REPORT ON
GROUND GEOPHYSICAL SURVEY
BOB'S LAKE PROPERTY, WHITNEY TOWNSHIP
PORCUPINE MINING DIVISION, ONTARIO
FOR
SUMMIT GOLD MINES INC.
VOLUME I

BY

BARRINGER RESEARCH LIMITED

304 CARLINGVIEW DRIVE

METROPOLITAN TORONTO

REXDALE, ONTARIO

APRIL 1974

1. INTRODUCTION

1.1 GENERAL

During the periods from October 20th, 1973 to November 14th, 1973, and between January 18th, 1974 and January 29th, 1974, all dates inclusive, ground geophysical surveys were carried out by Barringer Research Limited, on behalf of Summit Gold Mines Inc., covering eight unpatented mining claims located in Whitney Township. The geophysical surveys consisted of a ground magnetic survey and an induced polarization survey.

The southeastern third of the property contains outcrops. The rest of the property is covered by overburden.

The geophysical surveys were carried out based on the recommendations made in the Qualifying Report prepared by W. Walker, Consulting Geologist, and this report has benefited from discussions with Mr. Walker.

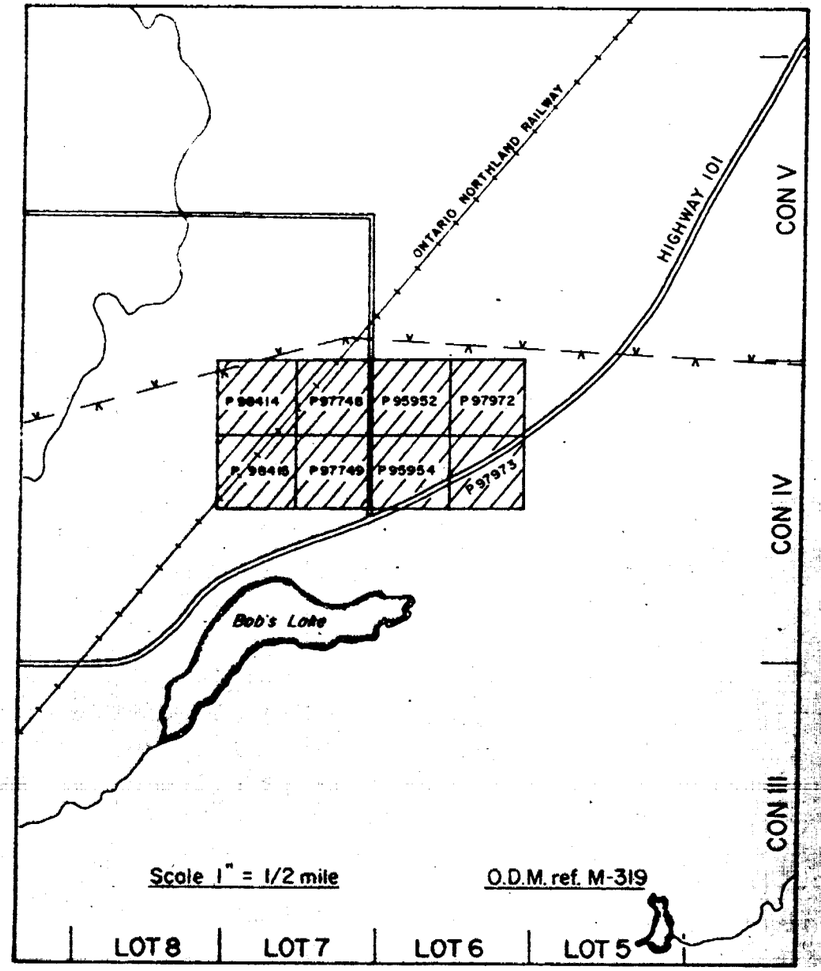
The purpose of the ground magnetic survey was to aid the geological understanding of the property, providing the means of "geological mapping" by magnetics. The induced polarization survey was conducted to search for gold deposits associated with disseminated sulphide mineralization. In the following, the results of the geophysical surveys are discussed and recommendations are made for further work.

