

A Geophysical Report On
An Induced Polarization Survey
Deadwood Property, near Greenwood
Greenwood Mining Division, British Columbia
(49°, 118°, S.W.)

For

San Jacinto Explorations Limited

Claim Group Surveyed:

Little Ruth L881S
Tintic L1461
Red Metal Fr. L1568S
Toronto L1013
Butte City L1230
Pluto L2393
Ah There L1960

Hound 1 to 3 incl.
Hound Fr. 1 and 2
Frantic Fr.
Ragna Rock Fr.
Jim McRea Fr. 1 and 2
Hardscrabble Fr.

Supervision and Report by:

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

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

November 26th, 1966, and February 1st, 1967

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HUNTEC LIMITED

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A GEOPHYSICAL REPORT ON
AN INDUCED POLARIZATION SURVEY
DEADWOOD PROPERTY, NEAR GREENWOOD
GREENWOOD MINING DIVISION, BRITISH COLUMBIA
(49°, 118°, S.W.)

FOR

SAN JACINTO EXPLORATIONS LTD.

BY

HUNTEC LIMITED
TORONTO, ONTARIO
FEBRUARY, 1967

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CERTIFICATE

I, HENRY HERBERT SHEAR, of P. O. Box 216, Penticton, British Columbia, Professional Engineer, DO HEREBY CERTIFY as follows:

1. That as President of SAN JACINTO EXPLORATIONS LIMITED (N.P.L.) ('the Company'), I was responsible for the exploration program carried out by the Company on its Deadwood Group during the months of November and December, 1966.
2. That the Company during the months of November and December, 1966, as hereinafter set out, retained its own crew at a total cost to the Company of \$2,435.00 to carry out linecutting on the Deadwood Group (see Notice to Group accepted for filing January 19, 1967 by the Sub-Mining Recorder in Vancouver, British Columbia) in preparation for a geophysical survey to be carried out on the Deadwood Group by Hunttec Limited and to assist the crew employed by Hunttec Limited in carrying out such survey;
3. That the respective periods for which the members of the crew employed by the Company were engaged as aforesaid and the wages paid to them for such work are as follows:

<u>Name</u>	<u>Nature of Work</u>	<u>Period of Employment</u>	<u>Monthly or Daily Rate</u>	<u>Cost to Deadwood Group</u>
David Grey	Linecutting	Nov.1-30/66	\$500.00 mo.	\$500.00
"	Asst.I.P.Crew	Dec.1-14/66	"	225.00
Ian McCallum	Linecutting	Nov.1-26/66	\$550.00 mo.	550.00
"	Asst.I.P.Crew	Nov.28-30/66	"	
Joseph Horovatin	Linecutting	Nov.3-5/66	\$20.00 day	60.00
	Asst.I.P.Crew	Nov.28-Dec.14	"	300.00
Robin Foreshaw	Asst.I.P.Crew	Nov.28-Dec.14	"	300.00
Frank Horovatin	Linecutting	Nov.3-22/66	"	240.00
Ed Hendry	"	Nov.7-24/66	"	<u>260.00</u>
			Total -	\$2,435.00

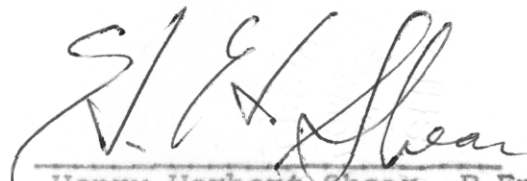
4. That the Company caused Hunttec Limited to carry out a geophysical survey of the Deadwood Group during the period from November 27 to December 14, 1966, at a cost to the

Company of \$2,040.19 which has been paid by the Company, and I do verily believe that the statement set out in the appendix to the geophysical report on the induced polarization survey carried out by Hunttec Limited on the Deadwood Group filed with this Declaration of the man-days required to complete the survey and of the personnel employed by Hunttec Limited in conducting the same and the periods for which they were employed is a true and correct one;

5. That as hereinbefore set out the original survey was carried out by Hunttec Limited at the cost to the Company during the period from November 27 to December 14, 1966, but as a result of the aberrational readings obtained during part of the survey as a consequence of what Hunttec Limited considered to be mechanical difficulties, Hunttec Limited carried out a partial resurvey in or about the period from Dec. 31, 1966 to February 3, 1967, the cost of which was borne by Hunttec Limited.

DATED at the City of Vancouver, in the Province of British Columbia, this 9th day of February, 1967.

Respectfully submitted,


Henry Herbert Shear, P.Eng.

INTRODUCTION

Between November 26th, 1966, and February 1st, 1967, Huntec Limited carried out an Induced Polarization (I.P.) survey over a property held by San Jacinto Explorations Limited. This property, referred to as the Deadwood property is located in the Greenwood area of British Columbia.

The survey was conducted along picket lines turned off at right angles every 400 feet from a north-south baseline and chained at 100 foot intervals.

Reconnaissance chargeability (the I.P. response parameter) measurements were made every 200 feet using the "three-electrode array" method of surveying with an electrode separation of 400 feet. Where necessary, additional measurements were made at appropriate station intervals using multiple electrode spacings to further examine possible anomalies.

Simultaneous readings of resistivity were made in addition to these chargeability measurements and in all 15.68 miles of reconnaissance and 2.25 miles of detail surveying were completed.

The reconnaissance data are presented in contoured form on plans of the line grid at a scale of 1" to 300 feet, while data from the detail

surveying are presented in profile form. The profile scales are one inch to 200 feet, one inch to 5 milliseconds and 2 inches per logarithmic cycle for distance, chargeability and resistivity respectively.

Property and Location

This property of San Jacinto Explorations Limited is in the Greenwood Mining Division of British Columbia, and is located approximately two miles northwest of Greenwood (49°, 118°, S.W.).

