REPORT ON
AN INDUCED POLARIZATION SURVEY
KAMLOOPS AREA

By: Huntec Limited
Feb. 1966

Pinnacle

REPORT ON

AN INDUCED POLARIZATION SURVEY

NEAR

KAMLOOPS, BRITISH COLUMBIA

(50°, 120°, N.E.)

FOR

ACCLE MINERAL CLAIMS

Survey inconclusive

BY

HUNTEC LIMITED

TORONTO, ONTARIO

FEBRUARY, 1966

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INTRODUCTION

Between November 1st and November 13th, 1965, an Induced Polarization (I. P.) survey was carried out by Huntec Limited for Accle Mineral Claims. The survey area was located on the Kamloops to Merritt Highway, approximately 8 miles south of Kamloops.

The geophysical crew was managed by Mr. A. R. Dodds, assisted by Mr. B. T. Howes, both of Huntec Limited. Survey decisions were made in consultation with Mr. A. Poole, representing Accle Mineral Claims who provided two field helpers. Drafting and typing were done at the Toronto office of Huntec Limited.

The I. P. survey consisted of 4.70 miles of readings taken at 200-foot intervals on lines 400 feet apart, using the electrode configuration known as the "three-electrode array". Fill-in readings at 100-foot intervals were taken in anomalous areas. An electrode separation of 200 feet was used. Parts of two lines were also detailed with electrode separations of 50 feet and 100 feet. Resistivity readings were taken concurrently on all lines.

The data are presented in the form of profiles, using distance scales of 1 inch to 200 feet and 1 inch to 100 feet for reconnaissance and detail respectively. The distance between lines on the reconnaissance map has been doubled in order to separate the different profiles. Vertical scales are 1 inch to 5 milliseconds and 2 inches per logarithmic cycle for chargeability and resistivity respectively on both reconnaissance and detail survey maps.

SURVEY SPECIFICATIONS

The equipment used was a 7.5 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 7.5 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 halfway between C_1 and P_1.

INTERPRETATION

The background chargeability readings in this area are generally flat and low, varying slightly with thickness of overburden as indicated by the resistivity measurements. Two strong and two weak anomalous trends show above this background. These are identified by the letters A, B, C, and D on the accompanying map of reconnaissance profiles.

Anomaly A is strong and extensive, crossing four lines for a strike length of at least 800 feet. It could extend further to both north and south, but was not traced because of shortage of time. The strongest readings occur on the end lines, 8+00N and 16+00N. Detailed readings at closer electrode separations were taken on Lines 8+00N and 12+00N giving a closer horizontal control on the location of the causative body, and some idea of its depth. On Line 8+00N, the source is expected to be 80 to 120 feet below ground surface, centering on 21+75W. The top of the body could come rather closer to surface.

Anomaly B is also strong and quite extensive, appearing on three lines with what is probably an end effect on the next line south, 8+00N. The anomaly appears to be curved, or could be offset by a fault, and is probably shallower than Anomaly A. It could extend further to the north, but is closed off at the south end. Detailing on Line 12+00N indicates that the top of the body approaches to within 30 to 60 feet of surface, and that the body may widen at depth. Calculations for resistivity data give an overburden thickness of approximately 35 to 40 feet, the bedrock being only slightly less conductive than the overburden. It would therefore seem most probable that the chargeable body reaches bedrock surface under some 40 feet of overburden.

Anomaly C is very much weaker than A or B, being only just discernible above background. However, its strike length makes it significant. No detailing was done because of lack of available time. If the source of this anomaly is shallow, i.e. less than 50 feet below surface, it could well be caused by a fault zone, a basic dike, or any change in rock-type. However, if the source is of the order of 100 feet below surface, the significance of the anomaly is markedly increased and considerable sulphide percentages are possible.

Anomalous Area D is somewhat erratic, and no directional trends can be ascertained. The only high readings occur on Line 20+00N in the region of the Merritt-Kamloops Highway, where some readings had to be omitted. Other readings in the zone, on Lines 16+00N and 12+00N are only marginally anomalous.

