Hans Lundberg,
Victory Building,
80 Richmond St. West,
Toronto 1, Ontario.

REPORT ON

THE GEOPHYSICAL SURVEY OF

THE KENSULL GOLD MINES LIMITED,

SHAW AND GIBLIN TOWNSHIPS, COCHRANE DISTRICT, ONTARIO

DIGEST

A magnetic survey on the Kensull property was carried out in May and June, 1946. The survey outlined several zones of high magnetic intensity and indicated several trends which are thought to be shears or faults.

One of the high magnetic intensity zones is undoubtedly caused by a quartz diabase dyke and need not be drilled.

A second area of high magnetic intensity, probably underlain by serpentine rocks, occurs in the southwest portion of the property. Within this area there is a narrow zone of very high intensity. This could be caused by concentration of magnetite along a shear.

The trend suggested by interruptions in the iso dynamic lines of both higher than normal and lower than normal intensities, appears to represent the continuation of a fault known to occur to the southeast of the property.

Another trend located in the northwest part of the property may be indicative of a carbonatized zone. Some additional trends which may be of importance are also discussed in this report.

A number of sections have been recommended for drilling in order to verify the interpretation of the magnetic results and to obtain geological information on which to plan a more detailed drilling program.

INTRODUCTION

The magnetic survey was started on May 10th and completed June 6th, 1946. Weather conditions were favourable throughout the duration of the survey. Because of the scarcity of outcrops, it was necessary to obtain geological information either by drilling or by geophysical methods. It was decided that a magnetic method be used, since by this method it is possible to trace magnetic

horizons. It is often possible to locate shear zones, faults and contacts by means of a magnetic survey.

Location and Means of Access

The property is located on the boundary of Carman and Shaw townships, Cochrane District, Ontario. Carman township is not subdivided, but in Shaw township, the property lies in lots 1 and 2, Concessions 3, 4 and 5. The property consists of 29 claims numbered as follows:

P-29625 to P-29630
P-29547 to P-29562
P-29580 to P-29587
P-29609 to P-29617

29 claims
36 days on each

The approximate area of the property is 1100 acres.

The camp used for the survey is located at the rapids on the Redstone River a short distance south of the property. In order to reach the camp the survey party took a truck from Timmins to South Porcupine and then followed along the road to Malga Porcupine mine, as far as a trail leading into the camp. The camp is 1½ miles from the road.

Topography

The Redstone River crosses the property from south to north. During the time the survey was made, the water in this river was high above its natural banks, therefore a considerable area was not accessable. In the vicinity of the river there is low swampy ground but the remainder of the area is sand plain. Outcrops are very scarce.

GEOLOGY

There are only five small outcrops on the property. These consist of pillow lava and andesite. On the west side of the more westerly of the outcrops in the northwest corner of the property, there is a small carbonate shear which strikes about 30° east of south. A specimen from this shear which was brought to our office as an example of the shear, was assayed. It ran 0.02 ozs. to the ton.

Some trenching was done at 29503, 500W and olivine diabase was found. Because of the scarcity of outcrops, it is almost impossible to map formational contacts until some drilling has been done. A study of the geological maps of the area show that any one, or all, of the following types of rock may underlay the property.

1. Andesite and pillow lava probably underlay the greater portion of the property.

2. Bands of iron formation occur to the west of the property and strike towards it, therefore there may be one or more bands of iron formation on the claims.

3. Large masses of serpentine occur to the southeast of the property and it seems possible that the southern portion of the group may be underlain by these rocks.

4. A large stock of quartz porphyry lies north of the property and may extend into the more northerly of the claims of the Kensull group.

5. Both olivine diabase and quartz diabase dykes occur in the area in considerable abundance, therefore it is possible that some of these may cross the property.

The iron formation, serpentine rocks, quartz diabase and olivine diabase are rocks which commonly contain magnetite in appreciable quantities and therefore are formations over which high magnetic intensity may be expected. Because of this, it is possible to make only a tentative interpretation of the magnetic results until some drilling has been done.

