4672

93N/6E

REPORT ON THE INDUCED POLARIZATION AND RESISTIVITY SURVEY ON THE HEATH AND CAT CLAIMS TCHENTLO LAKE AREA OMINECA MINING DIVISION, B.C. FOR NATION LAKE MINES LIMITED (N.P.L.)

BY

PHILIP G. HALLOF, Ph.D.

AND

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

~~NAME AND LOCATION OF PROPERTY:~~

HEATH AND CAT CLAIMS, TCHENTLO LAKE AREA
OMINECA MINING DIVISION, B.C. 55°15'N - 125°10'W

DATE STARTED: JULY 17, 1973

DATE FINISHED: AUGUST 5, 1973

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McPHAR GEOPHYSICS LIMITED

REPORT ON THE

INDUCED POLARIZATION

AND RESISTIVITY SURVEY

ON THE

HEATH AND CAT CLAIMS

TCHENTLO LAKE AREA

OMINECA MINING DIVISION, B.C.

FOR

NATION LAKE MINES LIMITED (N.P.L.)

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1. INTRODUCTION

An Induced Polarisation and Resistivity survey has been carried out for Nation Lake Mines Limited on their Heath and Cat Claims. The property is located just east of the north end of Tchentlo Lake on the west slope of Mount Nation, about 65 miles NNW of Fort St. James. The centre of the property is about 55°15'N latitude and 125°10' west longitude.

The property is accessible by charter aircraft from Fort St. James. The B.C. Railway extension currently under construction passes 20 miles west of the claims.

The geology of the claims area is discussed in a report prepared for Nation Lake Mines Limited by Dr. R.H. Seraphim dated June 18, 1973. A hornblende diorite, locally very coarse grained, occurs in the southwest part of the property. A fine grained pink to grey syenite occurs north and

east of the diorite. One outcrop of a dark green andesite was located but its location was not defined.

Chalcopyrite mineralization has been located in a number of different locations. It occurs in NW striking shear zones within the diorite and as weak disseminations in the syenite. Pyrite content is described as relatively scarce. The diorite locally contains abundant magnetite.

A geochemical survey located an extensive copper anomaly positioned within the Heath Claims.

The IP survey was carried out during the period July 20 to August 3, 1973. A McPhar P660 frequency-domain IP system was used for the survey operating at 0.3 Hz and 5.0 Hz.

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.
4000N	300 feet	IP 6083-1
3200N	300 feet	IP 6083-2
2400N	300 feet	IP 6083-3
1600N	300 feet	IP 6083-4
800N	300 feet	IP 6083-5
0+00	300 feet	IP 6083-6
800S	300 feet	IP 6083-7
1600S	300 feet	IP 6083-8

Line	Electrode Intervals	Dwg. No.
2400S	300 feet	IP 6083-9
3200S	300 feet	IP 6083-10
Baseline	300 feet	IP 6083-11
100W	25 feet	IP 6083-12

Also enclosed with this report is Dwg. I.P.P. 4908, a plan map of the survey grid at a scale of 1" = 400'. The definite, probable and possible induced polarisation 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 polarisation 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 300' electrode intervals the position of a narrow sulphide body can only be determined to lie between two stations 300' 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 survey grid and claims information shown on Aug. 1, 1977, 4908 has been taken from maps made available by the staff and principals of Nation Lake Mines Limited (N.P.L.).

3. DISCUSSION OF RESULTS

The measured resistivities of the survey grid were relatively high with the exception of the southwest corner. The western halves of Line 2400S and Line 3200S display lower resistivities that could be explained by deeper overburden, a rock type change or a higher degree of alteration.

A number of weak IP responses were located by the survey. Many of them could be important if most of the anomalous material were of economic interest. Some of the IP anomalies could be due to concentrations of magnetite which have been described in the diorites. This possibility could be investigated by carrying out a magnetometer survey over the IP grid.

Where some line-to-line continuity seems indicated, the IP responses have been correlated into zones. A total of 8 zones have been outlined and are designated as Zones A, B, C, D, E, F, G and H.

ZONE A

This zone contains several copper occurrences which have been investigated by trenching. This low magnitude, well-defined IP anomaly is shallow relative to the electrode interval used for the survey. The stronger portion of the anomaly was traced from about 12S to 4N. It appears to be surrounded by weaker, less anomalous material.

A detail IP traverse using 25 foot electrode intervals was run

paralleling the trench [illegible], IP 608[illegible]. The detail suggests that the mineralization is variable with more massive sections surrounded by disseminated material.

ZONE I

This zone is located at the eastern edge of the IP grid in Heath Claims 8 and 10. The anomaly was not defined to the east and the lines should be extended. The IP effects are moderate in magnitude and relatively shallow.

ZONE C

The Zone C anomaly occurs within the lower resistivity environment. It can be traced south from Line 1600S to Line 3200S. It may extend north to 18W on Line 800S where the source appears deep.

On Line 2400S and Line 3200S, the anomaly source appears to deepen to the west. There is a possibility that the overburden could be relatively deep, particularly along the western edge. If this proves so, then the lower resistivities of the overburden could unduly enhance the metal factor anomaly.

ZONE D

This zone has been correlated into a zone on the basis of apparent continuity and similarity of response. The anomaly is strongest on Line 1600N where some depth to the source is indicated. Negative frequency effects along the western edge are probably due to poor contacts and prevent complete definition of the IP anomaly.

ZONE E

This zone is best defined on Line 3200S where moderate depth to the source is indicated. The anomaly is weak in magnitude.

ZONE F

Zone F lies to the east and parallels Zone A. It is weak in magnitude, appears shallow on Line 800S and relatively deep on Line 0+00.

ZONE G

The IP response appears relatively deep and of low magnitude on both lines. It could continue to the NNW, as Line 4000N did not investigate this area.

ZONE H

Zone H occurs on the extreme west boundary of the IP grid. The lines would have to be extended to completely outline this anomaly. It occurs within the low resistivity environment similar to Zone "C" and the same comments would apply.

Elsewhere on the grid, the survey located several other weak and very weak IP responses. The strongest of these anomalies that show no obvious continuity are the deep IP source centred at 15W on Line 800N and the shallow, well-defined anomaly at 6E on Line 2400N.

4. SUMMARY AND RECOMMENDATIONS

A number of copper occurrences and gossans have been located in an area underlain by diorite, syenite and basic volcanics. A geochemical

survey has located an extensive copper anomaly with values above 150 ppm. The IP survey was carried out to investigate the grid area for evidence of concentrations of metallic material.

The survey located a number of weak IP responses, eight of which have been correlated into zones, mainly on the basis of continuity along the expected NNW strike.

Zone A which contains known copper mineralization will merit further investigation. Because of the variable nature of the mineralization as indicated by the short electrode interval IP detail on Line 100W, it is recommended that additional IP fill-in surveying should be carried out before initiating a drilling or trenching program. The zone should be further defined by surveying the intermediate 400 foot spaced lines. On completion of this work, the line with the best IP anomaly should be surveyed with shorter electrode intervals to facilitate investigations by drilling or trenching.

Regarding the other zones, since the IP anomalies tend to be low in magnitude, it would be desirable to test them for other correlating features. All the IP zones should be checked for coincident magnetic anomalies, as IP effects of these magnitudes could be caused by concentrations of magnetite. Any direct correlation of IP zones with observed copper mineralization or geochemical expression will warrant additional IP surveying followed by drilling or trenching.

In case it proves necessary to carry out some test drilling before proceeding with additional IP surveying, the following holes are suggested on the basis of the present data:

Hole #1

Drill west from 1 on Line 0+00 at 45° for a distance of 500 feet.

Hole #2

Drill west from 0 on Line 0+00 at 45° for a distance of 500 feet.

Hole #3

Drill east from 35+50E on Line 800N at 45° for a distance of 500 feet.