The property is at an elevation of some 3000 feet and is accessible by road from Greenwood.

The following mineral leases and claims, representing the property were surveyed:

Little Ruth	L881S
Tintic	L1461
Red Metal Fr.	L1568S
Toronto	L1013
Butte City	L1230
Pluto	L2393
Ah There	L1960
Hound	Nos. 1 to 3 incl.
Hound Fr.	No. 1 and 2
Frantic Fr.	
Ragna Rock Fr.	
Jim McKea Fr.	Nos. 1 and 2
Hardscrabble Fr.	

Purpose

The purpose of the survey was to try and locate by the Induced Polarization method, the presence of any mineralized deposits on the property.

Geological Environment

The oldest rocks in the general area constitute an assemblage of mixed sedimentary and volcanic origin. The sedimentary rocks are argillite and limestone and are, in part at least, of Carboniferous age. The volcanic rocks are latite and andesite, and are believed to be chiefly flows. Both sedimentary and volcanic rocks were intruded in Mesozoic time by igneous rocks that include bodies of peridotite, pyroxenite, gabbro, diorite and larger masses of granodiorite. Tertiary sediments and volcanic flows unconformably overlie the fore-mentioned sedimentary and igneous rocks in the vicinity of Phoenix.

Most of the Paleozoic sedimentary and volcanic rocks have been metamorphosed. They have been partly to completely silicified to form jasperoid and chert over wide areas. In addition the limestones have been partly to completely replaced by lime silicate minerals, notably epidote and garnet. In places these lime silicate rocks contain sufficient sulphides to constitute low grade ore.

Most of the Mesozoic rocks have been altered. The occurrence of chlorite, epidote and sericite is widespread. Sericitization is particularly common along mineral bearing fissures in granodiorite. Ultrabasic intrusions, most probably peridotite, have been altered to Serpentine.

Mineral deposits in the area are of three types:

- (a) Deposits of chalcopyrite, pyrite and magnetite occurring with the lime silicate minerals.
- (b) Deposits of pyrrhotite, pyrite and arsenopyrite occurring near the margins of bodies of granodiorite and diorite.
- (c) Quartz veins, bearing pyrite, galena, sphalerite and chalcopyrite and reportedly assaying high in gold and silver, occurring in and around bodies of granodiorite.

SURVEY SPECIFICATIONS

The survey was carried out using a Huntex pulse-type Induced Polarization unit, comprised basically of a transmitter, receiver and motor generator.

In this system a gasoline motor, coupled to a 2.5 kw, 400 cycle three-phase generator allows the transmitter to provide a maximum of 2.5 kilowatts d. c. to the ground at a cycling rate of 1.5 seconds "current on" and 0.5 seconds "current off", with 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 the potential electrodes, P_1 and P_2 , during the "current on" part of the cycle and a secondary or over-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 (ρ_a) is proportional to the ratio of the primary voltage and the measured current, the proportionality factor depending on the geometry of the array used. The resistivity and chargeability obtained are called "apparent" as they are values which that portion 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 of the rocks.

The survey was carried out using the "three-electrode array" system. In this system the current electrode (C_1) and the two potential electrodes, P_1 and P_2 , are moved in unison along the survey lines. The spacing between C_1 and P_1 is kept constant for each traverse, at a figure roughly equal to the depth to be explored by that traverse. The second current electrode (C_2) is kept fixed at "infinity".

Thus, on a traverse with a spacing of 400 feet, a body lying at a depth of 200 feet will produce a strong response, whereas one at a depth of 400 feet will produce a weaker one. By running subsequent traverses at different electrode spacings, more precise estimates can be made of depth to the top of causative bodies, as well as more information on the geometry and extent of the bodies.

The "three-electrode array" with a 400 foot electrode separation was used over the entire survey area to try and detect zones of sulphide mineralization. Subsequent detail work was then done with 50, 100, 200, and 400 foot electrode separations respectively along certain lines as deemed necessary to give additional information for the selection of drilling targets.

INTERPRETATION PROCEDURES

Induced Polarization interpretation procedures have been most completely developed in situations of horizontal layering and for bodies of large lateral extent such as porphyry coppers. The complex problem of resolving the combined effects of depth, width, dip and true chargeability of steeply dipping bodies, together with the physical characteristics of overburden and country rocks, have not been completely solved theoretically. The interpreter must, therefore, use empirical solutions plus experience gained from surveys over known bodies in other areas in addition to existing type curves.

The interpretation submitted in this report indicates three anomalous zones plus other small anomalies which could correspond partly to disseminated sulphide mineralization. The actual bodies, if existent, are probably narrower than the indicated zones as shown on the accompany maps. Estimates of depth to the top of mineralization have been made by virtue of the three-electrode data. Drill holes have been spotted based on these depths and positions of the probable causative body.

Estimates of the average percentage sulphide present by volume have been made. These do not take into account the possibility of some response being caused by magnetite which probably occurs on the properties. They are, however, minimum estimates as they are based on the values of observed chargeabilities and not on the true chargeabilities

of the anomalies themselves. They are necessarily approximate as the relationship between chargeability and percentage sulphide is affected by such things as grain size, resistivity contrast, quantity and nature of absorbed water, degree of interconnection of mineralization and other factors. The rule-of-thumb used in this interpretation, based on past experience, is that 1% by volume of sulphide mineralization corresponds to between 5 and 15 milliseconds of true chargeability.

DISCUSSION OF RESULTS

The reconnaissance phase of the I.P. survey indicates very variable chargeability values over this property, without any true background level. Three quite extensive zones of higher chargeability are discernable however, and are outlined on the accompany map. Although these are considered to be the most favourable zones for extensive mineralization, the possibility of mineralized zones of limited extent occurring elsewhere on the property is not eliminated.

