Geomagnetic Survey

2.623

# GEOMAGNETIC SURVEY
# THORBURN #1 GROUP
# HOLLINGER MINES LIMITED

## Introduction:

During the period May 24, 1971 to July 13, 1971, a geomagnetic survey was performed over the Thorburn #1 Group. The instrument used was an A.B.E.M. MZ-4 torsion magnetometer. The property consists of fifty claims numbered:

P-255494-495 incl. in Geary Township;
P-255496-513 incl.; P-255927-934 incl.; P-256526-527 incl.; and P-256546-555 incl. in Thorburn Township and
P-256536-545 incl. in Reid Township.

## Location and Access:

The claim group is located approximately twenty-five miles northwest of Timmins, in northeastern Thorburn Township. The property extends a bit north and east into Geary and Reid Townships. Access is most convenient via heliocopter although a swamp road from Kamiskotia may be used to reach the property by muskeg tractor.

## Topography:

The main portion of the group is covered by growths of spruce, tending to an alder swamp in the south and a cedar swamp in the northwest. Due to depths of overburden usually greater than one hundred feet, no rock exposures are found in the area.

## Geology:

Most geological information available is gleaned from diamond drilling results filed for assessment purposes. There are no Ontario Department of Mines publications covering the area which give any concrete geological information.

The eastern portion of the group is underlain by a large ultrabasic complex which extends a bit east into Reid and north into the southern extremities of Geary and Mahaffey. Rocks associated with this complex include peridotites, gabbros and diorites

of varying grain sizes and metamorphic grades.

A zone of volcanics envelope the ultrabasic body, consisting of flows and pyroclastics ranging in composition from rhyolitic to basaltic with some interbedded graphitic horizons. Northeast of this zone in Mahaffey, there is a band of acidic volcanics, while in the northwest there is a band of sediments (greywackes and iron formation). A few northerly trending quartz diabase dykes are inferred through magnetic associations in the area.

A predominant westerly to northwesterly trend is indicated; however, within the ultrabasic complex trends are much more random.

Previous Work:

The first exploration work recorded in the area began in 1954, in southwest Mahaffey. C.C, Huston performed an electromagnetic survey with a follow-up drilling programme on part of the Abitibi Smoothrock Falls Concession. Five holes were drilled, three of which are recorded. The first hole, in the south, encountered basalts, granodiorites, diorites and gabbros. Distinct crystals of amphibole and pyroxene were visible in the basalt. All rocks encountered were magnetic, attributed to disseminated magnetite. The only sulphide intersected was pyrite, in minor amounts. Further north, the second hole encountered andesite and diorite. The third hole was abandoned in deep overburden.

In 1961, Texas Gulf Sulphur Company Limited acquired six claims nearby, on the Reid-Mahaffey boundary. One hole was drilled intersecting rhyolites, chloritic schists and graphitic horizons. Thirty-three feet of massive to fifty percent pyrite was found in one graphitic horizon.

In 1964, Black River Mining, Coastal Mining and Transterre Explorations Limited acquired fourteen claims just east of the Huston property. An electromagnetic survey (Crone JEM) was performed with magnetic surveys only over the conductive zones. Six holes were drilled, all encountering rhyolite flows and pyroclastics with graphitic horizons containing heavy pyrite. One hole, on the township

line, was stopped in a zone of gabbro.

Further north in Mahaffey, Barrington Explorations performed magnetic (Askania) and electromagnetic (Crone JEM) surveys over eight claims. The magnetics indicated a northwest trend to a presumed volcanic-sedimentary contact. The results of the electromagnetic survey were negative, hence no further work.

Westward into Geary Township, Cominco drilled three holes on their thirty-one claim group in 1966. The drill holes encountered talc-chlorite and chlorite schists plus some slate and graphitic horizons containing pyrite. The schists are believed to be of volcanic origin.

In 1965, the Patino Mining Corporation conducted a magnetic (MF-1) and electromagnetic (SE 200) survey on a nineteen claim group west of the Hollinger property. Several weak anomalies were outlined and attributed to conductive overburden. One legitimate, strong conductor was noted although no drilling was recorded.

In 1966, Allied Pitch-Ore Mines Limited outlined one electromagnetic conductor in an eleven claim group extending west from the property under consideration. No drilling followed to test the conductive zone.

Further south, INCO drilled one hole on a four claim group in 1966. The hole encountered andesite interbedded with conductive graphitic and argillaceous material.

