

# GM 65223

HELICOPTER-BORNE TDEM SURVEY, LAC ARQUES PROJECT

Documents complémentaires

*Additional Files*



Licence



Licence

Cette première page a été ajoutée  
au document et ne fait pas partie du  
rapport tel que soumis par les auteurs.

Énergie et Ressources  
naturelles

Québec 

HELICOPTER-BORNE  
TDEM SURVEY  
NEMISCAU, QUÉBEC  
NTS MAP SHEET 032/O14

LAC ARQUES PROJECT

Presented to:

EXPLORATION NEMASKA INC.  
450 De La Gare du Palais  
Québec (Québec)  
G1K 3X2

Ressources Naturelles  
Secteur mines

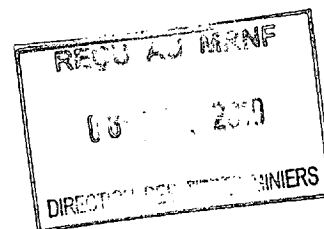
30 AOUT 2010

Bureau Régional Val-d'Or

GM65 223

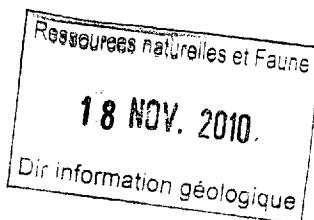
Presented by:

GEOPHYSICS GPR INTERNATIONAL INC.  
100 - 2545 Delorimier Street  
Longueuil (Québec)  
J4K 3P7



M-10931

AUGUST 2010



1053628



## TABLE OF CONTENTS

1.	INTRODUCTION .....	1
2.	SURVEY DETAILS .....	2
2.1	Survey area .....	2
2.2	Survey block parameters .....	3
2.3	Survey geodetic parameters .....	4
2.4	Flight path and elevation .....	5
3.	LOGISTICS.....	5
3.1	Survey helicopter .....	5
3.2	Survey personnel .....	5
3.3	Preparation .....	6
3.4	Operating base & fuel cache .....	6
3.5	Flight dates .....	6
4.	SURVEY EQUIPMENT .....	7
4.1	The EMosquito II™ TDEM system .....	7
4.2	DGPS positioning.....	10
4.3	Radar altimeter .....	10
4.4	Helicopter data acquisition and recording system .....	10
4.5	Survey helicopter .....	11
4.6	Data processing hardware and software .....	11
4.7	Field computer workstation .....	11
5.	DATA PROCESSING.....	12
5.1	TDEM processing .....	12
5.2	TDEM Interpretation.....	12
5.3	Presentation.....	13
6.	FINAL PRODUCTS.....	14
6.1	Paper products .....	14
6.2	Digital products.....	15
7.	CONCLUSION.....	16
	CERTIFICATE OF QUALIFICATION	



## TABLE OF CONTENTS (continued)

### LIST OF FIGURES

FIGURE 1	General survey area .....	2
FIGURE 2	Survey area and map sheet location .....	4
FIGURE 3	EMosquito II™ in flight with a ROBINSON R-44.....	9

### LIST OF TABLES

TABLE 1	Survey block coordinates.....	3
TABLE 2	Geodetic parameters .....	4
TABLE 3	Planned survey parameters.....	5
TABLE 4	Survey personnel .....	6
TABLE 5	Technical specifications of the EMosquito II™ system.....	8
TABLE 6	Technical specifications of the R44 Robinson Helicopter.....	11
TABLE 7	Drawing titles and numbers .....	14

### LIST OF APPENDICES

APPENDIX A	Miniature maps
APPENDIX B	TDEM interpreted anomalies tables
APPENDIX C	Maps 10-08-526-00 to 10-08-528-00

Drawing title	Drawing numbers
Flight path recovery and property limits	10-08-526-00
Electromagnetic survey Interpretation map	10-08-527-00
TDEM survey profiles, (nT/sec)	10-08-528-00

APPENDIX D	Digital data on CD-ROM
------------	------------------------



## 1. INTRODUCTION

During July 2010, **Geophysics GPR International Inc.** flew a helicopter-borne time-domain electromagnetic geophysical survey for **Exploration Nemaska's Lac Arques project**. The survey was composed of one (1) block for a minimum coverage of 482 line-km, located near Nemiscau, (Québec) on the NTS sheet 032/O14. The time-domain electromagnetic survey was flown from July 10<sup>th</sup> to 12<sup>th</sup>, 2010 for a total of **496 line-km**.

