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REPORT ON

AN INDUCED POLARIZATION SURVEY

LUX CLAIM GROUP

HIGHLAND VALLEY, BRITISH COLUMBIA

(50°, 120°, N. W.)

FOR

CANZAC MINES LIMITED, (N. P. L.)

BY

HUNTEC LIMITED

TORONTO, ONTARIO

October, 1965

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INTRODUCTION

Between August 24th and September 25th, 1965, an Induced Polarization (I. P.) survey was carried out by Huntec Limited for Canzac Mines Limited. The survey area was covered by a group of 28 mineral claims (LUX 7 to 12 incl., 24 to 32 incl., 14, 20, 22, and 37 to 46 incl.) located approximately 6 1/2 miles north of the Bethlehem Mine, Highland Valley, British Columbia.

The geophysical crew was managed by Mr. B. T. Howes, assisted by Mr. P. Allen, and was supervised by Mr. A. R. Dodds. Canzac were represented by Mr. W. McLaren, and provided two field helpers. Drafting and typing were done at the Toronto office of Huntec Limited.

The I. P. survey consisted of 10.5 miles of readings taken at 200 foot intervals on lines 400 feet apart, using the electrode configuration known as the 'three-electrode array'. An electrode separation of 400 feet was used. Parts of several lines were also detailed variously with electrode separations of 50, 100, 200 and 800 feet, including two full lines of 200-foot readings to test depth penetration. Resistivity readings were taken concurrently on all lines.

The reconnaissance data are presented in the form of contoured maps at a scale of 1 inch to 200 feet. Contour intervals are 0.5 milliseconds for chargeability and logarithmic for resistivity. Data for lines detailed with more than one electrode separation are presented in the form of profiles, using a distance scale of 1 inch to 200 feet and vertical scales of 1 inch to 2 milliseconds and 2 inches per logarithmic cycle for chargeability and resistivity respectively.

SURVEY SPECIFICATIONS

The equipment used was a 2.5 kilowatt pulse type induced polarization instrument designed and manufactured by Huntec Limited. Power is obtained from a gasoline motor coupled to a 400 cycle three phase generator. This powers a transmitting unit which provides a maximum of 2.5 kw d.c. to the ground. The cycling rate is 1.5 seconds "current on" and 0.5 seconds "current off", the pulses reversing continuously in polarity.

The data recorded in the field consist of careful measurements of the current (I) in amperes flowing through electrodes C_1 and C_2, the primary voltage (V_p) appearing between P_1 and P_2 during the "current on" part of the cycle, and the secondary voltage (V_s) appearing between P_1 and P_2 during the "current off" part of the cycle. 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, in ohm-meters, is proportional to the ratio of the primary voltage to the measured current, the proportionality constant depending on the geometry of the electrode array used. The resistivity and chargeability obtained are called "apparent" as they are values which that part of the earth sampled would have if it were homogeneous. As the earth sampled is usually inhomogeneous, the

calculated apparent resistivity and apparent chargeability are functions of the actual resistivity and chargeability and of the geometry of the rocks.

The electrode configuration used for this survey was the 'three-electrode array'. For this array one current electrode, C_1 and the two potential electrodes, P_1 and P_2, are moved in unison along the survey lines. The spacing of these electrodes determines the depth penetrated. The second current electrode, C_2, is placed an 'infinite' distance away which, in practice, is about ten times the distance between C_1 and P_1. The I.P. measurement is plotted half-way between C_1 and P_1.

PRELIMINARY INTERPRETATION

The chargeability measurements in this area are, by and large, very flat, with a range from 0.5 to 3.4 milliseconds. Most of the readings are between 1.0 to 2.5 milliseconds, this variation being probably caused by changes in the thickness and nature of the overburden, and possibly by minor changes in the type and freshness of bedrock.

Only one region of interest can be selected on the basis of this survey. This consists of a zone of weakly anomalous readings centred on line 4+00S at the baseline. These readings only just stand out above background, and under different circumstances might be considered insignificant. However, in this case the cause of the increased apparent chargeability appears to be fairly deep, probably 200 feet or more, thus increasing the significance of weakly anomalous readings. Overburden in this area is thin to absent, the outcropping rocks being volcanics with low I.P response and an exceptionally low resistivity. Readings of this amplitude could well be caused by a change in rock type, or an increase in the magnetite content of the underlying rocks. They could, however, equally well be caused by sulphides.

The resistivity changes in this area should be useful in assisting geological mapping. The area is unusual in that the outcropping volcanics give as low an apparent resistivity as areas

covered by swampy overburden. The low in the southeast part of the grid is apparently caused by volcanics, while at the western side a swamp is at least a contributing factor in lowering the resistivity. In the northwest corner of the area volcanics may again be the cause of low resistivities, since there appears to be little overburden.

