# GEO LA LTÉE PHYSIQUE LOGIOUE <br> EXPLORATION - SERVICES 

### 2.3859



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GEOPHYSICAL SURVEYS
PROPERTY OF FALCONBRIDGE COPPER LIMITED
ZENMAC MINE AREA - MN 673
DISTRICT OF THUNDER BAY - PROV. ONTARIO
NOVEMBER 1980
C. LAVOIE, Ph.D.

## RECFNED

firn. 301981
MINING LANDS SECTION

## INTRODUCTION

A E.M.H. and a V.L.F. electromagnetic surveys, combined with a magnetometer survey, were carried out over Zenmac Mine property, owned by Fäiconbridge Copper Ltd., District of Thunder Bay, Province of Ontario.

The purpose of these surveys was to finci conductive zones which may contain zinc. The magnetic survey was done such as to define the geological structure.

PROPERTY, LOCATION AYD ACCESS

The property is located East of Wiriston lake, 13 miles North of the town of Schreiber, iocated ciose by Lake Superior. The property is easily accessible by a secondary roaa.

The property includes the following claims:


## GEOPHYSICAL WORK

From the period of September lst to September 30th, 1980, electromagnetic surveys E.M.H. and V.L.F. and a magnetic survey, were carried out over 100 metre grid lines.

> surneyed by medootnomaternown Maxmin II, operatina at a frequency of 888 and $3,555 \mathrm{~Hz}$ (cable 100 meters). The readings were taken at 25 metre intervals along the lines. The instrument was previously calibrated over an esker.

 Geonics EM-16, operating at a frequency of NAA. The readings were taken facing North at 12.5 metre intervals.

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 magnetio muxuay was carried outwuingramato metrics G-816, having a sensitivity of 1 gamma. The readings were taken at 12.5 metre intervals along the lines. The base lines were also surveyed at 12.5 metre intervals. The usual diurnal. and datum corrections were made using as base station the line intersection with the base lines.
## DISCUSSION OF METHODS

Electromagnetic horizontal loop methods are capable of delineating zones of conductivity that could represent, but not necessarily, massive concentrations of minerals having metallic conductive properties. The common minerals are pyrite, pyrrhotite, chalcopyrite, nickel (but not sphalerite ) and graphite. In certain areas, the overburden is a conductor and this may require some farfetched experience to differentiate between these various sources of conductivity. While using a longer cable, we investigated more ground and, normally. the interpreted depth is higher than with a shorter cable.

The V.L.F. electromagnetic method is normally used in non-conductive overburden areas to get information on the structural geology, reflected by conductive zones as faults, shear zones and naturally, massive sulphides.

The conductive zones are picked-up with varying amplitude readings depending on the following parameters; overburden conductivity, conductivity of the zone, depth, angle with the transmitter station and the geometry of the conductive zone.

Normally, a V.L.F. anomaly is not a diamond drill target on its' own. It has to be tested with other geophysical methods, especially
in an overburden conductivity area. In this case, the overburden does not seem to be conductive.

During a survey, it is a good policy to use two different stations perpendicular to each other. This can permit the detection of more conductors. However, due to the electromagnetic field line distorsion present at the edge of a conductor, a false short conductor may be obtained with one station at the edge of a long conductor obtained with another perpendicular transmitter station.

Concentrations of minerals having magnetic susceptibility will give rise to variations in the earth's magnetic field. Systematic observation of the total earth's magnetic field has allowed us to contour the data outlining magnetic patterns or anomalies.

Minerals having strong magnetic susceptibility are magnetite and pyrrhotite and are usually, but not necessarily, associated as primary or accessory minerals in massive sulphide deposits; thus, coincident magnetic and electromagnetic anomalies could be important, but are not necessarily required.

## DESCRIPTION AND INTERPRETATION

The geophysical electromagnetic surveys done on this property have permitted us to detect many anomalies.

The horizontal loop electromagnetic anomalies survey show weak anomalies with the high frequency of $3,555 \mathrm{~Hz}$. These anomalies appear mainly with the Out-of-Phase components and we interpreted a conductivity thickness of less than 1 mho. Due to accidental topography and short cable, some false In-Phase positive readings are present. However, considering this kind of topography, the survey was well done. Normally, the E.M.H. anomalies coincide to V.L.F. electromagnetic anomalies and we will discuss them at the same time. The diamond drill we are recommending is all located on the E.M.H. map (frequency $3,555 \mathrm{~Hz}$ ).

