

2.39811



**WORK REPORT**  
**On**  
**CLAIM # 3003093**  
**BOND TOWNSHIP**  
**PORCUPINE MINING DIVISION**  
**for**  
**APOLLO GOLD CORPORATION**

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December, 2008

## TABLE OF CONTENTS

<u>Page #</u>	<u>Contents</u>
1	Introduction
3	Location and access
3	Personnel
3	Previous work
3	Claims
5	Work program summary
6	Work program
6	VLF-EM
9	Results
9	Recommendations and Conclusions
10	Certificate

### Figures

1	Location map
2	Regional location map
3	Grid and Claim Sketch

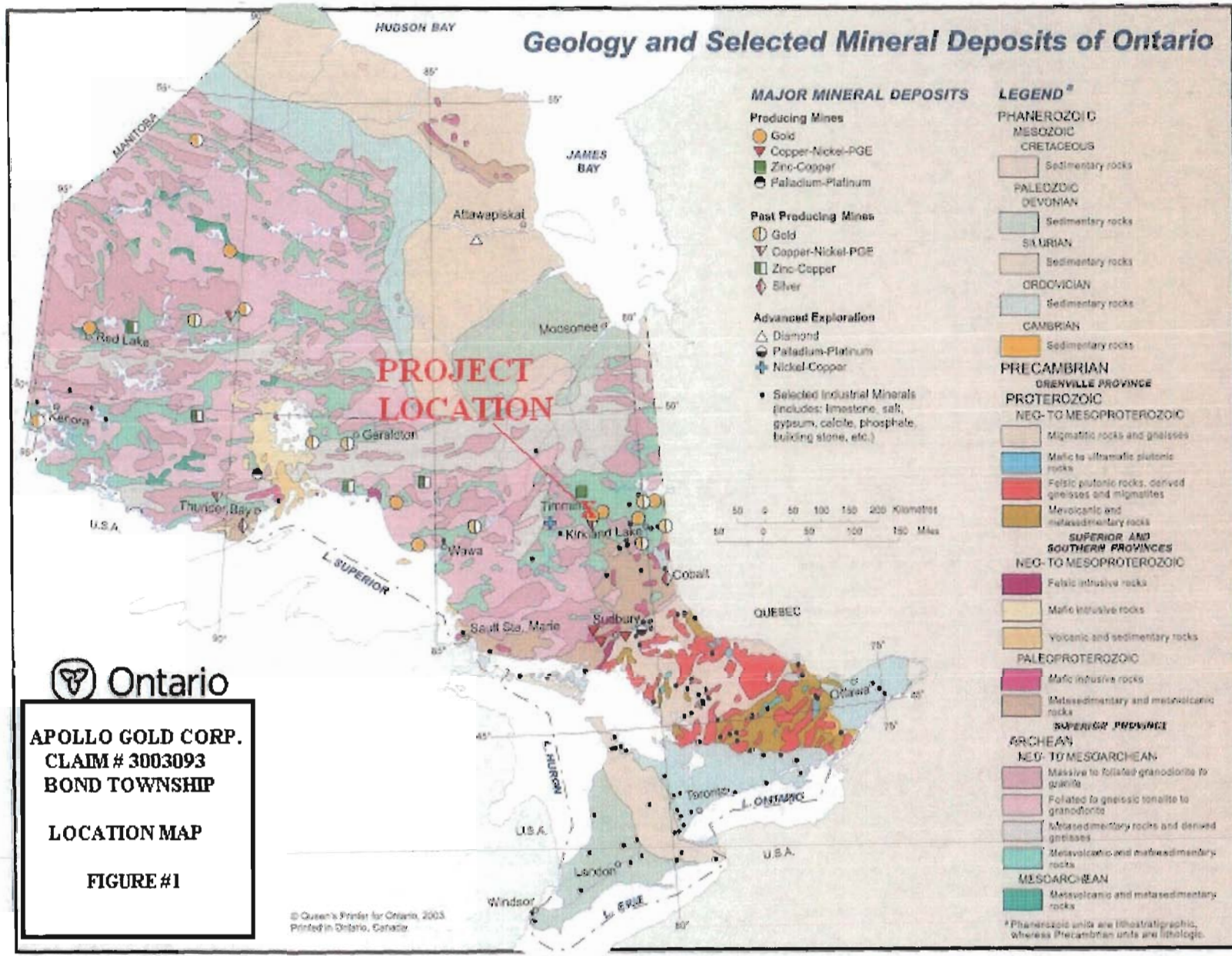
### Appendices


A	VLF EM-16
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### Maps

1	Posted and Profiled VLF-EM map
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# Geology and Selected Mineral Deposits of Ontario



 **Ontario**

**APOLLO GOLD CORP.**  
**CLAIM # 3003093**  
**BOND TOWNSHIP**

**LOCATION MAP**

**FIGURE #1**

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### LOCATION AND ACCESS

Claim # 3003093 is a four unit block-mining claim that occupies the south half of Lot 6, Concession 6, Bond Township. The property is situated just north west of Moose Lake, approximately 40km east of the City of Timmins (Figure #2).

Access to the work area was gained by taking Hwy 101 east from the city of Timmins for approximately 40km to Fretz Road south. From here the claim was accessed by snowmobile by taking an old road which heads east from the end of Fritz road and ends at Moose Lake. Moose Lake provided access to the southeast corner of the claim (Figure #3).

During the summer months or later in the winter when ice condition allow, the claim can also be accessed by heading south on the Driftwood River where it crosses Hwy 101

### PERSONNEL

The following people were directly involved in carrying out the VLF-EM survey.

Project Manager	Steve Anderson	Timmins
Geophysical Helper	Chasa Kioke	Timmins

### PREVIOUS WORK

The VLF-EM survey carried out as part of this work program is the first to be completed on this claim by Apollo Gold Corporation.

Although assessment credits have previously been applied to this claim the work was carried out on a contiguous claim and spread to the subject claim.

### CLAIMS

The claim covered by this work program is registered in the name of Apollo Gold Corporation. It is located within the Porcupine Mining Division and a legal description is as follows:

3003093

S ½ of Lot 6, Concession 6

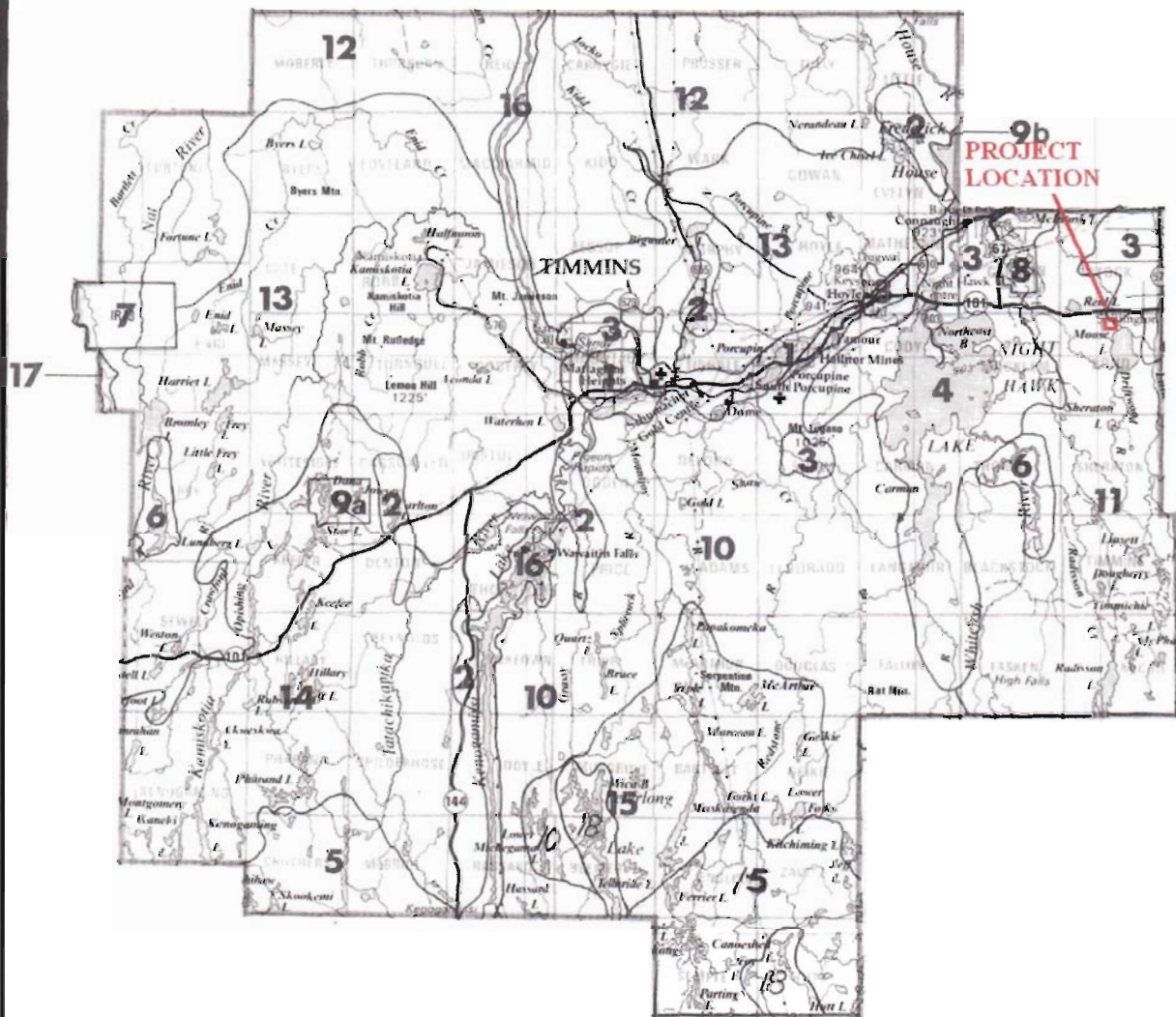
Bond Twp.

# DISTRICT DE TIMMINS DISTRICT



Miles 10 0 10 Miles

Kilometres 10 0 10 Kilomètres



APPOLO GOLD CORP.  
CLAIM #3003093  
BOND TOWNSHIP  
REGIONAL LOCATION MAP  
FIGURE #2



**WORK PROGRAM SUMMARY****General Information:**

Survey Dates: November 29-30, 2008  
Survey Period: 2 days  
Survey Days: 2 days  
Weather/down days: 0 days  
Survey Coverage: 5.6km Flagged Lines  
5.6km VLF-EM survey

**Personnel:**

Project Supervision: Steve Anderson  
Geophysical Helper: Chasa Kioke

**Survey Specifications:**

Line Interval: 100 meters  
Reading Interval: 25 meters  
Parameter Surveyed: In-Phase and Quadrature  
Station: Cutler Main, 24.0 KHz. (NAA)

**Instrument:**

VLF-EM: Geonics VLF EM-16

**Surveyed by:**

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## WORK PROGRAM

The work program involved establishing 5.6km of GPS controlled flagged grid lines over a specific area of interest. The grid specifications were set up to provide north-south grid lines to be surveyed. The purpose of this program was to provide reconnaissance VLF-EM data for the area that may help with the geological interpretation.

The following is a brief description of the geophysical methods and parameters used:

### VLF - EM Survey

A Geonic EM-16 instrument was used to survey the entire property. Both the In-phase (dip angle) and Quadrature values were recorded at 25m intervals.

While VLF stands for Very Low Frequency, it is for mineral exploration purposes a very high frequency compared to other commonly used Electromagnetic Surveys. The commonly used frequencies are in the order of 18-20 kilohertz. The VLF-EM technique employs fixed transmitter stations located at various places around the world to facilitate navigation. Because of this, one has a limited choice as to what transmitter station that can be used, depending on distance from and azimuth to the transmitter station.

