



42A155W0133 63.875 MCCART

010

Mr. Geo. G. Elliott,
Room 1204, 302 Bay Street,
Toronto, Ontario.

Dear Sir:

The following report describes the results of geophysical survey operations on part of your 16-claim group property, situated in Range V, Lots 6, 7 and 8, McCart Township, Porcupine Mining Division, Ontario.

Eight claims of the group were covered completely by magnetometer and electrical resistivity surveys along northwest picket lines spaced at 400-foot intervals. These surveys were carried out by Geo-Technical Development Company Limited during the period from April 22nd to May 11th, 1957. The results are shown on Plan No. 1 accompanying this report.

CONCLUSIONS AND RECOMMENDATIONS

The results of the magnetometer and electrical resistivity surveys are such as would be expected in an area known to be underlain by serpentine rocks and Keewatin volcanics. The serpentine bodies register as high magnetic readings, and their contacts are sharp, as shown by the abrupt magnetic variations.

Extremely low resistivity values were obtained in the north portion of the property and along Line 0+00; graphite, which is known to occur on the property, is likely responsible, at least in part, for the very low resistivity. These anomalies should,

nevertheless, be investigated in the hope of discovering sulphides associated with the graphite in the contact zones.

Some of the sharp resistivity contrasts in the southern part of the property may be significant indicators of sulphides without associated graphite.

The size of the individual serpentine bodies may be smaller than shown on the old geological map; an outcrop investigation would thus be helpful in spotting the best drill locations on the property.

Five tentative drill sites are indicated on Plan No. 1; they are designed to test the more favourable features revealed by the surveys.

D. D. #1 will intersect extremely low resistivity readings associated with sharp increases in magnetic intensities.

D. D. #2 is designed to obtain a cross-section through low resistivity readings in contact with a sharp magnetic dipole.

D. D. #3 will test an area of sharp resistivity contrast associated with the southern magnetic anomalies.

D. D. Holes #4 and #5 are especially designed to obtain a cross-section through an extensive zone of low resistivity readings. These holes should not be drilled, in the event that D. D. #1 did not intersect sulphides.

PROPERTY, LOCATION AND ACCESS

The property surveyed is located six miles northwest of Porquis Junction. The highway from Porquis Junction to Cochrane passes about three miles east of the property, and the latter is easily accessible by a country road which runs westward from the highway along the southern boundary of Range V.

The property is comprised of a group of 16 contiguous claims numbered as follows:

- P 41540 - P 41547 inclusive, Lot 8, Range V, McCart Township
- P 41486 - P 41489 inclusive, Lot 7, Range V, South McCart Township
- P 41490 - P 41493 inclusive, Lot 6, Range V, South McCart Township

Only the 8 claims on Lots 6 and 7 were covered during the recent surveys.

TOPOGRAPHY AND GENERAL GEOLOGY

The area lies in the clay belt which covers an extensive area in Northeastern Ontario and Northwestern Quebec. It is characterized by low ground, with numerous muskegs, peat bogs, sand, gravel and stratified clays which were deposited in Lake Barlow, Ojibway during glacial times. Crops are scarce

in this general area, but one exception is the surveyed area where rocks are exposed on all the claims.

According to Map No. 28B, published in 1917 by the Ontario Bureau of Mines, on a scale of 2 miles to the inch, the property is largely underlain by serpentine rocks which have intruded Keewatin volcanics of andesitic composition.

Sulphide mineralization, consisting mostly of pyrrhotite, occurs at the contact of serpentine and volcanics. Baker* reports that small stringers of massive sulphide carrying as much as 3% nickel are present in the mineralized zone. This occurrence is entirely similar to that of the Alexo Nickel Mines, some eight miles to the south, where 56,000 tons of ore, averaging 4.5% nickel and 0.6% copper, were produced between 1912 and 1918**.

A black schist containing graphite in bedding planes and fractures was observed in the contact zone on Lot 7*; because of their high conductivity, these graphitic rocks produce sharp resistivity anomalies of unusual intensity; since they occur in the contact zone, however, they are likely associated with sulphides and should be investigated.

*Baker, M.B., Ontario Bureau of Mines, Vol. XXVI, 1917, P. 271.

** See Ontario Department of Mines, Vol. 46, Part 1, Page 222.

*Ontario Bureau of Mines, Vol. XXVI, 1917, P. 271.

INTERPRETATION OF THE MAGNETOMETER SURVEY RESULTS

Several high magnetic zones were recorded during the survey; these are probably caused by concentrations of magnetic minerals within the peridotite bodies. The high magnetic zones occur in the form of lenses, which strike a few degrees north-of-east near the north boundary of the property and in a northeast direction in the southern claims. The magnetic anomalies are sharply defined, and are often bordered on the south by small negative magnetic zones which probably indicate the direction of dip of the magnetic body.

