2389

REPORT ON 92H/16W, 9W
INDUCED POLARIZATION
AND RESISTIVITY SURVEY
ON THE
SPA MINES PROPERTY
PRINCETON AREA, SIMILKAMEEN M.D. B.C.
FOR
QUALITY EXPLORATION CORPORATION

BY

R. A. BELL, Ph.D.

DAVID K. FOUNTAIN, P.ENG.

NAME AND LOCATION OF PROPERTY:

SPA MINES PROPERTY, PRINCETON AREA

SIMILKAMEEN MINING DIVISION, B.C. 49°N, 120°W - NE

DATE STARTED: NOVEMBER 2, 1969

DATE FINISHED: NOVEMBER 21, 1969

TABLE OF CONTENTS

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2389 MAP

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

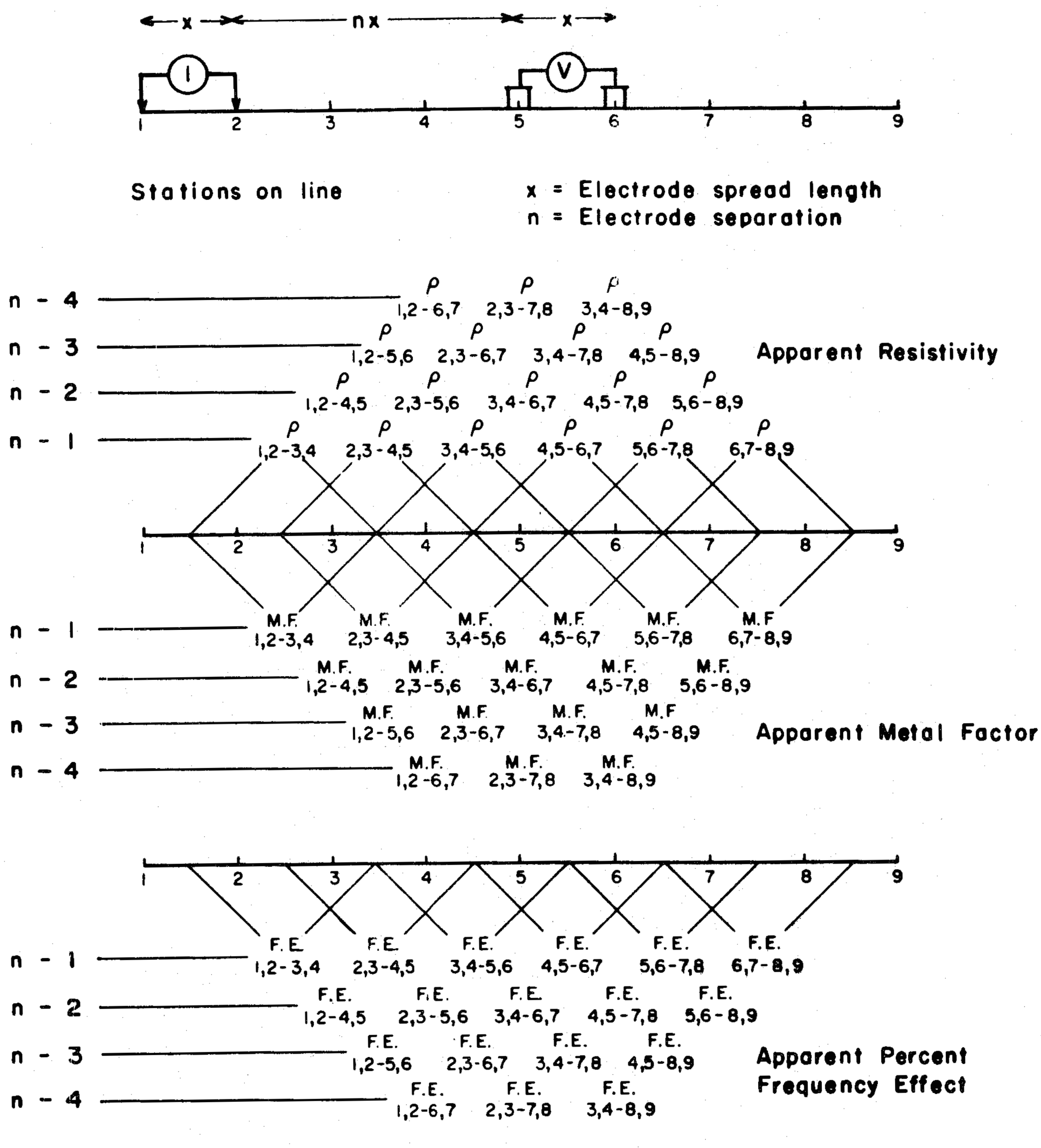


Fig. A

McPHAR GEOPHYSICS LIMITED

REPORT ON

INDUCED POLARIZATION

AND RESISTIVITY SURVEY

ON THE

SPA MINES PROPERTY

PRINCETON AREA, SIMILKAMEEN M.D. B.C.

FOR

QUALITY EXPLORATION CORPORATION

---

1. INTRODUCTION

At the request of Quality Exploration Corporation, we have carried out a combined induced polarization and resistivity survey of a portion of the Spa Mines Project claims in the Princeton Area of British Columbia. The property is located 25 miles northeast of Princeton and 6 miles north of Bankier. Access is via a logging road 26 miles from Princeton on the Osprey Lake road, the total road distance being about 35 miles. The centre of the property is situated in the northeast quadrant of the one degree quadrilateral whose southeast corner is at 49° north latitude and 120° west longitude, in the Similkameen Mining Division.

A detailed geologic report prepared for the Company by Alrae Engineering Limited has been made available to us. According to this information, the western section of the property and part of the eastern section, is underlain by volcanic rocks of the Nicola Group. These consist of acid to intermediate flows and pyroclastics. The north-central claims are underlain by a granodiorite stock of probable Jurassic age. A younger alkaline granite occupies the remainder of the property.

Interest in the property is related to two mineral occurrences known as the Dillard Zone and the Mabel Zone. The Mabel Zone occurs in the east part of the property and has a north-south trend. It consists of chalcopyrite and specularite in a wide irregular zone within the altered granite. Previous trenching and diamond drilling showed the presence of copper, lead, zinc and silver.

The Dillard Zone occurs in the north-central part of the property at the contact between the acid volcanics and granodiorite; it also has a north-south trend. Mineralization exposed in the trenches consists of chalcopyrite, pyrite and tetrahedrite.

The IP survey consisted of three small grids to test areas of particular interest and was carried out with a McPhar Variable Frequency IP unit operating at 0.3 and 5.0 cps. Field work was performed in November 1969 on the following claims:

Fix:	048, 049, 050, 051, 053, 50, 51, 53, 161, 163, 192, 192A, 193, & 193A
San:	9, 10, 11, 12 & 14
San Fraction:	2
Duke:	3
Meg:	2
P.I.	7

These claims are all located in the Similkameen Mining Division and are assumed to be owned or held under option by Quality Exploration Corporation.

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.

a) South Grid

Line 176E	200 foot spreads	Dwg. IP 5371-1
Line 180E	200 foot spreads	Dwg. IP 5371-2
Line 180E	100 foot spreads	Dwg. IP 5371-3
Line 184E	200 foot spreads	Dwg. IP 5371-4

b) East Grid

Line 246E	200 foot spreads	Dwg. IP 5371-5
Line 248E	200 foot spreads	Dwg. IP 5371-6
Line 264E	200 foot spreads	Dwg. IP 5371-7
Line 268E	200 foot spreads	Dwg. IP 5371-8
Line 116N	200 foot spreads	Dwg. IP 5371-9

c) North Grid

Line 148N	200 foot spreads	Dwg. IP 5371-10
Line 152N	200 foot spreads	Dwg. IP 5371-11
Line 156N	200 foot spreads	Dwg. IP 5371-12
Line 160N	200 foot spreads	Dwg. IP 5371-13
Line 164N	200 foot spreads	Dwg. IP 5371-14

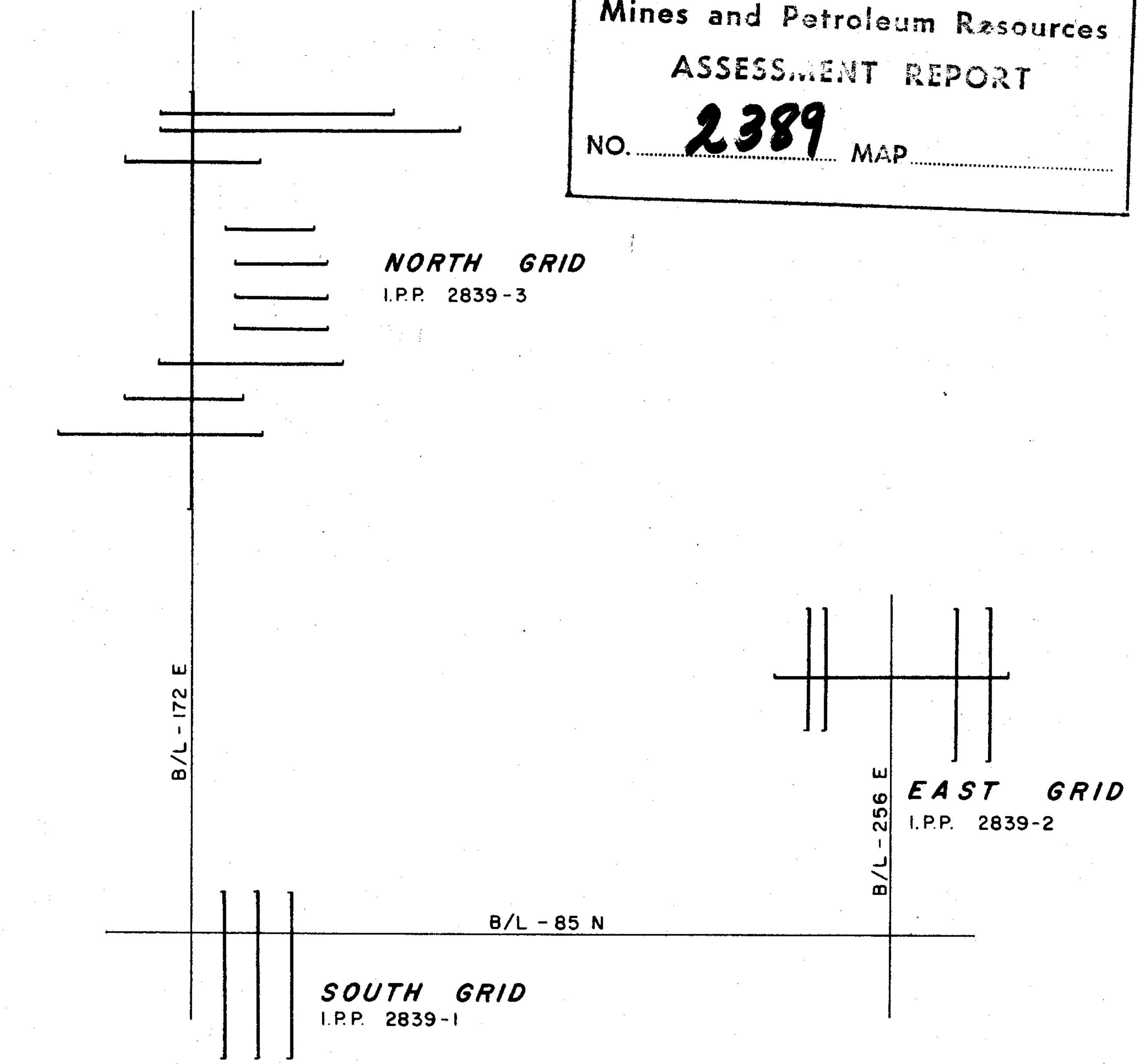
North Grid contd.

Line 164N	100 foot spreads	Dwg.IP 5371-15
Line 168N	100 foot spreads	Dwg.IP 5371-16
Line 172N	100 foot spreads	Dwg.IP 5371-17
Line 180N	200 foot spreads	Dwg.IP 5371-18
Line 184N	200 foot spreads	Dwg.IP 5371-19
Line 186N	200 foot spreads	Dwg.IP 5371-20
Line 186N	100 foot spreads	Dwg.IP 5371-21
Line 172N	200 foot spreads	Dwg.IP 5371-22

Enclosed with this report are Dwgs. I.P.P. 2839-1 to -3 of the South Grid, East Grid, North Grid and location maps of the survey area at a scale of 1" = 2000' and 1" = 4 miles. The definite and possible induced polarization anomalies are indicated by solid and broken bars respectively on this plan map as well as 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 spread length; i.e. when using 200' spreads the position of a narrow sulphide body can only be determined to lie between two stations 200' apart. In order to locate sources at some depth, larger spreads 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

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2389 MAP



GRID LOCATION

QUALITY EXPLORATION CORPORATION

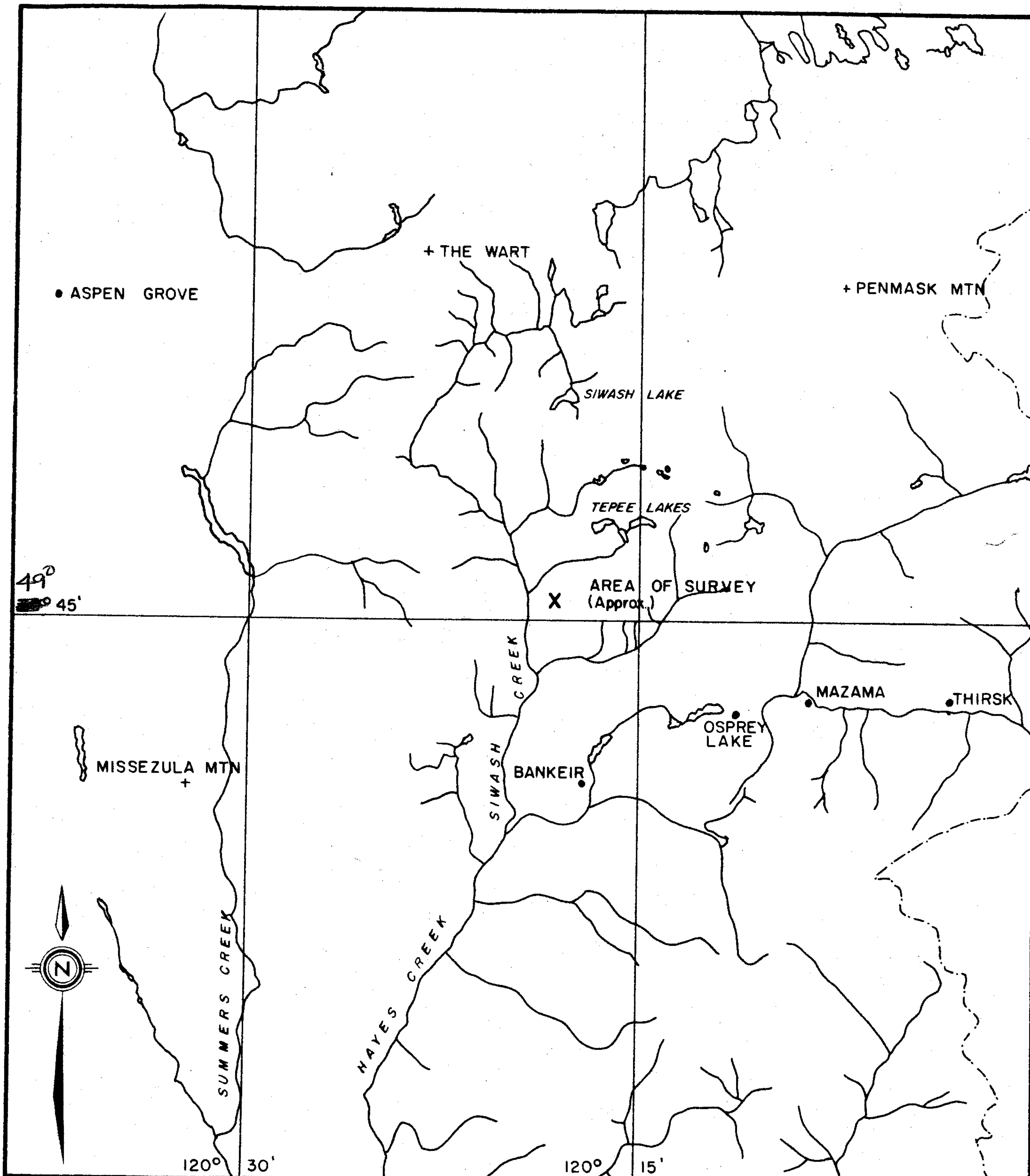
SPA MINES PROJECT, PRINCETON AREA, SIMILKAMEEN M.D., B.C.

SCALE

1" = 2,000'

DNH 1970

4a



LOCATION MAP

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT, PRINCETON AREA, SIMILKAMEEN M.D., B.C.