For this survey, Cutler Main (NAA) was used. It has an operating frequency of 24.0 kHz and an azimuth of approximately of 130 degrees TN from the property. Very briefly, the transmitting station emits a concentric, circular wave pattern, expanding about the transmitter dipole. Being thousands of miles away from the transmitter, we deal with the tangent of this wave pattern, which in this case would have a direction normal to the azimuth of 270 degrees. Thus any conductors having a general EW strike direction would be intersected by this signal which induces a signal in the conductor which in turn opposes the primary signal from the transmitter station. This elliptically polarizes the resultant field enabling detection of the conductor using a receiver coil to determine the attitude of the resultant field at various points along the grid lines.

The resultant field dips away from the conductor axis on both sides of the conductor producing a crossover on the conductor axis. For an EW conductor, a true crossover would occur where the field dips south and changes to a north dip as you progress from south to north. For this survey, a +/- system is used where a (+) dip angle means the field is dipping to the south (indicating anomaly is to north) and a (-) dip angle means the field is dipping to the north (indicating anomaly is to South). This is the case only if all readings were taken facing north as per this survey.

The quadrature values, while not useful alone, can help distinguish between bedrock conductors, which generally have a smaller out-of-phase response than overburden or short wavelength conductors can. Also, the polarity of the quadrature is diagnostic, i.e.; if the polarity follows or is the same sense as the In-phase it gives more credibility to the conductor. Reverse quadrature often indicates overburden responses.

The following parameters were employed for the survey:

Instrument – Geonics EM-16

Transmitter Station – Cutler Main

- Call symbol NAA

Frequency - 24.0 kHz

Azimuth to station - approx. 130 degrees TN

Reading Direction - All reading taken facing north

Station Interval - 25m

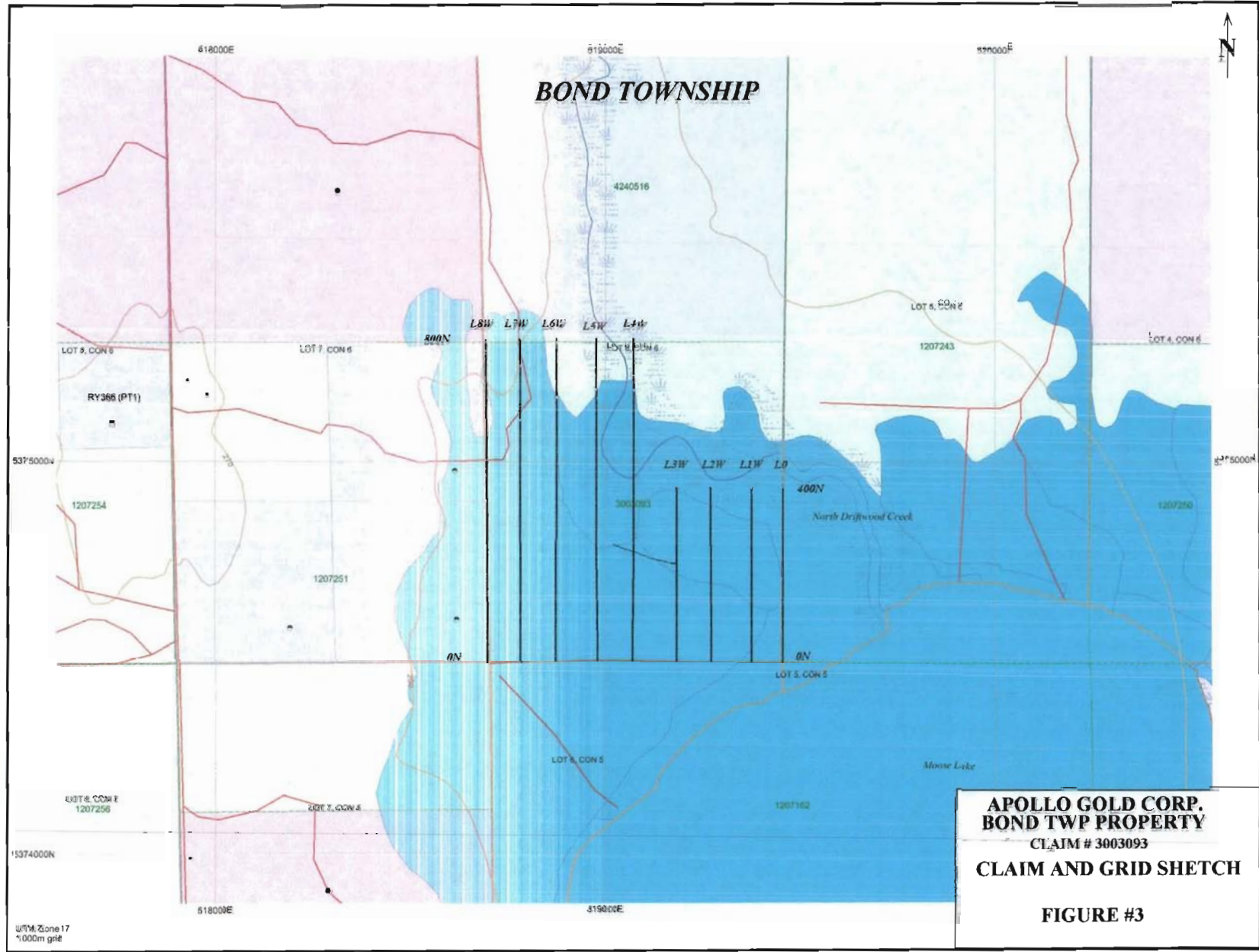
Line Interval - 100m

Data Presentation - Plan, profiled map

- Scale - 1:5000

- Profile scale 1 cm = 10%





**BOND TOWNSHIP**

**APOLLO GOLD CORP.  
 BOND TWP PROPERTY  
 CLAIM # 3003093  
 CLAIM AND GRID SHETCH**

**FIGURE #3**

UTM Zone 17  
 1:000m grid

## **SURVEY RESULTS**

The VLF-EM survey conducted on the subject property did not detect any areas of interest.

## **RECOMMENDATIONS AND CONCLUSIONS**

As described under the results, this work program did not outline any areas of interest. This may be due to conductive overburden. Although no overburden information was available to the author the claim does lie within the Abitibi Clay belt and may have a significant amount of coverage.

