LARRY NOEL GERVAIS

Frècheville - Holloway Property

Matheson Area

Frècheville & Holloway Townships, N.E. Ontario

Larder Lake Mining Division

N.T.S. 32D/12

Report on Induced Polarization Surveys

Val Senneville, Québec

December 10, 2001

Gérard Lambert, P.Eng.
Consulting Geophysicist
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<td>1:5,000</td>
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Introduction

During the month of December 2001, ground geophysical investigations consisting namely in Induced Polarization (I.P.) surveys, were carried out over the Frécheville-Holloway property in the Matheson area, for Prospector Larry Noel Gervais of Timmins.

The purpose of these surveys was to provide appropriate geoscientific information about the underlying lithologies and to map with a better accuracy the distribution of disseminated and stringer sulfides in the bedrock, these sulfides being potentially of economic interest if they are found to carry significant concentrations of base and/or precious metals. Considering the incomplete or inadequate I.P. coverage from past geophysical work, the present I.P. surveys were also meant to complement the geophysical coverage and understanding on the property.

This report describes the work done and discusses the results obtained and the interpretation of the data. Recommendations for any future work are presented in the conclusion.

The I.P. survey was carried out between Dec. 1st and Dec. 12., 2001, by crews of Rémy Bélanger Geophysics of Rouyn-Noranda, Québec.

Property description, location and access

The Frécheville-Holloway property is situated in the northeastern portion of Holloway and southeastern portion of Frécheville townships, in northeastern Ontario (Larder Lake Mining Division). The center of the survey area is located at about 48 km to the north of Larder Lake and 60 km east of Matheson. The survey area is easily accessible by vehicle, as highway 101 passes just 100 meters south of the grid. Please refer to Figures 1. and 2. on the next two pages, showing location maps of the property, at scales of 1:1,000,000 and 1:100,000 (N.T.S. 32D), respectively.
The Frècheville-Holloway property consists of a block of four contiguous unpatented mining claims, situated in Holloway and Frècheville townships. The I.P./resistivity compilation maps appended to this report illustrate the shape of the claim blocks which was covered by the present surveys and also show the property boundary, the claim lines and the claim numbers (1225218, 1225410, 1225408 and 1222454).

Description of the I.P. surveys

The Induced Polarization surveys were carried out over a grid which consisted of cut picket lines oriented north-south (000°), spaced every 200m and chained/picketed every 25m. The grid lines were turned off from base line O+00mN (Azimuth 090°) which coincides with the Frècheville-Holloway township line. Survey lines go from L-2200mW to L-000mE. The (0,0) point is located at the four corners of Frècheville-Holloway-Stoughton-Marriott townships. Tie lines 400N and 800S were also established to control the survey lines. A total of 20 kms of cut lines constitute the grid, including the base line and tie-lines.

The Phase I.P. surveys were carried out using a dipole-dipole electrode configuration. The dipole dimension was 50 meters and successive separations at multiples of n=1 to n=6 times the dipole dimensions were used, in order to investigate at depth. A total of approximately 13.4 line-km of I.P. data was thus gathered by operator Rémy Bélanger over the course of the survey.

The I.P. equipment used for the survey consisted of 1°) a Phoenix IPT-1 transmitter operating at 1.0 Hz, powered by a 2 kilowatt, model MG-2 motor generator. The phase angle (measured in milliradians) between the transmitted current and the received voltage was measured by 2°) a Phoenix Turbo V-5 Phase I.P. receiver, measuring the phase shift (induced polarization effect) and also the apparent resistivity of the earth at each "n". The phase angle is a direct measure of the polarizability or chargeability of the underlying earth.
The results of the I.P. surveys are presented in the appendix, namely in the form of **pseudo-sections** of the apparent resistivities and the measured phase angles, at the scale 1:5,000 as well as on plan maps at 1:5,000 showing respectively the contours of the apparent resistivity at \( n=2 \) and the contours of the Phase (polarization) at \( n=2 \). These plan maps also display the interpreted I.P. anomaly trends using symbols which are explained in the accompanying legend.