The time-domain electromagnetic survey was flown using a TDEM EMosquito II™, a high resolution time-domain electromagnetic system with a large penetration. For this survey, a radar altimeter, and a DGPS system was mounted onto the helicopter.

This report is intended to be read in association with the printed maps provided in Appendix C.

TDEM data quality control was done by Eric Desaulniers while data processing was carried out by Marc Boivin, P. Geo. This report was written by Olivier Létourneau, B.Sc. The final report was checked and approved by Réjean Paul, Eng., Geoph.



## 2. SURVEY DETAILS

### 2.1 Survey Area

The survey area is located near Nemiscau, Québec, Canada (Figure 1). The survey consists of one (1) block on the NTS maps 032/O14.

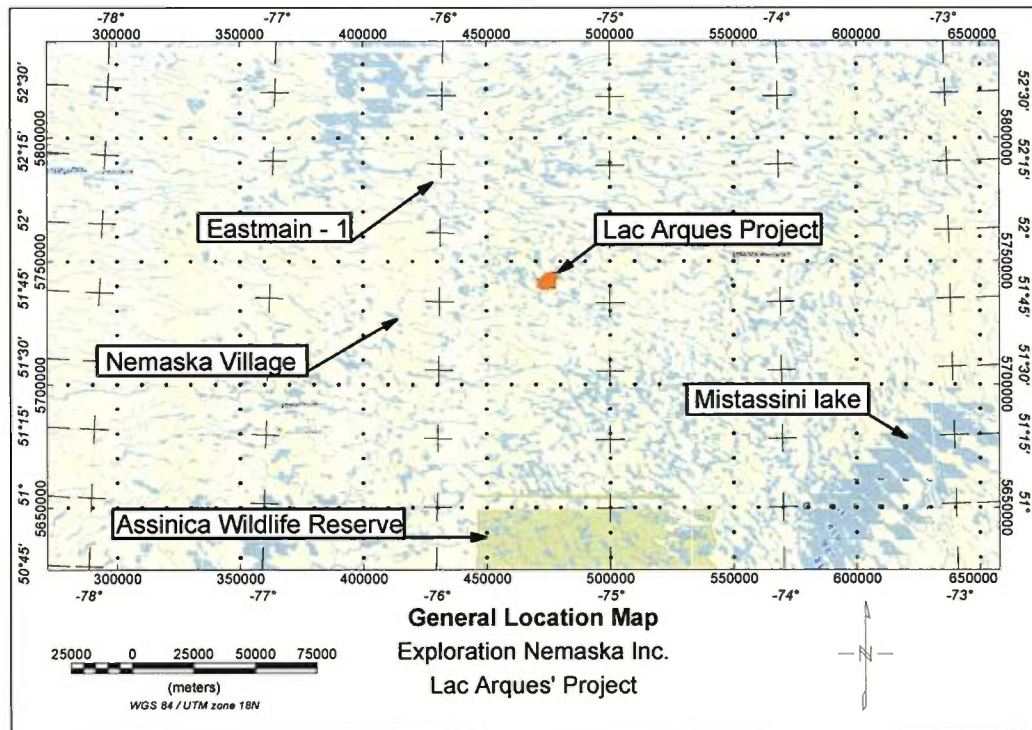


Figure 1 – General survey area



## 2.2 Survey block parameters

The direction of the flight lines was north - south ( $0^\circ$  -  $180^\circ$ ) and tie lines was east - west ( $90^\circ$  -  $270^\circ$ ) with respect to UTM coordinates.

One (1) block was scheduled for surveying for a total of 482 linear kilometres, based on 100 meter line spacing and 1000 meter tie-line spacing.

The coordinates given in Table 1 represent the outline of the zones to be flown. All coordinates are given in UTM zone 18N (NAD83).

