

PRELIMINARY SERIES



LEGEND

- PRECAMBRIAN
- 4 NONACHO GROUP
Conglomerate, arkose, quartzite, greywacke, and slate
 - 3 Granite, granodiorite, and allied rocks;
3a, massive; 3b, gneissic; 3c, small bands of meta-sedimentary rocks (1 and 2) common; in part younger than 4
 - 2 Biotite-feldspar-quartz paragneiss, biotite-quartz paragneiss, hornblende-feldspar-quartz paragneiss, hornblende-biotite-feldspar-quartz paragneiss; includes lit-par-lit gneiss and migmatite
 - 1 Quartzite and greywacke; commonly feldspathized

- Geological boundary (assumed)
- Limit of area surveyed with aircraft
- Bedding (inclined, overturned)
- Bedding (dip known, top unknown; inclined, vertical)
- Gneissosity, foliation (inclined, vertical, dip unknown)
- Glacial striae

Geology by F.C. Taylor, 1958

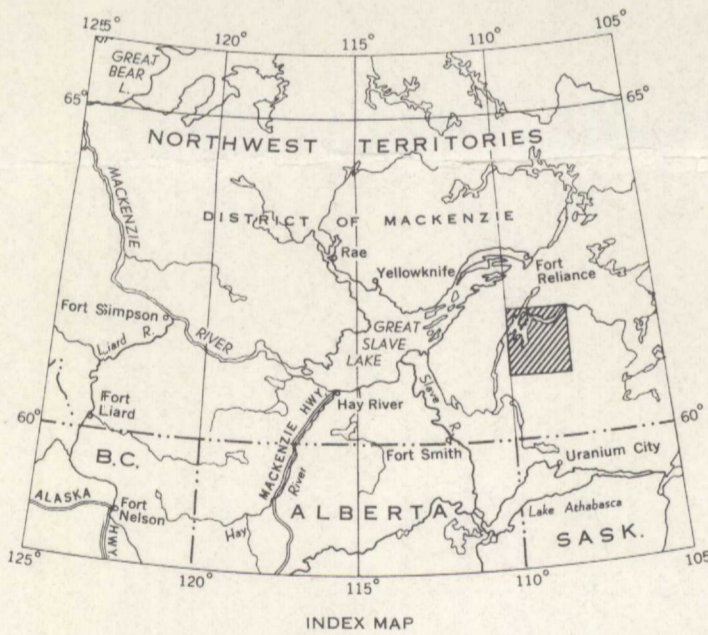
- Portage
- Lake and stream (position approximate)
- Rapids
- Marsh
- Height in feet above mean sea-level

Cartography by the Geological Survey of Canada, 1959

Approximate magnetic declination, 29° 30' East

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.

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



DESCRIPTIVE NOTES

The map-area can be reached by air from Uranium City, Saskatchewan 125 miles to the south, or from Yellowknife, Northwest Territories 190 miles to the northwest. Two water routes to the area are available; one from Lake Athabasca, the other from Great Slave Lake.

Within the map-area no practicable canoe routes exist, hence much of the area was examined with the aid of a light aircraft. Spot observations were made along flight lines spaced 2 miles apart. A few ground traverses were made to supplement air traverses, in places where further geological information was desirable.

Although the surface of the area as a whole is plain-like, in detail, much of it is rugged, with steep-sided hills. In the southwest third, local relief reaches 300 feet and there bedrock is well exposed. Elsewhere relief is less and bedrock is poorly exposed except on a few large hills. Eskers, outwash, and moraines are common in the east part of the area and cover most of the bedrock.

The entire area is wooded with small black spruce, white birch, and jack pine.