Whether the magnetic highs represent separate lenses of serpentine or magnetic mineral concentrations within large bodies of serpentine would have to be determined by careful geological mapping; Map 28b of the Ontario Bureau of Mines shows two large bodies of serpentine coinciding roughly with the zone of high magnetic readings in the north and south. There would be much interest added to the property if each magnetic anomaly represented an individual serpentine lens, since the areas of contact, which are considered important in prospecting for nickel, would be greatly increased in number; no less than 10 magnetic anomalies, with readings increasing sharply above 5,000 gammas were recorded during the survey, and 3 other zones with sharp increases above 2,000 gammas could be

interpreted as being caused by serpentine rocks.

EXPLANATION OF ELECTRICAL RESISTIVITY SURVEY METHOD

The method used by Geo-Technical Development Company Limited is a form of the early resistivity survey or "mapping" methods, modified by some eleven years' experience in the field.

In short, a known current is introduced into the ground by means of two screen contacts, which are separated by a distance approximately equal to three times the width of the property, with a spread line drawn through the centre of the property, at right angles to the base line. The contacts are spaced equi-distant from the central base line. Readings are then taken at 50-foot intervals along the picket lines, by means of a sensitive vacuum tube voltmeter which measures the potential drop across the interval. The apparent resistivity is then calculated from the potential readings and current, in terms of ohm-centimeters. Shear and fracture zones are relatively better conductors, due to their higher water content. This is true also of porous, unconsolidated, sediments. Extreme low resistivity readings may be due to graphite or to sulphide mineralization, and, there is no way to distinguish between sulphide and graphite, from the results obtained. Graphite is suspected as the cause of an anomaly when there are occurrences of this mineral within

schists or shear zones in the immediate vicinity. Sulphide mineral deposits have also been discovered in areas of high resistivity contrasts which did not register extremely low readings.

INTERPRETATION OF THE ELECTRICAL RESISTIVITY SURVEY RESULTS

The resistivity readings over the entire property are relatively low, only one reading on Line 16E., 700 feet north, was above 500 ohm-centimeters $\times 10^3$, and more than half the area surveyed has resistivity values under 100 ohm-centimeters $\times 10^3$. The strongest conducting zones are associated with the magnetic anomalies in the north part of the property; readings below 5 ohm-centimeters $\times 10^3$ were recorded at four stations on Lines 0+00, 4E. and 8E.. Graphite in a serpentine contact zone may cause these extreme "lows", but the possibility of associated sulphides should be kept in mind.

The abrupt change in resistivity to the west of Line 0+00 may indicate a sharp contact between serpentine on the east and volcanic rocks on the west.

The resistivity readings associated with the southern magnetic anomalies are generally higher, and graphite would not be expected to occur near the serpentine in this part of the property.

Sharp contrasts in resistivity, as on Line 20E., near the base line, may be more significant as sulphide indicators than the extreme low readings of the north.

Three small sulphide showings were mapped by the survey crew on Claim P 41492 near the south boundary; two of these showings are associated closely with the north boundary of a high magnetic anomaly; the resistivity readings, on the other hand, show sharp contrasts, but no extremely low values.

In further exploring the property, much attention should be given to the accurate mapping of the serpentine bodies, and, if immediate drilling is contemplated, the first holes should be spotted in such a way as to give the most information possible on the attitude of these serpentine bodies, especially with respect to their size. These holes should be collared in andesite and drilled toward the high magnetic zones.

INSTRUMENT DATA

A Sharpe Instrument, No. 158, with a sensitivity of 16.5 gammas per scale division, was used for the magnetometer survey.

The electrical resistivity survey was conducted with a Canadian Research Institute Vacuum Tube Voltmeter, Model E-3579, with 100-microvolt full-scale deflection, together with a Canadian Fairbanks-Morse Onan Motor Generator Plant, 115V., 400W..

SURVEY DATA

A magnetometer survey, followed by an electrical resistivity survey, has been carried out by Geo-Technical Development Company Limited, over a portion of the Elliott Property in Range V, Lots 6 and 7, McCart Township, Ontario. This work was done during the period from April 22nd to May 11th, 1957.

Two base lines running N. 45° E. were cut across the property, and picket lines were cut at right angles to the base lines, at 400-foot intervals; 8 miles of line were thus cut and chained, including base lines and spread line.

The magnetometer survey was conducted along the picket lines, with readings being taken at 100-foot intervals. These readings, expressed in gammas, are shown on the west side of the picket lines, on Plan No. 1 accompanying this report. A total of 5.25 miles of line was surveyed, involving 278 readings.

The electrical resistivity survey was conducted along the same picket lines, with voltmeter readings being taken at 50-foot intervals. These are shown on Plan No. 1, expressed in ohm-centimeters $\times 10^3$. A total of 556 readings were taken, along 5.25 miles of line.

