PHOENIX GEOPHYSICS LIMITED

REPORT

ON THE

INDUCED POLARIZATION AND RESISTIVITY SURVEY

ON THE

MT. SICKER PROPERTY

MT. SICKER AREA

VICTORIA MINING DIVISION, BRITISH COLUMBIA

FOR

LARAMIDE RESOURCES LIMITED

NTS 92B/13W

Latitude: 48°53'N Longitude: 123°52'W

BY

FRANK DISPIRITO, B.A.Sc., P.ENG.

PAUL A. CARTWRIGHT, B.Sc.

JANUARY 10, 1982

part 2 of 2

TABLE OF CONTENTS

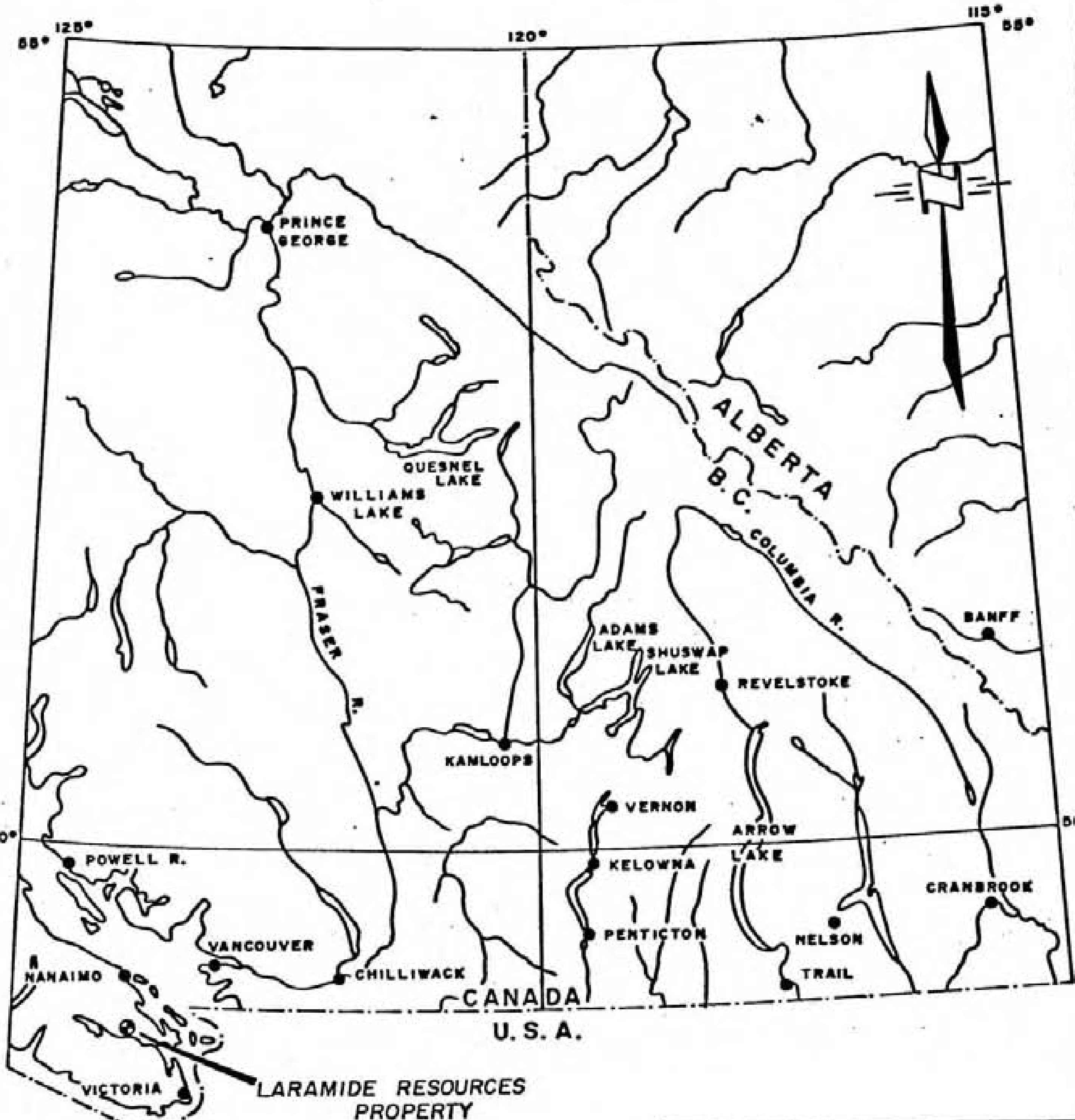
1. INTRODUCTION

An Induced Polarization and Resistivity survey has been carried out for Laramide Resources Limited on the Mt. Sicker property, Mt. Sicker area, Victoria Mining Division, British Columbia. The property is located at about 48°53' North Latitude and 123°52' West Longitude, approximately 16 kilometers northwest of Duncan, British Columbia (Figures 1 and 2).

A paved road from Duncan passes near the base of Mt. Sicker. Access to the grid is via old logging roads which traverse Mt. Sicker.

Since the 1800's economic mineralization has been noted in the Mt. Sicker area. Near the center of the Silver 2 claim a small massive sulphide-type showing is partly exposed along an old road cut. The present IP survey was conducted in order to delineate any metallic mineralization in the vicinity of the known showing.

Field work was carried out in October of 1981 using a Phoenix Model IPV-1 IP and Resistivity receiver unit in conjunction with a Phoenix Model IPT-1 IP and Resistivity transmitter unit, recording the polarizability as percent frequency effect (P.F.E.) between frequencies of 4.0 Hertz and 0.25 Hertz. Apparent resistivity measurements are normalized in units of ohm-meters, while metal



LARAMIDE RESOURCES LTD.	
LOCATION MAP LARAMIDE RESOURCES PROPERTY VICTORIA MINING DIVISION, BRITISH COLUMBIA	
Date: Dec. 1981.	Scale: 1" = 64 Miles
Dwn by: W. G.	Figure 1