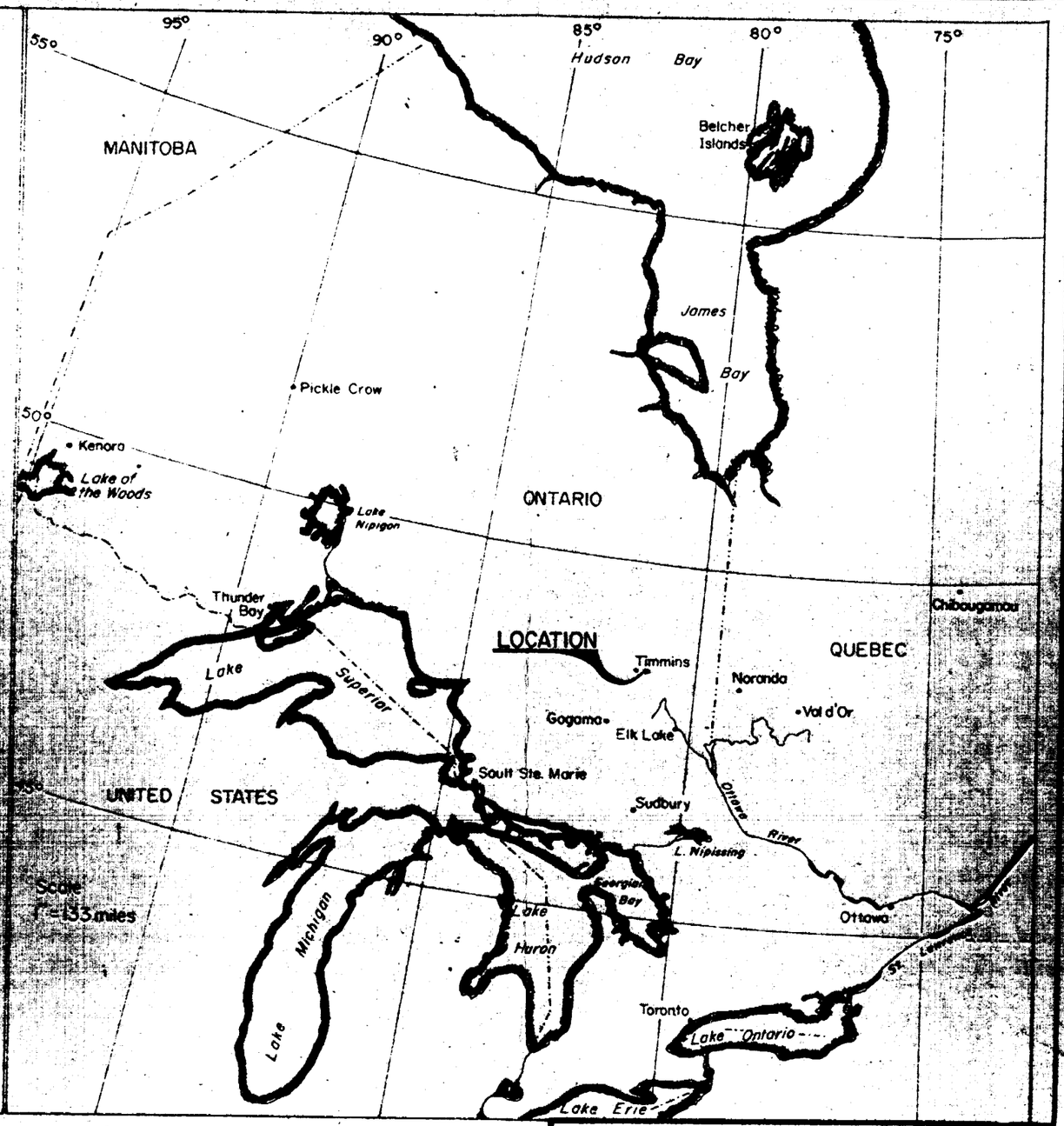
1.2 PROPERTY

The property consists of eight unpatented mining claims in Whitney Township, (north halves of Lots 6 and 7, Concession IV), Porcupine Mining Division, Ontario. The claims are numbered: P98414-15, P97748-49, P95952, P95954 and P97972-73, all numbers are inclusive. The location of the property is indicated on the Locality Plan (Dwg. No. 5-355-1).

1.3 LOCATION AND ACCESS

The property is located about 9 miles east of Timmins, Ontario. It is traversed by Highway 101, by the Ontario Northland Railway and by the HEPC power line. A pipe line of the Northern Ontario Natural Gas Co. is located





N

A

Work undertaken by
BARRINGER RESEARCH LTD, Toronto, Canada.

SUMMIT GOLD MINES INC.

BOBS LAKE GROUP, WHITNEY TWP., ONTARIO

LOCALITY PLAN

NOV 1973 | DWG. 5-355-1

about one mile to the west. The recently producing Hallnor and Broulan Reef Gold Mines were about one-half mile to the north and the presently producing Pamour Gold Mine, controlled by Noranda Mines, is a mile to the northeast. Bob's Lake is less than a quarter of a mile to the south.

Reference: Topographic Map Sheet 42A/11.

1.4 PREVIOUS WORK

The only recorded work are recent magnetic and fixed transmitter vertical loop electromagnetic surveys by K. H. Darke Consultants Ltd. for Tri-J Mineral Surveys in 1969. The survey outlined a conductive zone across the centre of the property. The single hole drilled on this conductive zone intersected talcose shearing (presumably related to the ultramafic intrusives) in carbonated intermediate volcanics.

Geological mapping was carried out by W. Walker, P. Eng., in the fall of 1973 and his geology is used in the interpretation.

1.5 GEOPHYSICAL SURVEYS

The magnetic survey was carried out on every survey line, while the induced polarization survey was carried out over alternate lines. The magnetic survey covered 24.3 line miles with 5242 readings. The reconnaissance IP survey encompassed 328 readings at two separations and an additional 9 readings of detail for a total of 10.3 line miles.

The survey could not be completed during the first period due to wet ground conditions and lake freeze-up, consequently, the survey recommenced in late January after freeze-up.

1.6 SURVEY CONTROL

The grid was cut by a crew under the supervision of Mr. O. Hicks of Schumacher, Ontario, under separate contract. The base line has a bearing of 90°T. Sub-base lines in the north and south were also established. The survey lines were laid out and cut perpendicular to the base line with a nominal spacing of 100 feet and chained and picketed with a nominal 50 foot station

interval. In that 26.25 line miles were cut including the base lines.

1.7 PERSONNEL

The geophysical surveys were carried out by a crew lead by Mr. George Young, Senior Geophysical Operator, under the supervision of R. Caven, P. Eng., Senior Geophysicist and Frank L. Jagodits, P. Eng., Chief Geophysicist.

2. SURVEY PROCEDURES

2.1 MAGNETIC SURVEY

The magnetic survey was carried out over the survey lines using a Barringer GM122 proton precession magnetometer, measuring the earth's total magnetic field to the nearest one gamma intensity value. The station interval was 25 feet and readings to the nearest one gamma were obtained. Magnetometer base stations were established at suitable intervals and the operator returned to a base station within two hours of commencing the survey loop. The magnetic readings were corrected for the diurnal changes of the earth's magnetic field.

2.2. INDUCED POLARIZATION SURVEY

The induced polarization survey utilized a pole-dipole electrode array, the measuring, or potential dipole had a separation of 200 feet, referred to as the 'a' spacing. The current pole was situated to the south of the potential dipole throughout in order to make line to line correlation possible.

The reconnaissance induced polarization work was done within n = 1, and 2, for a potential dipole to current pole distance of 200 and 400 feet respectively. The detail survey used an 'a' spacing of 100 feet and readings were obtained at separations of n = 1 and 2. The station interval was 200 feet.

The potential dipole and the current pole move in unison along the survey lines, while the second or "infinity" current pole is fixed at a distance which is sufficiently large so as not to affect significantly the current distribution of the moving current pole. Commonly this distance is at least 10 times the 'na' spacing from the nearest survey point on the grid.

A 7.5 Kw transmitter-generator unit was employed for this survey.

3. DESCRIPTION OF THE INSTRUMENTATION

3.1 TOTAL FIELD MAGNETOMETER

The proton precession, or nuclear precession, magnetometer measures the total intensity of the earth's magnetic field regardless of direction. For the measurement the magnetic spins of the hydrogen nuclei, protons of the fluid in the sensory head are aligned in one direction by the polarizing current in the sensory coil. The polarizing current is terminated abruptly and the proton spin-axes deviate, precess, from the imposed alignment under the influence of the external, or earth's magnetic field. The precession frequency is measured and converted to gammas of field strength. The measurement is thus absolute, and no instrumental drift need to be accounted for. The diurnal variations in the earth's field have to be corrected for, to bring all measurements to a common point in time and space.

The Barringer GM122 magnetometer is a proton precession instrument measuring the field to the nearest one gamma.

3.2 INDUCED POLARIZATION SYSTEM

The induced polarization system used is the time-domain system. The DC-pulse or time-domain approach to the induced polarization method comprises of the passing of direct current through the ground which builds up charges on the interfaces between metallic minerals and electrolytes. The current is switched off and the redistribution of these charges is measured as a voltage decay (referred to as "overvoltage" of IP effect) at the ground surface. Comparison of this secondary voltage (V_s) with the primary voltage (V_p) when the current is on provides a measure of the chargeability of the sub-surface.

The system consists of a generator set, a transmitter and receiver. The generator set, consisting of an engine driven alternator and voltage regulator, provides the primary power at 120V AC - 400 Hz to the transmitter. The transmitter contains the circuitry and front panel controls to step up and convert the primary AC voltage to a rectangular low frequency wave form, the amplitude of which can be selected by the operator for application to the ground.

The transmitter also contains switching circuitry for the current. The current is applied to the ground for 2.0 seconds and it is switched off for 2.0 seconds. The polarity of current is reversed after each pulse.

