

GM 08226

REPORT ON A MAGNETOMETER SURVEY

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VAL D'OR, Que.

Report on a Magnetometer Survey

of part of the property of

MOGADOR MINES LIMITED

Fiedmont Twp., N.-W. Quebec

by

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MINISTÈRE DES MINES, QUÉBEC
SERVICE DES CITES MINÉRAUX
N° CM- 8226

INTRODUCTION

The Mogador property consists of lots 29 to 40 incl., range X, Fiedmont township. The entire area of the claims with the exception of the northern halves of lots 37 to 40 incl. was covered by our survey.

The work described hereafter represents but part of a systematic search carried on jointly by Mogador Mines Limited and Barmont Mines Limited with the aim of locating the source (or sources) of mineralized boulders found in ranges IX and VIII on Barmont ground.

No outcrops have yet been found on Mogador claims and only a few of them were mapped on the adjacent lots. Accordingly, geophysical prospecting is the only available means to throw some light on the structural conditions prevailing in this district and to efficiently guide exploratory drilling.

GENERAL GEOLOGY

The Piedmont and adjoining areas were recently mapped by L. P. Fremblay and the results of his work appear on Preliminary Map 47-9, "Barraute", issued by the Geological Survey of Canada.

Piedmont township presents some striking geological conditions which were used as a starting point for the large scale exploration carried on at present by Megador and Barmont. The township is crossed by a structural feature already known in Barraute and which was named by us in previous reports "Laflamme River Fault". This regional accident, striking in a north-northeasterly direction, follows the bed of Piedmont Lake and, through a series of creeks, depressions and small lakes, reaches Blouin Lake where its existence has been known for years. Beside a nearly continuous topographical depression, the presence of the fault is also marked by a diabase dyke which outcrops in Barraute and Piedmont and quite probably joins the diabase dyke mapped in Dubuisson, south of Blouin Lake.

Some geological facts of regional significance that appear to be related to the Laflamme River Fault are worth to be noted.

First, the Lacorne and Courville batholiths and their satellites outcropping on both sides of the fault, have an entirely different composition and age. Two relatively small and isolated granitic stocks occur along the fault in ranges II & III, Barraute Twp., and in ranges VI and VII, Piedmont Twp. Other may well exist under the glacial drift which covers most of the region. It is also interesting to note that the bulk of the Dubuisson-Bourlamaque batholith extends east of the Blouin Lake Fault, while only small isolated plugs or narrow tongues are known to exist west of it. The Laflamme River and Blouin Lake faults thus seem to have acted as a controlling factor of the major intrusions.

Second, the Lacorne batholith is bordered by a band of sediments and schists tentatively classified as being of Kewagama age. This band, striking east-west in Landrienne, turns sharply to the south before reaching the Laflamme River Fault and no outcrops of this formation are known east of the fault.

For all the reasons given above, we consider that the Laflamme River Fault is a regional geological feature of major significance.

Another regional feature that may play an important role in the area under review is represented by the Manneville Fault that extends from the interprovincial boundary to, at least, Figuiery Twp. Very little is known about that fault further east but we have some reasons to believe that it breaks up into numerous branches and shears in the Barraute-Fiedmont area which therefore seems to have been subjected to a double pattern of fractures, a condition evidently favourable to ore deposition.

ECONOMIC GEOLOGY

The more favourable areas appear to be those adjoining the Laflamme River fault and dyke. In Barraute, for instance, the Bartes deposit and the Hollinger and Bargold showings are closely related to the fault. A similar relationship does exist further east between the Bell River Fault and dyke and the main deposits of that district. Smith-Tiblemont, Tiblemont Island, Bevcourt, Buffadison and Vicour, all occur at a short distance from the dyke and the deep-seated fracture it sealed.

G.W.H. Nozman established that the Lamothe-Lacorne and Centre Post batholiths belong to the same intrusive phase. The latter being associated with base metal ore deposits, it is possible that the same association may also characterize the first. As a matter of fact, lead and zinc showings have been found in Preissac and Clericy, while zinc-copper-silver values were obtained at different places in the southern part of Barraute and zinc-gold values on lot 57, range V, Fiedmont township.

