4182

REPORT ON THE
INDUCED POLARIZATION
AND RESISTIVITY SURVEY
ON THE
NADI AND IDA CLAIMS,
NADINA LAKE AREA
OMINECA MINING DIVISION, B.C.
FOR
JOREX LIMITED

BY

PHILIP G. HALLOF, Ph.D.

AND

MARION A. GOUDIE, B.Sc.

Department of

Mines and Petroleum Resources

ASSESSMENT REPORT

NO. 4182 MAP

NAME AND LOCATION OF PROPERTY:

NADI AND IDA CLAIMS, NADINA LAKE AREA

OMINECA MINING DIVISION, B.C. 53°56' N - 127°03' W

DATE STARTED: OCTOBER 20, 1972

DATE FINISHED: NOVEMBER 12, 1972

Mining Recorder's Office RECORDED

FEB - 5 1973

SMITHERS, B.C.

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| 17 | 4 | I | Owg. I.P.P. | 3563 |
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McPHAR GEOPHYSICS LIMITED

REPORT ON THE

INDUCED POLARIZATION

AND RESISTIVITY SURVEY

ON THE

NADI AND IDA CLAIME.

NADINA LAKE AREA

OMINECA MINING DIVISION, B.C.

FOR

JOREX LIMITED

1. INTRODUCTION

In late June of 1972, we completed an Induced Polarization and Resistivity survey on the Nadi Claim Group, Nadina Lake area, Omineca Mining Division, B. C. for Jorex Limited. The results were very promising and the client decided to extend the survey in an attempt to delimit the source of strong IP anomalies. This report will incorporate the results of the first survey in the discussion of the additional work. The claim group is situated at 53°56' north latitude and 127°03' west lengitude.

The general geology of the survey area is discussed in the first report.

The second survey was completed in October and November, 1972.

using a McPhar Pé60 high power variable frequency IP unit, operating at 0.3

and 5.0 Hz over the following claims:

Nadi: 1, 2, 30, 31, 32, 33, 34, 35, 36, 37, 39, 42,

43, 44, 45, Fr 50, Fr 53, M1, M2

Ida: 14, 16, 18, 33, 34, 35, 36, 37, 38, 39, 40, 41,

42, 43, 57, 58, 59, 60, 131, 132, 161, 162, 163, 164

These claims are assumed to be owned or held under option by Jorex Limited.

2. PRESENTATION OF RESULTS

The Induced Pelarization 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. |
|--------|------------------------------|----------|------------|
| 7200NE | (Extension of previous Line) | 300 feet | IP 6032-1 |
| 5600NE | 11 | 300 feet | IP 6032-2 |
| 4800NE | 11 | 300 feet | IP 6032-3 |
| 4000NE | | 300 feet | IP 6032-4 |
| 3200NE | (NW Part) | 300 feet | IP 6032-5 |
| 3200NE | (SE Part) | 300 feet | IP 6032-5A |
| 2400NE | | 300 feet | IP 6032-6 |
| 1600NE | | 300 feet | IP 6032-7 |
| 800NE | | 300 feet | IP 6032-8 |
| 0 | | 300 feet | IP 6032-9 |
| 4005W | | 300 feet | IP 6032-10 |
| 800SW | | 300 feet | IP 6032-11 |
| 1200SW | | 390 feet | IP 6032-12 |
| 1600SW | | 300 feet | IP 6032-13 |
| 1600SW | | 200 feet | IP 6032-14 |

| Line | , | Electrode Intervals | Dwg. No. |
|------------------|--------------|---------------------|------------|
| 20 0 0\$W | | 300 feet | IP 6032-15 |
| 2400SW | | 300 feet | IP 6032-16 |
| 32005W | | 300 feet | IP 6032-17 |
| 4200SE | | 200 feet | IP 6032-18 |
| 5000SE | | 200 feet | IP 6032-19 |
| 1200SE | (SW EM Grid) | 100 feet | IP 6032-20 |
| 2000SE | (SW EM Grid) | 100 feet | IP 6032-21 |
| 4490NW | (NW EM Grid) | 200 feet | IP 6032-22 |
| 4000NW | (NW EM Grid) | 200 feet | IP 6032-23 |

Also enclosed with this report are Dwgs. I.P.P. 4882-1, 4882-2 and I.P.P. 2891, plan maps of the Nadi and Ida Claims Grid at a scale of I" = 400' and, Dwg. I.P.P. 3563, a composite plan of the three grids above at a scale of I" = 1320'. The definite, prebable 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 somes 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 200' electrode intervals the position of a narrow sulphide body can only be determined to lie between two stations 200' 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.

3. DISCUSSION OF RESULTS

Extensions to three lines of the previous survey and twenty additional lines have not yet delimited the anomalous area. Very strong anomalies were located from Line 13600NE to Line 24605W. Between Line 24005Wand Line 32005W, there may be a change in reck type. This change also appears at 4NE on Line 12005E of the 5W EM Grid. The change is characterized by increased resistivity and a decrease in both size and magnitude of the anomalies. However, this change in resistivity may equally well be caused by decreased mineralization and the resulting decreased conductivity. A review of the similar some mapped in the June survey has led to the deletion of that some for the same reason.

The stippled area on the IP plan maps indicate moderately high to very high magnitude IP anomalies. Within these areas, there are extremely variable fluctuations, e.g. on Line 1600NE, n = 1, the metal factor values change from 335 at 51SE to 54SE to 1307 at the next reading to the east. These very high values can not be correlated from the present data and may result from erratic, strong concentrations of sulphide mineralization.

It would be tempting to suggest that this very extensive area of

strong amemalies is a zoned deposit with the minerals in orderly succession from a pyrite core. However, if you look at Appendix I, which is data from an IP line over the Bell erebody, it is immediately apparent that, even if this were so, it can only be proven by drilling the source of the anomalies.

Line 16005W was surveyed using both 300' and 200' electrode interval spacings. The value of detail, particularly when selecting a drill target, is evident in the results. Detail with even shorter electrode intervals would be useful since the source of the anemaly is still shallow relative to the electrode interval. It is strongly recommended that three or more east-west lines and one north-south line be surveyed with shorter electrode intervals prior to drilling. The optimum interval should be selected after testing in the field.

If detail surveying is not feasible, several possible drill locations follow:-

- Line 1600SW (1) a hole collared at 38SE, drilled at 45° to the northwest to cross beneath 35SE. This hole should test three levels of magnitude of the anomaly.
 - (2) a hele collared at 48SE, drilled at 45° to the southeast, to cross beneath 51SE.
 - (3) a hole collared at 56SE, drilled at 45° to the southeast to cross beneath 59SE.
 - (4) a hole collared at 658E, drilled at 45⁰ to the northwest to test the centact zone between strong and weak portions of the anomaly.

From the previous report:

Line 10400NE

8SE - drilled to a vertical depth of 175'

1+50NW - drilled to a vertical depth of 175'

Line 10400NE - (cont'd.)

6NW - drilled to a vertical depth of 175

12NW - drilled to a vertical depth of 175'

The anomalies to the southwest and northwest decrease in magnitude and breadth, but the data are too scattered to determine whether there is any correlation between these weaker somes. The probable and possible anomalies should be tested as follows:-

Line 3200NE - a hole collared at 15E, drilled at 45⁶ to the morthwest to cross beneath 4NW; this should test both probable and possible anomalies.

4. CONCLUSIONS

The IP survey on the Nadi and Ida claim group has located an extensive area which is strongly anomalous over most of the survey area. The anomalies become weaker and smaller in size to the northwest and southwest.

It has been strongly recommended that four or five lines should be surveyed with shorter electrode intervals prior to selecting drill sites.

Concentrated mineralisation will produce IP anomalies of high magnitude - if these somes are narrower than the electrode interval in width, the boundaries of the sone will not be defined exactly, as can be seen on Line 16005W. Also seen on that line is a shallow, strong source on the detail line which was not defined with 300' intervals because of the greater depth probed and the larger amount of rock being averaged. Therefore detail minimizes the possibility of missing selected drill targets. Several drill help locations have been suggested from the present data.

MCPHAR GEOPHYSICS LIMITED

Philip G. Haller. Geophysicist

Marion A. Goudie,

Geologist.

Dated: December 14, 1972

ASSESSMENT DETAILS

PROPERTY: Nadi Claim Group MINING DIVISION: Ominoca PROVINCE: British Columbia SPONSOR: Jorex Limited LOCATION: Nadina Lake area TYPE OF SURVEY: Induced Pelarisation DATE STARTED: October 20, 1972 OPERATING MAN DAYS: 48 DATE FINISHED: Nevember 3, 1972 EQUIVALENT 8 HR.MAN DAYS: 72 CONSULTING MAN DAYS: 3 NUMBER OF STATIONS: 235 NUMBER OF READINGS: 1464 DRAUGHTING MAN DAYS: 10 85 MILES OF LINE SURVEYED: 11.46 TOTAL MAN DAYS:

CONSULTANTS:

Philip G. Hallof, 15 Barnwood Court, Don Mills, Ontario. Marion A. Goudie, 739 Military Trail, West Hill, Ontario.

FIELD TECHNICIANS:

J. Parker, Box 340, Chelceland, Saskatchewan

K. Hoeberg, General Delivery, Kamloops, B. C.

Plus Z Helpers:

M. McCabe, General Delivery, Prince George, B. C.

B. McCabe, coo Mr. A. McCabe, Sundridge, Outarie.

DRAUGHTSMEN:

B. Beden, 58 Glencrest Blvd. Toronto 16, Ontario.

G. Hines, 114 Hillsview Drive, Richmond Hill, Ontario.

V. Young, 703 Cortex Avenue, Bay Ridges, Ontario.

har geophysics limited

Philip G. Hallof,

Geophysicist

Dated: December 14, 1972

STATEMENT OF COST

Jorex Limited -Nadi Claims

| Crew: | John Parker - Kur | t Heeberg | |
|------------|-----------------------------|----------------|------------|
| | perating (prorated 12 | (251) | \$3.098.95 |
| la days Tr | ravel) 2 days ad Weather) | @ \$100.00 day | 200.00 |
| day Of | f) i day reakdown) | | N. C. |
| Expenses | - (prorated 12/25½) | | |
| Vehicle Er | Epense | 258.46 | |
| Meals and | Accommodation | 306.10 | |
| Telephone | and Telegraph | 10.72 | |
| Supplies | | 60.96 | |
| | | 636.24 | |
| +10% | | 63. 62 | |
| | | -mat Massach | 699.86 |
| Extra Lab | our 835.30 | | |
| + 20% | 167.06 | | |
| | | | 1.002.36 |
| | | | \$5,001.17 |

Merhar Geophysics LT 27

Philip G. Hallot, & Goophysicist

Sing with vesting 23, 1878

Dated: December 14, 1972

7 157,52

211071

ASSESSMENT DETAILS

| PROPERTY: Ida Claim Group | | MINING DIVISION: Omineca | | |
|--------------------------------------|----|----------------------------------|--|--|
| SPONSOR: Jorex Limited | | PROVINCE: British Columbia | | |
| LOCATION: Nadina Lake area | | | | |
| TYPE OF SURVEY: Induced Polarization | | | | |
| OPERATING MAN DAYS: | 22 | DATE STARTED: November 5, 1972 | | |
| EQUIVALENT 8 HR, MAN DAYS: | 33 | DATE FINISHED: November 12, 1972 | | |
| CONSULTING MAN DAYS: | 2 | NUMBER OF STATIONS: 170 | | |
| DRAUGHTING MAN DAYS: | 5 | NUMBER OF READINGS: 1200 | | |
| TOTAL MAN DAYS: | 40 | MILES OF LINE SURVEYED: 9.01 | | |

CONSULTANTS:

Philip G. Hallof, 15 Barnwood Court, Don Mills, Ontario. Marion A. Goudie, 739 Military Trail, West Hill, Omtario.

FIELD TECHNICIANS:

- J. Parker, Box 340, Choiceland, Saskatchewan
- K. Heeberg, General Delivery, Kamloops, B. C.

Plus 2 Helpers:

- M. McCabe, General Delivery, Prince George, B. C.
- B. McCabe, c/o Mr. A. McCabe, Sundridge, Ontario.

DRAUGHTSMEN:

- B. Boden, 58 Glencrest Blvd. Toronto 16, Ontario.
- G. Hines, 114 Hillsview Drive, Richmond Hill, Ontario.
- V. Young, 703 Cortez Avenue, Bay Ridges, Ontario.

Morhar Geoffysics Limited

Philip G. Hallof.

Geophysicist

Dated: December 14, 1972

STATEMENT OF COST

Jorex Limited Ida Claims

| Crew: John Parker - Kurt Ho | epezg | |
|---|-------------------------------|------------|
| $4\frac{1}{2}$ days Operating (prorated $4\frac{1}{2}/25\frac{1}{2}$ day Travel) | b | \$1.162.05 |
| 3 days Standby) 4½ days 1 day Preparation) | @ \$100.00/day | 450.00 |
| 1 day Off | | N. C. |
| Expenses - (prorated $4\frac{1}{3}/25\frac{1}{3}$) | | |
| Vehicle Expense | 96. 92 | |
| Meals and Accommodation | 114, 78 | |
| Telephone and Telegraph | 4.01 | |
| Supplies | 22.85 | |
| | 238.56 | |
| +10% | 23.86 | |
| | | 262.42 |
| Extra Labour - (prorated $4\frac{1}{3}/25\frac{1}{5}$) | 31 3, 23 | |
| + 20% | 62.65 | |
| | -17-1-79-11-11-1-9 | 375.88 |
| | | |
| | | \$2,150.35 |
| | | |

FFDAR GEORHYSICS LIMITED

Philip G. Hallos. Geophysicist.

Bars Age of London

Dated: December 14, 1972

CERTIFICATE

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

- 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 Jorex 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 Toronte

This 14th day of December 1972

Lucia de Esperant Luis

الإنجاز المراجع المراجع

CERTIFICATE

I, Marion A. Goudie, of the City of Toronto, Province of Ontario, do hereby certify that:

- I am a geologist residing at 739 Military Trail, West Hill,
 Ontario.
- I am a graduate of the University of Western Ontario with a
 B.Sc. Degree (1950) in Honours Geology.
 - 3. I am a member of the Geological Society of America.
 - 4. I have been practising my profession for 23 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 Jorex 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 Toronto

This 14th day of December 1972

Marion A. Goudie, B.Sc.