As the high frequency EM-16 survey showed little response additional coverage using a lower frequency large loop EM survey may be warranted. An induced polarization survey may also provide resistivity data that may help outline any geological structures extending through the claim. This may also help outline any zones of sulphides or disseminated sulphides.

CERTIFICATION

I, Steve Anderson of Timmins, Ontario hereby certify that:

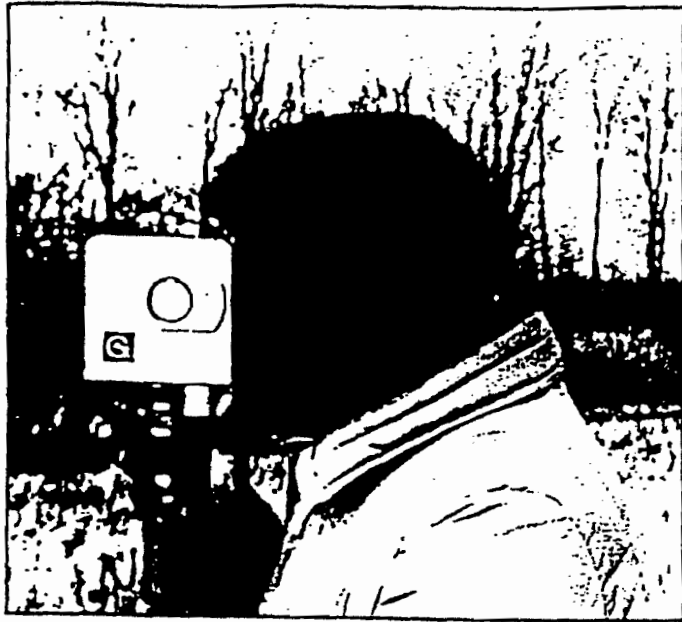
1. I hold a three-year Geological Technologist Diploma from Sir Sandford College, Lindsay, and Ontario, obtained in May 1981.
2. I have been practising my profession since 1979 in Ontario, Quebec, Nova Scotia, New Brunswick, Newfoundland, NWT, Manitoba, Saskatchewan and Greenland.
3. I have been employed directly with Asamera Oil Inc. Urangellschaft Canada Ltd. Nanisivik Mines Ltd., R.S. Middleton Exploration Services Ltd., Rayan Exploration Ltd and I am currently co-owner of Vision Exploration.
4. I have based conclusions and recommendations contained in this report on knowledge of the area, my previous experience and on the results of the fieldwork conducted on the property during November, 2008.

