REPORT ON

THE GEOLOGICAL SURVEY AND GEOPHYSICAL WORK

MAGDALENA RED LAKE GOLD MINES, LTD.

EAGLE LAKE AREA, ONTARIO

JUNE AND JULY, 1946

Map Nos. M-20, M-21 & M-22

Young, Young & Gross Ltd.,
Red Lake, Ontario

INDEX

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Report on

The Geological Survey and Geophysical Work

Magdalena Red Lake Gold Mines, Ltd.

Eagle Lake Area, Ontario

June and July, 1948

SUMMARY AND CONCLUSIONS

During the past year we have completed a magnetic survey, a geological survey and a self-potential survey of the Magdalena claims as well as considerable trenching, stripping and sampling on this ground. The results of our work show that gold is widely distributed on the property and occurs in two ways: in quartz veins and stringers filling fractures in such rocks as quartz porphyry, and in sulphide replacement zones in the lavas of basic composition. The best concentrations of gold found to date occur in the so-called Zone 1 in the basic lavas. The combined evidence from the various sources of investigation indicates that this zone:-

1. is a concentration of sulphides.
2. has a length of roughly 2000 feet.
3. is approximately 100 feet wide.
4. contains three samples sections, 0.145 oz. gold over 60 feet, 0.146 oz. gold over 40 feet, 0.146 oz. gold over 25 feet, which are open at one or both ends (see Map No. M-22); further sections were unattainable because of water and overburden but isolated gold values have been obtained on the zone over a length of 2000 feet.
5. appears to have the consistency of grade necessary for a large low-grade deposit.
6. should be drilled at close intervals to ascertain the grade and dimensions.

Other concentrations of pyrrhotite-bearing sulphides in the basic lavas were indicated by the magnetic survey and were numbered Zones 2, 3 and 4 (see Map M-20 accompanying Magnetic

Geophysical report). These zones were samples where rock outcrops occurred and checked for sulphides by the self-potential method where they were covered by overburden. None of these zones was found to contain gold in such concentrations as Zone 1 but as sampling of these zones was limited by the overburden, the low gold returns were not considered as too diagnostic. What is considered of more importance is the fact that these zones do contain gold, that theyare similar in mineralogy and structure to Zone 1, and that they are concentrations of sulphides over large areas as indicated by the magnetic and self-potential surveys. It is possible, therefore, that ore may be found in these sulphide concentrations and we recommend that each of the Zones 2, 3 and 4 be tested by at least one drill hole, as shown on Map M-81. The holes should be directed where sulphide concentrations are indicated by the magnetic and self-potential surveys. It is suggested that these zones be drilled after the exploration of Zone 1. In this way they remain as ore potentials when the value of Zone 1 has been defined.

A large portion of the property is underlain by rocks which are more or less fractured and filled with quartz stringers. A large number of samples has been taken from deposits of this nature and generally returned low gold values. However, occasional channel samples have returned values in the ounces and free gold has been found in the quartz in a number of places (see Maps M-17, M-18). It is quite possible that these fractured bodies may contain ore which is hidden under the large areas of overburden. The areas of fracturing are very extensive and a slight increase in the average grade of this material opens the possibility of immense tonnages of low-grade material. A limited amount of drilling on this type of gold occurrence is recommended and the location of these holes is shown on Map M-81.

RESULTS OF SURFACE SAMPLING

Introduction

During the 1948 field season, a month was spent by the writer on the Eagle Lake prospect of Magnolona Red Lake Mines Limited. The claims were mapped on a scale of 200 feet to the inch controlled by the picket lines cut for the magnetic survey. The group was prospected with special attention given to the areas of magnetic anomalies. In all, 104 samples were cut; practically all of these were 5 foot channel samples. The self-potential geophysical method was used to check all the magnetic anomalies for sulphides.

The geological map and report and the self-potential profiles and report are intended to be complete in themselves for assessment purposes, and are included as separate sections in this report. Familiarity with the magnetic contour map, submitted by Young, Young & Orone Limited in December, 1947, and its accompanying report, is assumed.

Development work during the 1948 field season was directed mainly towards prospecting the magnetic anomalies and sampling any mineralization found. Two men were employed for this purpose.

