

31M04SW0061 63.610 STRATHCONA

010

REPORT ON
RESISTIVITY AND MAGNETIC SURVEY
FIRBY GROUP
NEWKIRK MINING CORPORATION LTD.
STRATHCONA TOWNSHIP
TEMAGAMI LAKE AREA
ONTARIO

Prepared by:

R. Bruce Graham, Ph. D., Geologist for

Geo-Technical Development Company Limited
24 Wellington Street West
Toronto, Ontario

Newkirk Mining Corporation Ltd. ,
100 Adelaide Street West, Suite 1600,
Toronto 1, Ontario.

Gentlemen:

The following report describes electrical resistivity and magnetic surveys with limited check electro-magnetic work carried out on the 9 claim Firby Option in Strathcona Township, Temagami Lake Area, Ontario.

Three sulphide showings are present on the property. Assays from these indicated less than 1% copper over narrow widths. The geophysical work indicated the mineral occurrences to be small and localized. Diamond drilling confirmed this, as well as the fact that the showings were low grade.

The results of the geophysical survey were not encouraging. If it is desired to carry out further work on the claims, the following two areas are recommended:

- (1) The area between lines 4 + 00E and 12 + 00E;
7 + 00S to 10 + 00S.
- (2) The area between lines 4 + 00E and 6 + 00E,
15 + 50S to 17 + 00S.

A few preliminary test holes should suffice to ascertain whether or not further work here is warranted.

PROPERTY

The property surveyed is comprised of 9 contiguous claims numbered as follows:

T. R. T. 6982 to 6987 inclusive,
T. R. T. 35162 to 35164 inclusive.

LOCATION

The Firby group is located in the central part of Strathcona Township, District of Nipissing, Ontario. It lies 3 miles south of the town of Temagami.

ACCESS

Highway No. 11 passes through the claim group entering at the southwest corner and crossing the north boundary one claim west of its eastern boundary.

The old highway crosses through the southeast corner of the property.

TOPOGRAPHY

That portion of the property showing the greatest relief lies in the southeast corner. Elsewhere the relief is somewhat subdued and rolling. Three small lakes are outlined on the map accompanying this report. These occur in the northern two-thirds of the property. Two of these lie respectively northwest and southeast of the highway. The northwest corner of Lowell Lake just enters the southeast corner of the Firby group.

GEOLOGY

The geological information on which this report is based was obtained from Ontario Department of Mines, Vol. L1, Pt. VI, 1942; "The Northeastern Portion of the Temagami Lake Area".

The western quarter of the claims is underlain by granite. The southeastern quarter is underlain by cobalt conglomerate. The remainder is underlain by andesite and a minor amount of crystallized greenstone and rhyolite. An amphibolite dyke strikes north through the granite in the western part of the property. Minor feldspar porphyry is present in the volcanic complex.

The following table gives the relative ages of the rock formations on the property.

TABLE OF FORMATIONS

QUATERNARY

PLEISTOCENE and
RECENT

Boulder clay, sand and gravel.
Unconformity.

PRE-CAMBRIAN

HURONIAN:

Cobalt conglomerate.
Unconformity.

ALGOMAN:

Amphibolite dyke.
Aplite and pegmatite dykes,
Granite,
Intrusive contact.

KEEWATIN:

Andesite and recrystallized
greenstone, rhyolite, feldspar
porphyry. (The latter is possibly
related to the Algoman intrusive.)

The andesites are medium to fine grained and green in color. Locally they are purplish. Areas of recrystallized greenstone are believed to be due to the presence of near surface apophyses of granite. Such rocks outcrop just west of Maille Lake near the volcanic-conglomerate contact. The extent of the rhyolite is imperfectly known, but is associated with the sulphides in the various showings.

The granite varies from white to greenish white to pink, and is classified as a silicious albite granite. The granite is seamed by pegmatite and aplite dykes.

Amphibolite dykes similar to the dyke occurring in the granite in the western part of the group abound in the granite for several miles further to the west. They favor two directions; one is northerly, and the other is easterly.

