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REPORT  
GEOLOGICAL SURVEY  
FOR  
CANADIAN NORTH INCA MINES LIMITED  
BARTLETT TOWNSHIP CLAIMS  
BY  
ASSOCIATE MINING CONSULTANTS

Abstract

Canadian North Inca Mines has under its control some thirty mining claims in the western section of Bartlett Township. They are situated twenty-three miles due south of Timmins, Ontario. The claims were originally under the control of Cameron-Porcupine Gold Mines Limited. The present owners carried out horizontal electro-magnetic and magnetic coverage over the claims in the winter of 1960. The electro-magnetic survey produced nothing of value and the magnetic survey showed a series of highs within the volcanics which did not appear to have any economic significance. The most recent work has been to geologically map the property in detail. This work turned up no new veins and does not justify, at present, the expenditure of money on diamond drilling.

### History

Bartlett Township and its vicinity have been mapped by E. L. Bruce of the Ontario Department of Mines, and reported on in Volume 35, part 6, 1926. The Canadian North Inca property includes within it the original claims of Cameron Creek-Porcupine Mines Limited, on which some surface work has been done previously to the Government mapping. A shaft 30-feet deep had been sunk on a quartz vein which Bruce describes as being so shattered that there is some doubt that it was actually in place. There are, however, veins of quartz on surface cutting through a diorite exposure. Sampling done by Bruce showed no gold contained in the two veins that appear in the trench north of the shaft.

More recently, the claims came under control of Canadian North Inca Mines Limited, which company caused to have done electro-magnetic and magnetic geophysical surveys during the winter of 1960, as well as a detailed geological mapping job, which has just been completed at this date.

### Purpose

The present work was designed to complement geophysical work carried out during the winter months, in order to correlate the geophysical results with the geology. In

addition, it was hoped that further quartz veins would be located and available for sampling.

To this end a geologist went onto the property in July, 1960, and commenced mapping the claims, using the picket lines cut for the geophysical work as control. The work was completed in late August.

#### Description

The thirty claims belonging to Canadian North Inca Mines Limited are contiguous and are numbered P-48131 to P-48160 inclusive. These claims have neither been surveyed or brought to patent.

#### Location and Accessibility

The claim group is located in the north-west corner of Bartlett Township and lie west of the north end of Muskasenda Lake. They are about 30 miles by road south from Timmins, Ontario.

The claims are readily accessible by motor vehicle along a well used lumber road south from Timmins. The north-east corner of the claims is very close to a lumber camp at the head of Muskasenda Lake.

#### Topography

Topographically, the claim group is generally flat and is dominated by the drainage system of the Muskasenda

River and some of its tributaries. The areas of outcrop as shown on the accompanying map, pretty well depict the higher ground. As might be expected, the low ground adjacent to the river and creek systems is swampy and devoid of outcrop.

### Geology

The general geology of the area may be taken from the legend of Map No. 35H which accompanies the previously mentioned report by E. L. Bruce. The oldest rocks in the area are of Keewatin age and consist of basic lavas, rhyolites, trachytes, tuffs, and some sediments. In addition to these, are the familiar keewatin banded iron formations. Following the emplacement of the previous formations, there was a period of intrusion which brought in the amphibolites of the area. These may be of Haileyburian age. The next sequence of events was the intrusion of other formations by a series of acid types, consisting of hybrid granites, granite porphyrys, quartz and feldspar porphyrys and fine grained granites. The last Precambrian activity in the area was the intrusion of the Keweenawan diabase dykes so familiar throughout Northern Canada. The cover consists of the usual glacial deposits as well as some river sediments.

Structurally, little can be said about the area

because of the extreme amount of cover, however, it may be inferred from the topographic lineations that some north-south faulting or shearing has taken place. In addition, there is suggestion of a north-east, south-west series of lineaments, as well as a possibility of north north-west, south south-east trending features. In his report, Bruce mentions that the volcanics are possibly part of a large anticlinal fold which has been eroded, leaving the basic igneous rocks at the axis of the anticline occupying a large part of the general area.