The electromagnetic V.L.F. In-Phase readings have been compiled with the Fraser method. The anomaly axis interpreted with the Fraser contour and obtained with the NAA station, are drawn on the profile maps. Normally, the conductors producing these V.L.F. anomalies are located close to these axis and/or towards the negative-positive crossover of the electromagnetic profile. Each anomaly is tabulated by giving the following parameters:

- location of the anomaly on the grid: line, station,
- intensity of the peak to peak which reflects the validity of the anomaly or its' signals with respect to the noise ratio since the noise is approximately 1 to $2 \%$,
- length of the anomaly,
- depth interpreted using the peak to peak horizontal distance divided by 2 which gives us a good idea of the maximum depth of the conductor producing the anomaly,
- the magnetic association.
(See the tabulated sheet at the end of this report.

We have tried to give a priority to each anomaly, based mainly on the geophysical results. The second priority anomalies are interpreted as having more chance of being produced by bedrock conductor and the cause of them should be eventually explained by trenching or diamond drill holes.

The term " first priority " should eventually be used to re-classify the anomalies, using the geological datas or other discriminating geophysical methods.

Quite a few V.L.F. anomalies have been found on this property. All of them are described in tabulated form. Hereafter, we will discuss mainly of the second priority anomalies.

## Anomaly №. 1

The anomaly No. 1 is mainly obtained on line 1 W , station $13+75 \mathrm{~N}$. At this location, it coincides to the weak Out-of-Phase E.M.H. anomaly. No. H-14 and to a magnetic high of approximatively 200 gammas. More detail work is required on its' extension before drilling it.

## Anomalies №s. 3 and 5

The anomalies Nos. 3 and 5 are located in the North-Eastern part of line 9 E and 10 E and coincide on line 10 E , station $13+50 \mathrm{~N}$ and on line 9 E , station $12+25 \mathrm{~N}$ to the weak Out-of-Phase E.M.H. anomaly No. H-12. A diamond drill hole may be planned to study these anomalies on line 9 E as follows:

Collar hole: | Line $\quad 8+40 \mathrm{E}$ | Station: $12+50 \mathrm{~N}$ |
| :--- | :--- | :--- |
|  | Azimuth: 2030 |$\quad$ Dip: 500

$$
\text { Length: } 125 \text { metres }
$$

## Anomalies Nos. 8, 9, 10 and 13

From the E.M.H. results (frequency $3,555 \mathrm{~Hz}$ ), the best conductive zone would be located West of line 2 W . In this area, the conductive zone is also magnetic. A diamond drill hole may be planned as follows:

| Collar hole: | Line: | $5+50 \mathrm{~W}$ |
| :--- | :--- | :--- |
| Azimuth: | $230^{\circ}$ | Station: |
|  | $2+75 \mathrm{~N}$ |  |
|  | Dip: | $50^{\circ}$ |

Length: 100 metres

Anomalies Nos. 15 and 17

Anomaly No. 17 is possibly located on the extension of anomalies Nos. 3 and 5 or anomaly No.15. Anomaly No. 15 also coincides to the weak E.M.H. Out-of-Phase anomaly No. H-15. A magnetic association is possible on anomaly No. 15 and also on anomaly No.17. This becomes evident if we change the magnetic axis direction that we have interpreted. Before recommending a diamond drill hole, more details will be required on anomaly No.15. Concerning the anomaly No.17, we should wait for the diamond drill results on anomalies Nos. 3, 5 and 13.

Anomaly №. 20

Anomaly No. 20 is obtained mainly on line 0 , station 1 N . If we change the direction interpreted, the anomaly will coincide to the weak E.M.H. anomaly No. H-4, which follows a creek.

There is no magnetic association. A fracture having a North-East direction is possible. If this possible fracture extends more North-East, it may explain a sinistral displacement between anomalies Nos. 9, 10 and 11. A diamond drill hole is recommended as follows:

| Collar hole: | Line: | $0+50 \mathrm{E} \quad$ Station: $1+35 \mathrm{~N}$ |  |
| :--- | :--- | :--- | :--- | :--- |
|  | Azimuth: | $285^{\circ} \quad$ Dip: | $50^{\circ}$ |
|  | Length: | 150 metres |  |

Anomaly No. 28

Anomaly No. 28 is mainly obtained on line 14 E , station $8+50 \mathrm{~N}$ where it coincides to the weak E.M.H. anomaly No. H-11. As a second priority target, a diamond drill hole may be done.