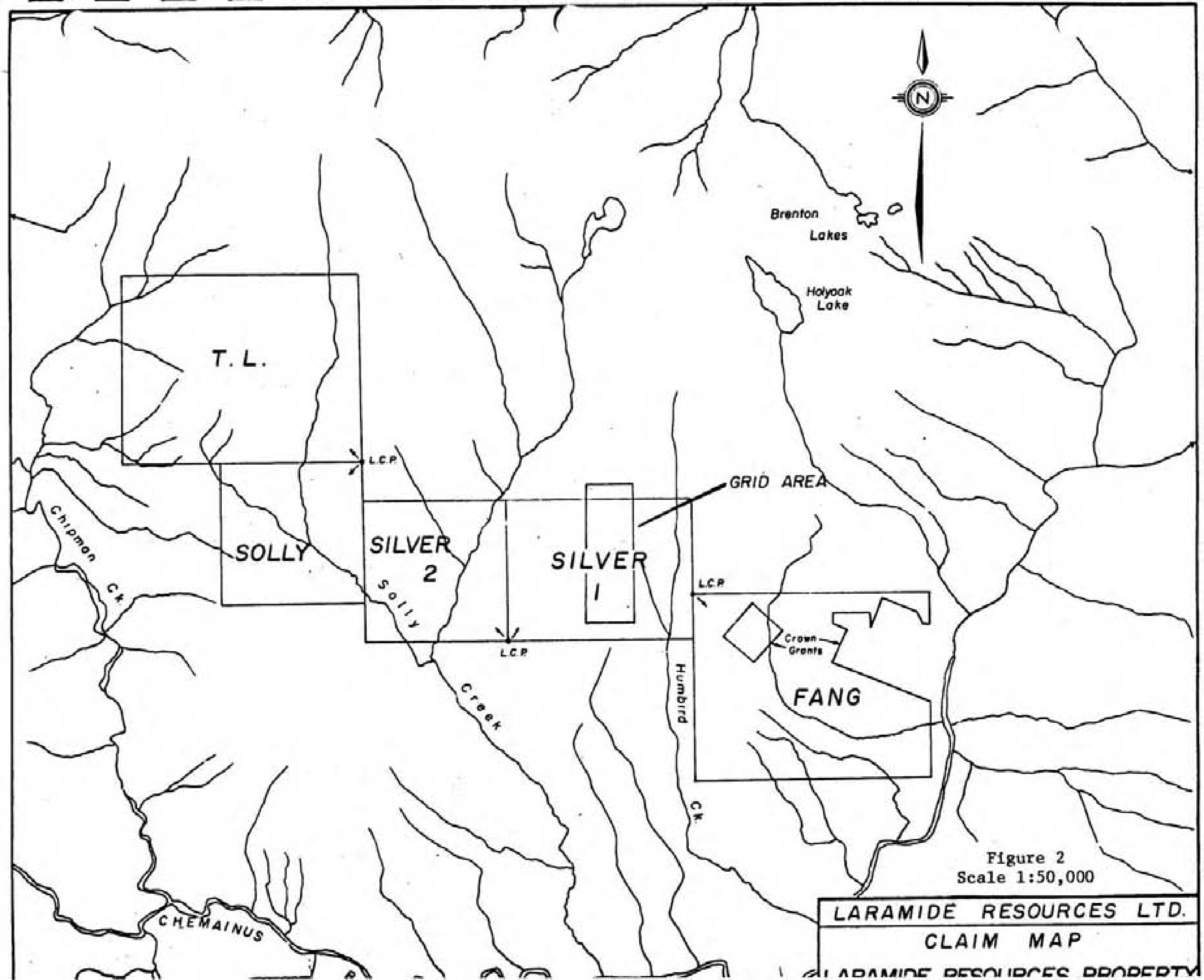


Figure 2
Scale 1:50,000

factor values are calculated according to the formula: M.F. = (PFE x 1000)/Apparent Resistivity. Dipole-dipole array was used exclusively, with a basic inter-electrode distance of 50 meters. Four dipole separations were recorded.

The field work was conducted under the supervision of Mr. Peter Gardner, geophysical crew leader, whose certificate is attached to this report.

2. DESCRIPTION OF CLAIMS

The Mt. Sicker property consists of 5 claims as outlined below.

CLAIM NAME	UNITS	RECORD NUMBER	DATE RECORDED
Fang	20	534	8 May 1981
Silver 1	9	535	8 May 1981
Silver 2	12	536	8 May 1981
Solly	9	537	8 May 1981
T.L.	20	538	8 May 1981

The claims are owned and operated by Laramide Resources Limited of Vancouver, B.C.

3. PRESENTATION OF RESULTS

The Induced Polarization and Resistivity results are shown on the following data plots in the manner described in the notes attached to this report (Part B).

LINE	ELECTRODE INTERVAL	DWG. NO.
32 W	50 meters	I.P. 5818-1
30 W	50 meters	I.P. 5818-2
28 W	50 meters	I.P. 5818-3

Also enclosed with this report is Dwg. I.P.P.-B-4018, a plan map of the surveyed grid at a scale of 1:2,000. 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 the 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 grid information shown on Dwg. I.P.P.-B-4018 has been taken from maps made available by the staff of Laramide Resources Limited.

4. DESCRIPTION OF GEOLOGY

The Mt. Sicker property is mainly underlain by deformed felsic rocks of the Paleozoic Sicker Series. Along the south edge of the claim block the volcanic rocks are in fault contact with sedimentary rocks of the Cretaceous, Nanaimo Formation.

The Sicker Series is host to several massive sulphide deposits. These deposits are associated with felsic volcanic rocks.

