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REPORT ON THE
ELECTROMAGNETIC AND MAGNETIC SURVEYS
OF
FIDELITY MINING INVESTMENTS LIMITED
PACAUD TOWNSHIP
TEMISKAMING MINING DIVISION

Summary

The electromagnetic survey located ten conductive zones. Several of these are associated with known sulphide mineralization. Attention is drawn to the association these conductors have with magnetic anomalies.

An evaluation of each of the conductors is recommended employing available geologic and magnetic information.

An "Induced Polarization" survey is recommended to survey for the presence of sulphides in the area under the powerline and also in the recently located area 'A_2' where disseminated sulphides were uncovered.

REPORT ON THE

ELECTROMAGNETIC AND MAGNETIC SURVEYS

OF

FIDELITY MINING INVESTMENTS LIMITED

PACAUD TOWNSHIP

TEMISKAMING MINING DIVISION

I Introduction

Electromagnetic and magnetic surveys were conducted over the eight mining claims of Fidelity Mining Investments Limited in an effort to locate conductive and magnetic sulphide bodies. The magnetic survey might also prove helpful in mapping cross-faulting if a magnetic horizon were displaced.

The eight claim group is located in Pacaud Township, Boston Creek Area, Temiskaming Mining Division and includes the former mines known as the Patterson (to the north) and the Ossian - Trethewey (to the south).

II Geophysical Surveys

The geophysical surveys were conducted on traverse lines that run perpendicular to the strike, at intervals of 200 feet along the baseline. It was noted that the electromagnetic survey was not very effective in the area where a large power transmission line cuts north - south across the property at 43 + 00W.

(a) Electromagnetic Survey

The entire grid was surveyed with vertical transmitting loop, dip angle electromagnetic equipment. The transmitter locations were choosen to correspond with magnetic highs or known sulphide conductors in an effort to complete the detail work during the course of the regular survey. The conductors are labelled alphabetically for convenience and are discussed in detail below, together with a comment on any associated magnetic features.

Conductor 'A'. This conductor strikes from 1 + 50S, line 86 + 00W to 2 + 50S, line 74 + 00W. The zone passes through a pit on line 84 + 00W and the orebody at the Patterson Mine. The conductor is weak but well defined. The zone could extend eastward to 1 + 50S, line 72 + 00W but a recent find at this point indicates a second zone. Zone 'A_2' starts here and strikes westward parallel to the baseline.

Magnetic highs at 5 + 00S, Line 84 + 00W, 4 + 50S, line 82 + 00W and 4 + 50S, line 80 + 00W to 4 + 00S, line 78 + 00W lie along conductor 'A'. There appears to be no magnetic expression of the eastern end of the conductor.

Conductor 'A_2'. This conductor is not well defined, but a recent discovery of disseminated sulphides on strike with the conductor axis at 1 + 50S, line 72 + 00W brought notice to three weak conductors that lie at 1 + 00S, line 74 + 00W, 1 + 50S, line 76 + 00W and 1 + 00S, line 78 + 00W. A magnetic high is coincident with this conductor at the east but dies out to the west.

Conductor 'B'. This conductor was outlined from 4 + 00S, line 74 + 00W to 1 + 50S, line 66 + 00W. The conductor is well defined at 2 + 50S, line 70 + 00N and 1 + 50S, line 68 + 00W where magnetic highs correspond closely with the conductive axes. The conductor may extend to 0 + 50S, line 66 + 00W.

Conductors 'A' and 'B' may represent the same horizon that has been offset by a cross-fault, but this would have to be substantiated by geologic evidence.

Conductor 'C' occurs on two lines, 66 + 00W and 64 + 00W, but is poorly defined. The magnetic anomaly that runs from 2 + 00S, line 66 + 00W to 1 + 00S, line 62 + 00W shows a relationship with this weak conductor.

<u>Conductor 'D'</u> strikes almost at right angles to the other conductive zones and there is some doubt of its existence as a single zone, since the detail survey from set-up T_3 failed to define it. There is a good possibility that all of the conductor axes shown on the south ends of lines 70 + 00S to 50 + 00W are short non-continuous conductors. The conductor at 3 + 50S, line 64 + 00W lies over a magnetic high. At present the significance of these features is not known.

A similar conductor and magnetic high on line 60 + 00W at 4 + 00S and 3 + 50S respectively may be associated.

<u>Conductor 'E'</u> cuts the south ends of lines 56 + 00W, 54 + 00W, 52 + 00W and possibly 50 + 00W. It is not well defined, lies within the granite and has no magnetic expression. It appears quite similar to conductor 'D'.

<u>Conductor 'F'</u>. This conductor is poorly defined. It lies quite close to the Ossian - Trethewey shaft and parallels the magnetic highs and lows lying along the base-line from 52 + 00W to 48 + 00W. The proximity of the conductor to the large powerlines makes it difficult to define. Its importance will depend on its association with the known ore.

Conductor 'G'. One hundred feet to the south of 'F', another poorly defined conductor, parallels the baseline at 1 + 00S on lines 50 + 00W, 48 + 00W and 46 + 00W. This conductor lies parallel to a magnetic high that extends eastward to 2 + 50S, line 44 + 00W. There could be some association between these two anomalous features. The present information gives no evidence of a conductor associated with the magnetic high at 2 + 50S, line 48 + 00W. In the area between line 50 + 00W and line 34 + 00N the powerline makes it difficult to examine with the electromagnetic survey.

Conductors 'F' and 'G' correspond to the north and south ore bodies at the Ossian - Trethewey Mine.

Conductor 'H' was traced from 2 + 00S, line 36 + 00W to 1 + 50S, line 16 + 00W and eastward. There is a break between lines 28 + 00W and 24 + 00W and 'H' may be two separate zones. Small discontinuous magnetic highs and lows follow this conductor down its entire length and again there is a break in the magnetics between lines 28 + 00W and 24 + 00W.

Conductor 'I'. This conductor parallels the east end of conductor 'H' between line 26 + 00W and line 18 + 00N and perhaps to line 16 + 00W. The magnetic highs at 2 + 50S, line 24 + 00W, 3 + 50S, line 22 + 00W, 3 + 00S, lines 20 + 00W and 18 + 00W lie along the conductor but with the present magnetic interpretation are not shown as a single magnetic feature. These magnetic features could be joined up into a single band if the geologic evidence justified this interpretation.

(b) Magnetic Survey

The magnetic survey was carried out with a Schmidt-type magnetometer, Sharpe A_2, with a scale constant of 20.0 gammas per scale division.

In addition to the magnetic features mentioned with the discussion of conductors there are the following magnetic anomalies:

(1) Magnetic high at 0 + 50S, line 84 + 00W.

(2) A line of small magnetic highs, starting at 2 + 50N, line 46 + 00W and running to 1 + 00N, line 72 + 00W, at present has no economic significance attached to them.

(3) A magnetic high striking through 2 + 00S, line 56 + 00W. This follows the general trend of Conductor 'C'.

(4) A magnetic high between 3 + 50S, line 32 + 00W, 3 + 50S, line 28 + 00W lies along a line of pitting and trenching. The failure to locate a conductor here is likely explained by the nature of the sulphide mineralization. This magnetic anomaly is likely explained by magnetite and/or magnetic sulphides that are not conductive.

(5) Minor magnetic highs north of the baseline and between lines 30 + 00W and 38 + 00W are not associated with any conductive zones.

Conclusions and Recommendations

The sulphides are not excellent conductors nor are they all magnetic, but the occurrence of conductors in the proximity to known sulphide outcrops encourages further search in these areas. Cross-faults appear to be a major factor in localizing the mineralizing solutions. Therefore any displacement of the magnetic horizons indicates zones of interest. Several faults could be interpreted on the basis of available geologic information. The conductors that are well defined and those that have good magnetic association should be drilled.

A programme of "Induced Polarization" is recommended to survey the area in which the electromagnetic results were obscured by the powerline. In addition, the area of conductor 'A_2', where disseminated sulphides were located, should be surveyed with the "Induced Polarization" technique.

Respectfully submitted,

SCOPE MINING AND EXPLORATION CONSULTANTS LIMITED

Tom Gledhill

T. R. Gledhill, B.A., P. Eng.

Toronto, Ontario

October 31, 1961.

REPORT ON

FIDELITY MINING INVESTMENTS LTD.

BOSTON CREEK PROPERTY

PACAUD TOWNSHIP, TIMISKAMING DISTRICT

ONTARIO

The following is a resume' of results of geological mapping, prospecting, and trenching work performed on parts of an eight claim group. It is accompanied by reports on magnetic, electromagnetic and induced polarity surveys performed over the same area. Maps on a scale of 100 feet to the inch, and a tabulation of man-days spent on the work are appended for assessment purposes.

Property

Fidelity Mining Investments Limited holds under option four unpatented claims - T. 48982 to 48985 inclusive, being S$\frac{1}{2}$ L4 C6 - and four patented claims - L.52235 to 52238 inclusive, being N$\frac{1}{2}$ L3 C5 - all in Pacaud Township, Timiskaming District, about one mile southeast of the village of Boston Creek, and ten miles south of the town of Kirkland Lake. The Ontario Northland Railway passes through Boston Creek, and the village and property are accessible by road.

History

In the late 1920's a series of copper discoveries were made south and east of Boston Creek. All were related to a rhyolite tuff horizon described further below. Three shafts were sunk - the Amity, in Lot 5 Conc. 6, to a depth of 1,000 feet; the Patterson, in Lot 4 Conc. 6, to a depth of 500 feet; and the Trethewey-Ossian, in Lot 3 Conc. 5, to a depth of 115 feet. The deposits were small, and with the drop in copper prices in the 1930's all were abandoned after only token amounts of mining.

Sporadic exploration work was done in the 1950's, by Consolidated Golden Arrow and other companies, including deepening the Trethewey-Ossian shaft to 200 feet. Cam-Copper shipped a few hundred tons from the Trethewey shaft before a fire halted the operation. Myrla Exploration extracted a few thousand tons from the Patterson and Amity shafts, then ceased operations with dropping copper prices in 1956.

Fidelity Mining Investments' current option includes the Trethewey-Ossian and Patterson workings.

Work Performed

A base line was cut diagonally in a southeasterly direction across the claims following a favorable horizon as discussed below. At 200 foot intervals picket lines were cut and chained 100 to 1,000 feet on either side of the base line. A total of 7 miles of line were cut.

Geological mapping was carried out over this area, in part at 40 feet to the inch and in part at 100 feet to the inch. A 100 foot composite plan is appended. Interpretation on this plan is in part modified by geophysical results discussed below.

Magnetic and electromagnetic surveys were performed over the same area by Scope Mining Consultants, and an induced polarity survey was performed over selected portions by McPhar Geophysics. Plans and reports on the geophysical work are attached.

Old trenches were cleaned out and reblasted to obtain fresh samples, and a number of new rock trenches were put down on gossan zones and sulfide showings.

The above work was carried out on seven of the above eight claims. T. 48984 lies outside the area of immediate interest. For assessment purposes it is requested that 1/7 of the survey work be applied on each of claims T.48982, 48983 and 48985. One-half of the trenching is distributed over the four unpatented claims.

Since completion of the above, some 3,000 feet of drilling, and dewatering of the Trethewey-Ossian shaft have been completed, and mining operations are now in progress. This latter work has all been done on the patented claims, hence is not applicable as assessment and is not included in the present report.

General Geology

The regional geology is amply described in ODM Report, Vol. 66, Pt. 5, by K. D. Lawton.

The area of immediate interest and that intensively explored lies along the northeast contact of the Round Lake Batholith, a large granite mass of Algoman age occupying the greater part of Pacaud Township.

In the area under discussion the granite is markedly gneissic in character with foliation paralleling the contact which strikes at about 130°, and dips near-vertically.

Adjoining to the northeast are 60 to 80 feet of thin-bedded tuffs, dark grey-green in color and about andesite in composition.

Northeast of the andesite tuff is a 90 to 140 foot thickness of grey to buff, very siliceous, rhyolite tuffs. Intermittently along both margins of the rhyolite tuff are found a few inches of thin-bedded cherty material referred to in ODM Reports as iron formation. In the area examined this "iron formation" would have an iron content of only 2-3% though some broken muck on the Patterson shaft dump has a higher iron content.

Northeast again of the rhyolite tuff is a thickness of 400 feet or more of andesite tuffs with some interbedded andesite flows.

In the andesites on either side of the rhyolite tuff are occasionally found some more siliceous tuffs, about dacite in composition, and the contact between the acid and basic tuffs is not always clear-cut. All the tuffs are uniformly fine grained, thin-bedded, and apparently waterlain.

Two groups of intrusives were noted. There are a great many small acid dikes of rhyolitic composition, occasionally find-grained, but generally with medium to coarse feldspar and quartz phenocrysts. These are most numerous close to, and presumably are genetically related to, the granite. They range from a few inches to a few feet in width, occasionally are cross-cutting, but commonly conform to the bedding.

Irregular diorite and amphibolite intrusives are widespread, particularly to the northeast of the rhyolite tuff horizon. One grades into the other and they are quite evidently variations of a single rock-type. Grain size varies up to 1/4 inch in width. There is one more-or-less continuous large diorite mass paralleling the northeast side of the area mapped, and very numerous smaller bodies varying from one to several feet in width. Again cross-cutting relationships were noted, but the usual attitude is conformable to the bedding.

No direct evidence was found to establish the relative ages of the acid and basic intrusives. Lawton classifies the diorites as Haileyburian, hence older than the acid dikes, which he relates to the Algoman granite.

