

31M04SW0059 63.789 STRATHCONA

010

Electromagnetic Survey  
Strathcona Twp.

1956

## SUMMARY

Electromagnetic results show no evidence of major bodies of massive sulphides in this property. Two minor conductors appear and these may represent some degree of sulphide mineralization. A self potential survey now in progress has already indicated moderately strong anomalies, which, when outlined, may warrant investigation by diamond drilling.

## INTRODUCTION

The following report is based on the results of an electromagnetic survey carried out for Cobalt Consolidated Mines Limited by G. G. I. Surveys Limited between June 29, 1956 and August 13, 1956.

The survey covered a group of five claims, numbered T-37127-30 and T-39547, and part of a sixth claim, T-36231. These claims form a single group lying between the north-east arm of Lake Timagami and Highway No. 11, in Strathcona Township, Timiskaming Mining Division, Ontario.

Survey lines were laid out at 200 foot intervals for the north part of the property and at 400 foot intervals for the south part. The direction of survey lines was true north. E.M. readings were made every 100 feet along survey lines, for a total of eight line miles.

## SELF POTENTIAL SURVEY

A self potential survey is in progress on this property and will be discussed in a later report. The purpose of the S.P. survey is to trace out sulphide formations which are not sufficiently massive for detection by the E.M. method. Preliminary results of the S.P. survey show anomalies of moderate strength towards the west boundary of the property in the region between 1000 feet and 2000 feet north of the base line.

The position and strength of these anomalies remains to be confirmed.

#### ELECTROMAGNETIC METHOD

The equipment used for the present survey was a Sharpe E.M. unit, Model SE 100. This consists of a vertical-loop transmitter energized at a frequency of 1000 cycles per second, and a receiving coil which is carried from station to station along survey lines in the vicinity of the transmitter. Readings are taken with the plane of the transmitter loop pointed towards the receiver, and the receiver is rotated about the horizontal axis through both units to obtain a null, or minimum sound signal. The angle of tilt of the receiver in null position is a measure of distortion of the transmitted E.M. field, the distortion being due to subsurface conductors. In the present case, north tilts should occur on the north side of a conductor and south tilts on the south side. The position of change, or "cross-over", defines approximately the axis of the conductor.

Any body of massive sulphides occurring within 100 feet of surface should be easily detectable, but the actual depth range of the method will depend on the size of the body and the nature of its surroundings.

Non-sulphide conductors, such as graphite, swampy ground, clay, or water-permeated shears, may also give rise to tilts and cross-overs.

### DISCUSSION OF RESULTS

A plan of the survey lines, showing the E.M. readings and inferred conductors, accompanies this report.

Towards the northeast corner of the property there are two conductors of sufficient strike length to be detected on more than one survey line each. Farther south, Line 40E shows two very local conductors.

The observed tilt angles are in all cases minor. Such anomalies may easily be due to non-sulphide causes, as outlined in the previous section, but this does not rule out the possibility of mineralization. However, sulphides in massive form, not deeply buried, and having the strike length indicated by the first two conductors, would be expected to show up more strongly. Present results suggest weak conductors - possibly zones of disseminated sulphides - rather than deeply buried good conductors.

### GEOLOGY

(Reference: "The Northeastern Portion of the Timagami Lake Area" - Map No. 51e and report by W.W. Moorhouse - Vol. LI, 1942, Ontario Department of Mines.)

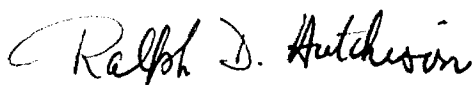
The area of this property is predominantly one of Keewatin volcanics. The northeast arm of Lake Timagami is considered to represent a major shear striking north-easterly. Within the present property the schistosity of the volcanics varies in strike between north of east and south of east.

Immediately west of the present property is a sulphide occurrence along the south margin of a diorite sill, described by Moorhouse as disseminated to massive pyrite. Moorhouse also cites reports of copper and nickel probably referring to the same zone. Part of this zone is currently being explored by Diadem Mines Limited.

#### RECOMMENDATIONS

The electromagnetic results are considered too weak to be used as a basis for any definite recommendations at this stage. The self potential survey now in progress should prove more satisfactory for the delineation of sulphide occurrences and subsequent plans for diamond drilling.