A map showing the local geology has been included with this report. There follows here a brief summary of the various rock types and kind.

Keewatin basic and acidic lavas were found and these have been intruded by amphibolites. At a later time, the granit intrusion came in and finally the youngest rock, diabase, a dyke of which was found striking north-south on the western end of the property. The property is largely covered by glacial drift and marine and outwash deposits of sand and gravel.

Keewatin - this consists mainly of basic lavas and some acid flows. Chlorite is common and in places quartz is present. No structure was apparent, however,

some poor pillows were observed. Pillow tops could not be determined and very few strikes and dips could be obtained.

Haileyburian - A large area of intrusive amphibolite was noted on the eastern third of the claim group. There were numerous outcrops of variable appearance; some of the amphibolite exhibits large fibrous crystals, while others have short, stubby crystals. In addition, a salt and pepper variety as noted in the Government reports was observed; this latter may have been a diorite previously. In composition, the rock is comprised mainly of darkly amphibole and in the salt and pepper variety there is an appreciable amount of feldspar. No contact with other rock types was observed.

Algoman - Acid intrusive of granitic types were seen. Hybride granite was greyish in colour, while the unaltered type of granite had a higher content of pink feldspar.

Keweenawan - At the west end of the property a north-south diabase dyke has been noted. It is quite typical in appearance and has a definite chilled contact. It has the diabasic texture and brownish weathering, common to this type of intrusive.

Correlation of Geology and Geophysics

As might be expected from an area such as this, nothing of value was picked up by the horizontal loop electro-magnetic method and therefore no more need be said. There is however, a definite correlation to be made between the magnetic picture and the geological mapping.

The most outstanding coincidence, again as could be predicted, is the magnetic anomaly which coincides with the diabase dyke mapped in the western section of the property. This confirms the geological thinking, that is to say, it is a typical magnetic olivine diabase dyke of Keweenawan age. The map, as prepared by Revjo Management, delineates fairly well the volcanics and the acidic rocks, except that in Claim P.48115, the amphibolite extends further west than predicted by the magnetics. The localized highs within the volcanic-amphibolite area may be due to boulders of iron formation transported down from outcrops to the north. The better substantiated features are probably due to local increases in magnetite content within the volcanics or along the contact of the intrusive amphibolites. In the east central portion of the prospect, there are two north-south lineal magnetic features which can be attributed, according to the geological mapping, to occurrences of amphibolite. These would be definite intrusives and not

merely a coarse facie of the volcanic flows.

### Economic Geology

Very little mineralization was observed, although in some cases, appreciable amounts of disseminated pyrrhotite and pyrite were contained in the basic volcanics. It must be stressed that this was not at all common.

The only quartz veins that were noted in the entire mapping project were those already known at the shaft and trench put down by the Cameron-Porcupine workers. These workings were found to be pretty well filled up and overgrown. Two sets of samples were taken from the dump and the trench. These consisted of barren quartz.

### Summary and Conclusions

The electro-magnetic survey showed nothing of interest and the magnetic survey serves to better outline the rock formations by means of their different magnetite contents. The claims are predominantly overburdened, covered with less than 10 percent outcrop throughout. The geological mapping confirms, as might well be expected, the findings of the Government mapping. It, however, did not turn up anything of economic importance.

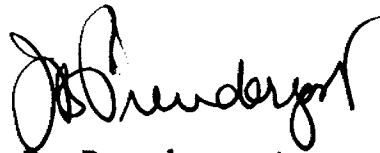


Recommendations

In light of the present work, and that carried on, both in the recent past and in the middle 1920's, it is considered that no justification can be found for a drilling programme. If any work was to be carried out in the future, it might be feasible to do further trenching along the strike of the quartz vein.

The claims should be kept in good standing as long as the present work will permit.

