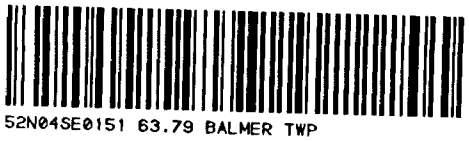

Report on a Geomagnetic Survey of the Property of

DETTA RED LAKE MINES LIMITED

Balmer Township, Red Lake Area, Kenora District, Ont.

INTRODUCTION

Detta Red Lake Mines Limited holds 16 claims in Balmer Township, Red Lake Area, District of Kenora (KRL 19502 to 19510 incl., KRL 19514, KRL 19643 to 19647 incl., and KRL 10013.) This property is contiguous with Lassie Red Lake (Dome), Robin Red Lake (Dome), Dickenson Red Lake (Brewis and White) and MacFie (Brewis and White). It is located near the important gold-bearing zones of Dickenson and Campbell Red Lake (Dome).

Scarcity of outcrops and importance of local structure in the quest for repetitions of gold-bearing zones south of Dickenson and Campbell justified geophysical surveying of Detta. More than ten properties in Balmer Township are being surveyed.

GEOLOGY

Rocks underlying Balmer Township are involved in geological structure known to be of economic importance at some places. They are, however, poorly exposed at the surface, and the relatively few and scattered outcrops located to date by all workers are not adequate for interpretation of structure that is generally believed to be complex. Geomagnetic data from eleven properties being surveyed will provide critical information for solution of the structural problems confronting property managements.

The regional geology of Red Lake area is treated in a comprehensive manner in a report with maps by H.C.Horwood *. The recognition by this geologist of the complex structure in Balmer Township directed attention

* Horwood, H.C.: Ont. Dept. Mines Ann. Rep. XLIX, Part 2, 1940.

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SUMMARY

A geomagnetic survey of the Detta Red Lake property has been made in conjunction with surveys in several nearby properties. Results have been combined with available geological data, which is scanty, in order to present an interpretation of sub-surface geology.

The most pronounced feature revealed by the survey is an anomaly trending east-west in volcanic rocks near the centre of the property, north of the band of Timiskaming sedimentary rocks crossing the southern portion of the property, which is intruded by a quartzporphyry dike. This anomaly is interpreted to be the manifestation of a body of diorite, trending nearly east-west, with either flexure or faulting causing moderate displacement in claim No. KRL 19505.

Other anomalies, less persistent, are shown in the contour plan. Anomalies can be correlated with geological information obtained from the present cross-sectional drilling programme, and if any zone of possible economic importance is intersected the geophysical data can assist in subsequent tracing and testing this zone.

The field personnel engaged in the surveys consists of two magnetometer operators, two assistants, and line cutters. Askania vertical variometers set for sensitivities close to 25.0 gammas per scale division are being used. The general method being used for the surveys is to cut lines on each property at right angles to the expected strike of formations, and to measure the vertical component of the total magnetic field at stations 100 feet apart. Wherever marked local changes in intensities are encountered intermediate stations are measured. Crossing zones of iron formation necessitates a great many extra readings.

to that locality, and indirectly resulted in the discovery of economic gold deposits. Norwood identified certain sedimentary rocks just south and east of Balmer Lake as Keewatin formations, locally developed within a succession largely composed of volcanic rocks. Using these sedimentary rocks as key horizon-markers, a pronounced "U"-shaped synclinal fold was postulated with the nose facing south and the limbs extending east and west.

Recent work by private geologists derived an interpretation radically different from Norwood's conceptions. The band of sedimentary rocks called "Keewatin" by Norwood are correlated through Duluth, Lennie, Brewis, Dickenson, Robin and Dotta properties in an "S" -shaped fold. This interpretation correlates Norwood's "Keewatin" sedimentary rocks with the sedimentary rocks on the Dotta property at McNeely Bay, which he classified as "Temiskaming", by the presumption that all outcrops of sedimentary rocks belong to one succession. There are few such outcrops, especially on Robin and Dotta properties, and no change of strike and dip which impel such correlation. Furthermore, the conception depends to a great degree on the identity of an isolated outcrop near the south-west corner of Claim No. KRb20796 of Robin property, termed conglomerate, whereas Norwood's party mapped it as quartz porphyry. No strike or dip is known for this outcrop, and its identity may be open to question.

Geomagnetic surveying of the structure of Balmer Township indicates that the course of so-called Keewatin sedimentary rocks, comprising bands of iron formation, conglomerate, greywacke and allied variations is neither a U-shaped fold nor an S-shaped fold, and that there is no normal connection between these rocks and the so-called Temiskaming sedimentary rocks at McNeely Bay. They follow a course north of west across Duluth and Lennie

properties, turning southerly on Brewis to cross the Dickenson property into Robin. The band turns to a southeasterly trend crossing the eastern side of the Robin property into Komal and A. B. and R ground. The western limit of this band is a north-south fault passing near the mouth of Balmer Creek through the middle of Dickenson and Robin properties.