Respectfully submitted,



Ralph D. Hutchison, P. Eng.  
Consulting Geophysicist

Toronto,  
Oct. 2, 1956

## INTRODUCTION

The following report is supplementary to a report of October 2, 1956, dealing with geophysical surveys of a group of five mining claims in the north part of Strathcona Township, Timiskaming Mining Division, Ontario.

Both electromagnetic and self-potential surveys were carried out on this property by G. G. I. Surveys Limited for Cobalt Consolidated Mines Limited. The previous report discussed the electromagnetic results. The present report is based on the self-potential survey completed since that date. The same grid of lines was used. Readings were made at 50 foot intervals along three of the survey lines in the north-west part of the property, several anomalies being noted in this section. Otherwise a 100 foot station interval was used.

Field work was done between November 8 and November 14.

## SELF-POTENTIAL METHOD

The principles of this type of survey were outlined in a report dated November 16, 1956, covering an S.P. survey on another group held by Cobalt Consolidated in the southeast part of Strathcona Township.

## DISCUSSION OF RESULTS

The self-potential results are shown on the accompanying plan of lines, which corresponds to the plan used for the electromagnetic survey.

Three fairly pronounced anomalies occur along the west boundary of the property. These can probably be related to zones of mineralization already identified by diamond drilling in the Diadem property adjoining. It is evident that these zones do not extend very far into the Cobalt Consolidated property.

The only other anomaly is a relatively weak one near the base line between 14E and 22E. This would suggest a zone of disseminated sulphides. A more definite anomaly might exist within the 50 millivolt contour as mapped, but the results to date do not suggest any impressive quantity of sulphides.

In the electromagnetic survey two conductors were mapped in the northeast part of the property. The S.P. results fail to show any evidence of sulphides in this area. Furthermore, it was noted in the field that both the E.M. conductors corresponded in position with gulleys, and can therefore be explained as the effect of conductive overburden.

## CONCLUSIONS

A small sulphide occurrence may exist in the vicinity of Line 18E and the Base line. Apart from this and the indications



along the west boundary, there is no evidence of mineralization in this property.

Respectfully submitted,

*Ralph D. Hutchison*

Ralph D. Hutchison, P. Eng.  
Consulting Geophysicist

Toronto,  
December 20, 1956



31M04SW0059 63.789 STRATHCONA

020

Self Potential Survey  
Strathcona

1956

SUMMARY

A marked anomaly occurs immediately west of a copper showing already investigated by drilling. The structural location and geophysical characteristics of this anomaly are favourable, and diamond drilling is recommended. Other anomalies of lesser strength may represent fairly extensive zones of mineralization, and these would bear further investigation.

## INTRODUCTION

The following report is based on the results of a self-potential survey carried out by G. G. I. Surveys Limited for Cobalt Consolidated Mines Limited on a group of 12 mining claims in Strathcona Township, Timiskaming Mining Division, Ontario.

This group lies near the southeast corner of the township. Claim numbers are 34289-92, 36920-23, and 36940-43. The property can be reached by following a trail east from Highway No. 11 in the vicinity of Herridge Lake.

Survey work was done between August 26 and September 27, 1956, with some additional detail work on November 2, 1956.

Survey lines were laid out at a separation of 400 feet running east and west true from a central base line. Self-potential readings were made in general at intervals of 100 feet along the survey lines. For the detail work a 50 foot station interval was used, and several lines of readings were run through the bush between picket lines.

The survey involved a total of 10 1/4 line miles.

## GEOLOGY

The geology of this area is shown on Map 51e - Ontario Department of Mines - "Northeastern Portion .. Temagami Lake Area". The present property lies mostly in an area mapped as recrystallized Keewatin greenstone. Along part of the west and south boundaries the greenstone is bounded by areas of Algoman granite. Cobalt sediments are shown along most of the south boundary, extending a few hundred feet into the property.

A zone of copper mineralization, striking north to north westerly and lying about 1000 feet east of the west boundary, has been investigated by diamond drilling. Drilling and subsequent geological mapping show a granite dyke or sill striking north westerly and dipping north easterly and underlying this mineralized zone.

