

**Assessment Report:  
A VLF Electromagnetic Survey**

**On**

**The Vanguard VMS Property  
Kashabowie Lake Area  
Thunder Bay Mining Division**

**Prepared for  
1401385 Ontario Inc.**

**March 30, 2015**

## Summary

In March 2015, Clark Exploration Consulting carried out a VLF electromagnetic survey on 1401385 Ontario Inc.'s Vanguard Property. The survey was conducted in the immediate vicinity of the Anderson copper occurrence and encompassed a series of trenches in the northeastern portion of the property.

A total of 63 percent in phase and 63 percent quadrature readings were taken at 15m intervals along a three line, north-south grid. The plotting of this data revealed the presence of conductors along the southern portion of the grid. Crossover points which indicate conductor tops appear to coincide with the occurrences of water bodies. For this reason, it is unlikely the conductive responses recognized in this survey are due to sulphide mineralization.

Future work on the property should include an interpretation of the data generated in this report by a professional geophysicist and if necessary, the extension of the grid southwestward to delineate the conductors identified in this survey.

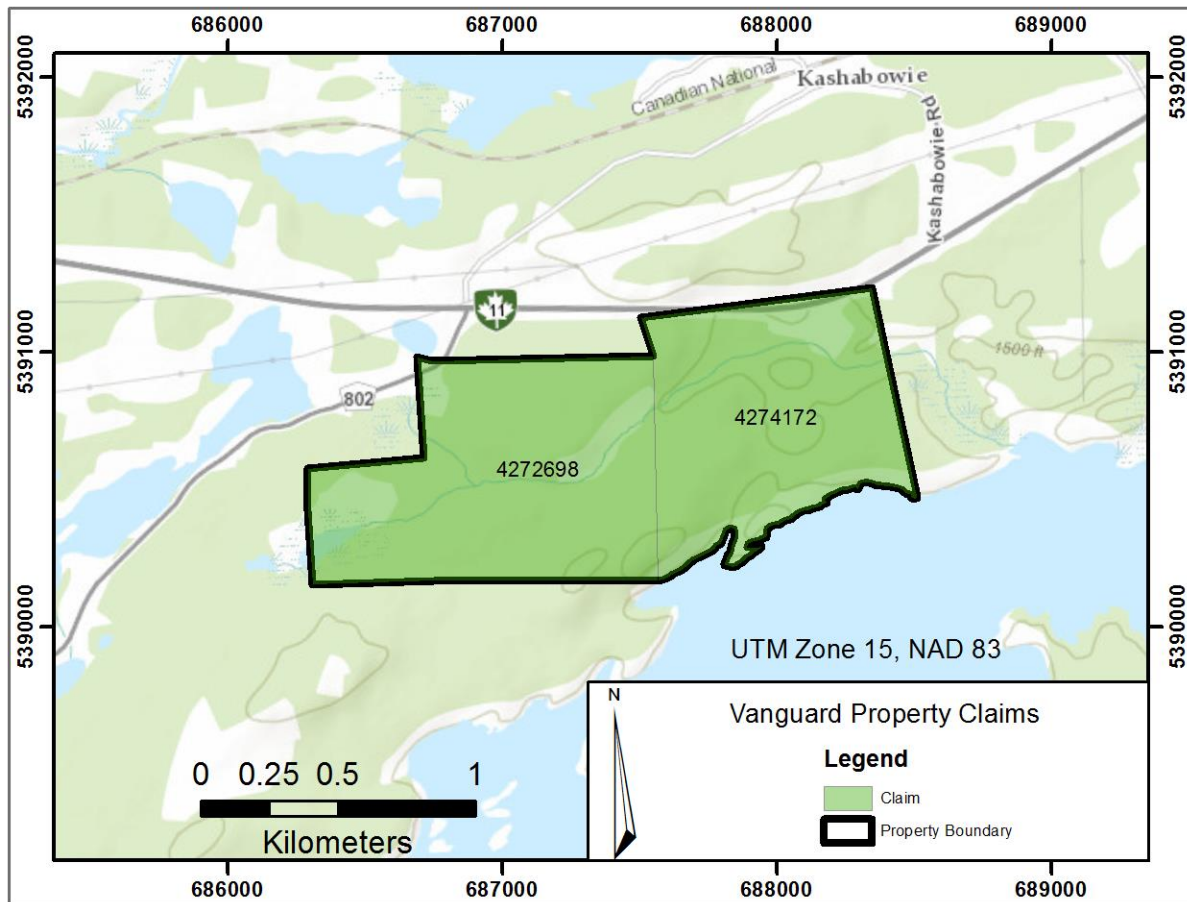
## Property Description and Location

The Vanguard Property is located approximately 100km west of the city of Thunder Bay, Ontario in the Kashabowie Lake Area of the Thunder Bay Mining District (**figure 1**).