Anomalies Nos. 35, 39, 40, 41 and 42

These anomalies seem to be on the extension of each other. Anomaly No. 42 coincides to the weak E.M.H. anomaly No. H-5, while anomaly No. 41 coincides to the weak E.M.H. anomaly No. H-8. Normally, all these anomalies coincide to high magnetic readings. Diamond drill holes may be planned to define the cause of them. However, hole No. 85 may already have explained the cause. We should start to drill the E.M.H. anomaly and depending of the results, extend the diamond drilling program.
Collar hole: Line: 7 E Station: 5+25 S
Azimuth: $250^{\circ}$
Length: 100 metres
Dip: ..... $50^{\circ}$Line: 0Azimuth: $250^{\circ}$
Station: 7+35 SDip: $50^{\circ}$
Length: 125 metres
Anomaly No. 37

This anomaly coincides to the weak E.M.H. anomalies No. H-3 and H-13. They also coincide to high magnetic readings. A diamond drill hole should be planned as follows on anomaly No. H-3.

| Collar hole: | Line: $\quad 5 \mathrm{~W}$ | Station: $5+35 \mathrm{~S}$ |
| :--- | :--- | :--- |
|  | Azimith: $250^{\circ}$ | Dip: 500 |
|  | Length: 100 metres |  |
|  |  |  |

The anomaly No. H-13 may have previously been drilled since it is located South of Zenith deposit and future work should depend on the available geological information.

Anomalies Nos. 68 and 71

These anomalies located in the SouthWestern part seem to be an extention of each other. Anomaly No. 68 coincides to a weak E.M.H. Out-ofPhase anomaly No. H-9. A magnetic association is normally observed. A diamond drill hole should be planned on line 8 S to define the cause of this anomaly.

| Collar hole: | Line: | 8 S | Station: $2+50 \mathrm{~W}$ |
| :--- | :--- | :--- | :--- |
|  | Azimuth: $190^{\circ}$ | Dip: | 500 |
|  | Length: | 100 metres |  |
|  |  |  |  |

Anoma ly №. 78

This anomaly is located in the Western part of the property and coincides to the weak E.M.H. anomalies Nos. H-6 and H-7. Magnetic association is also present on some lines. This anomaly may have been explained in the past by holes Nos. 109 and 116. If it was not, we may plan a diamond drill hole on line 1 E or 4 E .

Anomaly No. H-10

This weak Out-of-Phase E.M.H. anomaly is located on line 14 E , station $15+25 \mathrm{~S}$, just

East of a creek and seem to be produced by overburden conductivity effect. There is no magnetic association. No more work is recommended for now.

MAGNETIC SURVEY

So as to facilitate the interpretation of the geological structure, we have located on the magnetic maps, the magnetic axis on each line. However, other interpretation of the magnetic axis direction may be possible from one line to the other. By observing conjointly the geological, the magnetic and the electromagnetic datas, it should be easy to define the geological contact. From the geophysical survey, we observed areas of stable electromagnetic and magnetic patterns representing probably different geological formations.

## CONCLUSION AND RECOMMENDATIONS

From the present geophysical information, we are recommending at least 6 diamond drill holes. However, a re-interpretation using all the geological information is recommended and this may bring other valuable targets on the property.

For future references or geophysical work in this area, we are concluding that the survey done brought a great deal of information. However, possible presence of fractures perpendicular to the geological formations should incite the use of two perpendicular V.L.F. stations. The use of E.M.H. is possible with a very high frequency. We think that the induced polarisation method should be tried to define the validity of the third and fourth priority V.L.F. anomalies. The kind of mineralization found on this property does not seem to respond very well with the electromagnetic method.

