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Report of a Combined magnetic and VLF-EM Survey on the Lac Villebon Gold Property, Abitibi, 32C/03, 32N/14

> for Aldever Resources Inc. PO Box 28084 West Pender Street Vancouver, BC, Canada, V6C 3T7

by Jean-M. Hubert, eng.

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# Introduction

A ground combined magnetic and very low frequency electromagnetic (VLF-EM) survey was performed by Aldever Resources Inc. on their Lac Villebon Gold Property, in Eastern Abitibi.

The survey, which totals 62 line-kilometers, was executed in March and April 2016 by an Aldever team and the data were processed by MBGeosolutions.



Figure 1. Location of the property Lac Villebon Gold.

## The Property

The Lac Villebon Gold property is located 32 km east of the Municipality of Val d'Or in Eastern Abitibi. It includes thirty nines (39) in the NTS 31N/14 and 32C/03 map area (figure 2).

The Lac Villebon Gold project covers an area of approximately 865 hectares on the western shore of Lac Villebon, and the Project's mineral claims are contiguous with the southern border of Alexandria Minerals' Cadillac Break Property Group. The Project is 31 kilometres southeast of the historic Sigma and the Lamaque Mines, which are currently controlled by Integra Gold Corp. and produced  $\sim 9.1$ M oz Au. The Lac Villebon Gold Project is also  $\sim 18$ km southeast of Agnico Eagle Mines Limited's Akasaba West Mine, which was acquired from Alexandria Minerals

Corporation in 2014 and hosts an indicated gold resource of approximately 200,000 oz Au. Other active companies in the immediate area include Glencore, 1.5 km to the south, and Monarques Gold Corporation and Cartier Resources Inc. to the northeast. The project is easily accessible year-round by the Trans-Canada Highway and is a 40-minute drive from the city of Val-d'Or. *(from http://www.aldever.com)* 

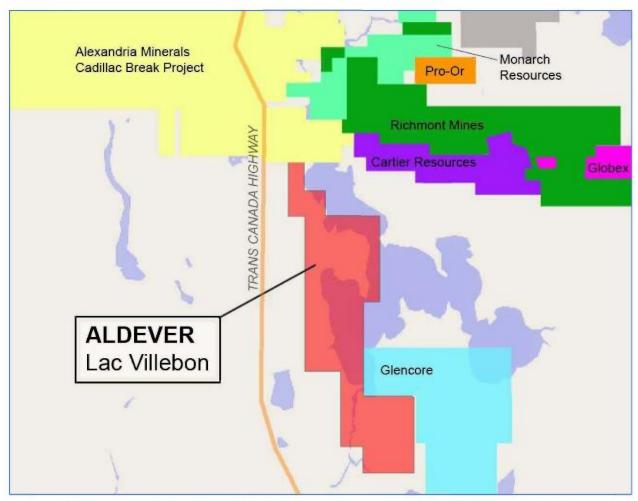


Figure 2. Location of Lac Villebon Gold and surrounding properties. (from <u>http://www.aldever.com</u>)

The fifteen (15) claims of the property covered by the survey are listed in the next table and shown in figure 3.

| 2431837 | 2431840 | 2431843 | 2431846 | 2431849 |
|---------|---------|---------|---------|---------|
| 2431838 | 2431841 | 2431844 | 2431847 | 2434764 |
| 2431839 | 2431842 | 2431845 | 2431848 | 2434765 |

