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MAXMIN II ELECTROMAGNETIC AND MAGNETOMETER SURVEYS
LITTLE A - 9, 10
LITTLE TOWNSHIP
PORCUPINE MINING DIVISION TIMMINS AREA, ONTARIO
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NORCEN ENERGY RESOURCES LIMITED

| Toronto, Ontario, Canada | W. E. Brereton, P.Eng. |
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| May, 1980 | M P H CONSULTING LIMITED |

## 1. INTRODUCTION

This report outlines the results of ground geophysical surveys carried out on grid $A-9,10$, Little township during the period February to April 1980 on behalf of Norcen Energy Resources Limited.

Technical Data Statements pertaining to this work are presented in Appendix II.

## 2. LOCATION

The property consists of 13 contiguous unpatented mining claims in west-central Little township approximately 35 km northeast of Timmins. The claims are numbered P515736 to 737,515739 to 741, 515750 to $752,521881,517240$ to 243 and occupy the $W 1 / 2$ of $\mathrm{N} 1 / 2$, Lot 9 , Con. 3, all of Lot 10 , Con. 3 except $\operatorname{se} 1 / 4$ of $S 1 / 2$ and $S 1 / 2$ Lot 11 , Con. 3 except $S E 1 / 4$ of $S 1 / 2$ and S 1/2 Lot 11, Con. 3 (see Index Map - geophysical sheets).

## 3. ACCESS

The road known locally as the Ice Chest Road transects the west portion of the claim group approximately 5 miles south-
west of the Fredrickhouse River Dam. Easiest access to the Ice Chest Road is off highway 610 approximately half way between Hoyle and Connaught.

## 4. LINECUTTING

Two east-west baselines were established, one extending 1.6 km east from post 4, claim. P517242 and a second extending 1.2 km east from post 4, claim P515751. North-south crosslines were cut at 125 m intervals. Additional east-west lines were cut parallel to the baselines at $1000 \mathrm{~N}, 700 \mathrm{~N}, 600 \mathrm{~N}$, $475 \mathrm{~N}, 350 \mathrm{~N}$. Baselines and all crosslines were chained and picketed at 25 m intervals. A total of approximately 29 km of line was cut, chained and picketed.

## 5. TOPOGRAPHY

The property is essentially a low swampy plain traversed by two low, rounded north-south sandy ridges, one along the east side of the property and the other along the Ice Chest Road in the west. The ridges support stands of mature, open jackpine and represent eskers which have been worn down by wave action of glacial lake Barlow-Ojibway. Several small kettles were noted during the field work.

There is no appreciable relief in general although up to 5 m or more of abrupt relief may be encountered along creeks and associated with the west esker.
6. GEOPHYSICAL SURVEYS

Electromagnetic Survey
Electromagnetic surveying was carried out with a MaxMin II EM unit. A 200 m cable was used for routine coverage at operating frequencies of 444 Hz and 1777 Hz . Technical and operational aspects of the MaxMin II are presented in Appendix $I$.

The results of the EM surveying are shown on the prints accompanying this report. Mapl presents the low frequency data and Map 2 the high frequency results.

Four conductors were located by the surveying - 'A', 'B', 'C' and ' $D$ '.
'A' has a strike length of less than 125 m and is centred at 50 N on line l25E. The conductor dips north at $70^{\circ}$ and is indicated to be covered by at best 60 m of glacial overburden. There is a distinct 20 gamma magnetic correlation with the conductor on line l25E. Inphase to quadrature ratios at 444 Hz indicates low conductivity.

Conductor 'B' strikes east-west and is approximately 375 m long and is located near the north ends of lines 375 E to 625E. Dip is approximately vertical with 70 m to 80 m of overburden cover. Conductivitiy is moderate. There is no direct magnetic correlation.
'C' strikes north-south in the region of line 500 E and is detectable on cross lines 350 N through to 1000 N for a strike length of at least 650 m . A steep east dip is indicated in the area of line 600 N with depths to conductor axis of approximately 50 m . Conductivity is low. There is no direct magnetic correlation.

Conductor ' $D$ ' is a very weak feature extending from lines 250 E to 1000 E south of the south baseline.