Dated this 9th day of December, 2008  
At Timmins, Ontario.



**APPENDIX "A"**  
**GEONICS EM-16**

## VLF EM



## EM16

One of the most popular and widely used electromagnetic instruments, the EM16 VLF receiver makes the ideal reconnaissance EM. This can be attributed to its field reliability, operational simplicity, compactness and mutual compatibility with other reconnaissance instruments such as portable magnetometers and radiometric detectors.

The VLF method of EM surveying, pioneered by Geonics, has proven to be a simple economical means of mapping geological structure and fault tracing. The applications are many and varied, ranging from direct detection of massive sulphide conductors to the indirect detection of precious metals and radioactive deposits.

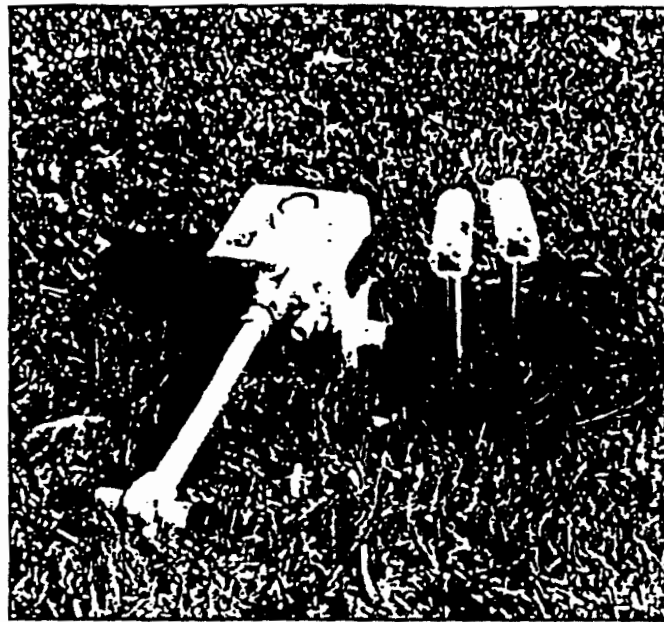
### FEATURES

- The EM16 is the only VLF instrument that measures the quad-phase as well as the in-phase secondary field. This has the advantage of providing an additional piece of data for a more comprehensive interpretation and also allows a more accurate determination of the tilt angle.
- The secondary fields are measured as a ratio to the primary field making the measurement independent of absolute field strength.
- The EM16 is the only VLF receiver that can be adapted to measure VLF resistivity.

## Specifications

<b>MEASURED QUANTITY</b>	In-phase and quad-phase components of vertical magnetic field as a percentage of horizontal primary field. (i.e. tangent of the tilt angle and ellipticity)
<b>SENSITIVITY</b>	In-phase : $\pm 150\%$ Quad-phase : $\pm 40\%$
<b>RESOLUTION</b>	$\pm 1\%$
<b>OUTPUT</b>	Nulling by audio tone. In-phase indication from mechanical inclinometer and quad-phase from a graduated dial.
<b>RATING FREQUENCY</b>	15-25 kHz VLF Radio Band. Station selection done by means of plug-in units.
<b>OPERATOR CONTROLS</b>	On/Off switch, battery test push button, station selector switch, audio volume control, quadrature dial, inclinometer.
<b>POWER SUPPLY</b>	6 disposable 'AA' cells
<b>DIMENSIONS</b>	42 x 14 x 9 cm
<b>WEIGHT</b>	Instrument: 1.6 kg Shipping : 5.5 kg

