1018

REPORT ON THE 54 125 SE

INDUCED POLARIZATION SURVEY
LORNE CLAIMS
SAM ROSS CREEK PROPERTY

~~HOUSTON~~ AREA, BRITISH COLUMBIA

FOR

AMAX EXPLORATION INCORPORATED
OMINECA M.D.

BY

D. B. SUTHERLAND

AND

PHILIP G. HALLOF, Ph.D.

NAME AND LOCATION OF PROPERTY:

SAM ROSS CREEK PROPERTY, HOUSTON AREA
54 - 125 SE
OMINECA MINING DIVISION, B.C. ~~54° N/126° W SE~~

DATE STARTED: AUGUST 1, 1966

DATE COMPLETED: SEPT. 3, 1966

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McPHAR GEOPHYSICS LIMITED

REPORT ON THE

INDUCED POLARIZATION SURVEY

SAM ROSS CREEK PROPERTY

HOUSTON AREA, BRITISH COLUMBIA

FOR

AMAX EXPLORATION INCORPORATED

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1. INTRODUCTION

At the request of Mr. W. W. Shaw, Geophysicist for the Company, an induced polarization and resistivity survey has been carried out on the Sam Ross Creek Property, in the Houston Area of British Columbia for Amax Exploration Incorporated. The property lies in the Omineca Mining Division, in the SW quadrant of the 1° quadrilateral whose SE corner is at 54°N, 126° W.

The area is of interest because of a molybdenite showing and the purpose of the survey was to outline areas of metallic mineralization that would be of interest for further investigation. The field surveying was carried out during August and September 1966.

2. PRESENTATION OF RESULTS

The IP and resistivity results are shown on the following data plots in the manner described in the notes preceding this report.

Line	Dipole Length	Dwg. No.
10E	300 Feet	IP 2584-1

Line	Dipole Length	Dwg. No.
4E	300 Feet	IP 2584-2
1W	300 Feet	IP 2584-3
6W	300 Feet	IP 2584-4
11W	300 Feet	IP 2584-5
11W	300 Feet	IP 2584-6
11W	100 Feet	IP 2584-7
16W	300 Feet	IP 2584-8
16W	300 Feet	IP 2584-9
24W	300 Feet	IP 2584-10

Enclosed with this report is Dwg. Misc. 3224, a plan map of the grid at a scale of 1" = 400'. 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 foot spreads the position of a narrow sulphide body can only be determined to lie between two stations 200 feet 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 center 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

Anomalous IP effects are evident on each of the traverse lines. For ease of discussion these anomalies have been grouped into zones that are lettered alphabetically.

Zone A

This zone has been formed from three similar anomalies that lie near 33W on Line 1W, Line 6W and Line 11W. The IP results suggest a steeply dipping source that is narrower than the 300 foot dipoles used for the initial coverage. Detail surveying using 100 foot dipoles on Line 11W indicates that the source could be narrower than 100 feet on this line.

Zone A definitely warrants further investigation and a drill hole is suggested to determine its cause on Line 11W.

Zone B

The best responses on Zone B occur on Line 11W and Line 16W. Here the IP results suggest a shallow source of low to moderate metallic content that has a width of about 300 feet. A drill hole is recommended on Line 11W to establish its cause.

The weaker IP effects on Line 6W and Line 24W may represent a continuation of the source.

Zone C

Zone C has been interpreted from weak IP effects in the vicinity of 40S on Line 1W and Line 6W. These anomalies could be due to a relatively narrow source and detailed IP surveying using shorter dipoles as suggested to assess their importance.

Zone D

This isolated response appears to be due to a shallow, narrow source and should also be detailed with shorter spreads.

Zone E

Low resistivities occur just south of the base line on every traverse. These are associated with metal factor values that suggest shallow sources of low metallic content. However, the observed frequency effects are quite small and are subject to error. For this reason, detailed surveying with a shorter electrode interval will be required to firmly establish the existence of Zone E.

4. SUMMARY AND RECOMMENDATIONS

The IP results on the Sam Ross Creek Property have outlined several E-W trending sources of low to moderate metallic content. Because of the reported molybdenite showings on the property, weakly mineralized structures could be of economic importance.

Zones A and B appear to be sufficiently well-defined to warrant further investigations and possibly drill testing.

Zone C and D suggest narrow sources as their cause and

detailed IP surveying with shorter spreads should be carried out to assess their importance.

Zone E is a weak source that is associated with low resistivities. Detailed IP surveying with shorter spreads will be required to firmly establish its existence.

The details of the follow-up program will be finalized by Mr. W. W. Shaw who is in close liaison with the regional geologists.

McPHAR GEOPHYSICS LIMITED

D. B. Sutherland,
Geophysicist.

Philip G. Hallof,
Geophysicist.

Dated: December 7, 1966

ASSESSMENT DETAILS

PROPERTY: Sam Ross Creek Property

MINING DIVISION: Omineca

SPONSOR: Amax Exploration, Incorporated

PROVINCE: British Columbia

LOCATION: Houston Area

TYPE OF SURVEY: Induced Polarization

OPERATING MAN DAYS:	40	DATE STARTED:	August 1, 1966
EQUIVALENT 8 HR. MAN DAYS:	60	DATE FINISHED:	September 3, 1966
CONSULTING MAN DAYS:	2	NUMBER OF STATIONS:	150
DRAUGHTING MAN DAYS:	5	NUMBER OF READINGS:	588
TOTAL MAN DAYS:	67	MILES OF LINE SURVEYED:	7.42

CONSULTANTS:
D. B. Sutherland, Apt. 807, 43 Thorncliffe Park Drive, Toronto 17, Ontario.
P. G. Hallof, 5 Minorca Place, Don Mills, Ontario.

FIELD TECHNICIANS:
J. Parker, Box 340, Choiceland, Saskatchewan.
D. Malouf, 23 Edenbridge Drive, Islington, Ontario.

3 Helpers - supplied by client.

DRAUGHTSMEN:
P. Coulson, 6 Paradise Avenue, Markham, Ontario.
S. Woods, Apt. 401, 1222 York Mills Road, Don Mills, Ontario.
N. Lade, Apt. 503, 35 Esterbrooke Ave., Willowdale, Ontario.

