

P.B. HOPKINS

8 CLAIMS IN GILLIES LIMIT, ONTARIO

PART I:

GENERAL

INTRODUCTIONS:

The Timagami - Cobalt area is known for its metalliferous deposits of silver, cobalt, copper, nickel, platinum, palladium and gold. Examples of this are the silver-cobalt mines of Cobalt; the Timagami copper mine and Cuniptau, Strathy Basin, and Manitoba and Eastern nickel-copper-platinum deposits (Trebor Mines Ltd.). These last three occur as complex pyrrhotite bodies. Magnetic iron ore also occurs in the area.

Prospector Norman Montgomery acquired a block of 36 claims in Gillies Limit and Best Township by staking, to cover an area that contains a nickel-copper-bearing zone, massive sulphide float, and gossan. This was optioned to M.J. Boylen about two years ago, who turned it over to Conlagas Nines Ltd. Conlagas performed a magnetic survey over a small block covering small parts of five claims and drilled five boreholes. They obtained some nickel and copper values, but considered the results inconclusive, and dropped their option. Montgomery subsequently found more and richer float, got nickel-copper values in new trenching and interested Mr. P.E. Hopkins in optioning the property and performing more work.

Meanwhile the G.S.C. published an aeromagnetic map of the area (Timagami sheet no. 5100) last year, which shows a magnetic anomaly 21 miles long and 1 mile wide, traversing this 36-claim property, the T.N.O. Ry. and Highway No. 11. The Coniagas survey and drilling was done in a small area just south of and slightly overlapping the centre of the south boundary of the aeromagnetic anomaly.

Thus, with the new aeromagnetic information and the discovery of new showings, gossan and float containing nickel and copper values, magnetometer, electromagnetic and this present survey were planned to cover the area immediately west of the Coniagas survey within the aeromagnetic anomaly.

PROPERTY:

This consists of 40 contiguous, unpatented claims, numbered as follows:

Total

40 claims

The property comprises an area of approximately 1,600 acres.

LOCATION:

The property lies on the Southwest side of Gillies Limit and parts of a few claims overlap into Best township, to the Southwest. This is all in Nipissing District, Timiskaming Mining Division, Northern Ontario. It includes Whitney Lake, is west of Rib Lake, and Northeast of Isabel Lake. This 12 miles north of Timagami town and 10 miles south of Latchford village on Highway No. 11.

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ACCESS:

The property is traversed by Highway No. 11 about 12 miles north of Timagami town. It is also traversed by the T.N.O. reilway. The tent camp is reached from Highway 11, at a point just north of Whitney Lake, by a tractor road 3/4 mile westward. The showings and the area surveyed are shown on the enclosed geological map.

TOPOGRAPHY:

The area is rugged and rocky and is dotted with numerous lakes. Outcrops of diabase or sediments of the Cobalt series, especially, stand in bold relief. Many cliff-like elevations characterize these formations. In parts of the area, both granites and greenstones commonly outcrop in persistent, rolling hills. Swamps are restricted for the most part to narrow valleys between ridges and outcrops and typical muskes was rarely encountered except around the shores of the smaller lakes. Drift is widespread as a thin cover for the bed rock and as valley-fill. To this extent it renders prospecting and a proper understanding of the geology difficult. Owing to the fact that much of the forest is virgin timber, most of the outcrops are moss-covered, and continuous exposures are relatively few.

As in other areas in which the drift cover is not heavy, the topographical features reflect to a marked degree the structure of the underlying bed rock. Many smaller lakes follow more or less closely the strike of regional shearing and bedding.

It is believed that these bodies of water occupy zones of faulting and fracturing along which movements occurred from Algoman to post-Keweenawan time.

GENERAL GEOLOGY

The consolidated rocks of the area are all pre-Cambrian in age and include a wide range of types.

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TABLE OF FORMATIONS

QUATERNARY

Recent Pleistocene:

Peat, sand and gravel Boulder clay, sand, and gravel.

Unconformity

PRE-CAMERIAN

Keweenawan:

(Olivine diabase dikes.

Intrusive contact (?)

(Nipissing diabase sill and

(associated dikes.

Intrusive contact

Huronian:

Cobalt conglowerate, slate, and quartzite,

A HOUSE STREET

Unconformity

(Lamprophyre: amphibolite, carbonate, diorite, and greenstone dikes.

Algoman:

Intrusive contact (Quarts porphyry, feldsper porphyry, felsite dikes and intrusives Granite, granodiorite, including Porphyritic types, albite granite, granite and aplite dikes.

Intrusive Contact

Diorite, quartz diorite; sheared and (altered phases.