These zones, as outlined, are intended to indicate general areas of higher I.P. response. It is likely that the actual sources of the higher chargeability are narrower and more complex, but this can only be determined under lines which have been detailed with additional electrode separations.

The resistivity contours appear largely to reflect topographical changes and variations in overburden thickness, particularly in the case of the overburden filled valley lying east of the baseline between Lines 28S and 64S.

Zone I was detailed on Line 72S and appears, from this detailing, to have a fairly shallow source. The most probable cause is that all the rocks under this zone, from 1+00E to the west end of the line and from close to surface to a depth of about 300 feet at least, are lightly mineralized to the extent of, say, 1-3% metallic sulphides, with

possible areas of higher concentration at about 4+00W and 8+00W as shown under the detail profiles.

It is believed that further investigation is warranted by a drillhole collared at 6+60W dipping 45° to the west. This drillhole is given priority 3.

Zone II was detailed on line 8+00C and 28+00C. Two broad anomalous zones coming within 100 feet of surface are interpreted between 0+00 and 6+00E as shown on the detail profile. Two drillholes with priorities 4 and 5 are recommended to investigate these areas.

The high readings on the 100 foot separation profile are not consistent with the readings obtained from the other electrode separations and the interpretation is somewhat ambiguous. They may be caused by a narrow, shallow (within 50 feet) mineralized body as shown on the detail profile. It is recommended that further investigation of this anomaly be left for encouraging results from drillholes 4 and 5. A shallow narrow body centred at 10+00W is indicated by the 100 foot readings at the west end of Line 8+00C. Drillhole number 6 collared at 9+00 W is recommended for further investigation.

The detail work on Line 28+00S indicates a broad chargeable zone coming to within 100 feet of surface. This anomaly is better defined than the others and so the drillholes that are recommended for further investigation are given top priority. Drillholes numbers 1 and 2 are shown on the detail profiles and should be drilled for a minimum down hole length of 400 feet.

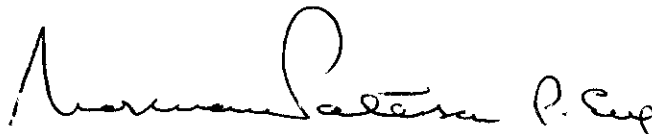
SUMMARY AND RECOMMENDATIONS

1. An Induced Polarization survey covering 15.68 line miles was carried out on the Deadwood Property held by San Jacinto Explorations Limited near Greenwood, B. C.

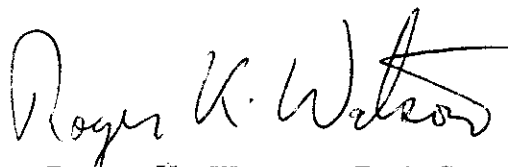
2. Three zones have been outlined whose chargeability field is significantly above background and which may be caused by the presence of metallic sulphides.

3. Six drillholes are recommended for further investigation. The locations of these are given in the interpretation discussion of each anomaly and on the plan maps and sections.

HUNTEC LIMITED



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



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

APPENDIX

Claim Group Surveyed

The property surveyed is covered by the following group of mineral leases and claims:

Little Ruth	L881S
Tintic	L1461
Red Metal Fr.	L1568S
Toronto	L. 013
Butte City	L1230
Pluto	L2393
Ah There	L1960
Hound	1 to 3 incl.
Hound Fr.	1 and 2
Frantic Fr.	
Ragna Rock Fr.	
Jim McRea Fr.	1 and 2
Hardscrabble Fr.	

Miles Surveyed

The survey comprised two phases: reconnaissance (covering all lines once with one electrode separation) and detail (resurveying selected lines with different electrode separations). The number of line-miles of readings taken in each phase was as follows:

	<u>Line-miles</u>	<u>Stations</u>
Reconnaissance	15.68	435
Detail	<u>2.29</u>	<u>127</u>
Total	17.97	562

Man-days Required

	<u>Man-days</u>
Operating geophysical equipment	53
Interpretation and report writing	5
Drafting	7
Typing	1

Personnel Employed on Survey

<u>Name</u>	<u>Occupation</u>	<u>Address</u>	<u>Dates</u>
A.R. Dodds	Geophysicist	1450 O'Connor Dr., Toronto 16, Ont.	Jan. 31-Feb. 3, 1967
R.K. Watson	Geophysicist	"	Feb. 6, 1967
W. Mairs	Geophysical Operator	"	Nov. 26-Dec. 8, 1966
H. Ford	"	"	"
J. Horovatin	Helper	Greenwood, B.C.	Nov. 26-Dec. 8, 1966
R. Forshaw	"	"	Nov. 28-Dec. 8, 1966
E. McCallum	"	"	Nov. 28-Dec. 1, 1966
D. Grey	"	"	Dec. 2-8, 1966
H. Ricketts	Drafting	1450 O'Connor Dr., Toronto 16, Ont.	Jan. 25, 31, 1967 Feb. 1, 2, 6, 1967
J. Wilson	"	"	Feb. 1, 6, 1967
L. Brunton	Typing	"	Feb. 6, 1967

DOMINION OF CANADA) IN THE MATTER of SAN JACINTO EXPLORATIONS
 PROVINCE OF BRITISH) LIMITED (N.P.L.) and the Recording of
 COLUMBIA) Assessment Work on the Deadwood Group,
 TO WIT:) Greenwood Mining Division.