INDUCED POLARIZATION
AND

GEOLOGIC SECTION FROM

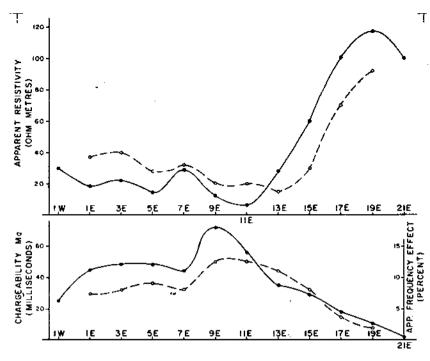
BRITISH COLUMBIA
DISSEMINATED SULPHIDES

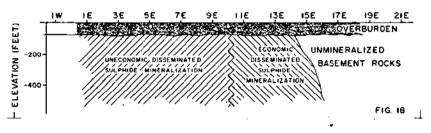
BELL OREBODY LINE-22N

DIPOLE-DIPOLE ARRAY, X=200 Ft., N=1

POLE-DIPOLE ARRAY, X=200 Ft., N=1

(REMOTE ELECTRODE - WEST)





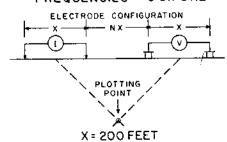
INDUCED POLARIZATION
AND

GEOLOGIC SECTION FROM

BRITISH COLUMBIA
DISSEMINATED SULPHIDES

BELL OREBODY LINE-22N

FREQUENCIES- 0-31/5HZ



P/2 π (OHM FEET) APP. [0.52 X P APP. (OHM-METRES]]
N-1-9.3 | | 69 y | 16 | 59 | 2.6 | 14 | 30 | 51 | 61 | 46
N-2-6.9 | (3 | | | | | | 4.8 | (2.9 | 2.6 | 4.8 | | | | 3.7 | 44 | 51
N-3-8.9 | 12 | 14 | (5.6) (2.5) | 7.2 | 5.6 | 8.3 | 8.7 | 20 | 45
N-4-11 | 8.4 | 14 | (6.7) | NR | NR | 9.4 | 29 | | 11 | (5.7) | 18 | 61

4E

14E

0 2E 4E 6E 8E 10E 12E 14E 16E 18E 20E 22E FREQUENCY EFFECT APP

II (18/ 14 \ 88 78 \ 47 12 12 12 (56) 14 99 89 474) 7.7 8.9 93/74/98 93\45 N-4-11 10 12 ЮF (65 20E 22E

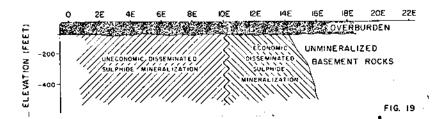
METAL FACTOR APP

N-1 — 1200 1070 1800 820 13000 5700 605 262 93 54 15

N-2 — 1740 695 1090 500 2890 3470 5720 3340 1173 207 73 39

N-3 — 780 925 905 NR (7550) 1030 1480 1070 1338 465 19

N-4 — 1070 1230 840 NR NR NR 1160 320 657 (1720) 505 74



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

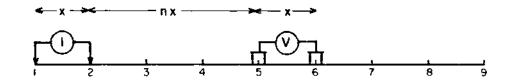
spurious electrical effects. The actual negative frequency effect value

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.

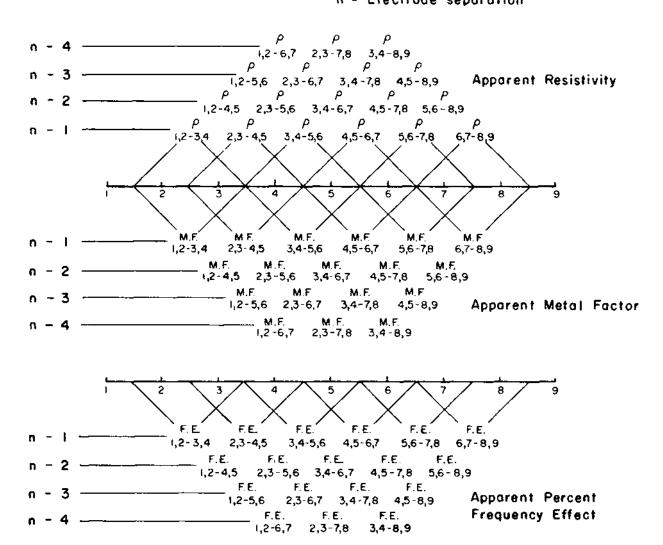
The symbol "NR" indicates that for some reason the operator did not attempt to record a reading although normal survey procedures would suggest that one was required. This may be due to inaccessible topography or other similar reasons. Any symbol other than those discussed above is unique to a particular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

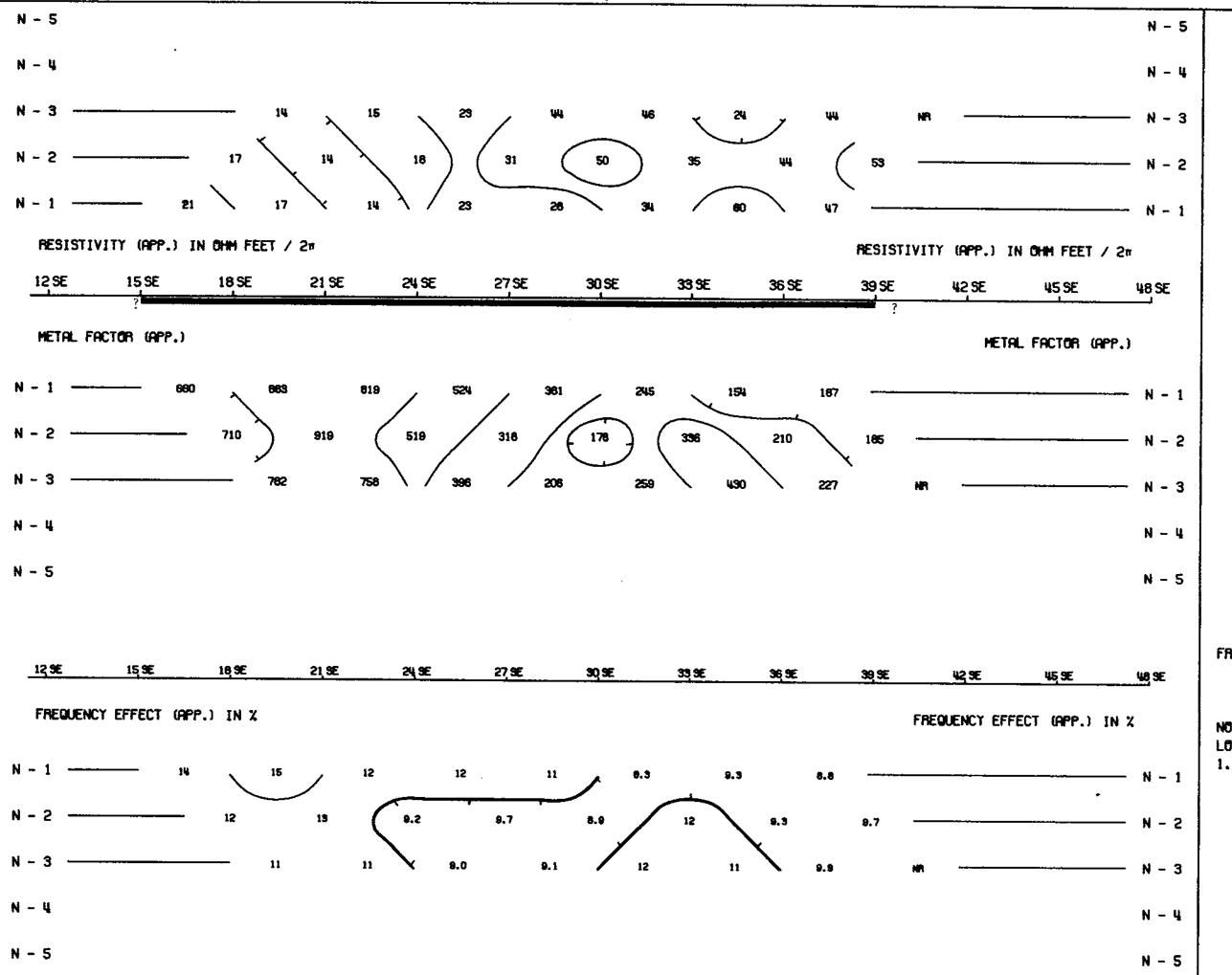
METHOD USED IN PLOTTING DIPOLE-DIPOLE INDUCED POLARIZATION AND RESISTIVITY RESULTS



Stations on line

x = Electrode spread length n = Electrode separation

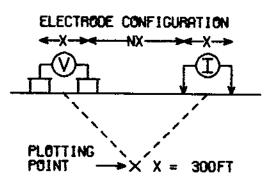




JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.

LINE NO. - 7200NE

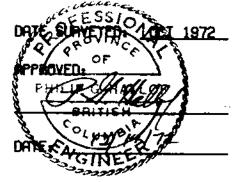


SURFACE PROJECTION OF ANOMALOUS ZONES

PROBABLE POSSIBLE ////

FREQUENCIES: 0.31-5.0 HZ

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



Expiry Date: February 25, 1973

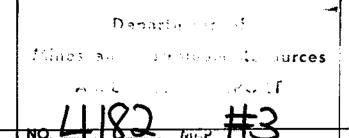
McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

PLAN MAP



Scale I 4 miles IDA 163 NOTE TO ACCOMPANY GEOPHYSICAL REPORT FOR JOREX LIMITED, NADI AND IDA CLAIMS, NADINA LAKE AREA, OMINECA M.D., B.C. BY P.G. HALLOF (P. ENG.) AND M.A. GOUDIE, (GEOLOGIST.) 53°45' DATED: DEC. 14, 1972



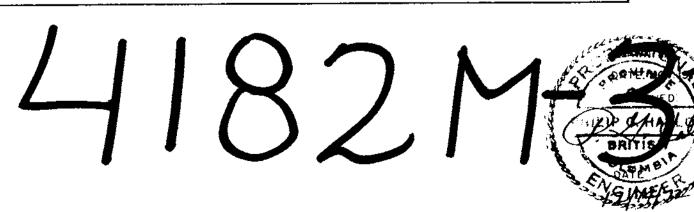
SURFACE PROJECTION OF ANOMA, OUS ZONES

PROBABLE PROBABLE Numbers of the end of the aromatics indicate prectrate interval

JOREX LIMITED

IDA CLAIMS, NADINA LAKE AREA
OMINECA M.D., BRITISH COLUMBIA
SCALE

ONE INCH EQUALS FOUR HUNDRED FEET



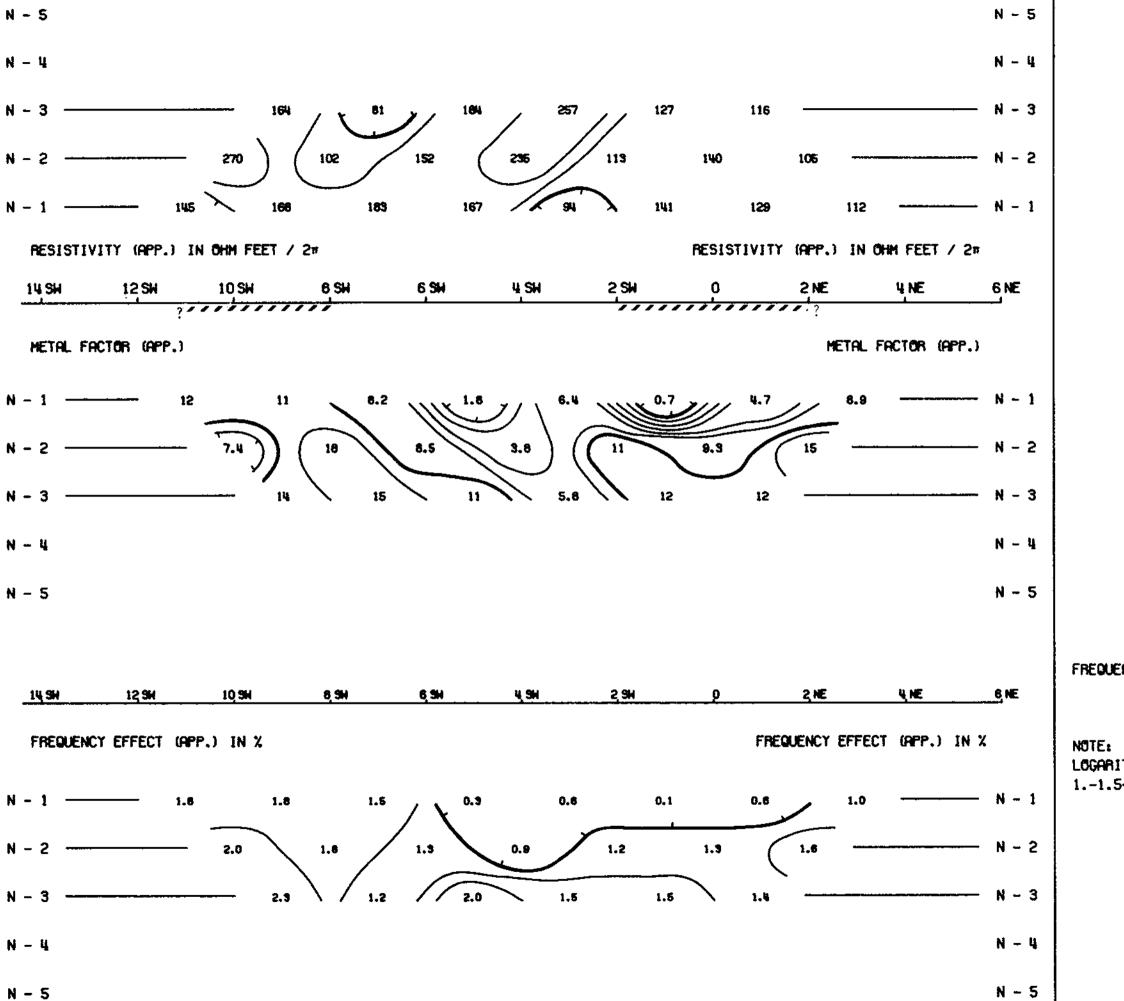
Expery Date: February 25, 1977

McPHAR GEOPHYSICS INDUCED POLARIZATION AND RESISTIVITY SURVEY PLAN MAP Description of Mines an Algerian Ze purces As 255 - 1 REP. 15 N A D I 44 NADI 49 NADI 45 THIS ZONE ADJOINS THE ZONE WHICH IS SHOWN ON LINE 3200 NE 1DA 13 LOCATION MAP
Scale:("= 4 miles NOTE TO ACCOMPANY GEOPHYSICAL REPORT FOR JOREX LIMITED, NADI AND IDA CLAIMS, NADINA LAKE AREA, OMINECA M.D., B.C. BY P.G. HALLOF (P. ENG.) AND M.A. GOUDIE, (GEOLOGIST.) DATED: DEC.14, 1972. SURFACE PROJECTION JOREX LIMITED OF ANOMALOUS ZONES NADI & IDA CLAIMS, NADINA LAKE AREA OMINECA M.D., BRITISH COLUMBIA POSSIBLE Number at the end of anomaly SCALE indicates electrode interval ONE INCH EQUALS FOUR HUNDRED FEET

