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GEOPHYSICAL REPORT
ON THE HIGHLAND CHIEF MINES PROPERTY
IN THE HIGHLAND VALLEY
BRITISH COLUMBIA
FOR
HIGHLAND CHIEF MINES LIMITED

has a strowing (5?) and keyser

August 20th - October 10th
1969

Longitude 121°00'W
Latitude 50°15'N

50°21' / 121°09' Key, B, CC

50°23' / 121°09' other

PREPARED BY:
R. CAVEN
BARRINGER RESEARCH LIMITED
304 CARLINGVIEW DRIVE
REXDALE, ONTARIO

NOVEMBER 1969

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INTRODUCTION

During the time period August to October, 1969, Barringer Research Limited completed an Induced Polarization/Resistivity Survey on parts or all of the following claims: TAM, PM, LAKE, WHY, PIM, CHIEF, JC, MERV, and EYE (Key + B). The scope of the work included 24.8 line-miles of Induced Polarization Survey. In addition some detail and depth sounding work was carried out. The work was carried out from August 20 to October 10, 1969, inclusive by Barringer geophysicist Edward Reeves, and supervised by Barringer geophysicist Roger Cavén, P. Eng.

121°30'
121°00'
120°30'
50°30'
50°15'

SPENCES BRIDGE

Thompson River

PIMAINUS LAKE AREA

B.L.1
B.L.2
B.L.3

EYE CLAIMS AREA

New KEY & B claims

Nicola River

Fraser River

LYTTON

NICOLA

Nicola Lake

MERRITT

N.T.S. 921

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Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2385 MAP #1

Roger J. Cavén
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA

Work undertaken by
BARRINGER RESEARCH LTD, Toronto, Canada.

HIGHLAND CHIEF MINES LTD
HIGHLAND VALLEY, B.C.

LOCALITY PLAN

NOV. 1969 | Scale 1:250,000 | DWG. 5-228-1

LOCATION AND ACCESS

The claims surveyed are situated around and south of the Pimainus and Skyline Lakes, on the west side of Spaist Mountain, in the Kamloops Mining Division, British Columbia.

Access to property is from the Highland Valley Road approximately 10 miles due south by gravel road, or 16 miles north of the Merritt to Spences Bridge Highway No.8, by a four-wheel drive vehicle road.

N.T.S. map: Spences Bridge 92 1/6 East, with S.E. corner co-ordinates: longitude 121°00'W, and latitude 50°15'N.

PROPERTY AND SURVEY CONTROL

The claim boundaries were surveyed by McWilliam, White, Gobe and Associates, British Columbia Land Surveyors, Kamloops. The grid was cut by Mr. Sahara of Merritt, British Columbia, under separate contract.

GEOLOGY

The area surveyed is located on the west side of the Guichon Creek batholith. Some outcrops were in evidence although the major part of the area is covered by glacial till and outwash of varying thickness. Mineralization has been found in the form of chalcocite in the approximate centre of the grid.

The aeromagnetic map 5211 G, 1968, features several magnetic highs superimposed upon a magnetic gradient. Some of the aeromagnetic features probably reflect bedrock topography.

SURVEY AND EQUIPMENT

The work was carried out on a grid with lines 400 - 800 feet apart as shown on the accompanying map. (Dwg.no. 5-228-2)

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 100 feet and n=2 for a distance of 200 feet between current and near potential electrodes. A pole-dipole array was used with a = 100 feet and n=5 for detail surveying carried out on parts of lines 2N and 9. A depth sounding was also attempted on line 2N employing an expanding three array. (Dwg. no. 5-228-2)

The direction of traversing was from east to west with the potential dipole leading. Stations were occupied every 200 feet.

The smaller grid over the EYE claims was surveyed by a pole-dipole array with an 'a' spacing of 200 feet and n=3. Traversing was in the direction west to east. (Dwg.No. 5-228-5).