SCALE

ONE INCH EQUALS FOUR MILES

DNH 1970

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 names and relative position of the claims, and the geologic data indicated on the maps and discussed in the report, is based upon maps prepared by Alrae Engineering Limited.

3. DISCUSSION OF RESULTS

a) South Grid

Three lines were surveyed in the south-central part of the property, on the Fix claims. According to the geological report prepared by Alrae Engineering Limited, this area is underlain by alkaline granite.

Line 176E

Above background IP effects were measured on three sections of this line. The anomalies are quite weak but they could represent minor disseminated mineralization of possible interest as illustrated in the Appendix.

Line 180E

Similar results were obtained on this traverse but detailing with 100 foot electrode intervals indicates that most of the features are narrow and weak. A possible exception is the anomaly at 88N; the pattern is incomplete and the data would have to be extended to permit a more complete evaluation.

Line 184E

Shallow weak anomalies occur at 76N to 78N and 84N to 86N.

b) East Grid

Five lines were surveyed on the northeast part of the property, covering the northern extension of the Mabel Zone. This section is underlain by a north-south trending zone of altered granite.

Line 246E

A low magnitude, but fairly definite anomaly, was found at 118N. The source is shallow relative to the 200 foot electrode interval and therefore detailing with shorter spreads would be warranted.

Line 248E

Above background IP effects were measured on the wide separations (i.e. n = 3) from at least 113N to 117N, indicating either a deep source or an "off the end" effect.

Line 264E

A single anomalous reading was obtained at station 118N on this line.

Line 268E

Shallow weak anomalies were found at 109N and 117N. Detailing with shorter spreads is indicated in both cases.

Line 116N

Here there is a shallow definite anomaly at 246E to 248E which would appear to correlate with the feature on Line 246E.

A stronger anomaly, with some depth to the top of the source, occurs at 252E to 254E. Additional lines are needed to delimit this anomaly.

c) North Grid

An extensive grid was surveyed in the vicinity of the Dillard Zone, which occurs at the contact between a granodiorite stock and acid volcanics of the Nicola Group.

Line 148N

A definite anomaly, with some depth to the top, occurs at 170E to 172E. This appears to correlate with anomalies on Line 152N and Line 172E.

There is also a definite anomaly at the east end of the line that may represent the southern continuation of the Dillard Zone, but the data does not extend far enough east to complete the pattern.

Line 152N

Here there is a probable deep source centred at 172E to 174E, correlating with a more definite anomaly on the preceding line. Again the effective survey coverage does not extend far enough to the east.

Line 156N

On this line there is a definite deep anomaly at 178E to 180E, with a weaker extension to the east.

Line 160N

This traverse is at the south end of the area of trenching and was surveyed using 100 foot electrode intervals. The results indicate a broad zone of weak mineralization from at least 180E to 185E, with a stronger section at the eastern edge from 182E to 185E.

Line 164N

The 200 foot data shows a strong shallow anomaly at 180E to 182E, coincident with the showing, within a wide zone of weaker effects. The results of the detail traverse, using 100 foot spreads, indicate two sources within this zone, a deeper one at 180E to 181E and a shallow one at 184E to 185E.

Line 168N

A complex anomalous response was obtained throughout the length of this short traverse, with stronger sections at 179E at depth, from 181E to 182E and from 184E to 185E.

Line 172N

Similar results were found here, including a shallow definite anomaly centred at 179E.

Line 180N

Anomalous effects at the east end of the line indicate that the Dillard Zone is still continuing but the data does not extend far enough east to complete the pattern.

Line 184N

This traverse was extended farther east than the other lines and the results indicate that the complex mineralized zone extends from 178E to 196E. The magnitude of the Metal Factor values is quite variable, with stronger sections at 178E to 180E and from 184E to 196E.

Line 186N

On this short line the results obtained with 200 foot dipoles indicate a possible weak anomaly at 172E and a more definite anomaly at 178E to 180E.

Subsequently the data was extended to the east using 100 foot dipoles. Anomalous effects were obtained on the wide separations from about 188E to at least 195E, indicating a wide deep zone of weak mineralization. The near-surface resistivities are higher here than on the lines to the south, suggesting a change in rock type.

Line 172E

A definite anomaly occurs at 150N to 152N, with a deeper extension to the south. This feature correlates with anomalies on Line 148N and Line 152N. Several weak anomalies were found on other parts of the line but these do not appear to be of prime interest.

4. SUMMARY AND RECOMMENDATIONS

No strong anomalies were found on the South Grid but there are weak IP effects on all three lines. Their importance is difficult to assess in view of the limited amount of work in this area. If the geology indicates the possible presence of disseminated copper mineralization, with little or no pyrite, the grid should be expanded in order to delimit the anomalies.

On the East Grid there appears to be a northwest-trending zone crossing Line 246E, Line 116N and Line 248E. There is also a definite anomaly on the central part of Line 116N. A more extensive grid of east-west lines should be surveyed to trace out these features.

Definite anomalies were found on almost every line on the North Grid and most of these can be correlated into a broad north-south zone extending through the Dillard workings. Several of the traverses should be extended farther east as the anomaly patterns are incomplete. Drilling seems to be warranted on either Line 164N or Line 168N and should consist of a cross-section of two or three inclined holes.

A drill hole may also be warranted to test the definite anomaly at 170E to 172E on Line 148N but additional traverses are required to trace out the southern extension of this subsidiary zone. The geophysical results in this area should be compared closely with the geology. Experience in the area has indicated that anomalous IP responses are often obtained in the Nicola Volcanics due to finely disseminated pyrite and magnetite of no economic significance.

McPHAR GEOPHYSICS LIMITED

Robert A. Bell,
Geologist.

David K. Fountain,
Geophysicist.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. K. FOUNTAIN

Expiry Date: April 25, 1970

Dated: January 15, 1970

ASSESSMENT DETAILS

PROPERTY: Spa Mines		MINING DIVISION: Similkameen
SPONSOR: Quality Exploration Corporation		PROVINCE: British Columbia
LOCATION: Princeton Area		
TYPE OF SURVEY: Induced Polarization		
OPERATING MAN DAYS:	40	DATE STARTED: Nov. 2, 1969
EQUIVALENT 8 HR. MAN DAYS:	60	DATE FINISHED: Nov. 21, 1969
CONSULTING MAN DAYS:	3	NUMBER OF STATIONS: 251
DRAUGHTING MAN DAYS:	7	NUMBER OF READINGS: 1840
TOTAL MAN DAYS:	70	MILES OF LINE SURVEYED: 7.25

CONSULTANTS
Robert A. Bell, 50 Hemford Crescent, Don Mills, Ontario.
David K. Fountain, 44 Highgate Road, Toronto 18, Ontario.

FIELD TECHNICIANS
P. Mark, 26 Columbine Avenue, Toronto 8, Ontario.
Plus 4 helpers:
Herbert Langlais, 6105 S.E. Marine Drive, Burnaby, B.C.
William Murray, General Delivery, Kamloops, B.C.
Raymond Janvier, Box 235, Rutland, B.C.
Paul Hanson, 354 Sherbrook Street, New Westminster, B.C.

DRAUGHTSMEN:
P. Coulson, 77 Peter Street, Markham, Ontario.
D. Holmes, 42 Langborne Place, Don Mills, Ontario.
B. Marr, 19 Kenewen Court, Toronto 16, Ontario.

McPHAR GEOPHYSICS LIMITED

Robert A. Bell

Robert A. Bell,
Geologist.

Dated: January 19, 1970

STATEMENT OF COST

Quality Exploration Corporation

Spa Mines

Crew (1 man)

10 days Operating		@ $220.00/day	$2,100.00
4 days Travel)			
1 day Bad Weather) 6 days		@ $85.00/day	510.00
1 day Standby)			
3 days Breakdown			N. C.
Extra Labour			1,253.00
Service Charge - 20%			250.60

Expenses

Rented Vehicles	$ 866.00	
Taxis	14.80	
Meals and Accommodation	233.50	
Telephone and Telegraph	8.25	
Supplies	17.05	
	1,139.60	
Service Charge - 10%	113.96	
		1,253.56
		$5,367.16

McPHAR GEOPHYSICS LIMITED

Robert A. Bell,
Geologist.

Dated: January 19, 1970

see reverse for declaration →

CERTIFICATE

I, Robert Alan Bell, of the City of Toronto, Province of Ontario, do hereby certify that:

1. I am a geologist residing at 50 Hemford Crescent, Don Mills, (Toronto) Ontario.

2. I am a graduate of the University of Toronto in Physics and Geology with the degree of Bachelor of Arts (1949); and a graduate of the University of Wisconsin in Economic Geology with the degree of Ph. D. (1953).

3. I am a member of the Society of Economic Geologists and a fellow of the Geological Association of Canada.

4. I have been practising my profession for over fifteen 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 Quality Exploration Corporation 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 15th day of January, 1970

Robert A. Bell

Robert A. Bell, Ph. D.

CERTIFICATE

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

1. I am a geophysicist residing at 44 Highgate Road, Toronto 18, 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 Province of British Columbia and Ontario, and have been practising my profession for eight 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 Quality Exploration Corporation 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 15th day of January, 1970

