REPORT ON

MAGNETOMETRIC AND ELECTROMAGNETIC SURVEYS

MONTREAL RIVER PROJECT

GRID DESBIEN 2-82

DESBIEN TOWNSHIP

ON BEHALF OF

NORANDA EXPLORATION LTD

REPORT NO: E-8340

Val d'Or, Quebec.
April 1983.

Maurice Giroux,
Geologist.
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INTRODUCTION

During April 1983, a geophysical crew, under the direction of the author, carried out magnetometric and electromagnetic surveys over grid Desbien-82, Montreal R. Project, Desbien Township, Ontario, on behalf of Noranda Exploration Ltd.

The grid is located north of Desbien Township, Ontario, some 70 kilometer north-east of Sault Ste-Marie. The property is only accessible by helicopter from lumber road about 16 km south-east.

The claims covered by this survey are registered with the Ministry of Natural Resources of Ontario under the following claim numbers:

CLAIMS LICENCES NUMBERS

9507, 9508, 9509, 9510, 9511,
9512, 9513, 9514, 9515

The purpose of this survey was to outline and investigate Input anomalies. These anomalies were first outlined from an airborne survey carried out previously.

The grid consisted of a total of 14.1 km of lines and base line, oriented N140° at 100 m centers. A total of 12.8 line km of electromagnetic and magnetometric surveying were carried out over this grid.

The instrument used for the electromagnetic survey was an Apex Maxmin II, horizontal loop, electromagnetic unit operating at frequencies of 444 Hz and 1777 Hz with a coil separation of 100 meters. The magnetometric survey was carried out using a Scintrex, Model MP-2, Portable Proton Magnetometer, which measures the earth's total field with a sensitivity of 1.0 gamma. Base stations for diurnal corrections were established along the base line.
Concentrations of minerals having magnetic susceptibility will give rise to variations in the earth's magnetic field. The data obtained by systematic observation of the intensity of the earth's magnetic field has been contoured and the results show magnetic patterns or anomalies. Minerals having strong magnetic susceptibility are generally magnetite or 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.

Electromagnetic methods are capable of delineating zones of conductivity that could represent massive concentration of minerals having metallic conductive properties. Such minerals are pyrite, pyrrhotite, chalcopyrite (but not sphalerite) and graphite. It is rarely possible, from E.M. data alone, to differentiate between these various sources of conductivity.

DISCUSSION OF RESULTS

Magnetic survey:

One (1) drawing shows the magnetometric data on a horizontal scale of 1:2500. The magnetometric data has been contoured and shows magnetic patterns or anomalies.

East of the base line, we observed few magnetic heights which have a rough trend of N165°. The rest of the surveyed area is relatively uniform with few exception.

Electromagnetic survey:

Two (2) drawings show the electromagnetic data on a horizontal scale of 1:2500 for both the 444 Hz and 1777 Hz frequencies. The solid profile represents the in-phase data while the dashed profile represents the out-of-phase data. Both the in-phase and out-of-phase data are plotted on a scale of 1 cm = 10%.
The survey has outlined 3 major conductive zones labelled zones 1, 2 and 3 and will be described in turn:

ZONE # 1

This zone is located in the center of the surveyed area, south of the base line and has an excellent response on both the 444 Hz and 1777 Hz frequencies. The following parameters have been established on line 3W for the 1777 Hz frequency:

- **Strike:** N155°
- **Length:** 600 meters
- **Width:** 15 meters
- **Depth:** 4 meters
- **Dip:** 60° SW
- **Conductivity:** 6.7 mhos
- **Magnetic association:** 23 Y

The most probable explanation for the observed results is a shallow tabular body of conductive minerals having no magnetic properties such as graphite or non-magnetic sulphides.

In order to sample this zone by diamond drilling, the following drill hole location is suggested:

- **Collar:** L3W, 3 + 75S
- **Azimuth:** N50°E
- **Dip:** -45°
- **Depth:** 75 meters

ZONE # 2

This zone is located just south and parallel to zone # 1. It has good response on both frequencies and the following parameters have been established on line 2 W for the 1777 Hz frequency:
Strike: N155°
Length: 200 meters
Width: 15 meters
Depth: 5 meters
Dip: 70° N.E.
Conductivity: 6d = 4 mhos
Magnetic association: 32 ¥

This conductor has most likely the same nature then conductor # 1 and the following drill hole location is suggested:

Collar: L2W, 5 + 62.55
Azimuth: N230°
Dip: -45°
Depth: 75 meters

ZONE # 3

This zone is located north of the base line and has weak response on both frequencies. The following parameters were established on line 1W for the 1777 Hz frequency:

Strike: N165°
Length: 400 meters
Width: 20 meters
Depth: ≈ 40 meters
Dip: Sub-vertical
Conductivity: 6d = 9 mhos
Magnetic association: 329 ¥

The most probable explanation for the observed results is a deep tabular body containing massive conductive minerals.

In order to sample this zone by diamond drilling, the following drill hole location is suggested:

.../5
CONCLUSION

The present survey has adequately outlined three (3) conductive zones labelled 1, 2 and 3. Those zones have been interpreted in accordance with the results obtained. Three (3) drill holes were suggested to sample the anomalies. Sulphides and/or graphite are suggested as the likely source of conductivity.

Respectfully submitted,

MG:cs1
830502

Maurice Giroux, Geologist.
For additional information see maps:

Desbiens - 0014 #1

#2

#3
REMÈS.

M. GIVOGUE

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NORANDA EXPLORATION LTD

TITLE

ELECTROMAGNETIC SURVEY

PROJECT

DESBIEU 2-82

444 Hz.

LEGEND - LEGEND

COMPONANT EN PHASE DU CHAMP E M PRIMAIRE. IN PHASE COMPONENT OF PRIMARY E M FIELD.

COMPONANT EN QUADRAATURE DU CHAMP E M PRIMAIRE. QUADRAATURE OF PRIMARY E M FIELD.

DELIBITATION DU CONDUCTEUR E M ET IDENTIFICATION. OUTLINE OF E M CONDUCTOR AND IDENTIFICATION.

CONDUCTEUR FAIBLE OU PROBABLE. PROBABLE OR WEAK CONDUCTOR.

EMPLACEMENT APPROXIMATIF. APPROXIMATE LOCATION.

APEX ELECTROMAGNETOMETER