PHOENIX GEOPHYSICS LIMITED

REPORT

ON THE

INDUCED POLARIZATION AND RESISTIVITY SURVEY

ON THE

FRASER GOLD PROPERTY

CARIBOO MINING DIVISION
BRITISH COLUMBIA

FOR

EUREKA RESOURCES, INC.

LATITUDE: 52°20'N
LONGITUDE: 120°25'W
NTS 93A/7

CLAIMS
ALPHA 2, KAY 1-12, MAC, MAC 2-9,
MAC 9 FR., MAC 10 FR., MAC 11 FR., MAC 12 FR.

OWNER:

MR. CLIFF GUNN

OPERATOR:

EUREKA RESOURCES, INC.

BY

PAUL A. CARTWRIGHT, B.Sc.,
GEOPHYSICIST

DATED: 16 OCTOBER 1985

TABLE OF CONTENTS

PART A

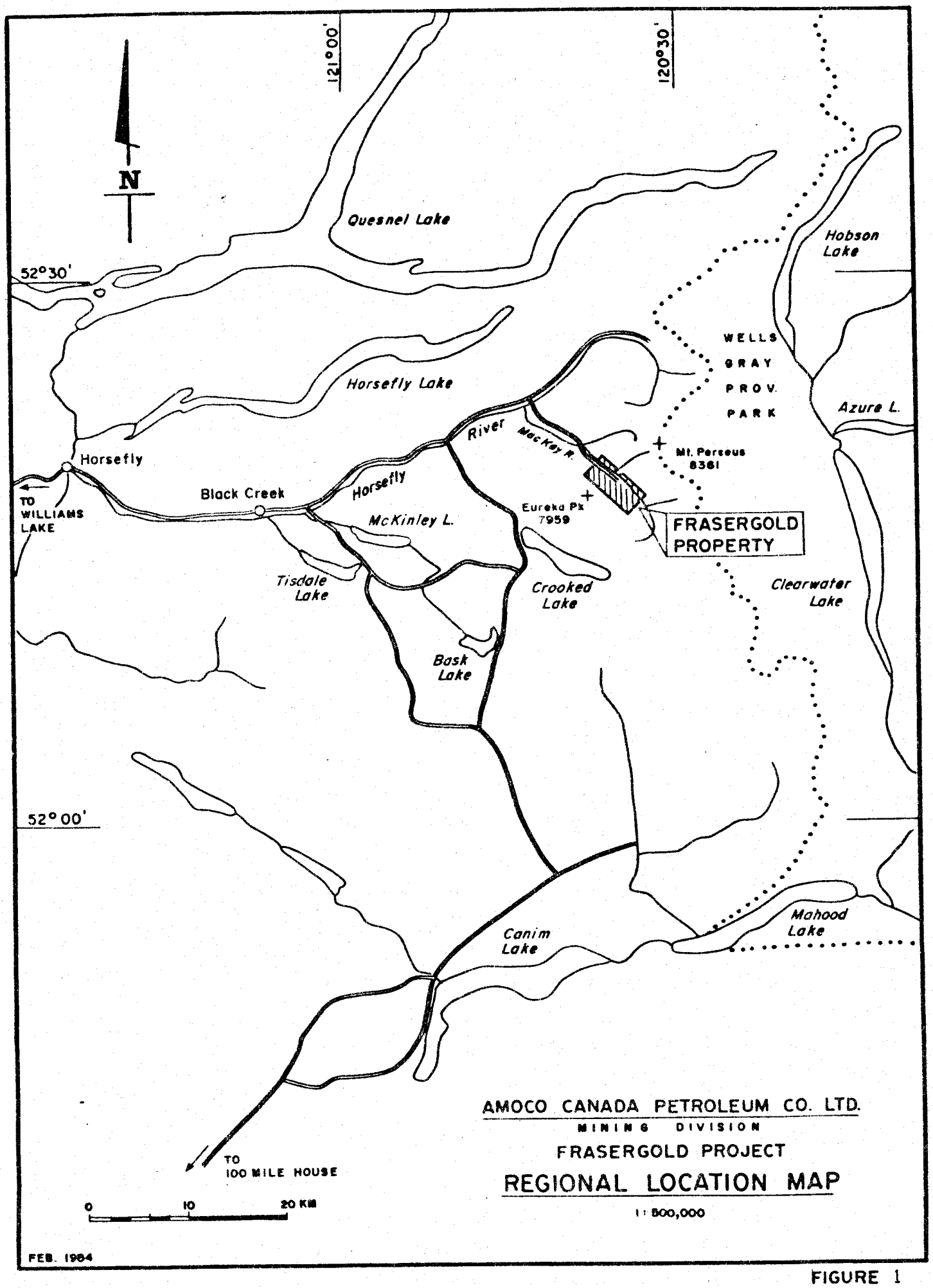
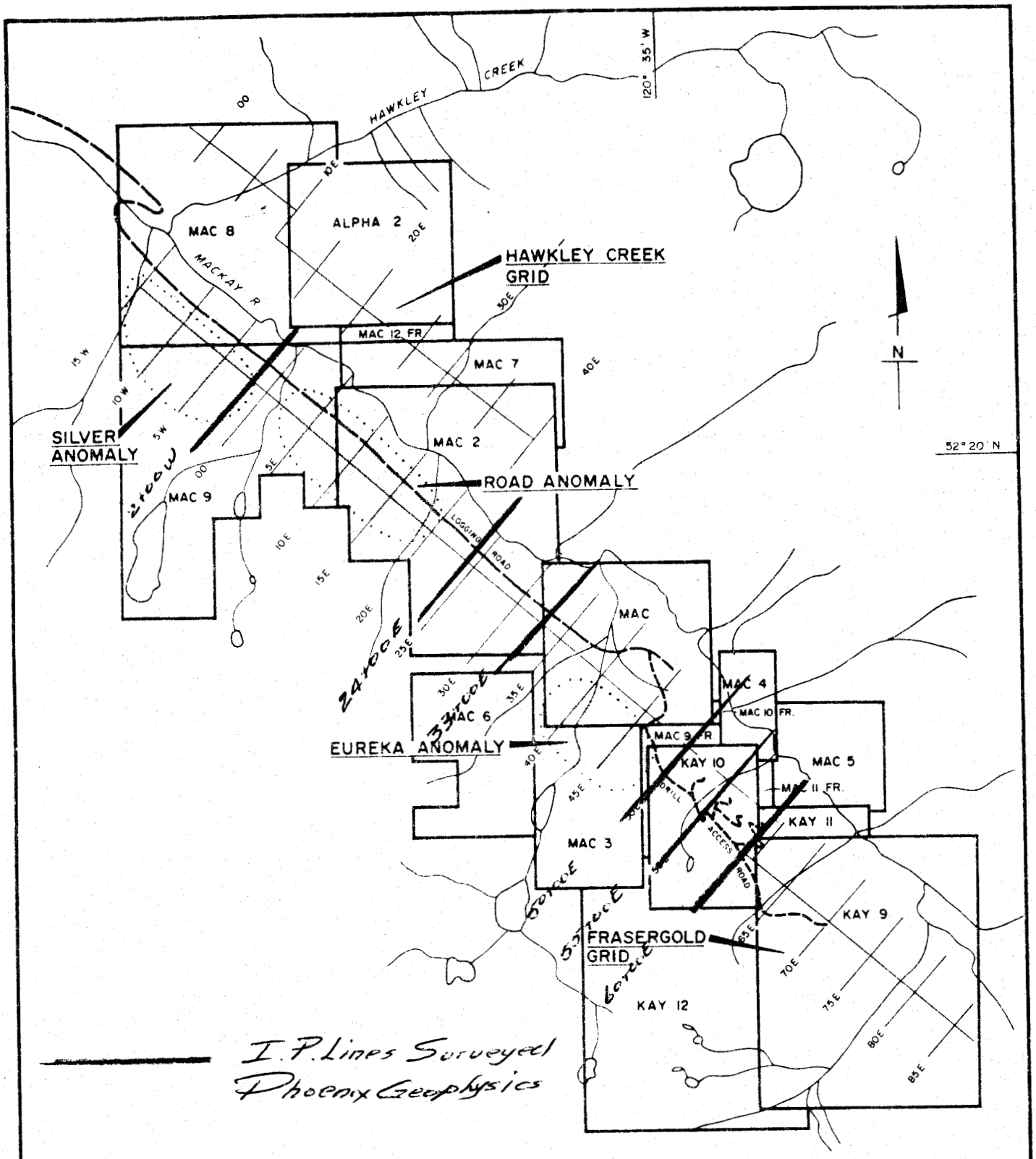

N
121°00'
120°30'
52°30'
52°00'
Quesnel Lake
Hobson Lake
WELLS GRAY PROV. PARK
Azure L.
Horsefly Lake
Horsefly River
MacKay R.
Mt. Perseus 8361
Horsefly
Black Creek
TO WILLIAMS LAKE
McKinley L.
Eureka Pk 7959
FRASERGOLD PROPERTY
Tisdale Lake
Crooked Lake
Clearwater Lake
Bask Lake
Canim Lake
Mahood Lake
TO 100 MILE HOUSE
0 10 20 KM
AMOCO CANADA PETROLEUM CO. LTD.
MINING DIVISION
FRASERGOLD PROJECT
REGIONAL LOCATION MAP
1:500,000
FEB. 1984

FIGURE 1



AMOCO CANADA PETROLEUM CO. LTD.