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

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

Expiry Date: April 25, 19

APPENDIX

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

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

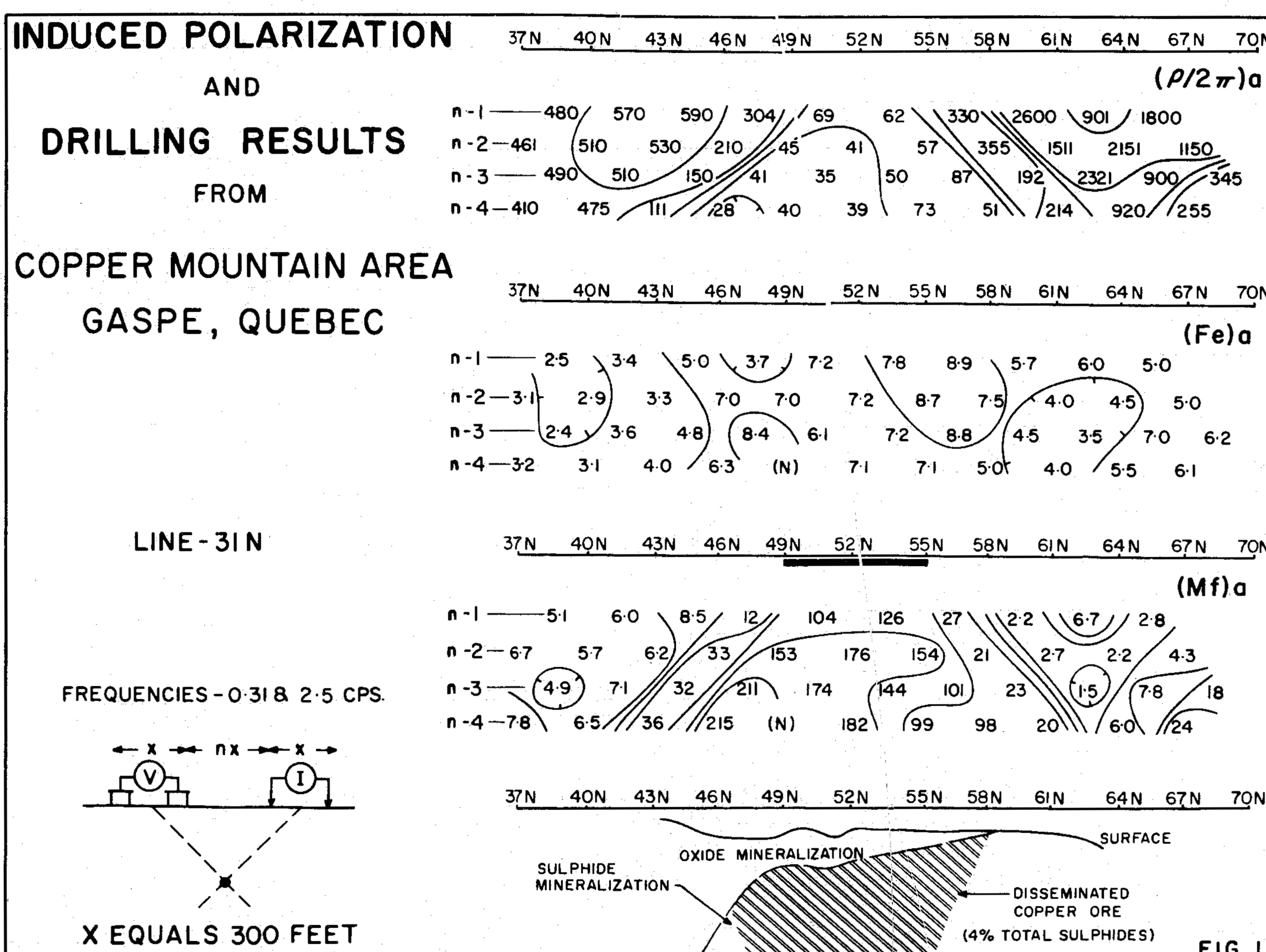


FIG. 1

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

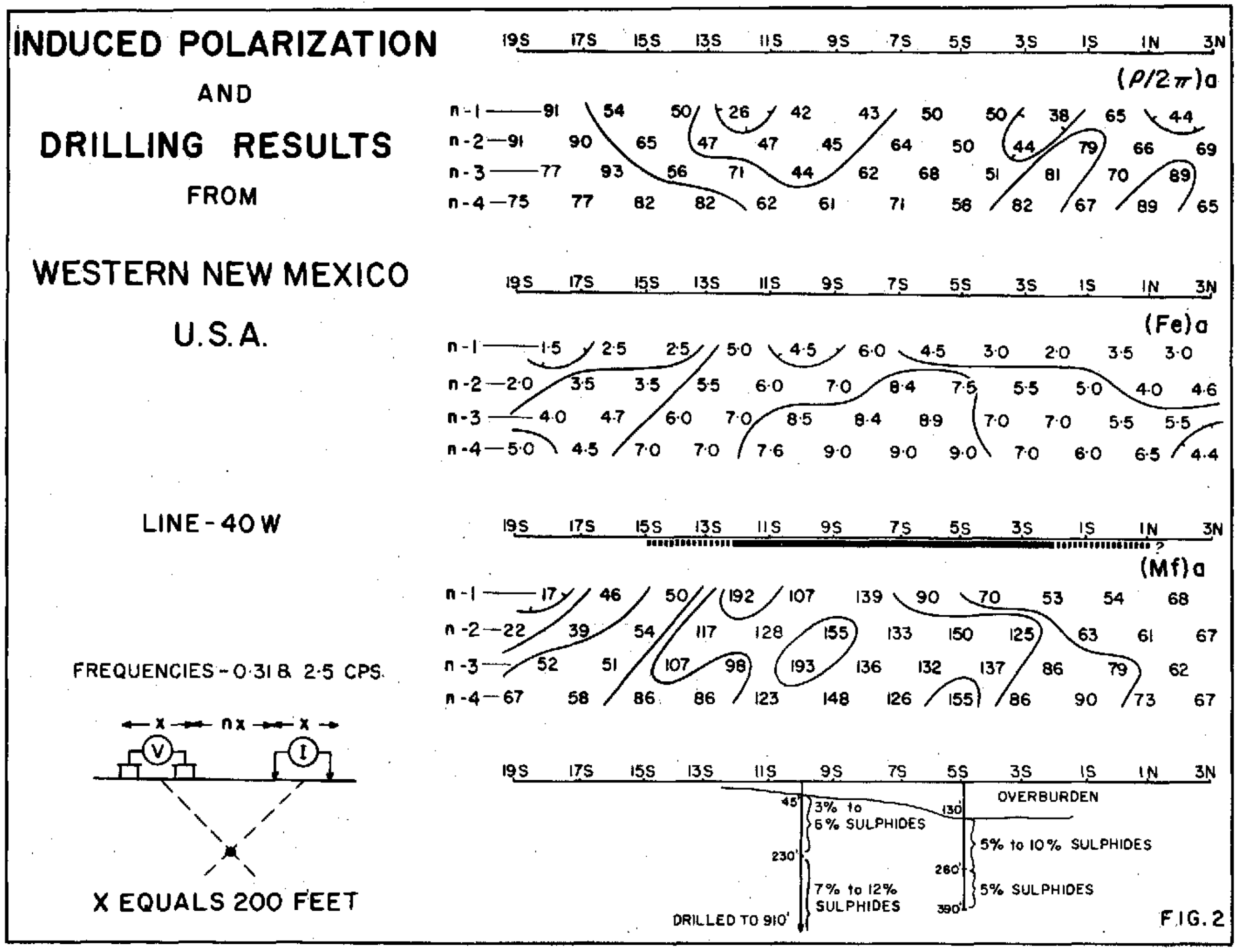


FIG. 2

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

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

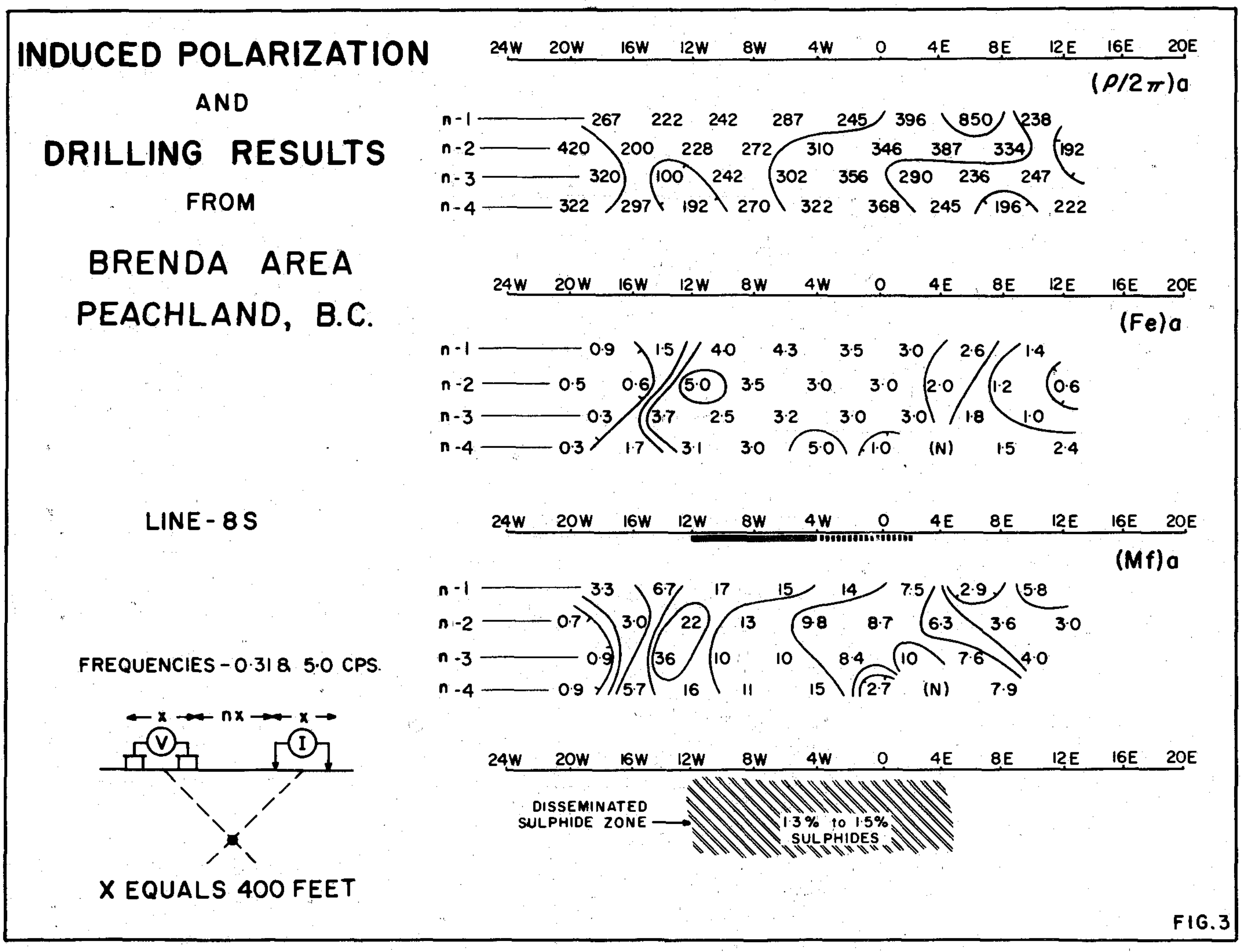
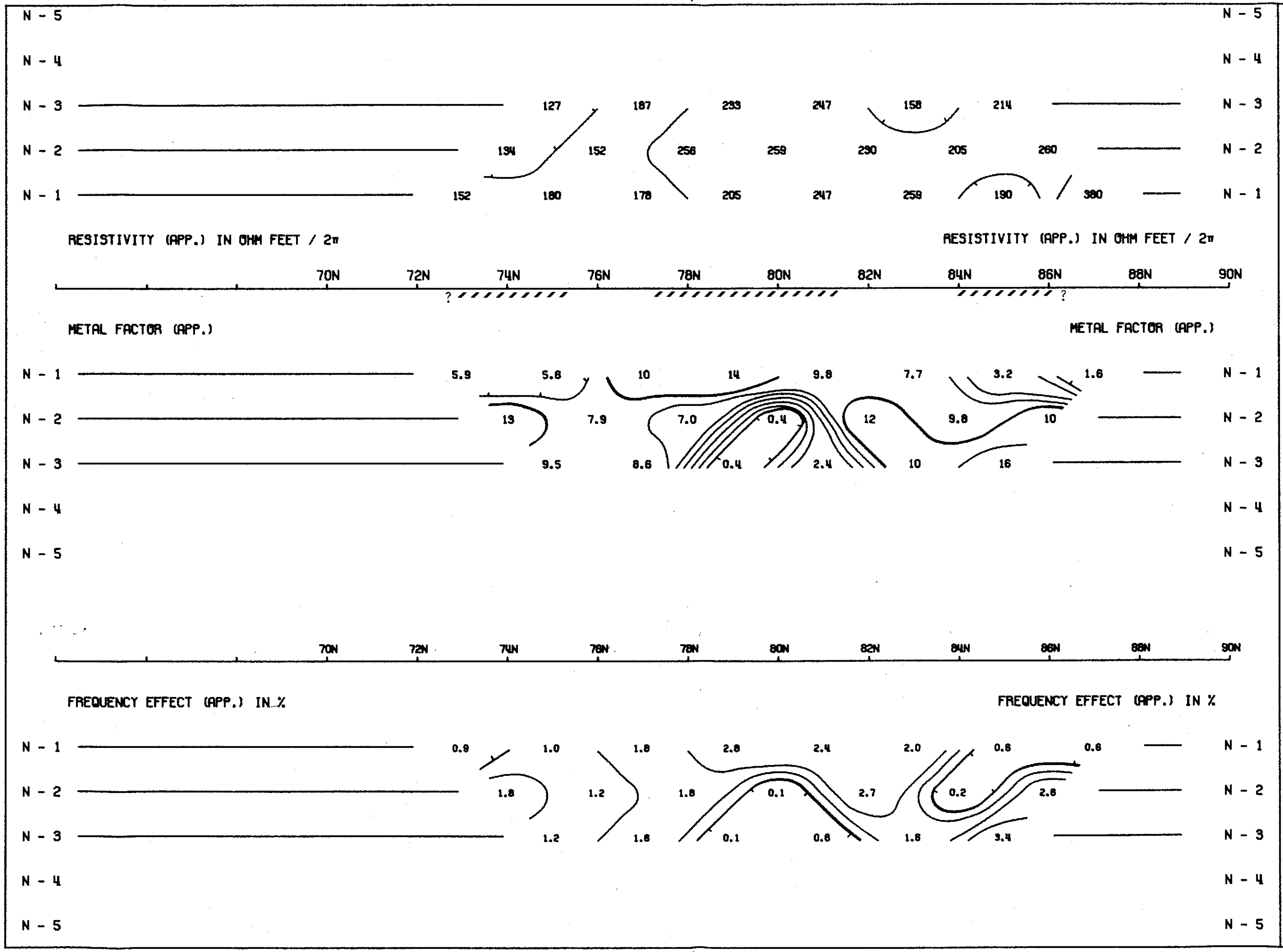


FIG.3



DWG. NO.- I.P.-5371-1

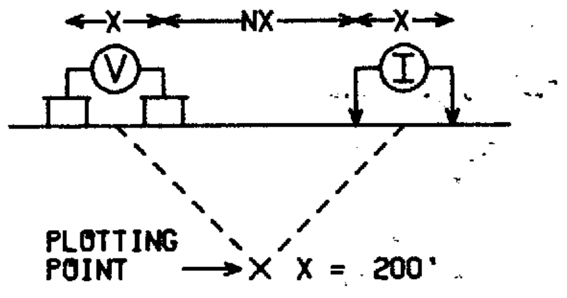
QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 176E

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED

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

DATE: Jan 73

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA D. K. FOUNTAIN

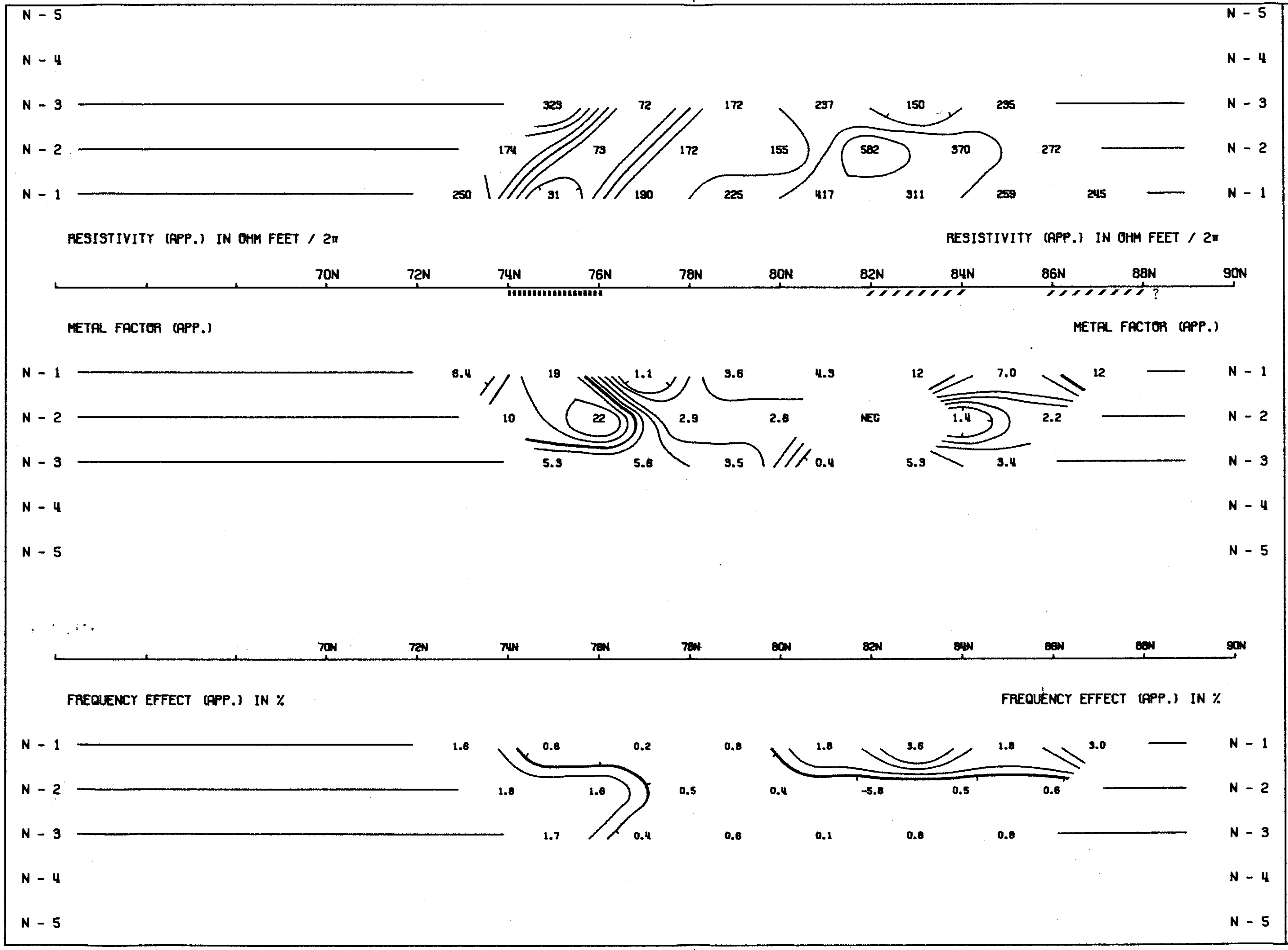
Expiry Date: April 25, 1970

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371-2

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 180E

ELECTRODE CONFIGURATION

PLOTTING POINT X = 200'

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV. 1969

APPROVED: D. K. FOUNTAIN

DATE: Jan 15/70

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

PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA

Expiry Date: April 25, 1970

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER

DWG. NO.- I.P.-5371-3

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 180E

ELECTRODE CONFIGURATION

X — NX — X

PLOTTING POINT X = 100'

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV. 1969

APPROVED:

DATE:

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

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

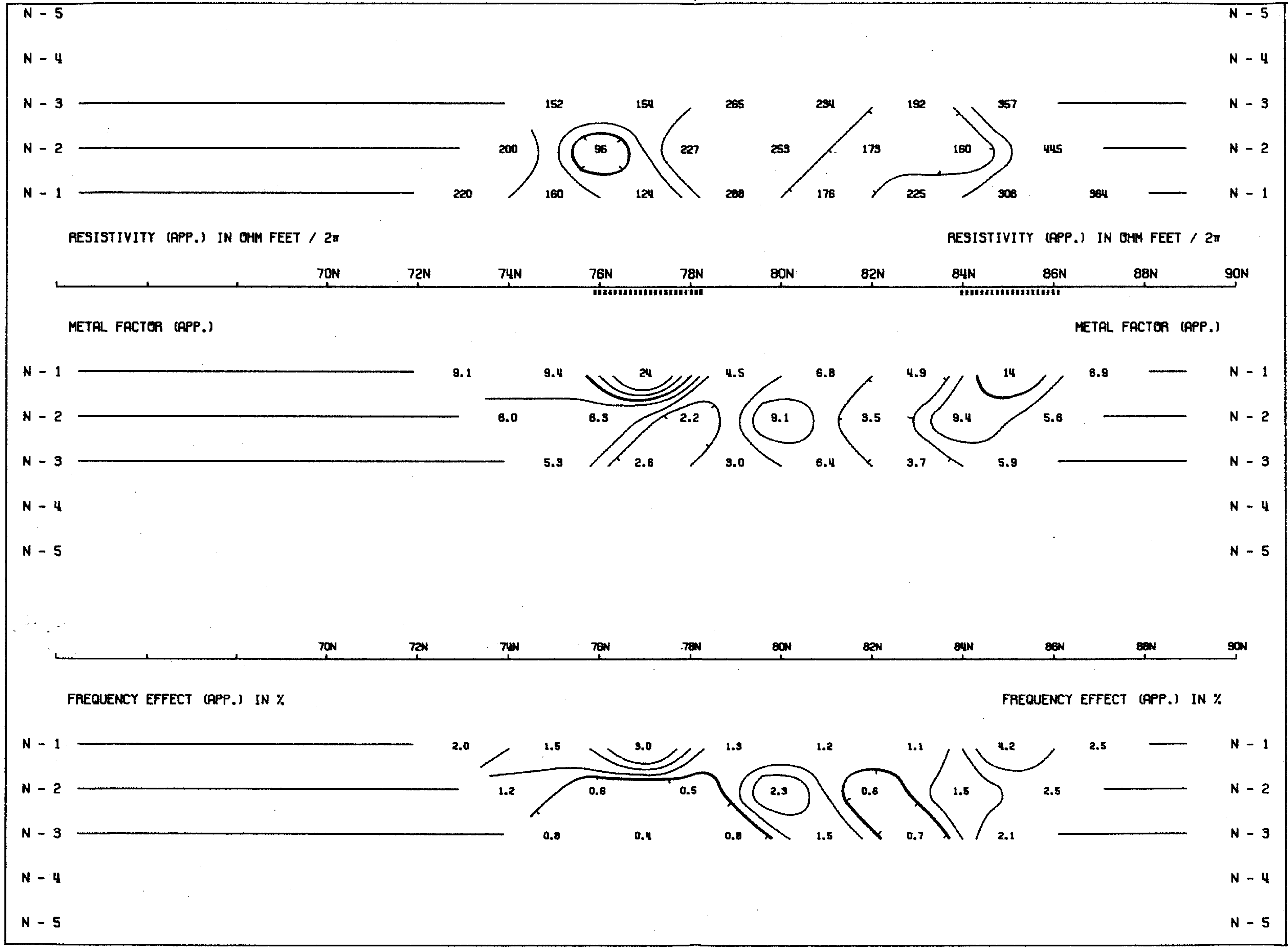
Expiry Date: April 25, 1970

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371-4

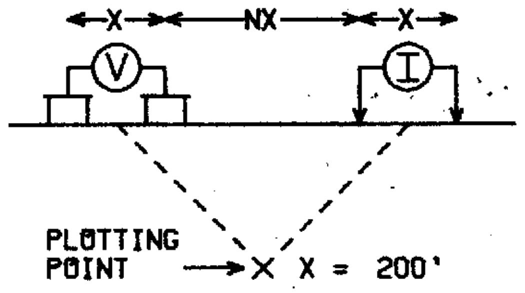
QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 184E

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED

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

DATE:

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

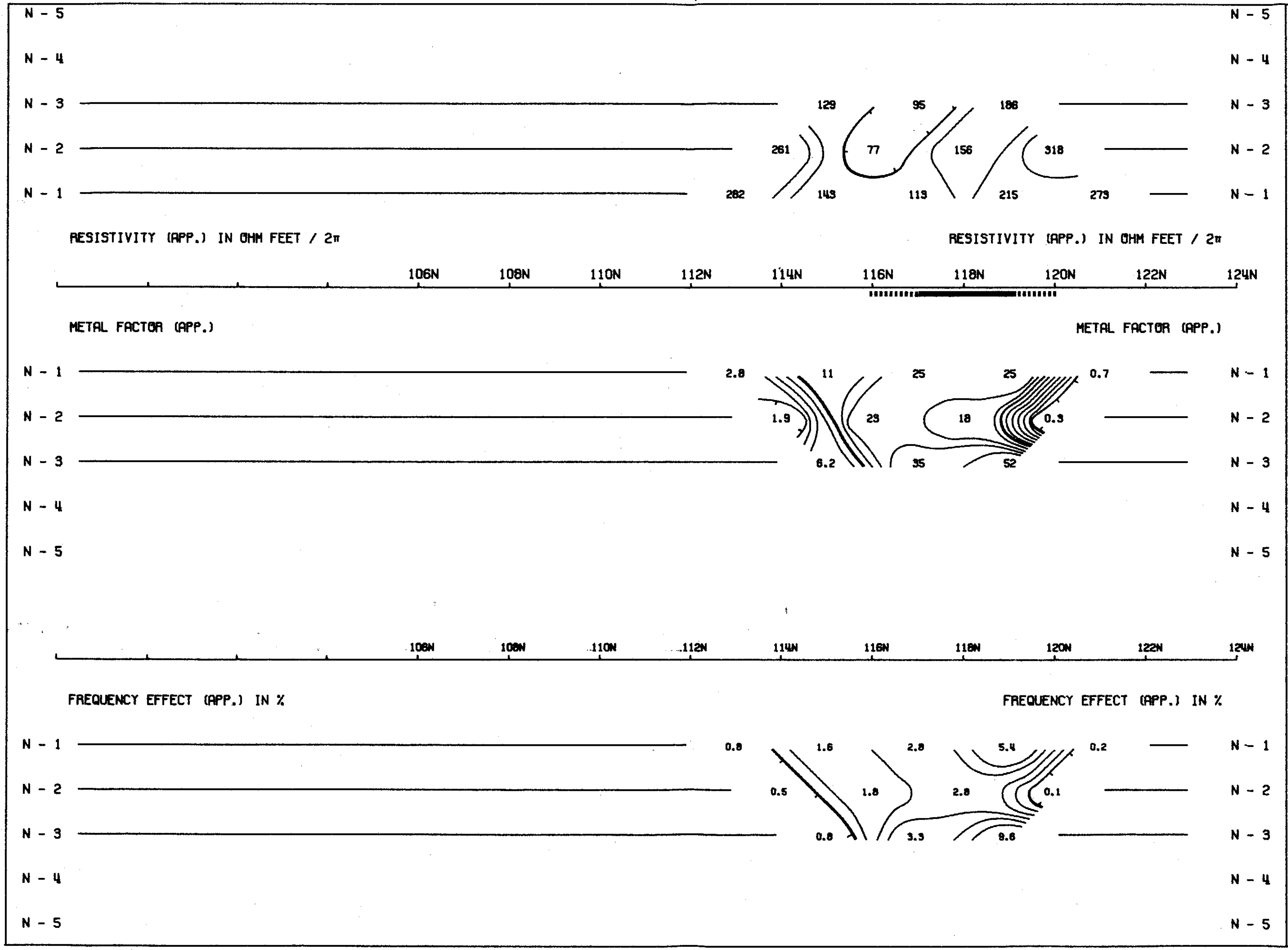
Expiry Date April 25, 1970

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371-5

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 246E

ELECTRODE CONFIGURATION

PLOTTING POINT X = 200'

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED:

D. K. FOUNTAIN

PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA

Expiry Date: April 25, 1970

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

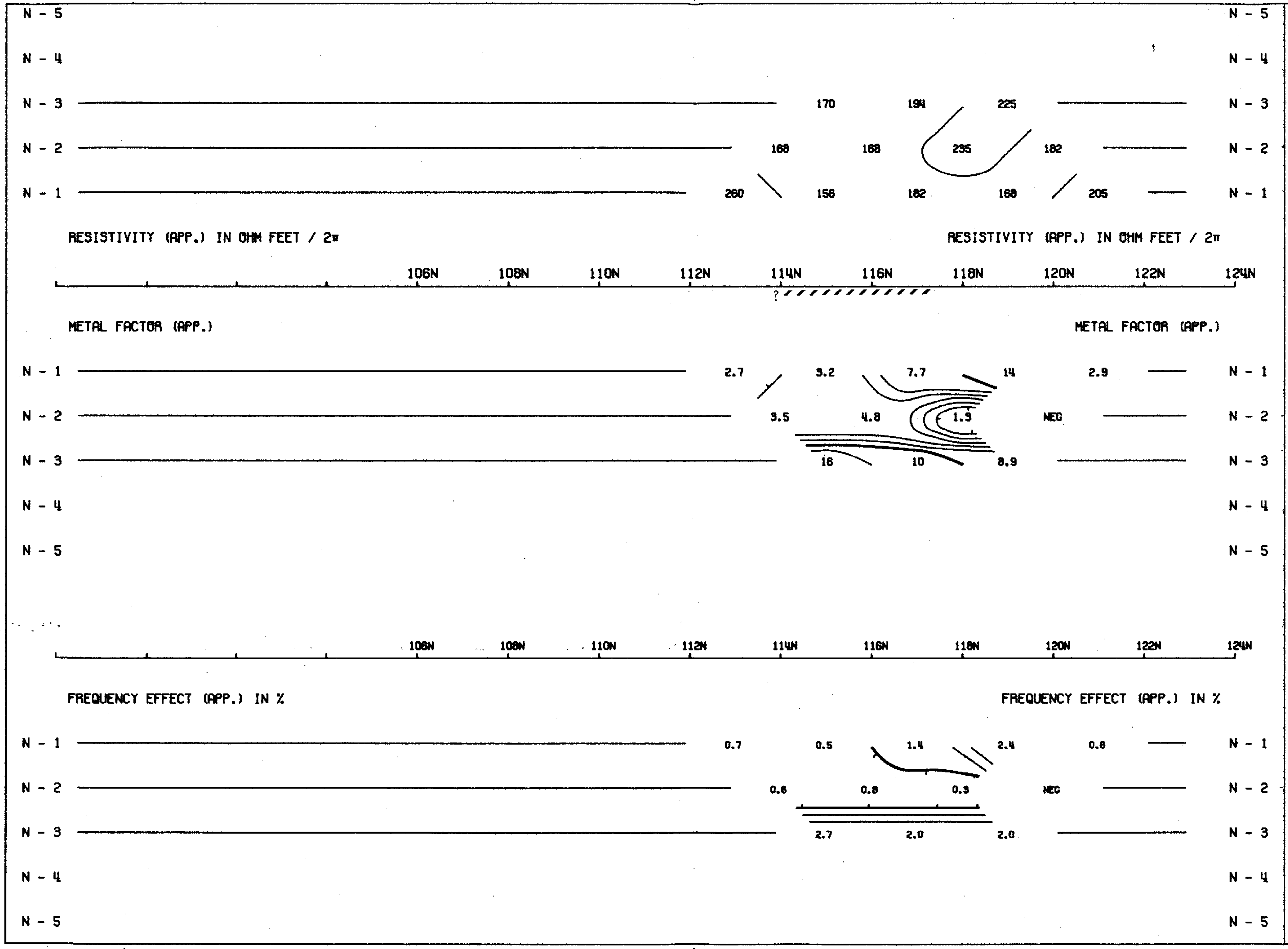
DATE:

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371-6

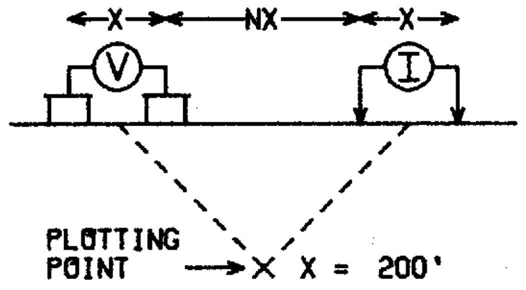
QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 248E

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED:

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

DATE:

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

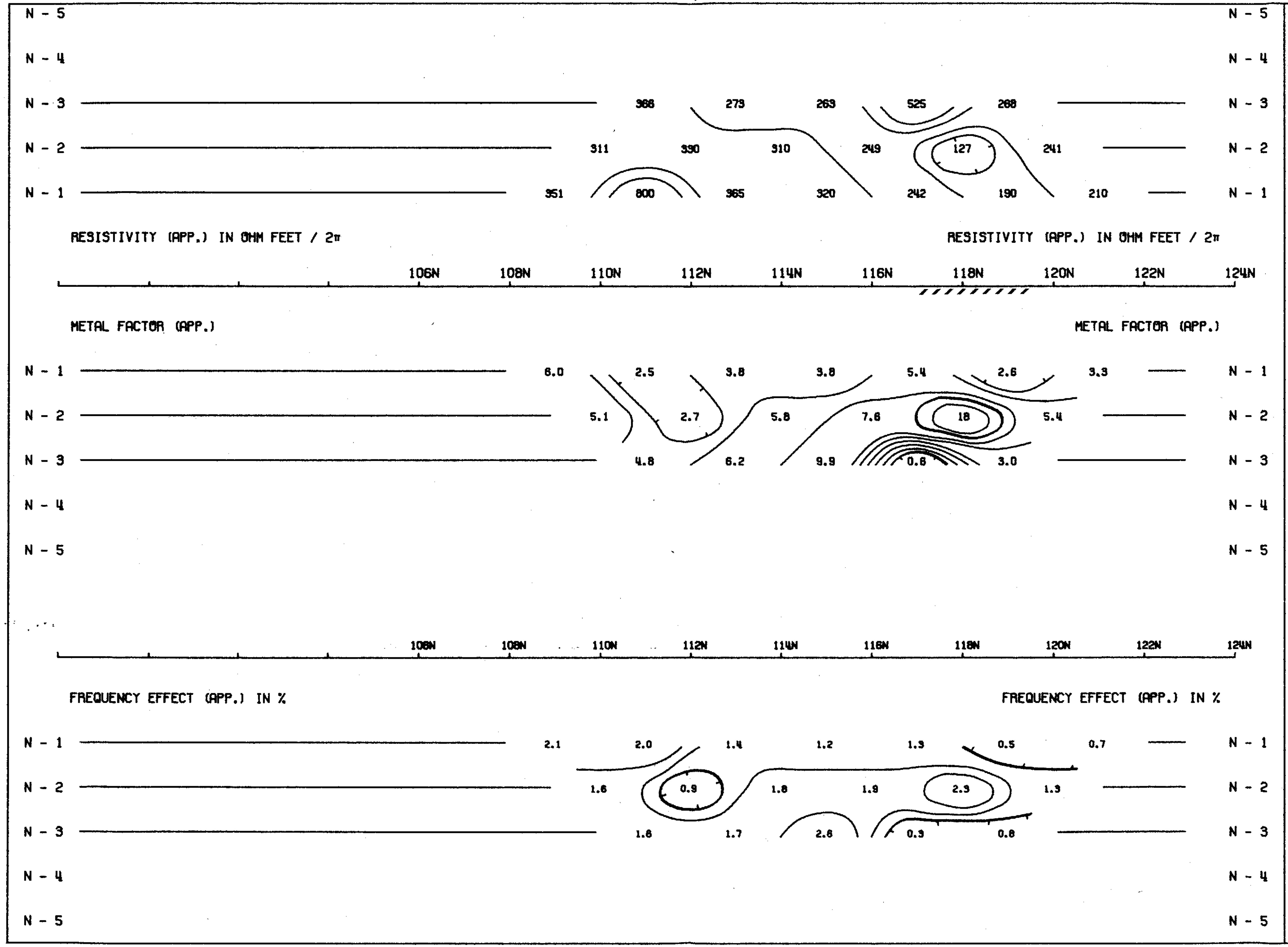
Expiry Date: April 25, 1970

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371-7

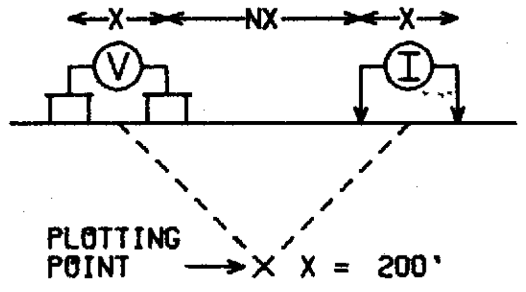
QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 264E

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED:

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

DATE:

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA D. K. FOUNTAIN

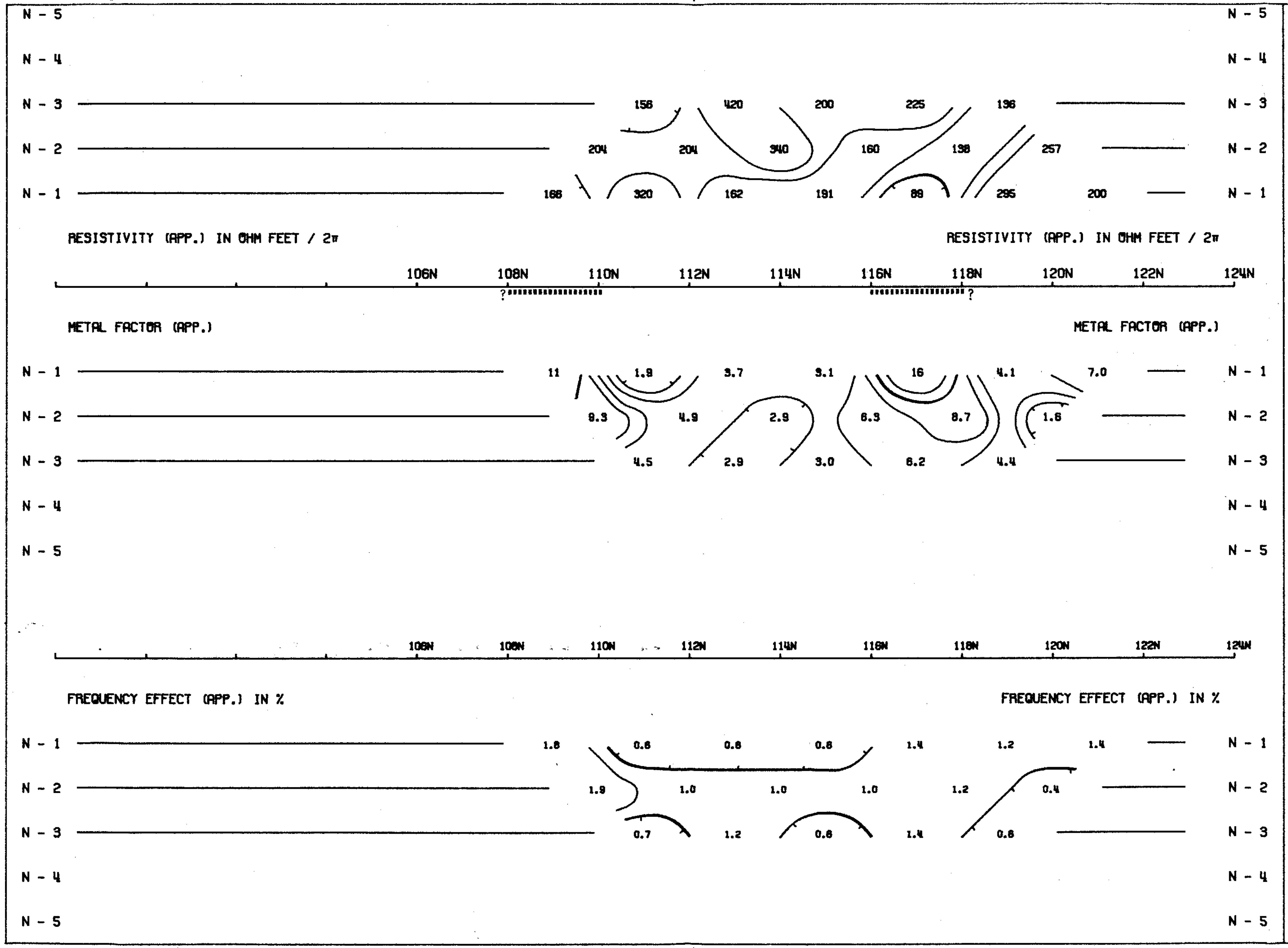
Expiry Date: April 25, 1970

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371-8

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 268E

ELECTRODE CONFIGURATION

X NX X

PLOTTING POINT X = 200'