DWG. IPP - 4882-2

McPHAR GEOPHYSICS INDUCED POLARIZATION AND RESISTIVITY SURVEY . PLAN MAP Diparlmans of Mines and Justin am Resources ASSESS ... REPORT NO. 4182 MAP #) NADI 17 NADI 14 NADI M7 NADI 13 NADI II NADI M8 NADI 36 NADI 38 NADI 5 NADI 34 NADI 32 NADI 31 NADI 33 NADI 48 NADI #6 NADI 42 NADI 40 NADI 49 NADI 47 NADI 45 NADI 43 NADI 41 LOCATION MAP Scale(1"=4 miles THIS ZONE ADJOINS THE ZONE WHICH IS SHOWN ON LINE 2400 NE NOTE TO ACCOMPANY GEOPHYSICAL REPORT FOR JOREX LIMITED, NADI AND IDA CLAIMS, NADINA LAKE AREA, OMINECA M.D., B.C. BY P.G. HALLOF (P. ENG.) AND M.A. GOUDIE (GEOLOGIST.) DATED: DEC. 14, 1972 SURFACE PROJECTION JOREX LIMITED OF ANOMALOUS ZONES DEFINITE NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., BRITISH COLUMBIA POSSIBLE SCALE Number at the end of anomaly indicates electrode interval ONE INCH EQUALS FOUR HUNDRED FEET

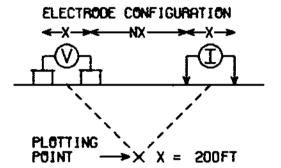
DWG. IPP-4882-1



JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.

LINE NO. - 4000NW

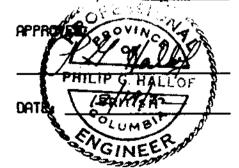


SURFACE PROJECTION OF ANOMALOUS ZONES

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED NOV 1972

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

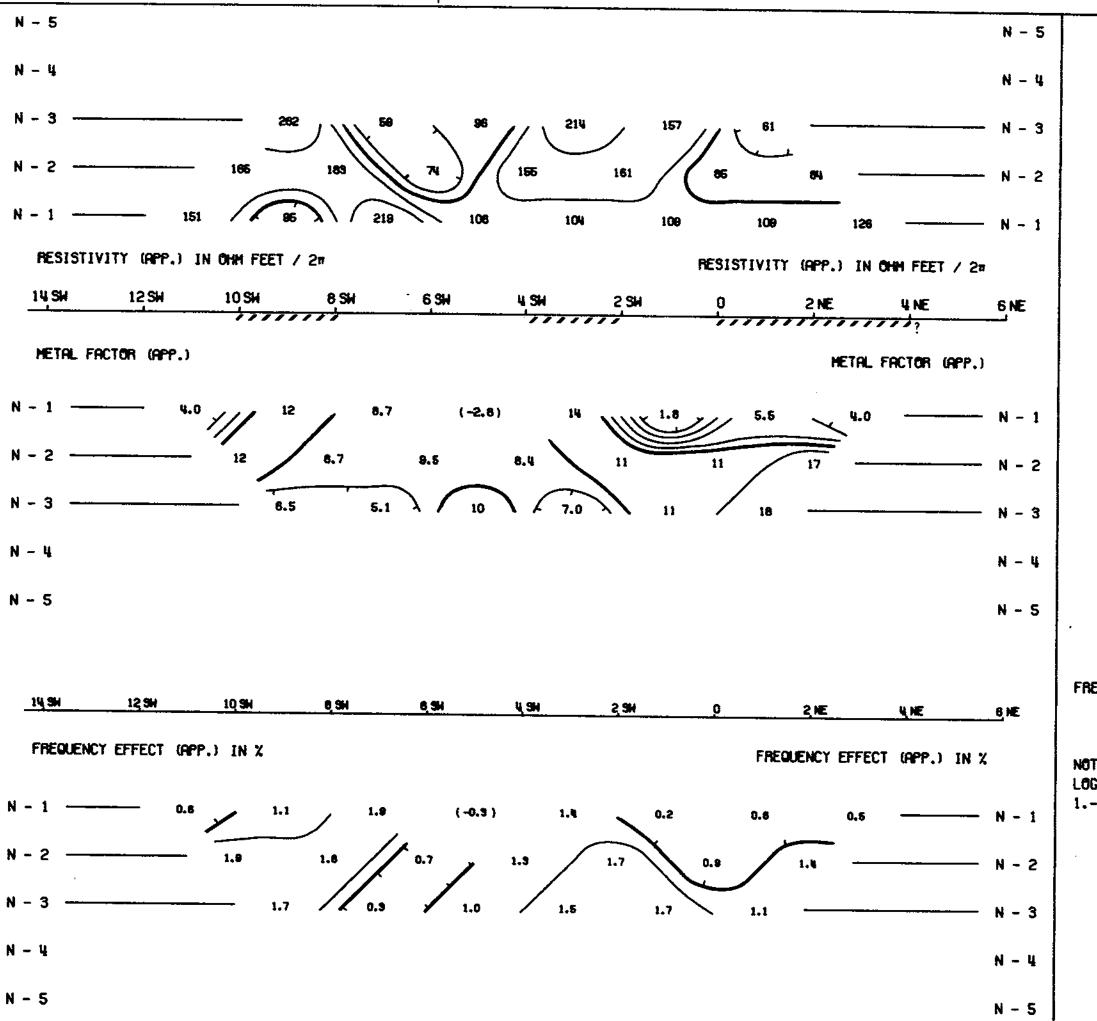


Expiry Date: February 25, 1973

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

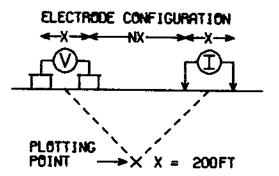
NOTE: THIS PLOT HAS PRODUCED BY MCPHAR COMPUTER DIVISION



JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.

LINE NO. - 4400NH

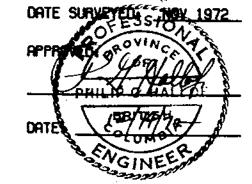


SURFACE PROJECTION OF ANOMALOUS ZONES

PROSPIBLE PROPERTY PROSPIBLE PROPERTY PROSPIBLE PROPERTY PROSPIES PROPERTY PROPERTY PROSPIES PROPERTY PROSPIES PROPERTY PROPERTY

FREQUENCIES: 0.31-5.0 HZ

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

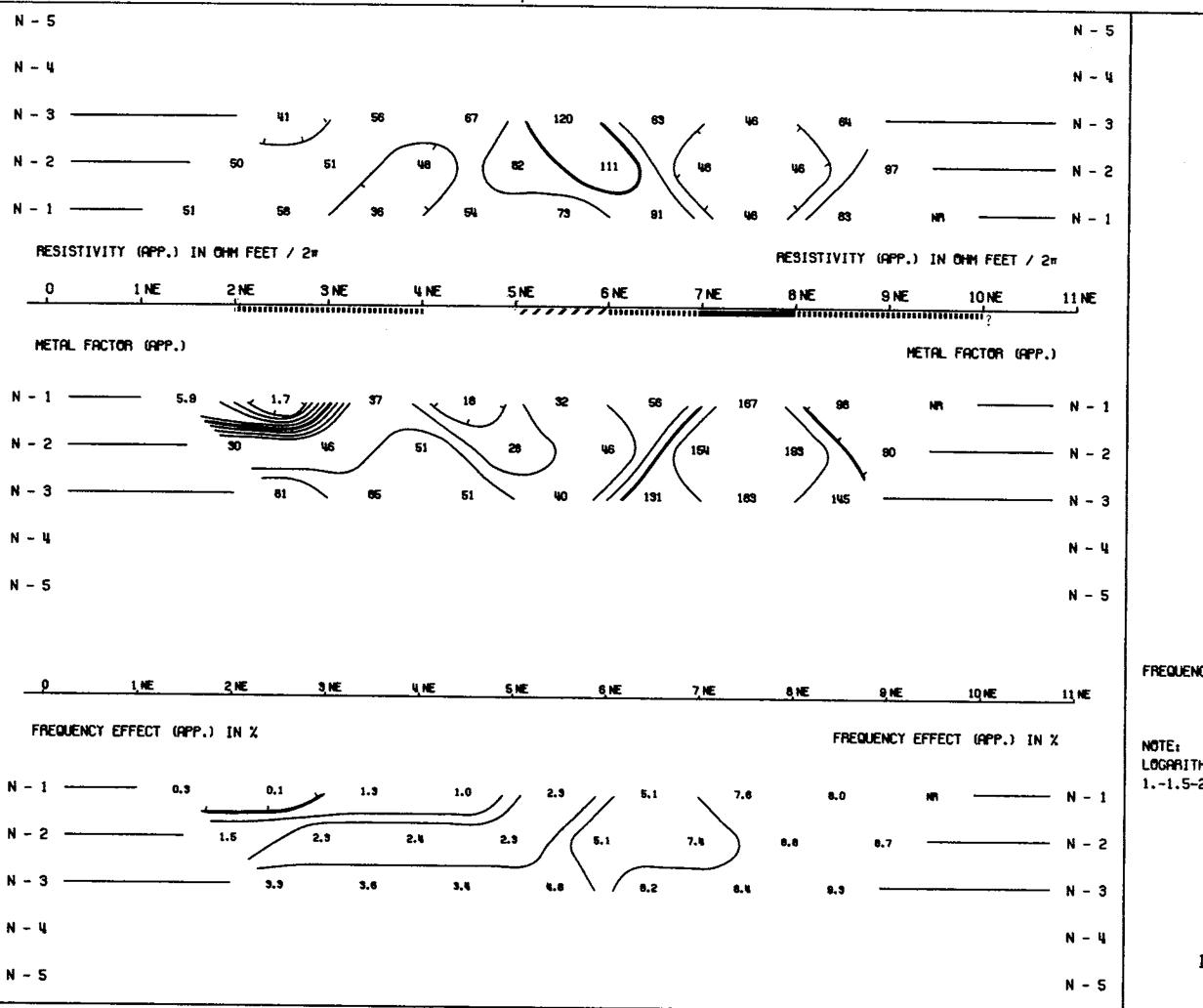


Expiry Date: February 25, 1973

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

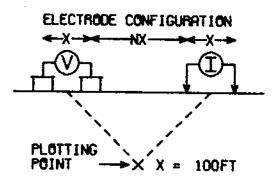
NOTE: THIS PLOT HAS PRODUCED BY HOPHER COMPUTER DIVISION



JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.