Zone 1

On Zone 1, Rock Island was resampled to check the previous assays. The appearent was found to be very close

as can be seen by inspection of the included assay plan. The values shown along the east side of the island are the new results.

Nothing more important or more encouraging than the main showing on one 1 has been found as a result of the summer's work. The known facts concerning this location are shown on the composite plan (S-82) included in this report. This plan shows the geology, gold values, magnetic contours and the indicated sulphide mineralization as determined by the self-potential geophysical method.

Zone 2

On Zone 2, mineralization was found on Leo Island. Samples were taken over 10 feet but only very low values were obtained. The highest assay was .02 ounces per ton.

Zone 3

Mineralization in small shears and veins on Zone 3 was sampled. Since the various showings do not appear on lie on a continuous structure, no assay plan has been prepared to show the low values obtained.

Zone 4

A long trench extending westward from Line C 150 feet north was sampled along a length of 185 feet. The highest value obtained was .06. The structure exposed in the trench is a shear with a quartz vein parallel to it along part of its length. The eastern extension of this

structure strikes into low swampy ground while the western extension pinches out in the trench. The showing lies in a magnetic condition which persists for several hundred feet off both ends of the trench. This showing may yet have some economic importance so the assay plan has been included in this report.

Miscellaneous

Centered on Line B 1300 feet north, an intrusive (?) porphyry containing quartz-filled fractures gave low gold values over a considerable area. The assay plan shows the values obtained at selected places across the length of the area. This location bears a strong resemblance to that part of the Cornieri Bay showing where quartz stringers associated with high-grade vuggy quartz masses also yield low values.

Along the boundary between Claims 12192 and 12188 a trench in a strong mineralized shear zone was sampled and very low values were obtained. The trench lies along the strike of an irregular quartz vein west of the showing. Coarse native gold was obtained from the vein in a drusy cavity but a channel across the vein about 60 feet away returned a trace of gold. The shear and quartz vein appear to be the result of relief of stress through rocks of different competency resulting in a fracture in the porphyry containing the vein and shearing in the acid flows.

On Line 3 at 2100 feet south, mineralization in

basic flows, iron formation and porphyry dikes has been exposed in a long trench. Pyrite, pyrrhotite and chalcopyrite were seen in the shears and dissominations. Samples were taken along the trench and the values obtained are shown on the accompanying assay plan.

Low values were obtained from a variety of small shears and veins but as none of these is considered to offer any great encouragement they are not included on any plan which accompanies this report. The locations and values obtained are recorded on field notes and sample books and are available for future reference.

GEOLOGY

Introduction

The Maple Lake area was mapped in 1938 for the Ontario Department of Mines by W. W. Moorhouse whose map and report supplements the limited personal observations of the larger features which extend beyond the boundaries of the Magdalene property.

A geological Map No. M-81 accompanies this report.

The rocks underlying the claims are classified in the following table of formations:-

Pleistocene	- sandy clays
Post-Algoman	- lamprophyre dikes
Algoman	- quartz veins
	- porphyry dikes and sills
Keewatin	- intrusive porphyry bodies
	- acid and intermediate flows
	- iron formation
	- basic flows

Keewatin

Basic flows. The oldest rocks are light to dark green andesites with minor basalts in two bands striking north-easterly and southerly respectively; the junction of these two bands lies in the area of the Magdalena group. Pillow horizons are common but the individual pillows are only

occasionally of use in determining flow tops. Amygdules in the pillows are not rare and the concentration at the tops of pillows was of use in structural determinations. The amygdules may be quartz or calcite; they have not been seen to be mineralized by sulphides. The lavas are quite massive with schistosity of a minor degree developed in places and occasionally small shears where the stress has been sufficient. A few amphibolites outcrop in the vicinity of the lavas. No contacts were seen but the amphibolites are considered to be altered and recrystallized andesites. The near-by pillow lavas are in the amphibolite stage of metamorphism which tends to substantiate this assumption.

Iron formation. Bands of lean, siliceous iron formation or banded chert occur in the basic flows along the north shore of Hardrock Bay. Occasionally, these bands may reach 10-13 feet in thickness, but 1-2 feet is usual. In most of these bands the magnetite content is small but in one narrow band enough magnetite was present to cause a noticeable deflection in the compass needle.

