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PRELIMINARY REPORT, GEOLOGY OF JOGUES LAKE AREA, NEW QUEBEC TERRITORY

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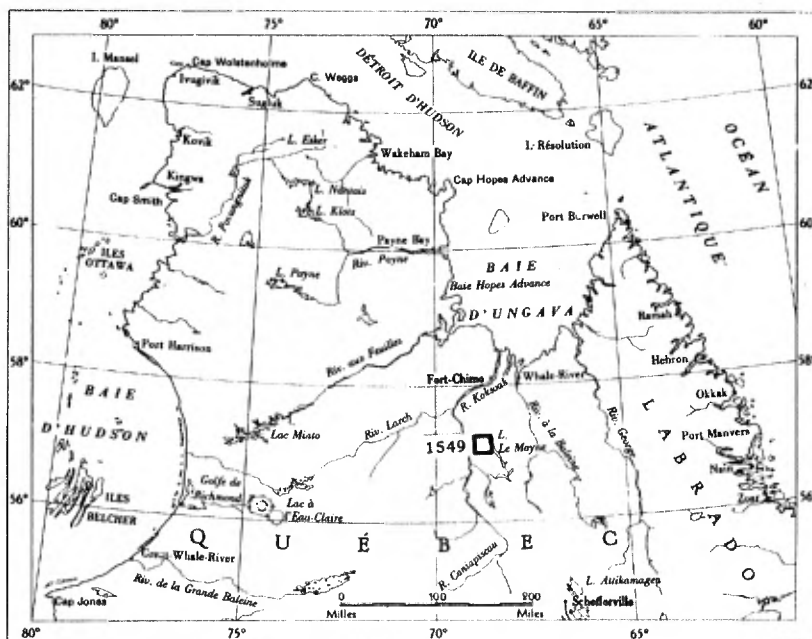
Geology
of
JOGUES LAKE AREA

NEW QUEBEC TERRITORY

PRELIMINARY REPORT

by

T. Hashimoto



QUEBEC

1964

QUEBEC DEPARTMENT OF NATURAL RESOURCES

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GEOLOGICAL EXPLORATION SERVICE

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Preliminary Report

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INTRODUCTION

The Jogues Lake area is 75 miles south of Fort Chimo and 180 miles north-northwest of Schefferville. It comprises about 215 square miles and is bounded by longitudes $68^{\circ}40'$ - $69^{\circ}00'$ and latitudes $57^{\circ}00'$ - $57^{\circ}15'$.

The only practical means of access is by float-plane, the nearest bases being at Fort Chimo and Schefferville.

In general, the area is sparsely forested and many hill tops are barren. Most of the valleys are moderately forested by spruce with minor amounts of tamarack. Thick growths of alder and teabush are found on the sides of many hills.

Lake and speckled trout are plentiful in many lakes, the speckled trout being mainly in small lakes and streams, and the lake variety in such larger lakes as Colombet and Rouvière.

Although game is scarce, bear, cariboo, weasel, partridge, duck, and goose were seen.

The Jogues Lake area is characterized by parallel north-west-trending ridges which rise sharply 200 to 400 feet above the general level. Resistant gabbro sills form the ridges, and alternating soft sedimentary rocks underlie the valleys. In general, the topography is rugged owing to this differential erosion, the average relief being 200 to 300 feet.

In the north central sixth of the map-area, Pleistocene glaciation has played an important role in fashioning the present topography and has given many of the lakes a pronounced N.15°E. trend. The area is drained by Kaniapiskau river, a tributary of the Koksoak. The latter flows into Ungava bay, 120 miles to the north.

GENERAL GEOLOGY

The area lies in the "Labrador Trough". The bedrock is Precambrian in age and is composed of sedimentary and volcanic rocks intruded by gabbro sills. These rocks have been highly folded and metamorphosed and belong to the greenschist facies of metamorphism.

