4431

REPORT ON THE 93N/7W
INDUCED POLARIZATION
AND RESISTIVITY SURVEY
ON THE
SOONER CLAIMS, AHDATAY PROPERTY
GERMANSEN LANDING AREA,
OMINECA MINING DIVISION, B.C.
FOR
NORANDA EXPLORATION COMPANY LIMITED

BY

PETER K. SMITH, B.Sc.

AND

DAVID K. FOUNTAIN, P.Eng.

NAME AND LOCATION OF PROPERTY:

SOONER CLAIMS, AHDATAY PROPERTY
GERMANSEN LANDING AREA,
OMINECA MINING DIVISION, B.C. 55°19'N - 124°51'W

DATE STARTED: OCTOBER 27, 1972

DATE FINISHED: NOVEMBER 27, 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

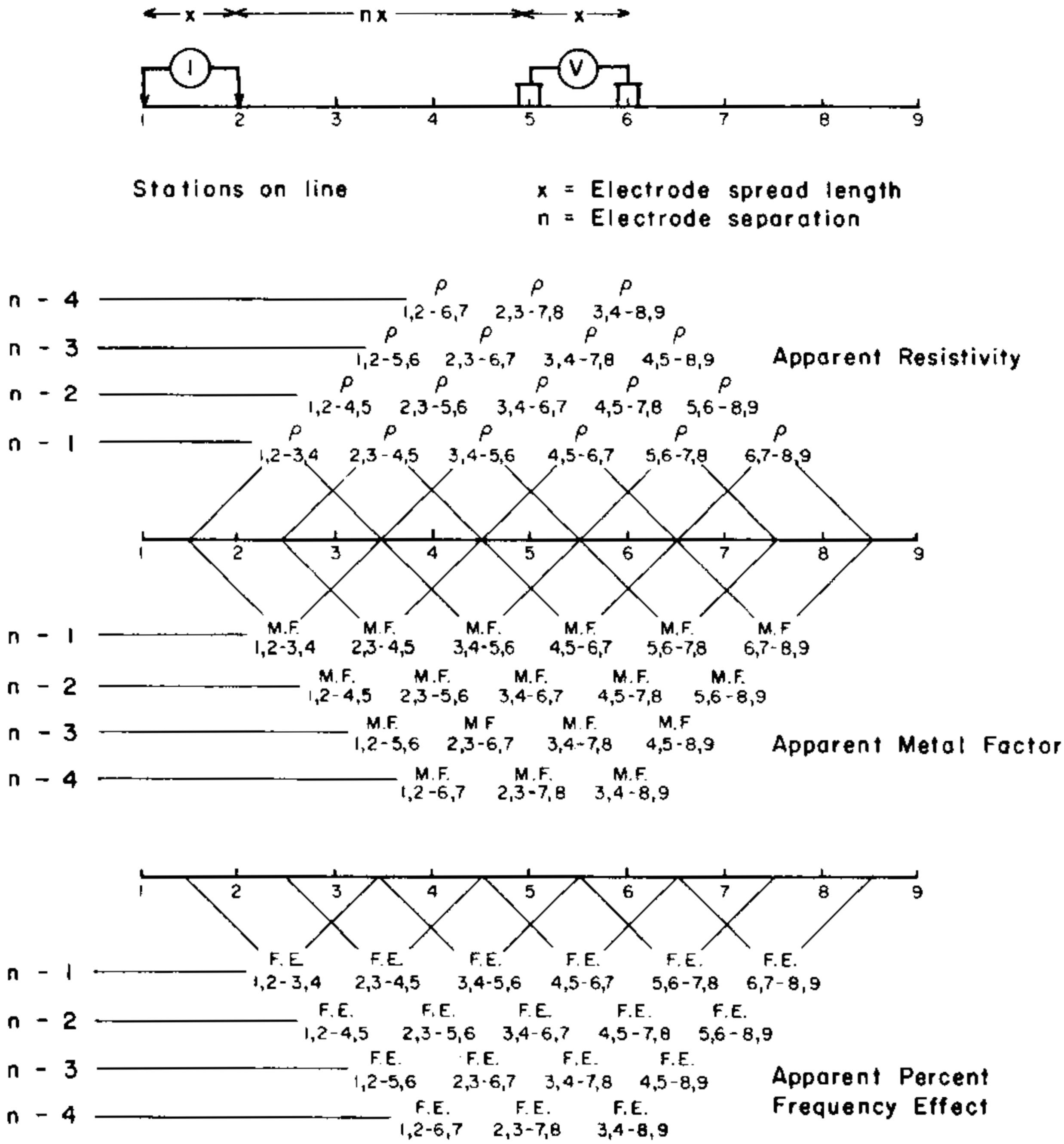

Fig. A

McPHAR GEOPHYSICS LIMITED

REPORT ON THE INDUCED POLARIZATION AND RESISTIVITY SURVEY ON THE SOONER CLAIMS, AHDATAY PROPERTY GERMANSEN LANDING AREA, OMINECA MINING DIVISION, B.C. FOR NORANDA EXPLORATION COMPANY, LIMITED

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1. INTRODUCTION

During October and November 1972, an Induced Polarization and Resistivity survey was carried out on the Sooner Claims, Ahdatay Property of Noranda Exploration Company, Limited in the Germansen Landing Area, Omineca Mining Division, British Columbia. The property is located 34 miles southwest of Germansen Landing, B.C. at 55°19'N latitude and 124°51'W longitude and covers the headwaters of Ahdatay Creek, which flows southerly to the east end of Tchentlo Lake.

Access to the property is by helicopter from Germansen Landing to helicopter landing pads within the claim group. Elevations on the property range from 3,500 to 4,000 feet above sea level.

The property consists of 52 contiguous mineral claims which were staked following a reconnaissance geochemical program completed in August

1972.

Previous work on the property has consisted of gridline preparation and geochemical soil sampling.

The geophysical survey work discussed in this report was carried out on the following claims of the Ahdatay Property.

Claim	Record Number	Mining Division
Sooner 14	105237	Omineca
Sooner 15	105238	Omineca
Sooner 16	105239	Omineca
Sooner 18	105241	Omineca
Sooner 25	105248	Omineca
Sooner 27	105250	Omineca
Sooner 28	105251	Omineca
Sooner 29	105252	Omineca
Sooner 30	105253	Omineca
Sooner 9 Fr	105268	Omineca
Sooner 10 Fr	105269	Omineca
Sooner 14 Fr	105273	Omineca
Sooner 15 Fr	105274	Omineca

The claims are registered in the name of Noranda Exploration Company, Limited (No Personal Liability). The record date of the claims is October 4, 1971.

The Ahdatay property covers part of an area of extensive overburden masking almost all bedrock in the vicinity. The projected eastern boundary of the Hogem Batholith with the Takla Group of volcanic rocks (from G.S.C. Map 971-A, J.E. Armstrong 1949) either passes through or very close to the property.

The Hogem Batholith is a composite pluton extending approximately 75 miles northwest of the Nation Lakes. It is bounded on the west by the Pinchi-Omineca fault system and on the east by rocks of the Takla Group.

The claims are covered with glacial rubble and detritus of chiefly an intrusive nature. The intrusive float includes granodiorite, granodiorite porphyries, syenites and diorites. Volcanic rocks present as float include andesite and andesite porphyry. G.S.C. Memoir 252 Fort St. James Map Area, Cassiar and Coast Districts, British Columbia. (J.E. Armstrong) 1949, provides an insight into the regional geological setting of the Ahdatay property.