LINE NO. - 2000SE

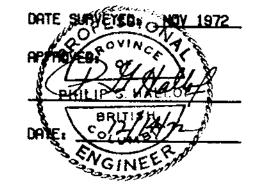


SURFACE PROJECTION OF ANOMALOUS ZONES

PROBABLE IMMINIMI POSSIBLE ////

FREQUENCIES: 0.31-5.0 HZ

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

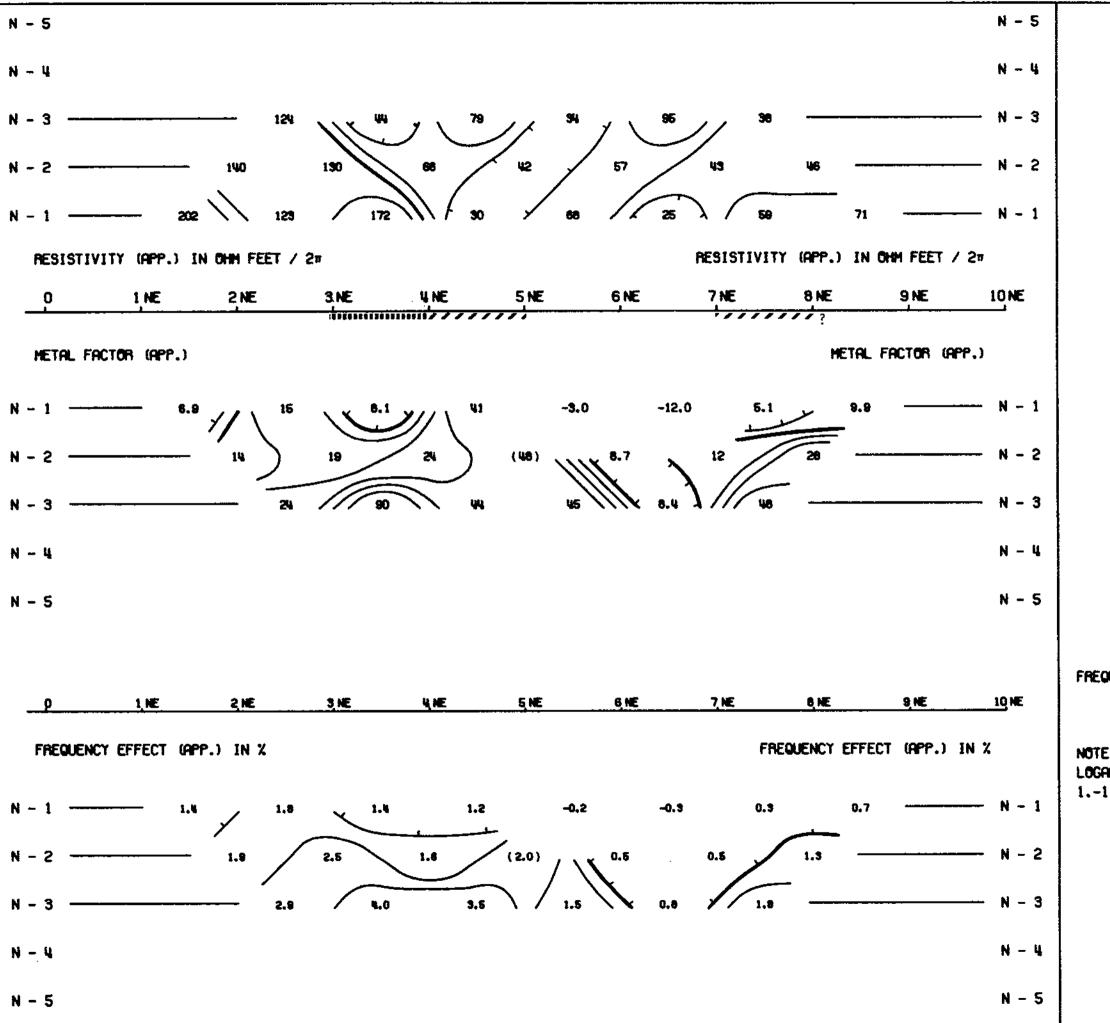


Espiry Dales February 25, 1973

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

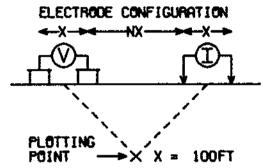
NOTE: THIS PLOT WAS PRODUCED BY HOPHER COMPUTER DIVISION



JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.

LINE NO. - 1200SE



SURFACE PROJECTION OF ANOHALOUS ZONES

DEFINITE -PROBABLE MANAGEMENT POSSIBLE ////

FREQUENCIES: 0.31-5.0 HZ

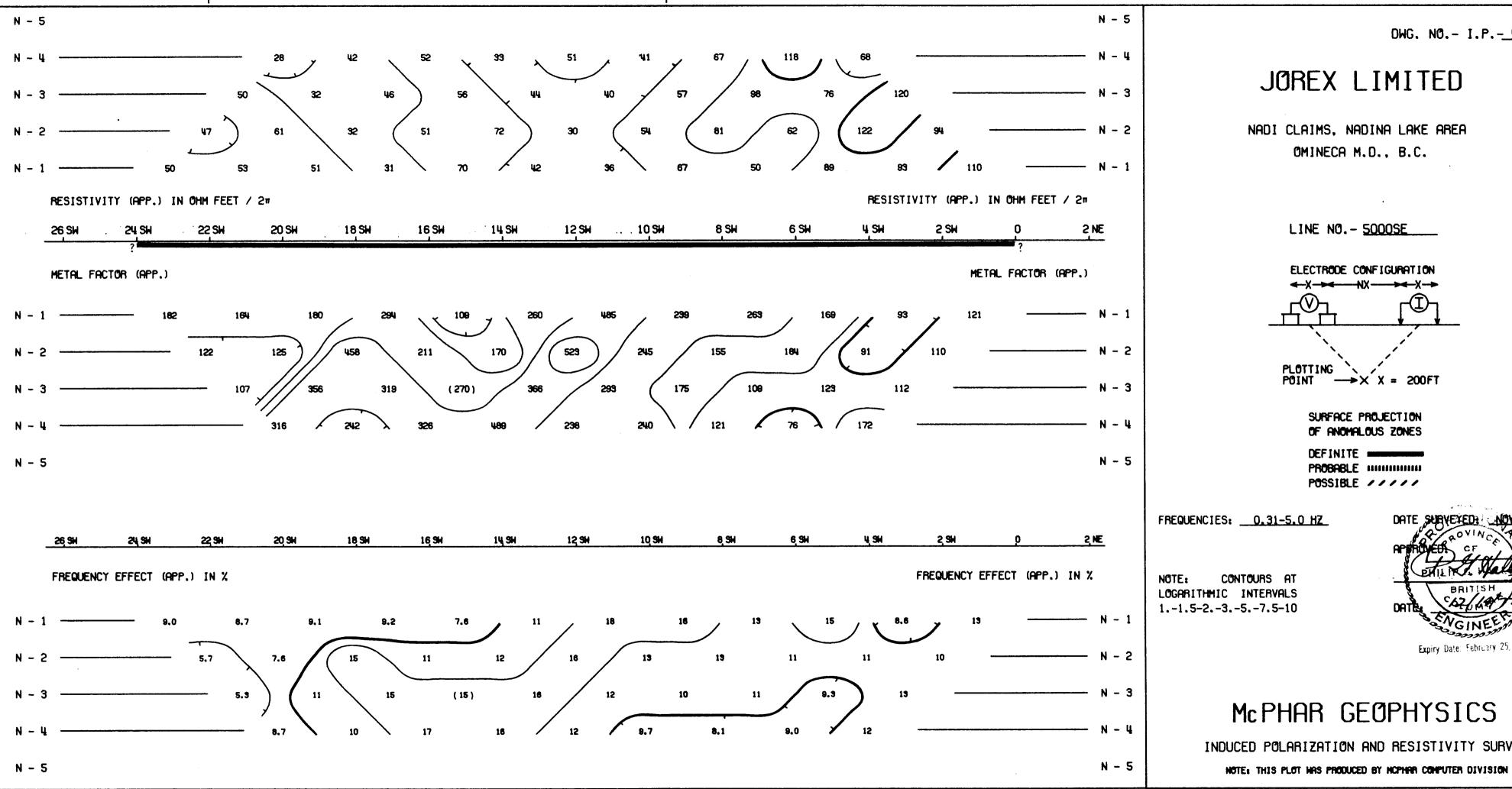
CONTOURS AT LOGARITHMIC INTERVALS 1,-1,5-2,-3,-5,-7,5-10

Expiry Date: February 25, 1973

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

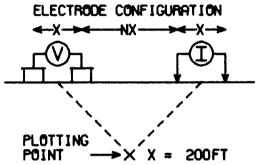
NOTE: THIS PLOT HAS PRODUCED BY HOPHAR COMPUTER DIVISION



JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.

LINE NO. - 5000SE



SURFACE PROJECTION OF ANOMALOUS ZONES

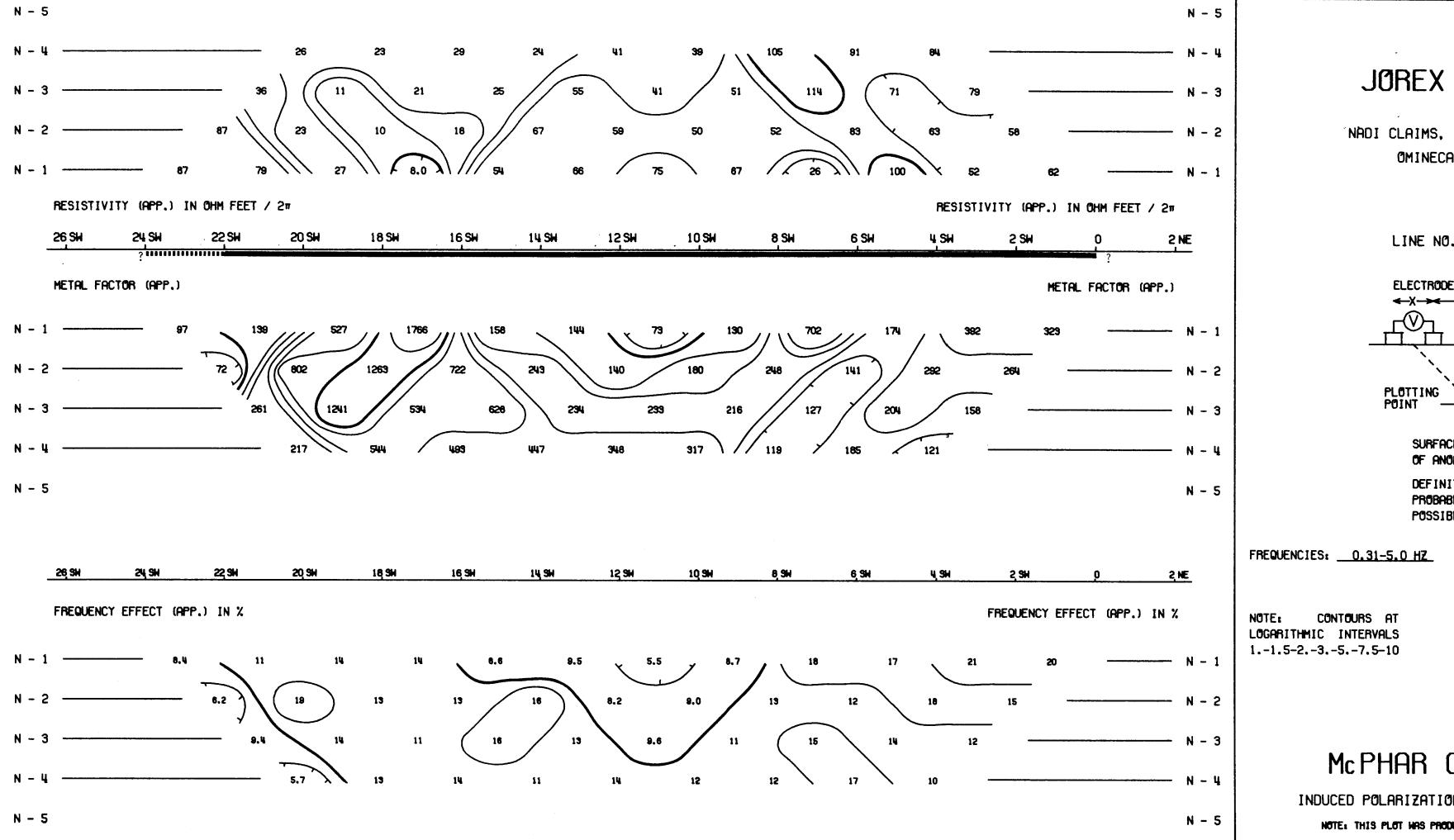
DEFINITE -PROBABLE POSSIBLE ////



Expiry Date: February 25, 1973

McPHAR GEOPHYSICS

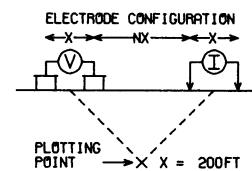
INDUCED POLARIZATION AND RESISTIVITY SURVEY



JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.

LINE NO. - 4200SE



SURFACE PROJECTION OF ANOMALOUS ZONES

PROBABLE POSSIBLE

PHILIP S. HALLOF

DATE

BY OVER 1972

PHILIP S. HALLOF

OLUMB

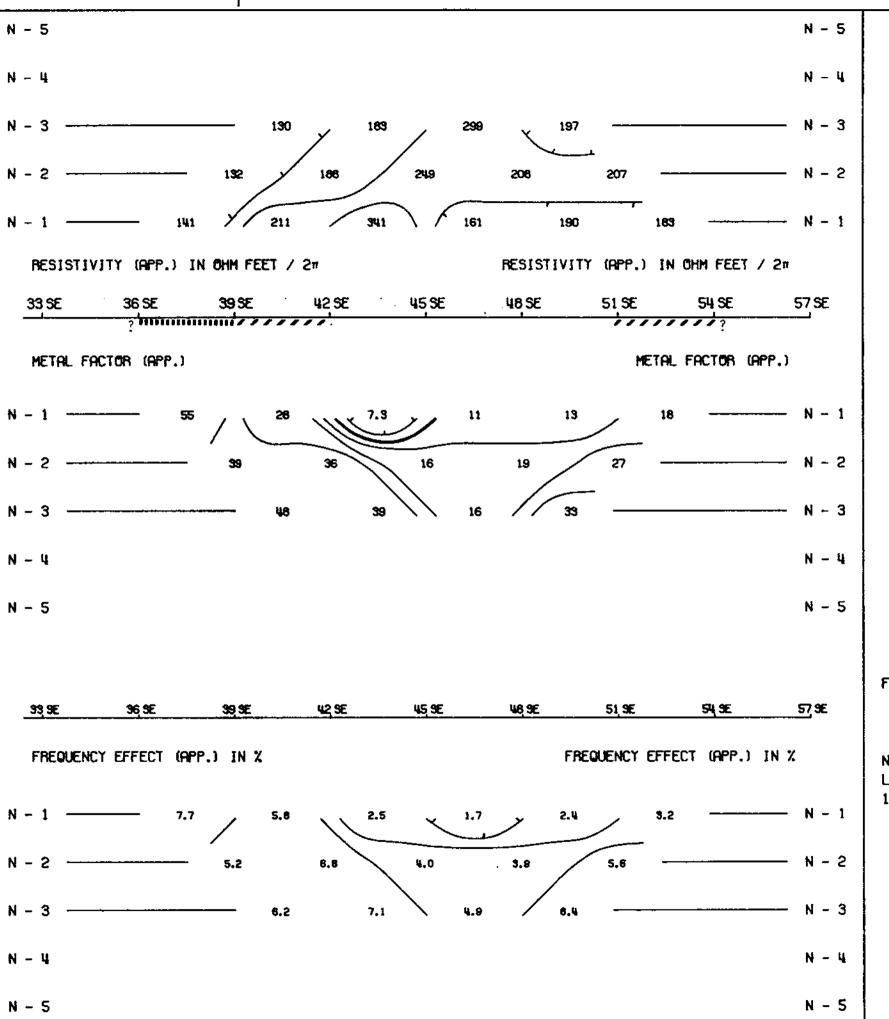
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Expiry Date: February 25, 1973

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION



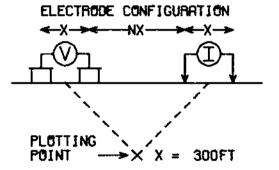
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DWG. NO.- I.P.- 6032-17

JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.

