5930

1975 GEOPHYSICAL REPORT ON AN INDUCED POLARIZATION SURVEY OVER THE NORTH VEGA CREEK PROPERTY MINERAL CLAIMS BEG 77 to 98.

DATE: DECEMBER, 1975

BY: GARRY M. DEPAOLI
GEOPHYSICIST, B.Sc.

1975 GEOPHYSICAL REPORT ON AN INDUCED POLARIZATION SURVEY OVER THE NORTH VEGA CREEK PROPERTY MINERAL CLAIMS BEG 77 to 98.

located in

NORTHERN BRITISH COLUMBIA

in the

OMENICA MINING DIVISION

approximately

30 MILES NORTH OF GERMANSEN LANDING, B.C.

at coordinates

56°09' N. LAT,; 125°20' W. LONG. NTS 94 C/3

work for

BP MINERALS LIMITED

work by

MORRISON & DEPAOLI
GEOPHYSICAL SURVEYING AND CONSULTING

work period

AUGUST 28 to SEPTEMBER 1, 1975.

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ILLUSTRATIONS

INTRODUCTION

The North Vega Creek Property is located in northern British Columbia. It consists of 22 mineral claims owned by BP Minerals Limited and is currently being investigated for the possibility of a porpyry copper deposit. During the period August 28 to September 1, 1975 a total of 5.7 line miles of induced polaization/resistivity surveying were completed over the property. The following report describes the instrumentation, field procedure and results obtained from the survey.

The work was executed by Morrison & DePaoli Geophysical Surveying and Consulting upon the request of BP Minerals and under the direct supervision of C. Baites.

LOCATION & ACCESS

The North Vega Creek Property is located in northern British Columbia approximately 30 air miles north of Germansen Landing or near the headwaters of Vega Creek northwest of Uslika Lake. It lies within the Omenica Mining Division at 56°09' North Latitude, 125°20' West Longitude. (NTS Block 94 C3)

Road access to within 8 miles of the property is provided by the Germansen Landing - Aiken Lake Road. Final access is by helicopter.

GRID CONTROL

The control grid consists of 6.6 miles of cut, chained and flagged lines. The lines form one segment of a much larger grid network. The central baseline strikes northsouth and 7 perpendicular crosslines spaced 800 feet apart were surveyed.

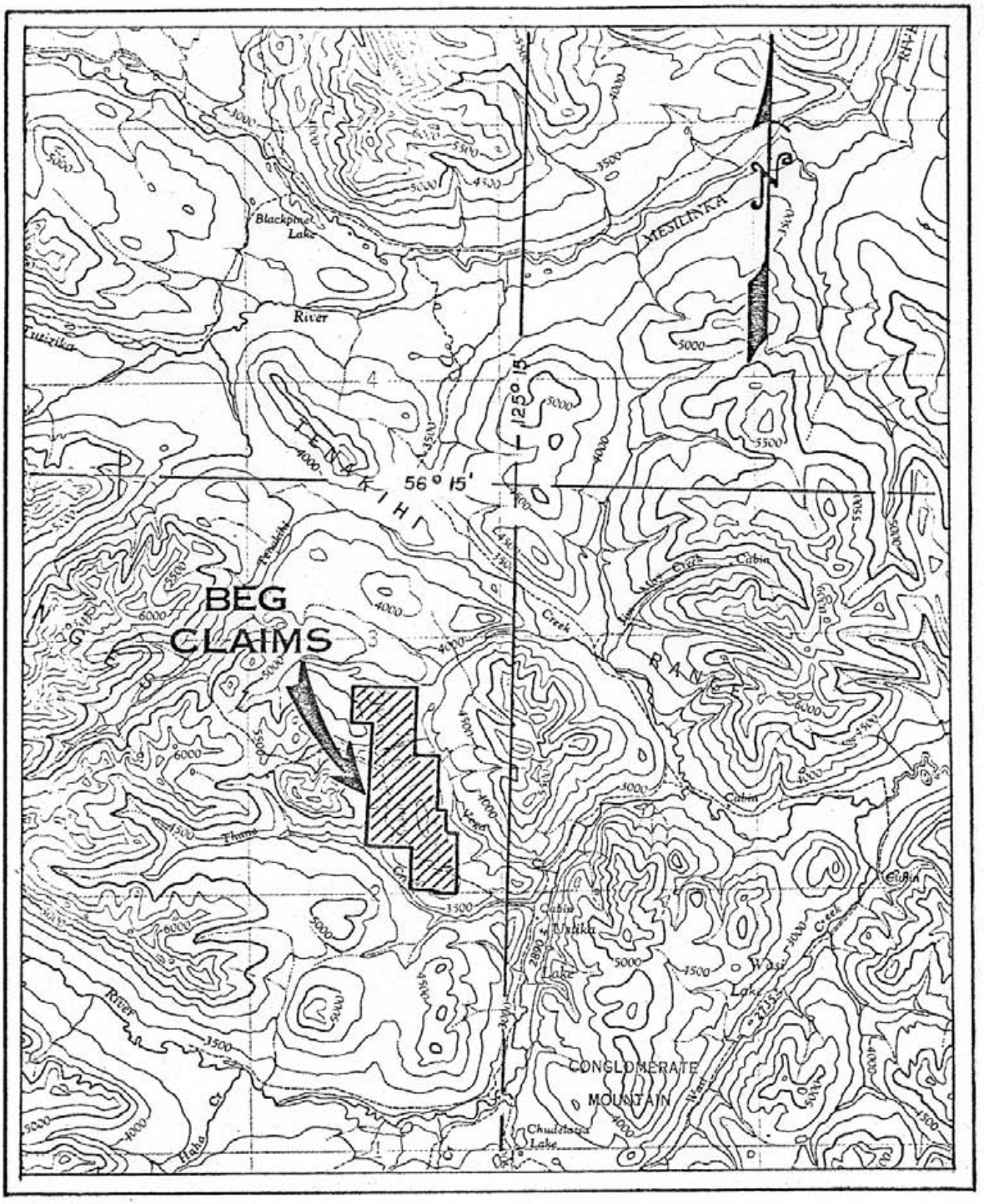


PLATE 1

LOCATION MAP

BEG CLAIMS

VEGA CREEK;OMINECA MINING DIVISION, B.C.

N.T.S. 94C3

SCALE:1 INCH = 4 MILES

GENERAL GEOLOGY

Most of the survey area is thought to be underlain by volcanic and pyroclastic rocks of Triassic Age in sequence with Jurassic sediments. A topographic high with good outcrop exposure in the northeast portion of the grid has been mapped as an andesite agglomerate, block breccia, and lappilli breccia. Two outcrops of tuff, minor argillite and limestone occur in the western margin of the grid.