| Tableau 1. Claims covered by the survey |  | Tableau | 1. | Claims | covered | by | the | survey |
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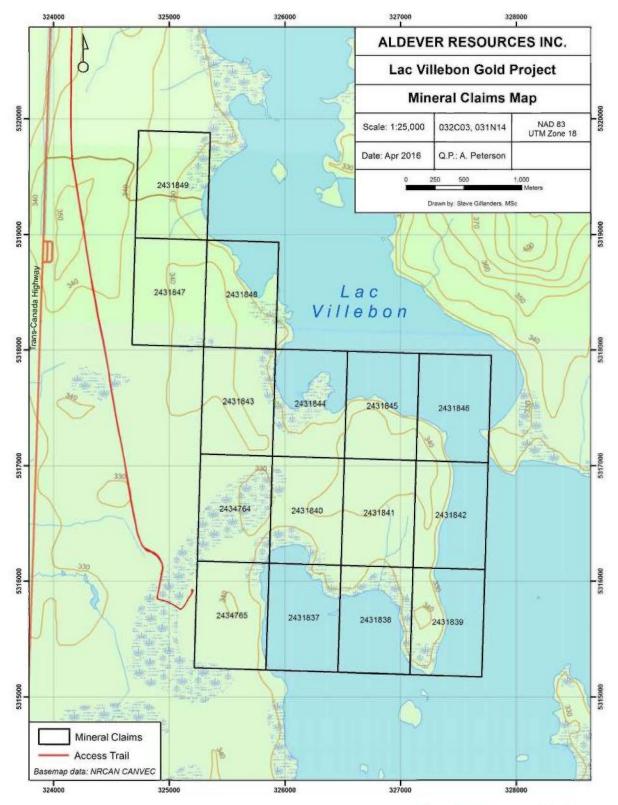


Figure 3. Claims covered by the survey.

## The Survey

The magnetic survey was executed between March 16<sup>th</sup> and April 4<sup>th</sup> 2016 by an Aldever field crew composed by Erin Bros, Steve Gillanders and Richard Hardwood.

The survey line grid totalizes 62 line-km. All the lines were read with a GSM-19V Overhauser Magnetometer, built by the company GEM of Toronto.

The GSM-19V Overhauser instrument is a total field magnetometer that includes VLF-EM sensors and a built-in GPS for accurate location of the measurements. The GSM-19 Overhauser is essentially a proton magnetometer, but the overhauser effect increases its sensitivity to 0.01 nanoTesla and its precision to 0.1 nT.

The VLF-EM module can measure simultaneously the signal from 3 stations. With three orthogonal sensors, the vertical in-phase and out-of-phase components are measured as % of the total field; the total field is measured in picoTesla and horizontal field component in arbitrary scale. The VLF station NAA 24.0 kHz, located in Cutler, Maine provides the signal for the measurements. The signal at 25.2 kHz from NML, located in Lamour, North Dakota was too weak to give reliable measurements.

# **Magnetic Survey**

The readings were taken every 12.5 metres along the lines. Magnetic diurnal was monitored with a GMS-19 base station and the magnetic readings were corrected with GEMLink 5.3 software. No value was attributed to the magnetic base station; so, a default value of 0 nT was automatically attributed and the magnetic values corrected for diurnal value are the difference relative to the base station value. The mean value of the base station readings is 55397 nT and this value should be added to the corrected measurements to get the Total Magnetic Field Intensity.

Raw magnetic data, corrected only for the diurnal variation, are shown in Figure 4. The magnetic data are very noisy, which limit the usefulness of the survey.

The base station data indicate that its location is suitable and no important solar activities occurred during the survey.

Bad readings are present in most all surveys, but they usually show only some few isolated peaks easy to remove. The actual survey reveals too much imprecise value that a manual cleanup is impractical