GEOPHYSICS

(a) General

The results of the geophysical survey show a generally high apparent resistivity level over most of the grid indicating proximity of the batholithic rock. Exceptions are the N.W. corner of the main grid and all of the small grid over the EYE claims, where overburden of greater depth is indicated.

(b) Chargeability and Resistivity

The Induced Polarization results from the survey of the EYE claims No.13 and 43 show very low values of both chargeability and apparent resistivity. The resistivity pattern, however, may be interpreted as showing a decrease in overburden thickness to the north. The greater depth of overburden will also explain the existence of an aeromagnetic low over these claims. Although the resistivity data does show that the overburden was apparently penetrated, no significant chargeability response was evident.

The survey over tha main grid revealed a pattern of chargeability and resistivity anomalies. The chargeability values show two main zones of high response: 1) Line 0 to Baseline 1 along an axis at 24W to 26W, resp., 2) Baseline 2 to Line 9 between 40W and 50W. Several lesser anomalies also exist. The resisitivity values have many sharp maxima. The chargeability anomalies are generally accompanied by resistivity highs although the resistivity pattern also extends into the areas of chargeability lows.

The resistivity anomalies appear to reflect the general trend of jointing and fracturing within the Guichon Creek Batholith. One set of joints and/or fractures strikes approximately due north and a conjugate, weaker set strikes west of north with the direction varying over the batholith. It is, however, likely that some of the resistivity anomalies reflect changes in the lithology of the batholithic rocks. The most abundant rock type within the Guichon Creek Batholith is a uniform, coarse

grained quartz-diorite, but dark dioritic phases, some of which may be younger than the majority of the intrusive, occur in several places.

The chargeability anomalies are numerically of small amplitude, but have peaks of up to four times the background value, which is placed at approximately 2 m.secs. Evidence of both north and north-west structural controls may be observed in the chargeability contours of zone 1.

The mineralization observed on the property was found in shears, together with quartz. It is therefore expected that the anomalous chargeability zones are due to parallel near vertical vein type polarizable sources, possibly mineralized. This conclusion is also born out by the detail work on line 9, where the chargeability pattern follows the general outline of the regular survey but with lower amplitude which is interpreted as being the result of a polarizable source extending in depth, but not in width, when averaged over a larger mass. The effect of the shears, with polarizable sources, may be to cause moderate resistivity maxima. An enhancement of the chargeability values is also possible in this environment.

Showings JC 8,10

To the north of the Pimainus and Skyline Lakes the work showed an abrupt termination of the response pattern obtained further to the south. This may be due to a displacement caused by a fault striking approximately west.

CONCLUSIONS AND RECOMMENDATIONS

From the geophysical data two first order chargeability anomalies emerge. Coincident with the chargeability pattern is, however, an apparent resistivity pattern reflecting structure and/or changes in lithology. Furthermore, the chargeability anomalies are interpreted as being due to polarizable sources in relatively narrow parallel veins or shears, which are steeply dipping and extending in depth.

The chargeability values may be enhanced by the bulk resistivity of the host rock of polarizable sources. The relationship between true and the measured apparent chargeabilities would be a function of the nature of the polarizable source and its relation to the host rock, the amount of fracturing present in the rock, and lithology.

It is therefore recommended that the geophysical results be carefully evaluated by further mapping of the geology. Since the main anomalies are in areas covered by overburden some exploratory drilling and trenching will be necessary for the assessment of the economic potential of the area.

The following drill holes are recommended:-

No.1 Collar at Baseline 2, station 46W, azimuth N90^{o}E, inclined 50^{o} from the horizontal, to a length of 250 feet.

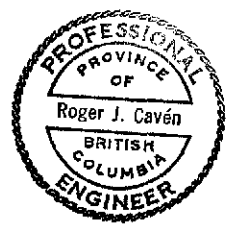
No. 2 Collar at Line 9, station 46 + 50W, azimuth N90^{o}E, inclined 50^{o} from the horizontal, to a length of 300 feet.