MINING DIVISION

FRASERGOLD PROJECT

CLAIM MAP WITH GRIDS

Drawn By	d.o's	Scale	1:50,000
Date	March 1985	Project Nº	83C-004

FIGURE 2

1. Introduction

An Induced Polarization and Resistivity Survey has been completed on the Frasergold Property, Cariboo Mining Division, British Columbia, on behalf of Eureka Resources, Inc.

The property is located approximately 50 km east of the community of Horsefly, B.C. Access is via the Horsefly and McKay River logging roads.

The following geological description of the project area has been provided by the staff of Eureka Resources, Inc.

> "Geographically, the Frasergold property is situated along the eastern edge of the Quesnellia Tectonostratigraphic Terrane in the Quesnel Lake map area. The boundary between the Quesnellia Terrane and the western edge of the North American Craton is marked by a thin slice of Slide Mountain Oceanic Terrane. Because of the sea-floor spreading processes, Quesnellia has been swept northeastwards and has collided with the western margin of the North American Craton. This collision has resulted in the obduction of the Slide Montain Terrane and the eastern portion of the Quesnellia Terrane onto the Omineca Crystalline Belt.
>
> Within the northeast corner of the property, Omineca Belt rocks are represented by the Kaza group. This group consists of highly metamorphosed Late Proterozoic-Early Paleozoic miogeosynclinal sediments.
>
> The Slide Mountain Terrane is represented by a series of Late Paleozoic intermediate to mafic volcanic rocks with remnant ultramafic lenses and pods at its base. These rocks occur as a thin strip along the northeast edge of the property.
>
> Approximately 90 percent of the property is underlain by rocks of the Quesnellia Terrane. This terrane is composed of a sequence of volcanic and sedimentary rocks of the Upper Triassic to Lower Jurassic age. On the Frasergold property, only the base of the Quesnellia Terrane is represented and has been informally named Black Phyllite Unit. This unit has interbedded mafic volcanics and phyllites at its base, which grade upward into a thick sequence of black phyllites with lesser siliceous sediment. Then, the unit grades into a mixed volcanic, phyllite assemblage and finally into massive volcanic breccias, tuffs and flows.

The property is situated on the northeastern limb of the Eureka syncline. The general trend of stratigraphy is 130° - 140° with dips generally less than 45° to the southwest. The predominant foliation trends sub-parallel to stratigraphy however it dips more steeply to the southwest at 60°. The regional folding is reflected on several scales from 10's of millimeters to several meters as observed from diamond drilling and rock exposures.

The foliated phyllites contain abundant (up to 30%) synmetamorphic veins and lenses of quartz. Quartz structures appear compatible with the northwest trend and dip of foliation. These quartz veins contain variable amounts (usually less than 10 percent) of pyrite, pyrrhotite and ankerite. From field observations, a shallow (5° - 15°) northwest trending plunge has been noted for some of the quartz veins. Veins have been locally folded into recumbent structures, producing quartz knots in the hinge of folds. Stretching of quartz structures is also noted, producing pinch and swell features."

Previous work included a considerable amount of drilling, which has outlined a zone of encouraging gold values.

Objective of the present IP and Resistivity Survey was to map the extent of the known mineralization along strike.

A Phoenix Model IPV-1 IP and Resistivity receiver unit was used in conjunction with a Phoenix Model IPT-1 IP and Resistivity transmitter powered by a 2 kw motor-generator. IP effect is recorded directly as Percent Frequency Effect (P.F.E.) at operating frequencies of 4.0 Hz and 0.25 Hz. Apparent resistivity values are normalized in units of ohm-meter, while Metal Factor values are calculated according to the formula: M.F. = (P.F.E. x 1000) Apparent Resistivity.

Dipole-dipole array was utilized to make the measurements with a basic interelectrode distance of 50 meters. Four dipole separations were recorded in every case.

Field work was carried out during January 1985, under the supervision of David Daggett, geophysical crew leader. His certificate of qualification is included with this report.

2. Description of Claims

The Frasergold property consists of the following claims, which have been grouped for assessment purposes into the Eureka North and Eureka South Claim Groups.

CLAIMS CONSTITUTING FRASERGOLD PROPERTY AND EXPIRY DATES

EUREKA NORTH CLAIM GROUP

Claim Name	Units	Tag Number	Record Number	Date Staked	Date Recorded	Expiry Date*
Mac	9	23411	1286	21 Sept/79	19 Oct/79	1989
Mac 2	20	22726	2078	24 Sept/80	22 Oct/80	1987
Mac 7	8	80450	6249	9 July/84	27 July/84	1988
Mac 8	16	80448	6250	4 July/84	27 July/84	1988
Mac 9	20	80449	6251	7 July/84	27 July/84	1988
Mac 9 Fr	1	04447	6204	15 June/84	16 July/84	1988
Mac 12 Fr	1	04449	6253	14 July/84	27 July/85	1989
Kay 10	6	61638	1961	21 Sept/80	25 Sept/80	1992
Alpha 2	9	80121	5159	22 Sept/83	23 Sept/83	1987
	90	units				

(*) Expiry dates listed include assessment work filed subsequent to the 1984 field season. Amoco is awaiting approval of these assessment credits by the B.C. Dept. of Mines.

EUREKA SOUTH CLAIM GROUP

CLAIM NAME	UNITS	TAG NUMBER	RECORD NUMBER	DATE STAKED	DATE RECORDED	EXPIRY DATE*
Kay 1	1	390472M	1182	11 Aug/79	4 Sept/79	1988
Kay 2	1	390473M	1183	11 Aug/79	4 Sept/79	1988
Kay 3	1	390474M	1184	11 Aug/79	4 Sept/79	1988
Kay 4	1	390475M	1185	11 Aug/79	4 Sept/79	1988
Kay 5	1	390476M	1186	11 Aug/79	4 Sept/79	1988
Kay 6	1	390477M	1187	11 Aug/79	4 Sept/79	1988
Kay 7	1	390478M	1188	11 Aug/79	4 Sept/79	1988
Kay 8	1	390479M	1189	11 Aug/79	4 Sept/79	1988
Kay 9	20	61637	1810	12 July/80	11 Aug/80	1992
Kay 11	2	61639	1962	21 Sept/80	25 Sept/80	1990
Kay 12	20	78773	4631	12 Jan/83	26 Jan/83	1992
Mac 3	6	68002	3074	17 Dec/80	23 Dec/80	1991
Mac 4	2	68003	3075	18 Dec/80	23 Dec/80	1988
Mac 5	4	80451	6248	19 July/84	27 July/84	1989
Mac 6	9	68005	3077	17 Dec/80	23 Dec/80	1991
Mac 10 Fr	1	80120	6231	21 June/84	19 July/84	1989
Mac 11 Fr	1	04448	6252	13 July/84	27 July/84	1988
	73	Units				

(*) Expiry dates listed include assessment work filed subsequent to the 1984 field season. Amoco is awaiting approval of these assessment credits by the B.C. Dept. of Mines.

3. Presentation of Data

The Induced Polarization and Resistivity results are shown on the following data plots in the manner described in Part B of this report.

Line	Electrode Interval	Dwg. No.
2 + 00W	50 meters	IP-5865-1
24 + 00E	50 meters	IP-5865-2
33 + 00E	50 meters	IP-5865-3
50 + 00E	50 meters	IP-5865-4
55 + 00E	50 meters	IP-5865-5
60 + 00E	50 meters	IP-5865-6

Also enclosed with this report is Dwg. I.P.P.-B-3040, a plan map of the Frasergold Property grid at a scale of 1:10,000. The definite, probable and possible Induced Polarization anomalies are indicated by bars, in the manner shown on the legend, on this plan map as well as on the data plots. These bars represent the surface projection of the anomalous zones as interpreted from the location of transmitter and receiver electrodes when the anomalous values were measured.