The late Precambrian or Proterozoic rocks (Kaniapiskau group) of the area include phyllite, slate, dolomite, quartzite, meta-basalt, metamorphosed basic and acid tuffs, basic agglomerate, greywacke, iron-bearing rocks, and arkose.

In the southwest corner of the area, Kaniapiskau strata rest unconformably on pink granite at two places. This granite has been interpreted as intrusive by some, but field evidence indicates that it represents basement rock.

PRECAMBRIAN

Archean

The only rock of the so-called "Archean basement" found in the area is a pink granite. It outcrops at two places in the southwest corner of the area and is of particular interest in that it is exposed within the limits of the "Labrador Trough". It is exposed through "windows" where the younger Kaniapiskau strata have been eroded away.

The granite is pink, medium to coarse grained, and generally massive although locally gneissic. It is essentially composed of quartz, microcline and chlorite.

Proterozoic

Kaniapiskau Group

In the Jogues Lake area, the Kaniapiskau Group consists of two sub-groups of metasedimentary rocks: one of metavolcanic rocks, and one of meta-gabbro sills.

Older Metasedimentary Rocks

The stratigraphic succession in the older metasedimentary sequence is as follows in ascending order: quartzite (except in a few places where the basal member is a shale or arkose),

Table of Formations

Cenozoic	Recent Pleistocene		Peat, river and beach deposits Silt, sand, gravel, boulders
Unconformity			
Precambrian	Proterozoic	Kaniapiskau Group	Meta-gabbro sills
			Metasedimentary rocks: Phyllite, slate, dolomite, quartzite; minor amounts of greywacke, sandstone and silicate iron-bearing rock
			Metavolcanic rocks: Massive, sheared and pillowed basalt; rhyolite; tuffs; basic agglomerate. Minor amounts of meta-greywacke, phyllite, and quartzite as interbeds
			Metasedimentary rocks: Phyllite, slate with minor amounts of quartzite Dolomite Chert-hematite iron-bearing rock Quartzite (shale or arkose locally)
Unconformity			
Precambrian	Archean		Granite

cherty-hematite rock, dolomite, phyllite with some slate.

Quartzite and arkose overlie the granite at Colombet lake, but near the southwest border of the area the granite is overlain by shale.

The basal quartzite is white or, locally, pink, massive, and medium to coarse grained. It appears to be thin and, in a few places, it is dolomitic.

Arkose is found only at two places on Colombet lake. It is massive, medium to coarse grained and is essentially composed of quartz and pink feldspar. Its composition is very close to that of the parent granite. At one place, the contact between these two rocks is more or less gradational.

The only occurrence of a basal shale is near the southwest corner of the area where it overlies the "basement granite" and dips under the quartzite. The shale is purple and apparently quite local. The purplish colour results from the small amount of hematite cement.

One outcrop of iron-bearing rock overlies the quartzite. This is a chert-hematite rock with minor amounts of magnetite.

Dolomite also overlies the quartzite, but where the dolomite is exposed there are no exposures of the chert-hematite rock and, hence, the exact age relationship between these two members is not known. The dolomite is massive, buff to rusty weathering, and contains many thin quartz veins. The color of the weathered surface indicates that the dolomite contains some iron; in some cases, it may be very close to ferro-dolomite in composition.

Phyllite and some slate represent the youngest sedimentary strata in this group of metasedimentary rocks. Both are generally black (locally grey-green), commonly graphitic, and thinly foliated. Both weather rusty in many places owing to the pyrite present.

A few thin layers of white, medium-grained quartzite are interlayered with the phyllite.

Metavolcanic Rocks

The metavolcanic rocks are composed chiefly of massive and sheared basalt but include some pillowed basalt, rhyolite and minor amounts of tuff and basic agglomerate. The pillowed basalt and rhyolite occur in the western half of the area, and the basic agglomerate is found on the northeast shore of Jogues lake near the eastern border of the area.

