

# GM 04395

GEOLOGICAL REPORT

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Énergie et Ressources  
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Québec 

The Lac la Trêve Nickel - Copper Area

*Cantons de Guettard  
et Lamarck*

The Lac la Trêve area is about 40 miles due west of the town of Chibougamau. The geology is well described in the Que. Dept. of Mines report No 64 "The Branssat - Daine Area" by J. E. Gilbert and on map 608 A, "The Mechamego Lake" sheet of the G.S.C.

In the fall of 1955 H. Pelette and P. Genest while prospecting for the New Jersey Zinc Exploration Co., made<sup>2</sup> nickel - copper discovery on Lac la Trêve. In the spring and summer of 1956, four additional finds were made on this property. The company staked most of the area covering Lac la Trêve, a strike length of eleven miles in all. The main showing is on the heel of the boot like peninsula in Baie St. Geneviève. The writer of this report has not seen these showings but from conversations with the company prospectors, they are similar to those described below.

QUEBEC DEPARTMENT OF MINES

MAR 4 - 1957

MINERAL DEPOSITS BRANCH

CM-4395

This summer two Val d'Or prospectors, Lucien Nat<sup>l</sup>ippe and Jules Labonté made five discoveries on the ground to the east of New Jersey Zinc Exploration while blazing staking lines.

All these showings are associated with a late olivine diabase sill which crosses the townships of Daine, Guettard, Lamarck and the southeast corner of Julien. It strikes about N. 65° E and dips with the formations from 40° to 70° north. The width varies from 120 to 300 feet. It forms a series of hog backs across the area which is relatively flat. The sill itself is more often on the north or south side of these hills.

The sulphides are always found on the south side of the intrusive. They are made up of pyrrhotite, chalcopyrite and an unidentified nickel mineral <sup>which</sup> is probably pentlandite. There is a marked absence of pyrite and quartz. <sub>which</sub>

The # 1 showing, in Guettard Twp., is 3000 feet due east of the easternmost bay of Lac la Trêve. It consists of a small pit on the south contact

of the diabase sill. No length or width of mineralization can be seen because of overburden. A large angular block of serpentinized and mineralized diabase was found. Blasting under it, the mineralization was in the bed rock. So this block was probably heaved up by frost action, without any horizontal displacement. Very little more trenching could be done because of water seepage. Nevertheless enough work was done to indicate that the mineralization was on the south contact and that the footwall rocks were conglomerates. Some of the more or less massive sulphides were found in the sediments as well as in the diabase. These are pyrrhotite, chalcopyrite and pentlandite. There are many asbestos seams in the diabase in this pit. Some are up to 2 inches across with both cross and slip fibre. The fibre is very harsh. Pyrrhotite, pentlandite and chalcopyrite are found running in long narrow streaks parallel to or across the fibres. So the sulphides in this pit are in the diabase, in the asbestos related to the diabase, and in the conglomerate. Some of this mineralization is very massive.

The # 2 showing, in Guettard Twp., is  $1\frac{3}{4}$  miles northeast of the most easterly bay of Lac la Trêve. Again it lies on the south side of the same diabase sill. It is a small roundish outcrop, 15 x 15 feet, sticking out of low ground. The north contact of the sill can be seen 100 feet north of the discovery. The south contact is covered with overburden but 40 feet to the south a small outcrop shows volcanics, The sill here cannot be more than 140 feet wide.

The wall rocks are pillowed andesites. These have tops facing south but dips are north, so these formations are overturned. The sulphides are in streaks and flattened nodules throughout the outcrop. Chalcopyrite, pentlandite and pyrrhotite constitute about 10% to 15% of the rock.

The # 3 showing, in Guettard Twp., is about 1000 feet northeast of the

# 2 discovery. It is again within the south contact of the same sill.

The diabase here is well exposed for a length of 700 feet and a width of 200 feet on the top of a high hill. It strikes about N.  $45^{\circ}$  E. and probably dips with the formations at  $60^{\circ}$  to the north. The minerals at the centre of the sill are very coarse, with pyroxene crystals up to one inch long. A small veinlet of asbestos was noticed in about the middle of the intrusive. There is a chilled edge on the footwall side of this sill of about 10 feet in width. Cooling fractures cross the diabase at about right angles to its strike.

The wall rocks are pillowed andesites. These strike from N.  $45^{\circ}$  to  $65^{\circ}$  E. and dip north at about  $60^{\circ}$ . Tops face south so the formations are overturned. The pillows have epidotized borders and contain some amygdules. There is a small amount of pyrite disseminated in these volcanics. The contacts of the sill are easily traced because of the rougher surface presented by the lavas.

The mineralized zone is in the diabase, at about 10 feet from the south contact, that is just outside the chilled edge. It is exposed almost continuously for the whole length of the outcrop (700 feet) and it has a surface width from 5 to 15 feet. Very little or no gossan can be seen. The mineralized zone can be followed by looking for pits in the rock. Sometimes these are filled with moss. The sulphides are in nodular or globular shapes that vary in size from a fraction of an inch up to two inches across. Sometimes these are squeezed into roughly ellipsoidal forms. The nodules usually have the pyrrhotite and pentlandite at the centre and the chalcopyrite at the edge. The sulphides constitute roughly 10% of the rock in the mineralized zone. They are made up of pyrrhotite, chalcopyrite and pentlandite.

The # 4 showing in Lamarck Twp., is  $\nabla$  about 6800 feet northeast of the

most easterly bay of Lac la Trêve. It is just north of the place where Dempster creek crosses the same diabase sill. A small outcrop 10 x 15 feet is sticking out of overburden. It is made up of diabase with about 15% to 20% sulphides. The south contact of the sill seems to be just about at the edge of the outcrop. About 100 feet to the northeast the sill outcrops and exposes its south contact but there is just a small amount of sulphides here. One hundred feet to the southwest another patch of diabase can be seen. Small pits in the rock which indicate the weathering of the sulphides are evident but no blasting was done to open it up. There appears to be a swing in the contact of the sill here and the well mineralized outcrop is at the apex of the curve. The sulphides are as in the other showings pyrrhotite, chalcopyrite and pentlandite.

The # 5 showing near the Julien-Lamarck township line was not seen by the writer. It was reported by the prospectors to be again on the south edge of the same sill.

These appear to be magmatic segregation type of deposits with some hydrothermal action superimposed. The sulphides originated with the magma of the sill. As this cooled the sulphides which crystallized first sank to the bottom or south contact of the intrusive because of its north dip. The chilled edge prevented the mineralization from sinking to the contact itself as is the case at the # 3 showing. The chilled edge varies in thickness and it can be absent as is the case in the # 4 showing where the sulphides can be seen right up to the contact. This could be explained by assuming different temperatures for different parts of the original magma. Hydrothermal action at the same time or a little later carried some of these sulphides into the footwall rocks as is the case at the # 1 showing. Here they are replacement type in the conglomerate. The alteration of olivine to serpentine and the

formation of asbestos is evidence for some hydrothermal action.

There are other sulphide deposits in the immediate area. But these are pyrite replacement bodies which are older and unrelated to the sill. The volcanic rocks near the mineralized sill have some pyrite in them but none can be found in the diabase.

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