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED:

DATE:

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

Expiry Date: April 25, 1970

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

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER

DWG. NO.- I.P.-5371-9

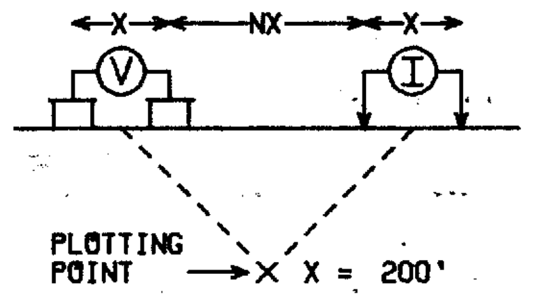
QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 116N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ▬▬▬

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

POSSIBLE / / / / /

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED:

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

DATE:

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

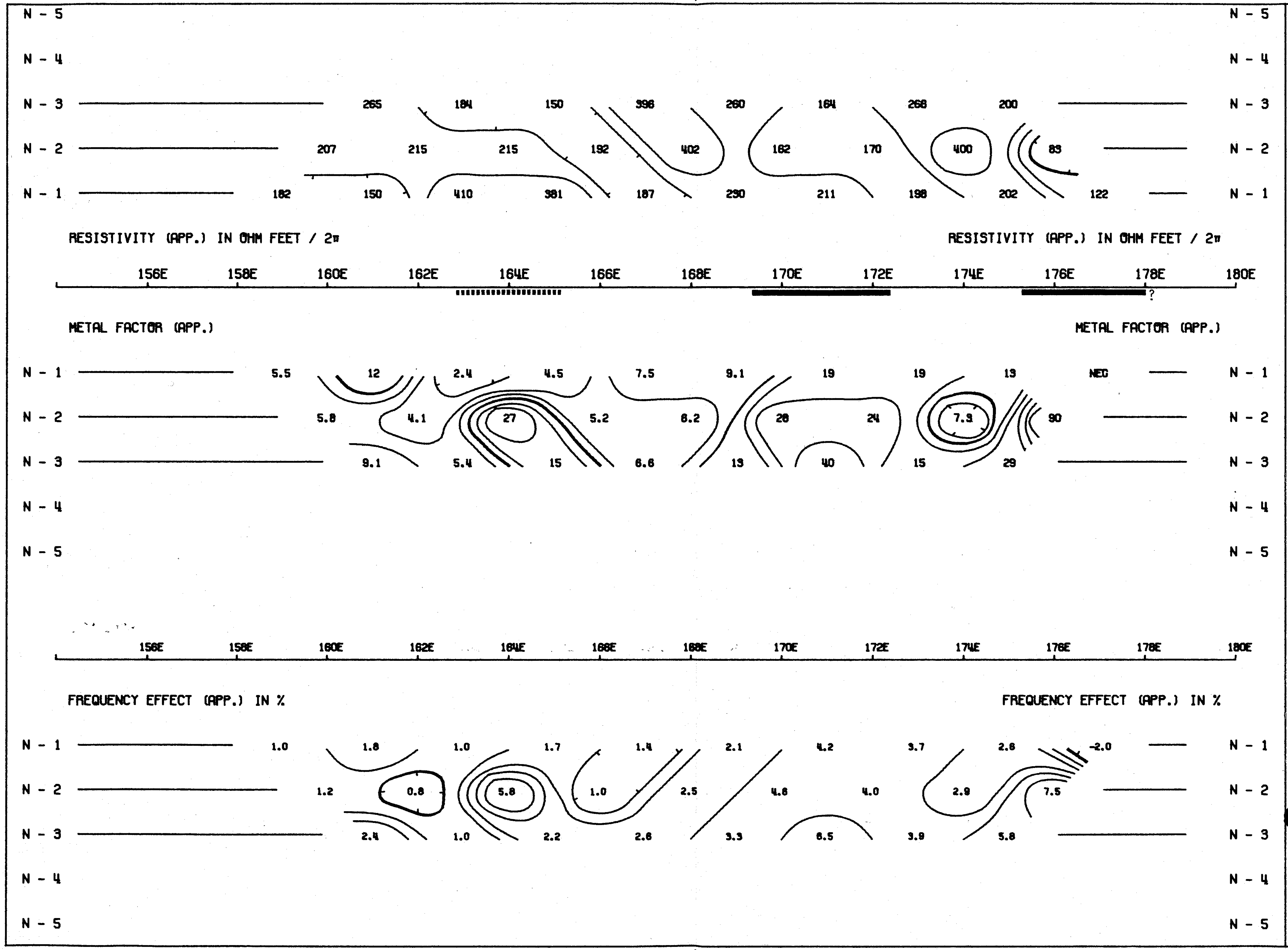
Expiry Date: April 25, 1970

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371-10

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 148N

ELECTRODE CONFIGURATION

X — NX — X

PLOTTING POINT → X X = 200'

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED:

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

DATE:

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

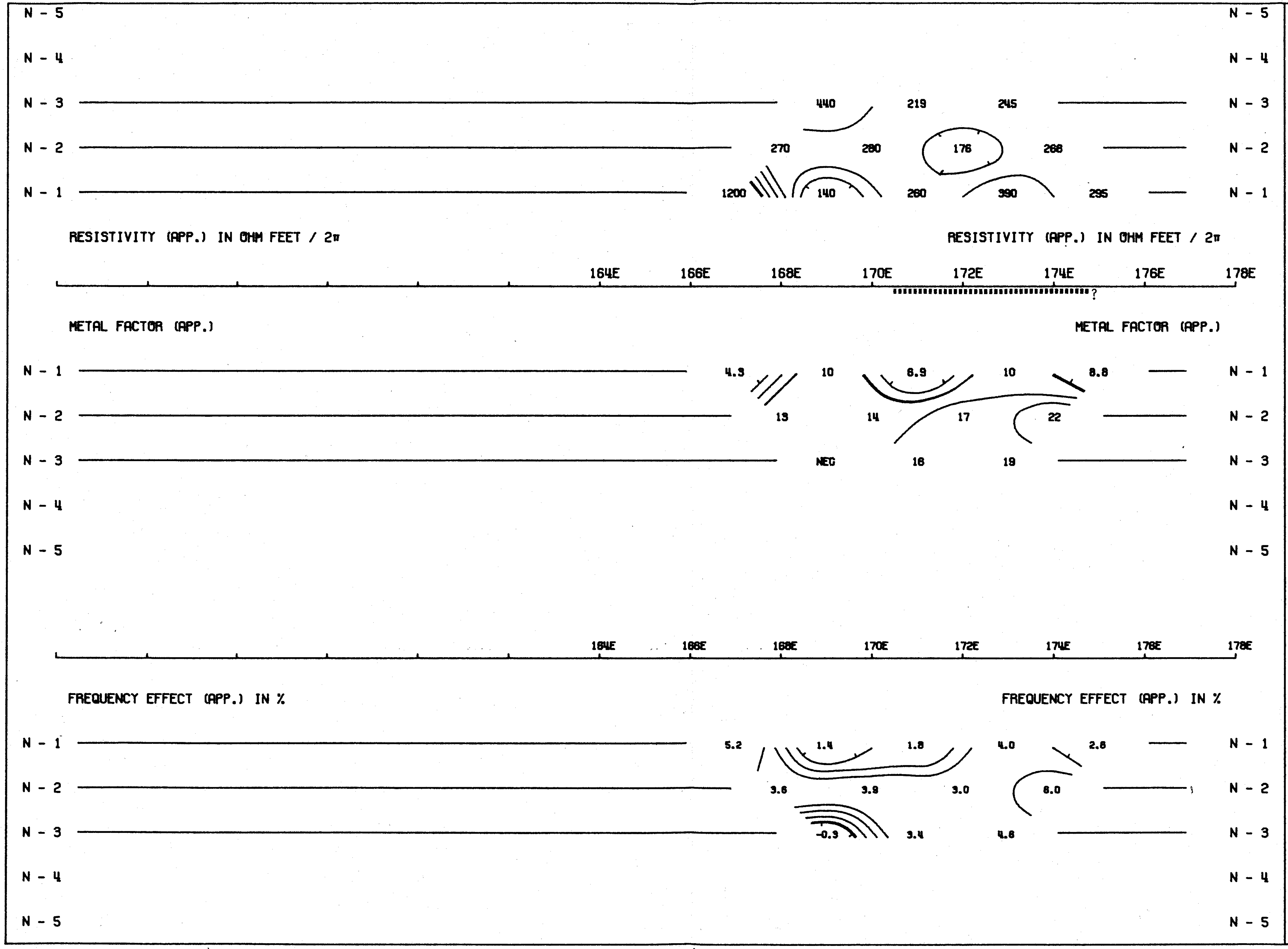
Expiry Date: April 25, 1970

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371-11

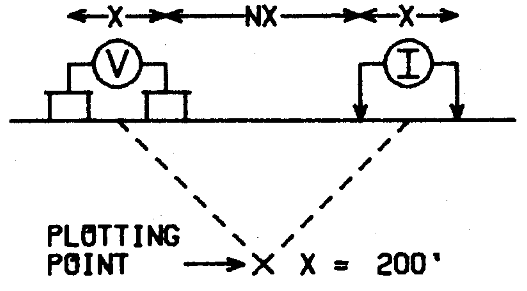
QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 152N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ▬▬▬

PROBABLE ▮▮▮▮▮▮

POSSIBLE / / / / /

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED:

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

DATE:

Expiry Date: April 25, 1970

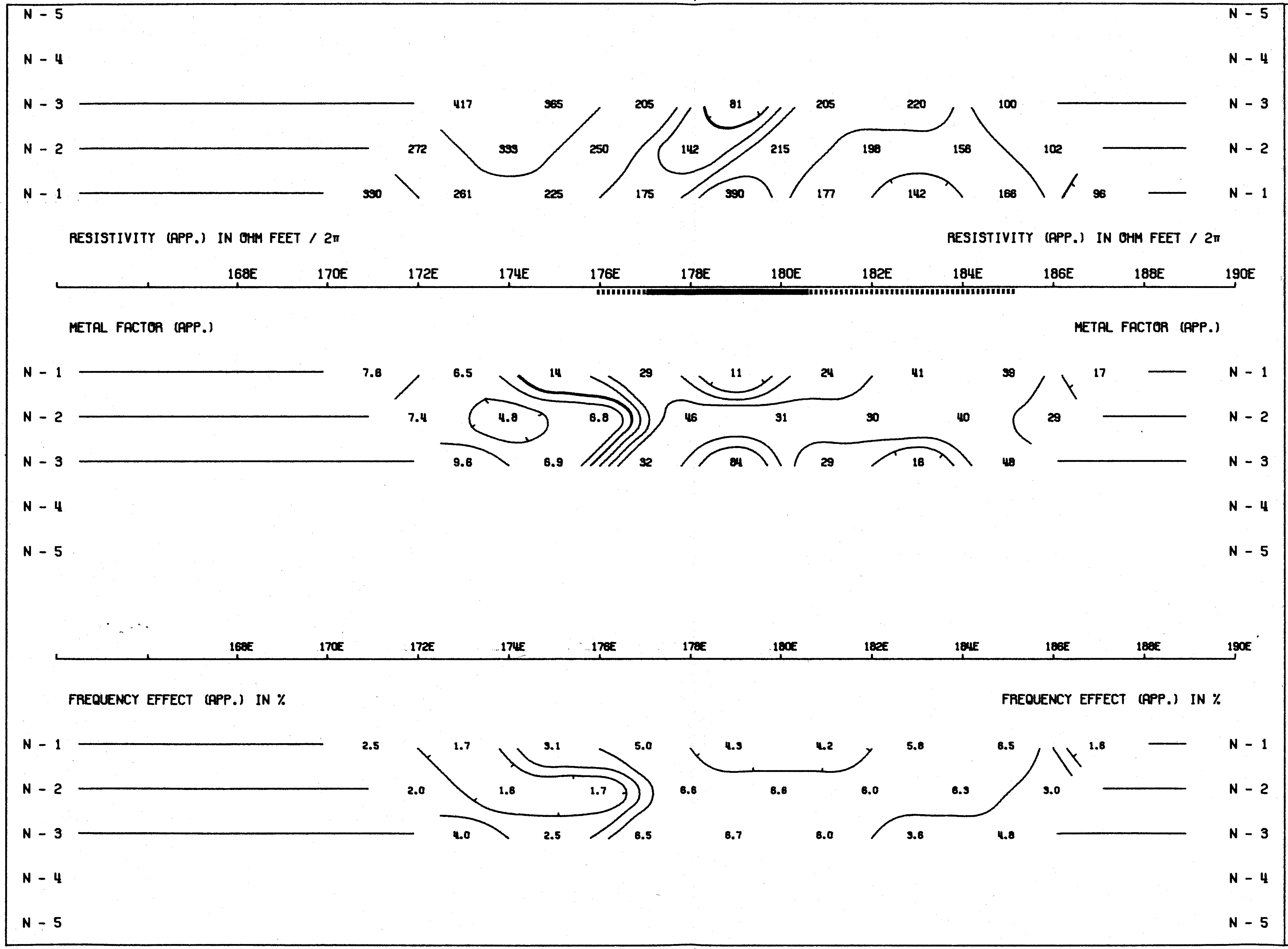
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371-12

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 156N

ELECTRODE CONFIGURATION

←X→←NX→←X→

PLOTTING POINT → X X = 200'

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ▬▬▬

PROBABLE ||||||||||

POSSIBLE /////

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED: [signature]

DATE: Jan [handwritten]

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

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA D. K. FOUNTAIN

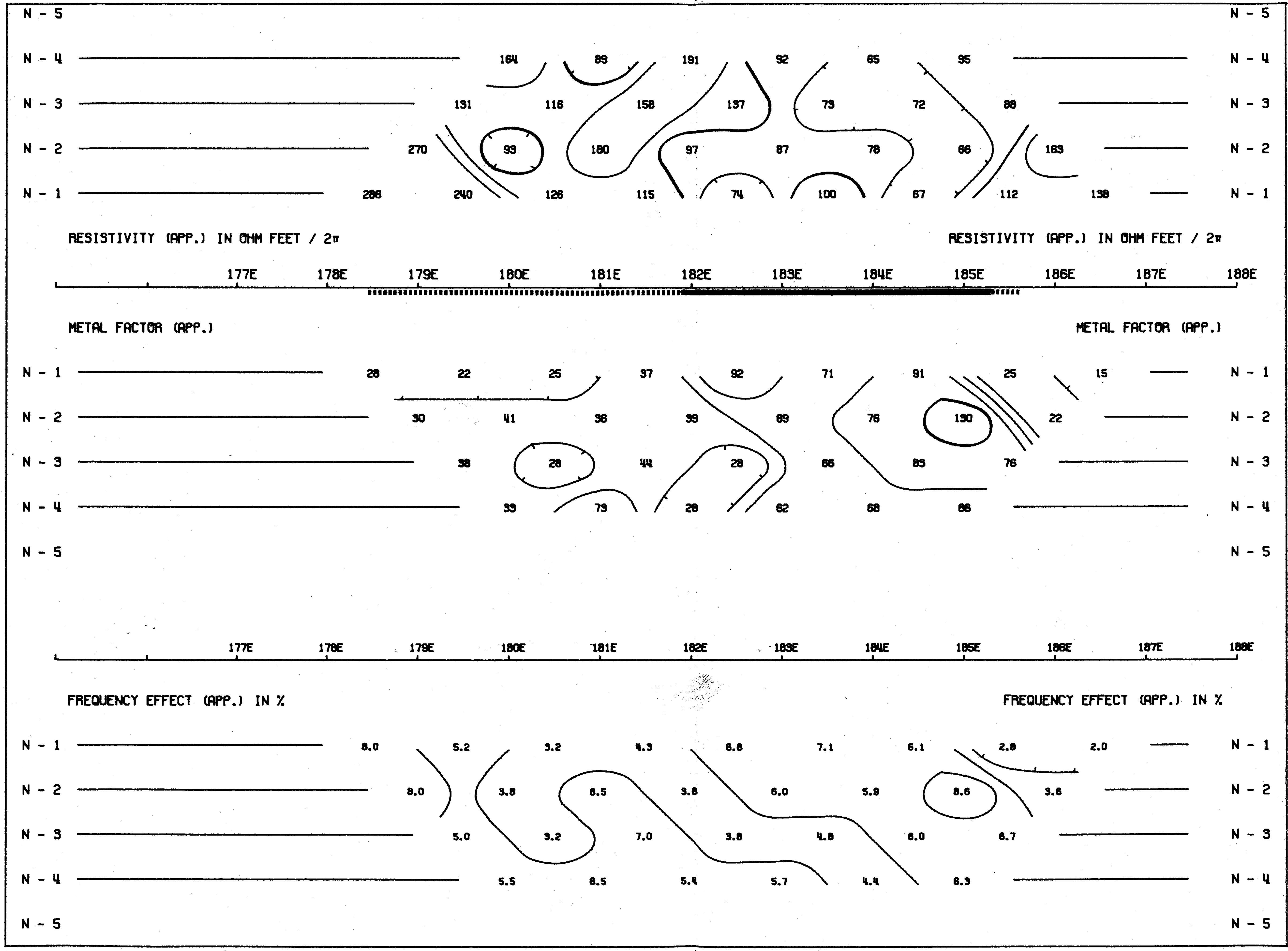
Expiry Date: April 25, 1970

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



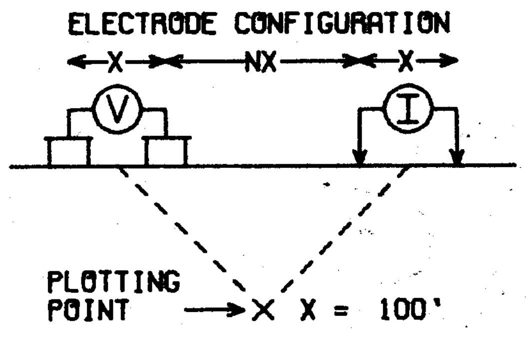
DWG. NO.- I.P.-5371-13

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 160N



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ▬▬▬
PROBABLE ||||||||||||
POSSIBLE / / / / /

