QD02112

Technical Report
Geophysical VLF-EM Ground Survey

Wounded Moose Property
AM65-210/Wam151-164 Claim Series
Center UTM-7N X=611800, Y=7053600
NTS 115O10
Dawson Mining District, Yukon

Field Work Performed July 9th to 16th, 2016, for

TAKU GOLD CORP.

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Report by Joël Dubé, January 27th 2017

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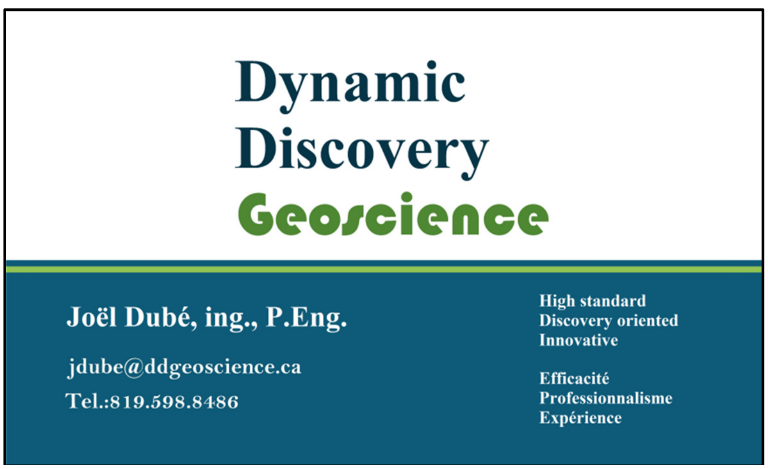


TABLE OF CONTENT

I. INTRODUCTION **4**

II. WOUNDED MOOSE PROJECT **5**

III. TECHNICAL SPECIFICATIONS **8**

Field Operations 8
Survey Equipment 8

IV. DATA PROCESSING AND PRESENTATION **9**

VLF-EM data 9
Deliverables 9

V. RESULTS INTERPRETATION AND DISCUSSION **10**

Airborne data 10
VLF-EM data 13
Recommendations 17

VI. CONCLUSION **18**

VII. REFERENCES **19**

VIII. STATEMENT OF QUALIFICATIONS **20**

IX. APPENDIX A – WOUNDED MOOSE PROPERTY MINERAL CLAIMS COVERED **21**

FIGURES

Figure 1: General location of the Wounded Moose Project 4
Figure 2: Mineral properties south of Dawson City 5
Figure 3: Regional location of the Wounded Moose Property and surveyed area 6
Figure 4: Survey lines and Wounded Moose mineral claims location 7
Figure 5: First Vertical Derivative of the TMI and geophysical interpretation 11
Figure 6: Digital elevation model and geophysical interpretation 12
Figure 7: Hawaii Fraser filtered in-phase component and geophysical interpretation 16
Figure 8: Seattle Fraser filtered in-phase component and geophysical interpretation 17

TABLES

Table 1: Delivered maps 9
Table 2: Total Magnetic Intensity statistics 10
Table 3: Interpreted VLF-EM anomalies 14

I. INTRODUCTION

At the request of the mineral exploration company Taku Gold Corporation, the exploration services company Breakaway Exploration Management Inc. of Val-d'Or (QC) conducted a Very Low Frequency Electro-Magnetic (VLF-EM) survey on the Wounded Moose Project (Figure 1). The consulting firm Dynamic Discovery Geoscience Ltd. of Ottawa (ON) received the mandate to control the quality of the survey, to process the acquired data and to present and interpret these data in the current report.

Figure 1: General location of the Wounded Moose Project

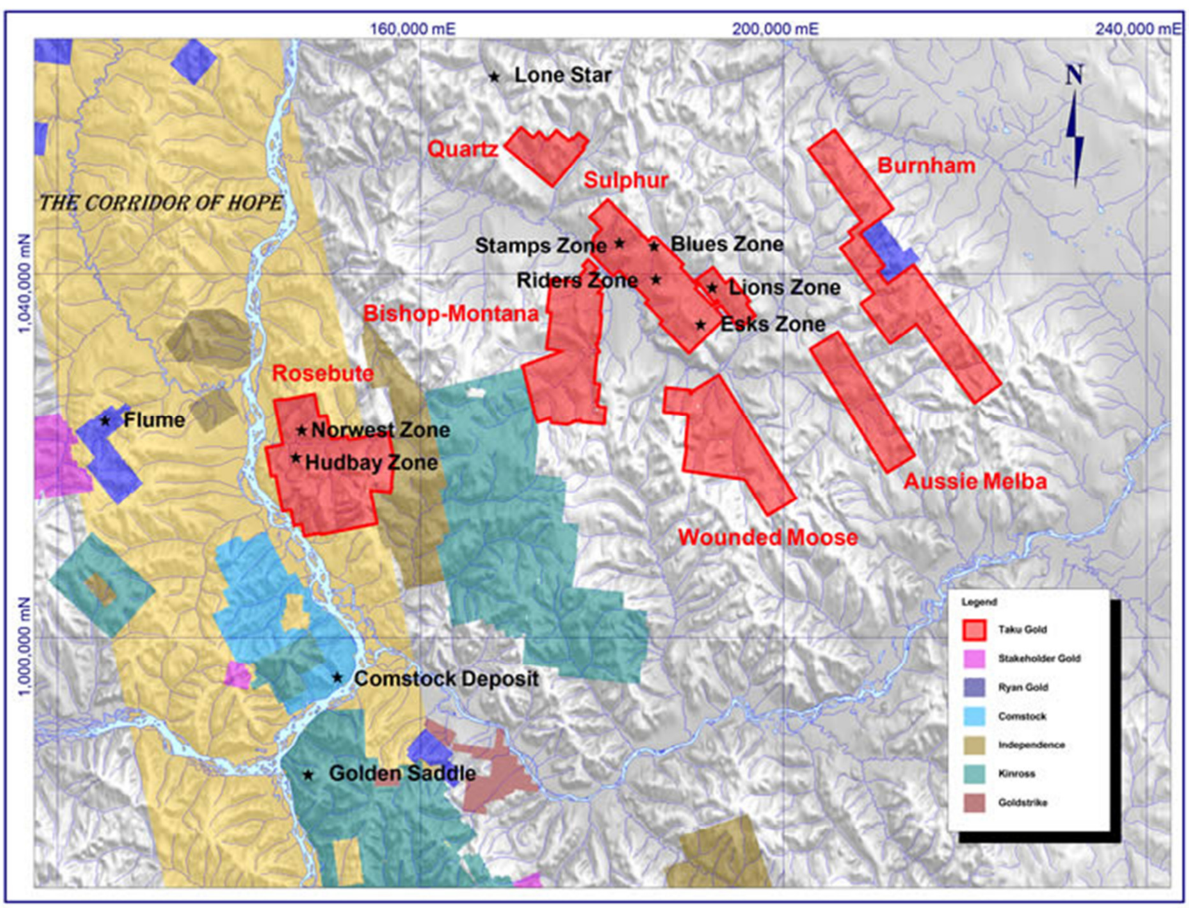
The survey was conducted from July 9th to 16th, 2016, by Mr. Marty Huber and Josh Judson, under the supervision of Mr. Mark Fekete, P.Geo., for a total of 40.0 linear km.