I, ALLAN HARRISON AINSWORTH, Barrister and Solicitor,
 of Suite 625, 925 West Georgia Street, in the City of Vancouver,
 in the Province of British Columbia, DO SOLEMNLY DECLARE as
 follows:

1. That I am the Secretary of San Jacinto Explorations Limited (N.P.L.) ('the Company'), and as such have knowledge of the matters deposed to herein;
2. That the Company during the months of November and December, 1966, as hereinafter set out, retained its own crew at a total cost to the Company of \$2,435.00, to carry out linecutting on the Deadwood Group (see Notice to Group accepted for filing January 19, 1967 by the Sub-Mining Recorder in Vancouver, British Columbia) in preparation for a geophysical survey to be carried out on the Deadwood Group by Huntec Limited and to assist the crew employed by Huntec Limited in carrying out such survey;
3. That the respective periods for which the members of the crew employed by the Company were engaged as aforesaid and the wages paid to them for such work are as follows:

<u>Name</u>	<u>Nature of Work</u>	<u>Period of Employment</u>	<u>Monthly or Daily Rate</u>	<u>Cost to Deadwood Group</u>
David Grey	Linecutting	Nov.1-30/66	\$500.00 mo.	\$500.00
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Ian McCallum	Linecutting	Nov.1-26/66	\$550.00 mo.	550.00
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Joseph Horovatin	Linecutting	Nov.3-5/66	\$20.00 day	60.00
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Robin Foreshaw	Asst.I.P.Crew	Nov.28-Dec.14	"	300.00
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Ed Hendry	"	Nov.7-24/66	"	<u>260.00</u>
Total -				\$2,435.00

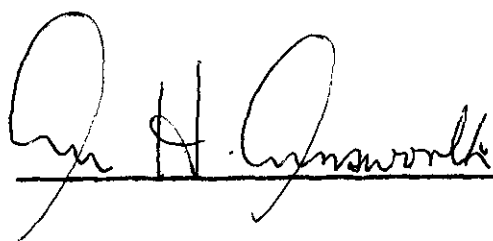
4. That the Company caused Hunttec Limited to carry out a geophysical survey of the Deadwood Group during the period from November 27 to December 14, 1966, at a cost to the Company of \$2,040.19 which has been paid by the Company, and I do verily believe that the statement set out in the appendix to the geophysical report on the induced polarization survey carried out by Hunttec Limited on the Deadwood Group filed with this Declaration of the man-days required to complete the survey and of the personnel employed by Hunttec Limited in conducting the same and the periods for which they were employed is a true and correct one;

5. That as hereinbefore set out the original survey was carried out by Hunttec Limited at the cost to the Company during the period from November 27 to December 14, 1966, but as a result of the aberrational readings obtained during part of the survey as a consequence of what Hunttec Limited considered to be mechanical difficulties, Hunttec Limited carried out a partial re-survey in or about the period from December 31, 1966 to February 3, 1967, the cost of which was borne by Hunttec Limited.

AND I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath, and by virtue of the Canada Evidence Act.

DECLARED before me at the City)
of Vancouver, in the Province)
of British Columbia, this 9th)
day of February, 1967.)


A Commissioner for taking Affi-
davits for British Columbia.


J. H. Gynsworth

SAN JACINTO EXPLORATIONS LIMITED (N.P.L.)

INDUCED POLARIZATION SURVEY
DEADWOOD PROPERTY
GREENWOOD MINING DIVISION, B.C.

