2142

GEOPHYSICAL AND GEOCHEMICAL REPORT

ON THE HIGH GROUP FOR

ARLINGTON SILVER MINES LIMITED

no deposit - no return

2 parts

AND

LARGO MINES LIMITED

VOLUME I

MAY 25th - AUGUST 13th 1969

Longitude 120°45'W

Latitude 50°30'N

PREPARED BY:

R. CAVEN

BARRINGER RESEARCH LIMITED

304 CARLINGVIEW DRIVE

REXDALE, ONTARIO

OCTOBER 1969

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INTRODUCTION

During the time period from May to August, 1969, Barringer Research Limited completed a combined induced polarization/resistivity, ground magnetic and geochemical survey on the High Group of claims for Arlington Silver Mines Ltd/ Largo Mines Limited, Vancouver, B.C. The scope of the work included 44.8 line-miles of induced polarization and ground magnetic survey, and geochemical soil-sampling in the S-W quadrant of the property. In addition, a number of days of orientation and detail I.P. were run. The work was carried out from May 25th to August 13th, 1969 inclusive by Barringer's geophysicist Edward Reeves, and supervised by Barringer Research geophysicist Roger Caven, P. Eng.

Location and Access

The claims group is situated immediately west of Tunkwa Lake, in the Kamloops Mining Division, about 16 miles south of Savona, B.C.

Access to property is from the Savona - Merritt Road to Tunkwa Lake and across range land to west of the lake. N.T.S. Map: Cherry Creek 92 I/10 West, with S.E. corner coordinates: long. 120° 45'W, and lat. 50°30'N.

Property and Survey Control

The claim boundaries were located, and survey grid laid out and cut by Amex Exploration Service of Kamloops, B.C., under separate contract.

GEOLOGY

The High Group of claims has a gently rolling topography, cut by the Guichon Creek and its tributaries in the S.W. corner. No outcropping bedrock was observed on the property. An abundance of vesicular lava blocks were found, however, of an angular shape suggesting very little transport horizontally, but with considerable vertical movement. The overburden was seen as mechanically derived from the general area and largely of glacial origin, except in the S.E. corner, where the land is marshy and rich in organic material to a depth of several feet as judged from some holes found there, which were entirely in an A horizon. In the north central and north western parts of the property the topography is suggestive of underlying bedrock highs. In the S.W. corner where the creek has cut valleys to a depth of a hundred feet or more, only overburden could be seen.

The geological map no. 886A accompanying the G.S.C. memoir 249, Nicola map area, 1961, shows the area to be covered by the Kamloops Group of volcanic rocks of Miocene or earlier age, with the Guichon Creek batholith having a contact sub-parallel with and close to the Guichon Creek.

The aeromagnetic map 5217 G, 1968, features a broad magnetic gradient just west of Tunkwa Lake, with the higher values of the magnetic field to the west over the batholith, indicating a contact zone, striking approximately N30^{o}W, through the centre of the property.

SURVEY AND EQUIPMENT

The work was carried out on a grid with lines 800 feet apart.

The ground magnetic survey used a Barringer nuclear precession magnetometer GM102A, which is a total field instrument of ±10 gamma accuracy over the whole range. Readings were taken every 100 feet, or less where necessary.

The induced polarization survey employed a Huntec 7.5 kW pulse type transmitter, and a 200 series receiver. Readings were taken at 200 foot station intervals. The electrode array used was a pole-dipole with an 'a' - spacing of 400 feet and n =2 for a distance of 800 feet between current and near potential electrodes. Detail survey was carried out over three intermediate lines with a pole-dipole array with an 'a' spacing of 200 feet and n = 1, 2, 3, and 4 respectively. The direction of traversing was from east to west with the potential dipole leading. The electrode spacing used over the entire grid was determined by an orientation survey on line 48S as well as a depth sounding on the same line with an expanding three-array.

The geochemical survey consisted of soil sampling at 400 foot station intervals in the S.W. quadrant of the grid and at 200 foot intervals over the induced polarization anomalies. The assessment of the soils was provided by Barringer geochemical consultant, Dr. Peter M. D. Bradshaw.

GEOPHYSICS

General

The results of the geophysical survey programme show that the area is covered by a very conductive and thick overburden, and suggest that the area is underlain by a volcanic sequence of varying thickness, but also of very low apparent resistivity. The apparent resistivity data and the magnetics indicate that the overburden is decreasing in thickness to the north and north-west.

Magnetics

The ground magnetic data shows a positive westerly gradient upon which is superimposed several closed anomalies, particularly in the north central and north westerly parts of the property, indicating a local thinning of the overburden and/or capping volcanic rocks, since the batholithic rock generally has a higher magnetic activity than the Kamloops volcanic sequence. This is entirely consistent with the aeromagnetic data available, which shows the area to be a contact zone between the batholith to the west and the volcanics. Since the aeromagnetic data by necessity filters out near surface effects the picture obtained is one of gradual increase in thickness of the volcanics to the east providing the contact, obviating the need for the contact to be also a surface or near surface feature. The batholithic rock may penetrate the capping rock as veins or dykes, as shown by some very high values in the groundmagnetics data.

Chargeability and Resistivity

The induced polarization results show a close relationship to the pattern of ground magnetic anomalies, with the anomalous chargeability values flanking the magnetic highs, or being confined between them as is the case of the chargeability anomaly centred on 40N, 0 W.

In the southern half of the property both the chargeability and resistivity results show low relief, but in the northern half, both show several anomalies of up to 10 times background. Only two of the chargeability highs coincide with resistivity highs, those centred on line 32N at 18E and 32E respectively. Of the other chargeability anomalies the one centred at 40N, O.W is situated on the S.W. slope of a resistivity high trending N45^{o}W, while the anomaly at 40N, 26 - 28 W has no significant resistivity feature associated with it. The detail survey on lines 36N, 44N, 52N with four electrode spacings indicates that the source of the anomalous polarization should be sought at a depth comparable to the dimension of the shortest electrode spread, which for n= 1 is 200 feet. A pseudo section of the chargeability on line 36N shows the westerly anomaly to be due to a higher concentration of polarizable material in a lens-like mass or a dyke with a definite plunge N-W indicated. This anomaly is not only favoured by its low resistivity environment but by its relation to the magnetics as well. The anomaly lies on a magnetic gradient which could represent a rather flat contact between the Guichon batholith rocks to the west and overlying volcanics to the east. A local north-west trend of the chargeabilities is reflected in a similar magnetic trend. This response, including its extension, has a potential strike length of 4,000 feet.