McPHAR GEOPHYSICS LIMITED

D. B. Sutherland

D. B. Sutherland,
Geophysicist.

Dated: December 7, 1966

Statement of Cost

Sam Ross Creek Property

Crew

8	days	Operating	@ $175.00/day	$1,400.00
1	day	Travel)		
1	day	Bad Weather)		
5 1/4	days	Standby) 7 1/2	@ $ 75.00/day	562.50
1/4	day	Electrode)		
		Preparation)		
				1,962.50

Expenses

Vehicle Rental	$139.37	
Taxis and Bus	14.62	
Meals and Accommodation	182.84	
Telephone and Telegraph	23.44	
Freight and Brokerage	113.92	
Camp Supplies	33.91	
Supplies	24.98	
		533.08
		$2,495.58

McPHAR GEOPHYSICS LIMITED

D. B. Sutherland,
Geophysicist.

Dated: December 7, 1966

CERTIFICATE

I, Don Benjamin Sutherland of the City of Toronto, Province of Ontario, do hereby certify that:

1. I am a geophysicist residing at Apartment 807, 43 Thorncliffe Park Drive, Toronto 17, Ontario.

2. I am a graduate of the University of Toronto in Physics and Geology with the degree of Bachelor of Arts (1954); and a graduate of the University of Toronto in Physics with the degree of Master of Arts (1955).

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

4. I have been practising my profession for over seven 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 Amax Exploration Incorporated.

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

Dated at Toronto

This 7th day of December 1966

Don B. Sutherland

Don B. Sutherland, M.A.

McPHAR GEOPHYSICS LIMITED

NOTES ON THE THEORY OF INDUCED POLARIZATION AND THE METHOD OF FIELD OPERATION

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 effectively stop all 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 "metal factor" or "M. F." are a measure of the amount of polarization present in the rock mass being surveyed. This parameter has been found to be very successful in mapping areas of sulphide mineralization, even those in which all other geophysical methods have been unsuccessful. The induced polarization measurement is more sensitive to sulphide content than other electrical measurements

because it is much more dependent upon the sulphide content. As the sulphide content of a rock is increased, the "metal factor" of the rock increases much more rapidly than the resistivity decreases.

Because of this increased sensitivity, it is possible to locate and outline zones of less than 10% sulphides that can't be located by E. M. Methods. The method has been successful in locating the disseminated "porphyry copper" type mineralization in the Southwestern United States.

Measurements and experiments also indicate that it should be possible to locate most massive sulphide bodies at a greater depth with induced polarization than with E. M.

Since there is no I. P. effect from any conductor unless it is metallic, the method is useful in checking E. M. anomalies that are suspected of being due to water filled shear zones or other ionic conductors. There is also no effect from conductive overburden, which frequently confuses E. M. results. It would appear from scale model experiments and calculations that the apparent metal factors measured over a mineralized zone are larger if the material overlying the zone is of low resistivity.

Apropos of this, it should be stated that the induced polarization measurements indicate the total amount of metallic constituents in the rock. Thus all of the metallic minerals in the rock, such as pyrite, as well as the ore minerals chalcopyrite, chalcocite, galena, etc. are responsible for the induced polarization effect. Some

oxides such as magnetite, pyrolusite, chromite, and some forms of hematite also conduct by electrons and are metallic. All of the metallic minerals in the rock will contribute to the induced polarization effect measured on the surface.

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 a distance (X) apart. The potentials are measured at two other points (X) feet apart, in line with the current electrodes. The distance between the nearest current and potential 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 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. The resistivity values are plotted above the line and the metal factor values below. The lateral displacement of a given value is determined by the location along the survey

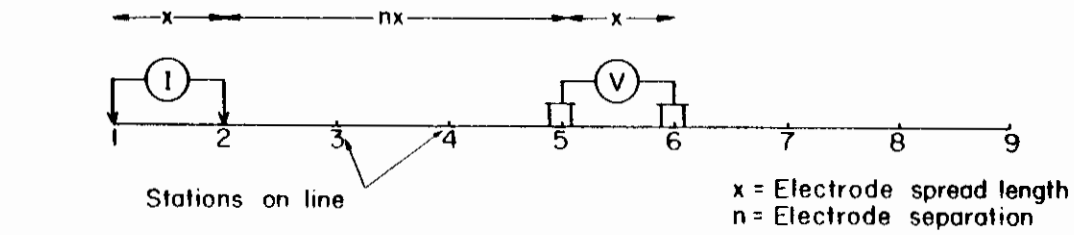
line of the center point between the current and potential electrodes. The distance of the value from the line is determined by the distance (NX) between the current and potential electrodes when the measurement was made.

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. These 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, model and theoretical investigations. The position of the electrodes when anomalous values are measured must be used 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 100 feet to 1000 feet for (X). In each case, the decision as to the distance (X) and the values of (N) 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 1 below demonstrates the method used in plotting the results. Each value of the apparent resistivity and the apparent "Metal factor" 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.

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



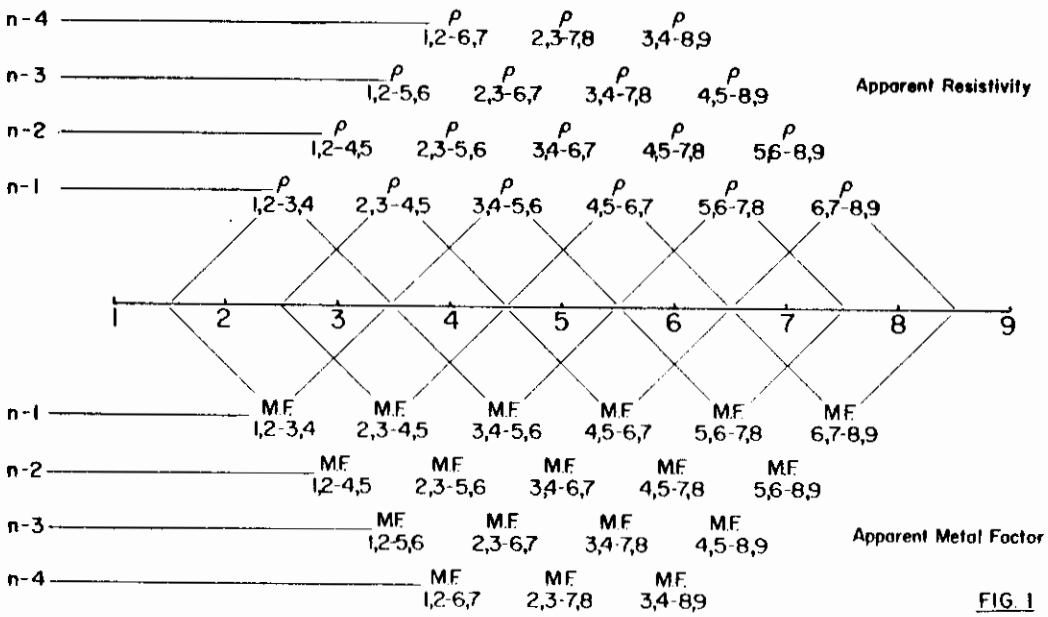
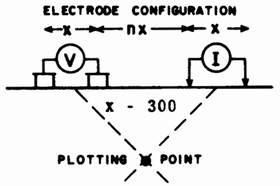