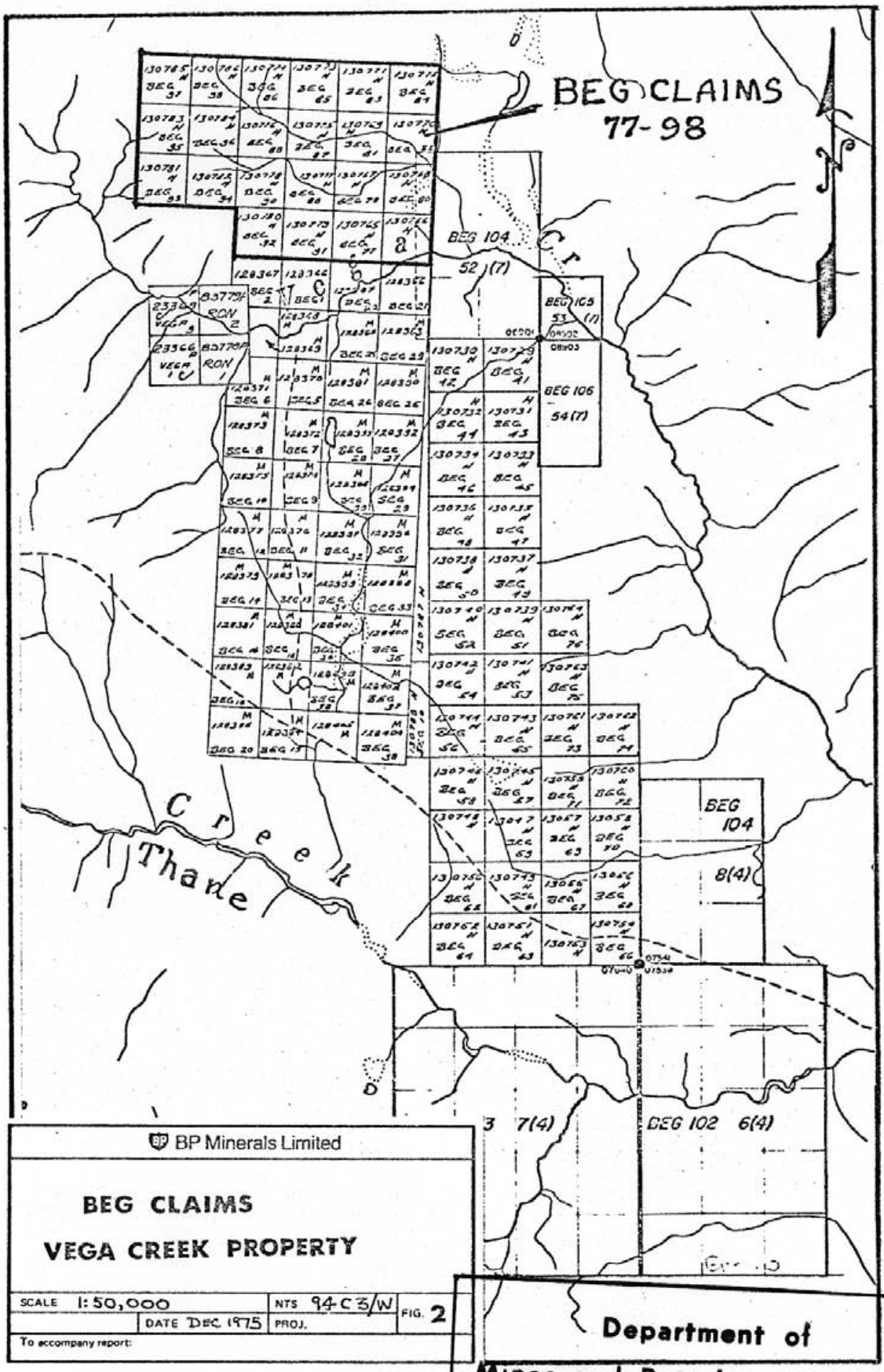
To date minor occurrences of chalcopyrite and native copper have been discovered on the property. The Vega copper, gold, silver prospect is located some 4,000 feet south of the survey area.

INDUCED POLARIZATION SURVEY

INTRODUCTION AND THEORY

Induced Polarization measurements were undertaken to determine the lateral and vertical distribution of sulphides within 500 feet of ground surface. Apparent resistivity data taken concurrently is useful in inferring overburden depths, defining abrupt lithological changes and assessing the importance of any IP effects obtained.

The term induced polarization means the electrical separation (ie. separation of charges) induced by an applied electric field. The cause of this polarization is changes in the mobilities of ions within a rock. At the interfaces between zones of different mobilities, excesses or deficiences of ions occur; the concentration gradients developed oppose the current flow and cause a polarizing effect. When mineral grains block the



BP Minerals Limited

BEG CLAIMS

VEGA CREEK PROPERTY

SCALE 1:50,000		NTS 94C 3/W	FIG. 2
	DATE DEC 1975	PROJ.	

To accompany report:

Department of Mines and Petroleum Resources

ASSESSMENT REPORT

NO. 5930 MAP # 2

pore passages of rocks and a current is applied, a concentration of ions builds up at the electrolyte (water) - metal interface while awaiting an electrochemical reaction which must occur before the electric charge can be transferred from an ion in the electrolyte to a free electron in the metal. The forces which oppose the current flow are said to polarize the interface and the added voltage necessary to drive the current across this barrier is known as "overvoltage".

It takes a finite time to build up overvoltages and one finds that the impedances of these zones (Warburg Impedance) decreases with increasing frequency. In the frequency domain system that was employed the decrease in the Warburg Impedance was measured between current applied at 0.3 hertz to current applied at 5.0 hertz.

INSTRUMENT AND PROCEDURE

A multiple frequency McPhar induced polarization system Model P-660, was employed in measuring the polarization and resistivity parameters. The transmitter is a manually variable voltage source. The output current can be selected from both polarities and varies from direct current to automatically alternating output frequencies of 0.05, 0.1, 0.3, 1.25 and 5.0 hertz.

On this survey the low and high frequencies employed were 0.3 and 5.0 hertz. Power was obtained from a 2½ KW - 400 hertz motor generator. The maximum output current for the transmitting system is 5.0 amp. while the maximum output voltage is 690 volts.

The receiver employed was the A.C. P-660 Model. This is a potentiometer type where the amplified and filtered signal is

compared with a reference voltage. It is powered by six 9 volt alkaline transistor batteries and draws 7.5 ma. Total weight including carrying case and batteries is 2.2 kilograms.

An in line dipole-dipole array was employed in the survey. The dipole length was 300 feet and measurements were taken to 4 separations (N=1,2,3,4). Survey procedure required the preparation of a "set-up" station near the center of each line. The transmitter and its motor generator power supply remained stationary at the set-up position and wires in increasing 300 foot intervals were strung out in both directions. Care was taken to ensure that the wires were well separated to prevent inductive coupling effects. The ends of the wires were connected to 4 foot stainless steel rods which had been hammered into the ground. Where possible the receiving dipole also utilized the stainless steel rods for electrode connections. Once the receiver dipole moved past the last steel rod ground connections were made via porous pots. Radio contact between the receiver and transmitter operators coordinated power "on" and "off" periods.

PRESENTATION OF DATA

The data is plotted in seven pseudosections, Figures 3a-g after Page 10. The pseudosections are vertical profile plots displaying apparent resistivities in $\rho_a/2\pi$ ohm-feet, calculated metal factors and percent frequency effect values. Contoured plan maps of the first separation (N=1), apparent resistivity and percent frequency effect data have also been prepared in Figures 4 and 5 repectively. An interpretation of the data is presented in Figure 6.

RESULTS AND INTERPRETATION

Two weak induced polarization anomalies were obtained on the grid area. The interpreted outlines of the source of the anomalies projected to surface is shown in Figure 6.

Anomaly #1 is reflected by PFE values ranging from 4 to 6% and is interpreted to reflect a total sulphide concentration of 1 to 1.5% by volume. The pseudosection plots of Lines 416+00 N and 424+00 N reveal lower PFE values on the deeper separations indicating that the sulphide concentration is decreasing with depth.

Anomaly #2 was obtained on the west end of grid Lines 400+00 N and 408+00 N and is still open to the west. PFE values range from 5 to 8.8% and may increase if coverage was extended to the west. These values are interpreted to reflect 1.5 to 2.5% total sulphides by volume.

Aside from the above two anomalies several weak increases in PFE indicated by 1 or 2 readings at the ends of some of the lines were obtained. Without further data it is difficult to comment on their significance, however their position projected to surface has been indicated in Figure 6.

Apparent resistivity values are characterized by a resistivity high extending the length of the grid and widening northward. The high, of 200 to 500 $\rho a/2\pi$ ohm-feet, encompasses a mapped andesite agglomerate unit and is interpreted to reflect this rock type. Two linear apparent resistivity lows flanking the high have good line to line correlation and have been interpreted as northwest and northeast faults.

