

MAR 19690003: FIREBAG RANGE

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ECONOMIC MINERALS

FILE REPORT No.

PB-AF-002(2)

INDUCED POLARIZATION SURVEY
FOR
C. C. HUSTON & ASSOCIATES

by

HUNTEC DIVISION
OF
KENTING EXPLORATION SERVICES LIMITED

Toronto, Canada
September, 1969

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1. INTRODUCTION

Between August 5th and September 4th, 1969, Hunttec Division of Kenting Exploration Services Limited carried out an Induced Polarization (I.P.) survey for C.C. Huston and Associates on the Quartz Mineral Exploration Permits 14 and 15, near Fort McMurray, Alberta.

The equipment used was a pulse-type system manufactured by Hunttec Division, Toronto, with a power rating of 7.5 kw.

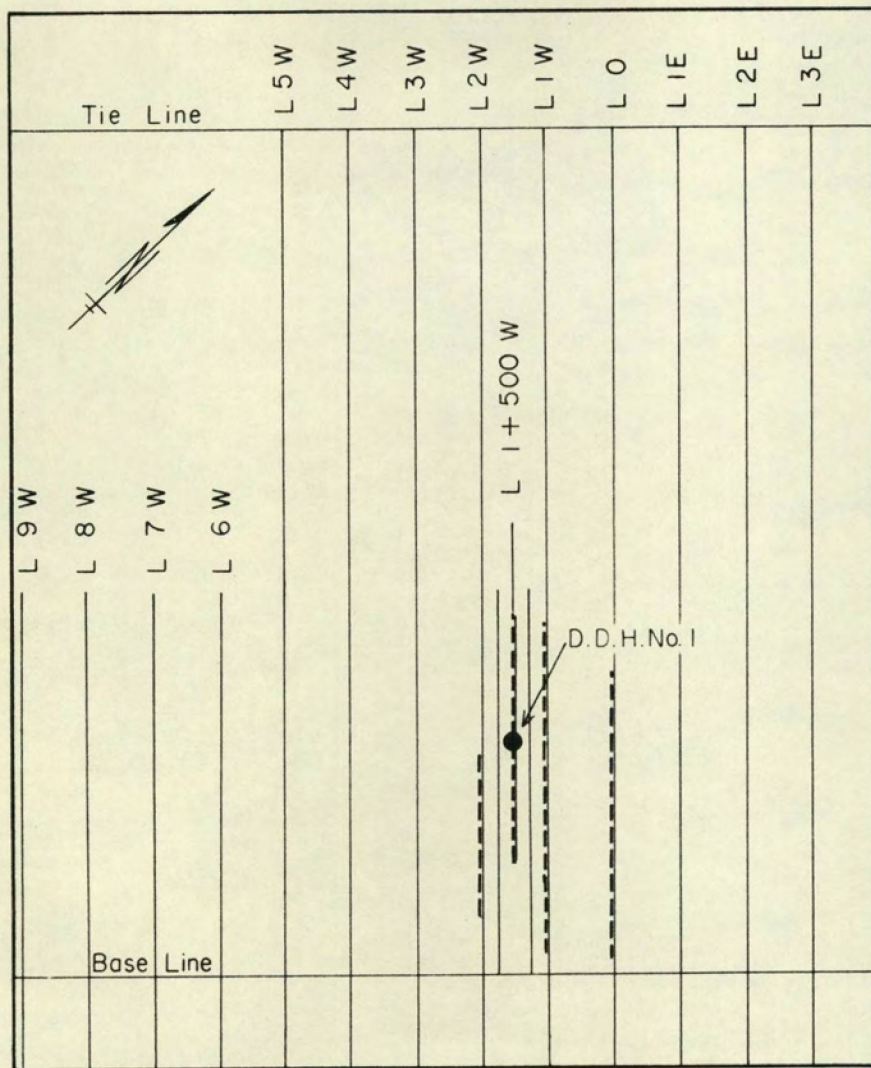
The lines surveyed were part of an area previously covered during a frequency domain type survey (McPhar Limited, 1967 and 1968), and later drilling of an anomaly did not reach bedrock in 158 feet.

Four main lines were surveyed in the area of the drill hole, giving a total of 3.3 line miles.

1.1 Location and Access

The property is located some 65 miles to north north east of Fort McMurray in the Firebag River Area. It is only accessible by light aircraft on floats using a small lake some 2 miles northeast of the survey grid.

