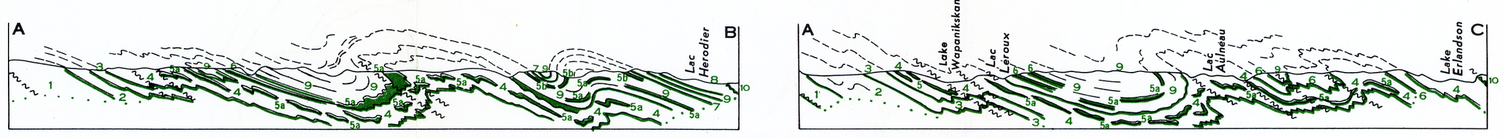
CANADA
DEPARTMENT
OF
MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA



DIAGRAMMATIC CROSS-SECTIONS ALONG LINES A-B AND A-C

Vertical scale exaggerated

SHEET 24F (East Half)

LEGEND

KANIAPISKAU GROUP (2-8)

PROTEROZOIC

- **8** — *Phyllite, mainly dark grey, carbonaceous*
- **7** — *Metabasalt, pillowed and massive*
- **6a, 6b** — **6a**, *dolomite, dolomitic conglomerate;* **6b**, *tuffaceous, agglomeratic dolomite; dolomitic tuff and agglomerate*
- **5a–5c** — **5a**, *phyllite;* **5b**, *iron formation;* **5c**, *quartzite*
- **4** — *Basic pyroclastic rocks, tuff, agglomerate; massive pillowed metabasalt; minor rhyolite agglomerate and lava*
- **3** — *Slate, phyllite; light to dark grey*
- **2** — *Quartzite, feldspathic grit; granite-boulder conglomerate; recomposed granite*

ARCHÆAN

- **1** — *Porphyritic (microcline) granite*

- **14** — *Biotite-muscovite granite, biotite-oligoclase granite-gneiss, hornblende gneiss*
- **13** — *Tourmaline - muscovite pegmatite*
- **12** — *Dolomite; abundant tremolite*
- **11** — *Amphibolite, amphibolite gneiss*
- **10** — *Garnetiferous muscovite-biotite schist and gneiss; staurolite schist and gneiss*
- **9** — *Gabbro and norite; 'blotchy' gabbro, quartz gabbro, olivine gabbro. May be in part extrusive*

Note. Units 9 to 14 are in part metamorphosed equivalents of units 2 to 8

Heavily drift-covered area

Geological boundary (defined, approximate, assumed)

Bedding (inclined, vertical, dip unknown, direction of dip known, upper side of bed unknown)

Schistosity, gneissosity, cleavage (inclined, vertical, dip unknown)

Pillowed volcanic layers (dip unknown, upper side of bed known)

Fault (defined, approximate, assumed)