Part of the south portion of the property was previously held by Crowpat Minerals Limited. In 1966, they performed magnetic, electromagnetic and induced polarization surveys over ten claims. No anomalous zones were indicated and no further work was performed.

Southeast of our property, New Mylamaque Mining and Smelting conducted magnetic (MF-1), electromagnetic (SE 200, Turam) and seismic surveys over fourteen claims. The seismic survey indicated an overburden depth of fifty feet; otherwise, results were negative.

A seven claim group, occupying part of the Reid portion of our group, was previously held by the Allied Pitch Ore Company Limited. An electromagnetic (VEM) survey was conducted which outlined two conductive zones, attributed to overburden. No further work is recorded.

In 1966, INCO drilled one hole on the east portion of the property in Reid. The hole encountered interbedded andesite, dacite, graphitic horizons and argillite.

Also in 1966, Conwest worked on a twenty-two claim group to the east in Reid. A geomagnetic survey is recorded, showing negative results.

Beginning in 1963, Mespi Mines Limited acquired several claims in separate blocks extending through northeast Thorburn into northwest Reid Township. Both airborne magnetic and electromagnetic surveys were flown in two directions, northeast and northwest in 1963 and 1964. Ground magnetic and electromagnetic (JEM and HEM) surveys were conducted over the claim groups with numerous conductors being outlined. Several drill holes were emplaced and will be discussed in generalized groups to compile a rough cross sectioning of the area.

The first group of drill holes is located approximately two miles east of the Thorburn-Reid Township line. All of these holes encounter the ultrabasic complex. Two holes encountered a minor amount of andesite at the top of the hole. The main rocks were gabbros and diorites with interbedded graphitic horizons and some rhyolite. The conductors in these holes were attributed to heavy pyrite found in the graphitic and rhyolitic horizons. The northernmost hole was lost after intersecting a twenty-five foot boulder (or ridge) of andesite. The southernmost hole of the group collared in peridotite with thirty to fifty percent serpentine and upto thirty percent magnetite.

The second group of drill holes extends eastward for a short distance from the township line. All of these holes intersected peridotite containing varying amounts of talc, chlorite, magnesite, magnetite and serpentine. There are some intersections of gabbro and coarse andesitic flow material. Most conductors appear to be associated with serpentinized shear planes.

The third group of holes extends northwest from the southern extremity of the property in Thorburn Township. These holes encountered acid to intermediate tuffs with some graphitic

horizons containing heavy sulphides. The two easternmost holes ended in quartz diabase.

None of the above Mespi drill holes are located on the present Hollinger grid.

Personnel:

The field survey was performed by R. Collins of Timmins, on a contract basis with Hollinger Mines Limited. Drafting of the plans was done by W. B. Caughell and interpretation by the author. The latter are employed by Hollinger Mines Limited.

Instrument Used:

The survey was conducted using an MZ-4 torsion wire magnetometer (serial number 4539) manufactured by the A.B.E.M. Company of Stockholm, Sweden. This magnetometer is a variometer for measuring the vertical component of the earth's magnetic field, at a sensitivity of 9.9 gammas per scale division.

The readings are taken by rotating a micrometer skrew until the torque applied to a torsion wire, which holds a magnet, is sufficient to return the magnet to a zero position. Graduations on the micrometer drum are noted during an observation.

At every station it is necessary to level the tripod-mounted instrument and orient it in a constant direction to minimize the effects of improper levelling adjustments.

Survey Method:

All of the instrument readings were obtained along cut and measured picket lines, spaced 400 feet apart, striking at 45 degrees. Individual stations were taken at one hundred foot intervals along the picketed lines. The datum was organized such that the readings were converted from scale divisions to gammas and then plotted on the grid system. Due to the large magnetic relief in the area no fixed contour interval was established. The datum was contoured to provide maximum clarity in interpretation.

A total of 3,134 readings were obtained from 2,572 stations over 48.29 miles of picketed lines. This 48.29 miles includes Base Lines and Tie Lines which were surveyed to aid in the calculation of diurnal drift. The remaining 6.94 miles of line consists of boundary lines which were not surveyed.

Results of the Survey:

The geomagnetic survey conducted reveals a large variance in magnetic intensities over the property. At this stage of exploration, not only the magnetic highs, but also the extremely low areas arouse geological interest.

The predominant zone in the group is the ultrabasic complex which extends eastward into Reid Township. Although there are occasional low (magnetically) zones within the assumed contacts, they are usually attributed either to a change in polarity or a less magnetic differentiate.