The Induced Polarization survey was carried out in order to outline zones of metallic sulphide mineralization which may be of possible economic significance. A McPhar variable frequency IP unit was employed utilising the dipole-dipole electrode configuration and 400' dipoles. Two dipole separations (n = 1,2) were recorded and frequencies employed were 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.
18800N	400 feet	IP 6053-1
18000N	400 feet	IP 6053-2
17600N	400 feet	IP 6053-3
17200N	400 feet	IP 6053-4
16800N	400 feet	IP 6053-5
16400N	400 feet	IP 6053-6
16000N	400 feet	IP 6053-7
15600N	400 feet	IP 6053-8

Also enclosed with this report is Dwg. I.P.P. 2895, a plan map of the Ahdatay 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 pinpoint 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 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.

The location of survey lines relative to claim boundaries, the name and relative positions of the claims and the geologic data indicated on the maps and discussed in the report, are based on information supplied by Noranda Exploration Company, Limited.

3. DISCUSSION OF RESULTS

Eight lines were surveyed with the Induced Polarization method on a reconnaissance basis reading only two dipole separations (n = 1,2). The northernmost lines are spaced at an interval of 800' while the remaining lines are at 400' intervals.

Moderate background apparent resistivity values were recorded over most of the property and moderate to high background Frequency Effect response was generally recorded.

Several weak, possible anomalies have been outlined on the Ahdatay Property.

Line 18800N

A weak anomalous IP response was recorded east of 104E continuing to the end of the line. A multiple source is suggested by the response from depth centred at 104E along with the stronger near-surface response to the east.

Line 18000N

Line 18000N is anomalous from 104E to 120E where surveying was discontinued. A broad source of finely disseminated mineralization in which the metallic content increases to the east, could account for this IP zone.

A weak possible anomaly was also indicated west of 88E to the end of the line.

Line 17600N

Weakly anomalous portions of this line extend west of 100E and east of 108E to either end of the line.

Line 17200N

Weak possible IP anomalies extend west of 88E, from 92E to 96E, and from 108E to 120E, the eastern end of the line.

Line 16800N

A broad, weak IP anomaly which increases slightly in magnitude to the west was outlined from 104E to 84E.

The stronger response recorded between 108E and 112E may indicate a relatively narrow, near-surface source.

Line 16400N

The response on this entire line is weakly anomalous.

Line 16000N

A possible, broad anomalous IP response is indicated from 88E to 108E.

Line 15600N

Line 15600N is considered slightly anomalous from 92E to 100E.

A distinct adjoining IP anomaly is outlined between 100E and 104E.

4. SUMMARY AND CONCLUSIONS

Several broad zones of weak possibly anomalous IP response have been outlined on the Ahdatay Property. In a favourable geologic environment these zones could represent finely disseminated metallic mineralization of economic significance. However, some rock types such as basic volcanics and certain sedimentary formations exhibit high background IP response due to disseminated electronic conducting material (graphite, magnetite and pyrite) of little or no economic value.

Further information on the underlying geology would be necessary to properly evaluate the significance of the weak IP anomalies indicated by the survey.

McPHAR GEOPHYSICS LIMITED

Peter K. Smith,
Geophysicist.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA

David K. Fountain, P. Eng.
Geophysicist.

Expiry Date: April 25, 1973

Dated: February 14, 1973

ASSESSMENT DETAILS

PROPERTY: Ahdatay

MINING DIVISION: Omineca

SPONSOR: Noranda Exploration Company, Limited

PROVINCE: British Columbia

LOCATION: Germansen Landing

TYPE OF SURVEY: Induced Polarization

OPERATING MAN DAYS:	16	DATE STARTED: October 27, 1972
EQUIVALENT 8 HR. MAN DAYS:	24	DATE FINISHED: November 27, 1972
CONSULTING MAN DAYS:	3	NUMBER OF STATIONS: 91
DRAUGHTING MAN DAYS:	3	NUMBER OF READINGS: 402
TOTAL MAN DAYS:	30	MILES OF LINE SURVEYED: 6.28

CONSULTANTS:
Peter K. Smith, 650 Parliament Street, Apt. 2212, Toronto, Ontario.
David K. Fountain, 62 Patina Drive, Willowdale 428, Ontario.

FIELD TECHNICIANS:
R. Mertens, 304 Holmes Avenue, Willowdale, Ontario.
J. Wowchuck, 4238 Winifred Street, Burnaby, B.C.
Plus Extra Labour:
J. Remillard, 288 Gildford St. St. James Assinaboyn, Winnipeg, Manitoba.
Randy Bing, 174 W. Seymour St. Kamloops, B.C.
R. Pesklevits, c/o Ron Birk, 262 Cherry Street, Kamloops, B.C.

DRAUGHTSMEN:
B. Boden, 58 Glencrest Blvd. Toronto 16, Ontario.
N. Lade, 299 Jasper Avenue, Oshawa, Ontario.
V. Young, 703 Cortez Avenue, Bay Ridges, Ontario.

McPHAR GEOPHYSICS LIMITED

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. K. FOUNTAIN

David K. Fountain, P.Eng.
Geophysicist.

Dated: February 14, 1973

Expiry Date: April 25, 1973

STATEMENT OF COST

Noranda Exploration Company Limited
Sooner Claims, Ahdatay Property

Crew: R. Mertens - J. Wowchuck		
4 days Operating	@ $240.00/day	$ 960.00
4 days Travel)		
3 days Bad Weather) 8 days	@ $100.00/day	800.00
1 day Standby)		
Expenses - prorated on elapsed days @ 12/58		
Air fares	39.93	
Excess Baggage	9.08	
Taxi	2.66	
Vehicle Expense	1.41	
Meals and Accommodation	54.83	
Freight and Brokerage	86.04	
Supplies	5.10	
Telephone and Telegraph	9.94	
	208.99	
+ 10%	20.90	
		229.89
Extra Labour (prorated as above)	434.49	
+ 20%	86.90	
		521.39
		$2,511.28

McPHAR GEOPHYSICS LIMITED

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — D.K. FOUNTAIN

David K. Fountain, P.Eng.
Geophysicist

Dated: February 14, 1973

Expiry Date: April 25, 1973

CERTIFICATE

I, Peter Kinsmen 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 3 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 Noranda Exploration Company 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 February 1973

Peter K. Smith, B.Sc.

CERTIFICATE

I, David Kirkman Fountain, of the City of Toronto, Province of Ontario, do certify that:

1. I am a geophysicist residing at 62 Patina Drive, Willowdale 428, Ontario.

2. I am a graduate of the University of Toronto with a Bachelor of Applied Science Degree in Engineering Physics (Geophysics).

3. I am a member of the Society of Exploration Geophysicists, the European association of Exploration Geophysicists and the Canadian Institute of Mining and Metallurgy.

4. I am a Registered Professional Engineer in the Provinces of British Columbia, Manitoba and Ontario, a Registered Professional Geophysicist in the Province of Alberta and a Registered Professional Geologist in the State of California, and have been practising my profession for eleven years.

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

6. 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 February 1973

PROFESSIONAL PROVINCE OF D. K. FOUNTAIN BRITISH COLUMBIA ENGINEER

David Kirkman Fountain, B.A.Sc. P.Eng.