No.3 Collar at Line 2, station 14 + 50W, azimuth N90^{o}E, inclined 60^{o} from the horizontal, to a length of 300 feet.

Of the three holes recommended, the first two are sited on the best chargeability responses. In the event that high resistivities may be enhancing values out of proportion to the metalic content of their source, the third hole is sited on moderate chargeabilities which are coincident with lower resistivities.

The results obtained from these drill holes would serve as a basis for further work. The work on the EYE claims indicate that further work in that area would not be warranted at present.

BARRINGER RESEARCH LIMITED



Roger Cavén, P. Eng.,
Geophysicist.

BARRINGER RESEARCH

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

November 25, 1969

Highland Chief Mines Limited
566 Howe Street
Vancouver, B.C.

Gentlemen:

Re: The TAM, PM, LAKE, WHY, PIM, CHIEF, J.C. MERV & EYE Claims, Kamloops Mining Division, B.C.

The following personnel were employed on the Induced Polarization survey on the above mentioned claims during the period August 20th to October 10th, 1969.

E. Reeves, - Geophysicist	August 20th	-	October 10th
M. Booth, - Instrument Operator	August 20th	-	October 10th
A. Wasnea, - Field Helper	August 20th	-	September 7th
J. Burn, - Field Helper	August 20th	-	September 2nd
P. Johnston, - Field Helper	August 20th	-	September 15th
R. Toupin, - Field Helper	September 1st	-	September 15th
A. McClelland, - Field Helper	September 16th	-	September 27th
D. Dawson, - Field Helper	September 16th	-	September 28th
W. Brown, - Field Helper	September 29th	-	October 10th
H. Allen, - Field Helper	September 29th	-	October 10th

Yours sincerely

BARRINGER RESEARCH LIMITED

Roger Cavén

RC:lh

R. Cavén, P. Eng.,
Geophysicist.

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

In the Matter of The TAM, PM, LAKE, WHY, PIM, CHIEF, JC, MERV & EYE claims on the Highland Chief Mines Property, Kamloops Mining Division.

I, Roger J. Caven,

of Barringer Research Limited, 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 supervised the Induced Polarization Survey on the aforesiad claims of the Highland Chief Mines property in the Kamloops Mining Division from on or about the 20th day of August 1969 to on or about the 10th day of October 1969.

2) The aforesaid work consisted of the following:

28½ days I.P. Survey	10,260.00
2 days orientation survey	720.00
Mobilization	200.00
Total Cost	$11,180.00

3) All the aforesaid work was done for Highland Chief Mines Limited, 566 Howe Street, Vancouver, 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 30 day of Dec. 1969, A.D.

Roger Caven

Julie Turner
A Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia.

SUB-MINING RECORDER

★o

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

In the Matter of The Highland Chief Mines Limited property, Kamloops Mining Division.

I, Roger J. Cavén

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

in the Province of British Columbia, do solemnly declare that

The following personal were employed on the Induced Polarization survey on the above mentioned claims during the period August 20 th to October 10 th, 1969.

Personnel	Time	Gross Wages
E. Reeves	August 20th - October 10th	1058.57
M. Booth	August 20th - October 10th	902.57
A. Wasnea	August 20th - September 7th	339.97
J. Burn	August 20th - September 2nd	204.00
P. Johnston	August 20th - September 15th	393.43
R. Toupin	September 1 st - September 15th	244.00
A. McClelland	September 16th - September 27th	216.00
D. Dawson	September 16th - September 28th	234.00
W. Brown	September 29th - October 10th	216.00
H. Allen	September 29th - October 10th	216.00

The above gross wages are included in the total charges, which consist of wages, vehicle to transport approximately 1200 lbs of I.P. equipment, charges for equipment, cost of materials used, food and lodging for personnel, drafting, report writing and reproduction costs, overhead, and profit.