The goal of the survey was to characterize the sub-surface rocks with respect to their signature to the VLF-EM method, and to identify response possibly associated to mineralized occurrences. In order to provide assistance in the data interpretation process, airborne magnetic and radiometric data acquired in the area in 2010 is also used.

II. WOUNDED MOOSE PROJECT

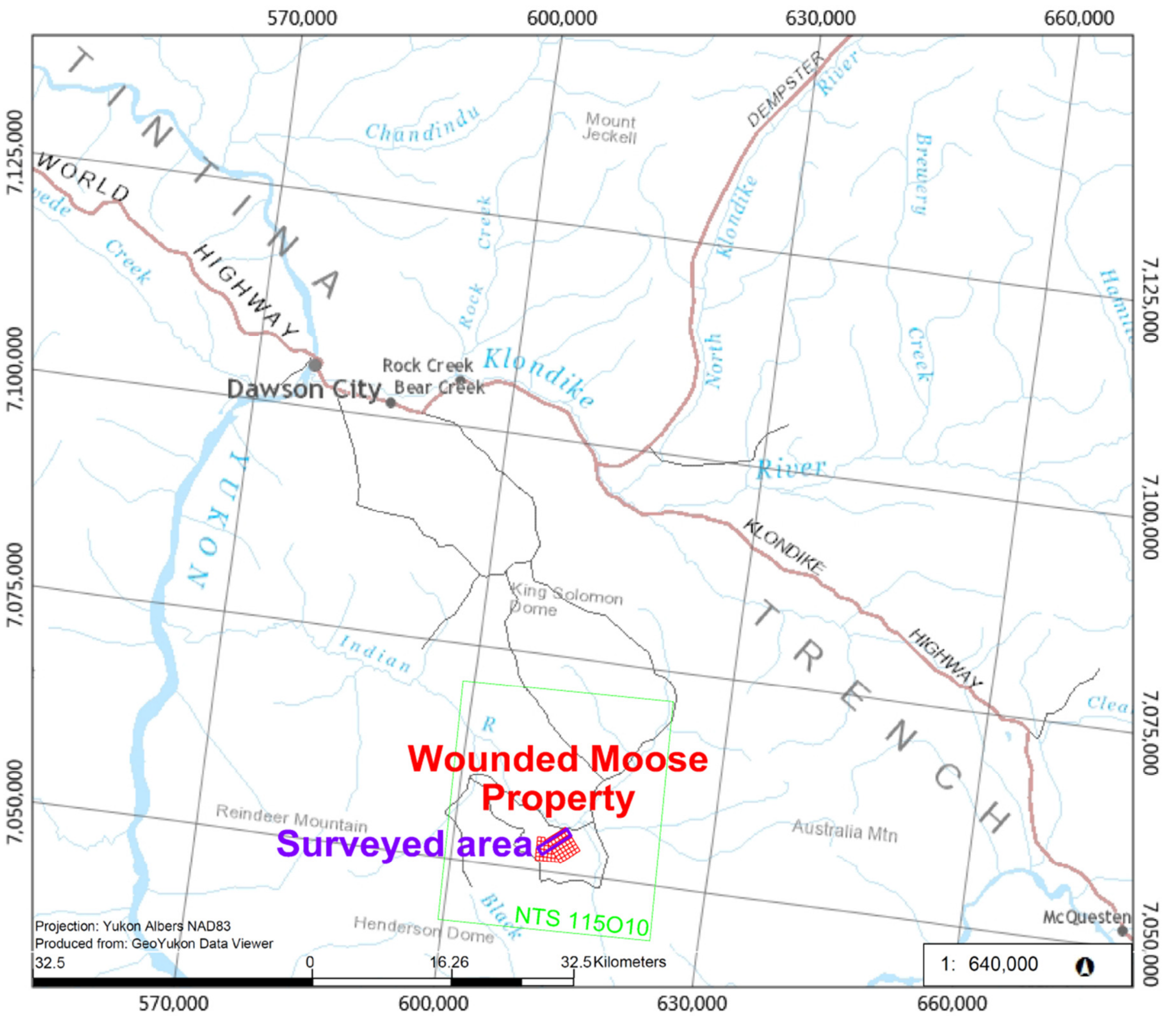
The Wounded Moose Property consists of a block of mineral claims located about 62 km southeast of Dawson City. This property is part of a constellation of properties owned by Taku Gold Corp. in the area, and shown in red in Figure 2.