## VLF RESISTIVITY METER



## EM16/16R

The EM16R is a simple, button on attachment to the EM16 converting it to a direct reading terrain resistivity meter. The EM16R interfaces a pair of potential electrodes to the EM16 enabling the measurement of the ratio of, and the phase angle between, the horizontal electric and magnetic fields of the plane wave propagated by distant VLF radio transmitters.

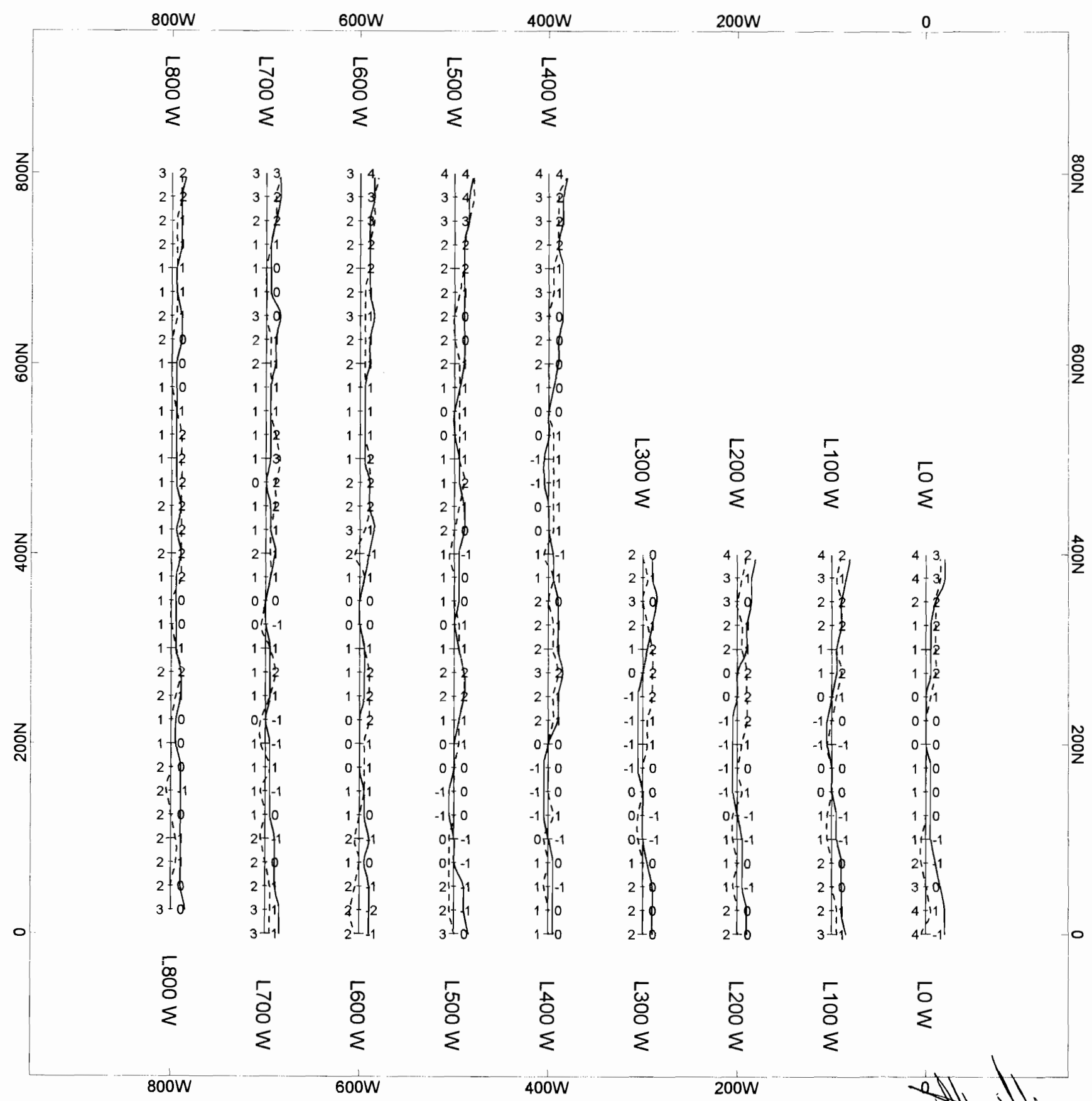
The EM16R is direct reading in ohm-meters of apparent ground resistivity. If the phase angle is  $45^\circ$ , the resistivity reading is the true value and the earth is uniform to the depth of exploration (i.e. a skin depth). Any departure from  $45^\circ$  of phase indicates a layered earth. Two layer interpretation curves are supplied with each instrument to permit an interpretation based on a two layer earth model.