**Table 1 - Survey block coordinates**

X(m)	Y(m)
475263	5738420
473263	5738420
472363	5738420
472263	5738484
471763	5739119
471663	5739182
470863	5739192
470863	5742392
471563	5742392
471663	5742429
471863	5742742
472263	5743109
472863	5743633
473563	5744245
473763	5744412
473863	5744470
474263	5744637
474963	5744929
476063	5745389
476263	5745472
476363	5745514
476463	5745540
478163	5745540
478263	5745514
478763	5745509
478763	5742309
478263	5742309
478163	5738800
476063	5738800
475363	5738800

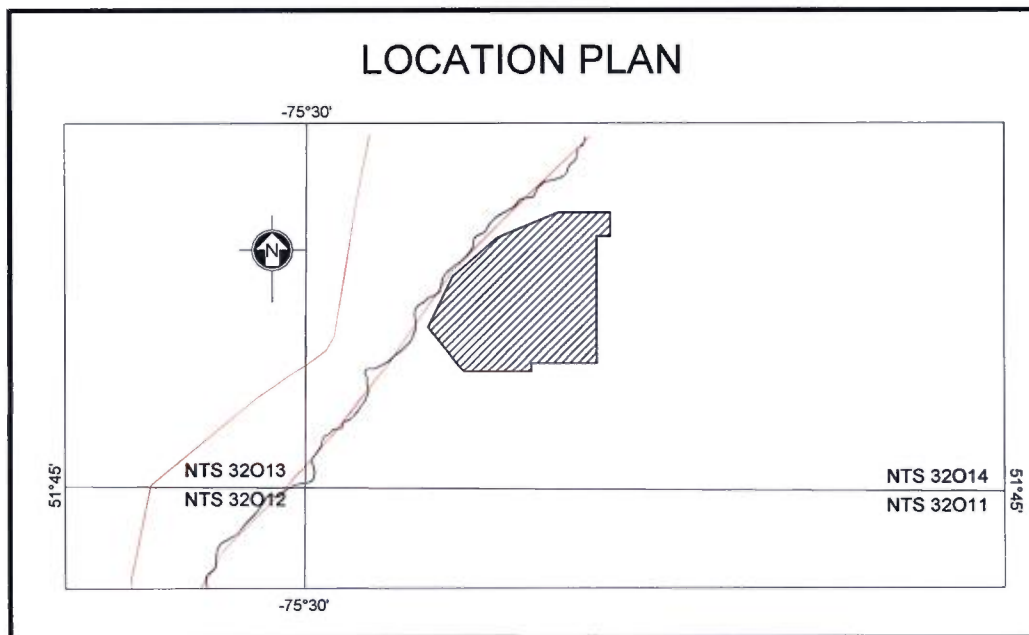


### 2.3 Survey geodetic parameters

The DGPS data were acquired as northing, easting, longitude and latitude format in WGS84 coordinates system. *Table 2* below presents the geodetic parameters that were used for data processing.

**Table 2 – Geodetic parameters**

<b>Datum:</b>	NAD83
<b>Ellipsoid:</b>	GRS-80
<b>Projection:</b>	UTM
<b>Zone:</b>	18N
<b>Central meridian:</b>	-75°
<b>False Easting:</b>	500 000
<b>False Northing:</b>	0
<b>Scale factor:</b>	0.9996





## 2.4 Flight path and elevation

Table 3 below shows the planned flight path parameters for the project.

**Table 3 – Planned survey parameters**

Parameters	Specifications	As flown
Flight-line Spacing	100 m	
Flight-line Direction	0°-180°	
Control-line Spacing	1000 m	
Control-line Direction	90°-270°	
Aircraft MTC*	60 m	88.8 m
TDEM Sensor MTC*	30 m	58.8 m
Ground speed	22.2 to 27.7 m/s	27.7 m/s

\*Mean Terrain Clearance

The tolerance parameters are based on ideal weather conditions.