Respectfully submitted,



J. D. Prendergast

Toronto, Ontario

September 9, 1960



9/9/60

\* Plan for geological survey has been reduced  
2:1 and is now on overhead



REPORT ON THE GEOPHYSICAL SURVEYS

Bartlett Township - Province of Ontario  
for

CANADIAN NORTH INCA MINES LIMITED

by

REVJO MANAGEMENT CONSULTING SERVICES LIMITED

SUMMARY

The property of Canadian North Inca Mines Limited consists of 30 mining claims situated in the northwest quarter of Bartlett Township, Porcupine Mining Division, Ontario.

Access to the property is readily achieved by a road south from Timmins, Ontario, a distance of thirty miles.

Geologically, the property straddles a granite-greenstone contact. This contact strikes irregularly through the central part of the property in a direction roughly N45°W, astronomic. West from this contact zone a dark hornblende rich granite predominates. It is cut by at least one diabase dike, striking north-south. East of the contact zone the rocks are typical Keewatin volcanics, intruded by numerous dioritic and gabbroic rocks. From a study of data available, it appears that the strike of these rocks is north-south with steep dips.

The first exploratory work conducted on the claim group dates back to 1924 at which time Cameron Porcupine Gold Mines Limited conducted surface exploratory work which consisted of sinking pits and excavating trenches in the search for gold and silver mineralization. These excavations were observed near the No. 1 post of claim P-48157. It was impossible to make a thorough investigation of the old workings as well as to re-sample them. Nevertheless, numerous quartz veins were observed in a dioritic granite host rock.

The electromagnetic work conducted on the Canadian North Inca property was a horizontal loop type. The magnetometer survey was conducted using the sensitive vertical force A-2 Sharpe Magnetometer. A grid of picket lines at 300-foot intervals was established over the property. The direction of these lines was east-west astronomic, with necessary base lines and tie lines at right angles to them.

## CONCLUSIONS

A study of the results of the electromagnetic survey reveals no anomalies which would indicate conductive zones caused by sulphide mineralization or other conductive material.

The magnetometer survey outlined four magnetic zones. These are all interpreted to be caused by magnetite mineralization in the basic volcanic rocks or basic intrusive rocks. However, it must be pointed out that disseminated sulphide mineralization, of possible economic value, may be associated with magnetite mineralization, but in concentrations too low to be detected by the electromagnetic induction survey method. Most of the magnetic anomalies are situated along topographic highs and consequently an examination of them may readily be done by surface geological mapping.

In a report on the Canadian North Inca Mines property, in the company's files by Mr. D.C. Gillham, B.Sc., dated December 14, 1959, three chip samples are reported to have been obtained from the former Cameron Porcupine workings which assayed \$6.75, \$389.15 and \$806.20 in gold per ton.

## RECOMMENDATIONS

It is recommended that any further expenditures on the property be deferred until the spring, at which time a detailed geological survey be conducted.

This work coupled with any required trenching and stripping would provide a better means of evaluating the numerous magnetic anomalies as to possible economic importance.

It would also permit a thorough investigation and resampling of the former Cameron Porcupine workings in order to determine their gold content.

Based on the results of this work, it is felt that any further investigation of the property by diamond drilling can be done to the best advantage and least cost.

### PROPERTY AND LOCATION

The property of Canadian North Inca Mines Limited consists of 30 contiguous, unsurveyed and unpatented mining claims, numbered P-48131 to P-48160 inclusive.

The Claim group is situated in the northwest quarter of Bartlett Township, Porcupine Mining Division, in the Province of Ontario.

### ACCESS

The property is easily reached from Timmins, Ontario by road a distance of some thirty miles south.

### TOPOGRAPHY

The claim group occupies an area of relatively low relief. Two ridges traverse the property. The first broad ridge strikes across the easternmost twelve claims in a north-south direction. The east margin of the ridge is dissected by the Muskasenda river. Relief of 75 feet is obtained within a few hundred feet of the river. The ridge slopes gently to the west. The second ridge on the property lies near the west boundary. Here, the relief is not as abrupt as in the eastern section. Elevation differences of 50 feet are obtained.

The central part of the property is quite flat with a few low rising hills.

The property is drained by a creek and its tributaries and by the Muskasenda river. The Muskasenda has been dammed at the north boundary of claim P-48131 and the river dredged northward to Marceau Lake. It is used as a water route during the spring log drive.

