4152

REPORT ON THE INDUCED POLARIZATION AND RESISTIVITY SURVEY ON THE TED CLAIM GROUP DUCKLING CREEK AREA OMINECA MINING DIVISION, B.C. FOR TUPCO MINES LTD. (N.P.L.)

93N/14W

BY

ASHTON W. MULLAN, B.Sc., P.Eng

And

PETER K. SMITH, B.Sc.

NAME AND LOCATION OF PROPERTY:

TED CLAIM GROUP, DUCKLING CREEK AREA, B.C.

OMINECA MINING DIVISION, B.C. 55°50'N - 125°20'W

DATE STARTED: OCTOBER 8, 1972

DATE FINISHED: OCTOBER 19, 1972

TABLE OF CONTENTS

McPHAR GEOPHYSICS

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. are the most useful values in 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 can not 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 other 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 the 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 above the line as a mirror image of the metal factor values below. On a second line, below the metal factor values, are plotted the values of the per cent frequency effect. In some cases the values of per cent frequency effect are plotted as superscripts of the metal factor value. In this second case the frequency effect values are not contoured. 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 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. When the F. E. values are plotted as superscripts to the MF values the third section of data values is not presented and the F. E. values are not contoured.

The actual data plots included with the report are prepared utilizing an IBM 360/75 Computer and a Calcomp 770/763 Incremental Plotting System. The data values are calculated, plotted, and contoured according to a programme developed by McPhar Geophysics. Certain symbols have been incorporated into the programme to explain various situations in recording the data in the field.

The IP measurement is basically obtained by measuring the difference in potential or voltage (ΔV) 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 (ΔV) the change in 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 noisey 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.

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

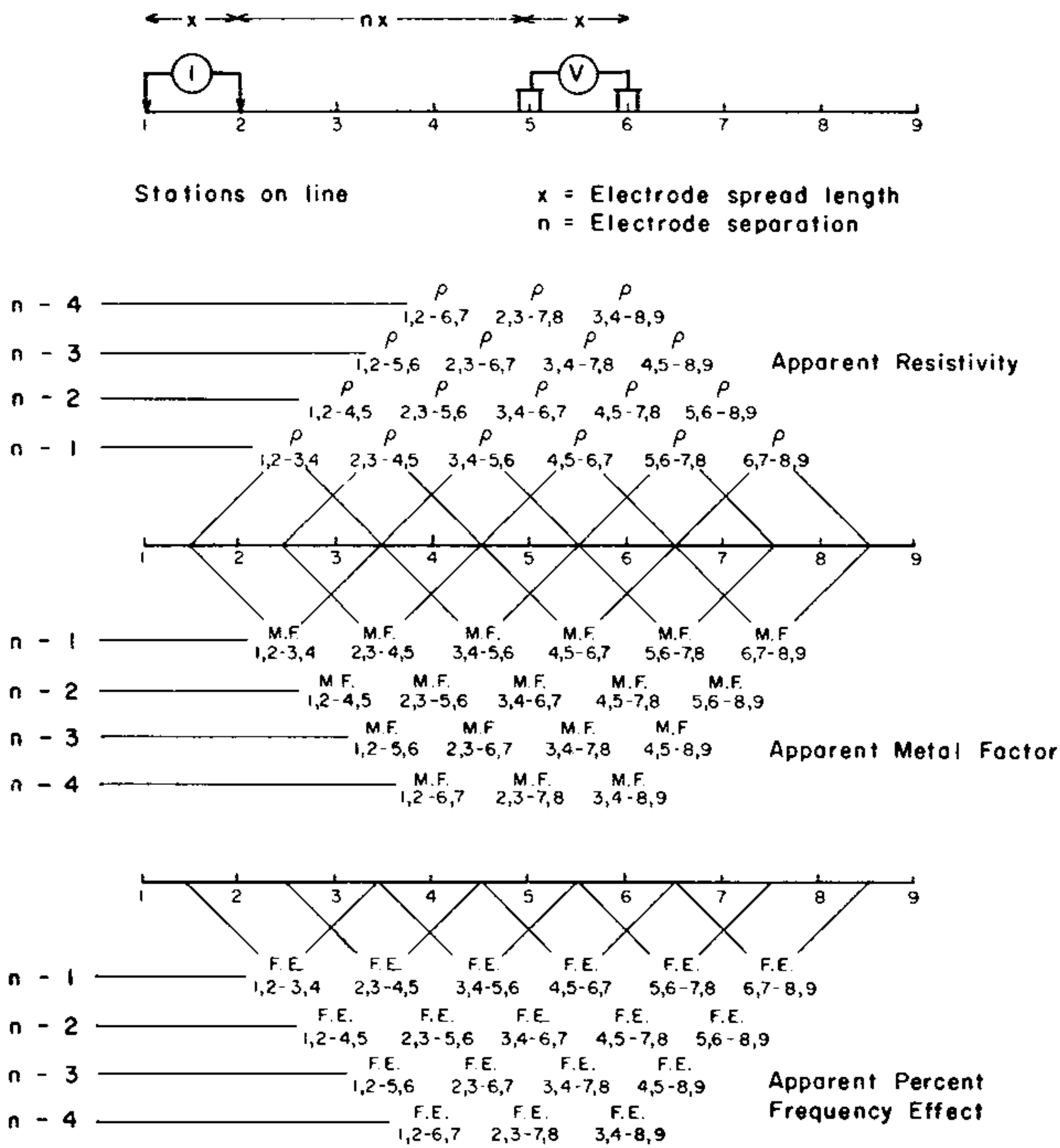


Fig. A

McPHAR GEOPHYSICS LIMITED

REPORT ON THE INDUCED POLARIZATION AND RESISTIVITY SURVEY ON THE TED CLAIM GROUP DUCKLING CREEK AREA OMINECA MINING DIVISION, B.C. FOR TUPCO MINES LTD. (N.P.L.)

1. INTRODUCTION

At the request of the Company, an Induced Polarisation and Resistivity survey has been carried out on the Ted Claim Group in the Duckling Creek Area, British Columbia for Tupco Mines Ltd. (N.P.L.). The property is located approximately 100 miles north-northwest of Fort St. James, B.C. at 55°50'N latitude and 125°20'W longitude in the Omineca Mining Division.

Access to the property is from Fort St. James to Germansen Landing and then by 4 wheel drive vehicle approximately forty miles via Tyee Resources "Rondah" property.

Although the claim group is believed to lie in a geologically favourable area, no detailed exploration is known to have been conducted prior to the summer of 1972 when a geologic mapping and a geochemical program were carried out by W. Meyer and Associates for Tupco Mines Ltd.

The Ted claim group lies within, and near the northeast boundary of, the Hogan Batholith in the vicinity of Duckling Creek syenites. Outcrop information on the property is limited. Along two east-west trending ridges in the western portion of the claim group monzonites and syenites are the predominent rock units mapped. Other rock units outcropping on the property include pyroxenites, diorites and pegmatite dykes.

Copper mineralization occurs along the ridges within shear zones and is reported to be associated with syenite and potash feldspar fracture filling. Minor amounts of copper were also found near the pegmatite-monzonite contacts. The talus slopes, in the western portion of the property, contain copper bearing float and abundant pyrite has been noted.

The Induced Polarization and Resistivity survey was conducted in an attempt to outline zones of economic metallic sulphide mineralization in the western portion of the claim group.

A McPhar variable frequency IP unit operating at 0.3 Hz and 5.0 Hz was employed for the survey. The dipole-dipole electrode array was used, with 400' dipoles, and readings were taken at three separations, (n = 1, 2 and 3).

Field work was carried out in October of 1972 on the following claims; as taken from the claim map supplied by Tupco Mines Ltd.

Ted	41, 42
Ted	47 to 61 (inclusive)
Ted	77 to 85 (inclusive)

2. PRESENTATION OF RESULTS

The Induced Polarization and Resistivity results are shown on the following data plots in the manner described in the notes preceding this report.

Line	Electrode Intervals	Dwg. No.
16000W	400 feet	IP 6015-1
15200W	400 feet	IP 6015-2
14400W	400 feet	IP 6015-3
13600W	400 feet	IP 6015-4
12800W	400 feet	IP 6015-5
12000W	400 feet	IP 6015-6
11200W	400 feet	IP 6015-7
9600W	400 feet	IP 6015-8

Also enclosed with this report is Dwg. I.P.P. 3555, a plan map of the Ted Claim Group Grid at a scale of 1" = 400'. 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 pin-point the source of an anomaly. Certainly, no anomaly can be located with more accuracy than the electrode interval length; i.e. when using 400' electrode intervals the position of a narrow sulphide body can only be determined to lie between two stations 400' 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 centre of the indicated anomaly probably corresponds fairly well with source, the length of the indicated anomaly along the line should not be taken to represent the exact edges of the anomalous material.

The claim boundary information shown on Dwg. I.P.P. 3555 has been taken from maps made available by the staff of Tupco Mines Ltd.

3. DISCUSSION OF RESULTS

Induced Polarization has been quite successful in outlining disseminated sulphide mineralization in British Columbia. Examples of typical responses over several deposits, including the Brenda Deposit near Peachland, B.C., are included in the Appendix. However, the interpretation of results from these surveys must be approached with caution since even weak anomalies can indicate low grade but still economic sulphide mineralization. Conversely stronger responses may be due to a source of uneconomic sulphides such as pyrite.