THE GEOPHYSICAL SURVEY

General

The successful application of magnetic methods to prospecting for ore deposits and the solution of structural problems in drift covered areas depends upon the fact that all the minerals and metals forming the earth's crust possess characteristic magnetic susceptibilities. Therefore, wherever deposits of magnetic material are encountered in large enough quantities, measurable magnetic anomalies will occur. The exact form of these anomalies and their relation to the deposits or formation causing them are factors ~~xx~~ that depend on the shape, size, distribution, depth, magnetic susceptibility and orientation of the body with respect to the earth's magnetic field, as well as the latitude in which it occurs and the amount of residual magnetism which may be present. In the final analysis, it is the complete anomaly and the relation of the magnetic highs and lows studied in conjunction with all available geological data that govern the final interpretation.

Owing to the many factors listed above which may influence the form of a magnetic anomaly, it is manifestly impossible to arrive at a correct quantitative prediction of the grade and amount of mineralization causing the disturbance by merely examining the character of the anomaly to which it gives rise. A magnetic survey will locate concentrations of magnetic minerals. In some cases, these

magnetic minerals may form an ore body. In others, they may be a constituent of an important rock formation which can be used as a horizon marker to deduce the location and trends of such structural features as faults, folds and unconformities. Where the magnetic susceptibility of two adjacent formations is sufficiently different, the approximate location of the contract may be determined.

It is obvious that in order to complete the geological picture by means of a magnetic survey, at least some rock has to be observed at key points. If, therefore, there are no outcrops, it is necessary to drill a number of short holes at certain key places to make a final interpretation of any magnetic survey.

Land Survey

The land survey was carried out under the direction of Mr. Crawford, underground surveyor at Preston East Dome Mines. The township line between Shaw and Guman townships was located. An east-west base line was turned off at right angles to the township line and extended east and west across the property. The north boundary of the property was turned off at right angels from the township lines. From these lines, the profile lines were established at 600 ft. intervals. All lines were turned off by means of transit. Lines were extended by siting pickets and were chained with chainage pickets set at 50 ft. intervals.

The origin of the survey is on the township line at a point 2,960 feet south of the north boundary.

Personnel

L. F. Bath carried out the magnetometer survey.

Method

Intensity determinations of the vertical component of the earth's magnetic field were made with an Askania Balance (Somidt type) adjusted to read 35.6 gamma per scale division. Readings were taken at 50 foot intervals along profile lines. The first base station established was assigned an arbitrary value. A system of control stations was maintained throughout the area surveyed, in order that the necessary corrections for diurnal variations etc. could be made. By this means, all the stations are automatically referred to the geophysical datum of the first station and the values approach those which would be obtained if it were possible to take all the readings at the same time and under the same conditions.

A total of 127,500 feet of profile line was read and observations were taken at 2006 stations.

RESULTS OF THE GEOPHYSICAL SURVEY

The Maps Nos. 14-243-1, 14-243-2, 14-243-3 and 14-243-4

The four maps accompanying the report are drawn to a scale of 1 inch equal to 200 feet. Maps Nos. 14-243-1 and 14-243-2 show the results of the survey on the north and south portions of the property. On these maps, the value in gamma units of the vertical magnetic intensity as observed, are plotted at each point of observation. In order to bring these values to the absolute vertical intensity for the area obtained by taking observations at the Ontario Government's station at South Porcupine, a factor of 57010 gamma has to be added.

Maps Nos. 14-243-3 and 14-243-4 show the interpretation of the magnetic results by means of iso-dynamic lines which outline areas of equal magnetic intensity. The arbitrary normal for the property selected in order to show the trend of the magnetic zones is between 1200 and 1400 gamma. Areas of magnetic intensity greater than 1400 gamma are coloured blue and those less than 1200 gamma are coloured red. Deeper shades of colouring are used to show greater deviation from normal.

Heavy broken lines mark trends which may in part indicate faults, shears or the approximate boundary between rocks of different types. Full lines show the locations of sections along which drilling should be done.

The Magnetic Results

The magnetic results may best be described by sections.

In the northern portion of the property to the east of the No. 2 trend, the magnetic field, with two exceptions, is fairly uniform and lower than normal. The first of the two exceptions is along line 475E where magnetic intensities are as much as 600 gamma above normal. This is a long narrow anomaly such as is usually found over quartz diabase dykes. It has a north-south trend, a common direction for such dykes. Although there are no outcrops of quartz diabase in the near vicinity, the geological maps show that a series of m such dykes occur about three miles north of the northern end of the anomaly, therefore it is most probable that this anomaly is caused by a quartz diabase dyke.