FIG. 1

DWG. NO.-I.P.-2584-1

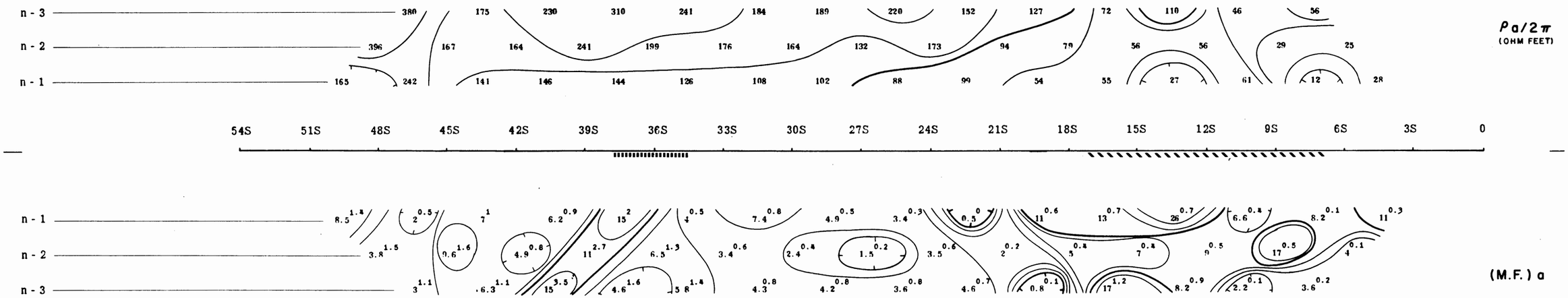
ELECTRODE CONFIGURATION



McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: CONTOURS AT LOGARITHMIC MULTIPLES OF 10-15-20-30-50-75-100



$Pa/2\pi$ (OHM FEET)

(M.F.) a

LINE NO.-10E

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

AMAX EXPLORATION, INC.

SAM ROSS CREEK PROPERTY, HOUSTON AREA-OMINECA M.D., B.C.

Scale-One inch = 300 Feet

NOTE LOGARITHMIC CONTOUR INTERVAL

1018

FREQUENCY 0.3-1.5 CPS

DATE SURVEYED AUG. SEPT. 1966

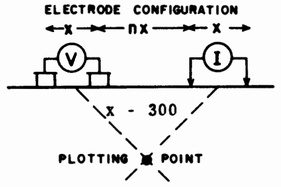
APPROVED

DATE 10/28/66

McPHAR GEOPHYSICS LIMITED

DWG. NO.-I.P.-2584-2

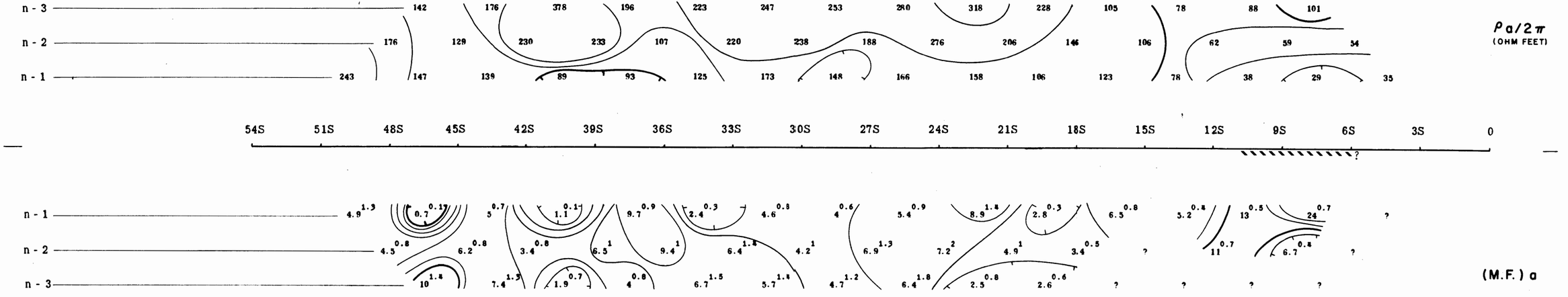
ELECTRODE CONFIGURATION



McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: CONTOURS AT LOGARITHMIC MULTIPLES OF 10-15-20-30-50-75-100



$Pa/2\pi$ (OHM FEET)

(M.F.) a

LINE NO-4E

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

AMAX EXPLORATION, INC.

SAM ROSS CREEK PROPERTY, HOUSTON AREA-OMINECA M.D., B.C.

Scale-One inch = 300 Feet

NOTE LOGARITHMIC CONTOUR INTERVAL

1018

FREQUENCY 0.31-3.0 CPS

DATE SURVEYED AUG. - SEPT. 1966

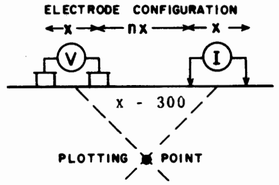
APPROVED

DATE

McPHAR GEOPHYSICS LIMITED

DWG. NO.-I.P.- 2584-3

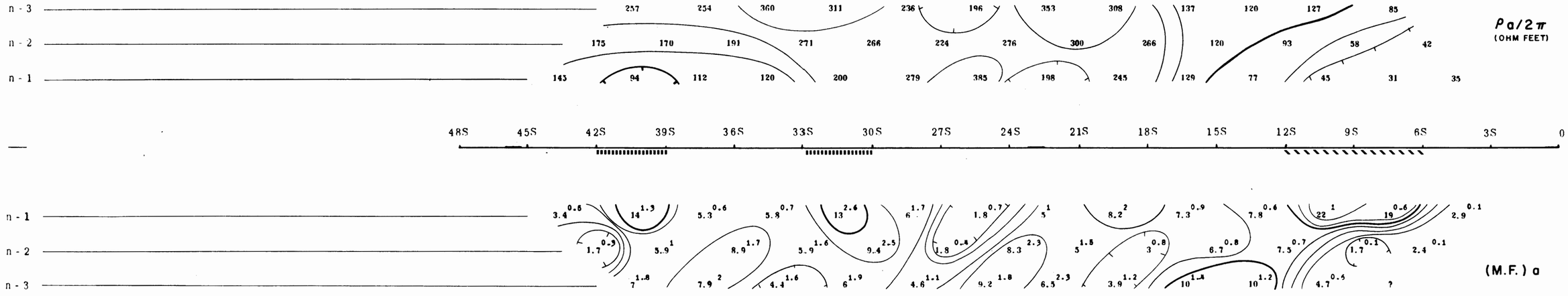
ELECTRODE CONFIGURATION



McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: CONTOURS AT LOGARITHMIC MULTIPLES OF 10-15-20-30-50-75-100



LINE NO.- 1 W

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

AMAX EXPLORATION, INC.