The campsite used during the survey was also located on the lake. The equipment was also set up at the camp as it could not be moved to the survey area



—— PICKET LINE

----- HUNTEC I.P. SURVEY COVERAGE

LOCATION OF SURVEYED LINES
QUARTZ MINERAL EXPLORATION PERMITS 14 & 15
FORT Mc MURRAY, ALBERTA

1" = 3000'

Job No. PT 1151/69

because of the swampy conditions.

The progress of the survey was severely restricted because of the terrain and the numerous breaks, which were caused by animals, in the abnormally large amount of wire which had to be laid out.

1.2 Geology

The geology is similar to that of the Pine Point area, Northwest Territories. It consists of Middle Devonian sediments, mainly limestones and dolomites with minor shale beds, which are close to the contact with the main part of the Precambrian basement complex.

Topographically, the area is relatively flat consisting mainly of swamp but with a number of sand ridges providing some relief.

2. SURVEY SPECIFICATIONS

2.1 Equipment

The Induced Polarization equipment used was a 7.5 kilowatt pulse-type instrument manufactured in Toronto by Huntex Division of Kenting Exploration Services Limited. The following are the specifications:

Type of current	- direct current
Frequency	- 1.5 seconds "current on" and 0.5 seconds "current off"; alternate pulses have reversed polarity
Maximum power available	- 7.5 kilowatts
Maximum current available	- 8 amperes
Average current used during the survey	- 0.8 amperes
Integration time	- 400 milliseconds

Measurements taken in the field were:

- a) The current flowing between the current electrodes C1 and C2.
- b) Voltage difference, V_p , between measuring electrodes P1 and P2 while current is flowing.
- c) Voltage difference, V_s , between P1 and P2 when the current is off.

2.2 Data Reduction

The apparent chargeability (Ma) 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 a geometrical factor appropriate to the array being used.

The Metal Factor is calculated by dividing the chargeability Ma by the resistivity and multiplying by 1000. This has the effect of reducing the apparent increase in chargeability which results from an increase in the resistivity. Only Metal Factor anomalies which correlate with chargeability anomalies are of interest.

2.3 Electrode Configuration

In the "three-array" system, one current electrode C1 and two potential electrodes P1 and P2 are moved in unison along the survey lines. The spacing between C1 and P1 is kept constant for each traverse, at a figure roughly equal to the depth to be explored during the traverse. The second current electrode C2 is kept fixed at "infinity". Readings are plotted midway between C1 and P1.

On a three-array traverse with a spacing of 400 feet between C1 and P1, a body lying at a depth of 200 feet

will produce a strong response, but a rather complex anomaly shape. A body at 400 feet will produce a simpler but weaker anomaly. By running subsequent traverses at different electrode spacings, more precise estimates can be made of depth and shape of the zones of chargeability.

The survey was completed using a single electrode separation of 400 feet with a station interval of 200 feet.

2.4 Data Presentation

The results of the I.P. survey are presented as profiles at a scale of one inch to 200 feet of the chargeability, resistivity and Metal Factor.

2.5 Interpretation

The results are typical of measurements obtained over sediments of the type found in the Pine Point area.

The chargeability and resistivity show some minor fluctuations, but any increase in chargeability is associated with an increase in resistivity as is shown by non-anomalous metal-factor results. These metal factor values probably give a truer indication of the nature of the rock than the apparent chargeability values. They show a gradual increase in the background level from the baseline to the north east ends of the lines.

The overburden is known to be at least 150 feet thick from the drill hole on line 1500. The resistivity results are highest near the baseline on most lines and this probably reflects a thinner overburden in that part of the area.

The thick overburden has meant that much of the response which was obtained from the frequency domain survey using the shorter electrode spacings probably result from variations in the overburden.

2.6 Conclusions and Recommendations

No anomalous readings were obtained during the survey and it is recommended that no further work be done.

Respectfully Submitted By:

HUNTEC, Division of Kenting
Exploration Services Limited

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Geophysicist.