Expiry Date: April 25, 1973

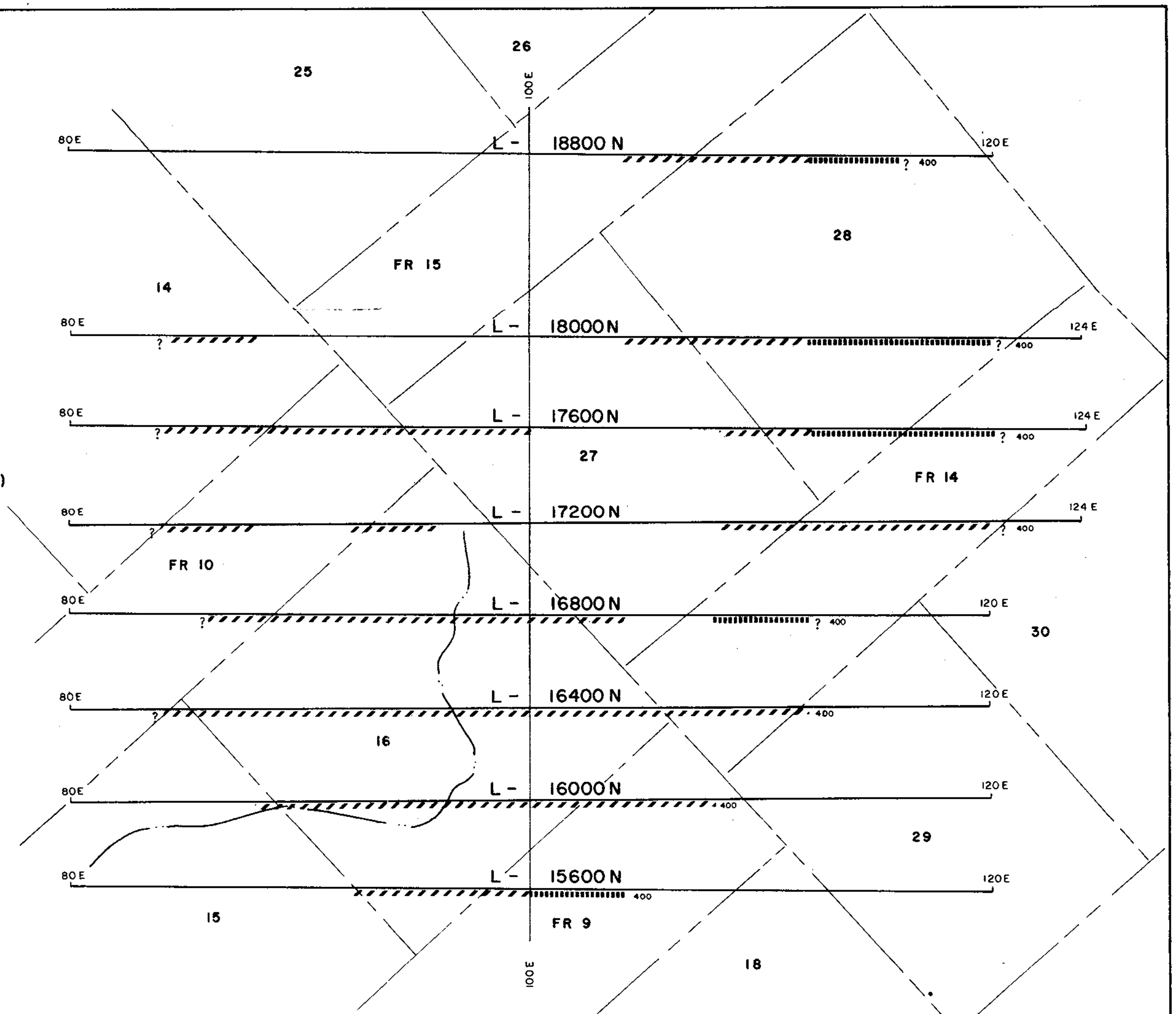
DWG. IPP - 2895

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4431 MAP #1

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

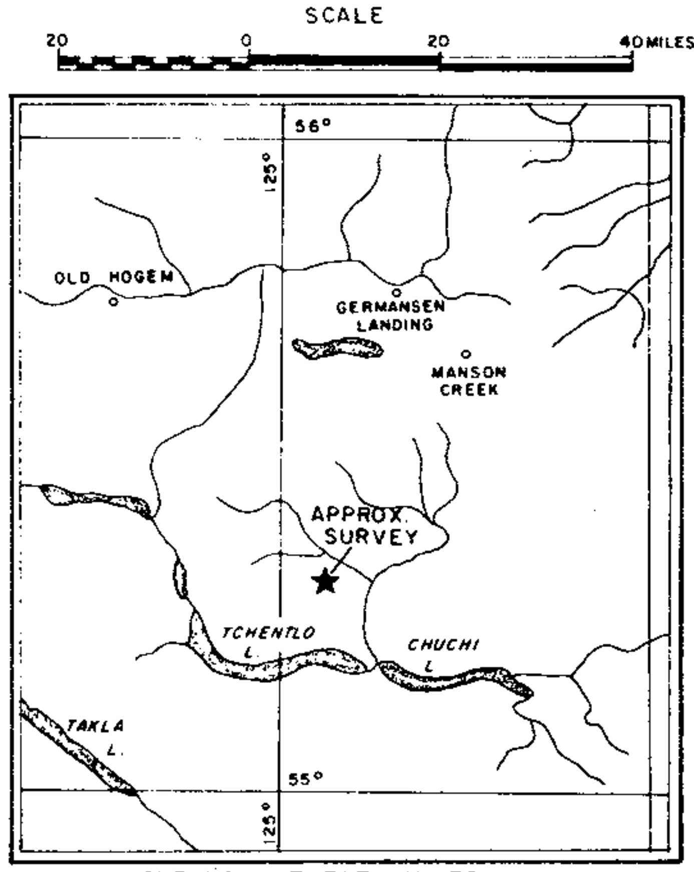
PLAN MAP



NOTE

TO ACCOMPANY GEOPHYSICAL REPORT FOR NORANDA EXPLORATION COMPANY LIMITED ON AHDATAY PROJECT, TCHENTLO LAKE AREA, OMINECA M.D., B.C. BY D.K. FOUNTAIN (P. ENG) AND P.K. SMITH, (GEOPHYSICIST).

DATED: FEB. 14, 1973



ONE INCH = TWENTY MILES

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

Numbers at the end of the anomalies indicate electrode interval

NORANDA EXPLORATION COMPANY LIMITED

AHDATAY PROJECT, TCHENTLO LAKE AREA

OMINECA M.D., B.C.

