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**STEALTH MINERALS LTD.**

**VOLUME ONE**

**A GEOPHYSICAL REPORT ON A GROUND MAGNETOMETER, INDUCED  
POLARIZATION AND RESISTIVITY SURVEY, OVER THE SOFIA PROSPECT,  
TOODOGGONE AREA, OMINECA MINING DIVISION,  
NORTH CENTRAL BRITISH COLUMBIA**

**By**

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## **SUMMARY**

During the period July 13 to July 21, 2005 Lloyd Geophysics Inc. carried out a ground magnetometer, induced polarization (IP) and resistivity survey over the Sofia property, in the Toodoggone area of north central British Columbia, for Stealth Minerals Ltd.

The geophysical surveys outlined a very strong IP chargeability anomaly, approximately 1400 metres long and 1000 metres wide, with a significant magnetic overprint, a strong depth component and the anomaly remains open in three directions.

In addition to extending the geophysical surveys to delineate the lateral extent of the strong IP chargeability anomaly, an initial diamond drill programme of 1400 metres in 7 holes has been recommended.

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### VOLUME TWO

IP PSEUDO-SECTIONS AND PLAN MAPS

## **1.0 INTRODUCTION**

During the period July 13 to July 21, 2005 Lloyd Geophysics Inc. carried out a ground magnetometer, induced polarization (IP) and resistivity survey over the Sofia property, in the Toodoggone area of north central British Columbia, for Stealth Minerals Ltd. Approximately 17 line kilometres of each individual geophysical survey was completed.

The property is located in an area of extensive glacio-fluvial and gravel covered terrain, with few outcrops. However the property is situated in a geological and structural setting which is highly permissive for the discovery of a copper-gold porphyry deposit. Therefore the purpose of the IP survey was to outline any sulphide systems which may lead to the discovery of an economic copper-gold porphyry deposit.

## **2.0 GEOLOGY**

Regionally, the Toodoggone area lies within the Intermontane Belt, between the east end of the Stikine Arch in the north and the Skeena Arch in the south. Geology along the east-northeast margin of the Stikine Terrane is dominated by the successive volcano-plutonic arcs, which were constructed from Permian time but most importantly during the late Triassic and early Jurassic. The Toodoggone area lies within a north-northwest trending corridor of Mesozoic island-arc magmatism.

Locally the Sofia property is underlain by both Jurassic monzonite and mafic Triassic (Takla group) volcanic rocks. The discovery outcrop (July 2004) displays intense potassic alteration of the monzonite and biotite alteration of the mafic rocks. Both lithologies are cut by magnetite, quartz-magnetite and magnetite-chalco pyrite veins forming a dense fracture pattern and stockwork.

The alteration styles within the two lithologies are similar to the Kemess south deposit, presently being mined by Northgate Minerals Corporation. Some 2000 metres southeast of the Sofia showing, a one metre chip sample hosted within the same intrusive, returned 32 grams per tonne gold and 5 per cent copper.

### **3.0 INSTRUMENT SPECIFICATIONS**

#### **3.1 Ground Magnetometer Survey**

The system consists of 2 Envi total field proton precession magnetometers manufactured by Scintrex Limited, Toronto, Canada.

The system is completely software controlled. The field magnetometer measures and stores in memory, via the keypad, the time, the location and the value of the earth's total magnetic field at each station. The base station magnetometer measures and stores in memory, automatically, the daily fluctuations of the earth's total magnetic field throughout each survey day.

At the end of each survey day, the 2 sets of data are merged and downloaded to a field computer. The field data is automatically corrected, via software, for diurnal variations recorded by the base station magnetometer.

