015872

REPORT ON

AN INDUCED POLARIZATION (I.P.) SURVEY

LEE CLAIM GROUP

WHITEHORSE MINING DISTRICT, YUKON TERRITORY

FOR

ANVIL MINING CORPORATION LIMITED

BY

HUNTEC LIMITED

VANCOUVER B.C.

NOVEMBER 1967

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INTRODUCTION

General

This report contains the results of an Induced Polarization survey carried out by Huntec Limited for the Anvil Mining Corporation Limited on the Lee Claim Group in the Whitehorse Mining District, Yukon Territory.

The project was part of a larger program studying the capability of the Induced Polarization method for detecting the type of sulphide mineralization which has been found in commercial quantities during the last few years in this district, and to prospect for additional ore.

Additional interest was shown in the survey over this grid in order to detect any significant correlation between the I.P. results and known gravity anomalies in the area.

The field work was carried out between September 6th and September 8th, 1967. The field party chief for the survey was Mr. Mark Samilski. The project was supervised from Vancouver by Mr. R. K. Watson.

The Property

The Lee Claim Group adjoins the Faro Group to the Northwest and appears on the regional geology map to lie completely within the quartz-sericite schist formation which has been the host rock for the economically mineralized bodies found to date. Access is by helicopter or on foot.

SURVEY SPECIFICATIONS

The Equipment

The Induced Polarization equipment used was a 2.5 kw pulse-type instrument manufactured in Toronto by Huntec Limited. The following specifications apply:

Type of current	Direct Current broken at periodic intervals
Frequency	1.5 seconds "current on" and 0.5 seconds "current off". Alternate pulses have reverse polarity
Integrating time	400 milliseconds
Maximum power available	2.5 kw
Maximum current available	3.0 amps

Measurements taken in the field were:

1. The current flowing through the current electrodes C_1 and C_2.
2. Primary voltage V_p between measuring electrodes during "current on" time.
3. Secondary voltage V_s between measuring electrodes during "current off" time.

The apparent chargeability (M_a) in milliseconds is calculated by dividing the secondary voltage by the primary voltage and multiplying by 400 which is the sampling time in milliseconds of the receiver unit. The apparent resistivity is calculated by dividing V_p by the current and multiplying by the geometrical factor appropriate to the electrode array being used.

Electrode Configuration

The entire survey was carried out using the pole-

dipole electrode configuration or array. In this array the current electrode C_1 and the two potential electrodes P_1 and P_2 are moved in unison along the line to be surveyed. The quantity "a" or "electrode separation" is the distance between C_1 and P_1. The distance between P_1 and P_2 is kept at some convenient distance equal to "a" or a simple fraction of "a". For the reconnaissance phase of this survey the value of "a" was kept at 200 feet.

Since the value of "a" is a rough approximation to the depth penetration, detailing of anomalies discovered in the reconnaissance phase was done by profiling the anomalies at different electrode separations. This additional data provides information from which depth, dip and location may more easily be calculated than from a single profile.

RESULTS AND INTERPRETATION

Presentation

The results of this survey and their interpretation are shown on Plate 1 in the rear jacket of this report. They are presented in the form of profiles of apparent chargeability (M_a) and apparent resistivity (ρ_a). The designation "apparent" refers to the fact that the physical quantity measured is of a volume of ground directly beneath and adjacent to electrodes and is a combination of the true chargeability or resistivity of overburden, the bedrock, and any mineralized sections of bedrock. In certain cases the true physical property of these units may be calculated or estimated from the "apparent" physical property.

When an anomaly is detected in the field during the reconnaissance survey additional readings are taken using various electrode separations. This additional detail information is shown in profile form and is used to calculate or estimate certain geometrical parameters and, where possible, values of true chargeability and resistivity. In this report the interpreted depth and geometric shape are shown along with the estimated true chargeability and resistivity (M_2 and ρ_2) on the profiles under each anomaly. These are at scale and interpreted depths may be scaled using the zero datum line as ground level. The existing interpretation techniques allow only a minimum chargeability to be estimated and so the value is designated as "greater than" the interpreted value. The same situation holds for resistivity except that it is a maximum value that can be determined so that the designation is "less than" the true resistivity.

The chargeability of a particular rock unit is a function of the amount of conductive material within it, and the number, size and distribution of the conductive particles. With this number of variables it is not a simple matter to relate chargeability directly to percentage, or grade of conductive particles. In an area where mineralized bodies have a uniform size and distribution of conductors it may be possible to do this, but only after a sufficient number of holes have been drilled to obtain the necessary information.

In this report no estimate of grade has been made from true chargeability (M_2). It may be assumed, however, that the higher M_2, the higher the percentage of mineralized particles. It would be hoped that a follow-up procedure of this survey would include a comparison of drilling results and calculated M_2 in order to derive a relationship between them.

It is known that graphite is prevalent in this area and that it will often form a strong conductor. Its unusual feature, when compared to metallic sulphides, is the ability of low percentages of graphite particles to be interconnected and to so form a good conductor. It is believed that a high chargeability anomaly caused by graphite will display a strong resistivity anomaly, whereas one caused by disseminated sulphides will show a comparatively weak resistivity anomaly or none at all. It is hoped that this observation may be used to discriminate between anomalies caused by graphite and those caused by disseminated metallic sulphides. It falls down when the anomaly is caused by massive sulphides, which will, of course, show a strong resistivity anomaly.

