2052

A GEOPHYSICAL REPORT ON AN INDUCED POLARIZATION SURVEY NAT & JERICHO CLAIM GROUPS (50°, 120°, S.W.)

92I07W

- for

TREMAR MINES LIMITED

JUNE 6 TO AUGUST 7, 1969

- by -

A. R. DODDS, B. Sc.

J. B. PRENDERGAST, M.A., P. Eng.

A REPORT ON

AN INDUCED POLARIZATION (I.P.) SURVEY

NAT & JERICHO CLAIM GROUPS

FOR

TREMAR MINES LIMITED

BY

HUNTEC

A Division of Kenting Exploration Services Limited

CALGARY, ALBERTA

SEPTEMBER, 1969

TABLE OF CONTENTS

INTRODUCTION

The Induced Polarization (I.P.) survey described in this report was carried out by Huntec Division, Kenting Exploration Services Limited for Tremar Mines Limited over parts of the Gaza and Jericho Properties, Highland Valley, British Columbia (50°, 120°, S.W.). The location of these properties is shown on the accompanying location map and the claims covered are listed in the Appendix.

The purpose of the survey was to prospect for disseminated sulphide mineralization such as has been located in several locations in the Highland Valley area.

The field work was completed between July 6th and August 7th, 1969, under the direction initially of R. Carisse and subsequently of V. Esbensen. The work was supervised from Calgary by A. R. Dodds.

The survey covered 16.14 line-miles on the Gaza Property and 13.13 line-miles on the Jericho Property grid. A limited amount of detail work was done on both grids.

SURVEY SPECIFICATIONS

The Equipment

The survey was carried out using Induced Polarization pulse-type equipment manufactured in Toronto by Huntec. The following specifications apply:

Type of Current	Direct Current broken at periodic intervals.
Period	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

This survey was carried out using the "three-electrode array" configuration. 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. In this array, the distance between P_1 and P_2 is also kept equal to "a" which, for this survey, was kept at 200 feet.

Detailing over anomalous areas was done by varying the quantity "a", thereby providing information for determining the location of the sources more accurately and assessing its importance.

RESULTS AND INTERPRETATION

Presentation

The reconnaissance data are presented as contoured plan maps of apparent chargeability and apparent resistivity in Drawing Nos. 1007-1 to 1007-4 inclusive, located in the map pocket.

The data for lines detailed with more than one electrode separation are shown in profile form on Drawing Nos. 1007-5 to 1007-8 inclusive, which are bound in the back of this report.

Interpretation

Gaza Property

Chargeability vaules in this area are generally flat and low, as it usual for background levels in the Highland Valley areas. Most of the regional variations in chargeability are associated with corresponding variations in resistivity, and therefore are probably caused by changes in overburden thickness or rock type. No significant change in sulphide content is to be expected.

Three areas have been picked out as being of possible significance, although the chargeability anomalies are weak and relatively limited in extent. They are not, however, associated with increases in resistivity and therefore could indicate small but significant increases in metallic particle content.

It is understood that Zone 1 is associated with known showings. Detailing on Line 32W indicates a fairly shallow source, extending to within 100 feet of surface, at 10 + 00N. A second weaker source is present at 7 + 00N. On

Line 36W this discrete source has faded, being replaced by a local effect at 11 + 50N and a possible more extensive source between 4 + 00N and 10 + 00N. The latter is weak and appears to be a layer of slightly more chargeable material between depths of 100 to 200 feet. It could be a side effect from material to the east of the survey line. No detailing was done on Lines 28W and 24W, so that information is limited. However, the sources must be either more deeply buried or less extensive and less heavily mineralized than that under Line 32W.

The whole of this zone is associated with lower resistivity values, making it the most significant of the three designated anomalies.

Zones II and III are weakly anomalous and generally associated with moderate resistivity. The exception is at 26 + 00N on Line 36W, where a combination of moderately high chargeability with low resistivity may indicate locally more concentrated mineralization. Neither of these zones was detailed, so that only a general interpretation can be attempted. The probable sources cannot be located accurately, but the area of interest is shown on the chargeability maps. Both anomalies are open to the west. Since the anomalies are only marginally above background, a very minor change in the sub-surface could account for them.

Jericho Property

Background chargeabilities in this area are very flat with only slight variation with resistivity. Two anomalies were detailed and two other possibilities deserve mentioning.

Zone I is at the extreme east end of the grid surveyed and was picked up on only one line. It is open to the north and may in fact not reach the survey line itself, although it must be within 50 feet of it literally. Detailing, with narrow electrode separations indicates two discrete sources, both of limited width and depth extent. The source at 71 + 50E is much the stronger of the two, having a possible width of 100 feet. Massive sulphides are not expected at this location. The second zone, at 75 + 00E, is much narrower and also appears to be disseminated. Both sources extend to within 50 feet of surface, and are centered at depths of about 70 feet.

Zone II is centered at about 25 + 00E on Line 15S and is very local. Complete detailing was not possible because of a steep canyon to the east, so that the exact location and orientation of the source is in doubt. A westerly dip is possible, but by no means defined. However, part of the source is placed confidently at a depth of about 100 feet below station 25 + 00E.

Zone III is weak and was picked up on only two readings at 2 + 00W and 4 + 00W on Line 20N. Additional surveying is required to locate the source and obtain indications of its size and importance. Such work would extend to Lines 20N and 16N, east of the baseline and might encounter terrain problems.

Zone IV is located at 4 + 00E on Line 35N, comprises only one reading, and is open to the north. The anomaly is weak and was not detailed, so that additional survey work is again required to locate and assess the source. Such work should consist of coverage of a line to the north of Line 35N and detailing with additional electrode separations. If the ground to the north is not held, the anomaly does not appear to be significant enough to warrant further work.

One other feature is of possible significance. This is the resistivity low extending between 65 + 00E on Line 4N and 62 + 00E on Line 12S. Although the chargeability values in this zone are not anomalous, they are in the high background range and a slight increase in mineralization is possible. Association with other favourable features such as geochemical results might make this zone worthy of further investigation.