The oldest rocks are quartzite and greywacke (1) that occur as narrow bands within the granitic rocks (3). They are grey to dark grey, rarely white or pink, fine to medium grained and show no primary structures other than bedding. Almost all are feldspathized so that contacts with granitic rocks (3) are gradational. Where metamorphism has been intense, these sedimentary rocks have been altered to paragneiss (2) which consists chiefly of quartz and feldspar with lesser amounts of biotite and hornblende. Locally the mafic minerals are dominant but only over small areas where they are present as thin bands or irregular patches. All the paragneisses are medium to coarse grained, light to dark grey, rarely greyish green, and poorly to well foliated. Included with map unit 2 are migmatite and lit-par-lit gneiss. Numerous small bodies of these rocks (1, 2) are present within the granitic rocks but most are too small to map separately.

The granitic rocks (3) are light grey to pink, rarely red, and medium to coarse grained, with textures ranging from massive (3a) to gneissic (3b), including some with porphyritic and augen textures. Small bands and patches of older sedimentary rocks (1) and paragneiss (2) are present in the south part of the area (3c). The granitic rocks range in composition from granite to granodiorite although locally, more basic facies are present. Quartz content ranges from 15% to 30% and either or both biotite and hornblende are present as accessory minerals. Some of the granitic rocks are intrusive into the Nonacho group (4) and hence are younger, whereas elsewhere they are overlain nonconformably by Nonacho rocks. However, as all the granitic rocks are lithologically similar, rocks of the two ages can only be distinguished where age relationships with the Nonacho group (4) are discernible.

The Nonacho group (4) consists solely of sedimentary rocks ranging from slate to conglomerate and includes greywacke, arkose, and quartzite. These rocks are exposed chiefly in the Sparks Lake area with lesser amounts southwest of Porter Lake and in the northeast part of the map-area. Each rock type commonly grades into the other, although in places, contacts between rock types are abrupt.

The conglomerate consists of well-rounded cobbles, rarely pebbles of both massive and gneissic granitic rocks, quartzite, slate, and vein quartz. The matrix is medium- to coarse-grained, pale red, or rarely grey to green arkose or feldspathic quartzite. The conglomerate is commonly massive but contains beds and lenses of arkose and most commonly occurs as thin interbeds in the arkose. These beds, which rarely exceed 6 feet in thickness, in places show intraformational breccias on the top surface where fragments of shale reach 2 feet in greatest dimension. At the base of the Nonacho group, shale beds locally attain a thickness of over 100 feet.

The arkose is medium to coarse grained and although chiefly massive, it is also well bedded, crossbedded, and ripple marked. This pale red to greyish red rock commonly contains scattered pebbles of white vein quartz and lenses and thin beds of pebble-conglomerate.

The greywacke and quartzite are fine- to medium-grained, grey to dark grey rocks. Much of the greywacke is massive but some shows bedding or locally a gneissic structure. Bedding in the quartzite averages 2 to 3 feet in thickness and ranges up to 7 feet. Like the arkose the quartzite and greywacke contain lenses of conglomerate, but these are fewer and smaller.

The regional structural trend throughout the map-area is to the northeast, although within this trend local variations are common. Most of the structural history is beyond the scope of the mapping, but within the Nonacho group (4) in the Sparks Lake area some structure is recognizable. At the south end of the lake, a syncline is present that extends northward into an area of close folds and massive conglomerate and arkose, where the fold pattern is lost. It may extend the length of the lake.

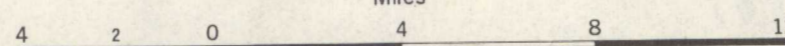
No faults were mapped but many lineaments, particularly in the southwest part of the area, may mark the location of zones of fractures.

The Nonacho area has not been thoroughly prospected. Although no mineral deposits have been located, much of the area, particularly that part underlain by sedimentary rocks, is worthy of prospector's attention. Quartz veins are common in the Nonacho group especially in those places where the younger granite is present. Although those examined failed to show any ore minerals only a cursory examination was possible. The older sedimentary rocks (1) are also possible hosts for ore and should be examined.

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

MAP 10-1959
GEOLOGY
NONACHO LAKE
DISTRICT OF MACKENZIE
NORTHWEST TERRITORIES

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



PUBLISHED, 1959
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MAP 10-1959
NONACHO LAKE
NORTHWEST TERRITORIES
SHEET 75F