#### **3.2 Induced Polarization Survey**

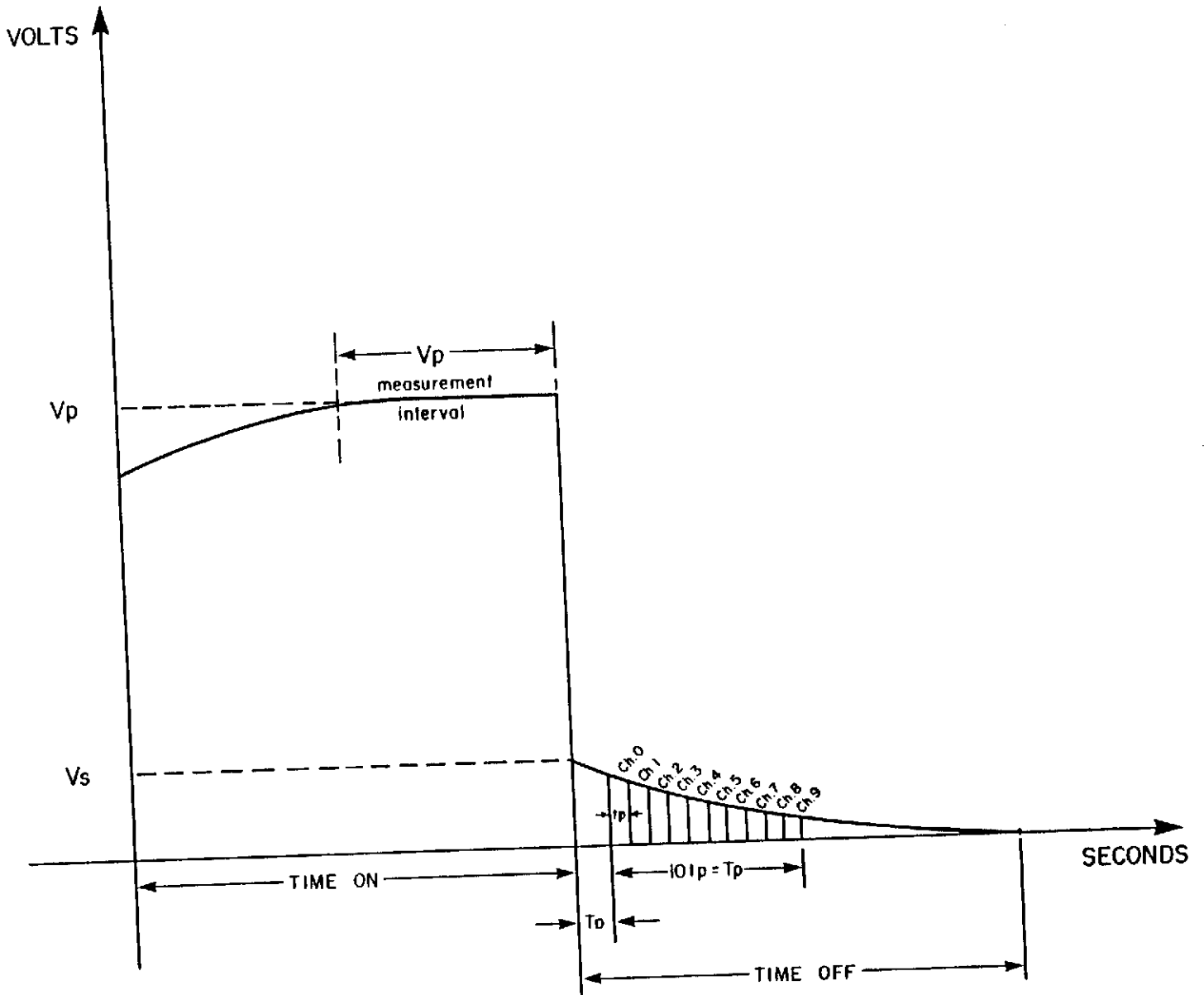
The system used to carry out this survey was a 7.5 kw time domain unit consisting of a 400 hertz Onan/Wagner Leland motor generator set and a Mark II transmitter manufactured by Hunttec Limited, Toronto, Canada and a 6 channel IP-6 receiver manufactured by Iris Instruments, Orleans, France.

The transmitter was operated with a cycle time of 8 seconds and the duty cycle ratio; [(time on)/(time off)] was 0.5 seconds. This means the cycling sequence of the transmitter was 2 second current "on" and 2 seconds current "off" with consecutive pulses reversed in polarity.

The IP-6 receiver can measure up to 6 dipoles simultaneously. It is microprocessor controlled, featuring automatic calibration, gain setting, SP cancellation and fault diagnosis. **To accommodate a wide range of geological conditions, the delay time, the window widths and hence the total integration time is programmable via the keypad.** Measurements are calculated automatically every 2 to 4 seconds from the averaged waveform which is accumulated in memory.