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED:

DATE:

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

PROFESSIONAL ENGINEER D. K. FOUNTAIN BRITISH COLUMBIA

Expiry Date: April 28, 1970

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER

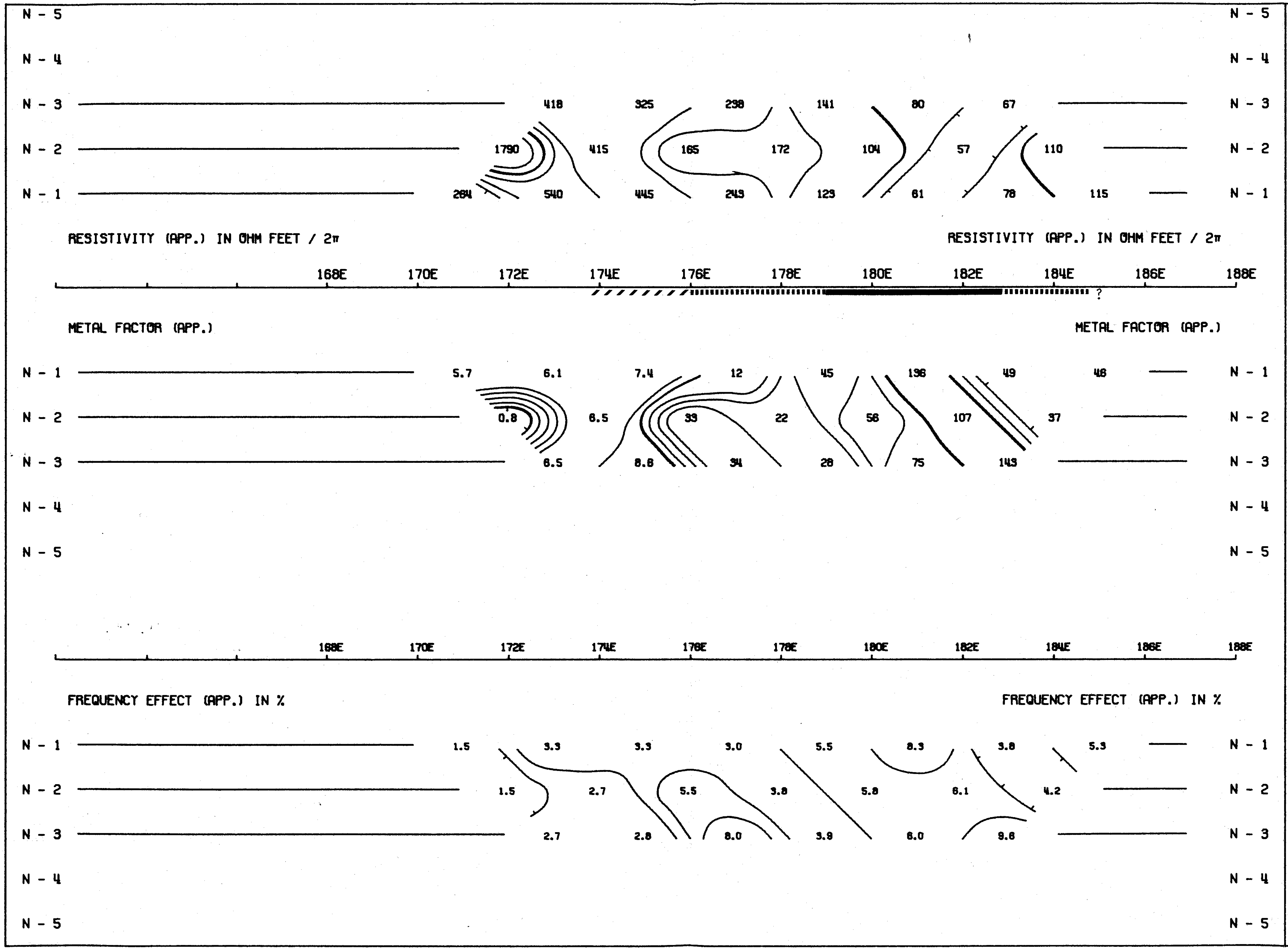
DWG. NO.- I.P.-5371-14

QUALITY EXPLORATION CORPORATION

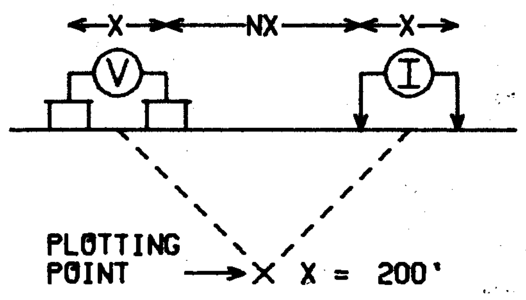
SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 164N



ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ▬▬▬

PROBABLE IIIIIIIIIIII

POSSIBLE / / / / /

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED [illegible] 1969

APPROVED [illegible signature]

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

DATE: [illegible]

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

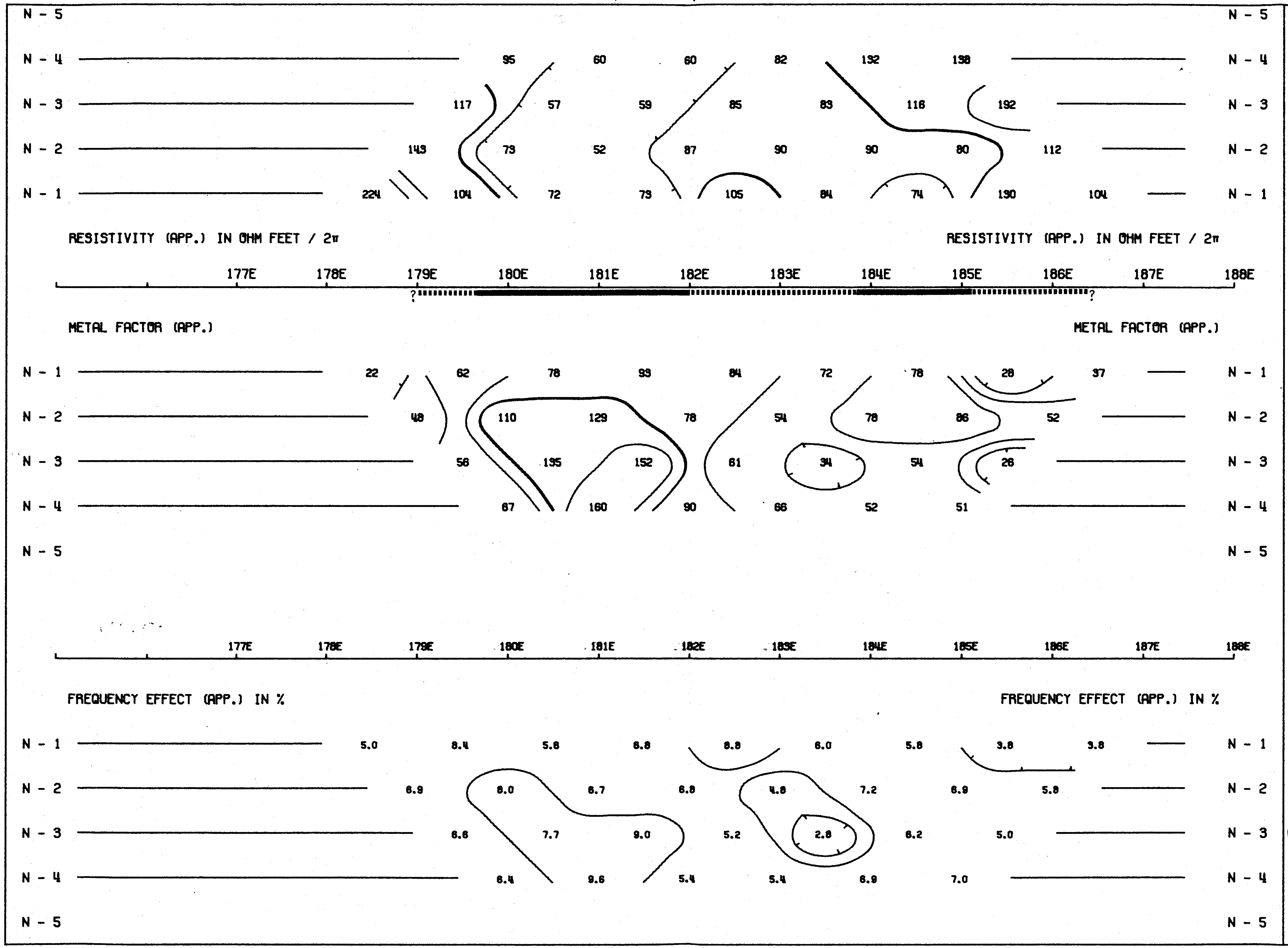
Expiry Date: April 25, 1979

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371-15

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 164N

ELECTRODE CONFIGURATION

X — NX — X

PLOTTING POINT X = 100'

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED:

DATE:

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

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA

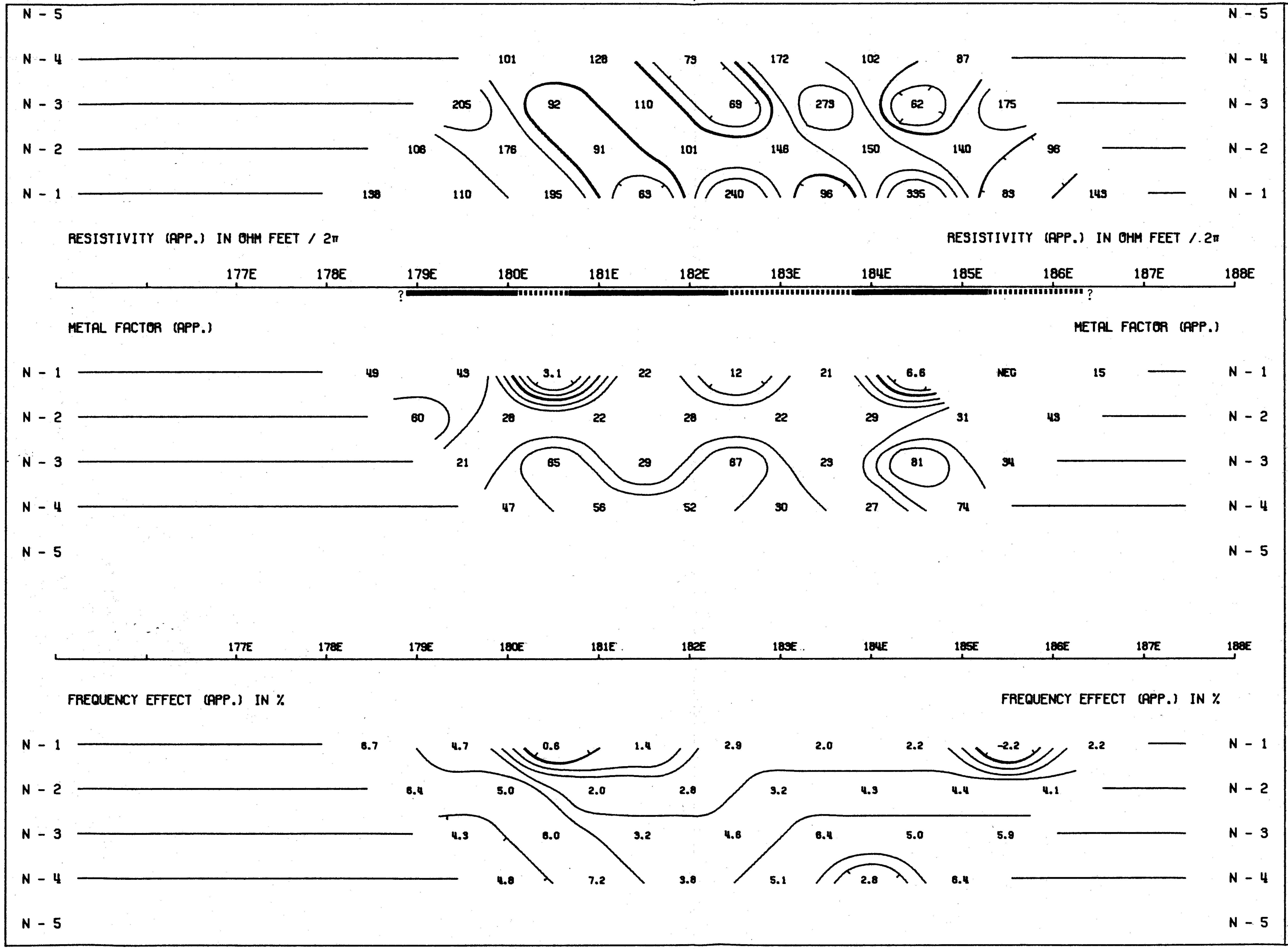
Expiry Date: April 25, 1970

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371-16

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 168N

ELECTRODE CONFIGURATION

X — NX — X

PLOTTING POINT → X X = 100'

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

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

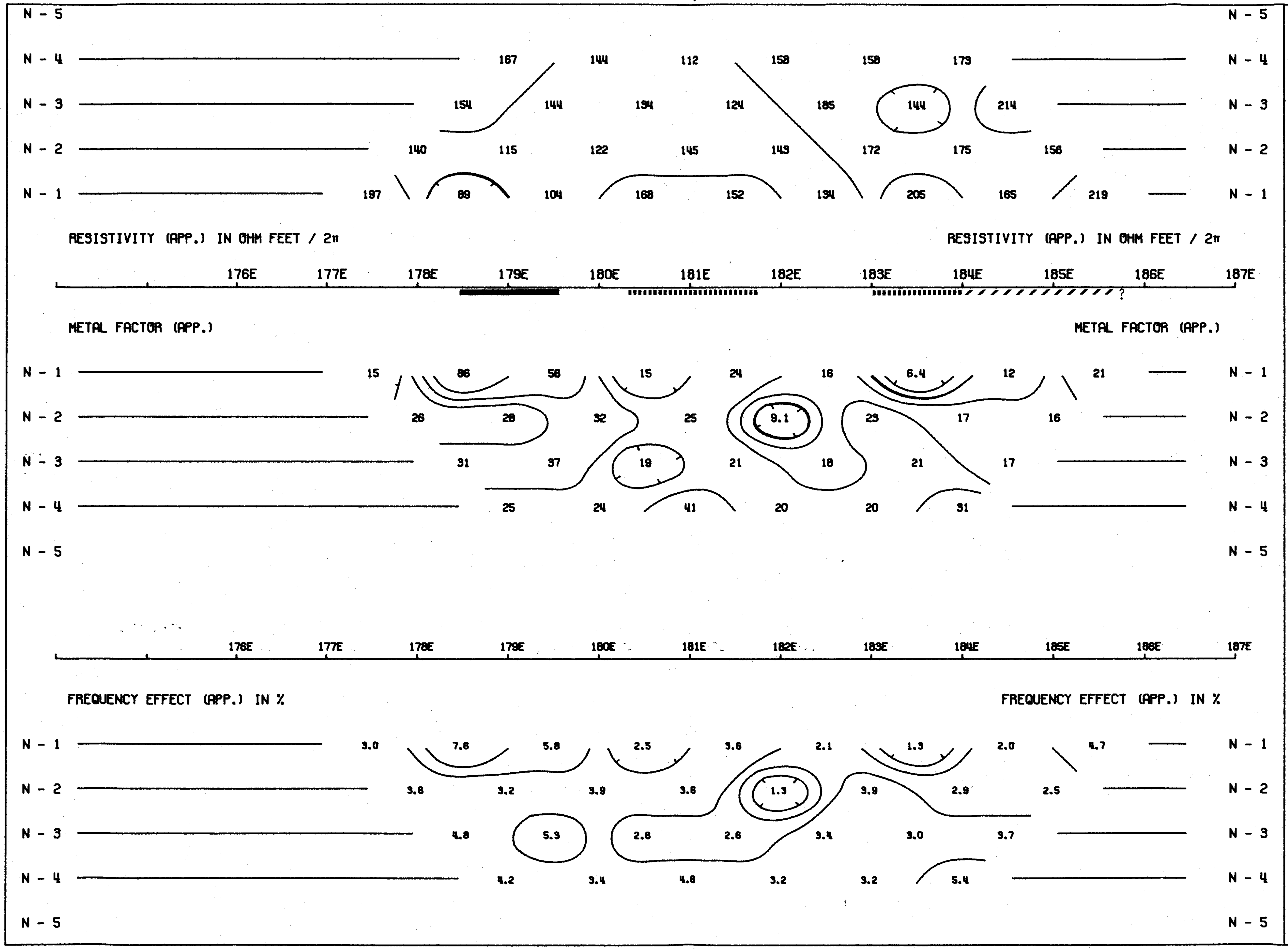
Expiry Date: April 25, 1970

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371 - 17

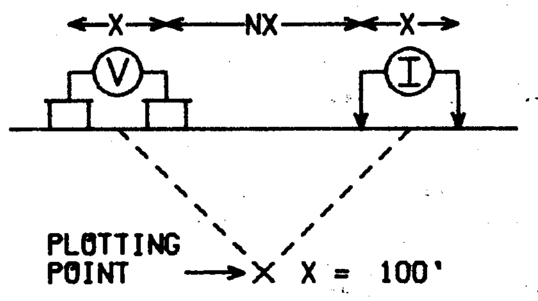
QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 172N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ▬▬▬

