknown)
Structural trends (observed from the air and on air photographs)
Glacial striæ (direction of ice movement not known)
Esker

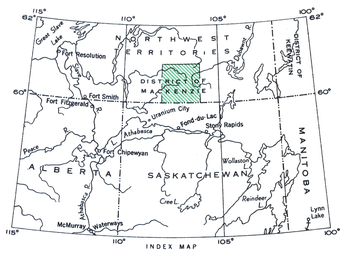
Geology by J. W. Hoadley, 1954

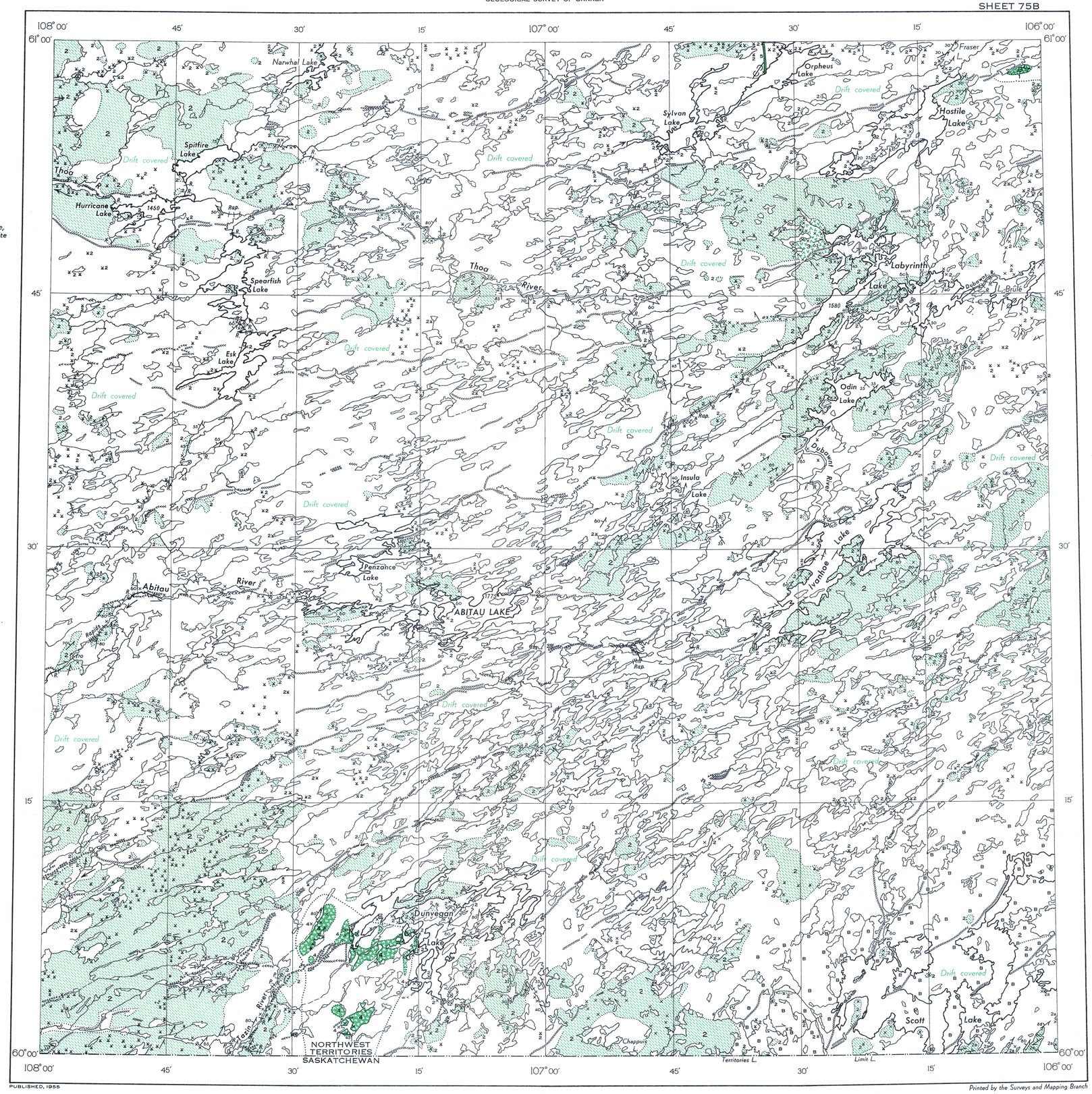
Portage . . . P
Provincial boundary
Lake and stream (position approximate)
Fall and rapid . . . F R
Marsh
Height in feet above mean sea-level . . . 1450

Approximate magnetic declination, 26° 35′ East

Cartography by the Geological Cartography Unit, 1955

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





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PRELIMINARY MAP 55-10

ABITAU LAKE

DISTRICT OF MACKENZIE
NORTHWEST TERRITORIES

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

Miles
4 2 0 4 8 12

DESCRIPTIVE NOTES

The area is readily accessible by air from Uranium City, Saskatchewan.