LINE NO.- 3200SW



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE -PROBABLE minimum POSSIBLE ////

FREQUENCIES: 0.31-5.0 HZ

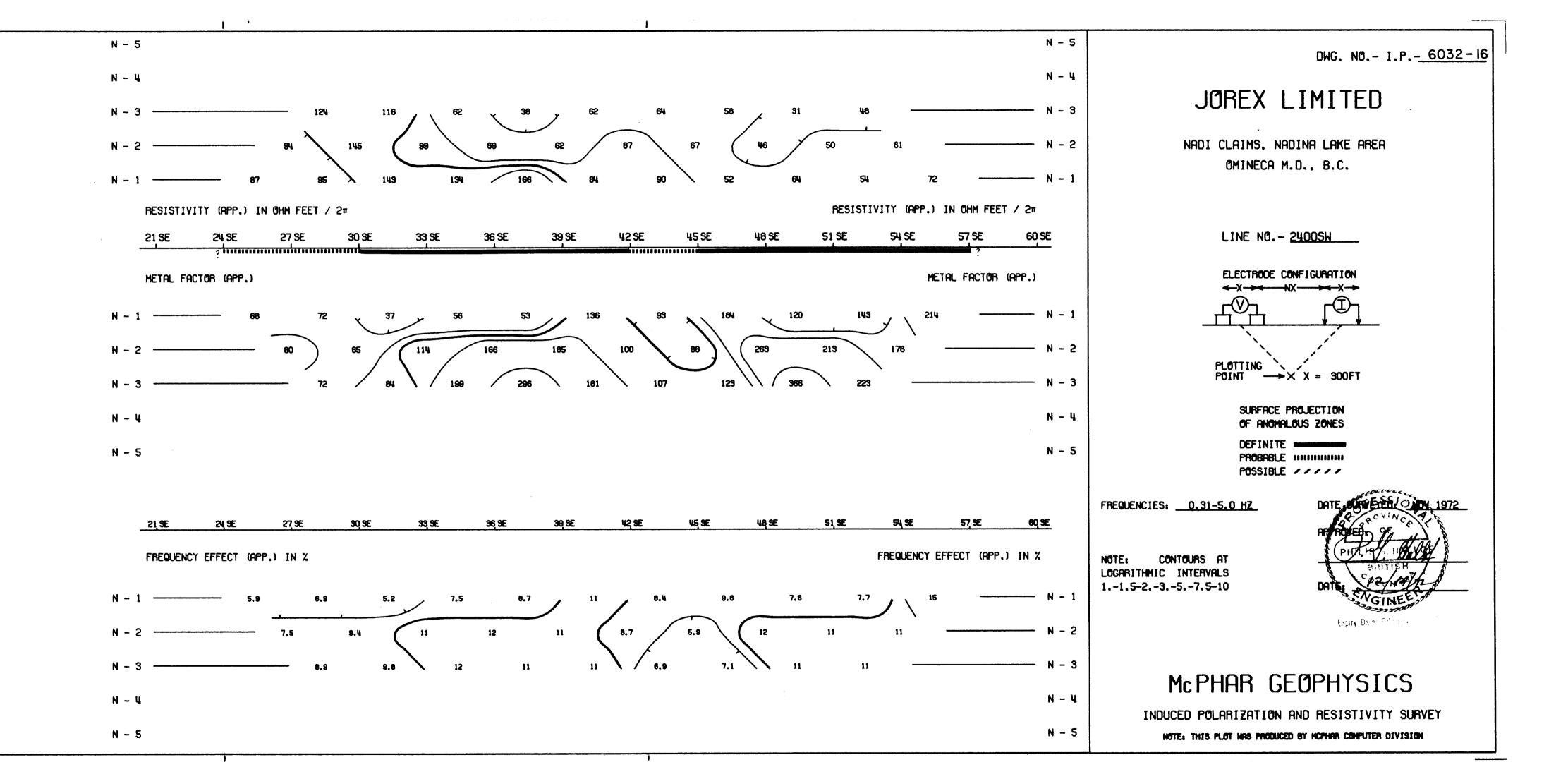
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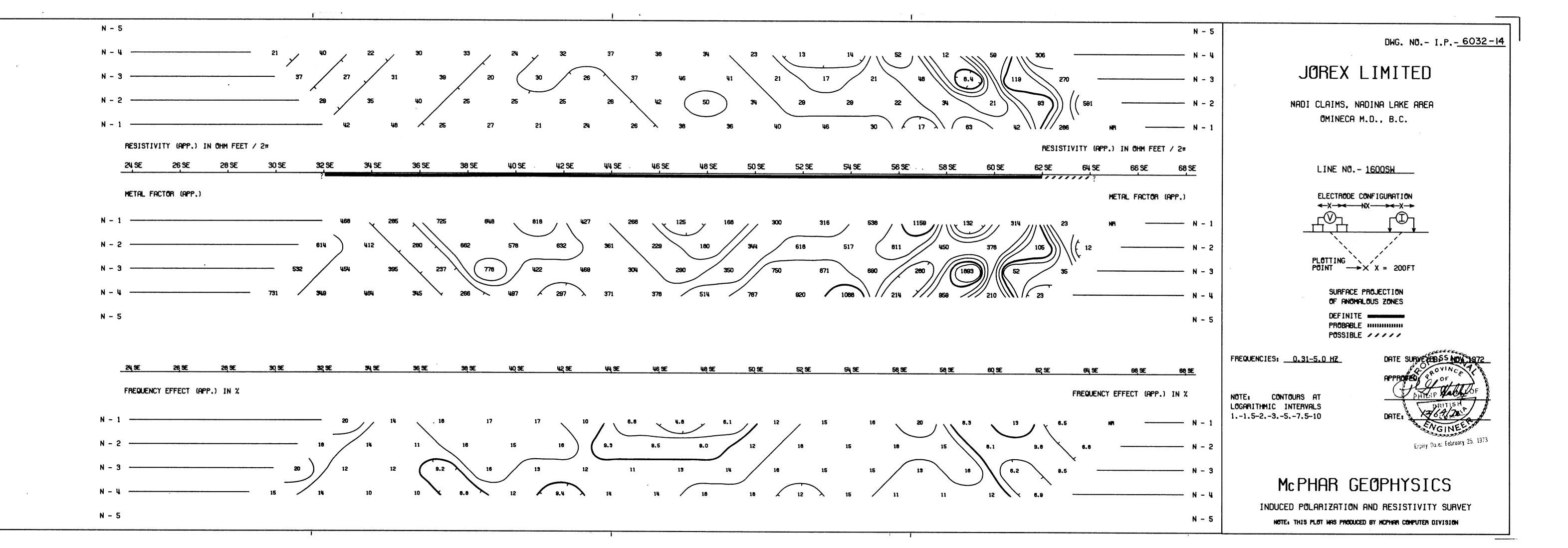
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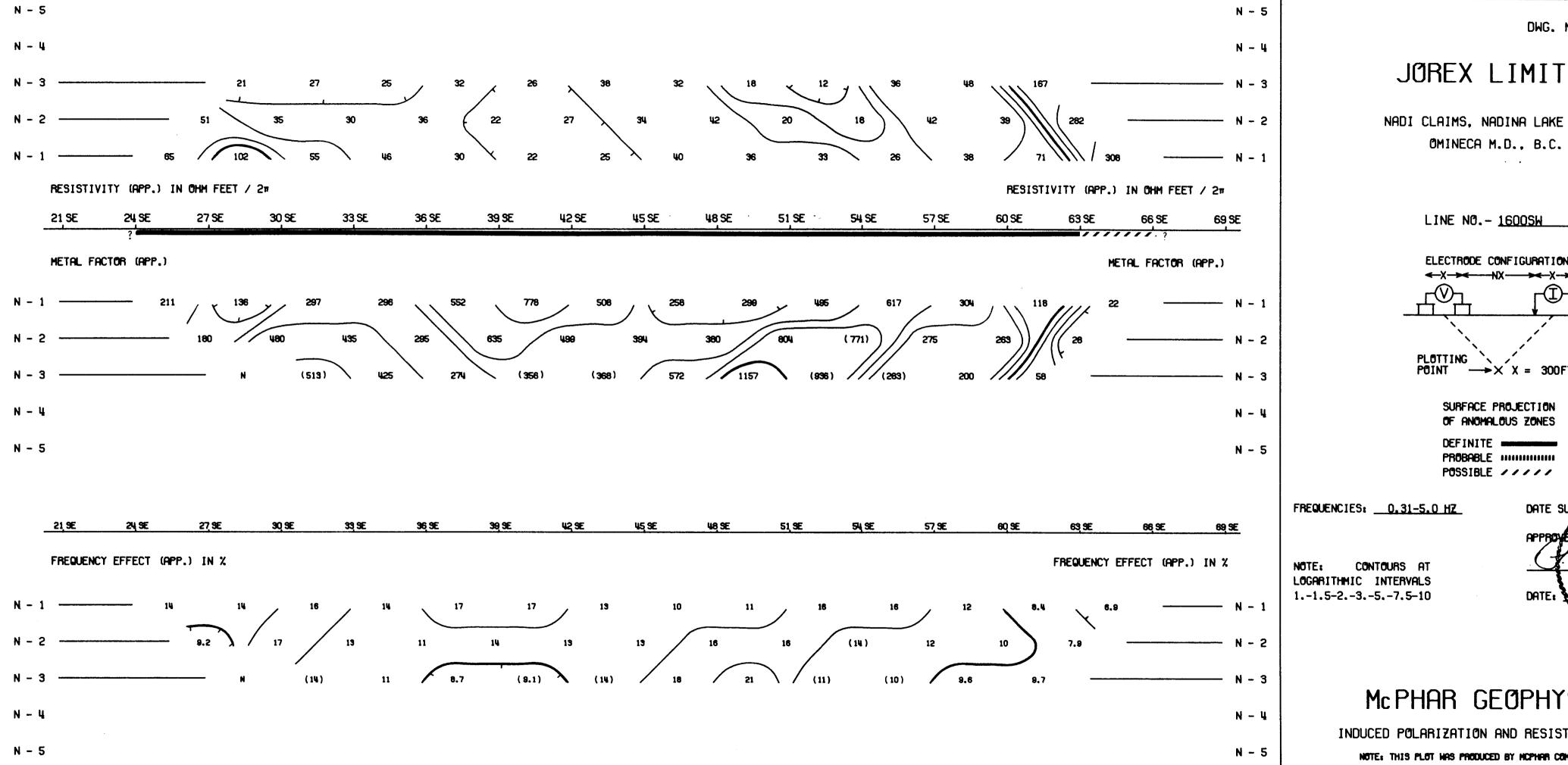
McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT HAS PRODUCED BY MCPHAR COMPUTER DIVISION

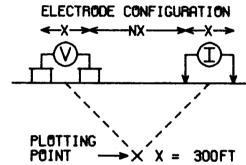






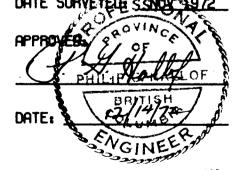
JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.



SURFACE PROJECTION OF ANOMALOUS ZONES

POSSIBLE ////

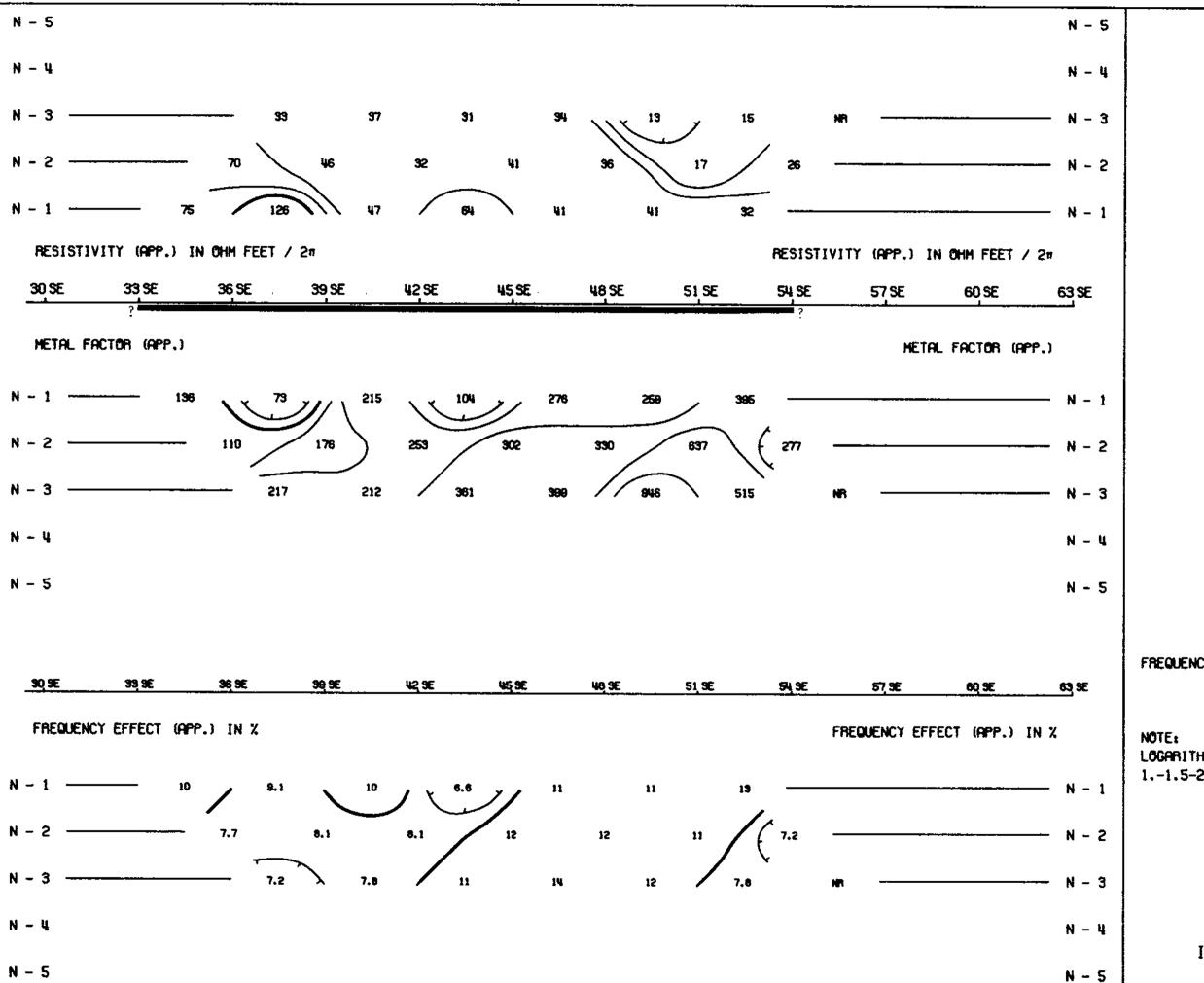


Replay Date: February 25, 1973-

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

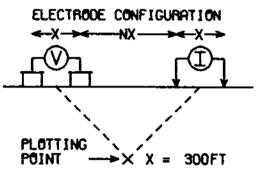
NOTE: THIS PLOT HAS PRODUCED BY MCPHAR COMPUTER DIVISION



JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.