This highly portable resistivity meter makes an ideal tool for quick geological mapping and has been used successfully for a variety of applications.

- Detection of massive and disseminated sulphide deposits
- Overburden conductivity and thickness measurements
- Permafrost mapping
- Detection and delineation of industrial mineral deposits
- Aquifer mapping

## Specifications EM16R ATTACHMENT

<b>MEASURED QUANTITY</b>	• Apparent Resistivity of the ground in ohm-meters • Phase angle between $E_x$ and $H_y$ in degrees
<b>RESISTIVITY RANGES</b>	• 10 - 300 ohm-meters • 100 - 3000 ohm-meters • 1000 - 30000 ohm-meters
<b>PHASE RANGE</b>	0-90 degrees
<b>RESOLUTION</b>	• Resistivity : $\pm 2\%$ full scale • Phase : $\pm 0.5^\circ$
<b>OUTPUT</b>	Null by audio tone. Resistivity and phase angle read from graduated dials.
<b>OPERATING FREQUENCY</b>	15-25 kHz VLF Radio Band. Station selection by means of rotary switch.
<b>INTERPROBE SPACING</b>	10 meters
<b>PROBE INPUT IMPEDANCE</b>	100 M $\Omega$ in parallel with 0.5 picofarads
<b>DIMENSIONS</b>	19 x 11.5 x 10 cm. (attached to side of EM16)
<b>WEIGHT</b>	1.5 kg (including probes and cable)

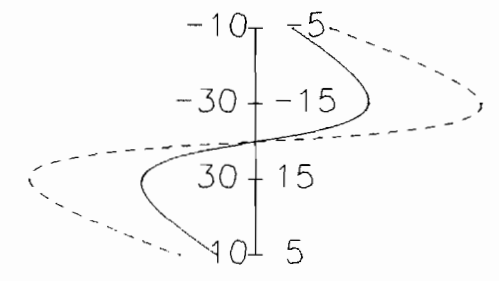


**VLF PROFILES**

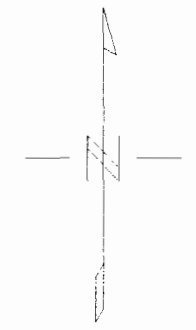
1 cm. = 10 %

- PROFILE +

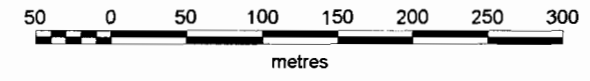
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NAA CUTLER, ME. 24 kHz.  
INSTRUMENT : EM 16  
Read Facing NORTH



Scale 1:5000



LINE KILOMETERS SURVEYED: 5.6

**APOLLO GOLD CORPORATION**

**BOND TOWNSHIP GRID  
VLF-EM SURVEY - PROFILES  
DECEMBER 2008**

BOND TOWNSHIP - PORCUPINE MINING DIVISION  
CLAIM NO. 3003093  
INSTRUMENT: GEONICS VLF EM-16  
STATION READ FACING NORTH - CUTLER, MAINE 24.0 kHz

**SURVEYED BY: VISION EXPLORATION INC.**

*[Handwritten signature]*