**Results and interpretation**

The Induced Polarization method is probably the best geophysical prospecting tool when investigating for base or precious metals in geological environments such as the Harker-Holloway mining camp. The I.P. technique is capable of mapping most types of metallic sulfides, even when they do not conduct, which is often the case with structure-hosted gold mineralization associated with disseminated and stringer sulfides in fractures. Furthermore, the I.P. technique can also discriminate between "poor" E.M. conductors associated with *electrolytic* conductivity such as porous shear zones and overburden depressions (causing no recognizable I.P. effect), and "poor" E.M. conductors caused by low-conductivity *metallic* mineralization, such as stringer sulfides or sphalerite-enriched sulfides (recognizable I.P. effect).

The apparent **resistivity** measurements often provide very useful **structural** information and greatly help in mapping major lithological contacts and faults (the latter usually expressed as more or less linear resistivity lows). The performance of the I.P. method can occasionally be hampered by conductive overburden cover such as lacustrine clays, and sources of man-made cultural noise (power lines, metallic fences, etc.) when present.
In this particular case, a 50-meter dipole dimension was chosen because of its penetration capability and its ability for outlining potentially large, deep and wide pyrite-mineralized zones having a significant depth extent. With the n=6 expanders, this 50-meter dipole-dipole I.P. survey should be able to successfully detect metallic sulphide mineralization in the bedrock to depths in excess of 100 meters.

The thickness of the overburden layer is quite variable within the survey area, but its largest range is not expected to exceed 25 to 30 meters, generally speaking.

• **Resistivity**

The resistivity pattern, as shown on the n=2 apparent resistivity colour contour map, and also on the resistivity pseudo-sections, provides a very faithful image of the relief of the bedrock surface and of the intrinsic resistivities of the underlying overburden and bedrock lithologies. Most of the high resistivity (> 2,000 ohm-meters) areas, abundant in the north portion of the grid, are most probably associated with bedrock ridges and subcrops (areas of thin overburden).

Quite often also, the definition of high resistivity zones provides help in outlining harder, more felsic rocks or hydrothermally-altered (silica and/or carbonates) horizons, a good tracer tool for metal-enriched environments.

These high resistivity zones and patches make up about one third of the survey area and are distributed according to the colour resistivity contour map (shades of red and purple) and should be visited in the field as there is a fair chance that more or new bedrock exposures will be found, hopefully helping in further understanding the geology and the structure of the property.
Elsewhere within the survey area, several low-resistivity (less than 200 ohm-meters) domains define areas where the water-soaked overburden layer probably thickens significantly, possibly up to 30-40 meters, or becomes particularly clay-rich in the areas of lowest resistivity. These areas of low resistivity are usually associated with bedrock troughs, sometimes of structural origins. Very commonly in archean terranes, low-resistivity lineaments are typically associated with major bedrock structures such as shear zones and open fracture planes.

There does not appear to exist any isolated resistivity lows that could be attributable to conductive metallic mineralization such as massive sulphides or graphite.

- **Polarization (I.P. effect)**

Referring to the I.P. pseudo-sections and the N=2 Phase (I.P.) contour map and its accompanying legend, it will be observed that the interpreted I.P. anomalies were classified according to their "strength" (i.e. the probable “massiveness” of the causative metallic material) and their degree of definition (a well-defined I.P. anomaly is one which displays a clear, unambiguous triangular shape on a pseudo-section), as well as according to the behavior of the apparent resistivity.