Acid and intermediate flows. Overlying the andesitic flows is a series of acid and intermediate lavas containing numerous feldspar porphyry bodies. In mapping these rocks considerable difficulty was encountered in differentiating between porphyritic flows and intrusive porphyries. The rocks are all considerably altered and may or may not have quartz phenocrysts. Similarly, the feldspar phenocrysts may be quite fresh or, at the other extreme, recognizable

only in thin section. Contact relations were rarely seen and the best criteria was the distribution of the outcrops, a circular or elliptical distribution being taken as an indication of the intrusive nature.

The rhyolites were usually porphyritic with quartz phenocrysts which may reach ¼ inch in diameter. The matrix varied from fine to dense, the latter often a very cherty-looking rock. This cherty rhyolite was seen to be intrusive, in some cases at least.

Schisted and agglomeratic equivalents of the acid and intermediate flows are found on the property. Two large areas have been mapped. One is the carbonate schist found on the north-east section of the group. These rocks are possibly derived from the intense shearing of acidic flows. They are light in color and very soft due to the high content of calcite present in part as veinlets and irregular patches. The agglomerate is probably of intermediate composition, being a dark colored rock; the fragments range in size down to such dimensions that in places it is more properly a tuff.

The rocks mapped as dacites include those grey or light green rocks which could not be mapped as rhyolites or andesites. Some of the outcrops mapped as dacite may be Keewatin intrusives. The lavas show no primary structures and consequently the extrusive nature of the rocks is not well marked. Both the alteration and the porphyritic texture vary from place to place increasing the difficulty in recognizing the continuity of the flows from outcrop to outcrop.

Porphyry bodies. The rocks considered to be Keewatin intrusives are medium-grained massive porphyries. They weather light in color and the phenocrysts show up on this surface even when alteration masks their appearance in the freshly broken rock. Fresh, unaltered portions give the appearance of being porphyry dikes but lack of contacts proves that this is a gradational change. These bodies have been found only in the acid and intermediate lavas and attest to the greater viscosity and consequent difficulty in extruding the more acid magmas.

Algoman

Porphyries. Numerous dikes and sills of Algoman porphyries are found in all types of Keewatin lavas. These have been mapped as quartz porphyry, quartz-feldspar porphyry, and feldspar porphyry respectively. Thin section study has suggested that these may form a series from the feldspar end to the quartz end. The evidence rests on the apparent increase in the alteration of the feldspar phenocrysts with an increase in the size and number of quartz phenocrysts. These bodies, which may be either dikes or sills, are usually narrow, of the order of 10-20 feet; an exception is the quartz porphyry dike which is found on Claim No. 12109 and extends north and south beyond the claim boundaries. This dike has a maximum width of 300 feet.

Quartz vein. There are no large continuous quartz veins on the property. The known examples are irregular replacement types which have apparently reopened as vuggy

cavities are present. In some of these cavities coarse native gold and pyrite cubes and tetrahedra have been seen.

Quartz also occurs as fracture fillings in various porphyries and in small shear zones.

Post-Algoman

Lamprophyre dikes. Several dark even-grained dike rocks have been mapped on the property. Thin sections have shown these to be hornblende-rich lamprophyres. Two examples in Bedrock Bay are conformable to the flows and are therefore sills. On the north end of the property, in Fornieri Bay, these rocks have been observed to be both conformable with, and cutting, the flows.

Pleistocene

The bedrock cover on the property is a sandy clay which must reach considerable depth to judge from the number of unsuccessful attempts to trench through it. Where the clay has been washed out along the shore fine sand beaches have resulted.

Structure

Folding - No small-scale folding is in evidence on the property which overlies the junction of two major structural features of the Eagle Lake area. These features are the two synclinal troughs striking approximately northeast and south respectively. The latter is considered by W. W. Moorhouse to be a lateral extension of the former. W. H. Gross considers

that the south-striking syncline is a cross-fold on the major structure. His theory explains the north-south break and the many intrusive porphyry dikes in that direction.