The number of 8-hour man days required to complete these surveys is as follows:

	<u>(8-Hour)</u> <u>Man Days</u>	<u>Attributable to</u> <u>Assessment Work</u>
Line Cutting and Chaining	16 x 4	64
Laying Spread Wire	6 x 4	24
Operating Resistivity Survey	10 x 4	40
Operating Magnetometer Survey	15 x 4	60
Calculation and Interpretation	3 x 4	12
Drafting	3 x 4	12
Office Typing and Supervision	<u>3 x 4</u>	<u>12</u>
Total	56	224

Respectfully submitted,

GEO-TECHNICAL DEVELOPMENT COMPANY LIMITED



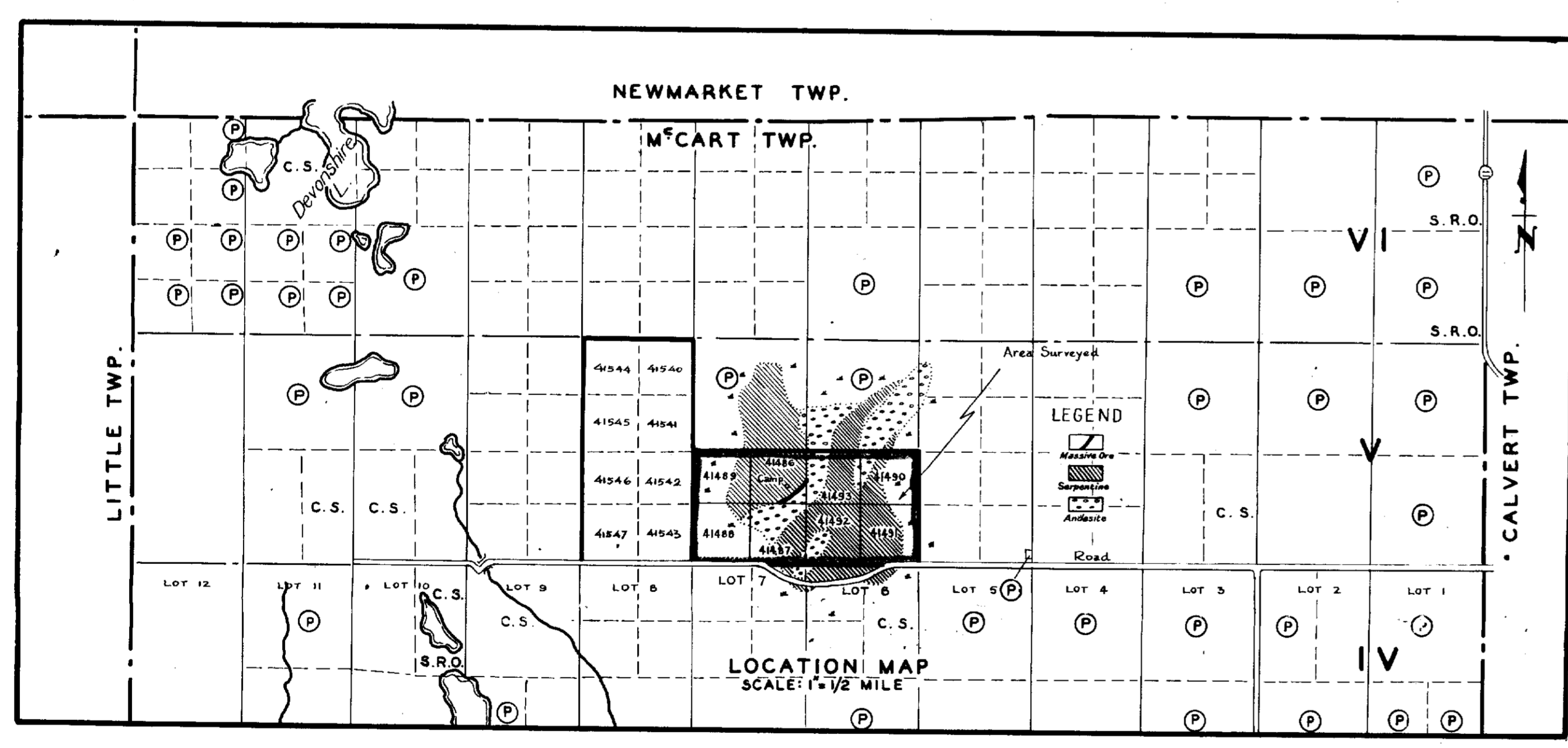
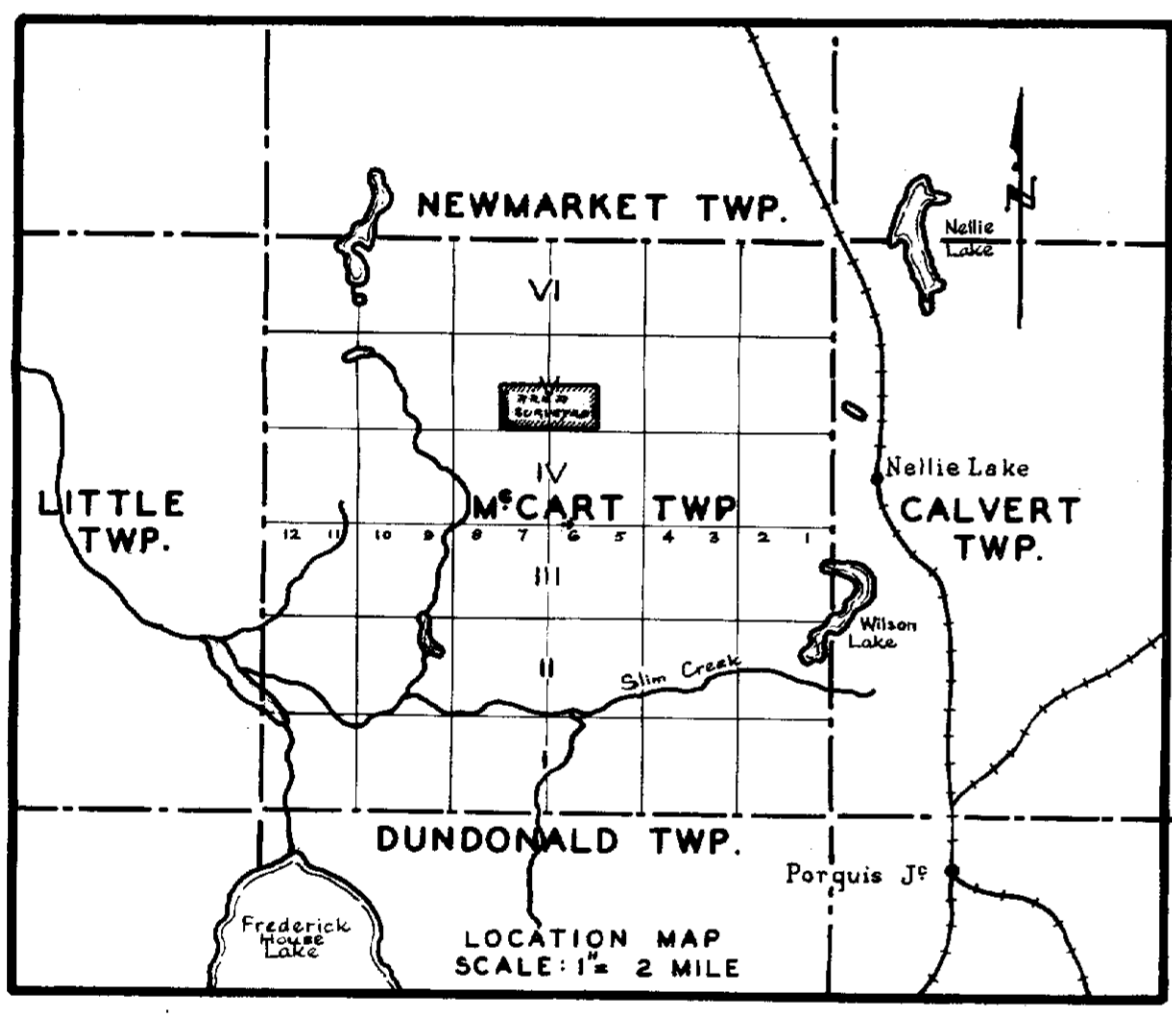
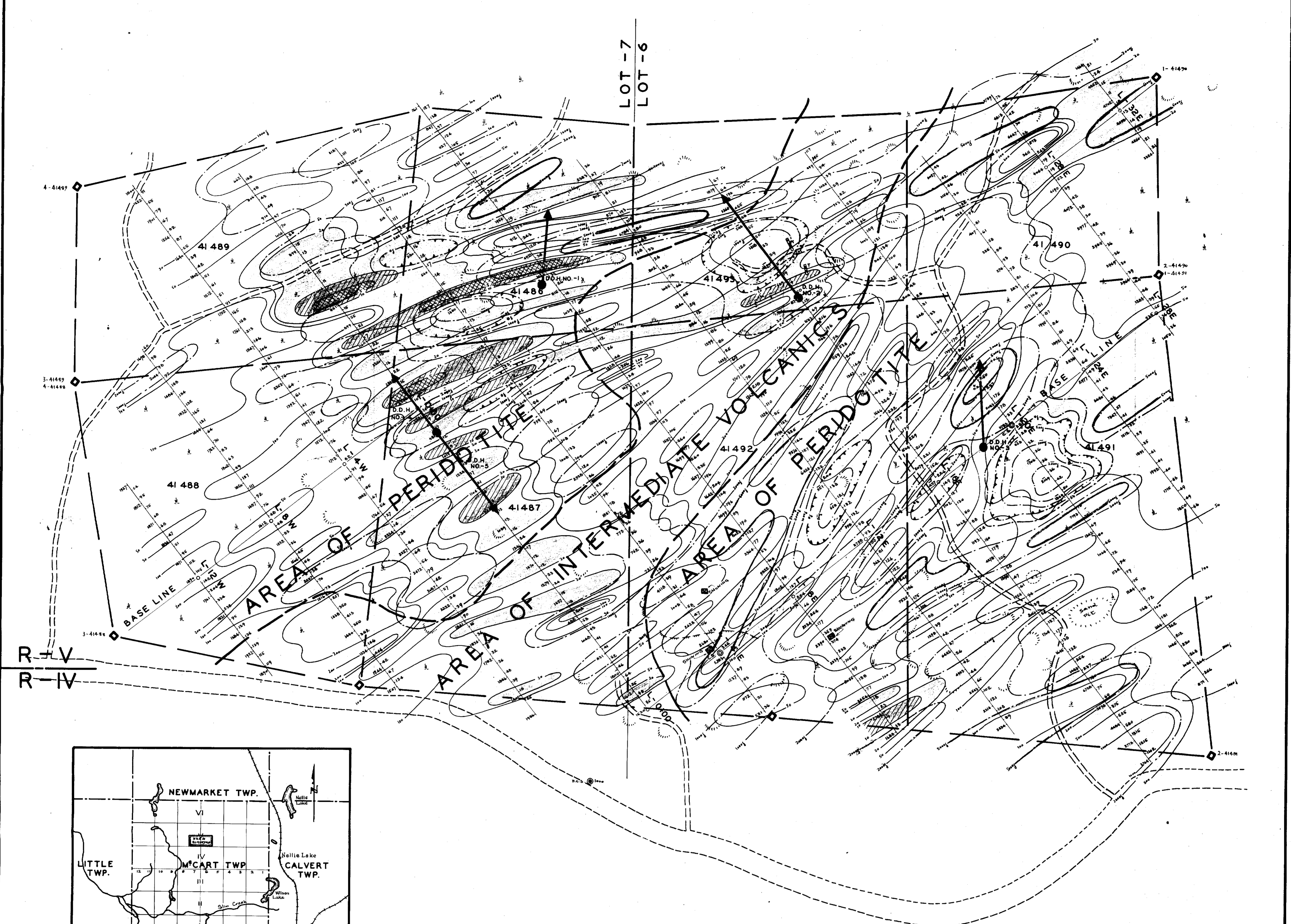
O. D. Maurice, Ph. D.,
Prof. Eng. & Geologist.