SUMMARY AND RECOMMENDATIONS

The I. P. survey over part of the Lux group of claims indicated one weakly anomalous area. The source is expected to be at least 200 feet below surface, and could consist of a change in rock type, an increase in magnetite content, or sulphide mineralization. The difference between the anomaly source and the surrounding rocks would not need to be very great.

It is recommended that some geological mapping be done in the southeast part of the grid area. If the geological situation seems favourable to sulphide mineralization then this anomaly might be further investigated. A small amount of magnetometer work would assist in deciding whether it is caused by magnetite. If the situation looks favourable, a vertical drill hole, collared at 0+00 on line 4 +00S, and 400 feet in length, is suggested.

HUNTEC LIMITED

R. K. Watson

for A. R. Dodds, B. Sc.
Geophysicist

R K Watson

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

REGISTERED PROFESSIONAL ENGINEER
R. K. WATSON
PROVINCE OF ONTARIO

APPENDIX I

Claims Surveyed

The area surveyed was covered by the following claims.

LUX 7 to 12 inclusive, 14, 20, 22, 24 - 32, 37 - 46.

Miles Surveyed

Various electrode separations were used for this survey, as follows:

Electrode Separation	Stn. Interval	Line Miles	Readings
400	200'	10.51	304
200'	200'	0.97	33
100'	100'	0.08	5
50'	25'	0.04	11
800'	400'	0.15	3
	Total	11.75 miles	356 rdgs.