A lumber camp is situated and maintained near the dam site.

### GEOLOGY

The map accompanying the Ontario Department of Mines Report (Part 6, Volume 35 1926) shows the property to be underlain by volcanics, bounded to the west by a large granite and granite porphyry mass. The whole sequence is intruded by basic rocks of varying shapes and sizes.

### PREVIOUS WORK

Previous work on the property dates back to 1924, at which time Cameron Porcupine Gold Mines Limited conducted work on claims now designated as P-48156 and P-48157. The work consisted of sinking pits and excavating trenches. This work was confined to and concentrated on numerous quartz vein structures in the dioritic facies of the granitic mass, near its east contact with the Keewatin volcanic rocks. This effort was directed towards the gold and silver possibilities of the structures.

Although it is reported that gold values were obtained, it appears the efforts of this work failed to disclose anything of economic importance.

There does not appear to have been any further systematic work done on the claims between this last period of activity and the acquisition of it by Canadian North Inca Mines Limited.

## ELECTROMAGNETIC SURVEY

### Theory

The survey was conducted using a Ronka Mark 4, Horizontal Loop Electromagnetic Unit. A description and operating principle is described as follows:

The Ronka horizontal loop unit is an electromagnetic induction method which measures the in-phase and out-of-phase components of the secondary magnetic field in terms of per cent of a normal or uniform field by means of a special compensator in the transmitting circuit.

The transmitter consists of a circular coil which is carried in a horizontal position by means of a special shoulder harness. The power unit is a vacuum tube oscillator fed by nine flashlight batteries. The current is supplied to the coil at 876 cycles per second. The receiving coil and recording unit consists of a similar diameter coil connected to an electronic circuit containing two potentiometers. Power is supplied by a dry cell battery.

The receiving coil is carried in a horizontal position at a fixed distance from the transmitting coil, usually 200 feet.

In the absence of a secondary field, the signal received by the receiving coil is due to the primary field alone and it is balanced by the compensating voltage. In the presence of a secondary field there is a change in the value of the signal received; the value of the compensating voltage must also be changed to achieve a null. The amount of change in the compensating voltage is measured as a per cent of its original value.

The in-phase and the out-of-phase controls are used to produce the necessary change in the compensating voltage to measure the effect of the secondary field.

As a tabular-shaped vertical conductor is approached both the in-phase and out-of-phase readings should rise and then fall to low values over the conductor and again rise on the other side. If a graph is prepared, it should show a zone of low values above the conductor and two zones of high values symmetrically located on either side.

Both the in-phase and out-of-phase readings show the same general curve. However, the ratio between the two readings is taken as a fair indication of the conductivity of the body producing the secondary field. A good conductor should produce a greater deviation of the in-phase component than the out-of-phase component. Ratios of in-phase to out-of-phase components greater than one are considered to indicate conductors which should be investigated by drilling.

#### Results of the Electromagnetic Survey

No conductors or anomalies of any significance were outlined on the property employing the Ronka Mark 4 electromagnetic unit, using a 200-foot coil separation.

#### MAGNETOMETER SURVEY

The instrument used in conducting the magnetometer survey of the property was an A-2 Sharpe Vertical force magnetometer. A base station was established just east of the property in an area of low magnetic susceptibility. Readings were taken at every 100 feet over the established grid system on the property. All readings were adjusted for diurnal variations using the established base stations as a reference.

#### Results of the Survey

Four magnetic anomalous zones were outlined on the property.

Zone "A" - This magnetic zone lies just west of Muskasenda Lake and Muskasenda River. It lies along the crest and flank of a steep hill. It forms a continuous zone about one mile in length and attains a maximum width of 700 feet in the south section of the property. Its average width is about 400 feet. There is an offset of the anomaly on claim P-48149 suggesting a fault or non-uniformity in the magnetic mineral content of the host rock.

The magnetic intensity of the anomaly varies along its strike, but its average magnetic value is some 1200 gammas above background.

