REPORT ON

THE GEOLOGICAL AND GEOPHYSICAL SURVEY OF

THE FREDERICK MINING AND DEVELOPMENT GROUP

REX LAKE AREA, ONTARIO

SUMMARY AND CONCLUSIONS

The purpose of this survey was to outline the general rock structure on this group of claims and to assist in the location of any base metal deposits that may occur on the property. Base metal deposits of copper, nickel and cobalt, and the precious metals platinum, palladium and gold, are known to occur in this region as irregular lens-shaped replacement bodies in the paragneiss. Our work in other sections of the Rex Lake Area has shown that these mineralized zones are manifested by readings departing appreciably from the normal magnetic values. It was considered possible to extend and outline by the magnetic method any mineralized showings uncovered by the geological survey and to indicate mineralized occurrences that may be covered by overburden.

The geological mapping revealed four predominant granitic intrusive areas. These areas were all contaminated by the invaded sediments but are recognized as characteristic zones. Generally speaking, the intrusive areas give relatively high magnetic values as demonstrated by observing Intrusive Area A. The contact of the granites and sediments could not be traced with any certainty by magnetic methods for the following reasons:

(1) intense lit-par-lit injection of the sediments

(2) large number of sedimentary inclusions in granitic areas

(3) lack of definite contacts between the sediments and granites. The granites intruded the sediments in irregular manner and consequently the contacts are not well-defined.

However, low anomalies were found locally at granite-sedimentary contacts. Two of these low anomalies coincide with silicified zones on the surface, namely No. 1 and No. 2 showings indicated on geological Map No. F-6. These zones were well mineralized and carry low values in gold. It is believed that these areas of silicification occur on the noses of granite intrusives.

Furthermore, Trend No. 1 (see Magnetic Contour, Map No. F-8) embracing both the above-mentioned showings, is an area of low magnetic intensity and suggests an elongated silicified zone worthy of investigation. Similarly, Trend No. 2 occurs along the granite-sediment contact and indicates another favorable area.

In view of the favorable zones indicated by the magnetic survey and their relationship to low gold values found on the surface, we recommend that the areas of low magnetic intensity be thoroughly prospected.

INTRODUCTION

During June, 1948, lines were cut and picketed in preparation for a geological and geophysical survey of this group of twenty claims. The work was started on June 2nd and completed on June 20th.

Geological mapping was carried out on a scale of 200 feet to the inch. Approximately 10% of the property is covered by the waters of Rex Lake but on the land claims the rock outcrops were

plentiful and a fairly comprehensive geological picture was obtained. The magnetic readings were taken simultaneously with the mapping of the group and aided in interpreting the general geological conditions.

AREA, CLAIMS

The group examined is comprised of twenty claims having an area of approximately 800 acres. Claim numbers are KRL 29271-2-3-4-5-6-7-8-9-29280-1-2 and KRL 29263-4-5-6-7-8-9-29270.

LOCATION AND ACCESSIBILITY

The Rex Lake property of Frederick Mining and Development Ltd. is located on the north shore at the east end of Rex Lake, District of Kenora, Patricia Portion. A part of the southerly claims, approximately 10% of the property, lies in Rex Lake. The claims can be reached by flying from Red Lake, a distance of 65 air miles, or from Kenora, 50 miles to the south-east.

LAND SURVEY

For the magnetic and geological survey a base line was started at the west end of Claim No. KRL-29274 with a bearing N 75° E closely parallelling the regional strike. The arrangement of the claims necessitated the cutting of a sub-base line with the same bearing; this line was started at 700' south on Line Q. Lines were turned off at 400' intervals and cut to the property boundaries. These lines were chained and picketed at 100' intervals.

Due to difficult terrain, the chaining of the ends of the lines was found to be impractical and picket lines are placed on the map perpendicular to the base line. However, as the lines are short,

they are believed to be very close to their true position. This was confirmed by observation along the shoreline.

A total of 17 miles of lines was cut. The station interval was 100 feet and, where required, intermediate readings were taken. A total of 797 observations was made.

As these claims were not tagged there was some difficulty in finding the property boundaries. However, we believe that the group was outlined correctly. Claim corners were located and tied in to the picket lines as accurately as possible.

MAPS

Three maps, Nos. F-6, F-7 and F-8, accompany this report, each drawn to a scale of 1 inch = 200 feet.

Map No. F-6 is a map showing all the surface geological features observed including outcrops, topography, strikes and dips of rock formations, etc.