CONCLUSIONS AND RECOMMENDATIONS

Anomaly#1 is not an impressive IP target, however it is associated with a 2,000 gamma ground magnetic anomaly on Line 424+00 N. This is the highest magnetic ground feature on the grid. Unfortunately ground magnetic coverage does not extend over the IP anomaly on Line 416+00 N. In view of the possibility of a magnetite - chalcopyrite - low pyrite mineral assemblage the weak IP anomaly becomes more significant. The ground magnetic coverage should be extended on Lines 416+00 N, 408+00 N and fillin Lines 420+00 N and 412+00 N to obtain the complete magnetic expression surrounding the induced polarization feature. If a large and partially coincident magnetic anomaly is obtained then drill testing of the area should be considered.

Anomaly #2 although not completely defined has a linear and rather uniform appearance. A pyritiferous fine ash tuff has been mapped 600 feet west of the anomaly near Line 408+00 N. This unit is interpreted as the source of Anomaly #2. No further work is recommended in this region of the grid.

RESPECTFULLY SUBMITTED

Garry DePaoli

GARRY M. DEPAOLI,
GEOPHYSICIST, B.Sc.

December, 1975
Burnaby, B.C.

CERTIFICATION

I Garry M. DePaoli, of the city of Burnaby, in the Province of British Columbia, HEREBY CERTIFY AS FOLLOWS:

1. That I am a graduate of the University of British Columbia, Vancouver, B.C. with a Bachelor of Science Degree in Combined Honours Geophysics and Geology. (1969)

2. That I have practiced my profession as a Geophysicist continuously for the past 6 years in Northern Ontario, Quebec, Manitoba, Western USA, Alaska, Yukon Territories and British Columbia.

3. That I am a member in good standing of the Society of Exploration Geophysicists, The Geological Association of Canada, The Canadian Institute of Mining and Metallurgy, and the B.C. Society of Exploration Geophysicists.

4. That I have no interest directly or indirectly in the North Vega Creek Property nor do I expect to receive any.

5. That the information contained herein was compiled under my direction and supervision during the period August 28 to September 1, 1975.

GARRY M. DEPAOLI,
GEOPHYSICIST, B.Sc.

Burnaby, B.C.
December, 1975.

CERTIFICATION

I Dennis F. Morrison, of the Village of Washago, in the Province of Ontario, Hereby Certify As Follows:

1. That I have attended the University of Waterloo for 2 years enrolled in the Faculty of Science.

2. That I was employed with Bell Canada as an electronic technician during the period 1964 - 1967.

3. That I was employed with McPhar Geophysics as an Induced Polarization Operator during the period 1967 - 1970.

4. That I have operated as an independent Induced Polarization Contractor from 1970 to the present.

5. That I have induced polarization operating experience in Newfoundland, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, British Columbia, Alaska, Yukon and Northwest Territories and the Republic of Panama.

6. That I have no interest directly or indirectly in the North Vega Creek Property nor do I expect to receive any.

DENNIS F. MORRISON

Burnaby, B.C.
December, 1975.

ASSESSMENT DETAILS

WORK SUMMARY

5.7 line miles of induced polarization / resistivity surveying. Dates worked August 28 to September 1, 1975.

PERSONNEL

Garry M. DePaoli	Geophysicist, Morrison & DePaoli Geophysical Surveying and Consulting 5305 East Georgia, Burnaby 2, B.C.
Dennis F. Morrison	IP Contractor, Morrison & DePaoli Geophysical Surveying and Consulting P.O. Box 418, Gravenhurst, Ontario.
Blair T. Taylor	Geophysicist, 122 West 45 Ave., Vancouver, B.C.

LIST OF CLAIMS

Omenica Mining Division

Beg 77	Rec.# 130765 H	Beg 88	Rec.# 130776 H
Beg 78	Rec.# 130766 H	Beg 89	Rec.# 130777 H
Beg 79	Rec.# 130767 H	Beg 90	Rec.# 130778 H
Beg 80	Rec.# 130768 H	Beg 91	Rec.# 130779 H
Beg 81	Rec.# 130769 H	Beg 92	Rec.# 130780 H
Beg 82	Rec.# 130770 H	Beg 93	Rec.# 130781 H
Beg 83	Rec.# 130771 H	Beg 94	Rec.# 130782 H
Beg 84	Rec.# 130772 H	Beg 95	Rec.# 130783 H
Beg 85	Rec.# 130773 H	Beg 96	Rec.# 130784 H
Beg 86	Rec.# 130774 H	Beg 97	Rec.# 130785 H
Beg 87	Rec.# 130775 H	Beg 98	Rec.# 130786 H

Owned and Operated by BP Minerals Limited.

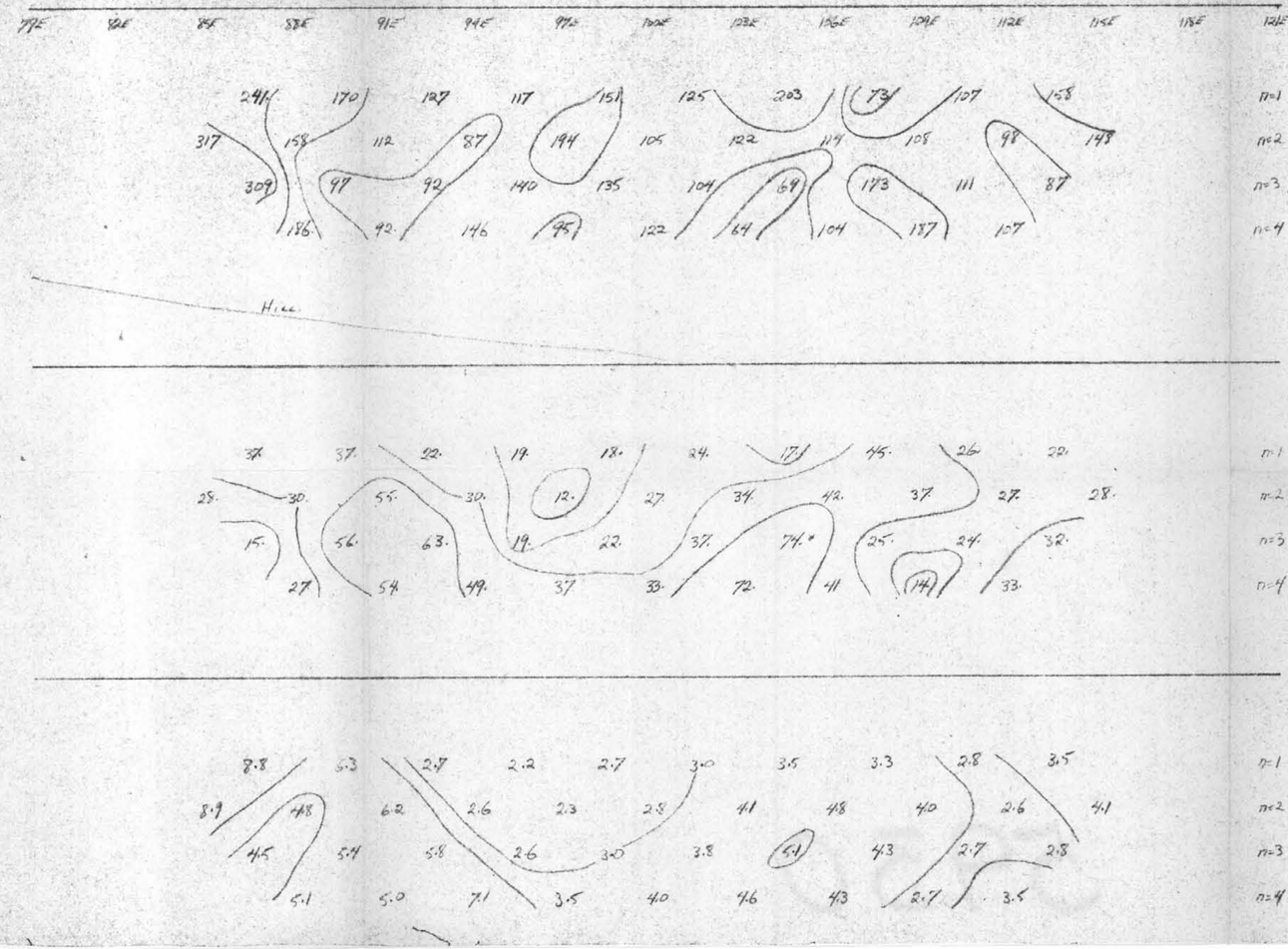
COST STATEMENT

Charges as per Morrison & DePaoli Contractor Billing:		
5 Operating Days @ $350.00 per day	.....	$1,750.00
Extra Labour		
1 man for 5 days @ $45.33 per day	.....	$226.65
Prorated Expenses for food, fuel, vehicles and expendible materials ($998.76/24) x 5	.....	$208.08
Total Contractor Cost	.....	$2,184.73