The generator set and the transmitter are manufactured by Huntec Limited of Toronto, and are available as 2.5 or 7.5 Kw units. The receiver is the Newmont designed N IV manufactured by Crone Geophysics Limited, Mississauga, Ontario. The receiver contains its own power supply and has an SP buckout, manual and automatic. After the primary voltage between the potential electrodes has been determined, the receiver automatically integrates the secondary voltage between 0.45 and 0.90 seconds (M) as well as between 0.90 - 1.35 seconds (N) after the termination of each primary current pulse for six consecutive pulses (3 complete cycles), compares the sum to the primary voltage measurement and displays a readout directly in milliseconds on a meter.

The applied current is measured on the transmitter and the apparent resistivity of the given electrode array calculated from the current (Ig) and primary voltage (V_o) and factor applicable to the electrode array employed.

In most environments the measurement of the chargeability can be repeated to an accuracy of 5 - 10% or better, depending on the power rating and ground resistivity.

4. DATA REDUCTION AND PRESENTATION OF THE RESULTS

4.1 MAGNETOMETER SURVEY

The result of the survey is presented in the form of contours of equal intensity of the earth's magnetic field as interpolated from the readings at the stations. The basic contour interval is 10 gammas with suitably larger intervals in areas of steep magnetic gradients. The horizontal scale of the maps is 1 inch equals 100 feet (Dwg. Nos. 5-355-2A & B). The value of the magnetic field read at each station is shown on separate maps (Dwg. Nos. 5-355-3A & B).

As indicated earlier the magnetic readings are corrected for diurnal variations.

4.2 INDUCED POLARIZATION SURVEY

The induced polarization and resistivity data is presented in the form of profiles, one set for each separation. The profiles have vertical scales of 1 inch equals 10 milliseconds for the chargeability and 1 inch equals 1000 ohm-metres for the apparent resistivity. The horizontal scale of the maps is 1 inch equals 100 feet (Dwg. Nos. 5-355-4A & B and 5A & B).

In order to compensate for the effect of increasing resistivity on the chargeability, normalized chargeabilities were also calculated. These are not shown but were used in the interpretation. The normalized chargeability is equal to the chargeability divided by the resistivity multiplied by 1000 and has a dimension of farads/metre.

4.3 INTERPRETATION

The interpretation of the magnetic survey is presented on a copy of the magnetic contour maps (Dwg. Nos. 5-355-6A & B).

The interpretation of the induced polarization survey is presented on a copy of the n = 1 induced polarization profile maps (Dwg. Nos. 5-355-7A & B).

5. KNOWN GEOLOGY

The general geology of Whitney Township is given on M. E. Hurst's map of the Porcupine Area (Ontario Department of Mines map 47a, 1939). The geology of the Porcupine Area is given in a paper by Stewart A. Ferguson, "The Relationship of Mineralization to Stratigraphy of in the Porcupine and Red Lake Areas, Ontario", Geological Association of Canada Special Paper No. 3, p99-119, 1966).

The geology of the property is also given on two maps, Whitney Township Northeast Quadrant and Northwest Quadrant, Ontario Department of Mines, compiled by S. A. Ferguson in 1958.

The reader is also referred to a report by W. Walker, F.G.A.C., P. Eng., Consulting Geologist, entitled "Summit Gold Mines Inc., Bob's Lake Group, Whitney Township, Porcupine Mining Division, Ontario", July 1973.

"The Porcupine-Destor fault, a regional structure which extends from the west of Timmins well into Quebec, is the controlling feature of the local geology. The precise nature and limits of the fault zone have various interpretation. I consider that it occupies the entire area between the volcanics which lie to the north of three mines and the volcanics which outcrop in the southeast part of the property. The fault zone has been intruded by ultramafic material and the Temiskaming type sediments appear to have been deposited in the fault valley. In other words, three gold mines lie on the north flank of the fault zone and the property is on the south flank of the fault zone.

All ore produced to date from this part of the Porcupine gold field has been from the north contact of the sediments, though further to the west several producers are south of the sediments. The greater part of the ore is in brittle sediments related to volcanic buttresses and incompetent soapstone. Comparable conditions on the south contact are the targets of the present programme, (W. Walker, Qualifying Report, July 1973).

Walker's (1973) mapping outlined dacite in contact with ash in the southeast of the property. Fissile siltstone, ash and faults were also mapped by Walker.

6. INTERPRETATION

6.1 GENERAL

6.1.1 Magnetic Survey

The use of the magnetic characteristics of rocks to aid the "mapping" of subsurface geology is well established. To obtain a geological interpretation of the magnetic contour maps studies of magnetic features such as gradients, distribution and frequency of anomalies, amplitudes of anomalies, strike, etc., were made. Areas of different magnetic characteristics were outlined as magnetic units. Altogether, eight magnetic units were outlined on the basis of changes in the various characteristic patterns of the magnetic anomalies.

These characteristics are as follows:

(a) magnetic base levels;

(b) intensity, shape, strike, frequency and distribution of anomalies within the unit;

(c) relationship to surrounding units.

The magnetic contours have also been studied for expressions of faulting and shear zones are interpreted from magnetic gradients and from abrupt terminations and displacements of magnetic trends.

6.1.2 Induced Polarization Survey

The induced polarization technique is unique among geophysical methods in that it is able to detect both massive and disseminated sulphide mineralization. It does not depend entirely on the contrast in conductivity between the mineralized zone and the host rock, as the electromagnetic induction methods do. The induced polarization effect comes from the physical phenomenon of build-up of electrical charges at the interfaces between metallic sulphides and fluids in pore-spaces in the rock under the influence of a current applied to the ground.

When this primary current is interrupted the accumulated charges dissipate and in the process set up secondary currents which can be measured. The ratio between the secondary and primary currents is the chargeability measure. In the practical case the voltages are measured rather than the currents themselves, but the chargeability remains the same. Although initially the induced polarization method was devised to detect low grade dissemination of copper sulphides it has been found that some metallic oxides, such as magnetite, metals in the native state, and graphite also give IP effects. Due to the nature of crystal arrangement in a massive sulphide body this also gives a measurable chargeability. The amplitude and type of IP anomaly is dependent upon the average mineral content in a volume of rock as well as the size of the mineral grains. Very fine grain mineralization usually gives a higher chargeability value than a coarse grained deposit of the same average grade. Concentration of the mineralization within a small volume, such as occurs in a massively mineralized zone lower the resistivity to an appreciable degree. The resistivity measurements are obtained at the same time as the chargeabilities (Section 3.1, above). Sulphide concentrations as low as one percent or less can be successfully mapped with IP provided that this mineral content occurs over a volume of rock which is comparable in size with the volume measured. The volume of the subsurface which is used for each reading depends upon the separation between the electrodes, and can therefore be adjusted to fit the exploration problem at hand.

The IP responses and apparent resistivities obtained from the different separations were studied and are classified as excellent, good, poor or indefinite. The IP surveying was hindered by the muskeg cover which resulted in a number of negative chargeabilities. Negative chargeabilities sometimes also results from peculiar channelling of currents along fracture zones. This will depend upon the location of the current electrodes and potential electrodes in reference to the fracture zone. It is, however, believed that the significant IP anomalies were observed in spite of the "masking" effect of the conductive overburden.

The IP anomalies following a given strike direction are grouped into anomalous zones and indicated such on the interpretation maps.

