## GEOPHYSICAL REPORT

FOR
FALCONBRIDGE LIMITED
ON THE
MANN BELT
GRID \#HAN96-02
HANNA TOWNSHIP, PORCUPINE MINING DIVISION NORTHEASTERN ONTARIO

2. 16641

Qual. $\# 2.3943$
PREPARED BY: J.C.Grant, CET, FGAC
March, 1996


## TABLE OF CONTENTS

PAGE
INTRODUCTION ..... 1
PROPERTY LOCATION AND ACCESS ..... 1
CLAIM GROUP ..... 1
PERSONNEL ..... 2
LINECUTTING PRGGRAM ..... 2
GECPHYSICAL PROGRAM ..... 2,3
SURVEY RESULTS ..... 3,4
CONCLUSIONS AND RECOMMENDATIONS ..... 4
CERTiFICATE
APPENDICIES: A: BRGM OMNI IV SYSTEM SPECIFICATIONSB: APEX PARAMETRICS, MAXMIN 11 SYSTEM
LIST OF FIGURES: FIGURE l, LOCATION MAPFIGURE 2, PROPERTY LOCATION MAPFIGURE 3, CLAIM MAP
POCKET MAPS: CONTOURED MAGNETIC MAP MAXMIN 444 HZ PROFILE MAP MAXMIN 1777HZ PROFILE MAP

## INTRODUCTION

The services of Exsics Exploration Limited were retained by Falconbridge Limited to complete a line cutting and geophysical program on a group of claims located in Hanna Township, Grid \#llan96-02, of the Porcupine Mining Division in Norteastern Ontario. Figure 1 and 2.

The purpose of this program was to locate and outline airborne targets in an area which was considered favourable for base metal deposition.

The linecutting of the grid began on January 15 th, 1996 and was completed on January 30 th, 1996. The geophysics was started on the 4 th of March and was completed on the 7 th of March, 1996. In all, a total of 12.5 kilometers of grid lines were established on the claim group.

## PROPERTY LOCATION AND ACCESS

Grid, Han96-02, is located in the southwest section of Hanna Township such that the grid stratties the Reaume and Hanna Township line. The Fredrick House River is situated approximately 2 kilometers to the east of the grid. The entire grid is located approximately 32 kilometers northwest of the Town of Iroquois Falls. Figures 1 and 2.

Access to the grid during the survey period was ideal. Falconbridge Limited has plowed open a road which follows the concession line between Concession $V$ and $V$ of Mann Township. This road is opened to the Bridge across the Fredrick House River. A second plowed road was then opened north after the bridge crossing and provides drivable access to the south of the grid. A short skidoo ride from this point will access the south section of the grid. Travelling time from Timmins to the grid is approximately 1.8 hours.

## CLAIM GROUP

The claim numbers which were partially covered by the grid are as follows.

$$
\text { P-1201960 } \quad 16 \text { units }
$$

Refer to figure 3, copied from the MNDM Plan map \#G-3507, of Hanna Township, scale $1: 20,000$.




## PERSONNEL

The field crew directly responsible for the collection of all data were as follows:

Robin Mathieu........Timmins, Ontario
Todd Mathieu.........Timmins, Ontario
Richard Mathieu......Timmins, Ontario
The geophysical program was completed under the direct supervision of J.C.Grant and all plotting and computor compilation was completed by P. Gauthier of Exsics.

## LINECUTTING PROGRAM

The grid consisted of 100 meter line spacing and 25 meter station spacing. The baseline was turned off from a starting point which had been located earlier by Falconbridge personnel. The basline was cut at 270 degrees from line 400 mE to 300 MW and line $0+00$ represents the township line. The lines were chained from the baseline to tieline 1300 MS which represents the south boundary of the grid. A tieline 700 MS was also cut to contol these cross lines. All of the cut lines were chained with 25 meter pickets. In all, a total of 12.5 kilometers were cut and chained.

## GEOPHYSICAL PROGRAM

This program consisted of a total field magnetic survey done in conjuction with a Horizontal Loop, electromagnetic, HLEM, survey. The magnetic survey was completed on the entire cut grid however the HLEM survey was completed on the cross lines only.

The magnetic survey was completed using the BRGM, OMNI IV system. Specifications for this system can be found as Appendix A of this report. The HLEM survey was completed using the Apex Parameterics, MaxMIn II system. Specifications for this system can be found as Appendix $B$ of this report.

## MAGNETIC SURVEY:



The collected, corrected and levelled data was then plotted directly onto a base map at a scale of 1:5000 and then contoured at 5 gamma intervals where possible. A copy of this base map is included in the back pocket of this report.