### 3. LOGISTICS

#### 3.1 Survey helicopter

- Type : ROBINSON R-44 Raven 2
- Call sign : **C-GATM**
- Operated by: **Prospectair Geosurveys Inc.** based in Gatineau, Québec

#### 3.2 Survey personnel

The survey personnel consisted of the following: (*Table 4*):

**Table 4 – Survey personnel**

<b>Project Manager</b>	<i>Réjean Paul, Eng., Geoph.</i>
<b>Report</b>	<i>Olivier Létourneau, B.Sc.</i>
<b>TDEM data Processing</b>	<i>Marc Boivin, P. Geo.</i>
<b>TDEM data quality control</b>	<i>Eric Desaulniers</i>
<b>Technicien</b>	<i>Franck Beillard</i>
<b>Pilot / Operator</b>	<i>Alain Tremblay</i>
<b>Drafting</b>	<i>André Beaudoin, tech.</i>

#### 3.3 Preparation

The helicopter's installation was carried out in a hangar at Hydro-Québec's Nemiscau airport, located in Nemiscau, Québec. The EMosquito II™ system was assembled and a test flight was carried out.

#### 3.4 Operating base & fuel cache

The crew was based at Camp Cree Construction in Nemiscau, Québec. The Rupert Helipad was used for take-off and landing operations with the bird attached.

#### 3.5 Flight dates

The crew finished mobilization on July 10<sup>th</sup>. Flying production was carried from July 10<sup>th</sup> to 12<sup>th</sup>, 2010. No days (0) were lost due to bad weather conditions.



## **4. SURVEY EQUIPMENT**

### **4.1 The EMosquito II™ TDEM system**

The TDEM EMosquito II™ is a high resolution time-domain transient electromagnetic helicopter-borne system developed by T.H.E.M Geophysics of Gatineau, Québec. This powerful light-weight system employs a transient or time-domain electromagnetic transmitter that drives an alternating current through an insulated electrical coil system. The system uses a 4 KW generator and a large condenser to transmit alternating 2.75-ms half sine pulses with intervening off-times of 13.916 ms electric pulses, at a rate of 30 pulses per second. The current in the coil produces an electromagnetic field. Termination of the current flow is not instantaneous, but occurs over a very brief period of time (a few microseconds) known as the ramp time, during which the magnetic field is time-variant. The time-variant nature of the primary electromagnetic field creates a secondary electromagnetic field in the ground beneath the coil, in accordance with Faraday's Law. This secondary field immediately begins to decay in the process, generating additional eddy currents that propagate downward and outward into the subsurface. Measurements of the secondary currents are made only during the time-off period by a vertical component receiver located almost half way between the helicopter and the transmitter loop. It is placed with the magnetometer taped to a horizontal boom which supports the receiving coils tear-drop shape vessel at its end. The boom has an elastic suspension. A proprietary suspension system protects the orthogonal coils assembly and limits the total field excursions. The tear-drop vessel acts as a vane and maintains the mast in the line of flight.

Depth of investigation depends on the time interval after shutoff of the current, since at later times the receiver is sensing eddy currents at progressively greater depths. The intensity of the eddy currents at specific times and depths is determined by the bulk conductivity and geometry of subsurface rock units and their contained fluids.



**Table 5: Technical specifications of the EMosquito II™ EM system**

Item	Specification
<b>Transmitter:</b>	
Loop Diameter:	7.5 meters
Current Waveform:	Half-Sin
Turns:	2
Pulse Length:	2 ms
Frequencies:	30, 45, 90 Hz (programmable)
Loop Area:	50 m <sup>2</sup>
Peak Current:	2000 A
Tow Cable Length:	65 m
Self-Powered:	9HP Honda coupled with 28 Volts Alternator
<b>Receiver:</b>	
Coil axis:	X, Y and Z orthogonal coils assembly
Configuration:	Coaxial (Z)
Four channels:	Current, X, Y and Z
Max Sampling rate:	1024 points per half cycle at 90 Hz
Survey sampling rate:	1024 or 2048 points per half cycle at 30 Hz
Sampling:	Full waveform
Gates:	Programmable (max 256)
On time signal:	Recorded and processed
<b>Mechanical:</b>	
Maximum survey speed:	<b>110 km per hour</b>
Transmitter height:	30 m AGL
Receiver height:	60 m
Weight (Total):	200 kg





**Figure 3 – EMosquito II™ in flight with a ROBINSON R44**

## 4.2 DGPS positioning

A Novatel Pro-pak V3 DGPS receiver that offers many differential correction options for various environments and worldwide coverage was used for in-flight navigation, with a sampling interval of 1 second. The antenna was mounted directly on the helicopter. The DGPS system provides an accurate positioning as well as the height above the WGS-84 ellipsoid for the Agis on-board navigation system. The differential data set was relayed to the helicopter via the Omnistar network appropriate geosynchronous satellite for the survey location. The receiver optimizes the corrections for the current location.