The second exception is a local high that occurs on trend No. 3 on line 2500E. Because of the limited extent of this anomaly, located as it is in a fairly uniform area of magnetic intensity, it may be caused by pyrrhotite or magnetite mineralization along a shear, therefore the section should be investigated by drilling.

There are two possible interpretations as regards the formations under-

lying the remainder of this northeastern portion. The first is that the area may be underlain by quartz porphyry and the second, by fairly acid volcanics or tuffs. The lack of any evidences of trends suggesting bedding may favour the quartz porphyry interpretation.

The second portion of the property to be discussed, lies in the southwestern portion of the property to the west of trend No. 1. The vertical magnetic intensity over this area is, in general, higher than over any of the other portions of the property. The zone is at least 2000 feet wide, a width that seems too great for iron formation, therefore it is thought that this section of the property is underlain by serpentine. Since there are several large outcrops of serpentine to the southeast and the strike is northwest-southeast, in this section, there is geological support for the above interpretation.

There is one zone of very high magnetic intensity within this area. It crosses line 3000S at 3500S having a strike of approximately N20°W. This anomaly may be caused by high magnetite content such as might be developed along a shear zone, and should be drilled.

Magnetically, the area between the two portions of the property described above, is much more complicated. A series of high and low magnetic zones probably represent beds with high magnetite content and low magnetite content, therefore the strike of the zones of equal magnetic intensity show the strike of the formation. It would appear that the strike of the formation is rather irregular, and thus certain portions of the area could have favourable structures. These should be drilled.

There are two features which deserve particular mention. The first of these is a high magnetic zone that extends from 2200S line 1000W to 2050S on the township line. Trenching of this zone showed the presence of olivine diabase.

The second feature is a N30°W trending zone which crosses the north boundary at 1000E and the 0+00 base line at 2400E. This is a cross cutting feature and may be caused by a diabase dyke.

There are six trends shown on the map. No. 1 is the approximate boundary of an area most likely underlain by serpentine and an area underlain by a series of volcanics with interbedded basic flows, diabase, or perhaps some iron formation. In the northern part of the property there are some indications that this trend also represents a fault.

No. 2 is the approximate boundary of an area of low magnetic intensity and an area of alternating low and high zones. The low area may be underlain by

quartz porphyry.

No. 3 is a trend which is marked by one narrow high zone of magnetic intensity in the area of low intensities. This may be a shear zone.

No. 4 is the boundary of two areas. In the northern section, the strike of the zones of equal magnetic intensity tend to depart from the local zone of high magnetic intensity situated on line 1500W at 2150N. In the southern section, the trend of the zones appear to swing to the southeast. The significance of this is not apparent but as geological information is gained by drilling, it may be possible to make a more definite interpretation.

No. 5 follows along narrow zones of low magnetic intensity. There also appears to be some displacement of the iso dynamic lines as they cross this trend. Study of the geological maps suggests that this trend may be the continuation of a fault which is known to occur in Carman township to the southeast of the Kenaull property.

Trend No. 6 is marked by well defined bends in the iso dynamic lines. Carbonate veined with quartz is known to occur along this zone.

Recommendations

A series of drill sections is recommended to test certain areas which appear to have favourable structures. These are as follows:

D.D.Section No. 1 — This section starts at a point 200 feet east of line 2000W, station 950S, and finishes at a point 70 feet west of line 2000W station 1300S.

D.D.Section No. 2 — This section starts at a point 240 feet east of line 3000W, station 3400S and finishes at a point 210 feet west of line 3000W station 3400S.

D.D.Section No. 3 — This section starts at a point 330 feet east of line 500W station 3050S and finishes at a point 160 feet west of line 500W, station 3050S.

D.D.Section No. 4 — This section starts at a point corresponding to station 3850N line 3500W, and finishing at a point corresponding to station 3500N line 3500W.