SUMMARY AND RECOMMENDATIONS

The I. P. survey indicated two strong and two weak anomalies in this area.

It is recommended that Anomaly A be drilled initially on Line 8+00N to intersect 100 feet below 21+75W.

Anomaly B should be drilled initially on Line 12+00N, to intersect 100 feet below 14+20W.

Further detail work would have to be done before any drill locations could be spotted on Anomaly C. A comparison between the I. P. results and known geology may indicate the cause of this anomaly.

Anomaly D is not outlined or detailed sufficiently to enable any elaborate interpretation to be done. An extension to the north of the survey grid is necessary before the anomalous readings can be properly assessed. Fill-in lines at 200-foot intervals would also assist this investigation.

Since ultrabasic rocks are known in this general area, and these can have high chargeability values, a magnetometer survey over this grid would assist in outling the geology, and might account for some of the anomalies.

If the results of these investigations prove encouraging, further I. P. work might be done to fully outline the various anomalies.

HUNTEC LIMITED

Andrew R. Dodds, B.Sc.
Geophysicist

Toronto, Ontario

February, 1966

APPENDIX 1

Miles Surveyed

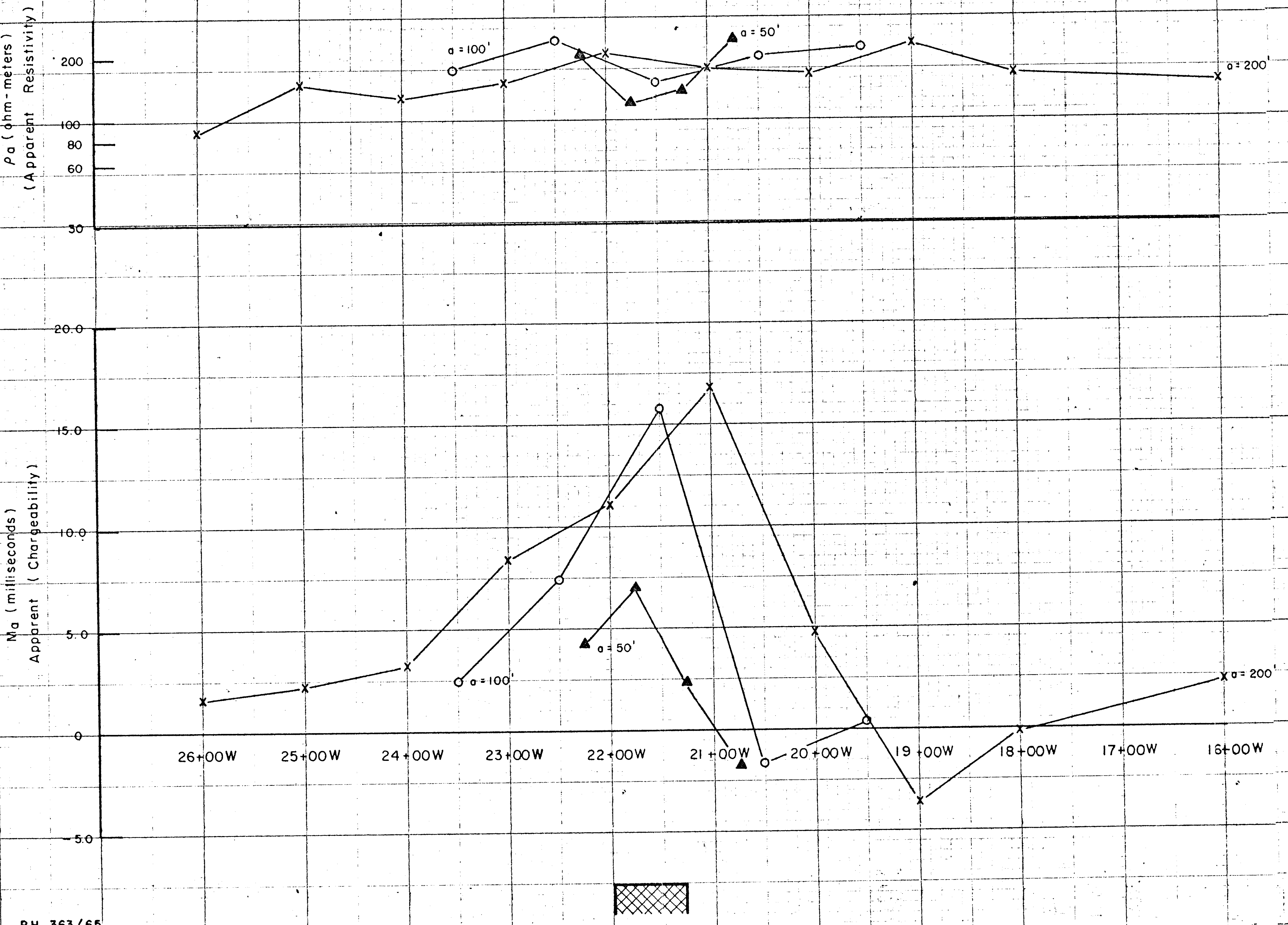
	Electrode Separation	Miles	Readings
Reconnaissance	200'	4.70	180
Detail	100'	0.28	14
	50'	0.06	8