6.2 DETAILED INTERPRETATION OF MAGNETIC SURVEY

6.2.1 General Discussion

The magnetic contour map is undoubtedly dominated by the magnetic feature crossing the map area in a nearly east-west direction. The intensity of the anomaly varies along its length, but it can be as much as 1250 gammas. The depth of the source could be in the range of 150 - 250 feet. The width varies but may be in the order of 150 - 200 feet at its narrowest in the west and 300 - 400 feet at its widest in the centre of the map area. It is believed that the anomaly represents a basic to ultrabasic dyke which may have partially filled a shear zone.

Apart from this main magnetic feature there are a number of east-west and northeast-southwest dykes interpreted. The majority of these are located to the south of the main magnetic feature.

The railway crossing in the area to the west produced a number of spurious anomalies along its length which were not considered in the interpretation. No magnetic survey was carried out along Highway 101 and in the trailer park. There is some suggestion that a few spurious anomalies occur along the north-south road in the central map area.

The outline of the magnetic units is more general than is usually the case. The magnetic survey is characterized by northeast-southwest gradients varying from gentle to steep. This fact hampered the outline of the units. Undoubtedly, some of these gradients may represent strike faulting and were interpreted as such.

The detailed magnetic survey contains a wealth of structural information. The major interpreted fault strike directions are north-northwest, east-northeast and north-northwest.

6.2.2 Discussion of the Magnetic Units

(i) Magnetic Unit 1

The limit of the unit is indeed very approximate and more or less follows a reasonably steep magnetic gradient. Apart from the gradients the unit is poorly devoid of distinct magnetic anomalies. The underlying rocks are interpreted to be sediments and/or acid volcanic and/or intrusive rocks. The geologic map indicates two drill holes just to the north which encountered granite.

(ii) Magnetic Unit 2

This is the magnetic unit which contains the dominating magnetic anomaly discussed in paragraph 6.2.1. The unit itself, as outlined, encompasses a larger area than the anomaly actually is. The underlying rocks, apart from the basic to ultrabasic dyke, are believed to be acid to intermediate sediment or volcanics. There are a few dyke-like features interpreted north of the main anomaly in the west central map area.

(iii) Magnetic Unit 3

The unit occupies the southwest corner of the map area and is characterized by gentle magnetic gradients and a few discrete magnetic anomalies. The underlying rock is interpreted to be acid to intermediate volcanics, and/or sediments.

(iv) Magnetic Unit 4

The unit lies south of Unit 3 and the country rocks within the unit are believed to be the same as in Unit 3. However, a number of east-northeast dykes or sills of intermediate to basic composition are interpreted and outlined on the Interpretation Map.

(v) Magnetic Unit 5

The unit lies south of Unit 2 and extends from the south central map area in a general northeasterly trend to the eastern border of the survey. It is characterized by east-west and northeast-southwest gradients.

A number of local anomalies occur, some of which were outlined as dykes. One particular anomaly is noteworthy. It is located north and west of Highway 101. It may signify basic to ultrabasic intrusion. The underlying rocks are interpreted to be sediments and/or acid to intermediate volcanics.

(vi) Magnetic Unit 6

It is a well-defined unit just south of the main peak of the dominating magnetic feature. The anomalies enclosed by the unit have short strike length, but intense. Intermediate to basic volcanics and/or intrusives may be the cause.

(vii) Magnetic Unit 7

The unit is similar to Unit 6 and is located on the eastern edge of the map area. The strike lengths are longer than in Unit 6, especially in the northern part of the unit. Underlying rocks may be intermediate to basic volcanics.

(viii) Magnetic Unit 8

This unit occupies the southeastern corner of the map area. It is characterized by lower magnetic intensities than elsewhere in the survey area. A number of low amplitude local anomalies are present. Sediments and/or acid to intermediate volcanics may be the underlying rocks.

(ix) Magnetic Unit 9

This unit is located within Unit 8 and may describe an east-west striking dyke of intermediate to basic composition.

6.3 INDUCED POLARIZATION SURVEY

6.3.1 General

The induced polarization survey outlined four anomalous zones. Outside of the anomalous zones, small intensity anomalies may reflect rock type changes.

The correlation between magnetics and IP data will be discussed later.

In a number of cases (e.g. IP-2) and in the area south of Highway 101, chargeability anomalies are accompanied by increased apparent resistivity. In these cases the change of resistivity is quite remarkable signifying change in rock type.

6.3.2 Detailed Discussion

(i) Anomalous Zone IP-1

The zone can be definitely recognized on two lines, namely on Lines 8W and 10W. The n = 1 coverage is not complete on Line 10W but data available suggests stronger response on n = 1. On Line 8W the n = 2 response is less than on Line 10W. The n = 1 response becomes negative which probably is due to conductive overburden.

The IP anomaly occurs north of the interpreted ultrabasic body and it appears to be associated with dykes interpreted from magnetics. It is recommended that this zone be tested by diamond drilling.

(ii) Anomalous Zone IP-2

This zone extends from Line 4E to Line 4W and is south of the main magnetic feature. The increase of resistivity can be correlated from line to line and is also associated with an increase in chargeability.

(iii) Anomalous Zone IP-3

The zone is more than likely a westerly extension of Anomalous Zone IP-4. The intensity of the anomalies are smaller than in Zone 4 and it extends from Line 8E to Line 14E. The responses at n = 1 and n = 2 are similar, except Line 8E where the n = 1 response is about half of the n = 2 response. The IP zone appears to be associated with a long strike fault interpreted from the magnetics and it is south of the main dominant magnetic feature. A strong magnetic anomaly, which was interpreted to be caused by basic to ultrabasic intrusive is located just south of the IP zone.

The IP anomaly at n = 2 widens considerably and the northerly peak is associated with the main, dominant magnetic anomaly.

(iv) Anomalous Zone IP-4

This is a significant zone with the strongest responses. It extends from Line 16E to Line 26E. The response and width of the zone varies from line to line, the strongest being on Line 22E.

The zone is situated to the south of the main magnetic anomaly believed to be caused by buried basic to ultrabasic intrusion. The IP anomalies straddle several magnetic units.

The anomalous zone can be correlated with a number of faults striking in a general east-northeast direction. There are major faults which can be traced for large distances. Numerous cross-faults were also interpreted from magnetics within the IP anomalous zone. Graphite was observed outcropping on Line 22E at Station 4N, which may account partially for the IP anomaly to the east of this location.

On the whole it is believed that a part of the IP response may originate from mineralization associated with faults and shear zones. Graphite may be a major contributor in some cases. Since it is a significant zone, the results will be discussed over each line.

On Line 16E the data obtained with the shallower penetrating array (n = 1, a = 200 feet) has its peak to the south of the n = 2, a = 200 feet peak. The IP anomalies obtained within n - 2, a = 200 feet array and the detail array, n = 1 and 2, a = 100 feet, have an associated increase in resistivity. This resistivity anomaly occurs on the n = 1, a = 200 feet data also, and it continues on Line 18E.

The detail IP data and the n = 2, a - 200 feet data substantiate each other but the n = 1, a = 200 feet data seemingly stands alone.

The IP data along Line 18E is not complete because the surveying could not be carried out over the trailer park. The amplitudes of the anomalies are less than on Line 16E or on Line 20E, but has the appearance of a wide chargeable zone which extends to depth.