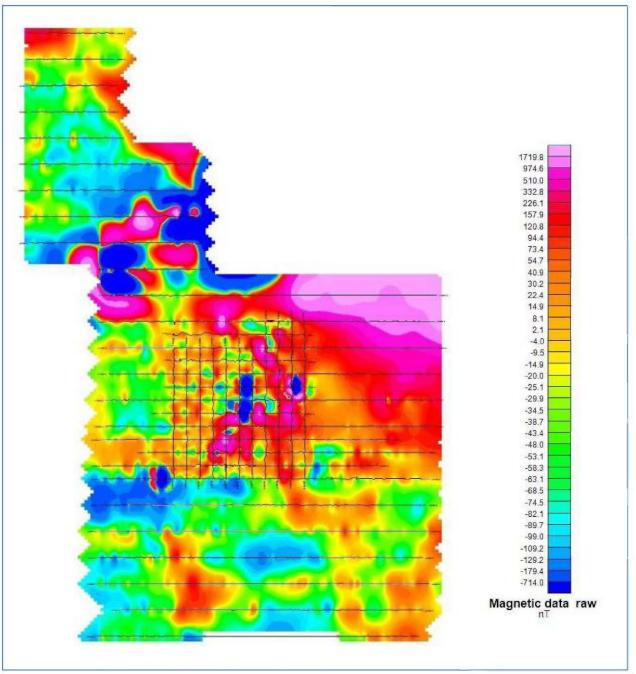




Figure 5 gives a good insight of the noise with the profile of the difference of a reading and the mean of adjacent ones. The red profiles vary between -100 and +100 nT; blue dots indicate the location where the absolute difference is greater than 100 nT.

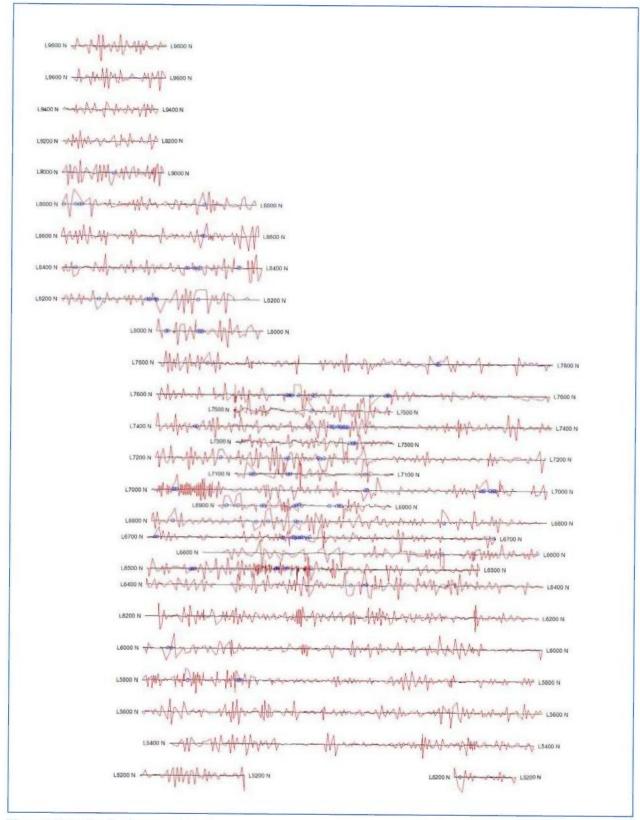


Figure 5. Noise Profiles in magnetic data.

Even if the data are noisy, a strong, aggressive filtering lets strong magnetic anomalies stand out, but weak anomalies are loss in the filtered noise.

The mean value of the base station readings was attributed as the base station value and was added to the magnetic measurements to get the Total Magnetic Field Intensity (TMI). TMI values, gridded and filtered, are presented in figure 6.

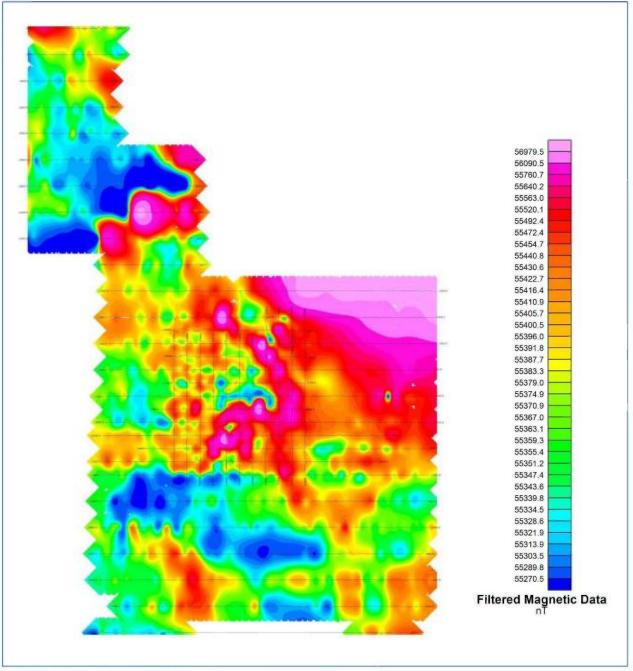


Figure 6. Filtered Total Magnetic Intensity.