LINE NO. - 2000SW



SURFACE PROJECTION OF ANOMALOUS ZONES

PROBABLE PROSSIBLE ////

FREQUENCIES: __0.31-5.0 HZ

DATE SURVEYED NOV 1972

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

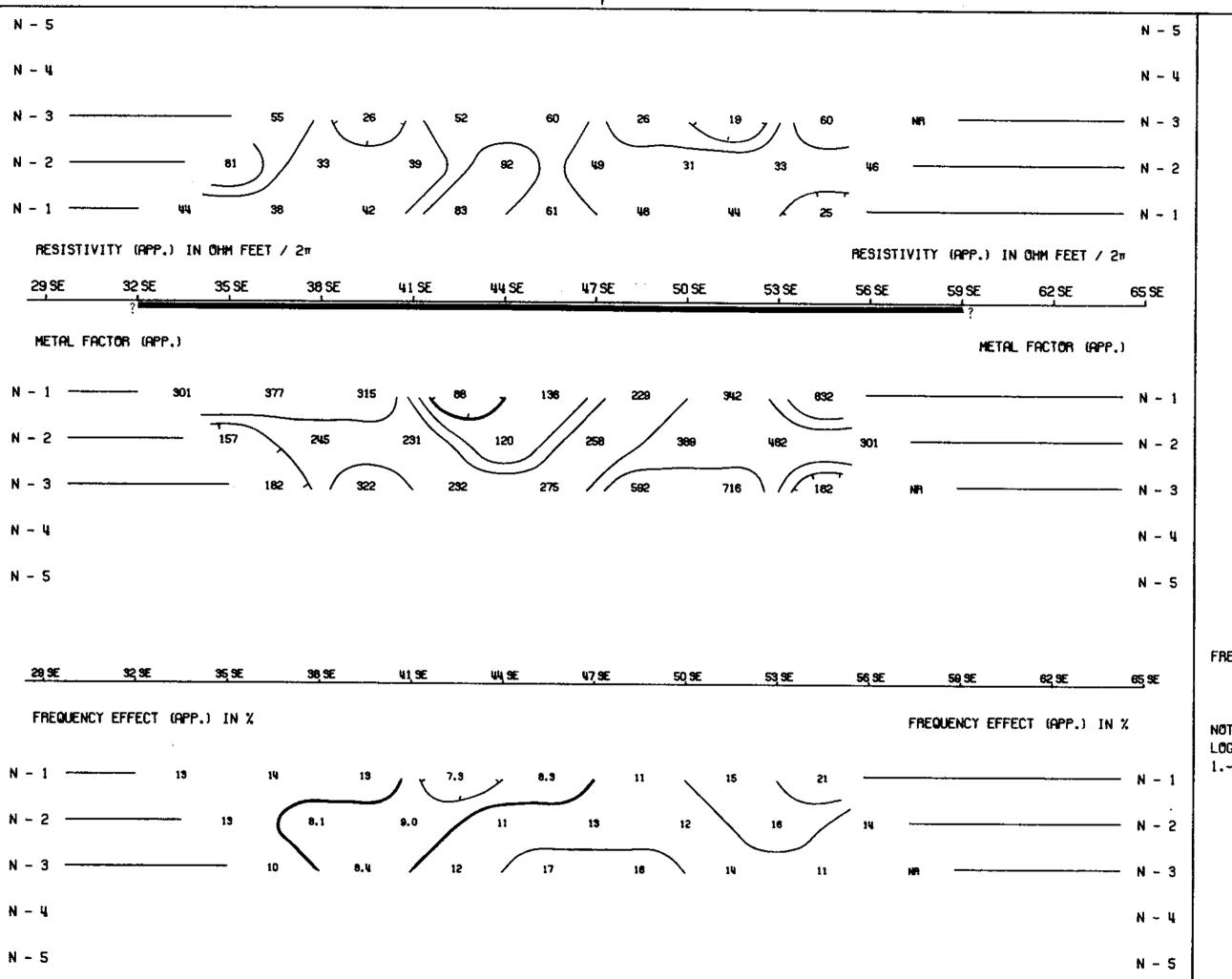
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Date: Select Sebstaty 25, 1975

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

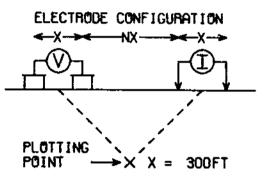
NOTE: THIS PLOT WAS PRODUCED BY HIPHAR COMPUTER DIVISION



JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.

LINE NO. - 1200SW



SURFACE PROJECTION OF ANOMALOUS ZONES

PROBABLE PROSSIBLE PROSSIBLE

FREQUENCIES: 0.31-5.0 HZ

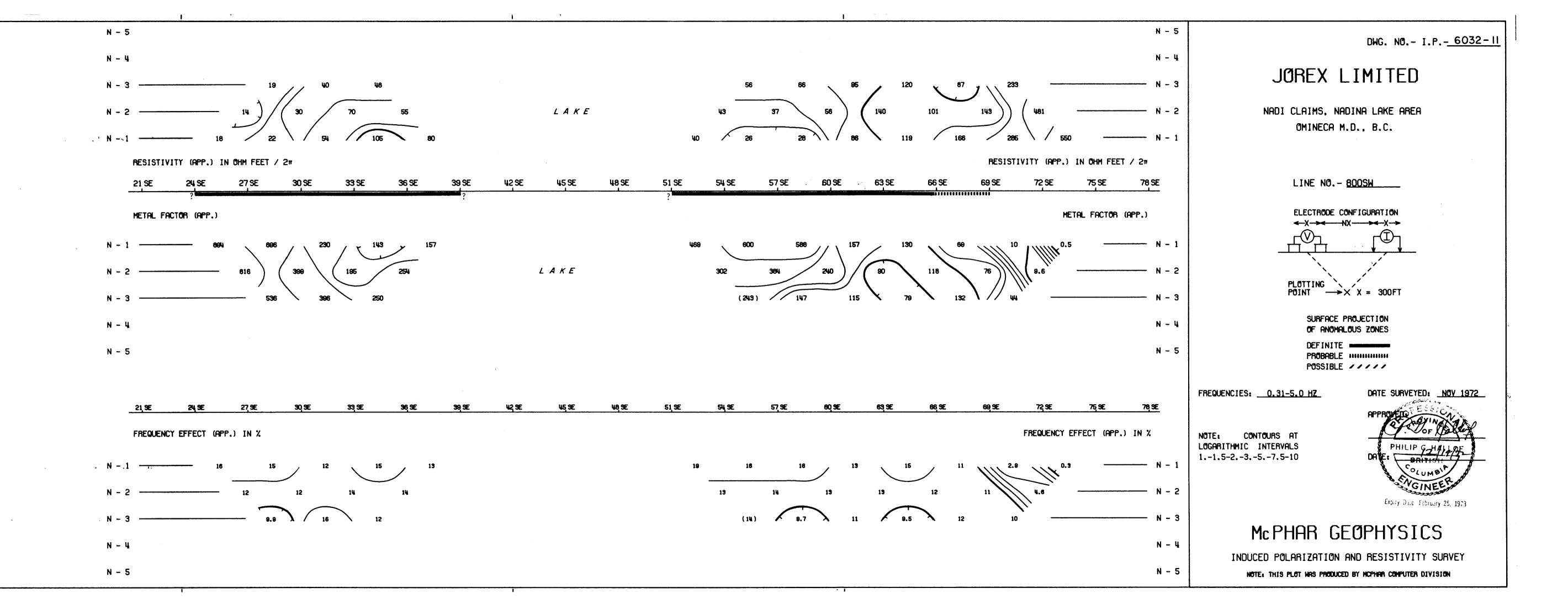
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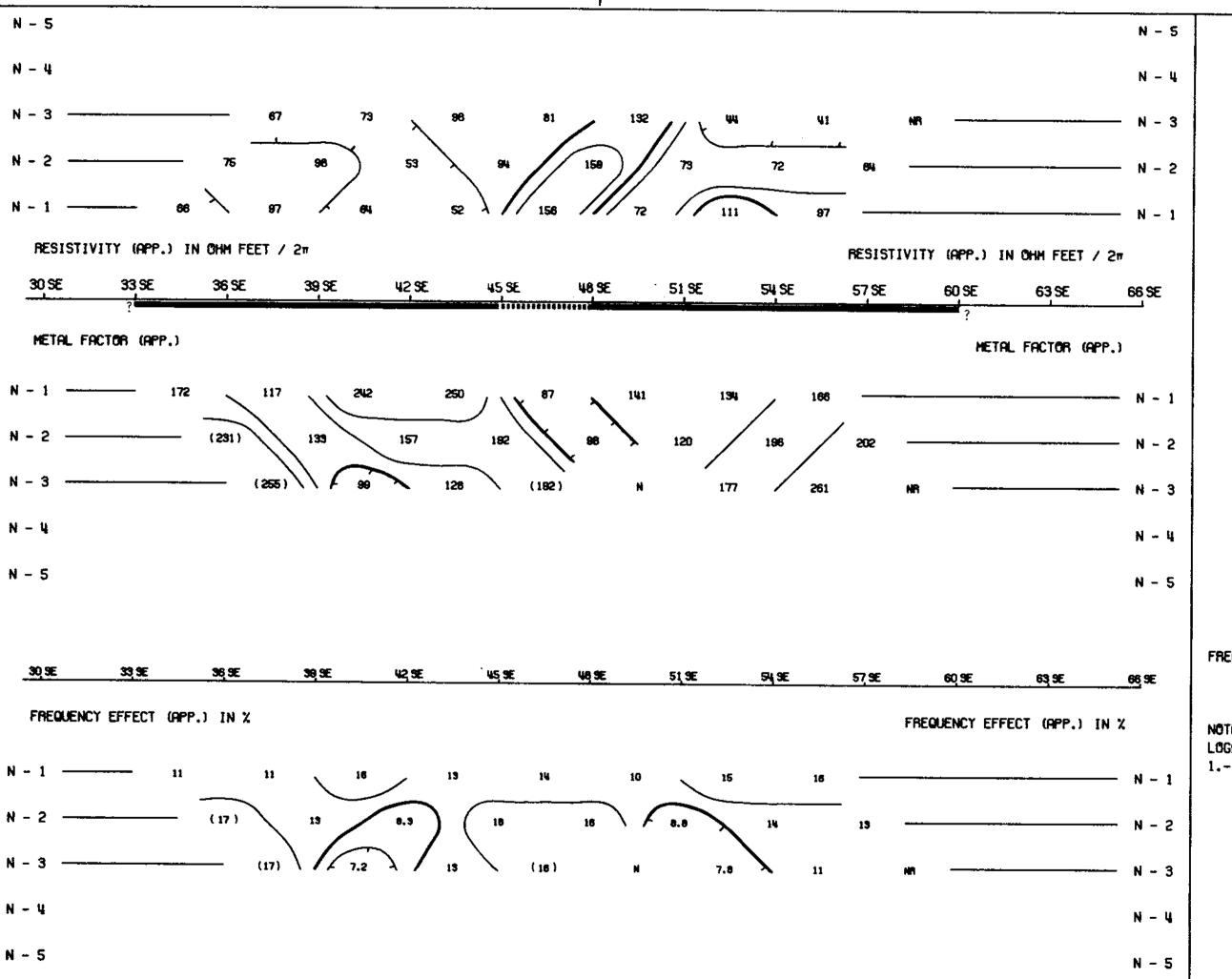


Expiry Date February 2 1973

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

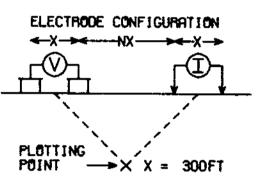




JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.