HLEM SURVEY:
The following parameters were kept constant throughout the survey.


The collected data was then plotted directly onto a base map at a scale of 1:5000, one base map for each frequency, and then profiled at lcm to $+/-20 \%$. An interpretation for each line of the conductor was done as far as depth to source and apparent conductivity in Mhos and was put directly onto the base map. A copy of these base maps are included in the back pocket of this report.

## SURVEY RESULTS

The geophysical surveys were successful in locating and outlining several conductive zones on the grid. Each of the zones has been labelled and will be discussed seperately and in detail.

ZONE A:
This zone represents the most predominant feature on the grid. It appears to relate to a good bedrock conductor situated at a depth of 55 to 65 meters and with a conductivity of 7 to 38 mhos. The magnetic survey suggest the zone has a magnetic low association and that it appears to have been cross cut by two structures. One north-south structure appears to parallel line l00mE and interrupts the strike of the zone. There seems to be a second northwest southeast structure striking across lines 400 ME to 100 MW which appears to have been faulted off on it's northwest extension by a weak mag low paralleling line loomw possibly suggesting a minor fault structure. The best portion of the zone strikes across lines lOOME to 400 ME and continues off of the grid to the east.

ZONE B:
This zone represents a single line response situated on line 100MW at 775 MS . It may relate to a bedrock conductor situated at a depth of 63 meters and with moderate conductivity of 5 mhos. The magnetics show a moderate low association with the target and also suggest the zone is situated at the junction of the northwest cross structure and suspected north-south fault zone. The zone infact, may relate to these two structures.

ZONE C:
This zone strikes across the north ends of lines 200ME to 400ME and appears to continue off of the grid to the east. At this writing it is a questionable zone due to the lack of northern coverage. The magnetic surveys outlined a north-south structure again paralleling line 400 ME suggesting a dike like feature. The zone appears to strike across this structure.

The remaining conductive zones are situated on lines 300 MW and 200 Mw and may extend as far as the weak zone on line $0+00$. Again at this writing, the zone are weak and questionable. The western extension of the zone has a weak magnetic high associatior and a spot weak high value on it's eastern tip.

## CONCLUSIONS AND RECOMMENDATIONS

The surveys were successful in locating and outlining one good strong bedrock conductor which should be followed up by drilling. The magnetic survey would suggest the grid has been cross cut by two dike like or fault related zones. Both of these cross structures appear to have interrupted or distorted the strike of the conductive zones.

Should drilling of the main $A$ zone return encouraging results, then the remaining targets should be considered for further followup work. This follow-up program should include the reading of the east west tie lines and baseline in the event the cross structures noted on the magnetics, are conductive. Zone $B$ would suggest they may be.

Respectfully submitted
J.C.Grant, CET, FGAC. February, 1996.


## CERTIFICATE

I, John C. Grant, hereby certify that:

1) I am a graduate qeophysicist (1975) of the three year program in Geological Technology at Cambrian College of Apolied Arts and Technology, Sudbury, Campus. I have worked subsequentely as an Exploration Geophysicist for Teck Exploration Limited (5 years), North Bay office, and as Exploration Manaqer and Geophysicist for Exsics Exploration Limited from 1980 to present.
2) I am a Member of the Certified Enqineering Technologist Association since 1984.
3) I am a member of the Geological Association of Canada.
4) I have been actively engaged in my profession for the last twenty (20) years, inciuding all aspects of exploration studies, surveys and interpretations.
5) I have no specific or special interest in the described property. I have been retained as a Consulting Geophysicist by the claim holders.

John Charles Grant, CET, FGAC



Four Magnetometers in One
Self Correcting for Diurnal Variations
Reduced Instrumentation Requirements
25\% Weight Reduction
User Friendly Keypad Operation
Universal Computer Interface
Comprehensive Software Packages