Better presentations are obtained if East-West and North-South surveys are taken separately. Figure 7 shows the magnetic data on the East- West lines and figure 8, those on the North-South lines.

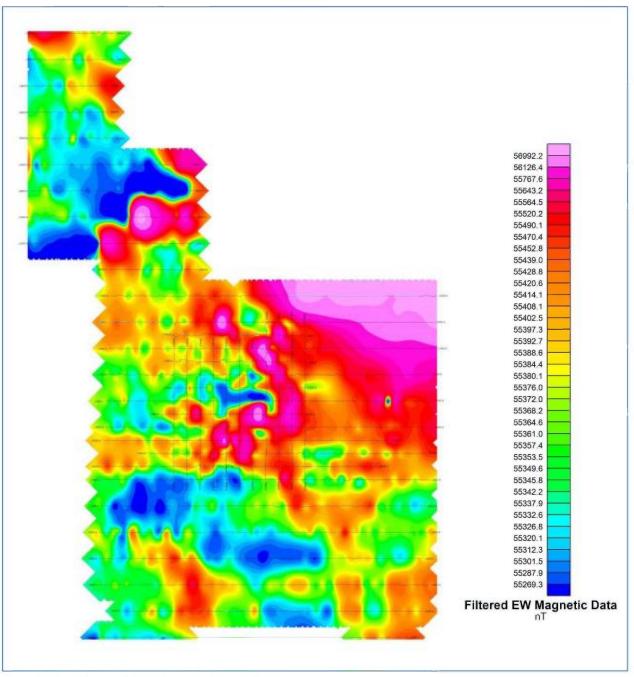


Figure 7. Total Magnetic Field Intensity - East-West line survey.

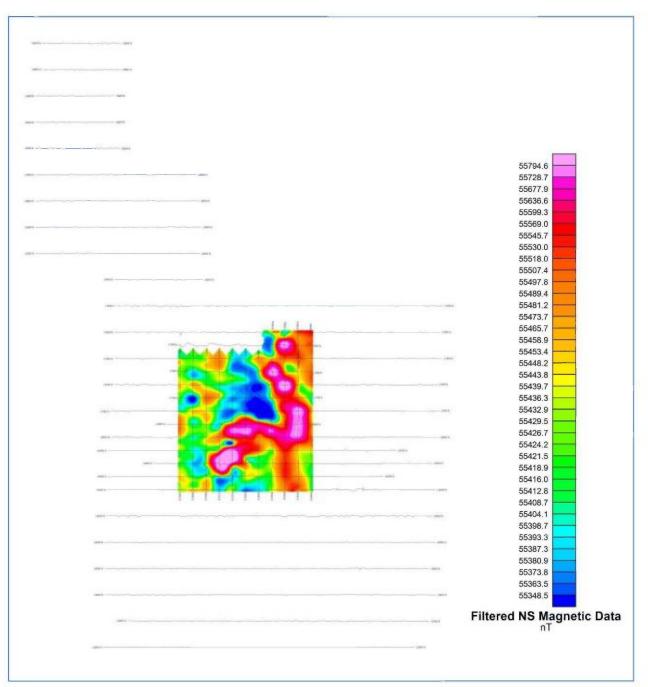


Figure 8. Total Magnetic Field Intensity - North-South line survey.

## VLF-EM survey

The readings were taken every 12.5 metres along the lines The VLF readings are taken after the magnetic readings. The VLF-EM measurements include the vertical in-phase and out-of-phase components, measured as % of the total field; the total field amplitude in picoTesla.