Map No. F-7 shows the gamma values at each point where an observation was made.

Map No. F-8 shows our interpretation of the magnetic results.

PERSONNEL

The field work for the magnetic and geological survey was carried out by S. F. Leaming L. V. Palmason, F. S. Dunn, R. Bittner and M. Hannah.

TOPOGRAPHY

In general, the topography is rough, particularly in the western portion of the property. In places the ridges rise vertica

100 feet from the lake running parallel to the general east-west strike of the formations. Outcrops are numerous in most parts though the north-eastern claims show few outcrops.

GENERAL GEOLOGY

The Frederick Mining & Development Group lies in an elongated belt of Precambrian sedimentary gneisses and granitic intrusives. The area is one of deep-seated origin as is evidenced by the pegmatitic intrusions, the ptygmatic folding of the quartz and pegmatite stringers, and the abundant lit-par-lit injections of granitic material in the paragneisses.

The gneisses of the area are dominantly of a highly quartzose nature. In part this is due to silicification from the action of the granitic intrusives, in part the original arkosic nature of the gneisses accounts for the high quartz content. During metamorphism the argillaceous part of the sediments were made over into biotite so that the common gneiss is a biotite gneiss. Some more impure bands have allowed the development of garnet. In the main, the stage of metamorphism remained the biotite zone of Harker.

The granites in the area and on the property are seldom free from indications of contamination. Bands of sediments and schlieren are found in the most intrusive and pure looking granite. Three types were mapped in the field - red granite, grey granite and alaskite. These were commonly garnetiferous, especially the white varieties.

(1) Red Biotite Granite This type is most common and occurs in large masses and dikes cutting the sedimentary series. Usually it is

compact and of fresh appearance.

(2) Grey granite. Grey granite is less widespread and occurs in small lenses and bands. It varies in color from a dark grey to almost pure white and often contains garnetiferous bands.

(3) Aplite. A pure white very silicious granite, usually garnetiferous.

(4) Pegmatites. Red pegmatites, though reportedly quite common in the area, were not found to any extent on this property. They occur in the red granites as irregular patches and border phases and are probably the late minor intrusive stage of the red granite.

[illegible]

Two surface showings were examined on this group of claims. No stripping was carried out but a preliminary examination did reveal the exact nature and extent of the showings. Each consists of a pure silicified replacement zone with sulphide mineralization and low values in gold. The mineralized areas seem to occur along granite-sedimentary contact and are interested by low magnetic anomalies.

[illegible]

It is located 25 feet west of 30 feet south on line L. This showing is a silicified replacement zone in paragneiss on the edge of a small escarpment facing low ground to the north-east. The zone can be traced intermittently along the edge of the scarp in a south-westerly direction for approximately 70 feet. Mineralization is quite erratic with pockets consisting of pyrite, pyrrhotite and sphalerite. The length, width and definite nature of the showing could not be de-

ter mined without considerable stripping and trenching. Character samples 1 and 2 were taken to be assayed for gold and nickel.

No. 2 and 3 Showings

These two showings are grouped because of their similarity and proximity. Number 2 showing is located a few feet west of 900 foot south main adit. It is a pyrite-quartz association on the edge of a scarp. Beside sub-ground to the north-east. The rocks are silicified and injected pegmatites; ptygmatic folds in the quartz veins are common. On the south-side of the scarp pegmatites increase and form bosses in indefinite number. They seem to be closely associated with the mineralization and contain minor sulphides.

The pyrite is in cubes, often 1 inch or more on a side, sometimes modified by small octahedral faces. In places, the pyrite is mineralized to considerable depth, in others a thin shell of limonite covers the hard siliceous gossan.

The showing extends along the scarp for about 200 feet but it does not appear to be continuous locally, being discontinuous and varying in degree of mineralization.

Number 3 showing is located on the north shore of Fox Lake at the mouth of the main adit. Conditions here are similar to Number 2 showing but fewer pyrite cubes or none found and silicification is less intense.

Character samples no. 3, 4 and 5 were taken across these two showings to be assayed for gold and nickel.

Assays

Character samples	Location	Gold Ozs./Ton	Gold Value/Ton	Nickel
Sample No.				
1	Fox Lake	0.02	$0.70	Nil
2	"	0.01	0.35	"
3	2 "	0.01	0.35	"
4	" "	0.02	0.70	"
5	3 "	0.02	0.70	"

[illegible]

The vertical component of the earth's magnetic field was measured by a Gaertner-type magnetometer adjusted to a sensitivity of 1/.3 gamma per scale division. Base stations were established and corrections were made for diurnal variation, temperature changes and possible changes in the centre of gravity of the instrument. The vertical intensities in gamma units have been plotted on map No. P-7 which accompanies this report.