5. DISCUSSION OF RESULTS

Resistivity levels under the surveyed Mt. Sicker grid are generally moderate to high in magnitude. The apparent resistivities measured range from about 100 to 3000 ohm-meters. Background IP effects are low to moderate in magnitude, ranging from less than 1 P.F.E. up to about 3 P.F.E.

Relatively lower apparent resistivities (less than 500 ohm-meters) were measured at the southern end of the grid. These lower resistivities may reflect the presence at depth of the sedimentary rocks of the Nanaimo Formation known to outcrop in the vicinity.

Definite and probable IP anomalies have been noted on every line surveyed. These IP anomalies are associated with slightly lower than background apparent resistivities. The IP anomalies form one main broad east-west trending zone, as can be seen on Dwg. I.P.P.-B-4018. This anomalous IP zone, however, is open to the west and east of the surveyed grid. Also, the anomaly on Line 28 W is open to the north.

There also exists one separate narrow IP anomaly of moderate magnitude located on Line 32 W centered at Station 0 + 25N. This anomaly is located very close to the resistivity contact, which almost, certainly, marks the position of a volcanic rock/sedimentary rock interface.

The depth to the top of the source of all the IP anomalies detected by the present survey is definitely less than one dipole spacing, that is, less than 50 meters subsurface. A better estimate of the parameters describing the source could not be made because the computer inversion programs available cannot handle a source much greater than 3 dipole spacings wide.

It is the author's understanding that trenching has been done near the center of the IP anomaly on Line 28W (refer to report by Belik, December 1981). Pit 5 uncovered a chloritic schist with a few narrow bands of semi-massive pyrite. Within Pit 6 a sericitic schist was found containing up to 10% disseminated pyrite and minor chalcopyrite.

6. SUMMARY AND RECOMMENDATIONS

Generally, apparent resistivities of moderate magnitude were recorded over the survey area. Relatively low resistivities evident south of Station 50N on Line 32W and south of Station 50S on Line 30W may correspond to sedimentary rocks of the Cretaceous Nanaimo Formation.

One main anomalous IP zone has been outlined by the data. This IP zone correlates with sulphide mineralization uncovered by test pits near the center of the IP anomaly on Line 28 W.

A separate, narrow IP anomaly classified as probable, has also been detected on Line 32 W centered at Station 0 + 25 N.

It is recommended that before diamond drilling is considered to test the IP anomalies, additional geophysical work be carried out. In order to clearly define the limits of the anomalous IP zone the present grid should be extended to the east and to the west and Line 28W should be extended to the north. Also, for a better estimate of the depth to the top of the source of the IP anomalies, detailed IP surveying using shorter electrode intervals is necessary.

PHOENIX GEOPHYSICS LIMITED

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
F. DISPIRITO

Frank DiSpirito, B.A.Sc., P.Eng.
Geophysicist.

Paul A. Cartwright, B.Sc.,
Geophysicist.

DATED: 10 January 1982

ASSESSMENT DETAILS

PROPERTY: Mt. Sicker

MINING DIVISION: Victoria

SPONSOR: Laramide Resources Limited

PROVINCE: British Columbia

LOCATION: Mt. Sicker

TYPE OF SURVEY: Induced Polarization and Resistivity

OPERATING MAN DAYS: 3

DATE STARTED: 5 October 1981

EQUIVALENT 8 HR. MAN DAYS: 4.5

DATE FINISHED: 9 October 1981

CONSULTING MAN DAYS: 4

NUMBER OF STATIONS: 63

DRAFTING MAN DAYS: 4

NUMBER OF READINGS: 516

TOTAL MAN DAYS: 12.5

KM. OF LINE SURVEYED: 3.0

CONSULTANTS:

F. DiSpirito, 2748 Oxford Street, Vancouver, B.C.
P.A. Cartwright, 4238 W. 11th Avenue, Vancouver, B.C.

FIELD TECHNICIANS:

P. Gardner, 393 Connaught Avenue, Willowdale, Ontario.

DRAUGHTSMEN:

Ron Wakaluk, 7886 Vivian Drive, Vancouver, B.C.