McPHAR GEOPHYSICS LIMITED

Philip G. Hallof,
Geophysicist

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. W. MULLAN

Ashton W. Mullan, B.Sc. P. Eng.
Geologist

Dated: August 17, 1973

ASSESSMENT DETAILS

PROPERTY: Heath and Cat Claims MINING DIVISION: Omineca

SPONSOR: Nation Lake Mines Limited (N.P.L.) PROVINCE: British Columbia

LOCATION: Tchentlo Lake Area

TYPE OF SURVEY: Induced Polarization

OPERATING MAN DAYS:	49	DATE STARTED: July 17, 1973
EQUIVALENT 8 HR. MAN DAYS:	73.5	DATE FINISHED: August 5, 1973
CONSULTING MAN DAYS	3	NUMBER OF STATIONS: 357
DRAUGHTING MAN DAYS:	7	NUMBER OF READINGS: 2,202
TOTAL MAN DAYS:	83.5	MILES OF LINE SURVEYED: 12.3

CONSULTANTS: ADDRESS

Philip G. Hallof - 15 Barnwood Court, Don Mills, Ontario
Ashton V. Mullan - 1440 Sandhurst Place, West Vancouver, British Columbia

FIELD TECHNICIANS:

G. Trefenanko - Box 923, Lac La Biche, Alberta
E. Jamieson - 4467 Parliament Crescent, West Vancouver, British Columbia

DRAUGHTSMEN:

B. Boden - 103 Petworth Crescent, Agincourt, Ontario
C. May - 5 Eastmoor Crescent, Scarborough, Ontario
V. Young - 64 Highcourt Crescent, Scarborough, Ontario

McPHAR GEOPHYSICS LIMITED

Philip G. Hallof
Geophysicist

Dated: August 17, 1973

STATEMENT OF COST

Nation Lake Mines Limited (N.P.L.)
Tchentlo Lake, British Columbia

Crew: G. Trefenanko - E. Jamieson

12.3 Line Miles Surveyed

12 miles @ $450.00 mile	$5,400.00
3 miles @ $400.00 mile	120.00
3 days standby @ $225.00 day	731.25
	$6,251.25

Breakdown of Above

12 days operating @ $377.50 day		$4,624.37
3 days standby @ $225.00 day		731.25
1 days travel		
2 days preparation	4-3 4 @ $100.00/day	475.00
1 days standby		
1 day		N.C.

Crew Expenses

Fares	$ 22.00	
Truck Rental	30.00	
Vehicle Expense	163.00	
Meals & Accommodation	145.49	
Taxi	7.00	
Telephone & Telegraph	2.85	
Supplies	12.06	
	382.40	
+10%	38.24	420.64
		$6,251.26

McPHAR GEOPHYSICS LIMITED

Philip G. Hallof

Philip G. Hallof
Geophysicist

Dated: August 17, 1973

CERTIFICATE

I, Philip George Hallof, of the City of Toronto, Province of Ontario, do hereby certify that:

1. I am a geophysicist residing at 15 Barnwood Court, Don Mills, Ontario.

2. I am a graduate of the Massachusetts Institute of Technology with a B.Sc. Degree (1952) in Geology and Geophysics, and a Ph. D. Degree (1957) in Geophysics.

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

4. I am a Professional Geophysicist, registered in the Province of Ontario, the Province of British Columbia and the State of Arizona.

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 Nation Lake Mines Limited (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 17th day of August 1973

Philip G. Hallof, Ph. D.

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. That I have no direct or indirect interest, nor do I expect to receive any interest directly or indirectly, in the propety or securities of Nation Lake Mines Limited (N.L.L.) or any affiliate.

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

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Dated at Toronto

The 17th day of August 1973.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. W. MULLAN

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

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.

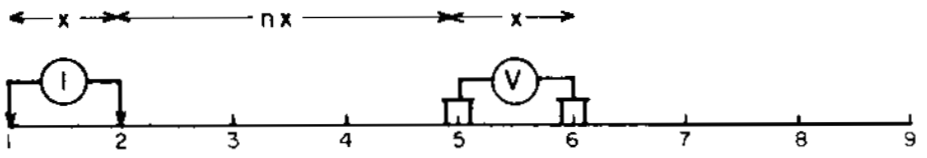
In some situations spurious noise, either man made or natural, will render it impossible to obtain a reading. The symbol "N" on the data plots indicates a station at which it is too noisey to record a reading. If a reading can be obtained, but for reasons of noise there is some doubt as to its accuracy,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

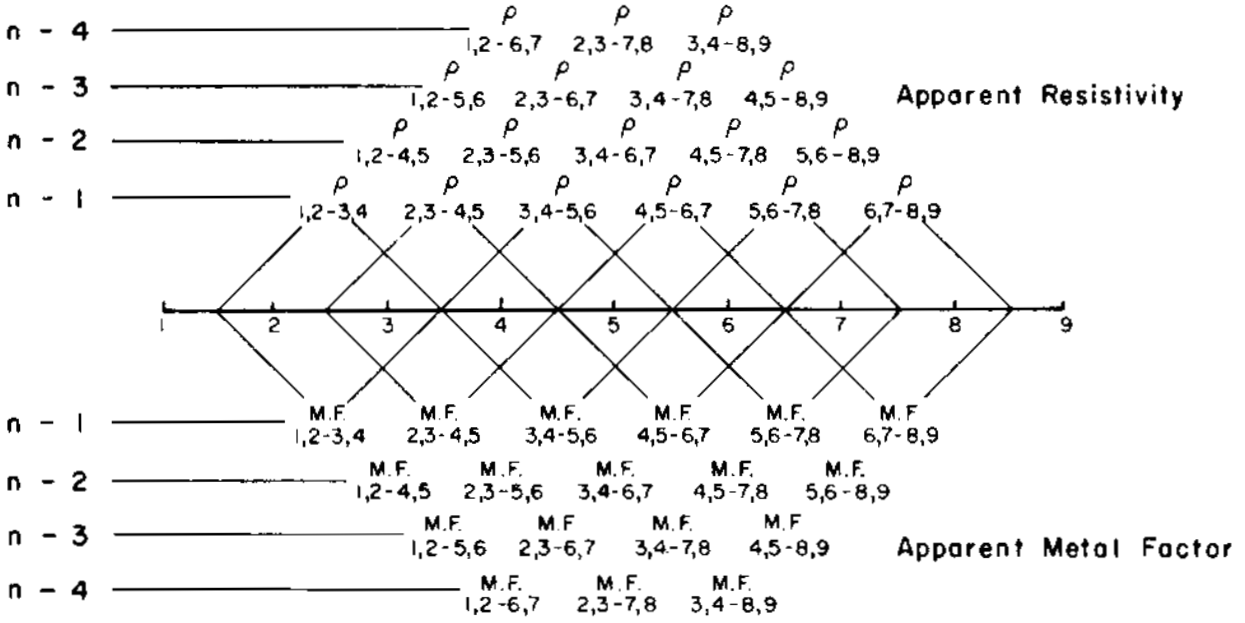
The symbol "NR" indicates that for some reason the operator did not attempt to record a reading although normal survey procedures would suggest that one was required. This may be due to inaccessible topography or other similar reasons. Any symbol other than those discussed above is unique to a particular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