Since the Induced Polarization measurement is essentially an averaging process, as are all potential methods, it is frequently difficult to exactly pinpoint the source of an anomaly. Certainly, no anomaly can be located with more accuracy than the electrode interval length; i.e. when using 50 meter electrode intervals the position of a narrow sulphide body can only be determined to lie between two stations 50 meters apart. In order to definitely locate, and fully evaluate, a narrow, shallow source, it is necessary to use shorter electrode intervals. In order to locate sources at some depth, larger electrode intervals must be used, with a corresponding increase in the uncertainties of location. Therefore, while the center of the indicated anomaly probably corresponds fairly well with the source, the length of the indicated anomaly along the line should not be taken to represent the exact edges of the anomalous material.

The topographic, claim, and grid information shown on Dwg. I.P.P.-B-3040 has been taken from maps made available by the staff of Eureka Resources, Inc.

4. Discussion of Results

At least two highly conductive and polarizable zones (Zone A, Zone C) are detected by the IP and Resistivity data recorded over the Frasergold grid area. The observed margins of these two trends have been further subdivided into two additional zones of somewhat lesser conductivity. Zone A1, Zone C1.

All of the above features, together with a fifth zone (Zone B), are best illustrated by the data collected on the 3 most easterly lines: Line 50 + 00E, Line 55 + 00E and Line 60 + 00E. Zones A, A1, C and C1 are interpreted to extend as far westward as Line 24 + 00E. While similar geophysical signatures are seen in the IP and Resistivity data acquired on Line 2 + 00W, this line is located at too great an inteval from the next line (Line 24 + 00E) to allow correlation of anomalous zones over the intervening distance.

Each anomalous IP zone is discussed separately below.

Zone A

This zone is indicated to strike across the northern ends of Line 24 + 00E through to Line 60 + 00E. As such, the trend is undefined to the west, north and east.

A very conductive and quite polarizable source appears to be present. Black banded and carbonaceous phyllites are mapped in the area of this anomalous I.P.zone, and are almost certainly the cause of the anomalous geophysical response.

Zone A1

IP Zone A1 is interpreted to lie along the southern margin of IP Zone A. This former trend is marked as a region of only moderate conductivity accompanied by moderately anomalous IP effects (P.F.E.).

The previously discovered mineralized zone containing very anomalous gold values correlates very well with the position of IP Zone A1, which is well outlined in the data recorded on the three easternmost lines, and may extend westward as far as Line 24 + 00E.

Depth to the top of the source of IP Zone A1 is indicated to be less than one dipole length (50 meters) beneath the surface.

Zone B

The trend is only detected in the data measured on Line 50 + 00E, Line 55 + 00E, and Line 60 + 00E. The character of this zone is very different from any of the other zones in that the presence of the zone is marked by very high magnitude IP effects, unaccompanied by any anomalous resistivity values. It therefore appears that the source of IP Zone B is a high concentration of disseminated metallic sulphides, buried at a depth of less than 50 meters sub-surface.

Zone C

The source of this geophysical response appears to be very similar to that of IP Zone A which is thought to be caused by carbonaceous black phyllites.

Zone C is marked only on the extreme southern ends of Line 33 + 00E, and Line 50 + 00E.

Zone C1

This zone is interpreted to exist along the northern contact of Zone C, and is modelled after the signature provided by IP Zone A1. That is, IP Zone C1 may outline a discrete zone of moderately conductive and polarizable material lying along the margin of a more conductive and polarizable body (Zone C).

It is hoped that IP Zone C1 is indicating the presence of a mineralized trend similar to the gold bearing zone outlined by IP Zone A1.

5. Summary and Recommendations

Five anomalous IP zones have been detected by the Induced Polarization and Resistivity Survey on the Frasergold Property.

One of these IP trends, Zone A1, correlates with the position of previously drilled mineralization, which is associated with very anomalous gold values.

Another of the IP zones, Zone C1, may be detecting a similar mineralized band, and should be investigated further.

Initially, additional work should be in the form of infill IP and Resistivity surveying to better evaluate the IP response between existing lines. Drilling priorities could then be established.

PHOENIX GEOPHYSICS LIMITED

Paul A. Cartwright, B.Sc.
Geophysicist.

Dated: 16 October 1985

ASSESSMENT DETAILS

PROPERTY: Frasergold

MINING DIVISION: Cariboo

SPONSORS: Eureka Resources, Inc.

PROVINCE: British Columbia

LOCATION: 50 km East of Horsefly, B.C.

TYPE OF SURVEY: Induced Polarization and Resistivity

OPERATING MAN DAYS: 18

EQUIVALENT 8 HR. MAN DAYS: 27

CONSULTING MAN DAYS: 4

NUMBER OF STATIONS: 118

DRAFTING MAN DAYS: 3

NUMBER OF READINGS: 481

TOTAL MAN DAYS: 34

KILOMETERES LINE SURVEYED: 5.6

CONSULTANT: Paul A. Cartwright, 4328 W. 11th Avenue, Vancouver, B.C.

FIELD TECHNICIANS:

D. Daggett, 35 Falcon Crescent, Chelmsford, Ontario.
Y. Nadeau, 214 - 744 West Hastings Street, Vancouver, B.C.
R. Wartnow, 4976 - 2nd Avenue, Delta, B.C.
G. Shields, 7100 Warden Avenue, Markham, Ontario

DRAUGHTSMAN:

R. Norris, 7100 Warden Avenue, Markham, Ontario.

PHOENIX GEOPHYSICS LIMITED

Paul A. Cartwright

Paul A. Cartwright, B.Sc.
Geophysicist.

DATED: 16 October 1985

STATEMENT OF COST

Eureka Resources, Inc.,
Induced Polarization and Resistivity Survey,
Frasergold Property, Cariboo Mining Division, B.C.

CREW: D. Daggett, G. Shields, R. Wartman

PERIOD: August 16, 1985 to August 18, 1985

CREW: D. Daggett, R. Wartnow, Y. Nadeau

PERIOD: August 19, 1985 to August 21, 1985

A) Data Acquisition Cost August 16, 1985 to August 21, 1985 6 operating days @ $825.00	$ 4,950.00
B) Mobilization-demobilization Cost	1,500.00
C) Interpretation and Reporting Cost October 1, 1985 to October 16, 1985	1,050.00
Total Cost:	$ 7,500.00

PHOENIX GEOPHYSICS LTD.

Paul A. Cartwright

Paul A. Cartwright, B.Sc.
Geophysicist.

DATED: 16 October 1985.

CERTIFICATE

I, Paul A. Cartwright, of the City of Vancouver, Province of British Columbia, do hereby certify:

1. I am a geophysicist residing at 4238 W. 11th Avenue, Vancouver, B.C.

2. I am a graduate of the University of British Columbia, with a B.Sc. Degree (1970)

3. I am a member of the Society of Exploration Geophysicists, the European Association of Exploration Geophysicists and the Canadian Society of Exploration Geophysicists.

4. I have been practising my profession for 15 years.

5. I am a Professional Geophysicist licensed in the Province of Alberta.

6. I have no direct or indirect interest, nor do I expect to receive any interest, directly or indirectly, in the property or securities of Eureka Resources, Inc.

7. The statements made in this report are based on a study of published geological literature and unpublished reports.

8. Permission is granted to use in whole or in part for assessment and qualification requirements but not for advertising purposes.

DATED AT VANCOUVER, BRITISH COLUMBIA this 16th day of October 1985.

Paul A. Cartwright, B.Sc.

CERTIFICATE

I, David Daggett, of the City of Chelmsford, Province of Ontario, do hereby certify that:

1. I am a geophysical crew leader residing at 35 Falcon Crescent, Chelmsford, Ontario.

2. I am a graduate of Cambrian College in Geological Technology.

3. I have been practising my vocation about seven years.

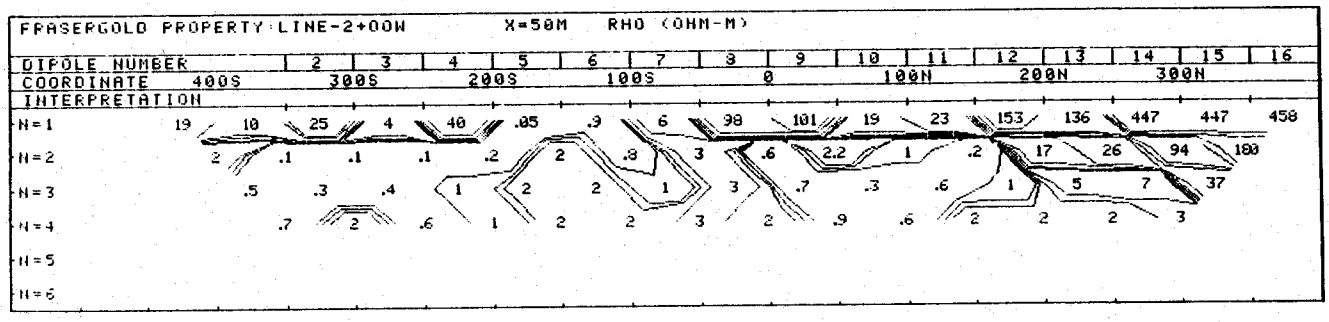
4. I am presently employed as a geophysical crew leader by Phoenix Geophysics Ltd. of 7100 Warden Avenue, Markham, Ontrio.