LINE NO. - 400SW

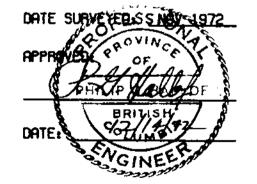


SUBFACE PROJECTION OF ANOMALOUS ZONES

PROBABLE POSSIBLE ////

FREQUENCIES: 0.31-5.0 HZ

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

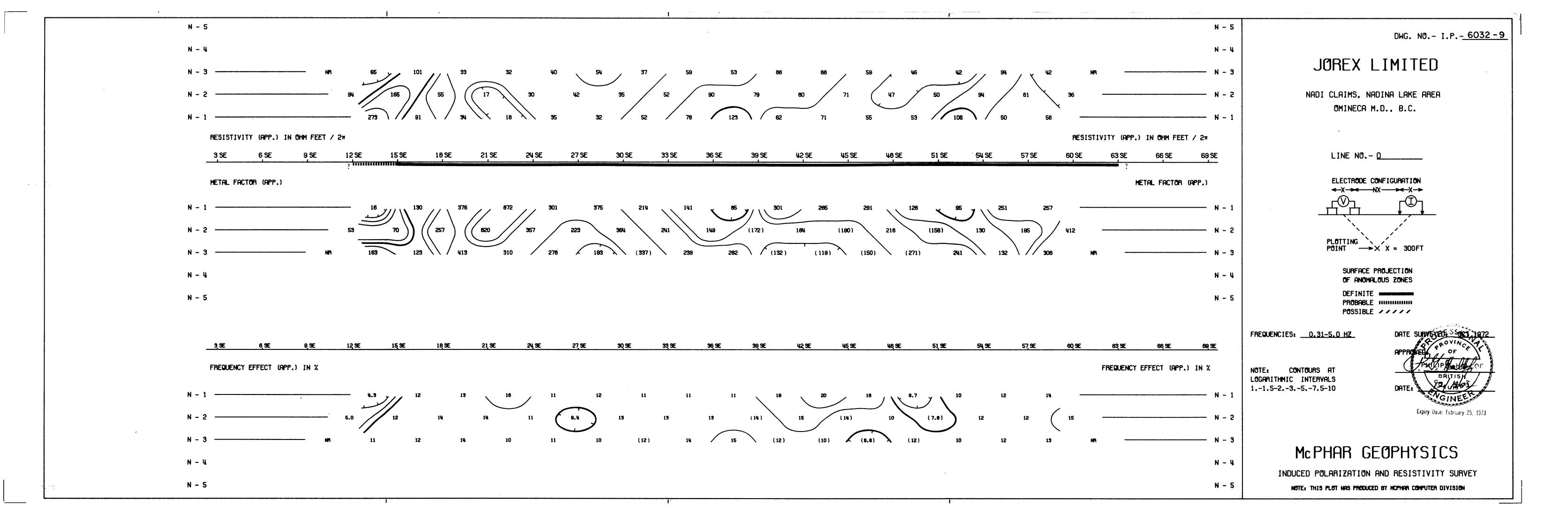


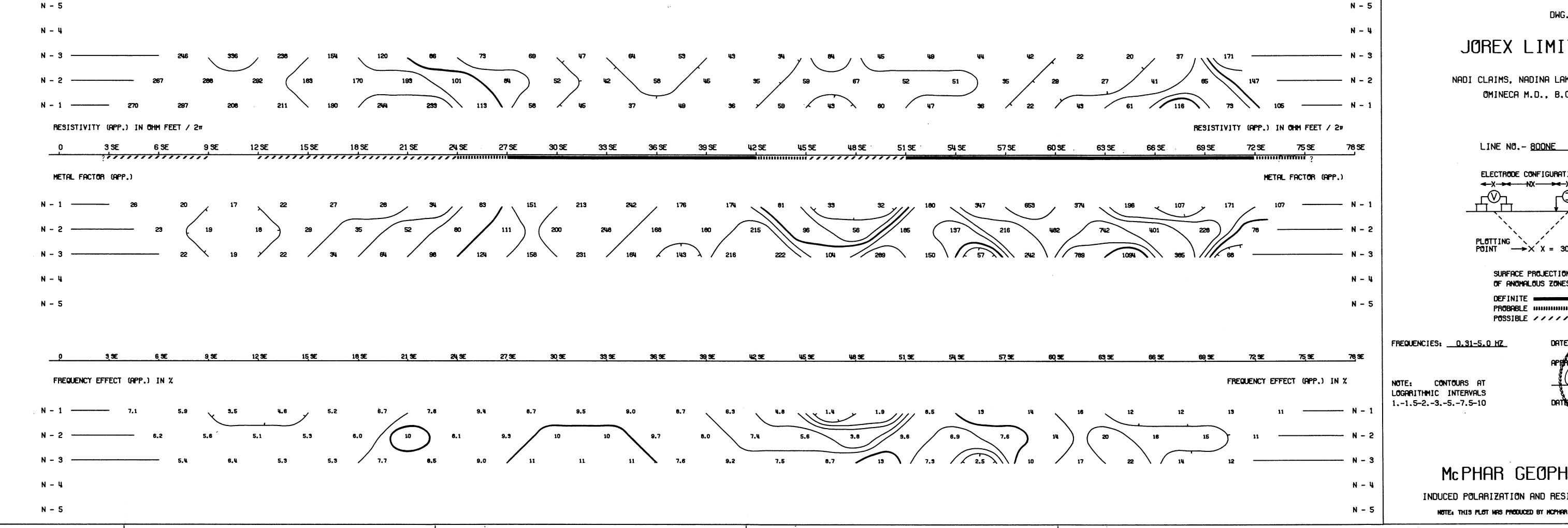
Expiry Date: February 25, 1973

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT HAS PRODUCED BY HOPHER COMPUTER DIVISION

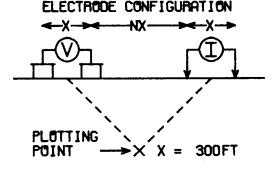




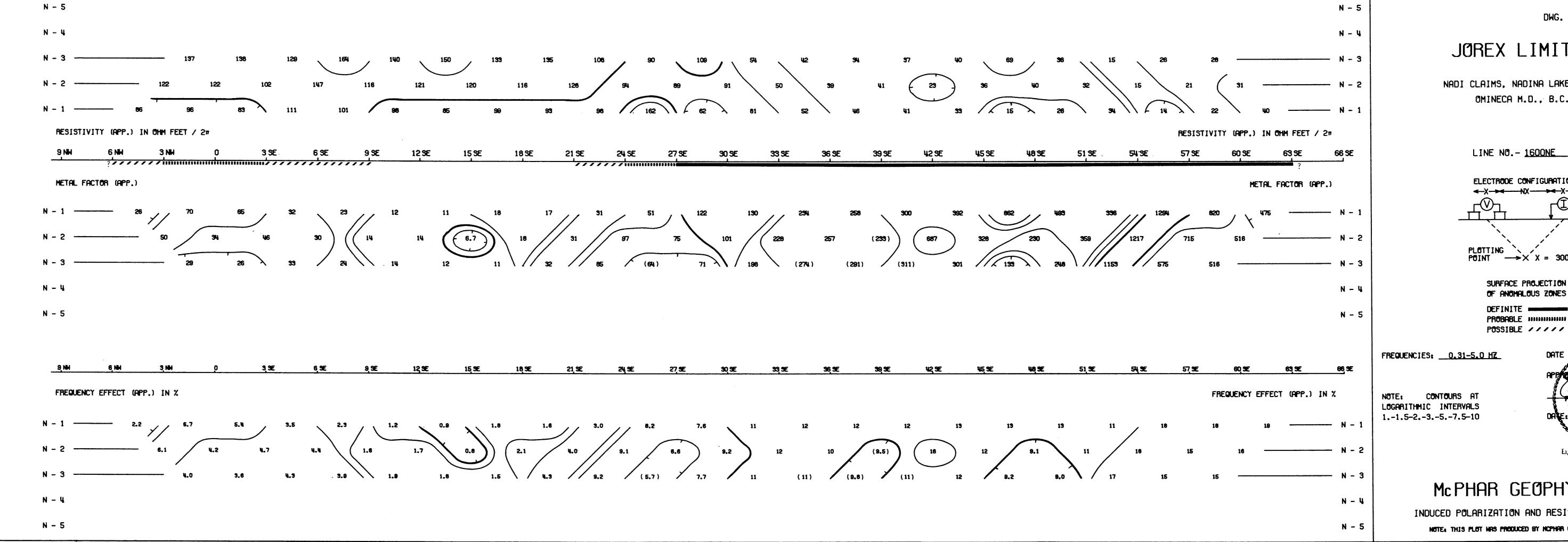
DWG. NO.- I.P.- 6032-8

JOREX LIMITED

OMINECA M.D., B.C.

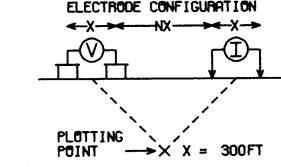


POSSIBLE ////



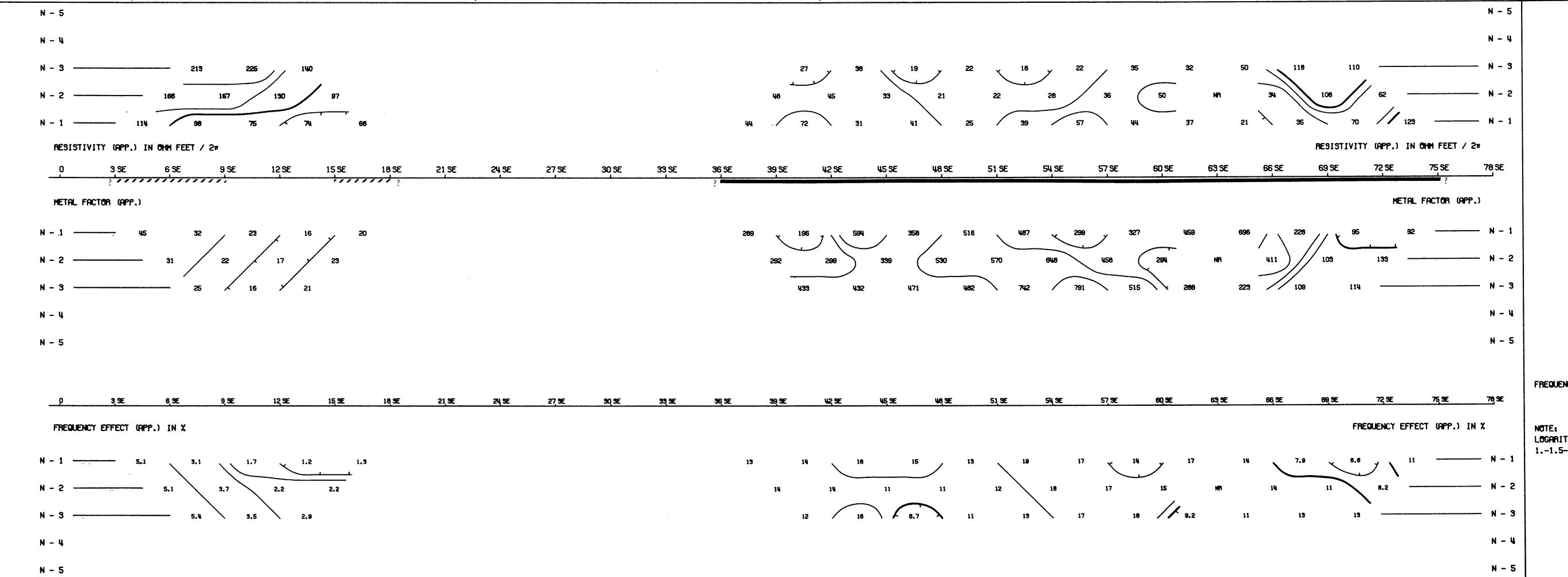
JOREX LIMITED

OMINECA M.D., B.C.



OF ANOMALOUS ZONES

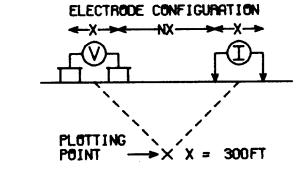
PROBABLE IIIIIIIIIII POSSIBLE ////



JOREX LIMITED

ADI CLAIMS, NADINA LAKE AREA OMINECA M.D.. B.C.