Structural Geology

All the tabular and layered rocks have a general southeasterly strike, averaging about 130°. Dips commonly are 5-15° on either side of vertical, with occasional flattening, in one case to 45° south. In the underground workings at the Trethewey-Ossian dips are quite sinuous, averaging 85° south, but varying as much as 30° over 100 feet. Local warping of 20° - 30° in strike has also been noted, and on a minute scale there are many tight drag folds in the vicinity of faulting.

Shearing and schistosity parallel to the bedding is fairly common. One north-south fault, with a 5-6 foot right-hand displacement, was noted at 53W on the base line.

Two northeast-striking faults are known, one through the Trethewey shaft and a second at 3100W. In each case displacement is right-hand and only one to a few feet. The Trethewey fault horizontal displacement varies from zero to 10 feet at different depths, the variation being taken-up by drag folding. Dip is 60-65° southeast. Several other faults with similar attitude and minimum displacement are postulated from observation of crumpling and shearing, though lack of exposure of displacement on a readily recognized horizon, together with the slight movement, prevents definite recognition.

Economic Geology

Varying amounts of sulfides - principally pyrite, with here and there lesser amounts of pyrrhotite, and chalcopyrite, and minute amounts of bornite, sphalerite and galena - are found more or less continuously along both contacts of the rhyolite tuff.

At at least two locations - the Patterson and Trethewey shafts - substantial quantities of chalcopyrite with lesser bornite, and small and variable silver, are found. The Patterson surface showings are largely obscured by the dump, but as far as can be observed, are related to small, north-east striking, quartz-filled shears. At the Trethewey-Ossian there is a single broad (10-30 foot) zone of faulting, quartz-filled and with numerous small offshoots. Copper ore shoots are found on both contacts of the rhyolite, extending up to 70 feet in either direction from the quartz-filled fault. Characteristically the mineralization is massive chalcopyrite, a few inches to 36 inches wide, sometimes with a bornite core, and with minor disseminated copper extending a few inches into either wall.

Lawton emphasizes the relationship of copper to "iron formation". This has not been my observation. While cherty beds are commonly present, good widths of chalcopyrite have been noted where no chert occurs, and conversely "iron formation" has been noted underground carrying only iron sulfides. There is a marked relationship between dip changes and sulfide widths, the best widths of chalcopyrite to date being found where dips change from 75° north to 65° south over about 30 feet vertically. To date the bulk of the copper found lies in the hanging (southeast) wall of the fault though good widths and values are known in the footwall as well. An abrupt termination of values and a broad halo of pyrite is found around the ore shoot on the south rhyolite contact.

Ten feet into the andesites south of the rhyolite at the Trethewey there is a second, parallel copper-bearing shoot. This has not yet been thoroughly explored, but is known to have a length of 50 feet or more and has been cut by drilling and underground workings over a vertical range of 150 feet.

Apart from the Trethewey and Patterson shaft areas small amounts of chalcopyrite are found at several locations along the rhyolite tuff contacts as shown on the accompanying plan. Two other copper occurrences of some note, apart from the contact zones, have been found. One at 7400W, 50S consists of disseminated chalcopyrite and quartz stringers in andesite tuffs. Sulfides are found over a width of 15 feet or more with the greatest concentration associated with narrow (1"-2") acidic tuff bands. Picked samples of commercial grade can be obtained though the overall copper content is under 1%.

Underground at the Trethewey-Ossian, well within the rhyolite tuff are zones of disseminated chalcopyrite. Less than commercial amounts of copper are found over widths of 10-15 feet, and good values over narrow widths have been obtained in drilling. There appear to be three zones, with no definite boundaries, at least one of which has been traced for 100 feet vertically.

Geophysical Work

Details of the various surveys are described in reports by Scope and McPhar. A relationship between known mineralization and magnetic results can be demonstrated. The very widespread sulfides resulted in a profusion of conductive zones throughout the area surveyed. IP work was undertaken to attempt to differentiate between larger sulfide bodies and conductive stringers. Some success has been proven by follow-up drilling, and there remain a number of interesting features as yet uninvestigated.

Conclusions

Geological mapping has outlined in detail the area in which copper mineralization of the Patterson and Trethewey-Ossian type may be expected to occur. The outcrop areas have been fairly thoroughly prospected, and while several new copper occurrences have been found none appear to have ore-making possibilities. There are, however, several areas which because of structural and geophysical features, are considered of interest either beneath overburden or at depth. Two of these, on the south rhyolite contact opposite the Patterson shaft, and another in the fault zone at 5300W definitely warrant investigation by drilling.

Experience in mining known ore shoots will determine whether it would be economically advisable to investigate other indications of mineralization not accessible from existing underground workings.

Respectfully submitted,

18 May 1962.

L. G. PHELAN, M.A.Sc. P.Eng.,
Consulting Geologist.

FORM NO. L42-811-P REPORT PAPER . . GRAND & TOY LIMITED

REPORT ON THE INDUCED POLARIZATION AND RESISTIVITY RESULTS FROM THE BOSTON CREEK PROPERTY, PACAUD TOWNSHIP, ONTARIO FOR FIDELITY MINING INVESTMENTS LIMITED

1. INTRODUCTION

At the request of Mr. L. G. Phelan, consultant for the company, several lines have been surveyed using the induced polarization method on a property near Boston Creek, Ontario on behalf of Fidelity Mining Investments Limited. Several small mining operations on the property have recovered high-grade copper ore from small ore-shoots along a tuff contact.

The previously mined zones had very little lateral extent, and occurred where small cross faults had off-set the contact. There is enough surface outcrop in the area so that the two contacts of the tuff band can be located with reasonable accuracy and the purpose of the IP survey was to locate unknown zones of mineralization along the contact.

The field measurements were made during November 1961.

2. PRESENTATION OF RESULTS

The induced polarization and resistivity results are shown on the following enclosed data plots. The results are plotted in t' manner described in the notes preceding this report.

Test Work

Line 50W	100' Spreads	Dwg. I. P. 2866-1
	50' Spreads	Dwg. I. P. 2866-2
Line 48W	50' Spreads	Dwg. I. P. 2866-3
Line 74W	50' Spreads	Dwg. I. P. 2866-4
Line 18W	50' Spreads	Dwg. I. P. 2866-5
Baseline	50' Spreads	Dwg. I. P. 2866-6

Overburden Covered Area

Line 36W	50' Spreads	Dwg. I. P. 2867-1
Line 38W	50' Spreads	Dwg. I. P. 2867-2
Line 40W	50' Spreads	Dwg. I. P. 2867-3
Line 42W	50' Spreads	Dwg. I. P. 2867-4
Line 44W	50' Spreads	Dwg. I. P. 2867-5
Line 46W	50' Spreads	Dwg. I. P. 2867-6

Measurements Along Contacts

Line A	50' Spreads	Dwg. I. P. 2868-1
Line 30W	50' Spreads	Dwg. I. P. 2868-2
Line 34W	50' Spreads	Dwg. I. P. 2868-3
Line B	50' Spreads	Dwg. I. P. 2868-4
Line 62W	50' Spreads	Dwg. I. P. 2868-5
Line 64W	100' Spreads	Dwg. I. P. 2868-6
Line C	50' Spreads	Dwg. I. P. 2868-7

Enclosed with this report is Dwg. Misc. 2869, a plan map of the contact zone covered. 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 50' spreads the position of a narrow sulphide body can only be determined to lie between two stations 50' 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

The geological mapping in the contact zone has shown that there is some mineralization along most of the contact. A previous vertical loop EM survey in the area resulted in more or less continuous anomalies along both the north and south contacts of the tuff band. The geophysical problem is not to locate sulphide mineralization along the contact, but rather to determine where along the contact the sulphide content is the greatest.

Since the induced polarization measurement is an averaging process, the measurement is that of the volume of metallic mineralization present rather than of the continuity of conduction; it was thought that it might prove more useful than the EM measurement. Therefore, the first part of the programme consisted of test measurements made over known mineralization. These lines were surveyed in areas where ore grade mineralization was known, and in other areas where drilling has intersected only scattered mineralization at the contact.

Test Measurements

Line 50W

This line passes over the shaft that was used to mine one of the old orebodies. It was surveyed to determine the IP effect from the ore grade mineralization. It was first surveyed using 100' spreads, and a moderate magnitude, but definite, anomaly shows at the baseline. However, the mineralization is much less than 100' wide, and a great deal of unmineralized rock would be averaged into each measurement.

The line was resurveyed using 50' spreads, in order to increase the magnitude and to get more detailed information. The data over the main zone was not measured, since the waste dump at 0+50S interfered with the electrode site. However, the more detailed measurements indicate that there are really three anomalous zones crossed by

Line 50W. The largest is at the baseline, and is incomplete in the present data. There is a narrow anomaly at 1.5S over the south contact, and another, weaker, anomaly at 1.5N to 2.0N.

The resistivities are high north of the baseline, and the anomaly at 1.5N to 2.0N may be more important than it appears, since very highly resistant rocks reduce the apparent IP effect from mineralization. Since the source appears to be narrow, it could be better located using shorter spreads.

South of the south contact the surface resistivities are very low. They increase with separation, but the basement values are much less than north of the baseline. The very low surface resistivities are caused by the swamp to the south. The geological information indicates a different rock type to the south, and this fact undoubtedly accounts for the change in resistivity.

Line 48W

This line is east of the ore zone that was mined from the shaft on Line 50W. This is confirmed by the fact that only a slight IP increase was measured at the north contact. There is a small anomaly at 2.5N that probably correlates with the one north of the baseline on Line 50W.

There is a strong, definite anomaly at depth at 1S to 2S over the south contact. It is much larger in magnitude than the one over the south contact on Line 50W. The values for $n = 1$ are similar on both lines, but on Line 48W the values increase with separation. The drill holes through the south contact on Line 50W should indicate the amount of mineralization at that point. More mineralization would be expected at depth (50 to 100 feet to the top) on Line 48W.

Line 74W

This line was surveyed to pass over a zone of disseminated mineralization north of the north contact. The IP results indicate the presence of the mineralization about 0+50S of the baseline. Moreover, the IP effects increase with depth, so that the sulphide content should be greater at depth.

Baseline

The baseline was surveyed along the strike of the known orebody at 50W to determine the apparent IP effects to be expected. A large anomaly was located at 49+50W to 50W, over the known mineralization. A weaker anomaly was located at 52+50W to 53W, and another zone was located at depth at 48W to 48+50W. To the east and west of these points, the effects are very small; however, this may be due to the fact that the baseline is not exactly along the contact in those areas.

Line 18W

This line was surveyed somewhat east of the others, in an area where disseminated mineralization is known. The results show a narrow, shallow anomaly at the south contact. The one value is large, but the pattern suggests that the zone has irregular boundaries, rather than that the source is a tabular zone of more massive mineralization.

Overburden Covered Area

Approximately 1000' of the favourable contact zone is completely covered by recent sediments, and no geological information is available. There is no EM data in this area due to powerline noise, therefore several lines were covered by IP. On most of the lines there are no IP effects. The apparent resistivities are relatively high, indicating that the overburden is not very thick.

There are some shallow, low magnitude anomalies on Line 36W and Line 44W, that are similar to those obtained previously over the slightly mineralized contact. However, there is a definite anomaly at depth on Line 42W. This anomaly is not as large as that over the known zone of mineralization, but it is quite different from the data on the other lines. Since the powerline passes through this area, a check should be made on the area to make sure that a power pole is not grounded at that point. Such a ground sometimes connects the power poles together and can give rise to small IP effects.

However, the anomaly at 0.5S to 1S on Line 42W seems to be too large to have that type of source. The anomaly appears to be at depth, but the source may actually be to the side of the line. The lines 200' to the east and west do not have a similar anomaly, so the source has a limited strike length. Lines should be surveyed 100' east and west of Line 42W to completely evaluate this zone.

Measurements Along Contacts

The test measurements along the baseline indicated that large IP effects could be expected if lines along the strike of the contact passed over zones of ore mineralization. Therefore, three lines were planned to pass over the contacts at places indicated to be of geologic interest. Several large anomalies resulted, and some detailed work was done on lines perpendicular to the contact.

Line A

This line was surveyed along the north contact, and several anomalies resulted. The largest and most definite of these is at about 6W to 7W on Line A, which would be between Line 30W and Line 32W of the grid. The source of the anomaly appears to be shallow, and unfortunately the pattern is somewhat indefinite in shape.

Therefore, the exact location of the source along Line A is uncertain. Line 30W of the grid was at the western edge of the anomalous area, and it was decided to survey this cross line to determine the anomalous effects there. The results on Line 30W show a moderate magnitude, but definite anomaly at 2S to 2.5S, that correlates with Line A. However, the effects are not as large as on Line A, and it is probable that this line is not exactly over the source of the anomaly on Line A. Additional cross lines, at less than 200' spacings, would have to be cut and surveyed with IP in order to better locate this anomaly.

In addition, the last few measurements on the south end of Line 30W were definitely anomalous. This anomaly would correlate with the south contact, and the data should be extended to complete the pattern. The south contact was checked to the west on Line 34W, and some anomalous effects are present, but they are not as strong as indicated on Line 30W.

Line B

This line is along the north contact west of the position of Line A. Again, several anomalies were located. Although none of them are as large in magnitude as that on Line A, the anomaly at 1.5W to 2.0W is definite. There is one very large value at depth at 3.5W, that is quite different from the surrounding values; but it has been checked several times and the effects are repeatable.