Structural trend lines

Esker

Geology by W. F. Fahrig, 1954

Fall and rapid

Marsh

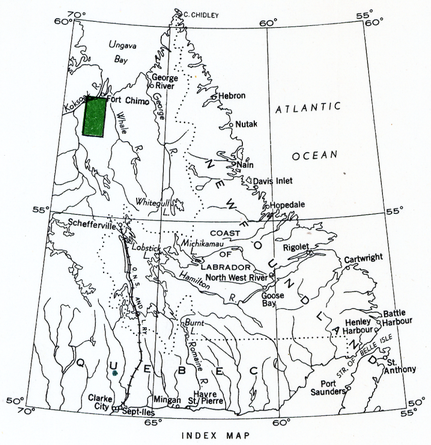
Sand or gravel

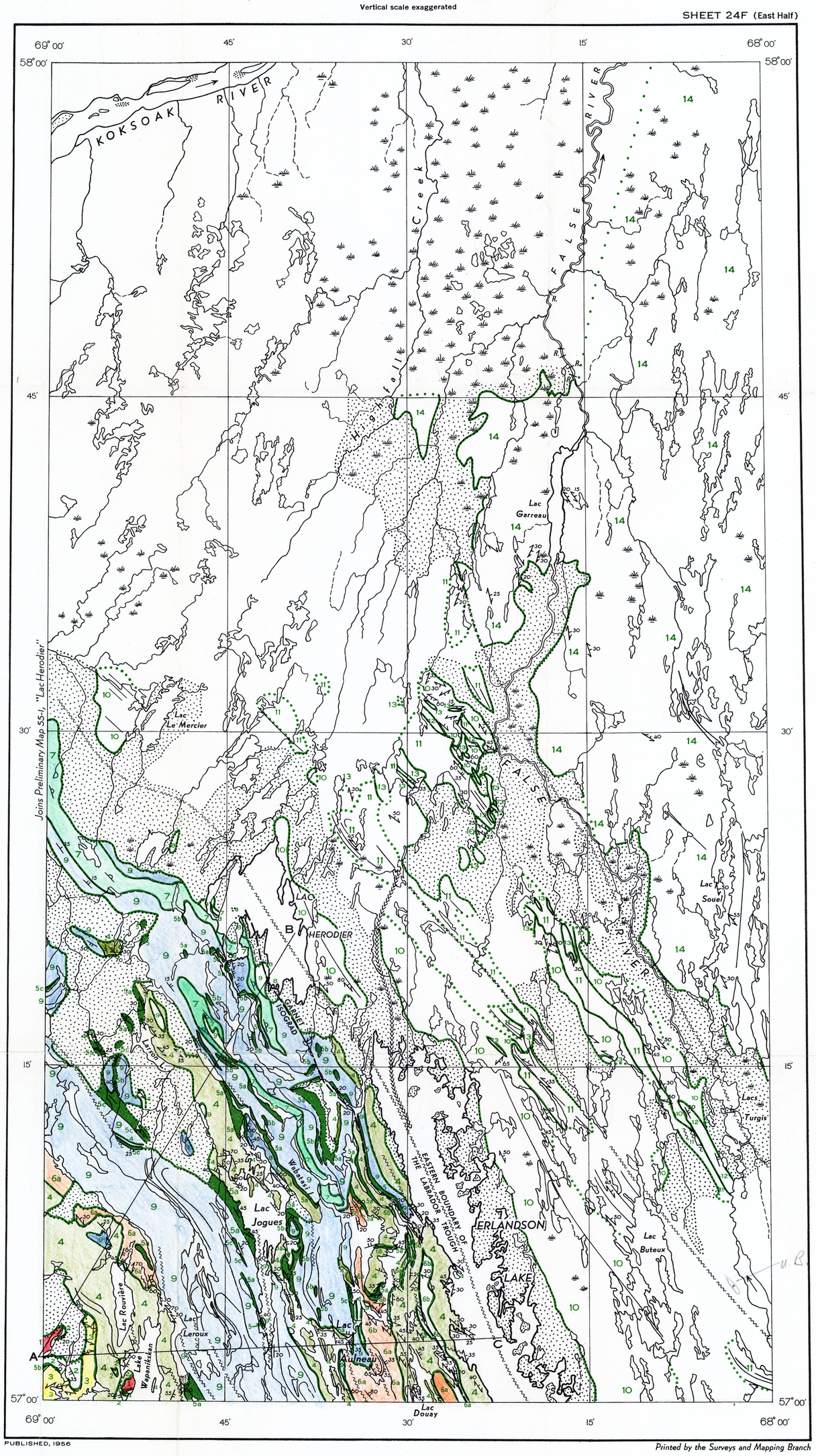
Approximate magnetic declination, 37° 48′ West

Cartography by the Geological Cartography Unit, 1956

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

Geographical names subject to revision





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DESCRIPTIVE NOTES

The granite (1) on Lake Wapanikskan is composed in part of large crushed pink feldspars in a very fine-grained schistose light green matrix.