SAM ROSS CREEK PROPERTY, HOUSTON AREA-OMINECA M.D., B.C.

Scale-One inch = 300 Feet

NOTE LOGARITHMIC CONTOUR INTERVAL

1018

FREQUENCY 0.3 - 6 CPS

DATE SURVEYED SEPT. 1956

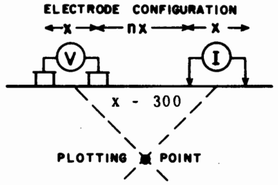
APPROVED

DATE AUG. 28/56

McPHAR GEOPHYSICS LIMITED

DWG. NO.-I.P.-2584-4

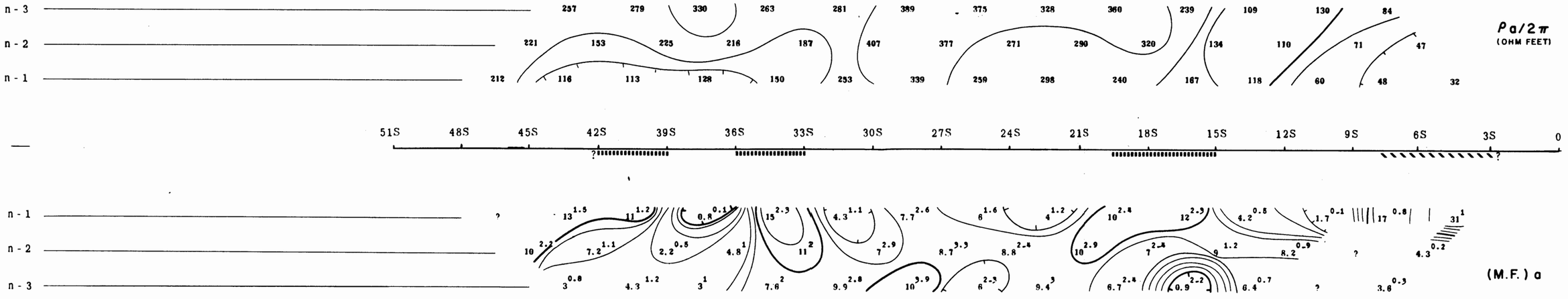
ELECTRODE CONFIGURATION



McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: CONTOURS AT LOGARITHMIC MULTIPLES OF 10-15-20-30-50-75-100



LINE NO-6 W

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

AMAX EXPLORATION, INC.

SAM ROSS CREEK PROPERTY, HOUSTON AREA-OMINECA M.D., B.C.

Scale-One inch = 300 Feet

NOTE LOGARITHMIC CONTOUR INTERVAL

108

FREQUENCY 0.5-1-5 CPS

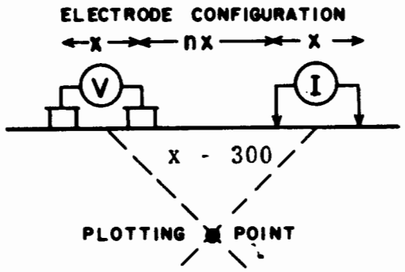
DATE SURVEYED AUG. SEPT. 1966

APPROVED

DATE

GEOPHYSICS SECTION

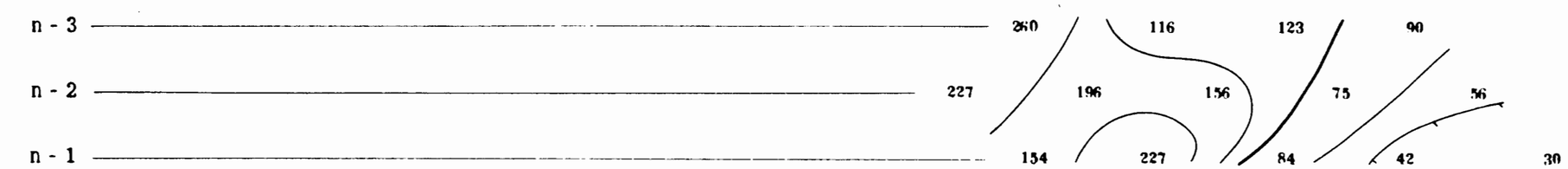
DWG. NO.-I.P.-2584-5



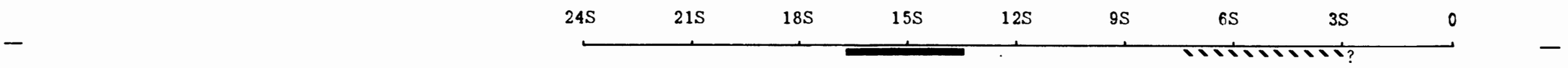
McPHAR GEOPHYSICS LIMITED

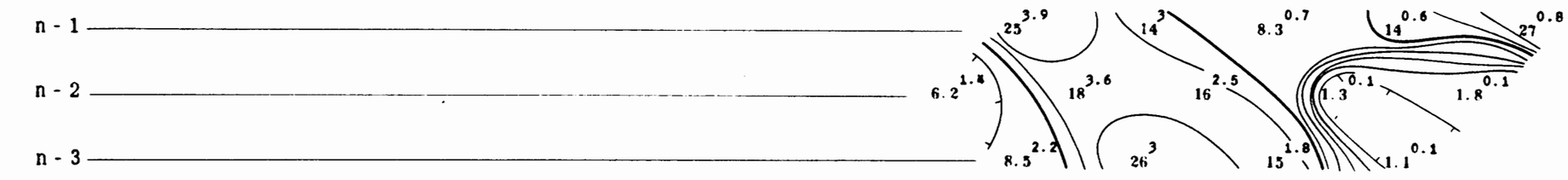
INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: CONTOURS AT LOGARITHMIC MULTIPLES OF 10-15-20-30-50-75-100



Pa/2π
(OHM FEET)





(M.F.) a

LINE NO.-1-W

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ——————

PROBABLE ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪

POSSIBLE / / / / / / / / /

AMAX EXPLORATION, INC.

SAM ROSS CREEK PROPERTY, HOUSTON AREA—OMINECA M.D., B.C.

