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REPORT ON

AN INDUCED POLARIZATION (I.P.) SURVEY

WEST TED CLAIM GROUP

WHITEHORSE MINING DISTRICT, YUKON TERRITORY

FOR

ANVIL MINING CORPORATION LIMITED

BY

HUNTEC LIMITED

VANCOUVER B.C.

NOVEMBER 1967

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ACCOMPANYING MAPS

		MAP POCKET Scale
Plate 1	Apparent Chargeability and Apparent Resistivity Contours with Interpretation	1" = 400 ft.
Fig. A	Map showing approximate location of survey area	1" = 4 miles

Detail Profiles of Apparent Chargeability & Apparent Resistivity

Fig. 1	Line 8E
Fig. 2	Line 40E

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 West Ted Claim Group in the Whitehorse Mining District, Yukon Territory.

The survey of this claim group was part of a larger program which was designed to test the capability of the Induced Polarization method of 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. Part of this test included several test profiles over the Faro ore body. Additional interest was shown in the West Ted property in order to determine the I.P. effect, if any, associated with a previously observed magnetic anomaly which is approximately coincident with the baseline of the grid.

Field work was carried out between August 28th and September 5th, 1967. The field party chief until August 30th was Mr. John James, whocwas succeeded for the remainder of the survey by Mr. Mark Samilski. The project was supervised from Vancouver by Mr. R. K. Watson.

The Property

The West Ted group of claims lies approximately 30 miles north-east of the Anvil airstrip and base camp; access is by helicopter or on foot. The rocks outcropping in the area are mainly quartzites, banded hornfels, granulite and skarn, which are thought to be of Precambrian age.

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.

Data Presentation

The results of the reconnaissance phase of the survey are shown on Plate 1 which is located in the pocket at the back of the report. This shows contours of apparent chargeability and apparent resistivity at a scale of 1" to 400 ft. The interpretation data is also indicated and includes an outline of the chargeable bodies producing anomalies, zones of high conductivity and values of the chargeability and resistivity contrasts.

The detail results obtained along lines 8E and 40E are shown in Figs. 1 and 2 respectively as profiles at a horizontal scale of 1" to 200 ft. These are included as separate foldouts following the report. They also show sections of the interpreted bodies and their positions relative to ground level.

RESULTS AND INTERPRETATION

The contoured chargeability readings show a very well-defined zone of high chargeability running along the south and east boundaries of the survey grid. In places, notably on lines 8E, 36E and 40E there are corresponding resistivity anomalies showing values well below the normal background. Detailing on line 8E indicates the presence of a discrete chargeable body with relatively high conductivity which is interpreted as lying approximately 100 ft. below ground surface with a centre of chargeability at about 175 ft. below ground surface. The detail work done on line 40E is complicated by the fact that the profile is running along strike of the chargeable body and the normal rule of determining depth from the different electrode spacings cannot be considered valid here. It appears that the upper edge of the chargeable material is not deep and very likely comes to bedrock surface.

It is understood that a strong magnetic anomaly lies along the southern part of the grid and coincides roughly with the chargeability anomaly. The chargeable body is interpreted as a sulphide body containing magnetite but also containing conductive sulphides or graphite, which are probably massive in any areas of low resistivity. The most probable outline of the chargeable body is shown by cross hatching on the chargeability contour map with shaded areas indicating the more conductive and therefore massive portions. Whether or not economic sulphides are included within the conductive and chargeable zone cannot be directly determined from this geophysical survey. However the strong chargeability and resistivity anomalies indicate that there are definitely large amounts of other conductive minerals besides magnetite. - graphites?

No soil geochem anom on 40 E 36E

In as much as graphite is ever present in this area and is a good electrical conductor it is recommended that before the anomaly is tested by diamond drilling, a gravity survey be conducted across the anomaly at 400 ft., or preferably 200 ft. line intervals as an attempt to distinguish between graphite and conductive sulphides. A drilling program should then be established based on investigating strong conductors or chargeable areas which have a definite gravity high anomaly.