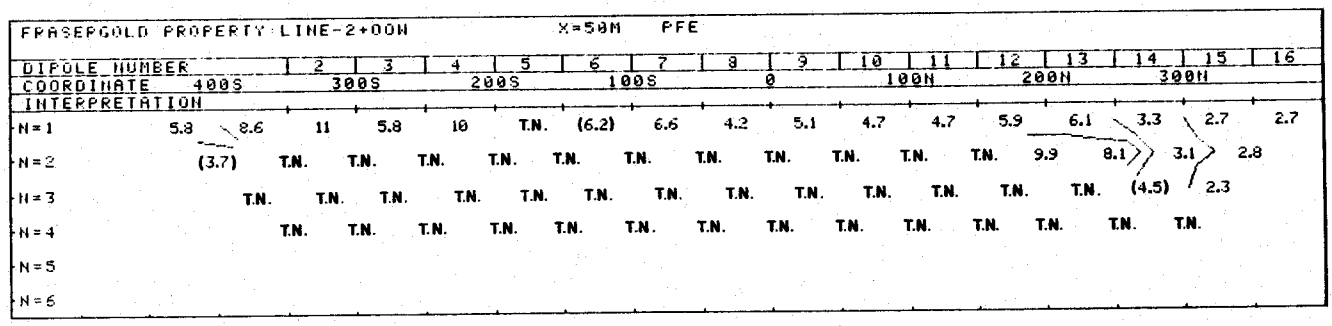
DATED AT VANCOUVER, B.C. this 16th day of October 1985.

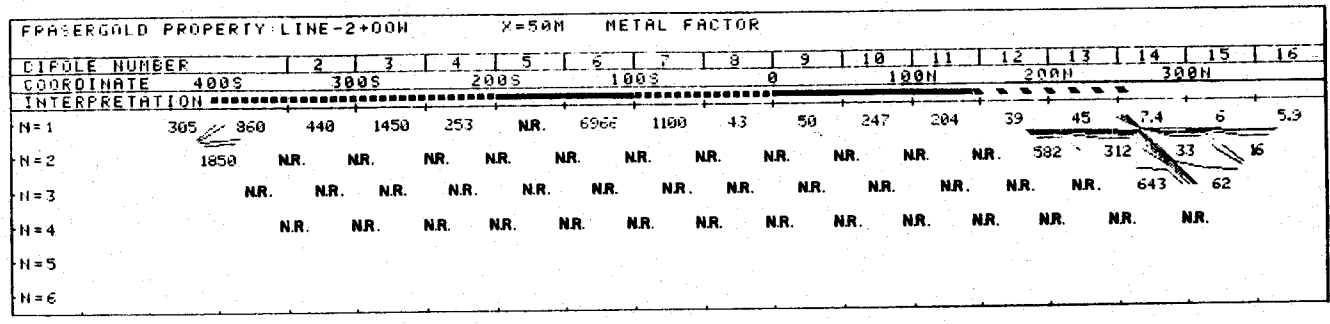
David Daggett

David Daggett

DWG NO. -I P-5865-1





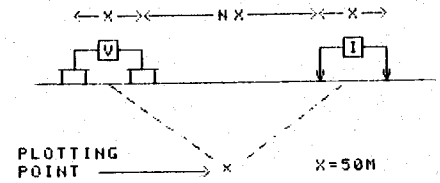


EUREKA RESOURCES INC.

FRASERGOLD PROPERTY

CARIBOO M.D. / B.C.

LINE NO. -2+00W



SURFACE PROJECTION OF ANOMALOUS ZONE

DEFINITE
PROBABLE
POSSIBLE

FREQUENCY (HERTZ)
0.25 & 4.0 HZ

NOTE- CONTOURS AT LOGARITHMIC INTERVALS 1,-1.5 -2,-3,-5,-7.5,-10

DATE SURVEYED: AUG. 1985

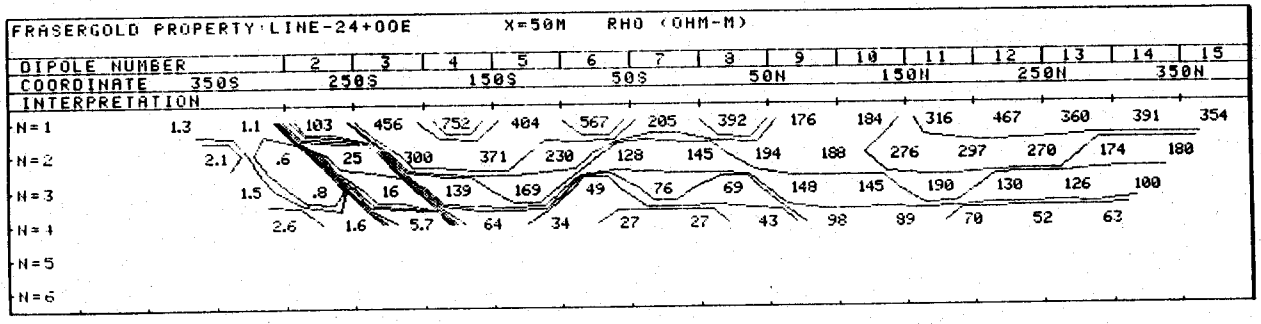
APPROVED

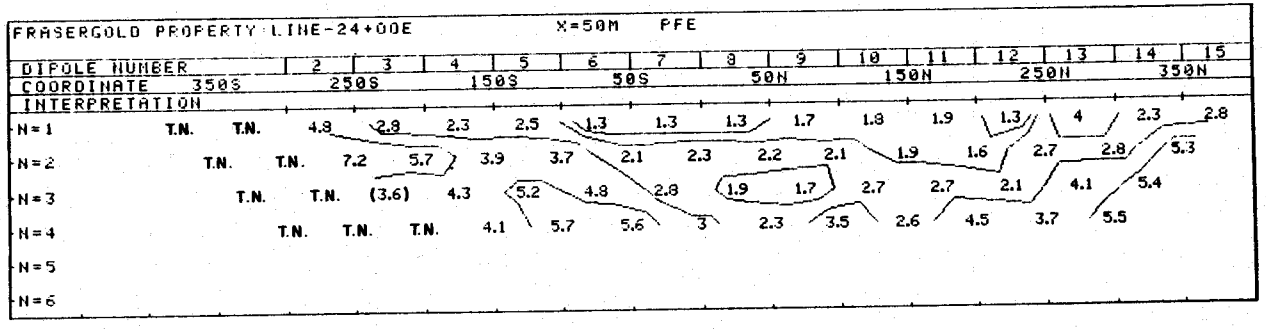
DATE Oct. 15/85

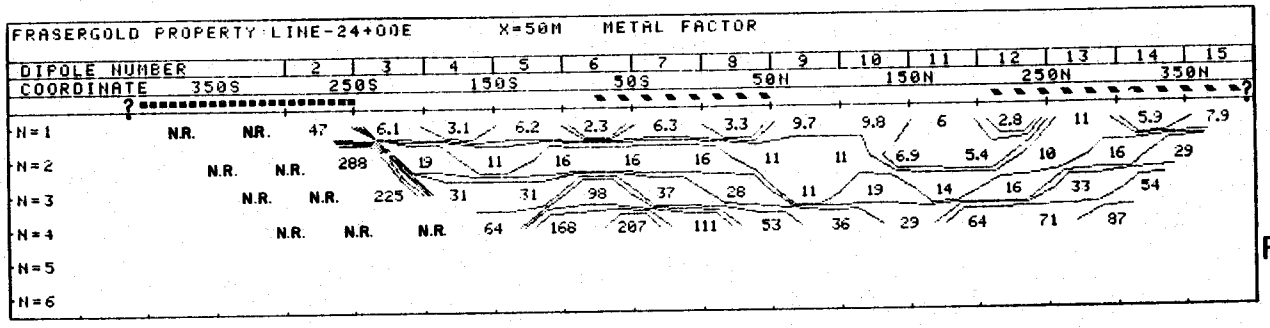
PHOENIX GEOPHYSICS LTD

INDUCED POLARIZATION AND RESISTIVITY SURVEY

DWG. NO.-I.P.-5865-2





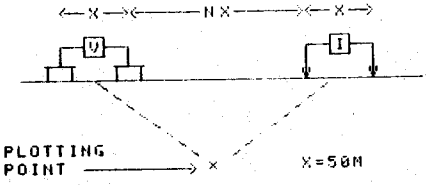


EUREKA RESOURCES INC.