The property consists of two contiguous unpatented mining claims totalling 9 units which border Upper Shebandewan Lake to the southeast and are intersected by Highway 802 to the northwest. The claims are accessible year-round by car via highway 11 and can be accessed by boat or snowmobile through Upper Shebandewan Lake.

The property is located within the Shebandewan Greenstone Belt of the Wawa Subprovince. Numerous base metal occurrences have been recognized adjacent to the property within the metavolcanic rocks that characterize the region. Most notably, the eastern boundary of the property lies approximately half a kilometer west of the Vanguard East Zone. In 1991, before the establishing of NI 43-101 standards, Noranda reported a resource of 100,000 tonnes grading 1.8%Cu, 3-6%Zn, 6.8g/t Ag and 4-6g/t Au at that site.

**FIGURE 1: Property Location**



**VLF Survey**

This survey was carried out to identify near surface conductors in an attempt to locate sulphide mineralization on the property. The survey was exclusively carried out on claim 4272698 in the area surrounding the Anderson copper occurrence (MDI52B09NW00038). A Geonics EM-16 was used for the survey, and a flagged grid was laid out the day prior to taking readings, in order to break trail through the deteriorating snow. Three grid lines 225 metres in length and 100 metres apart were laid out due north at NAD 83, UTM zone 15 eastings 5390300E, 5390400E and 5390500E, respectively. A Garmin GPSmap 62 GPS unit was used to measure 15 metre spacing between the 21 stations on each line. The VLF method employed in this survey utilizes navigation signals as a primary source. The receiver measures the dip angle and vertical quadrature of the resultant electromagnetic field at the station. This method is capable of detecting weak conductors and has moderate to great depth penetration, but conductive overburden greatly diminishes its capability. Data are plotted as stacked profiles of dip angle and vertical quadrature. Conductor axes (crossovers) are identified where the dip angle crosses from negative to positive.

The Geonics EM-16 utilized in the survey measured the In-phase and Quadrature components of the EM field. The survey used VLF transmitter NAA at Cutler, MD., U.S.A. (17.8kHz) as a source. The In-phase

and quadrature were measured facing south. The data was hand recorded in a field book that was later entered into a spreadsheet and plotted. A total of 63 readings were taken (**Appendix A**).

## **Conclusions**

The VLF survey identified three broadly trending east-west conductors in the southern half of the survey area. The most pronounced crossover occurred at the southern extreme of the survey area with the shape of this field being distorted to the positive, indicating dipping of the conductive material. The anomalous VLF response from this site coincides with the occurrence of an east-west trending creek. Though it is unlikely VMS mineralization has been detected by this survey, the data generated in this report should be reviewed by a professional geophysicist and potential prospective horizons should be identified and delineated by additional surveying.

Given the immediate proximity of the property to a high grade base metals deposit (the Vanguard East Zone), an exploration program including detailed mapping and sampling should be carried out to provide an up to date evaluation of the property. Future work should also include expanding the survey area to the eastern edge of claim 4274172 to identify any conductors that may be related to mineralization at the Vanguard East Zone.