SUMMARY AND RECOMMENDATIONS

The I.P. survey covered 16.14 line-miles on the Gaza Property and 13.13 line-miles on the Jericho Property. Three anomalies were detailed, four others being considered too weak to warrant detail work.

All of the anomalies show indications of being caused by vein-type mineralization, rather than porphyry-copper type. The anomalies detailed are of limited extent and weak amplitude and, coming from shallow sources, are not expected to be very significant.

Zones II and III on the Gaza Property and Zones III and IV on the Jericho Property cannot be fully assessed, but could represent porphyry-type mineralization. Since they have not been detailed or fully outlined, their extent and exact locations remain in doubt. Additional work may be warranted on these if other factors are favourable.

Respectfully submitted,

HUNTEC,
A Division of Kenting Exploration Services Ltd.

J. B. PRENDERGAST, M.A., P. Eng.
Manager, Western Division

A. R. DODDS, B. Sc.
Senior Geophysicist

PROF. ENG. OF B. PRENDERGAST

Expiry Date: May 23, 1970

APPENDIX A

ASSESSMENT CREDIT DATA

Gaza Property

Gap 1, 2, 3, 4

Gap Frs. 1 and 2

Nat 1, 2, 3, 4, 6, 9, 10, 11, 12, 13, 14, 19, 20, 21

Bud 2

Jay 20

Jericho Property

Bob 1, 2, 4, 11, 12, 13, 14

Gnat Frs. 1, 2, 8

James 7

Jericho 18, 19, 20, 21, 22, 63, 64, 65, 66

Jim 1, 2, 3, 4, 5, 6, 1 Fr.

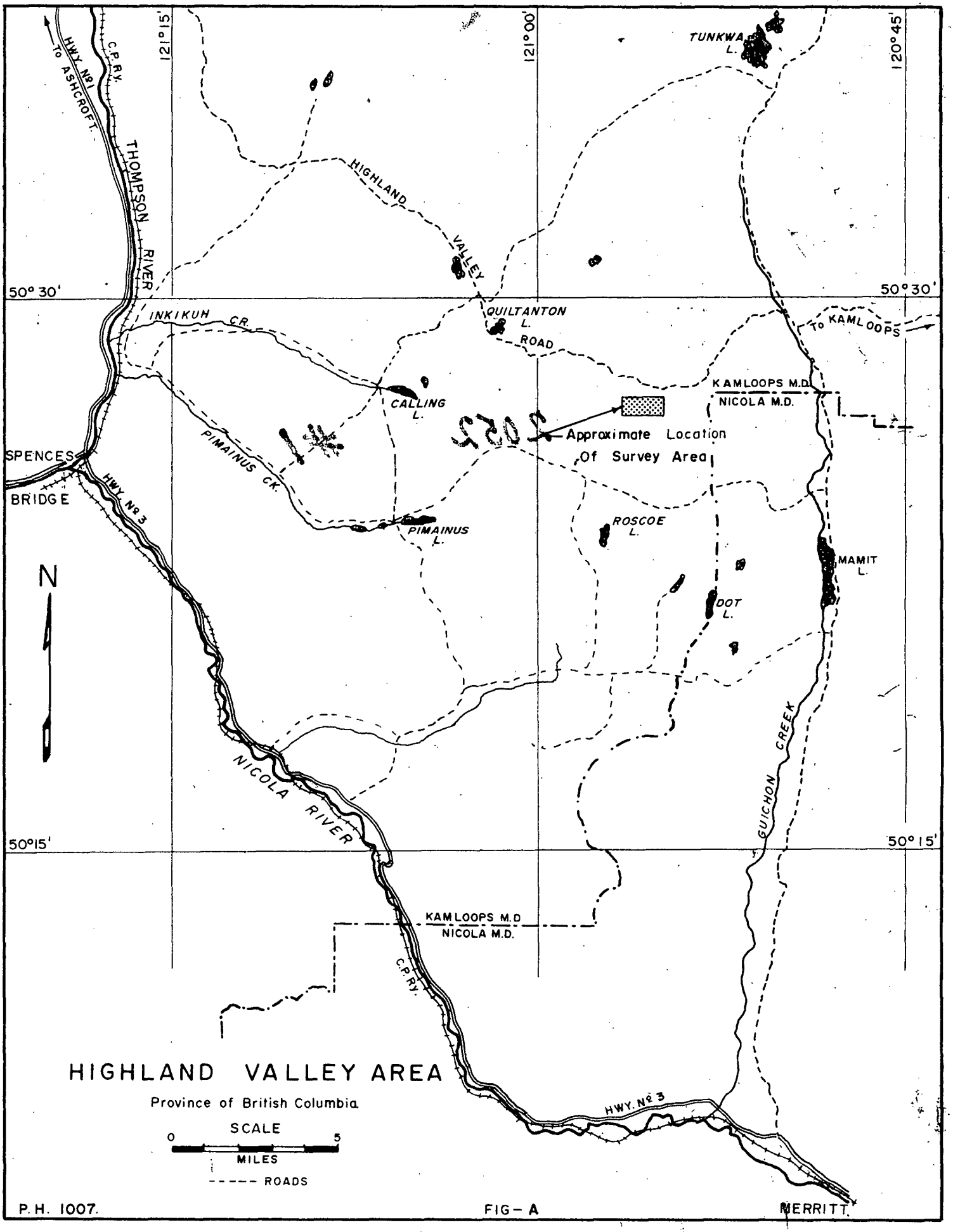
Price 42, 44, 46

Miles Surveyed

Gaza Property (NAT Claim Group)	
Reconnaissance	16.14 miles
Detail	1.33 miles
Jericho Property (JERICHO Claim Group)	
Reconnaissance	13.13 miles
Detail	0.80 miles
TOTAL	31.40 miles