SUMMARY

1. The Induced Polarization survey detected a large chargeability and resistivity anomaly along the southern and eastern parts of the survey grid. The southern part is known to be related to a magnetic anomaly and it is concluded that the anomaly represents a deposit of magnetite and electrically conductive material which could be metallic sulphides and/or graphite. The conductivity and chargeability anomalies are both too strong to have been caused by magnetite alone.

2. It is recommended that a gravity survey be carried out over the anomaly to attempt to distinguish between sulphides and graphite before a drilling program is set up to investigate the anomaly.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. K. WATSON

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R. K. Watson

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

APPENDIX A

ASSESSMENT CREDIT DATA

Miles Surveyed:	Line-Miles
Reconnaissance Phase	3.0
Detail Phase	1.2
Total	4.2

Personnel:

Name	Occupation	Dates
J. James	Operator/Party Chief	Aug.28 - Aug.30, 1967
M. Samilski	Operator/Party Chief	Aug.28 - Sept.5, 1967
A. Hovi	Operator	Aug.28 - Sept.5, 1967
R. Johns	Helper	Aug.28 - Sept.5, 1967
M. Lowey	"	Aug.31 - Sept.5, 1967
E. Helkio	Drafting	Oct.24 - Oct.27, 1967
R. K. Watson	Geophysicist	Nov.2 - Nov.3, 1967
W. A. Finney	Geophysicist	Nov.3, Nov.6, 1967
M. Vatcher	Typing	Nov. 7, 1967

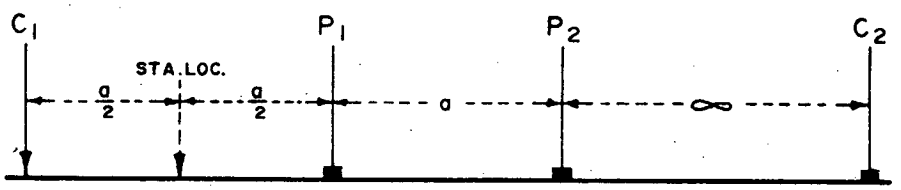
DETAIL PROFILES of APPARENT CHARGEABILITY & RESISTIVITY

ANVIL MINING CORPORATION LIMITED.

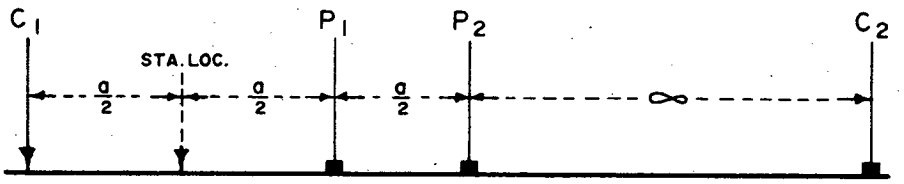
(WEST TED GROUP)

FIGS. --- 1 & 2.

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.