D.D.Section No. 5 — This section starts at a point corresponding to station 3960N line 2500E and finishing at a point corresponding to station 3500N line 2500E.

D.D.Section No. 6 — This section starts at the intersection of the base line and the Shaw-Carman township line and finishes at the intersection of the Shaw-Carman township line and station 300S.

D.D.Section No. 7 — This section starts at the intersection of the Shaw-Carman township line and station 1200N and finishes at the intersection of the Shaw-Carman township line and station 800N.

D.D.Section No. 8 — This section starts at a point 180 feet east of line 1500W station 2300N and finishes at a point 140 feet west of line 1500W station 2050N.

Conclusions

The drill sections should be carefully studied together with the magnetic results before further drilling is planned.

Data for Assessment Work

The owners should obtain a map from their land surveyor showing the claim boundaries and at least one magnetic profile. They should also obtain from the land surveyor a statement as to the number of man days for cutting and chaining the lines.

Our engineer and one helper used 65 eight hour man days for field work. A total of 25 eight hour man days was used for drafting and preparation of the report.

We do not have the record of man days for cooking and supervision by the Kensull staff during the course of the survey, but this should also be added to the total.

This report is respectfully submitted.

Toronto, Ontario.
July 6th,
1946

(signed)

Hans Lundberg

65
25
90

180
4
720

29 | 720
58
140
145

90

No. 11

(Work Done) Date

Porcupine Mining Division P-29525.

Abstract of Mining Claim

Name and Address of Licensee: J.D. MacLean.

Timmins, Ont.

Number of License: M-12142.

Locality: Shaw Township.

900

Date and Hour of Staking: July 4/44 at 9:00 A.M.

Date of Recording: July 7/44.

Forestry Permit Granted

Forestry Permit Refused

Cert. of Record Granted

Cert. of Work Granted

July 12/44. Transferred to John A. Macpherson. A-19987.

Oct.30/44. Extension granted to June 30/45.

June 11/45. Extension granted to December 31/45.

Dec.27/45. Extension granted to July 31/46.

Jan. 7/46. Transferred to Kensull Gold Mines Limited, A-20257.

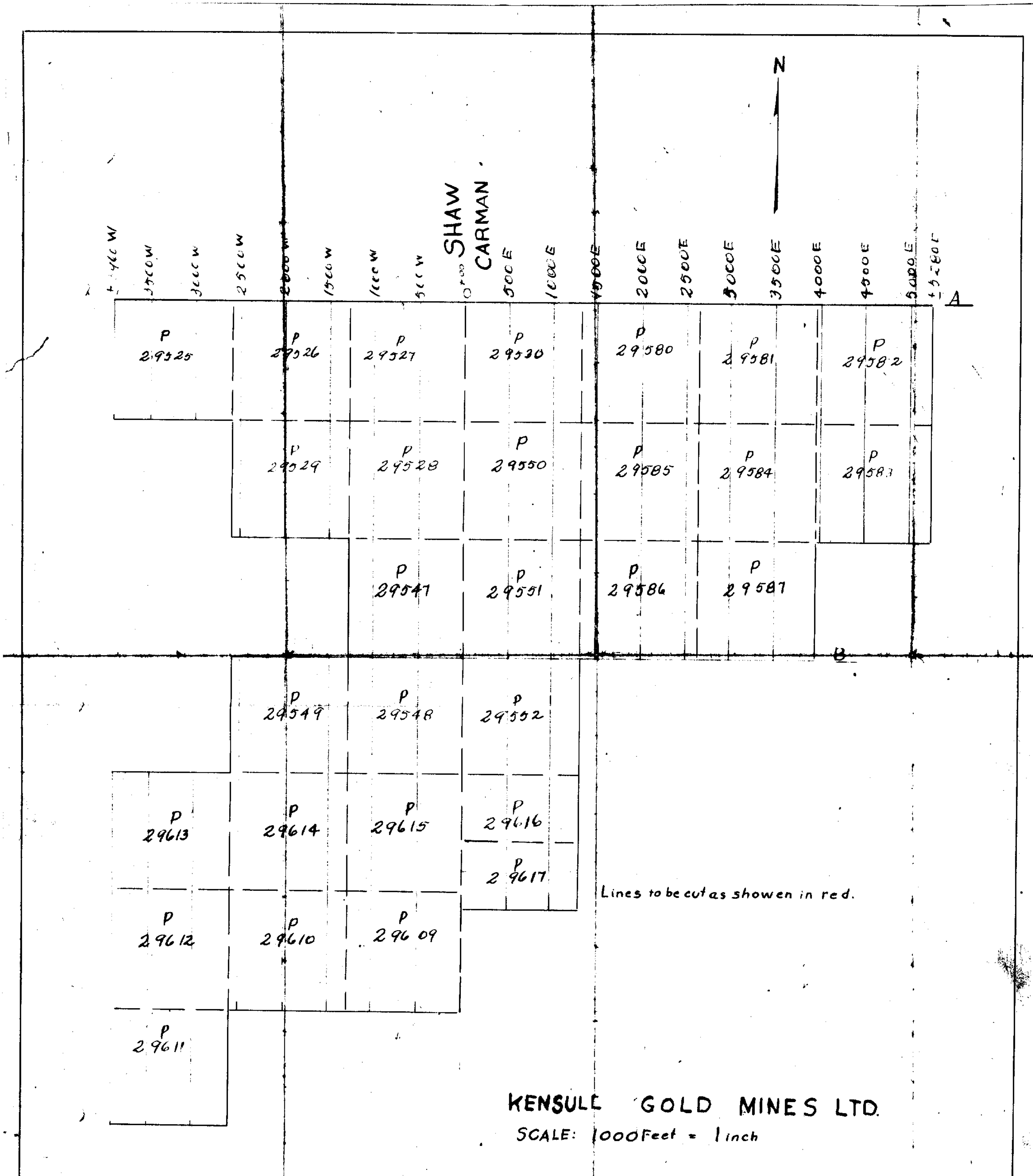
July 25/46. Extension granted to November 30/46.