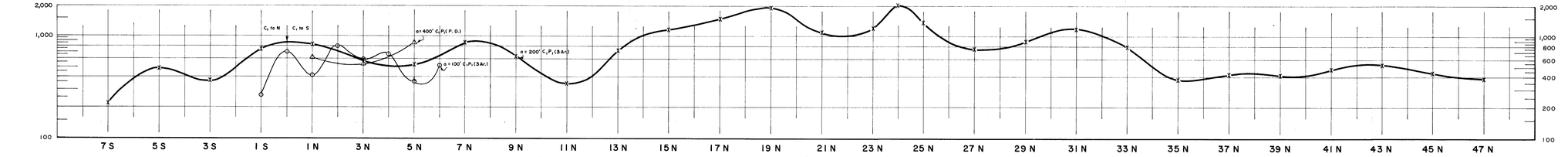
Personnel

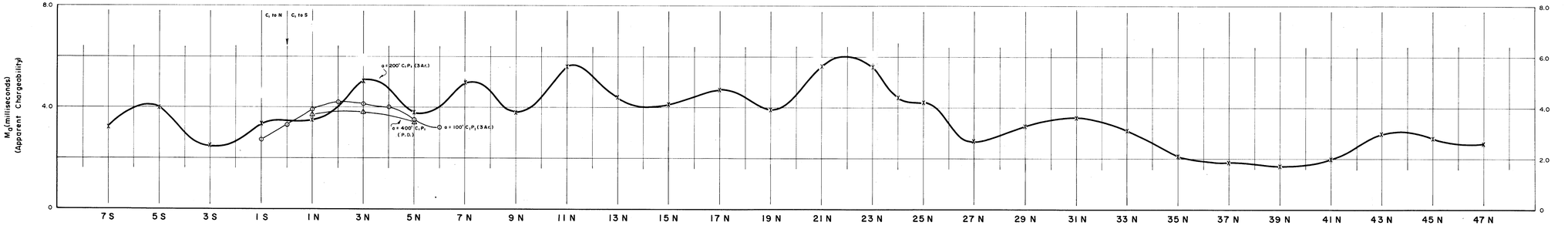
Name	Position	Dates	Rate/day	Total Charges
R. Carrisse	Party Chief	June 8-July 25/69	$90.00	$3460.00
V. Esbensen	Party Chief	July 26-Aug. 7/69	$90.00	810.00
P. Slominski	Operator	June 8-July 28/69	$75.00	2925.00
T. Samilski	Operator	July 29-Aug 7/69	$75.00	600.00
J. Anderson	Helper	June 11-July 5/69		
K. Morris	Helper	June 11-Aug. 6/69		
C. Gracie	Helper	June 29-Aug. 6/69		
P. Shauglnessey	Helper	July 2-Aug. 6/69		
A. R. Dodds	Sr. Geophysicst	Aug 8-Aug 16/69	$150.00	1050.00
M. Cole	Draftsman	July 21-25/69 Aug. 11-15/69 Aug. 18-20/69 Sept. 8-16/69	$75.00	675.00
P. Whiteley	Typist	Aug. 16/69	$25.00	18.15
I.P. Unit		June 8-Aug.7/69	$70.00	3140.00
			TOTAL	$12,678.15


121°15'
121°00'
120°45'
50°30'
50°15'
HWY No1
To ASHCROFT
C.P.R.Y.
THOMPSON RIVER
HIGHLAND VALLEY
TUNKWA L.
INKIKUH CR.
QUILTANTON L.
ROAD
To KAMLOOPS
KAMLOOPS M.D.
NICOLA M.D.
CALLING L.
Approximate Location Of Survey Area
SPENCES BRIDGE
HWY No3
PIMAINUS CK.
PIMAINUS L.
ROSCOE L.
MAMIT L.
DOT L.
N
NICOLA RIVER
GUICHON CREEK
KAMLOOPS M.D.
NICOLA M.D.
C.P.R.Y.
HWY. No 3
MERRITT
HIGHLAND VALLEY AREA
Province of British Columbia
SCALE
0
5
MILES
ROADS
P.H. 1007.
FIG - A

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 2052 MAP #1





2052 #6

INDUCED POLARIZATION SURVEY.

DETAIL PROFILE: LINE-28 W

LEGEND

INTERPRETED CAUSATIVE BODY.

RECOMMENDED D.D. HOLE.

PROFESSIONAL ENGINEER — Expiry Date: May 26, 1970

Sept 17/69

TREMAR MINES LIMITED.

GAZA PROPERTY, HIGHLAND VALLEY - B.C.

Horizontal Scale: 1 inch = 200 feet.

Vertical Scales:
Chargeability — 1 inch = 2·0 milliseconds.
Resistivity — 2 inches = 1 logarithmic cycle (ohm-meters)

To accompany report by: Andrew R. Dodds
A. R. Dodds, B.Sc, Geophysicist.

