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ET MINÉRALE

FORT MCKENSIE, SHALE FALLS (EAST HALF) AND
MORAINE LAKE (EAST HALF) AREAS

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OPEN-FILE MANUSCRIPT

Gouvernement du Québec
DEPARTMENT OF NATURAL RESOURCES
Mines Branch
Geological Exploration Service

Geology of the
FORT MCKENZIE, SHALE FALLS (EAST HALF)
AND MORAINÉ LAKE (EAST HALF) AREAS
New Québec Territory

Preliminary Report
by
Burkhard Dressler

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INTRODUCTION

Location, Access and Description of the Area

The map-area, about 160 miles north of Schefferville, is comprised within latitudes $56^{\circ}45'$ and $57^{\circ}00'$ and longitudes $68^{\circ}30'$ and $69^{\circ}15'$ - and within latitudes $56^{\circ}30'$ and $56^{\circ}45'$ and longitudes $69^{\circ}00'$ and $69^{\circ}15'$. It covers about 640 square miles. Access is by airplane from Schefferville or Fort-Chimo. All larger lakes, Swampy Bay river and Caniapiskau river are accessible to float - equipped planes.

East of Caniapiskau river, the area is hilly; west of it, mostly flat. All the area drains northward to Ungava bay.

The area lies in a subarctic to hemi-arctic bioclimatic zone (spruce, tamarack, arctic birch, "Labrador tea" and alders). The woodland is not suited for economic exploitation or mining purposes.

Previous Work

The east and west halves of the area were mapped, respectively, at the scale of 1 inch = 4 miles, by Roscoe* (1957), and Fahrig (1969), and the region south of the present area by Dressler (1971) at the scale of 1 inch = 1 mile.

Field Work

June 19 - Sept. 14, 1972. Traverses were made at less than half-mile intervals. Flat, sand-covered areas were examined from the airplane and, if promising, traversed on foot.

GENERAL GEOLOGY

Almost all the area lies within the Labrador Trough. Only the southwestern corner is underlain by rocks of the Superior tectonic Province.

All bedrock is Precambrian in age. Archean granites in the southwest corner are overlain by sedimentary and volcanic rocks of the Early Proterozoic (Aphebian) Kaniapiskau Supergroup. A possibly post-Kaniapiskau hyaloclastite cuts the rocks of this supergroup.

DESCRIPTION OF ROCKS

In this preliminary report the description of rocks is presented only in table form.

* See "References", at end of report.

I - KANIAPISKAU SUPERGROUP

Volcanic Rocks, possibly post-Kaniapiskau:

Greenish-grey, fine-grained, highly carbonatized tuff. Carbonate-rich, greenish-grey hyaloclastite, containing inclusions of argillite and sandy dolomite. These tuffs and hyaloclastites probably belong to the carbonatite-meimechite suite of rocks of the Patu lake map-sheet south of the present area.

A - Miogeosyncline

Menihék Formation:

- c) Maroon siltstone and fine-grained, maroon sandstone; in places crossbedded; rarely, small dolomitic concretions.
 - b) Grey, tan, or brown-weathering siltstone; in places crossbedded.
 - a) Grey or black argillite.
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Ferriman Subgroup

Sokoman Formation:

- d) Upper silicate-carbonate iron-formation: similar to lower SCIF, but commonly very chert-rich ("lean chert").
 - c) Upper hematite iron-formation: similar to lower HIF. Thickness of layers of ironstone in places 2-3 feet.
 - d) Lower silicate-carbonate iron-formation: greenish-grey, rusty-brown-weathering ironstone, interlayered with dark-grey or black chert or carbonate-rich bands. Both ironstone and chert commonly contain small blobs of carbonate.
 - a) Lower hematite iron-formation (banded jaspilite): red jasper bands (some millimeters to some centimeters thick) interlayered with dark brown-red, oolitic and finely intraclastic, hematite ironstone. In the southern part of the area, in places, a red oolitic jasper bed, about 2 feet thick, makes up the base of the Sokoman Formation.
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Ruth Formation:

- c2) West of Caniapiskau river (\pm northern part of map-area): red and brown siltstone interlayered with jasper beds or lenses.

- c₁) East of Caniapiskau river (± southern part of map-area): banded siltstone. Red, brown, black, grey or greenish-grey beds are from 2 to 20 mm. thick.
 - b) Siltstone and minor argillite, greenish dark-grey, brown-weathering.
 - a) Chert: 1-5, rarely 15, feet thick; brown-red or dark grey; intraclastic and oolitic.
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Wishart Formation:

Fine - or medium-grained, greenish-grey, white, or rarely pink, sandstone or arkose; minor interlayered grey siltstone.

-Unconformity-

Swampy Bay Subgroup

Otelnuke Formation: Not observed in map-area.

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Savigny Formation: Dark-grey, fissile argillite.

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Haute Chute Formation: Not observed in map-area.

Pistolet Subgroup

Uvé Formation: Not observed in map-area.