As in the previous case, the indicated anomalies along the contact were not exactly at one of the existing cross lines. However, rather than cut new lines, the two nearest lines (Line 62W, Line 64W) were surveyed. The results on Line 62W are not anomalous, except for some values measured for large separations over Line B. These may indicate a source at depth, but more probably it is due to a source east of Line 62W. Other lines should be surveyed in that direction.

Line 64W was surveyed using 100' spreads in order to try to locate the source of the deep anomaly at about 3.5W. Nothing anomalous resulted, but the line may be too far to the west to locate the source; certainly, it is not centered in the anomaly.

Line C

This line is along the south contact, and there is one definite anomaly. It is not as large as was obtained along the baseline over the known mineralization, but the pattern is definite and the anomaly should be investigated further.

4. CONCLUSIONS AND RECOMMENDATIONS

The induced polarization and resistivity results described in this report show clearly that the mineralization of the kind previously mined on the Boston Creek Property can be located. The results also suggest that the massive ore mineralization can be separated from the zones of more disseminated mineralization which occur along most of the contact.

The results along the contacts are of interest, because only a few large anomalies were located. Along most of the contact covered, the IP effects were small. The anomaly located on Line A, just east of where it is crossed by Line 30W, is larger than that obtained on the base line over the known zone. The data on Line 30W is slightly anomalous, hence most of the mineralization must be east of that point. Further IP measurements on closely spaced cross lines, or drilling in that area, would be necessary to locate the source of the large effect measured on Line A.

The anomalous results on Line B and Line C are not well enough located. The present data is only sufficient to indicate that certain parts of the contact contain more mineralization than others. This is also true of the partial anomaly obtained over the south contact on Line 30W. More data would be necessary to evaluate the importance of the anomaly. However, the anomaly located at depth over the south contact on Line 48W is well located, and could be tested by drilling.

If the drilling of the largest of these anomalies indicates that the IP method can be used to discriminate between the widespread disseminated mineralization in the area, and the massive mineralization of economic interest, the other anomalies should be investigated more thoroughly.

McPHAR GEOPHYSICS LIMITED

Philip G. Hallof

Philip G. Hallof,
Geophysicist.

Robert A. Bell

Robert A. Bell,
Geologist.

Dated : December 7, 1961.

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

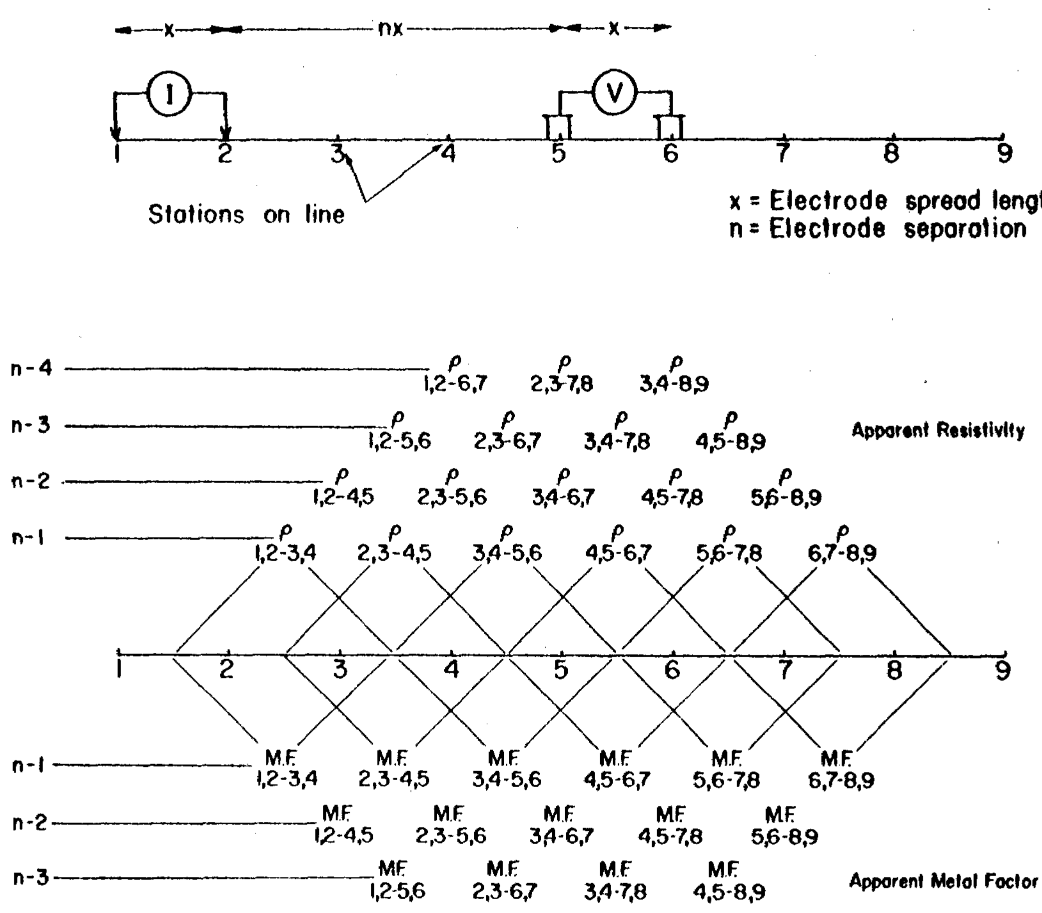
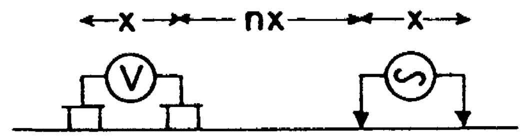


FIG. I

DWG. NO.-I. P.-2866-2

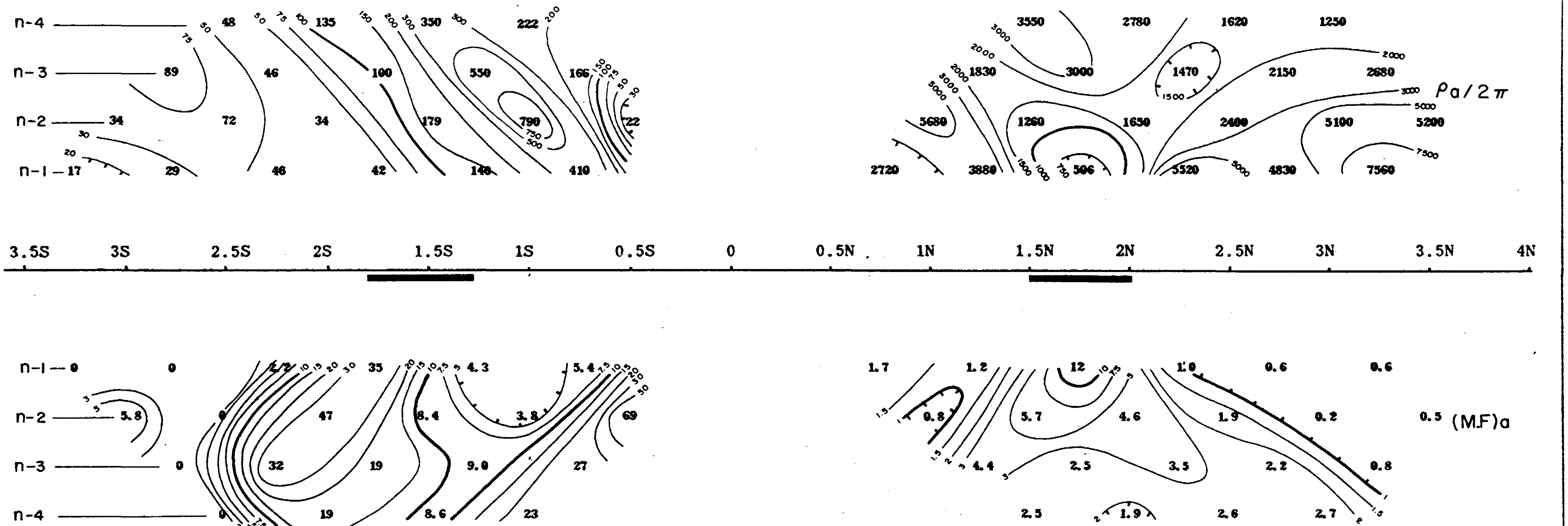
McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



ELECTRODE CONFIGURATION

X - 50



FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale - One inch = 50 Feet

ANOMALOUS ZONE

POSSIBLE ANOMALOUS ZONE

NOTE

LOGARITHMIC CONTOUR INTERVAL

FREQUENCY .31 - 5 CPS.

DATE SURVEYED NOV. 1961

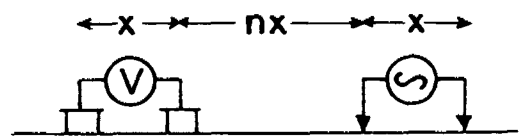
APPROVED PH

DATE 12/7/61

DWG. NO.-I.P.-2866-3

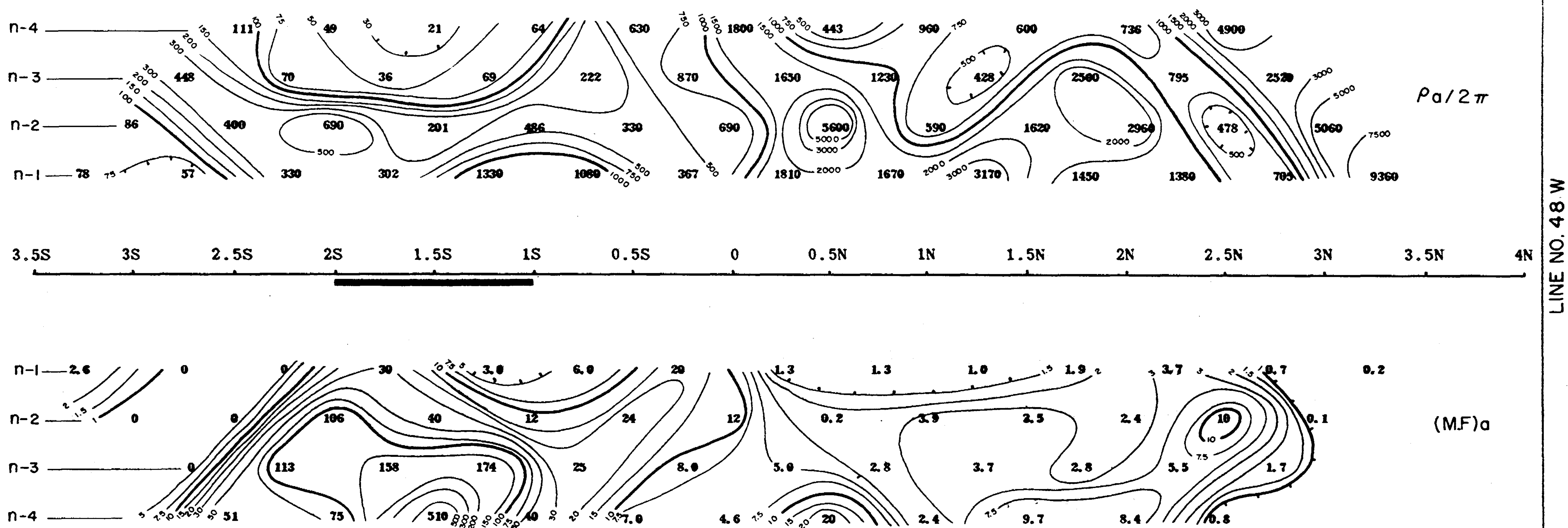
McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