## 4.3 Radar altimeter

A FreeFlight TRA3000 radar altimeter, combined with a TRI40 Indicator unit mounted on the helicopter provides the pilot with highly accurate altitude-above-ground-level (AGL) information with a resolution of 0.5 m and an accuracy of 5% over a range up to 2,500 ft. The radar altimeter data is recorded and sampled at 10 Hz.

## 4.4 Helicopter Data Acquisition and Recording System

The Airborne Geophysical Information System (AGIS-XP) is an advanced software driven instrument specifically designed for mobile aerial or ground geophysical survey work. The AGIS instrumentation package includes an advanced Satellite navigation (GPS), real-time flight path information that is displayed over a map image (BMP format) of the area, and reliable data acquisition software. Thanks to simple interfacing, the radar and barometric altimeters and Geometrics magnetometer are easily integrated into the system and digitally recorded. Automatic synchronization to the GPS position and time provides very close correlation between data and geographical position. The AGIS is equipped with a software suite allowing easy maintenance, upgrades, data QC, project and survey area layout planning.

For the purpose of the TDEM recording, PicoEnvirotec designed for the EMosquito II™ system a TDEM data acquisition and synchronization system perfectly compatible with the existing AGIS-XP package.

Data were recorded on hard disk and backed up after each flight.



#### 4.5 Survey helicopter

PROSPECTAIR flew the survey using Prospectair's Robinson R44 (registration C-GATM) helicopter that efficiently handles the equipment load and the required survey range. Table 6 presents the helicopter's technical specifications and capacity.

**Table 6: Technical specifications of the R44 Robinson Helicopter**

Item	Specification
Generator	One 195kW (260hp) Textron Lycoming O-540
Rate of climb	1000 ft/min Rate of climb 1000 ft/min
Cruising speed at 75% power	209 MPH
Service ceiling	14,000 ft
Range with no reserve	645 km
Empty weight	635 kg
Maximum take-off	1,090 kg

#### 4.6 Data Processing Hardware and Software

Processing was performed on high performance desktop computers optimized for quick daily QC and processing tasks. Geosoft software Oasis Montaj version 7.1 was used for data processing.

#### 4.7 Field computer workstation

A dedicated laptop computer was used on-site for the purpose of displaying geophysical data for quality control, calculating and displaying the navigation, producing maps, and backing up digital data.



## 5. DATA PROCESSING

### 5.1 TDEM processing

Data compilation, including editing and filtering, quality control, and final data processing of the Time-Domain Electromagnetic survey was performed by Marc Boivin, P.Geo., as an external consultant.

The PicoEnvirotec EM Digital Acquisition System records the vertical component (Z) of the receiver coils at a sampling rate of 30 Hz. There is 30 full cycles (60 half cycles) of the full waveform (Tx ON and OFF time) every second.

The first data manipulation involves a stacking procedure where each half cycle is weighted with respect to the previous cycle ( $\pm 1/4$ ), the next cycle ( $\pm 1/4$ ) and its own value ( $\pm 1/2$ ). The positive and negative signs of the respective multiplication coefficients are used to make positive all negative half cycles.

The next step is the half cycle averaging corresponding to the desired sampling rate. In the present case, from the 60 stacked positive half cycles per second, 6 consecutive half cycles are averaged to produce one sample every 0.1 sec.

The windowing settings for the 40 different channels are presented in Table 4. Channels 1 to 10 correspond to the ON-time measurements and channels 11 to 40 correspond to the OFF-time. Channels 11<sup>th</sup> to 12<sup>th</sup> aren't used for interpretation and mapping as they exist some 'ramp-off' effect that alters the data quality. Each window is filtered with a median filter removing spikes and with a finite impulse response (FIR) selective filter of the 251<sup>th</sup> order improving the signal to noise ratio.