## Magnetic Survey

A Geometrics G-816 proton precession magnetometer was employed for the magnetic surveying. Correction for diurnal variations were made using a Barringer Research BM-123 base station recorder. Details of the magnetic method and technical specifications of the instruments employed are presented in Appendix I.

There is no appreciable magnetic relief on the property.

In accord with EM results, magnetically-inferred bedrock
strikes appear to swing from east-west in the west portion of the grid to more north-south over the east portion. (See Map 3).

## 7. CONCLUSIONS AND RECOMMENDATIONS

The short strike length and weak but definite magnetic correlation suggest that conductor ' $A$ ' may be reflective of a sulphide concentration.

Conductors 'B', and 'D' are probably representative of graphitic units with the shorter strike length of ' $B$ ' making this feature somewhat more interesting.

The possibility remains that ' $C$ ' is a conductive zone of shearing which is cross-cutting stratigraphy. If stratiform, 'C' is undoubtedly a graphitic unit.

The grid area is inferred to be underlain predominantly by felsic metavolcanics and sediments considering the magnetic data.

None of the conductors located appears to have been drill tested in the past. Conductor ' $A$ ', ' $B$ ' and ' $C$ ' are recommended for drill tests as follows:

| Conductor | Collar | Dip | Azimuth | Length |
| :---: | :---: | :---: | :---: | :---: |
| A | $87.5 \mathrm{~N}, 125 \mathrm{E}$ | -60 | $180^{\circ}$ | 150 m |
| B | $225 \mathrm{~N}, 500 \mathrm{E}$ | -60 | $360^{\circ}$ | 170 m |
| C | $600 \mathrm{~N}, 1537.5 \mathrm{E}$ | -60 | $270^{\circ}$ | 150 m |

Further work will be contingent on the results of the above.


WEB: 9
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# REPORT <br> hinivinu laindo sectionk <br> 0 N <br> MAXMIN II ELECTROMAGNETIC AND MAGNETOMETER SURVEYS LITTLE A-14 <br> LITTLE TOWNSHIP <br> PORCUPINE MINING DIVISION TIMMINS AREA, ONTARIO 

for<br>NORCEN ENERGY RESOURCES LIMITED

Toronto, Ontario, Canada May, 1980
W. E. Brereton, P.Eng.

M P H CONSULTING LIMITED

## 1. INTRODUCTION

This report outlines results of ground geophysical surveys carried on grid A-14, Little township, in the period February to April, 1980 on behalf of Norcen Energy Resources Ltd. Technical Data Statements pertaining to this work are presented in Appendix II.

## 2. LOCATION

The property consists of 13 contiguous unpatented mining claims in the northeast portion of Little township, approximately 44 km northeast of Timmins. The claims are numbered P521829, 832 to 836 incl., 845 to 850 incl., 869 and occupy the $E 1 / 2$ of $s 1 / 2$ Lot 5 , Con. $6, \mathrm{~S} 1 / 2$, Lot 4 , Con. 6 and N $1 / 2$ of $N 1 / 2$ Lot $4, ~ C o n . ~ 5$ and $S 1 / 2$ and $S W 1 / 4$ of $N 1 / 2$, Lot 3 Con. 6. (see Index Map - geophysical sheets).

## 3. ACCESS

Easiest access to northeast Little is afforded via bush roads which extend off the west end of the Dam Road from the settlement of Nellie Lake on highway 11 northeast of timmins.

A bush road which turns north on crossing the Little-McCart boundary leads to the southeast end of the baseline.
4. LINECUTTING

A 1.375 km baseline was established at a bearing azimuth of $130^{\circ}$ extending northwest from the southeast corner of Lot 2 , Con. 6. A 0.625 km sub baseline was cut parallel to the main baseline extending northwest from 675S on line l375E. Crosslines were cut at 125 m intervals. The baselines and all crosslines were chained at 25 m intervals. A total of approximately 23 km of line was cut, chained and picketed.
5. TOPOGRAPHY

The property is covered mainly by low, swampy ground. There is no appreciable relief.
6. GEOPHYSICAL SURVEYS

## Electromagnetic Survey

EM unit. A 150 m cable was used for routine coverage at operating frequencies of 444 Hz and 1777 Hz . Technical and operational details of the MaxMin II are presented in Appendix I.