Faulting - According to Moorhouse[1] no faulting of any importance was recognized in the Eagle Lake area, probably because the stresses were accommodated by shearing and flow rather than fracturing. In the vicinity of the Magdalena group of claims much of the rock is quite massive so that the relief of stress here may have involved faulting. Geophysical evidence suggests two lines of offset which may be faults. Only one of these has any definite field evidence to support the contention. This offset runs north-northwest from the main trench on Zone 1. Along this line numerous northerly striking porphyry dikes indicate some structural weakness which permitted their intrusion. About 600 feet west of this line a north trending valley separates acid flows from basic lavas; outcrops are rare in the critical points so it is not known with certainty that there is a definite offset or whether the apparent offset is due to the numerous intrusives which may have invaded the lavas northwest of Rook Island. The offset running south from Line J at the base line as shown on the magnetic contour map, is not marked as a fault by field observation. A suggestion of a structural weakness lies in the emplacement of porphyry dikes in a north-south direction but if a fault exists there is no horizontal displacement.

1. Moorhouse, W.W., Geology of Eagle Lake Area, Ontario Dept. of Mines, vol. 48, pt. 4.

Evidence of faults on the porphyry dike on Claim No. K-18169 is indirect and shows up on the geological map as a result of the distribution of the outcrops. The fault surface has not been seen in any case. The porphyry dike in this case itself probably occupies a fault with very small horizontal displacement.

Shearing - The basic volcanics have been comparatively little affected by shearing stress. Chlorite schists are rare; shear zones are weak, impersistent structures. They are, however, recrystallized to a considerable extent, the ferromagnesians are now represented by hornblende and the feldspars are largely albitized so that any previous schistosity may have been obliterated. In contrast, the acidic lavas are represented in places by large areas of carbonate and sericite schists.

Fracturing - In places, the combination of stress and competency has been such as to develop neither faults nor schists in the rocks but resulting in the production of fracture systems in definite patterns. The rocks containing these fractures are the porphyritic types and apparently intrusive as well as extrusive rocks are favourable for their development. The fractures lie in three directions, one of which is predominant, a second of lesser importance and a third of very minor total quantity. These structures are invariably filled with quartz and may or may not carry gold values.

Distinct from these fracture patterns are the joints found in most of the massive rocks. These latter may be in sets but are not often quartz-bearing.

Geophysical report (Self-Potential) pages 15-22 (incl) removed To file 63-144.

V.A.S. Sept/48.

12191

FORMIERI BAY

12192

LAKE

12193

12190

12189

12188

12186

12187

12198

12184

12183

12197

12185

12181

12182

12196

12180

ROCK IS.

LEO IS.

HARDROCK BAY

12222

12223

12224

BASE L

500N 1000N 1500N 2000N

G

M.V. 200 100 0 -100

1000 1000 1400 200 1500 2000 LAKE

900 900 800 1300 800 1100 LAKE

F

M.V. 500 400 300

900 900 1100 LAKE

C

M.V. 500 200 100

900 900 900 800 1100 1000 LAKE 1100

BASE LINE

A

M.V. 0 -100 -200

1100 1200 1300 1800 1000

BB

100 0 -100

1500 1200

DD

M.V. 900 800 700 600 500 400 300

500N 1000N 1500N 2000N

12

MAGDALENA RED LAKE MINES, LIMITED

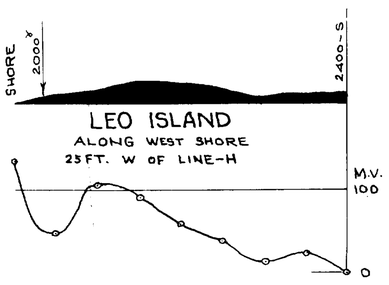
EAGLE LAKE PROSPECT DISTRICT OF KENORA, ONT.