Figure 2: Mineral properties south of Dawson City



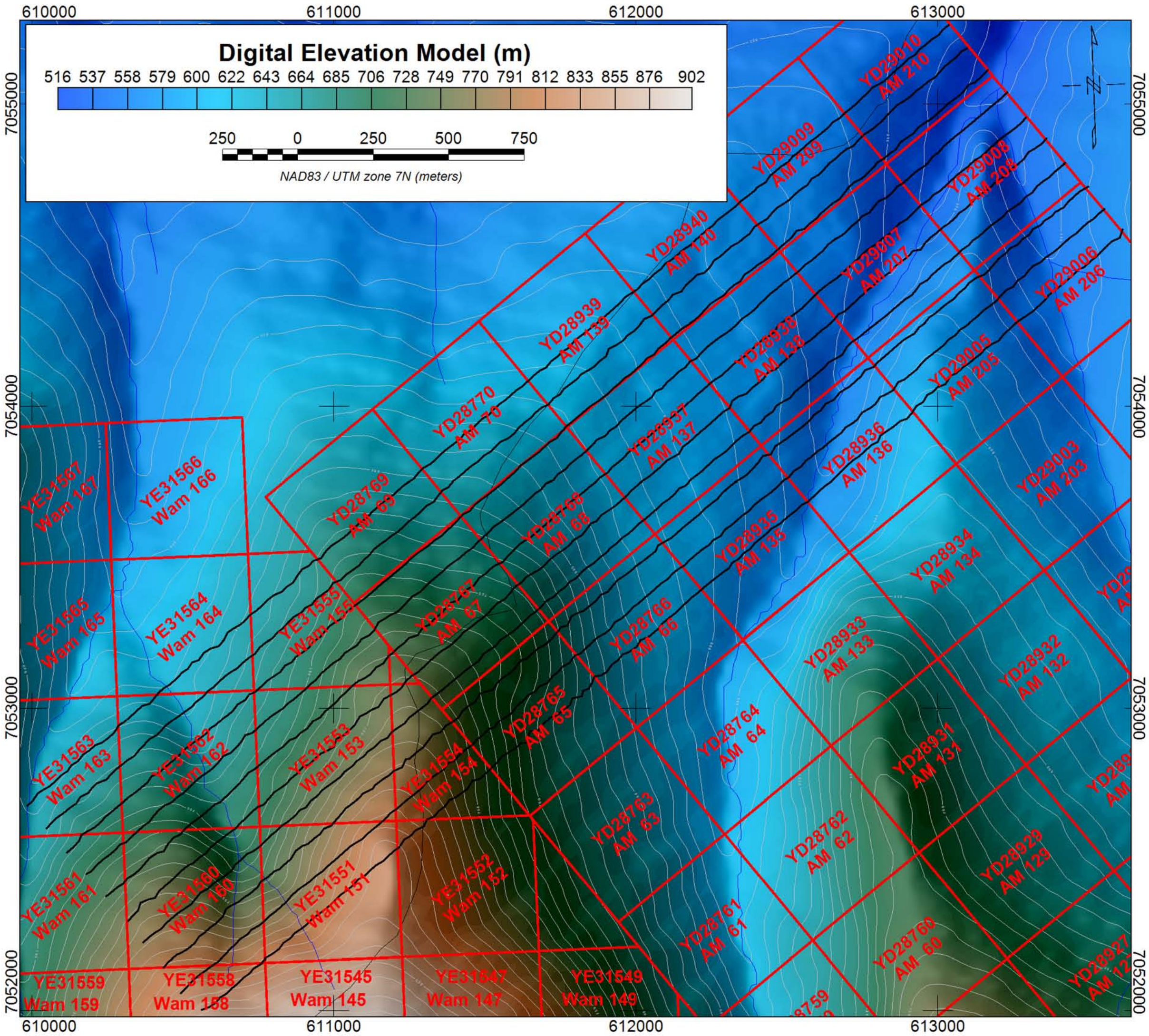
The north western part of the Wounded Moose Property has been the subject of the VLF-EM survey (Figure 3). This zone can be accessed in the summer via secondary roads connecting to Dawson City.

Figure 3: Regional location of the Wounded Moose Property and surveyed area



The Property is located within NTS map sheet 115O10. The survey grid consists of a network of 10 lines oriented N050 and spaced every 100 m. Survey lines are all 4000 m in length, for a total survey production of 40.0 km. The survey was carried out through the bush with the help of real-time GPS navigation, which made line cutting and chaining unnecessary. Mining titles covered by the survey lines are shown in Figure 4, and all the Wounded Moose Property claims that have been at least partly covered by the survey are listed in Appendix A.

Figure 4: Survey lines and Wounded Moose mineral claims location



III. TECHNICAL SPECIFICATIONS

Field Operations

The VLF-EM survey, totalling 40.0 km, was carried out from July 9th to 16th 2015, by Marty Huber and Josh Judson of Breakaway Exploration Management. VLF-EM data were recorded every 25 m along the lines, for a total of 1610 data points collected. Technical supervision was provided by Joël Dubé, P.Eng. On top of data inspection performed on the field by the operators while conducting the survey and transferring the data to a computer, the data were transferred to Dynamic Discovery Geoscience's office in Ottawa to undergo full data QC. All data were verified in this manner.

Survey Equipment

The equipment used for the VLF-EM survey consisted of an EM-16 device manufactured by Geonics. The EM-16 VLF system enables measurements of the vertical in-phase (P) and out-of-phase (Q) components expressed as % of the VLF horizontal primary field, with a resolution of 1 %.

Two VLF transmitter antennae were used: NPM Lualualei, Hawaii, emitting at a frequency of 21.4 kHz and NLK Seattle, Washington, emitting at a frequency of 24.8 kHz. The Hawaii antenna is located about 4900 km from the survey block, at an azimuth of N206, while the Seattle antenna is at a distance of 2040 km in the N143 direction. This implies that conductors striking NNE-SSW are best coupled with the EM signal from the Hawaii antenna, while the Seattle antenna's signal is best coupled with NW-SE conductors. The 63 degrees difference between the primary field directions from both antennae ensures that no conductors are left undetected with this survey configuration. By convention, all VLF-EM measurements were made with the instrument facing N120 for the Hawaii antenna and N060 for the Seattle antenna, for proper polarity of the results.

A GPS unit was used both for navigation purposes along an ideal local grid (no lines were cut) and for recording of survey stations locations, with an absolute accuracy of 2 to 5 m.

IV. DATA PROCESSING AND PRESENTATION

Data compilation including editing and filtering, quality control (QC), and final data processing was performed by Joël Dubé, P.Eng. Processing was performed on high performance computers optimized for quick daily QC and processing tasks. Geosoft software Oasis Montaj version 9.1 was used.

VLF-EM data

The vertical in-phase and out-of-phase components are presented in profiles. The in-phase component was further processed with a Fraser filter which results in a signal with maximum amplitude at the inflexion point of the input signal. This parameter was interpolated onto a regular grid using a bi-directional gridding algorithm to create a two-dimensional grid equally incremented in x and y directions. The final grids were created with 20 m grid cell size, appropriate for the survey lines spaced at 100 m, and were filtered with a 3x3 Hanning filter to reduce short wavelength noise in the grids. The Fraser filtered in-phase component effectively enables identification of the conductors in an intuitive way by looking at maximum amplitude lineaments on its contour map.