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

POSSIBLE / / / / /

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED: [signature]

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

DATE: [handwritten date]

Expiry Date: April 25, 1970

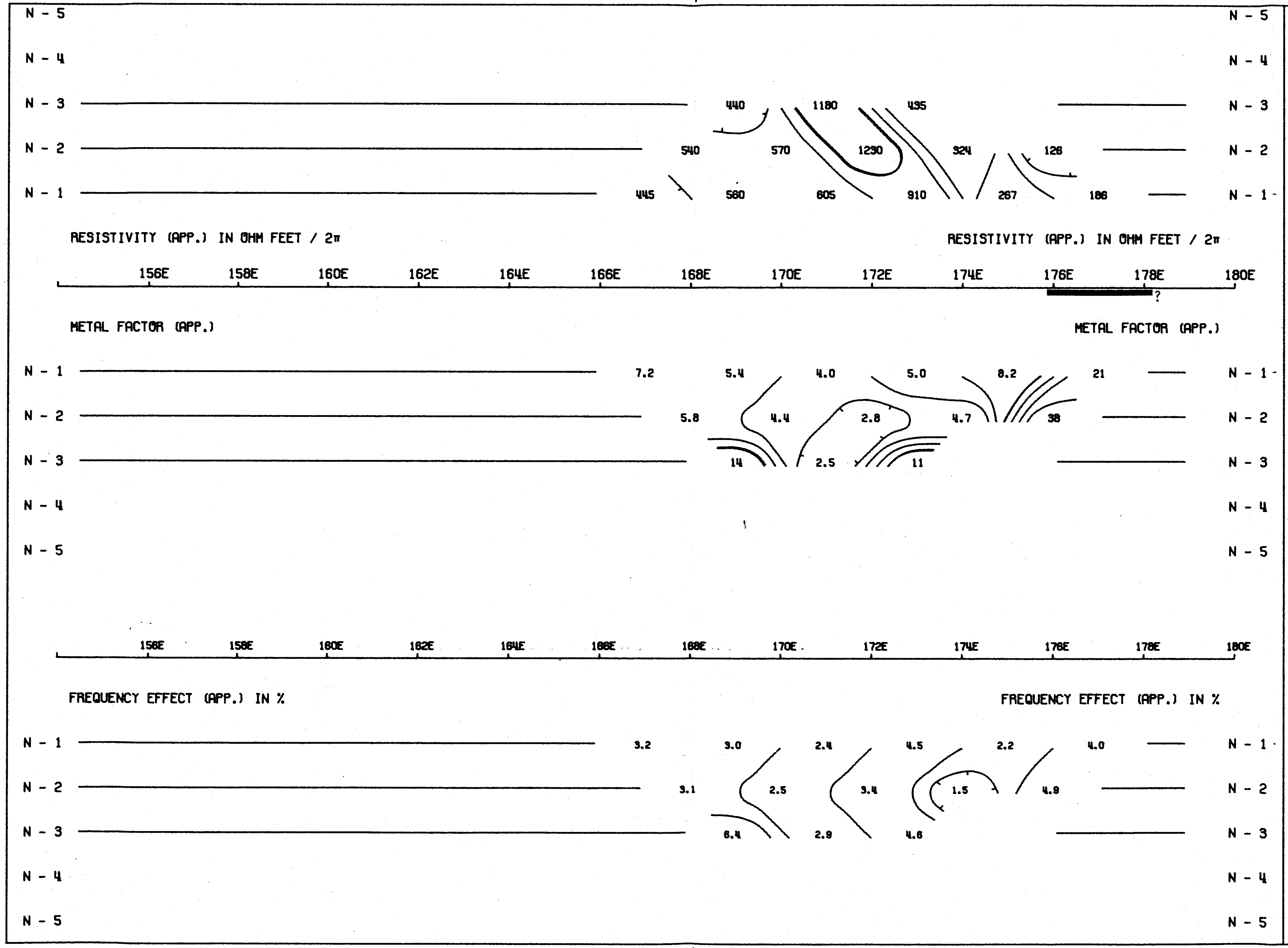
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371-18

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 180N

ELECTRODE CONFIGURATION

X — NX — X

V I

PLOTTING POINT → X X = 200'

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED:

DATE:

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

Expiry Date: April 25, 1970

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

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER

DWG. NO.- I.P.-5371-19

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 184N

ELECTRODE CONFIGURATION

←X→←NX→←X→

(V) (I)

PLOTTING POINT →X X = 200'

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ▬▬▬

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

POSSIBLE / / / / /

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV. 1969

APPROVED: D. K. Fountain

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

DATE:

Expiry Date: April 25, 1970

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

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

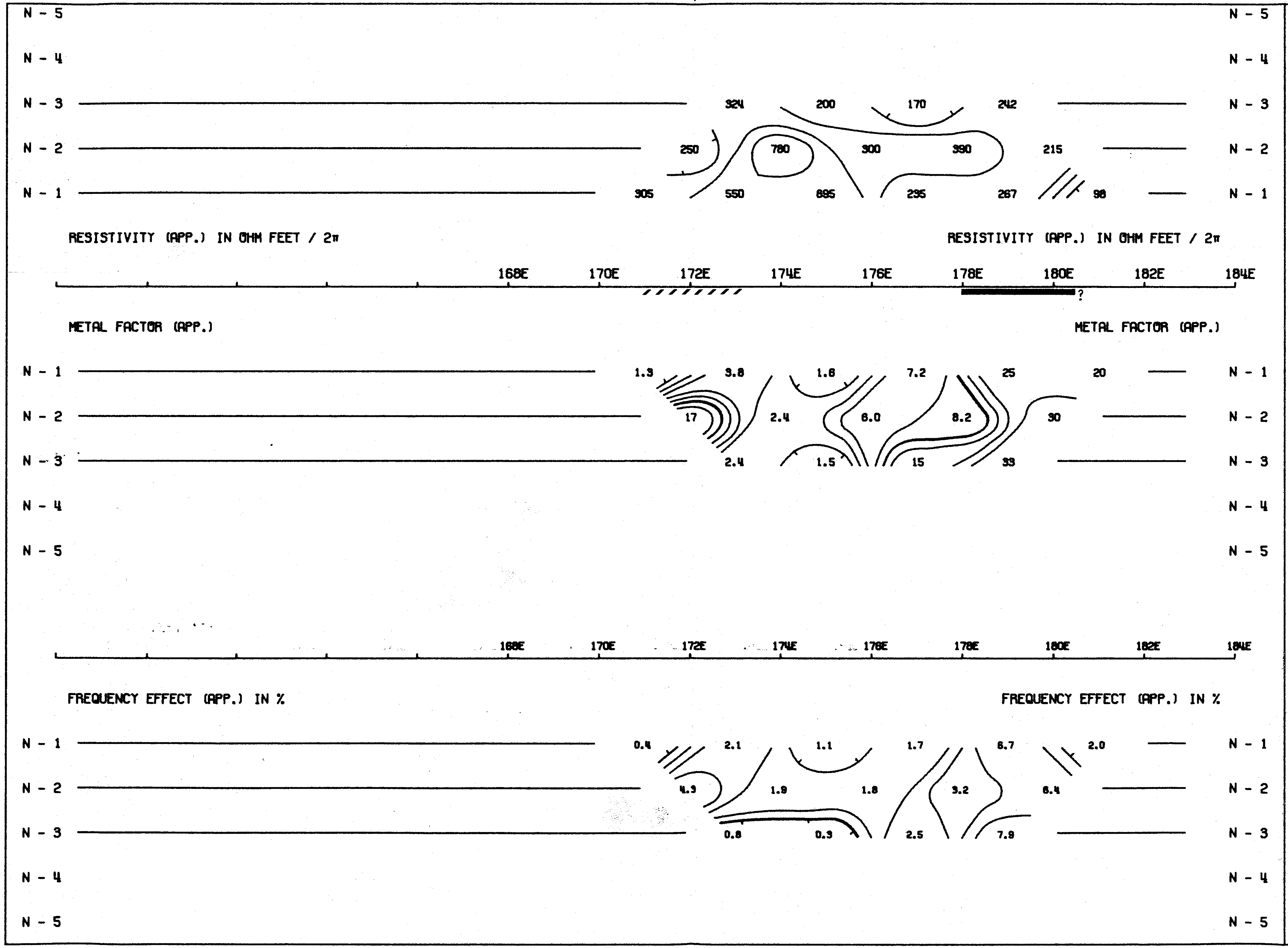
NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER

DWG. NO.- I.P.-5371-20

QUALITY EXPLORATION CORPORATION

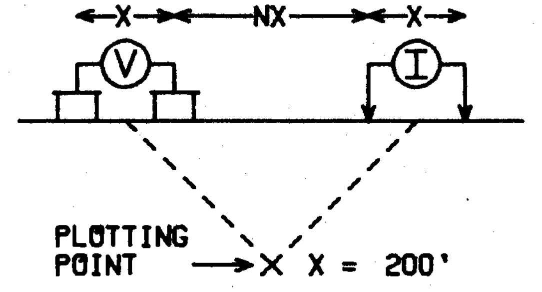
SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.



LINE NO.- 186N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ▬▬▬

PROBABLE ||||||||||

POSSIBLE / / / / /

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV. 1969

APPROVED:

DATE:

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA

Expiry Date: April 25, 1970

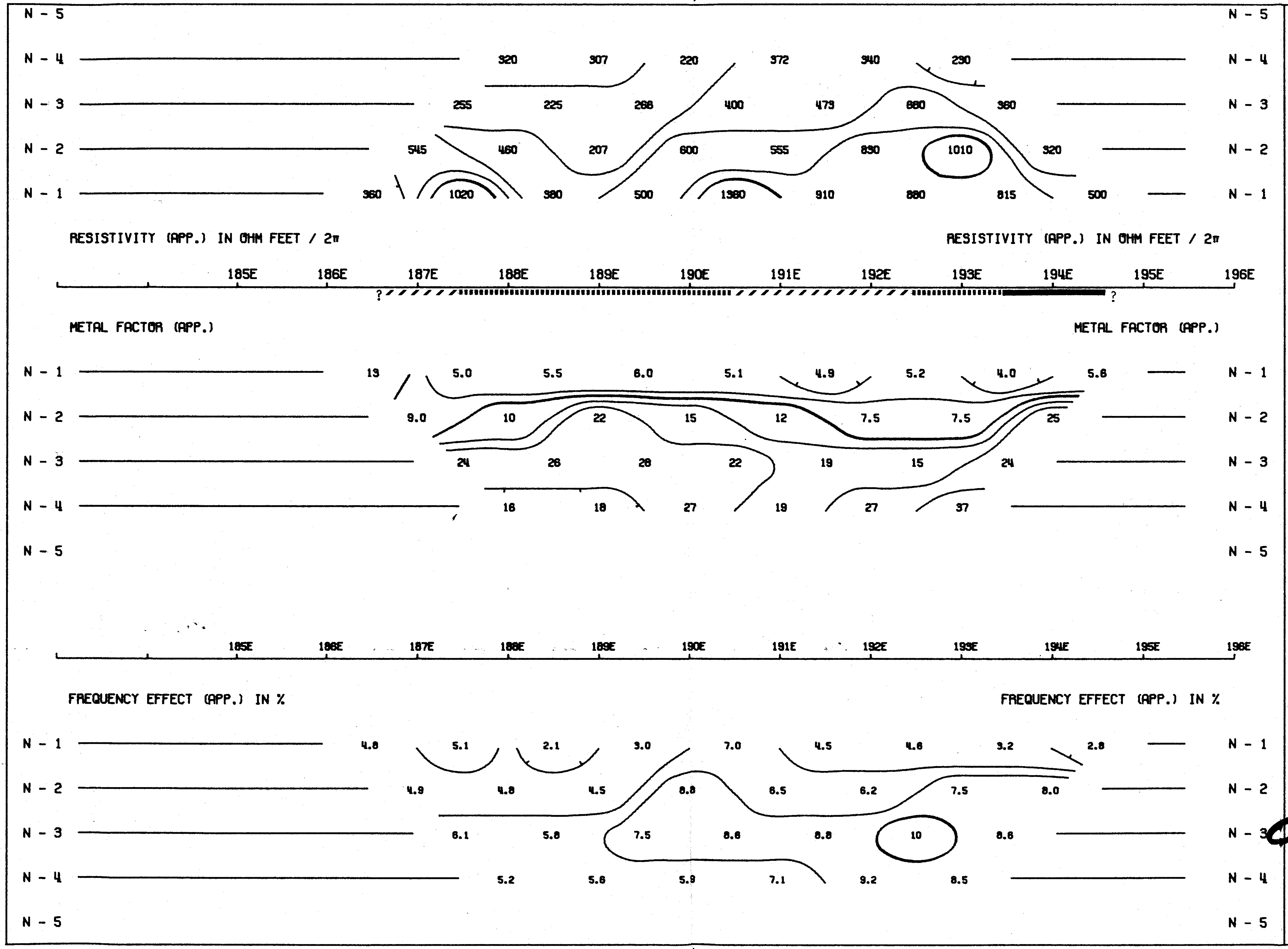
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5371-21

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 186N

ELECTRODE CONFIGURATION

PLOTTING POINT → X X = 100'

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV 1969

APPROVED:

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

DATE:

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

Expiry Date: April 25, 1970

2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER

DWG. NO.- I.P.-5371-22

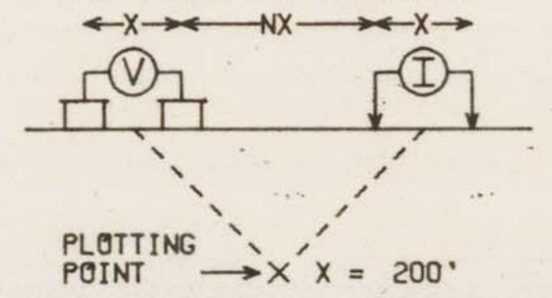
QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT

PRINCETON AREA, SIMILKAMEEN, M.D., B.C.