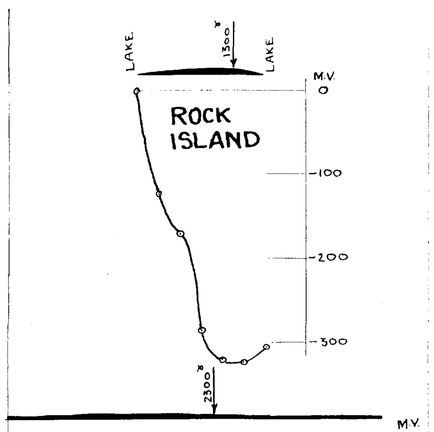
SELF POTENTIAL & TOPOGRAPHIC PROFILES

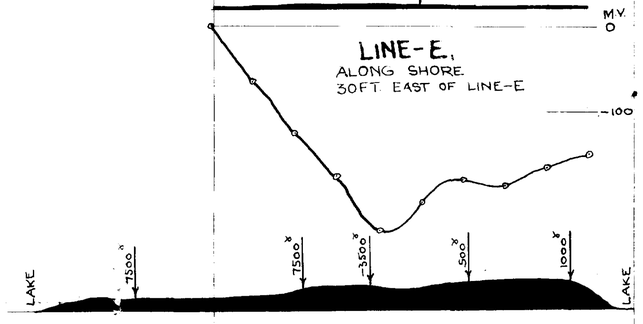
SCALE – HORIZONTAL – 1" = 100'
VERTICAL S.P. – 1" = 100 M.V.
VERTICAL TOP. – 1" = 100'