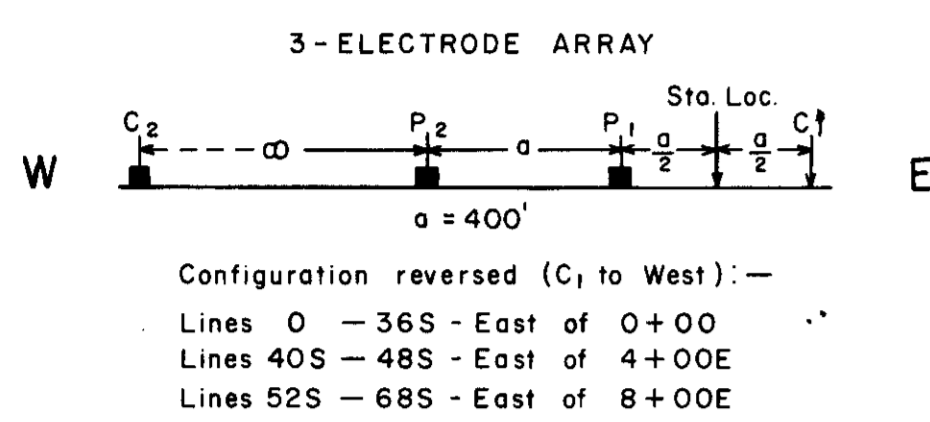
APPARENT CHARGEABILITY CONTOURS
WITH INTERPRETATION

CONTOUR INTERVAL: 1.0 milliseconds
SCALE: 1 inch = 300 feet

To accompany report by *Arthur R. Dodds*
A. R. Dodds, B.Sc., Geophysicist

HUNTEC LIMITED, Toronto, Canada - February 1967

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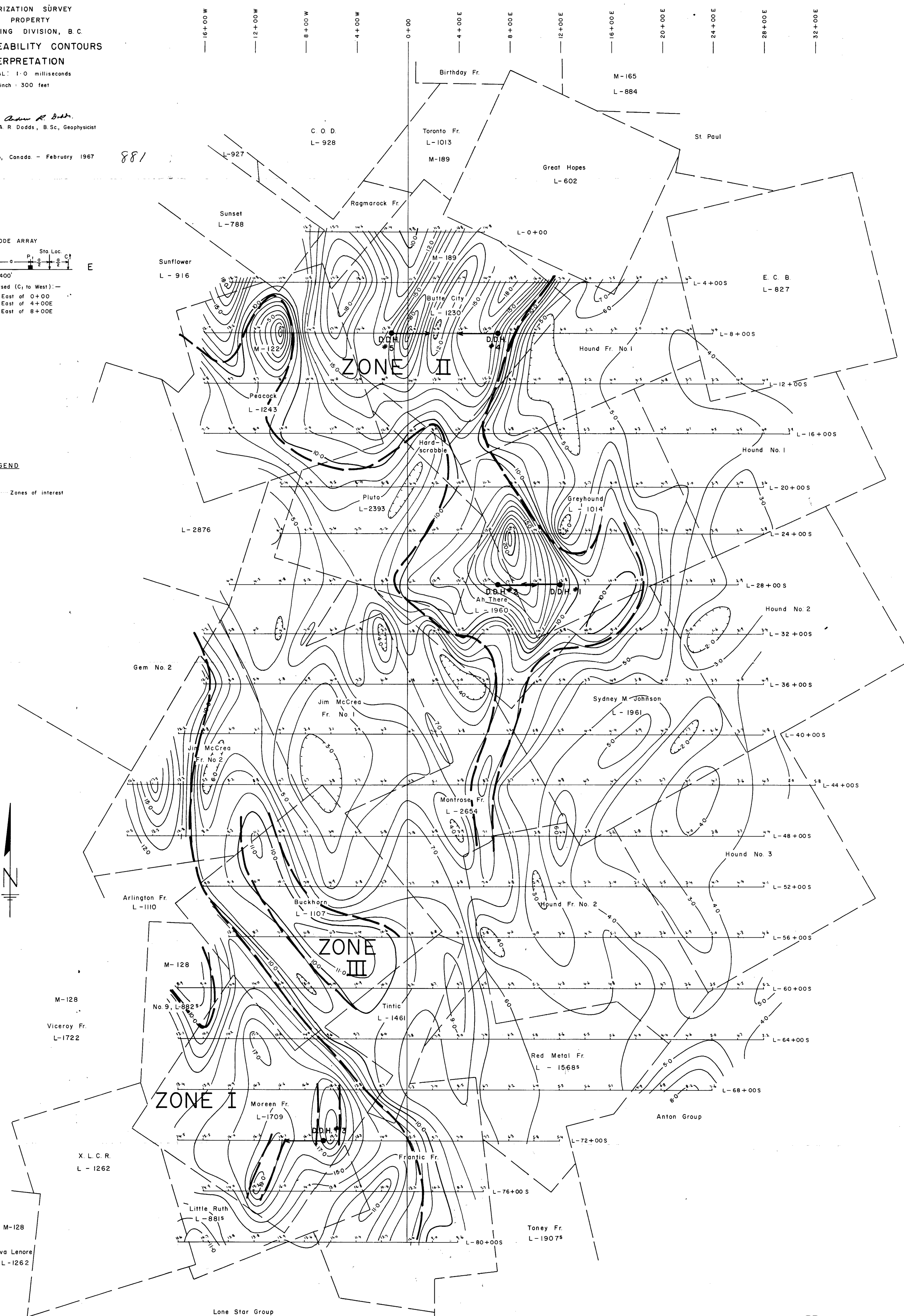


LEGEND

--- Zones of interest



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
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MAP 4



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SAN JACINTO EXPLORATIONS LIMITED (N.P.L.)

INDUCED POLARIZATION SURVEY
DEADWOOD PROPERTY
GREENWOOD MINING DIVISION, B.C.