It is interpreted that the anomaly represents a basic volcanic flow or a basic intrusive body with disseminated magnetite.

Zone "B" - This magnetic zone lies about 3,000 feet west of the "A" Zone and strikes parallel to it. It possesses similar characteristics as to length, width, and intensity as Zone "A". It occurs along the west flank of the same broad hill as Zone "A".

It is interpreted that the cause of the magnetic zone is either a basic volcanic flow or a basic intrusive body with disseminated magnetite.

Lying between Zones "A" and "B" there are numerous short magnetic zones of low intensity.

Zone "C" - This zone consists of eight isolated short and narrow magnetic anomalies lying near the assumed granite-greenstone contact. Because of the lack of supporting electrical properties, these are interpreted to be caused more likely by magnetite mineralization than by sulphide mineralization.

They could represent either magnetite rich dioritic facies of the granite, xenoliths of greenstone in the granite or narrow finger-like dioritic gabbroic intrusives in the volcanic rocks.

Zone "D" - occurs near the west boundary of the property. Correlation with geological exposures established that the magnetic zone is caused by a diabase dike.

There are numerous other short, weak magnetic responses within granitic intrusive. These probably all represent the varying magnetite content of the mass.

Respectfully submitted,

REVJO MANAGEMENT CONSULTING SERVICES LIMITED

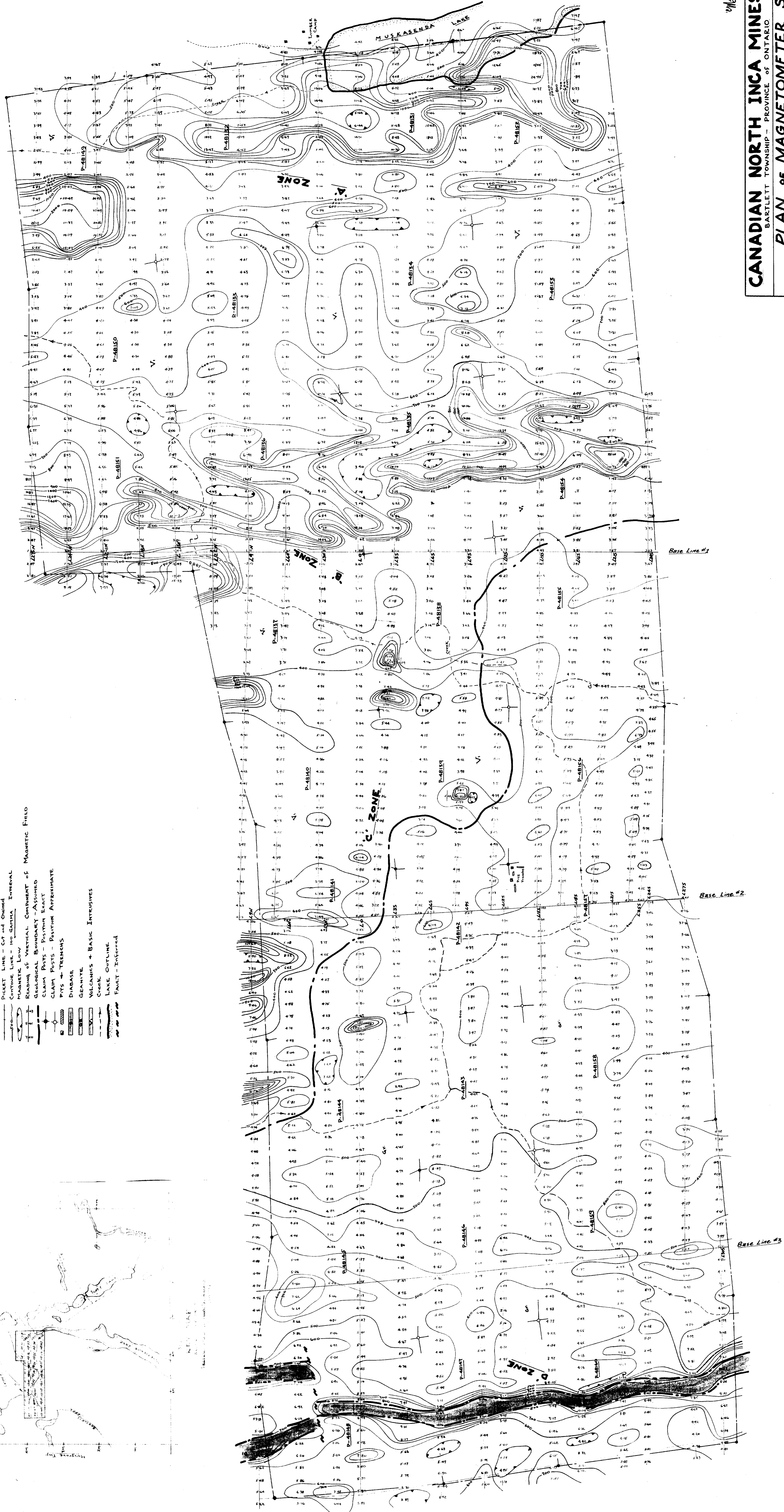
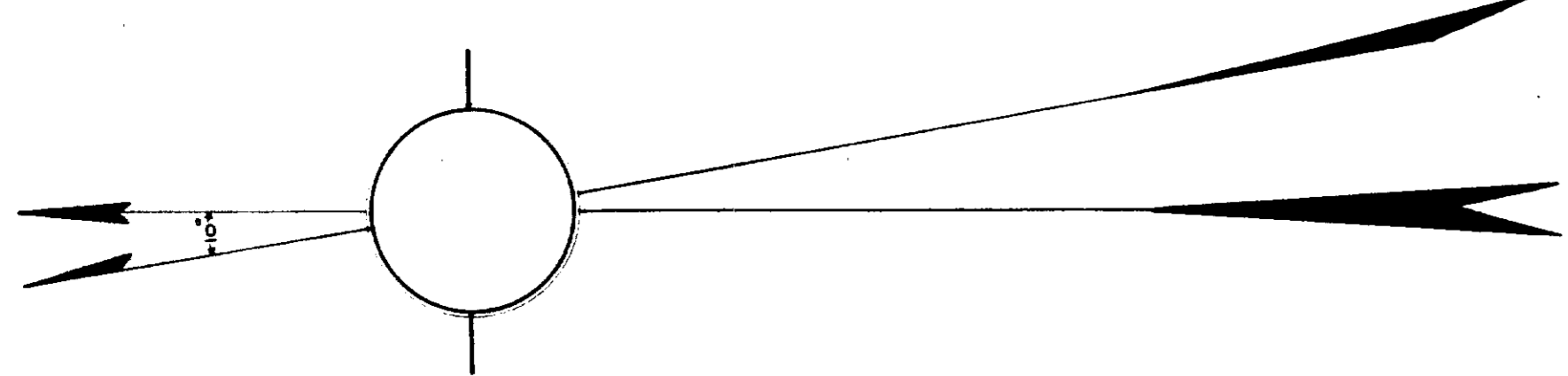


Per Michael Zurowski.

Toronto, Ontario  
February 18, 1960.







**SYMBOLS**

- DICKET LINE - Cut and Chained
- OUTLINE - No DATA
- INTERVAL
- MAGNETIC LOW
- READING OF VERTICAL COMPONENT OF MAGNETIC FIELD
- GEOLOGICAL BOUNDARY - ASSUMED
- CLAIM POSTS - POSITION EXACT
- PITS & TRENCHES - POSITION APPROXIMATE
- DIABASE
- GRANITE
- VOLCANICS & BASIC INTERUSIVES
- LAKE OUTLINE
- FAULT - INFERRED

**CANADIAN NORTH INCA MINES LIMITED**  
 BARTLETT TOWNSHIP - PROVINCE OF ONTARIO  
**PLAN OF MAGNETOMETER SURVEY**  
 REVJO MANAGEMENT CONSULTING SERVICES LIMITED  
 TORONTO, ONTARIO