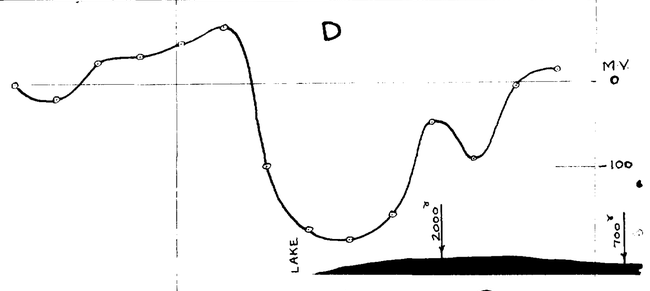
AUGUST – 1948

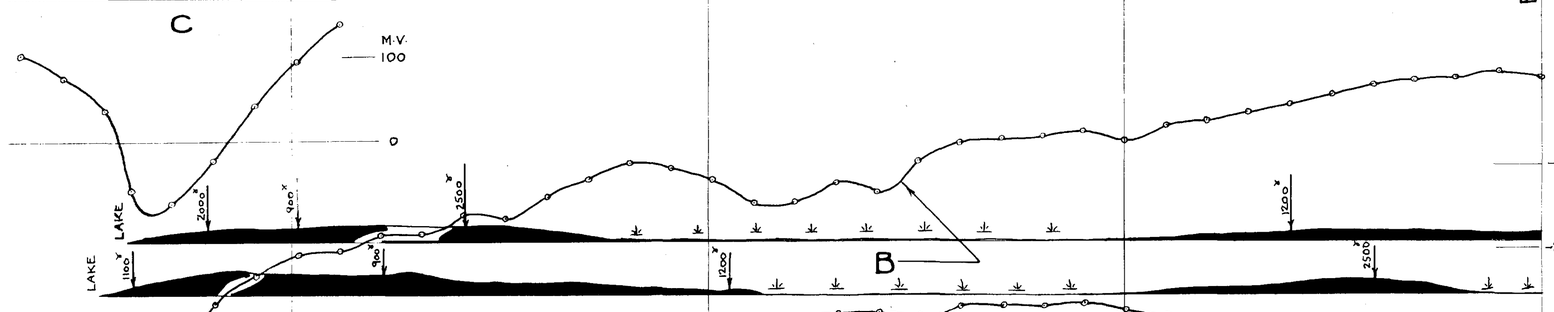
SOUTH SHEET

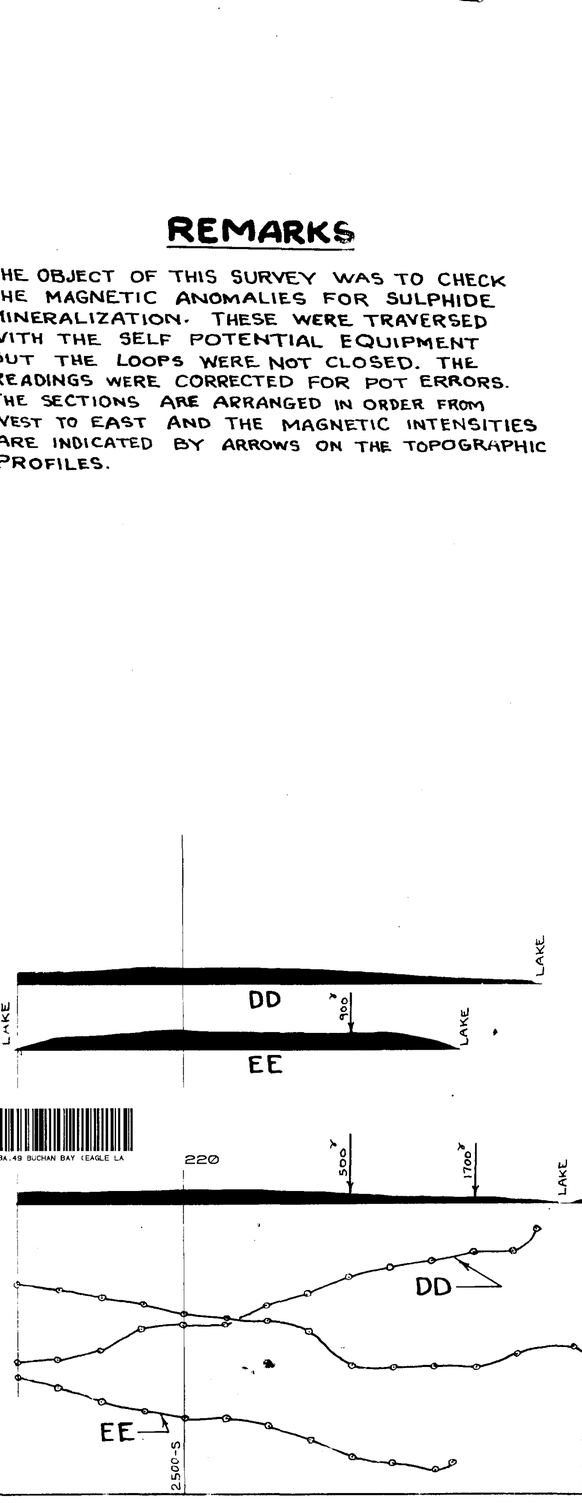










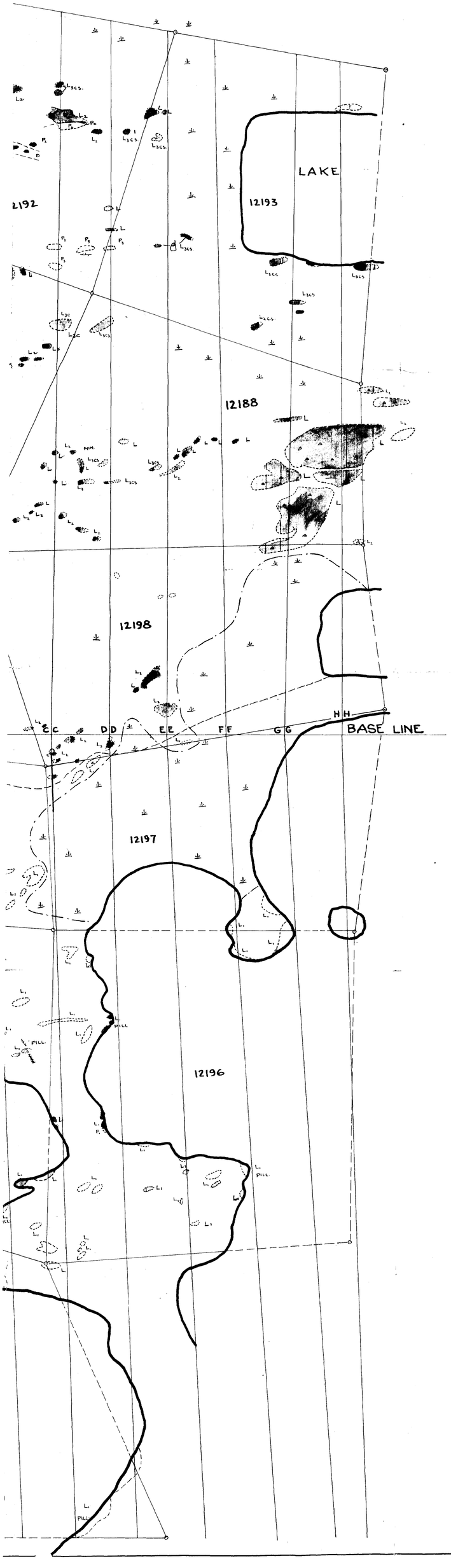


REMARKS

THE OBJECT OF THIS SURVEY WAS TO CHECK THE MAGNETIC ANOMALIES FOR SULPHIDE MINERALIZATION. THESE WERE TRAVERSED WITH THE SELF POTENTIAL EQUIPMENT BUT THE LOOPS WERE NOT CLOSED. THE READINGS WERE CORRECTED FOR POT ERRORS. THE SECTIONS ARE ARRANGED IN ORDER FROM WEST TO EAST AND THE MAGNETIC INTENSITIES ARE INDICATED BY ARROWS ON THE TOPOGRAPHIC PROFILES.

2.B.H.-49

MAP NO M-20 - SOUTH SHEET
Young Young & Thom Ltd



63A-49

LEGEND

POST ALGOMAN

D — LAMPROPHYRE DIKES

ALGOMAN

Q — QUARTZ VEINS

P — PORPHYRY DIKES AND SILLS, FELDSPAR PORPHYRY – P_1, QTZ.-FELDSPAR PORPHYRY – P_2, QTZ. PORPHYRY – P_3

KEEWATIN

K — INTRUSIVE PORPHYRY BODIES

L_3 — ACIDIC FLOWS, CARBONATE SCHIST – $L_{3CS.}$

L_2 — INTERMEDIATE FLOWS

L_{2C} — L_2 = UNDIFFERENTIATED FLOWS

I.F. — IRON FORMATION AND BANDED CHERT