Helicopter Support Charges.
Mobilization and Demobilization of camp, food, men and IP equipment - 1.5 hours
Supervision and supply to camp - .5 hours
Total cost @ $265.00 per hour $530.00

Cost applicable for assesssment ½ ($530.00)	.....	$265.00
TOTAL COST TO BE APPLIED TO BEG CLAIMS 77 to 98	.....	$2,449.73

LINE 400N.



B. P. MINERALS LTD.
NORTH VEBA PROPERTY
USLIKA LAKE AREA, B.C.

P-660 FREQUENCY DOMAIN I.P.
DIPOLE-DIPOLE ARRAY
0.3 & 5.0 Hz.
OPERATORS: MORRISON & DEPAOLI.

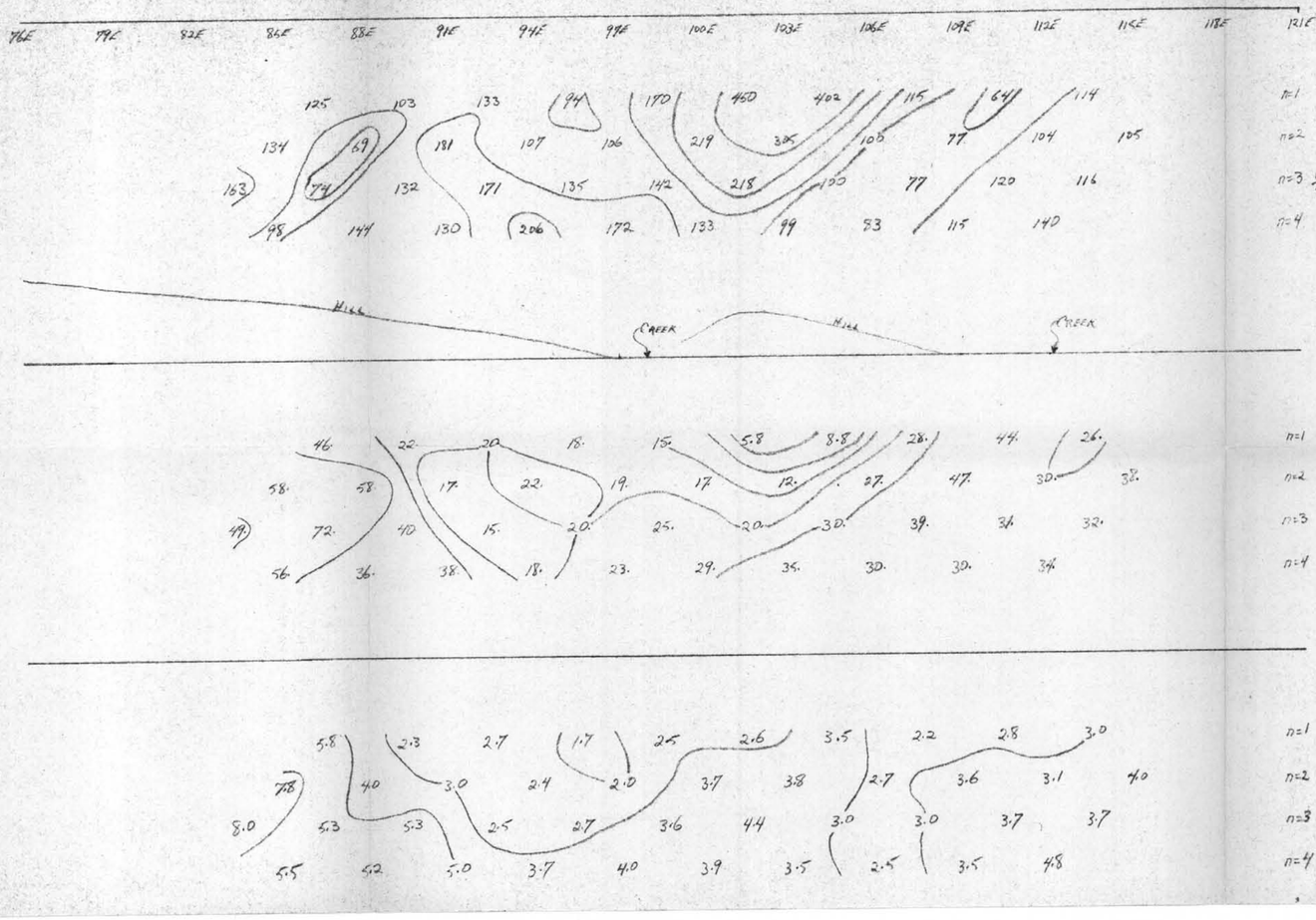
SCALE: 1" = 300'
DATE: AUGUST 31, 1975.

LINE 400+00 N.

FIGURE 3(a)

5930

LINE 408 N.



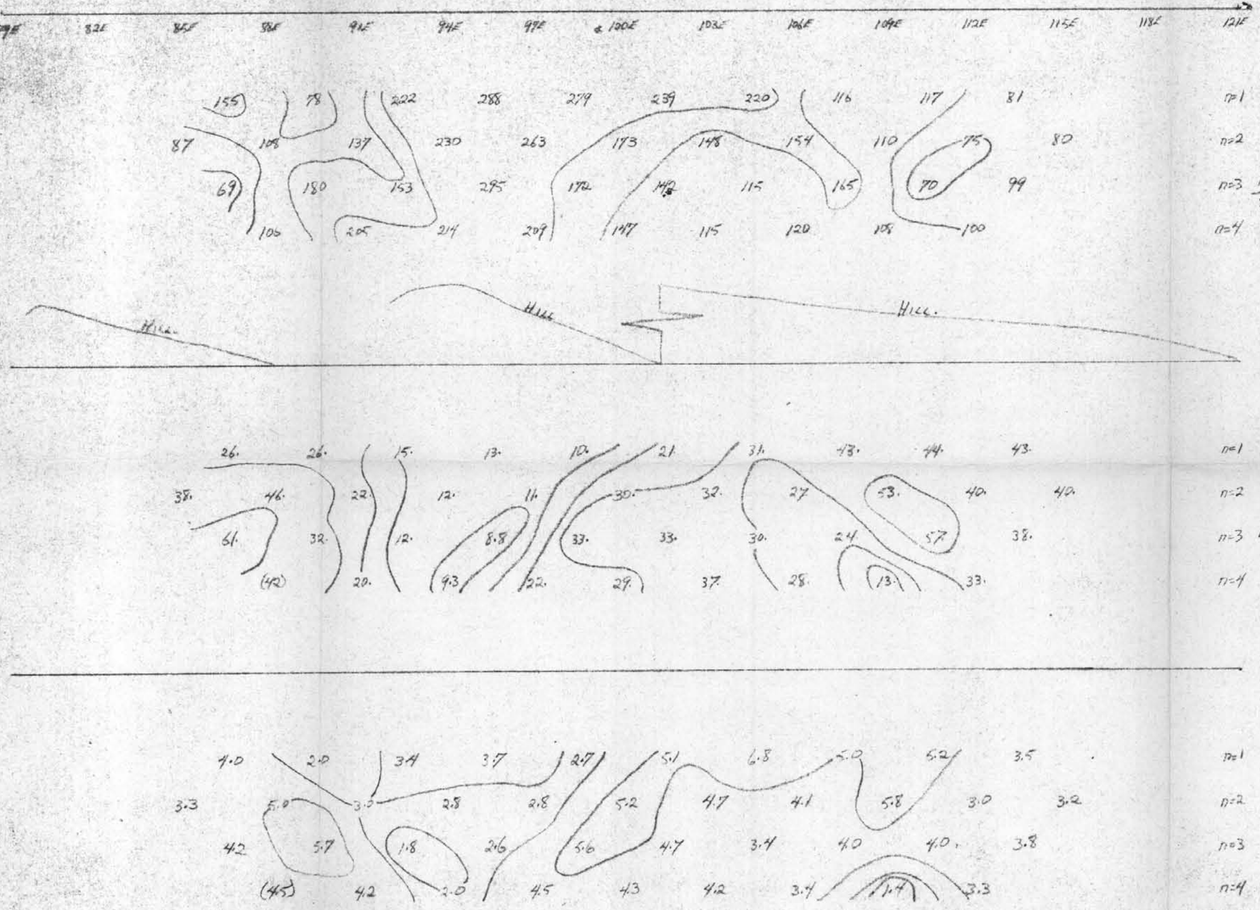
B. P. MINERALS LTD.
NORTH VEGA PROPERTY
USLIKA LAKE AREA, B.C.