Deliverables

The maps created to present the information extracted from the survey are summarized in Table 1. All maps are referred to NAD-83 in the UTM projection Zone 7 North, with coordinates in metres. Maps are at a 1:5,000 scale and are provided in PDF, PNG and Geosoft MAP formats.

Table 1: Delivered maps

No.	Nom	Description
1	DEM	Location of the survey lines and of the mineral claims
2	PQprof_Hawaii	VLF-EM in-phase & out-of-phase profiles for Hawaii antenna
3	P-FRASERcont_Hawaii	Fraser filtered VLF-EM in-phase contours for Hawaii antenna
4	PQprof_Seattle	VLF-EM in-phase & out-of-phase profiles for Seattle antenna
5	P-FRASERcont_Seattle	Fraser filtered VLF-EM in-phase contours for Seattle antenna
6	INTERPRETATION	Interpretation map with regional Residual Total Field

Digital data are also supplied for all the parameters recorded during the survey. The database is delivered in the Geosoft GDB format. As well, data grids created for mapping purposes are included in the deliverables. They are referenced to NAD-83 in the UTM projection Zone 7 North, with coordinates in metres. Grids are provided in Geosoft GRD format, with a 20m grid cell size. Finally, interpretation elements found on the interpretation map are supplied in the Esri SHP format.

V. RESULTS INTERPRETATION AND DISCUSSION

Airborne data

Although no magnetic data was acquired as part of this project, helicopter-borne magnetic data is presented here in an effort to support the interpretation process. The magnetic data used were acquired in 2010 by Precision GeoSurveys Inc. Note that this airborne survey did not fully cover the area surveyed by the VLF-EM method on the ground. The First Vertical Derivative (FVD) of the Total Magnetic Intensity (TMI) is presented in Figure 5 together with interpreted features extracted from the interpretation map. The magnetic signal is quite active in places and varies over a range of 1056 nT in the mapped area. The variability of the TMI signal within the block is summarized in Table 2, which present data statistics.

Table 2: Total Magnetic Intensity statistics

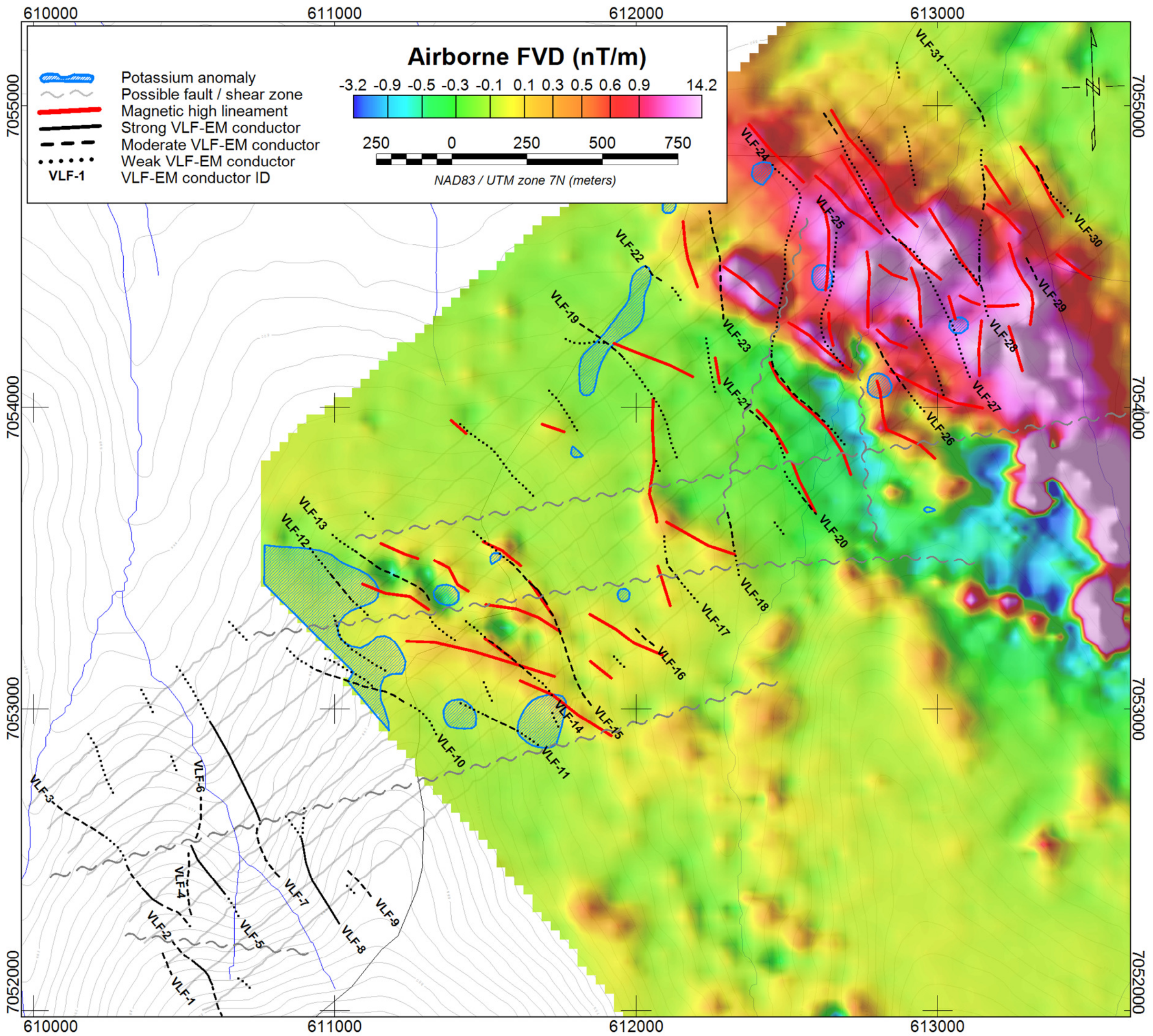
Statistic	TMI (nT)
Minimum	57314
Maximum	58370
Median	57397
Mean	57483
Standard Deviation	179.8

The area is characterised by a very strong NW-SE trending magnetic anomaly near the NE end of the VLF-EM lines. This strong anomaly likely relates to rock units enriched in magnetite such as intermediate to mafic intrusive or volcanic rocks. The rest of the area is very settled and is only disturbed locally by weak magnetic anomalies.