Only a portion of the data was obtained on Line 20E due to the trailer park. The detail and reconnaissance IP data suggest a reasonably wide IP zone which extends to depth. Distribution of chargeable material suggested to be uniform with depth.

The IP anomaly located across Magnetic Units 5 and 7, Unit 7 being more magnetic. There are measures of shear zones interpreted from the magnetics nearby.

The full IP anomaly can be seen on Line 22E. It straddles Magnetic Units 5 and 7. Graphite was found outcropping at Station 4N which may account for much of the northern part of the IP anomaly. The southern part of the anomaly is located over Magnetic Unit 7 which is believed to be caused by intermediate to basic volcanics.

The anomaly narrows on Line 24E, but it is wider at the deeper penetrating arrays, which may be suggestive of northerly dip.

The anomalous zone straddles the two magnetic units discussed above and a number of interpreted shear zones also correlate with the IP data.

The anomaly widens, especially at n = 2, along Line 26E.

7. CONCLUSIONS AND RECOMMENDATIONS

During the fall of 1973 and the winter of 1974, ground magnetic and induced polarization surveys were carried out by Barringer Research on behalf of Summit Gold Mines Inc., covering eight unpatented mining claims located in Whitney Township, near Timmins, Ontario.

The surveys were conducted to search for gold deposits associated with disseminated sulphide mineralization.

The dominant feature of the magnetic contour map is the east-northeast striking magnetic anomaly crossing the entire survey area and the structural data interpreted from the magnetics.

The dominant magnetic anomaly, which has its source at depth between 150 and 250 feet below ground, interpreted to represent an ultrabasic dyke. Altogether nine magnetic units were outlined representing rock of acid to intermediate composition. Within the magnetic units anomalies were outlined and believed to represent basic to ultrabasic dykes or sills.

Four anomalous IP zones were outlined on the basis of the reconnaissance and detail IP surveys.

Anomalous Zones IP-3 and IP-4 are more than likely related to each other. Anomalous Zone IP-1 occurs on two lines and is considered to be worthy of drilling.

Zones IP-3 and IP-4 form a more or less continuous zone from Line 8E to Line 26E.

It is proposed that these zones be tested with two drill holes and if results are encouraging a third hole can be drilled.

In order to test the anomalies, the following drill holes are recommended:

1. Collar: Line 10W, Station: 5+00N, Azimuth: Grid South, Dip: -45°, Depth 350 feet.

2. Collar: Line 10E, Station: 1+00S, Azimuth: Grid North, Dip: -45°
Depth 350 feet.

3. Collar: Line 22E, Station: 5+00N, Azimuth: Grid South, Dip: -45°
Depth 350 feet.

Since graphite may be an indicator of gold mineralization, the first hole to test Anomalous Zone IP-4 was located along the line where graphite was found outcropping.

The following location is given to be drilled if encouraging results are obtained in the previous two holes along zones IP-3 and IP-4.

Collar: Line 24E, Station: 5+50N, Azimuth: Grid South, Dip: -45°
Depth 350 feet.

Respectfully submitted

BARRINGER RESEARCH LIMITED

REGISTERED PROFESSIONAL ENGINEER
F. L. JAGODITS
PROVINCE OF ONTARIO

per.

F. L. Jagodits, P. Eng.,
Chief Geophysicist.
Exploration Division.

900

GEOPHYSICAL – GEOLOG TECHNICAL DAT.

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey Magnetic

Township or Area Whitney Township

Claim holder(s) Summit Gold Mines Inc.

Author of Report F. L. Jagodits,

Address 304 Carlingview Dr., Rexdale.

Covering Dates of Survey Oct. 25/73 - Jan. 26/74.
(linecutting to office)

Total Miles of Line cut 26.25

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

DAYS per claim

Geophysical
--Electromagnetic
–Magnetometer 40
–Radiometric
–Other
Geological
Geochemical

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer ____ Electromagnetic ____ Radiometric ____
(enter days per claim)

DATE: May 3, 1974 SIGNATURE: _____
Author of Report or Agent

PROJECTS SECTION

Res. Geol. ____ Qualifications 2.55

Previous Surveys 63.3064 not for assessment Credits

Checked by ____ date ____

GEOLOGICAL BRANCH

Approved by ____ date ____

GEOLOGICAL BRANCH

Approved by ____ date ____

OFFICE USE ONLY

MINING CLAIMS TRAVERSED
List numerically

(prefix)	(number)	
1.P ✓	P98414	1/8 N.C May
✓	P98415 ✓	
✓	P97748 ✓	
1/4 N.C	P97749 ✓	
1/4 N.C	P95952 ✓	
1/4 N.C	P95954 ✓	
✓	P97972 ✓	
✓	P97973 ✓	

If space insufficient, attach list

TOTAL CLAIMS 8

Show instrument technical data in each space for type of survey submitted or indicate "not applicable"

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations 5,242 Number of Readings 5,242

Station interval 25'

Line spacing 100'

Profile scale or Contour intervals 10 gammas
(specify for each type of survey)

MAGNETIC

Instrument Barringer GM 122

Accuracy - Scale constant + 1 gamma

Diurnal correction method Base station looping

Base station location Baseline 5W

ELECTROMAGNETIC

Instrument

Coil configuration

Coil separation

Accuracy

Method: ☐ Fixed transmitter ☐ Shoot back ☐ In line ☐ Parallel line

Frequency
(specify V.L.F. station)

Parameters measured

GRAVITY

Instrument

Scale constant

Corrections made

Base station value and location

Elevation accuracy

INDUCED POLARIZATION – RESISTIVITY

Instrument

Time domain Frequency domain

Frequency Range

Power

Electrode array

Electrode spacing

Type of electrode

HOYLE TWP. M-287

TWP. M-315

TWP. M-270

CODY

SHAW TWP. M-311

THE TOWNSHIP OF

WHITNEY

DISTRICT OF COCHRANE

PORCUPINE MINING DIVISION

SCALE: 1-INCH 40 CHAINS

LEGEND

PATENTED LAND	P
CROWN LAND SALE	C.S.
LEASES	L
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	
IMPROVED ROADS	
KING'S HIGHWAYS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	
CANCELLED	C.
S.R.O. PATENTED	

NOTES

400' Surface rights reservation around all lakes and rivers.

No disposition of sand & gravel on lands lying north of the O.N.R., from May 8th 1964 until further notice. D.O.M. file 250 13

Any restakings in area within stippling subject to rights and privileges granted to Pamour Porcupine Mines Limited for tailings disposal

This township lies within the Municipality of CITY of TIMMINS.