Although the remaining chargeability highs on the north part of the grid tend to be part of one large arc shaped formation, two highs stand out. These are the high centred on L56N, 12W and that on L40N at the BL. They are apparently related although the base line response is in a more resistive environment. The pseudo sections suggest increasing width with increasing depth on the later response. The anomaly on L56N has greater definition with depth suggesting a vein or dyke like source.

The chargeability anomalies which occur in the southern half of the property, are, as mentioned before, of much lower amplitude. Although they are at present considered to be of low priority, a re-evaluation may be in order if the stronger anomalies to the north should be of economic interest. The much thicker overburden, with its high conductivity would tend to mask significant occurrences of material responsive to induced polarization.

GEOCHEMISTRY

The topography of the surveyed area is mature and rolling with local relief seldom exceeding 200-300 feet. Most of the drainage is internal (i.e. sub-surface) in broad shallow valleys. In periods of extreme run-off some water may collect in surface pools and small rivers but these seldom have any active sediment.

The soils on the higher ground are very sandy with a very shallow but well defined A horizon from 1/2" to 1" thick. The B horizon is distinct and well developed and is frequently in excess of 3 feet. In the local depressions (i.e. above the internal drainage) the A horizon is much thicker and darker varying from 2" to 1 foot, overlying a similar but slightly darker B horizon. In both cases the underlying C horizon is a well sorted material of transported origin, probably fluvial-glacial. The maximum observed depth of the C horizon was 20 feet, but in no place was bedrock observed and the estimated depth is 100-500 feet. Following an examination of the analytical results the following anomalous and threshold values are calculated.

	Copper ppm
Background	0 - 30
Threshold	30
3rd Order Anomaly	31 - 60
2nd Order Anomaly	61 - 90
1st Order Anomaly	> - 90

The geochemical results show only scattered anomalous samples. Four 1st order anomalous results are found on lines 40S, 48S, and 46S. These however do not form any coherent pattern and are only very weakly supported by 2nd and 3rd Order anomalous values. Nowhere in the map area is there a well defined geochemical anomaly.

The absence of geochemical anomalies is only to be expected when the nature and

thickness of the overburden is considered. In addition those isolated anomalous samples which do occur are most probably due to mechanical transportation within the underlying till and therefore will be of a transported origin. Furthermore the lack of correlation of the geochemistry with the geophysics is only to be expected and it is recommended that the geophysical anomalies be considered entirely on their own merit with no attempt to cross correlate with the geochemistry.

SURVEY & ANALYTICAL PROCEDURE

The soil samples were collected at 400 foot intervals along a regular grid with lines 800 feet apart. The samples were collected from the sandy light to medium brown B horizon, placed in metal free, high wet strength Kraft paper envelopes and shipped to Vancouver for analysis. Here the samples were dried in cabinet using forced hot air, gently crushed to loosen the soil aggregates (being careful not to pulverize any of the mineral grains) and sieved to minus 80 mesh using a nylon screen. Analysis was carried out at the Vancouver laboratory of Barringer Research Limited by dissolving the samples in concentrated perchloric acid and determining the metal concentration using a Perkin-Elmer 303 Atomic Absorption Spectrometer. The analyst in charge was Miss Y. Hazeldene.

CONCLUSIONS AND RECOMMENDATIONS

It can be inferred from the geophysical data that the Guichon Creek batholith has intruded the volcanics in a domelike structure, or short stock, above its regular sloping surface. This would have resulted in an approximately arcuate fracture pattern, possibly associated with veins and dykes, thus explaining both magnetics and resistivity.

Associated with this structure are several induced polarization anomalies of which two can be considered major responses, both with peaks on line 40N, and striking 30° to 45° west of north. The anomaly with its peak at 40N on the baseline may possibly resolve into two separate although adjacent sources.

The absence of geochemical correlation with the I.P. anomalies is not damaging to the evaluation of the property in this instance, since a response would not necessarily be expected if the source were capped with a rock layer and also covered by deep overburden, particularly a glacial till.

The induced polarization responses detected in this area do thus exist within the context of a geology which can only be inferred from the various sources of data available. With topographic relief suggesting underlying bedrock relief and the geophysical data indicating depth to source of I.P. response to be of the order of 200 feet, it is likely that the anomalies originate below the capping volcanics, which are much thinner in these places. Since concentrations of sulphides are known to exist within the Guichon Creek batholith, this may be the situation in this case.

To obtain a better description of the geology of the area and to determine the sources of the induced polarization responses it is recommended that two of the major anomalies be tested by diamond drilling, so that the information gained can serve as basis for further work.

The following drill holes are suggested:

D D H 1 Collar at line 40N,station 25W, directed grid S W
Bearing 225°, inclined 50° to a depth of 800 feet

D D H 2 Collar at line 40N, station 4W, directed grid E
Bearing 90°, inclined 50° to a depth of 800 feet

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
Roger J. Cavén

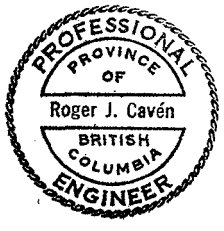
Roger Cavén, P. Eng.
Geophysicist.

Peter M. D. Bradshaw,
Chief Geochemist.

The following drill holes are suggested:

D D H 1 Collar at line 40N,station 25W, directed grid S W
Bearing 225°, inclined 50° to a depth of 800 feet

D D H 2 Collar at line 40N, station 4W, directed grid E
Bearing 90°, inclined 50° to a depth of 800 feet



Roger Cavén, P. Eng.
Geophysicist.

Peter M. D. Bradshaw,
Chief Geochemist.

BARRINGER RESEARCH

BARRINGER RESEARCH LIMITED
304 CARLINGVIEW DRIVE
REXDALE, ONTARIO, CANADA
PHONE: 416-677-2491
CABLE: BARESEARCH

October 17th, 1969

Arlington Silver Mines Limited/Largo Mines Limited
110 One Bentall Centre
505 Burrard Street
Vancouver, 1, B.C.