Two diabase dykes are noted in the western portion of the group by their consistent northerly trend. The slight change in trend in one diabase is probably associated with refraction between two units of different competency, namely the ultrabasic and the volcanics. These quartz diabase dykes are offset in the south by a northwesterly trending fault, in a magnetic low.

In 1966, INCO drilled just south of this zone, intersecting intermediate tuffs and graphitic horizons. Thus the fault zone is presumed to be filled with graphitic material accounting for a magnetic low, with intermediate tuffs south of this zone.

Northeast of the fault there is another separate zone of lower magnetic intensity. This zone may be sediments since a hole drilled by INCO further east, bottomed in argillite. The INCO zone, however, was interbedded with andesite and rhyolite which may account for the alternating magnetic highs and lows further west and northwest. It must be considered that the zone of low magnetic attraction may also be rhyolitic volcanics.

The high zone extending due north from the ultrabasic is considered to be a contact between the acid to intermediate

volcanics to the west and the zone of extreme magnetic low to the east. This zone may be either rhyolitic or sedimentary since both types of rock are characterized by a low magnetic attraction.

Conclusions:

Since it is often difficult to interpret geology from magnetic associations, even with the amount of data available, a follow-up programme is usually in order. This would involve ground electromagnetic surveys plus diamond drilling before final assessment of the property.

Dale R. Alexander

OCT/71

HOLLINGER MINES LIMITED
TIMMINS, ONTARIO

PERFORMANCE & C



900

## ASSESSMENT WORK DETAILS

Township or Area: Thorburn Township

Type of Survey: Mag.
A separate form is required for each type of survey

Chief Line Cutter or Contractor: R. Collins
Name
26 Maple Street South, Timmins, Ont.
Address

Party Chief: R. Collins
Name
26 Maple Street South, Timmins, Ont.
Address

Consultant
Name
Address

## COVERING DATES

Line Cutting: May 1/71 to June 23/71

Field: May 24/71 to July 13/71
Instrument work, geological mapping, sampling etc.

Office

## INSTRUMENT DATA

Make, Model and Type: ABEM MK-4 #4539

Scale Constant or Sensitivity: 9.9 /S.D.
*Or provide copy of instrument data from Manufacturer's brochure.*

Radiometric Background Count

Number of Stations Within Claim Group: 2,572

Number of Readings Within Claim Group: 3,134

Number of Miles of Line cut Within Claim Group: 55.23

Number of Samples Collected Within Claim Group

List numerically

SEE ATTACHED SHEET

RECEIVED
SEP 30 1971
PROJECTS SECTION

If space insufficient, attach list

TOTAL: 50 claims

| CREDITS REQUESTED | 20 DAYS per claim | 40 DAYS per claim | Includes (Line cutting) |
|---|---|---|---|
| Geological Survey | ☐ | ☐ | |
| Geophysical Survey | ☐ | ☒ | Show Check ✓ |
| Geochemical Survey | ☐ | ☐ | |

Send in duplicate to:
FRED W. MATTHEWS
SUPERVISOR-PROJECTS SECTION
DEPARTMENT OF MINES & NORTHERN AFFAIRS
WHITNEY BLOCK
QUEEN'S PARK
TORONTO, ONTARIO

DATE: September 23, 1971

SIGNED: W. H. Hansen
(W. H. Hansen)

*Performance and coverage credits do not apply to airborne surveys.*

# SUBMISSION OF GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL SURVEYS

# AS ASSESSMENT WORK

In order to simplify the filing of geological, geochemical and ground geophysical surveys for assessment work, the Minister has approved the following procedure under Section 84 (8a) of the Ontario Mining Act. This special provision does not apply to airborne geophysical surveys.

If, in the opinion of the Minister, a ground geophysical survey meets the requirements prescribed for such a survey, including:

(a) substantial and systematic coverage of each claim
(b) line spacing not exceeding 400 foot intervals
(c) stations not exceeding 100 foot intervals or
(d) the average number of readings per claim not less than 40 readings

it will qualify for a credit of 40 assessment work days for each claim so covered. It will not be necessary for the applicant to furnish any data or breakdown concerning the persons employed in the survey except for the names and addresses of those in charge of the various phases (linecutting contractor, etc.). It will be assumed that the required number of man days were spent in producing the survey to qualify for the specified credit.

Each additional ground geophysical survey using the same grid system and otherwise meeting these requirements will qualify for an assessment work credit of 20 days.