PHOENIX GEOPHYSICS LIMITED

F. DiSpirito, B.A.Sc., P.Eng.
Geophysicist.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — F. DISPIRITO

DATED: 10 January 1982

STATEMENT OF COST

Laramide Resources Limited

Induced Polarization and Resistivity Survey,
Mt. Sicker Property, Victoria Mining Division,
British Columbia.

PERIOD: 5 October 1981 - 9 October 1981

CREW: P. Gardner

3 Operating days @ $600/day		$ 600.00
1 Travel Day @ $300/day		300.00
EXPENSES:		
Food	$ 53.25	
Ferry	29.00	
Fuel	25.00	
Vehicle	88.50	
	$ 195.75	
+ 15%	29.36	225.11
		$ 2,325.11

PHOENIX GEOPHYSICS LIMITED

Frank DiSpirito

Frank DiSpirito, B.A.Sc., P.Eng.,
Geophysicist.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA F. DISPIRITO

DATED: 10 January 1982

CERTIFICATE

I, FRANK DISPIRITO, of the City of Vancouver, Province of British Columbia, do hereby certify that:

1. I am a geophysicist residing at 2748 Oxford Street, Vancouver, B.C.

2. I am a graduate of the Univeristy of British Columbia with a B.A.Sc. Degree in Geological Engineering.

3. I am a Professional Engineer registered in the Province of British Columbia.

4. I have been practising my profession for 7 years.

5. I have no direct or indirect interest, nor do I expect to receive any interest directly or indirectly, in the property or securities of Laramide Resources Limited or any affiliate.

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

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

DATED AT VANCOUVER, B.C.,
this 10th day of January 1982.

Frank Di Spirito

Frank DiSpirito, P.Eng.

CERTIFICATE

I, PAUL A. CARTWRIGHT, of the City of Vancouver, Province of British Columbia, do hereby certify that:

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

2. I am a graduate of the University of British Columbia, Vancouver, B.C. with a B.Sc. Degree.

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

4. I have been practising my profession for 11 years.

5. I have no direct or indirect interest, nor do I expect to receive any interest directly or indirectly, in the property or securities of Laramide Resources Limited or any affiliate.

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

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

DATED AT VANCOUVER, B.C.
this 10th day of January 1982.

Paul A. Cartwright per JO

Paul A. Cartwright, B.Sc.

CERTIFICATE

I, PETER GARDNER, of the City of Toronto, Province of Ontario, do hereby certify that:

1. I am a geophysical crew leader residing at 393 Connaught Avenue, Willowdale, Ontario.

2. I am a graduate of Radio College of Canada in Electronics Technology.

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

4. I am presently employed as a geophysical crew leader by Phoenix Geophysics Limited of 200 Yorkland Blvd., Willowdale, Ontario.

DATED AT VANCOUVER, B.C.
this 10th day of January 1982.

Peter Gardner.