## SELF -POTENTIAL METHOD

This type of survey depends on the measurement of weak electrical voltages normally developed by sulphide deposits in contact with their surroundings.

Most of the metallic sulphides, as well as graphite and a few other minerals, if occurring within 100 feet or so of surface, will generate negative voltage towards their upper

extremity, by a process analogous to that of the galvanic cell. This effect is detected by the measurement of relative potential (or voltage) along the surface of the ground.

The survey equipment consists of a potentiometer sensitive to millivolts, two non-polarizing electrodes for making contact with the ground at successive points, and the necessary wire to complete the measuring circuit.

Readings are taken along successive survey lines from fixed base stations. The relative voltage of the base stations is determined by reading base lines in the same manner; and all the readings of the survey are then reduced to a common datum.

Centres of marked negative voltage indicate the presence of sulphides or some equivalent. The strength of an anomaly will depend on such factors as the size and concentration of the mineralized formation and the depth of cover. Sometimes the shape of the anomaly can be used for more specific determination of strike, dip, etc.

#### DISCUSSION OF RESULTS

The accompanying plan shows the survey lines and the self-potential readings as recorded in millivolts and reduced to a common datum. The results are contoured with

an interval of 100 millivolts.

The most outstanding anomaly (designated "A") is centred on Line 44N about 800 feet west of the base line. This anomaly reaches a peak of nearly 500 millivolts. As a sample for comparison, it may be mentioned that a similar survey which led to the discovery of the "G" body at Noranda in 1924, showed peak values in the range 300 to 450 millivolts. Sulphide anomalies do not usually exceed 600 or 800 millivolts.

Detail work in the vicinity of this anomaly failed to show any definite direction of strike. The contours, as a whole, indicate an irregular mass probably elongated in a northerly direction.

There are two additional features of interest with respect to this anomaly:

1. A short distance west of the anomaly are the sulphide zone and dyke already mentioned, striking in general west of north.
2. Immediately east of the anomaly is a line trending about N 30°E across the property along which the S.P. values show a sharp cut-off to zero or nearly zero. This would suggest a structural break interrupting two of the anomalous zones of the survey. It is shown as a probable fault in the plan of results.

Anomaly B lies just west of the granite dyke, and extends almost due south, with an interruption at the assumed fault. The peak value of 260 millivolts brings it well within the range of interest, but present S.P. data is insufficient for more than a rough outline of this anomalous zone.

Anomaly C represents a larger zone containing several readings in excess of 200 millivolts. A showing of finely disseminated sulphides has been noted at the intersection of Line 36N and the base line. The general trend of Anomaly C strongly suggests a structural relationship with Anomaly A. A more detailed survey in this area might well show up stronger values than those already recorded.

A series of intermittent anomalies extends southeasterly from anomaly C to the southeast corner of the property. The correlation of anomalies from one survey line to the next is uncertain, but a more or less continuous zone of mineralization is suggested by the general distribution of these scattered peaks.

#### RECOMMENDATIONS

A diamond drill hole to investigate Anomaly A at depth is recommended as follows: It is shown as D.D.H. 1



on the plan of results.

D.D.H. 1 - Collar: on Line 44N, 600 ft. west  
of base line

Bearing: West along picket line

Dip: 50°

Hole length: 600 ft. provisional.