ELECTRODE CONFIGURATION

X - 50



FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale - One inch = 50 Feet

ANOMALOUS ZONE

POSSIBLE ANOMALOUS ZONE

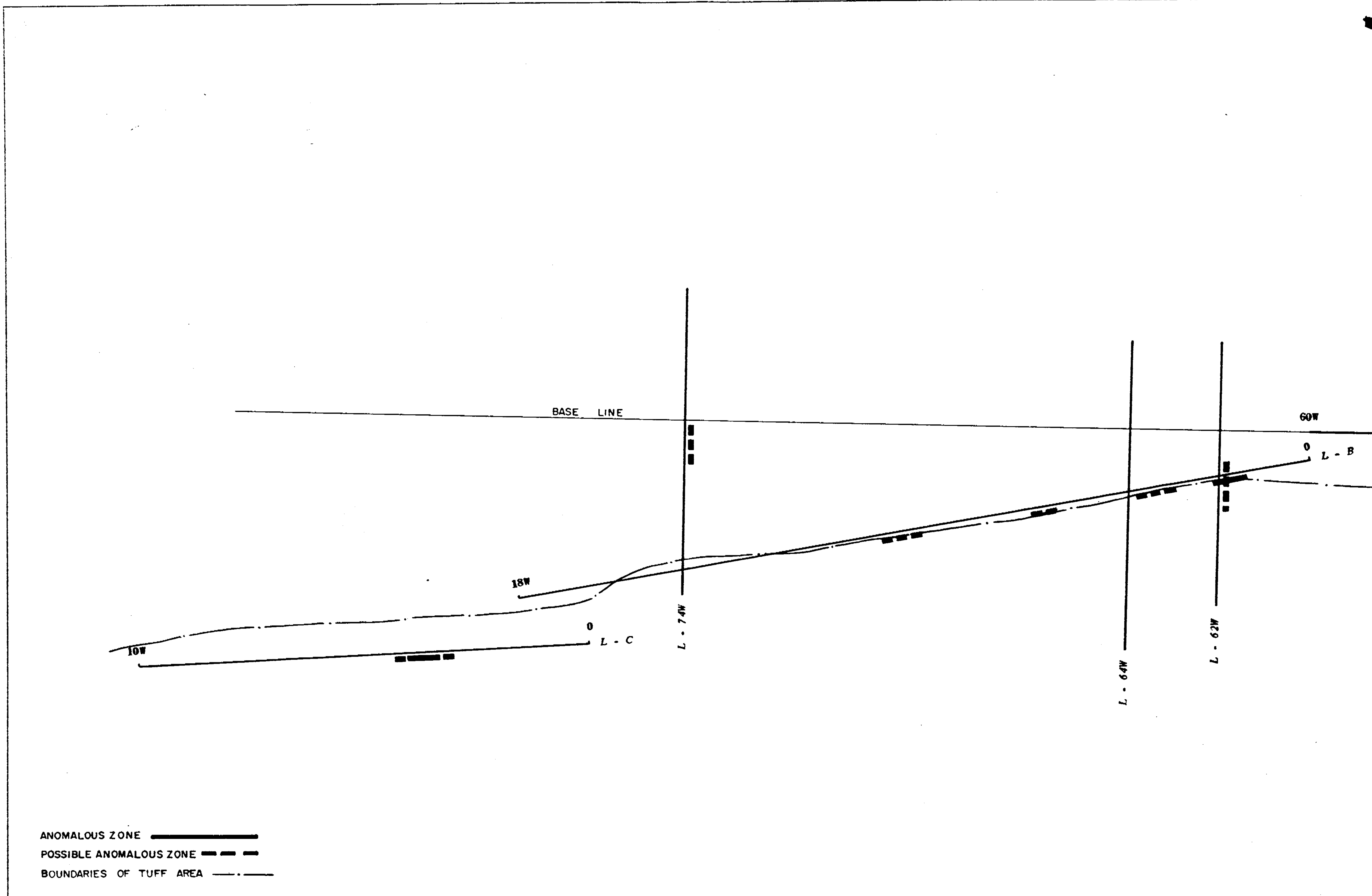
NOTE
LOGARITHMIC CONTOUR INTERVAL

FREQUENCY .31 - 5 CPS.

DATE SURVEYED NOV. 1961

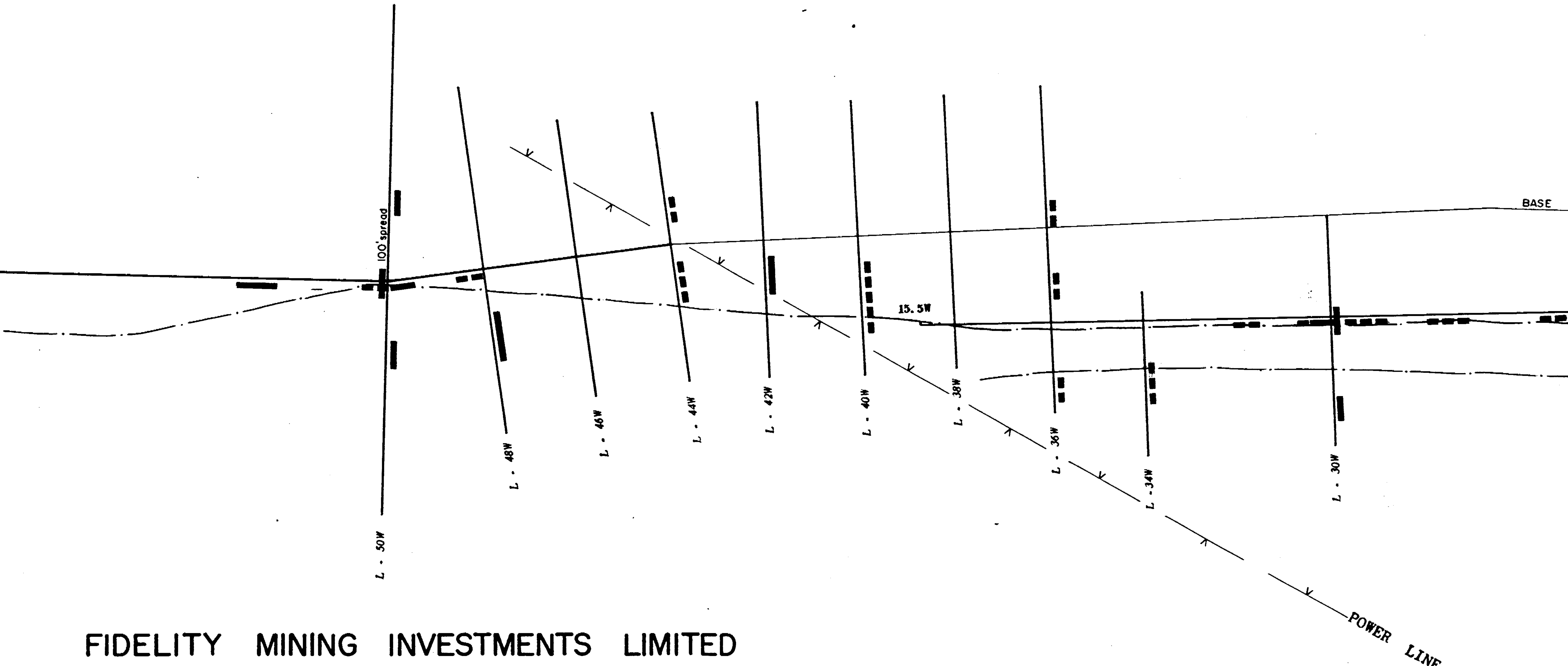
APPROVED

DATE 12/7/61


BASE LINE
60W
0
L - B
18W
L - 74W
L - 64W
L - 62W
10W
0
L - C
ANOMALOUS ZONE
POSSIBLE ANOMALOUS ZONE
BOUNDARIES OF TUFF AREA

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



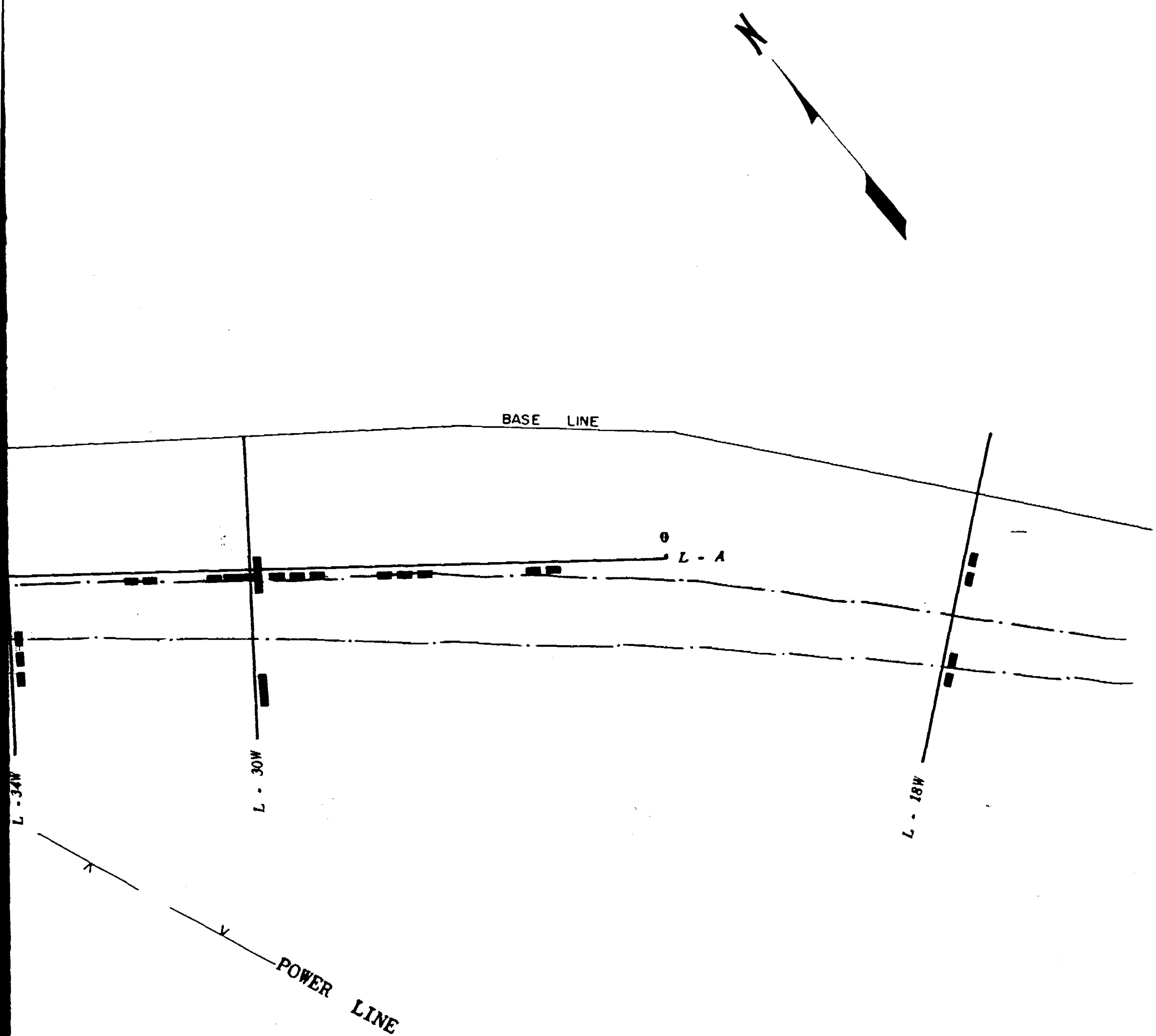
FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale – One inch = 200 Feet

DWG. NO.- MISC 2869

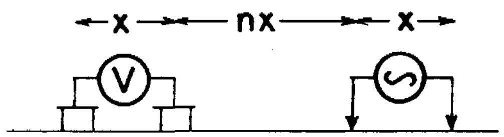


APPROVED

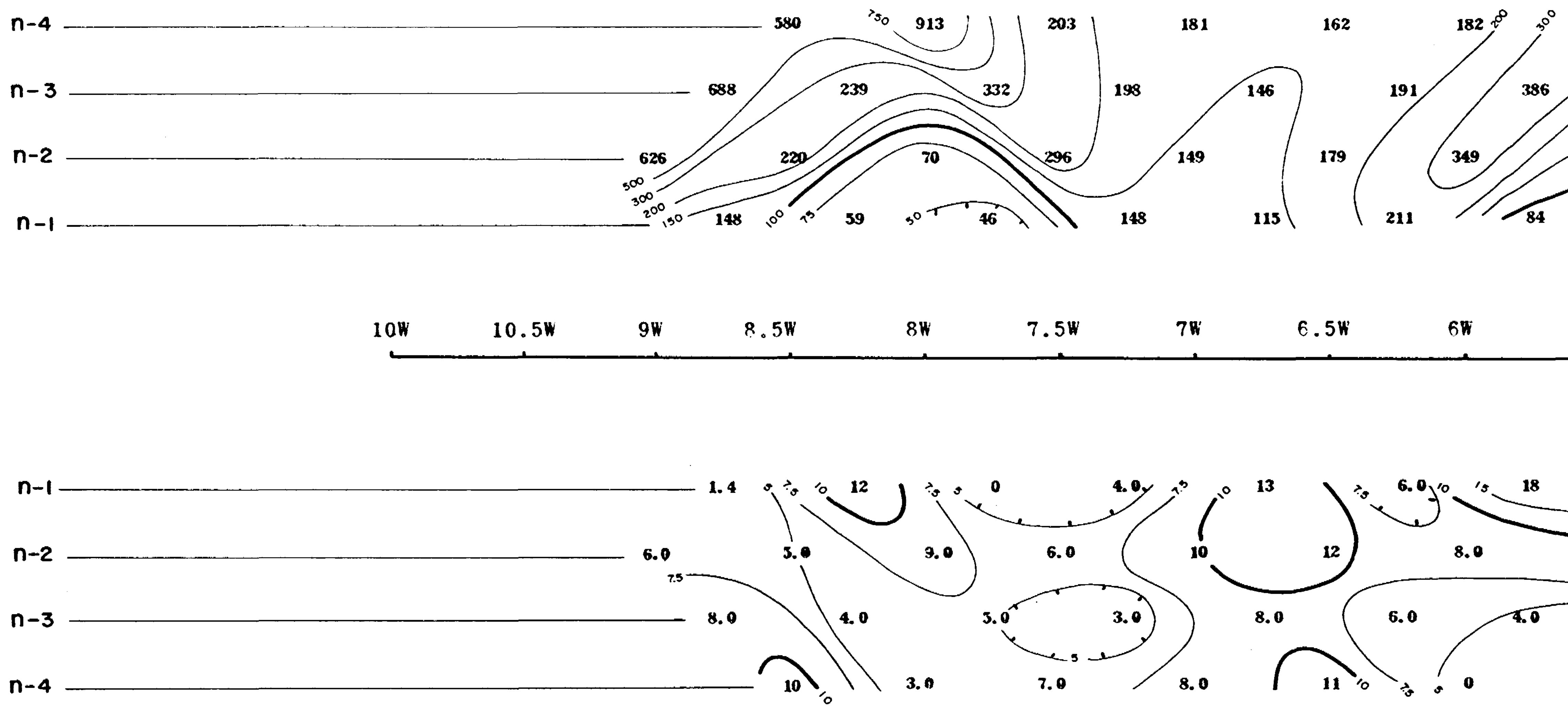
DATE 12/7/61

McPHAR GEOPH

INDUCED POLARIZATION A



ELECTRODE CONFIGURATION
x - 50



FIDELITY MINING INV

BOSTON CREE

PACAUD TWP.

