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ET MINÉRALE

SAKAMI LAKE (NORTH AREA)

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Gouvernement du Québec

DEPARTMENT OF NATURAL RESOURCES

Mines Branch

Geological Exploration Service

Geology of the
SAKAMI LAKE (NORTH) AREA
NOUVEAU QUEBEC

Preliminary Report

by

J. Peter Mills

Québec

1973

INTRODUCTION

Location and Accessibility:

The map area consists of about 189 square miles (490 km.^{2}) around the north part of Sakami Lake situated about 85 miles (137 km.) east of Fort George on the east coast of James Bay. Access to the area can be achieved by float plane from either Fort George or Chibougamau. Radio communications can be maintained most of the time with establishments at Fort George via several frequencies.

Regional Features:

The region is well forested and lakes are numerous. Spruce and pine are the most plentiful tree types with birch and poplar predominating in some local areas. Long Lake and Alder Lake to the north are the largest lakes in the region. The area is drained by the Fort George River, to the north of the map area, which flows into James Bay at the town of Fort George.

Relief is predominangly less than 50 feet (15 m.). Relief features consist of low, wooded hills most often bound by irregular lakes and swamp areas. Several high hills more than 200 feet high (61 m.) exist in the north part of the region.

TABLE OF FORMATIONS

PLEISTOCENE (RECENT)	Till and stream deposits; peat bog and swamp development; irregular drainage patterns; lakes and vegetation.

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	1. Diabase dike emplacements; quartzitic sedimentary deposits; tectonic activity (high angle faulting).
	2. Tectonic activity (regional faulting and folding); granitic-dioritic intrusive activity; metamorphism.
PRECAMBRIAN	3. Tectonic activity; basaltic-dacitic-rhyolitic extrusives; banded magnetic iron formation; siliceous sediments.
	4. Granitic material interlayered with impure sandstone and quartz-feldspar-biotite gneiss; granitic and dioritic rocks.

GENERAL GEOLOGY

Pleistocene Geology:

The map area was glaciated during the last ice advance. Numerous glacial striations indicate a general northeast strike of ice movement. Unconsolidated till material constitutes numerous mounds and elongate ridges over the entire region. Boulders, gravel and sand are the major constituents of the till, however, some clay material exists in many of the low laying areas. Peat bogs are numerous and often constitute the shore line areas of the lakes. Local drainage appears to be controlled by till deposits and many of the lakes owe their shapes to the pattern of till distribution. Regional drainage is bedrock controlled.

Layered Quartzitic Sandstone:

The region at the extreme north end of the map area, and north of the map area, contains several large exposures of finely banded quartzitic sandstone. This material is predominantly fine grained, brownish to slightly reddish, well indurated, and often crossbedded. Occasional lenses of coarse sand and rounded pebbles occur at lower elevations interlayered with the finer sand. Investigations of the crossbedding indicate tops up in all cases studied.

Mudstone Conglomerate:

Lower elevations on the north side of the lake at the extreme north of the map area contain several exposures of conglomeratic material interlayered with fine to coarse quartzitic sandstone. The conglomerate consists of pebble to boulder sized fragments of reddish mudstone in a matrix consisting of well indurated sandstone. The mudstone fragments are angular to slightly rounded and form an open-work texture. The conglomeratic material appears to constitute the basal zone of the layered quartzitic sandstone discussed above.

Siliceous Limonitic Material:

Several zones in the volcanic region in the eastern part of the map area contain units of banded siliceous-limonitic material. The siliceous rich bands contain very fine grained, light grey rock weathering rusty brown. Bands containing relatively more limonite are brownish to medium brown. Banding is not always apparent on the weathered surfaces.

Interlayered Impure Sandstone and Granitic Material:

Impure sandstone, interlayered with granitic bands in some regions, forms much of the area in the east part of the map region. The sandstone faction is fine grained, massive to slightly foliated, equigranular, highly quartzo-feldspathic and weathers to a medium to light grey colour. The dark mineral faction consists of biotite

and minor chlorite. The granitic faction is medium to coarse grained, light grey and massive to slightly foliated. This interlayered sequence grades into a zone in the southeast part of the map area which contains more granitic material and in which zones of fine quartz-feldspar-biotite schist occur.

Volcanic Materials:

Volcanic rocks consisting of interlayered basaltic dacitic and rhyolitic materials form a northeast-trending zone in the east part of the map area. The volcanic region also contain minor zones of siliceous-limonitic rock and dark coarse ultra-mafic material.

The basic volcanics consist of medium to dark grey-green massive rock with pillowed lava and fragmental zones. Lighter grey coloured zones in the volcanic sequence are considered to be intermediate or dacitic volcanics. Secondary amphibole development, often showing well developed diablastic texture, forms a conspicuous feature in some zones of the intermediate volcanics.

Rhyolitic or acidic volcanics form several zones in the sequence, particularly in the central and northern part of the sequence. These materials are well laminated, very fine grained and light grey to pinkish in colour.

Granitic and Dioritic Materials:

Granitic and dioritic rocks form the major part of the central and western zones of the map region. Porphyritic zone through this

region are not confined to one or the other rock type, but transcend boundary areas. Many parts of the area, particularly in the granitic regions (unit 10), also show basaltic materials resulting in distinctive basaltic units and apparent mixtures of granitic and basaltic materials. Zones of apparent acidic or rhyolitic volcanics also occur in granitic regions. Dioritic material is distinguished from granitic rock by the lack of visible quartz and more mafic mineral.

STRUCTURAL GEOLOGY

The region is characterized by high-angled foliation attitudes throughout the map area except for the quartzitic sandstone in the north (unit 2). The parallel trend of foliation and banding or layering where observed indicate that shearing is a common feature throughout the region.

Major drainage channels appear to be fault controlled and also indicate a predominantly northeast strike of fault zones. The narrow east-west trending lake in the north part of the area is considered to be a fault-controlled structure. The relief pattern and formation distribution suggests that the quartzitic sandstone on the north side of the lake is part of a down-faulted block. Topographic map and aerial photographic interpretations indicate that this fault zone is a regional feature extending to the east and west of the map area.

METAMORPHISM

The greenschist facies of metamorphism appears to characterize the region with minor zones of the epidote-amphibolite facies. The porphyritic texture existing in some zones of the granitic and dioritic rocks may be secondary development (porphyroblastic). This is suggested by the fact that the affected zones transcend apparent granitic-dioritic boundaries. Euhedral tourmaline crystal development exists in parts of the interlayered sequence in the extreme southeast area (unit 14) suggesting a secondary enrichment in this region.

ECONOMIC GEOLOGY

Mineralized zones in the area consist of several limonitic and pyritic zones in the volcanic and impure sandstone regions in the east part of the map area. All exposures containing traces of pyrite and limonite showed signs of having been previously prospected.

Processing of soil samples collected for geochemical analysis show relatively high readings for uranium around the long, east-west trending lake in the north part of the map area. These high readings may be related to the existing of the large quartzitic sandstone units in the area.

Investigations of recently published aeromagnetic maps show relatively high readings over the large quartzitic-sandstone unit (units 2 and 3) in the north of the region. These high readings suggest that more mafic rock formations may exist below the sandstone.