Among the various areas of Northwestern Quebec where conditions are favourable to the deposition of lead-zinc-silver ore, the northern part of Fiedmont Twp. is one of the most promising in spite of the scarcity of outcrops which makes prospecting difficult. First, this area, as already said, is cut by the eastern nose of the Lacorne batholith and, furthermore, been submitted to the deformations caused by the Laflamme and Manneville Faults.

The discovery in 1947 of five well-mineralized floats in ranges VIII and IX gave a strong support to the assumptions presented in this report and led Barmont and Mogador to undertake a systematic study of that area. Assay results of the floats were as follows:

Float	Location	Nature	Au (oz)	Ag (oz)	Pb %	Zn %	Cu %
1	lot 32, R.VIII	rhyolite	.032	6.492	1.25	2.05	.57
2	lot 33, R. IX	"	.014	1.470	1.44	2.01	.06
3	lot 35, R.VIII	"	.022	1.396	1.91	-	-
4	" "	"	.024	1.585	Tr	3.29	Tr
5	lot 36, R.VIII	quartz	.278	-	-	-	-

All the floats were angular or subangular and were found lying on the bed rock at the bottom of the drift, thus representing some of the last pieces of rock chipped off by the ice. Numerous other boulders, well-mineralized with pyrite, were picked higher up in the drift but all of them were found barren.

Floats 1 and 2 are located along a line the strike of which coincides with the average direction of the glaciation. Float 1 was associated with large and angular blocks of diabase.

Due to the lack of outcrops, it was decided to perform a magnetic survey over part of ranges VIII and IX, on Barmont ground, and range X on Mogador. Although the floats are not magnetic, it was hoped that the survey would give valuable information on the structure of the area and draw the attention to perturbed and mineralized zones. It is the intention of the owners to perform, during the coming summer, an electrical survey over the most favourable sections outlined by the magnetometers. Spontaneous polarization was already tried by Barmont on lots 35 and 36, range IX, and succeeded in discovering a chimney of heavy pyrite located immediately north of a magnetic anomaly. Some pyrrhotite carrying low values in zinc, lead and silver was found associated with the barren pyrite.

RESULTS OF THE SURVEY

All the results of the survey are gathered on a 300-foot-to-the-inch map attached to this report. Some of the magnetic data established by Barmont south of Mogador are also shown on the same map. Technical details concerning the survey are to be found in the Appendix while the geological interpretation of the survey results is given hereafter.

Main formations

According to Tremblay's map, the property is underlain by a complex of andesitic and rhyolitic lavas. This opinion is confirmed by the behaviour of the magnetic profiles observed at Mogador and which are typical of acid to intermediate formations.

Some magnetic bands such as (m₁m₁), (m₂m₂), (m₃m₃) etc., or the contacts of weakly magnetic flows such as C₁C₁ show readily that the general strike of the lavas, with but few exceptions dealt with further on, is slightly south of east.

There are, however, two areas marked Zone "P" and Zone "G" where the existence of lavas is dubious. Zone "P" may well represent the southeastern extension of a rhyolite porphyry body outcropping in range I, Barraute Twp., on lots 25 to 27.

On the other hand, judging by the similarity with the magnetic profiles over the granitic area farther south, around Piedmont Lake, Zone G can be interpreted as also underlain by a granitic intrusion.

Diabase dyke and faults

This magnetic dyke outcropping in range I, Barraute Twp., immediately north of Mogador, was identified with "Anomaly D" and delineated right across the Mogador ground.

The same dyke was traced by means of outcrops and magnetic surveying over ranges VI and VII to the northern part of range VIII where, as shown on our map, it seems to disappear. Unless the dyke turns sharply to the east in range IX, there will be an east-west displacement of half a mile between the northern and the southern sections of the dyke.

If such is the case, one may expect to find in range IX an important fault which may well be a branch of the Manneville Fault. The magnetic survey presently under way in range IX will

probably throw some light on this question.

It is important to note that the southern part of the dyke in range X appears to be broken and folded. The crowding of magnetic anomalies in that area, the sharp turn exhibited by the magnetic band m_1m_1 , the location of anomalies A_2 , A_3 and A_6 , all these facts as well as the behaviour of the dyke can be readily explained by a system of faults or flexures such as F_1F_1 and F_2F_2 . It is worth noting that these accidents parallel the contact between the lavas and the Kawagama sediments outcropping west of Mogador.