30 1/2 days of I.P. and orientation survey á $ 360.-/day $ 10,980.-

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 12 day of January 1970., A.D.

Roger Cavén

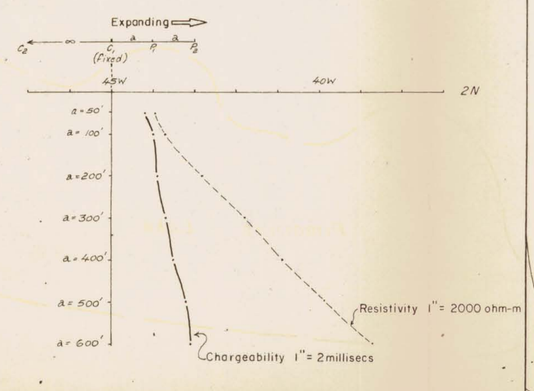
Jeri Swanson

A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia.

Sub-mining Recorder

THREE ELECTRODE ARRAY DEPTH PROFILE

Scale 1" = 200'



INSET

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Pole – Dipole

P_2 ∞ a P_1 na C_1 ∞ C_2

a = 100'

LEGEND

(n = 2) Chargeability – Scale 1" = 5 millisecs.

x (n = 5)

(n = 2) Resistivity – Scale 1" = 2000 ohm metres

x (n = 5)

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2385 MAP #2

Work undertaken by
BARRINGER RESEARCH LTD., Toronto, Canada

HIGHLAND CHIEF MINES LTD.

PIMAINUS LAKE AREA, HIGHLAND VALLEY – B.C.