Pre-Algoman (?)

Keevatin

(Diorite, quartz diorite, and sheared equivalents, peridotite, and metadiabase (intrusives.

Intrusive Contact

Basic and intermediate lava flows, pillow

lavas, amygdular lavas, pyroclastics, tuffs, diorite and recrystallized rocks. chlorite, carbonate, and hornblande schist.

Rhyolite, quartz and feldspar porphyry, acid tuffs, agglomerates, carbonates

and sericite schist.

Banded iron formation.

LOCAL GEOLOGY:

There is no published government detailed geological map or report covering this property. The property has not yet been geologized to the best of the writer's knowledge. From brief visits to the property and a discussion with Dr. Robert Thompson, Ontario Government resident geologist at Cobalt, Ont., the writer believes that

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the country rock underlying the property is composed mainly of Keewatin basic and intermediate lava flows, pillow lavas, amygdaloidal lavas, pyroclastics, tuffs; chlorite, carbonate sericite and hornblende schists, rhyolite and agglomerates. Intruding these ancient Keewatin greenstones is a large gabbro plug, probably 2 miles long and 1/4 mile wide, striking in a east northeast - west southwest direction. It is believed that it is this gabbro that causes the aeromagnetic anomaly. The Coniagas work was on the south margin of this gabbro and east southeast of it in the country rock. This present survey takes in 320 acres immediately west-northwest of theConiagas survey, straddling the gabbro just west-southwest of its centre.

ECONOMIC GEOLOGY:

As mentioned in the Introduction, economic deposits of silver, cobalt, copper, nickel, platinum, palladium, gold and iron ore are known in this area.

Discovered to date on the Montgomery-Hopkins property are nickel-copper bearing outcrops, float and rusty zones. Assays have been run on various samples and these are discussed in part II of this report.

REFERENCES:

Ontario Dept, of Mines claim whiteprints of Gillies Limit and Best township Nat. Topo. Series map sheet 'Haileybury' sheet 31M/SW G.S.C. Aeromagnetic Map 'Timagami', No. 510G Conversation with Dr. Robert Thompson, Ont. Government resident geologist at Cobalt, Ont. Conversation with geologist Seeber of Boylen Engineering Conversation with geologist R.N. Paterson of Coniegas Mines Ltd. Ont. Porestry Inventory Maps Nos. 472793 and 472794 Ont. Forestry Air Photos Nos. 46-123, 206-45 206-47 46-123, 46-124 206-119 4 - 124, 206-121 Report on a Magnetometer Survey for P.E. Hopkins on 6 claims in Gillies Limit by R.P. Wagner of Hopkins Mining Consultants Ltd. January 1958 Report on an Electromagnetic Survey for P.E. Hopkins on 6 claims in Gillies Limit by E.P. Wagner of Hopkins

Mining Consultants Ltd. March 1958.

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PART II

INTRODUCTION

This geological survey was done on 8 claims:

T-37363, - 64, - 65, -66, - 67 - 5 claims and T-37384, - 85, - 86 - 3 claims

Total 8 claims

Good picket lines, spaced 200 feet apart, overed this entire area with the exception of the south half of claims T-37364 and - 63. The geology of these Practions was done by pace and compass traverses.

The object of this survey was to prospect the outcrops and to assess the various magnetic and electromagnetic anomalies of previous surveys. A moderate drilling program was contemplated, as a follow-up, to test the most promising sones.

From an economic viewpoint, the large pieces of almost massive sulphide float found, are most impressive. Obviously from their jagged appearance, they are of very local origin. The area around the east end of Dieter Lake looks particularly attractive. Here, a strong N-S fault has been dragged about 175 feet to the dest by a cross fault striking up Dieter Lake. This assumption is based on visible evidence from an aerial photograph and from the fracture pattern revealed by the ground survey. The six pieces of float scattered about may have some from sulphide bedies located in the fractured area around the fault intersections.

Another point of interest on the property is the impression of considerable bed rock dislocation one gets in walking north up the valley from the west end of Dieter Lake. Here, the disposition of scarps, draws and slight mineral disseminations are suggestive of good prospecting ground.

The mantle of overburden and the weathering of the rock outcrops made it necessary to depend more on impressions than on good geological evidence. In fact, only two actual faults were seen on the ground, the rest must be regarded as possibilities. However, the five diamond drill holes, the electro-magnetic and magnetometer surveys all serve as additional sources of information for this report.