The surveys began with measurements from 2 stations, NAA 24.0 kHz, located in Cutler, Maine and NML 25.2 kHz, located in Lamour, North Dakota. The signal from NML was too weak to give reliable measurements and NML signal was discarded.

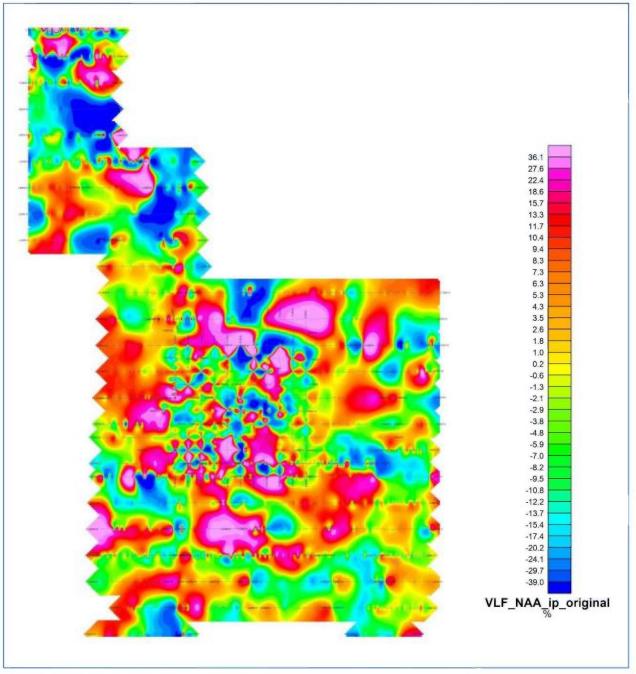


Figure 9. Original NAA VLF-EM In-phase component.

The VLF data are as noisy as the magnetic data. In addition to the noise, in-phase and out-of-phase components show unexplainable sign reversals.

Including the noise, the regular and unexplainable sign reversals, the in-phase and out-of-phase components require extensive corrections and there are no guarantees that the applied correction will be the right one. This introduce a risk to interpret false anomalies. However, even if in-phase and out-of-phase components are not very useful, total field could indicate anomalies if the intensity is greater than the noise. VLF Filtered Total Field data are shown in figure 10.

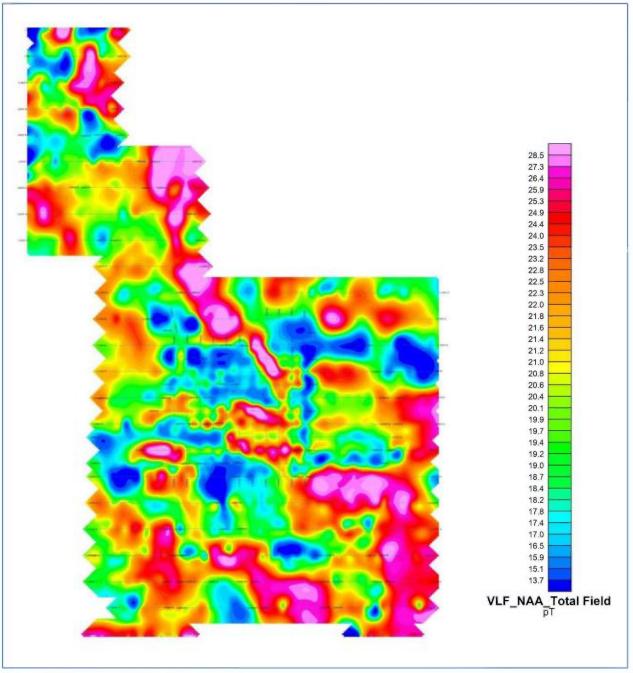


Figure 10. VLF-EM NAA Filtered Total Field.