FRASERGOLD PROPERTY

CARIBOO M.D. / B.C.

LINE NO.-24+00E



SURFACE PROJECTION OF ANOMALOUS ZONE

DEFINITE
PROBABLE
POSSIBLE

FREQUENCY (HERTZ)
0.25 & 4.0 HZ.

NOTE- CONTOURS AT LOGARITHMIC INTERVALS 1,-1.5 -2,-3,-5,-7.5,-10

DATE SURVEYED: AUG. 1985

APPROVED

DATE Oct. 15/85

PHOENIX GEOPHYSICS LTD.

INDUCED POLARIZATION AND RESISTIVITY SURVEY

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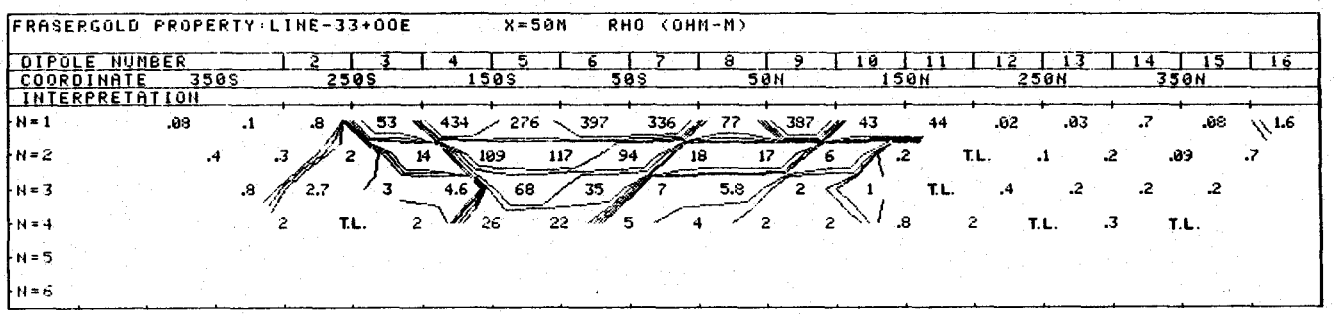
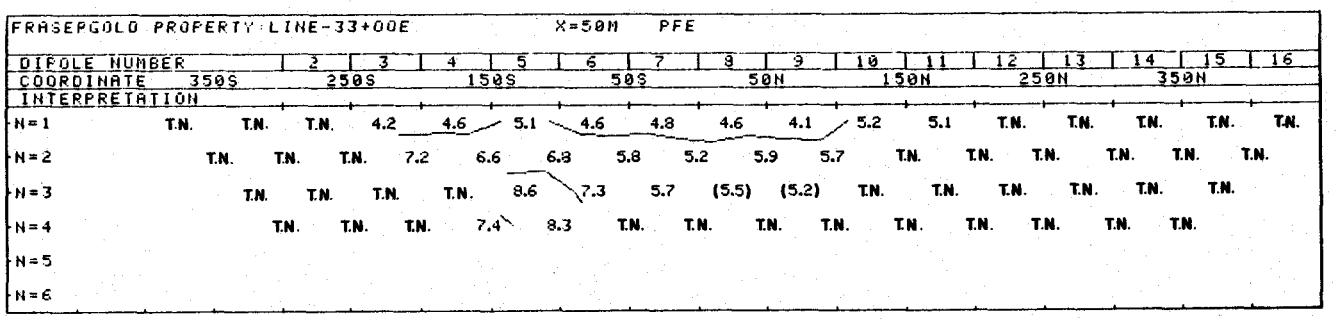
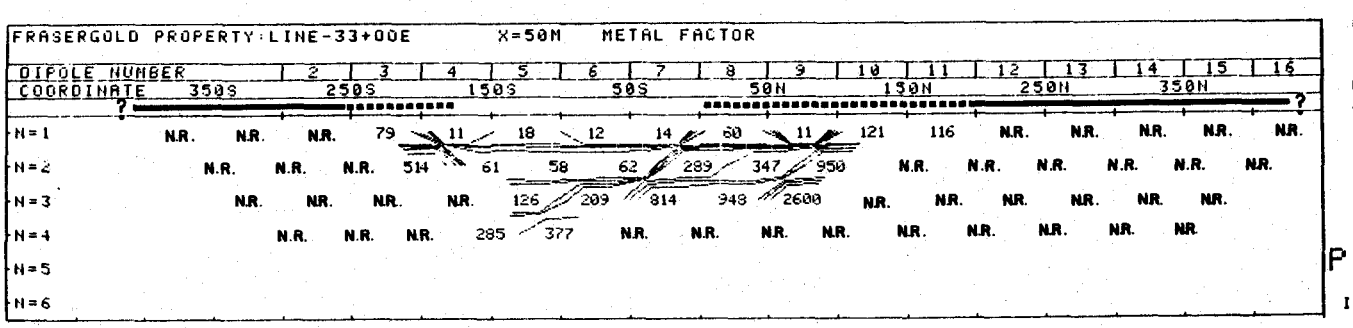




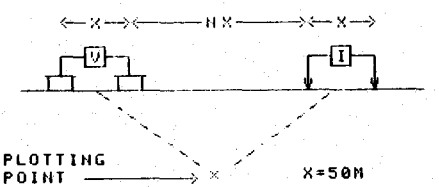


EUREKA RESOURCES INC.

FRASERGOLD PROPERTY

CARIBOO M.D. / B.C.

LINE NO.-33+00E



SURFACE PROJECTION OF ANOMALOUS ZONE

DEFINITE
PROBABLE
POSSIBLE

FREQUENCY (HERTZ)
0.25 & 4.0 HZ.

NOTE- CONTOURS AT LOGARITHMIC INTERVALS 1,-1.5 -2,-3,-5,-7.5,-10

DATE SURVEYED: AUG.1985

APPROVED

PAC

DATE Oct. 15/85

PHOENIX GEOPHYSICS LTD

INDUCED POLARIZATION AND RESISTIVITY SURVEY

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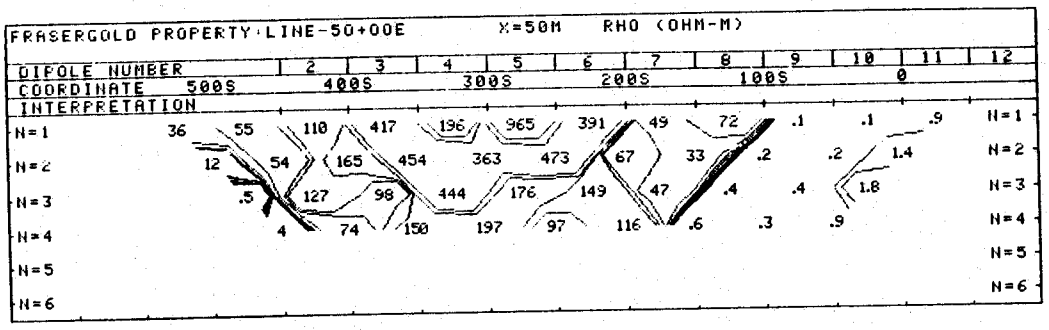

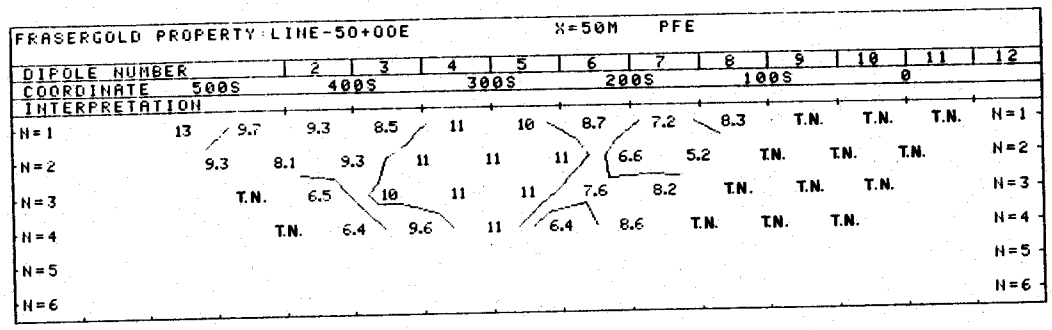

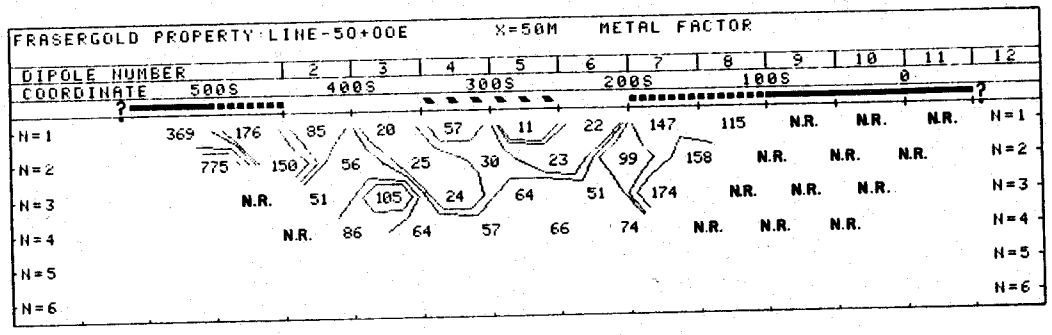

EUREKA RESOURCES INC.