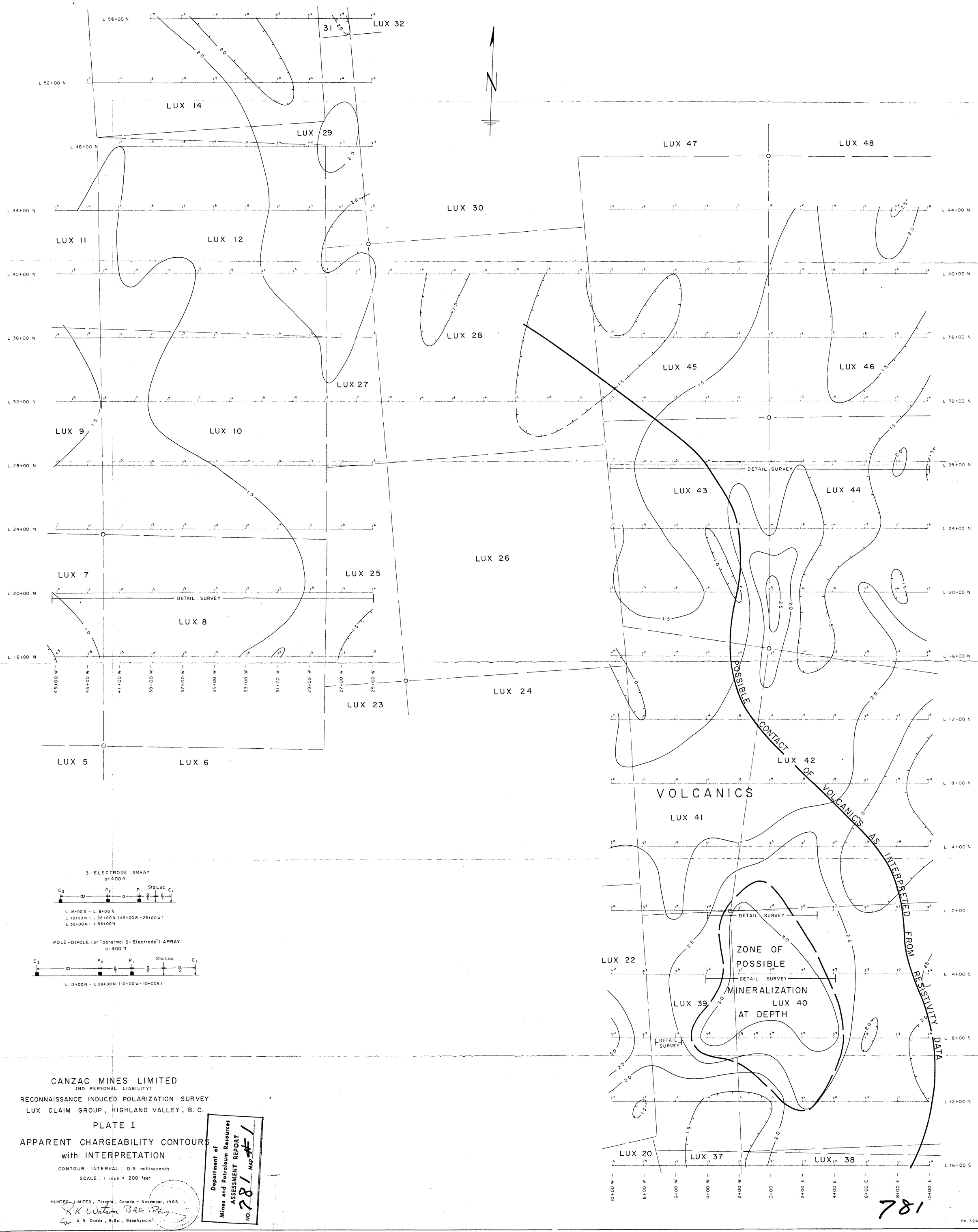
Personnel Time

Field Work	72 man days
Interpretation	6 man days
Drafting, typing	8 man days

Personnel Employed on Survey

Name	Occupation	Address	Dates
A. R. Dodds	Geophysicist	1450 O'Connor Dr.	Aug. 24-Oct. 6/65
B. T. Howes	Geophysical Operator	"	Aug. 24-Sept. 25/65
P. Allen	"	"	"
L. Sostad	Helper	Canzac Mines	"
G. Laughy	"	"	Aug. 26-Sept. 8/65
R. McGregor	"	"	Sept. 11-24/65
M. Lyons	Typing	1450 O'Connor Dr.	Oct. 28/65
J. Wilson	Drafting	"	Nov. 5, Nov. 8-11, Nov. 29/65.
R. K. Watson	Geophysicist	"	Nov. 26/65.

-61 man days



3-ELECTRODE ARRAY
a = 400 ft.

L. 16+00S - L. 8+00 N
L. 12+00N - L. 28+00N (45+00W - 25+00W)
L. 32+00N - L. 56+00N

POLE-DIPOLE (or "abnormal 3-Electrode") ARRAY
a = 400 ft.

L. 12+00N - L. 26+00N (10+00W - 10+00E)

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RECONNAISSANCE INDUCED POLARIZATION SURVEY
LUX CLAIM GROUP, HIGHLAND VALLEY, B. C.

PLATE 1

APPARENT CHARGEABILITY CONTOURS with INTERPRETATION

CONTOUR INTERVAL : 0.5 milliseconds
SCALE : 1 inch = 200 feet

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LUX 31

LUX 32

LUX 14

LUX 29

LUX 30

LUX 47

LUX 48

LUX 11

LUX 12

LUX 28

LUX 27

LUX 45

LUX 46

LUX 9

LUX 10

LUX 26

LUX 43

LUX 44

LUX 7

LUX 25

LUX 8

LUX 24

LUX 41

LUX 42

LUX 5

LUX 6

LUX 23

LUX 22

LUX 39

LUX 40

LUX 20

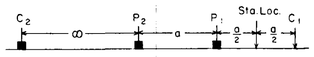
LUX 37

LUX 38

POSSIBLE CONTACT OF VOLCANICS AS INTERPRETED FROM RESISTIVITY DATA

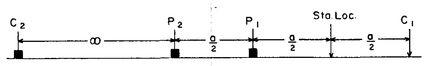
VOLCANICS

3-ELECTRODE ARRAY
a = 400 ft.



L. 16+00 S - L. 8+00 N
L. 12+00 N - L. 28+00 N (45+00 W - 25+00 W)
L. 32+00 N - L. 56+00 N

POLE-DIPOLE (or "abnormal 3-Electrode") ARRAY
a = 400 ft.



L. 12+00 N - L. 28+00 N (10+00 W - 10+00 E)

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RECONNAISSANCE INDUCED POLARIZATION SURVEY
LUX CLAIM GROUP, HIGHLAND VALLEY, B.C.

PLATE 2

APPARENT RESISTIVITY CONTOURS with INTERPRETATION

CONTOURS AT (logarithmic intervals) 30, 40, 60, 80, 100, 150, 200, 300, 400, 600, 800, 1000 ohm-meters

SCALE: 1 inch = 200 feet

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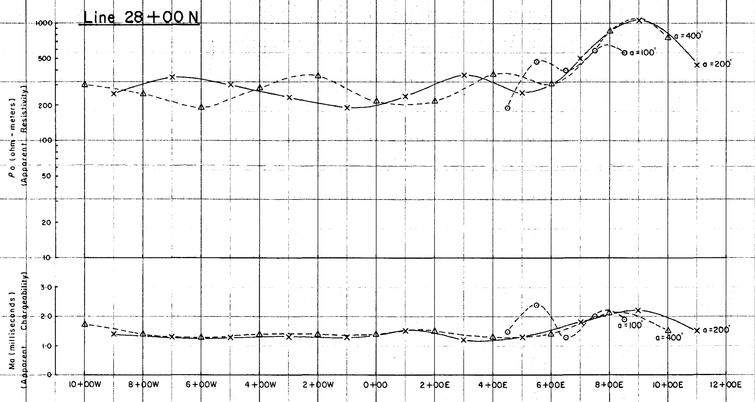