ODM:IK

Toronto, Ontario,

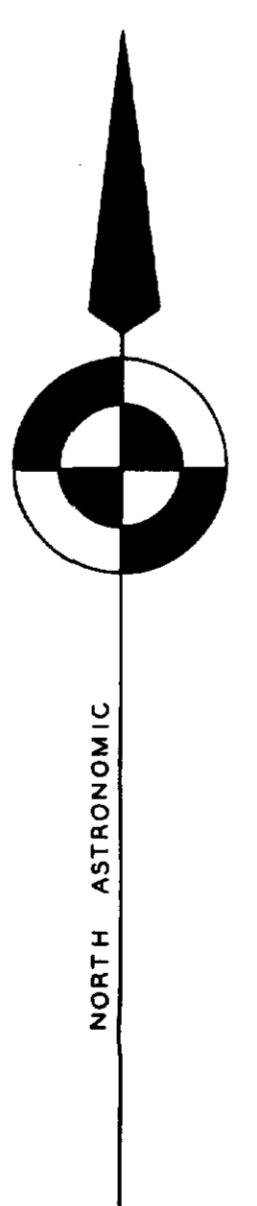
May 24th, 1957.

/rap



LEGEND

- LINES CUT AND CHAINED ELECTRICAL RESISTIVITY READINGS OBSERVED AND PLOTTED ON EAST SIDE OF LINE
- ELECTRICAL RESISTIVITY CONTOUR
- MAGNETIC READINGS OBSERVED AND PLOTTED ON WEST SIDE OF LINE
- MAGNETIC CONTOUR
- MAGNETIC BASE CONTROL STATION
- MAGNETIC CONTROL STATION
- OUTLINE OF HIGHER GROUND
- SWAMP AND AREA OF LOW GROUND
- CLIFF
- TRENCH
- SHOWING
- CLAIM POST LOCATION AND CLAIM BOUNDARY
- PROPOSED DIAMOND DRILL HOLE
- GEOLOGICAL CONTACT INFERRED FROM GEOPHYSICAL SURVEY DATA



- LEGEND**
- 0 - 2000 GAMMA
 - 0 - 1000
 - 1000 - 2000
 - 2000 - 5000
 - 5000 - UP

GEOPHYSICAL SURVEY ON PART OF PROPERTY
MC CART-TOWNSHIP CLAIMS
 ELECTRICAL RESISTIVITY CONTOURS
 ISO-DYNAMIC CONTOURS OF MAGNETIC INTENSITIES
 AND
 GEOLOGICAL INTERPRETATION

- LEGEND**
- 0 - 10 OHM-CM x 10³
 - 10 - 20
 - 20 - 50
 - 50 - 100
 - 100 - 200
 - 200 - UP

MC CART TOWNSHIP
 DISTRICT OF COCHRANE
 ONTARIO

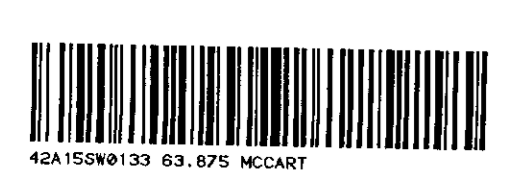
GEOPHYSICAL SURVEY BY:

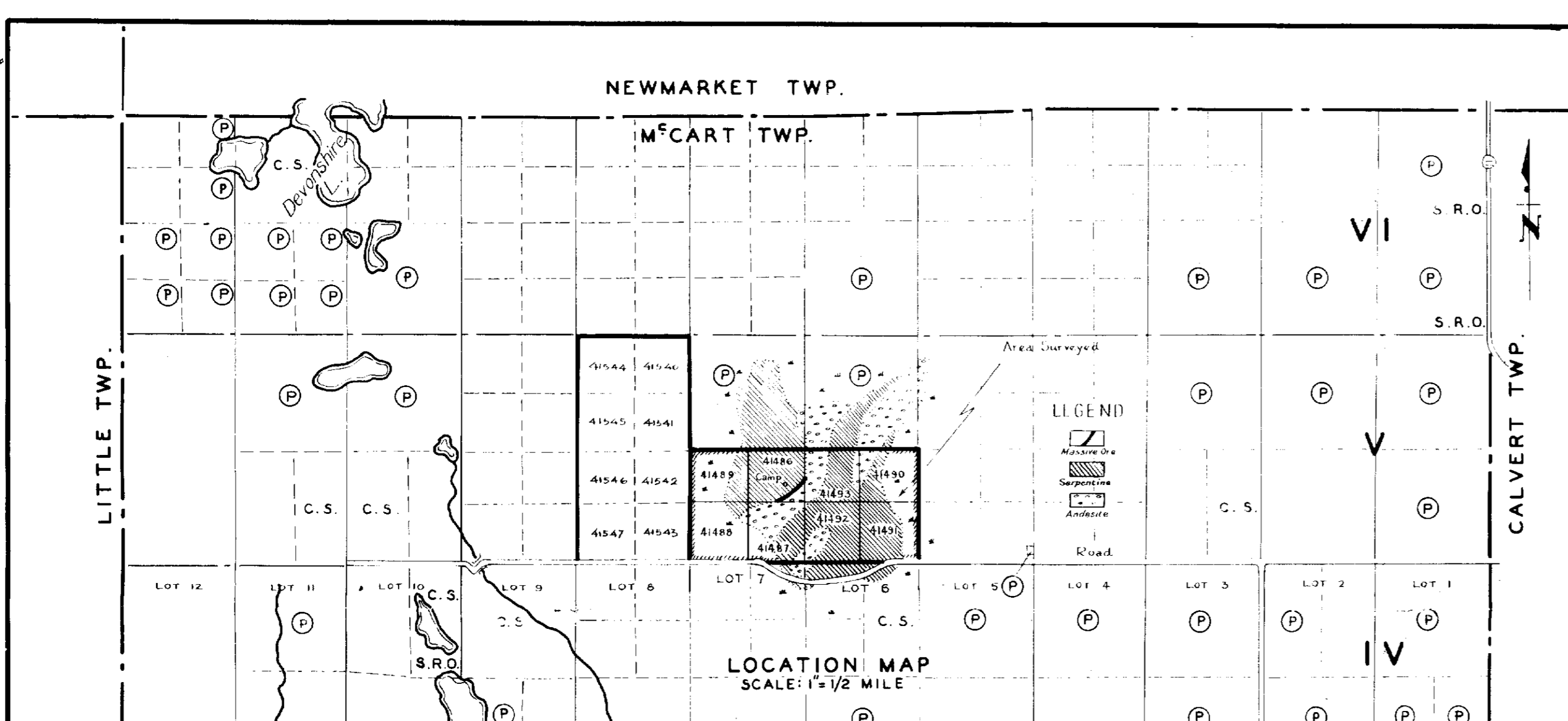
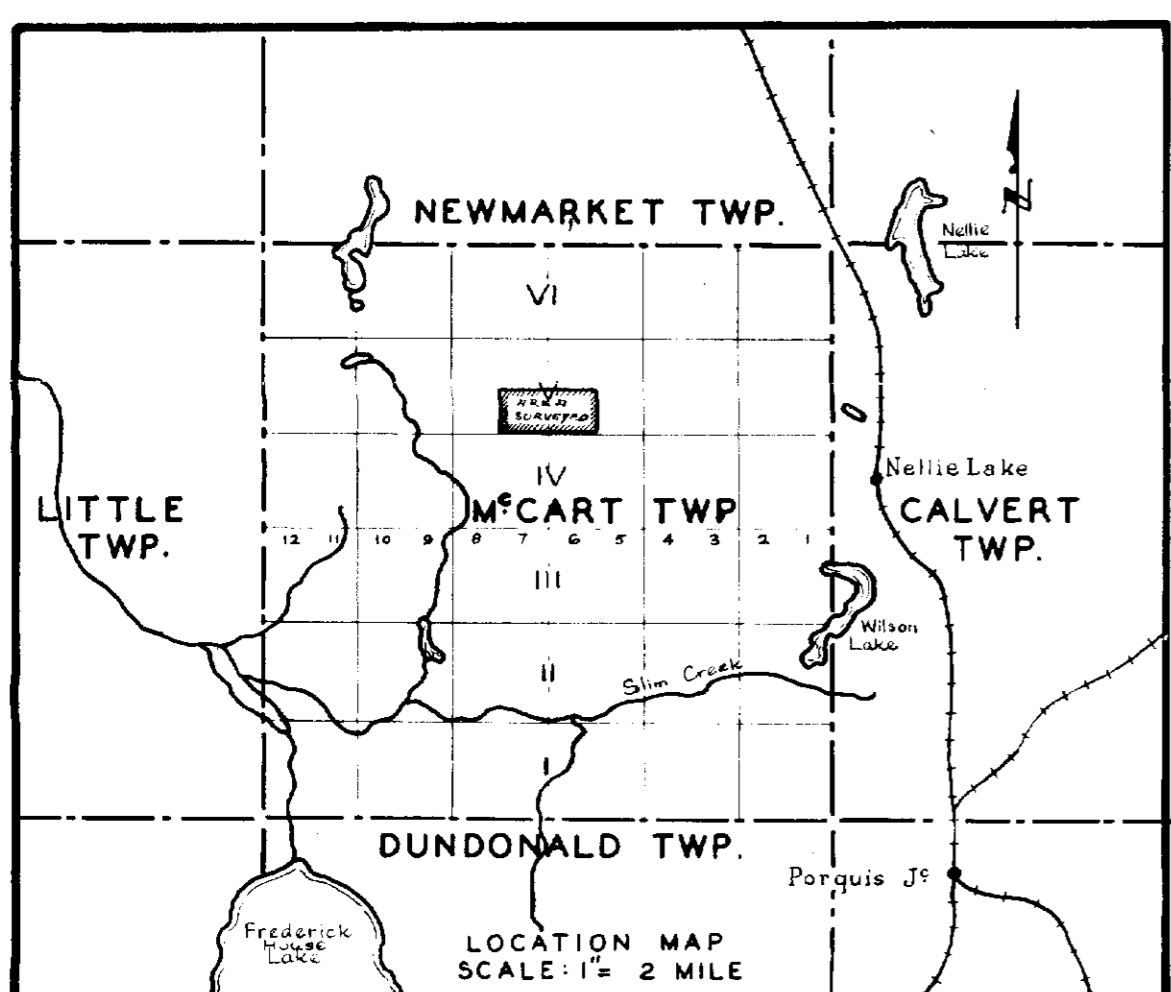