Scale-One in

ANOMALOUS ZONE

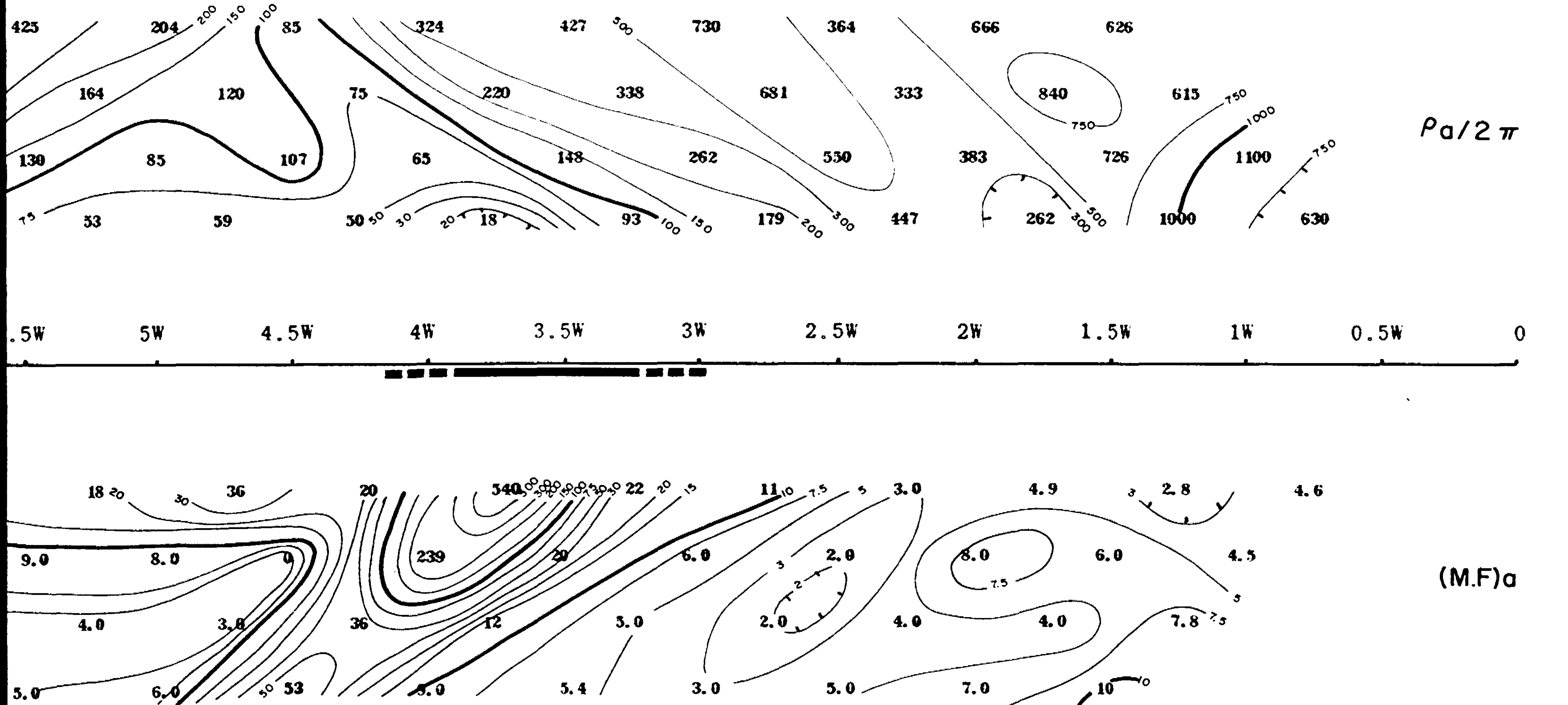
POSSIBLE ANOMALOUS ZONE

NOTE
LOGARITHMIC CONTOUR INTERVAL

DWG. NO.-I.P.-2868-7

YSICS LIMITED

ND RESISTIVITY SURVEY



LINE NO. "C"

VESTMENTS LIMITED

K PROPERTY

ONTARIO

ch= 50 Feet

FREQUENCY 31 - 5 CPS

DATE SURVEYED NOV 1961

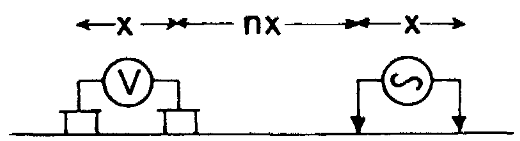
APPROVED ___

DATE 12/7/61

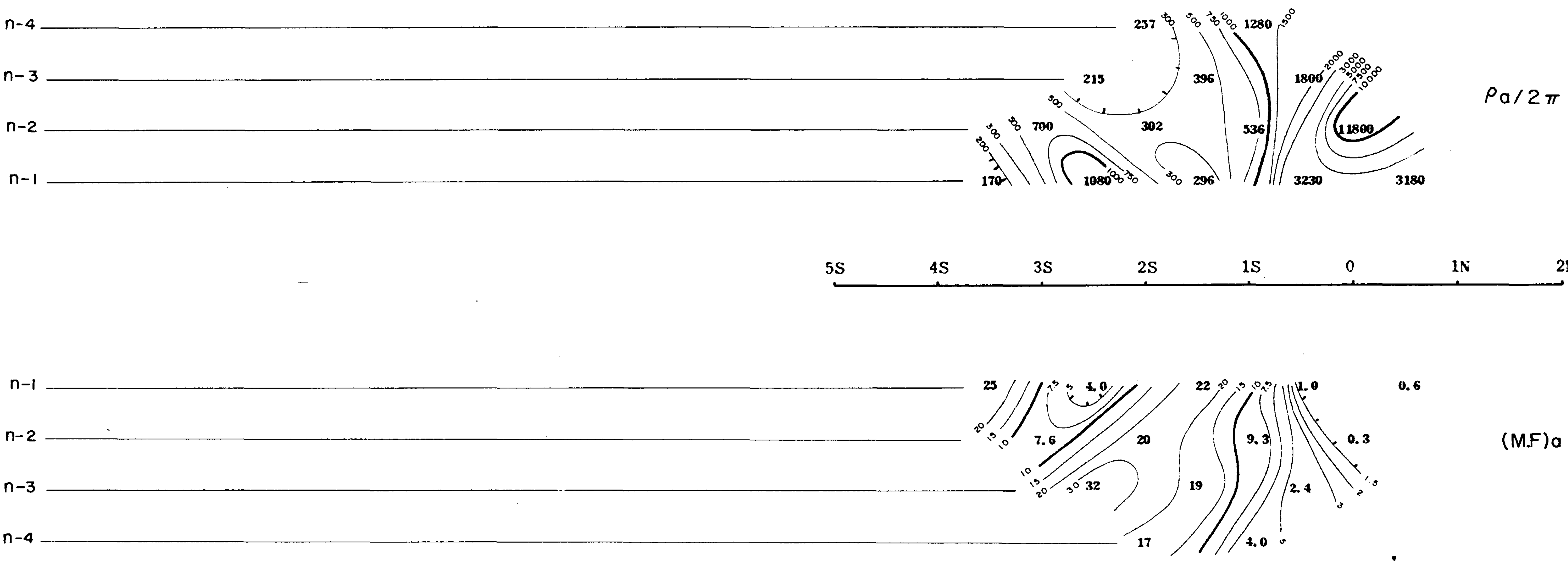
DWG. NO.-I.P.-2868-6

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



ELECTRODE CONFIGURATION
X ~ 100



LINE NO. 64 W

FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale - One inch = 100 Feet

ANOMALOUS ZONE

POSSIBLE ANOMALOUS ZONE

NOTE
LOGARITHMIC CONTOUR INTERVAL

FREQUENCY .31 - 5 CPS.

DATE SURVEYED NOV. 1961

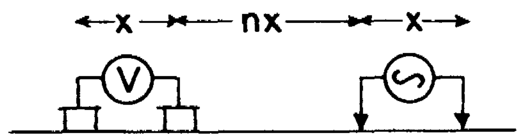
APPROVED PH

DATE 12/7/61

DWG. NO.-I.P.-2868-5

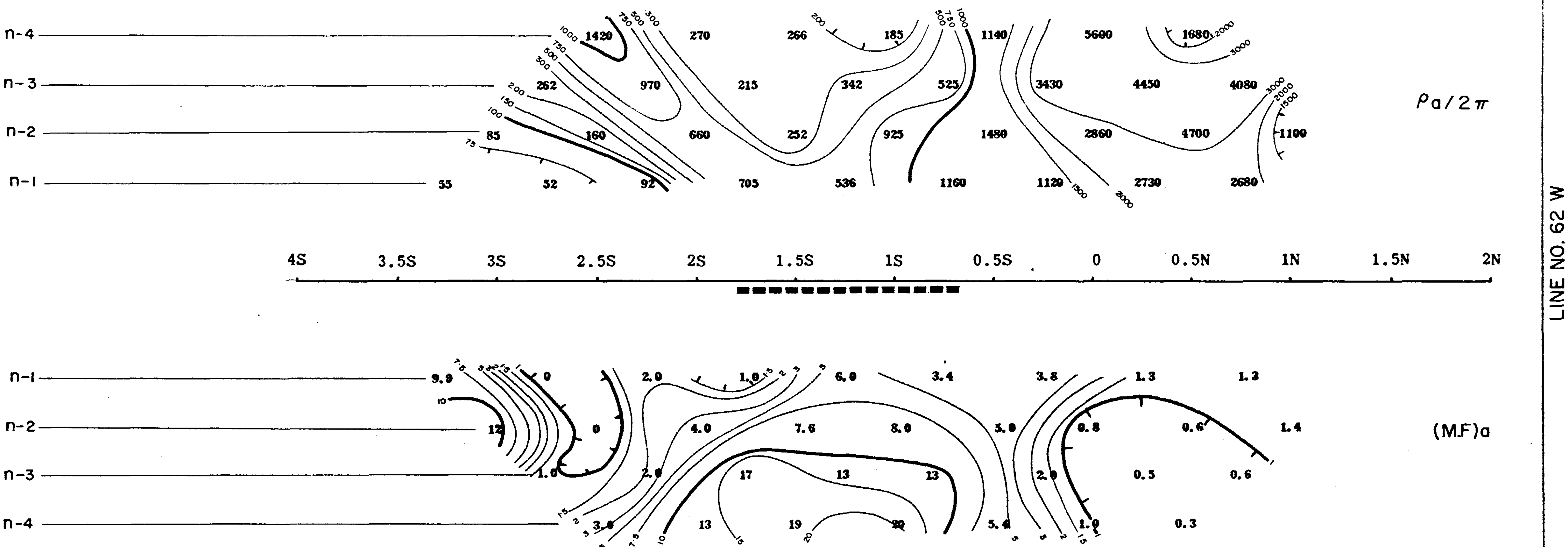
McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



ELECTRODE CONFIGURATION

X - 50



FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale - One inch = 50 Feet

FREQUENCY .31 - 5 C.P.S.