P-660 FREQUENCY DOMAIN I.P.
DIPOLE - DIPOLE ARRAY.
0.34 5.0 HZ.
OPERATORS: MORRISON & DEPAOLI.

SCALE: 1" = 300'
DATE: SEPTEMBER 1, 1975.

LINE 408+00 N.

FIGURE 3(6)



B. P. MINERALS LTD.
NORTH VEGA PROPERTY.
USLIKA LAKE AREA. B.C.

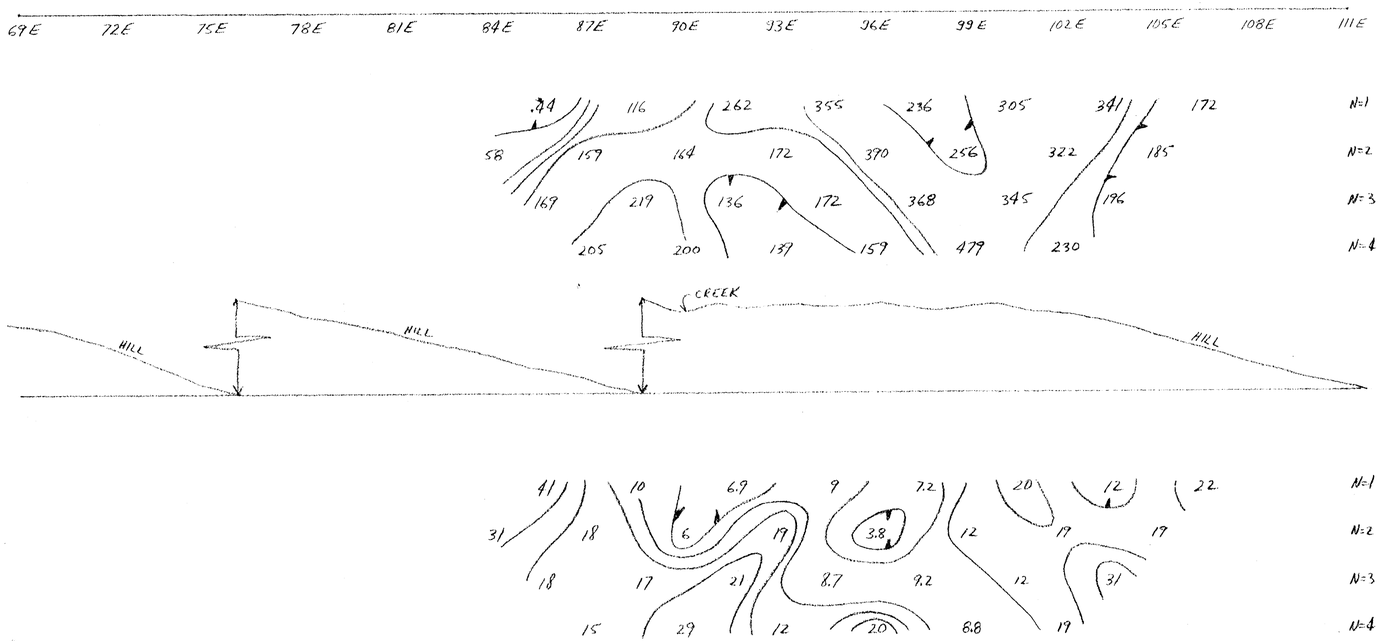
P-660 FREQUENCY DOMAIN I.P.
DIPOLE - DIPOLE ARRAY
0.3 & 5.0 HZ.
OPERATORS: MORRISON & DESPAULT.

SCALE: 1" = 300'
DATE: AUGUST 31, 1975.

LINE 416+00 N.

FIGURE 3(c)

LINE 424 N



$\rho_{(a)}/2\pi$
OHM FEET

M.F.

P.F.E.

BP MINERALS LTD.
NORTH VEGA PROPERTY
USLIKA LAKE AREA

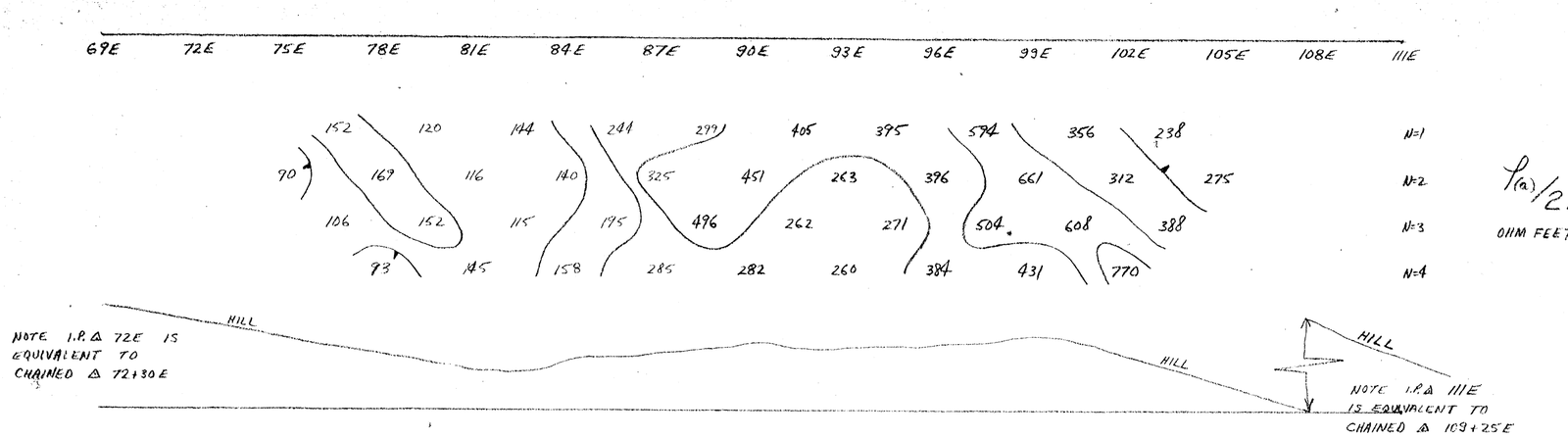
P-660 FREQUENCY DOMAIN I.P.
DIPOLE - DIPOLE ARRAY
0.3 AND 5.0 HERTZ
OPERATORS: MORRISON & DEPAOLI