A geological survey using the same grid system, and meeting the requirements for submission of geological surveys for maximum credits will qualify for an assessment work credit of 20 days. If line cutting has not previously been reported with any other survey and is reported in conjunction with the geological survey a credit of 40 days per claim will be allowed for the survey.

Similarly, a geochemical survey using the same grid system with the average number of collected samples per claim being not less than 40 samples, and meeting the requirements for the submission of geochemical surveys for maximum credits, will qualify for an assessment work credit of 20 days. If line cutting has not previously been reported with any other survey and is reported in conjunction with the geochemical survey a credit of 40 days per claim will be allowed for the survey.

Credits for partial coverage or for surveys not meeting requirements for full credit will be granted on a pro-rata basis.

If the credits are reduced for any reason, a fifteen day Notice of Intent will be issued. During this period, the applicant may apply to the Mining Commissioner for relief if his claims are jeopardized for lack of work or, if he wishes, may file with the Department, normal assessment work breakdowns listing the names of the employees and the dates of work. The survey would then be re-assessed to determine if higher credits may be allowed under the provisions of subsections 8 and 9 of section 84 of the Mining Act.

If new breakdowns are not submitted, the Performance and Coverage credits are confirmed to the Mining Recorder at the end of the fifteen days.

September 23, 1971.

Statement Showing Distribution of Assessment Days as a Result of a Geophysical Mag. Survey (including line cutting) Performed on Thorburn #1 Group - 50 Claims in Thorburn, Geary and Reid Twps., Ont.

| Claim No. | Assessment Days | Claim No. | Assessment Days | Claim No. | Assessment Days |
|---|---|---|---|---|---|
| P-255494 | 40 | P-255511 | 40 | P-256540 | 40 |
| 255495 | 40 | 255512 | 40 | 256541 | 40 |
| 255496 | 40 | 255513 | 40 | 256542 | 40 |
| 255497 | 40 | 255927 | 40 | 256543 | 40 |
| 255498 | 40 | 255928 | 40 | 256544 | 40 |
| 255499 | 40 | 255929 | 40 | 256545 | 40 |
| 255500 | 40 | 255930 | 40 | 256546 | 40 |
| 255501 | 40 | 255931 | 40 | 256547 | 40 |
| 255502 | 40 | 255932 | 40 | 256548 | 40 |
| 255503 | 40 | 255933 | 40 | 256549 | 40 |
| 255504 | 40 | 255934 | 40 | 256550 | 40 |
| 255505 | 40 | 256526 | 40 | 256551 | 40 |
| 255506 | 40 | 256527 | 40 | 256552 | 40 |
| 255507 | 40 | 256536 | 40 | 256553 | 40 |
| 255508 | 40 | 256537 | 40 | 256554 | 40 |
| 255509 | 40 | 256538 | 40 | 256555 | 40 |
| 255510 | 40 | 256539 | 40 | | |

Total 2,000 days

W. H. Hansen

HOLLINGER MINES LIMITED

TIMMINS, ONTARIO

# THORBURN

M.601

Telaim map.

PORCUPINE MINING DIVISION

DISTRICT OF COCHRANE

Scale - 40 Chains = 1 Inch

NOTE

400' Surface Rights Reservation around all Lakes and Rivers.

2.623

GEARY

NORTH AST

MOBERLY

REID

5M. 4M. 3M. 2M. 1M.

79.83 79.14 80.37 79.83 80.28

Thorburn Creek

Enid Creek

DATE OF ISSUE

OCT 5 1971

ONT. DEPT. OF MINES AND NORTHERN AFFAIRS

MAHAFFY TWP.

MAHAFFY TWP.
REID TWP.

P255494
P255495
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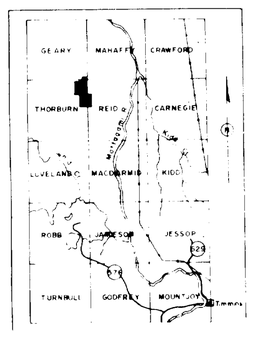
P256543
P256542
P256544
P256545

30 E TL
12 N TL
4 N TL
8 S
16 S
24 S
32 S
40 S
48 S
56 S
21 W TL
35 W BL
fault
INCO

LOCATION MAP




LEGEND

Contour Intervals

- 10,000 +
- 7,000
- 3,000
- 2,000
- 1500
- 1300
- 1200
- 1100
- 1000
- 900
- 500
- 100