In several places high electrode contact resistance lead to low transmitter currents and subsequent noisy readings, especially at the larger electrode separations. Every effort was made to overcome this situation including using parallel current electrodes and a salt water electrolite as well as additional narrow band pass filtering on the receiver. In spite of the low currents most readings were successfully obtained.

Anomalous IP responses recorded in this survey over the western portion of the Ted Claim Group are generally weak.

Line 16000W

The northern portion of Line 16000W was surveyed beginning at 8N, north of the lake. Several IP readings were missed due to high contact resistance. The resistivity data outlines a distinct low at depth centred at 26N.

Line 15200W

A section of the northern portion of this line and a section south of the base line were surveyed. An anomaly extends from 12N to 8N and indicates a source which continues to depth. However, the anomaly is incomplete at 8N and since it lies at the foot of a moderate slope where mineralization has been reported in the float, this response is not of high priority for follow up.

An anomaly extends from 20N to 28N indicating a shallow source. If overburden is not deep the source of this response could be explored by trenching.

Line 14400W

Similar to the previous line, sections of Line 14400W have been surveyed both north and south of the base line. A possible near surface anomaly has been outlined between 12S and 16S. To the north, an anomaly interpreted as possible from 25N to 29N, and probable from 29N to 35N, where it is incomplete, was recorded. Outcrops in the vicinity suggest the host rock is monzonite. The response was recorded on a hillside of moderate slope. Further exploration is warranted.

Line 13600W

Line 13600W was surveyed south of the base line. A possible anomaly is indicated extending south of 20S to 24S, where it is incomplete. However, the readings are noisy in this vicinity. An anomaly to the north, which is interpreted as possible from 12S to 10S and probable from 10S to 4S, indicates a source at depth centred at 8S. Some copper mineralization has been mapped in the shear zone immediately north of this anomaly.

Line 12800W

Line 12800W was surveyed south of the base line. In this section, a probable anomaly was recorded extending from 12S to 20S. A broad source at depth is indicated. North of 8S and incomplete at 0 a weaker anomaly has been outlined. A broad, shallow source extending to depth is interpreted. A small outcrop of syenite has been mapped in this vicinity. Anomalies on Line 12800W provide targets to explore both the typical moderate and weak responses recorded on this property.

Line 12000W

South of the base line a probable anomaly extends from 12S to 20S and a possible anomaly continues to the end of the line where it is incomplete. A shallow source in this swamp covered area is indicated. Additional exploration should be dependent on results from targets outlined on Line 12800W.

Line 11200W

South of the base line a shallow, weak anomaly was outlined between 12S and 16S.

Line 9600W

Line 9600W was surveyed both north and south of the base line. An anomaly possible from 8S to 0, probable from 0 to 4N and possible from 4N to 6N outlines a shallow source which appears to extend to depth. To the north an anomaly possible from 20N to 24N and probable from 24N to the end of the line was recorded in this relatively flat area. The anomaly source appears to be centred at 28N. There is no outcrop information in this region.

4. CONCLUSIONS AND RECOMMENDATIONS

The combined Induced Polarization and Resistivity survey has outlined several targets for diamond drilling or trenching in the western portion of the Ted Claim group. The following recommendations have been made on the basis of the geophysical and available geologic information. They should be reviewed taking into account the results of the geochemical work carried out on the property.

It is important to note that several chaining errors were found on the grid and that stations mentioned in this report are the corrected station numbers as measured from the base line. Bracketed station numbers appearing on the data plots indicate the incorrectly numbered or misplaced stations found on the grid.

Initial exploration is recommended on Line 12800W as this will serve to evaluate both the weak and moderate IP responses recorded. The following is a list of suggested diamond drill holes to test the anomalous IP responses recorded in the western portion of the Ted Claim group. Because large electrode intervals were employed the drill locations are only approximate.

Hole #	Location	Direction	Depth
DDH-1	Line 12800W 16S	Vertical	500'
DDH-2	Line 12800W 6S	Vertical	350'
DDH-3	Line 13600W 8S	Vertical	500'
DDH-4	Line 12000W 18S	Vertical	350'
(dependent on results from DDH #1)			
DDH-5	Line 14400W 33N	Vertical	500'
DDH-6	Line 15200W 26N	Vertical	200'
(or if possible, trench from 24N to 28N)			
DDH-7	Line 9600W 2N	Vertical	300'
DDH-8	Line 9600W 26N	Vertical	300'

McPHAR GEOPHYSICS LIMITED

Ashton W. Mullan, P.Eng.
Geologist.

Peter K. Smith, B.Sc.
Geophysicist.

PROVINCE OF BRITISH COLUMBIA
PROFESSIONAL ENGINEER
A. W. MULLAN

Dated: November 7, 1972

ASSESSMENT DETAILS

PROPERTY: Ted Claim Group		MINING DIVISION: Omineca	
SPONSOR: Tupco Mines Ltd.		PROVINCE: British Columbia	
LOCATION: Duckling Creek Area			
TYPE OF SURVEY: Induced Polarization			
OPERATING MAN DAYS:	24	DATE STARTED:	October 8, 1972
EQUIVALENT 8 HR. MAN DAYS:	36	DATE FINISHED:	October 19, 1972
CONSULTING MAN DAYS:	2	NUMBER OF STATIONS:	100
DRAUGHTING MAN DAYS:	5	NUMBER OF READINGS:	513
TOTAL MAN DAYS:	43	MILES OF LINE SURVEYED:	6.7

CONSULTANTS:

Ashton W. Mullan, 1440 Sandhurst Place, West Vancouver, B.C.
Peter K. Smith, 650 Parliament Street, Apt. 2212, Toronto, Ontario.

FIELD TECHNICIANS:
J. Parker, Box 340, Choiceland, Saskatchewan.
K. Hoeberg, General Delivery, Kamloops, B.C.
Plus Extra Labour:
Gerry Silver, 852 Georgeann Road, Kamloops, B.C.
John Addlington, 852 Georgeann Road, Kamloops, B.C.

DRAUGHTSMEN:
N. Lade, 299 Jasper Avenue, Oshawa, Ontario.
B. Boden, 58 Glencrest Blvd. Toronto 16, Ontario.
G. Hines, 114 Hillsview Drive, Richmond Hill, Ontario.

McPHAR GEOPHYSICS LIMITED

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. W. MULLAN

Ashton W. Mullan,
Geologist.

Dated: November 7, 1972

STATEMENT OF COST

Tupco Mines Ltd.
Duckling Creek, B.C.

Crew: (2 men) - John Parker - Kurt Hoeberg

6 days Operating		@ $265.00/day	$1,590.00
2 days Travel) 4 days Preparation)	6 days	@ $100.00/day	600.00
Less than 10 Operating day charge as per Contract -			200.00

Expenses

Bus fares	24.00	
Truck Rental	233.26	
Vehicle expense	56.64	
Taxi	4.55	
Meals and Accommodation	304.57	
Telephone & Telegraph	4.50	
Supplies	80.67	
	708.19	
+ 10%	70.82	
		779.01
Extra Labour	550.00	
+ 20%	110.00	
		660.00
		$3,829.01

McPHAR GEOPHYSICS LIMITED

Ashton W. Mullan,
Geologist

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. W. MULLAN

Dated: November 7, 1972

CERTIFICATE

I, Ashton W. Mullan, of the City of Vancouver, in the Province of British Columbia, hereby certify:

1. That I am a geologist and a fellow of the Geological Association of Canada with a business address at Suite 811, 837 West Hastings Street, Vancouver, B.C.

2. That I am registered as a member of the Association of Professional Engineers of the Provinces of Ontario and British Columbia.

3. That I hold a B.Sc. degree from McGill University.

4. That I have been practising my profession as a geologist for about twenty 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 Tupco Mines Ltd., (N.P.L.) 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 Toronto

This 7th day of November 1972.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — A. W. MULLAN

A. W. Mullan, B.Sc., P.Eng.

CERTIFICATE

I, Peter K. Smith, of the City of Toronto, in the Province of Ontario, hereby certify:

1. That I am a geologist/geophysicist with a business address at 139 Bond Avenue, Don Mills, Ontario.

2. I am a graduate of the University of British Columbia with a B.Sc. Degree in Honours Geology and Geophysics (1970).

3. I am a member of the Society of Exploration Geophysicists.

4. I have been practising my profession for 2 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 Tupco Mines Ltd. (N.P.L.) 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 Toronto

This 7th day of November 1972.

Peter K. Smith, B.Sc.

The source of the moderate magnitude IP anomaly shown in Figure 1 contains approximately 4% metallic mineralization. The zone is of limited lateral extent and enough copper is present to make the mineralization "ore grade". The presence of the surface oxidation can be seen in the fact that the apparent IP effects increase for n = 2.