SCALE : 1" = 300'
DATE : AUGUST 30, 1975

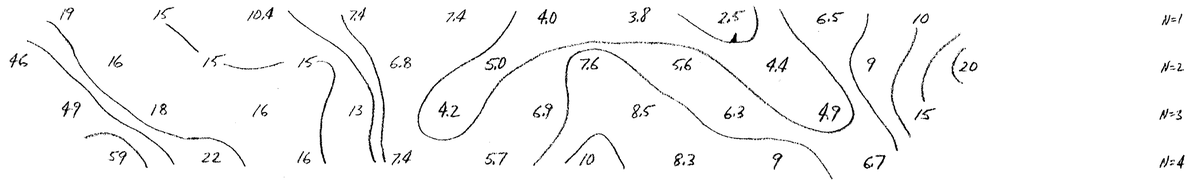
LINE : 424+00 N

FIGURE 3(d)

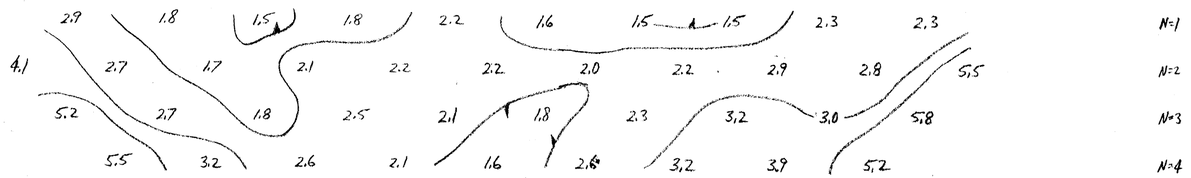
LINE 432N



$\rho_{(a)}/2\pi$ OHM FEET



M.F.



P.F.E.

BP MINERALS LTD.
NORTH VEGA PROSPECT
USLIKA LAKE AREA

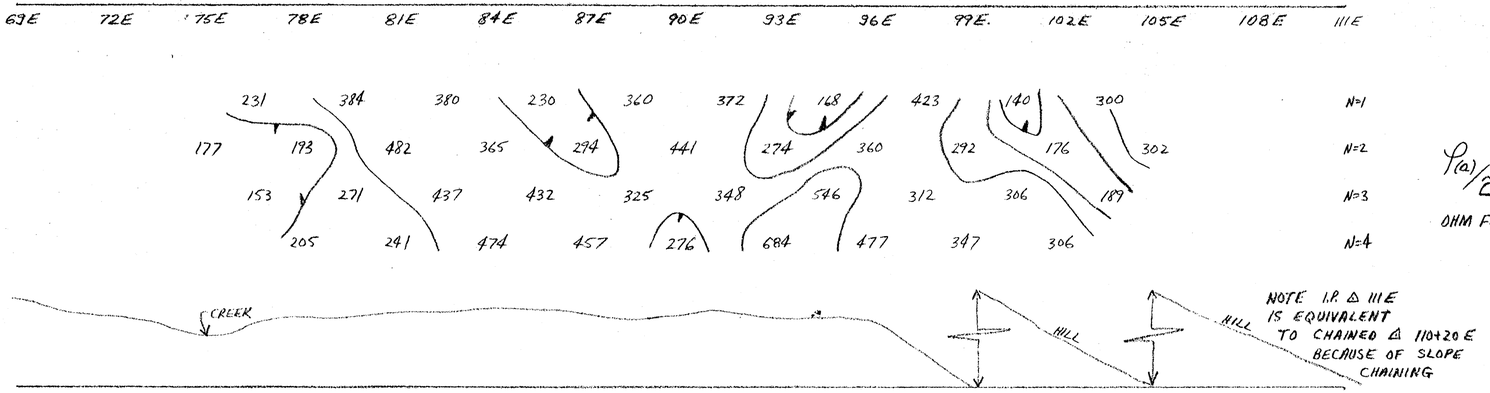
P-660 FREQUENCY DOMAIN I.P.
DIPOLE - DIPOLE ARRAY
0.3 AND 5.0 HERTZ
OPERATORS: MORRISON & DEPAOLI

SCALE: 1" = 300'
DATE: AUGUST 29, 30 1975

LINE 432+00N

FIGURE 3(e)

LINE 440 N



$\rho_{(a)}/2\pi$ OHM FEET

M.F

P.F.E.

BP MINERALS LTD.
NORTH VEGA PROPERTY
USLIKA LAKE AREA, B.C.

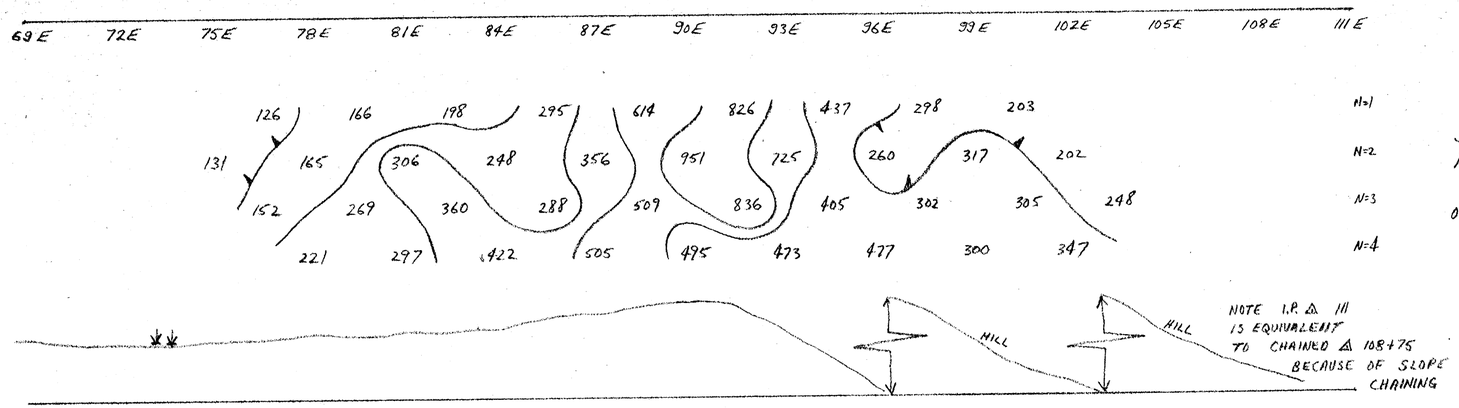
P-660 FREQUENCY DOMAIN I.P.
DIPOLE - DIPOLE ARRAY
0.3 AND 5.0 HERTZ
OPERATORS: MORRISON + DEPAOLI

SCALE: 1" = 300'
DATE: AUGUST 29, 1975

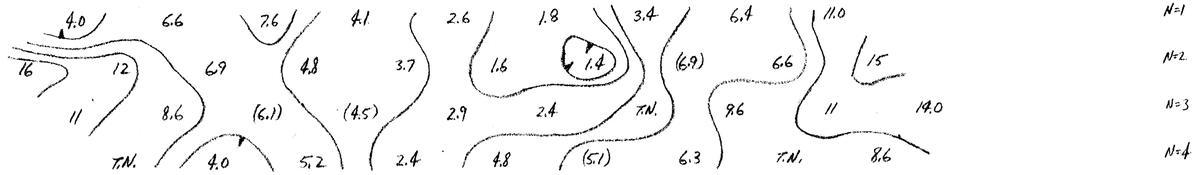
LINE: 440+00 N

FIGURE 3(f)

LINE 448 E



$\rho_{(a)}/2\pi$ OHM FEET



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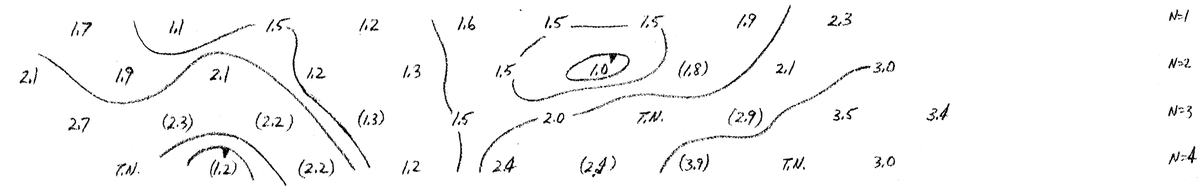


P.F.E.