Conductive, semi-massive and massive metallic mineralization (graphite and/or massive sulfides) will typically cause a marked decrease in the measured apparent resistivity, in addition to a strong I.P. anomaly. So will a mineralized shear corridor carrying disseminated or stringer sulfides. As the concentration of these metallic materials decreases, the drop in the resistivity becomes more negligible, but the I.P. effect still remains. The symbols used in the interpretation of the data are explained on the compilation maps and on the pseudo-sections.
Larry Noel Gervais  Frécheville - Holloway property, I.P. surveys

The Induced Polarization measurements show the presence of two units in the bedrock exhibiting moderately anomalous I.P. behavior, distributed as linear trends oriented roughly east-west, in areas of low to moderate resistivity.

The first trend is located between lines 2200W and 1800W at or near the base line 000N and appears to remain open to the west. It is incompletely closed-off to the north. It is associated with a strong resistivity ridge and could simply be the result of high background polarization. Its proximity to the surface however allows one to anticipate that its cause may outcrop at surface and therefore warrants a ground verification.

The second anomaly trend is more interesting. It is located between 1200W and 200W at about 550S-600S. It originates from a deep source (probably around 60-75 meters), occasionally becomes wide (on lines 1200W and 400W) and is best defined on line 400W between 525S and 450S. There is a slight suggestion that the apparent resistivity decreases above this I.P. anomaly, therefore it may be due to weakly or moderately conductive metallic material (stringer sulphides, flaky graphite). The appreciable width of the response on lines 1200W and 400W makes this response appealing. This second I.P. anomaly trend deserves further testing by diamond drilling, in the view of delineating metallic sulphide mineralization in the bedrock. Drill holes should be positioned so as to intersect the mineralization at 90 to 125 meters vertically below surface.

Conclusion and recommendations

The Induced Polarization surveys which were recently completed over the Frécheville-Holloway property for Prospector Larry Noel Gervais have successfully defined one zone characterized by a well-defined, moderately strong I.P. effect, located in low resistivity environments.

With only limited knowledge of the property area, it is difficult from a geophysical point of view alone, to rate the I.P. anomalies discussed above in terms of their economic potential, especially if one is exploring the property for gold. But it is highly probable that the "strongest"
Larry Noel Gervais

I.P. anomalies on lines 1200W and 400W will probably be caused by disseminated or stringer metallic mineralization such as pyrite in the bedrock, at depths of about 60-75 meters below ground surface.

Recommending further work on this property, it is advisable to visit all the high resistivity areas in search for potentially new bedrock exposures. This will hopefully allow to obtain some lithological samples and to possibly allow an explanation for the I.P. trend along the base line on lines 2200W and 2000W.

The other anomaly trend at 500S-600S, particularly on lines 1200W and 400W deserves further investigation by means of diamond drilling, aiming at intersecting the mineralized units at about 100-125 meters below ground surface. The choice of priorities will however require some input from other sources of geoscientific information, such as airborne and ground magnetic survey maps, compilations of past work and of nearby showings and mineralized drill intersections, as well as an analysis of the magnetic relief and resistivity trends in conjunction with a regional geological and a structural compilation.

Val Senneville, Québec

December 10, 2001

Gérard Lambert, P.Eng.
Consulting Geophysicist
Note: Grid lines on subject property (claim numbers) L 1225410, L 1225454, L 1225218, L 1225408, are extended south onto (claim no.) L 1204299, L 43077, L 43079, L 43078, L 43077 approximately 400 meters south to get full I.P. survey coverage on subject claims.

recut lines ___ 10.90 kms.
freshcut lines ___ 9.10 kms.
total ___ 20.0 kms

contractor: Dave Clement

date: Dec. 04, 2001
**Work Report Summary**

Transaction No: W0280.01919  
Recording Date: 2002-DEC-13  
Approval Date: 2002-DEC-19

Client(s):
- 136071 Gervais, Larry Noel
- 177382 Obradowich, Thomas John
- 188436 Robitaille, Robert Rocky
- 298698 Iserhoff, Charles Samuel

Survey Type(s): Work Report Summary

W0280.01919 Status: APPROVED  
2002-DEC-13 Work Done from: 2001-DEC-01 to: 2001-DEC-12