The spontaneous polarization survey carried out by Barmont in range IX as well as the few exploratory holes drilled there also tend to support the hypothesis of the existence of faults F_1F_1 and F_2F_2 .

Magnetic anomalies

Several magnetic anomalies marked A_1 to A_8 were outlined on Mogador ground and the adjacent Barmont claims.

As mentioned above, the mineralized floats are not magnetic. Experience shows, however, that, commercial deposits are often associated with magnetic disturbances, that is to say magnetic anomalies are generally found in their vicinity.

A good example of this fact is offered by A_1 which is located 300 feet south of a heavy pyrite chimney where base metal shoots may well exist.

It is important to note that, with the exception of A_7 and A_8 , all the anomalies are located in the faulted area surrounding the diabase dyke. Whatever the exact meaning of these anomalies, little doubt remains as to the conclusion that further exploration work has to be concentrated in that area which covers only some 150 acres.

As far as A_8 is concerned, it is quite probably associated with a dioritic plug such as those outcropping on lots 32, range IX, and 51 range X. The meaning of A_7 is rather uncertain but it deserves a test due to its proximity to the dyke.

CONCLUSIONS AND RECOMMENDATIONS

Generally speaking, the magnetic survey did meet its objectives: it outlined the most favourable section of the property.

This favourable section shows a set of structural conditions that make possible the existence of mineral concentrations. It may well contain one of the sources of the floats discovered further south.

However, before undertaking a test of that area by systematic drilling, we recommend that a spontaneous polarization survey be performed over the southern halves of lots 33, 34, 35 and 36 and extended over part of the adjoining ground if deemed advisable. Unless the overburden is really too thick, any concentrations of sulphides will give measurable electrical reactions.

M. G. G. G.

J. H. H. H.

APPENDIX

TECHNICAL DETAILS OF THE MAGNETOMETER SURVEY

Network of measurement stations

The network of measurement stations consists of a series of north-south picket lines perpendicular to a base line passing approximately through the center of range X. Numbered pickets were placed at chained 100-foot intervals along the lines 400-feet apart. Some intermediate lines and short transverse lines were placed wherever details measurement were deemed necessary.

The ends of all the lines were carefully tied in by chainage to the government survey lot posts. All chainages, except the regular 100 and 400-foot intervals, are plotted on the map; it is, therefore, possible to calculate in coordinates any given point of the survey and reconstruct its position on the ground even after the picket lines disappear.

The magnetometer survey stations and the measurements performed on the Mogador property can be classified as follows:

Base stations	6
Ordinary measurement stations	1,214
Detail measurement stations	<u>153</u>
Total measurement stations	1,373
Check measurements on bases	93
Check measurements on ordinary stations	<u>28</u>
Total number of measurements performed	1,494

Magnetometer Survey

The survey was performed with a precise Ruska magnetometer measuring the variations of the vertical component of the earth's magnetic field. The instrument was set for precision work, the scale coefficient having been reduced by internal adjustments.

All the magnetic values shown on the map attached to this report are given in gammas (1 gamma = 1/100,000 gauss, C. G.S. unit) and are referred to an arbitrarily chosen base station which has been considered to have a zero value, and which is located on Barmont ground Line 68 E station O. The main base of the present survey is 100-ft east of station 326 + 48. Line O and it has a value of + 116 gammas.

The total value of the vertical component of the earth's magnetic field in the district is of about 52,500 gammas, the intensity of the total field being of approximately 59,900 gammas and the inclination of some 77°30'.

The usual sensitivity of the Huska magnetometer is of about 3 gammas, but due to the errors introduced by daily variations and other causes, the precision of the survey is somewhat less. Calculation of the value of the mean quadratic error shows that the survey can be considered accurate within ± 7.5 gammas which is amply sufficient.

The interpretation of the magnetic results has been made by the study of magnetic profiles drawn at a scale of 500 gammas to the inch.

M. Geoffrey

T. Thoulouzy

True copy

T. Thoulouzy

*Sworn before me
at Val d'or this 24th day
of January 1948*

E. Viney

EDWARD VINEY
COMMISSAIRE DE LA COUR SUPPLÉMENTAIRE
POUR LE DISTRICT D'ARTIBES, QUEBEC