APPENDIX

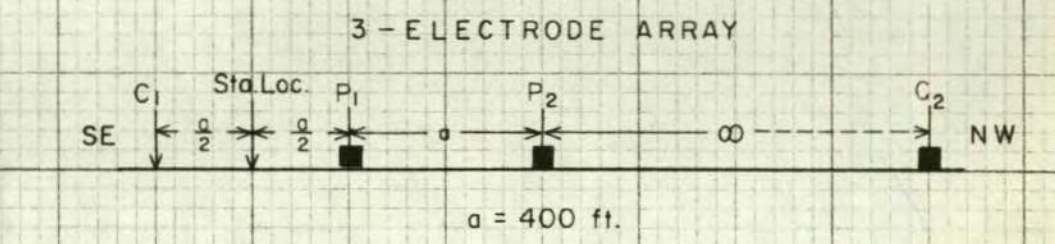
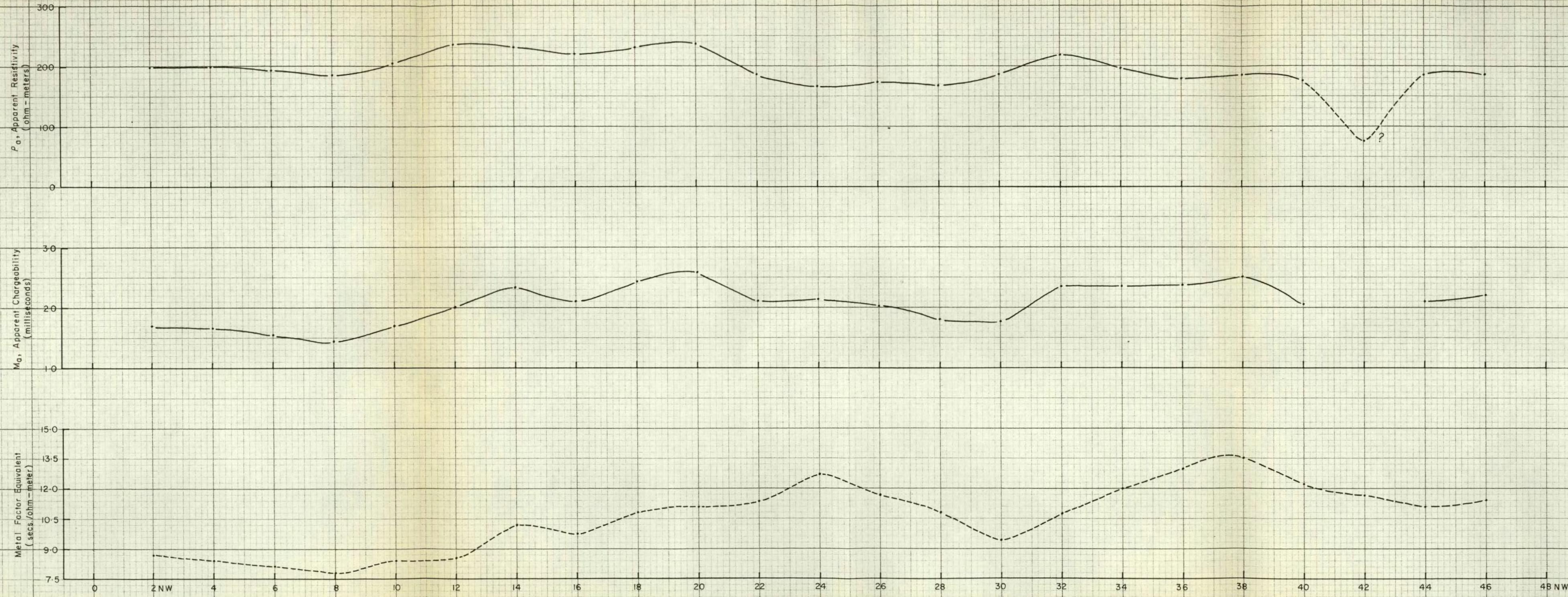
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I. P. SURVEY
QUARTZ MINERAL EXPLORATION
PERMITS 14 & 15
FORT McMURRAY, ALBERTA

LINE 0

HORIZONTAL SCALE : 1 in. = 200 ft.