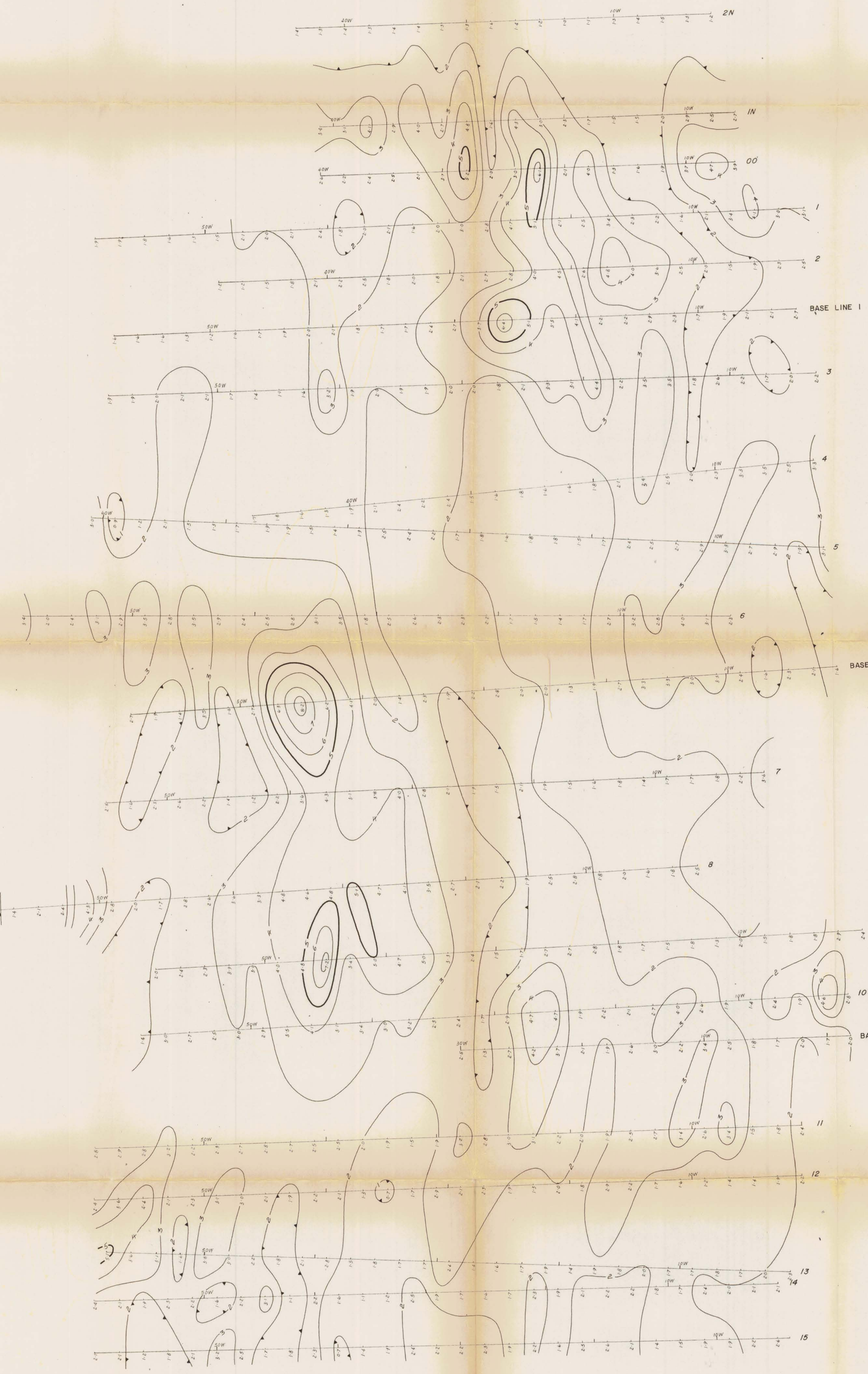
INDUCED POLARIZATION & RESISTIVITY SURVEY

POLE – DIPOLE

NOV. 1969 | Scale 1" = 400' | DWG. 5-228-2

2385

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
Roger J. Cavin



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Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2385 MAP #3