FRASERGOLD PROPERTY

CARIBOO M.D. / B.C.

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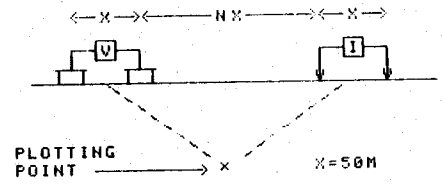

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FREQUENCY (HERTZ)
0.25 & 4.0 HZ.

NOTE- CONTOURS AT LOGARITHMIC INTERVALS. 1,-1.5 -2,-3,-5,-7.5,-10

DATE SURVEYED AUG. 1985

APPROVED RAC

DATE Oct. 15/85

PHOENIX GEOPHYSICS LTD.

INDUCED POLARIZATION AND RESISTIVITY SURVEY

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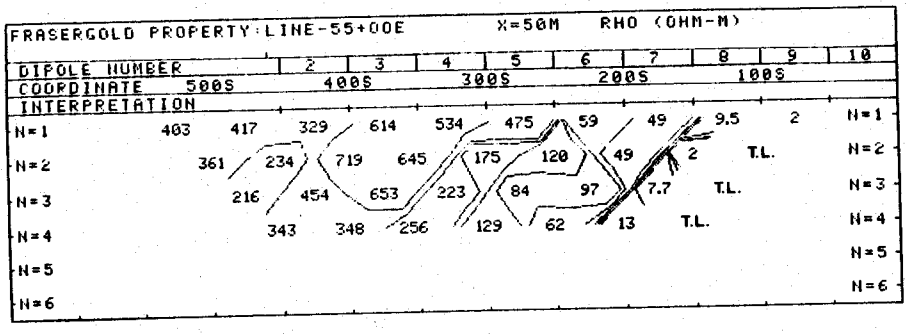
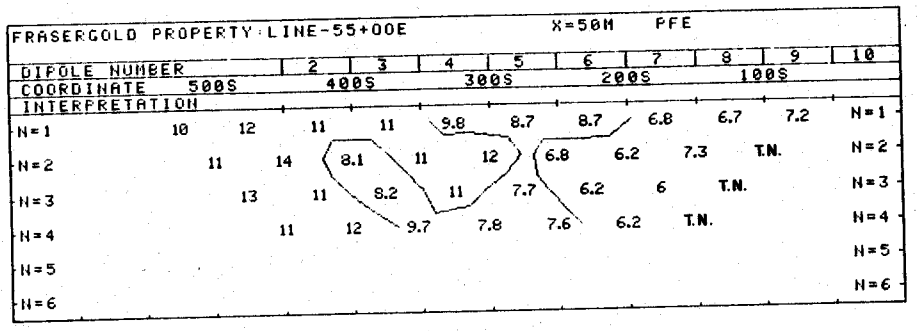
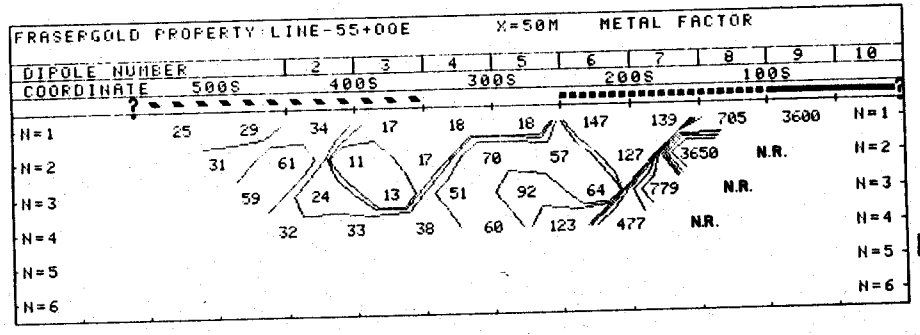




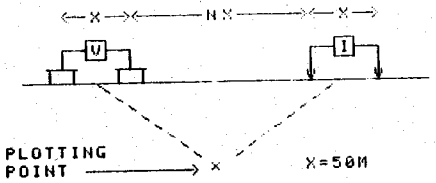


EUREKA RESOURCES INC.

FRASERGOLD PROPERTY

CARIBOO M.D. / B.C.

LINE NO.-55+00E



SURFACE PROJECTION OF ANOMALOUS ZONE

DEFINITE ——————

PROBABLE ....

POSSIBLE ~~~~~~

FREQUENCY (HERTZ)
0.25 & 4.0 HZ.

NOTE- CONTOURS AT LOGARITHMIC INTERVALS 1,-1.5 -2,-3,-5,-7.5,-10

DATE SURVEYED AUG. 1985

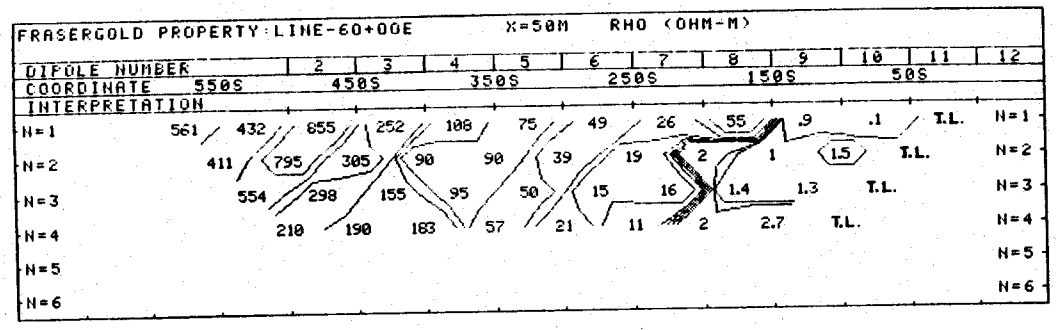
APPROVED PAC

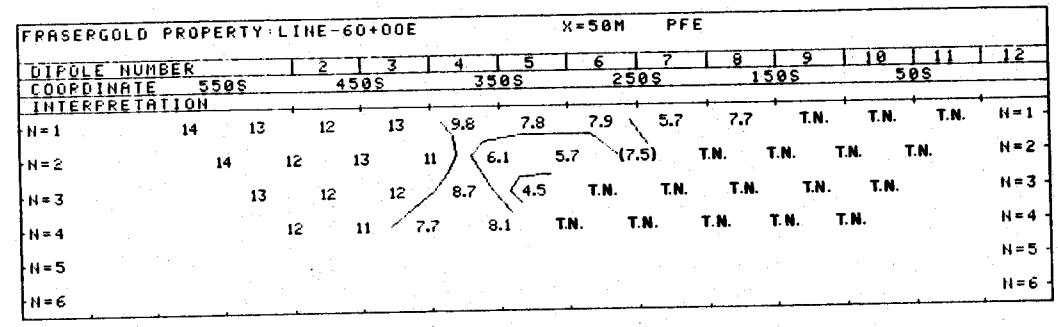
DATE Oct. 15/85

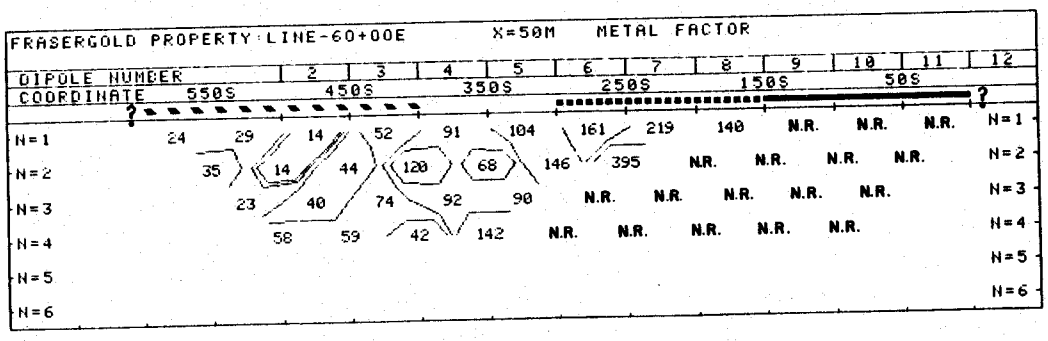
PHOENIX GEOPHYSICS LTD.