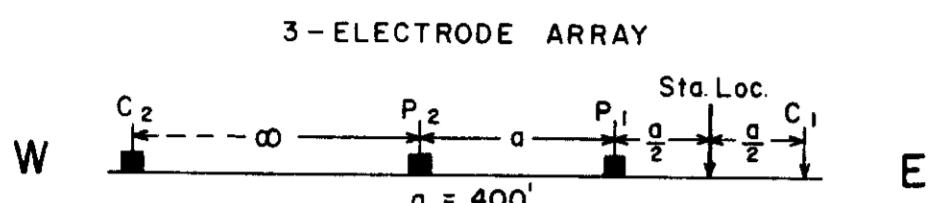
APPARENT RESISTIVITY CONTOURS

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

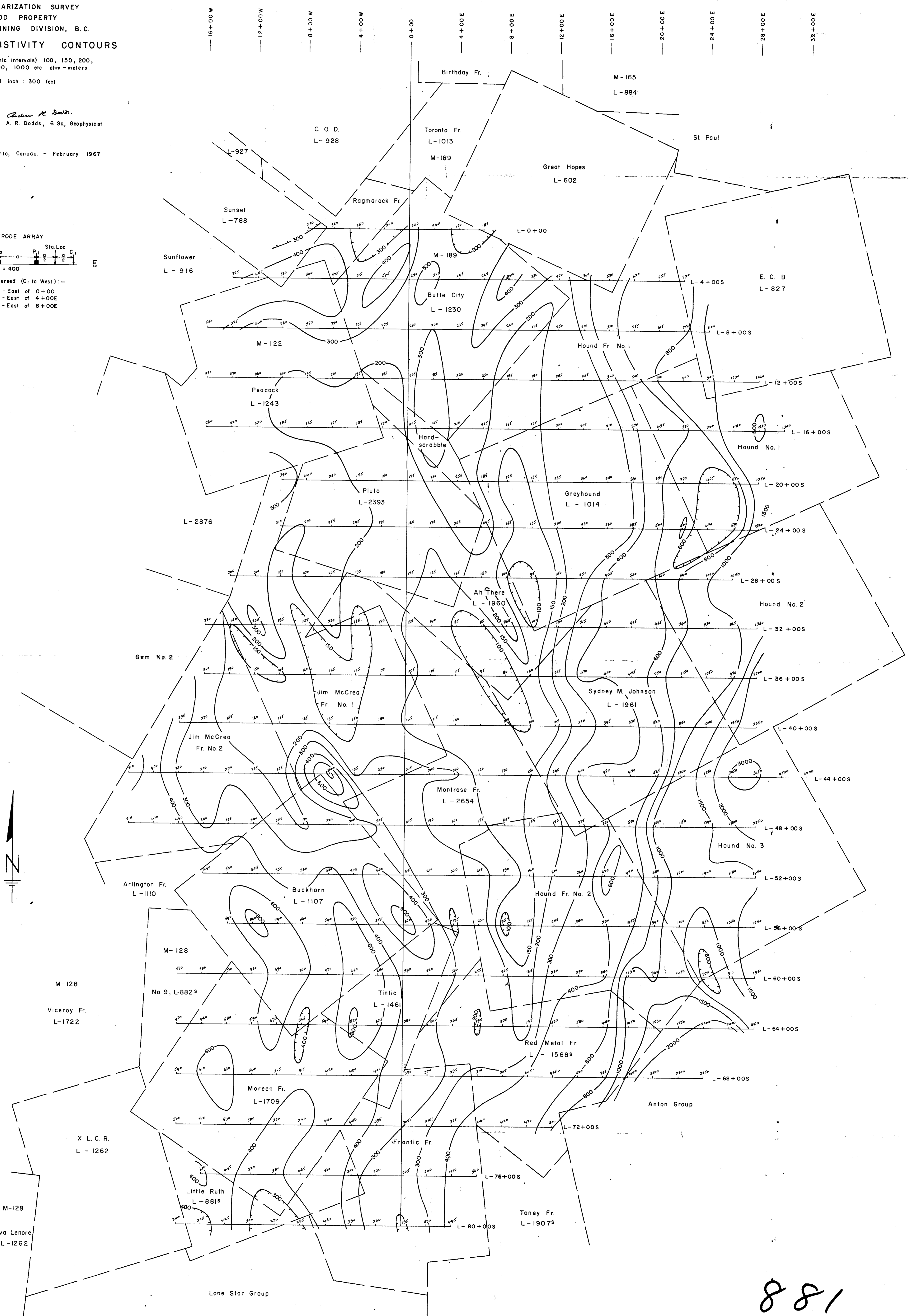
SCALE: 1 inch = 300 feet

To accompany report by *Richard R. Dodds*