Several magnetic lineaments are found in the block. The strongest ones are associated to the strong magnetic anomaly discussed above. Lineaments are mostly trending NW-SE, but can vary from WNW-ESE to N-S. Magnetic lineaments are caused by magnetite/pyrrhotite bearing structures, such as dykes, mafic intrusive and/or volcanic rocks or mineralized structures. Magnetic lineaments have been identified as thick red lines on the interpretation map and figures.

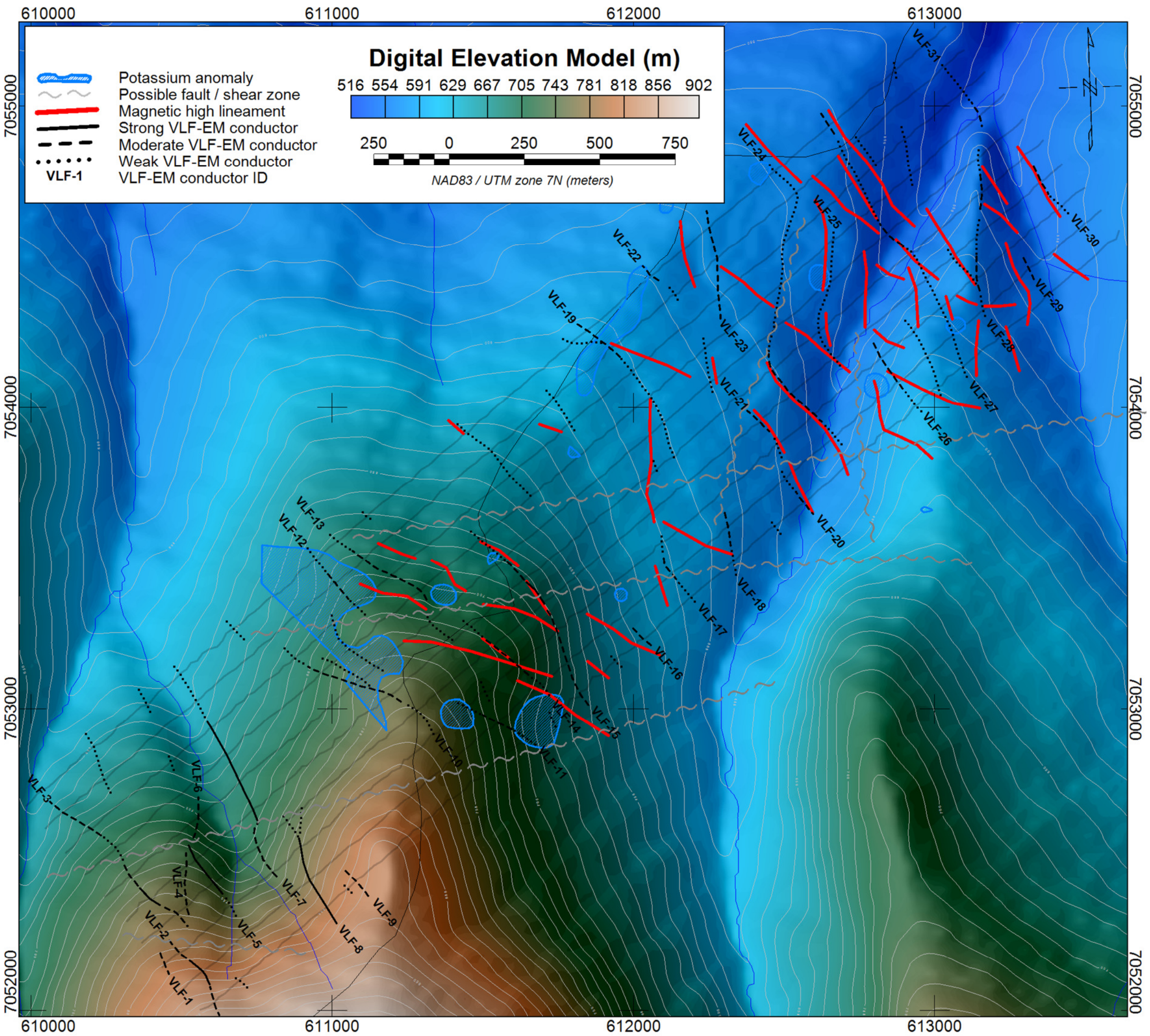
In some areas, it is possible to detect structural features offsetting observed magnetic lineaments and causing abrupt interruption or changes of the magnetic and VLF-EM responses. These features are typically caused by faults, fractures and shear zones. Structural features can be inferred from cross-cutting of magnetic lineaments, or abrupt change in lineament's wavelength, and also by a joint analysis of Digital Elevation Model (DEM) data (Figure 6). As well, narrow magnetic highs or lows can sometime indicate faults or shear zones enriched or depleted in magnetic minerals. Based on these interpretation principles, a number of possible faults/shear zones have been interpreted and are shown as white 'S' shaped dashed lines on all the figures of this section. If they are thought to be favorable structures in the exploration context of the Wounded Moose Project, they should be paid particular attention.

Figure 5: First Vertical Derivative of the TMI and geophysical interpretation



The radiometric data acquired in conjunction with the magnetic data as part of the 2010 airborne survey was also analyzed. As expected, the radiometric results (not shown here) are generally weaker along topographic depressions. In order to compensate for this undesirable effect the radio-elements ratios have been calculated. In theory, interpretation based on ratios of the three main radio-elements, Potassium (K), equivalent Uranium (U) and equivalent Thorium (Th), has advantages over the use of direct element concentration because natural variations from the level of rock exposition are adjusted for. Variable overburden thickness and extents, vegetation, topography and surface water content strongly control the intensity of gamma-rays response for all three elements. However, since all three elements are affected in the same manner by these variables, the ratios enable mitigation of these effects and enhance response from the geology. For this reason, and since gold mineralization is sometimes emplaced by mineralizing fluids also leading to potassic alteration as is the case at the Hemlo deposit for instance (Pemberton et al., 1984; Doyle, 1990; Manning at al., 1998), the Potassium to Total Count (K/TC) ratio is considered as an interesting exploration targeting feature on the project. Potassium anomalies have therefore been interpreted based on this product and are shown as hatched blue polygons.