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Alder Formation: In map-area present only as:

- b) Pink, dark brown-red, fine- or medium-grained sandstone or arkose.
 - a) Pink, coarse, granitic conglomerate, or arkose, form the base of the Alder Formation. These rocks also make up thick layers in the sandstone (b).
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Lace Lake Formation: Not observed in map-area.

Seward Subgroup

Du Portage Formation and Dunphy Formation: Not observed in map-area.

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Chakonipau Formation: Not observed in map-area.

B - Eugeosyncline

(Description is not in stratigraphic order)

Metagabbros: Medium-, in places coarse-grained; grey or greenish grey; brown or tan weathering; in a few places highly carbonatized.

Metabasalts: Fine-grained or aphanitic; grey or greenish grey; brown or greenish-grey weathering; in a few places pillowed or with vesicles or hyaloclastic.

Metabasalts and metagabbros belong to the so-called Montagnais Group of the Kaniapiskau Supergroup. In places one rock type grades into the other along the strike of a ridge. The base of gabbros - for instance at contacts with sediments - commonly is fine-grained.

Rhyolites: Very fine-grained or aphanitic; dark grey; light grey weathering.

Agglomerates, tuffs and volcanic breccias: These rock types are commonly highly altered. They are in greenschist-facies, mostly sheared and exhibit volcanic fragments set in a chlorite- or actinolite-rich groundmass. Tuffs commonly are carbonate-rich.

Conglomerates: In places conglomerates contain granitic boulders up to 3 feet in diameter, in places fragments of volcanics or sediments. The matrix for the

fragments mostly is fine-grained. Granitic breccias and conglomerates were noted on islands in Wapanikskan (Colombet) lake.

Sandstones and arkoses: Coarse-, medium-, or fine-grained; grey, white or pink; in places dolomitic. In places angular or subangular quartz and feldspar grains up to 5 mm. in diameter are set in a black, silty groundmass (= "dirty sandstone").

Siltstones: Dark grey or black. Commonly laminated.

Argillites: Dark grey or black. Commonly rusty weathered.

Dolomites: Grey or light grey; tan weathering; in places sandy and pink.

Greenschists: Fine-grained, foliated or fissile, green; origin unknown.

-Unconformity-

II ARCHEAN BASEMENT

Pink, mostly coarse-grained granites; minor grey, biotite-plagioclase gneisses.

STRUCTURAL GEOLOGY and METAMORPHISM

The major part of the map-area lies within the Labrador Trough. In general, the structure trends north-northwest.

The western part of the present area - underlain by the Wishart, Ruth, and Sokoman Formations - is strongly folded and faulted. Heavy thrusting from the northeast caused overturned folds and more or less strike-parallel thrust faults. East of Cambrian lake, the rocks of the Ferriman Subgroup are thrust over the granites of the Superior Province.

Basalts, gabbros and sedimentary rocks of the eugeosyncline are strongly deformed also. Here, the structural interpretation is based mainly on air-photo examination.

All rocks of the map-area have been metamorphosed. In the western part of the region, the Proterozoic rocks exhibit a very low-grade metamorphism. The degree of metamorphism increases eastward and reaches higher greenschist facies in the eastern part of the map-area.

ECONOMIC GEOLOGY

The region is highly favourable for prospecting, especially for iron, copper, nickel, and perhaps zinc.

In the iron-formation, exploration companies have not

found any considerable amount of direct-shipping iron-ore. However, abundant taconite occurrences could warrant more prospection.

Sulphide showings in sedimentary and volcanic rocks of the eugeosyncline are numerous. Large areas have been explored by different mining companies and claims staked.

Three types of sulphide mineralization can be distinguished. They are:

a) Synsedimentary, disseminated, banded or massive pyrrhotite, pyrite, minor chalcopyrite and bornite in argillites, sandstones and sandy dolomites. This type of mineralization was observed mainly around Wapanikskan (Colombet) and Aulneau lakes. At the latter lake, intensive prospecting has been carried out.

b) Sulphides are found in gabbros and basalts of the Montagnais Group. Pyrite, pyrrhotite and minor chalcopyrite occur finely disseminated. Certain areas where the content of these sulphides is above normal are marked on the map.

Massive pyrrhotite was observed in a gabbro just south of Aulneau lake.

c) Pyrite, chalcopyrite, bornite, hematite, and rarely sphalerite were noted in calcite veins, or quartz veins, or just along joints in sedimentary and volcanic rocks of the eugeosyncline around Wapanikskan (Colombet) and Aulneau lakes.

In places, these three types of mineralization appear to be consanguineous. At Aulneau lake, for instance, gabbros overlie highly mineralized argillites. The lower portions of these gabbros show clearly a higher content of disseminated sulphides than normal. Joints in the surrounding rocks are mineralized.

GEOCHEMISTRY

During geologic mapping, about 430 stream-sediment samples were collected. They were sent to the Department's Laboratories for chemical analysis.

REFERENCES

- DRESSLER, B. (in press) - Geology of the Patu Lake Area; New Québec Territory: Québec Dept. Nat. Res., P.R. No. 603.
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- ROSCOE, S.M. (1957) - Cambrian lake (East Half); New Québec: Geol. Surv. Can.; Paper 57-6.