The results of the EM surveying are shown in the prints accompaying this report. Map 1 presents the low frequency data and Map 2 the high frequency results.

Four conductors were located numbered 'A', 'B' ' $C^{\prime}$ and ' $D$ '.
'A' extends from line 125 W to line 1250 W and is open at both ends. The conductor consists of two segments - a moderately to highly conductivity east portion with dips of $45^{\circ} \mathrm{N}$ to $60^{\circ} \mathrm{N}$ and a weaker, more steeply dipping west portion. Depths to conductor top are approximately 30 m over the east portion and somewhat greater to the west. There is no notable magnetic correlation.

Conductor ' $B$ ' occurs 150 m south of the baseline on lines 1125 W to 1375 W for an indicated strike length of 375 m . ' $B$ ' exhibits low conductivity being predominantly a quadrature feature at 444 Hz . A steep north dip is indicated. There is approximately 50 m of glacial overburden cover. No coincident magnetic anomaly was found.

Conductor ' $C$ ' occurs between lines 1375 W to 1625 W for a strike length of approximately 375 m . The conductor is slightly arcuate occurring at 625 s to 650 S . ' C' exhibits very low
conductivity and has a steep south dip. The conductor coincides approximately with a 40 gamma magnetic low on line l500W.

Conductor ' $D$ ' is a weakly conductive predominantly quadrature effect parallel to and approximately 150 m north of 'A'. A north dip is indicated by detail work with a l00m cable on line 375W. The conductor flanks a distinct magnetic anomaly between lines 500 W to 750 W and occurs approximately 25 m south of the 550 gamma magnetic maximum on line 500 W .

## Magnetic Survey

A Geometrics G-816 proton precession magnetometer was employed for the magnetic surveying. Correction for diurnal variation was made using a Barringer Research BM-123 base station recorder. Details of the magnetic method and technical specifications of the instruments employed are presented in Appendix I.

The most striking magnetic feature (Anomaly A) is located immediately north of the baseline between lines 375 W and 750 W . Maximum relief is approximately 2000 gammas. Magnetic profiles indicate a moderate north dip to the magnetic body. The anomaly terminates abruptly to the east suggesting that the causative body may be truncated by a fault in this area.

Another magnetic feature of possible economic significance is Anomaly ' $B$ '. This anomaly shows as a 120 gamma high centred at 250 s on line 375 .

Magnetic values show a 'regional' increase from northeast to southwest across the property. There is a relatively rapid climb in the northeast followed by a low relief plateau in the central portion of the property with values increasing again in the southwest.

Northwest-striking contours along the south portion of line 1375W are probably indicative of a diabase dyke.

## 7. CONCLUSIONS AND RECOMMENDATIONS

The grid area is inferred to cover a portion at the top of a felsic dome the main centre for which is located to the north in Mann township. Magnetically, the central portion of the grid is interpreted to be underlain predominantly by felsic volcanics. The increased magnetic activity in the south portion of the grid may relate to more basic volcanics, such that a major mafic-felsic contact may cross the grid in the area of $E M$ conductor 'C'.

Conductor 'A' was investigated previously by Amax (1971) in a single hole drilled in the area of present line 625W. The conductor was shown to be a 4 m thick, graphitic unit with associated pyrite. No further drill testing is recommended at this time.

Conductors 'B' and 'C' are probably not reflective of large concentrations of conductive sulphides considering the geophysical responses. The short strike length and inferred geological setting are of interest however and drill tests are warranted.

Conductor ' $D$ ' is formational in nature and is probably due to a weakly graphitic unit analogous to 'A'. The close spadial association of conductor ' $D$ ' with magnetic anomaly 'A' in the vicinity of line 500 W is of interest however and a drill test is recommended.

Neither of magnetic anomalies 'A' or 'B' are due to substantaal pyrrhotite concentration considering the EM results. Magnetite-bearing mafic or ultramafic intrusive bodies are the most probable source of the higher magnetic intensities although 'A' may represent a faulted block of magnetite iron formation.