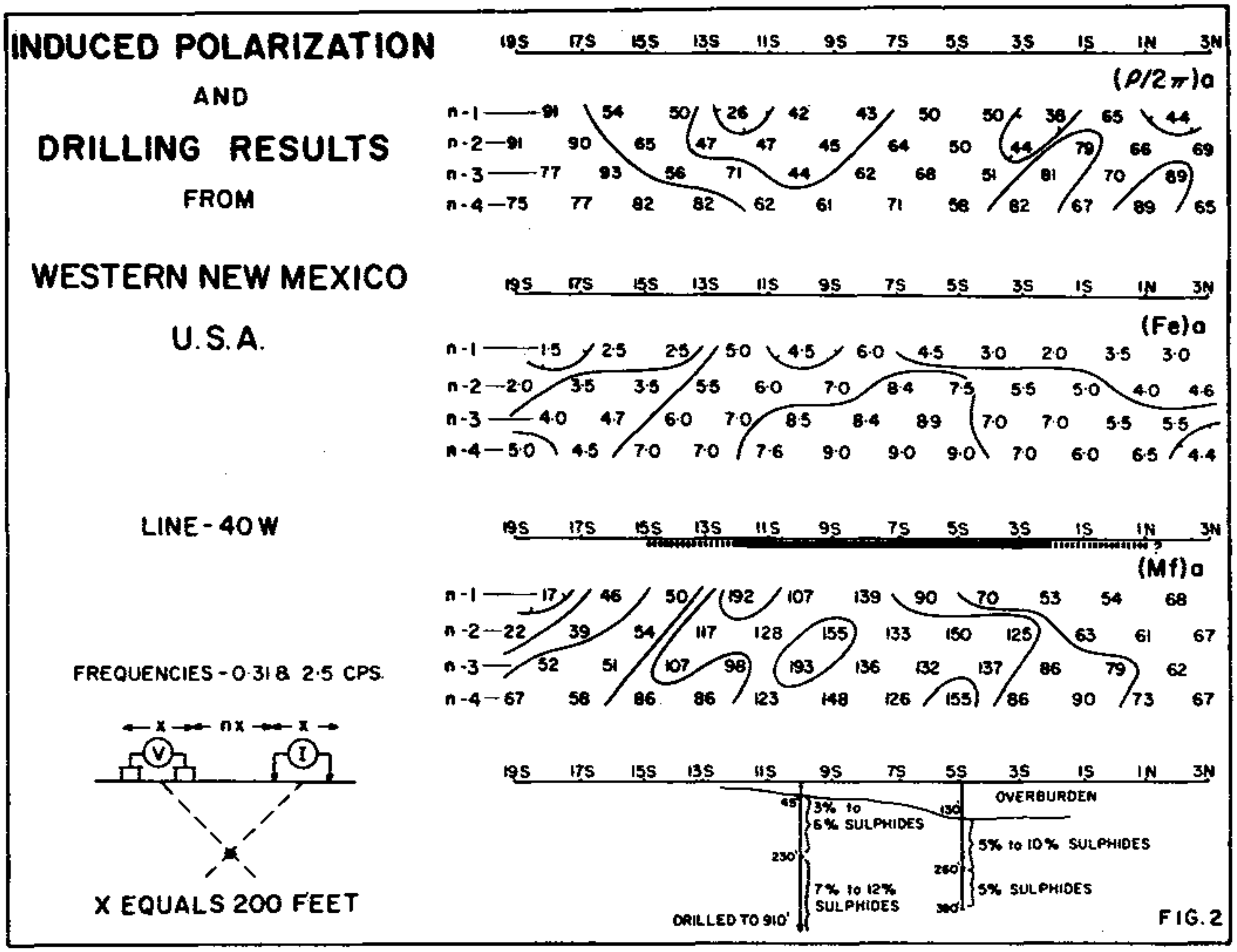


FIG. 2

The IP anomaly shown in Figure 2 has about the same magnitude as that described above. It should be noted that appreciably greater concentrations of metallic mineralization are present; further, there is little or no copper present. These results illustrate the fact that IP results can not be used to determine the exact amount of metallic mineralization present or to determine the economic importance of a mineralized zone. In some geologic situations zoning is present; the zones of mineralization of greatest economic value may contain less total metallic mineralization than other zones in the same general area.

APPENDIX

EXPECTED IP ANOMALIES FROM "PORPHYRY COPPER" TYPE ZONES OF DISSEMINATED SULPHIDE MINERALIZATION

Our experience in other areas has shown that the induced polarization method can be successfully used to locate, and outline, zones of disseminated sulphide mineralization of the "porphyry copper" type. In most cases the interpretation of the IP results is simple and straightforward. The results shown in Figure 1 and Figure 2 are typical.

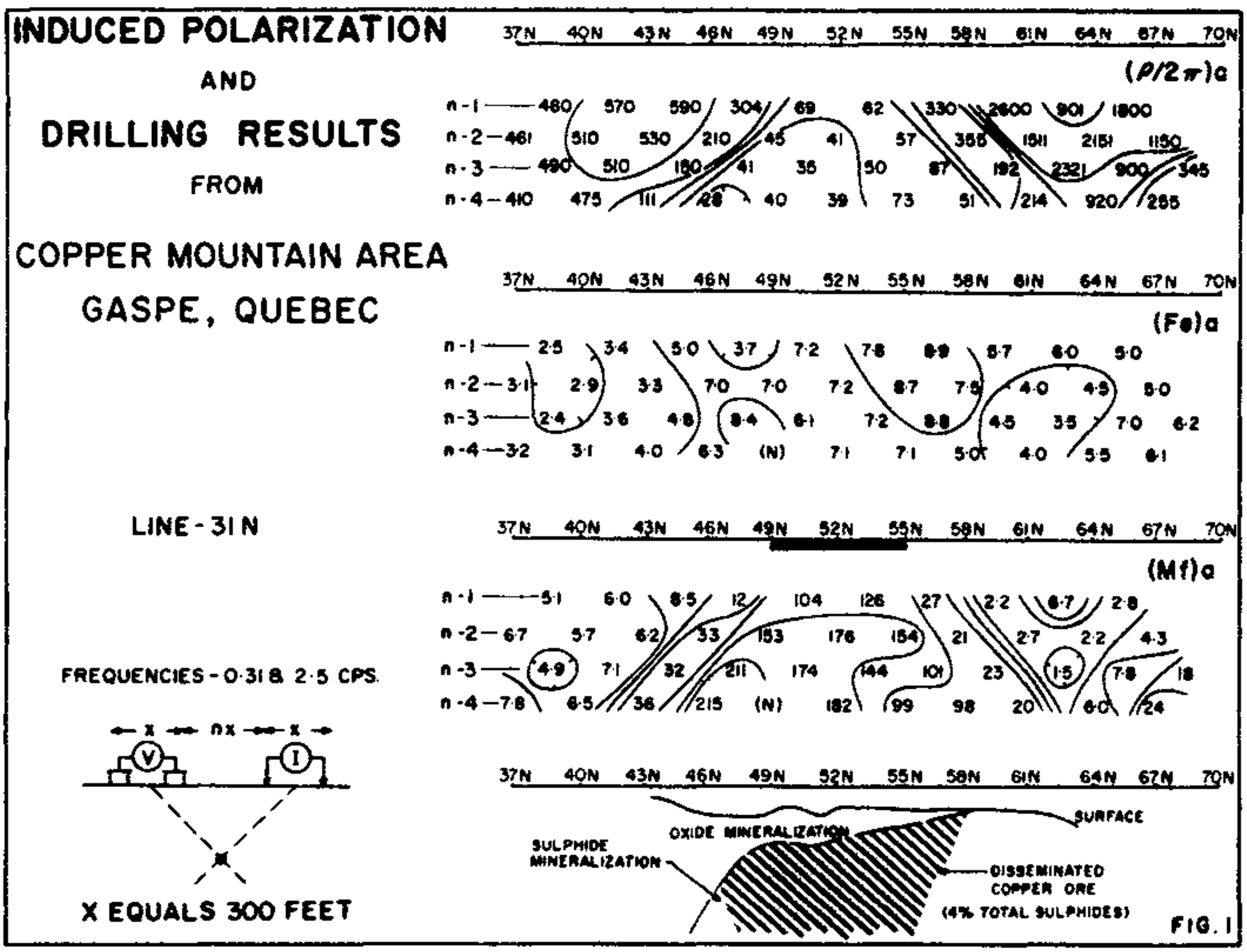


FIG. 1

In the proper geologic environment, the method will detect even very low concentrations of metallic mineralization. The IP results shown in Figure 3 located the ore zone at the Brenda Property near Peachland, B. C. The zone contains 1.0 to 1.5 per cent metallic mineralization; however, the mineralization is "ore grade" because only molybdenite and chalcopyrite are present.