The cobalt conglomerate underlies the high ground in the southeastern corner of the claim group. It contains scattered boulders of granite, greenstone and other rocks in a fine grained dark green matrix. It has many of the characteristics of a tillite.

The conglomerate shows little deformation.

STRUCTURE

No pronounced structural features are indicated within the area covered by the Firby group. Information on strike and dip is lacking. However, the formations appear to conform to the outline of nearby large granite intrusives. If such is the case on the ground

under consideration, then the formations would strike North-South. Regional information would indicate dips to be vertical or steep.

No important zones of faulting or shearing are known to occur on the property. A major fault lies along the northeast arm of Lake Temagami two miles to the northeast. If this fault has controlled mineral deposition, then the property could be within its sphere of influence.

GEOPHYSICAL SURVEYS

A combined magnetometer and resistivity survey was carried out over 9 claims comprising the Firby group. The magnetic readings are shown on the east side and the resistivity readings are shown on the west side of the traverse lines. The readings are in gammas for the former and in ohm-centimeters x 10^4 for the latter.

Some electromagnetic check work was also carried out in the vicinity of the sulphide showings.

EXPLANATION OF RESISTIVITY INTERPRETATION

The method used by the Geo-Technical Development Company Limited is a form of the early resistivity methods modified by some nine years' experience in the field.

In short, a known current is introduced into the ground by means of screen contacts, which are separated by a distance

approximately equal to three times the width of the block to be surveyed and located on a line cut through the center of the property at right angles to the base lines. The contacts are spaced equidistant from the base line, but are on opposite sides of it. Readings are taken at 50' intervals along picket lines by sensitive vacuum tube voltmeters, which measure the voltage drop across this interval. The apparent resistivity is calculated from the potential reading and current, in terms of ohm-centimeters. The readings are plotted on a map.

Due to the inhomogeneity of the medium being examined, i. e. the complexity of the geology and structure, interpretations are based on experience and a knowledge of the geological conditions in the area being tested with this particular method. Where the latter are unknown, the interpretation must, of necessity, be limited or very tentative.

However, without any geological information it is generally possible to differentiate between banded rocks such as volcanics, sediments or gneiss and large bodies of massive intrusives, due to the difference of electrical conductivity between the various flows or beds. Strike trends, folding, etc. are therefore readily picked up. In some cases rock contacts may be inferred.

Shear or fracture zones are relatively better conductors due to their higher water content. Where extreme low resistivity

values are found, graphite or sulphides are indicated. Graphite is found in schist or shear zones or sedimentary horizons, which are shown by electrical methods as, generally, narrow low linear trends. Unfortunately, from the point of view of interpretation, sulphides may be present with the graphite or may occur in shear zones giving similar low linears.

RESISTIVITY SURVEY RESULTS

The formations throughout the area are all highly resistant to conductivity. The lowest resistance obtained was in the order of 28 to 45 ohm-centimeters x 10^4 . Values of 10 ohm-centimeters x 10^4 or less are required to give significance with respect to sulphide mineralization.

The lowest values obtained are all localized and do not line up to form conductor axes. They are located as follows:

Line	3 + 00E,	15 + 00S
	6 + 00E,	8 + 50S
	11 + 00E,	2 + 50S, Maille Lake showing
	16 + 00E,	6 + 50N
	17 + 00E,	4 + 00S
	18 + 00E,	11 + 00N
	22 + 00E,	7 + 50N
	28 + 00E,	15 + 00S

MAGNETOMETER SURVEY RESULTS

The various formations on the Firby option do not show much difference in magnetic permeability.

No pronounced anomalies are present. There are, however,

five zones of higher than average magnetic readings that exhibit some linear continuity. These are shown on the accompanying plan as Anomalies 'A', 'B', 'C', 'D' and 'E'.

Elsewhere there are a few local spot highs, but information at hand does not indicate that they have any particular significance.

ELECTROMAGNETIC CHECK WORK

The electromagnetic check work gave three cross-overs. The first two occur at 15 + 50S and 16 + 50S on Line 4 + 00E, and the third was located at 17 + 00S on Line 6 + 00E.