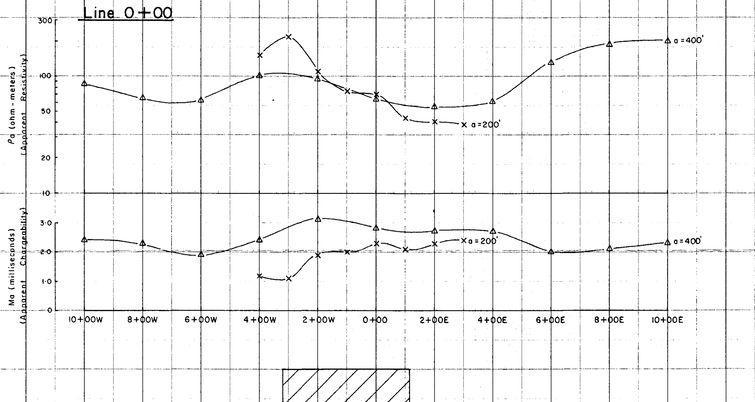

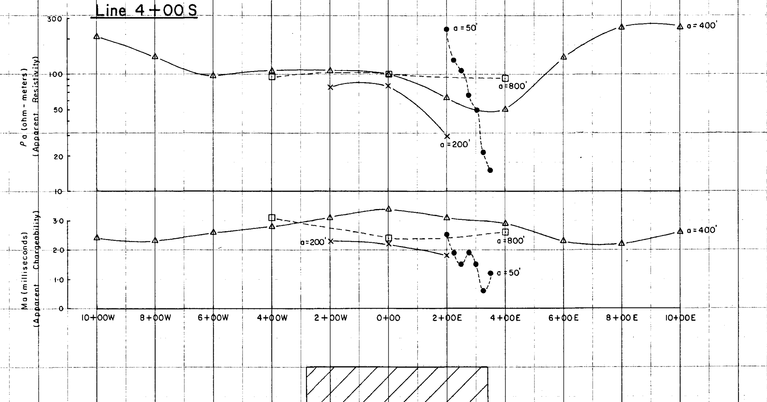

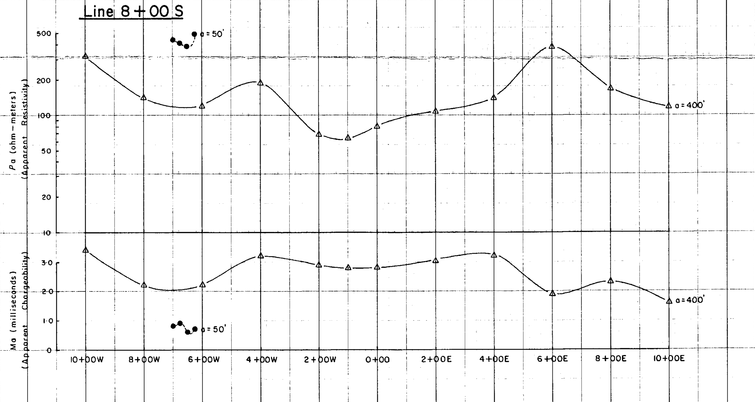

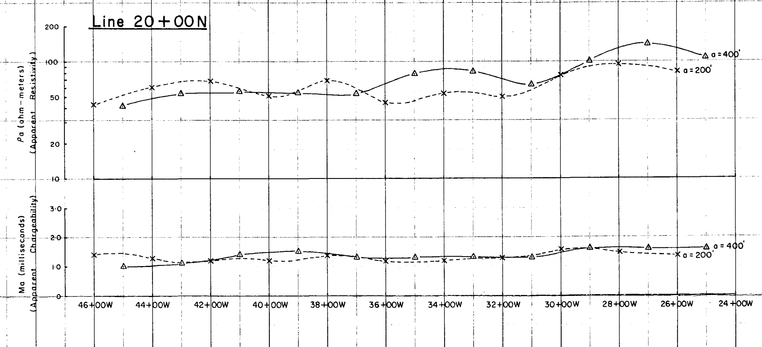

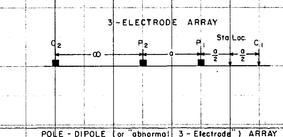

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LUX CLAIM GROUP, HIGHLAND VALLEY, B.C.

PLATE 3

DETAIL PROFILES with INTERPRETATION

SCALES:
Distance : 1 inch = 200 feet
Chargeability : 1 inch = 0.5 milliseconds
Resistivity : 2 inches = 1 cycle (logarithmic)

HUNTEC LIMITED, Toronto, Canada — November, 1965

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