GERVAIS, LARRY NOEL
OBRADOVICH, THOMAS JOHN
ROBITAILLE, ROBERT ROCKY
ISERHOFF, CHARLES SAMUEL

Survey Type(s): IP, LC

**Work Report Details:**

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| Totals | $2,338 | $2,338 | $2,338 | $2,338 | $2,338 | $0 | $0 |

External Credits: $0

Reserve: $0  
Reserve of Work Report#: W0280.01919

$0 Total Remaining

Status of claim is based on information currently on record.
Dear Sir or Madam

**Subject: Approval of Assessment Work**

We have approved your Assessment Work Submission with the above noted Transaction Number(s). The attached Work Report Summary indicates the results of the approval.

At the discretion of the Ministry, the assessment work performed on the mining lands noted in this work report may be subject to inspection and/or investigation at any time.

If you have any question regarding this correspondence, please contact STEVEN BENETEAU by email at steve.beneteau@ndm.gov.on.ca or by phone at (705) 670-5855.

Yours Sincerely,

Ron Gashinski
Senior Manager, Mining Lands Section

Cc:
- Larry Noel Gervais (Claim Holder)
- Larry Noel Gervais (Assessment Office)
- Thomas John Obradovich (Claim Holder)
- Robert Rocky Robitaille (Claim Holder)
- Charles Samuel Iserhoff (Claim Holder)
LARRY NOEL GERVAIS
Timmins, Ont.
Frecheville - Holloway Property

Induced Polarization surveys

Contours of the Phase (I.P. effect) 50 meters dipoles

Data processing and interpretation by
G. Lambert, P.Eng.
LAMBERT GEOSCIENCES LTD.
December 2001

Frecheville & Holloway Twps., N.E. Ontario
Scale 1:5,000
N.T.S. 32 D/12

I.P. survey by: Remy Belanger

LEGEND

INTERPRETATION

Polarization increase occurs decrease of the apparent resistivity.
Semi-massive to massive graphite. Normally will show a phase increase on E.M. survey such as MCMT.
Disseminated to stringer to sulphides, discontinuous or rich sulphides. Also alteration of metallogenic mineralization.
Poorly defined polarization with no apparent resistivity. Small quantities of sulphide veins, sometimes noisy readings.

Table:

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<th>Apparent Resistivity (Ohm-m)</th>
<th>Phase (I.P. effect) (miliarcadians)</th>
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<tr>
<td>231</td>
<td>8.8</td>
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<tr>
<td>318</td>
<td>4.2</td>
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<td>472</td>
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Instruments: Phoenix IPT-1 Tx, Turbo V=5 Rx
Frequency: 1.0 kHz
Operator: Remy Belanger
LARRY NOEL GERVAIS
Timmins, Ont.

Frecheville - Holloway Property

Induced Polarization surveys

Contours of the apparent resistivity

50 meters dipoles

a processing and interpretation by
Frecheville & Holloway Twps., N.E. Ontario
Lambert, P.Eng.

IBERT GEO SCIENCES LTD.

N.T.S. 32 D/12

December 2001

I.P. survey by: Remy Belanger

INTERPRETATION

Polarization increase accompanied by a significant decrease of the apparent resistivity.
Semi-massive to massive sulphides, graphite, normally will cause a conductor on an E.M. survey such as MaxMin or Input.

Polarization increase without any significant of the apparent resistivity.
Dissolved to stringer to semi-massive sulphides, discontinuous graphite, sphalerite rich sulphides. Also altered pyritized textures. 

Poorly defined polarization increase with no apparent resistivity signature.
Small quantities of sulphides, narrow mineral veins, sometimes noisy readings, due to coring problems. ANHYDITE, CLAY OR MICACEOUS MINERALS.