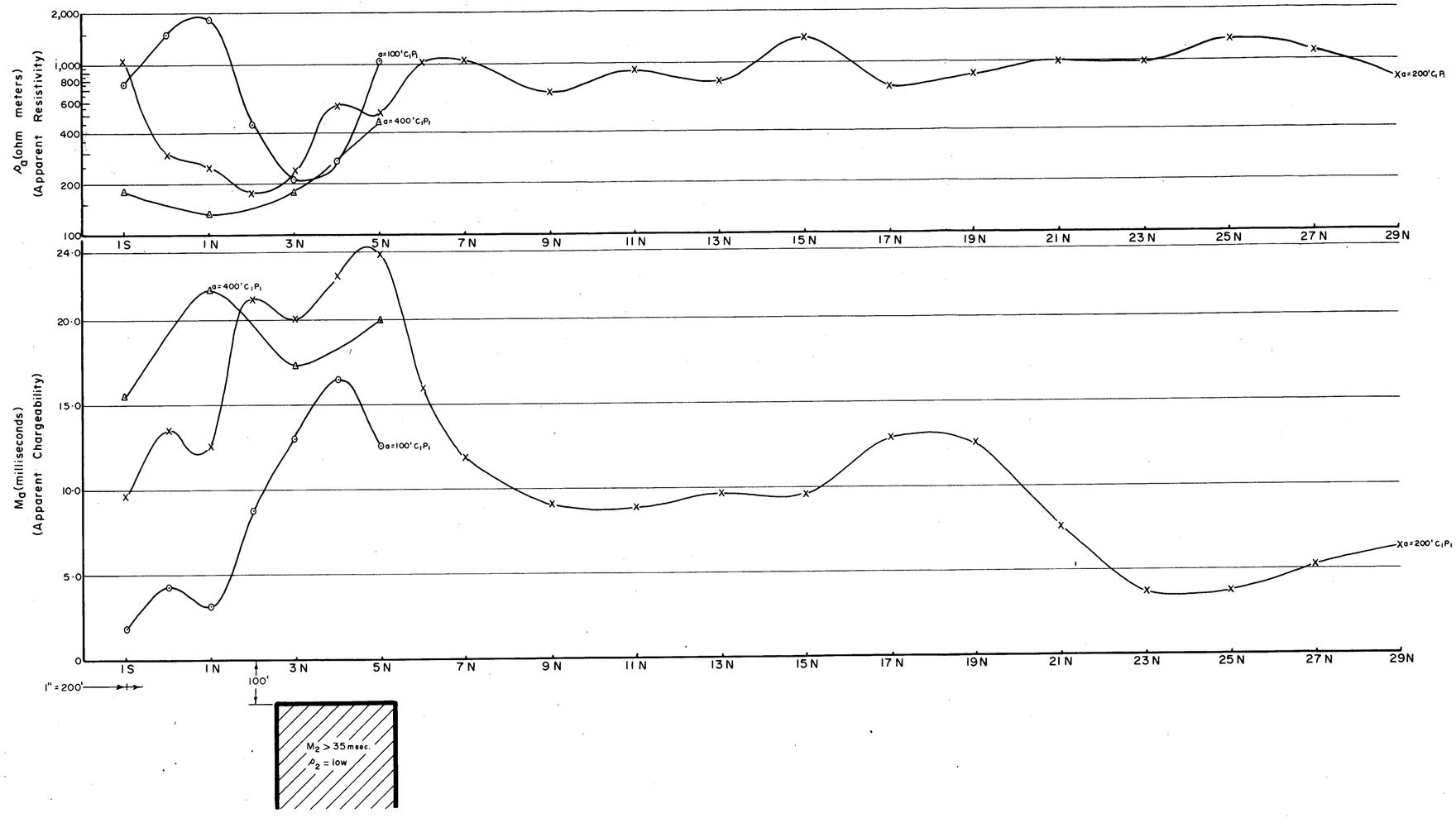
Vertical Scales:

Chargeability 1 inch = 5·0 milliseconds.

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

DATE: NOV. 1967.

JOB Nº: PH.-666/67.



INDUCED POLARIZATION SURVEY.

DETAIL PROFILE: LINE - 8E.

LEGEND

ANOMALOUS BODY.

NOTE:

M_2 – Interpreted Chargeability Contrast in Milliseconds of Anomalous Body.

ρ_2 – Interpreted Resistivity Contrast of Anomalous Body, ie, low, high or bgr. (equal to background.)

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To accompany report by: R.K. Watson