INDUCED POLARIZATION AND RESISTIVITY SURVEY

DWG. NO.-I.P.-5865-6





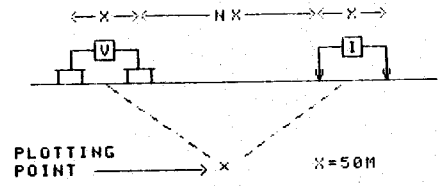


EUREKA RESOURCES INC.

FRASERGOLD PROPERTY

CARIBOO M.D. / B.C.

LINE NO.-60+00E



SURFACE PROJECTION OF ANOMALOUS ZONE

DEFINITE
PROBABLE
POSSIBLE

FREQUENCY (HERTZ)
0.25 & 4.0 HZ.

NOTE- CONTOURS AT LOGARITHMIC INTERVALS. 1,-1.5 -2,-3,-5,-7.5,-10

DATE SURVEYED AUG 1985

APPROVED PAC

DATE Oct. 15/85

PHOENIX GEOPHYSICS LTD.

INDUCED POLARIZATION AND RESISTIVITY SURVEY

PART B

PHOENIX GEOPHYSICS LIMITED

NOTES ON THE THEORY, METHOD OF FIELD OPERATION AND PRESENTATION OF DATA FOR THE INDUCED POLARIZATION METHOD

Induced Polarization as a geophysical measurement refers to the blocking action or polarization of metallic or electronic conductors in a medium of ionic solution conduction.

This electro-chemical phenomenon occurs wherever electrical current is passed through an area which contains metallic minerals such as base metal sulphides. Normally, when current is passed through the ground, as in resistivity measurements, all of the conduction takes place through ions present in the water content of the rock, or soil, i.e., by ionic conduction. This is because almost all minerals have a much higher specific resistivity than ground water. The group of minerals commonly described as "metallic", however, have specific resistivities much lower than ground waters. The induced polarization effect takes place at those interfaces where the mode of conduction changes from ionic in the solutions filling the interstices of the rock to electronic in the metallic minerals present in the rock.

The blocking action or induced polarization mentioned above, which depends upon the chemical energies necessary to allow the ions to give up or receive electrons from the metallic

surface, increases with the time that a d.c. current is allowed to flow through the rock; i.e., as ions pile up against the metallic interface the resistance to current flow increases. Eventually, there is enough polarization in the form of excess ions at the interfaces, to appreciably reduce the amount of current flow through the metallic particle. This polarization takes place at each of the infinite number of solution-metal interfaces in a mineralized rock.

When the d.c. voltage used to create this d.c. current flow is cut off, the Coulomb forces between the charged ions forming the polarization cause them to return to their normal position. This movement of charge creates a small current flow which can be measured on the surface of the ground as a decaying potential difference.

From an alternate viewpoint it can be seen that if the direction of the current through the system is reversed repeatedly before the polarization occurs, the effective resistivity of the system as a whole will change as the frequency of the switching is changed. This is a consequence of the fact that the amount of current flowing through each metallic interface depends upon the length of time that current has been passing through it in one direction.

The values of the per cent frequency effect or F.E. are a measurement of the polarization in the rock mass. However, since the measurement of the degree of polarization is related to the apparent resistivity of the rock mass, it is found that the metal factor values or M.F. can be useful values

determining the amount of polarization present in the rock mass. The MF values are obtained by normalizing the F.E. values for varying resistivities.

The Induced Polarization measurement is perhaps the most powerful geophysical method for the direct detection of metallic sulphide mineralization, even when this mineralization is of very low concentration. The lower limit of volume per cent sulphide necessary to produce a recognizable IP anomaly will vary with the geometry and geologic environment of the source, and the method of executing the survey. However, sulphide mineralization of less than one per cent by volume has been detected by the IP method under proper geological conditions.

The greatest application of the IP method has been in the search for disseminated metallic sulphides of less than 20% by volume. However, it has also been used successfully in the search for massive sulphides in situations where, due to source geometry, depth of source, or low resistivity of surface layer, the EM method cannot be successfully applied. The ability to differentiate ionic conductors, such as water-filled shear zones, makes the IP method a useful tool in checking EM anomalies which are suspected of being due to these causes.

In normal field applications the IP method does not differentiate between the economically important metallic minerals such as chalcopyrite, chalcocite, molybdenite, galena, etc., and the other metallic minerals such as pyrite. The Induced Polarization effect is due to the total of all electronic conducting minerals in the rock mass. Other electronic conducting

materials which can produce an IP response are magnetite, pyrolusite, graphite, and some forms of hematite.

In the field procedure, measurements on the surface are made in a way that allows the effects of lateral changes in the properties of the ground to be separated from the effects of vertical changes in the properties. Current is applied to the ground at two points in distance (X) apart. The potentials are measured at two points (X) feet apart, in line with the current electrodes is an integer number (n) times the basic distance (X).

The measurements are made along a surveyed line, with a constant distance (nX) between the nearest current and potential electrodes. In most surveys, several traverses are made with various values of (n); i.e., (n) = 1, 2, 3, 4, etc. The kind of survey required (detailed or reconnaissance) decides the number of values of (n) used.

In plotting the results, the values of apparent resistivity, apparent per cent frequency effect, and the apparent metal factor measured for each set of electrode positions are plotted at the intersection of grid lines, one from the center point of the current electrodes and the other from the center point of the potential electrodes. (See Figure A) The resistivity values are plotted at the top of the data profile, above the metal factor values. On a third line, below the metal factor values, are plotted the values of the percent frequency effect. The lateral displacement of a given value is determined by the location along the survey line of the center

point between the current and potential electrodes. The distance of the value from the line is determined by the distance (nX) between the current and potential electrodes when the measurement was made.

The separation between sender and receiver electrodes is only one factor which determines the depth to which the ground is being sampled in any particular measurement. The plots then, when contoured, are not section maps of the electrical properties of the ground under the survey line. The interpretation of the results from any given survey must be carried out using the combined experience gained from field results, model study results and the theoretical investigations. The position of the electrodes when anomalous values are measured is important in the interpretation.

In the field procedure, the interval over which the potential differences are measured is the same as the interval over which the electrodes are moved after a series of potential readings has been made. One of the advantages of the Induced Polarization method is that the same equipment can be used for both detailed and reconnaissance surveys merely by changing the distance (X) over which the electrodes are moved each time. In the past, intervals have been used ranging from 25 feet to 2000 feet for (X). In each case, the decision as to the distance (X) and the values of (n) to be used is largely determined by the expected size of the mineral deposit being sought, the size of the expected anomaly and the speed with which it is desired to progress.

The diagram in Figure A demonstrates the method used in plotting the results. Each value of the apparent resistivity, apparent metal factor, and apparent per cent frequency effect is plotted and identified by the position of the four electrodes when the measurement was made. It can be seen that the values measured for the larger values of (n) are plotted farther from the line indicating that the thickness of the layer of the earth that is being tested is greater than for the smaller values of (n); i.e., the depth of the measurement is increased.

The IP measurement is basically obtained by measuring the difference in potential or voltage (Δ V) obtained at two operating frequencies. The voltage is the product of the current through the ground and the apparent resistivity of the ground. Therefore, in field situations where the current is very low due to poor electrode contact, or the apparent resistivity is very low, or a combination of the two effects; the value of (Δ V) the change is potential will be too small to be measurable. The symbol "TL" on the data plots indicates this situation.

In some situations spurious noise, either man-made or natural, will render it impossible to obtain a reading. The symbol "N" on the data plots indicates a station at which it is too noisy to record a reading. If a reading can be obtained, but for reasons of noise there is some doubt as to its accuracy, the reading is bracketed in the data plot ( ).

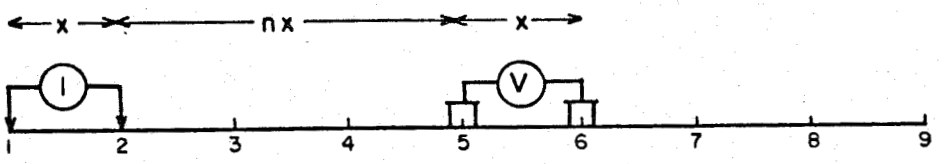
In certain situations negative values of Apparent Frequency Effect are recorded. This may be due to the geologic

environment or spurious electrical effects. The actual negative frequency effect value recorded is indicated on the data plot; however, the symbol "NEG" is indicated for the corresponding value of Apparent Metal Factor. In contouring negative values the contour lines are indicated to the nearest positive value in the immediate vicinity of the negative value.