### 5.2 TDEM Interpretation

The following basic interpretation is solely based on the helicopter-borne EM data acquired in this project and there was no match with the geology. Further interpretation works should include the determination of specific geological target type and the correlation between other data sources.

There is actually no automatic picking program involved in the interpretation procedures of the EMosquito II <sup>TM</sup> system. Identification of the EM anomalies is made on the EM profiles and classification is based on the calculated time constant (TAU) and time channel. The EM Time-Constant (TAU) is a general measure of the speed of decay of the electromagnetic response and reflects the "conductance quality" of a source.





The time rate of the secondary EM field recorded by the TDEM system is a function of the conductivity and geometry of conductors detected. A large resistivity conductivity will show a small value of the time constant (TAU) and conversely, a small resistivity will show a large value of the time constant (TAU). The time constants (Tau) were calculated using the MAXWELL V4.14 software of EMIT. The value was obtained by the best least squares fit between channels Z19 and Z36.

EM anomalies were identified, classified and listed in Appendix B. The anomalies that showed low amplitudes close to noise level were classified as "possible anomaly". No time-constant (TAU) were calculated for these possible anomalies. The remaining anomalies were classified in 5 groups, for anomalies in channels >5, 5 to 9, 10 to 14, 15 to 19 and > 20.

#### Settings used in the windowing of the full waveform

Channel #	Starting time (msec)	Width (msec)	Channel #	Starting time (msec)	Width (msec)
1	0.16667	0.01667	21	3.15000	0.53333
2	0.25000	0.01667	22	3.26667	0.53333
3	0.33333	0.01667	23	3.40000	0.53333
4	1.30000	0.01667	24	3.26667	1.10000
5	1.31667	0.01667	25	3.45000	1.10000
6	1.33333	0.01667	26	3.65000	1.10000
7	2.58333	0.01667	27	3.88333	1.10000
8	2.66667	0.01667	28	4.13333	1.10000
9	2.80000	0.08333	29	4.43333	1.10000
10	2.81667	0.08333	30	4.76667	1.10000
11	2.83333	0.08333	31	5.16667	1.10000
12	2.85000	0.16667	32	5.05000	2.20000
13	2.86667	0.18333	33	5.55000	2.20000
14	2.86667	0.25000	34	6.13333	2.20000
15	2.86667	0.36667	35	6.78333	2.20000
16	2.91667	0.36667	36	7.51667	2.20000
17	2.91667	0.53333	37	8.36667	2.20000
18	2.95000	0.53333	38	9.33333	2.20000
19	3.00000	0.53333	39	10.4500	2.20000
20	3.03333	0.53333	40	11.7000	2.20000

#### 5.4 Presentation

Each window was presented as a profile of different colours on the profile map. The interpreted anomalies were identified, quantified and plotted on the advanced interpretation map.



## 6. FINAL PRODUCTS

### 6.1 Paper products

A standard set of geophysical maps was produced at scale of 1:20 000. The flight path is presented on a separate map. The claims boundaries and their numbers are displayed on this map. The name and direction of the lines are indicated at the beginning and end of each line.

The maps were drawn in the UTM projection Zone 18 North, NAD83 datum. Coordinate units are in meters, unless indicated otherwise.

The final paper products consist of three (3) maps. The final maps produced for each map sheet are as follows:

- 1) Flight path recovery and property limits map
- 2) TDEM survey profile map
- 3) Electromagnetic survey Interpretation map

The digital data are included on a CD-ROM along with the printed maps. Following *Table 7* lists each map type and its associated drawing number.

Table 7 – Drawing titles and numbers

Drawing title	Lac Arques
Flight path recovery and property limits	10-05-526-00
TDEM survey profiles, (nT/sec)	10-05-527-00
Electromagnetic survey interpretation map	10-05-528-00



## 6.2 Digital products

Below is a list of the products delivered on CD-ROM  
(More detailed in Appendix D).