Figure 6: Digital elevation model and geophysical interpretation



VLF-EM data

VLF-EM anomalies have been identified by looking at both the in-phase and out-of-phase components for typical cross-over patterns, in conjunction with the Fraser-filtered in-phase contours, which aim at making the cross-over detection easier. The Fraser-filtered data is shown on Figure 7 for the NPM Hawaii antenna and on Figure 8 for the NLK Seattle antenna. Note that on July 13th, the NPM Hawaii antenna was inactive, resulting in no data being available for this antenna on all of line 7900N. Fortunately, data from NLK Seattle could still be acquired, and this was considered sufficient to perform reliable interpretation of the conductors for this line. The results are generally similar for both antennae in most areas (confirming that the results are of good quality), except for conductive features that are rather oriented WNW-ESE (poorly coupled to Hawaii antenna) or NE-SW (poorly coupled to Seattle antenna), which is expected when coupling between antennae used is at a high angle such as in this case. The interpretation of conductive axes has therefore been carried out looking at results for both antennae simultaneously.

Interpreted anomalies have been classified as weak (dotted black lines), moderate (dashed black lines) and strong (continuous black lines) based on the amplitude of the vertical components and the out-of-phase signal behaviour relative to the in-phase signal. For instance, strong conductors will generate an out-of-phase response that is opposite in sign to the in-phase component (reversed cross-over). Among the anomalies that have been outlined on the interpretation products, the few that were stronger and appearing related to possible mineralisation were identified with an ID number starting with the 'VLF' prefix. Based on the strength of the VLF-EM conductor, its continuity over several lines, its association to a magnetic lineament or its location close to a structural feature possibly favourable to mineralisation, a priority number (1 being prioritized) has been given to each VLF-EM conductor axis in order to guide follow-up efforts. This information, together with the approximate strike length and some comments for each conductive axis, are listed in Table 3. Out of the 31 VLF-EM conductors identified in the survey area, 5 are deemed of first priority, 17 of second priority and 9 of third priority.

It is important to mention that strong topographic features are known to affect the VLF-EM results (Nabighian, 1991). For instance, prominent ridges will cause a response typical of a conductor, while a deep valley will cause a reversed anomaly. However, these effects are dependent on the resistivity of the ground and cannot be corrected for since this parameter is unknown a priori. In the surveyed area of the Wounded Moose Property, the valleys are indeed associated to reverse VLF-EM anomalies. It is also possible that the N-S ridge associated to VLF-28 axis (at the NE end of the lines) is contributing, at least partly, to generate this anomaly.

The VLF axes are mostly trending from NW-SE to N-S. It is interesting to note that conductive and magnetic anomalies are correlated only very locally. In some cases, conductive axes rather appear to highlight discontinuities in the magnetic signal. This suggests that some conductors may actually be associated to faults, fractures or shear zones. The overburden troughs, clay minerals or mineralization often found in association with fault structures can explain their conductive nature and hence their response to the VLF-EM method. Such structural features are known to enable the circulation and precipitation of mineralizing fluids. Consequently, VLF-EM axes that appear to denote such type of structure should definitely be investigated further.

Table 3: Interpreted VLF-EM anomalies

ID	Length (m)	Priority	Magnetic association	Potassium association	Comments
VLF-1	N/A	3	N/A	N/A	Moderate VLF-EM conductor. Possibly associated to the VLF-2 conductor. Associated to topographic ridge.
VLF-2	200	2	N/A	N/A	Moderate to strong VLF-EM conductor. Possibly associated to the VLF-1 conductor. Possible continuity of VLF-3 conductor. Near topographic ridge. Open to SE.
VLF-3	500	1	N/A	N/A	Weak to strong VLF-EM conductor. Possibly associated to the VLF-4 conductor. Possible continuity of VLF-2 conductor.
VLF-4	100	2	N/A	N/A	Moderate VLF-EM conductor. Possibly associated to the VLF-3 and 5 conductors. Possible continuity of VLF-6 conductor. Near topographic ridge.
VLF-5	200	1	N/A	N/A	Weak to strong VLF-EM conductor. Possibly associated to the VLF-4 and 6 conductors.
VLF-6	N/A	3	N/A	N/A	Moderate VLF-EM conductor. Possibly associated to the VLF-5 conductor. Possible continuity of VLF-4 conductor. Near topographic ridge.
VLF-7	700	1	N/A	N/A	Weak to strong VLF-EM conductor. Possible continuity of VLF-8 conductor. Open to NW.
VLF-8	300	1	N/A	N/A	Weak to strong VLF-EM conductor. Possible continuity of VLF-7 conductor. Open to SE.
VLF-9	N/A	3	N/A	N/A	Moderate VLF-EM conductor. Open to SE.
VLF-10	500	2	None	High locally	Weak to moderate VLF-EM conductor. Possible continuity of VLF-11 conductor.
VLF-11	200	2	None	High locally	Weak to moderate VLF-EM conductor. Possible continuity of VLF-10 conductor. Open to SE.
VLF-12	200	2	None	Strong high	Weak to moderate VLF-EM conductor. Open to NW.
VLF-13	300	2	Weak low locally	Near strong high	Weak to moderate VLF-EM conductor. Possible continuity of VLF-14 conductor. Open to NW.
VLF-14	300	2	Weak high	Near high	Weak to moderate VLF-EM conductor. Possible continuity of VLF-13 conductor.
VLF-15	600	1	Weak high locally	Weak high locally	Weak to strong VLF-EM conductor. Open to SE.
VLF-16	N/A	3	Near weak high	None	Moderate VLF-EM conductor. Open to SE.