Nov.28/46. 99

Nov.28/46. 36 geophysical. Cancelled. Dept.letter May 29th. 1948.

Dated at Timmins, Ont. this 22nd. day of October 19 48.

Mining Recorder



200

3960 W
3500 W
3000 W
2500 W
2000 W
1500 W
1000 W
500 W
0 W

0 S
500 S
1000 S
1500 S
2000 S
2500 S
3000 S
3500 S
4000 S
4500 S
5000 S

P29549
P29548
H 1
P29613
P29614
P29615
P29612
H 2
P29610
P29609
H 3
P29611

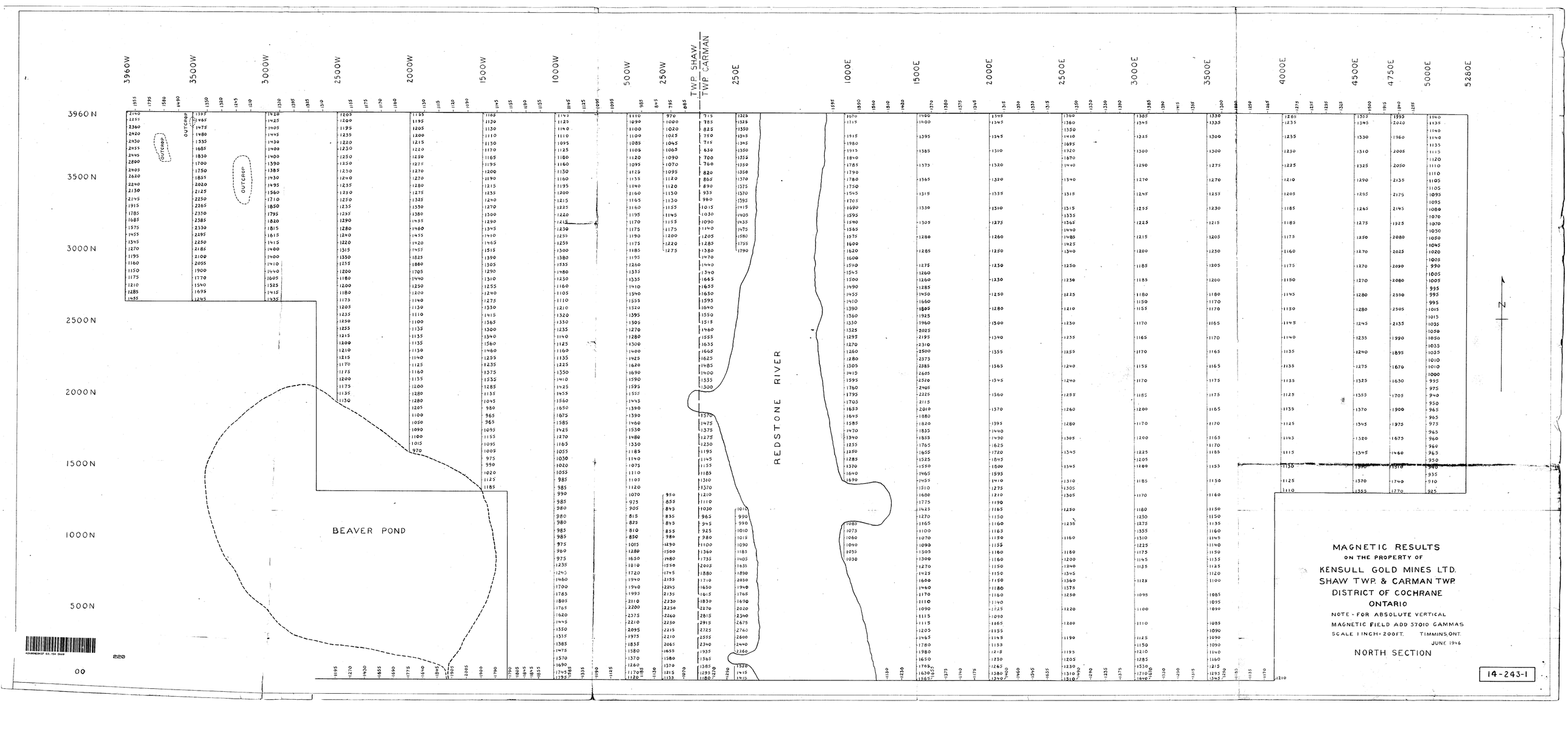
SHAW
GARMAN

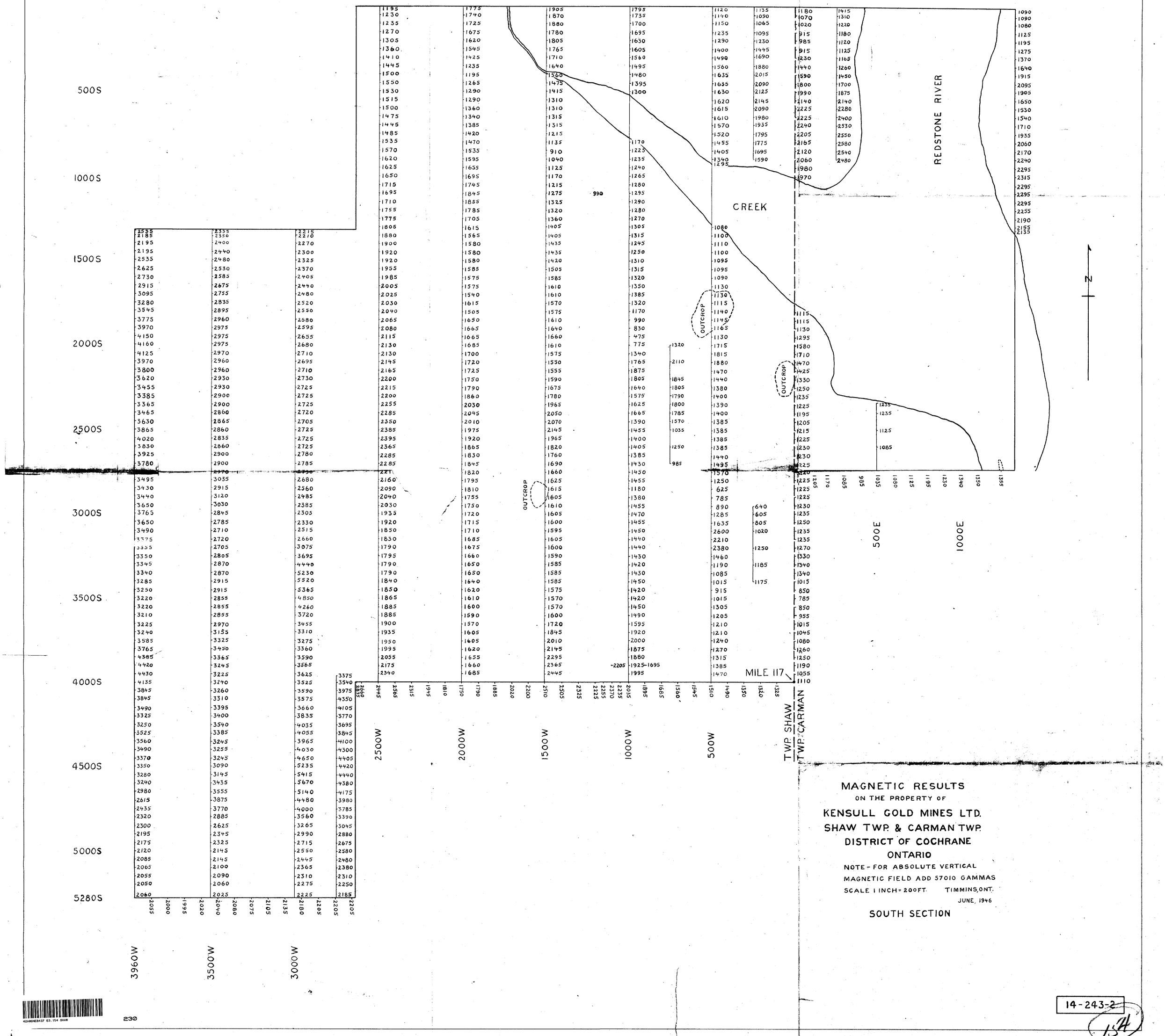
KENSULL GOLD MINES LIMITED

SOUTH WEST SECTION

SCALE 1 INCH = 200 FEET

J.S.C. 19/9/64


3960W
3500W
3000W
2500W
2000W
1500W
1000W
500W
250W
TWP. SHAW
TWP. CARMAN
250E
1000E
1500E
2000E
2500E
3000E
3500E
4000E
4500E
4750E
5000E
5280E
3960N
3500N