| specifications <br> Dvnamic Range |  |
| :---: | :---: |
| Tuning Method | Tuning value is calculated accurately utilizing a specially developed tuning algorithm |
| , tomatic Fine Tuning | $\pm 15 \%$ relative to ambient field strength of last stored value |
| Display Resolution | 0.1 gamma |
| F'rcessing Sensitivity | $\pm 0.02$ gamma |
| ¢ tistrical Error Resolution | 0.01 gamma |
| ausolute Accuracy | $\pm 1$ gamma at 50,000 gammas at $23^{\circ} \mathrm{C}$ |
| ؛ indard Memory Capacity |  |
| rotal Field or Gradient | 1,200 data blocks or sets of readings |
| fie-Line points | 100 data blocks or sets of readings |
| base station | 5.000 data blocks or sets of readings |
| [ play ............... | Custom-designed, ruggedized liquid crystal display with an operating temperature range from $-40^{\circ} \mathrm{C}$ to $+55^{\circ} \mathrm{C}$. The display contains six numeric digits, decimal point, battery status monitor, signal decay rate and signal amplitude monitor and function descriptors. |
| F 232 Serial I/0 interface | 2400 baud. 8 data bits, 2 stop bits, no parity |
| Gradient Tolerance | 6,000 gammas per meter (field proven) |
| Test Mode | A. Diagnostic testing (data and programmable memory B. Self Test (hardware) |
| $\leq$ rsor | Optimized miniature design. Magnetic |
| Gradient Sensors | consistent with the specified absolute accuracy. |
|  | 0.5 meter sensor separation (standard), normalized to gammas/meter. Optional 1.0 meter sensor separation available. Horizontal sensors optional. |
| Sensor Cable | Remains flexible in temperature range specified, includes |
| C :ling Time (Base station Mode) | strain-relief connector |
|  | Programmable from 5 seconds up to 60 min |
| Operating Environmental Range <br> P ner Supply |  |
|  | Non-magnetic rechargeable sealed lead-acia battery cartridge or belt; rechargeable Nicad or Disposable battery cartridge or belt: or 12V DC power source option for base station operation |
|  | 2,000 to 5,000 readings, for sealed lead acid power supply. depending upon ambient temperature and rate of readings |
| Weights and Dimensions readings |  |
| istrument Console Only | $2.8 \mathrm{~kg} .238 \times 150 \times 250 \mathrm{~mm}$ |
| iCad or Alkaline Battery Cartridge | $1.2 \mathrm{~kg} .235 \times 105 \times 90 \mathrm{~mm}$ |
| Nicad or Alkaline Battery Belt | . $1.2 \mathrm{~kg}, 540 \times 100 \times 40 \mathrm{~mm}$ |
| Lead-Acid Battery Cartridge | $1.8 \mathrm{~kg}, 235 \times 105 \times 90 \mathrm{~mm}$ |
| 3ad-Acid Battery Belt | $1.8 \mathrm{~kg}, 540 \times 100 \times 40 \mathrm{~mm}$ |
| Cradient Sensor |  |
|  |  |
| 10.5 m separation-standard) radient Sensor | $2.1 \mathbf{k g}, 56 \mathrm{~mm}$ diameter $\times 790 \mathrm{~mm}$ |
| 11.0 m separation-optionan | $2.2 \mathrm{~kg}, 56 \mathrm{~mm}$ diameter $\times 1300 \mathrm{~mm}$ |
| Standara System Complement | instrument console; sensor: 3 -meter cable, aluminum sectional sensor staff, power supdy, harness assembly. operations manual |
| dase Station Option | standara system plus 30 meter cable |
| Gradiometer Option | Standard system plus 0.5 meter sensor |

[^0]
## APPENDIX B



Five frequencies: 2e2, 444, 883,1777 and 3555 Hz . Maximum coupled (horizontal-loop Joperation with reference cable.

Minimum coupled operation with reference cable. Vertical-loop operation without reference cable. Coil separations: 25, 50, 100, 150, 200 and 250 m [with cable 3 or $700,200,300,400,600$ and 800 ft.
Reliable data from depths of up to 180m cGODft. Built-in voice communication circuitry with cable. Tilt meters to control coil orientation.




## Minuty of Northem Deverepmen

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 Susbury, Onterta.

Instructions:
900


Work Pertormed (Check One Work Greep Oniy)


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| Neme | notroe |
| :---: | :---: |
| Exsics Exploration LTd. | Po. Box 1880 Suite 13 Hollinger Bidg. Cimmins, Ont. |
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Certincation of Benerietal moterued - sio Mote Mo. 1 on reverse sude





Credits you are claiming in this report may be cut back. In order to minimize the adverse effects of such deletions, please indicate from which claims you wish to priorize the deletion of credits. Please mark ( $r$ ) one of the following:

1. $\square$ Credits are to be cut back starting with the claim listed last, working backwards.
2. $\square$ Credits are to be cut back equally over all claims contained in this report of work.
3. Credits are to be cut back as priorized on the attached appendix.

P1201960
In the event that you have not specilied your choice of priority, option one will be implemented.

Note 1: Examples of beneficlal interest are unrecorded transfers, option agreements, memorandum of agreements, etc., with respect to the mining claims.