Noise and/or leveling problem is still present on the detailed grid. VLF Total Field is not constant; some days, the stations emit at half power. Ideally, VLF Total Field should be monitored and corrected like the Magnetic Total Field, but it is not common practice and instruments are not designed to do it. Levelling problem is more obvious on the detailed grid, where crossed lines measurement produced a bubble like pattern. VLF Total Field data on the EW and NS were gridded separately and are shown in figure 11 and 12 respectively.

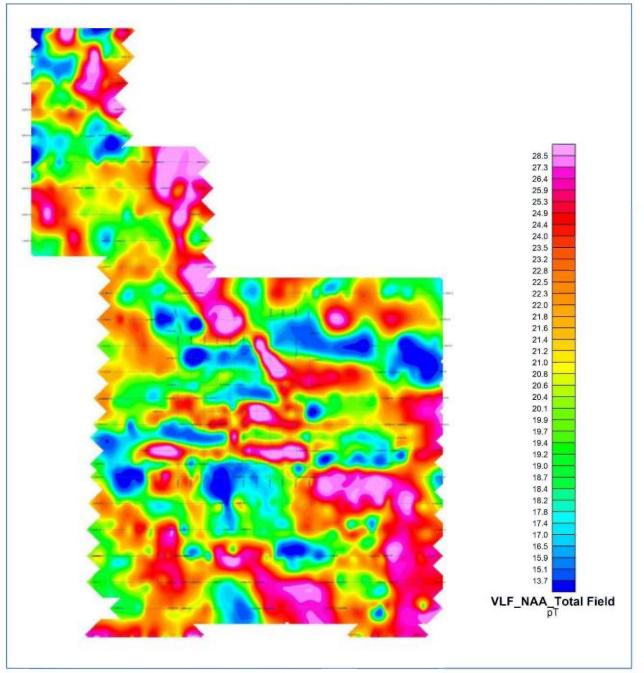


Figure 11. VLF-EM NAA Filtered Total Field, EW grid

Some anomalies are located between the lines and could be due to overshoot interpolation.

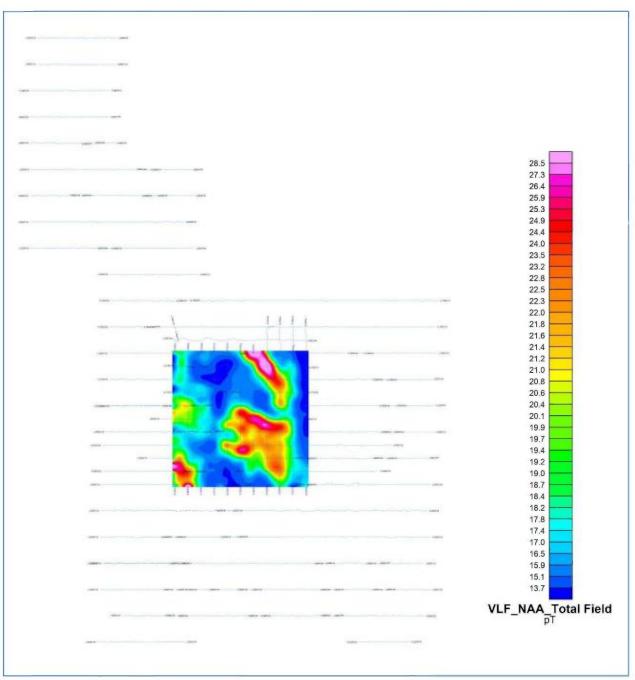


Figure 12. VLF-EM NAA Filtered Total Field, NS grid

A summary interpretation is given in figure 12. Due to the noisy measurements, all interpreted anomalies should be considered as probable and any anomaly of interest should be confirmed by a detailed survey. Magnetic anomalies are presented by grey lines and VLF ones by orange ones.