Conductors ' $B$ ' ' $C$ ' and ' $D$ ' should be drill tested as follows:

| Conductor | Collar | Dip | Azimuth | Length |
| :---: | :---: | :---: | :---: | :---: |
| B | $1250 \mathrm{~W}, 100 \mathrm{~S}$ | $-60^{\circ}$ | grid s | 140 m |
| C | $1500 \mathrm{~W}, 687.5 \mathrm{~s}$ | $-60^{\circ}$ | grid N | 140 m |
| D | $500 \mathrm{~W}, 200 \mathrm{~N}$ | $-60^{\circ}$ | grid S | 140 m |

Further work will be contingent on the results of the above.


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## 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.



AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)
Magnetometer
Electromagnetic
Radiometric (enter days per claim)

DATE: Apr .15,1980 SIGNATURE: $\frac{\left.1)^{\prime}\right) \wedge U Q(i n}{\text { Author of Report or Agent }}$

| MINING CLAIMS TRAVERSED |
| :---: |
| List numerically |

Res. Geol. Previous Surveys Qualifications $\frac{2.1310+\text { on }}{\text { this fie }}$ 1.1.

## GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS - If more than one survey, specify data for each type of survey

Number of Stations $\frac{1160}{} \quad \begin{aligned} & \text { Number of Re } \\ & \text { Station interval } \\ & \text { Profile scale } 1 \mathrm{~cm}=10 \%(444 \mathrm{~Hz}), 1 \mathrm{~cm}=20 \%(1777 \mathrm{~Hz}) \\ & \text { Contour interval } \\ & \text { Instrument } \quad \text { Geometrics G-816 proton magnetometer }\end{aligned}$
Number of Stations $1160 \quad \begin{aligned} & \text { Number of Re } \\ & \text { Station interval } \\ & \text { Profile scale } 1 \mathrm{~cm}=10 \%(444 \mathrm{~Hz}), 1 \mathrm{~cm}=20 \% \quad(1777 \mathrm{~Hz}) \\ & \text { Contour interval } \\ & \text { Instrument } \quad \text { Geometrics G-816 proton magnetometer }\end{aligned}$
Accuracy - Scale constant 1 gamma
Diurnal correction method base station recorder
Base Station check-in interval (hours)_ N/A
Base Station location and value _N/A


Instrument
Scale constant
Corrections made

Base station value and location

Elevation accuracy

Instrument
Method $\square$ Time Domain
Frequency Domain
Parameters - On time Frequency

- Off time $\qquad$ Range
- Delay time $\qquad$
- Integration time

Power
Electrode array
Electrode spacing $\qquad$
Type of electrode

## Ministry of Natural Resources

File

## GEOPHYSICAL - GEOLOGICAL - GEOCHEMICAL TECHNICAL DATA STATEMENT

## 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(s) MAGNETOMETER AND ELECTROMAGNETOMETER
Township or Area
Little Township

Claim Holder(s) Norcen Energy Resources Lta. 715-5th Ave. S.W., Calgary, Alta.
Survey Company__ M P H CONSULTING LIMITED
Author of Report W. E. Brereton, P. Eng.
Address of Author 706-141 Adelaide St. West, Toronto Covering Dates of Survey_Feb.28-Mar.25, Apr.13-14, 1980
Total Miles of Line Cut $\quad 14-29$



Res. Geol.
Previous Surveys Qualifications $\frac{2 \cdot 1310+\text { on }}{\text { this file. }}$



GROUND SURVEYS - If more than one survey, specify data for each type of survey


Instrument Geometrics G-816 proton magnetometer
Accuracy - Scale constant _ 1 gamma
Diurnal correction method base station recorder
Base Station check-in interval (hours) N/A
Base Station location and value N/A

Instrument Apex Parametrics MaxMin II
Coil configuration Horizontal Loop
Coil separation 100 m
Accuracy_0.5\% Inphase and quadrature
Method:
$\square$ Fixed transmitter
$\square$ Shoot back
区 In line
$\square$ Parallel line

Frequency—_ (specify V.L.F. station)
Parameters measured__ inphase and quadrature components of secondary EM field

Instrument $\qquad$
Scale constant $\qquad$
Corrections made $\qquad$

Base station value and location $\qquad$

Elevation accuracy

Instrument $\qquad$
$\square$ Frequency Domain
Frequency
Range

- Off time $\qquad$
- Delay time
- Integration time $\qquad$
Power
Electrode array
Electrode spacing
Type of electrode