LEGEND

DIPOLE-DIPOLE ARRAY

Instrument: Phoenix IPR-1 Tx, Turbo V-5 Rx
Frequency: 1.0 Hz
Operator: Remy Belanger

| Filter |
| n-t. 2, 3, 4, 5, 8 |

| Phase (I.P. effect) |
| (milliradians) |
| 231.8 |
| 318.42 |
| 318.4 |
| 418.01 |
| 477.05 |
| 477.0 |

| Apparent Resistivity (Ohm·meters) |
| 377.16 |

| Poorly defined polarization increase with no apparent resistivity signature. |
| Small quantities of sulphides, narrow mineral veins, sometimes noisy readings, due to coring problems. ANHYDITE, CLAY OR MICACEOUS MINERALS. |
INTERPRETATION

Resistivity
(Ohm-metres)

Polarization increase, accompanied by a significant decrease of the apparent resistivity.

Polarization increase without a marked decrease of the resistivity.

Poorly defined or noisy polarization anomaly, no resistivity signature.

Instrument: Phoenix IP-1 1Tx, Turbo V-5 Rx
Frequency: 1.0 Hz
Operator: Remy Belanger

Scale 1:5000

INTERPRETATION

Resistivity
(Ohm-metres)

Factor
Player

INTERPRETATION

Phase
(mRadians)

Good defined or noisy polarization anomaly, no resistivity signature.

Logarithmic Contours
1, 1.5, 2, 3, 4, 5, 7.5, 10...

INTERPRETATION

Metal Factor
(ip/res*100)

Polarization increase, accompanied by a significant decrease of the apparent resistivity.

Polarization increase without a marked decrease of the resistivity.

Poorly defined or noisy polarization anomaly, no resistivity signature.
**INTERPRETATION**

Resistivity

(Ohm-meters)

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<th>n=4</th>
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Phase

(micro-radians)

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Metal Factor

(p/ma*100)

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<tr>
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**Line 200 W**

Dipole-Dipole Array

Filter

Resistivity (Ohm-meters)

n=1, 2, 3, 4, 5, 6

Instrument: Phoenix IPT-1 Tx, Turbo V-5 Rx

Frequency: 1.0 Hz

Operator: Remy Belanger

Logarithmic Contours: 1, 1.5, 2, 3, 5, 7.5, 10...

INTERPRETATION

- Polarization increase, accompanied by a significant decrease of the apparent resistivity.
- Polarization increase without a marked decrease of the resistivity.
- Poody defined or noisy polarization anomaly, no resistivity signature.

Scale: 1:5000

**LARRY NOEL GERVAIS**

**INDUCED POLARIZATION SURVEY**

FRECHEVILLE-HOLLOWAY PROPERTY

Frecheville & Holloway Twp., (NTS 32D/12), Ontario

Date: 01/12/09

Interpretation by: G. LADAT, P.Eng.

Remy Belanger Geophysics
**INDUCED POLARIZATION SURVEY**

**FRECHEVILLE–HOLLOWAY PROPERTY**

**FRECHEVILLE & HOLLOWAY Twp's, (NTS 32D/12), Ontario**

Date: 01/12/09

Interpretation by: G. LAMBERT, P.Eng.

Remy Belanger Geophysics
Polarization increase, accompanied by a significant decrease of the apparent resistivity.

Polarization increase without a marked decrease of the resistivity.

Poorly defined or noisy polarization anomaly, no resistivity signature.

Instrument: Phoenix IPT-1 Tx, Turbo V-5 Rx
Frequency: 1.0 Hz
Operator: Remy Belanger
**Interpretation**

- **Polarization increase** accompanied by a significant decrease of the apparent resistivity.
- **Polarization increase without a marked decrease of the resistivity.**
- **Poorly defined or noisy polarization anomaly, no resistivity signature.**

**Scale** 1:5000

**Larry Noel Gervais**

**Induced Polarization Survey**

FRECHEVILLE-HOLLOWAY PROPERTY

Frecheville & Holloway Twp., (NIS 32D/12), Ontario

**Date:** 01/12/09

**Interpretation by:** G. LAMBERT, P.Eng.

Remy Belanger Geophysics