Gentlemen:

Re: The High Group of Mineral Claims
Kamloops Mining Division B.C.

The following personnel were employed on the induced polarization - ground magnetic and geochemical surveys on the above mentioned mineral claims during the period May 25th to August 13th, 1969.

E. Reeves - geophysicist, party chief instrument operator	May 25-Aug.13
J. Booth - field helper, sample collector	May 25-Aug.13
A. Wasnea - field helper, sample collector	May 25-Aug.13
J. Johnston - instrument and transmitter operator, field helper.	May 25-July 4
J. Burn - instrument and transmitter operator, field helper	June 25-Aug.13

Yours sincerely,

BARRINGER RESEARCH LIMITED

Roger Cavén

RC:lh

Roger Cavén, P. Eng.
Geophysicist

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.
TO WIT:

In the Matter of

The High Group of Mineral Claims
Kamloops Mining Division

I, Roger J. Caven

of Barringer Research Ltd., 1198 West Pender Street, Vancouver 1, B.C.

in the Province of British Columbia, do solemnly declare that

1. I am a Geophysicist and I did and I supervised the Induced Polarization, Magnetic and Geochemical Surveys on the High Group of Mineral Claims near Tunkwa Lake in the Kamloops Mining Division from on or about the 25th day of May, 1969 to on or about the 13th day of August 1969.

2. The aforesaid work consisted of the following:

44.8 miles of IP and Magnetic Surveys at $350/mile	15,680.00
2 days of orientation IP Survey at $345/day	690.00
6 days of 3 profile traversing-detail work-at $345/day	2,070.00
Mobilization	550.00
332 Soil Samples collected and analyzed	664.00
2 days consulting by Geochemical Consultant	300.00
Total Cost	19,954.00

3. All the aforesaid work was done for Arlington Silver Mines Ltd/Largo Mines Ltd.
1110 One Bentall Centre
505 Burrard Street
Vancouver 1, B. C.

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."

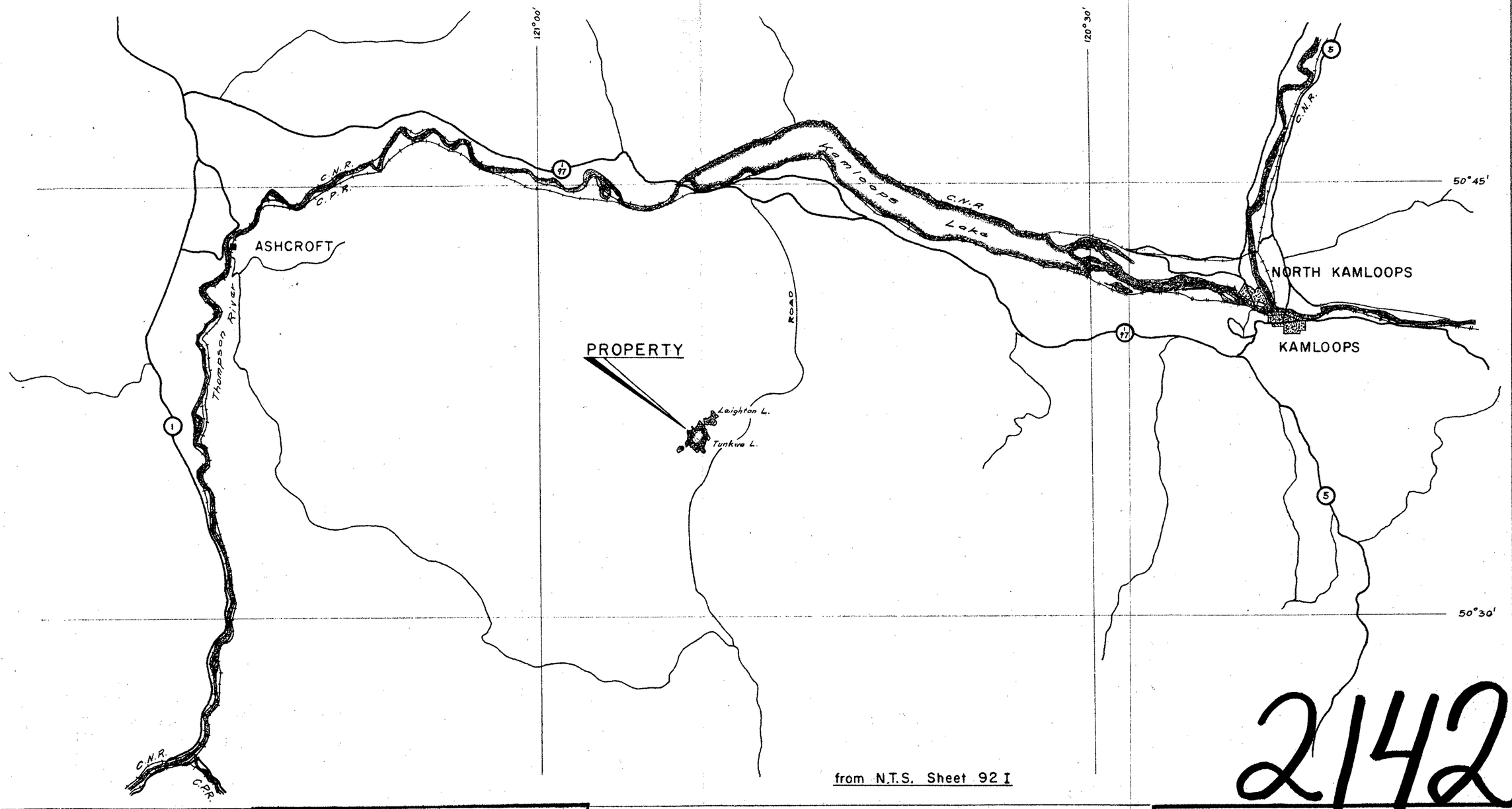
Declared before me at the City of Vancouver, in the Province of British Columbia, this 31st day of October, 1969, A.D.

Roger Caven, P.Eng.

J. Paul

A Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia.
Sub-mining Recorder

★0



from N.T.S. Sheet 92 I

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Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2142 MAP #1

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
Roger J. Cavén

Work undertaken by
BARRINGER RESEARCH LTD, Toronto, Canada.