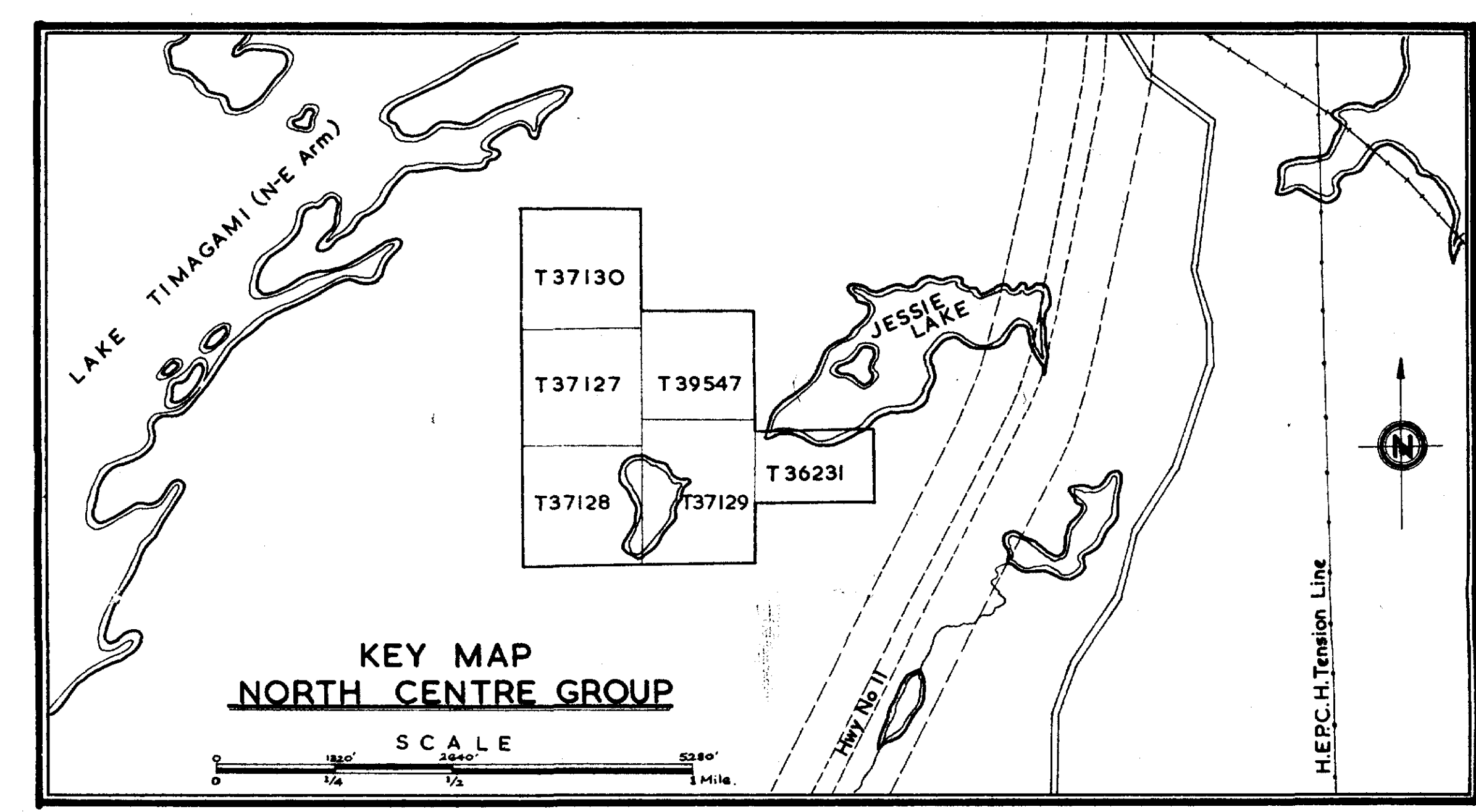
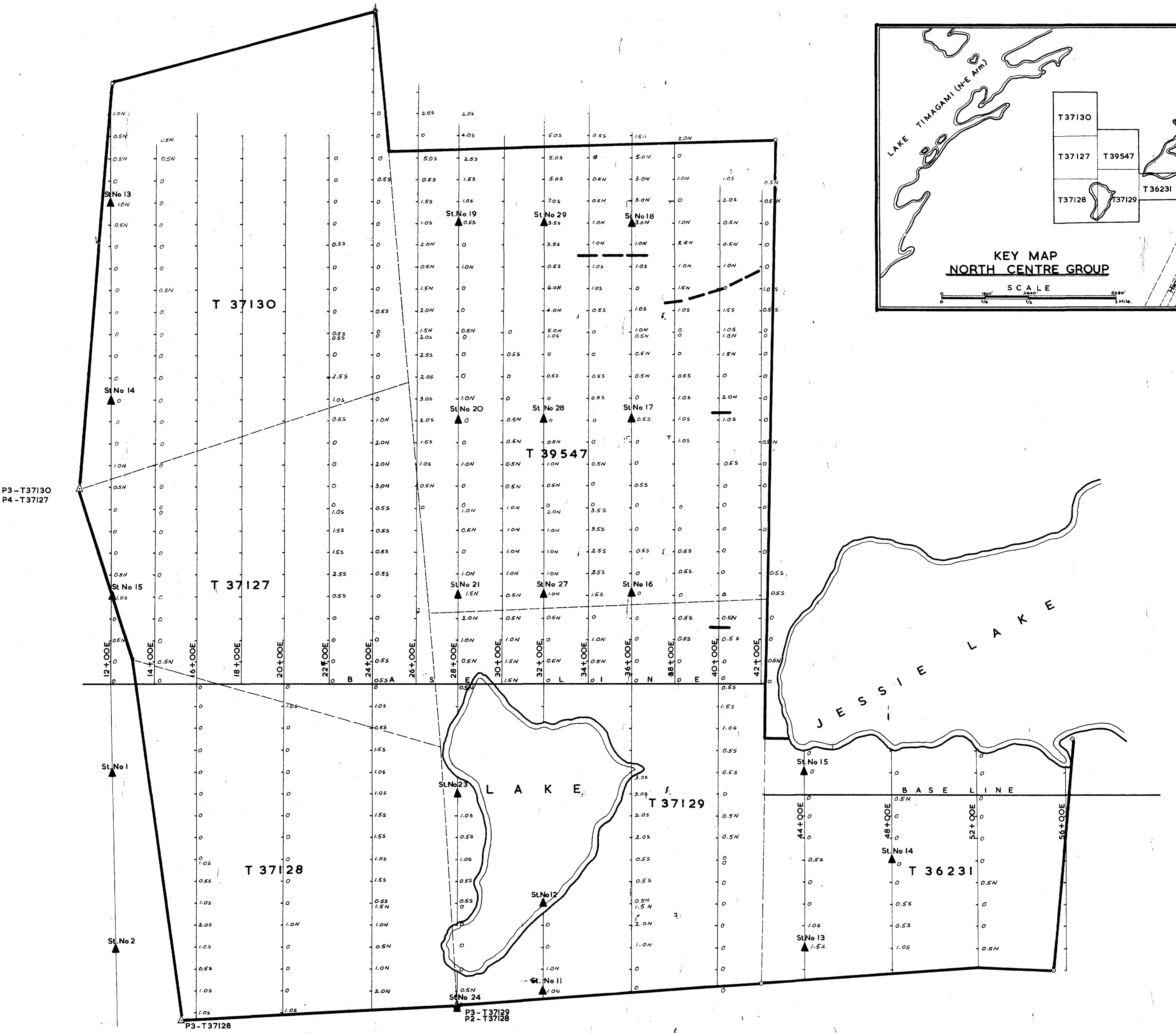
Further drilling of Anomaly A would logically depend on the results of D.D.H. 1. Favourable results from Anomaly A would also warrant further investigation of the other anomalies. In this case a more detailed S.P. survey would be in order for the most effective spotting of drill holes.