ID	Length (m)	Priority	Magnetic association	Potassium association	Comments
VLF-17	200	2	Near weak high	None	Weak to moderate VLF-EM conductor. Open to SE.
VLF-18	100	3	None	None	Weak to moderate VLF-EM conductor. Open to SE.
VLF-19	500	2	None	Marginal locally	Weak to moderate VLF-EM conductor. Open to NW.
VLF-20	100	2	Marginal high	None	Weak to moderate VLF-EM conductor. Possible continuity of VLF-21 conductor. Open to SE.
VLF-21	100	2	Marginal high	None	Weak to moderate VLF-EM conductor. Possible continuity of VLF-20 conductor.
VLF-22	100	3	None	Marginal locally	Weak to moderate VLF-EM conductor. Open to NW.
VLF-23	200	2	None	None	Moderate VLF-EM conductor. Open to NW.
VLF-24	800	2	Marginal high locally	Marginal locally	Weak to moderate VLF-EM conductor. Possibly associated to fault structure. Open to NW.
VLF-25	300	3	Strong high	Marginal locally	Weak VLF-EM conductor. Possible continuity of VLF-26 conductor.
VLF-26	200	2	Moderate high locally	None	Weak to moderate VLF-EM conductor. Possible continuity of VLF-25 conductor. Open to SE.
VLF-27	900	2	Strong high mostly	Marginal locally	Weak to moderate VLF-EM conductor. Open to NW and SE.
VLF-28	400	3	None	None	Weak to moderate VLF-EM conductor. Possible continuity of VLF-31 conductor. Strong association to topographic ridge.
VLF-29	N/A	3	Near strong high	None	Moderate VLF-EM conductor.
VLF-30	100	2	Weak high	None	Weak to moderate VLF-EM conductor.
VLF-31	200	2	None	None	Weak to moderate VLF-EM conductor. Possible continuity of VLF-28 conductor.

Figure 7: Hawaii Fraser filtered in-phase component and geophysical interpretation

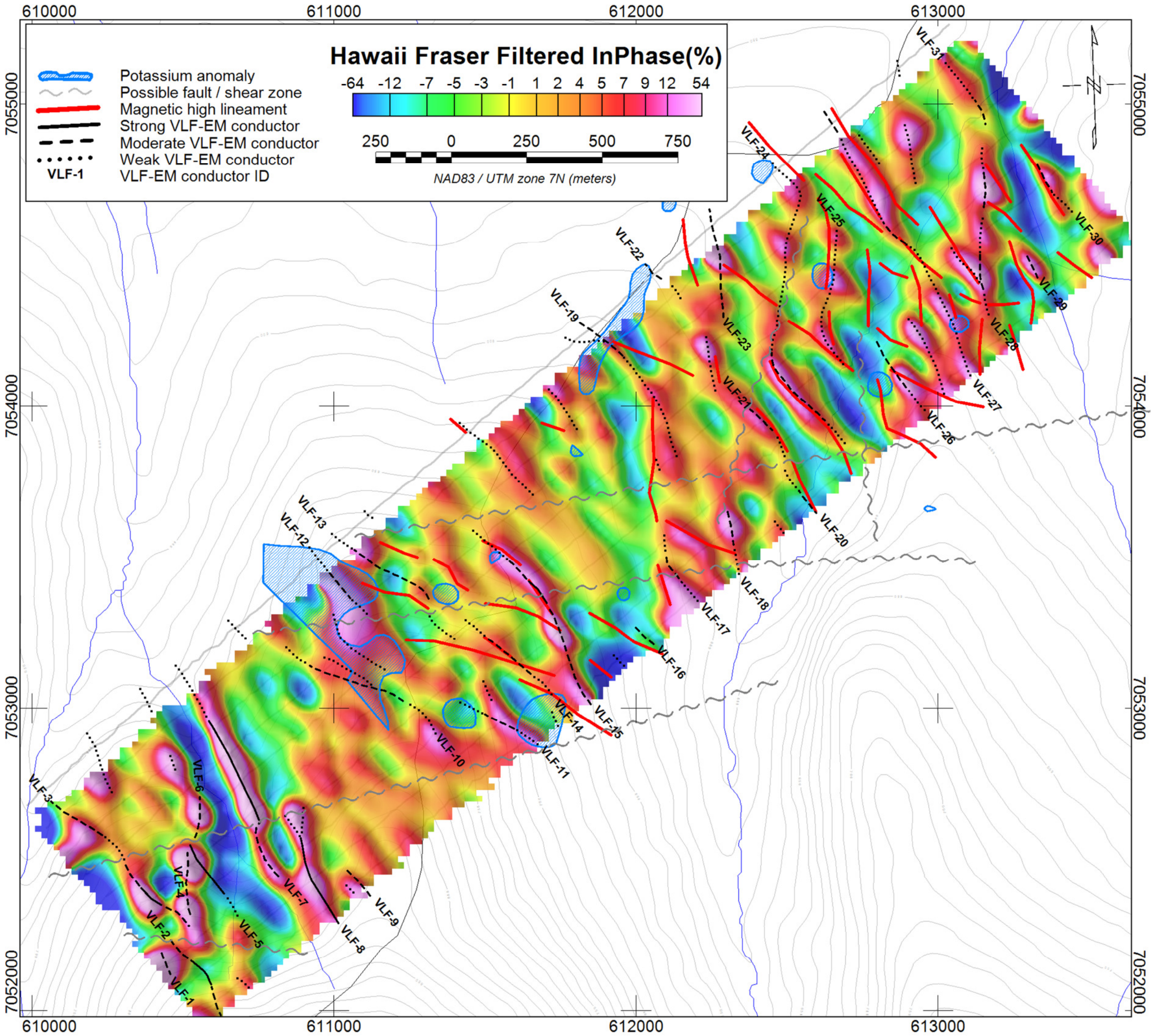
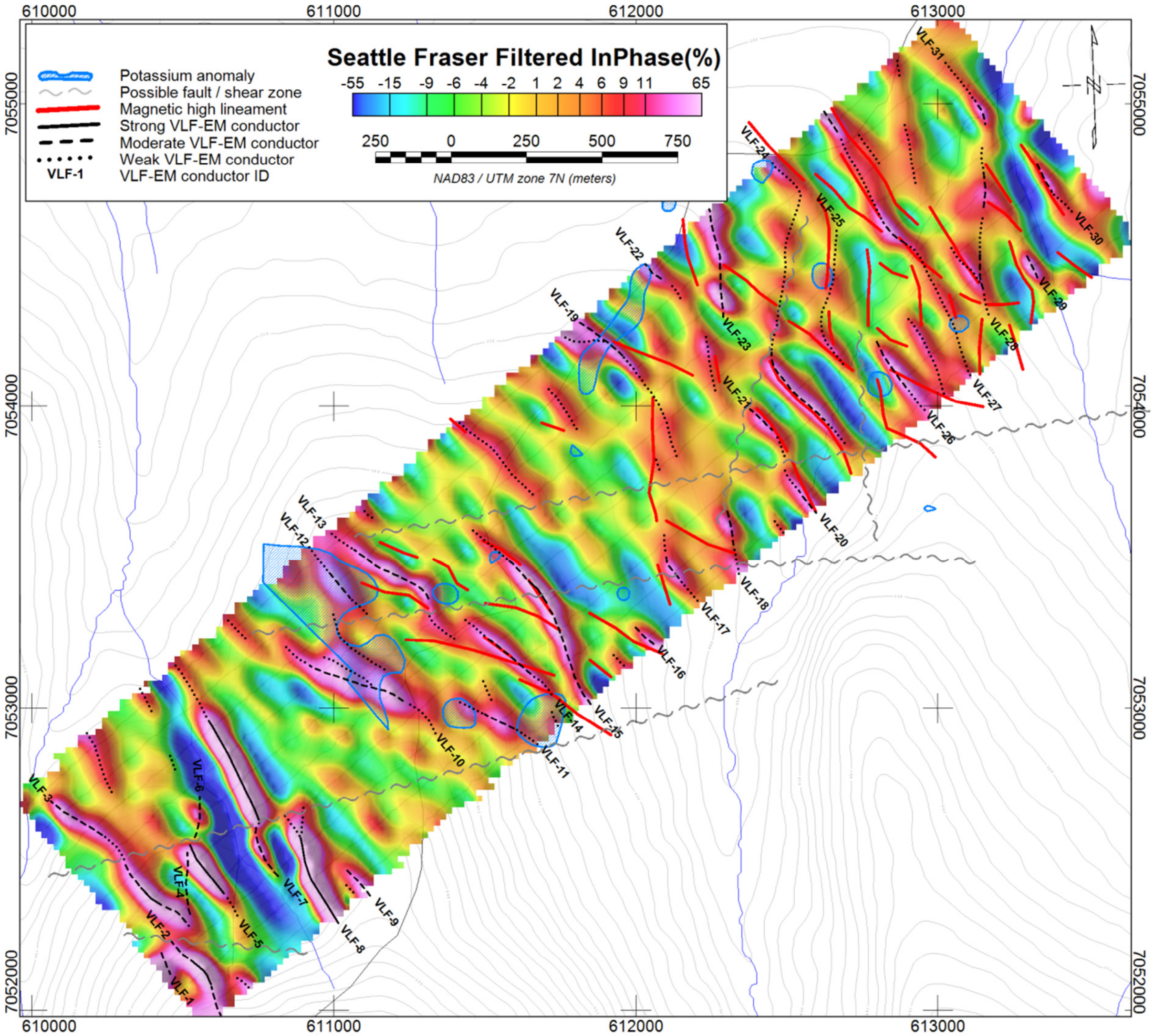