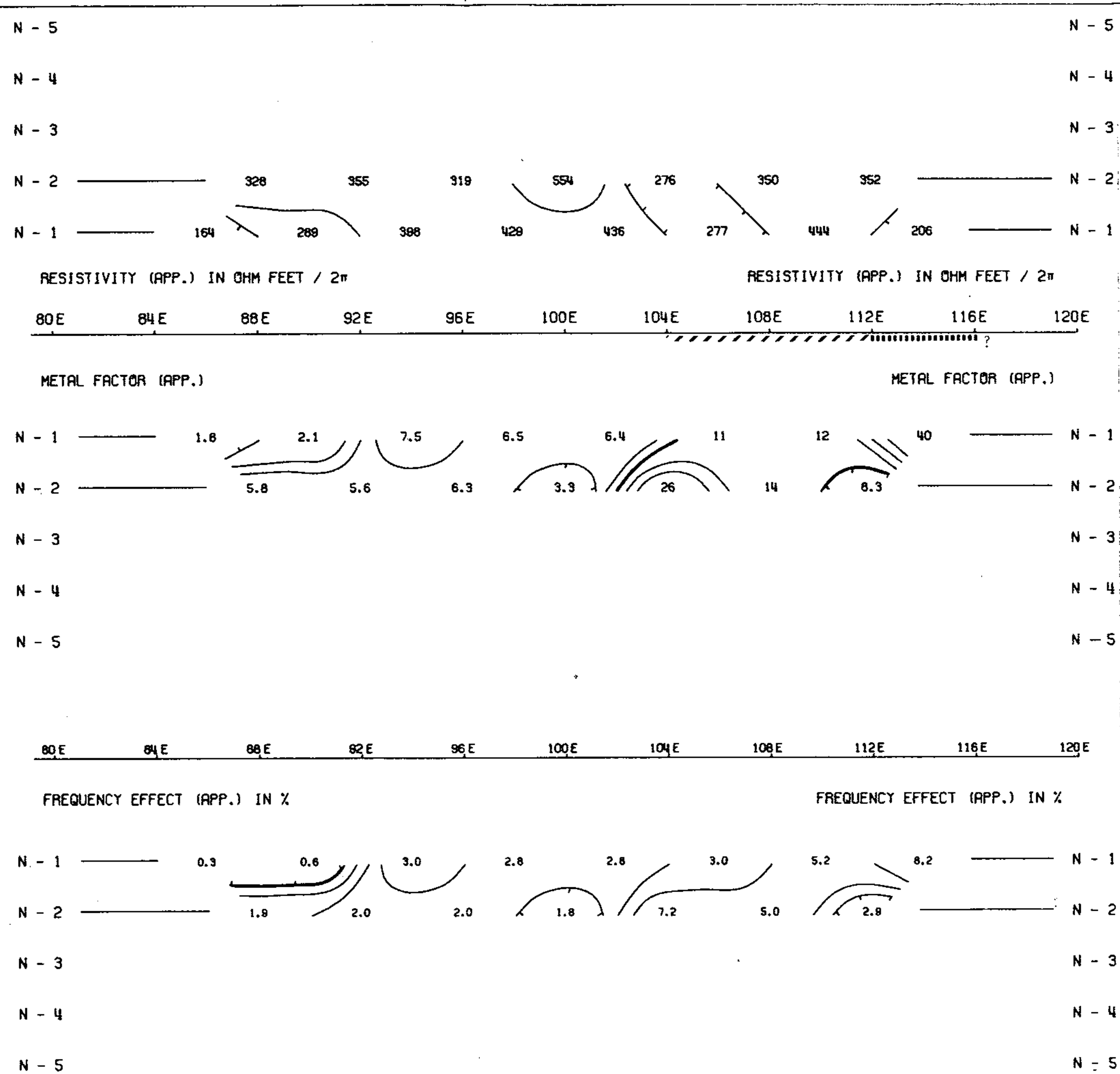
SCALE

One inch = 400 feet

4431 M-1

PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, D.K. FOUNTAIN

DWG. IPP - 2895



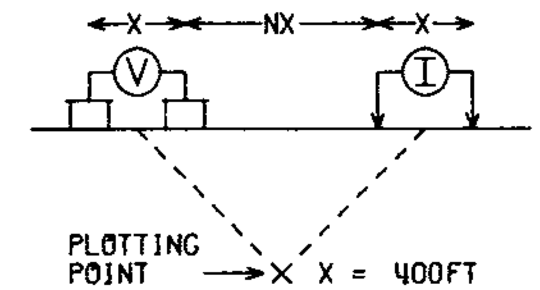
DWG. NO.- I.P.- 6053-1

NORANDA EXPLORATION COMPANY LIMITED.

AHDATAY PROJECT, TCHENTLO LAKE AREA,
OMINECA M.D., B.C.

LINE NO.- 18800N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: NOV 1972

APPROVED:

DATE:

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

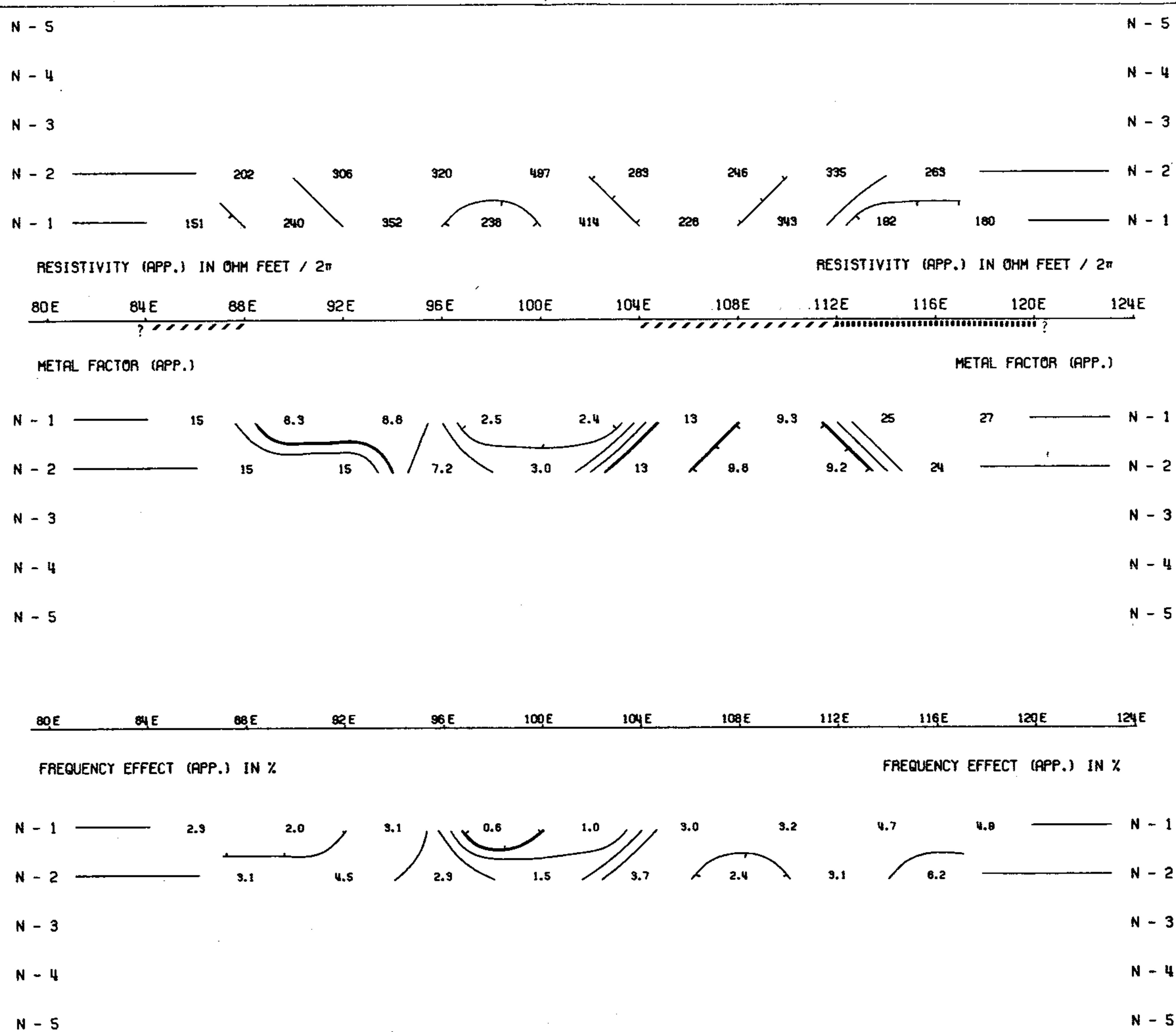
PROVINCE OF BRITISH COLUMBIA PROFESSIONAL ENGINEER

Expiry Date: April 25, 1973

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION



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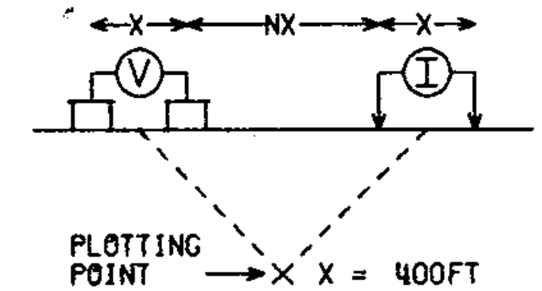
NORANDA EXPLORATION COMPANY LIMITED.