DATE SURVEYED NOV. 1961

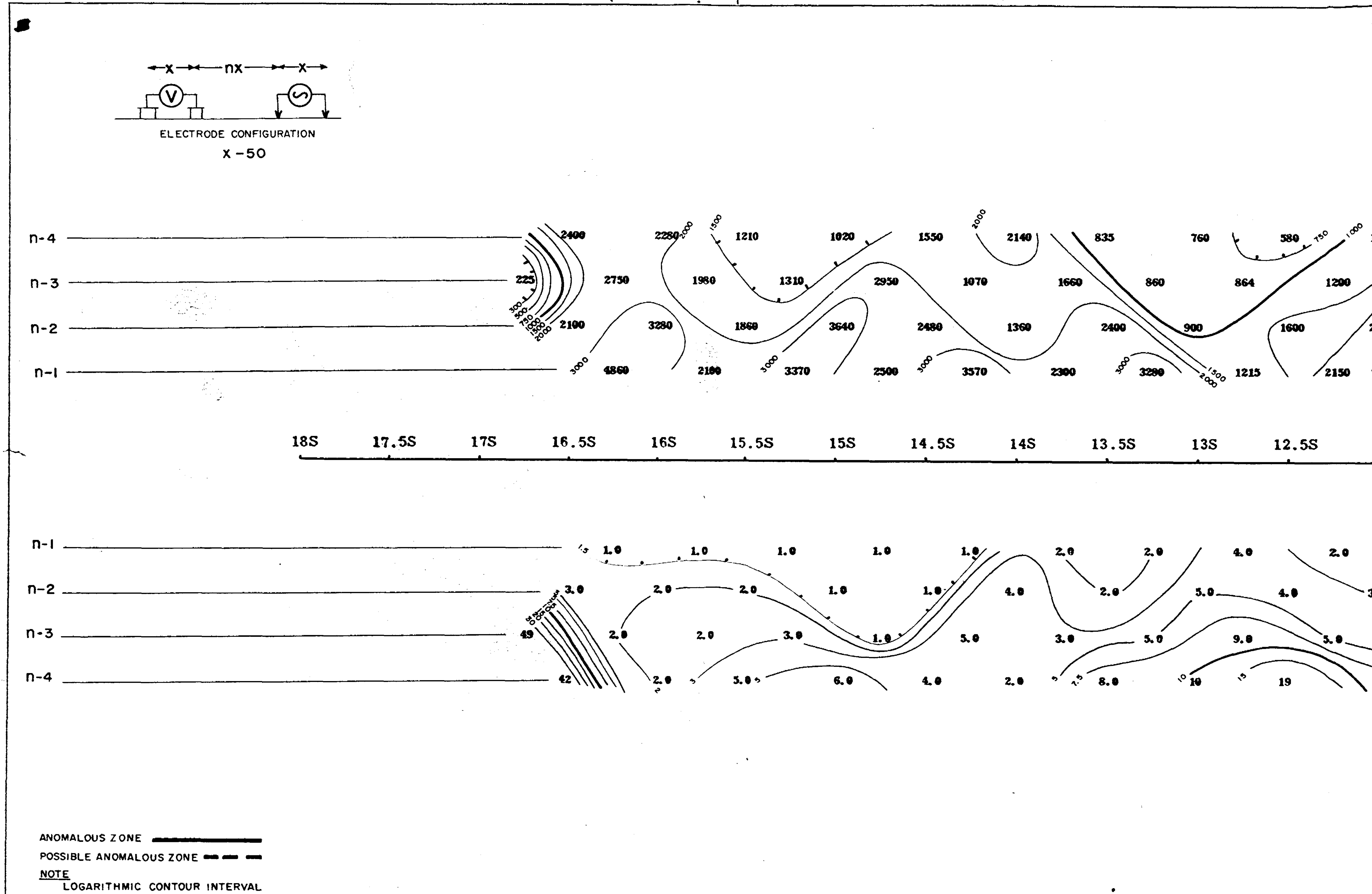
APPROVED PH

DATE 12/7/61

ANOMALOUS ZONE

POSSIBLE ANOMALOUS ZONE

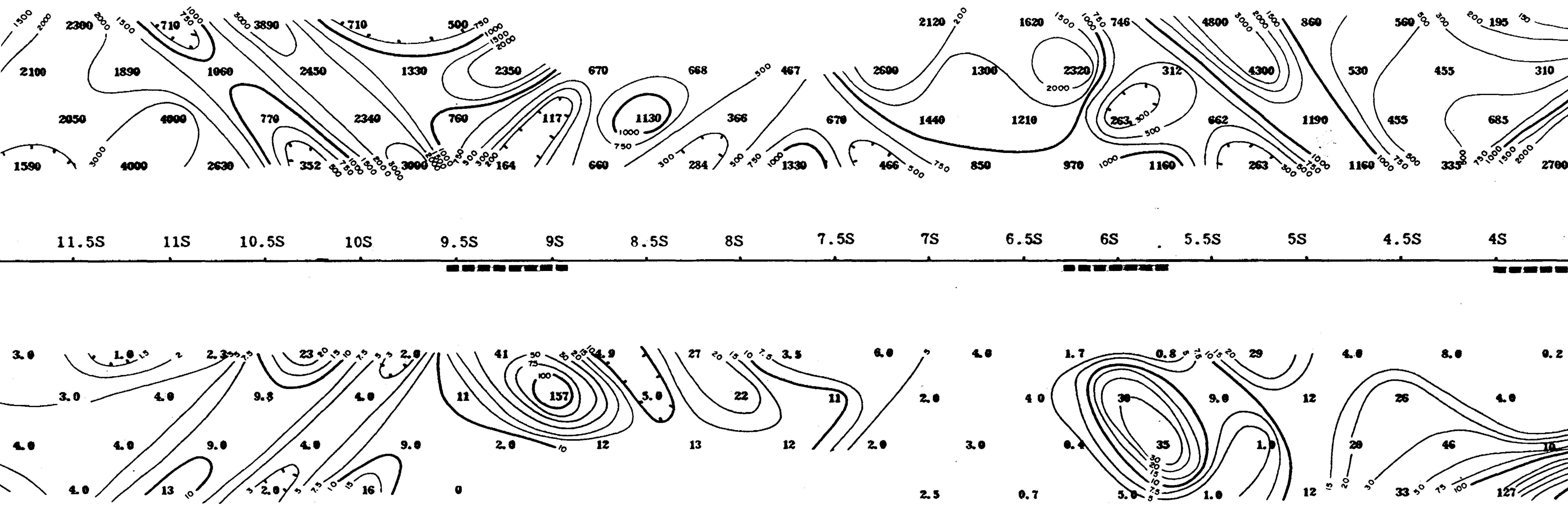
NOTE
LOGARITHMIC CONTOUR INTERVAL



x
nx
x
V
ELECTRODE CONFIGURATION
X -50
n-4
n-3
n-2
n-1
18S
17.5S
17S
16.5S
16S
15.5S
15S
14.5S
14S
13.5S
13S
12.5S
n-1
n-2
n-3
n-4
ANOMALOUS ZONE
POSSIBLE ANOMALOUS ZONE
NOTE
LOGARITHMIC CONTOUR INTERVAL

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



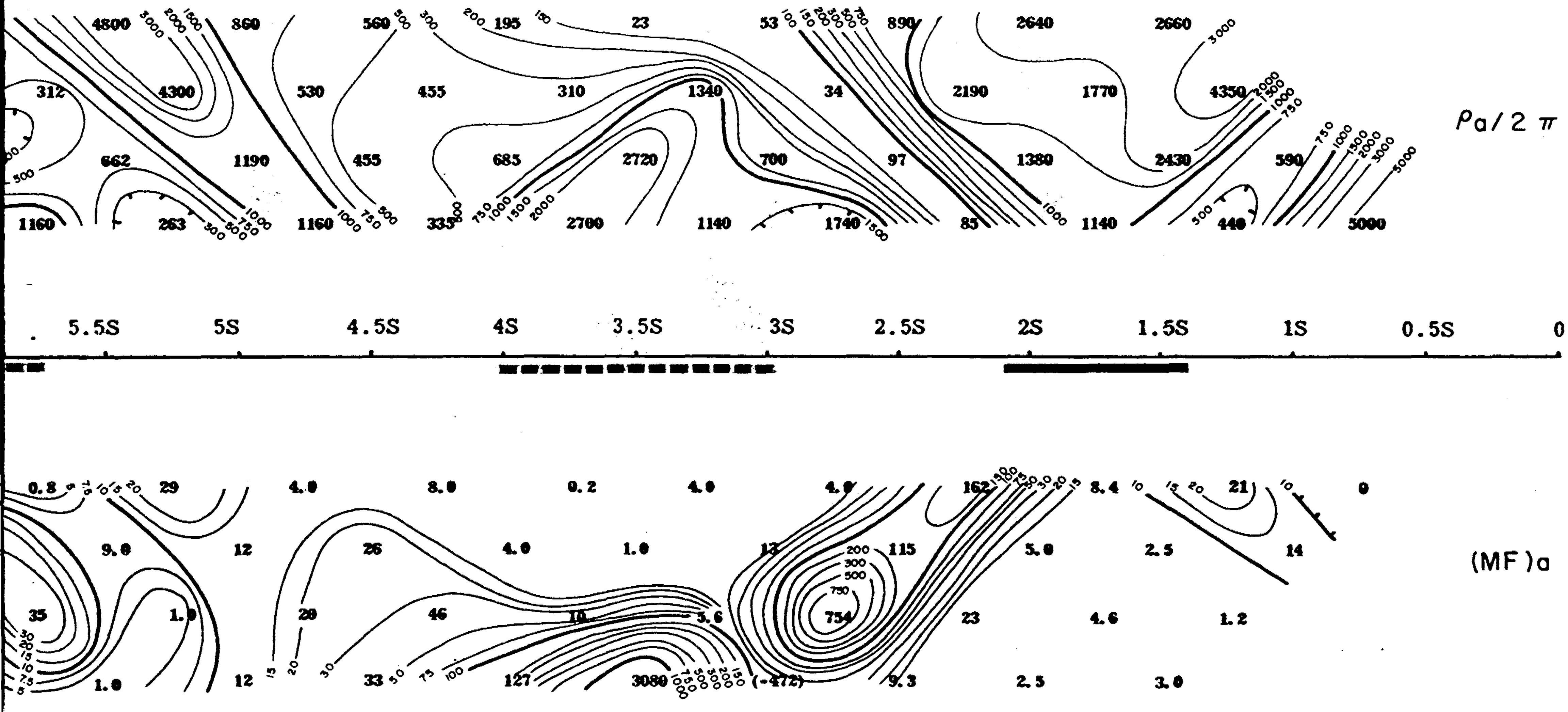
FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale – One inch = 50 Feet

DWG. NO.- I. P.- 2868-4



LINE NO. "B"

FREQUENCY .31 - 5 C.P.S.

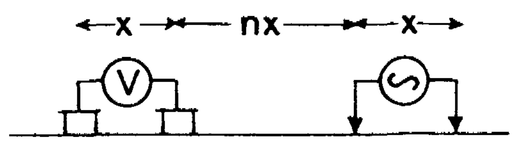
DATE SURVEYED NOV. 1961

APPROVED PH

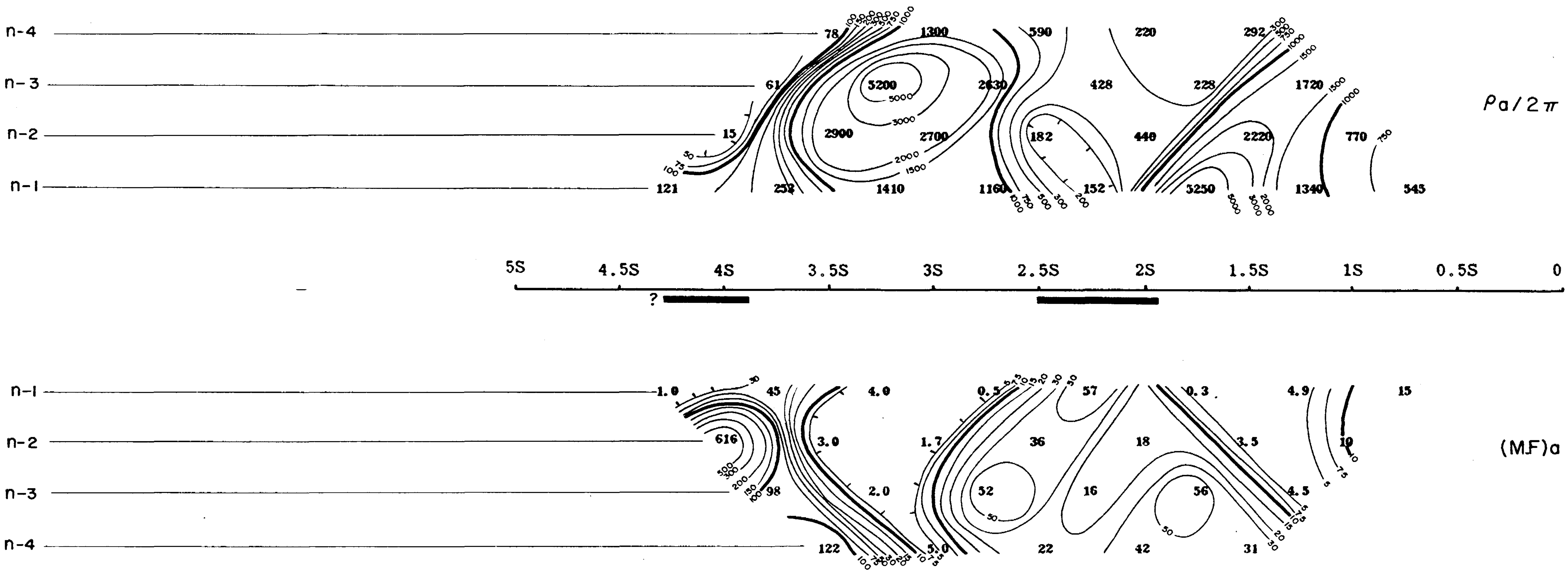
DATE 12/7/61

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



ELECTRODE CONFIGURATION
x - 50



LINE NO. 30 W

FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale - One inch = 50 Feet

ANOMALOUS ZONE

POSSIBLE ANOMALOUS ZONE

NOTE
LOGARITHMIC CONTOUR INTERVAL

FREQUENCY .31 - 5 CPS.