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Job No. PT 1151/69

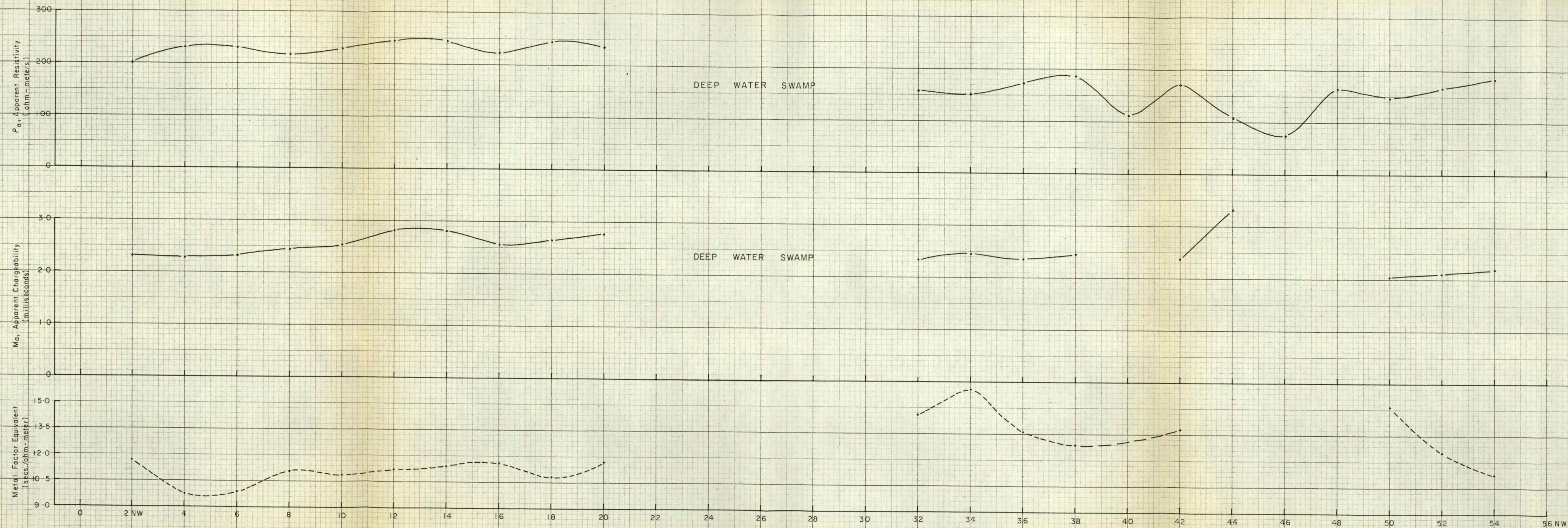


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SE C_1 $S1a$ Loc. P_1 P_2 N

$\frac{1}{2}a$ $\frac{1}{2}a$ a

$a = 400 \text{ ft.}$