AHDATAY PROJECT, TCHENTLO LAKE AREA,
OMINECA M.D., B.C.

LINE NO.- 18000N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: NOV. 1972

APPROVED:

DATE:

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

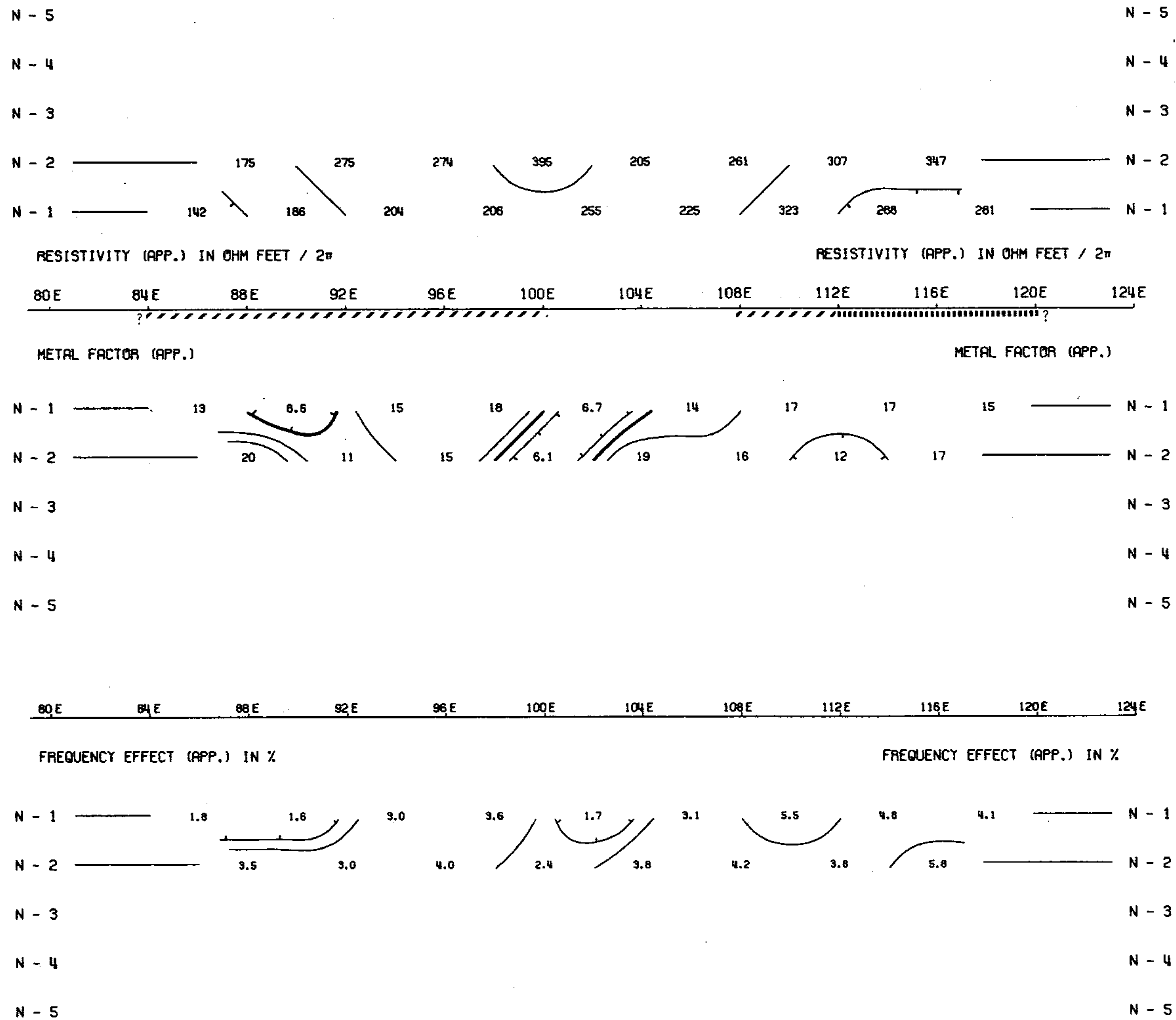
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA D. K. FOUNTAIN

Expiry Date: April 25, 1973

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION



DWG. NO.- I.P.- 6053-3

NORANDA EXPLORATION COMPANY LIMITED.

AHDATAY PROJECT, TCHENTLO LAKE AREA,
OMINECA M.D., B.C.

LINE NO.- 17600N

ELECTRODE CONFIGURATION

X = 400FT

PLOTTING POINT

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1972

APPROVED:

DATE:

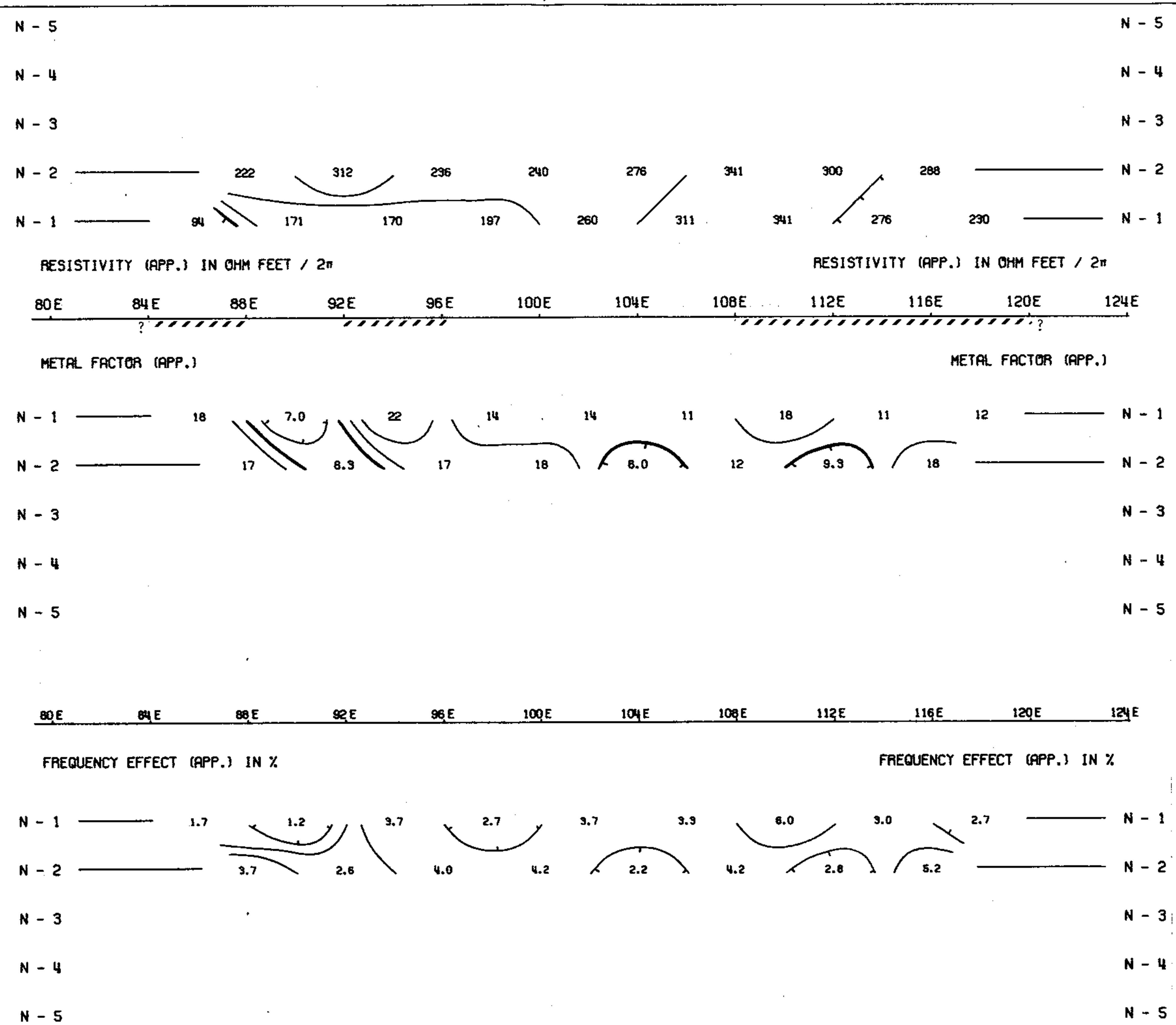
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION



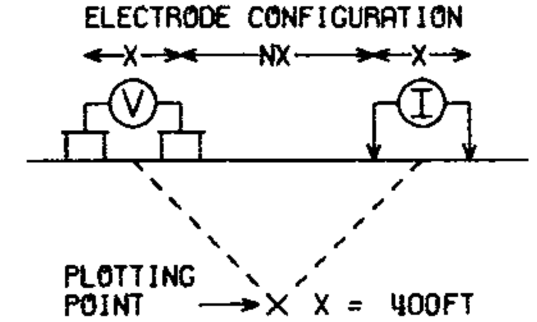
DWG. NO.- I.P.- 6053-4

NORANDA EXPLORATION COMPANY LIMITED.

AHDATAY PROJECT, TCHENTLO LAKE AREA,
OMINECA M.D., B.C.

LINE NO.- 17200N

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

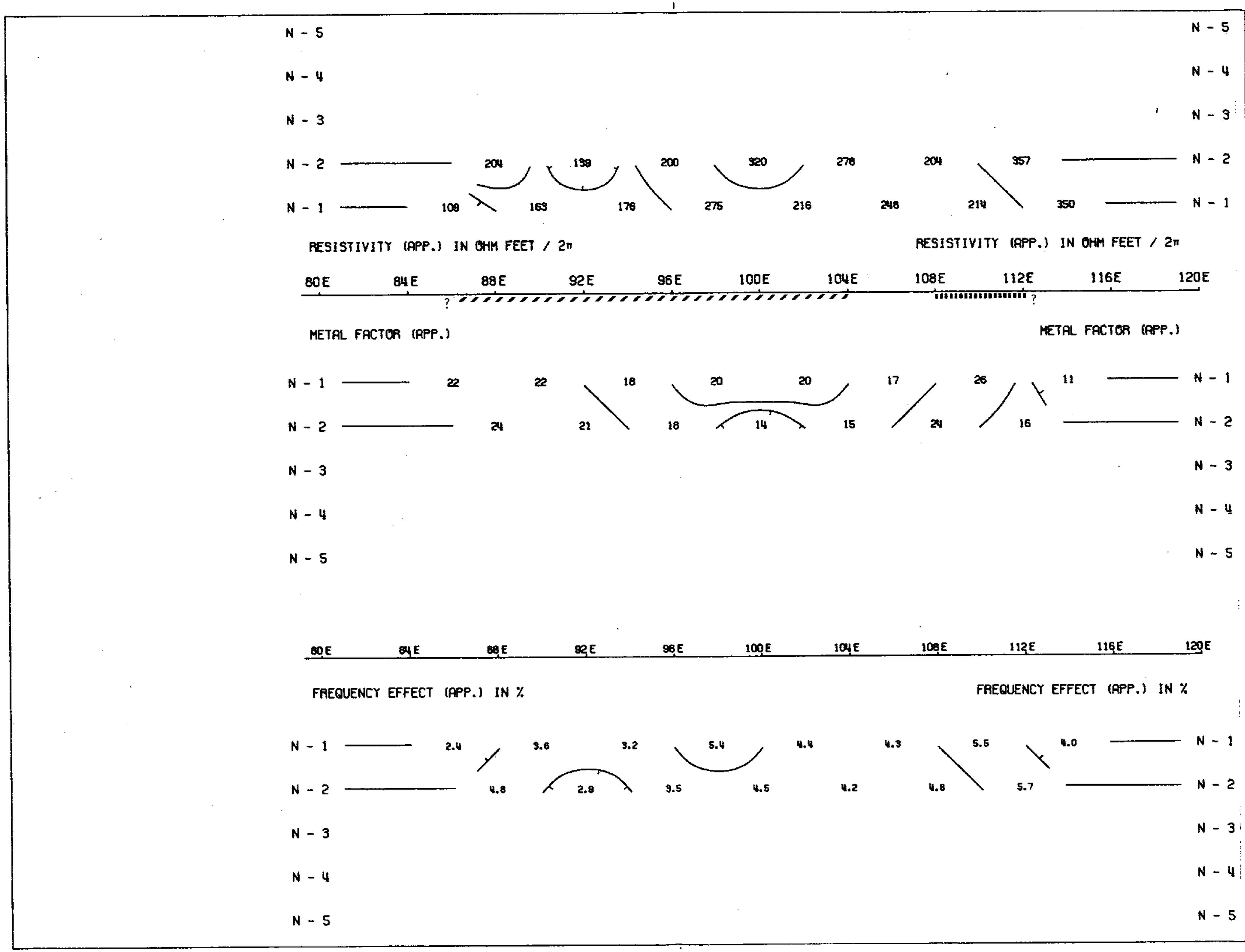
Expiry Date: April 25, 1973

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



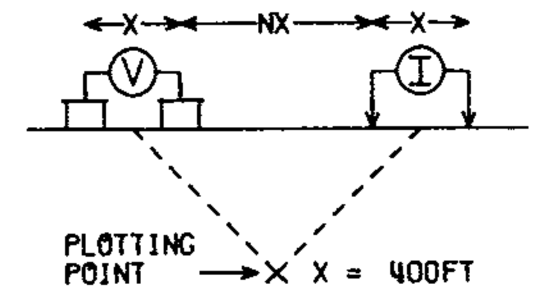
DWG. NO.- I.P.- 6053-5

NORANDA EXPLORATION COMPANY LIMITED.

AHDATAY PROJECT, TCHENTLO LAKE AREA,
OMINECA M.D., B.C.