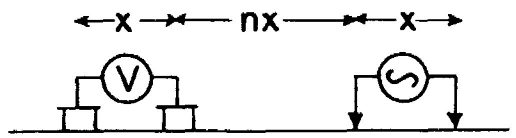
DATE SURVEYED NOV. 1961

APPROVED PH

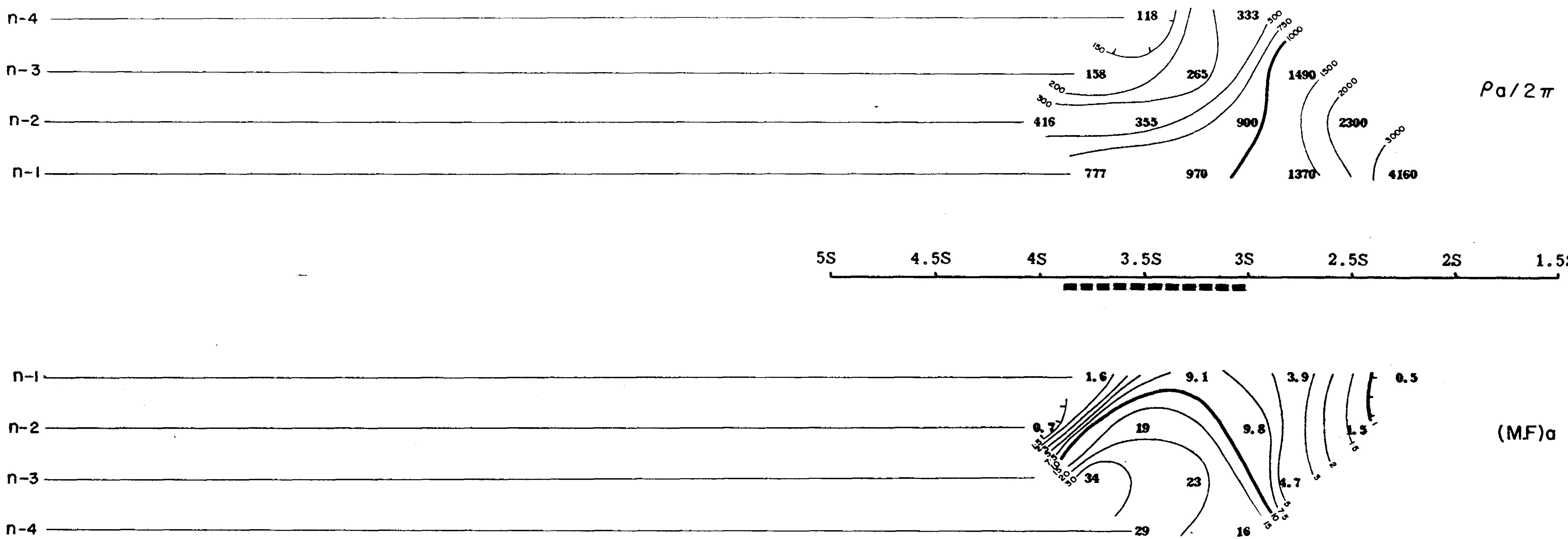
DATE 12/7/61

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



ELECTRODE CONFIGURATION
x – 50



LINE NO. 34 W

FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale – One inch = 50 Feet

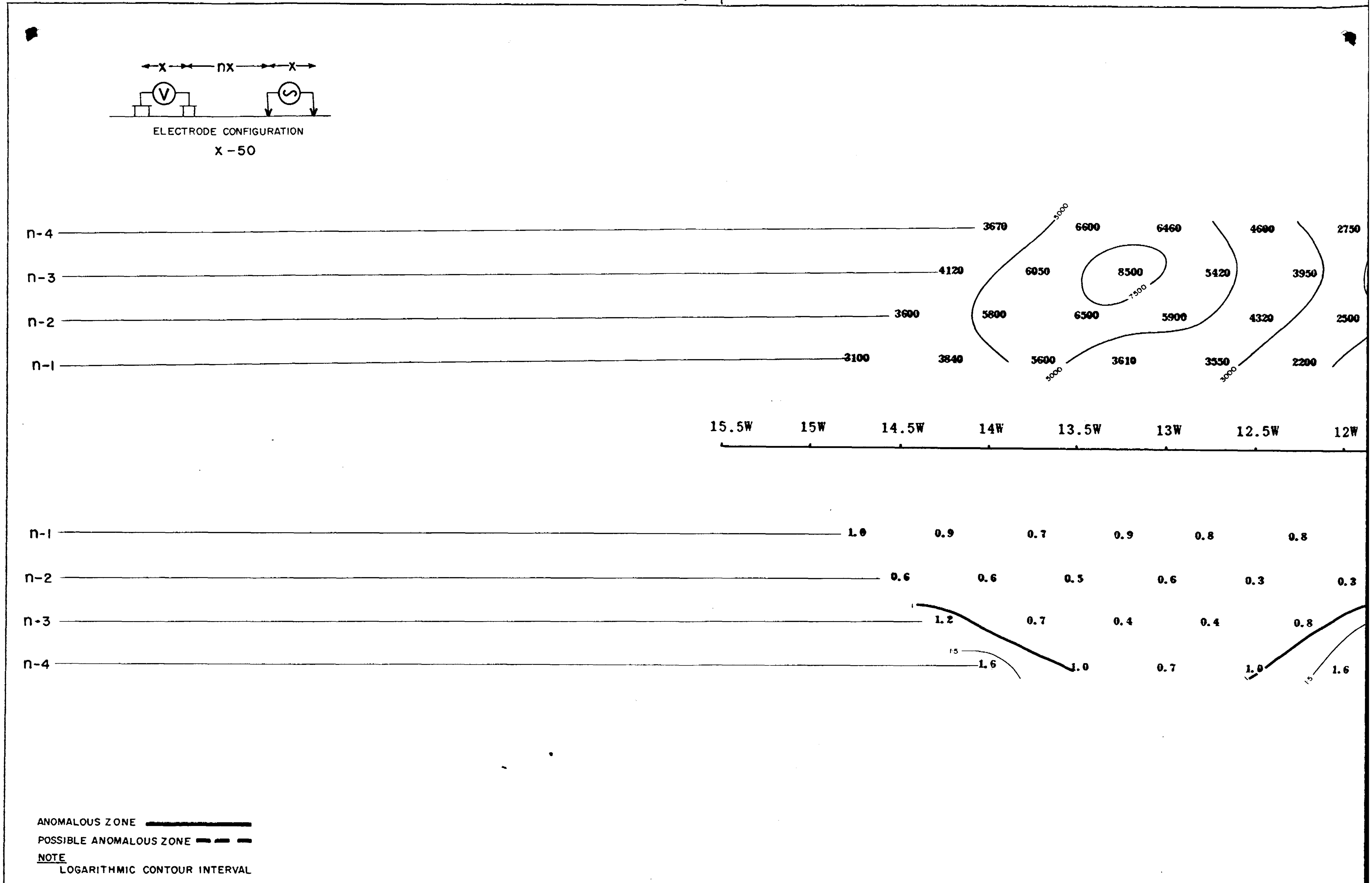
ANOMALOUS ZONE
POSSIBLE ANOMALOUS ZONE
NOTE
LOGARITHMIC CONTOUR INTERVAL

FREQUENCY .31 - 5 CPS.

DATE SURVEYED NOV. 1961

APPROVED PH

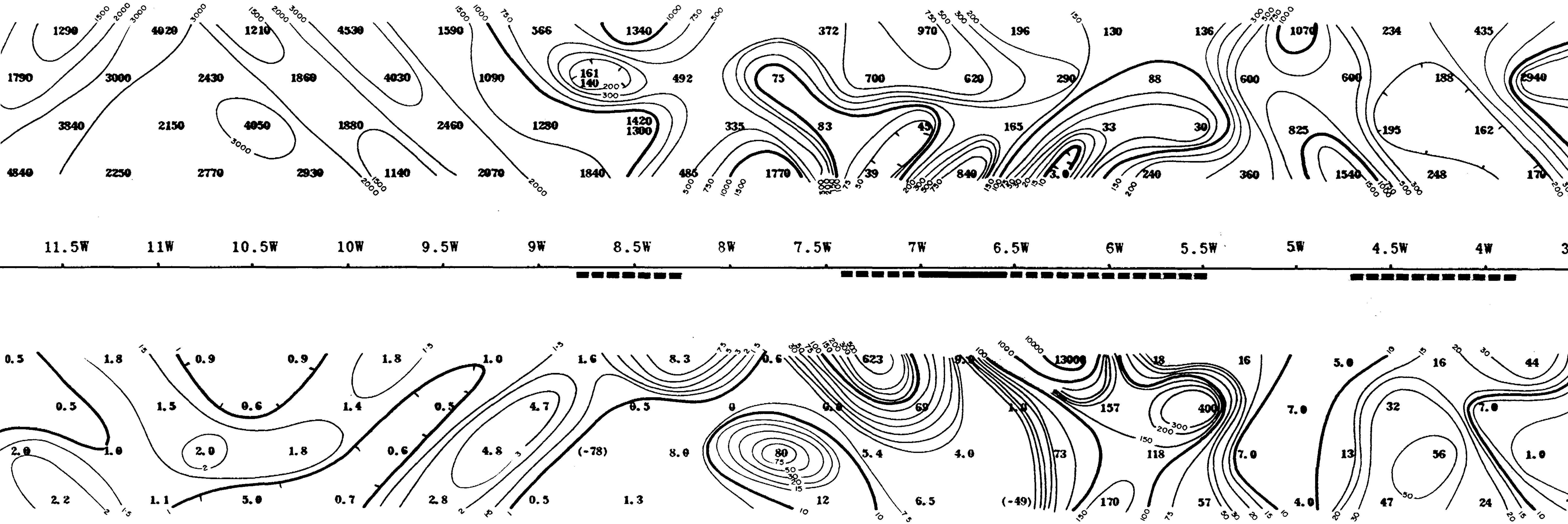
DATE 12/7/61



x
nx
x
V
ELECTRODE CONFIGURATION
X - 50
n-4
n-3
n-2
n-1
3670
6600
6460
4600
2750
4120
6050
8500
5420
3950
3600
5800
6500
5900
4320
2500
3100
3840
5600
3610
3550
2200
5000
7500
3000
15.5W
15W
14.5W
14W
13.5W
13W
12.5W
12W
n-1
n-2
n-3
n-4
1.0
0.9
0.7
0.9
0.8
0.8
0.6
0.6
0.5
0.6
0.3
0.3
1.2
0.7
0.4
0.4
0.8
1.6
1.0
0.7
1.0
1.6
1.5
ANOMALOUS ZONE
POSSIBLE ANOMALOUS ZONE
NOTE
LOGARITHMIC CONTOUR INTERVAL

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



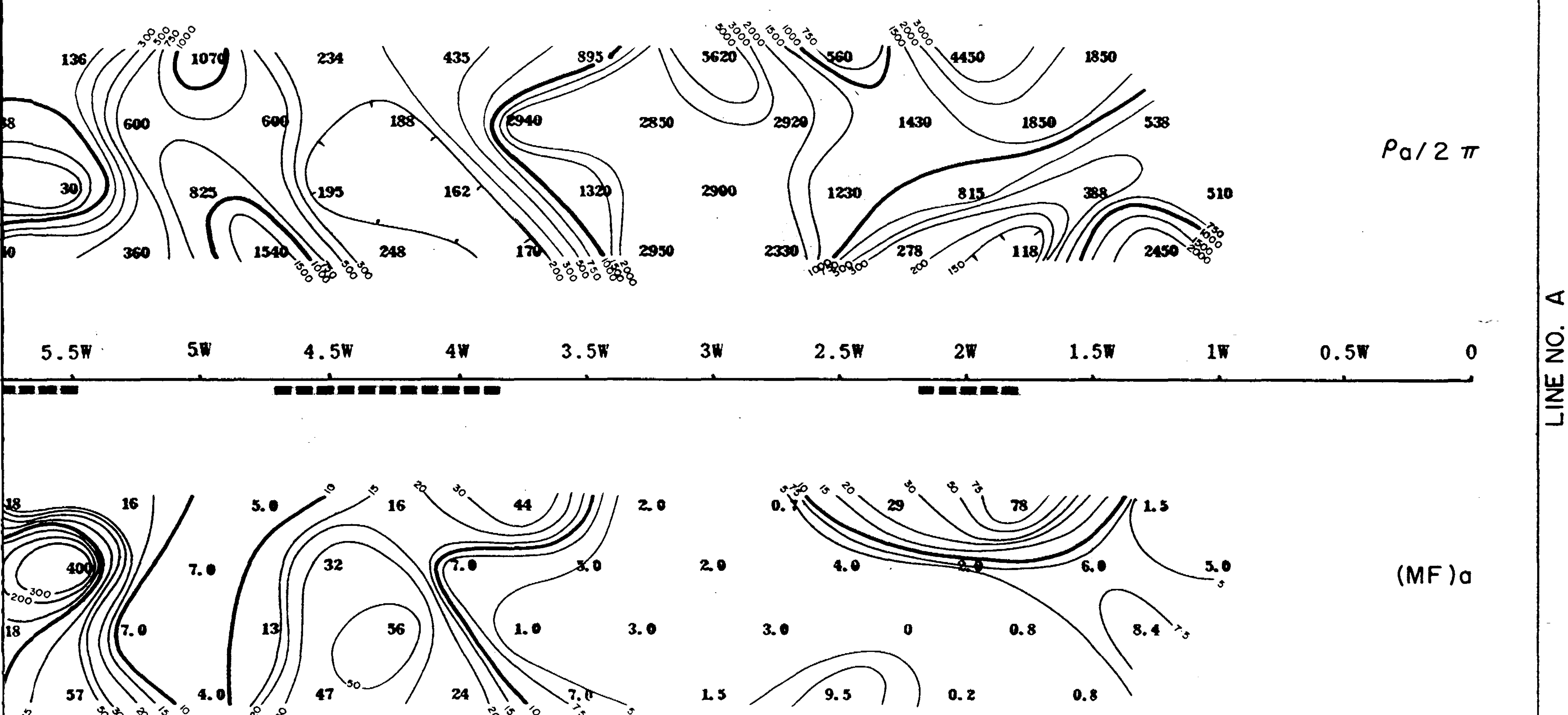
FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale – One inch = 50 Feet

DWG. NO.-I.P.-2868-1



FREQUENCY .31 - 5 C.P.S.