Respectfully submitted,

dESCRIPTION OF V.L.F. ANOMALIES
( NAA)
Region: Zenmac Mine Area
District' of Thunder Bay

| No. <br> Ano- <br> maly | Line | Station intersection | $\left\lvert\, \begin{gathered} \text { Intensity } \\ \text { Peak } \\ \text { to Peak } \end{gathered}\right.$ | Iength <br> (metres) | pepth interpreted ( m | Magnetic association | Notes | 苓 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| V-0] | 1 W | $13+75 \mathrm{~N}$ | 49 | 275 | 20 | 50-200 | Coincides to anomaly E.M, H. | 2 |
| $\mathrm{V}-02$ | 8 E | $12+75 \mathrm{~N}$ | 10 | 100 | 10 |  | Weak, doubtfull | 4 |
| N-03 | 10 E | $13+25 \mathrm{~N}$ | 57 ? | 130 | 45 | contact | $\begin{aligned} & \text { Coincides to anomaly } \\ & \text { E.M. H. } 12 \end{aligned}$ | 2 |
| V-04 | 1 W | $12+75 \mathrm{~N}$ | 10 | 500 | 17 | variable |  | 3 |
| V-05 | 9 E | $12+00 \mathrm{~N}$ | 27 | 450 | 20 | 5000 | Coincides on L 9 E to anomaly E.M.H. 12 | 2 |
| V-06 | 3 E | $10+75 \mathrm{~N}$ | 16 | 230 | 12 | variable | Better on L. 3 E | 3 |
| V-07 | 2 E | $10+00 \mathrm{~N}$ | 5 | 220 | 15 | variable |  | 4 |
| V-08 | 1 E | $9+00 \mathrm{~N}$ | 30 | 220 | 25 | contact ? | $\begin{aligned} & \text { Bending, may be on } \\ & \text { extension of } v-09 \\ & \hline \end{aligned}$ | 2 |
| V-09 | 1 E | $7+25 \mathrm{~N}$ | 21 | 350 | 25 | high | Bended | 2 |
| $\mathrm{V}-10$ | 2 W | $5+00 \mathrm{~N}$ | 34 | 140 | 20 | 400? | coincides to anomaly E.M.Hent | 2 |
| $\mathrm{V}-11$ | 0 | $6+25 \mathrm{~N}$ | 6 | 120 | 8 | 2000 | Weak | 4 |
| $\mathrm{V}-12$ | 7 E | $10+60 \mathrm{~N}$ | 4 | 310 | 10 | contact? | Weak, doubtfull | 4. |
| $\mathrm{V}-13$ | 2 W | $4+25 \mathrm{~N}$ | 25 | 600 | 17 | 300-2000 | Coincideg to anomaly E.M.H. $\# 01$ | 2 |
| $\mathrm{V}-14$ | 6 E | $8+50 \mathrm{~N}$ | 6 | 700 | 15 | variable | Weak, better on L. 4 E | 4 |
| $\mathrm{V}-15$ | 12 E | $11+10 \mathrm{~N}$ | 16 | 140 | 10 | 30 | Coincides to anomaly <br>  | 2 |
| $\mathrm{V}-16$ | 1 W | $3+25 \mathrm{~N}$ | 17 | 1000 | 18 | variable | Better on L. 1 W | 3 |
| $\mathrm{V}-17$ | 7 E | $8+25 \mathrm{~N}$ | 27 | 600 | 20 | 50-800 |  | 2 |
| V-18 | 14 E | $11+00 \mathrm{~N}$ | 25 | 550 | 15 | variable |  | 3 |
| V-19 | 3 W | 0+50 S | 12 | 200 | 10 |  | Weak | 4 |
| V-20 | 0 | $1+00 \mathrm{~N}$ | 34 | 200 | 25 |  | Coincides to anomaly EMCHOMOL | 2 |
| $\mathrm{V}-21$ | 0 | $2+00 \mathrm{~N}$ | 10 | 300 | 22 |  | Weak | 4 |
| $\mathrm{V}-22$ | 6 E | $5+50 \mathrm{~N}$ | 9 | 700 | 20 | variable | Weak, doubtfull | 4 |
| V -23 | 13 E | $9+00 \mathrm{~N}$ | 12 | 450 | 17 |  |  | 3 |
| V-24 | 1 E | $1+00$ S | 6 | 220 | 10 |  | Weak, creek, direction ? | 4 |
| V-25 | 1 W | 1+00 S | 12 | 200 | 20 |  | Creek, direction? | 3 |
| $\mathrm{V}-26$ | 2 E | 1+75 S | 17 | 120 | 10 | contact? | Weak, doutbfull | 4 |
| $\mathrm{V}-27$ | 2 E | $3+30 \mathrm{~S}$ | 14 | 600 | 15 | contact ? | Weak, better on line 3 E | 3 |
| V-28 | 14 E | $8+50 \mathrm{~N}$ | 30 | 450 | 15 |  | fonncides to anomaly EM.H. | 2 |
| V-29 | 15 E | $7+75 \mathrm{~N}$ | 11 | 150 | 20 |  | Weak, doubtfull | 4 |
| V-30 | 18.E | $6+25 \mathrm{~N} /$ | 9 | 200 | 20 | 20 |  | 3 |