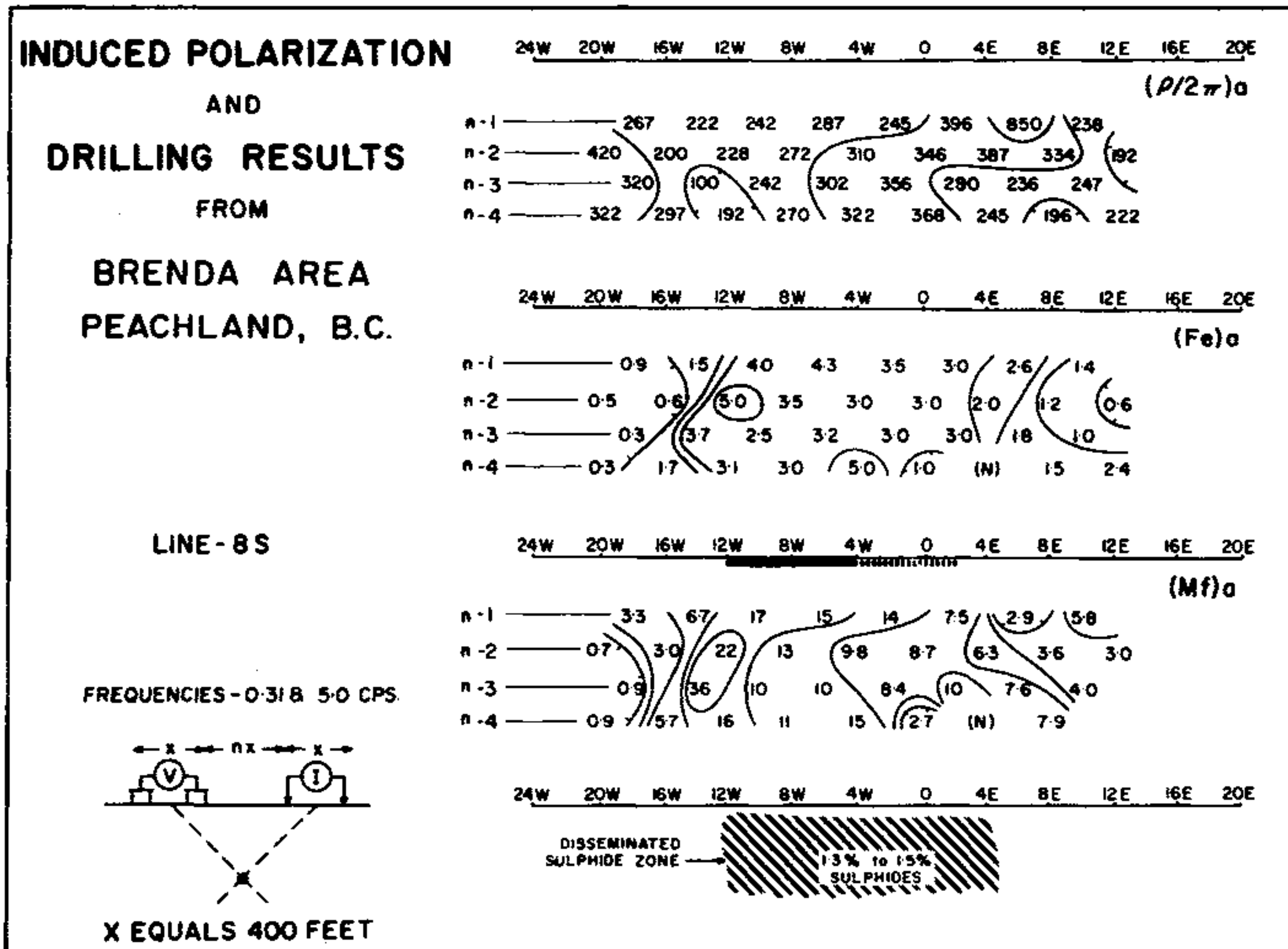
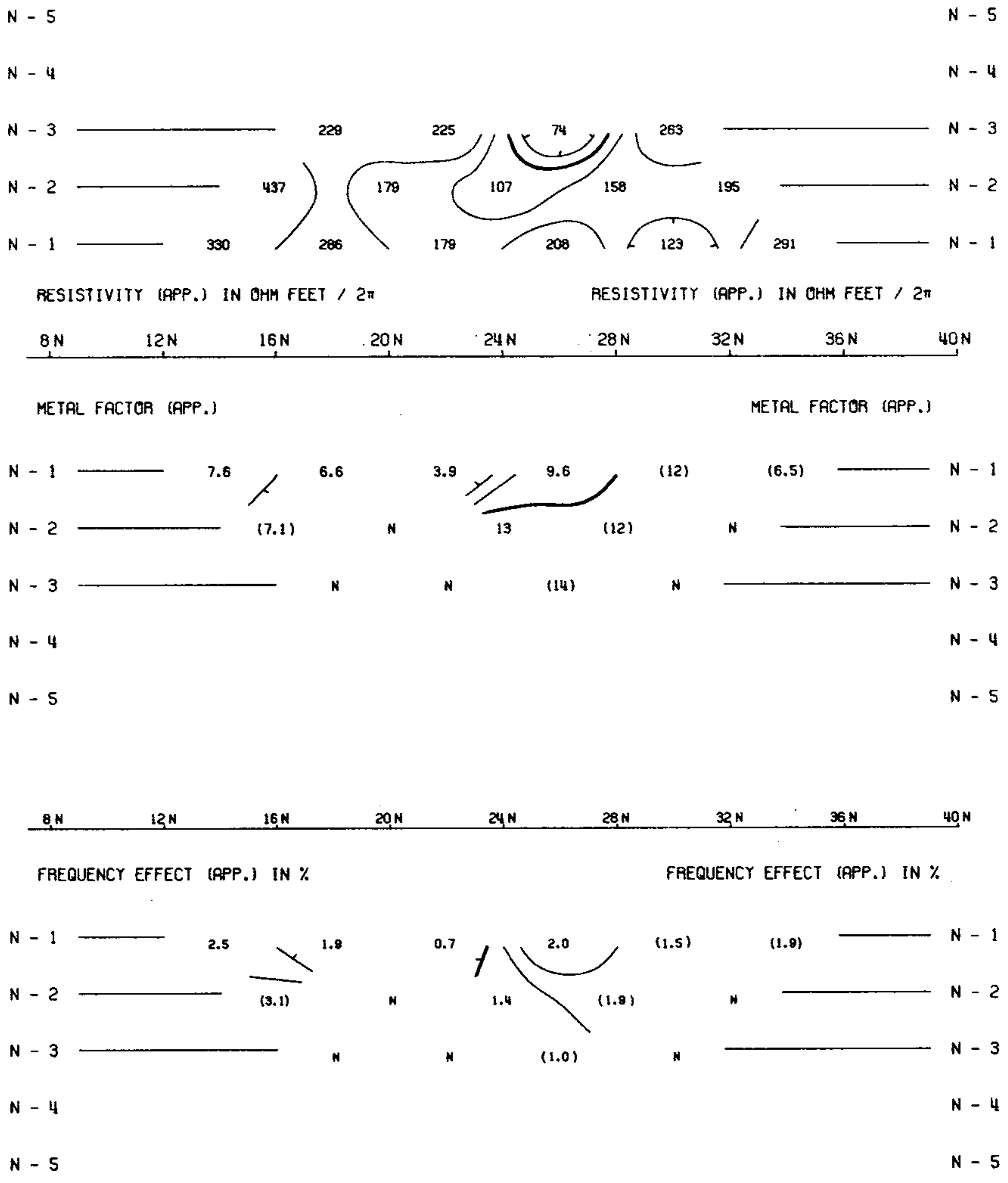


FIG. 3



4152)

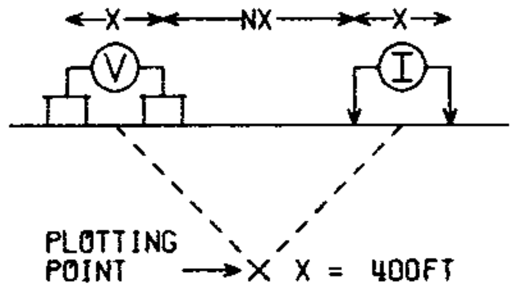
DWG. NO.- I.P.-6015-1

TUPCO MINES LTD., (N.P.L.)

TED CLAIMS, DUCKLING CREEK AREA
OMINECA M.D., B.C.

LINE NO.- 16000W

ELECTRODE CONFIGURATION



SURFACE PROJECTION
OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1972

APPROVED:

DATE:

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

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — A. W. MULLAN

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

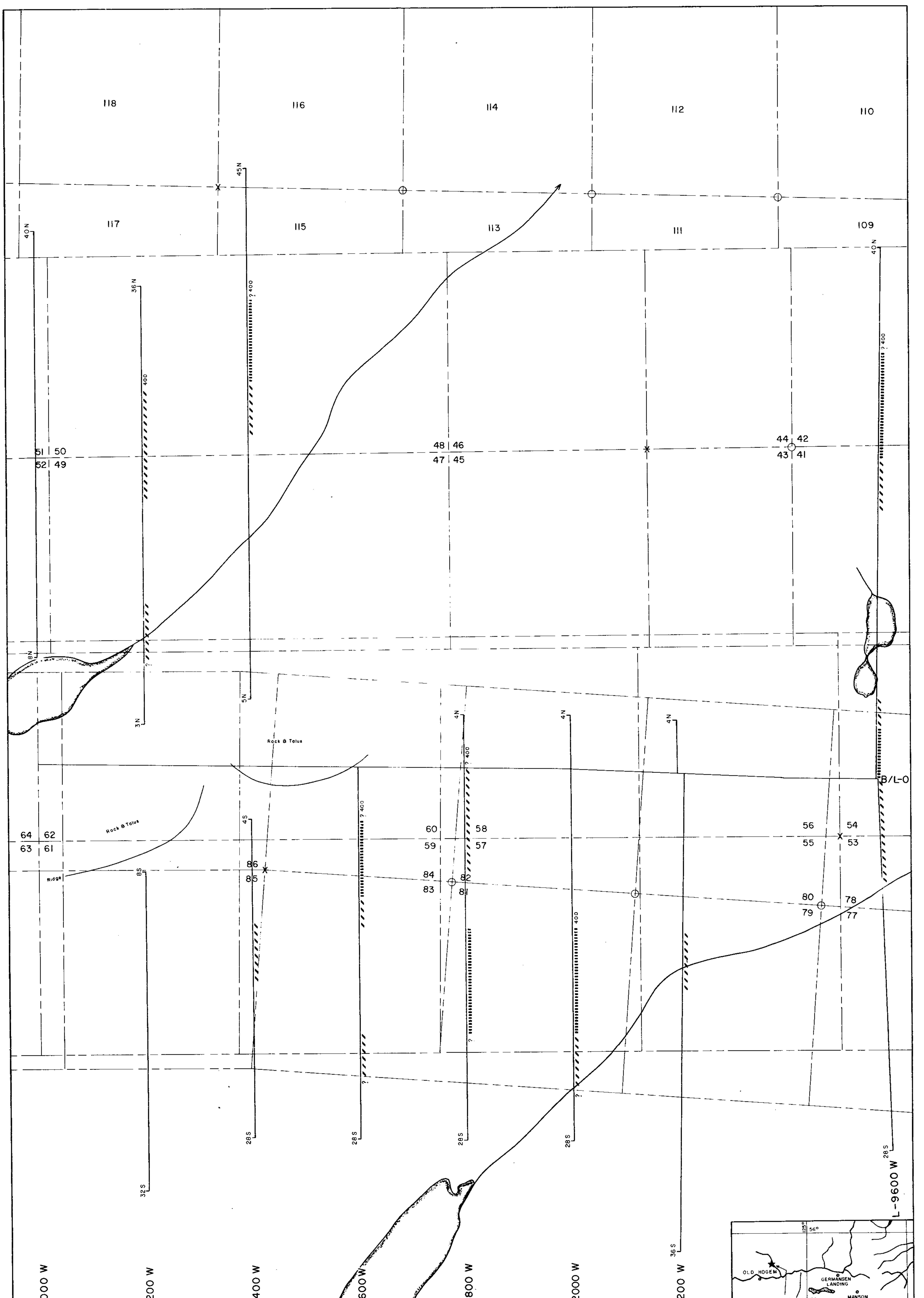
NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION

DWG. I.P.P. 3555

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

PLAN MAP



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

Numbers at the end of the anomalies indicate electrode interval

TUPCO MINES LTD. (N.P.L.)

TED CLAIMS, DUCKLING CREEK AREA,
OMINECA M.D., B.C.

SCALE

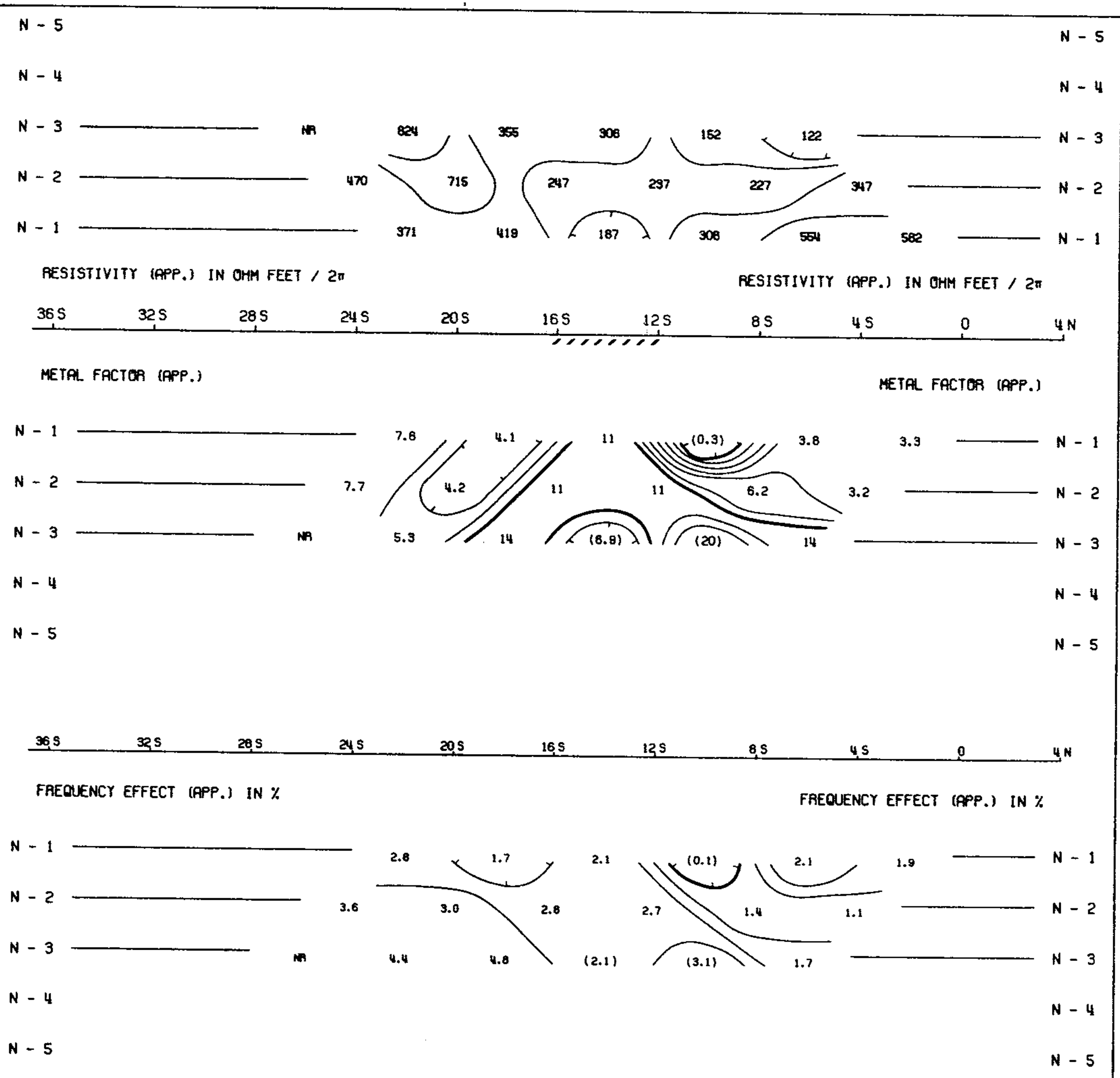
ONE INCH EQUALS FOUR HUNDRED FEET

Note: ○ – CLAIM POST
X – WITNESS POST

DRAWN:
DATE:
APP.:
DATE:

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. W. MULLAN

DWG. I.P.P. 3555

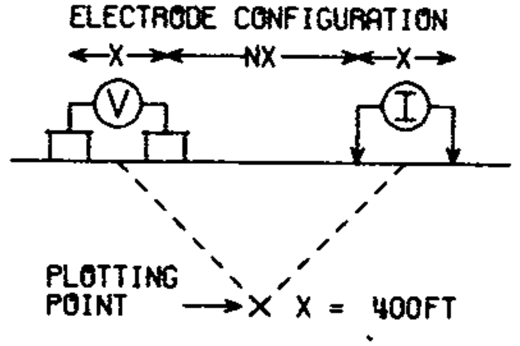


4152 DWG. NO.- I.P.- 6015-7

TUPCO MINES LTD., (N.P.L.)

TED CLAIMS, DUCKLING CREEK AREA
OMINECA M.D., B.C.