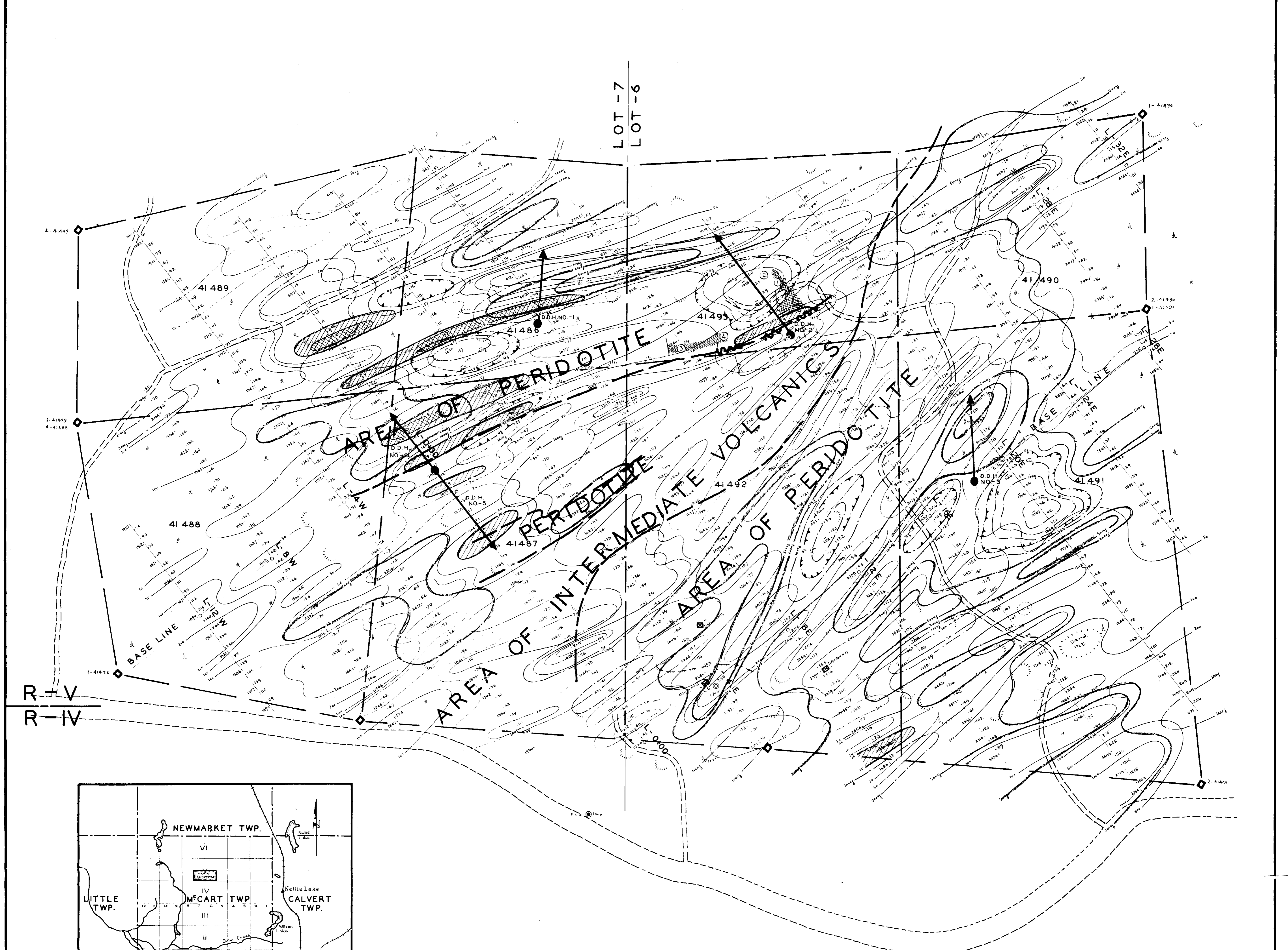
GEO-TECHNICAL DEVELOPMENT COMPANY LIMITED