Figure 8: Seattle Fraser filtered in-phase component and geophysical interpretation



Recommendations

It is worth mentioning that the penetration of the VLF-EM method is relatively weak compared to other methods. It is estimated in the order of 40-60 m in resistive areas, but can go down to 4-5 m in very conductive environments. However, this limitation is greatly compensated for by the limited efforts and expenses that must be deployed to acquire the results, which makes it a very efficient reconnaissance tool. The limited penetration depth of the method also implies that simple ground prospection and stripping techniques are usually sufficient to perform follow-up and determine the nature of the sources.

It is therefore recommended to investigate the outlined conductive anomalies by basic prospection methods, using the provided interpretation map and table as a guide to prioritize this reconnaissance effort. Areas where these VLF-EM conductors seem to cross-cut magnetic lineaments could relate to fault structures and should be paid particular attention. Prioritization of targets should be revisited in light of other geoscience information such as geochemical and geological data.

Following a preliminary prospection phase, sources identified as promising for mineralization discoveries could then be the object of localized resistivity/IP surveys that can be efficiently used to penetrate the ground at further depth and better image the geometry of conductive and chargeable sources in preparation for drilling. This method has the advantage of responding to disseminated sulphide occurrences, to which gold mineralization is often associated.

VI. CONCLUSION

The VLF-EM survey conducted in July 2016 by Breakaway Exploration Management on Taku Gold's Wounded Moose Property was successful in better characterising the physical properties distribution within the area, which could support a better understanding of the geological setting. In particular, several magnetic lineaments and conductors were interpreted based on the results, as well as possible fault structures. Some of the VLF-EM conductors interpreted were identified as potential exploration targets and prioritized for further investigation. The survey parameters used and the general data quality of the survey were adequate to meet these objectives.

Respectfully submitted,

Joël Dubé, P.Eng.
January 27th 2017

VII. REFERENCES

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VIII. Statement of Qualifications

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I, Joël Dubé, P.Eng., do hereby certify that:

1. I am a Professional Engineer specialized in geophysics, President of Dynamic Discovery Geoscience Ltd, registered in Canada.

2. I earned a Bachelor of Engineering in Geological Engineering in 1999 from the École Polytechnique de Montréal.

3. I am an Engineer registered with the Ordre des Ingénieurs du Québec, No. 122937, and a Professional Engineer with Professional Engineers Ontario, No. 100194954 (CofA No. 100219617) and with the Association of Professional Engineers and Geoscientists of New Brunswick, No. L5202 (CofA No. F1853).

4. I have practised my profession for 17 years in exploration geophysics.

5. I have not received and do not expect to receive a direct or indirect interest in the properties covered by this report.

Dated this 27th of January, 2017

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Joël Dubé, P.Eng. #100194954

IX. Appendix A – Wounded Moose Property mineral claims covered

NTS Map Sheet	Grant Number	Mineral Claim Tag
115O10	AM 65	YD28765
115O10	AM 66	YD28766
115O10	AM 67	YD28767
115O10	AM 68	YD28768
115O10	AM 69	YD28769
115O10	AM 70	YD28770
115O10	AM 135	YD28935
115O10	AM 136	YD28936
115O10	AM 137	YD28937
115O10	AM 138	YD28938
115O10	AM 139	YD28939
115O10	AM 140	YD28940
115O10	AM 205	YD29005
115O10	AM 206	YD29006
115O10	AM 207	YD29007
115O10	AM 208	YD29008
115O10	AM 209	YD29009
115O10	AM 210	YD29010
115O10	Wam 151	YE31551
115O10	Wam 152	YE31552
115O10	Wam 153	YE31553
115O10	Wam 154	YE31554
115O10	Wam 155	YE31555
115O10	Wam 158	YE31558
115O10	Wam 160	YE31560
115O10	Wam 161	YE31561
115O10	Wam 162	YE31562
115O10	Wam 163	YE31563
115O10	Wam 164	YE31564