The window widths of the IP-6 receive can be programmed arithmetically or logarithmically. For this survey the instrument was programmed arithmetically into 10 equal window widths or channels, Ch<sub>0</sub>, Ch<sub>1</sub>, Ch<sub>2</sub>, Ch<sub>3</sub>, Ch<sub>4</sub>, Ch<sub>5</sub>, Ch<sub>6</sub>, Ch<sub>7</sub>, Ch<sub>8</sub>, Ch<sub>9</sub>, (Figure 1). These are recorded individually and summed up automatically to obtain the total chargeability. Similarly, the resistivity (R) in ohm-metres is also calculated automatically. The instrument parameters chosen for this survey were as follows:

Cycle Time ( $T_c$ )	= 8 seconds
Ratio <u>(Time On)</u> (Time Off)	= 1:1
Duty Cycle Ratio <u>(Time On)</u> (Time On) + (Time Off)	= 0.5
Delay Time ( $T_D$ )	= 120 milliseconds



IP-6 RECEIVER PARAMETERS  
Figure 1

Window Width ( $t_p$ )	= 90 milliseconds
Total integration Time ( $T_p$ )	= 900 milliseconds

#### **4.0 SURVEY SPECIFICATIONS**

The magnetometer survey measurements were recorded at 25 metre station intervals, on lines 200 metres apart.

The IP survey measurements were made using the pole-dipole array, with a dipole length ( $x$ ) equal to 50 metres and measurements were recorded for  $n = 1$  to 6. The current electrode ( $C_1$ ) was always located to the east of the potential measuring dipole ( $P_1P_2$ ) as depicted on each pseudo-section drawing.

#### **5.0 DATA PROCESSING AND PRESENTATION**

The magnetic data collected in the field is merged with the base station data, downloaded to a field computer, automatically corrected and plotted in profile form on the individual pseudo-sections and also as a contoured plan map.

The IP data was processed at the end of each survey day using a Pentium laptop computer and Fujitsu printer. In the Vancouver office, the data was transferred to a high-speed desktop computer coupled to an HP DesignJet colour plotter to make the final pseudo-sections and plan maps. The numerical value obtained from a 21 point triangular filter of the IP data, applied consecutively at every station on each line, is also plotted on the pseudo-sections. These numerical values are also used to plot contoured plan maps of filtered chargeability and filtered resistivity.



The magnetic and IP data are shown on 14 pseudo-sections and 5 plan maps as follows:

**IP Pseudo-sections (1:2500)**

<b>Line No.</b>	<b>Drawing No.</b>
7200N	05495-01
7600N	05495-02
7800N	05495-03
8000N	05495-04
8200N	05495-05
8400N	05495-06
8600N	05495-07
8800N	05495-08
9000N	05495-09
9200N	05495-10
9400N	05495-11
9600N	05495-12
9800N	05495-13
10000N	05495-14

**Plan Maps (1:5000)**

<b>Description</b>	<b>Drawing No.</b>
Filtered Chargeability	05495-15
Filtered Resistivity	05495-16
Total Field Magnetics	05495-17
Stacked Chargeability	05495-18
Stacked Resistivity	05495-19

## **6.0 DISCUSSION OF RESULTS**

The identification of a magnetic signature is often quite adequate in distinguishing between different rock types based largely on their magnetite content. In conjunction with geological mapping, this kind of interpretation can also be extended to identify geological structures such as folds and faults.

Across the survey area there is a significant magnetic overprint with total field magnetic variations of approximately 1200 nT. This is both important and encouraging, since the Sofia showing displays intense potassic alteration of the monzonite and biotite alteration of the mafic rocks, with both lithologies being cut by magnetite, quartz-magnetite and magnetite-chalcopyrite veins forming a dense fracture pattern and stockwork.

There is a strong northeast-southwest magnetic linear running along line 9400N. Since this magnetic feature cuts across the general magnetic grain of the area surveyed line 9400N was re-surveyed. The repeated magnetic readings were consistent with the original magnetic data. This magnetic linear correlates well with an aeromagnetic high. Finally Stealth geologists have observed basic dyke style rocks in the immediate vicinity of this linear.