GEOPHYSICAL RESULTS

Geomagnetic variations on the Detta claims are much less intense than on Dickenson, Brewis and Robin properties. This is, in itself, evidence that the so-called Keewatin sedimentary rocks on Dickenson and Robin do not pass through Detta by way of a fold. Zones of high magnetic susceptibility characterizing iron-formation bands are not found on Detta, whereas they are prominent on Brewis, Dickenson and Robin. It is feasible that magnetic properties may change along strike, but it is not possible to presume folding on such an assumption because there is no geomagnetic evidence that the anomalies corresponding to rock units have flexures that would permit interpretation of a fold between "Keewatin" sedimentary rocks on Dickenson and Robin and "Temiskaming" sedimentary rocks on Detta.

Geomagnetic data on Detta claims show rock structure to have a general east-west trend across the property. The relative uniformity of magnetic measurements is characteristic of areas of normal greenstone and sedimentary rocks with low content of magnetite. Contacts of the "Temiskaming" band do not stand out sharply in the data, and their interpreted locations are based on a diffuse change from low magnetic susceptibility over known sediments to higher susceptibility over known greenstone rather than by virtue of local anomalies. Most magnetic anomalies on Detta are local, failing to persist for much distance.

Normal Keewatin volcanic rocks trending east-west are believed

to underlie most of Detta property. The so-called Temiskaming band near the south limit of the property is intruded by a quartz-porphyry dike generally parallel to bedding. The course of this dike is determined from outcrops and interpretation of geophysical data.

Near the north limit of the property, drilling on claim No. KRL 19503 has intersected sedimentary rocks, either tuffaceous volcanic rocks or greywacke[x]. One five foot band of iron formation in this hole was reported. It has already been stated that sedimentary rocks of the type outcropping near Molleely Bay on Detta property have fairly uniform magnetic properties not unlike the volcanic rocks nearby. Therefore, lacking iron formation bands of appreciable width, which would be manifest in geomagnetic results, such sedimentary rocks can be undetectable. Knowing that sedimentary rocks do occur, it is possible to select the most probable location of the southern contact of such a band from magnetic results (see map).

One anomaly on Detta is both strong and persistent. It extends east-west across the property on Claims KRL 19505, 19506 and 19507 with a flexure in Claim No. 19506 that may indicate either folding or faulting in the body causing this anomaly. A fault trending east of north is shown on the map. A diorite dike is believed to underlie this zone of anomalies (high) magnetism, by reason of the high susceptibility, the course, and character of the anomaly. If the cross-sectional drilling programme proves this contention, the zone may be tested at other places to investigate economic possibilities.

RECOMMENDATIONS

The strong persistent anomaly shown on the map and discussed above should be drilled where it is quite distinct, in order to relate its known course to geological identity. The cross-sectional drilling programme being

x Oral communication from Mr. George Holbrook.

conducted on Detta will do this. If diorite is found to be present in this zone, it should be tested at other places along its course to investigate economic potentialities.

Other anomalies, less persistent than the one discussed, may be related to rock units encountered in drilling a cross-section.. The course of these can be interpreted from the contour map and location of any desirable intersections can thus be anticipated to assist the planning of further drilling. We are prepared to revise and improve our interpretation from the relationship of geomagnetic data with new data such as drilling results and assist in this way in directing further exploration by drilling.

Respectfully submitted,

MINING GEOPHYSICS CORPORATION LIMITED.

G.P.Crombie

G.P.CROMBIE
Geologist and Geophysicist.

N.B.KNEVIL
Consulting Geophysicist.

March 29, 1946.

PRELIMINARY REPORT ON A GEOMAGNETIC SURVEY

OF DETTA RED LAKE CLAIMS

for

Mid-North Engineering Services Ltd.

INTRODUCTION

Field data involved in the geomagnetic study of the property have been compiled into a profile map submitted to Mr. A. W. White February 14th. All outcrop geology shown was transferred from Map 49 b, accompanying Report by H. C. Horwood in Vol. XLIX, Part 2, Ontario Department of Mines Annual Report 1940.

MAGNETIC CHARACTERISTICS OF THE AREA

Variation in magnetic intensity is much less marked on Detta than on claims north of the property, and is no more pronounced over areas of known sedimentary rocks than over areas of known volcanic rocks. The contacts between these two rock types are, in fact, not clearly shown. Magnetic zones can be correlated for limited distances, however, and at least one of these is continuous across the property. Trends of such zones are approximately east and west.