Note 2: If work has been performed on patented or leased land, please complete the following:

| I certity that the recorded holder had a beneficial interest in tre patented | Signature |
| :--- | :--- |
| or !eased land at the time the work was petormed. |  |

N．．i s．iy

日n・ー rinnto－ue


État des coûts aux filns du crédit d＇évaluation


Porsonal information collecied on this lorm is oblalned under the authorily of the Mining Act．This informallon will be used lo malnialn a record and ongoing status of the mining claim（s）．Ouestions aboul this collection should te directed to the Provinclal Manager．Minings Lande，Ministry of Northern Development and Mines，41h Floor， 159 Codar Street，Sudbury．Ontario PJE 6A5，Ielephone（705）870．7264．

Les renselgnements personnels contenus dans la presente formule son recueilis en vertu de la Lol sur les mines el serviront a lenlr a four un registre des concessions minleres．Adresser toute quesiton sur la collece de ces renselgnements au chel provincial des lerralns miniers，ministere du Osvoloppement du Nord of des Minas， 159 rue Ceder iés，ministite du （Ontario）P3E 6A5，1016phone（705）670．7264．

## 1．Direct Costs／Couts directs

| Typo | Doseciplion | ${ }_{\text {Mmoun }}$ | Total ${ }_{\text {Tolatioal }}$ |
| :---: | :---: | :---: | :---: |
| WagesSalaires | Lebour Malliosouvre | 300 |  |
|  | Fleld Supervision Supeniston sur lo terrain | 300 | $60{ }^{\circ}$ |
| Contractor＇： and Consulien Drolt Drolts del＇entrepre et de l＇expert consel | Linecutting | 3544 | $\begin{aligned} & \text { Imvoice" } \\ & 403 . \\ & 407 \end{aligned}$ |
|  | HLEM | 3117 |  |
|  | Mag |  | 6661 |
| Supplies Used Fournltures ullilstes | Flagging | 10 |  |
|  | Pieket tags | 48 |  |
|  |  |  | 58 |
| $\begin{array}{\|l} \hline \text { Equipment } \\ \text { Rental } \\ \text { Locatlon de } \\ \text { maldéret } \end{array}$ | $\begin{aligned} & \text { Trop } \\ & \text { Truck } \end{aligned}$ | 100 |  |
|  | Snow mobile | 50 |  |
|  |  |  | $150^{\circ}$ |
| Total Direct CosisTotal des coots directs |  |  | 7469 |

Nole：The rocorded holder will be required to verify expendtures claimed in this statement of costs within 30 days of a request lor verlication．If verlication is nol made，the Minister may reject for assessment work all or part of the assessment work submilted．


Note ：Le tilulaire enregistres sera tenu de virlier les dépenses demandies dans le présent étal des cofis dans les 30 jours sutvant une demande à cel eliel．Sila vérificallon n＇est pas eflectuée，le ministre peul rejeter toul ou une partie des travaux d＇óvaluation préseniés．

Filling Discounts

1．Work filed within Iwo years of completion is claimed at $100 \%$ of the above Tolal Value of Assessment Credit．

2．Work filed three，four or flve years after completion is claimed at $50 \%$ of the above Total Value of Assessment Credit．See calculations below：

| Total Value ol Assessment Credt |
| ---: | :--- |
| $\times 0.50-\quad$ Total Assessment Clalmed |

## Certificatlon Verliying Statement of Costs

I heroby cerlify：
that the amounts shown are as accurate as possible and these cosis were incurred while conducting assessment work on the lands shown on the accompanying Report of Work lorm．


に rake this certi！calion

## Remlses pour dépót

1．Les travaux déposés dans les deux ans suivant leur achévement sont femboursés à $100 \%$ de la valeur totale susmentionnée du crédil d＇évaluation．

2．Les travaux déposés trois，quatre ou cinq ans aprés leur achévement sont rembourses a 50 \％de la valeur totale du crédit d＇evaluation susmenilonne．Volr les caiculs ci－dessous．

|  | Evaluation totale domandre |
| :---: | :---: |
| $\times 0,50=$ |  |

## Attestatlon de l＇état des coats

J＇alteste par la présente：
que les montants indlqués sont te plus exact possible et que ces dépenses ont été engagées pour eflectuer les travaux d＇évaluallon sur les terrains indiqués dans la formule de rapport de travail cl．joint．

à laire celle alies！alion．



## EXSICS EXPLORATION LIMITED <br> CONTRACTING \& CONSULTING GEOPHYSICS

Tel. (705) 267-4151 Fax (705) 264-5790

P.O. Box 1880<br>Timmins. Ontario P4N7X1

### 2.16641

INVOICE \#:403 PROJECT \#:E-146

| ON ACCOUNT WITH: | Falconbridge Limited <br> P.O. Box ll40 <br> Timmins, Ontario | RECEIVED |
| :--- | :--- | :---: |
| Attention: Paul Negerl | JUL 5 1996 |  |
| MINING LANDS BRANCH |  |  |