Anomaly B should certainly be outlined in more detail prior to drilling. In the case of Anomaly C, the property boundary should be established. Claim posts noted between Lines 24 and 28N and between lines 40 and 44N suggest that the base line is a few hundred feet east of the property boundary in this area.

Respectfully submitted,

  
Ralph D. Hutchison, P. Eng.  
Consulting Geophysicist

Toronto, Ont.  
November 16, 1956



- LEGEND:**
- ELECTROMAGNETIC TILT ANGLES IN DEGREES
  - CONDUCTORS
  - TRANSMITTER STATIONS
  - CLAIM LINES -APPROX.
  - PROPERTY BOUNDARIES

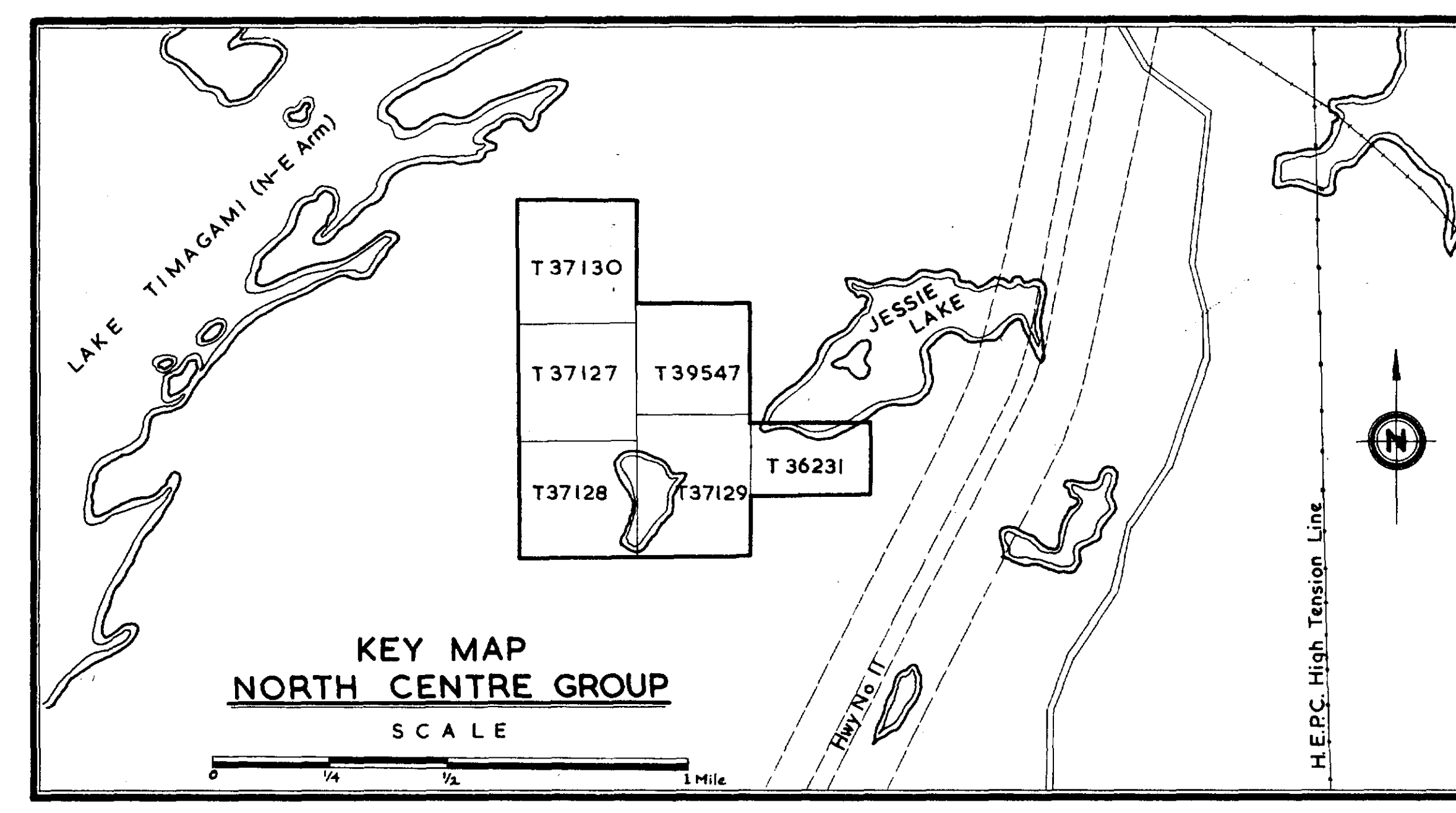
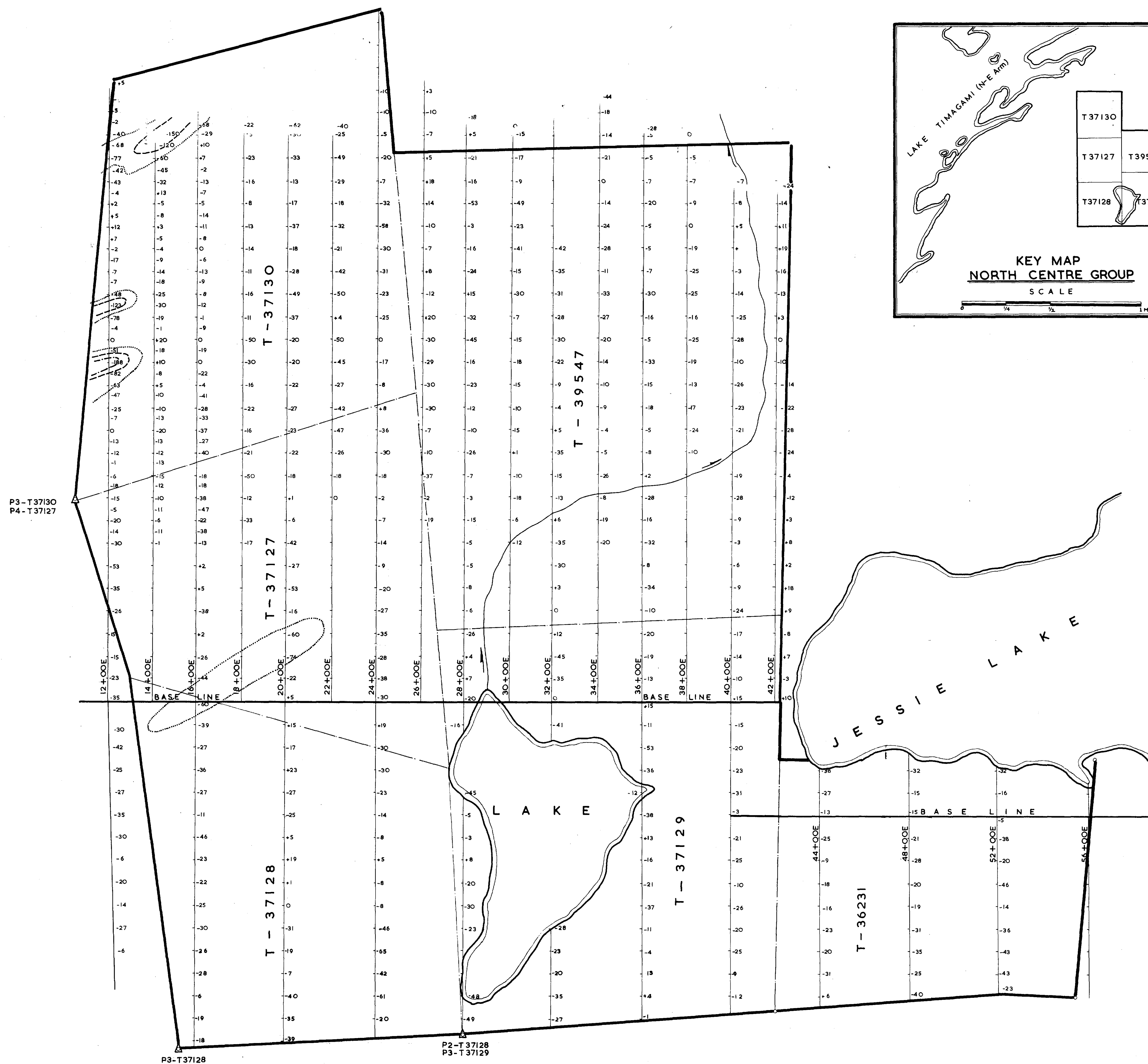
COBALT CONSOLIDATED MINES LTD  
Strathcona Twp. - Ontario