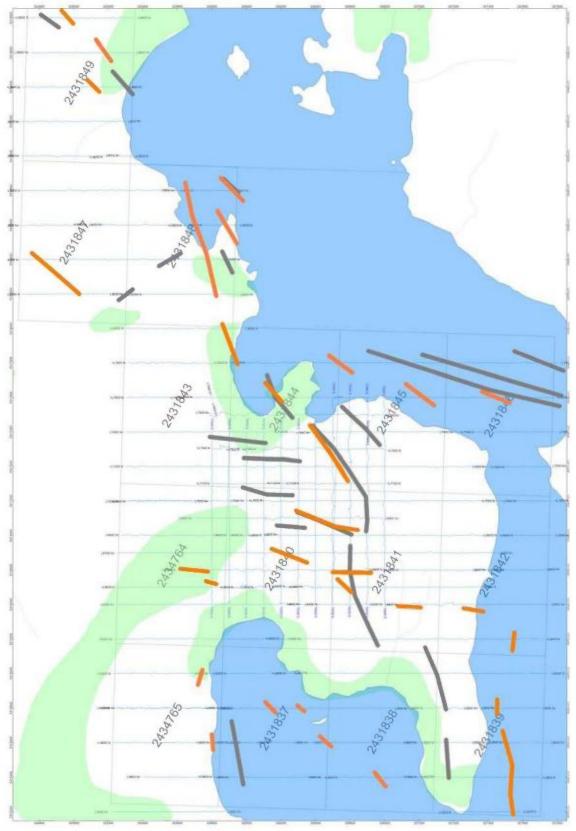


Figure 13Interpretation of magnetic and VLF anomalies.

### **Data Presentation and Recommendations**

The data are presented on five maps at the scale 1:5000, in the annexes. Two maps represent the Magnetic Total Field on the North-South and on the East-West grid lines. The data were only filtered, being too noisy to be leveled correctly. The magnetic field intensities range from 54700 nT to 58700 nT with a mean value of 55477 nT.

Two maps shown the Total Field from the VLF signal of the NAA station, located in Cutler, Maine. Again the surveys from lines North-South and lines East-West are presented separately. Like the magnetic data, VLF are noisy and and only a filter was applied to reduce the noise. In-phase and out-of-phase components are not shown; important noise and random sign reversals restrict their usefulness. The VLF Total Field intensities range from 0.2 pT to 42 pT with a mean value of 20 pT.

East-west magnetic anomalies in the Villebon Lake are probably caused by an ultramafic intrusive. Coinciding magnetic and VLF anomalies are attributed to pyrrhotite. Some VLF anomalies, mainly those located in the lake and parallel to the shore, can be related to conductive bottom lake sediments.

It is strongly recommended to confirm any anomaly of interest by a detailed survey. Smaller anomalies will stand out of noiseless survey and will be easier to correlate them on line to line basis and then, will help the geological mapping. The actual database do not permit any advanced data processing like a 3D magnetic inversion.

#### Conclusions

A combined magnetic and VLF-EM survey, totalling 62 km, was executed in April 2016 on the Lac Villebon Gold Property of Aldever Resources Inc. The data presents some erratic readings and a high level of noise. The data were processed and mapped and only higher anomalies that emerge from the noise were picked out. At this stage, no exploration target has been proposed but at the light of a geoscientific compilation, if any geophysical anomaly is enhanced, it is strongly recommended to confirm it using a more advanced geophysical survey.

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#### **CERTIFICATE of QUALIFICATIONS**

I, undersigned, Jean M. Hubert, do certify:

1. I am a consulting geophysicist and a professional engineer.

2. I am a graduate in Geological Sciences from Ecole Polytechnique de Montréal in 1972.

3. I have more than 40 years of practice in geophysics applied to mining exploration.

4. I am a member of l'Ordre de Ingénieurs du Québec and of the Society of Exploration Geophysicist.

5. I do not hold any interest in the company Aldever Resources Inc., or in any mining properties discussed in this report.

6. I examined the magnetic and VLF data, process them and wrote the document "Report of a Combined Magnetic and VLF-EM Survey on the Lac Villebon Gold Property, Abitibi, 32C/03, 32N/14"

Dated May 26, 2016

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Jean M. Hubert, p. eng. OIQ #22848