LINE NO.- 172E

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 CPS

DATE SURVEYED: NOV. 1969

APPROVED:

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

DATE: Jan 15 /70

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. K. FOUNTAIN

Expiry Date: April 25, 1970

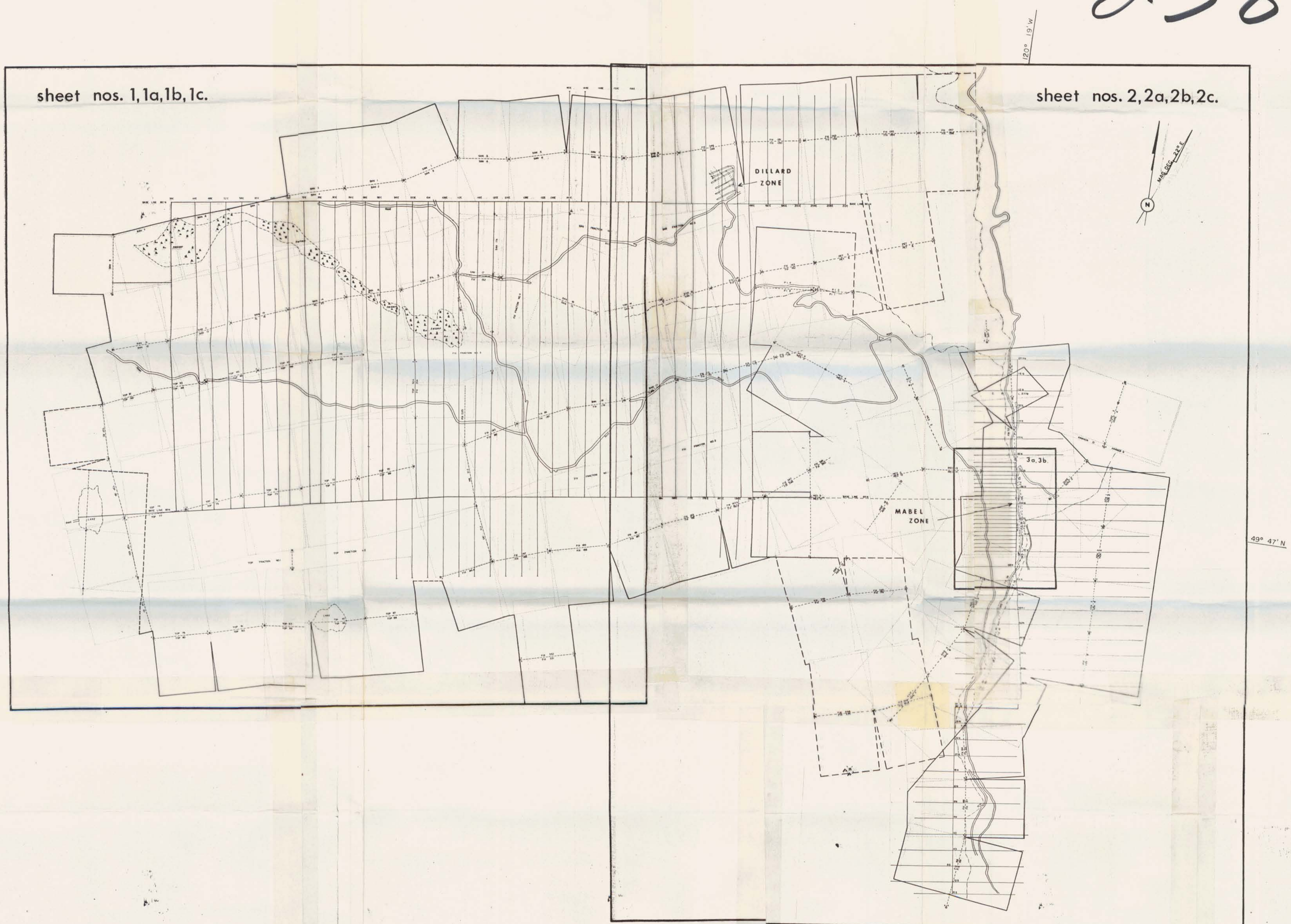
2389

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/75 COMPUTER AND A CALCOMP PLOTTER

2389



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2389 MAP #5

NOTE: TO ACCOMPANY GEOPHYSICAL REPORT BY R.G. JURY P. Eng., ON THE SPA MINES LTD. CLAIMS, SIWASH CREEK, SIMILKAMEEN MINING DIVISION, DATED SEPT. 12, 1969.

Rae G Jury

QUALITY EXPLORATION CORPORATION	
SPA MINES PROJECT INDEX AND CLAIM LOCATION MAP	
ALRAE ENGINEERING LTD. GEOLOGISTS AND ENGINEERS VANCOUVER, B. C.	
DESIGNED G.H. DRAWN E.R. CHECKED R.G.J. DATE SEPTEMBER 1969	SCALE: HOR. 1" = 1500' VERT.
	DWG. No. 5500— 12

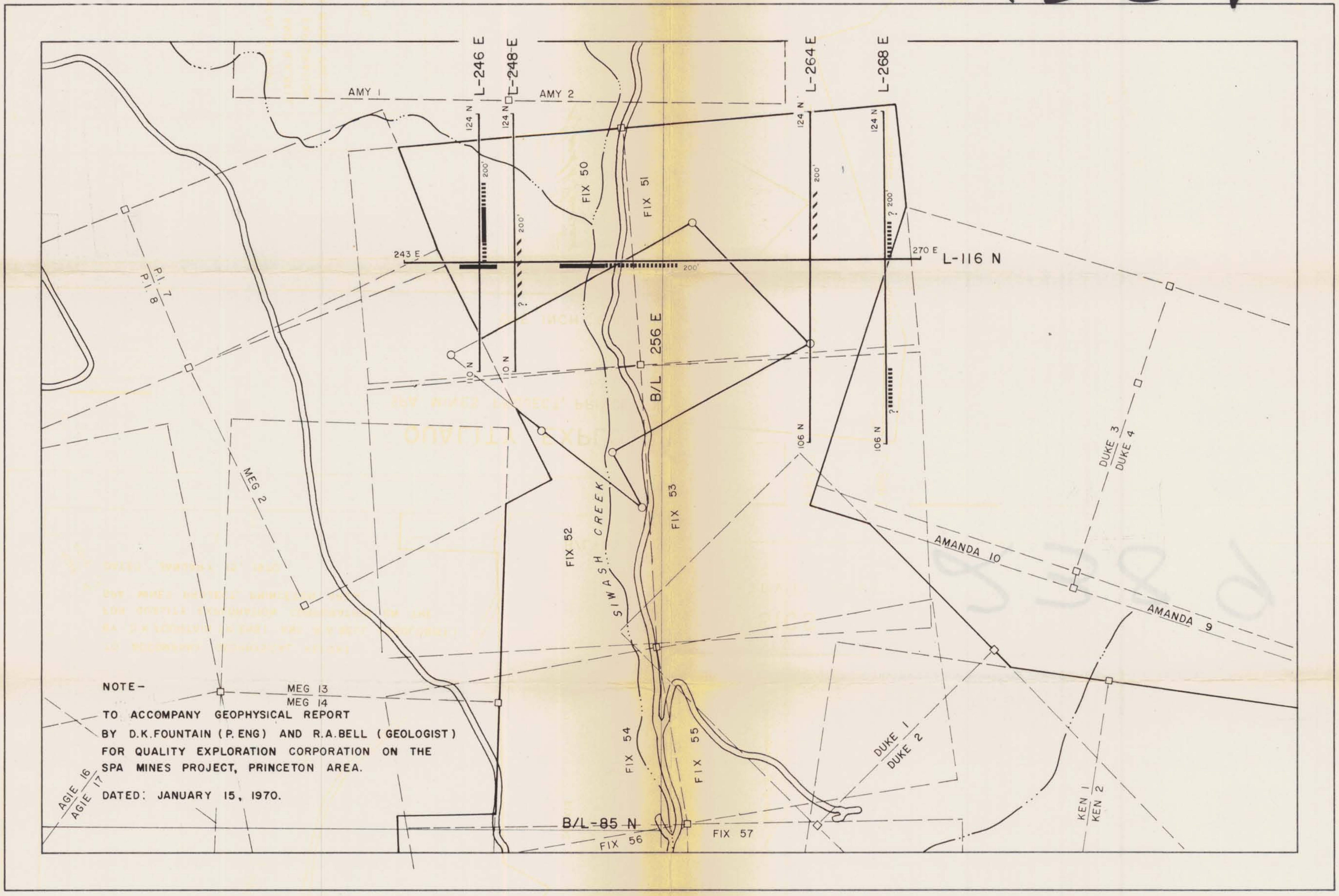
DWG. I.P.P. 2839-2

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

PLAN MAP

2389



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

Numbers at the end of the anomalies indicate spread used.

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT, PRINCETON AREA, SIMILKAMEEN M.D., B.C.

(EAST GRID)

SCALE

ONE INCH EQUALS FOUR HUNDRED FEET

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2389 MAP #3

DRAWN D.N.H.
DATE JANUARY 1970
APPROVED David K Fountain
DATE Jan 15/70

PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, D.K. FOUNTAIN
Expiry Date: April 25, 1970

DWG. I.P.P. 2839-2

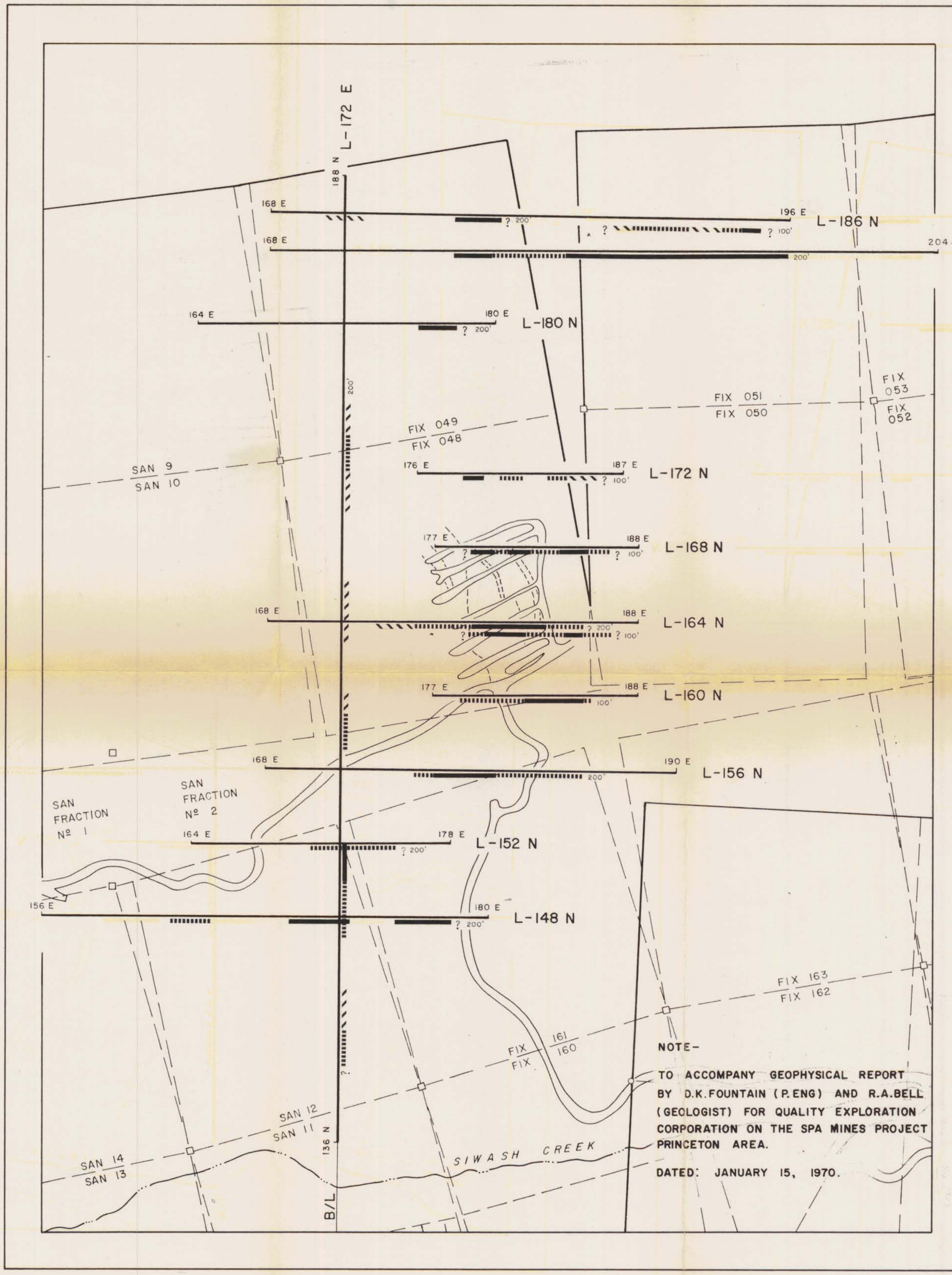
DWG. I.P.P. 2839-3

McPHAR GEOPHYSICS

2389

INDUCED POLARIZATION AND RESISTIVITY SURVEY

PLAN MAP



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

Numbers at the end of the anomalies indicate spread used.

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT, PRINCETON AREA, SIMILKAMEEN M.D., B.C.

(NORTH GRID)

SCALE

ONE INCH EQUALS FOUR HUNDRED FEET

DRAWN: D.N.H.

DATE: JANUARY 1970

APPROVED: David K. Fountain

DATE: Jan. 15/70

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

Expiry Date: April 24, 1970

DWG. I.P.P. 2839-3

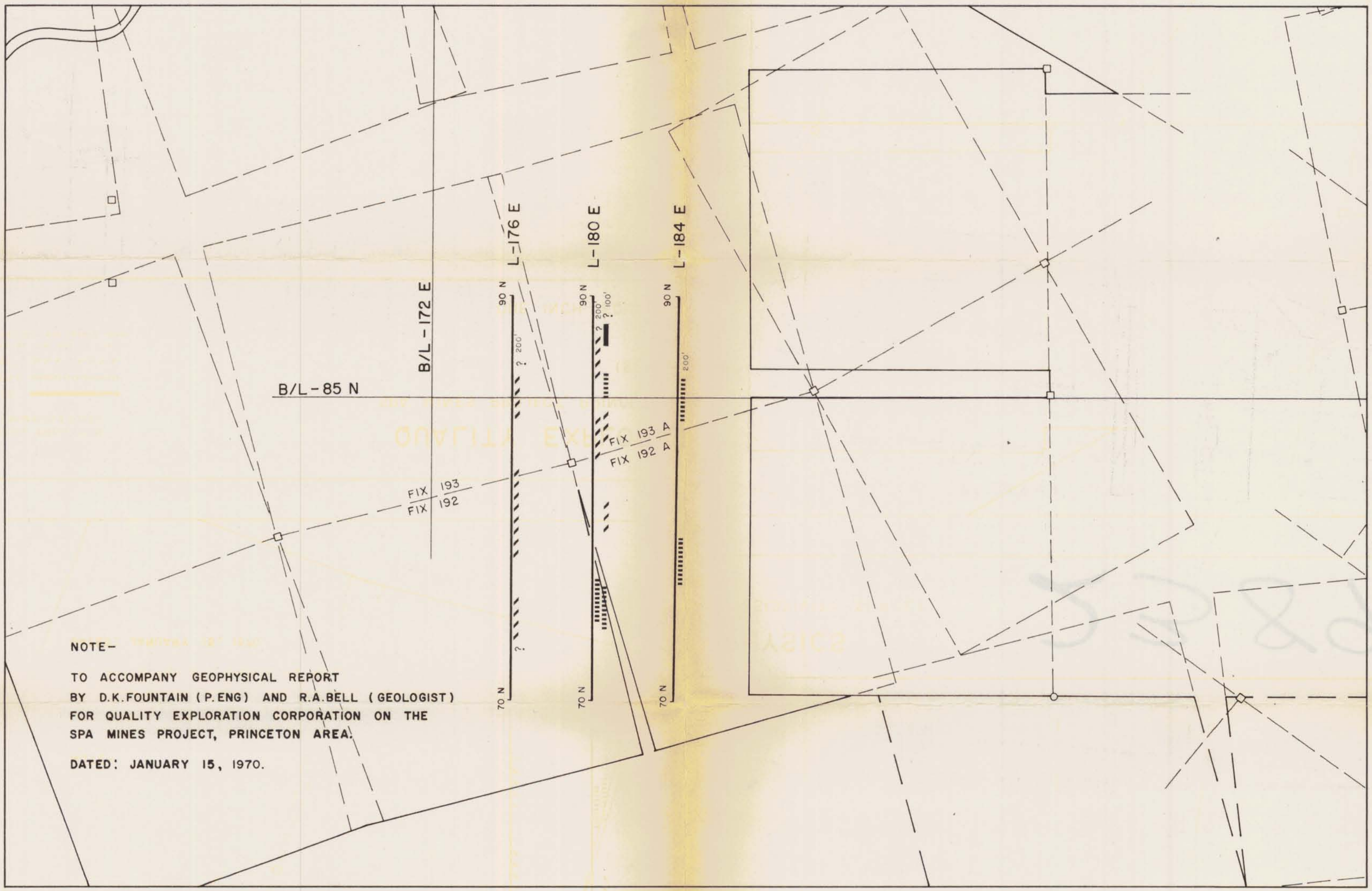
DWG. I.P.P. 2839-I

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

PLAN MAP

2389



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

Numbers at the end of the anomalies indicate spread used.

QUALITY EXPLORATION CORPORATION

SPA MINES PROJECT, PRINCETON AREA, SIMILKAMEEN M.D., B.C.

(SOUTH GRID)

SCALE

ONE INCH EQUALS FOUR HUNDRED FEET

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2389 MAP #2

DRAWN: D. N. H
DATE: JANUARY 1970
APPROVED: David K. Fountain
DATE Jan 15/70

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — D. K. FOUNTAIN
Expiry Date: April 25, 1970

DWG. I.P.P. 2839-I