Our interpretation of the magnetic readings is shown on map No. P-8. Lines of equal magnetic intensity in the vertical field are drawn at 100 gamma intervals. The normal vertical intensity for the property was assumed to be between 0 and 1000 gammas. Areas above 1000 gammas are colored blue and areas below 0 gammas are colored yellow. Various shades indicate a greater departure of the magnetic values from the normal readings.

The group of low anomalies represented on the magnetic contour map as Trend No. 1 is believed to be caused by an elongated zone of silicification. At two points along this favorable trend, well-indicated surface showings were found which yielded low gold values. Therefore, we believe that further work should be concentrated on the group of low magnetic anomalies.

A small area of low magnetic intensity, represented as Trend 2 on the magnetic contour map, is indicated in the northern part of Claim Nos. [illegible]-2526 and [illegible]-2266.

The remaining anomalies occur on the property and are believed to be caused by the following causes:-

1. [illegible] in topography
2. concentrations of minerals of high magnetic susceptibility

in the granite and porphyries. The high anomalies along the shore of [illegible] Lake are attributed to topography as cliffs rise 100 feet from the lake in places. Granitic rocks outcrop in the areas of magnetic highs at the west end of the base line and these high anomalies are believed to be caused by magnetic minerals in the granite.

The magnetometer has been useful in extending and outlining the mineralized showings found on the property. Furthermore, we believe that the geophysical survey has indicated the most favorable areas on which further work may be concentrated.

---

(1) We recommend that the three surface showings encountered be trenched to reveal their exact nature and their relationship to the surrounding rocks. The mineralized zones should then be properly sampled. These samples should be assayed for nickel, gold, platinum and palladium. The two latter precious metals are known to occur with the sulphides in this region.

(2) The areas of low magnetic intensity indicated by the magnetic survey should be thoroughly prospected and mapped in detail.

Respectfully submitted,

W. L. Gross, B.Sc.

L. V. Robinson, B.Sc.

[illegible], Ontario
July 2, 1943.

[illegible] Geophysical and Geological Survey
Frederick [illegible] and Development Group
[illegible] Lake Area, Ontario

1) Survey [illegible] by [illegible], [illegible] Gross Ltd., [illegible] Lake, Ontario.

2) Field work done, June 2nd to June 20th, 1940.

3) Schmidt-type magnetometer used, scale constant 17.5 gammas.