## DESCRIPTION OF V.L.F. ANOMALIES

(NAA)

$$
\begin{aligned}
& \text { Region: Zenmac Mine Area } \\
& \text { PN } 673 \\
& \text { District of Thunder Bay }
\end{aligned}
$$

| No. Anomaly | Line | Station inter section | $\begin{aligned} & \text { Intensity } \\ & \text { Peak } \\ & \text { to Peak } \end{aligned}$ | Length <br> (metres) | bepth interpreted ( m ) | Magnetic association | Notes | + |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathrm{V}-31$ | 11 E | $6+60 \mathrm{~N}$ | 10 | 250 | 15 | variable | Weak | 4 |
| V-32 | 12 E | $5+35 \mathrm{~N}$ | 4 | 300 | 12 | 30 ? | Weak | 4 |
| $\mathrm{V}-33$ | 10 E | $5+90 \mathrm{~N}$ | 6 | 200 | 16 |  | Weak | 4 |
| $\mathrm{V}-34$ | 11 E | $4+25 \mathrm{~N}$ | 9 | 100 | 18 |  |  | 3 |
| V -35 | 19 E | $2+00 \mathrm{~N}$ | 28 | 1100 | 22 | variable | Better on line 19 E | 2 |
| $\mathrm{V}-36$ | 13 E | 1+15 S | 12 | 250 | 15 | variable |  | 3 |
| V-37 | 1 E | $4+75 \mathrm{~S}$ | 46 | 1500 | 20 | 1000 |  | 2 |
| $v-38$ | 5 N | $9+75 \mathrm{~W}$ | 9 | 800 | 12 |  | Weak | 4 |
| $\mathrm{V}-39$ | 17 E | 0+90 S | 30 | 700 | 17 | 1000 ? |  | 2 |
| $\mathrm{V}-40$ | 11 E | $4+00 \mathrm{~S}$ | 34 | 320 | 8 | 1000 |  | 2 |
| V-41 | 7 E | $5+75$ S | 53 | 400 | 25 | variable | Coincides to ano.E.M.II. \#8 | 2 |
| V-42 | 1 E | $7+60 \mathrm{~S}$ | 42 | 1050 | 25 | 3000 | $\begin{aligned} & \text { Coincides to ano. E.M.H. } 155 \\ & \text { on lines o and } \end{aligned}$ | 2 |
| V-43 | 1 W | $5+80 \mathrm{~S}$ | 7 | 100 | 18 |  | Weak, doubtfull | 4 |
| V-44 | 8 N | $4+60 \mathrm{~S}$ | 1.5 | 100 | 23 | 100 |  | 3 |
| $\mathrm{V}-45$ | 20 E | $1+00 \mathrm{~s}$ | 10 | 250 | 15 | contact |  | 4 |
| $\mathrm{V}-46$ | 18 E | $2+75 \mathrm{~S}$ | 27 | 300 | 20 | 500 | Better on line 18 E | 2 |
| $V-47$ | 13 E | $4+00 . \mathrm{S}$ | 13 | 500 | 15 | variable |  | 3 |
| V-48 | 17 E | $4+30 \mathrm{~s}$ | 7 | 150 | 15 | 3000 | Weak | 3 |
| V-49 | 15 E | $5+15 \mathrm{~S}$ | 8 | 110 | 10 | 3000 | On extension of \# 48 | 3 |
| V-50 | 10 E | $6+40 \mathrm{~S}$ | 26 | 700 | 20 | contact? | Topo? | 3 |
| V-51 | 9 E | $5+65 \mathrm{~s}$ | 7 | 180 | 8 | contact ? |  | 4 |
| V-52 | 1 E | $8+80 \mathrm{~S}$ | 10 | 90 | 12 | ? | Weak | 4 |
| $\mathrm{V}-53$ | 0 | $10+00 \mathrm{~S}$ | 8 | 250 | 15 |  | Weak, doubtfull | 4 |
| V-54 | 1 W | $8+50 \mathrm{~S}$ | 20 | 150 | 15 |  |  | 3 |
| $v-55$ | 21 E | $5+50 \mathrm{~S}$ | 7 | 120 | 7 | Neg. | Weak | 4 |
| $\mathrm{V}-56$ | 20 E | $11+30 \mathrm{~S}$ | 8 | 150 | 15 |  | Weak | 4 |
| $V-57$ | 17 E | $10+50 \mathrm{~S}$ | 35 | 200 | 15 | contact |  | 2 |
| $v-58$ | 15 E | $7+50 \mathrm{~S}$ | 14 | 300 | 25 | variable |  | 3 |
| $V-59$ | 4 E | $10+80 \mathrm{~S}$ | 8 | 230 | 22 |  | Weak | 4 |
| T-60] | 3 E | $10+25 s$ | 3 | 150 | 12 |  | Weak, doubtfull | 4 |