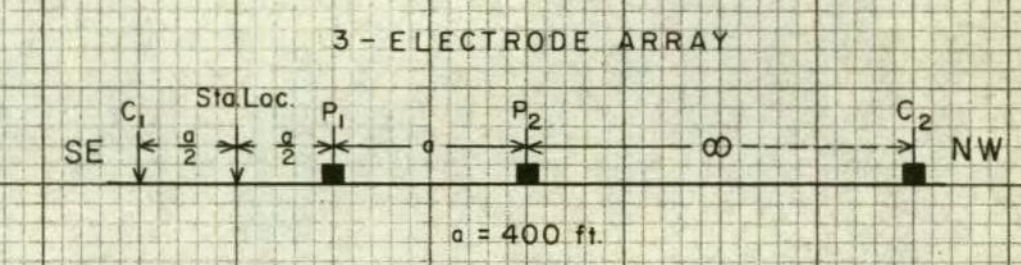
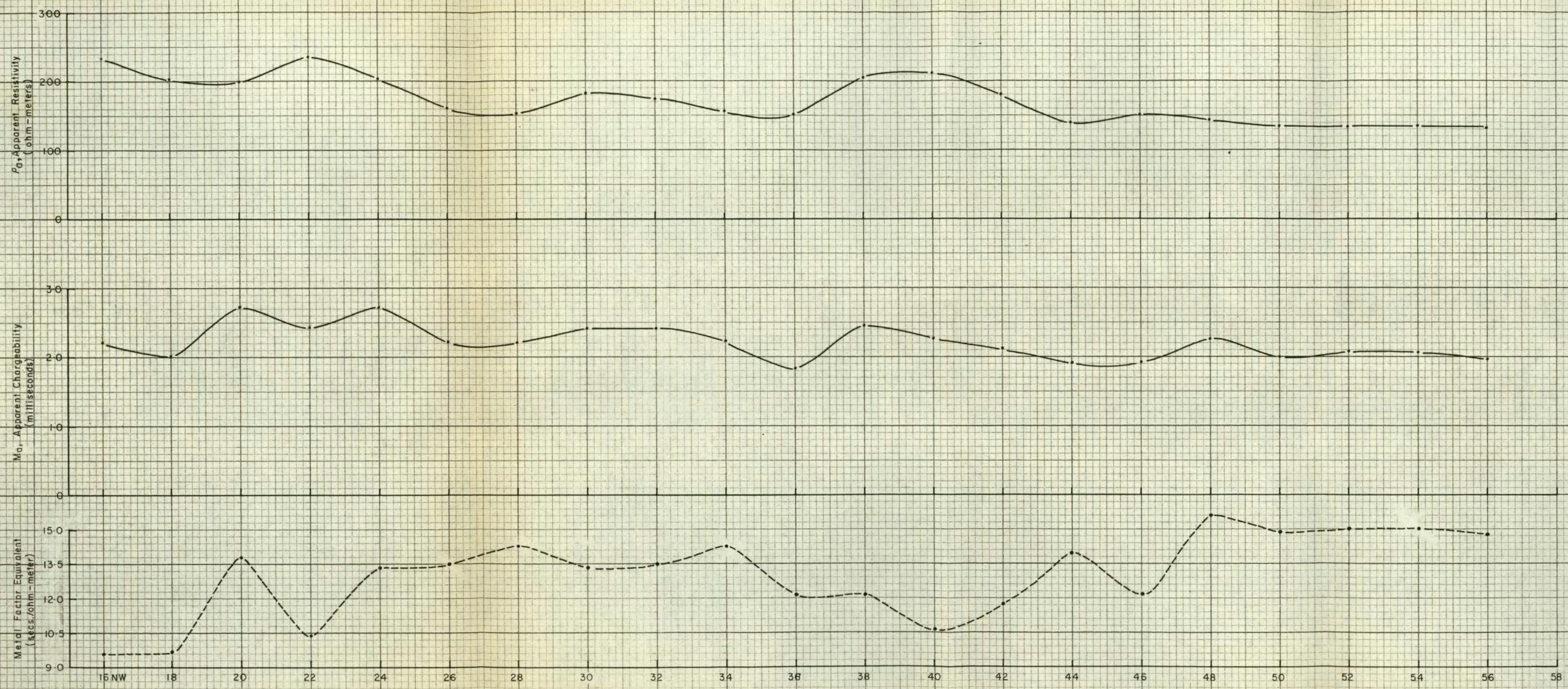
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C.C. HUSTON & ASSOCIATES
 I.P. SURVEY
 QUARTZ MINERAL EXPLORATION
 PERMITS 14 & 15
 FORT McMURRAY, ALBERTA

LINE 1+ 500W

HORIZONTAL SCALE: 1 in. = 200 ft.