4) Gross number of man-days employed on survey:-

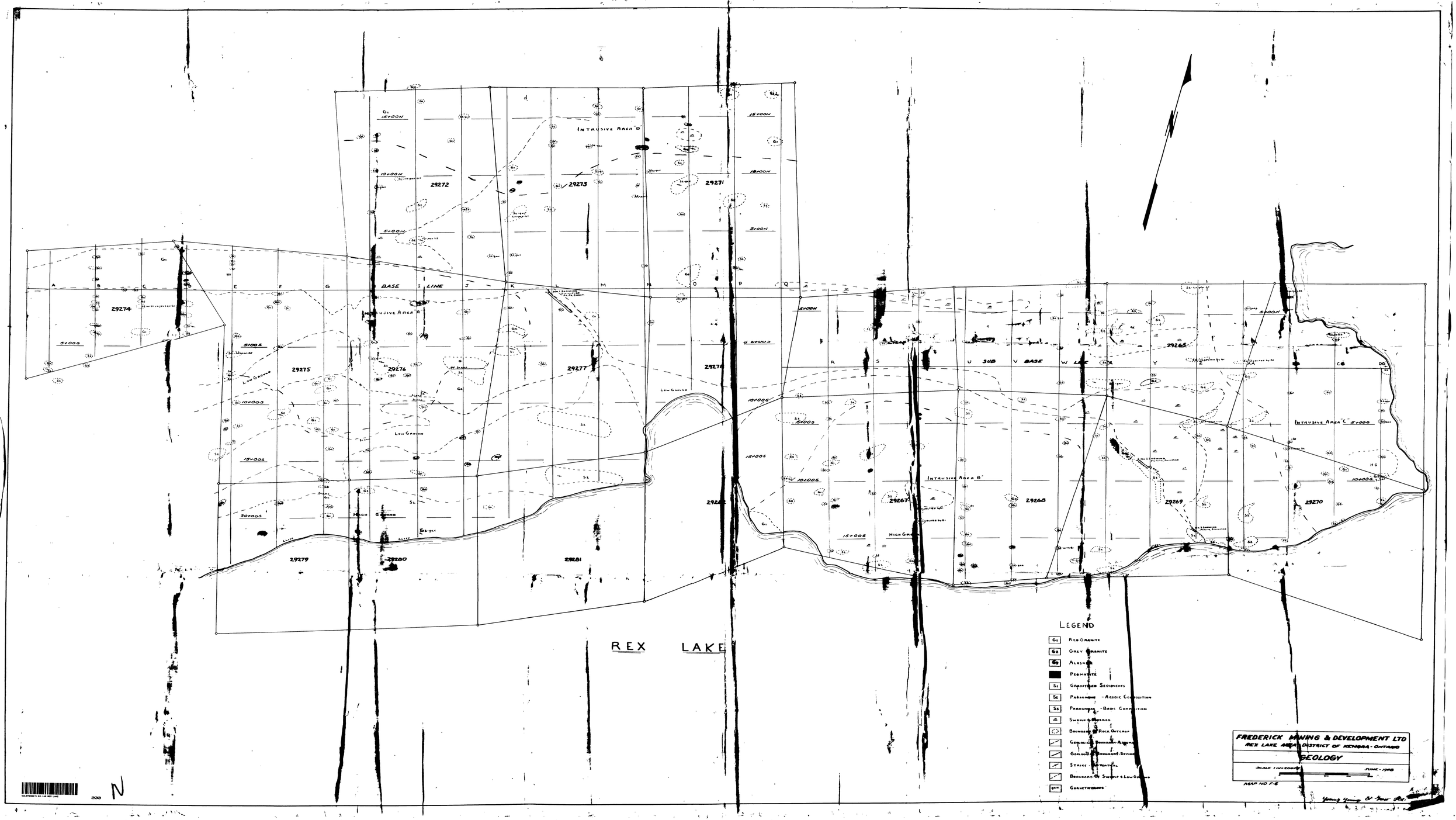
a. Line-cutting contracted at $25.00 per mile	50	man days
b. Instrument operator and assistant	35	" "
c. Geological Field work	35	" "
d. [illegible]	7	" "
e. Interpretation	5	" "

5) Stations established - 797

6) Miles of line cut - 17

7) Areas - 3: Nos. [illegible]-6, [illegible]-7 and [illegible]-8.

8) Reports enclosed in duplicate.


BASE LINE
INTRUSIVE AREA 'A'
INTRUSIVE AREA 'B'
INTRUSIVE AREA 'C'
INTRUSIVE AREA 'D'
SUB BASE LINE
LOW GROUND
HIGH GROUND
29271
29272
29273
29274
29275
29276
29277
29278
29279
29280
29281
29265
29266
29267
29268
29269
29270
REX LAKE
LEGEND
G1 RED GRANITE
G2 GREY GRANITE
G3 ALASKITE
PEGMATITE
S1 GRANITIZED SEDIMENTS
S4 PARAGNEISS - ACIDIC COMPOSITION
S5 PARAGNEISS - BASIC COMPOSITION
SWAMP & MUSKEG
BOUNDARY OF ROCK OUTCROP
GEOLOGICAL BOUNDARY - ASSUMED
GEOLOGICAL BOUNDARY - DEFINED
STRIKE & DIP VERTICAL
BOUNDARY OF SWAMP & LOW GROUND
GARNETIFEROUS
FREDERICK MINING & DEVELOPMENT LTD
REX LAKE AREA, DISTRICT OF KENORA - ONTARIO
GEOLOGY
SCALE 1 INCH EQUALS 200 FEET
JUNE - 1965
MAP NO F-6
N

FREDERICK MINING & DEVELOPMENT LIMITED

REX LAKE PROSPECT, DISTRICT OF REMBRA, ONT.