PLAN NO.-1

SCALE: 1" = 200'

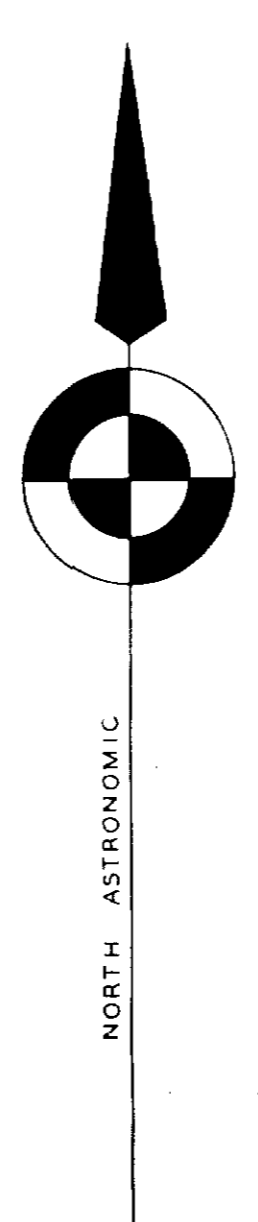
MAY - 1957





LEGEND

- LINES CUT AND CHAINED ELECTRICAL RESISTIVITY READINGS OBSERVED AND PLOTTED ON EAST SIDE OF LINE ELECTRICAL RESISTIVITY CONTOUR
- MAGNETIC READINGS OBSERVED AND PLOTTED ON WEST SIDE OF LINE MAGNETIC CONTOUR
- MAGNETIC BASE CONTROL STATION
- MAGNETIC CONTROL STATION
- OUTLINE OF HIGHER GROUND
- SWAMP AND AREA OF LOW GROUND
- CLIFF
- TRENCH
- SHOWING
- CLAIM POST LOCATION AND CLAIM BOUNDARY
- PROPOSED DIAMOND DRILL HOLE
- GEOLOGICAL CONTACT INFERRED FROM GEOPHYSICAL SURVEY DATA
- DENOTES SAMPLE NUMBER AND LOCATION
- SHEAR ZONE
- JOINTING
- MAIN MINERALIZED ZONE OBSERVED



- LEGEND**
- 0 - 2000 GAMMA
 - 0 - 1000
 - 1000 - 2000
 - 2000 - 5000
 - 5000 - UP

GEOPHYSICAL SURVEY ON PART OF PROPERTY
MC CART-TOWNSHIP CLAIMS
 ELECTRICAL RESISTIVITY CONTOURS
 ISO-DYNAMIC CONTOURS OF MAGNETIC INTENSITIES
 AND
 GEOLOGICAL INTERPRETATION

- LEGEND**
- 0 - 10 OHM-CM X 10⁵
 - 10 - 20
 - 20 - 50
 - 50 - 100
 - 100 - 200
 - 200 - UP

MC CART TOWNSHIP
 DISTRICT OF COCHRANE
 ONTARIO

GEO-TECHNICAL DEVELOPMENT COMPANY LIMITED

PLAN NO. - I SCALE: 1" = 200' MAY - 1957