Scale—One inch = 300 Feet

NOTE: LOGARITHMIC CONTOUR INTERVAL

1018

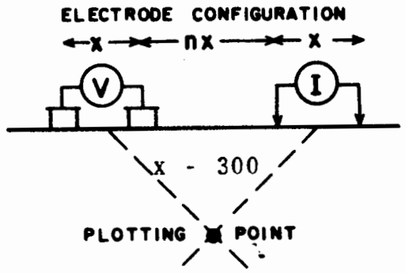
FREQUENCY 0.05-5 CPS

DATE SURVEYED AUG. SEPT. 1966

APPROVED

DATE 12/28/66

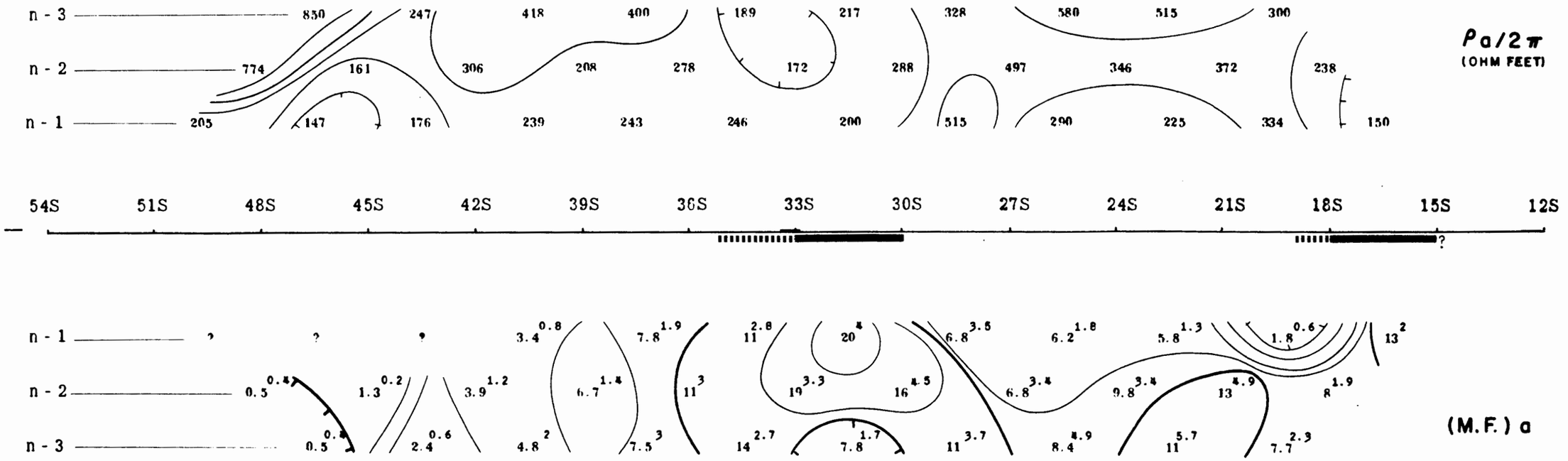
DWG. NO.-I.P.- 2584-6



McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: CONTOURS AT LOGARITHMIC MULTIPLES OF 10-15-20-30-50-75-100



LINE NO.-11W

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

AMAX EXPLORATION, INC.

SAM ROSS CREEK PROPERTY, HOUSTON AREA—OMINECA M.D., B.C.

Scale—One inch = 300 Feet

NOTE LOGARITHMIC CONTOUR INTERVAL

1018

FREQUENCY 0.31-5 CPS

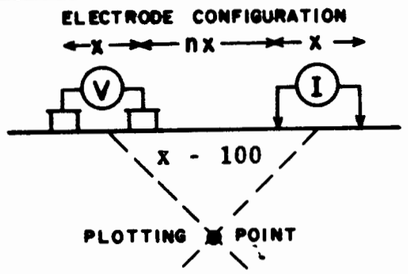
DATE SURVEYED SEPT. 1966

APPROVED

DATE 10/20/66

McPHAR GEOPHYSICS LIMITED AUG.

DWG. NO.-I.P.-2584-7



McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

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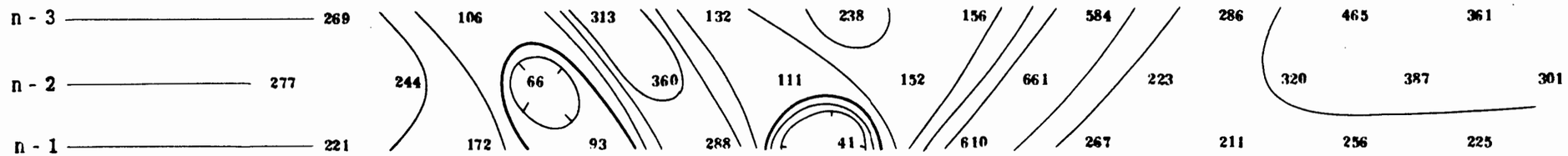
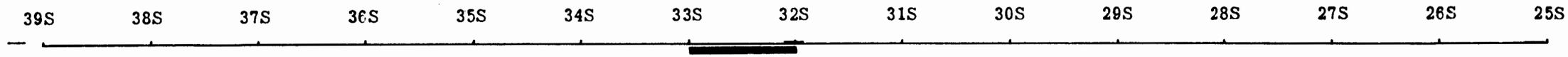
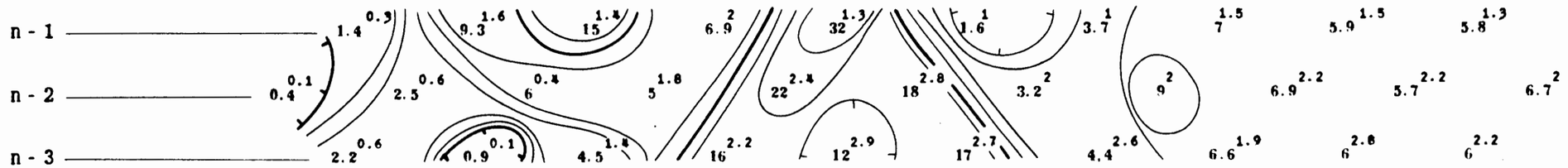


Pa/2π
(OHM FEET)





(M.F.) a

LINE NO.-I-W

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ——————

PROBABLE ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪

POSSIBLE / / / / / / / / /

AMAX EXPLORATION, INC.

SAM ROSS CREEK PROPERTY, HOUSTON AREA—OMINECA M.D., B.C.