Personnel Employed on Survey

Name	Occupation	Address	Dates
A. R. Dodds	Geophysicist	1450 O'Connor Dr. Toronto 16, Ont.	Nov. 1 - 13, 1965 Nov. 22, 1965 Jan. 4 - 5, 1966
B. T. Howes	Geophysical Operator	"	Nov. 1 - 13, 1965 Nov. 22, 1965
R. McLaren	Geophysical Helper	Kamloops, B.C.	Nov. 1 - 13, 1965
F. Raymond	"	"	Nov. 1 - 13, 1965
A. Fehrmann	Drafting	1450 O'Connor Dr.	Feb. 7 - 9, 1966
Mrs. L. Brunton	Typing	"	Feb. 14, 1966

DETAIL I. P. PROFILES
WITH INTERPRETATION

LINE 8+00 N



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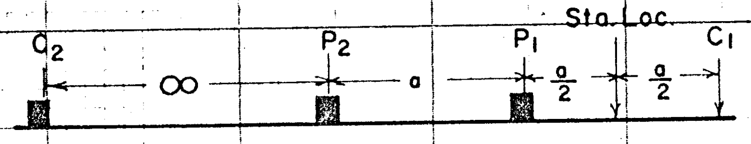
HORIZONTAL SCALE: 1 inch = 100 feet

VERTICAL SCALE: 1 inch = 5.0 milliseconds

2 inches = 1 cycle (logarithmic)