FLOAT ON THE PROPERTY:

The seven most significant pieces of float are located within a square of about 400 feet. They were well embedded in the overburden and in some the sulphide oxidation was amost complete. Considerable moiling had to be done in gathering fresh mineral for samples. Obviously, they have been laid down since glacial time. The glacial striae are still visible on the bedrock where protected

by overburden, consequently it is assumed that all soil and loose rock fragments at that time, were gouged out and transported for miles by the ice sheet. Other agencies capable of moving this heavy float might be: avalanches, rock fragments frozen in ice and moved by spring floods, or pieces broken from cliff faces, by frost and rolling down hills, and finally, chunks broken loose and heaved by frost to lie above their source. The latter agency seems most reasonable for the group of float at the east end of Dieter Lake, and sulphide bodies should occur below or near at hand. The piece on the shore of Dieter Lake and the one on the hillside near hole C-5 could have rolled down hill from higher sources.

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The locations and descriptions of the float found are indicated on the enclosed map.

THE PRACTURE PATTERN:

The prevailing direction of the mineral channels seems to be about N 75° to 80° W. Most of the faults shears and banding as well as the significant electro-magnetic snowalies strike in this direction.

Another set of fractures, localized around the big fault visible in the serial photograph, eppear to parallel it. Actual ground evidence of this big fault is hard to find. The field indications might suggest that both the N-S and E-W movements were absorbed by a series of faults and shears. It is not known whether the N-S faulting occurred before the mineralization period or after. If it is pre-mineral in age, it could be the feeder fault or main channel for the mineralizing solutions.

The valley running north easterly from the west end of Dieter Lake might be the surface expression of another feeder fault. It is common for mineral laden solutions to follow up such openings from which to permeate the rocks on either side.

Faults traversing the softer basic rocks are usually tight ones while those through the more competent material such as rhyolite and quarts diorite could be expected to remain open under pressure and provide better places for mineral deposition.

Such a condition wight be expected at the assumed fault intersections indicated under Dieter Lake, Outcrops of both rhyolite and quartz diorite were noted in this area.

HOST ROCKS:

It is important to consider the deposition habit of the minerals in an area. In some places a fractured rhyolite is an excellent host rock. Here, the fine grained dark rock seems to be the most favoured spot for deposition. From the diamond drilling report, the altered gabbro would appear to be the best host rock. Among the float pieces, a diorite with blue quartz eyes was found with good disseminations of pyrite.

From the above, it would seem best to consider all these as good host rocks. Although the rhyolites seen were mostly barren, it would be poor practise to rule them out entirely as host material.

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PROPERTY GEOLOGY

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The area surveyed is mostly composed of gabbrose rocks quite intimately mixed. In this report, the fine grained dark phases are called basalts, the medium to coarse grained ones, compased almost entirely of hornblende, are referred to as hornblendite. Some of the gabbros and dark diorites were difficult to differentiate in the field since there seems to be an insensible gradation from one to the other. The light coloured diorities in the northeeast part of the property were easily distinguishable, Quartz diorite with blue quarts eyes was of interest to the south of Dieter Lake. An occasional dyke of basalt porphyry was noted southwest of the camp site.

This whole basic mass was apparently distrubed and altered by a later invasion from an acid magma. This gave rise to the granitic injections seen in places on the property. These are referred to as granite, aplite, quarts-Deldspar porphyry and andesite porphyry. Some evidence was found to suggest that the mineral was introduced during the final stages of the granitic invasion However, the evidence is too slender for use in this report.

The age relationship of the rhyolite is not known, but it is believed to be Keewatin. It starts getting conspicuous around the outlet of Dieter Lake and becomes more plentiful farther to the east.

The north-west part of the area surveyd appears to be all underlain with greywacke and conglomerate of the Cobalt series.

MINERALIZATION:

In mapping the property, particular attention was given to the spotting of mineralization, with the hope that favourable zonew would show up from a birds-eye view. An effort was also made to note any topographic features that might cause electro-magnetic anomalies.

It appears that the anomalies obtained in the area to the north of and in Dieter Lake should be given top priority. The area to the south of Dieter Lake shows considerable differentiation and min-spots are quite plentiful, especially around the lake outlet.

The mineralization varies from slight disseminations to the almost massive sulphide in some of the float. Pyrite is the most common sulphide, with pyrrhotite next, and occasionally, small quantities of chalcopyrite were visible.

An idea of the quantities and grade of the sulphides may be obtained from the diamond drilling logs. These show low values in copper and nickel with seldom over 1/2 percent combined metals. Usually the grade values with the massiveness of the sulphides, but

such is not the case in the somes drilled. There is no mention of massive sulphide in sufficient quantity in the logs to suggest the drilled somes as a possible source for the float.