## DESCRIPTION OF V.L.F, ANOMALIES

(NAA)
Region: Zenmac Mine Area PN $6 / 3$
District of Thunder Bay

| No. <br> Ano- <br> maly | Line |
| :--- | :--- |


| $\left\lvert\, \begin{gathered} \text { Intensity } \\ \text { Peak } \\ \text { to Peak } \end{gathered}\right.$ | Iength <br> (metres) | bepth interpreted $\qquad$ | Magnetic association |
| :---: | :---: | :---: | :---: |

Notes $|$| N |
| :---: |
| 0 |
| 0 |
| 0 |
| 0 |

| V-61 | 1 S | $3+25 \mathrm{~W}$ | 10 | 1100 | 7 | variable |  | 3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| V-62 | 3 N | $3+10 \mathrm{~W}$ | 7 | 300 | 12 |  | Weak | 4 |
| V-63 | 0 | 0+60 W | 11 | 300 | 16 |  |  | 3 |
| $\mathrm{V}-64$ | 1 S | $4+15 \mathrm{~W}$ | 13 | 300 | 13 | variable |  | 4 |
| V-65 | 2 S | $0+75 \mathrm{~W}$ | 8 | 200 | 12 |  |  | 4 |
| V-66 | 6 S | 1+90 W | 14 | 280 | 25 |  |  | 3 |
| V-67 | 5 S | 0+75 W | 13 | 150 | 10 | 100 |  | 3 |
| V-68 | 8 S | $2+00 \mathrm{~W}$ | 49 | 650 | 20 | 500 | Coincides to ano.E.M.H. \#9 | 2 |
| V-69 | 12 S | 0+80 W | 15 | 450 | 20 | contact |  | 3 |
| $\mathrm{V}-70$ | 11 s | 1+50 W | 11 | 200 | 15 |  |  | 3 |
| V-71 | 15 S | 1+40 W | 11 | 180 | 18 | 2000 |  | 2 |
| $\mathrm{V}-72$ | 15 S | 0+75 W | 7 | 300 | 12 |  | Doubtfull | 4 |
| $\mathrm{v}-73$ | 15 E | $16+50 \mathrm{~s}$ | 12 | 600 | 15 | 100 |  | 3 |
| $\mathrm{V}-74$ | 16 E | $19+35 \mathrm{~S}$ | 30 | 200 | 20 | contact |  | 3 |
| v-75 | 14 E | $18+10 \mathrm{~s}$ | 5 | 250 | 12 |  |  | 4 |
| V-76 | 13 E | $14+75 \mathrm{~S}$ | 25 | 100 | 10 | 30 |  | 3 |
| V-77 | 7 E | $13+90 \mathrm{~s}$ | 12 | 280 | 20 |  |  | 3 |
| V-78 | 4 E | $13+20 \mathrm{~S}$ | 26 | 820 | 16 | variable | Coincides to ano. E.M.H. NoS. 6 and | 2 |
| v-79 | 3 E | $13+95 \mathrm{~S}$ | 10 | 120 | 12 | 30 |  | 3 |
| $\mathrm{V}-80$ | 0 | $13+20 \mathrm{~S}$ | 7 | 200 | 13 |  |  | 4 |
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# $3 E \int \begin{aligned} & \angle A \\ & \text { PAYSTOUE } \\ & \text { LOGIOUE } \\ & O\end{aligned}$ 

## STATEMENT FOR ASSESSMENT WORK

I, Clermont Lavoie, certify to the following.