LINE NO.- 16800N

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 D.K. FOUNTAIN

Expiry Date: April 25, 1973

McPHAR GEOPHYSICS

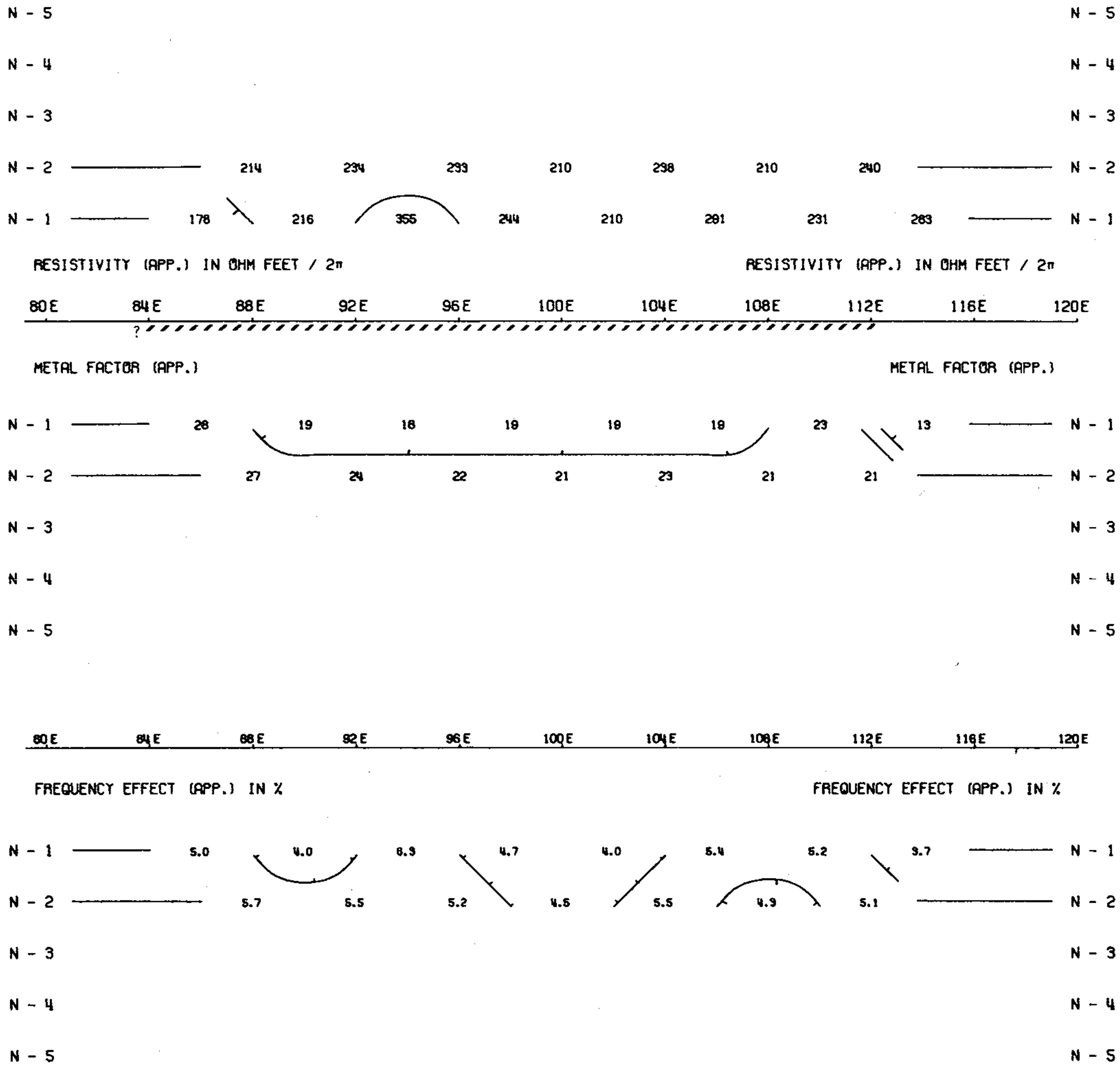
INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY McPHAR COMPUTER DIVISION

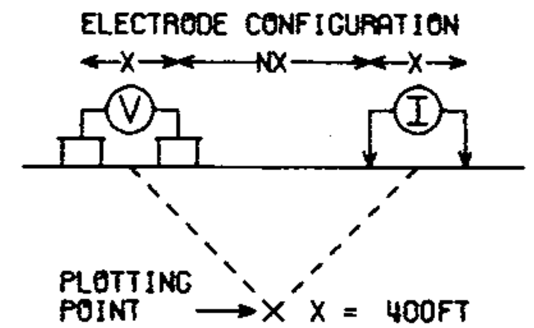
DWG. NO.- I.P.-6053-6

NORANDA EXPLORATION COMPANY LIMITED.

AHDATAY PROJECT, TCHENTLO LAKE AREA,
OMINECA M.D., B.C.



LINE NO.- 16400N



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1972

APPROVED:

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. K. FOUNTAIN

DATE:

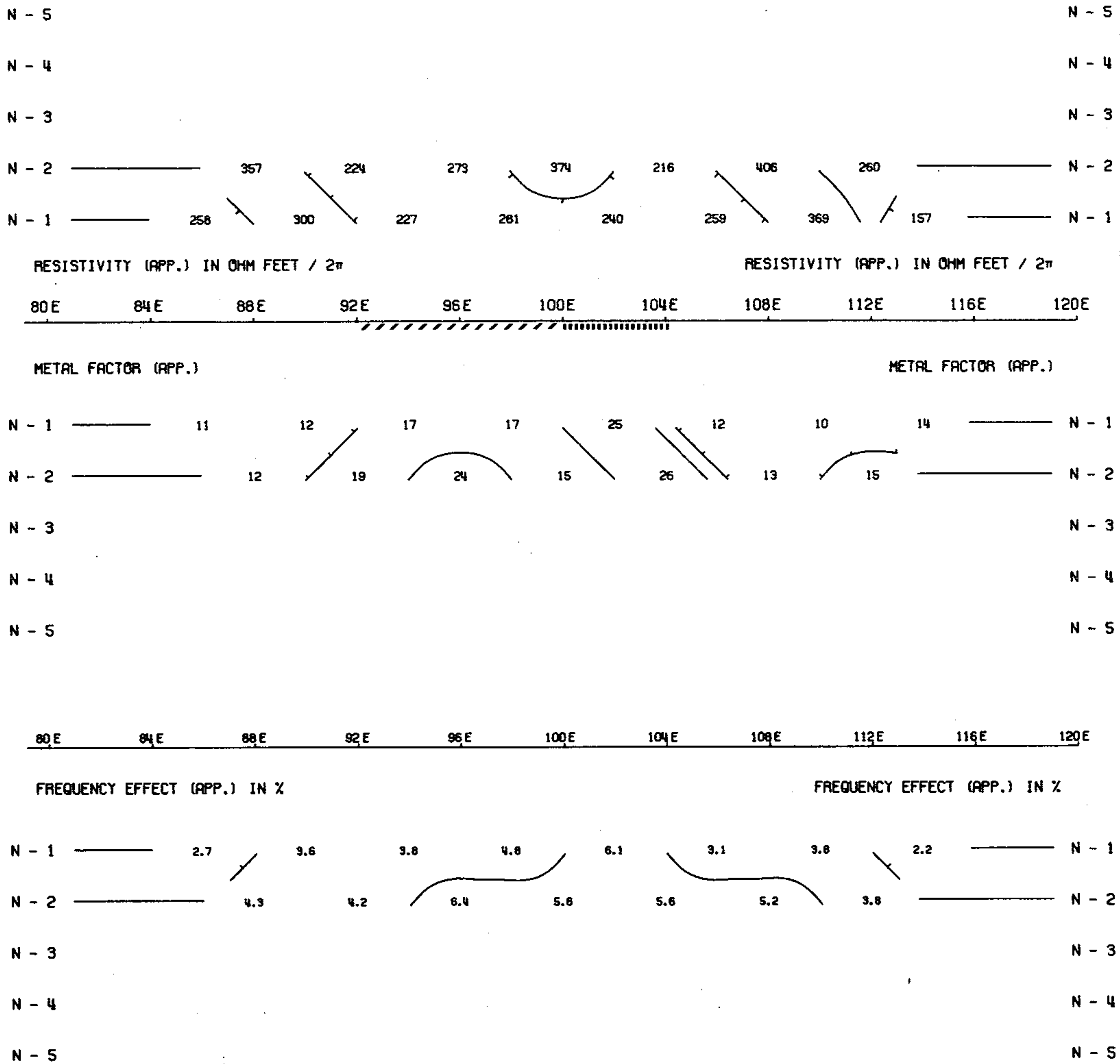
Expiry Date: April 28, 1975

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



DWG. NO.- I.P.- 6053-8

NORANDA EXPLORATION COMPANY LIMITED.