Scale—One inch = 100 Feet

NOTE: LOGARITHMIC CONTOUR INTERVAL

1018

FREQUENCY 0.5 CPS

DATE SURVEYED AUG. SEPT. 1966

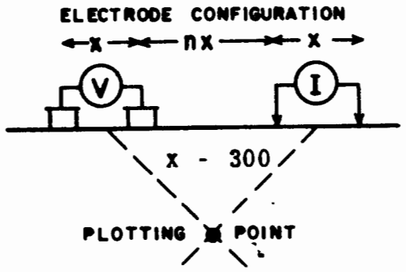
APPROVED

DATE 10/28/66

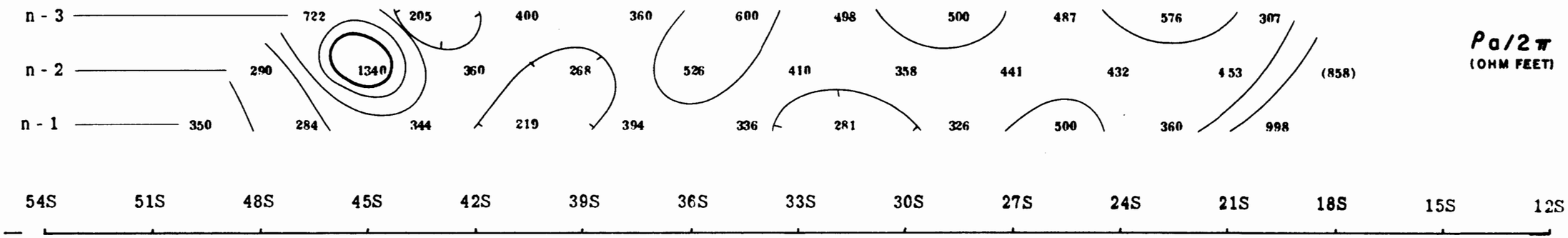
DWG. NO.-I.P.- 2584-8

McPHAR GEOPHYSICS LIMITED

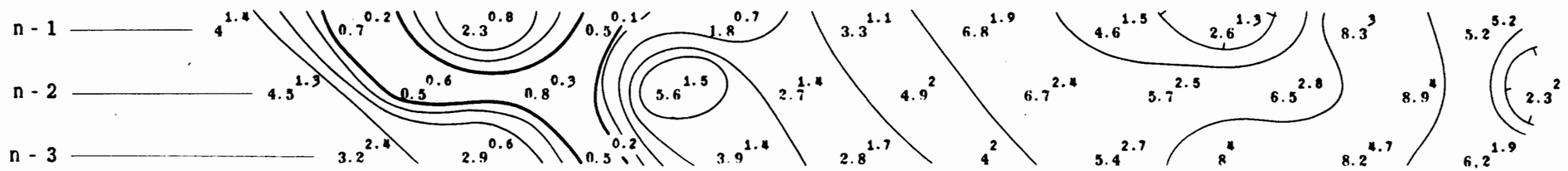
INDUCED POLARIZATION AND RESISTIVITY SURVEY



NOTE: CONTOURS AT LOGARITHMIC MULTIPLES OF 10-15-20-30-50-75-100



Pa/2π
(OHM FEET)



(M.F.) a

LINE NO.-16 W

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

AMAX EXPLORATION, INC.

SAM ROSS CREEK PROPERTY, HOUSTON AREA-OMINECA M.D., B.C.

Scale-One inch = 300 Feet

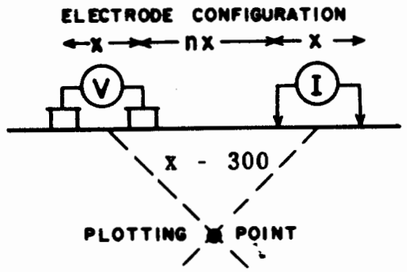
NOTE: LOGARITHMIC CONTOUR INTERVAL

1018

FREQUENCIES 0.31 - 5 CPS
DATE SURVEYED AUG. SEPT. 1966
APPROVED
DATE 10/28/66

McPHAR GEOPHYSICS LIMITED

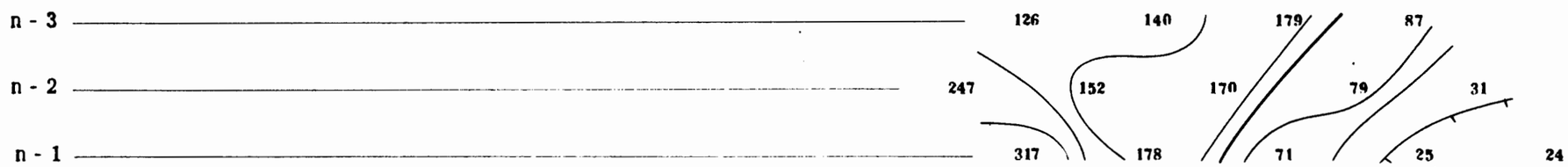
DWG. NO.-I.P.-2584-9



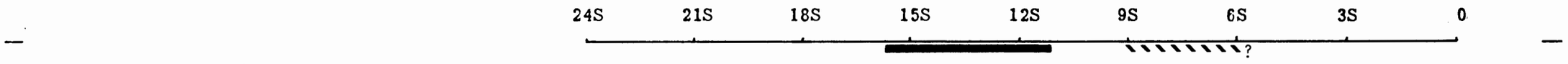
McPHAR GEOPHYSICS LIMITED

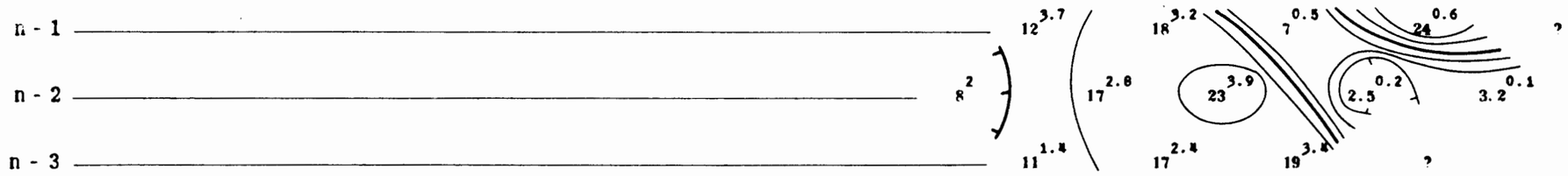
INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: CONTOURS AT LOGARITHMIC MULTIPLES OF 10-15-20-30-50-75-100



Pa/2π
(OHM FEET)





(M.F.) a

LINE NO.-16W

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ——————

PROBABLE ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪

POSSIBLE / / / / / / / / /

AMAX EXPLORATION, INC.

SAM ROSS CREEK PROPERTY, HOUSTON AREA—OMINECA M.D., B.C.