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MAGNETOMETER SURVEY:

Any sulphide bodies containing appreciable amounts of pyrrhotite or magnetite should give conspicuous anomalies in a reasonable magnetic background.

On this property the rock background is a poor one from a magnetic viewpoint. The basic rocks are usually high in accessory magnetite content. This, coupled with their phasing characteristic and intimate mixture, as well as alteration, all tend to produce a confusing magnetic picture.

Even so, a careful magnetometer survey with reddings taken at 25 foot intervals over the 'hot' areas, should prove effective in tracing strengly magnetic float sources. The readings should be seroed to the rock background so that the polarity effects, common to magnetic sulphide bodies, can be recognised.

Strangely enough, the survey, done last December, shows nothing of magnetic interest in the scattered float area.

THE ELECTRO-MAGNETIC SURVEY:

In the selection of a drilling target, the electromagnetic results seem to rate the most confidence. To avoid waste drilling, a spot should be chosen not only geologically favourable but supported by both magnetic and electro-magnetic evidence.

The electro-magnetic anomaly, EM-1 indicated in red at the east end of Dieter Lake, is the best supporting evidence for the float theory, previously discussed. Further testing of this area should be considered.

Anomaly RN-2, south of Dieter Lake, has some substantiation in magnetic anomalies N-1 and N-2. Its location is good with relation to the assumed fault indications in the lake.

RECOMMENDATIONS AND CONCLUSIONS:

A Drilling program of about 1,500 feet is recommended to test the most favourable sones. The proposed holes are as follows:

HOLE		DIRECTION	DIP	DEPTH	
P-1 P-2 P-3 P-4 P-5	North S65W S20W N25E N30E	(Magnetic) (Magnetic) (Magnetic) (Magnetic) (Magnetic)	45° 45° 45°	325 feet 350 feet 280 feet 280 feet 265 feet	
		Motal 5	holes	1.500 feet	

The chief object of the program should be to drill for massive sulphide bodies and then probe for higher grade centres.

Hole P-1 should test the float theory and out the electromegnetic anomaly EM-1, as well.

Hole P-2 under Dieter Lake, should test the fault theory and at the same time intersect any sumphides expressing as EM-1 and 2. It also has some magnetic support in M-1 and 2. trends.

Hole P-3 was laid out on the belief that the few erratio magnetic highs here might be due to sulphides especially around the EN-3 anomaly.

Hole P-4 is suggested because the rusty float on the shore of Dieter Lake could have rolled down from here. In addition, it outs EN-4-5 and 6 sones.

Hole 7-5 investigates the EM-5 anomaly under the boulder stream overburden.

All of which is respectfully submitted.

Fred S. Dunn

Toronto, Ontario

7 July 1958.

Fred S. Dunn, P.Eng. Ont. Hopkins Mining Consultants Limited.

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for

P.B. HOPKINS

on

6 CLAIMS IN GILLIES LIMIT, ONTARIO.

PART I:

GENERAL

INTRODUCTION: -

The Timagami - Cobalt area is known for its metalliferous deposits of silver, cobalt, copper, nickel, platinum, palladium
and gold. Examples of this are the silver-cobalt mines of Cobalt;
the Témagami copper mine and Cuniptan, Strathy Basin, and Manitoba
and Eastern nickel-copper-platinum deposits (Trebor Mines Ltd.).
These last three occur as complex pyrrhotite bodies. Magnetic iron
ore also occurs in the area.

Prospector Norman Montgomery acquired a block of 36 claims in Gillies Limit and Best township by staking, to cover an area that contains a nickel-copper-bearing zone, massive sulphide float, and gossan. This was optioned to M.J. Boylen about two years ago, who turned it over to Coniagas Mines Ltd. Coniagas performed a magnetic survey over a small block covering small parts of five claims, and drilled four boreholes. They obtained some nickel and copper values, but considered the results inconclusive, and dropped their option. Montgomery subsequently found more and richer float, got nickel-copper values in new trenching and interested Mr. P.E. Hopkins in optioning the property and performing more work.

Meanwhile the G.S.C. published an aeromagnetic map of the area (Timagami sheet no. 510G) this year, which shows a magnetic anomaly 2 1/2 miles long and half a mile wide, traversing this 36-claim property, the T.N.O Ry. and Highway No. 11. The Coniagas survey and drilling was done in a small area just south of and slightly overlapping the centre of the south boundary of the aeromagnetic anomaly.

Thus, with the new aeromagnetic information and the discovery of new showings, gossan and float containing nickel and copper values, this present survey was planned to cover the area immediately west of the Coniagas survey within the aeromagnetic anomaly.