3000N
2500N
2000N
1500N
1000N
500N
OUTCROP
OUTCROP
OUTCROP
BEAVER POND
REDSTONE RIVER
N
MAGNETIC RESULTS
ON THE PROPERTY OF
KENSULL GOLD MINES LTD.
SHAW TWP. & CARMAN TWP
DISTRICT OF COCHRANE
ONTARIO
NOTE - FOR ABSOLUTE VERTICAL
MAGNETIC FIELD ADD 57010 GAMMAS
SCALE 1 INCH = 200 FT. TIMMINS, ONT.
JUNE 1946
NORTH SECTION
14-243-1



MAGNETIC RESULTS

ON THE PROPERTY OF

KENSULL GOLD MINES LTD.

SHAW TWP. & CARMAN TWP.

DISTRICT OF COCHRANE

ONTARIO

NOTE - FOR ABSOLUTE VERTICAL MAGNETIC FIELD ADD 57010 GAMMAS

SCALE 1 INCH = 200FT. TIMMINS, ONT.

JUNE, 1946

SOUTH SECTION

14-243-2

154

MAP SHOWING
INTERPRETATION
ON THE
MAGNETIC SURVEY
ON THE PROPERTY OF
KENSULL GOLD MINES LIMITED
SHAW & CARMAN TWPS. ONTARIO