File - 2.1479

MINING LANDS
DATE OF ISSUE
MAY 13 1974
MINISTRY OF NATURAL RESOURCES

PLAN NO. M-319

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

42A11SE0253 2.1479 WHITNEY

200

26W 25W 24W 23W 22W 21W 20W 19W 18W 17W 16W 15W 14W 13W 12W 11W 10W 9W 8W 7W 6W 5W 4W 3W 2W 1W

SUB-BASE LINE 16+28 N

15 N

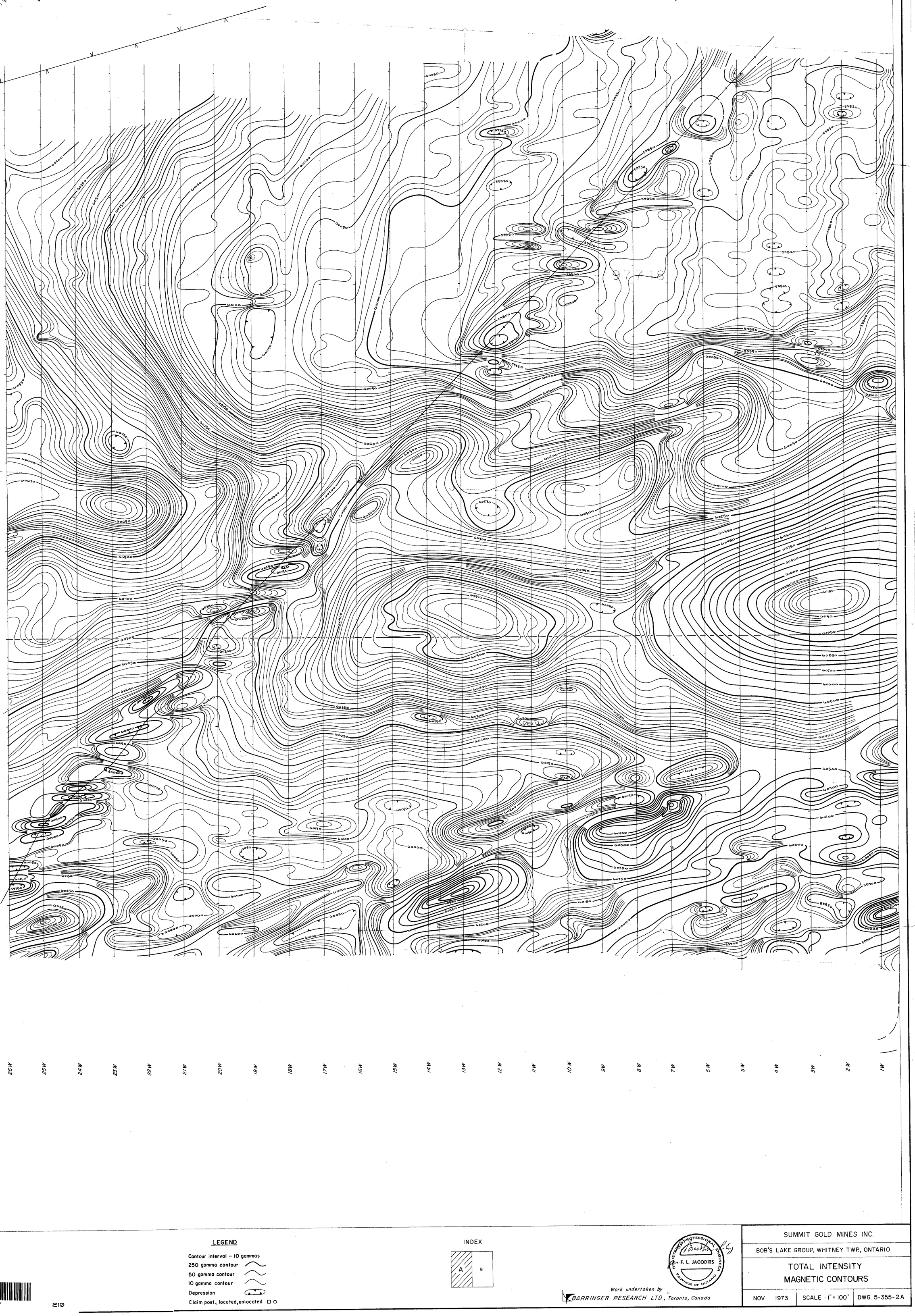
10 N

5 N

BASE LINE (bearing 90°)

5 S

97 18



26W 25W 24W 23W 22W 21W 20W 19W 18W 17W 16W 15W 14W 13W 12W 11W 10W 9W 8W 7W 6W 5W 4W 3W 2W 1W

N

A

42A11SE8253 2.1479 WHITNEY

210

LEGEND

Contour interval – 10 gammas
250 gamma contour
50 gamma contour
10 gamma contour
Depression
Claim post, located, unlocated □ ○

INDEX

A B

Work undertaken by
BARRINGER RESEARCH LTD., Toronto, Canada

REGISTERED PROFESSIONAL ENGINEER
F. L. JAGODITS
PROVINCE OF ONTARIO

SUMMIT GOLD MINES INC.

BOB'S LAKE GROUP, WHITNEY TWP, ONTARIO

TOTAL INTENSITY
MAGNETIC CONTOURS

NOV. 1973 | SCALE · 1" = 100' | DWG. 5-355-2A

00 1E 2E 3E 4E 5E 6E 7E 8E 9E 10E 11E 12E 13E 14E 15E 16E 17E 18E 19E 20E 21E 22E 23E 24E 25E 26E

15N

10N

5N

BASE LINE
(bearing 90°)

5S

10S

HIGHWAY 101

TRAILER PARK

42A11SE0253 2.1479 WHITNEY

220

LEGEND

Contour interval – 10 gammas
250 gamma contour
50 gamma contour
10 gamma contour
Depression
Claim post, located, unlocated □ ○

INDEX

Work undertaken by
BARRINGER RESEARCH LTD, Toronto, Canada

SUMMIT GOLD MINES INC.

BOB'S LAKE GROUP, WHITNEY TWP, ONTARIO

TOTAL INTENSITY MAGNETIC CONTOURS

NOV. 1973	SCALE · 1" = 100'	DWG. 5-355-2B

SUB-BASE LINE 16+28 N

15 N

10 N

5 N

BASE LINE (bearing 90°)

5 S

26 W 25 W 24 W 23 W 22 W 21 W 20 W 19 W 18 W 17 W 16 W 15 W 14 W 13 W 12 W 11 W 10 W 9 W 8 W 7 W 6 W 5 W 4 W 3 W 2 W 1 W

N

A

INDEX

A B

Work undertaken by
BARRINGER RESEARCH LTD, Toronto, Canada

REGISTERED PROFESSIONAL ENGINEER
F. L. JAGODITS
PROVINCE OF ONTARIO

SUMMIT GOLD MINES INC.

BOB'S LAKE GROUP, WHITNEY TWP., ONTARIO

TOTAL INTENSITY MAGNETIC VALUES

NOV. 1973 | SCALE · 1" = 100' | DWG. 5-355-3A

230

00 1E 2E 3E 4E 5E 6E 7E 8E 9E 10E 11E 12E 13E 14E 15E 16E 17E 18E 19E 20E 21E 22E 23E 24E 25E 26E

15N

10N

5N

BASE LINE (bearing 90°)

5S

10S

HIGHWAY 101

TRAILER PARK

F 95954

F 95952

P 97973

INDEX

A B

N

A

Work undertaken by
BARRINGER RESEARCH LTD, Toronto, Canada

F. L. JAGODITS
REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

SUMMIT GOLD MINES INC.