TIMAGAMI PROVINCIAL FOREST

**PLAN OF ELECTROMAGNETIC SURVEY**

SCALE: 1"=200'





- LEGEND :**
- 0 0 30 SELF-POTENTIAL VALUES IN MILLIVOLTS
  - ..... 50MV CONTOUR
  - 100MV CONTOUR
  - 150MV CONTOUR
  - CLAIM LINES -APPROX.
  - PROPERTY BOUNDARIES

**COBALT CONSOLIDATED MINES LTD**  
**Strathcona Twp. — Ontario**  
TIMAGAMI PROVINCIAL FOREST  
**SELF-POTENTIAL SURVEY**

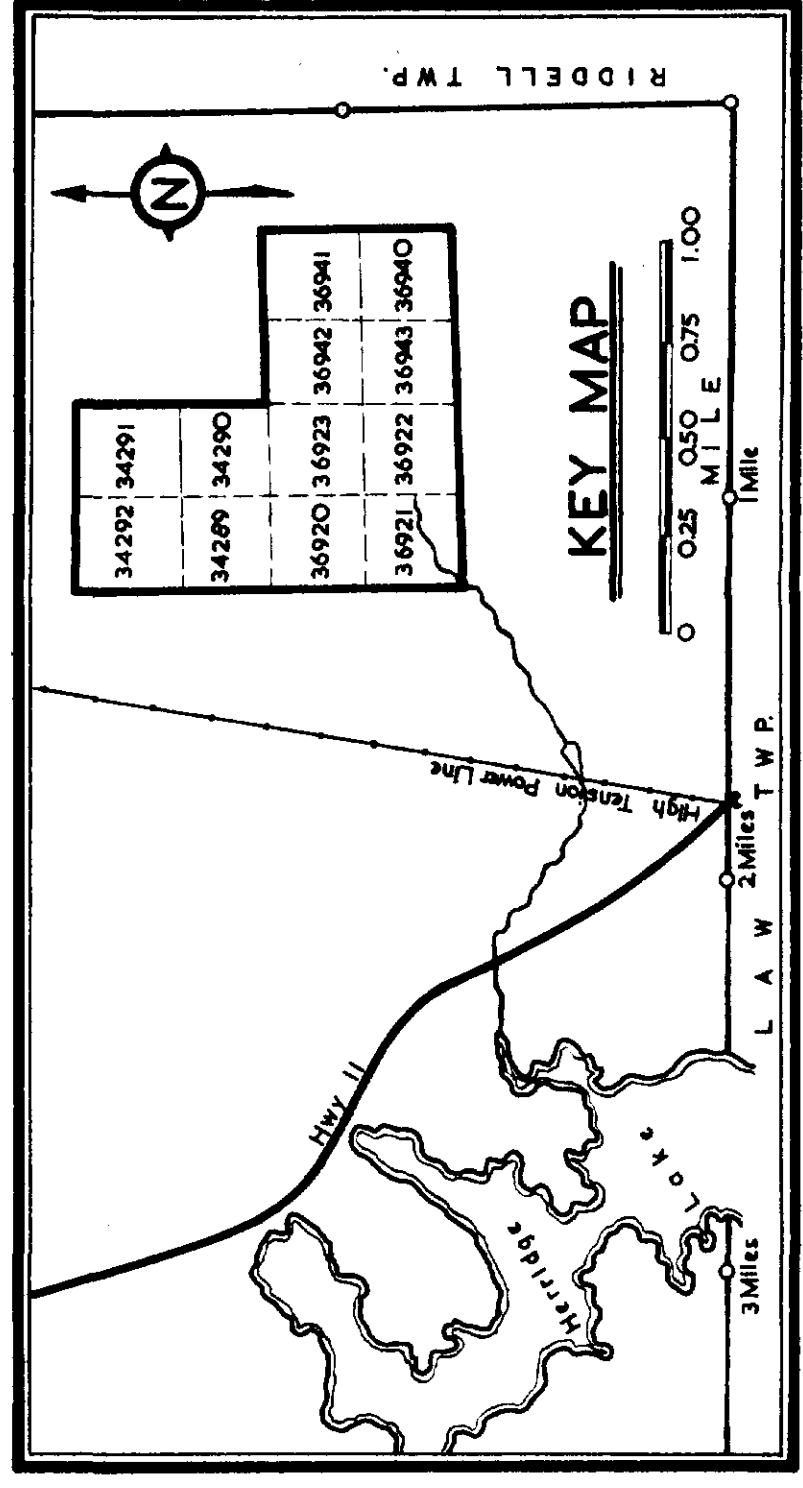


**COBALT CONSOLIDATED MINES LTD**  
**Strathcona Twp. — Ontario**

TIMAGAMI PROVINCIAL FOREST.

**SELF-POTENTIAL SURVEY**

SCALE: 1" = 200'



63-789

LEGEND:

- SELF-POTENTIAL VALUES IN MILLIVOLTS
- CONTOURS — INTERVAL 100 MV.
- DDH / PROPOSED DIAMOND DRILL HOLE
- FORMER DRILL HOLES