GEOPHYSICAL INTERPRETATION

An area of lower than average resistivity readings in the vicinity of Karol Lake is probably due to drainage effect.

The showing just north of Maille Lake on Line 11 + 00E, 2 + 50S is reflected by a 50×10^4 ohm-centimeter reading. This value is too high to be truly significant, and the distribution of the surrounding values shows it to be of local extent.

A resistivity low of 39×10^4 ohm-centimeters on the south shore of Maille Lake, Line 6 + 00E, 8 + 50S, coincides with Magnetic Anomaly 'C'. Neither the resistivity nor magnetic anomaly are of sufficient intensity to be regarded as important. However, this is the only location where two such anomalies coincide.

Magnetic Anomaly 'A' is assumed to pass through Karol Lake in an easterly direction. A maximum of 1,925 gammas was

obtained, and consequently is not regarded as high enough to be significant.

Magnetic Anomaly 'B' follows a trend of slightly north of east. It lies 100 feet east of the showing at Maille Lake. Readings up to 2,000 gammas were obtained. This anomaly could be due to fractures mineralized with pyrrhotite and hence could be regarded as a weak extension of the Maille Lake showing.

Magnetic Anomalies 'D' and 'E' have a northerly trend. Since amphibolite dykes are known to have a northerly trend on the property, it is likely that these anomalies are due to such dykes. The variability of magnetic intensity along these two anomalies is in part accountable to the fact that the traverse lines closely parallel the direction of the dykes, but the dykes themselves do not exactly coincide with the position of the traverse lines.

The three electromagnetic cross-overs previously mentioned occur in the vicinity of Magnetic Anomaly 'D'. These are a little north of Drill Hole F4 where known sulphides occur. The cross-overs lack continuity and appear to represent local sulphide mineralization along fractures.

ECONOMIC CONSIDERATIONS

Three sulphide showings were diamond drilled. The holes varied from 31 to 90.3 feet. In all five holes were drilled, totalling 269.3 feet. The approximate location of these holes is shown on the

accompanying plan.

Two samples of sulphides, exact location not known, were submitted for semi-quantitative spectrographic analysis for 33 elements. Significant results were obtained for cobalt, 0.05 to 0.02%; copper, 0.5%; iron, high; nickel, 0.05 to 0.02%; zinc, 0.3 to 1%.

The best drill hole assays varied from 0.16 to 0.45% Cu., and surface results over a width of 6 feet were similar.

CONCLUSIONS

The drill results confirmed the geophysical results that the mineralization is weak and localized as small pods.

RECOMMENDATIONS

It must be admitted that little encouragement was obtained from the geophysical results.

If, for various reasons, it is desired to do more work on this ground, it should be carried out in two areas:

- (1) The area between Lines 4 + 00E and 12 + 00E, 7 + 00S to 10 + 00S.

In this area, on the south shore of Maille Lake, a resistivity low coincides with a magnetic high. This is the only location on the property where such conditions occur.

- (2) The area between Lines 4 + 00E and 6 + 00E, 15 + 50S to 17 + 00S.

A few short test holes could be drilled here to test the extent and continuity of the cross-overs indicated by the electromagnetic check work.

INSTRUMENT DATA

A Wolfson type magnetometer with a sensitivity of 21.6 gammas was used for the magnetometer survey. A base control station was established at Line 44-W on the base line and control stations were set up at various points along the line grid, as shown on the accompanying plans. The resistivity survey was carried out with a Canadian Research Institute vacuum tube voltmeter, Model E 9008.

GEOPHYSICAL SURVEY DATA

A resistivity and magnetometer survey was carried out on the Firby group of nine claims in Strathcona Township, Temagami Lake Area, Ontario.

The survey was conducted by Geo-Technical Development Company from August 1st to 31st, 1955.

An east-west base line was cut centrally across the claim group. North-south picket lines were turned off from the base line at 200 foot intervals, and cut to cover the whole group. Line cutting amounted to 14.43 miles.