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

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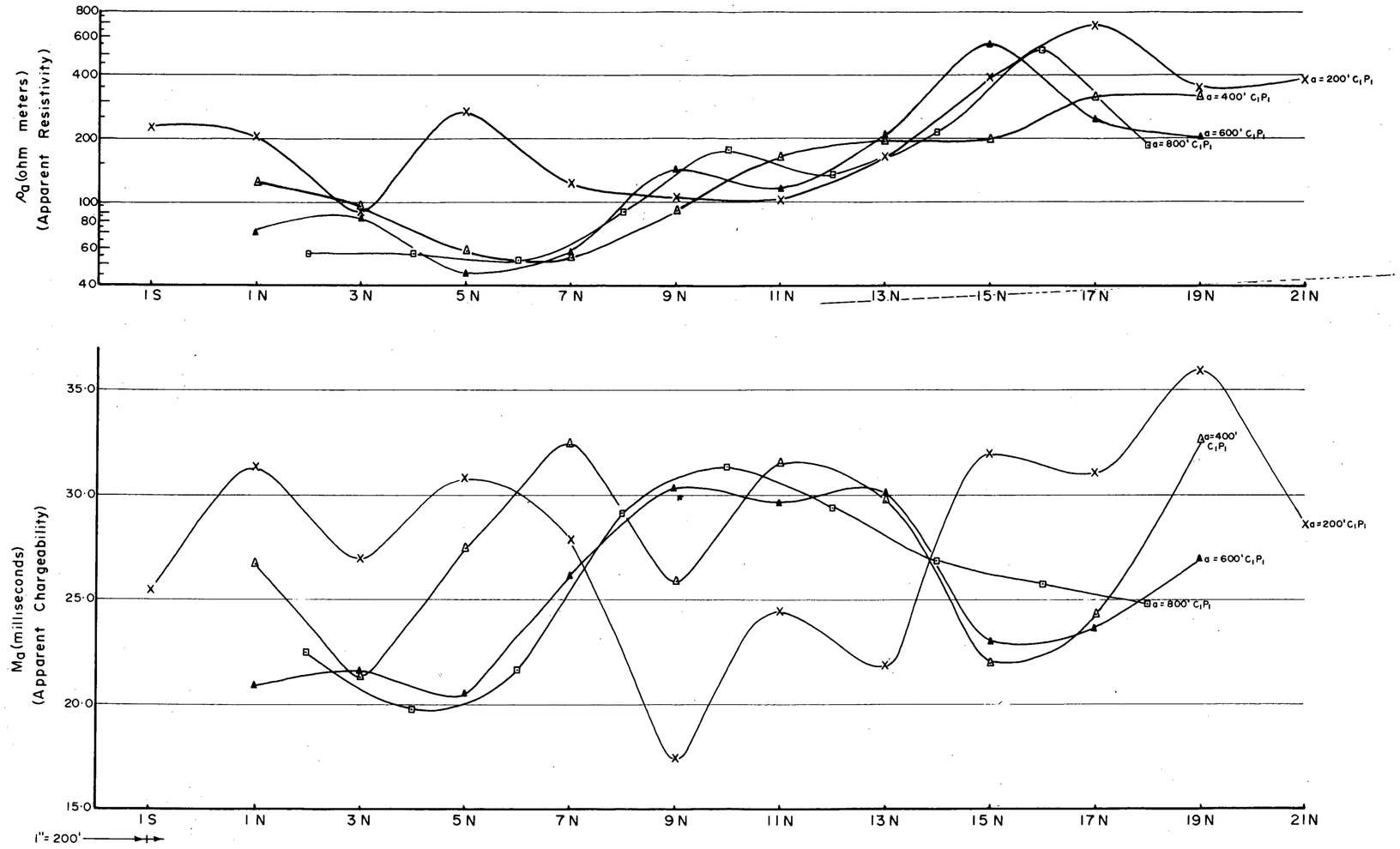
FIG.-1

PH.-666/67.

INDUCED POLARIZATION SURVEY.

DETAIL PROFILE: LINE -40E.



ENTIRE LINE UNDERLAIN BY MATERIAL HAVING A TRUE CHARGEABILITY IN EXCESS OF 35 MILLISECONDS AND PROBABLY COMING TO BEDROCK SURFACE.