Scale—One inch = 300 Feet

NOTE: LOGARITHMIC CONTOUR INTERVAL

1018

FREQUENCY 0.3 | 5 CPS

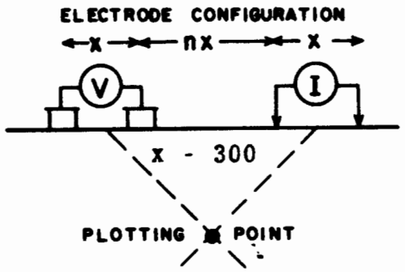
DATE SURVEYED AUG. SEPT. 1966

APPROVED

DATE 10/28/66

McPHAR GEOPHYSICS LIMITED

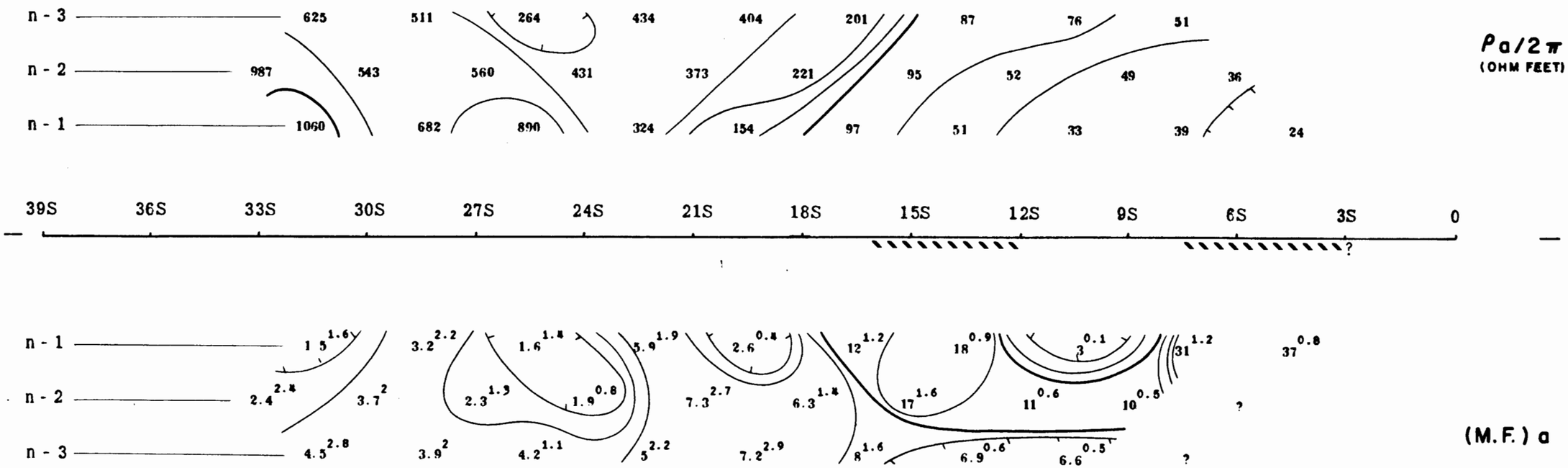
DWG. NO.-I.P.-2584-10



McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: CONTOURS AT LOGARITHMIC MULTIPLES OF 10-15-20-30-50-75-100



Pa/2π
(OHM FEET)

(M.F.) a

LINE NO.-24 W

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ——————

PROBABLE ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪

POSSIBLE / / / / / / / / /

AMAX EXPLORATION, INC.

SAM ROSS CREEK PROPERTY, HOUSTON AREA—OMINECA M.D., B.C.

Scale—One inch = 300 Feet

NOTE: LOGARITHMIC CONTOUR INTERVAL

1018

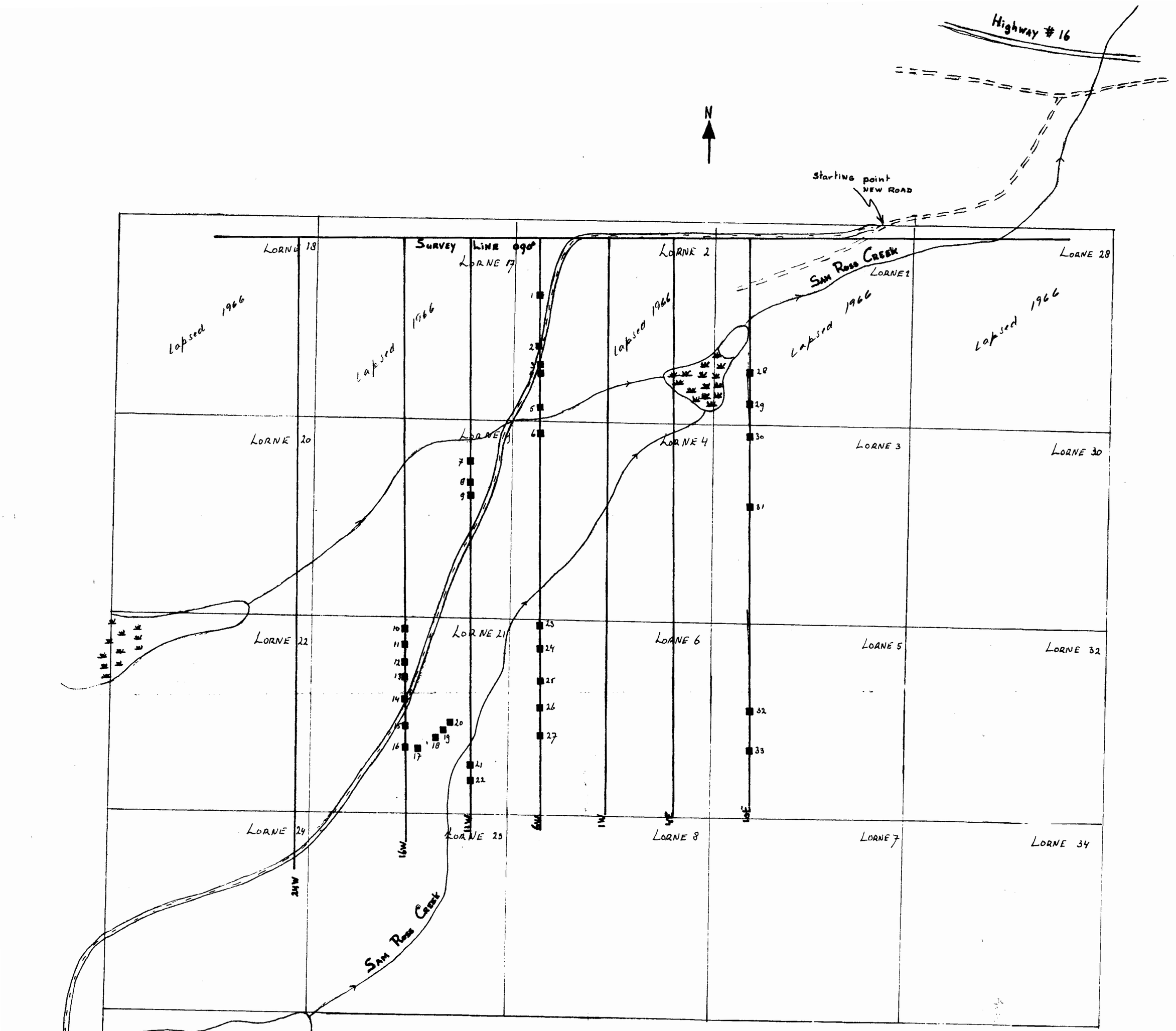
FREQUENCIES 0.3-1.0 CPS

DATE SURVEYED AUG. SEPT. 1966

APPROVED

DATE 10/28/66

McPHAR GEOPHYSICS LIMITED



DESCRIPTION OF THE TRENCHES,

Most of the trenches indicated on the map, trend N-S, all are approx. 15' wide and about 10' deep. The average length is around 60'. At the same time a new, approx 2 mile long road was constructed (see map). The work was carried out by two D7 bulldozers owned and operated by CALEDONIA ENTERPRISES Ltd., VANDERHOOF

Scale 1" = 400'

Additional map to accompany report on the Lorne claims on Sam Ross Creek - Omineca M.D.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1018 MAP 1

AMAX EXPLORATION INC.