There are two (2) main directories:

### Data/Block/

Contains for TDEM:

- Databases (Oasis Montaj™ .GDB and ASCII.XYZ)
- Grids (Montaj™ .GRD binary grid format)
- Projection information files (MapInfo and other .GI)
- Maps (Oasis Montaj™ .MAP)
- Files used in the MapInfo software to distinguish a Geosoft map file from a MapInfo file (MapInfo and other .GM)
- PDF

### Report/

Contains:

- Copy of the report (Adobe Acrobat .PDF)
- Description of the database's Channel (Adobe Acrobat .PDF)




## 7. CONCLUSION


A helicopter-borne time-domain electromagnetic geophysical survey was flown for **Exploration Nemaska Inc.** The survey was composed of one (1) of block located near Nemiscau, Québec. A total linear distance of **496 km** was flown from July 10<sup>th</sup> to 12<sup>th</sup>, 2010. TDEM Z-axis component, DGPS positioning and radar altitude data were collected.

The final paper products consist of maps at 1:20 000 scales. A total of three (3) maps were produced. The digital products consist of final databases, maps, metadata files and final grid files. Digital data are included on the CD-ROM and the content is described in Appendix D.

It is hoped that the information presented in this report and on the accompanying maps will be useful both in planning subsequent exploration efforts and interpretation of related exploration data.

This report was written by Olivier Létourneau, B.Sc. verified and approved by Réjean Paul, Eng., Geoph. Appendix B was written by Marc Boivin, P. Geo.

  
\_\_\_\_\_  
Olivier Létourneau, B.Sc.

  
\_\_\_\_\_  
Réjean Paul, Eng., Geoph.  
President  
(O.I.Q. No.: 23848)

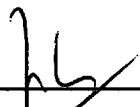


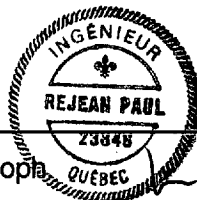
**CERTIFICATE OF QUALIFICATION**

1. I, the undersigned, Réjean Paul, graduated with a B. Sc. A. in Physics from École Polytechnique de Montréal in 1972 and the cofounder of Geophysics GPR International Inc. since 1974. I have worked in airborne geophysics since the year 1978.
2. I am a member of l'Ordre des ingénieurs du Québec (O.I.Q. No.: 23848) and also of the Society of Exploration Geophysicists.
3. I have no direct or indirect interests in the mining claims owned by **Exploration Nemaska**, nor in the securities of this company and have no interest in receiving such interest.

Signed in Longueuil, this August 12, 2010.

Respectfully submitted,

  
\_\_\_\_\_  
Réjean Paul, Eng., Geophysicist  
President  
(O.I.Q. No.: 23848)



**APPENDIX A**  
**Miniature maps**



## **NUMÉRIQUE**

**PAGE(S) DE DIMENSION HORS STANDARD  
NUMÉRISÉE ET POSITIONNÉE À LA SUITE DES  
PRÉSENTES PAGES STANDARDS.**

**APPENDIX B**  
**TDEM Interpreted anomaly tables**





## X.X TDEM interpretation

### General

The following basic interpretation is solely based on the helicopter-borne EM data acquired in this project and there was no match with the geology. Further interpretation works should include the determination of specific geological target type and the correlation between other data sources.

### Overview of the electromagnetic data

There is actually no automatic picking program involved in the interpretation procedures of the ProspectEM system. Identification of the EM anomalies is made by a geophysicist, using the EM profiles and classification is based on time channel response.

In total, thirty-nine (39) EM anomalies were identified and classified. 9 EM anomalies are interpreted as cultural artefacts. 17 EM anomalies are characterized by an ambiguous response, near the noise limit of the system. They are classified as "possible anomaly". 7 anomalies show very weak amplitudes (less than 10 off-time channels) and finally 6 anomalies show responses between 10 and 14 off-time channels.

Overall, the 6 well-defined EM anomalies are located

The 30 non-cultural anomalies were classified in 4 groups based on the number of time channel involved in the total response.

Level 1: possible anomaly

Level 2: channel Zoff\_5 to Zoff\_9

Level 3: channel Zoff\_10 to Zoff\_14

Table x summarize the interpreted EM anomalies.