ARLINGTON SILVER MINES LTD.
LARGO MINES LTD.

HIGH GOUP - HIGHLAND VALLEY, B.C.

LOCALITY PLAN

SEPT. 1969	Scale 1:250 000	DWG. 5-221-1

BASE LINE

40W 20W 20E 40E 60E 80E 100E

72N
64N
56N
48N
40N
32N
24N
16N

40W 20W 20E 40E 60E 80E 100E

N

—A—

Pole - Dipole

P_2 a P_1 na C_1 ∞ C_2

a=400', n=2

LEGEND

Chargeability - Scale 1"= 5 millisecs

Resistivity - Scale 1"= 100 ohm metres

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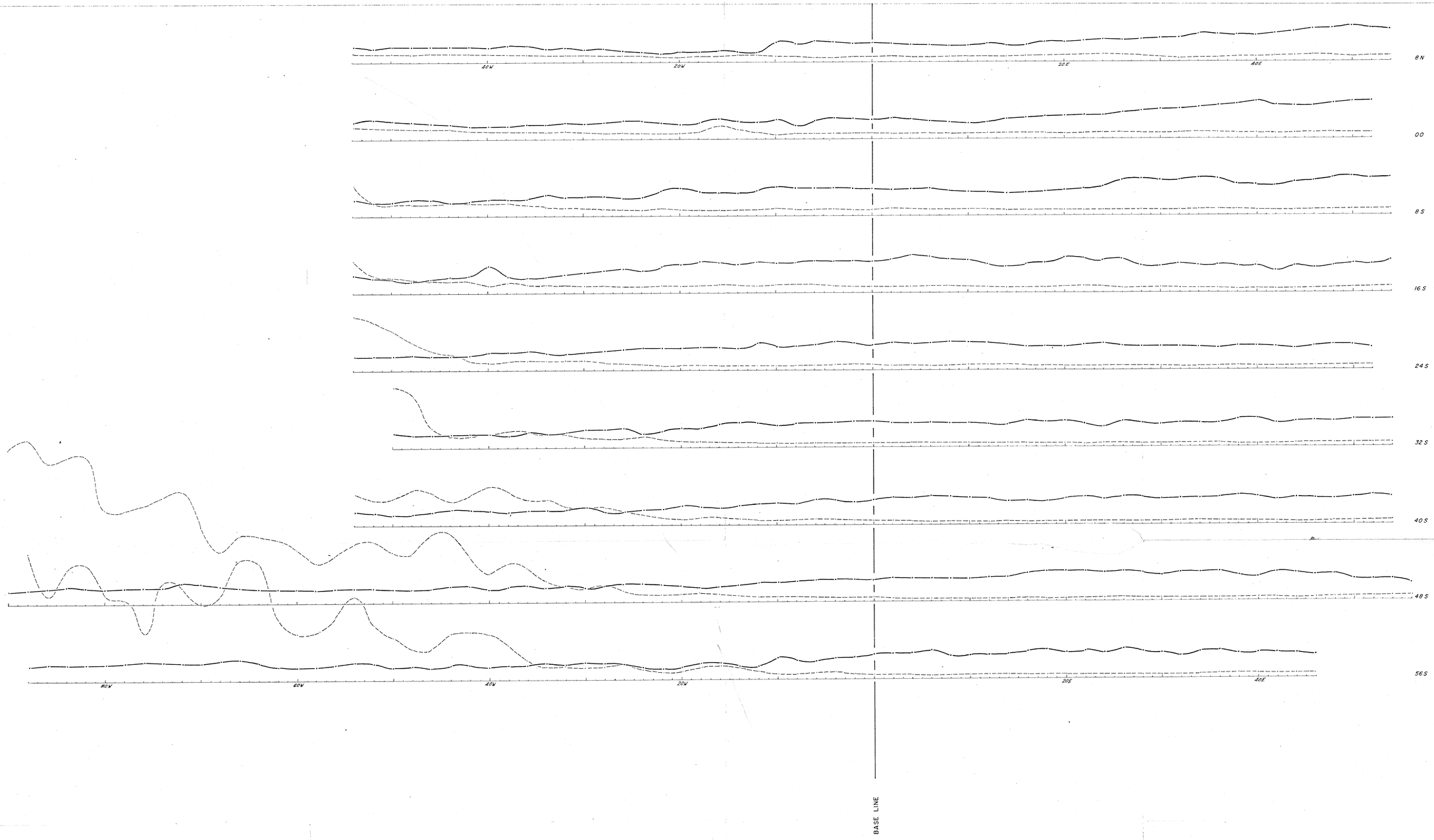
HIGH GROUP - HIGHLAND VALLEY, B.C.

INDUCED POLARIZATION & RESISTIVITY SURVEY

POLE - DIPOLE

SEPT. 1969 | Scale 1"=400' | DWG. 5-221-2A



N

A

Pole - Dipole

P_1 a P_2 na C_1 na C_2

a=400', n=2

LEGEND

Chargeability - Scale 1" = 5 millisecs

Resistivity - Scale 1" = 100 ohm metres

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ARLINGTON SILVER MINES LTD.
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HIGH GROUP - HIGHLAND VALLEY, B.C.

INDUCED POLARIZATION & RESISTIVITY SURVEY

POLE - DIPOLE

SEPT. 1969 | Scale 1"=400' | DWG. 5-221-2B

BASE LINE

40W 30W 20W 15W 10W 5W 0 20E 40E 60E 80E 100E 72 N

64 N

56 N

48N

40N

32N

24N

16N

LEGEND

Contour interval 2 millisecs.