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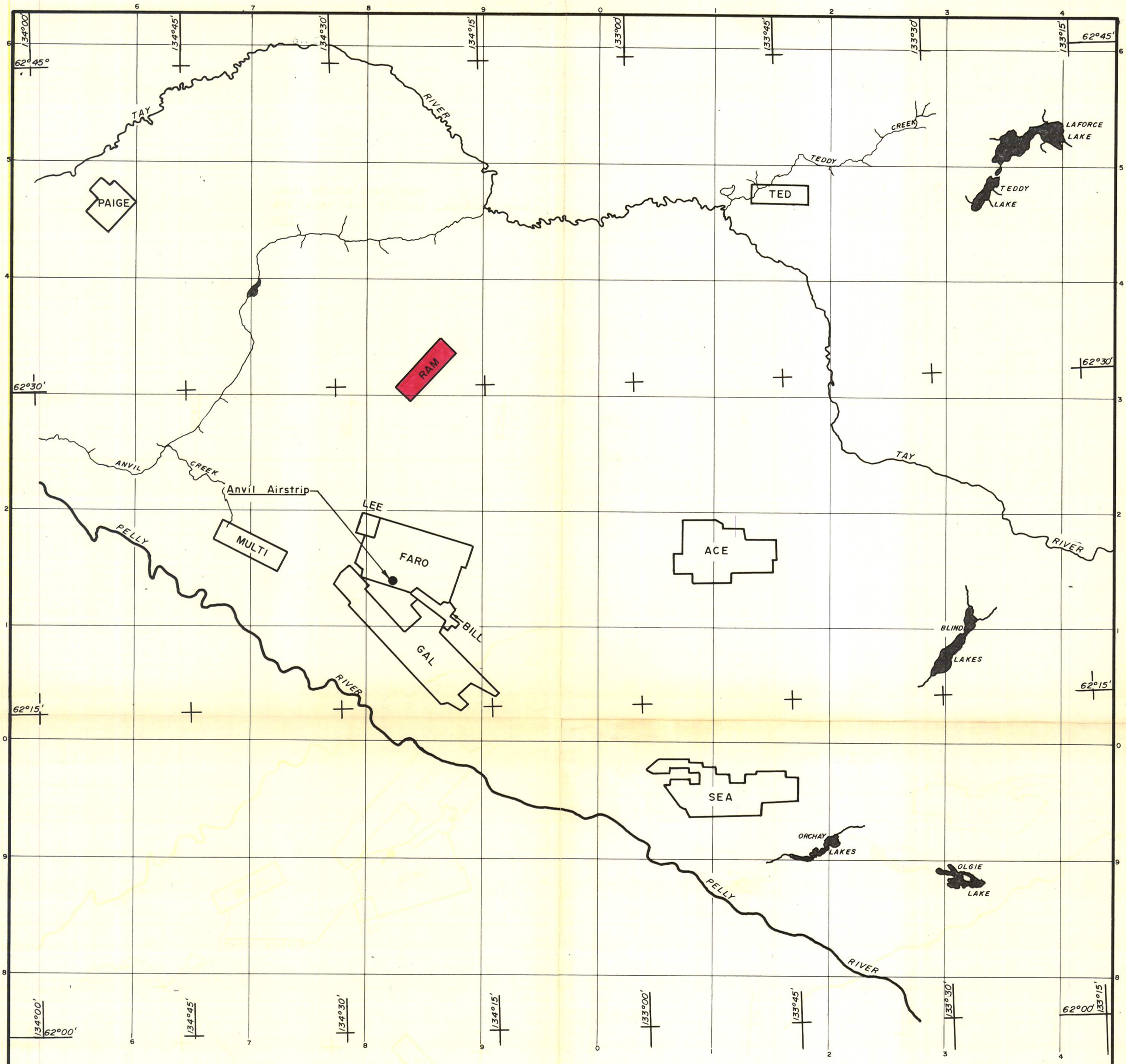
FIG.-2



NOTE:

MAP DRAWN FROM NATIONAL TOPOGRAPHIC SERIES.
FIRST EDITION, SHEET 105K.

inches
0 1
0 1 2
centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

ANVIL MINING CORPORATION LIMITED.

RAM GRID

WHITEHORSE MINING DISTRICT, - Y. T.

SURVEY LOCATION MAP.

To accompany report by: R. K. Watson

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

HUNTEC LIMITED. VANCOUVER - CANADA.

SCALE: 1 inch = 4 miles.

DRAWN: E. H.

DATE: NOV. 1967.