PROPERTY:

This consists of 36 contiguous unpatented claims, numbered as follows:-

T-37362 to T-37388 inclusive - 27 claims T-37513, -14, -16, -19, -21, -22, -23, -24, and 25 == 9 claims . TOTAL.....

L..........36 claims
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Some of these claims require assessment work in December 1957, and of these, those which the present survey does not cover will have to have applications made for extensions for assessment work purposes. These latter are claim Nos. T37382, 37383, 37521, 37522, 37523, and 37524. The property comprises ancarea of approximately 1,400 acres.

LOCATION:

The property lies on the Southwest side of Gillies Limit and parts of a few claims overlap into Best township, to the Southwest. This is all in Nippissing District, Timiskaming Mining Division, Northern Ontario. It includes Whitney Lake, is west of Rib Lake, and Northeast of Isabel Lake. This is 12 miles north of Timagami town and 10 miles south of Latchford village on Highway No. 11.

ACCESS:

The property is traversed by Highway No. 11 about 12 miles north of Timagami town. It is also traversed by the T.N.O. railway. The tent camp is reached from Highway 11 at a point just north of Whitney Lake by a tractor road 3/4 mile westward. The showings and area geophysical surveyed are 1/2 mile Northwest of the campsite.

TOPOGRAPHY:

The area is rugged and rocky and is dotted with numerous lakes. Outcrops of diabase or sediments of the Cobalt series, especially, stand in bold relief. Many cliff-like elevations characterize these formations. In parts of the area, both granites and greenstones commonly outcrop in persistent, rolling hills. Swamps are restricted for the most part to narrow valleys between ridges and outcrops and typical muskeg was rarely encountered except around the shores of the smaller lakes. Drift is widespread as a thin cover for the bed rock and as valley-fill. To this extent it renders prospecting and a proper understanding of the geology difficult. Owing to the fact that much of the forest is virgin timber, most of the outcrops are moss-covered, and continuous exposures are relatively few.

As in other areas in which the drift cover is not heavy, the topographical features reflect to a marked degree the structure of the underlying bed rock. Many smaller lakes follow more or less closely the strike of regional shearing and bedding.

It is believed that these bodies of water occupy zones of faulting and fracturing along which movements occurred from Algoman to post-Keweenawan time.

GENERAL GEOLOGY:

The consolidated rocks of the area are all pre-Cambrian in age and include a wide range of types.

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TABLE OF FORMATIONS

QUATERNARY

Recent Pleistocene: Peat, sand and gravel Boulder clay, sand, and gravel.

Unconformity

PRE-CAMBRIAN

Keweenawans

(Olivine diabase dikes.
(Intrusive contact(?)
(Nipissing diabase sill and
(associated dikes.
 Intrusive contact

Huronian:

Cobalt conglowerate, slate, and quartsite.
Unconformity

(Lamprophyre; amphibolite, carbonate, diorite, and greenstone dikes.

Algoman;

Intrusive contact
Quartz porphyry, feldspar porphyry, felsite dikes and intrusives
Granite, granodiorite, including
porphyritic types, albite granite,
granite and aplite dikes.

Intrusive contact

Diorite, quartz diorite; sheared and altered phases.

Pre-Algoman (?):

(Diorite, quartz diorite, and sheared (equivalents, peridotite, and met-(adiabase intrusives.

Keewatin:

Intrusive contact
(Basic and intermediate lava flows, pillow lavas, amygdular lavas, pyro(clastics, tuffs, diorite and recryst(allized rocks, chlorite, carbonate,
(and hornblende schist.
(Rhyolite, quartz and feldspar por(phyry, acid tuffs, agglomerates, car(bonates and sericite schist.
(Banded iron formation.

LOCAL GEOLOGY:

There is no published government detailed geological map or report covering this property. The property has not yet been geologized to the best of the writer's knowledge. From brief visits to the property and a discussion with Dr. Robert Thompson, Ontario Government resident geologist at Cobalt, Ont., the writer believes that the country rock underlying the property is composed mainly of Keewatin basic and intermediate lava flows, pillow lavas, amygdaloidal lavas, pyroclastics, tuffs; chlorite, carbonate, sericite and hornblende schists, rhyolite and agglowerates. Intruding these ancient Keewatin greenstones is a large gabbro plug, probably 2 miles long and 1/4 mile wide, striking in a east northeast - west southwest direction. It is believed that it is this gabbro that causes the aeromagnetic anomaly. The Coniagas work was on the south margin of this gabbro and east southeast of it in the country rock. This present survey takes in 250 acres immediately west northwest of the Coniagas survey, straddling the gabbro just west southwest of its centre.