10 Contour

2 Contour

Depression

Department of
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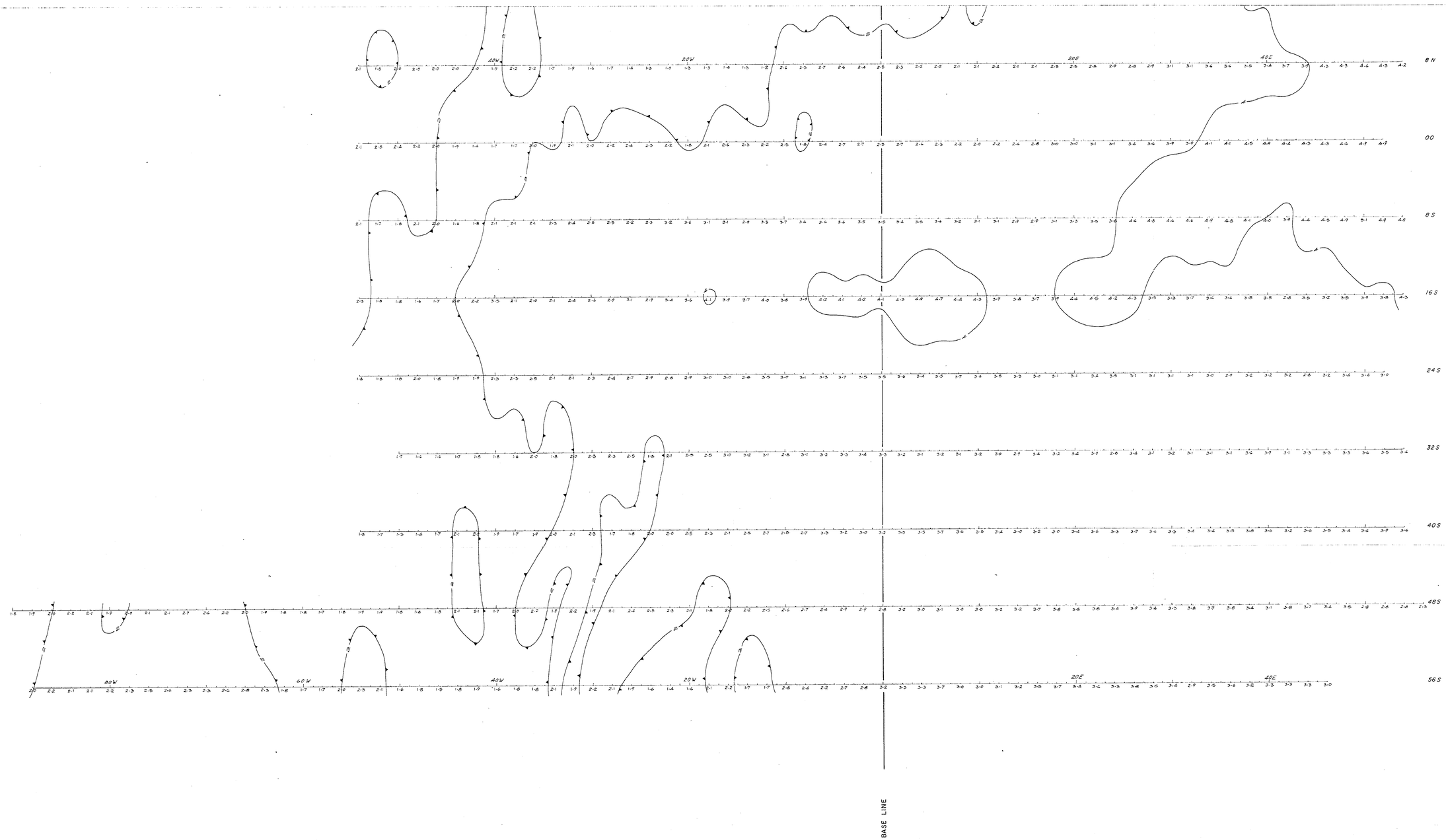
HIGH GROUP - HIGHLAND VALLEY, B.C.

CHARGEABILITY CONTOURS
a = 400' n = 2

SEPT. 1969 | Scale 1"=400' | DWG. 5-221-3A



N

A

LEGEND

Contour interval 2 millisecs.

10 Contour

2 Contour

Depression

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Mines and Petroleum Resources
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A

B

PROFESSIONAL ENGINEER OF BRITISH COLUMBIA Henry J. Cavis

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CHARGEABILITY CONTOURS
a = 400' n = 2

SEPT. 1969	Scale 1"=400'	DWG. 5-221-38

BASE LINE

40W 20W 20E 40E 60E 80E 100E

72N 64N 56N 48N 40N 32N 24N 16N

LEGEND

Contour interval 20 ohm metres

100 Contour

20 Contour

Depression

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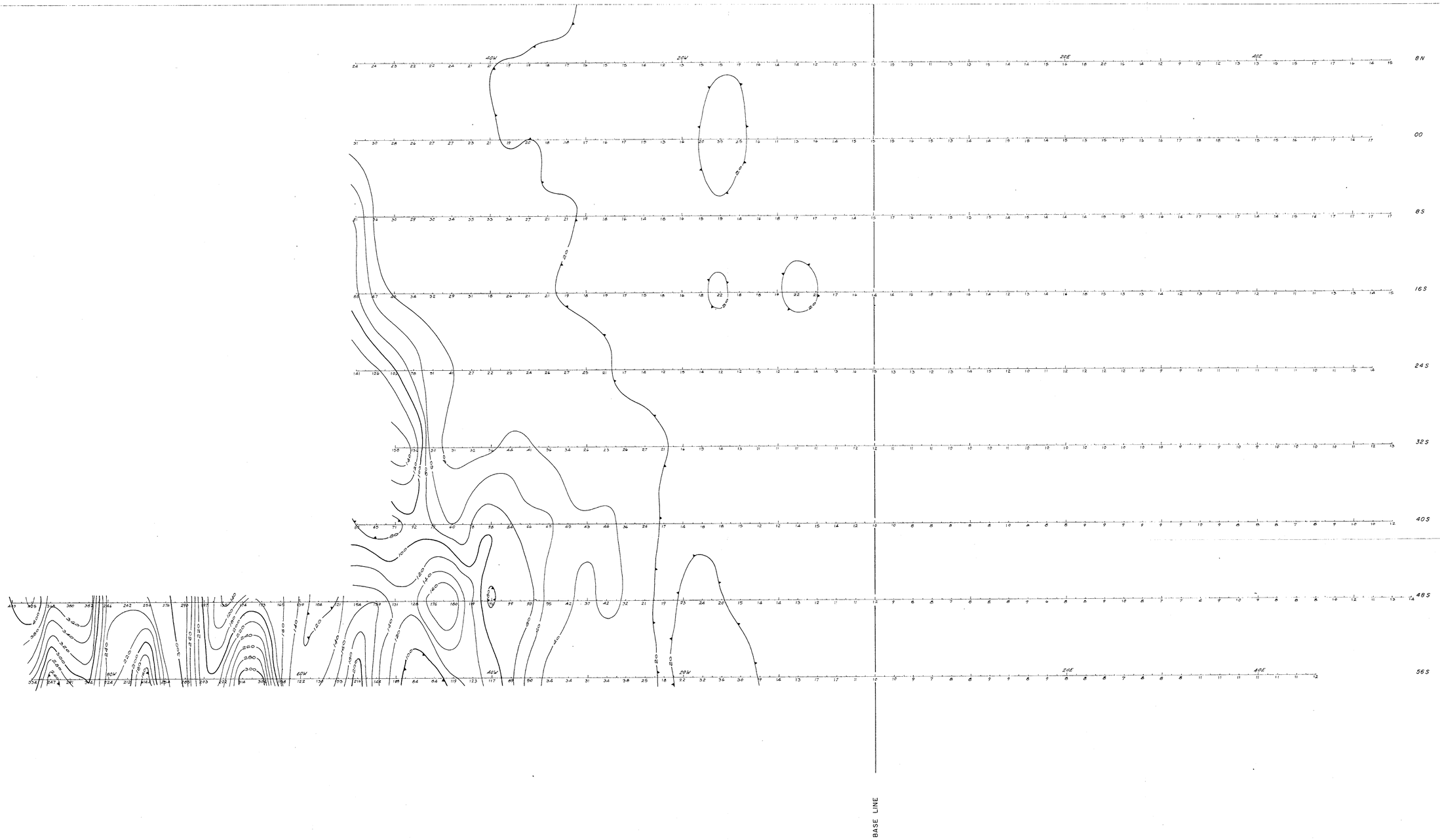
RESISTIVITY CONTOURS
a = 400' n = 2