LINE NO.- 11200W



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ▬▬▬
PROBABLE ıııııııııı
POSSIBLE / / / / /

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1972

APPROVED:

DATE:

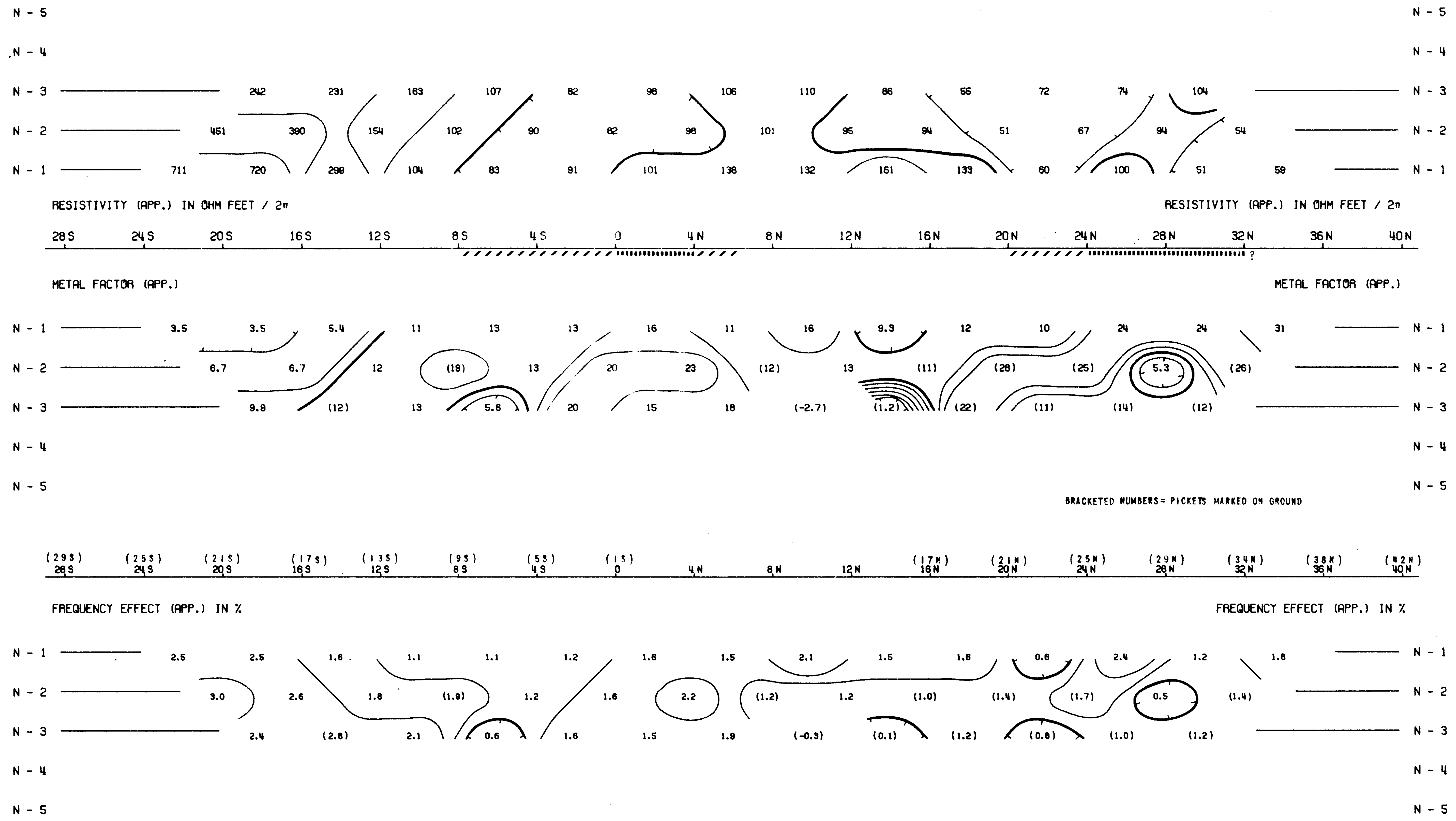
PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA — A. W. MULLAN

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

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION



4152 DWG. NO.- I.P.-6015-8

TUPCO MINES LTD., (N.P.L.)

TED CLAIMS, DUCKLING CREEK AREA
OMINECA M.D., B.C.

LINE NO.- 9600W

ELECTRODE CONFIGURATION

PLOTTING POINT X = 400FT

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1972

APPROVED:

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

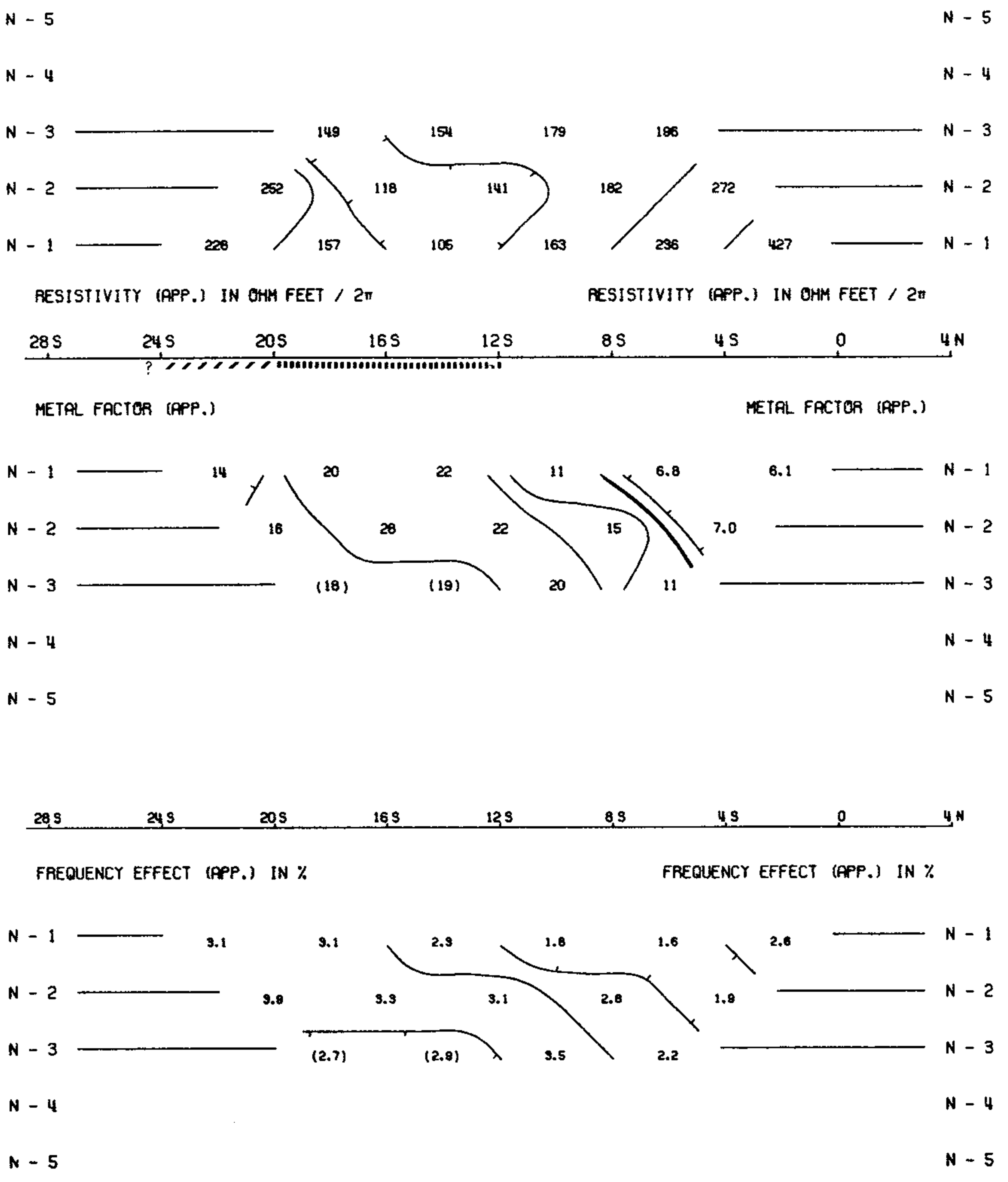
DATE:

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. W. MULLAN

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY McPHAR COMPUTER DIVISION



4152

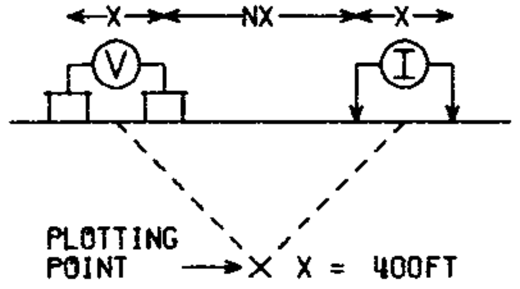
DWG. NO.- I.P.-6015-6

TUPCO MINES LTD., (N.P.L.)

TED CLAIMS, DUCKLING CREEK AREA
OMINECA M.D., B.C.

LINE NO.- 12000W

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1972

APPROVED:

DATE:

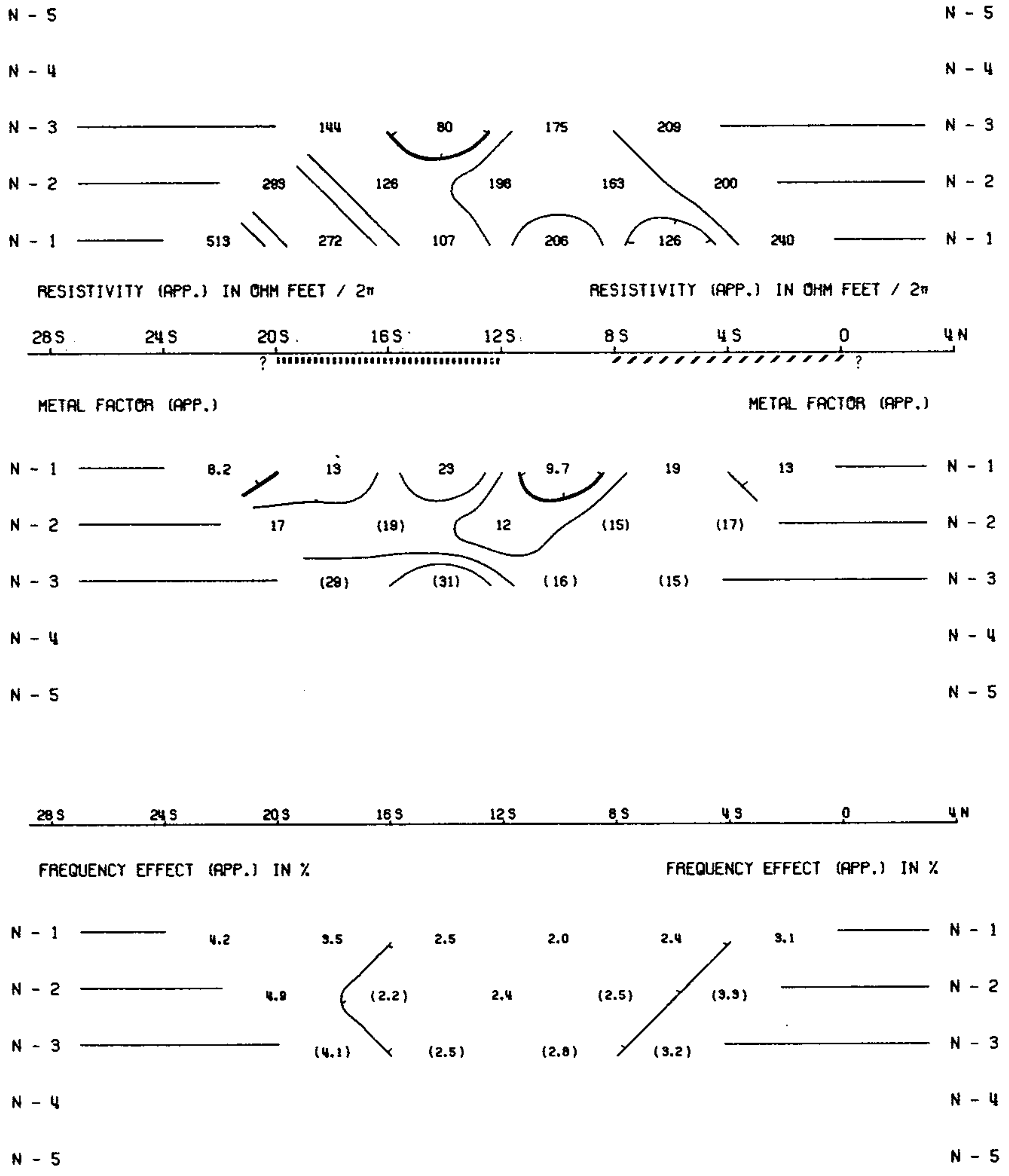
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — A. W. MULLAN

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION



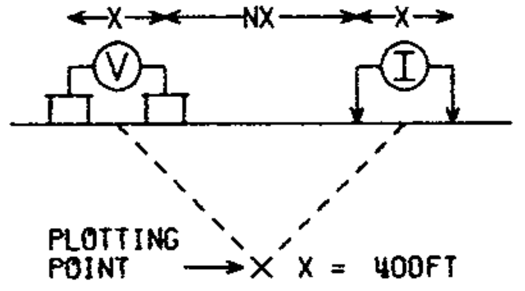
4152 DWG. NO.- I.P.-6015-5

TUPCO MINES LTD., (N.P.L.)

TED CLAIMS, DUCKLING CREEK AREA
OMINECA M.D., B.C.

LINE NO.- 12800W

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1972

APPROVED:

DATE:

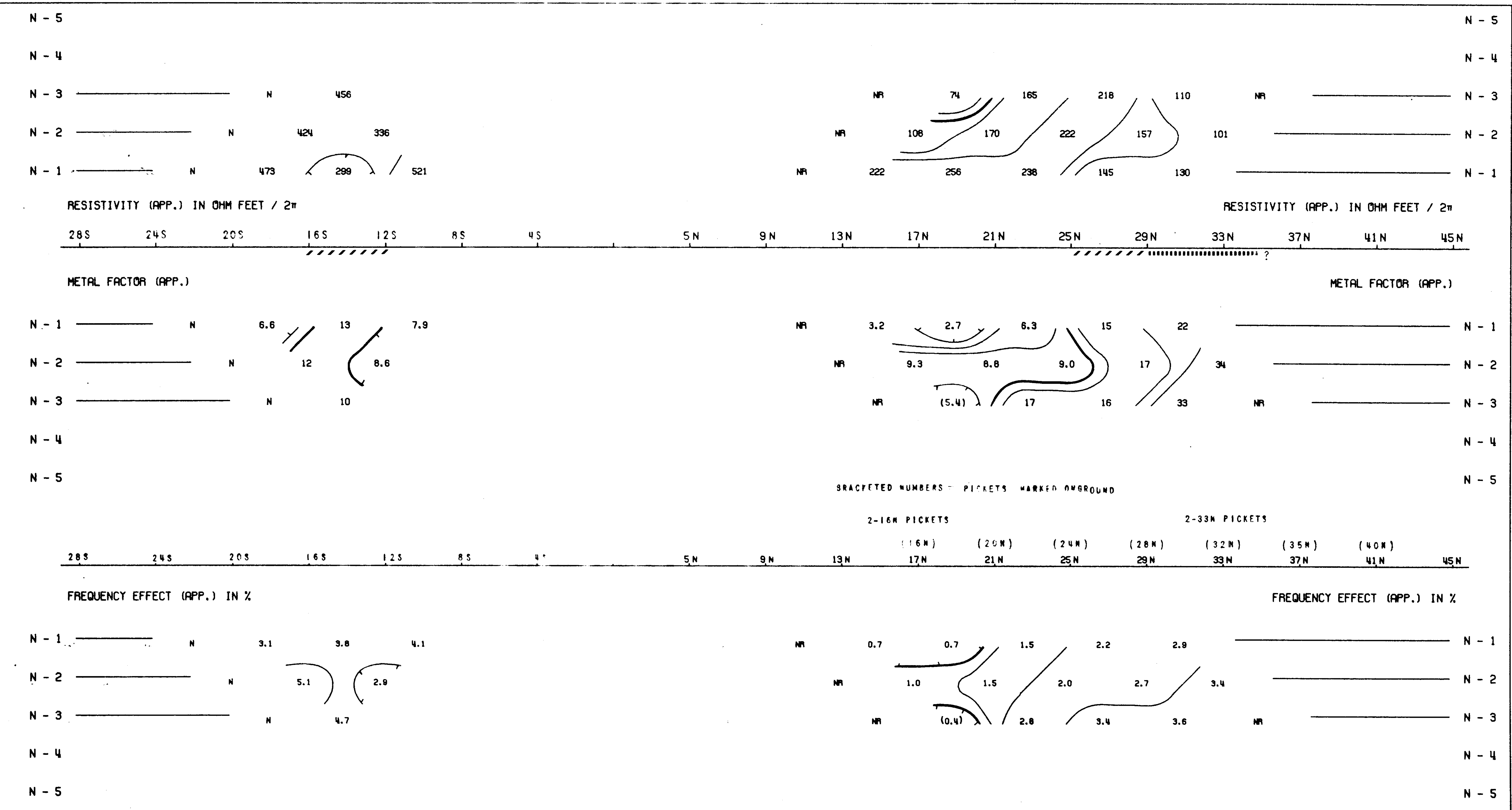
PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — A. W. MULLAN

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

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY McPHAR COMPUTER DIVISION



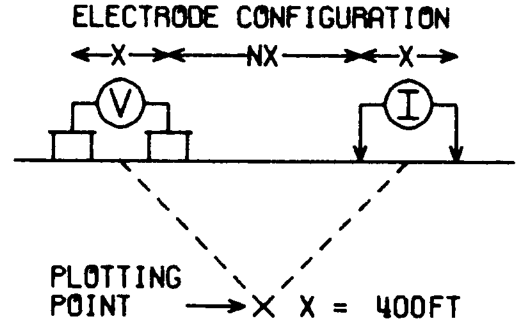
4152

DWG. NO.- I.P.-6015-3

TUPCO MINES LTD., (N.P.L.)

TED CLAIMS, DUCKLING CREEK AREA
OMINECA M.D., B.C.