CLAIM POST

Mespi

HOLLINGER MINES LTD

# GEOMAGNETIC SURVEY

## THORBURN TWP.

SCALE 1" = 400'

2.623

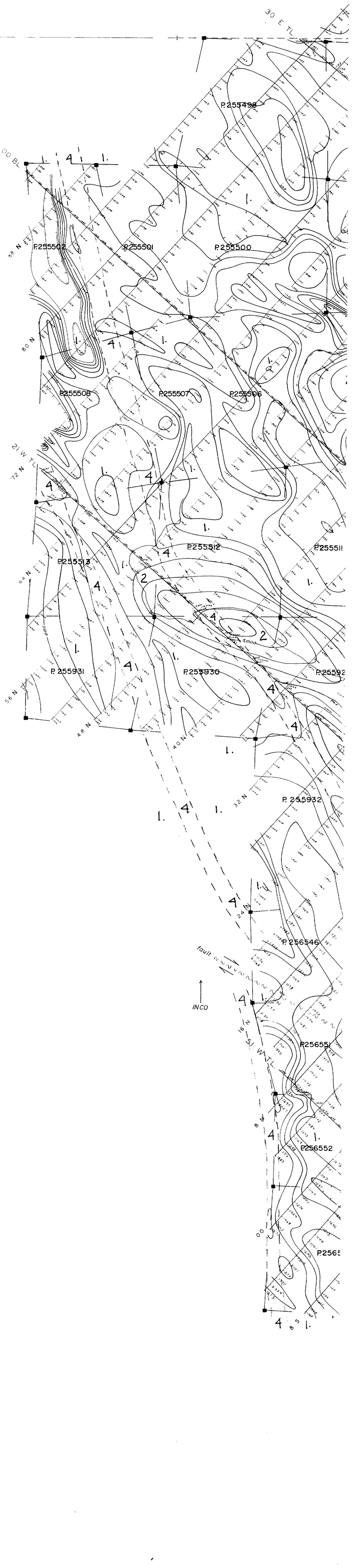
THORBURN NORTHEAST SHEET

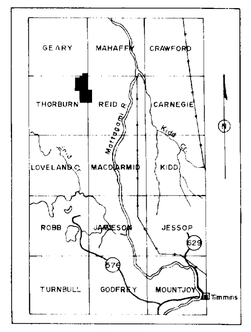
2.623

GEARY TWP.
THORBURN TWP.

N

AST.




LOCATION MAP

## LEGEND

Contour Intervals:

- 10,000 +
- 7,000
- 3,000
- 2,000
- 1500
- 1300
- 1200
- 1100
- 1000
- 900
- 500
- 100

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DIABASE - - - - - - 4.
VOLCANICS 1.
ULTRABASIC 2.
RHYOLITE or SEDIMENTS - - - - 3.

Dick R. Alexander
HOLLINGER MINES LIMITED
TIMMINS, ONTARIO

MAHAFFY TWP.

MAHAFFY TWP.
REID TWP.

P255494 P255495 P255496 P255497 P255498 P255499 P255500 P255501 P255502 P255503 P255504 P255505 P255506 P255507 P255508 P255509 P255510 P255511 P255512 P255513 P255927 P255928 P255929 P255930 P255931 P255932 P255933 P255934 P256536 P256537 P256538 P256539 P256540 P256541 P256542 P256543 P256544 P256545 P256546 P256547 P256548 P256549 P256550 P256551 P256552 P256553 P256554 P256555 P256526 P256527

30 E TL
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72 N
64 N
56 N
48 N
40 N
32 N
24 N
16 N
8 N
48 N
40 N
32 S
24 S
16 S
8 S
00 BL
8 S
16 S
24 S
32 S
40 S
48 S
56 S
21 W TL
35 W BL

fault

INCO

GEARY MAHAFFY CRAWFORD
THORBURN REID CARNEGIE
LOVELAND MACDONALD KIDD
ROBB JAMESON JESSOP
TURNBULL GODFREY MOUNTJOY
Timmins
1" = 8 Miles

LOCATION MAP

## LEGEND

Contour Intervals:

- 10,000 +
- 7,000
- 3,000
- 2,000
- 1500
- 1300
- 1200
- 1100
- 1000
- 900
- 500
- 100

CLAIM POST

Mespi

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# GEOMAGNETIC SURVEY

## THORBURN TWP.

SCALE 1" = 400'

2673

THORBURN NORTHEAST SHEET