SCALE 1 INCH = 200 FEET

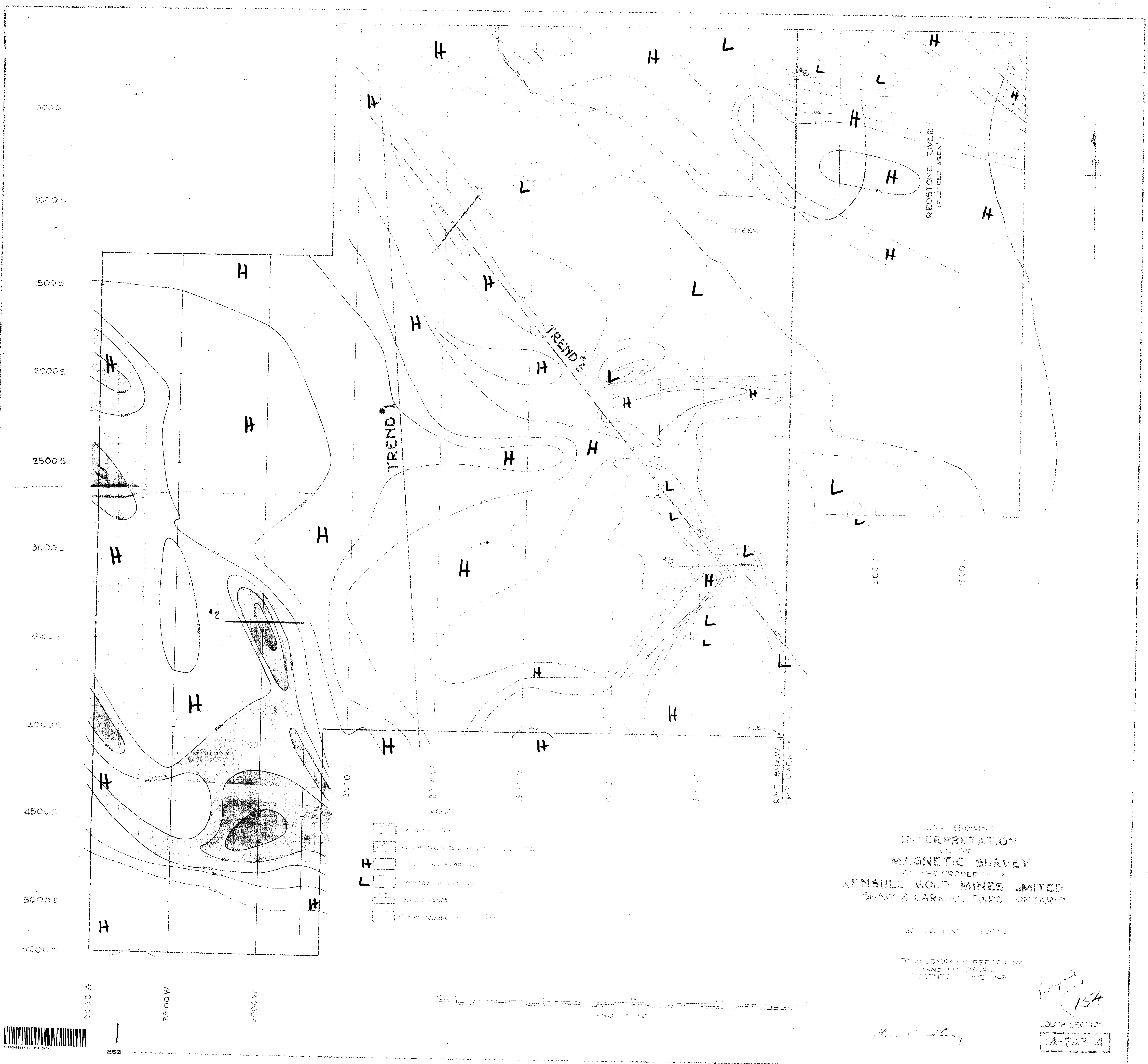
TO ACCOMPANY REPORT BY
HANS LUNTRERG
TORONTO, JUNE 1928

Hans Lundberg

NORTH SECTION
14-243-3

154

240



TREND #1
TREND #5
REDSTONE RIVER
CREEK
500 S
1000 S
1500 S
2000 S
2500 S
3000 S
3500 S
4000 S
4500 S
5000 S
5200 S
MAP SHOWING
INTERPRETATION
ON THE
MAGNETIC SURVEY
ON THE PROPERTY OF
KENSULL GOLD MINES LIMITED
SHAW & CARMAN TWPS. ONTARIO
TO ACCOMPANY REPORT BY
HANS LUNDBERG
TORONTO JUNE 1946
154
SOUTH SECTION
14-243-4
250