LINE NO.- 14400W



SURFACE PROJECTION OF ANOMALOUS ZONES
DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1972

APPROVED

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

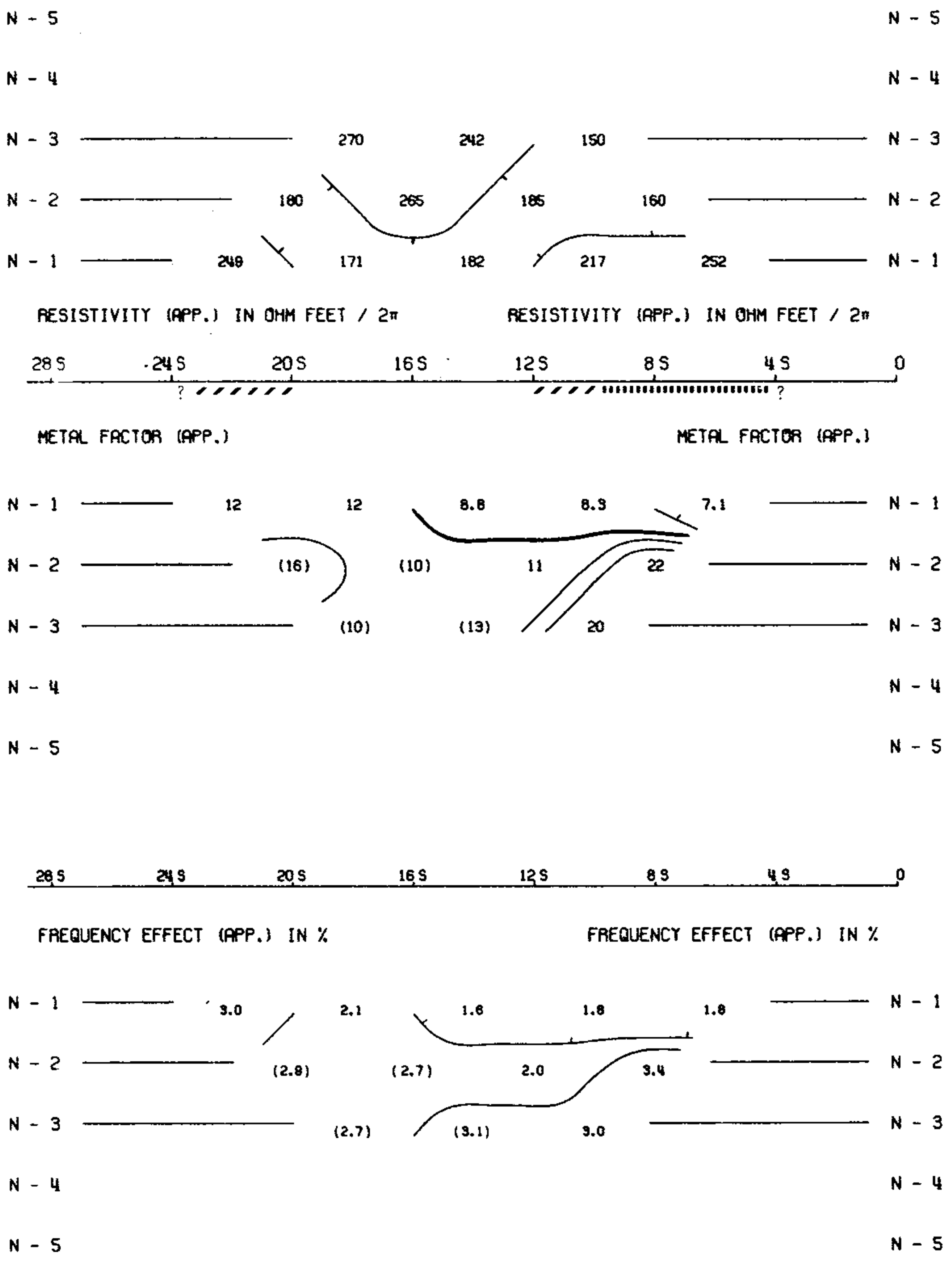
DATE:

PROFESSIONAL ENGINEER A.W. MULLAN BRITISH COLUMBIA

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION



4152

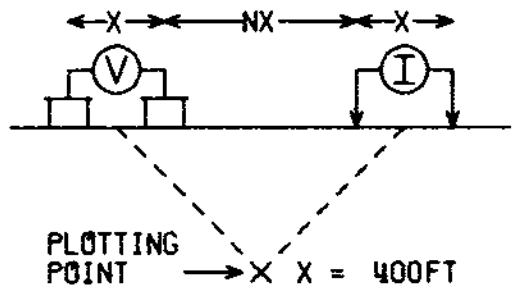
DWG. NO.- I.P.-6015-4

TUPCO MINES LTD., (N.P.L.)

TED CLAIMS, DUCKLING CREEK AREA
OMINECA M.D., B.C.

LINE NO.- 13600W

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1972

APPROVED:

DATE:

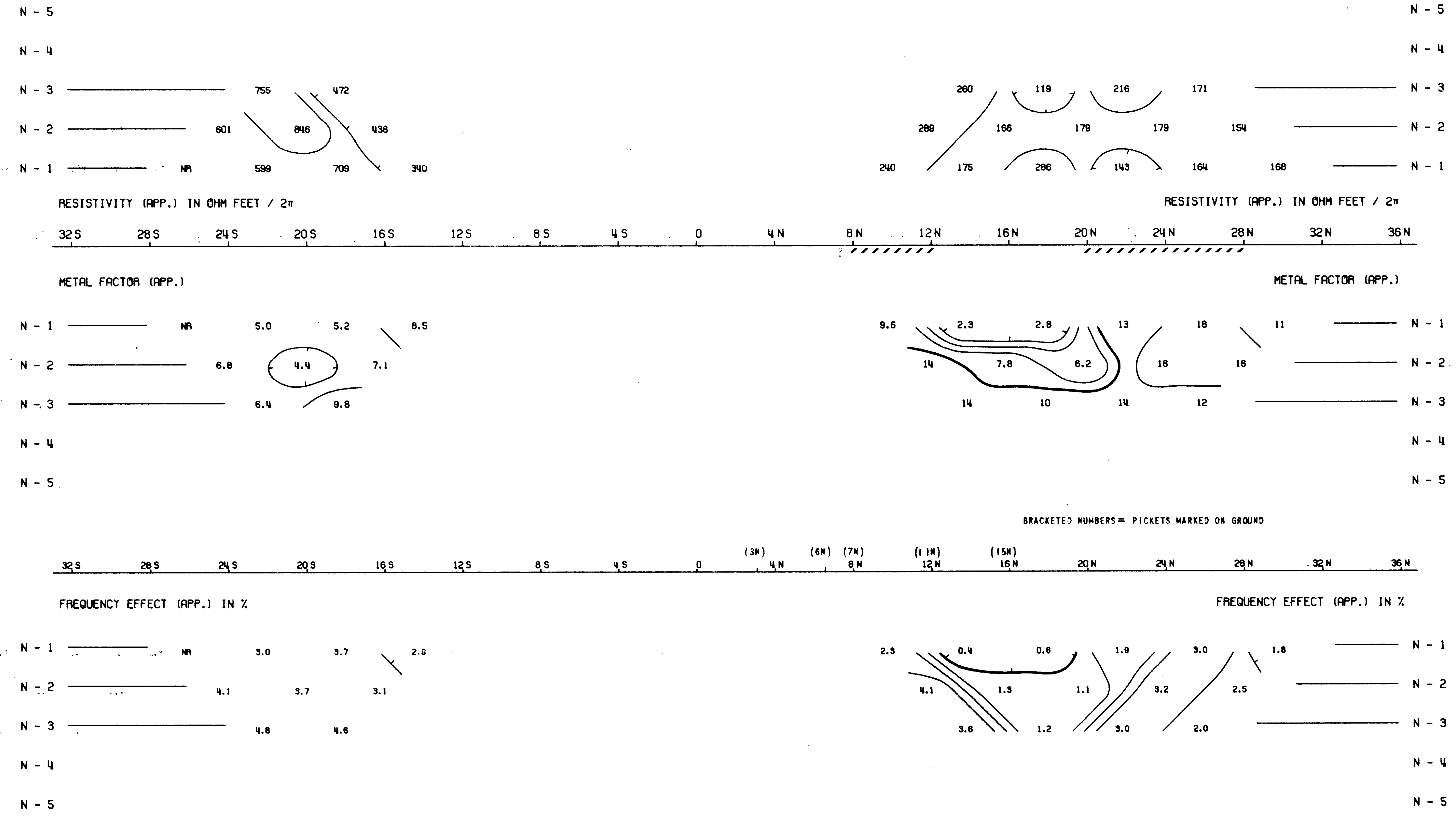
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. W. MULLAN

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY McPHAR COMPUTER DIVISION



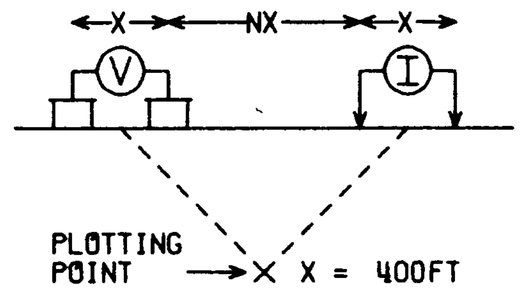
4152 DWG. NO.- I.P.-6015-2

TUPCO MINES LTD., (N.P.L.)

TED CLAIMS, DUCKLING CREEK AREA
OMINECA M.D., B.C.

LINE NO.- 15200W

ELECTRODE CONFIGURATION



SURFACE PROJECTION
OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1972

APPROVED:

DATE:

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

PROFESSIONAL ENGINEER — A. W. MULLAN — PROVINCE OF BRITISH COLUMBIA

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY McPHAR COMPUTER DIVISION

Ted
Alice
Carol
Note
o - CLAIM POST
x - WITNESS POST
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4152 MAP #10
Alice Group
Ted Group
Carol Group
SUB-MINING RECORDER
RECEIVED
NOV 14 1972
VANCOUVER, B. C.
TUPCO MINES LTD.
TED CLAIM GROUP
OMINECA M.D.
SCALE
1 inch = 1000 feet
W. MEYER & ASSOCIATES
AUGUST, 1972