A. R. Dodds, B.Sc., Geophysicist

HUNTEC LIMITED, Toronto, Canada - February 1967

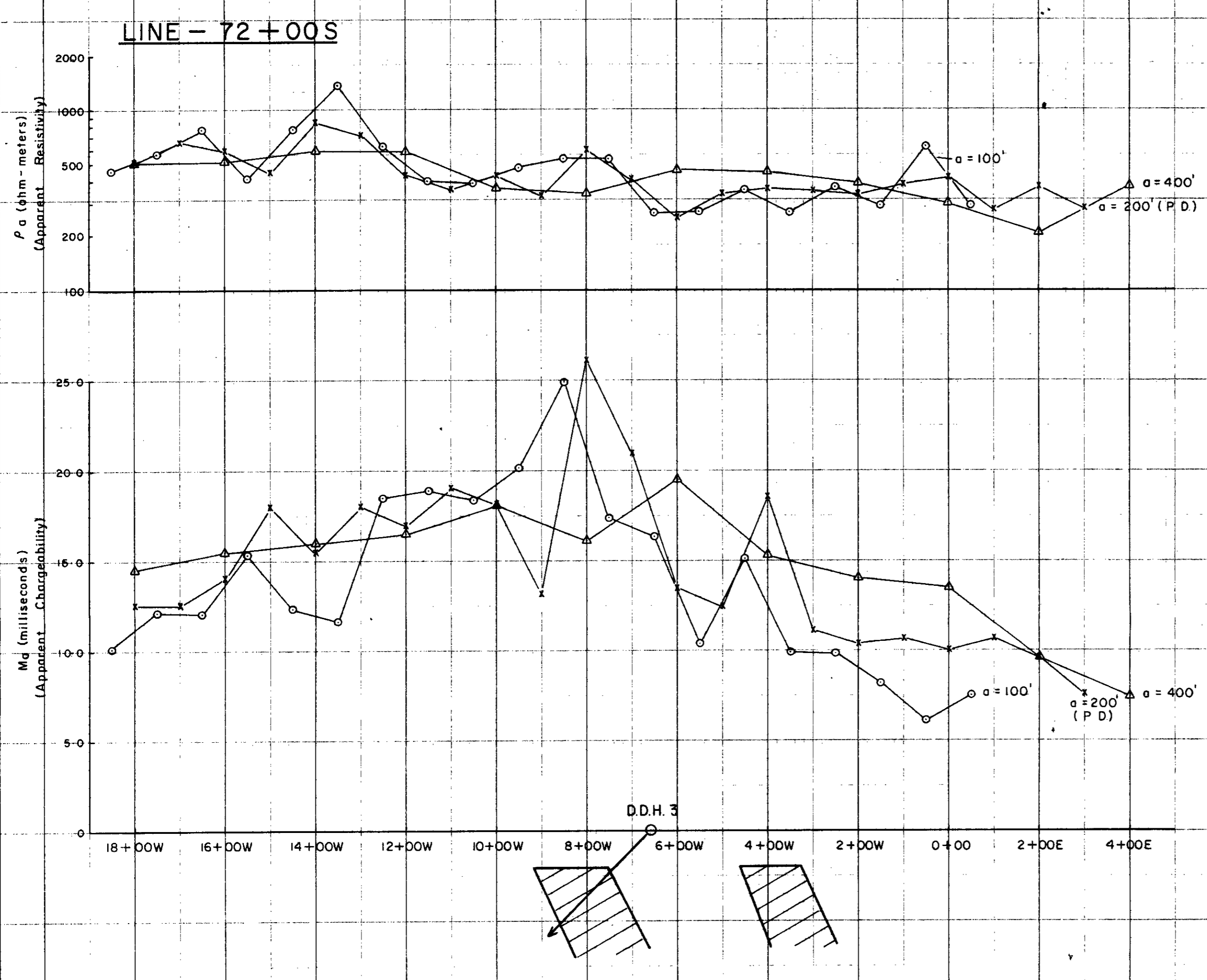
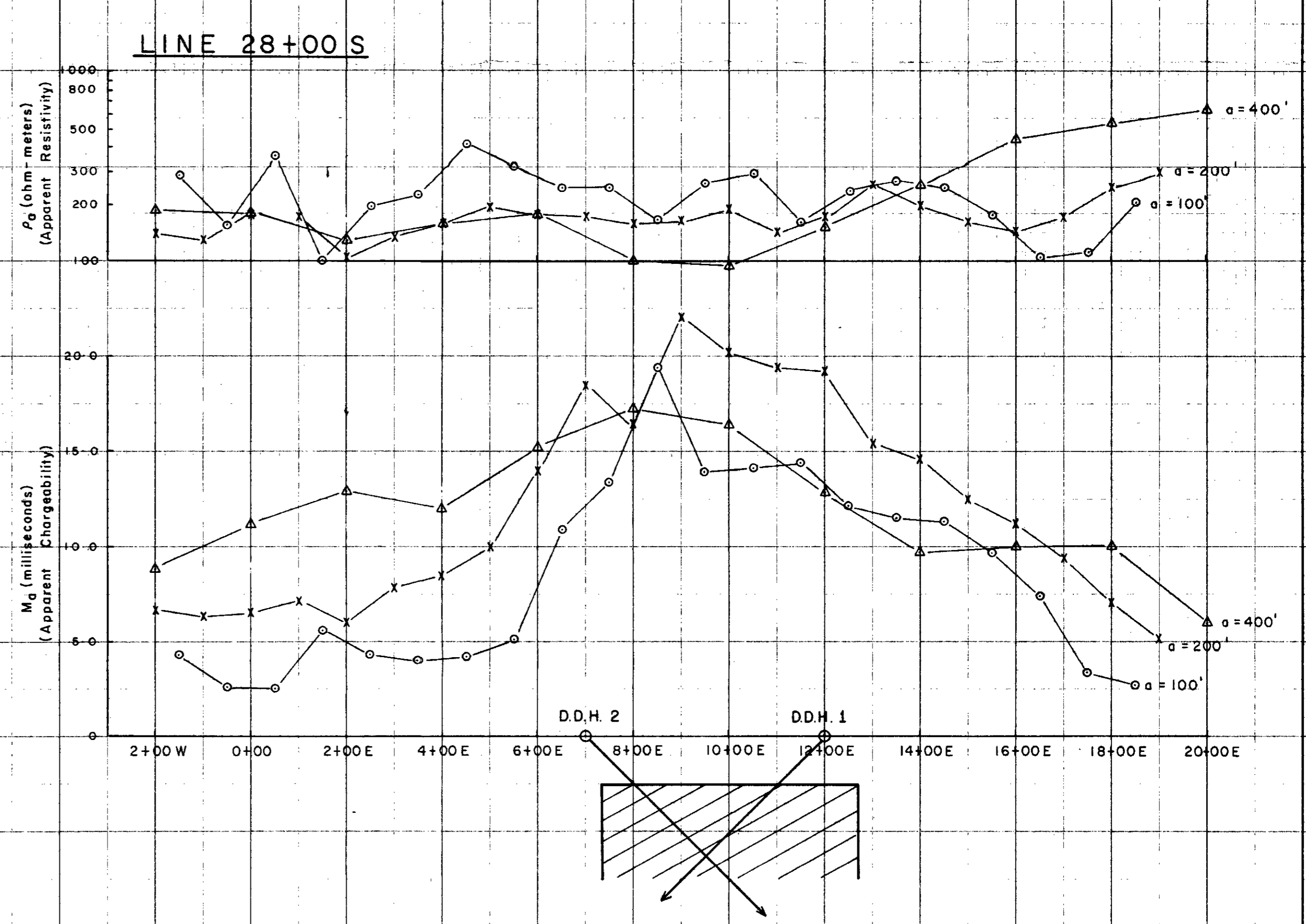
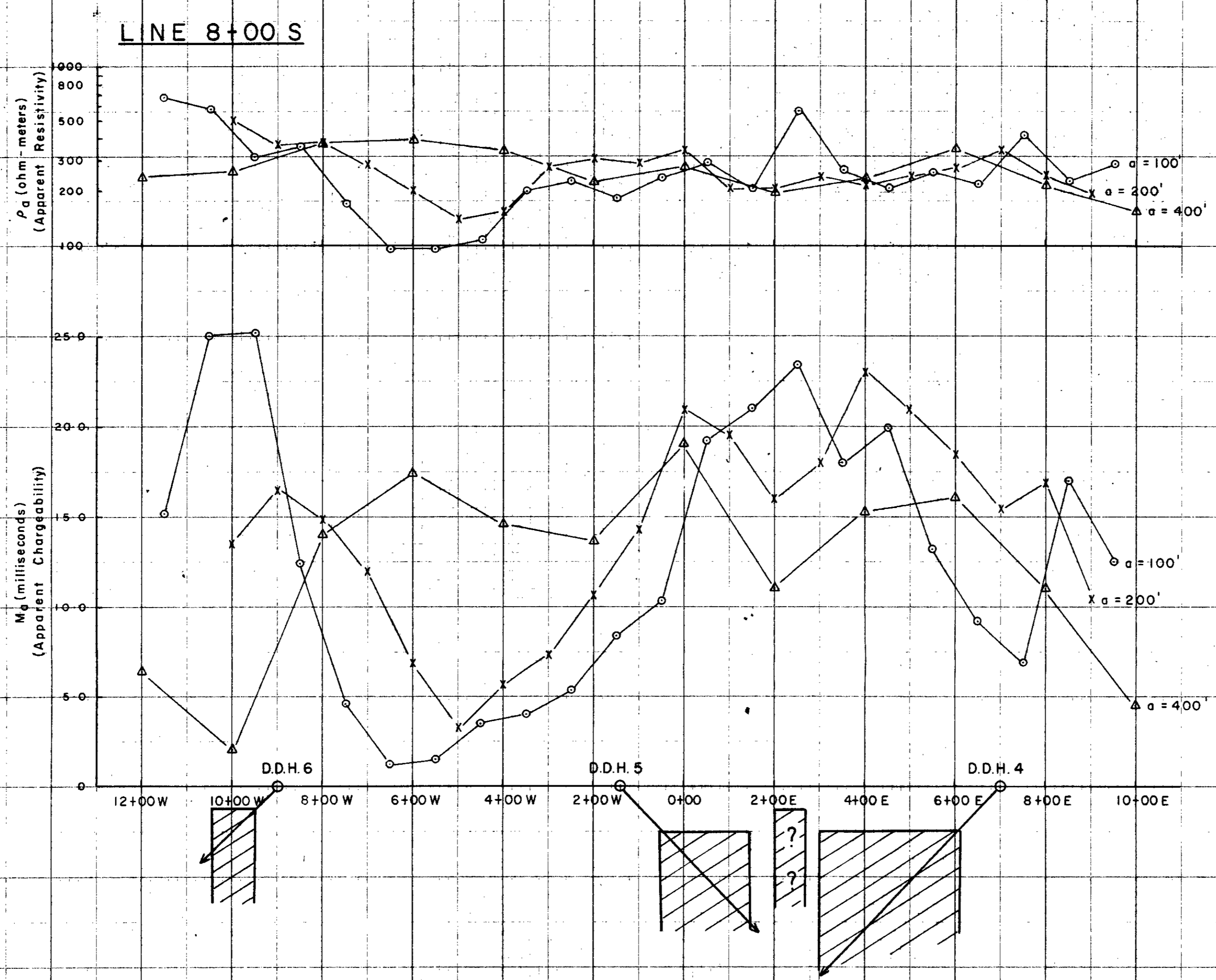