LINE NO. - 2400NE

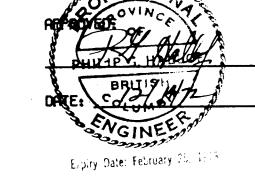


SURFACE PROJECTION OF ANOMALOUS ZONES

PROBABLE PROSSIBLE PROSSIBLE

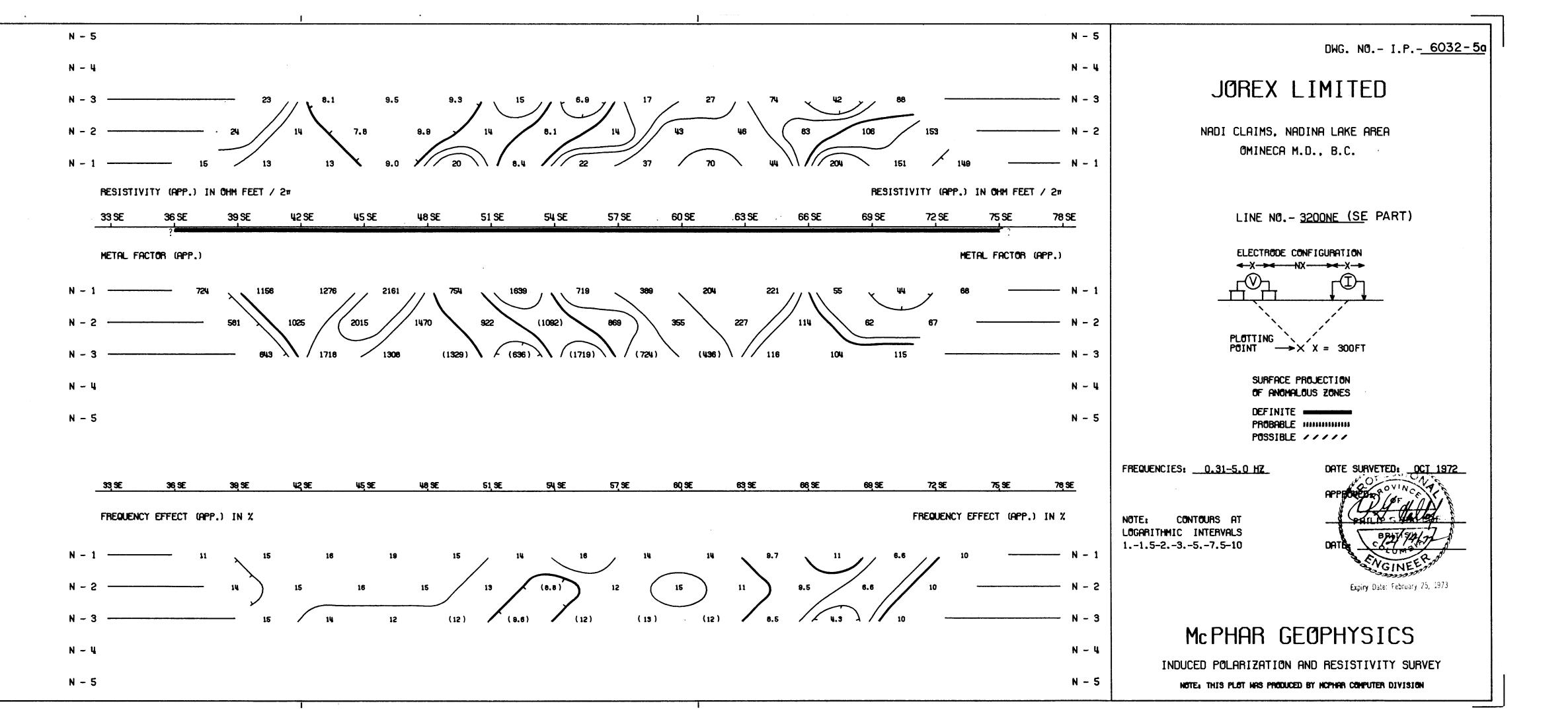
FREQUENCIES: 0.31-5.0 HZ

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



McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

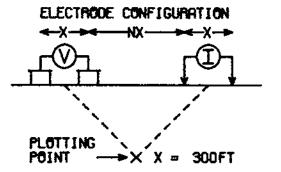


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|---|-----------------|-----------------------|--------------|---------|----------------|----------|--|---------------------|--|------------|----------|
| N - 5 | | | | | | | | | | N - 5 | |
| N – 4 | | | | | | | | | | N - 4 | |
| N - 3 | | 161 | | 163 | / | 100 | | | | - N - 3 | |
| N - 2 | | 109 | 149 | | 120 | | 106 | | | - N-2 | <u> </u> |
| N - 1 | - 77 | 100 | 1 | 107 | | 132 | // | 200 | | - N - 1 | |
| RESISTIVITY | (APP.) IN | OHM FEET / | 2 п | | RESIST | YTIVI | (APP.) | IN OH | M FEET / 2 | 2 # | |
| 8 N ä N | 5 NH | 2 NH | . 1 SE | | 4 SE | | 7 SE | | 10 SE | 13 SE | |
| | 5 NH | / / hanssa | ************ | 1006310 | ******** | 11111111 | क्षांक्रक् | 11111111 | ? | | |
| METAL FACTOR (APP.) METAL FACTOR (APP.) | | | | | | | | | | | |
| N - 1 | <u>.</u> 41 | y 57 | | 71 | | 54 | _ | u 5 | | - N - 1 | |
| N - 2 | | 51 | 24 | | 63 | | 97 | | | - N-2 | |
| N - 3 ——— | | - 36 | <i>></i> | 53 | | 85 | ************************************* | . | <u>. </u> | — н-з | |
| N - 4 | | | | | | | | | | N - 4 | |
| N - 5 | | | | | | | | | | N - 5 | |
| | | | | | | | | | | : | |
| 8 NH | S, NH | S MH | i SE | | . 4,9 € | | 7, 9 E | | 10 SE | 13 9€ | FRE |
| FREQUENCY EFFECT (APP.) IN X FREQUENCY EFFECT (APP.) IN X | | | | | | | | | X | NO1 | |
| N - 1 | 9. 1 | 5.7 | | 7.6 | ζ. | 7.2 | <i>y</i> | 8.9 | | - N - 1 | 1 |
| N - 2 | | 5.5 (| 8,0 | | 7.5 | | 11 | | | - N-2 | |
| N - 3 | | 5.7 | | 8.6 | | 0,5 | | | | - N-3 | |
| N - 4 | | | | | | | | | | N - 4 | |
| N - 5 | | | | | | | | | | N - 5 | |
| | | | | | | | | | | | |

JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.

LINE NO. - 3200NE (NW PART)

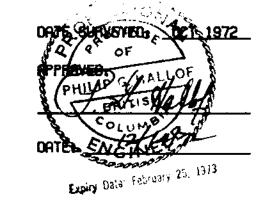


SURFACE PROJECTION OF ANOMALOUS ZONES

PROBABLE IMMINION POSSIBLE ////

FREQUENCIES: 0.31-5.0 HZ

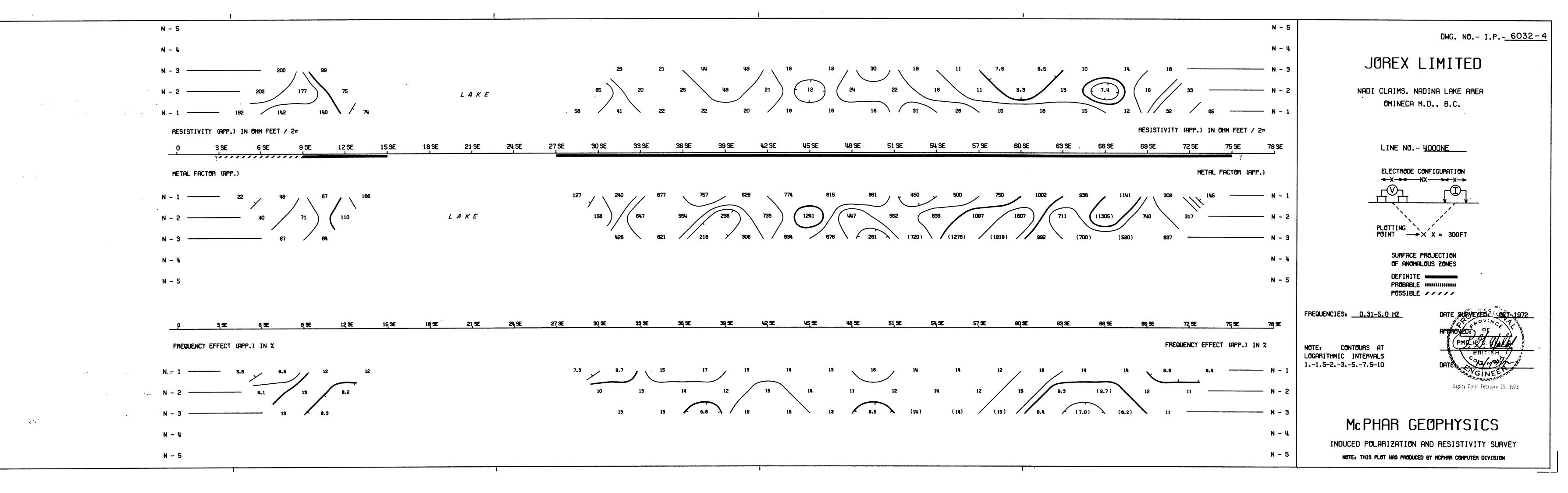
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

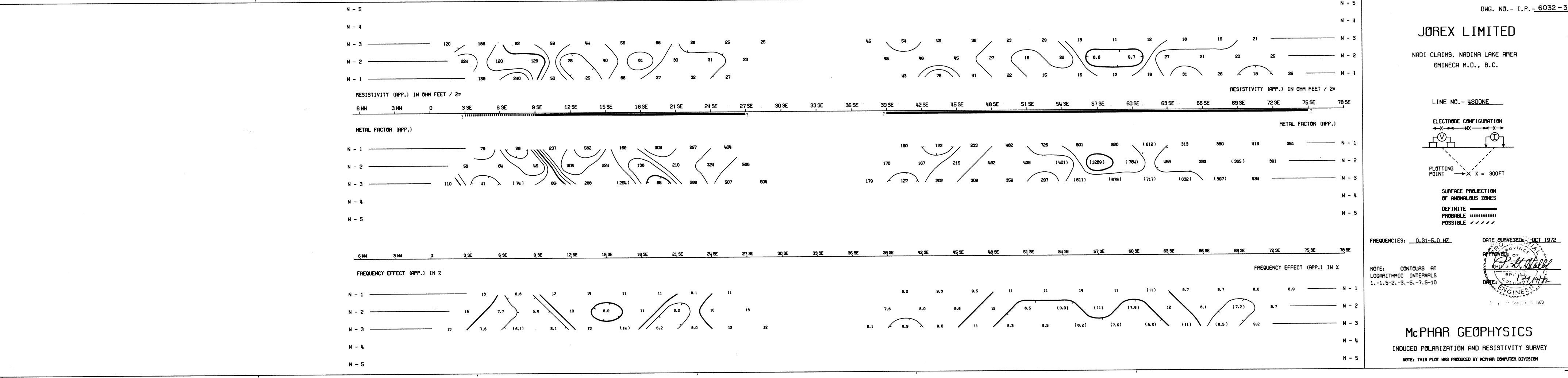


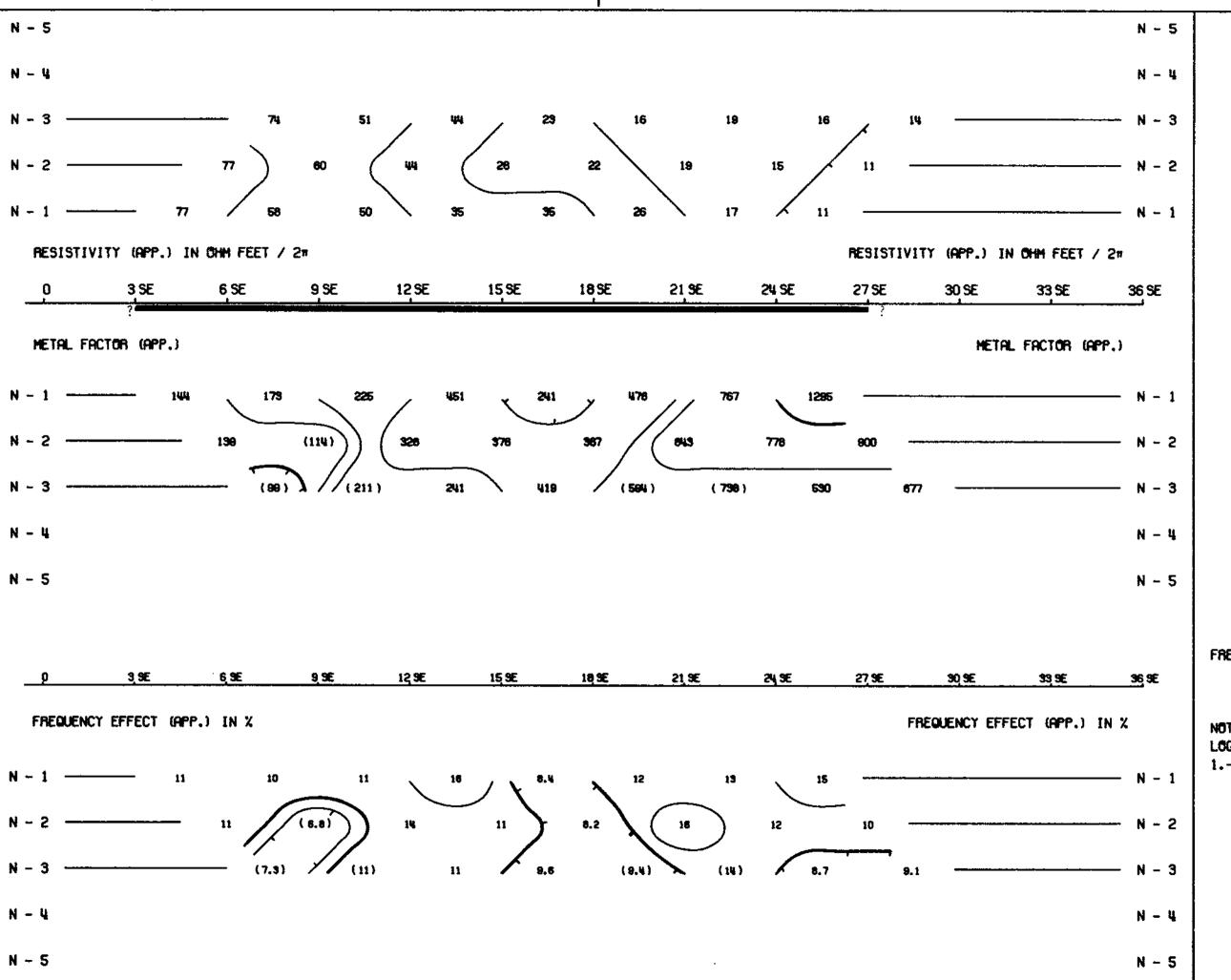
McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION



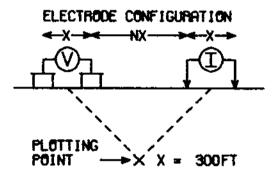




JOREX LIMITED

NADI CLAIMS, NADINA LAKE AREA OMINECA M.D., B.C.

LINE NO. - 5600NE

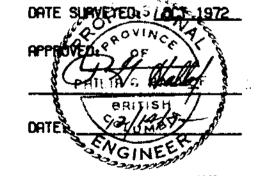


SUBFACE PROJECTION OF ANOMALOUS ZONES

PROBABLE IMMINIMUM
POSSIBLE ////

FREQUENCIES: 0.31-5.0 HZ

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



Expiry Date: February 25, 1973

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY HOPHAN COMPUTER DIVISION

McPHAR GEOPHYSICS INDUCED POLARIZATION AND RESISTIVITY SURVEY PLAN MAP tersories ar of Mines and matter on Resources Assess A Royal JOHNNY DAVID LAKE NADINA LAKE JOREX LIMITED SURFACE PROJECTION OF ANOMALOUS ZONES DEFINITE NADI & IDA CLAIMS, NADINA LAKE AREA, PROBABLE IIIIIIIIIIIII OMINECA M.D., BRITISH COLUMBIA POSSIBLE Numbers at the end of the anomaties indicate electrode interval SCALE I"= 1320' Every DWG. IPP - 3563