L_1 — BASIC FLOWS, AMPHIBOLITIC FLOWS – A

SYMBOLS

- GEOLOGICAL CONTACT DEFINED
- GEOLOGICAL CONTACT ASSUMED
- OUTLINE OF SWAMPS OR RIDGES
- SWAMP
- PIT OR TRENCH
- DIP AND STRIKE OF STRATA
- DIP AND STRIKE OF SCHISTOSITY
- PILL — PILLOW LAVAS
- MIN. — SULPHIDE MINERALIZATION
- ASSUMED OR POSSIBLE FAULT
- T — TUFF
- AAA — AGGLOMERATE

MAGDALENA RED LAKE MINES, LIMITED

EAGLE LAKE PROSPECT DISTRICT OF KENORA, ONT.

GEOLOGY

SCALE – 1" = 200'

AUGUST – 1948

0 100 200 400 600 800 1000 FT.

Approved for Assessment
J.E.T. Oct 4/48

MAP NO M-21

Young Young & Ross Ltd

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MAGDALENA RED LAKE MINES, LIMITED

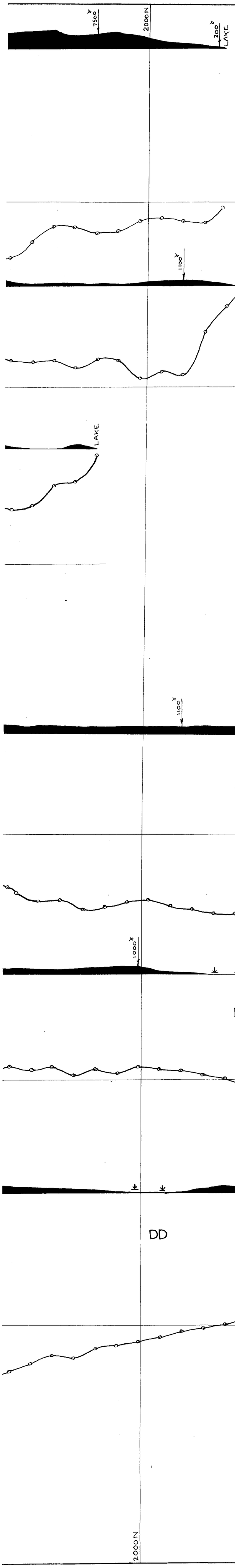
EAGLE LAKE PROSPECT DISTRICT OF KENORA, ONT.

SELF POTENTIAL & TOPOGRAPHIC PROFILES

SCALE – HORIZONTAL – 1" = 100'
VERTICAL S.P. – 1" = 100 M.V.
VERTICAL TOP. – 1" = 100'

AUGUST – 1948

NORTH SHEET



MAP NO M-20. NORTH SHEET
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