The magnetometer survey covered 12.6 miles of line involving 664 readings at 100 foot intervals. A magnetic base control

station and a magnetic control station were established. Their location is shown on the accompanying plan on the base line at 0 + 00 and 12 + 00E.

The electrical resistivity survey covered 12.1 miles of line involving 1,284 readings at 50 foot intervals. Detailed work was done along lines 100 feet apart between Lines 0 + 00 to 8 + 00E, 13 + 00S to 18 + 50S and on Lines 11 to 00E, 0 + 00 to 3 + 00S; 12 + 00E, 0 + 00 to 4 + 00S; 13 + 00E, 0 + 00 to 6 + 00S; 15 + 00E, 0 + 00 to 9 + 00S; 17 + 00E, 0 + 00 to 10 + 00S.

The number of 8-hour man days required to complete this work is as follows:

	<u>(8 hour)</u> <u>Man Days</u>	<u>Attributable to</u> <u>Assessment Work</u>
Line Cutting and Chaining	45 x 4	180 ✓
Laying Spread Wire	5 x 4	20 ✓
Operating Resistivity Survey	30 x 4	120 ✓
Operating Magnetometer Survey	35 x 4	140 ✓
Calculation and Interpretation	14 x 4	56 ✓
Drafting	10 x 4	40 ✓
Office Typing and Supervision	6 x 4	24 ✓
Totals	<u>145</u> ✓	0 <u>580</u> ✓

Respectfully submitted,

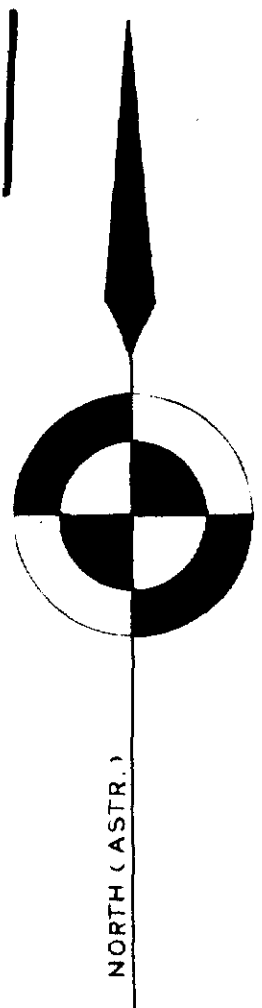
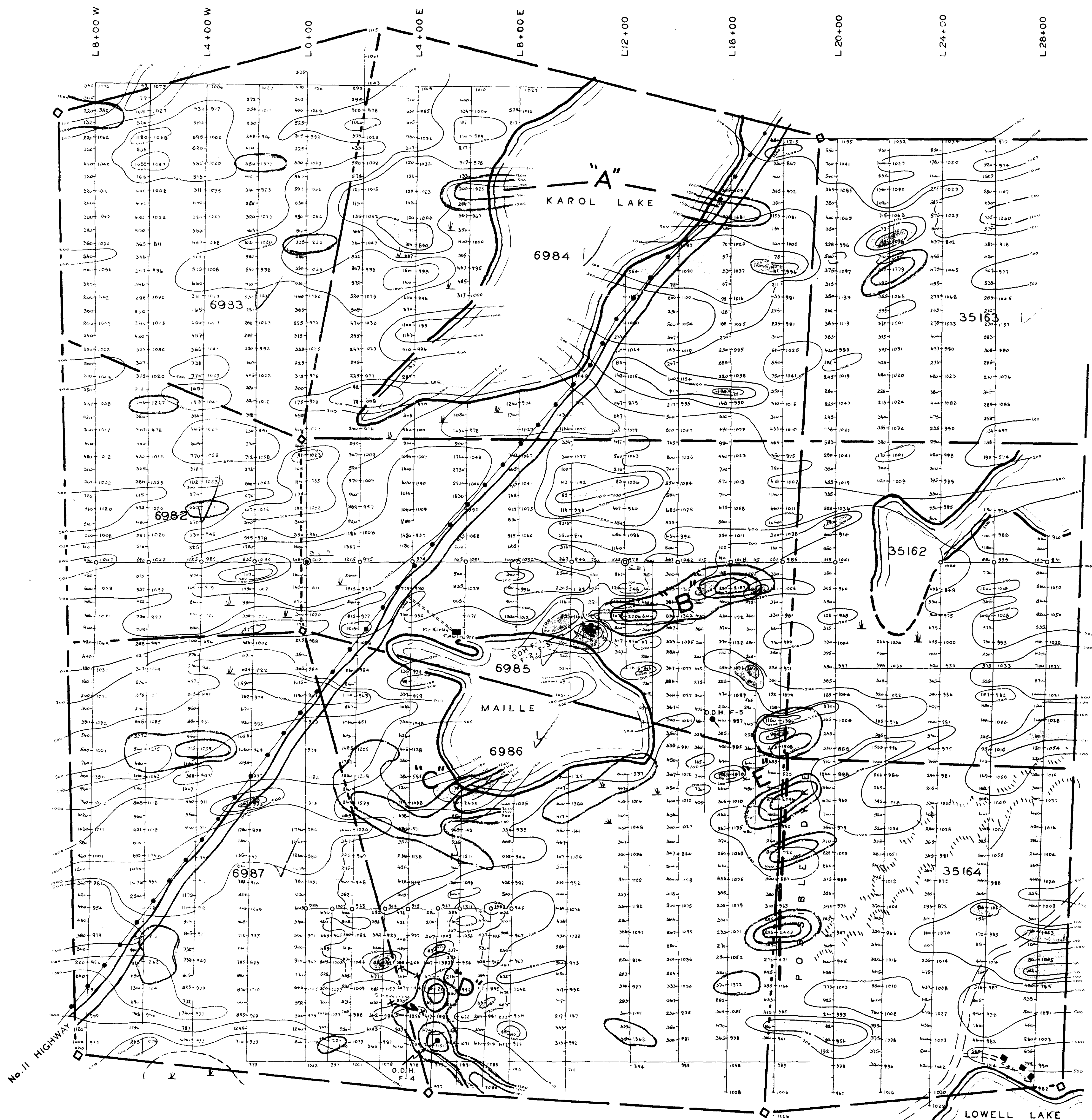
GEO-TECHNICAL DEVELOPMENT COMPANY LIMITED