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

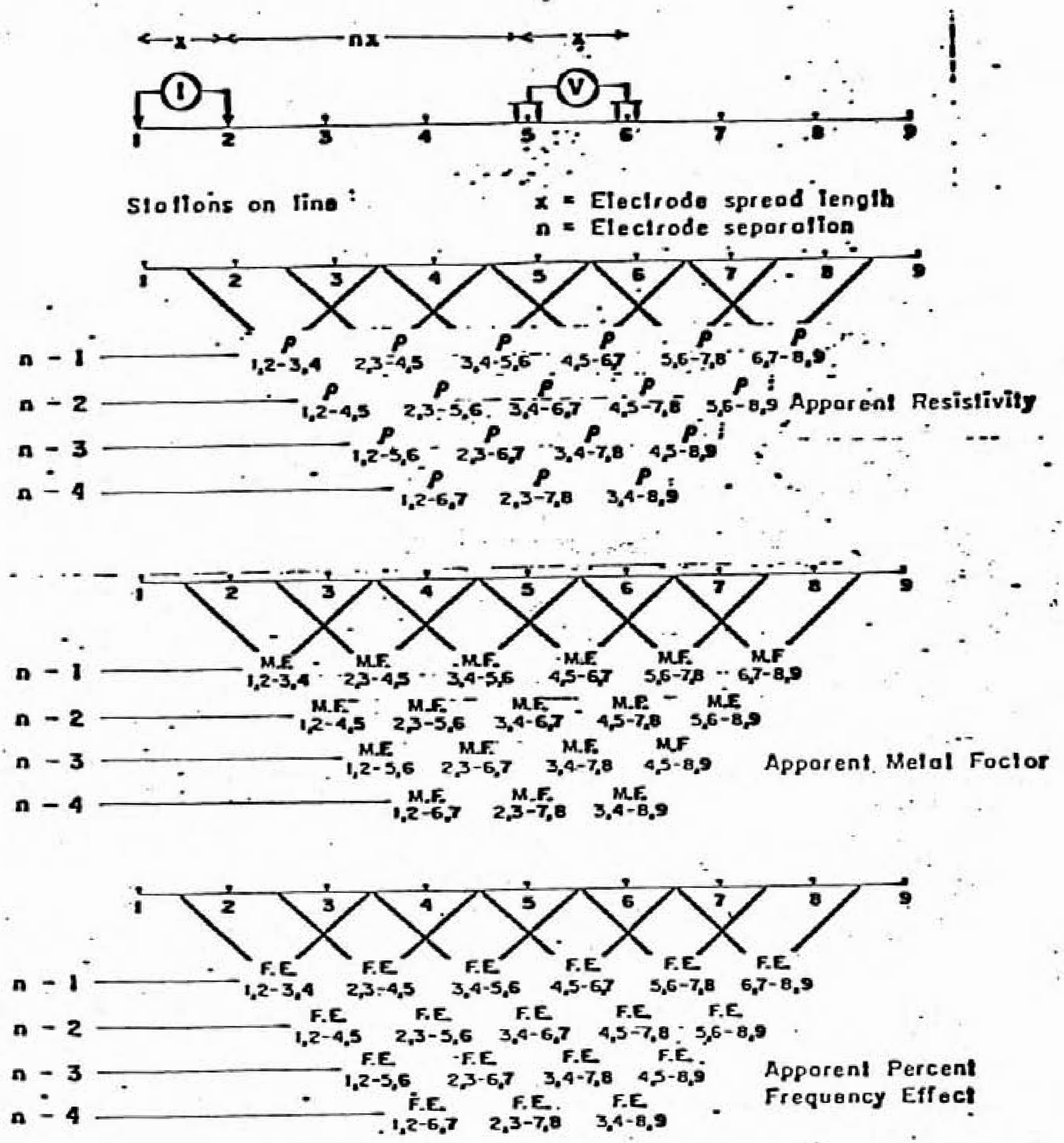
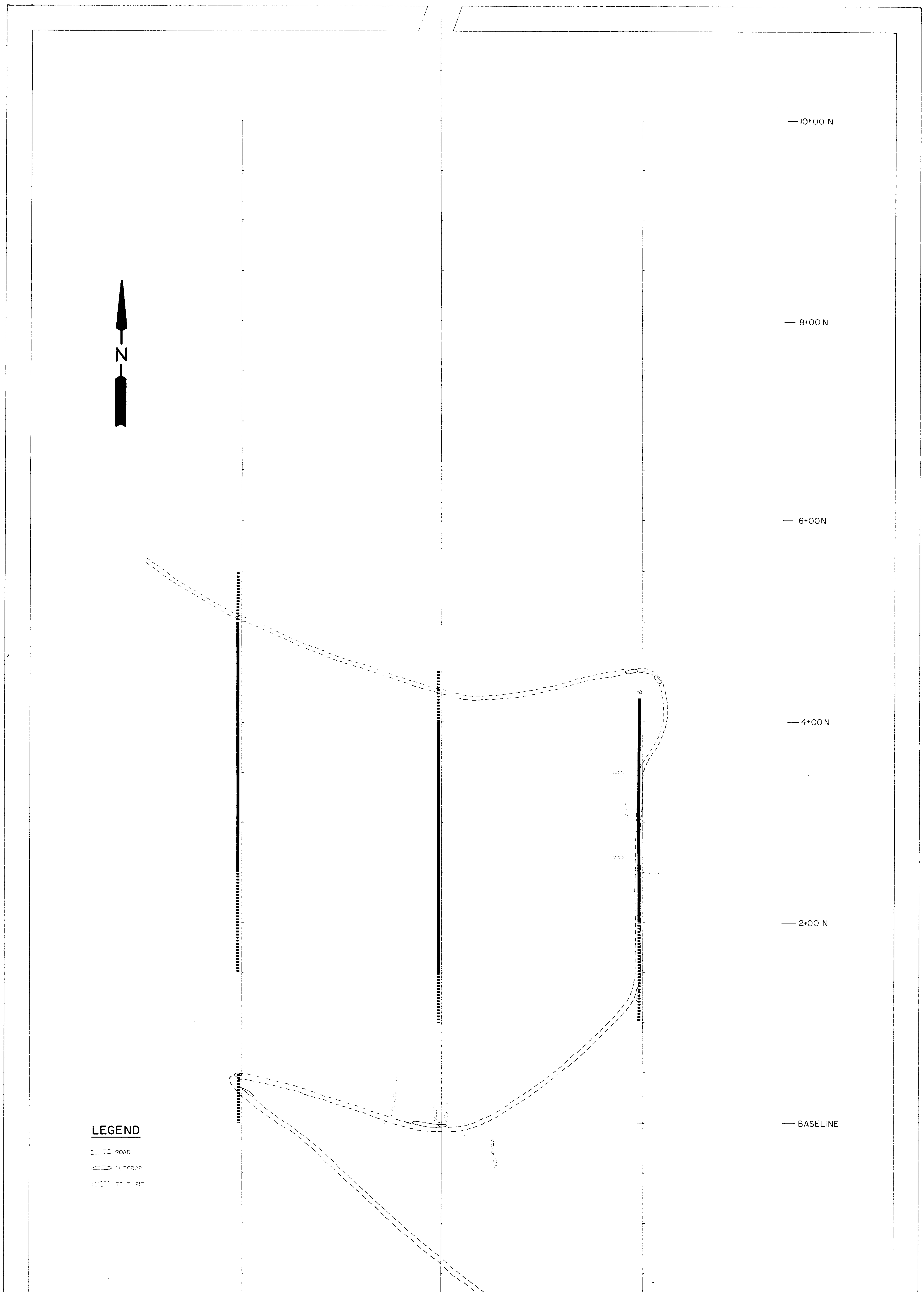


Fig. A

PHOENIX GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

PLAN MAP



SURFACE PROJECTION
OF ANOMALOUS ZONE
DEFINITE
PROBABLE
POSSIBLE

NUMBER AT END OF ANOMALIES
INDICATE SPREAD USED.

LARAMIDE RESOURCES LIMITED

MT. SICKER PROJECT, VICTORIA M.D.

MT. SICKER, BRITISH COLUMBIA

SCALE
1 : 2000

NOTE TO ACCOMPANY GEOPHYSICAL REPORT FOR LARAMIDE RESOURCES LTD. ON THE MT. SICKER PROJECT, VICTORIA M.D. B.C. BY PAUL CARTWRIGHT, B.Sc., GEOPHYSICIST. DATED: JAN. 10, 1982.

DRAWN: R.G.W.
DATE: DEC. 29, 1981.
APPROVED:
DATE:

DWG. NO.- IPP-B- 4018