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



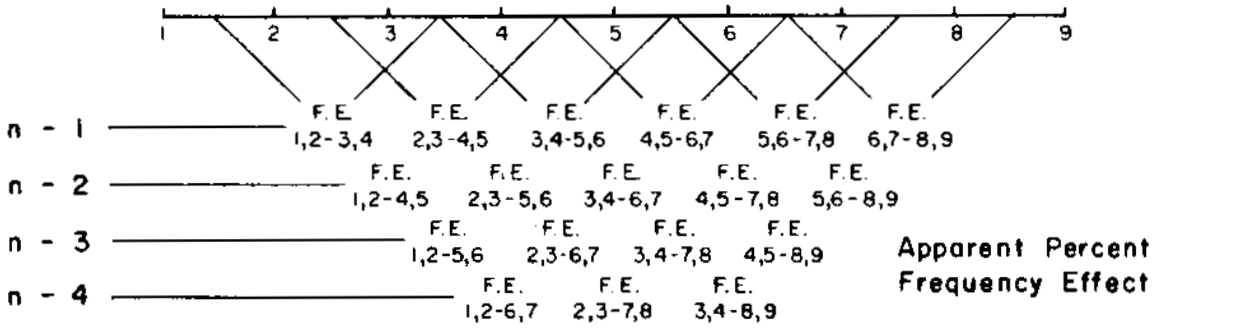
Stations on line

x = Electrode spread length
n = Electrode separation



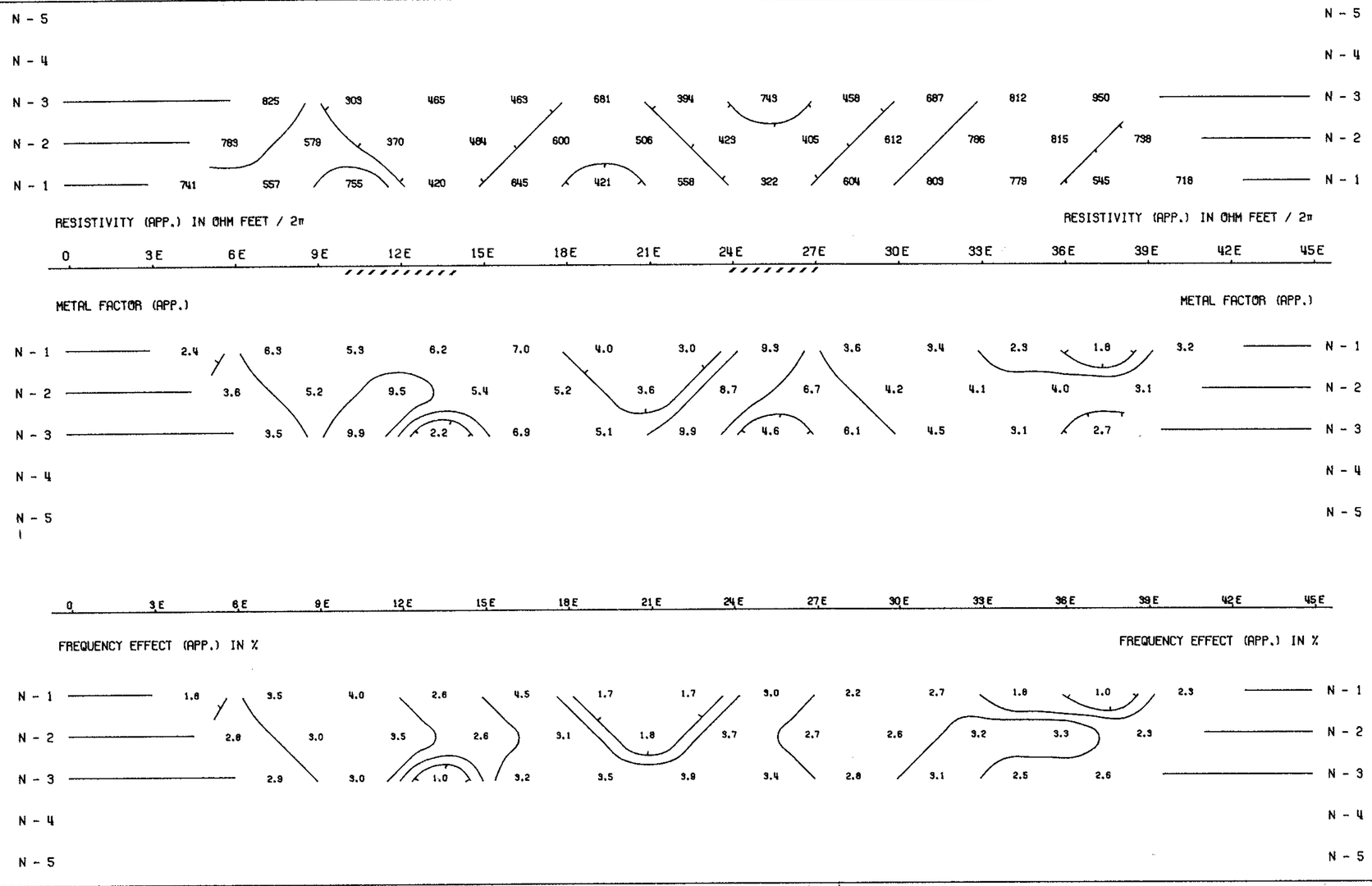
Apparent Resistivity

Apparent Metal Factor



Apparent Percent Frequency Effect

Fig. A



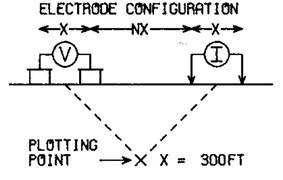
DWG. NO.- I.P.-6083-I

NATION LAKE MINES LTD.

HEATH AND CAT CLAIMS, TCHENTLO LAKE
OMINECA M.D., B.C.

LINE NO.- 4000N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: JUL 1973

APPROVED: P.H. Kelly

DATE: 8/17/73

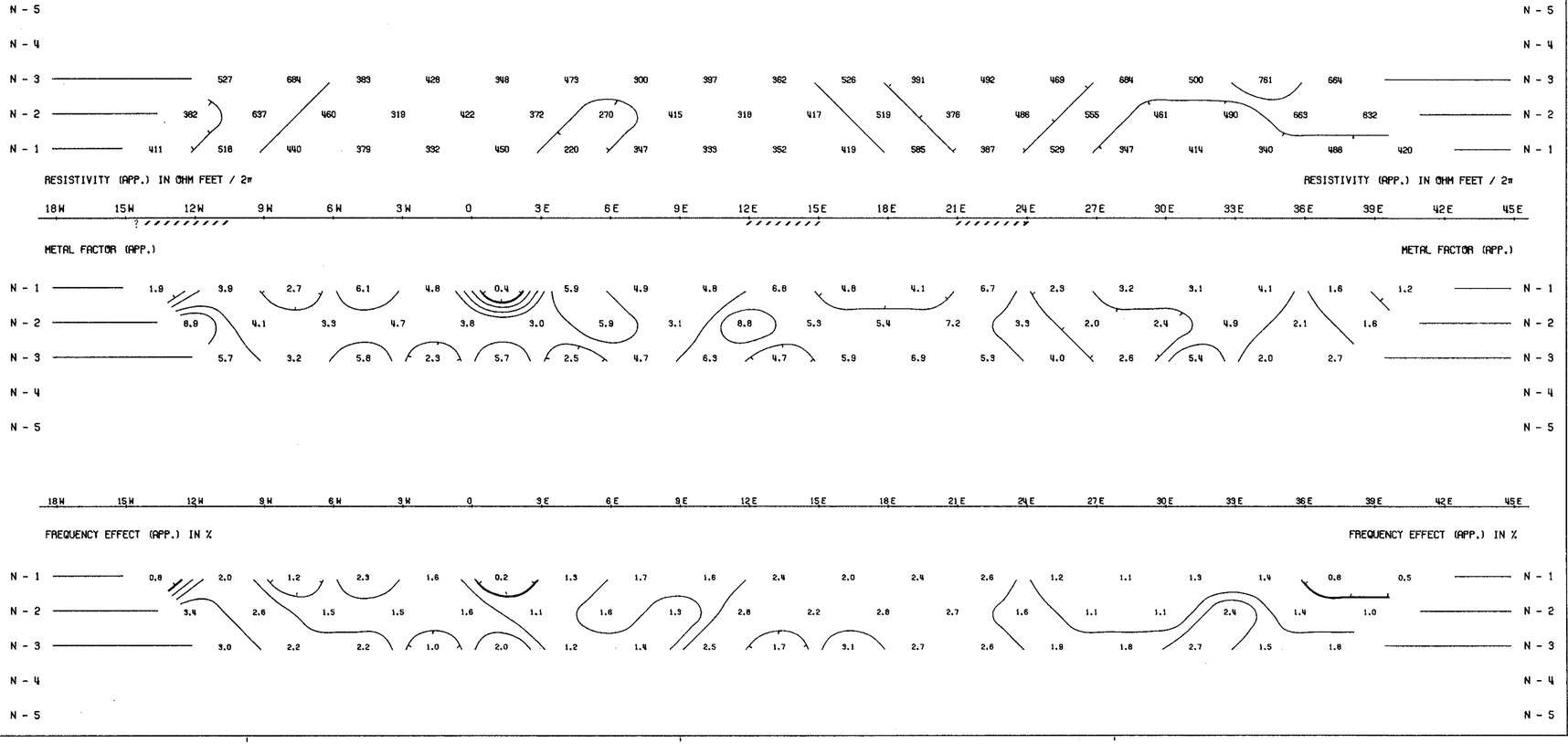
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

4672

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION



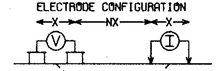
DWG. NO.- I.P.-6083-2

NATION LAKE MINES LTD.

HEATH AND CAT CLAIMS, TCHENTLO LAKE
OMINECA M.D., B.C.

LINE NO.- 3200N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: JUL 1973

APPROVED:

DATE: 8/17/73

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

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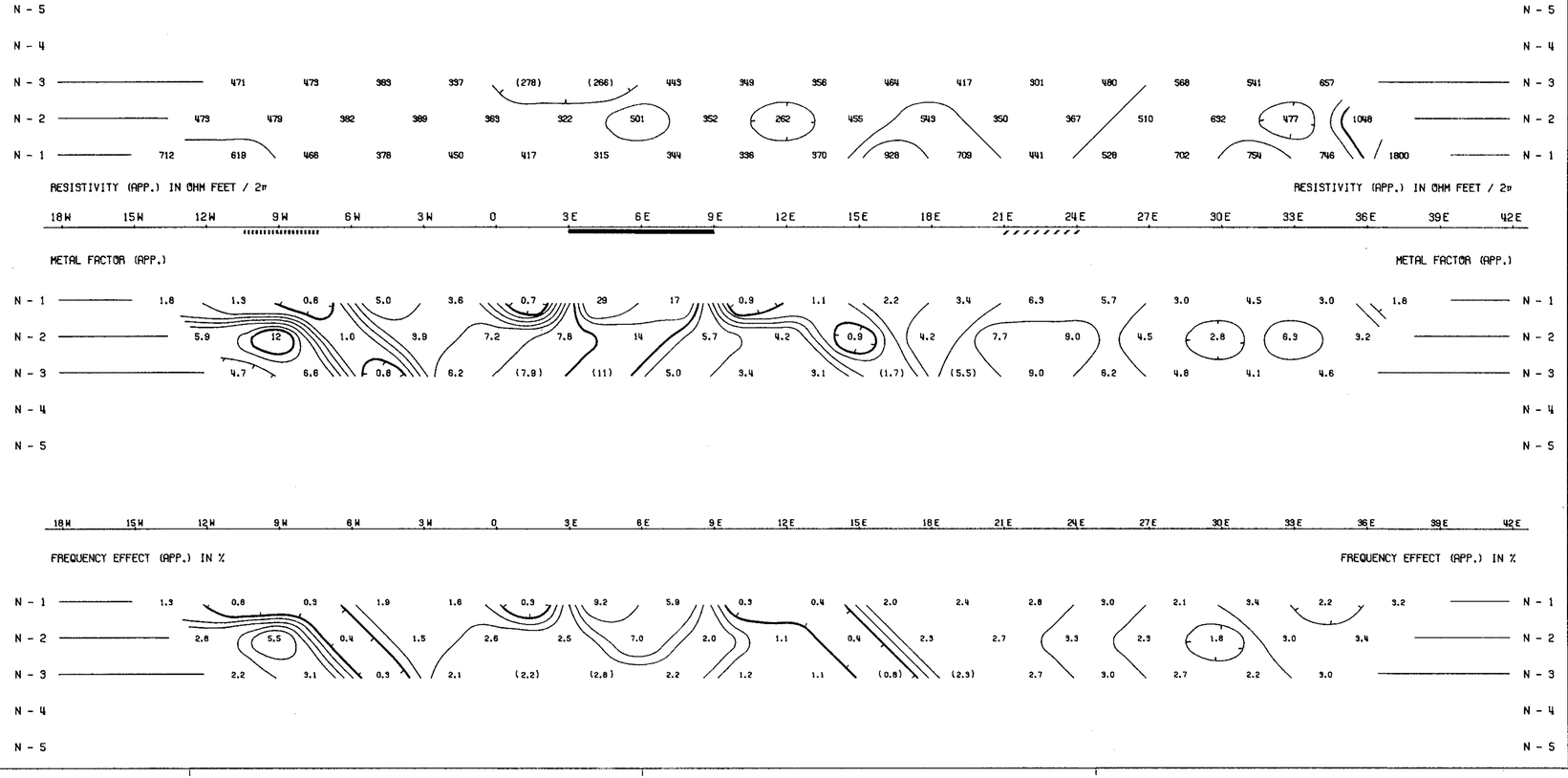
McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY McPHAR COMPUTER DIVISION



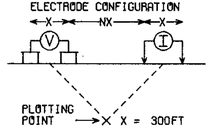
DWG. NO.- I.P.-6083-3

NATION LAKE MINES LTD.

HEATH AND CAT CLAIMS, TCHENTLO LAKE
OMINECA M.D., B.C.

LINE NO.- 2400N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: JUL 1973

APPROVED:

DATE: 8/7/73

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

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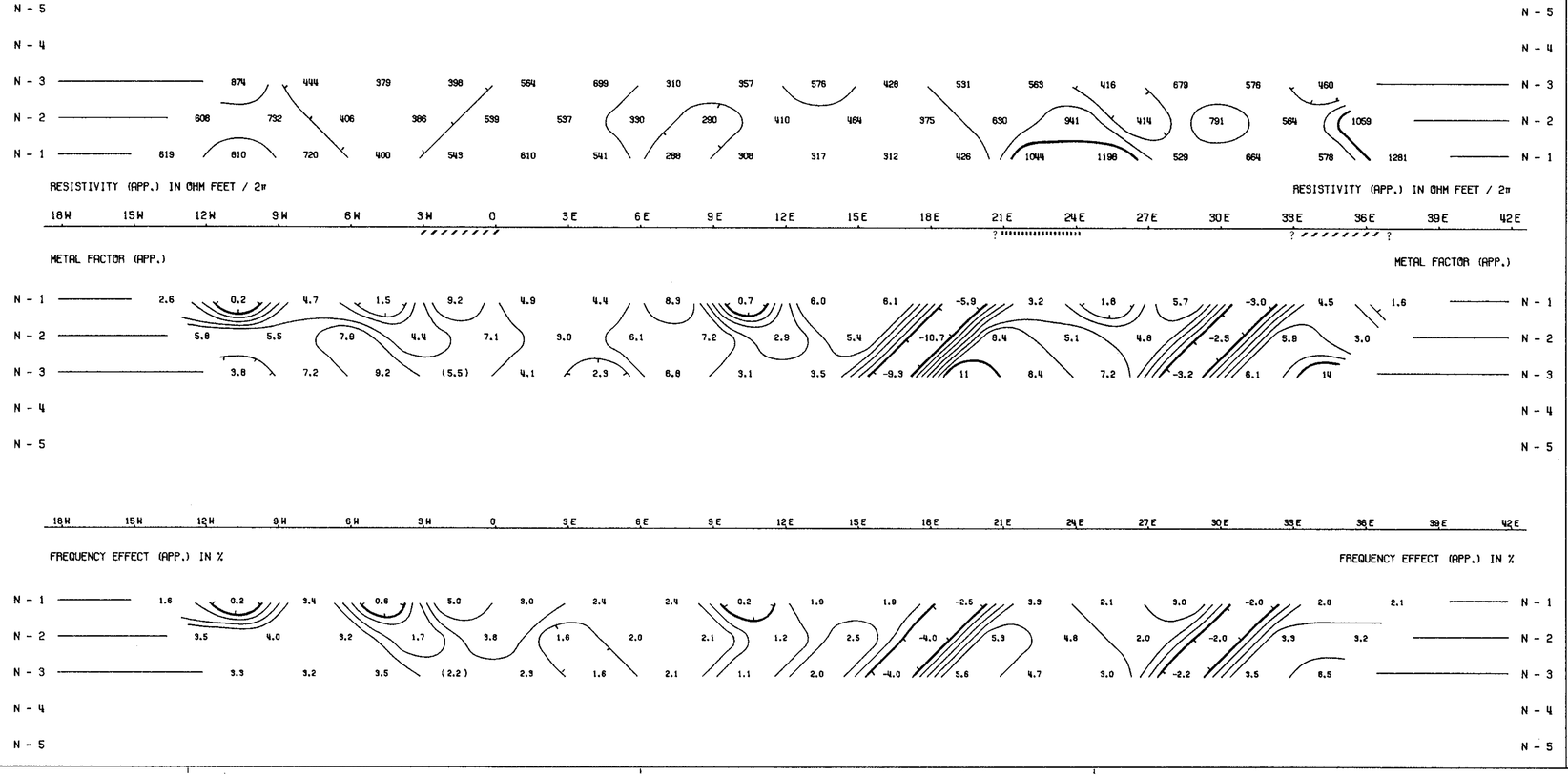
McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION



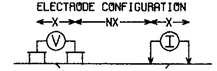
DWG. NO.- I.P.-6083-4

NATION LAKE MINES LTD.

HEATH AND CAT CLAIMS, TCHENTLO LAKE
OMINECA M.D., B.C.

LINE NO.- 1600N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: JUL 1973

APPROVED:

DATE: 8/17/73

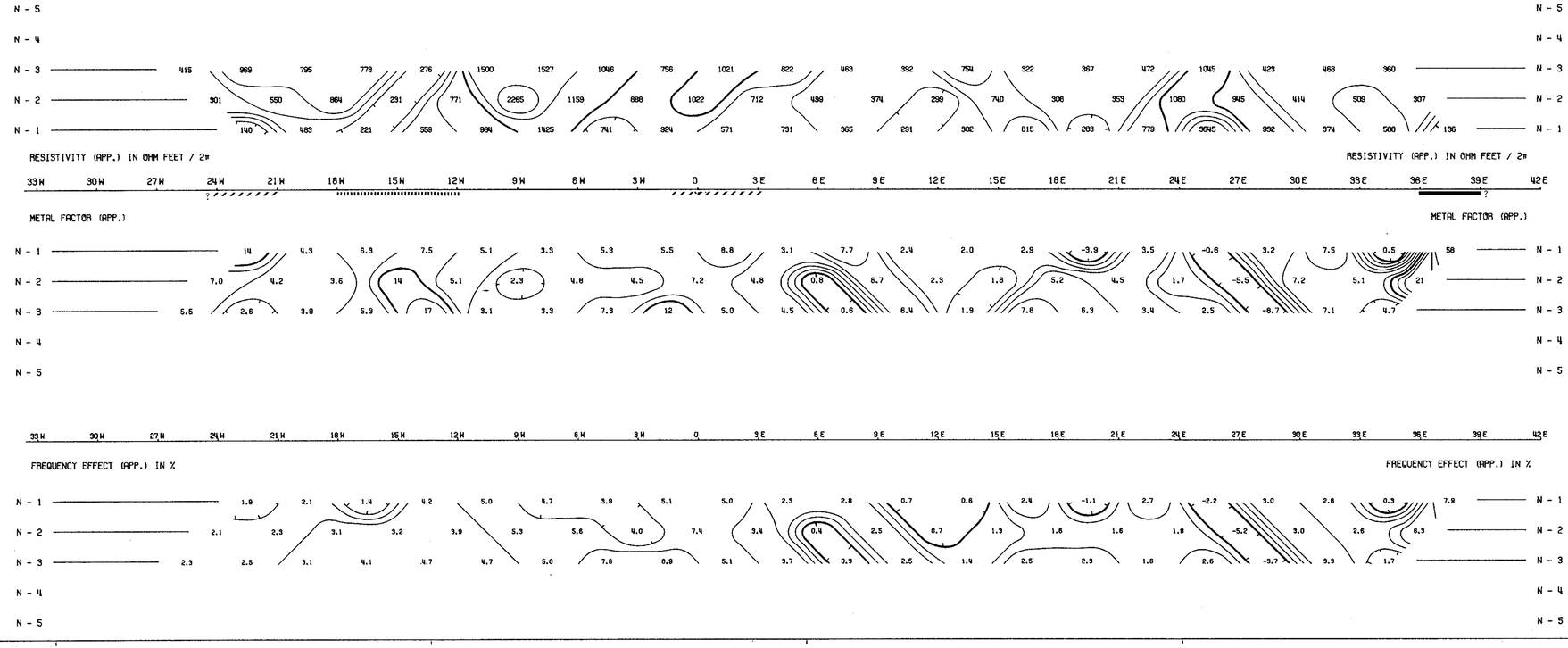
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

4672

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY McPHAR COMPUTER DIVISION



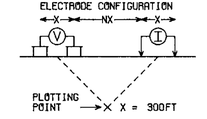
DWG. NØ.- I.P.-6083-5

NATION LAKE MINES LTD.

HEATH AND CAT CLAIMS, TCHENTLØ LAKE
ØMINECA M.D., B.C.

LINE NØ.- 800N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: JUL 1973

APPROVED:

DATE: 8/17/73

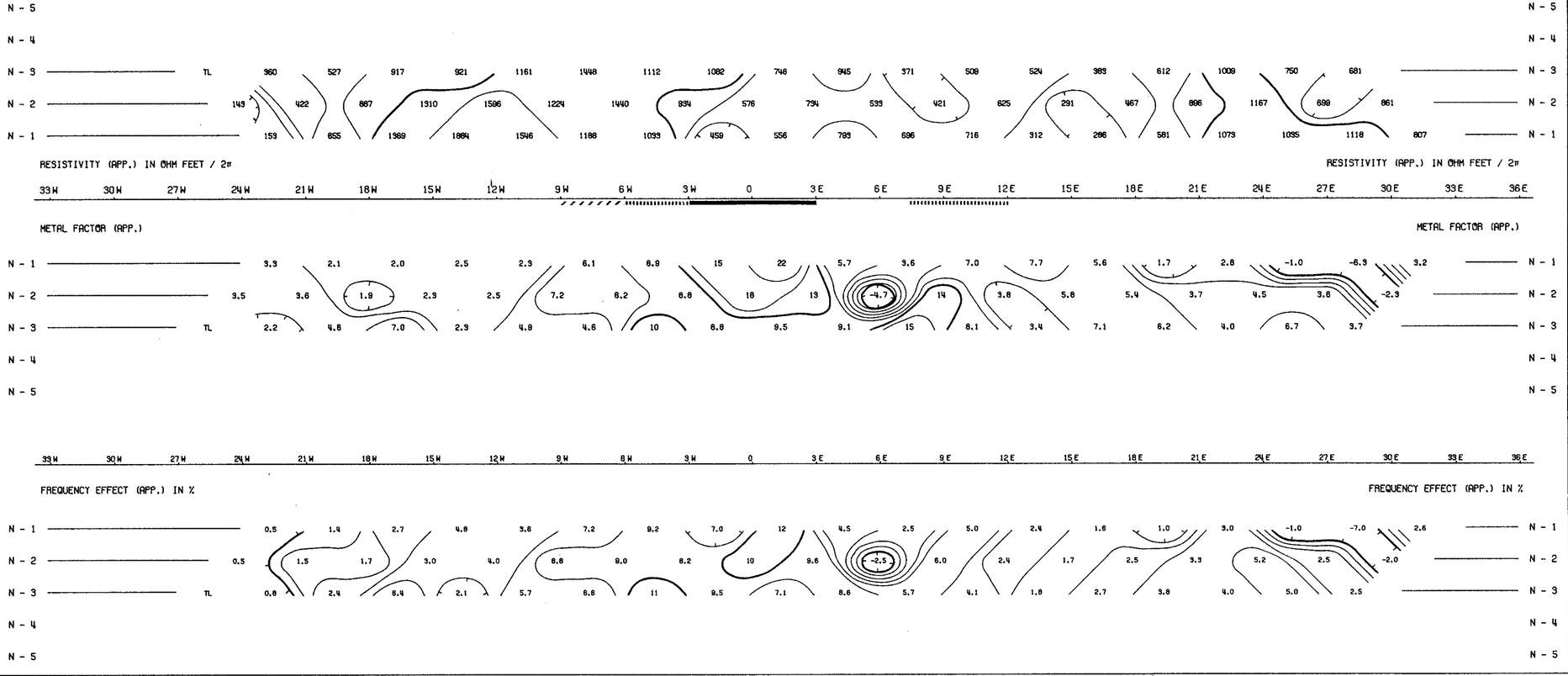
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

4672

McPHAR GEØPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NØTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION



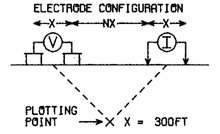
OWG. NO.- I.P.-6083-6

NATION LAKE MINES LTD.

HEATH AND CAT CLAIMS, TCHENTLO LAKE
OMINECA M.D., B.C.

LINE NO.- 0

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: JUL 1973

APPROVED:

DATE: 8/17/73

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

4672

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION

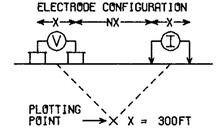
DWG. NO.- I.P.-6083-7

NATION LAKE MINES LTD.

HEATH AND CAT CLAIMS, TCHENTLO LAKE
OMINECA M.D., B.C.

LINE NO.- 800S

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: JUL 1973

APPROVED: P. H. Kelly

DATE: 8/17/73

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

4672

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

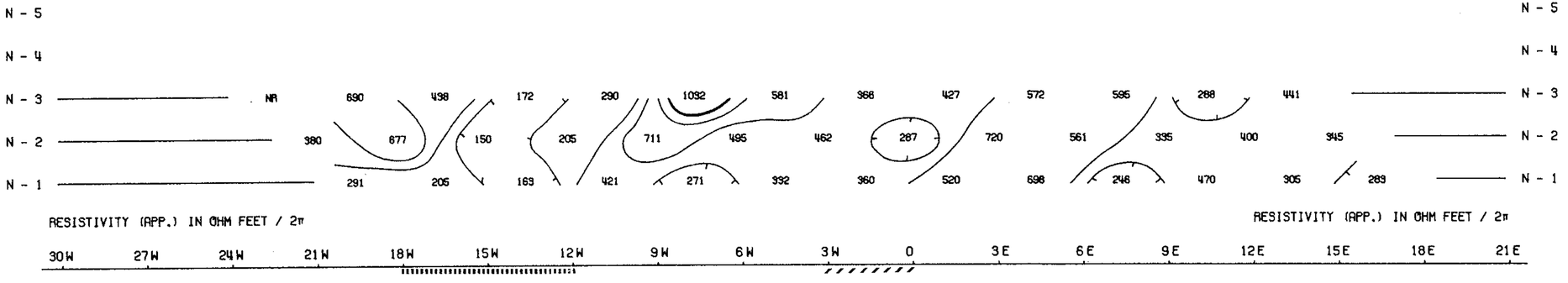
NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION

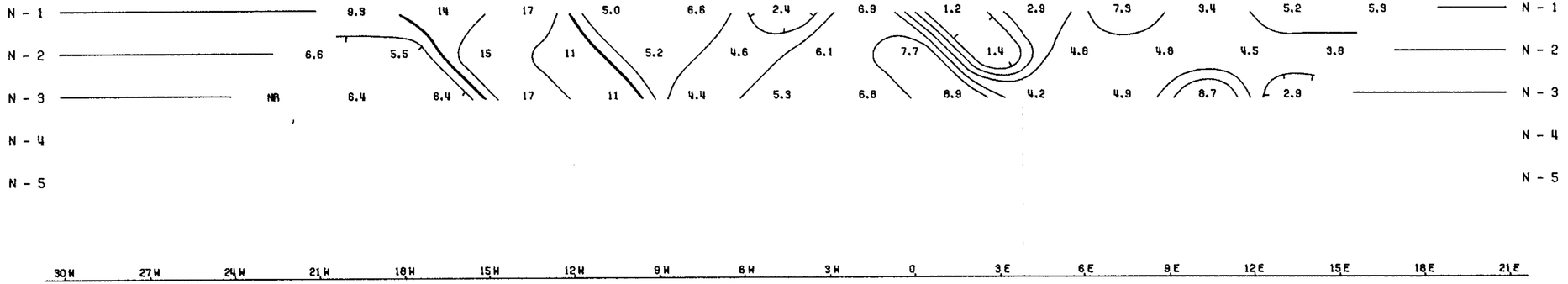
DWG. NO.- I.P.-6083-8

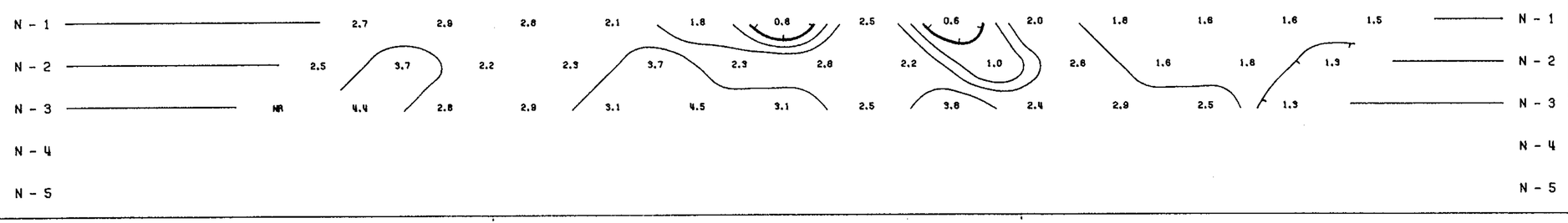
NATION LAKE MINES LTD.

HEATH AND CAT CLAIMS, TCHENTLO LAKE
OMINECA M.D., B.C.

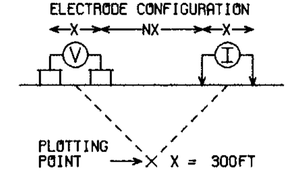
LINE NO.- 1600S







ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ▬▬▬▬
PROBABLE ▮▮▮▮▮▮▮▮
POSSIBLE ////////

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: JUL 1973

APPROVED: P.Y. Kelly

DATE: 8/17/73

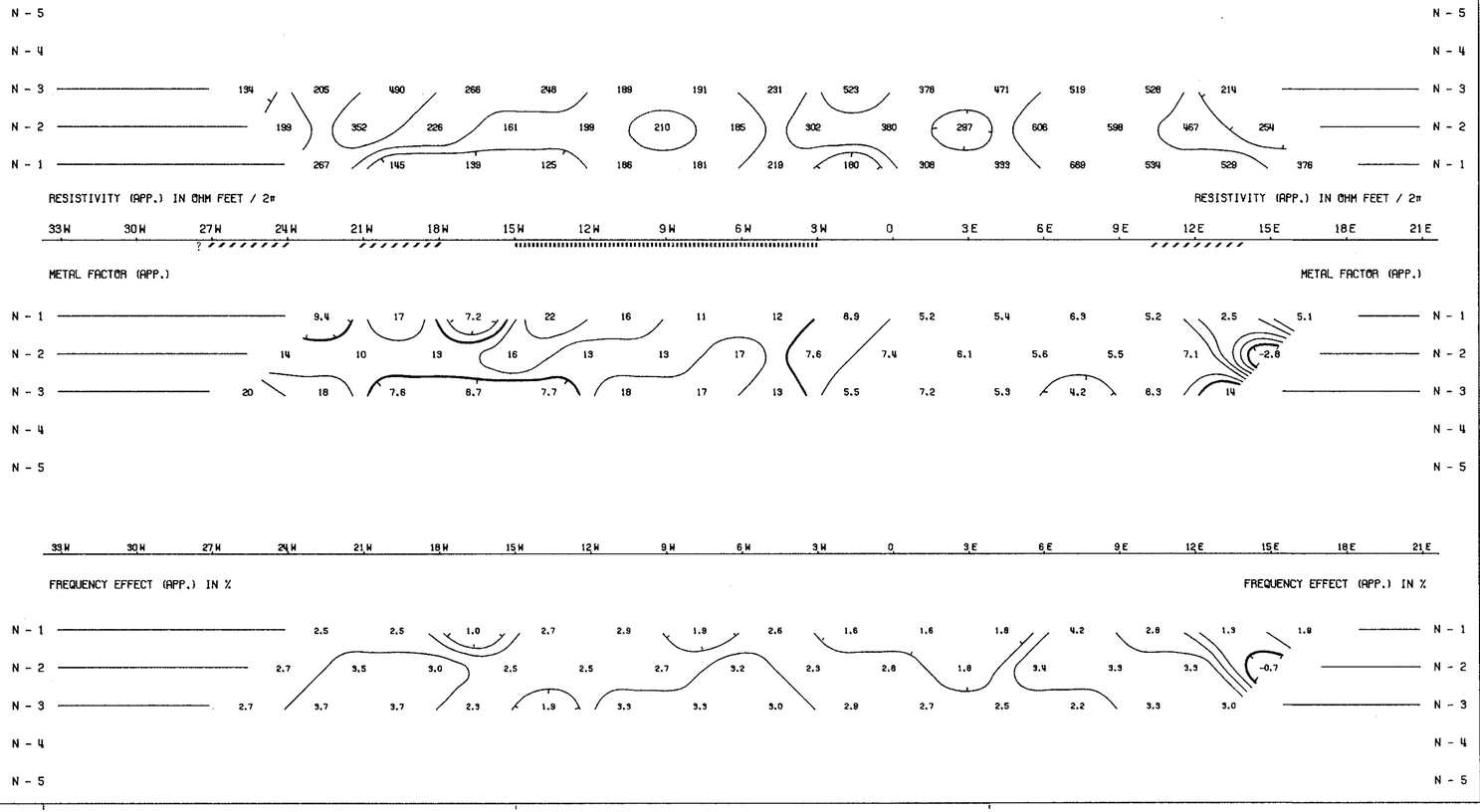
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

4672

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION



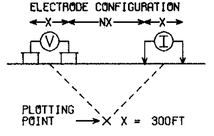
DWG. NO.- I.P.-6083-9

NATION LAKE MINES LTD.

HEATH AND CAT CLAIMS, TCHENTLO LAKE
OMINECA M.D., B.C.

LINE NO.- 2400S

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: JUL 1973

APPROVED:

DATE: 8/17/73

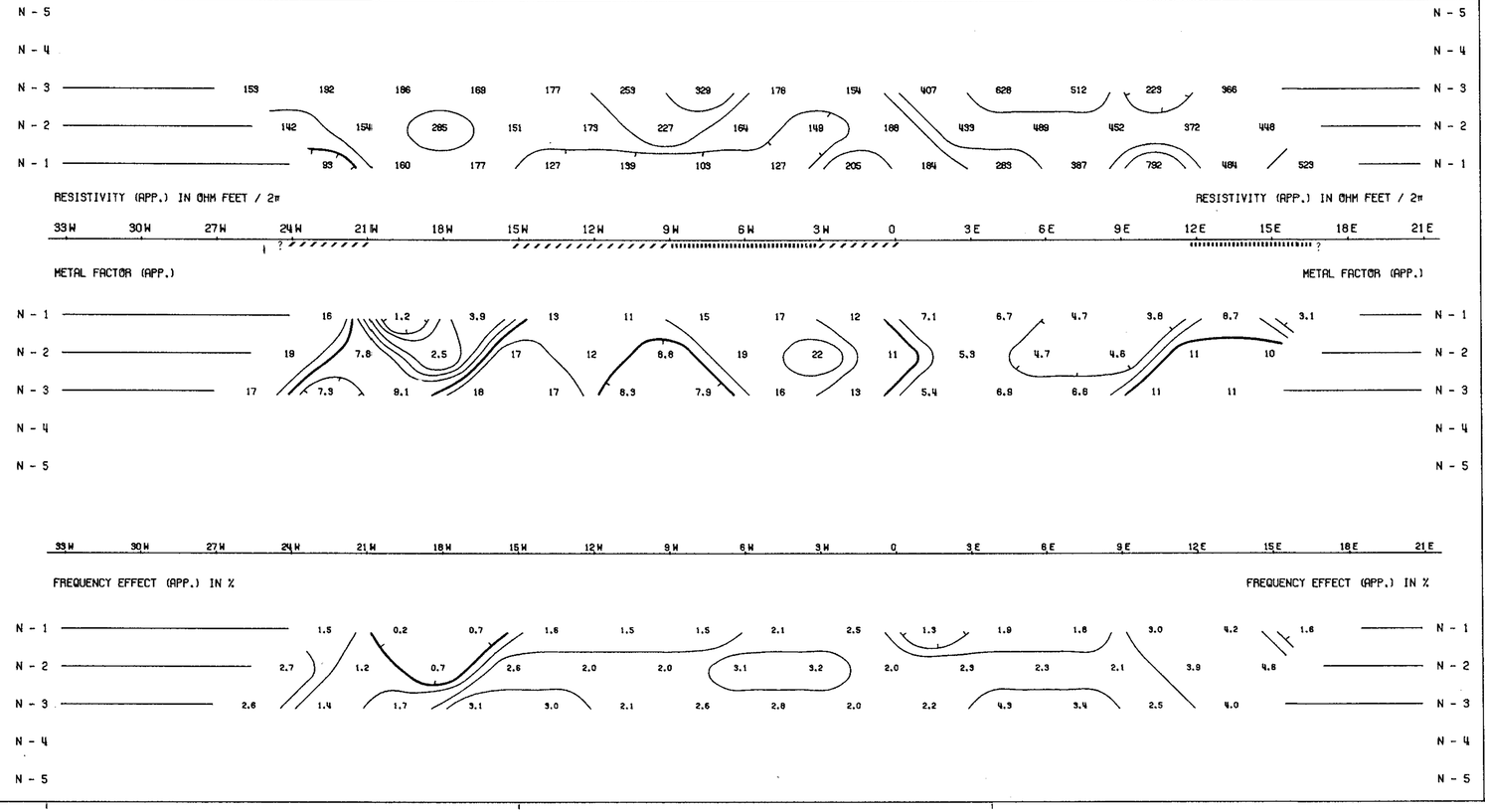
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

4672

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION



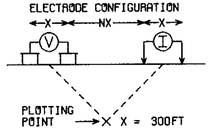
DWG. NO.- I.P.-6083-10

NATION LAKE MINES LTD.

HEATH AND CAT CLAIMS, TCHENTLO LAKE
OMINECA M.D., B.C.

LINE NO.- 3200S

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: JUL 1973

APPROVED:

DATE: 8/17/73

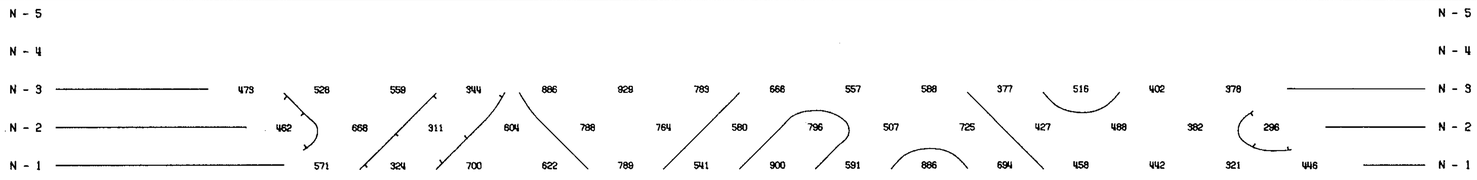
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

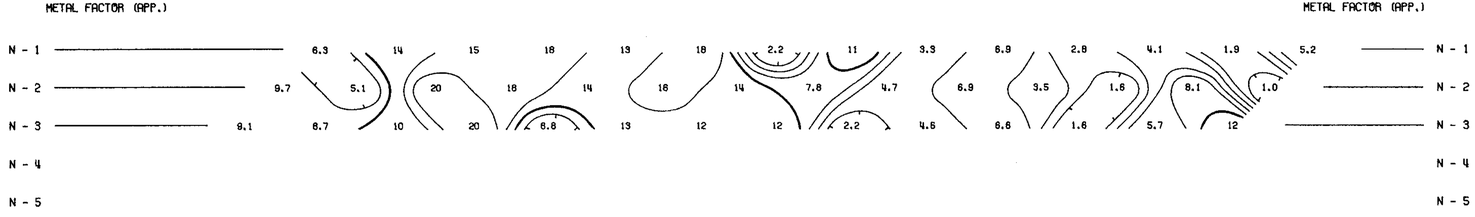
4672

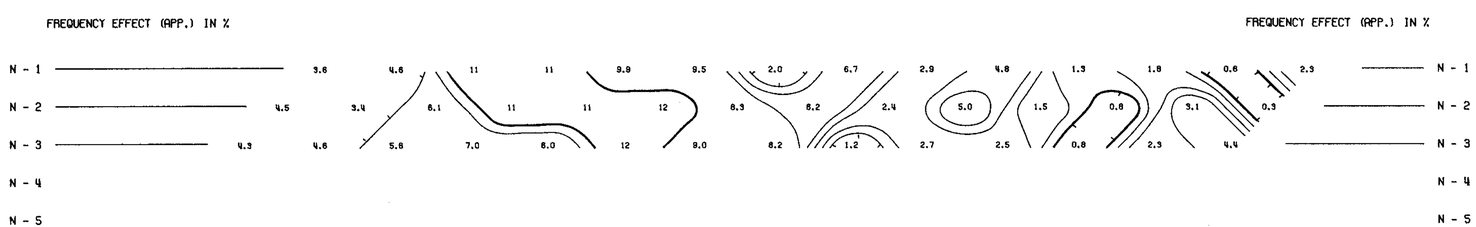
McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION







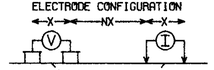
DWG. NO.- I.P.-6083-II

NATION LAKE MINES LTD.

HEATH AND CAT CLAIMS, TCHENTLO LAKE
OMINECA M.D., B.C.

LINE NO.- B/L

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: AUG 1973

APPROVED:

DATE: 8/17/73

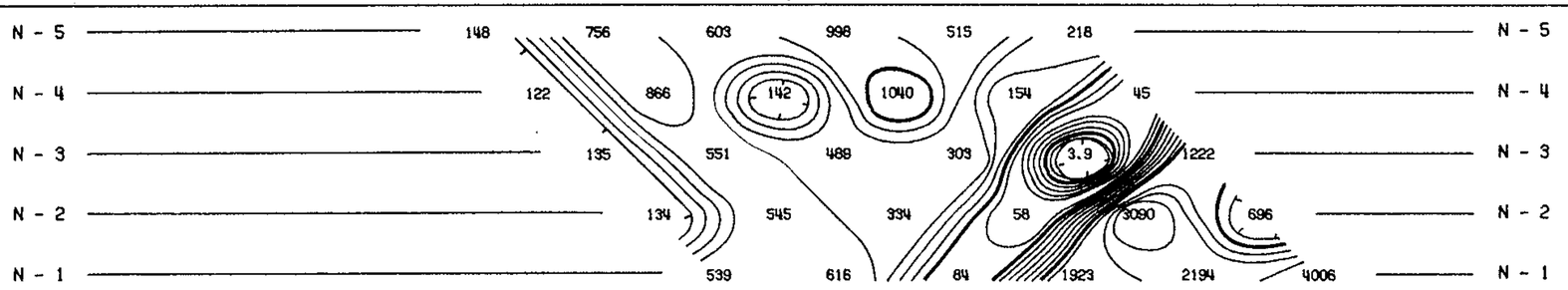
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

4672

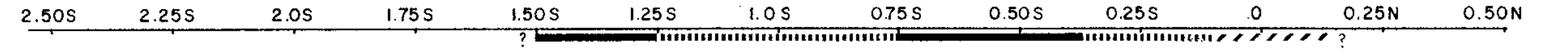
McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION

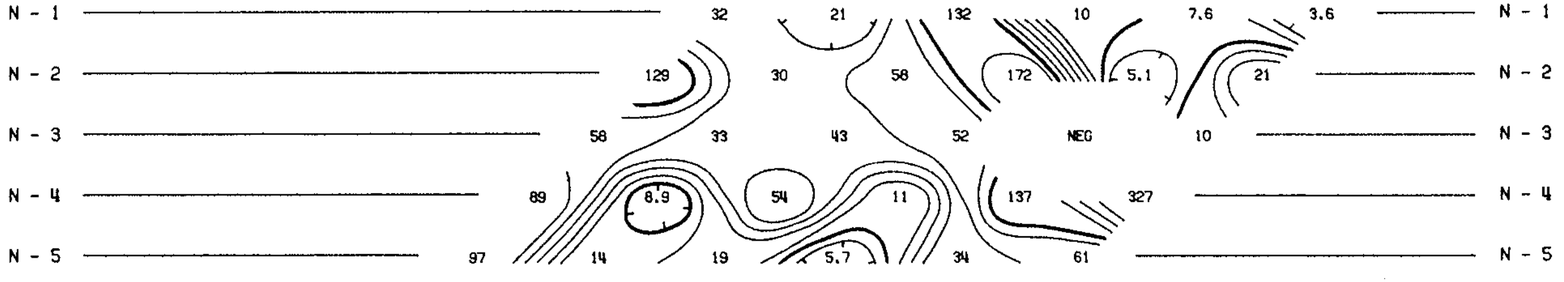


RESISTIVITY (APP.) IN OHM FEET / 2π

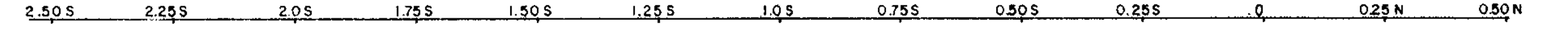


RESISTIVITY (APP.) IN OHM FEET / 2π

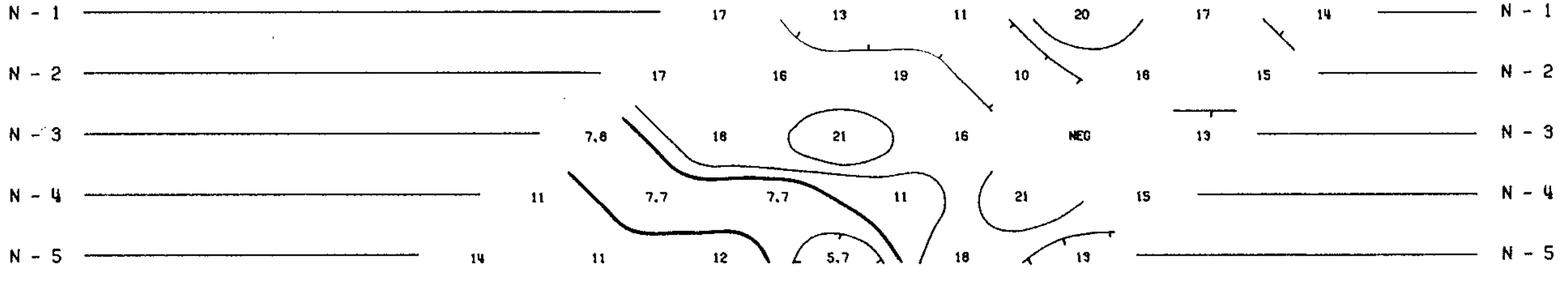
METAL FACTOR (APP.)



METAL FACTOR (APP.)



FREQUENCY EFFECT (APP.) IN %



FREQUENCY EFFECT (APP.) IN %

DWG. NO.- I.P.-6083-12

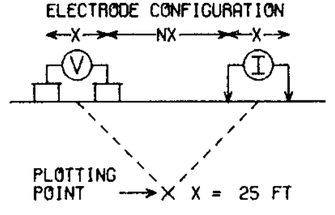
NATION LAKE MINES LTD.

HEATH AND CAT CLAIMS, TCHENTLO LAKE

OMINECA M.D., B.C.

LINE NO.- 100W

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ▬▬▬

PROBABLE ▮▮▮▮▮▮▮▮▮▮▮▮

POSSIBLE / / / / /

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: AUG 1973

APPROVED: R.H. Hallof

DATE: 8/17/73

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

4672

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

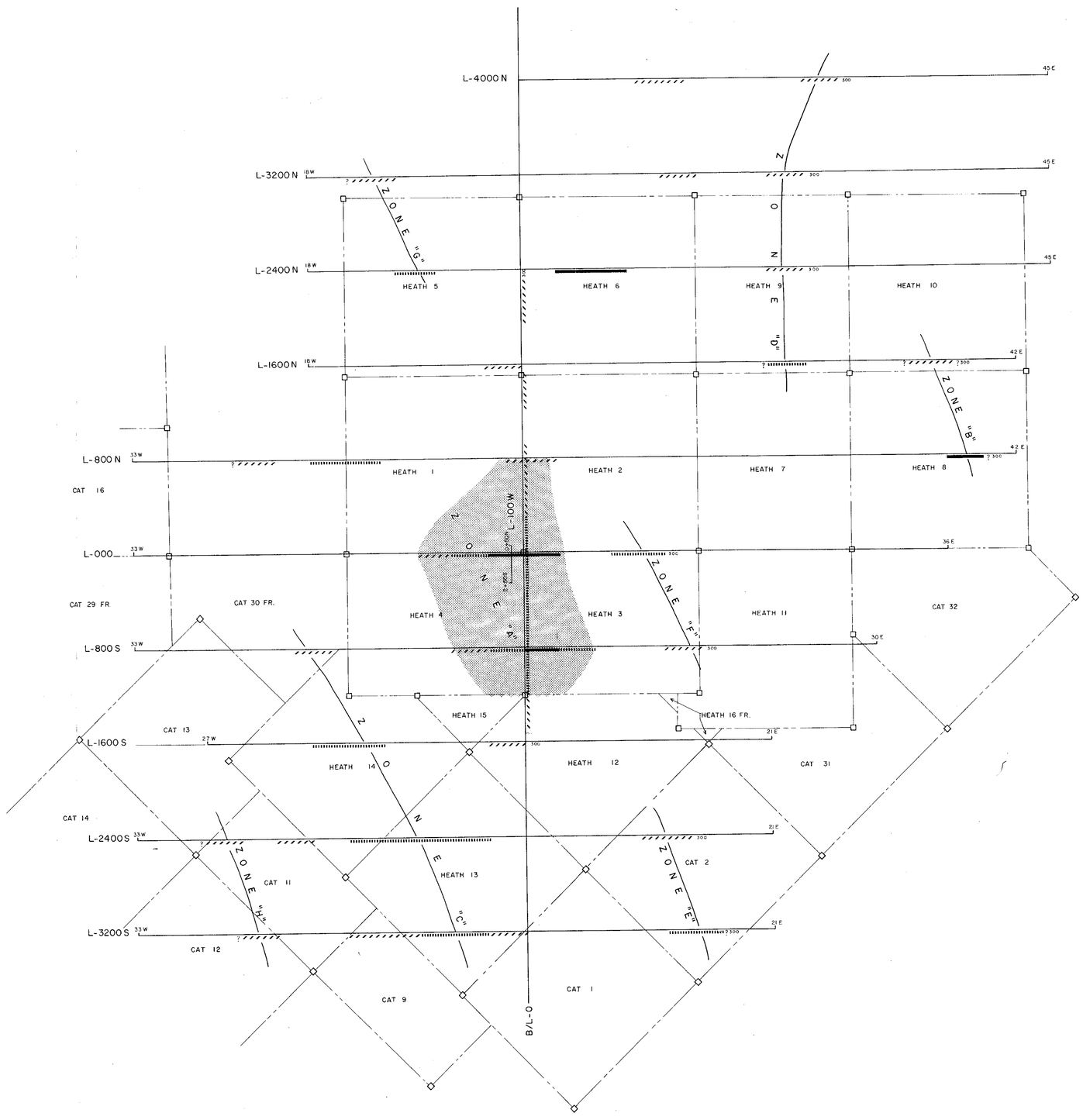
NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION

DWG. I.P.P. 4908

McPHAR GEOPHYSICS

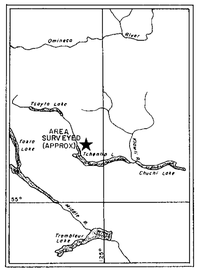
INDUCED POLARIZATION AND RESISTIVITY SURVEY

PLAN MAP



LOCATION MAP

Scale: 1" = 20 Miles



NOTE: TO ACCOMPANY GEOPHYSICAL REPORT FOR NATION LAKE MINES LIMITED, HEATH AND CAT CLAIMS, TCHENTLO LAKE, OMINECA M.D. BRITISH COLUMBIA, BY A.W. MULLAN (P.ENG.) AND P.G. HALLOF (GEOPHYSICIST) DATE, AUG. 17, 1973.

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ——————

PROBABLE ||||||||||||||||

POSSIBLE \\\\\\\

Number at the end of anomaly indicates spread used.

NATION LAKE MINES LIMITED

HEATH AND CAT CLAIMS,

TCHENTLO LAKE, OMINECA M.D., B.C.

SCALE

ONE INCH EQUALS FOUR HUNDRED FEET

DRAWN: C.M.

DATE: AUG. 17, 1973.

APPROVED: P.G. Hallof

DATE: 8/17/73

4672-M1

DWG. I.P.P. 4908

SCHEDULE "A"

Document of
Mineral Titles Branch
Assessment Report

NO. 4672 MAP #2