Configuration reversed (C₁ to West):-
Lines 0 - 36S - East of 0+00
Lines 40S - 48S - East of 4+00E
Lines 52S - 68S - East of 8+00E



Department of
Mines and Petroleum Resources
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NO. 881
MAP 5

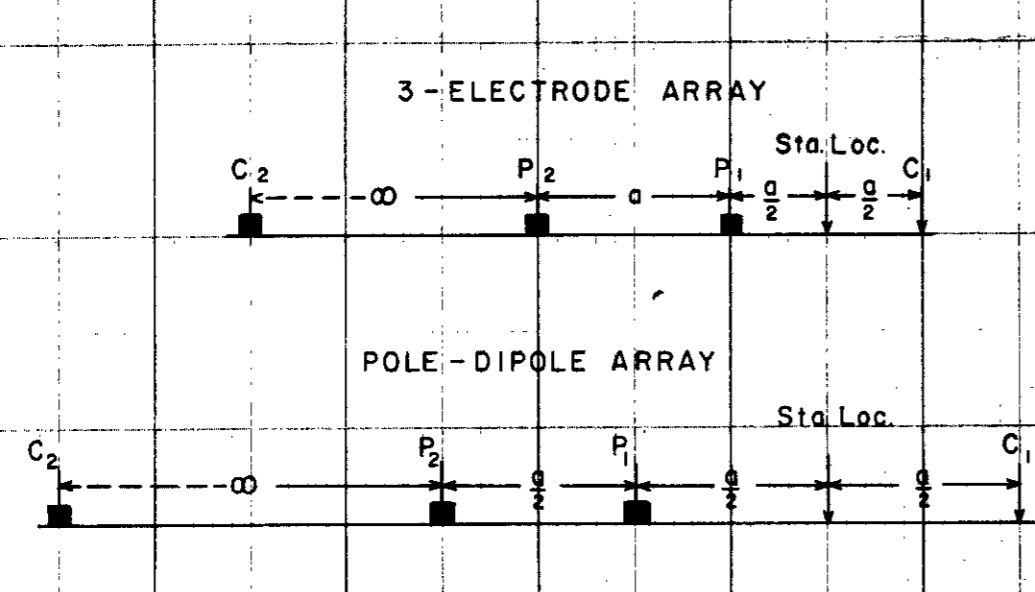
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INTERPRETATION LEGEND

Anomalous Zone

Recommended Diamond Drill Hole



NOTE: 3-Electrode Array used except where profiles are marked P.D.

HORIZONTAL SCALE: 1 inch = 200 feet

VERTICAL SCALES:

- Chargeability: 1 inch = 5.0 milliseconds
- Resistivity: 2 inches = 1 logarithmic cycle (ohm-meters)

SAN JACINTO EXPLORATIONS LIMITED (N.P.L.)

INDUCED POLARIZATION SURVEY

DEADWOOD PROPERTY

GREENWOOD MINING DIVISION, B.C.

DETAIL PROFILES WITH INTERPRETATION

To accompany report by *Alan A. Dadds*

A. R. Dadds, B.Sc., Geophysicist

HUNTEC LIMITED, Toronto, Canada - February, 1967.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 881 MAP # 6

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