Interpretation

Of the four lines that were surveyed only line 16E showed a recognizable I.P. anomaly. The three others showed virtually no I.P. or resistivity anomalous response and no further work is recommended on them, on the basis of this survey.

The anomaly on line 16E indicates a single discrete causative body, which is probably in the shape of a prism with the upper surface approximately 150 feet below ground surface. The profiles taken with a 200 ft. and 400 ft. electrode separation confirm the existence of each other and of the causative body. However, the 800 ft. electrode separation profile does not match the other two and may indicate that the causative body increases in width with depth.

The causative body as shown under the profile on Plate 1 is estimated to have a true chargeability of the order of 300 milliseconds. If the actual size of the causative body is different in cross sectional area to that shown, then the true chargeability would be different on an inverse proportion basis. There is no clear resistivity anomaly that can be related to the chargeability anomaly and it is interpreted that the causative body is composed of disseminated particles of conductive material. It could, therefore, be disseminated graphite or sulphides but possibly more likely sulphides in view of the lack of resistivity response. It is therefore recommended that a gravity and magnetic survey be carried out across this anomaly and if the results of these confirm the existence of the anomaly a drilling program be set up for further investigation.

SUMMARY

1. An Induced Polarization survey was carried out on four lines on the Lee grid.

2. One anomaly was discovered lying on line 16+00E, and is interpreted as being caused by a body some 150 feet deep composed of disseminated conductive particles. Because of the lack of resistivity response it is considered more likely to be composed of sulphides than graphite.

3. It is recommended that a gravity and a magnetic survey be carried out on this line prior to a decision to drill or to extend the I.P. survey.

HUNTEC LIMITED

R. K. Watson

R. K. Watson, B.A.Sc., P.Eng.
Geophysicist

APPENDIX A

ASSESSMENT CREDIT DATA

Miles Surveyed	Line-Miles
Reconnaissance	0.80
Detail Phase	0.38
Total	1.18

Personnel:

Name	Occupation	Dates
M. Samilski	Operator/Party Chief	Sept.6 - Sept.8, 1967
A. Hovi	"	Sept.6 - Sept.8, 1967
R. Johns	Helper	Sept.6 - Sept.8, 1967
M. Lowey	"	Sept.6 - Sept.8, 1967
D. Wilson	Drafting	Nov.22 - Nov.24, 1967
R. Watson	Geophysicist	Nov.27 - Nov.28, 1967
R. Harrington	Typing	Nov.29, 1967

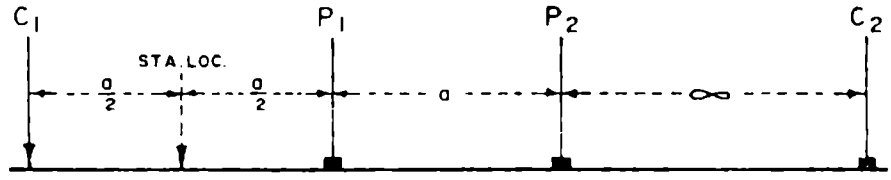
DETAIL PROFILES of APPARENT CHARGEABILITY & RESISTIVITY

ANVIL MINING CORPORATION LIMITED.

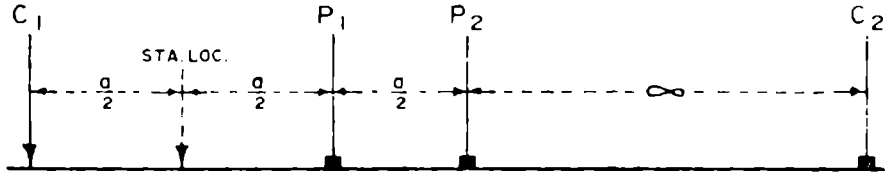
(LEE CLAIM GROUP)

PLATE ------ I

3 - ELECTRODE ARRAY



POLE - DIPOLE ARRAY

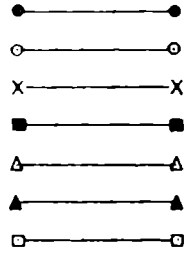


NOTE.

P_1 P_2 are Receiver Electrodes.

C_1 C_2 are Transmitter Electrodes.

LEGEND



a = 50'
a = 100'
a = 200'
a = 300'
a = 400'
a = 600'
a = 800'

Horizontal Scale: 1 inch = 200 feet

Vertical Scales:

Chargeability 1 inch = 5·0 milliseconds.

Resistivity 2 inches = 1 logarithmic cycle (ohm-meters)

DATE: NOV. 1967

JOB Nº: PH-666-7

STATEMENT OF COSTS

LEE GROUP

INDUCED POLARIZATION SURVEY

Huntec contract		
	3 days @ $206.00	$ 618.00
Helpers		
	6 man days @ $20.00	120.00
	Board & lodging (Faro Camp)	
	12 m.d. @ $6.80	81.20
Helicopter, transport		
	September 6-9	
	4 hrs. 20 min. @ $110.00/hr.	476.67
		$ 1,295.87