SEPT. 1969 | Scale 1"=400' | DWG. 5-221-4A



N

—A—

LEGEND

Contour interval 20 ohm metres

100 Contour

20 Contour

Depression

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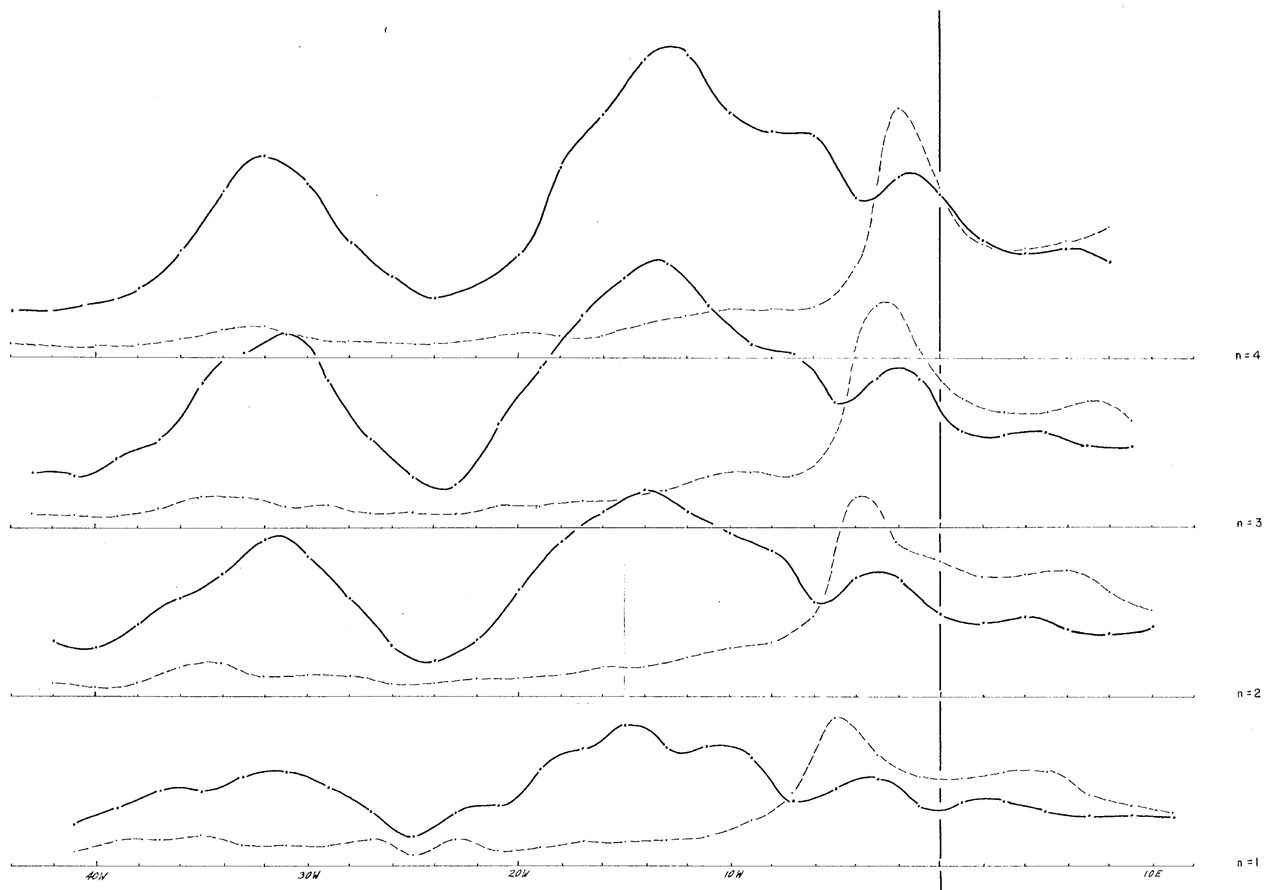
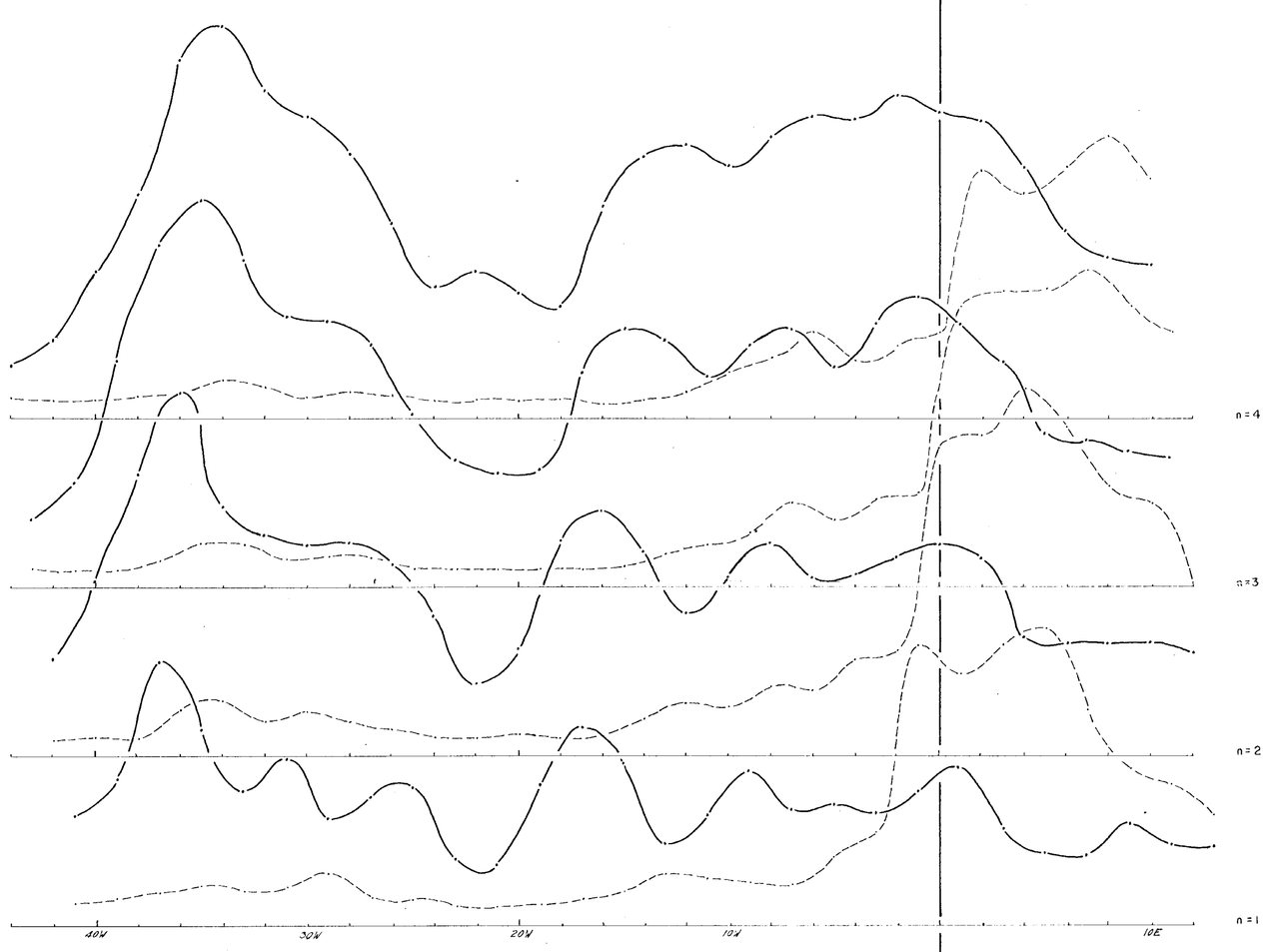
RESISTIVITY CONTOURS
a=400' n=2