LEGEND

Contour interval 1 millisec
5 Contour
1 Contour
Depression

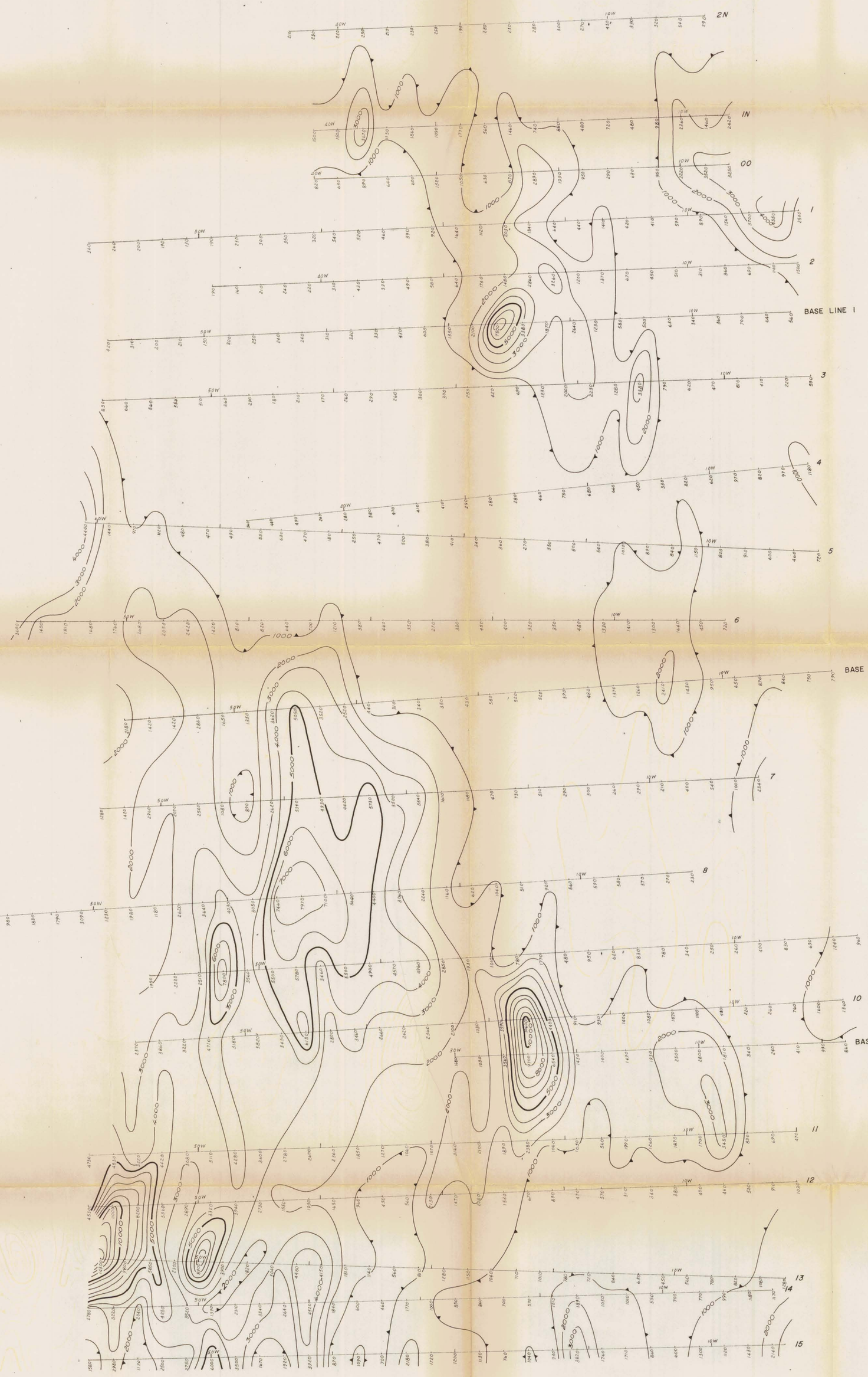
Work undertaken by
BARRINGER RESEARCH LTD., Toronto, Canada

HIGHLAND CHIEF MINES LTD.

PIMAINUS LAKE AREA, HIGHLAND VALLEY - B.C.

CHARGEABILITY CONTOURS
a = 100' n = 2

NOV. 1969	Scale 1"= 400'	DWG. 5-228-3



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Roger J. Cavin

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
Roger J. Cavin

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Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2385 MAP #4

LEGEND

Contour interval 1000 ohm metres

5000 Contour

1000 Contour

Depression

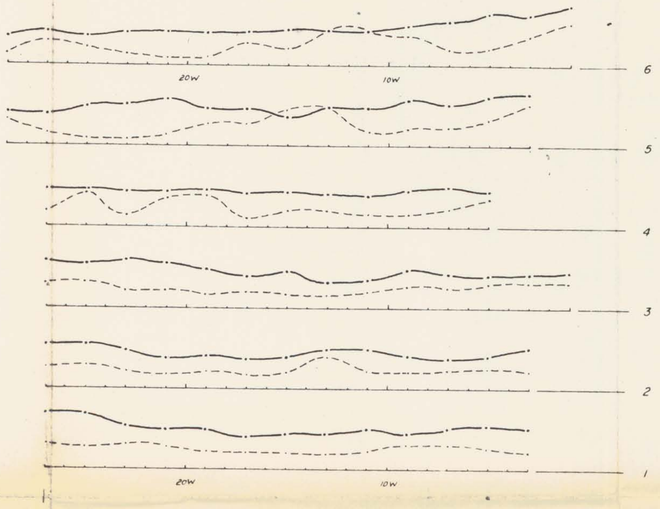
Work undertaken by
BARRINGER RESEARCH LTD., Toronto, Canada