Coarse-grained white and pink quartzite and arkose (2) overlie the granite on the southwest boundary of the map-area, and quartzite, arkose, feldspathic grit and granite-boulder conglomerate overlie the granite on Lake Wapanikskan. Sheared, basal, granite-boulder conglomerate also outcrops on islands along the east shore of the lake, and along a fault about 1½ miles east of the lake. In the southwest corner of the area a thin band of cherty iron-formation lies above the basal quartzite and is overlain by a thick layer of light to dark grey argillite (3). The argillite occurs at numerous levels in the overlying predominantly volcanic rocks (4).

The volcanic sequence (4) in the region of Lake Wapanikskan consists mainly of massive and pillowed metabasalt towards the base and fine-grained, finely-laminated basic tuffs with minor rhyolite flows and acidic tuffs towards the top. The belt of volcanic rocks trending northwest through Lac Aulneau (Marymac Lake) is composed almost entirely of coarse-grained, basic pyroclastic rocks containing a few white weathering, rhyolite bombs and minor flows and flow breccias. The agglomerate fragments are generally lensoid and range up to 2 feet in diameter. From Lac Aulneau to Erlandson Lake the pyroclastic members are intimately mixed and interbedded with dolomite. These rocks range from agglomerate with a few dolomite fragments through tuffs and agglomerates with apparently syngenetic dolomite matrices to massive dolomite containing sparsely distributed basalt fragments, or layers of basic pyroclastic material, and are generally grouped with the dolomite (6). Rhyolite fragments are more common in the agglomerates near Erlandson Lake. For a distance of 2 to 4 miles west of Erlandson Lake the basic pyroclastic rocks, in particular their matrices, are altered to coarse-grained hornblende-chlorite schist and the rhyolite agglomerates are characterized by the development of coarse-grained biotite around the larger fragments.

Black slate and phyllite are common in the belt of volcanic rocks northwest of Lake Wapanikskan; grey-green slates are interbedded with dolomite and possibly with basic tuffs at the bottom of the overlying dolomite formation. The west shore of Lac Jogues is composed of interbedded phyllite (5a) and finely-laminated tuffs. On the east shore phyllite is overlain by metamorphosed iron-formation (5b) which forms a thin but persistent unit between Lac Jogues and Lac Herodier. The iron-formation is composed mainly of carbonate and quartz, fibrous iron silicates, stilpnomelane, magnetite, and at one locality garnet. Quartzite (5c) interbedded with phyllite occurs southwest of Larson Lake and is believed to lie above the volcanic rocks (4) and at a stratigraphic level similar to that of the slates.

The dolomite (6a) northwest of Lake Wapanikskan is a dark rusty-weathering, fine-grained calcarenite containing areas of finely banded green schist and black slate. Directly east of Lake Wapanikskan the dolomite is missing but thin layers of dolomite occur between the gabbro sills farther east. The dolomite east of Lac Aulneau is predominantly dolomite-boulder conglomerate and in one locality boulders of dolomite conglomerate, up to 3 feet in diameter, are imbedded in dolomite-boulder conglomerate. Some of the conglomerate contains large, angular fragments of potash feldspar. In addition there are areas of red weathering, fine-grained dolomite, part of a member probably underlying the conglomerate. Some dolomite, for example the mass just east of Lac Douay contains pale green pleochroic mica that appears to be a variety of muscovite.

Above these strata and apparently separated from the lower volcanic strata (4) by slate, quartzite, iron-formation (5), and in some areas by dolomite (6), lies a horizon of pillowed and massive metabasalt (7).

Intrusive gabbro (9) was observed within all the previously described units except 1 and 2. The greater part is late Kaniapiskau age. Most of the gabbro has sub-ophitic texture but a minor amount is glomeroporphyritic with white weathering clusters and irregular masses of epidotized feldspar in a granular pyroxene-feldspar matrix. This is the so-called 'blotchy' gabbro. A second variety of gabbro contains irregular patches of blue quartz that appear to be secondary. Thirdly a few areas of gabbro tending in composition toward feldspathic peridotite, and a minor amount of diorite were observed.