The topography, except in the extreme northwestern and southwestern parts, is in general monotonously flat, and is in marked contrast to the comparatively rugged, rocky terrain to the south and west. Elevations range from 1,400 to 1,800 feet above sea-level. Local relief, except as previously mentioned, varies from 25 to about 200 feet, but over most of the central and eastern part does not exceed 50 feet. The divide between the Hudson Bay and Mackenzie watersheds crosses the area from southeast to northwest. Drainage, except for a few large rivers, is poor, and few of the creeks are navigable by canoe. The entire area is well wooded. Predominant trees are spruce, averaging 6 to 9 inches butt diameter. Sparse stands of pine and tamarack occur on some of the higher drumlins and scrub birch is sparsely scattered along creeks and lake shores. Underbrush is largely absent on the many drumlins, but scrub willow is thick in some of the more swampy parts.

Glacial drift covers at least 90 per cent of the area. Glaciation has produced the usual grooving, rounding, and polishing of the bedrock, and most glacial striæ trend west-southwesterly. Drumlins and drumlinoid forms, which vary in length from a few hundred feet to more than a mile, parallel the glacial striæ in most places. They form an almost unbroken interlocking network over 75 per cent of the area. Many have rock cores that occasionally outcrop on the stoss or northeastern ends. This is especially true where the stoss end occurs on a lake shore. Numerous eskers up to 200 feet high traverse the area more or less continuously from northeast to southwest, roughly paralleling the direction of regional ice movement. They mark the loci of Pleistocene drainage channels. In the vicinity of Scott Lake, in the southeastern corner of the area, the glacial deposits consist almost entirely of angular boulders, up to 30 feet in diameter. The boulders were derived from nearby underlying bedrock, and completely mantle the terrain, except on a few relatively high hills where bedrock is exposed. Little or no fine material occurs intermixed with the boulders and the unusual clarity of the water in Scott Lake is due to this lack of fine material in the surrounding drift.

The oldest known rocks (1) consist of quartzite and greywacke-type meta-sedimentary rocks exposed over very limited areas at two places. They are lithologically similar to Tazin group rocks of the Athabasca region, and may possibly be correlative with them.

The migmatized quartz feldspar gneisses (2) are so named for the two dominant minerals, but local variations in mineral content are characteristic, especially with respect to ferromagnesian minerals. Many of these rocks are garnetiferous. Most if not all are thought to have been derived from pre-existing sedimentary and possibly volcanic rocks by the processes of granitization. Migmatization appears to have occurred as a late phase in this process, and is identified with the introduction of much pegmatitic granite (4).

The composition, fabric, and general texture of the feldspathic quartz-biotite gneisses (2a) outcropping in the extreme southeast corner of the area indicate a sedimentary origin. Immediately to the southeast of the map-area they are interbanded with quartz-feldspar gneisses lithologically identical with many of the gneisses (2) in the area.

The rocks comprising the syenite body (3) to the northwest of Labyrinth Lake exhibit evidence of much deformation, crushing, and recrystallization. The major mafic constituent, biotite, is confined to more or less evenly distributed, rounded, porphyroblastic clusters of small flakes up to ⅛ inch in diameter. Differential weathering of the softer biotite has produced a characteristically pitted, weathered surface. Contacts, where seen, with adjoining quartz-feldspar gneisses (2) appear gradational. The body contains several dykes and ill-defined pegmatitic bodies that may be intrusive, but which in most cases appear as segregations, possibly due to metamorphic differentiation.

The composition and texture of the body mapped as pink granite (4) is variable. Locally it is composed of massive, pink, pegmatitic granite, but elsewhere it approaches granodiorite and in places quartz monzonite in composition.

The youngest rocks in the map-area are a few fresh-looking mafic dykes (5) and small, unmapped stocks of dioritic to gabbroic composition. Some exhibit ophitic texture.

Many of the prominent lineaments visible on the topographic map, and especially on air photographs, may represent loci of fault lines. Except in a few cases, however, their presence could not be proved because most occupy drift-filled depressions.

There is little evidence of mineralization in any of the rocks observed in the area. Hydrothermal quartz veins are conspicuously absent. Samples from zones of partly mylonitized rocks encountered in the southwestern part of the area were found to contain much hydrothermal epidote and quartz when examined under the microscope. One gabbro dyke, occupying a fault fissure 6 miles southeast of the rapids on Abitau River, was hydrothermally altered and mineralized with much epidote and some pyrite.

PRELIMINARY MAP 55-10
ABITAU LAKE
NORTHWEST TERRITORIES
SHEET 75 B