**APPENDIX A**

**% In Phase and % Quadrature Readings**

<b>Station ID</b>	<b>UTM Zone</b>	<b>Easting</b>	<b>Northing</b>	<b>% In Phase</b>	<b>% Quadrature</b>
300E 600N	15 (NAD 83)	687300	5390601	12	12
300E 615N	15 (NAD 83)	687299	5390616	12	9
300E 630N	15 (NAD 83)	687299	5390629	10	10
300E 645N	15 (NAD 83)	687300	5390645	2	12
300E 660N	15 (NAD 83)	687299	5390660	0	11
300E 675N	15 (NAD 83)	687300	5390675	0	11
300E 690N	15 (NAD 83)	687300	5390691	1	11
300E 705N	15 (NAD 83)	687301	5390705	10	12
300E 720N	15 (NAD 83)	687301	5390719	17	22
300E 735N	15 (NAD 83)	687301	5390735	8	20
300E 750N	15 (NAD 83)	687300	5390750	5	19
300E 765N	15 (NAD 83)	687300	5390765	12	22
300E 780N	15 (NAD 83)	687300	5390780	7	23
300E 795N	15 (NAD 83)	687300	5390794	5	23
300E 810N	15 (NAD 83)	687299	5390810	0	19
300E 825N	15 (NAD 83)	687301	5390825	-1	21
300E 840N	15 (NAD 83)	687301	5390840	-4	16
300E 855N	15 (NAD 83)	687299	5390854	-6	18
300E 870N	15 (NAD 83)	687300	5390870	-9	19
300E 885N	15 (NAD 83)	687300	5390886	-5	22
300E 900N	15 (NAD 83)	687300	5390900	3	16
400E 600N	15 (NAD 83)	687400	5390601	22	11
400E 615N	15 (NAD 83)	687400	5390616	33	20
400E 630N	15 (NAD 83)	687400	5390631	18	19
400E 645N	15 (NAD 83)	687398	5390644	-2	19
400E 660N	15 (NAD 83)	687399	5390661	-6	18
400E 675N	15 (NAD 83)	687401	5390675	-5	11
400E 690N	15 (NAD 83)	687400	5390689	5	12
400E 705N	15 (NAD 83)	687398	5390707	11	13
400E 720N	15 (NAD 83)	687399	5390722	10	12
400E 735N	15 (NAD 83)	687399	5390736	8	13
400E 750N	15 (NAD 83)	687400	5390751	9	13
400E 765N	15 (NAD 83)	687399	5390766	6	13
400E 780N	15 (NAD 83)	687400	5390779	8	21
400E 795N	15 (NAD 83)	687401	5390794	7	21
400E 810N	15 (NAD 83)	687400	5390809	2	19
400E 825N	15 (NAD 83)	687399	5390824	-3	21

<b>Station ID</b>	<b>UTM Zone</b>	<b>Easting</b>	<b>Northing</b>	<b>% In Phase</b>	<b>% Quadrature</b>
400E 840N	15 (NAD 83)	687399	5390840	-9	21
400E 855N	15 (NAD 83)	687402	5390855	-5	19
400E 870N	15 (NAD 83)	687402	5390870	-5	21
400E 885N	15 (NAD 83)	687399	5390884	-4	19
400E 900N	15 (NAD 83)	687400	5390900	-9	20
500E 600N	15 (NAD 83)	687499	5390601	-18	7
500E 615N	15 (NAD 83)	687499	5390616	-8	11
500E 630N	15 (NAD 83)	687499	5390632	12	9
500E 645N	15 (NAD 83)	687501	5390646	25	20
500E 660N	15 (NAD 83)	687502	5390660	13	13
500E 675N	15 (NAD 83)	687498	5390675	0	12
500E 690N	15 (NAD 83)	687500	5390691	-20	12
500E 705N	15 (NAD 83)	687499	5390706	-13	12
500E 720N	15 (NAD 83)	687500	5390721	0	20
500E 735N	15 (NAD 83)	687500	5390736	-2	28
500E 750N	15 (NAD 83)	687499	5390750	-13	15
500E 765N	15 (NAD 83)	687500	5390764	-5	12
500E 780N	15 (NAD 83)	687499	5390780	8	13
500E 795N	15 (NAD 83)	687501	5390794	16	21
500E 810N	15 (NAD 83)	687500	5390812	7	20
500E 825N	15 (NAD 83)	687500	5390826	4	21
500E 840N	15 (NAD 83)	687500	5390842	-3	21
500E 855N	15 (NAD 83)	687500	5390857	-1	20
500E 870N	15 (NAD 83)	687498	5390871	-8	21
500E 885N	15 (NAD 83)	687499	5390885	-5	22
500E 900N	15 (NAD 83)	687500	5390900	-5	22

## APPENDIX B

### Summary of Costs

Grid Set Up	2 @ \$500/day	\$1,000
VLF Survey Field Work	2 @ \$600/day	\$1,200
VLF Transmitter Rental	2 @ \$200/day	\$400
Truck Mileage	578 @ \$0.50/km	\$289
Gasoline	104.63L @ \$1.099/L	\$114.98
Report	1 @ \$1000	\$1,000
Total Assessment Work		<b>\$4,003.98</b>

## **APPENDIX C**

### **Geonics EM-16 Specifications:**

Measured Quantity - In-phase and quad-phase components of vertical magnetic field as a percentage of horizontal primary field (Tangent of the tilt angle and ellipticity).

Sensitivity - In-phase : +- 150%

Resolution Output - Nulling by audio tone. In-phase indication from mechanical inclinometer and quad-phase from graduated dial.

Operating Frequency - 17.8 kHz radio band.

Operating Controls - On/Off switch, battery test push button, station selector switch, audio volume control, quadrature dial and inclinometer.

Power Supply - 6 Duracell 'AA' batteries

Dimensions - 42 x 14 x 9cm

Weight - Instrument: 1.6kg



Appendix D

VLF Plots/Station Maps