East of the 'Labrador Trough' and in fault contact with it, lie the metamorphosed and metasomatized members of the Kaniapiskau group. These are divided into a western belt of four lithologic units (10, 11, 12, 13), in which the primary nature of the rocks is apparent and granitized rocks (14), in which most of the original character of the rocks has disappeared.

Fine- to coarse-grained garnetiferous muscovite-biotite schist and gneiss (10), with well defined bedding, occurs between Erlandson Lake and False River. A large part of the intervening belt is composed of amphibolite and amphibolite gneiss (11), with local pillow structures and fine tuffaceous banding, and narrow belts of metamorphosed dolomite (12). Sills and lobate masses of white weathering muscovite tourmaline pegmatite (13) are present throughout the area east of the 'Labrador Trough'. The highly granitized rocks (14) consist of biotite-oligoclase gneiss, biotite-microcline (augen) gneiss, biotite-muscovite granite, and amphibolite gneiss and pegmatite.

The rocks of the map-area have been regionally metamorphosed and deformed as a unit and in general the degree and grade of metamorphism increase north-eastward. The metamorphic minerals in the southwest corner of the map-area are chlorite, biotite, muscovite, etc. and indicate the green schist or epidote amphibolite facies. Toward the eastern limit of the 'Trough' the metamorphic minerals are coarser grained, and hornblende in metamorphosed agglomerate reaches 2 or 3 inches in length. The amphibole in the belt just west of Erlandson Lake is strongly coloured blue-green actinolitic hornblende and the associated biotite schists are garnetiferous. The garnet isograd was megascopically determined, but garnet was observed in thin sections from rocks near Lac Aulneau and 2 miles west of Lac Herodier. The metamorphic grade of these rocks is probably epidote amphibolite.

Directly east of Erlandson Lake and Lac Herodier the mica schists (10) are mainly fine grained and contain biotite, muscovite, and small garnets, chlorite being either absent or retrograde. Farther east these mica schists are progressively coarser grained and develop quartz-feldspathic layers and veins. The garnets in the schists for a distance of 5 miles west of False River average ½ inch in diameter and the accompanying minerals are similarly coarse grained. Bands of gneiss, with staurolite crystals up to 4 inches in length, were observed within this belt. Associated hornblendic schists and gneisses (11) contain hornblende, which is dark in thin section, and some garnet, and lack epidote or chlorite. Associated dolomitic rocks (12) either contain, along with carbonate, only tremolite in large pale-green blades or both tremolite and diopside. Between Erlandson Lake and False River, map units 10, 11, 12 probably increase in metamorphic grade from low amphibolite facies to high amphibolite facies (staurolite kyanite subfacies). The granitized rocks (14) farther east also probably represent the amphibolite facies.

The major structures of both the 'Labrador Trough' strata and the metamorphic rocks to the east trend northwest. In the southwest corner of the map-area schistose pre-Kaniapiskau granite and basal members of the Kaniapiskau group are exposed as a result of faulting that has extended into the granitic basement. The rocks around Lake Wapanikskan, particularly along the west shore, are in many places sheared, carbonatized, and pyritized. Prevalent thin lensoid shapes of volcanic fragments and strong schistosity in the belt of volcanic rocks through Lac Jogues suggest intense deformation. Eastward from the 'Labrador Trough' to False River the schists and gneisses form continuous, closely folded northwest-trending belts intersected by northwest-trending faults. Little is known about the structures present in the rocks east of False River.

There has been in recent years extensive interest shown in the economic potential of chalcopyrite and nickeliferous pyrrhotite deposits in the 'blotchy' gabbro sills. It is unlikely that the iron-formation of the map-area is anywhere enriched sufficiently to be of economic importance.

PRELIMINARY MAP 55-37

LAC HERODIER

(EAST HALF)

NEW QUEBEC

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

Miles

4 2 0 4 8 12

PRELIMINARY MAP 55-37
LAC HERODIER
(East Half)
NEW QUEBEC
SHEET 24F (East Half)

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