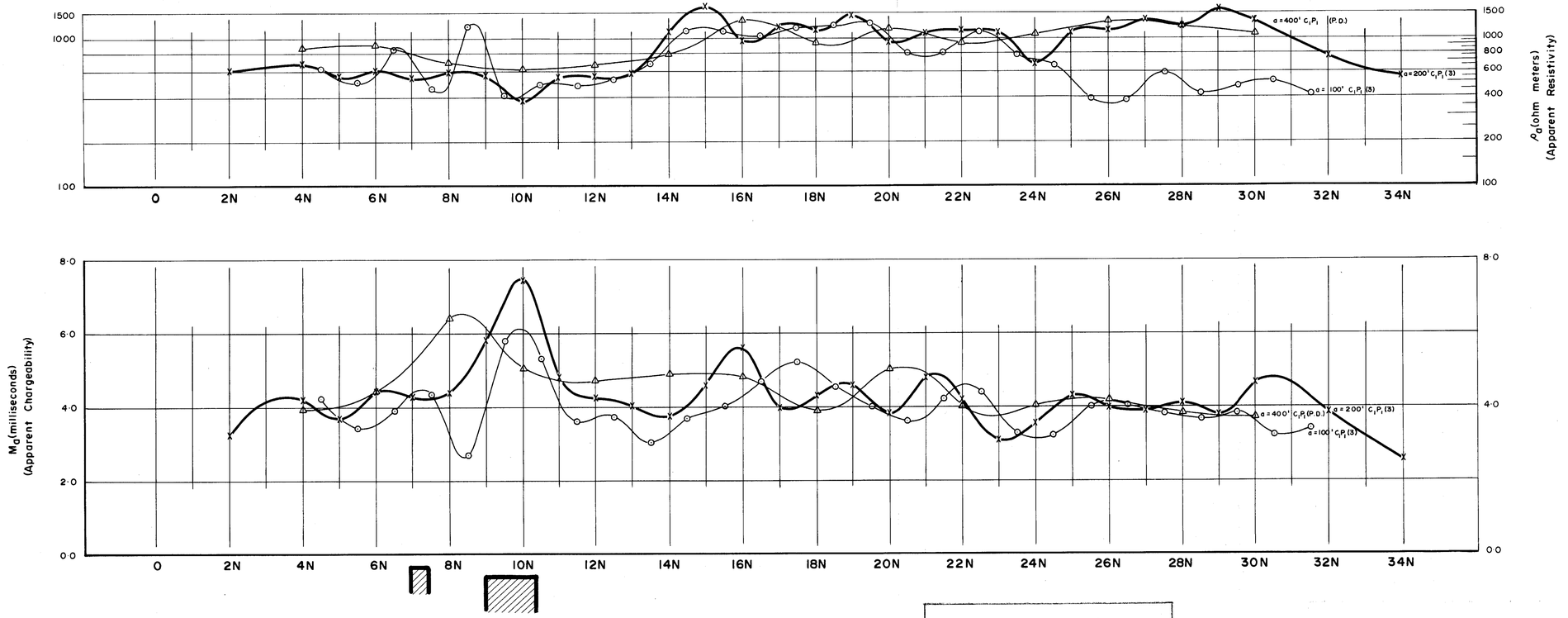
HUNTEC DIVISION - Calgary, Canada - September, 1969

DWG. Nº - 1007-5.

INSTRUMENT PARAMETERS

ON	1·5 secs.
OFF	0·5 secs.
DELAY	0·015 secs.
INTEGRATE	0·4 secs.

J# 2052



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2052 MAP #7

INSTRUMENT PARAMETERS

ON	1·5 secs.
OFF	0·5 secs.
DELAY	0·015 secs.
INTEGRATE	0·4 secs.

INDUCED POLARIZATION SURVEY.

DETAIL PROFILE: LINE-32W

2052

LEGEND

INTERPRETED CAUSATIVE BODY.

RECOMMENDED D.D. HOLE.

PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO
J. B. PRENDERGAST
Expiry Date: May 28, 1970

July 17/69

TREMAR MINES LIMITED.

GAZA PROPERTY, HIGHLAND VALLEY - B.C.

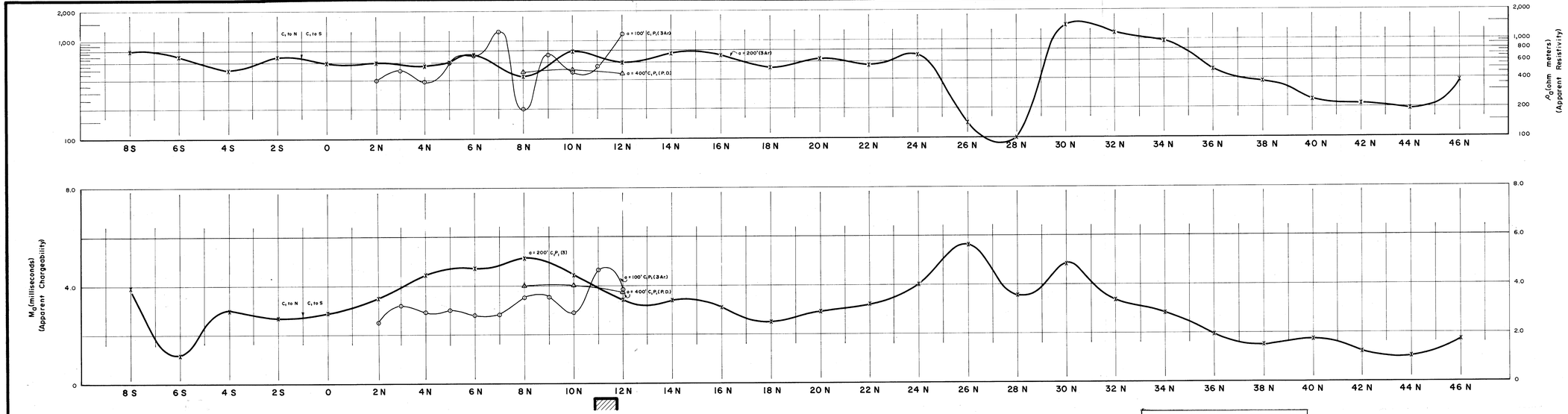
Horizontal Scale: 1 inch = 200 feet.

Vertical Scales:
Chargeability — 1 inch = 2·0 milliseconds.
Resistivity — 2 inches = 1 logarithmic cycle(ohm-meters)

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

HUNTEC DIVISION - Calgary, Canada - September, 1969

DWG. Nº - 1007-6.



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2052 MAP #8

INSTRUMENT PARAMETERS

ON	1·5 secs.
OFF	0·5 secs.
DELAY	0·015 secs.
INTEGRATE	0·4 secs.

INDUCED POLARIZATION SURVEY

DETAIL PROFILE: LINE - 36 W

2052

LEGEND

INTERPRETED CAUSATIVE BODY.

RECOMMENDED D.D. HOLE.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA
A. R. DODDS
GEOPHYSICIST
Expiry Date May 28, 1970
Sept 17/69

TREMAR MINES LIMITED

GAZA PROPERTY, HIGHLAND VALLEY - B.C.