ECONOMIC GEOLOGY:

As mentioned in the Introduction, economic deposits of silver, cobalt, copper, nickel, platinum, palladium, gold and iron ore are known in this area.

Discovered to date on the Montgomery-Hopkins property are nickel-copper-bearing outcrops, float, and gossan. This latter was found while cutting the baseline for this survey. Assays are being run on these samples for spectrographic analyses, gold, silver, platinum and cobalt, but are not yet available.

REFERENCES:

- Ontario Dept. Mines claim whiteprints of Gillies Limit and Best Township
- Nat. Topo. Series map sheet 'Haileybury', sheet 31M/SW
- G.S.C. Aeromagnetic Map 'Timagami', No. 5100
- Conversation with Dr. Robert Thompson, Ont. Government resident geologist at Cobalt, Ont.
- Conversation with geologist Seeber of Boylen Engineering
- Conversation with geologist R.N. Paterson of Coniagas Mines Ltd.
- Ont. Forestry Inventory Maps Nos. 472793 and 472794
- Ont. Forestry Air Photos Nos. 46-123, 206-45
 - 46-123, 206-47
 - 46-124, 206-119
 - 4 -124, 206-121

PART II:

MAGNETOMETER SURVEY

INSTRUMENT

The instrument used was a Sharpe Magnetometer, Model A-2, with a scale constant of 20 gammas per division, and an estimated field accuracy of +5 gammas.

FIELD METHOD

Readings were taken at 50 foot intervals along the picket lines 200 feet apart. To maintain a sufficient control over the Itime variations" in the readings, such as diurnal changes and instrumental drift, the time interval between check-readings did not exceed one hour throughout the area. It can be reasonably assumed that all the corrected gamma values could be reproduced within 100 gammas accuracy in the course of a repeated survey. This figure represents the accuracy or the probable error of the field work.

PRESENTATION OF THE DATA

The survey results are submitted in the form of a magnetic contour map. The scale of the map is 100 feet to the inch. The contour interval is 250 gammas, where each thousand-gamma level is drawn in with heavy lines.

The background level can be set on the northern part of the surveyed area at 2500 and on the southern part at about 1500 gammas.

The map also contains other pertinent data, such as topographical features, claim posts, outcrops, etc.

DESCRIPTION OF THE ANOMALIES

The great multitude of well defined anomalies proves the magnetometer survey a well adopted method and the abruptness of the magnetic variations justifies its detailed application.

The recorded magnetic features may be grouped in the following manner:-

- 1. Narrow WNW-ESE-striking bands with amplitudes over 10,000 gammas.
- 11. An alignment of the more intense and the less intense portions diagonally across these parallel bands.
- 111. NNE-SSW-striking bands of amplitudes about 2000 gammas.
 - 1V. The difference in background-level between the southern and the northern parts of the surveyed area.

MEANING OF THE ANOMALIES

Local anomalous variations in the earth's magnetic field are generally the result of changes in magnetite content below the surface.

As the magnetite concentration in a certain rock type under the same geological conditions may be assumed constant, these recorded variations reflect the subsurface structres. While a magnetometric survey can seldom directly detect sulphide concentration, it can indicate most structures and locate the most likely sulphide occurrences.

INTERPRETATION OF THE G.S.C. AEROMAGNETIC MAP

As there is no geological information available on the locality of the surveyed area, the evaluation of the survey has to rely to great extent on the interpretation of the G.S.C. aeromagnetic map of the region.

The sheet covering the area is titled "Timigami" 31 M/4, no. 510G. It was originally flown by the Dominion Gulf Company in 1947-49. The flight elevation is 500 feet with 3 miles flight-line intervals.

The geological features suggested by the map could be listed in the following sequence:

(1) Change of rock types, from volcanies on the north to gneisses on the south.

(2) Basic dykes, or iron formations about 1/2 mile wide, striking approximately N 70 E, with some abrupt variations in depth below present surface.

(3) These dykes were broken up by a series of faults, appearing as arcs in a north-south direction, converging toward the north. The presence of this faulting is evidenced by the displacement of the older features; by prominent but less intense magnetic anomalies, and by the alignment of lakes.

(4) The last detectable feature in this sequence is a pair of long narrow basic dykes, lined up parallel in a direction of N 70W. These are probably Keweenawan diabases.

The area of the ground survey coincides with a strong aeromagnetic anomaly, suggesting a short segment of a basic dyke of the older type. This dyke is terminated on the northeast by a fault "B" which runs from the north shore of Timigami Lake, cutting and displacing the old Iron Formation or basic dyke there, through Ferguson and Duncan Lakes and north along the west shore of Rib Lake. There is some vague indication that there is a flexure in the fault just about where it intersects the above-described basic dyke on the ground surveyed section of your property.