SAM ROSS CREEK PROPERTY

OMINECA MINING DIVISION, B.C.

SKETCH MAP showing 1018

LOCATION OF TRENCHES AND ROAD

This is the sketch referred to in the affidavit of Allen Swan 16 June 1967

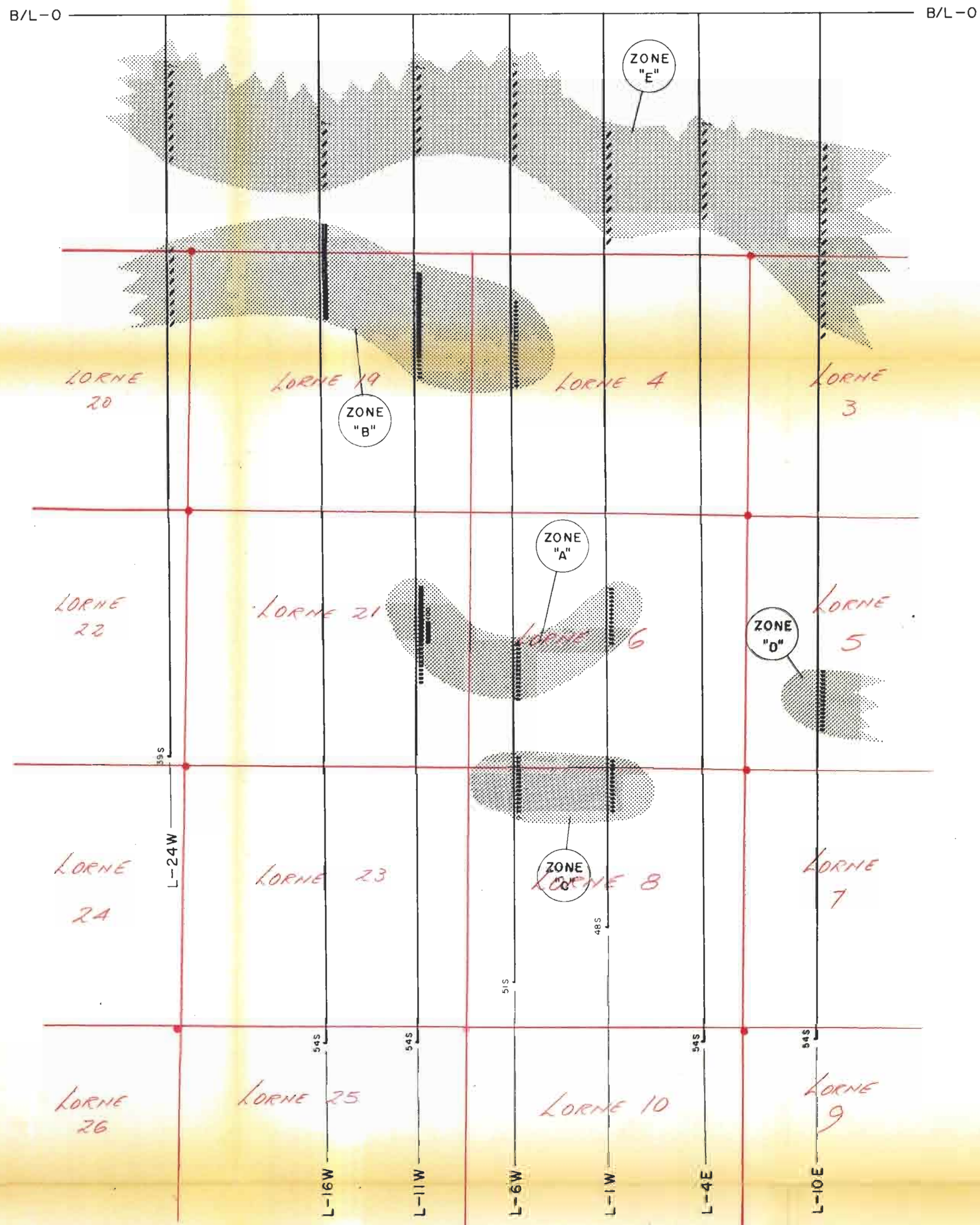
Don Small

a Commissioner for

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

PLAN MAP

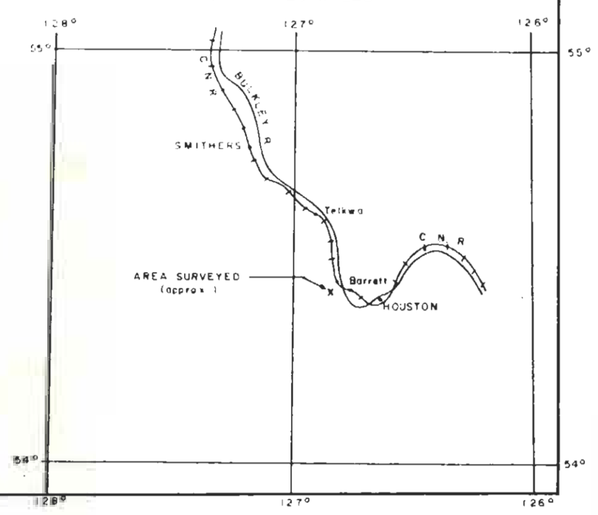


NOTE

TO ACCOMPANY GEOPHYSICAL REPORT
BY DON B SUTHERLAND, GEOPHYSICIST,
AND PHILIP G. HALLOF, GEOPHYSICIST,
ON THE SAM ROSS CREEK PROPERTY,
HOUSTON AREA, OMINECA M D
DATED DECEMBER 7, 1966

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1018 MAP 2

LOCATION MAP
SCALE 1" = 20 MILES



N

SURFACE PROJECTION
OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

Numbers at the end of the anomalies indicate spread used.

AMAX EXPLORATION, INC.

SAM ROSS CREEK PROPERTY, HOUSTON AREA - OMINECA M.D., B.C.

SCALE

ONE INCH EQUALS FOUR HUNDRED FEET

ANOMALOUS I.P. ZONES

1018

DRAWN: P.G.
DATE: OCT. 1966
APPROVED:
DATE: Nov 11/66

McPHAR GEOPHYSICS LIMITED

DWG. MISC. 3224