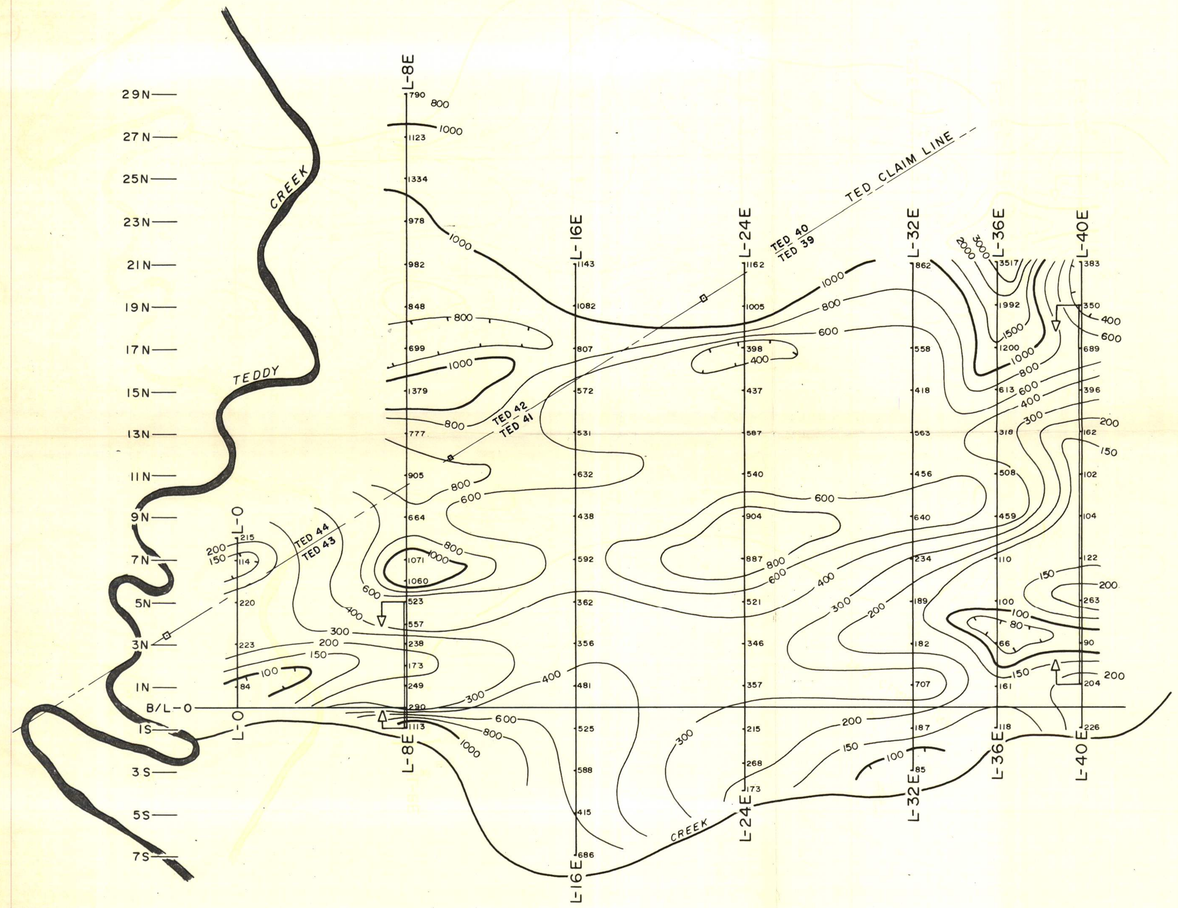
JOB Nº: P.H.- 666/67.

LEGEND

Approx. Area Surveyed.