G.S.T. REGISTRATION \# 113433791

RE: Linecutting on grids in Hanna, 96-02, 96-03,96-04

AT A RATE OF:

| 96-02, 12.5 kilometers | e $\$ 265.00 / \mathrm{km}$. | \$3312.50 |
| :---: | :---: | :---: |
| 96-03, 20.5 kilometers | @ $\$ 265.00 / \mathrm{km}$. | \$5432.50 |
| 96-04, 12.8 kilometers | e $\$ 265.00 / \mathrm{km}$. | \$3392.00 |
|  | sub-total | \$12137.00 |
|  | 7\% GST | \$ 849.59 |
|  | sub-total | \$12986.59 |
| oxes of tags, | ST, GST Incl | \$ 207.00 |
| TOTAL OF THIS INVOICE: |  | \$13193.59 |

DATE: February 7, 1996


PAYMENT DUE UPON RECEIPT OF INVOICE.
TERMS: NET 30, $2 \%$ INTEREST PER MONTH ON OVERDUE ACCOUNTS.


## EXSICS EXPLORATION LIMITED

CONTRACTING \& CONSULTING GEOPHYSICS

Tel. (705) 267-4151
Fax (705) $264-5790$

## P.O. Box 1880

Timmins. Ontario P4N 7X1 P.O. Box 1140 Timmins, Ontario PAN 7H9


INVOICE \#:407 PROJECT :E-146

## RECEIVED

Il 51996
MINING LANDS BRANCH
ATTENTION: Paul Sager
G.S.T. REGISTRATION \# 113433791
RE: Max Min and Magnetic Survey on Hanna Han 96-02, 96-03
AT A RATE OF:
96-02
10.4 Km of Max Min e $\$ 160.00 / \mathrm{Km} \quad \$ 1,664.00$
12.5 Km of Magnetic e $\$ 100.00 / \mathrm{Km}$
$\$ 1,250.00$
7\% GST
\$2,914.00
$5 \quad 203.98$

$\$$| 203.98 |
| :--- |
| 117.98 |

96-03
16.0 Km of Max Min e $\$ 160.00 \quad \$ 2,560.00$
20.5 Km of Magnetics © $\$ 100 / \mathrm{Km}$
$\$ 2,050.00$
7\% GST
$\$ 4,610.00$
$\$ \quad 322.70$
$\$ 4,932.70$
TOTAL OF THIS INVOICE:
$\$ 8,050.68$

DATE: February li, 1996
signed filar talon

PAYMENT DUE UPON RECEIPT OF INVOICE. TERMS: NET 30, 28 INTEREST PER MONTH ON OVERDUE ACCOUNTS.

## (8) Ontario

Ministry of
Northern Development and Mines

Ministère du Développement du Norad et dis Mines

July 19, 1996

```
Geoscience Assessment Office
                                    933 Ramsey Lake Road
                                    6th Floor
                                    Sudbury, Ontario
                                    P3E 6B5
                                    Telephone: (705) 670-5853
                                    Fax: (705) 670-5863
                                    Our File: 2.16641
                                    Transaction f: W9660.00298
```

```
Mining Recorder
Ministry of Northern Development & Mines
60 Wilson Avenue, 1st Floor
Timmins, Ontario
P4N 2S7
Dear Mr. White:
8UBJECT: APPROVAL OF ASSESSMENT WORK CREDIT ON MINING LAND,
CLAIM P. 1201960 IN HANNA TOWNSHIP
```

Assessment work credit has been approved as outlined on the Declaration of Assessment Work Form accompanying this submission. The credit has been approved under Section 14, Geophysics (MAG \& EM), of the Assessment Work Regulation.

The approval date is July 18, 1996.
If you have any questions regarding this correspondence, please contact Lucille Jerome at (705) 670-5858.

Yours sincerely,
ORIGINAL SIGNED BY:


Ron C. Gashinski
Senior Manager, Mining Lands Section
Mines and Minerals Division
fillifif
cc: Resident Geologist
Timmins, Ontario







[^0]:    ED A instruments inc 4 Thorncliffe Park Drive Toronto. Ontario
    Tetex: 0623222 EDA TOR Cable: Instruments toronto
    1416) 4257800
    $\operatorname{In}$ U.S.A
    ED A instruments inc
    ED A instruments
    5151 Ward Road