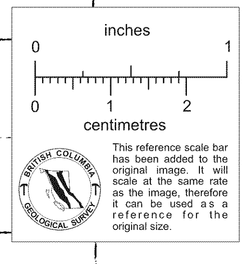
3 ELECTRODE ARRAY



INTERPRETATION LEGEND

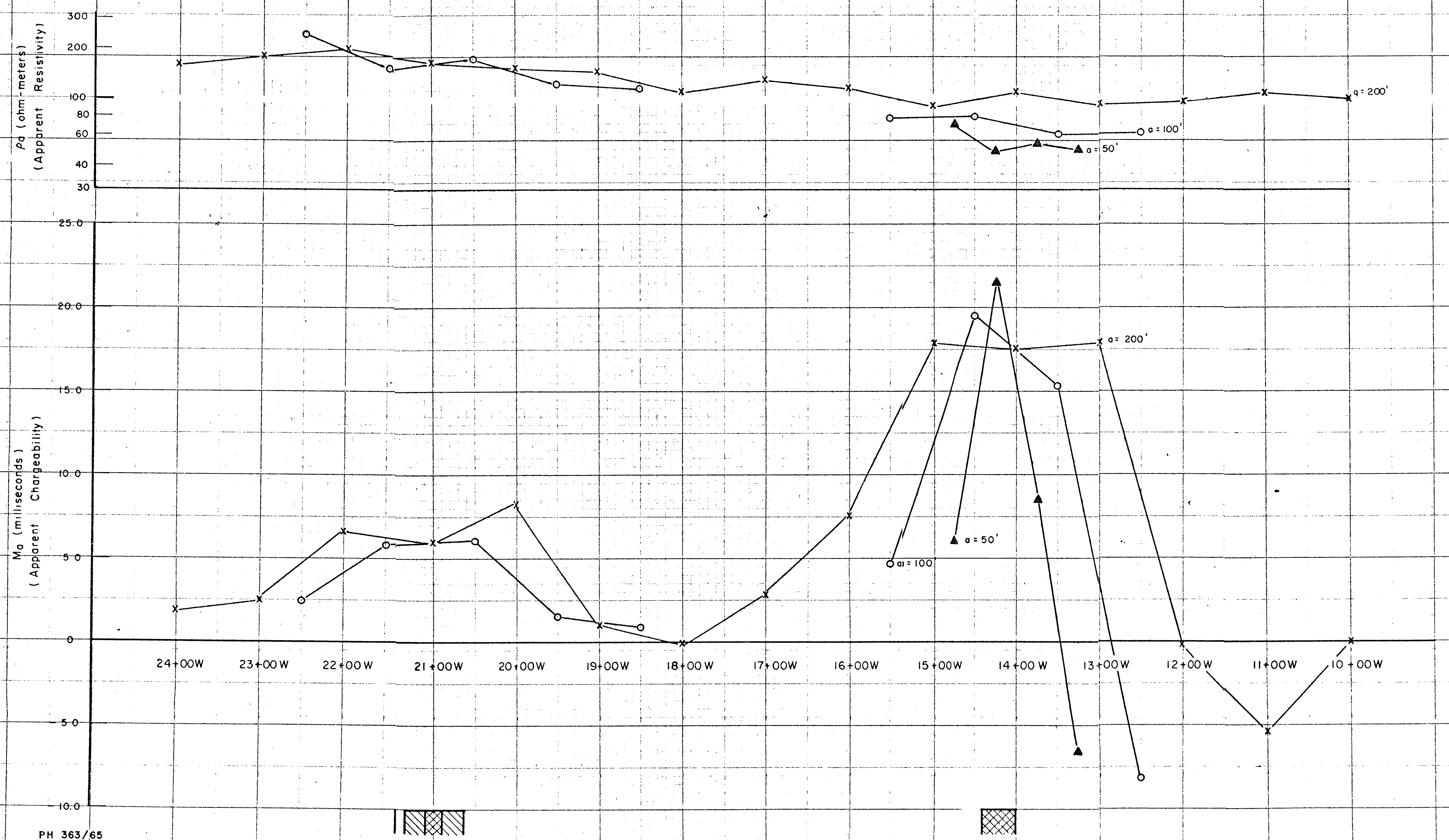
PROBABLE LOCATION OF CAUSATIVE BODY

Andrew R. Dodds



DETAIL I. P. PROFILES WITH INTERPRETATION

LINE 12+00 N



HORIZONTAL SCALE: 1 inch = 100 feet

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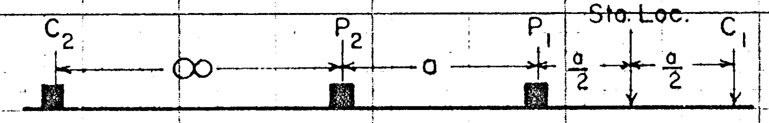
3 ELECTRODE ARRAY



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PROBABLE LOCATION OF CAUSATIVE BODY

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