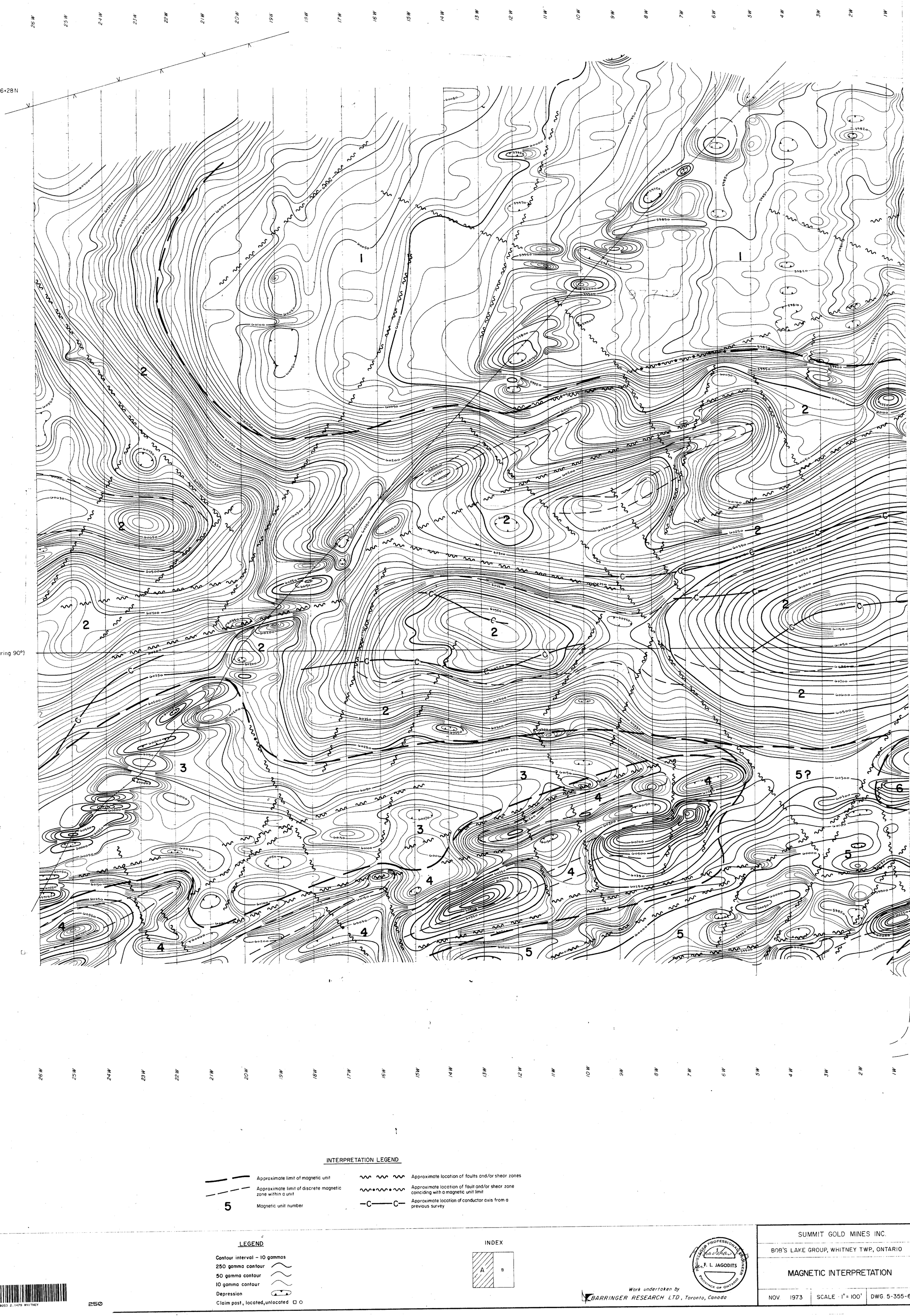
BOB'S LAKE GROUP, WHITNEY TWP, ONTARIO

TOTAL INTENSITY MAGNETIC VALUES

NOV. 1973 | SCALE · 1" = 100' | DWG. 5-355-3B

42A11SE0253 2.1479 WHITNEY

240



INTERPRETATION LEGEND

- Approximate limit of magnetic unit
- Approximate limit of discrete magnetic zone within a unit
- 5 — Magnetic unit number
- Approximate location of faults and/or shear zones
- Approximate location of fault and/or shear zone coinciding with a magnetic unit limit
- —C——C— Approximate location of conductor axis from a previous survey

LEGEND

Contour interval – 10 gammas

- 250 gamma contour
- 50 gamma contour
- 10 gamma contour
- Depression
- Claim post, located, unlocated □ ○

INDEX

A | B

Work undertaken by
BARRINGER RESEARCH LTD., Toronto, Canada

REGISTERED PROFESSIONAL ENGINEERS
F. L. JAGODITS
PROVINCE OF ONTARIO

SUMMIT GOLD MINES INC.

BOB'S LAKE GROUP, WHITNEY TWP, ONTARIO

MAGNETIC INTERPRETATION

NOV. 1973 | SCALE · 1" = 100' | DWG. 5-355-6A

00 1E 2E 3E 4E 5E 6E 7E 8E 9E 10E 11E 12E 13E 14E 15E 16E 17E 18E 19E 20E 21E 22E 23E 24E 25E 26E

15N

10N

5N

BASELINE
(bearing 90°)

5S

10S

HIGHWAY 101

TRAILER PARK

INTERPRETATION LEGEND

- Approximate limit of magnetic unit
- Approximate limit of discrete magnetic zone within a unit
- 5 — Magnetic unit number
- Approximate location of faults and/or shear zones
- Approximate location of fault and/or shear zone coinciding with a magnetic unit limit
- —C——C— Approximate location of conductor axis from a previous survey

N

LEGEND

Contour interval – 10 gammas

- 250 gamma contour
- 50 gamma contour
- 10 gamma contour
- Depression
- Claim post, located, unlocated □ ○

INDEX

A B

42A11SE0253 2.1479 WHITNEY

260

Work undertaken by
BARRINGER RESEARCH LTD, Toronto, Canada

REGISTERED PROFESSIONAL ENGINEER
Author
Dr. F. L. JAGODITS
PROVINCE OF ONTARIO

SUMMIT GOLD MINES INC.

BOB'S LAKE GROUP, WHITNEY TWP, ONTARIO

MAGNETIC INTERPRETATION

NOV. 1973	SCALE 1" = 100'	DWG. 5-355-6B

26W 24W 22W 20W 18W 16W 14W 12W 10W 8W 6W 4W 2W

SUB-BASE LINE 16+28 N

15 N

10 N

5 N

BASE LINE (bearing 90°)

SUB-BASE LINE 9+00S

P 98414

P 97748

P 98415

P 97749

N

A

ELECTRODE CONFIGURATION

C ∞ P a P na C

PLOTTING POINT

LEGEND

37/349 Station and Reading - Chargeability / Resistivity

Chargeability profile - Scale 1" = 10 milisecs

Resistivity profile - Scale 1" = 1000 Ohm-metres

Claim post - located, unlocated

Power line

INDEX

A B

Work undertaken by

BARRINGER RESEARCH LTD, Toronto, Canada

REGISTERED PROFESSIONAL ENGINEER F. L. JAGODITS PROVINCE OF ONTARIO

SUMMIT GOLD MINES INC.