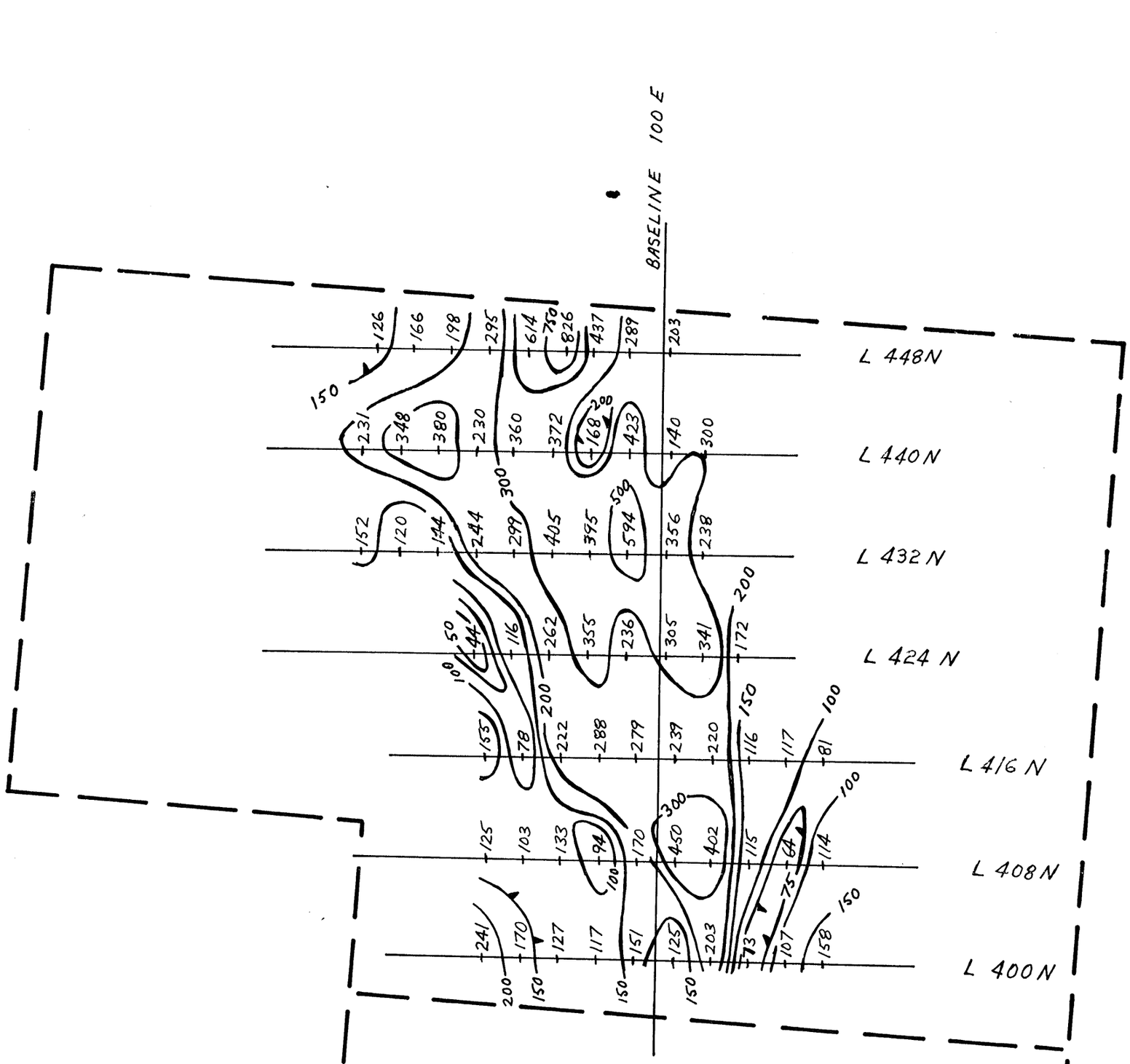
BP MINERALS LTD.
NORTH VEGA PROSPECT
USLIKA LAKE AREA, B.C.

P-660 FREQUENCY DOMAIN I.P.
DIPOLE - DIPOLE ARRAY
0.3 AND 5.0 HERTZ
OPERATORS: MORRISON & DEPAOLI

SCALE: 1" = 300'
DATE: AUGUST 28, 1975

LINE: 448+00 E

FIGURE 3 (g)



5930

M-3

LEGEND

- GRID LINE
- CLAIM BLOCK BOUNDARY
- 301 — APPARENT RESISTIVITY IN $\rho_a/2\pi$ OHM-FEET
- —300— RESISTIVITY CONTOUR, C.I. 50, 75, 100, 150, 200, 300, 500, 750

INDUCED POLARIZATION SURVEY
McPHAR P660 FREQUENCY DOMAIN
TX: 2.5 KW
DIPOLE - DIPOLE ARRAY
DIPOLE LENGTH a = 300 FEET
MEASUREMENTS TO FOUR SEPARATIONS N = 1, 2, 3, 4