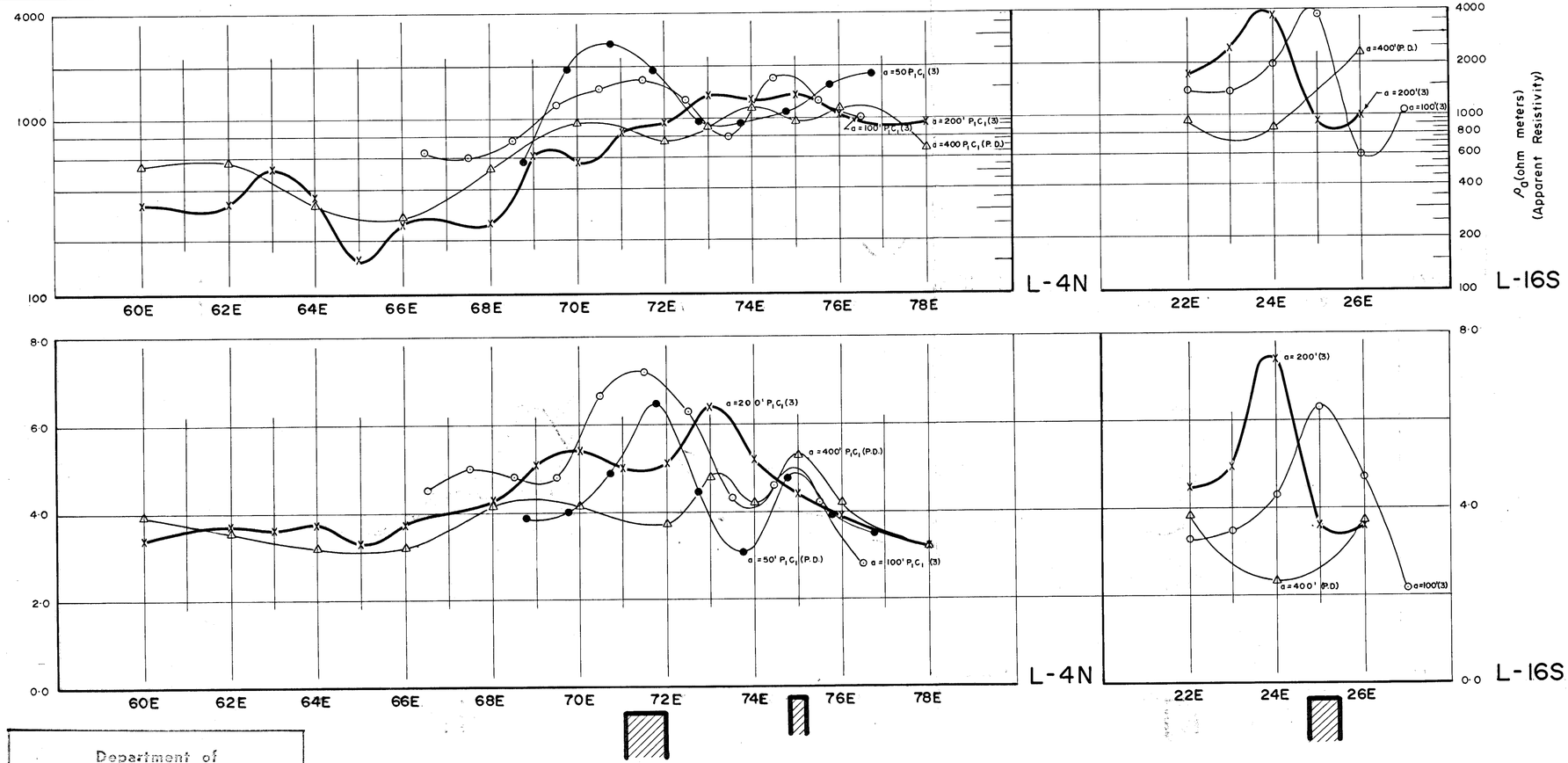
Horizontal Scale: 1 inch = 200 feet.

Vertical Scales:
Chargeability — 1 inch = 2·0 milliseconds.
Resistivity — 2 inches = 1 logarithmic cycle (ohm-meters)

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

HUNTEC DIVISION - Calgary, Canada - September, 1969

DWG. Nº - 1007 - 7.



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2052 MAP #9

INSTRUMENT PARAMETERS

ON	1·5 secs.
OFF	0·5 secs.
DELAY	0·015 secs.
INTEGRATE	0·4 secs.

INDUCED POLARIZATION SURVEY.

DETAIL PROFILE: LINES 16S & 4N

2052

LEGEND

INTERPRETED CAUSATIVE BODY.

RECOMMENDED D.D. HOLE.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. A. VANDERKAST
Expiry Date, May 28, 1970
Sept 17/69

TREMAR MINES LIMITED.

JERICHO PROPERTY, HIGHLAND VALLEY - B.C.