BOB'S LAKE GROUP, WHITNEY TWP, ONTARIO

INDUCED POLARIZATION & RESISTIVITY SURVEY

n = 1 POLE-DIPOLE ARRAY a = 200

NOV. 1973 | SCALE · 1" = 100' | DWG. 5-355-4A

42A11SE0253 2.1479 WHITNEY

270

00 2E 4E 6E 8E 10E 12E 14E 16E 18E 20E 22E 24E 26E

15N

10N

5N

BASE LINE (bearing 90°)

P 95952

P 97972

P 95954

P 97973

HIGHWAY 101

TRAILER PARK

5S

10S

ELECTRODE CONFIGURATION

C ∞ P

PLOTTING POINT — P

na

C

N — A

LEGEND

37 / 349 Station and Reading - Chargeability / Resistivity

(x a=100' x) Chargeability profile - Scale 1"=10 milisecs

(x a=100' x) Resistivity profile - Scale 1"=1000 Ohm-metres

□ ○ Claim post, located, unlocated

Power line

INDEX

A B

Work undertaken by

BARRINGER RESEARCH LTD, Toronto, Canada

REGISTERED PROFESSIONAL ENGINEER F. L. JAGODITS PROVINCE OF ONTARIO

SUMMIT GOLD MINES INC.

BOB'S LAKE GROUP, WHITNEY TWP, ONTARIO

INDUCED POLARIZATION & RESISTIVITY SURVEY

POLE-DIPOLE ARRAY

n = 1 a = 200'

NOV. 1973 | SCALE · 1" = 100' | DWG. 5-355-4B

42A11SE0253 2.1479 WHITNEY

26 W 24 W 22 W 20 W 18 W 16 W 14 W 12 W 10 W 8 W 6 W 4 W 2 W

SUB-BASE LINE 16+28 N

15 N

10 N

5 N

BASE LINE (bearing 90°)

SUB-BASE LINE 9+00 S

P 98414

P 97748

P 98415

P 97749

12 W 10 W 8 W 6 W 4 W 2 W

N

— A —

42A11SE0253 2.1479 WHITNEY

290

ELECTRODE CONFIGURATION

C ∞ P a P na C

PLOTTING POINT

LEGEND

37/369 Station and Reading - Chargeability / Resistivity

Chargeability profile - Scale 1" = 10 milisecs

Resistivity profile - Scale 1" = 1000 Ohm-metres

Claim post, located, unlocated

Power line

INDEX

A B

Work undertaken by

BARRINGER RESEARCH LTD, Toronto, Canada

REGISTERED PROFESSIONAL ENGINEER — F. L. JAGODITS — PROVINCE OF ONTARIO

SUMMIT GOLD MINES INC.

BOB'S LAKE GROUP, WHITNEY TWP, ONTARIO

INDUCED POLARIZATION & RESISTIVITY SURVEY

n = 2 POLE-DIPOLE ARRAY a = 200

NOV. 1973 | SCALE - 1" = 100' | DWG. 5-355-5A

00 2E 4E 6E 8E 10E 12E 14E 16E 18E 20E 22E 24E 26E

15N

10N

5N

BASE LINE (bearing 90°)

5S

10S

P 95952

P 97972

P 95054

P 97973

HIGHWAY 101

TRAILER PARK

N

— A —

ELECTRODE CONFIGURATION

C ∞ P a PLOTTING POINT P na C

300

LEGEND

37 / 369 Station and Reading - Chargeability / Resistivity

(x a=100' x) Chargeability profile - Scale 1"=10 milisecs

(x a=100' x) Resistivity profile - Scale 1"=1000 Ohm-metres

□ ○ Claim post - located, unlocated

Power line

INDEX

A B

Work undertaken by

BARRINGER RESEARCH LTD, Toronto, Canada

REGISTERED PROFESSIONAL ENGINEER F. L. JAGODITS PROVINCE OF ONTARIO

SUMMIT GOLD MINES INC.

BOB'S LAKE GROUP, WHITNEY TWP, ONTARIO

INDUCED POLARIZATION & RESISTIVITY SURVEY

n = 2 POLE - DIPOLE ARRAY a = 200'

NOV. 1973 | SCALE · 1" = 100' | DWG. 5-355-5B

26 W 24 W 22 W 20 W 18 W 16 W 14 W 12 W 10 W 8 W 6 W 4 W 2 W

SUB-BASE LINE 16+28 N

15 N

10 N

5 N

BASE LINE (bearing 90°)

P 98414

P 97748

P 97749

P 98415

n=1

IP-1

n=1,2

n=1,2

IP-2

n=1,2

SUB-BASE LINE 9+00S

12 W 10 W 8 W 6 W 4 W 2 W

42A11SE0253 2.1479 WHITNEY

310

N

ELECTRODE CONFIGURATION

C ∞ P a plotting point P na C A

LEGEND

- Excellent IP anomaly (n=1)
- Good IP anomaly (n=2)
- Poor IP anomaly (n=1,2)

with corresponding electrode separation

IP-2 Anomalous IP zone and number

37 / 5.6 Station and Reading - Chargeability / Resistivity

Chargeability profile - Scale 1" = 10 milisecs

Resistivity profile - Scale 1" = 1000 Ohm-metres

Claim post - located, unlocated

Power line

INDEX

A B

REGISTERED PROFESSIONAL ENGINEER F. L. JAGODITS PROVINCE OF ONTARIO

Work undertaken by

BARRINGER RESEARCH LTD, Toronto, Canada

SUMMIT GOLD MINES INC.

BOB'S LAKE GROUP, WHITNEY TWP, ONTARIO

INDUCED POLARIZATION & RESISTIVITY INTERPRETATION

n = 1 POLE-DIPOLE ARRAY a = 200

NOV. 1973	SCALE · 1" = 100'	DWG. 5-355-7A

42A11SE0253 2.1479 WHITNEY

320

N

A

ELECTRODE CONFIGURATION

C ∞ P a P plotting point na C

LEGEND

n=1	Excellent IP anomaly	with corresponding electrode separation
n=2	Good IP anomaly	
n=1,2	Poor IP anomaly	
IP-2	Anomalous IP zone and number	

37 / 369 Station and Reading - Chargeability / Resistivity

(x a=100' x) Chargeability profile - Scale 1" = 10 milisecs

(x a=100' x) Resistivity profile - Scale 1" = 1000 Ohm-metres

☐ ○ Claim post, located, unlocated

Power line

INDEX

A | B

F. L. JAGODITS — Registered Professional Engineer, Province of Ontario

Work undertaken by BARRINGER RESEARCH LTD., Toronto, Canada

SUMMIT GOLD MINES INC.

BOB'S LAKE GROUP, WHITNEY TWP, ONTARIO

INDUCED POLARIZATION & RESISTIVITY INTERPRETATION

n = 1 POLE-DIPOLE ARRAY a = 200'

NOV. 1973 | SCALE 1" = 100' | DWG. 5-355-7B