Electromagnetic 'E.M.H. (98.44 km) survey, electromagnetic V.L.F. survey with NAA station ( 101.24 km ) combined with a magnetic survey ( 106.54 km ) were carried out by one of my crews during the period of September list to September 30th, 1980.

Part of the following claims, owned by Falconbridge Copper Limited, in the Thunder Bay District, was covered, These claims are located 13 miles North of the town of Schreiber, province of Ontario.

| R-721 to R-724 incl. | 102793 to 102794 incl. |
| ---: | :--- | :--- |
| 9300 to 9301 incl. | 102797 to 102799 incl. |
| 9317 to 9320 incl. | 102803 to 102804 incl. |
| 42152 to 42153 incl. | 102808 to 102809 incl. |
| 42155 to 42163 incl. | 102813 to 102814 incl. |
| 42277 to 42278 incl. | 102817 to 102818 incl. |
| 88531 to 88532 incl. | 535914 to 535919 incl. |

E.M.H.: Maxmin II, frequency: 888 and $3,555 \mathrm{~Hz}$.

Cable: 100 metres. Sensitivity: 1\%.
E.M.: V.L.F. (NAA) station, facing North) Instrument: Geonics EM-16. Sensitivity: 1\%

Mag.: Instrument: Proton magnetometer. Geometrics G-816. Sensitivity: 1 gamma.

Operators: ( 30 days) Gilles Bacon, 94 Cloutier, Val diOr, Que. (30 days) Mario Forties, D'Alembert, Que. (30 days) Michel Gyepeau, Aye. A, Amos, Que. Respectful submitted,


900

Type of Surveys) LINECUTTING, MAGNETOMETER, VLF, MAXMIN II
Township or Area PAYS PLAT M-2522

Claim Holder (s) CORPORATION FALCONBRIDGE COPPER P.O. BOX 40, COMMERCE COURT, TORONTO, ONTARLO

Survey Company GEOLA LTEE
Author of Report CLERMONT LAVOIE PhD.
Address of Author 109 CLICHE ST. VAL D'OR, QUEBEC
Covering Dates of Survey JULY 1, 1980 ~ NOVBMBER, 1980
Total Miles of Line Cut 115 KILOMETERS


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


Res. Geol. $\qquad$ Qualifications
 Previous Surveys


TOTAL CLAIMS

6

## GEOPHYSICAL TECHNICAL DATA

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

Number of Stations $\qquad$ Number of Readings $\quad 2,300$
Station interval $12.5 \mathrm{~m}, \quad 25 \mathrm{~m}$ Line spacing $\quad 100 \mathrm{~m}$
Profile scale $1 \mathrm{~cm}-10 \%$
Contour interval $10 \%$ VLF, 50 and 100 ,Gammas, Magnetometer
Instrument GEOMETRICS G-816
Accuracy - Scale constant - 1 gamma
Diurnal correction method Loop Method
Base Station check-in interval (hours) One
Base Station location and value._Intersection of Cross Lines and Base Line. Values
variable.

Instrument Geonics EM-16, Apex Parametric MaxMin_II
Coil configuration $N / A \longrightarrow$ Horizontal
Coil separation $N / A \quad, \quad 100 \mathrm{~m}$
Accuracy $\quad 1 \% \quad 1 \%$
Method: (1) Fixed transmitter $\quad \square$ Shoot back (2) $\Delta x$ In line $\square$ Parallel line
Frequency (1)NAA, Cutler, Maine (2) 888 Hz and 3555 Hz (specify V.L.F. station)
Parameters measured (1) In phase, \&Quadrature

Instrument $\qquad$
Scale constant $\qquad$
Corrections made $\qquad$
$\qquad$
Base station value and location $\qquad$

Elevation accuracy

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

- Off time $\qquad$ Range $\qquad$

> - Delay time

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

Rope Lake M. 2525

||||||||||||||||||||||||||||||||||

PAYS PLAT LAKE DISTRICT OF
THUNDER BAY

THUNDER BAY
MINING DIVISION
SCALE: $1-1 \mathrm{NCH}=40 \mathrm{CHAINS}$

2.3859