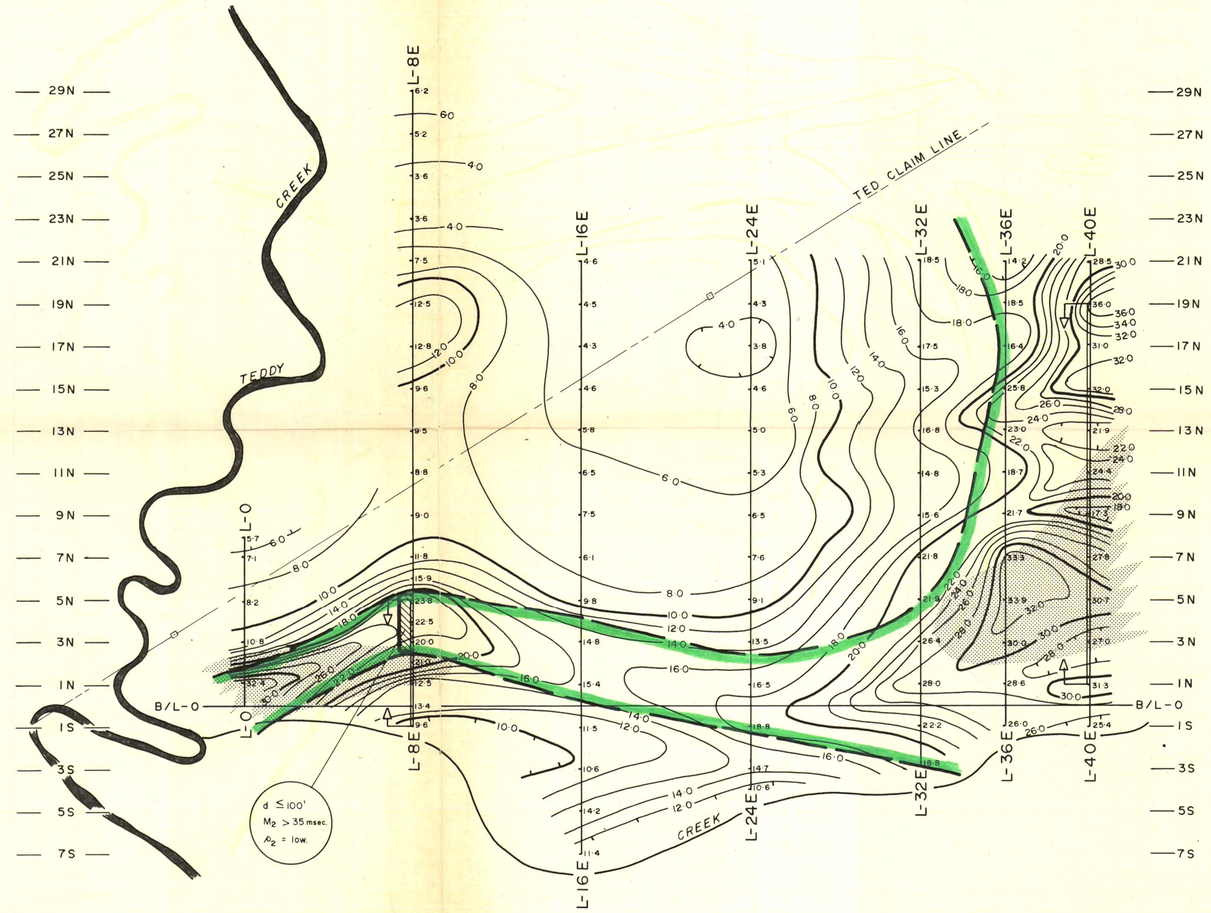
FIG. - A.

PH.- 666/67.



APPARENT RESISTIVITY CONTOURS.

CONTOURS AT (logarithmic intervals) 100, 150, 200, 300, 400, 600, 800, 1000 etc. ohm - meters.



APPARENT CHARGEABILITY CONTOURS. WITH INTERPRETATION.

CONTOUR INTERVAL: 2·0 milliseconds.

LEGEND

- Outline of Interpreted Anomalous Body.
- Detailed Anomalous Body.
- Zone of High Conductivity.
- Distance of Line Covered by Detail.

NOTE:

d – Depth to Top of Interpreted Anomalous Body in Feet.

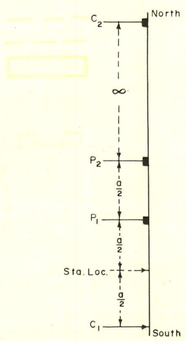
M_2 – Interpreted Chargeability Contrast in Milliseconds of Anomalous Body.

ρ_2 – Interpreted Resistivity Contrast of Anomalous Body, ie, low, high or bgr. (equal to background.)

N

POLE-DIPOLE ARRAY.

a = 200 feet



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SCALE: 1" = 400'

DRAWN: E.H.

DATE: OCT. 1967.

JOB N° PH-666

PLATE - I

inches 0 1 2
0 1 2 3 4 5 centimetres

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YUKON GEOLOGICAL SURVEY

PH-666/67