An IP response depends largely on the following factors:

- The volume content of sulphide minerals.
- The number of pore paths that are blocked by sulphide grains.
- The number of sulphide faces that are available for polarization.
- The absolute size and shape of the sulphide grains and the relationship of their size and shape to the size and shape of the available pore paths.
- The electrode array employed.
- The width, depth, thickness and strike length of the sulphide body and its location relative to the array.
- The resistivity contrast between the sulphide body and the barren host rock.

There are several critical factors that we would like to determine from IP field measurements made over a sulphide body. These are the sulphide content, the width, length, depth of burial and thickness of the body. Experience has shown that this is both difficult and unreliable because of the large number of variables, described above, which contribute to an IP response. **The problem is further complicated by the fact that rocks containing magnetite, graphite, clay minerals and variably altered rocks produce IP responses of varying amplitudes.**

During the 1990's, various research workers have developed special inversion software capable of generating realistic chargeability and resistivity models. While such models are often a good representation of the geological cross-section of a sulphide body, **they do not provide a unique solution, but rather a probable solution.** These models appear to be most useful for bodies of large lateral extent, for example porphyry deposits and less useful over smaller bodies, for example massive sulphide and skarn deposits.

The IP survey has outlined two very distinct IP chargeability zones. The northwestern half of the area surveyed has a very strong chargeability response with values ranging from 30 to 60 milliseconds with corresponding resistivity values in the 400 to 800 ohm-metre range. The southeastern half of the area surveyed is characterized by a much weaker IP chargeability response with values ranging from about 7 to 20 milliseconds, with higher resistivity values ranging from about 1000 to 1500 ohm-metres.

The IP chargeability anomaly which covers the northwestern half of the area surveyed is approximately 1400 metres long, 1000 metres wide and remains open to the northwest, the northeast and the southwest and exhibits a strong depth component.

Finally it is of some interest to note that the magnetic fluctuations appear to be more pronounced on the flanks of the IP chargeability anomaly, a fact which should not be ignored in any future drilling campaign.

## **7.0 CONCLUSIONS AND RECOMMENDATIONS**

Based on the geophysical data discussed in this report, the surveys have outlined a very strong IP chargeability anomaly with a significant magnetic overprint. This anomaly, which overlies approximately 50 percent of the survey area, is about 1400 metres long and 1000 metres wide. Furthermore it remains open to the northwest, the northeast and the southwest, and also has a strong depth component.

Since this anomaly is underlain by rocks of the Jock Creek quartz monzonite pluton, it has been interpreted to indicate the presence of a strong sulphide system with the potential to host a significant gold-copper porphyry deposit.

It is recommended that an *initial* diamond drill programme of 1400 metres in 7 holes be carried out to test the strong IP and magnetic anomalies detected by the present surveys.

Hole No.	Line No.	Station No.	Angle	Depth
1	9800N	12800E	Vertical	200 m
2	9800N	13000E	Vertical	200 m
3	9800N	13200E	Vertical	200 m
4	9200N	12900E	Vertical	200 m
5	9200N	13100E	Vertical	200 m
6	9200N	13300E	Vertical	200 m
7	9200N	13500E	Vertical	200 m

Finally, additional IP and magnetic surveys should be carried out to completely delineate the lateral extent of the present anomaly, which remains open in three directions.

Respectfully submitted,

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## APPENDIX

### CERTIFICATION OF THE AUTHOR

I, John Lloyd of 805 – 4438 West 10<sup>th</sup> Avenue, in the City of Vancouver, in the Province of British Columbia, do hereby state that:

I graduated from the University of Liverpool, England in 1960 with a B.Sc. in Physics and Geology, Geophysics Option.

I obtained the diploma of the Imperial College of Science, Technology and Medicine (D.I.C.) in Applied Geophysics from the Royal School of Mines, London University in 1961.

I obtained the degree of M.Sc. in Geophysics from the Royal School of Mines, London University in 1962.

I am a member in good standing of the Association of Professional Engineers in the Province of British Columbia, the Society of Exploration Geophysicists of America, the European Association of Exploration Geophysicists and the Canadian Institute of Mining and Metallurgy.

I have been practicing my profession for over forty years.

**Vancouver, B.C.**

**August, 2005**