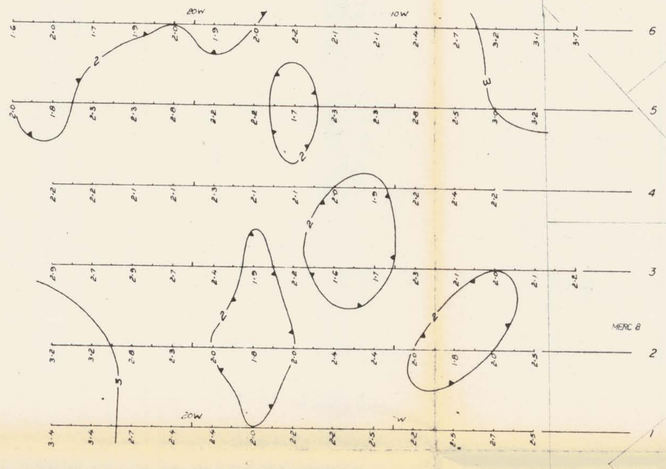
HIGHLAND CHIEF MINES LTD.

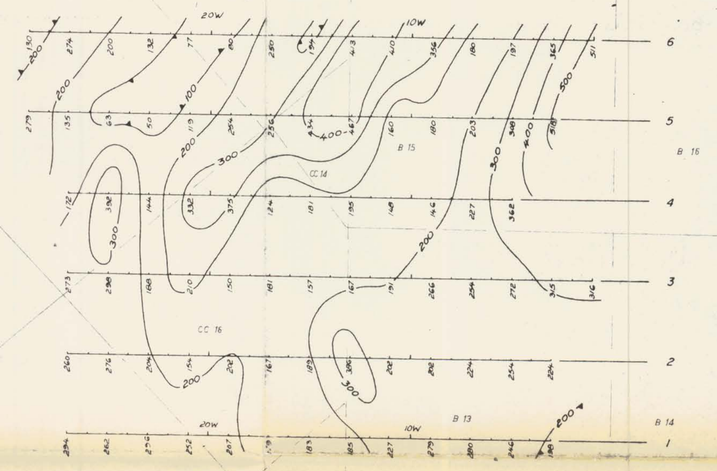
PIMAINUS LAKE AREA, HIGHLAND VALLEY - B.C.

RESISTIVITY CONTOURS
a = 100' n = 2

NOV. 1969 | Scale 1" = 400' | DWG. 5-228-4





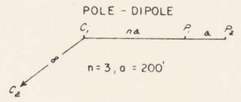


CHARGEABILITY & RESISTIVITY PROFILES

Chargeability profile scale 1"= 5 millisecs

Resistivity profile scale 1"= 1000 ohm metres

POLE - DIPOLE



CHARGEABILITY CONTOURS

Contour interval — 1 millisec

Depression

RESISTIVITY CONTOURS

Contour interval 100ohm metres

Depression

NOTE:

THIS DRAWING HAS BEEN AMENDED AS PER NOTES AND INFORMATION FROM HIGHLAND CHIEF MINES LTD. TO SHOW LOCATION OF GRID RELATIVE TO NEW CLAIMS. AREA WAS ORIGINALLY THE EYE GROUP. MAY 1970

2385

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2385 MAP #6

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APPROX.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
Roger J. Cavin

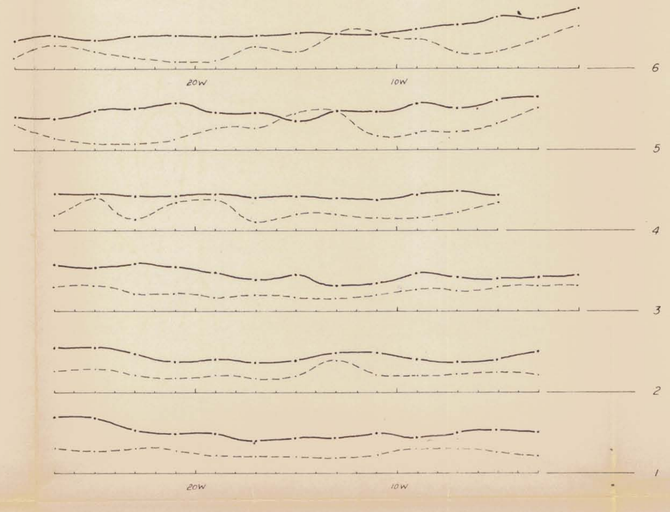
Work undertaken by
BARRINGER RESEARCH LTD, Toronto, Canada.