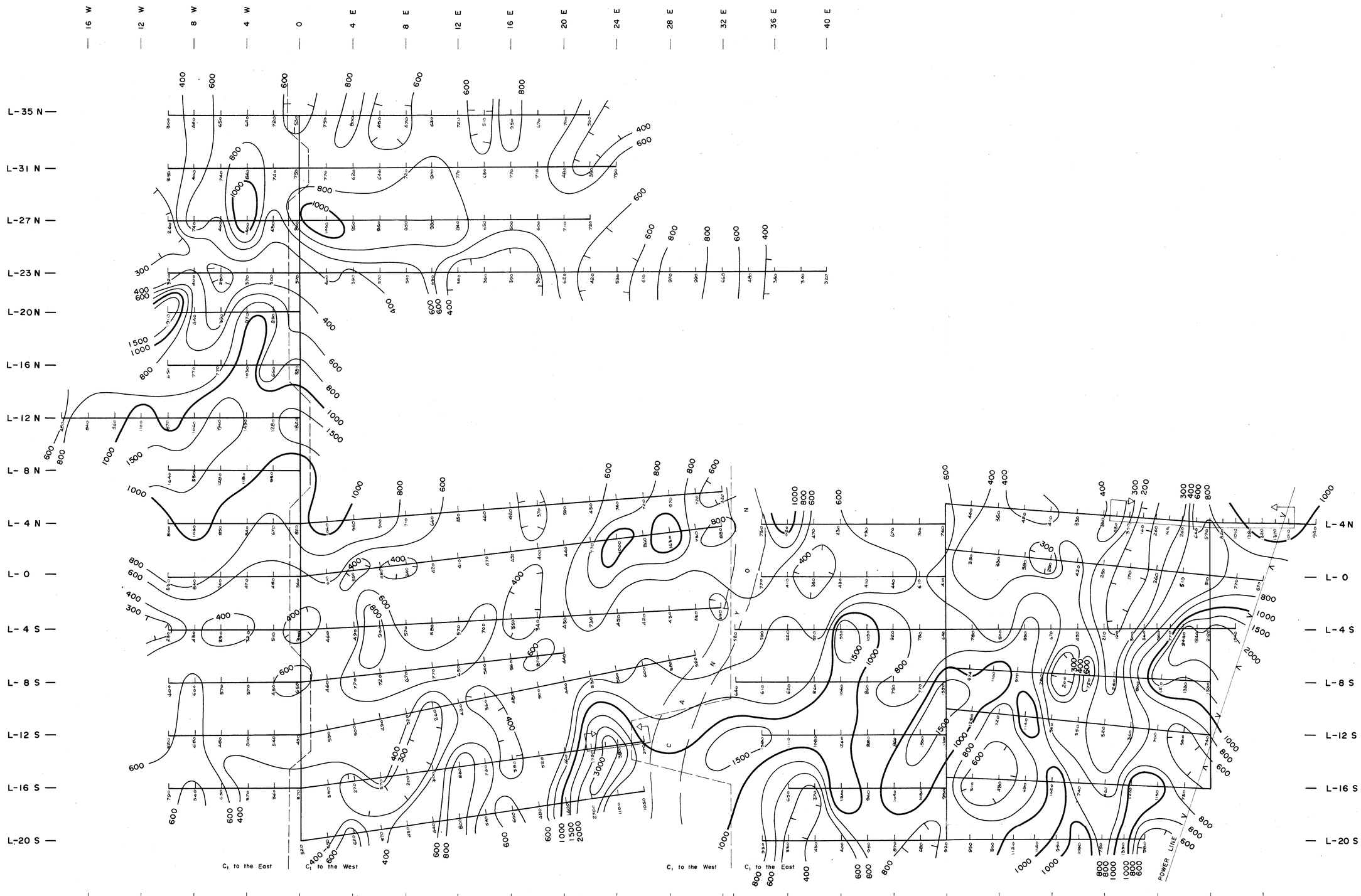
Horizontal Scale: 1 inch = 200 feet.

Vertical Scales:
Chargeability — 1 inch = 2·0 milliseconds.
Resistivity — 2 inches = 1 logarithmic cycle (ohm-meters)

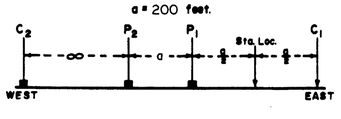
To accompany report by: Andrew A. Dodds
A. R. Dodds, B.Sc., Geophysicist.

HUNTEC DIVISION - Calgary, Canada - September, 1969

DWG. Nº - 1007-8



3 ELECTRODE ARRAY



LEGEND

PORTION OF LINE COVERED BY DETAIL SURVEYING

INSTRUMENT	PARAMETERS
ON	1·5 secs.
OFF	0·5 secs.
DELAY	0·015 secs.
INTEGRATE	0·4 secs.

2052

TREMAR MINES LIMITED.

JERICHO PROPERTY, HIGHLAND VALLEY - B. C.

INDUCED POLARIZATION SURVEY.
APPARENT RESISTIVITY CONTOURS

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

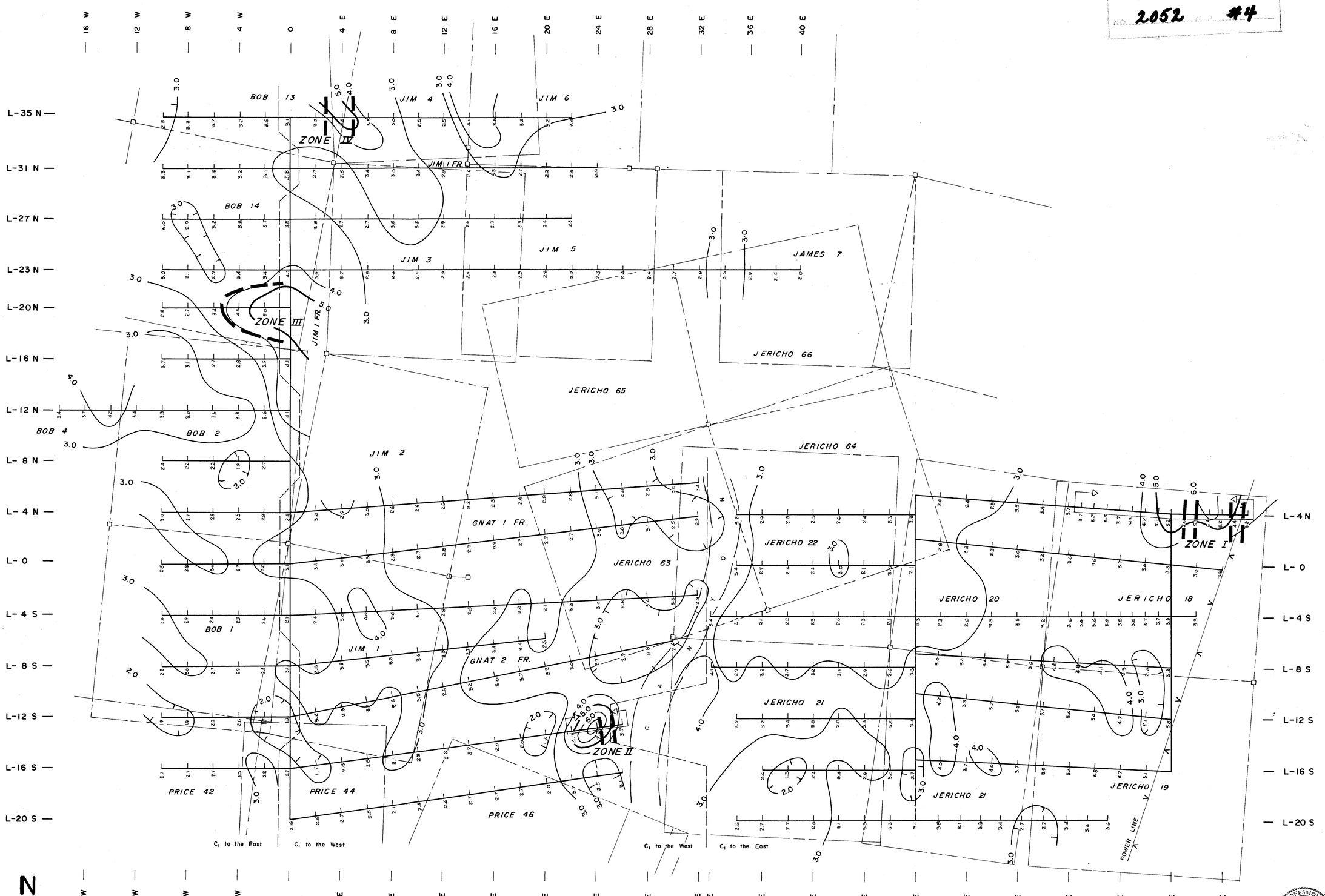
To accompany report by:

A. R Dodds, B Sc, Geophysicist.

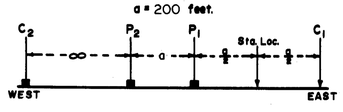
HUNTEC DIVISION, K.E.S.L. CALGARY-CANADA.

SCALE :	1 inch = 400 feet.
DRAWN :	R. C.
DATE :	August, 1969.
JOB Nº	P.H 1007.

DWG.Nº - 1007 - 4.



3 ELECTRODE ARRAY



LEGEND

PORTION OF LINE COVERED BY DETAIL SURVEYING

ZONE I

OUTLINE OF ANOMALOUS ZONE.

INSTRUMENT PARAMETERS	
ON	1·5 secs.
OFF	0·5 secs.
DELAY	0·015 secs.
INTEGRATE	0·4 secs.

2052

TREMAR MINES LIMITED.

JERICHO PROPERTY, HIGHLAND VALLEY – B. C.

INDUCED POLARIZATION SURVEY.
APPARENT CHARGEABILITY CONTOURS
WITH INTERPRETATION.
CONTOUR INTERVAL = 1.0 milliseconds.

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

HUNTEC DIVISION, K.E.S.L. CALGARY-CANADA.

SCALE:	1 inch = 400 feet.
DRAWN:	R.C.
DATE:	August, 1969.
JOB Nº	P.H 1007.

DWG. Nº – 1007 – 3.

N

52N
48N
44N
40N
36N
32N
28N
24N
20N
16N
12N
8N
4N
B/L-0
4S
8S
12S
16S

L-48W L-44W L-40W L-36W L-32W L-28W L-24W L-20W L-16W L-12W L-8W L-4W L-0 L-4E L-8E L-12E L-16E L-20E

JAY 20
NAT 14
NAT 13
NAT 12
NAT 11
NAT 10
BUD 2
NAT 9
NAT 19
NAT 21
NAT 20
NAT 22
NAT 2
NAT 4
NAT 1
NAT 3
NAT 5
NAT 6
NAT 8
SHEBA 26
SHEBA 25
GAP 1
GAP 2
GAP 3
GAP 4
GAP FR.
GAP 2 FR.
LAKE

3 ELECTRODE ARRAY

a = 200 feet.

C_2 NORTH
8
P_2
na
P_1
na
Sta. Loc.
na
C_1 SOUTH

2052

LEGEND

PORTION OF LINE COVERED BY DETAIL SURVEYING

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. PRENDERGAST
Expiry Date: May 28, 1970

TREMAR MINES LIMITED.

GAZA PROPERTY, HIGHLAND VALLEY - B.C.

INDUCED POLARIZATION SURVEY.

APPARENT RESISTIVITY CONTOURS

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

To accompany report by:

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

HUNTEC DIVISION, K.E.S.L. CALGARY - CANADA.

INSTRUMENT PARAMETERS	
ON	1·5 secs.
OFF	0·5 secs.
DELAY	0·015 secs.
INTEGRATE	0·4 secs.

SCALE: 1 inch = 400 feet.

DRAWN: M.C.

DATE: JULY, 1969.

JOB Nº P.H. 1007.

DWG. Nº - 1007- 2.

N

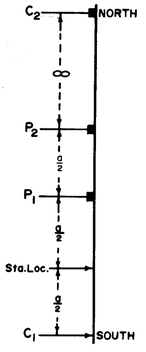
52N
48N
44N
40N
36N
32N
28N
24N
20N
16N
12N
8N
4N
B/L-0
4S
8S
12S
16S

L-48W L-44W L-40W L-36W L-32W L-28W L-24W L-20W L-16W L-12W L-8W L-4W L-0 L-4E L-8E L-12E L-16E L-20E

ZONE III
ZONE II
ZONE I
ZONE I
ZONE I
JAY 20
NAT 12
NAT 14
NAT 13
NAT 11
SHEBA 26
SHEBA 25
NAT 10
NAT 9
NAT 20
BUD 2
LAKE
NAT 19
NAT 21
NAT 22
NAT 2
NAT 4
NAT 1
NAT 3
NAT 5
NAT 6
NAT 8
GAP 1
GAP 2
GAP 2 FR.
GAP 3
GAP 4
GAP FR.
Road

3 ELECTRODE ARRAY

a = 200 feet.



LEGEND

PORTION OF LINE COVERED BY DETAIL SURVEYING.

ZONE I

OUTLINE OF ANOMALOUS ZONE.

2052

TREMAR MINES LIMITED.

GAZA PROPERTY, HIGHLAND VALLEY - B.C.

INDUCED POLARIZATION SURVEY.

APPARENT CHARGEABILITY CONTOURS
WITH INTERPRETATION.

CONTOUR INTERVAL = 1.0 milliseconds.