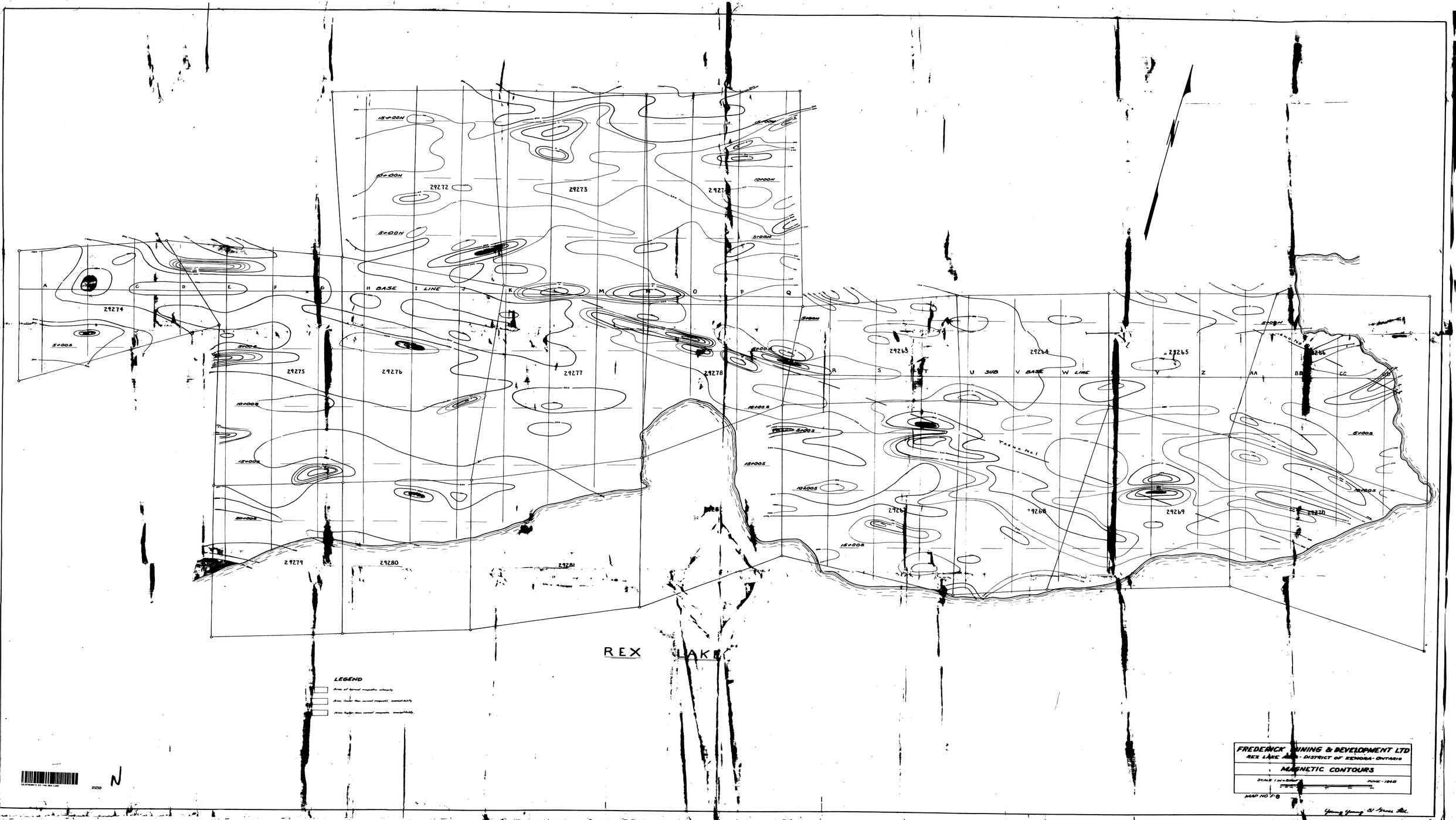
MAGNETIC READINGS

SCALE - 1" = 200' JUNE, 1948

0 100 200 400 600 800 1000 FEET

MAP No. F-7

Lyons, Lyons & Lyons Ltd.


15+00N
10+00N
5+00N
29272
29273
29274
29275
29276
29277
29278
A
C
D
E
F
G
H BASE I LINE J
K
L
M
N
O
P
Q
R
S
T
U SUB
V BASE W LINE
X
Y
Z
AA
BB
CC
DD
5+00S
10+00S
15+00S
20+00S
29263
29264
29265
29266
29267
29268
29269
29270
Trench No. 1
29279
29280
29281
REX LAKE
LEGEND
Area of lowest magnetic intensity
Area of low to normal magnetic intensity
Area of high to normal magnetic intensity
N
FREDERICK MINING & DEVELOPMENT LTD
REX LAKE AREA - DISTRICT OF KENORA - ONTARIO
MAGNETIC CONTOURS
SCALE 1 inch = 50 feet
JUNE - 1968
MAP NO. 7-8
Young Young & Associates