Line	UTM_X	UTM_Y	ID	Channel	Comments
L10	470868	5741448	10.1	N/A	Cultural effect
L20	470990	5741444	20.1	N/A	Cultural effect
L60	471375	5742249	60.1	N/A	Cultural effect
L70	471452	5742425	70.1	N/A	Cultural effect
L80	471574	5742413	80.1	N/A	Cultural effect
L90	471657	5742459	90.1	N/A	Cultural effect
L100	471759	5742490	100.1	N/A	Cultural effect
L110	471874	5742529	110.1	N/A	Cultural effect
L170	472457	5738603	170.1	N/A	Cultural effect
L540	476156	5745160	540.1	3	Possible anomaly
L250	473263	5738949	250.1	4	Possible anomaly
L260	473370	5743550	260.1	4	Possible anomaly
L270	473494	5738603	270.1	4	Possible anomaly
L290	473659	5738595	290.1	4	Possible anomaly
L370	474458	5739139	370.1	4	Possible anomaly
L520	475962	5742110	520.1	4	Possible anomaly

L530	476060	5743515	530.1	4	Possible anomaly
L530	476065	5740153	530.1	4	Possible anomaly
L550	476261	5745086	550.2	4	Possible anomaly
L550	476256	5744183	550.1	4	Possible anomaly
L570	476458	5743027	570.1	4	Possible anomaly
L640	477174	5743408	640.1	4	Possible anomaly
L640	477157	5744106	640.2	4	Possible anomaly
L720	477958	5741773	720.1	4	Possible anomaly
L750	478259	5740814	750.2	4	Possible anomaly
L10020	476796	5739418	10020.1	4	Possible anomaly
L230	473058	5738551	230.1	7	Weak amplitude
L100	471772	5740300	100.2	7	Weak amplitude
L580	476567	5740285	580.1	7	Weak amplitude
L690	477664	5742709	690.1	7	Weak amplitude
L250	473257	5738394	250.2	8	Weak amplitude
L460	475364	5742193	460.1	8	Weak amplitude
L580	476572	5740747	580.2	8	Weak amplitude
L180	472568	5738678	180.1	11	Weak amplitude
L190	472652	5738855	190.1	11	Weak amplitude
L600	476742	5738885	600.1	11	Weak amplitude
L170	472460	5738398	170.2	12	End of line
L190	472658	5738440	190.2	12	End of line
L10010	472665	5738440	10010.1	12	Thick source

**APPENDIX C**

**Maps**

**(10-08-526-00 to 10-08-528-00)**



**APPENDIX D**  
**Digital Data on CD-ROM**



### CD contents

File Name	Description	Format
<b>REPORT</b>		
M10931_Report.pdf	Data acquisition report	Acrobat
Database_Channel_Description.pdf	List of database channels of TDEM databases and corresponding units	Acrobat

<b>DATA \ GDB</b>		
M10931_TDEM.gdb	Time Domain Electro-Magnetic database	Geosoft .GDB
XML	Metadata information file	Geosoft .xml

<b>DATA \ MAP</b>		
M10931_FVD.map _N&S <i>(10-08-526-00)</i>	First Vertical Derivative map	Geosoft .MAP
M10931_Profile.map <i>(10-08-527-00)</i>	Electromagnetic Profiles Map	Geosoft .MAP
M10931_INT.map <i>(10-08-528-00)</i>	Electromagnetic Interpretation Map	Geosoft .MAP
GMs	Including all GM files used in the MapInfo software to distinguish a Geosoft map file from a MapInfo file	Geosoft .GM
GIs	Including all projection information files	MapInfo and other .GI

<b>DATA \ XYZ</b>		
M10931_TDEM.XYZ	Time Domain Electromagnetic database	Geosoft .XYZ

### TDEM DATABASE CHANNEL DESCRIPTION

Name	Units	Description
FID		Fiducial
Date	yyyy/mm/dd	Survey date
Flight	#	Flight number
Line	#	Line number
X	m	UTM Easting, NAD83, Zone 18N
Y	m	UTM Northing, NAD83, Zone 18N,
Long	Dec.degrees	Latitude in decimal degrees
Lat	Dec.degrees	Longitude in decimal degrees
Time_GPS	HH:MM:SS.SS	GPS UTM Time
DEM	m	Digital elevation model (SRTM)
Z	m	Orthogonal height above sea level
TDEM	nT/s	Filtred TDEM Z-component channels (Z13-Z36)
Altitude	m	Sensor height above ground