AHDATAY PROJECT, TCHENTLO LAKE AREA,
OMINECA M.D., B.C.

LINE NO.- 15600N

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:

DATE:

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

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA

Expiry Date: April 25, 1973

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

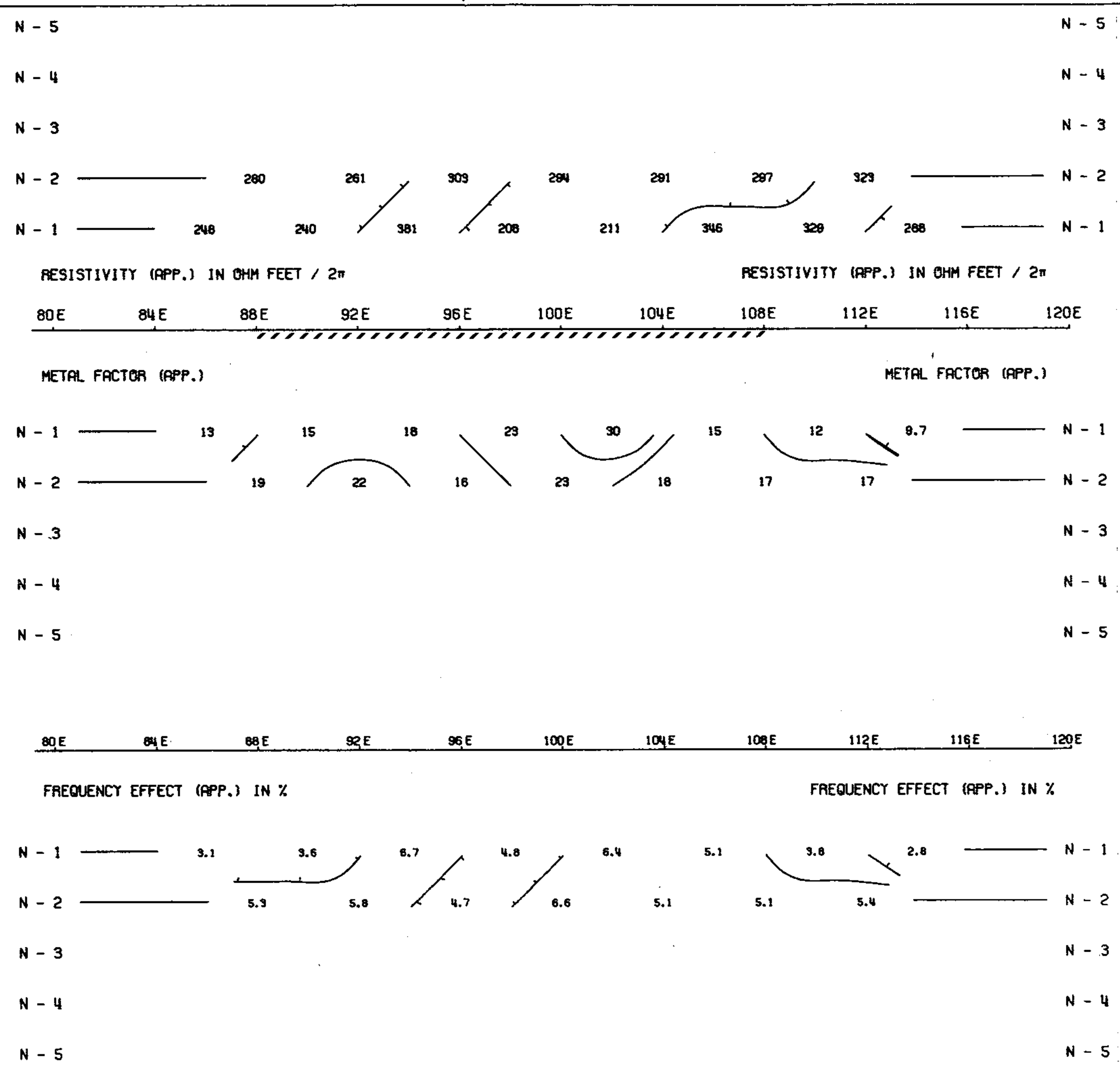
NOTE: THIS PLOT WAS PRODUCED BY MCPHAR COMPUTER DIVISION

DWG. NO.- I.P.- 6053-7

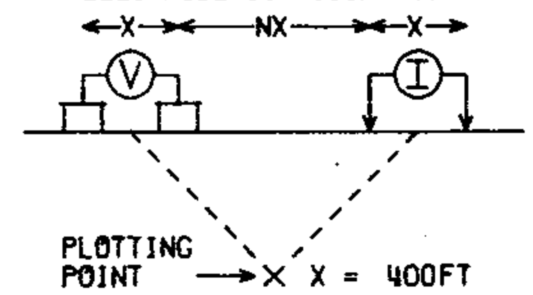
NORANDA EXPLORATION COMPANY LIMITED.

AHDATAY PROJECT, TCHENTLO LAKE AREA, OMINECA M.D., B.C.

LINE NO.- 16000N



ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

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

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: ... 1972

APPROVED:

DATE:

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

PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, D.K. FOUNTAIN

Expiry Date: April 25, 1973

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED BY McPHAR COMPUTER DIVISION

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.
TO WIT:

In the Matter of a statement of exploration expenses on 35 contiguous mineral claims in the Omineca Mining Division, having record numbers 105224 to 105233; 105236 to 105240; 105261 to 105264; 105268; 105269; 105275; 105248; 105241 to 105244, 105249 to 105252; 105266; 105267; 105273; 105274 (SOONER CLAIMS)

I, John E. Harrison, (F.M.C. 109121 issued April 28th, 1972) of P.O. Box 2169, Smithers, B. C. agent for Noranda Exploration Company, Limited (No Personal Liability) (F.M.C. 109102 issued April 28th, 1972) of 1050 Davie Street, Vancouver 5, B. C.

of

in the Province of British Columbia, do solemnly declare that the cost of an induced polarization survey and necessary line-cutting and transportation between October 27, 1972 and November 27, 1972 were:

1. Line Preparation (contract)		
- new lines and upgrading to IP standards	$792.00	
- field cost (P. Bland & F. Bland)		
- 18 man days @ $10.00/man day	180.00	
		972.00
2. IP Survey		
- contract	2,511.28	
- field costs 4 men for 9 days		
- 36 man days @ $10.00/ man day	360.00	
		2,871.28
3. Transportation		
- Okanagan Helicopters (Bell 206 B)		
- October 28 & November 5, 1972	1,208.85	
- Trans-Provincial Airlines (Otter)		
- October 28 & November 5, 1972 Invoices total $1,050.00	800.00	
		2,008.85
4. Supervision		
- G. E. Dirom 2 days @ $75.00/day		150.00
		$6,002.13

Of this amount $5,600 is claimed for assessment credit.

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the Town of Smithers, in the Province of British Columbia, this 28th day of May, 1973, A.D.

John E. Harrison

[signature]

A Commissioner for taking Affidavits for British Columbia or ~~A Notary Public in and for the Province of British Columbia.~~

In the Matter of

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....

....

....

Statutory Declaration

(CANADA EVIDENCE ACT)