The basalt is dark green or, locally, black and fine

grained. It is essentially composed of chlorite and albite with small amounts of calcite. The basalts in the eastern half of the area differ from those to the west in that some contain 2-3% magnetite and that some also contain epidote. Some of the sheared basalts may represent basic tuffs.

Metamorphosed basic agglomerate occurs on the northeastern shore of Jogues lake. The fragments appear to be basaltic in composition and are cemented in a calcite-epidote-chlorite groundmass. The fragments range from a fraction of an inch to several inches in diameter, but are usually $\frac{1}{2}$ inch to 2 inches.

Rhyolites are not extensive and occur as interbeds in the basalts. They are commonly grey but some are black. Some of these metamorphosed acid lavas are very similar in appearance to some of the meta-basalts but are considerably harder. A few very finely-bedded occurrences appear to be metamorphosed acidic tuffs.

Within the area of metavolcanic rocks, small amounts of phyllite, greywacke, and quartzite are interlayered with the basalt.

Younger Metasedimentary Rocks

Although the members of this group of metasedimentary rocks are similar to the older metasedimentary rocks, they differ in the following ways: (a) quartzite and dolomite are interbedded with phyllite and slate; (b) small amounts of sandstone, greywacke and silicate iron-bearing rock are present as interbeds. The sandstone is usually white and is very similar in appearance to the quartzite except that it is friable and will break around the quartz grains: it has been included with the quartzite on the accompanying map. The greywacke is medium grained, grey, and composed of quartz and some dark rock fragments. It is essentially a dirty sandstone.

Silicate iron formation occurs at only two places: one east and the other northeast of Jogues lake. The rock is characterized by the mineral grunerite which occurs as a felted mass of light brown needles and sheaf-like bundles.

A quartz-grunerite-iron carbonate assemblage with small amounts of stilpnomelane and magnetite was found to be most common and is characteristic of low-grade metamorphism.

Meta-gabbro Sills

Meta-gabbro sills intrude the metasedimentary and metavolcanic rocks especially in the eastern half of the area. All dip to the east.

The colour of the gabbros varies from pale greyish green

to black, with greyish green being much more common. The important mineral constituents are altered plagioclase and chlorite. In places, there are small amounts of blue quartz, pyrrhotite, and calcite. Some differentiation was noted in the sills, and the gabbro containing blue quartz appears to occur towards the tops.

STRUCTURAL GEOLOGY

The structure of the Jogues Lake area is complex although, or because, almost all the dips are to the east. In general, the pattern of deformation resembles that in other parts of the "Labrador Trough" and is the result of thrusting from the north-east. Most of the compressional forces have been taken up by folds, and faults are mainly restricted to bedding faults in the less competent phyllitic rocks. The net result has been a series of parallel, tightly-folded anticlines and synclines overturned to the west.

METAMORPHISM

The rocks belong to the greenschist facies of metamorphism. The metamorphism increases slightly from west to east, as indicated by the presence of epidote in the meta-basalts of the eastern half of the area.

ECONOMIC GEOLOGY

This area was extensively prospected during the summers of 1961 and 1962, and a few copper showings have been discovered. The most impressive occurrences are on Colombet lake where there are small, but high-grade, chalcopyrite showings.

During the course of the present field work several small mineralized zones were noted in the metamorphosed sedimentaries, basalts and gabbros. Most of the mineralization is pyrite or pyrrhotite, but there are also small amounts of chalcopyrite and nickeliferous pyrrhotite. The more important zones have been indicated on the accompanying map.

The Jogues Lake area holds considerable interest for the prospector. Close examination of the basalts, the gabbros and the contacts of the gabbros with the basalts and the sedimentary rocks may lead to the discovery of additional copper and nickel showings.

REFERENCE

- FAHRIG, W.F., (1956) Lac Herodier (East Half), New Quebec (Map with Marginal Notes); Geol. Surv., Canada, Paper 55-37.