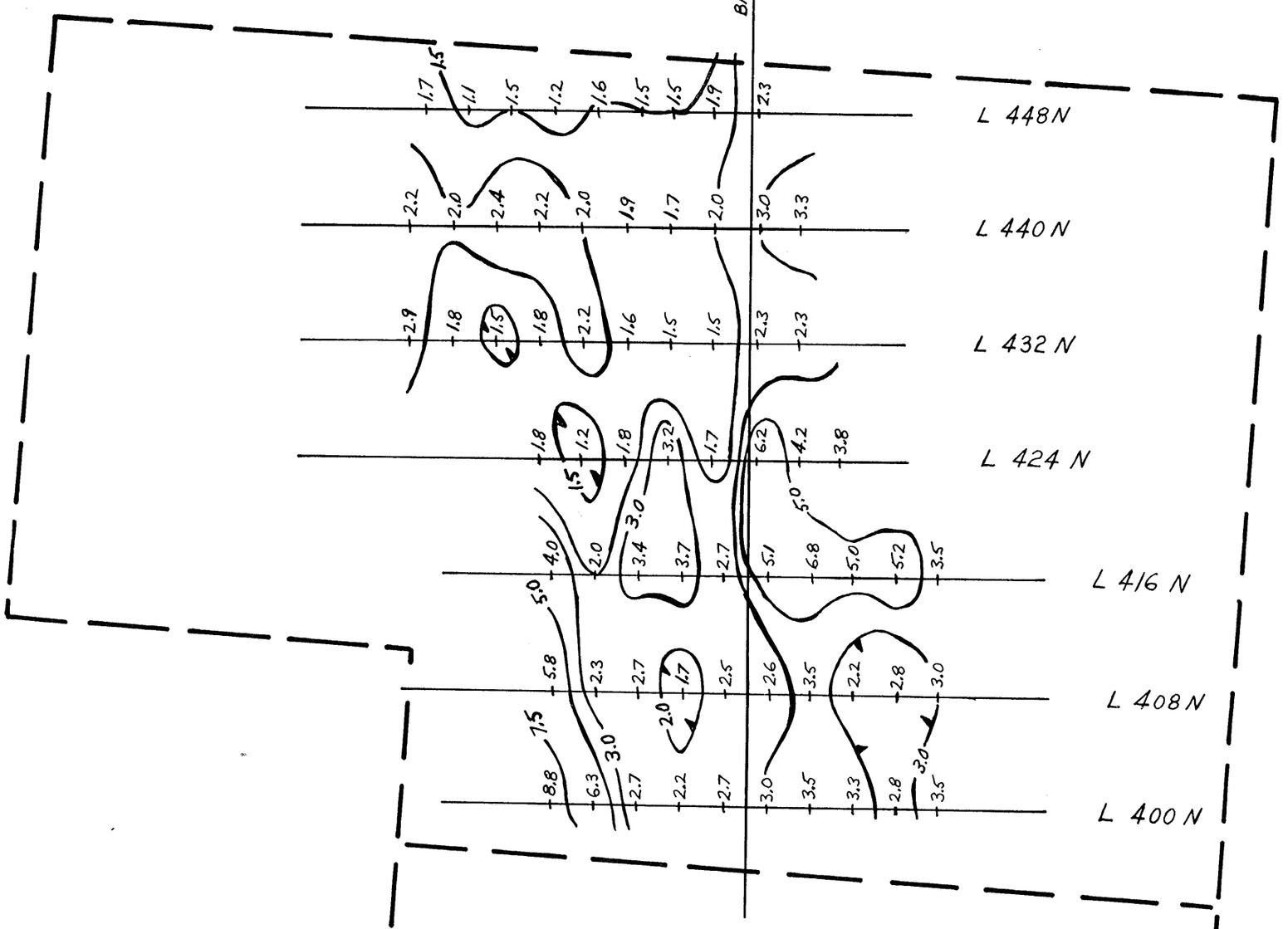
OPERATORS: MORRISON AND DEPAOLI

BP Minerals Limited

NORTH VEGA CREEK PROPERTY
BEG CLAIMS 77 - 98
PLAN RESISTIVITY N=1

SCALE 1" = 1000'		NTS 94 C 3	FIG. 4
DRAWN G.M.D.	DATE DEC. 1975	PROJ.	

To accompany report: 1975 GEOPHYSICAL REPORT ON AN INDUCED POLARIZATION SURVEY OVER THE N. VEGA CREEK PROPERTY BY GARRY M. DEPAOLI



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5930 MAP # 4

5930 M-4

LEGEND

GRID LINE

CLAIM BLOCK BOUNDARY

3.1 PERCENT FREQUENCY EFFECT

3.0 P.F.E. CONTOUR, C.I. 1.5, 2.0, 3.0, 5.0, 7.5

INDUCED POLARIZATION SURVEY
McPHAR P660 FREQUENCY DOMAIN
TX: 2.5 KW
DIPOLE - DIPOLE ARRAY
DIPOLE LENGTH a = 300 FEET
MEASUREMENTS TO FOUR SEPARATIONS N = 1,2,3,4

OPERATORS: MORRISON AND DEPAOLI

BP Minerals Limited

NORTH VEGA CREEK PROPERTY
BEG CLAIMS 77 - 98
PLAN PFE N = 1

SCALE 1" = 1000'		NTS 94 C 3	FIG. 5
DRAWN G.M.D.	DATE DEC. 1975	PROJ.	

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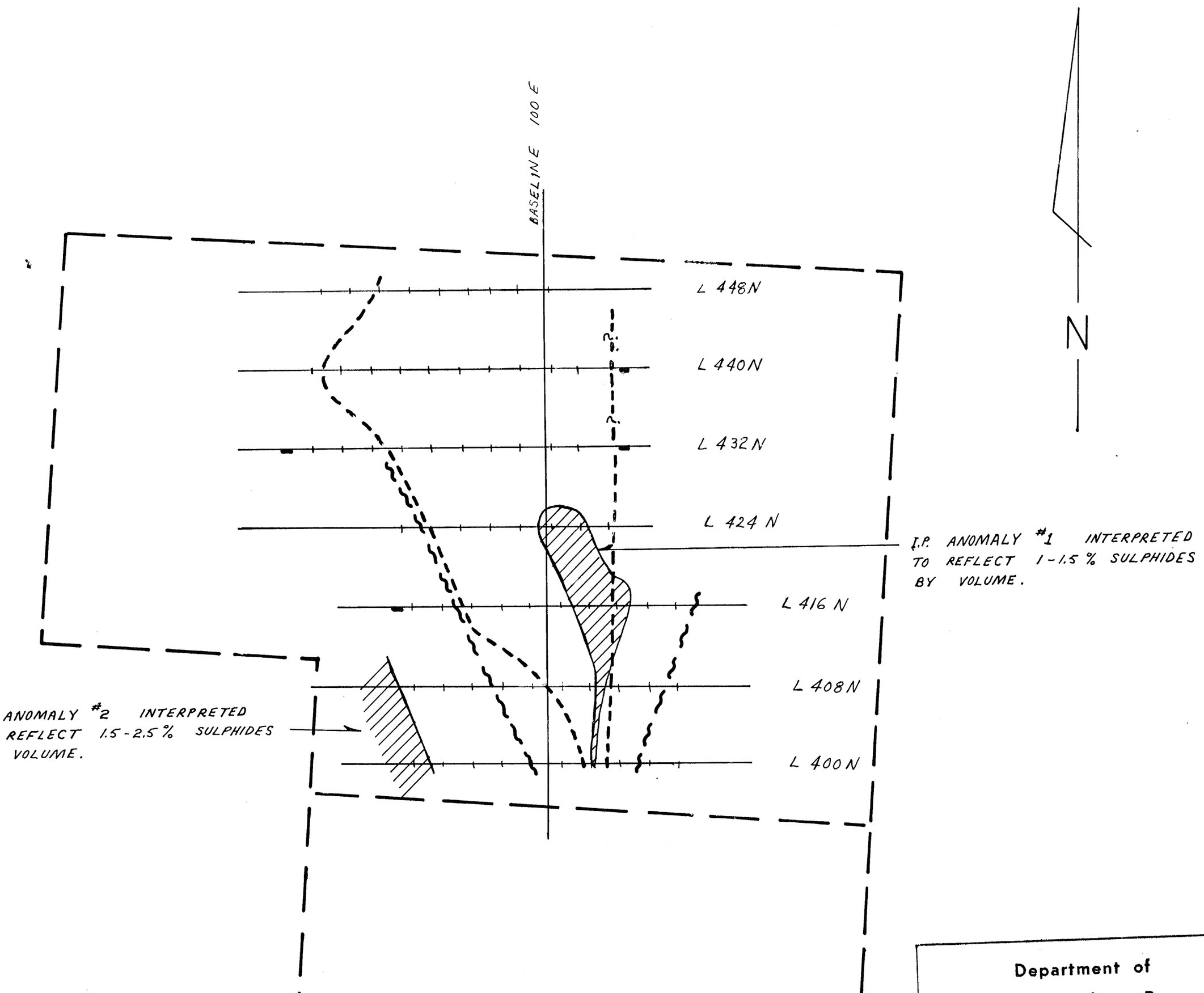

LEGEND

- GRID LINE
- CLAIM BLOCK BOUNDARY
- INDUCED POLARIZATION ANOMALY PROJECTED TO SURFACE
- WEAK INCREASES OF PFE VALUES
- OUTLINE OF RESISTIVITY HIGH
- INTERPRETED FAULTS

5930 M-5

BP Minerals Limited

NORTH VEGA CREEK PROPERTY
BEG CLAIMS 77 - 98
GEOPHYSICAL INTERPRETATION

SCALE 1" = 1000'		NTS 94 C 3	FIG. 6
DRAWN G.M.D.	DATE DEC. 1975	PROJ.	

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