SEPT. 1969 | Scale 1"=400' | DWG. 5-221-4B



LINE 52N



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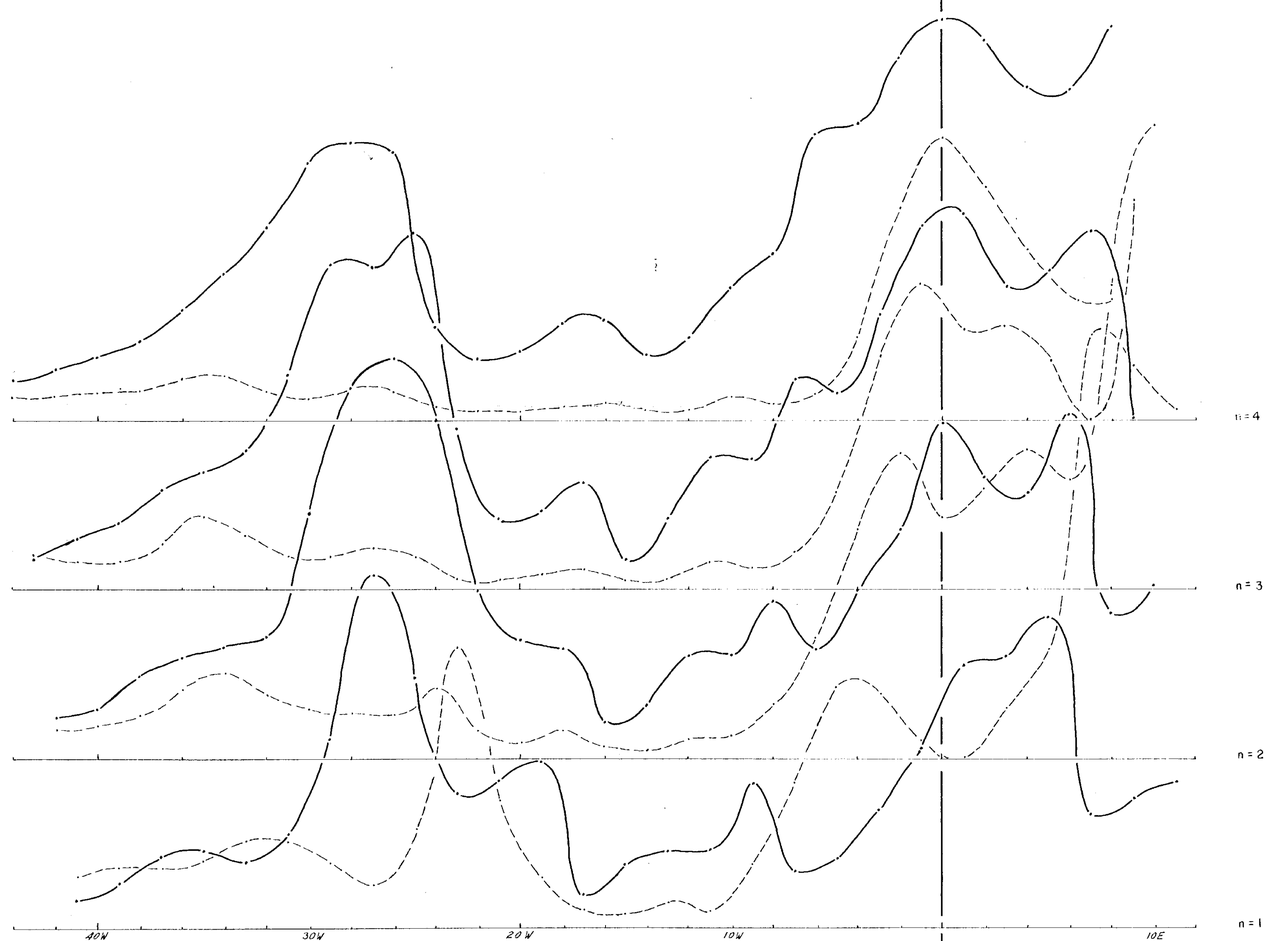
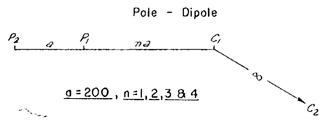