To accompany report by: A.R. Dodds

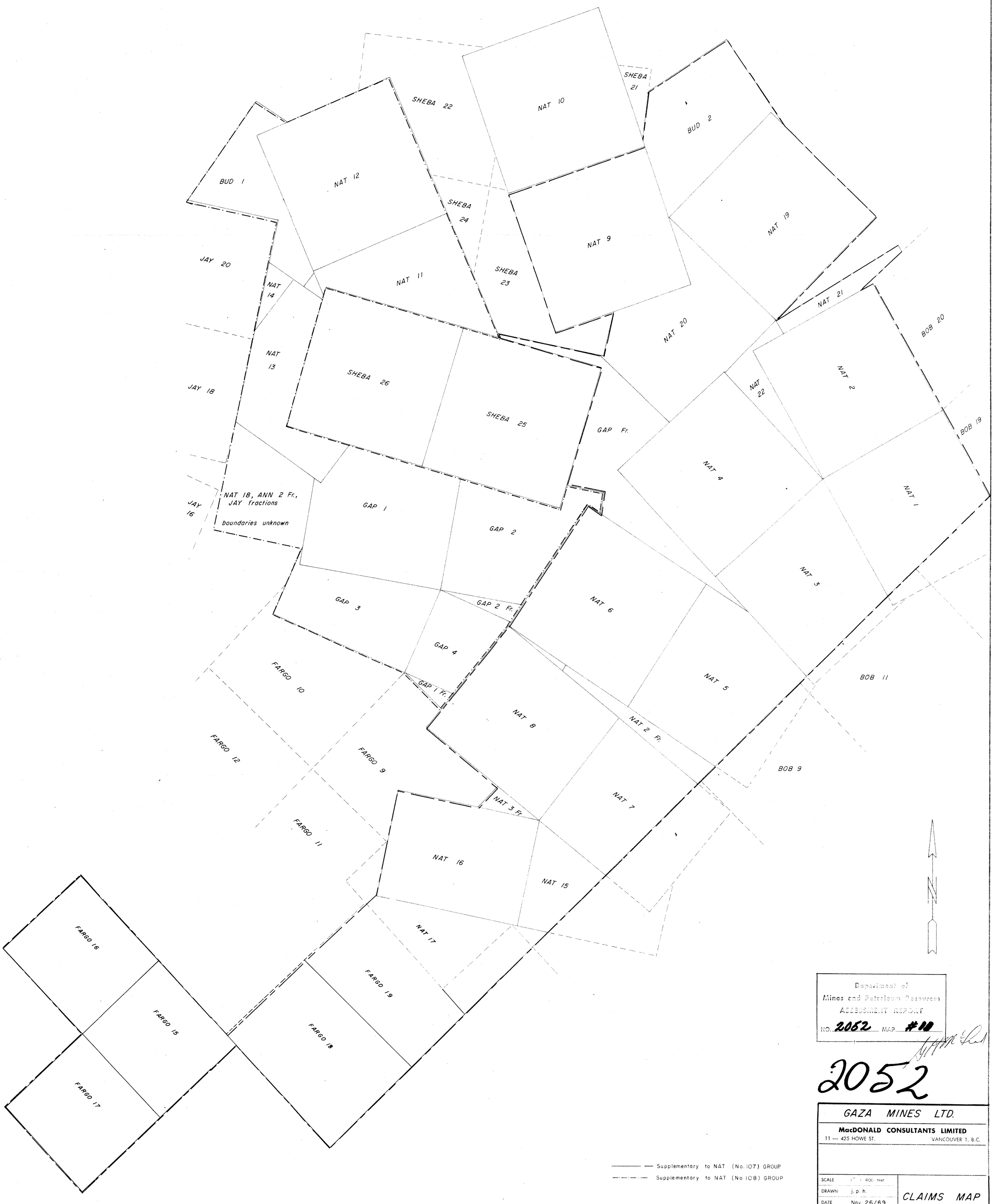
A.R. Dodds, B.Sc., Geophysicist.

HUNTEC DIVISION, K.E.S.L. CALGARY - CANADA.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. PRENDERGAST
Expiry Date: May 31st 1969

INSTRUMENT PARAMETERS	
ON	1.5 secs.
OFF	0.5 secs.
DELAY	0.015 secs.
INTEGRATE	0.4 secs.

SCALE: 1 inch = 400 feet.	
DRAWN: M.C.	
DATE: JULY, 1969.	
JOB No P.H 1007.	DWG. No - 1007- 1.



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2052 MAP #10

2052

GAZA MINES LTD.

MacDONALD CONSULTANTS LIMITED
11 — 425 HOWE ST. VANCOUVER 1, B.C.

SCALE	1" = 400 feet
DRAWN	j. p. h.
DATE	Nov. 26/69
NUMBER	263

CLAIMS MAP

Gnat 8 Fr.

10 W.

N. 35+00

24 E.

Bob 11
Bob 12

N. 31+00

Bob 13
Bob 14

Jim 4
Jim 3

Jim 1 Fr.

Jim 6
Jim 5

James 5

James 7

James 8

N. 27+00

N. 23+00

40 E

N. 20+00

Jim 1 Fr.

Jericho 66
Jericho 65

N. 16+00

28 W.

at Mal. 11+11

N. 12+00

N. 8+00

N. 4+00

Bob 4
Bob 3

Bob 2

0+00

Bob 1

BASE LINE

Jim 2
Jim 1

Gnat 1 Fr.

S. 4+00

S. 8+00

Moly Creek

Gnat 2 Fr.

Jericho 22
Jericho 21

S. 12+00

10 W.

S. 16+00

S. 20+00

400' BREAK AT CANYON

Price 42
Price 41

Price 44
Price 45

Price 46
Price 45

Witches Brook

23 N.

Pete's Cr.

Jericho 64
Jericho 63

NORTH

50E. TIE LINE

Jericho 20
Jericho 21

Jericho 18
Jericho 19

70 E. BASE LINE

20 S.

2052

2052

Tremar Mines Ltd.

MacDONALD CONSULTANTS LIMITED

11 — 425 HOWE ST. VANCOUVER 1, B.C.

JERICHO PROPERTY

SCALE 1"= 600'	Line Cutting
DRAWN P. G. S.	
DATE July 6/69	
NUMBER 263-31	