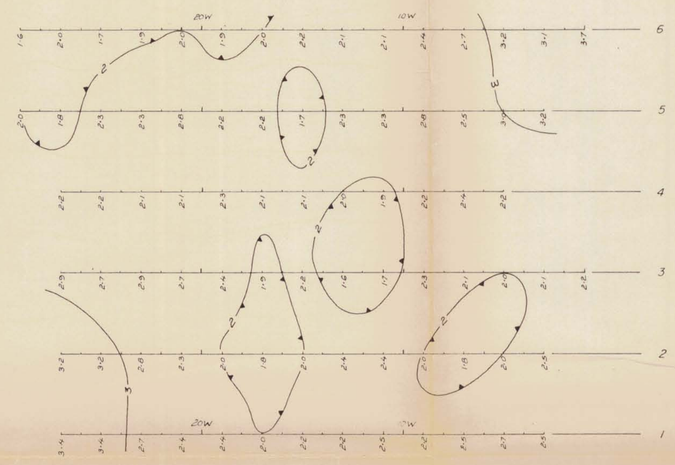
HIGHLAND CHIEF MINES LTD.

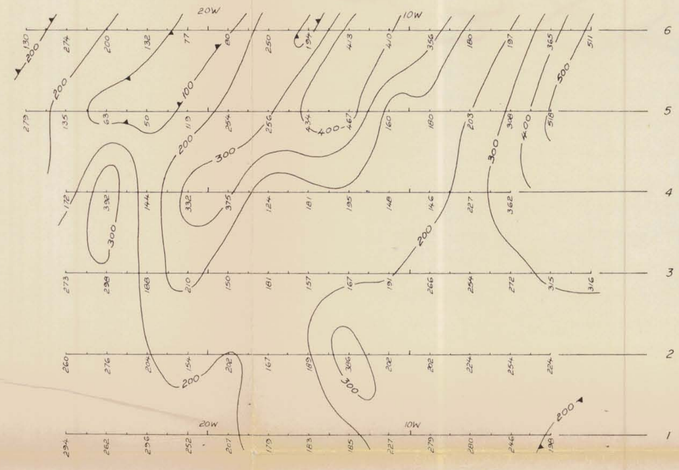
EYE CLAIMS, Nos 13 & 43, HIGHLAND VALLEY – B.C.

INDUCED POLARIZATION & RESISTIVITY SURVEY
POLE-DIPOLE

NOV. 1969	Scale 1"= 400'	DWG. 5-228-5





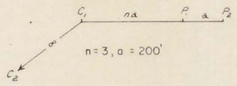


CHARGEABILITY & RESISTIVITY PROFILES

Chargeability profile scale 1"= 5 millisecs

Resistivity profile scale 1"= 1000 ohm metres

POLE - DIPOLE



n = 3, a = 200'

CHARGEABILITY CONTOURS

Contour interval — 1 millisec

Depression

RESISTIVITY CONTOURS

Contour interval 100ohm metres

Depression

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2385 MAP #5

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
Roger J. Cavin

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APPROX.

Work undertaken by
BARRINGER RESEARCH LTD, *Toronto, Canada.*

HIGHLAND CHIEF MINES LTD.

EYE CLAIMS, Nos 13 & 43, HIGHLAND VALLEY - B. C.

INDUCED POLARIZATION & RESISTIVITY SURVEY
POLE - DIPOLE

NOV. 1969	Scale 1"= 400'	DWG. 5-228-5