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I.P. SURVEY

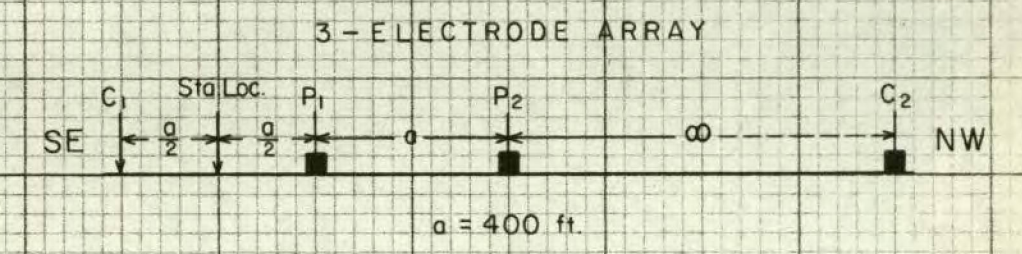
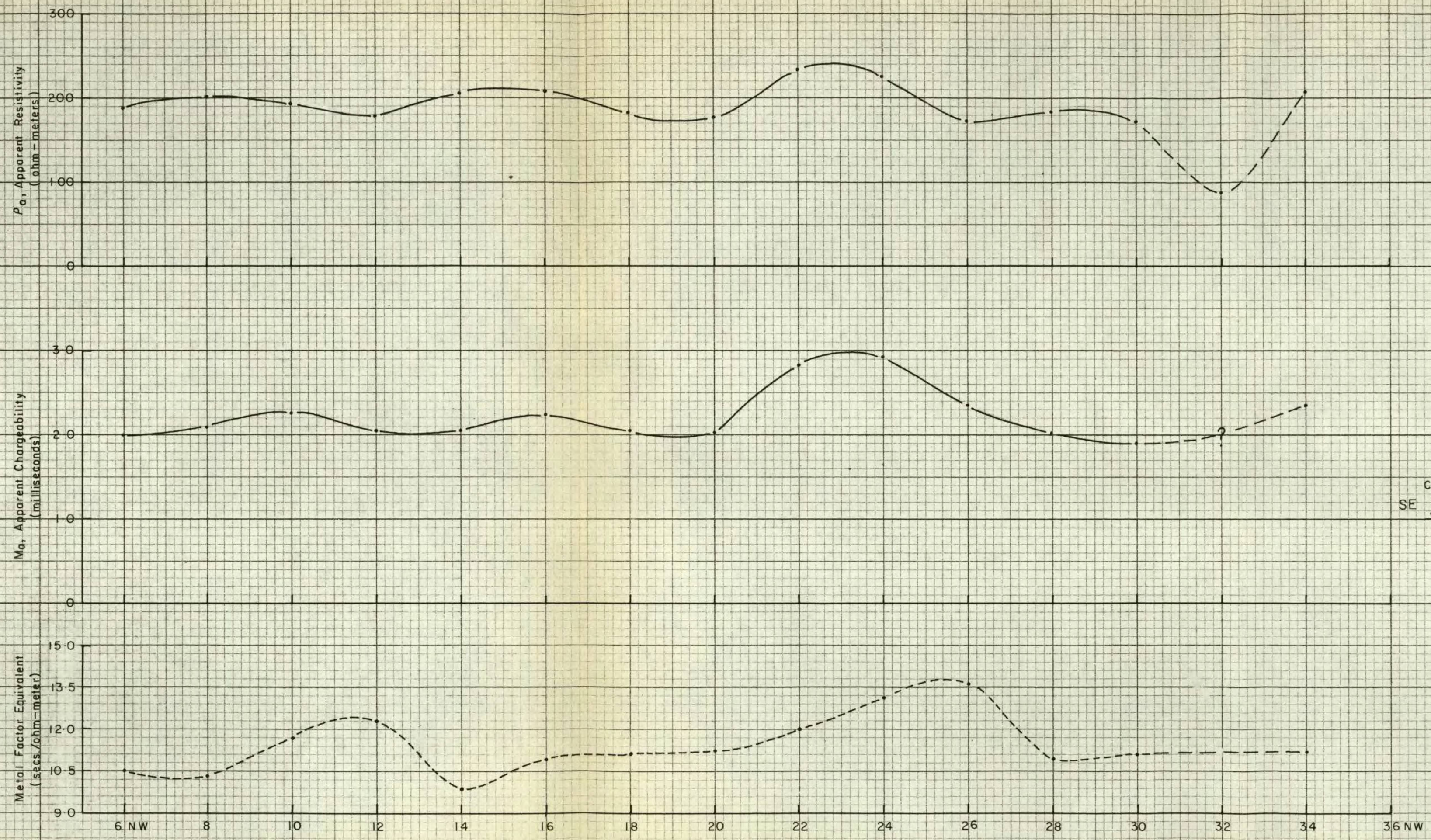
QUARTZ MINERAL EXPLORATION
PERMITS 14 & 15

FORT McMURRAY, ALBERTA

LINE 2 W

HORIZONTAL SCALE: 1 in. = 200 ft.

HUNTEC DIVISION of K.E.S.L. - September, 1969
Job No. PT 1151/69



19690003

QUARTZ MINERAL EXPLORATION PERMIT No. 14

(74E/10)

CANCELLED

CHARLES COOMBS HUSTON,
2001 - 80 RICHMOND STREET WEST,
TORONTO 1, ONTARIO

DATE OF ISSUE - OCTOBER 23, 1967
AREA - 15,360 ACRES

NO LEASES SELECTED

CORRECTION LINE

TP. 99

TP. 98

TP. 97

R. 6

R. 5

R. 4 W. 4 M.