The symbol "NR" indicates that for some reason the operator did not attempt to record a reading, although normal survey procedures would suggest that one was required. This may be due to inaccessible topography or other similar reasons. Any symbol other than those discussed above is unique to a particular situation and is described within the body of the report.

PHOENIX GEOPHYSICS LIMITED

METHOD USED IN PLOTTING DIPOLE-DIPOLE INDUCED POLARIZATION AND RESISTIVITY RESULTS

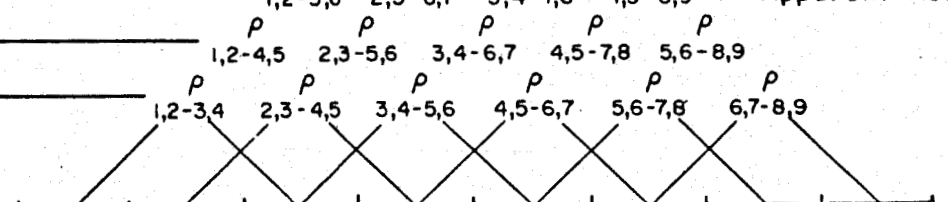


Stations on line

x = Electrode spread length
n = Electrode separation

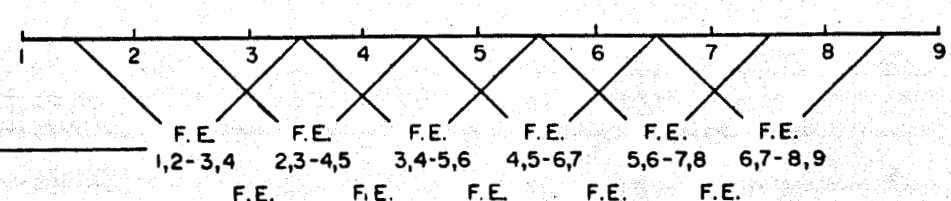
Apparent Resistivity

n - 4	ρ 1,2-6,7	ρ 2,3-7,8	ρ 3,4-8,9			
n - 3	ρ 1,2-5,6	ρ 2,3-6,7	ρ 3,4-7,8	ρ 4,5-8,9		
n - 2	ρ 1,2-4,5	ρ 2,3-5,6	ρ 3,4-6,7	ρ 4,5-7,8	ρ 5,6-8,9	
n - 1	ρ 1,2-3,4	ρ 2,3-4,5	ρ 3,4-5,6	ρ 4,5-6,7	ρ 5,6-7,8	ρ 6,7-8,9



Apparent Metal Factor

n - 1	M.F. 1,2-3,4	M.F. 2,3-4,5	M.F. 3,4-5,6	M.F. 4,5-6,7	M.F. 5,6-7,8	M.F 6,7-8,9
n - 2	M.F. 1,2-4,5	M.F. 2,3-5,6	M.F. 3,4-6,7	M.F. 4,5-7,8	M.F. 5,6-8,9	
n - 3	M.F. 1,2-5,6	M.F. 2,3-6,7	M.F. 3,4-7,8	M.F 4,5-8,9		
n - 4	M.F. 1,2-6,7	M.F. 2,3-7,8	M.F. 3,4-8,9			



Apparent Percent Frequency Effect

n - 1	F.E. 1,2-3,4	F.E. 2,3-4,5	F.E. 3,4-5,6	F.E. 4,5-6,7	F.E. 5,6-7,8	F.E. 6,7-8,9
n - 2	F.E. 1,2-4,5	F.E. 2,3-5,6	F.E. 3,4-6,7	F.E. 4,5-7,8	F.E. 5,6-8,9	
n - 3	F.E. 1,2-5,6	F.E. 2,3-6,7	F.E. 3,4-7,8	F.E. 4,5-8,9		
n - 4	F.E. 1,2-6,7	F.E. 2,3-7,8	F.E. 3,4-8,9			

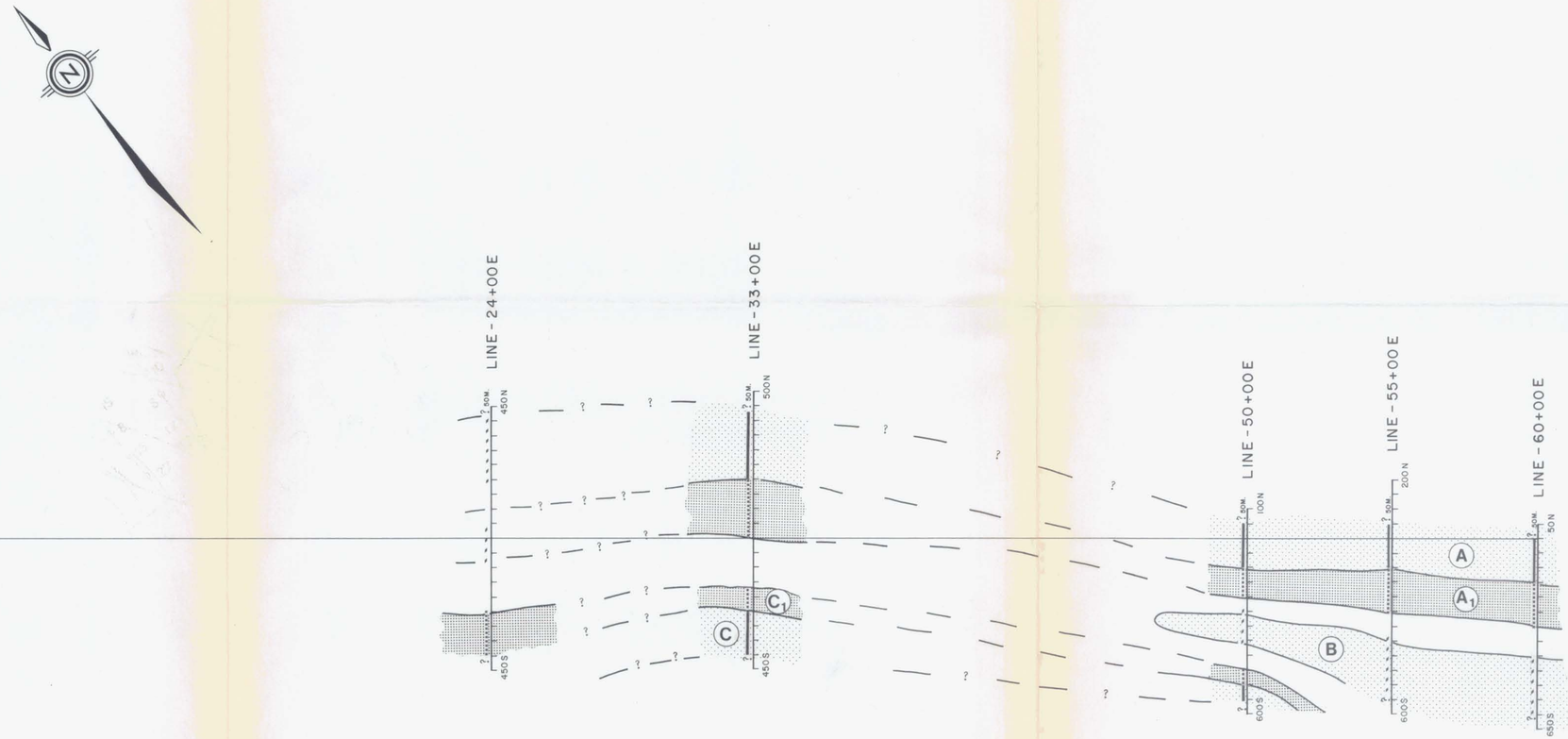
Fig. A

DWG. NO. -

PHOENIX GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

PLAN MAP



NOTE:
TO ACCOMPANY GEOPHYSICAL REPORT FOR EUREKA RESOURCES, INC. ON THE FRASERGOLD PROPERTY IN THE CARIBOO M.D., B.C. BY PAUL A. CARTWRIGHT, B.Sc., GEOPHYSICIST.

DATED - OCT. 16, 1985

SURFACE PROJECTION OF ANOMALOUS ZONE
DEFINITE ——
PROBABLE ·····
POSSIBLE - - - - -

NUMBER AT END OF ANOMALIES INDICATE SPREAD USED.

EUREKA RESOURCES, INC.

FRASERGOLD PROPERTY

CARIBOO M.D., BRITISH COLUMBIA

SCALE
0 200 400 600 m.
1:10,000

– OUTLINE OF ANOMALOUS I.P. ZONE

– OUTLINE OF ANOMALOUS I.P. ZONE POSSIBLY ASSOCIATED WITH Au MINERALIZATION

DRAWN: R.C.N.
DATE: SEPT. 1985
APPROVED: PAC
DATE: Oct. 15/85

DWG. NO.- I.P.P - B - 3040