SIGNIFICANCE OF THE RESULTS

Detailed mapping, more recent than the general mapping done by H. C. Horwood has led to the current opinion that sedimentary rocks outcropping on Detta, Robin, Dickenson, Brewis and Duluth properties are to be correlated as one band, forming an S shaped fold. This new conception classifies sedimentary rocks on Detta, thought to be

of Temiskaming age by Horwood, with similar sediments on Dickenson and Brewis, thought to be Keewatin age by Horwood. It is not a definite correlation, but rather an interpretation between widely scattered outcrops. Strike determinations manifest local twisting but do not show much evidence of the inferred general folding.

Geomagnetic work done to date does not bear out the conception outlined above. There are no zones of sufficient intensity to presume the presence of iron formation in the sedimentary rock band on Detta, whereas iron formation is found in the band inferred to be continuous from Brewis through Dickenson and Robin properties. Zones of high magnetic intensity that characterize the so-called Keewatin sedimetary rocks on Dickenson and Brewis are not found on Detta. Furthermore, the trends of those magnetic zones occurring on Detta persist in an east-west direction beyond limits of the property, denying the postulation of a fold on Detta that would be expected if correlation of sedimentary rocks on Dickenson and Detta were correct. Geomagnetic study, then, supports Horwood's differentiation between Timiskaming and Keewatin sedimentary rocks in this locality, and suggests that both persist eastward as distinct bands, the structure to the east being as yet unsolved.

CONCLUSIONS

Sedimentary and volcanic rocks on Detta claims have a general east-west strike, and are not involved in major folding that would permit correlation of the sedimentary rocks with similar sedimentary rocks outcropping on Dickenson claims.

Zones of high and low magnetic intensity may be correlated for limited distances across Detta property. These are at present

interpreted as showing formational trends. The cross-sectional drilling programme planned for the property will enable correlation of zones of anomalous magnetic intensity with known geological elements, and reliable extrapolation can probably be made at that time. The chosen cross section has a satisfactory location for such interpretation, and it intersects the most persistent, and strongest anomaly found in the geomagnetic work.

Respectfully submitted,

MINING GEOPHYSICS CORPORATION LTD.

G. P. Crombie

G. P. Crombie
Geologist and Geophysicist.

Toronto,
February 18, 1946.

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COAT OF ARMS

Ontario
Department of Mines

Parliament Buildings
Toronto 2, Ontario.

April 18, 1946.

Gentlemen: Attention: Mr. Ian Munro

I have to acknowledge receipt of your geophysical report and map and your letter of April 15th enclosing notarial copy and original of statement of charges by Mining Geophysics Corporation Limited for the survey carried out on mining claims K. R. L. 19502, K. R. L. 19503, K. R. L. 19504, K. R. L. 19505, K. R. L. 19506, K. R. L. 19507, K. R. L. 19508, K. R. L. 19509, K. R. L. 19510, K. R. L. 19514, K. R. L. 19643, K. R. L. 19644, K. R. L. 19645, K. R. L. 19646, K. R. L. 19647 and K. R. L. 10013, Balmer Township, held by Detta Red Lake Mines Limited.

The survey and cost of $2,700.00 therefor have been found to be satisfactory to the Departmental Geophysicist and the Mining Recorder, Sioux Lookout, has therefore been advised that a credit of 33-3/4 days' assessment work may be allowed on each of the above claims on account of such survey.

Yours very truly,

H. C. Rickaby

H. C. Rickaby,
Deputy Minister

/PL

per PL.

P.S. I return herewith the original statement of charges made by Mining Geophysics Corp. Ltd.

Messrs. Brewis & White,
200 Bay Street,
Toronto, Ontario.

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Geomagnetic Contour Map with Geological Interpretation

DETTA RED LAKE MINES Limited

Balmer Township, Ontario

SCALE - 1 INCH = 200 FEET

Contour Interval = 100 gammas

LEGEND

- QPb — Quartz porphyry
- D — Diorite
- TIMISKAMING
- S — Sedimentary rocks
- KEEWATIN
- A — Andesite
- Interpreted contact
- Geomagnetic contour with value in γ
- Outcrop by R.A. Shotford
- Outcrop by H.C. Horwood (approx.)
- Interpreted fault

N

BASE LINE

Mc NEELY BAY

ROAD

SAW MILL

WAREHOUSE

KRL 19502

KRL 19505

KRL 19506

KRL 19508

KRL 19509

KRL 19510

KRL 10013

KRL 19644

KRL 19645

KRL 19646

LAKE

MINING GEOPHYSICS CORPORATION - LIMITED
311 McKINNON BUILDING
19 MELINDA ST. - TORONTO

DRAFTED BY: R.H.	DATE: May 29/46.
TO ACCOMPANY REPORT: 194	COPY NO. 1

J.D. Irambie. W.J. Williams

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Map with
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