9 claims = 360

R. Bruce Graham
R. Bruce Graham, Ph. D.
Geologist

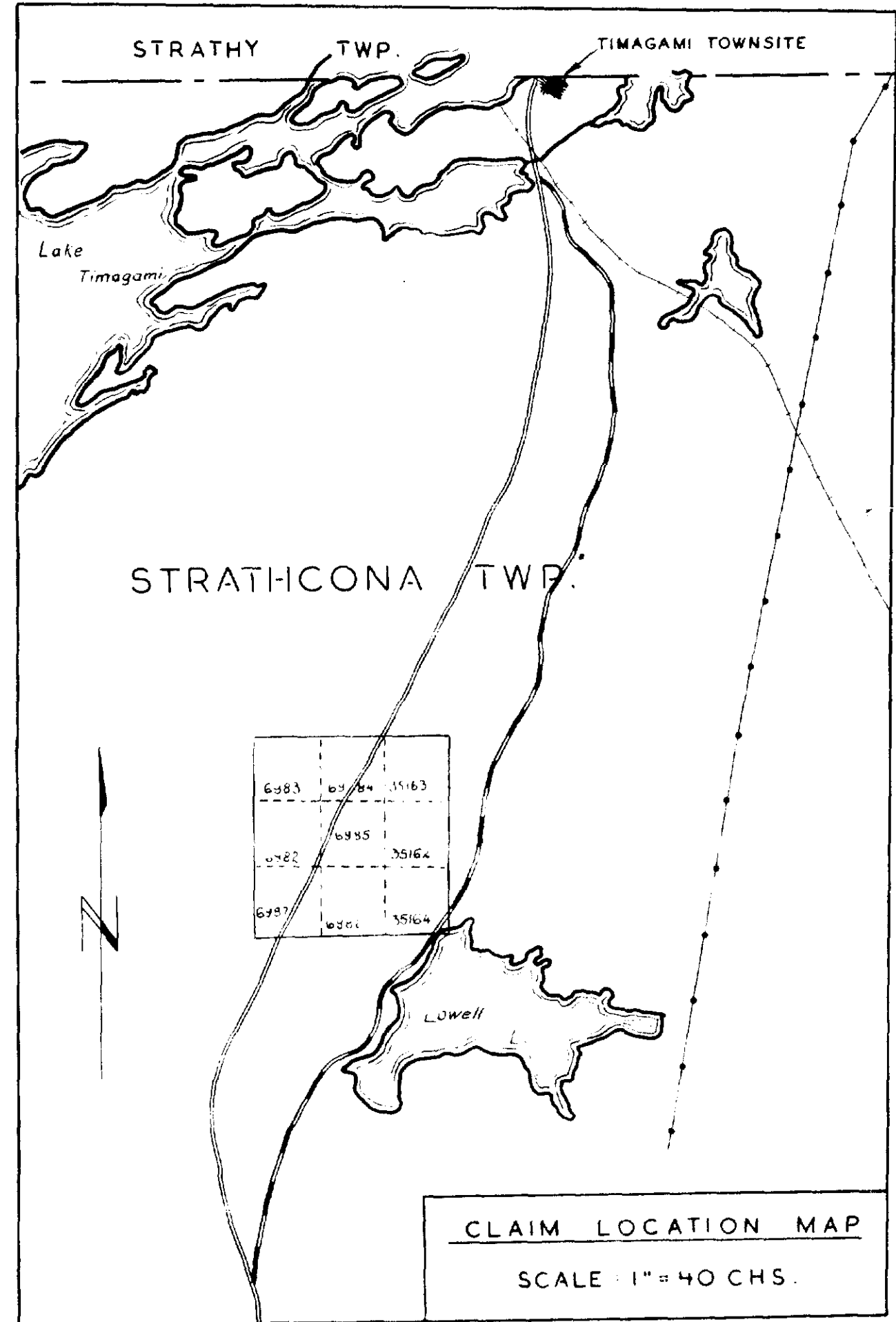
Toronto, Ontario
September 12, 1955

RBG/rap



LEGEND :

- LINE CUT AND CHAINED, MAGNETIC READINGS OBSERVED AND PLOTTED ON EAST SIDE OF LINE GRID
 - LINE CUT AND CHAINED, RESISTIVITY READINGS OBSERVED AND PLOTTED ON WEST SIDE OF LINE GRID
 - CONTOUR OF MAGNETIC READINGS
 - CONTOUR OF ELECTRICAL RESISTIVITY READINGS
 - ⊙ MAGNETIC BASE CONTROL STATION
 - ⊙ MAGNETIC CONTROL STATION
 - DIAMOND DRILL HOLE
 - X — CONDUCTOR INFERRED FROM ELECTRO-MAGNETIC CHECK SURVEY
- | | |
|---|---|
| <ul style="list-style-type: none"> □ 0 - 1500 GAMMA □ 0 - 1200 □ 1200 - 1500 □ 1500 - 2000 □ 2000 - UP | <ul style="list-style-type: none"> □ 0 - 50 OHM-CM x 10⁴ □ 50 - 100 □ 100 - 200 □ 200 - 500 □ 500 - 1000 □ 1000 - UP |
|---|---|



GEOPHYSICAL SURVEY DATA ON PROPERTY
OF "FIRBY" GROUP OF CLAIMS
NEWKIRK MINING CORPORATION LIMITED

ISO-DYNAMIC CONTOURS OF MAGNETIC INTENSITIES
AND
ELECTRIC RESISTIVITY CONTOURS

STRATHCONA TOWNSHIP
DISTRICT OF NIPISSING
TIMAGAMI AREA
ONTARIO

GEOPHYSICAL SURVEY BY :
GEO-TECHNICAL DEVELOPMENT COMPANY LIMITED

PLAN No. 1

SCALE : 1" = 200'

AUGUST 1955