LINE 36N

BASE LINE

Pole - Dipole



a = 200, n = 1, 2, 3 & 4

LEGEND

Chargeability - Scale 1" = 5 millisecs

Resistivity - Scale 1" = 100 ohm metres

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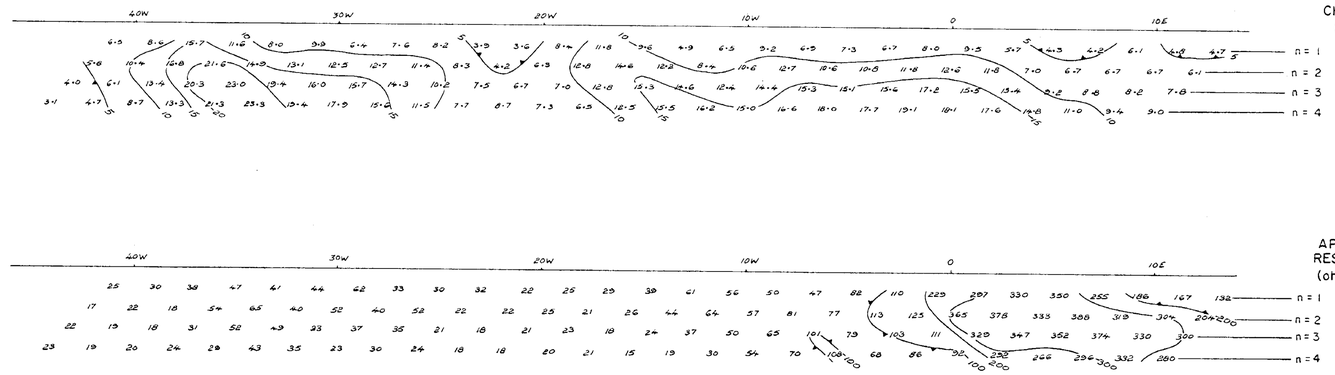
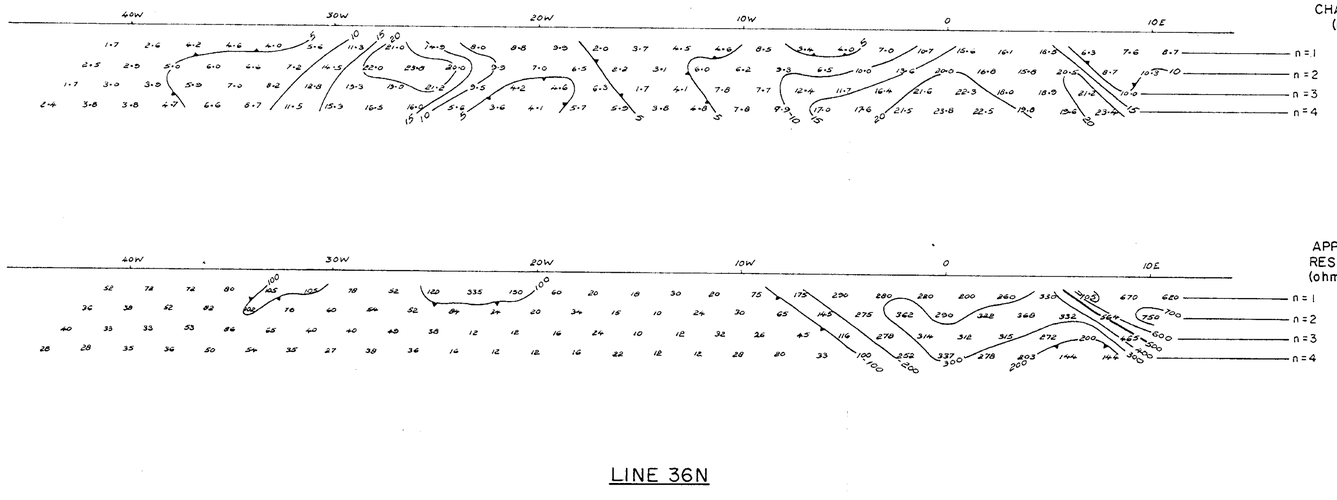
HIGH GROUP - HIGHLAND VALLEY, B.C.

INDUCED POLARIZATION & RESISTIVITY SURVEY DETAIL

SEPT. 1969	Scale 1"=400'	DWG. 5-221-5

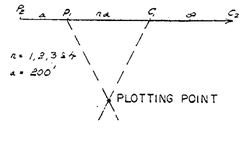


LINE 44N



LINE 36N

POLE-DIPOLE PLOTTING POINT



Chargeability contour interval — 5 millisecs

Resistivity contour interval — 100 ohm metres

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NO. 2142 MAP #9

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PROVINCE OF BRITISH COLUMBIA
Roger J. Caven

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HIGH GROUP - HIGHLAND VALLEY, B.C.

INDUCED POLARIZATION & RESISTIVITY SECTIONS
POLE-DIPOLE a = 200'

SEPT. 1969	Scale 1"=400'	DWG. 5-221-6