To appreciate the uncertainty of these deductions it must be quoted again that the area was flown at a height of 500 feet with a flight interval of three miles. This represents a very poor covering and the resulting aero-magnetic map is probably very far from presenting the true magnetic picture.

INTERPRETATION OF THE GROUND SURVEY

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(a) Lines An and Bn divide the area into two sections occupied

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by two different rock types "I" and "II". Certain things assumed, the susceptibility difference between "I" and "II" can be estimated around 0.003 cgs. units. This large difference leaves relatively few choices open for attempts to identify "I" and "II". In light of this and also the exhibited fracture pattern and the magnetic characteristic shown on the aeromagnetic map, "I" could be classified as a highly altered gneiss and "II" mainly altered gabbro with a high magnetite content.

(b) "C" and "D" designate basically similar magnetic bands with about 25 degrees difference in their strike. One may speculate that bands are caused by some highly magnetic material invading a zone of conjugate shear planes. The unnaturally small angle between these conjugate directions may be explained by the dip which all these assumed planes of fracture exhibit toward the south.

The fractures are essentially the same on either side of B, with the only difference, that on the east side the country rock is mostly gneiss.

- (c) There are some indications of folding, as shown on the map by fold axes "E". The western limb of the western anticline seems to continue deep below the surface level.
- (d) Anomalies *F* are bands of lower magnetic amplitude along the contact "A", their strike being along the probable direction of gneissosity of *I*.
- (e) Bands "G", located in the predominantly gneissic side of "A" are similar features to "F".

ECONOMIC IMPLICATIONS

All the interesting traces of mineralization so far discovered in this area were located in the region occupied by the "C" and "D" types of bands, on the east side of "B".

Closer examination reveals that these locations tend to coincide with the intersections of bands "C" and "D", characterised by slight magnetic depressions relative to the bands themselves. If the above interpretation of these bands is correct, this type of occurrence is easily understandable.

CONCLUSIONS

The magnetometric survey has been very successful in supplying information about the local geological structure, and providing an effective guide for further exploration work.

In the past, five holes were drilled on the anomalous part of the area east of the fault line "B". All these holes were located so as to intersect either the "C" or the "D" type of dykes at their magnetically most intense centres. None of these Coniagas holes located anything of economic interest.

On the basis of the present survey all the known mineral showings can be related to the intersections of dykes "C" and "D", a

feature but investigated to date by drilling.

Also, the present survey has detected a similar pattern of dykes west of the fault line "B", extending on an even larger area associated with a more pronounced variation of the magnetic field. Due to this similarity, probably the same considerations apply on both sides of "B" regarding favourable locations for mineral deposits.

RECOMMENDATIONS

It is recommended by the writer that:-

- An electromagnetic survey be performed on the anomalous portions of the property (i.e. the areas of both the Coniagas and the present survey), to indicate the presence of sulphides as distinct from magnetite. This should be done prior to, or concurrently with the drilling recommended below. For this e.m. survey, a low-frequency, vertical coil survey should be applied to the present picket line grid system.
- 2. At the present stage the five following boreholes be drilled in their sequence of priority:-

Hole	Collars		Azimuth	Dip	Slope
No.	West	North	Astronomical	Angle	Length
H 1	1200	9350	0•	-60°	3001
H2	820	9450	0.	-45°	3001
н 3	1520	9132	0.	-45°	3001
н 4	1300	9550	O°	-45°	3001
н5	2050	9950	0°	-45°	3001
-		• • •		TOTAL	1500

All of which is respectfully submitted.

E. P. Wagner

E.P.Wagner Geophysicist for HOPKINS EXPLORATION CONSULTANTS.

Toronto, Canada. January 1958.

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ON

ELECTRO-MAGNETIC SURVEY

on part of property of

P.E. Hopkins

Gillies Limit, Timagami, Ontario

INTRODUCTION:

Earlier this winter a magnetometer survey was performed by Hopkins Exploration Consultants on this nickel prospect for P.E. Hopkins and the results were submitted by our geophysicist, E.P. Wagner, in his report dated January, 1958.

Mr. Wagner concluded that a fracture pattern existed which was favourable for base metal deposition, and recommended an electromagnetic survey to be followed by diamond drilling.

This e.m. survey was therefore authorized by P.E. Hopkins and was carried out over our magnetometer grid as well as over the adjoining magnetometer grid of Coniagas Mines Limited.

PROPERTY:

This consists of 36 contiguous unpatented claims, numbered as follows:

T-37362 to T-37388 inclusive - 27 claims T-37513,-14,-16,-19,-21,-22,-23,-24 and 25 - $\underline{9}$ claims

Total 36 claims

The survey was performed on claims numbers T.37365,37366, 37367, 37384, 37385, 37386 and parts of 37387, 37388, 37364, 37363 and 37362.

SURVEY METHOD:

Reconnaissance survey, employing a vertical-coil, electromagnetic unit operating at 1000 cycles per second. The power was supplied by a motor-driven generator.

DESCRIPTION OF THE RESULTS:

The area is characterised by weak electromagnetic responses. The recorded anomalies /or crossovers are of small amplitude, seldom exceeding ± 5 degrees. This may be due to a relatively small contrast in the conductivity of the material referred to as "conductor" and the non-conductive background; by a large depth from the surface to the conductor, or by a combination of both.

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The uncertainty of the anomalies as discussed above may be partly explained by the unfavorable geometry of the survey. It was apparent from the magnetic survey results, that the strike of the anomalous zones in general is undesirably close to the azimuth of the existing picket lines. As the geological information on the area is very sparse, the picket line grid had to be laid out on the basis of the aeromagnetic map, which proved to be misleading. Although this fact has been recognized, nothing could be done, as the cutting of a new grid would have been prohibitively expensive.

The effect of this unfavorable geometrical factor is best illustrated by the electromagnetic responses obtained on the overlapping parts of the Coniagas property. The picket lines of this grid intersect the anomalous trends at larger angles, resulting in a general increase in the recorded amplitudes for the same anomalies.

CORRELATION OF THE ELECTROMAGNETIC AND MAGNETIC SURVEY RESULTS:

The results of the present survey partly modify but more often support the concepts formed by the interpretation of the previous geophysical surveys.

The line of discontinuity, marked B-B on both maps, emerges as a straight line.

There is an nearly perfect correlation between the magnetic and e.m. anomalies. It must be noticed that west of line B-B only the "C" type of magnetic anomalies are conductive, while east of this line only the "D" types exhibit this property. Examples of this are conductors 1 to 4 on the east, and conductors 5 to 8 on the west side.

There is evidence of the existence of a third type of conductor zone, represented by conductors 9, 10 and 11. This third type has no explicit magnetic expression, and is evidenced by magnetic discontinuities, rather than anomalies. The most likely geological explanation for this feature would be a corresponding fault system partly intruded by some conductive, non-magnetic material.

CONCLUSIONS:

In both Hopkins and Coniagas areas the e.m. investigation has been reasonably successful in detecting three types of conducting zones. The results of the survey are in close agreement with the previous geophysical work.

The next stage of development is drilling and trenching. The previous approach to this stage will be altered on the strength of the increased information, and the drilling program will be outlined to follow up all three types of the e.m. anomalies.

REC MENDATIONS:

The proposed drillsites are arranged in three groups. In each group the -45° holes are listed in the sequence of priority, as follows

> : 1, 2, 3, 4 : 5, 6, 7 : 8, 9, 10, 11 1st group 2nd 3rd

Hole No.	Slope	Azimuth	Collar Co-Ordinates		Hopkins or
	Depth	Astronomic	feet North	feet West	Coniagas Grid
H 1	2501	30°	0	600	С
н 2	3 68 '	10°	9350	1200	H
н 3	2501	10°	9513	950	H
н 4	282 '	10°	888	1300	Н
H 5	2501	0°	9365	1900	H
н б	270'	0°	10200	1200	H
н 7	2501	0°	9710	2800	Н
н8	2501	3 27°	10400	2220	H
н 9	212'	32 7°	10635	1400	Н
H10	2501	327°	11250	3000	H
H11	2501	327°	10820	4000	H
	2882 f	eet Total			

HOPKINS EXPLORATION CONSULTANTS

All of which is respectfully submitted.

Toronto, Canada, 20 March 1958

REFERENCES:

- Report on Magnetometer Survey on P.E. Hopkin's Timagami property by E.P. Wagner, of Hopkins Exploration Consultants, dated January,
- Ontario Dept. Mines claim whiteprints of Gillies Limit and Best Township.
- Nat. Topo. Series map sheet 'Haileybury', sheet No. 31M/SW. G.S.C. Aeromagnetic Map 'Timagami', No. 510G. Ont. Forestry Inventory Maps Nos. 472793 and 472794.

- Ont. Forestry Air Photos Nos. 46-123, 206-45 46-123, 206-47 46-124, 206-119 4-124, 206-121