DATE SURVEYED NOV. 1961

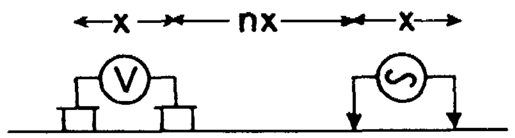
APPROVED PH

DATE 12/7/61

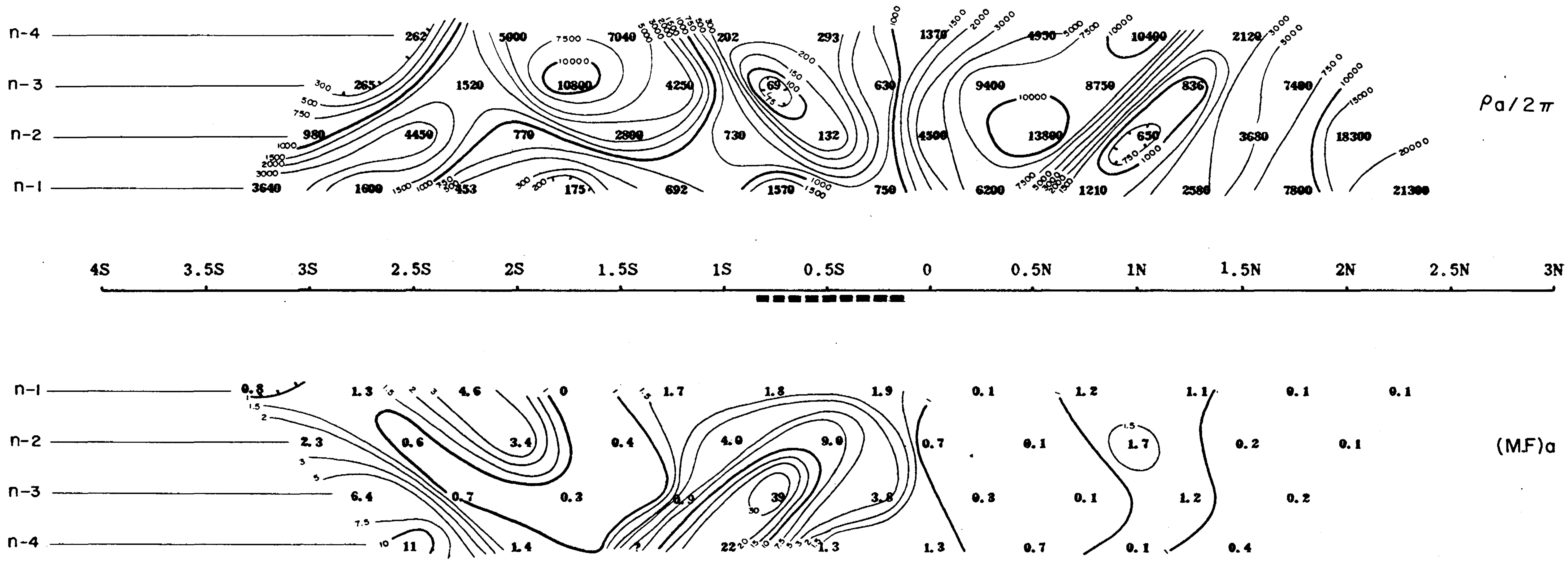
DWG. NO.- I.P.- 2866-4

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



ELECTRODE CONFIGURATION
X - 50



LINE NO. 74 W

FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale - One inch = 50 Feet

ANOMALOUS ZONE

POSSIBLE ANOMALOUS ZONE

NOTE

LOGARITHMIC CONTOUR INTERVAL

FREQUENCY 31 - 5 CPS.

DATE SURVEYED NOV. 1961

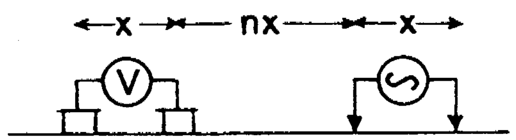
APPROVED PH

DATE 12/7/61

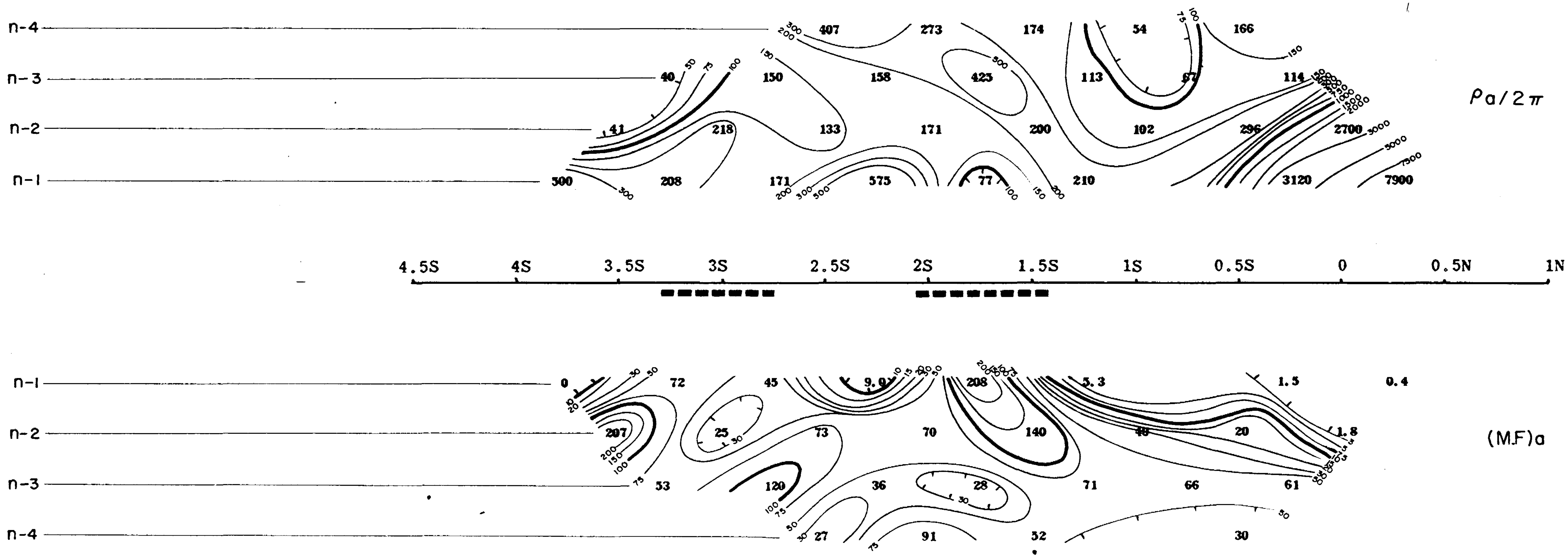
DWG. NO.- I. P.-2866-5

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



ELECTRODE CONFIGURATION
X - 50



LINE NO. 18 W

FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale - One inch = 50 Feet

ANOMALOUS ZONE

POSSIBLE ANOMALOUS ZONE

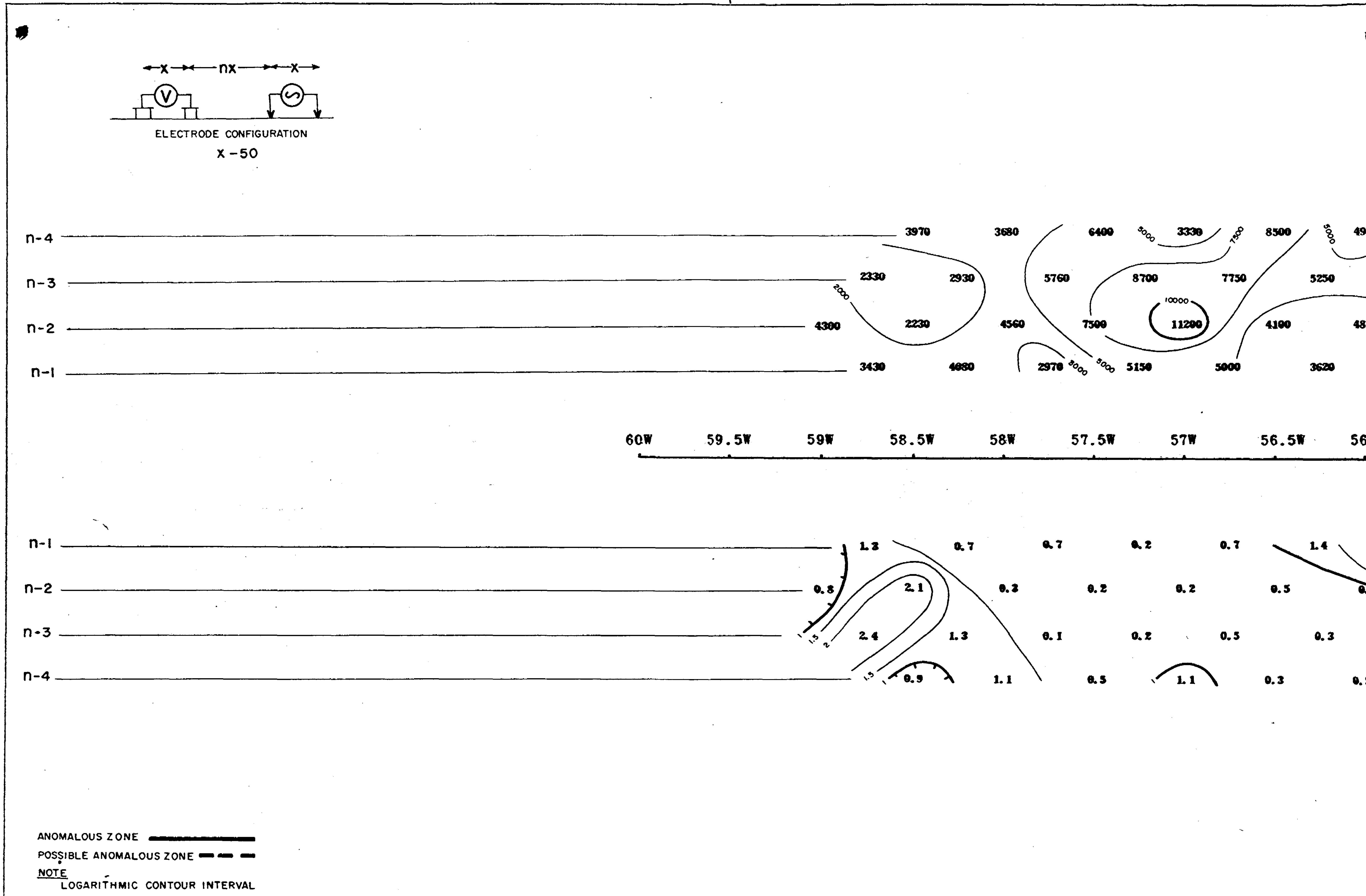
NOTE
LOGARITHMIC CONTOUR INTERVAL

FREQUENCY .31 - 5 CPS.

DATE SURVEYED NOV. 1961

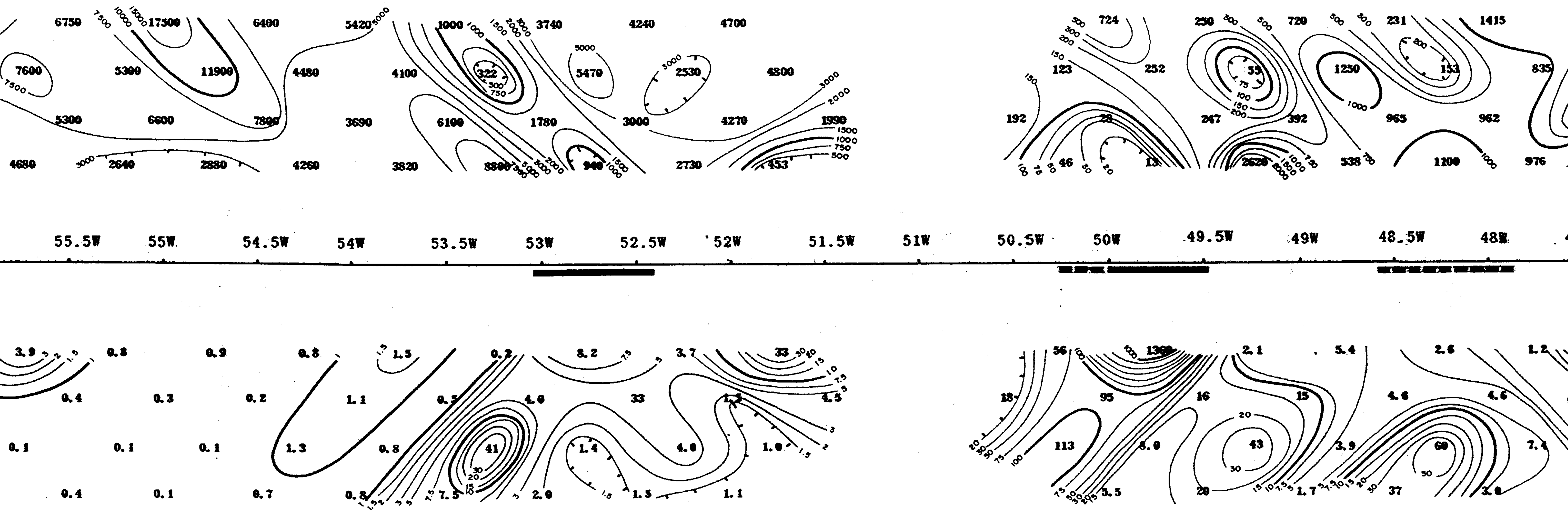
APPROVED PH

DATE 12/7/61


x
nx
x
V
ELECTRODE CONFIGURATION
X - 50
n-4
n-3
n-2
n-1
3970
3680
6400
3330
8500
4930
2330
2930
5760
8700
7750
5250
4300
2230
4560
7500
11200
4100
4870
3430
4080
2970
5150
5000
3620
2000
3000
5000
7500
10000
60W
59.5W
59W
58.5W
58W
57.5W
57W
56.5W
56W
n-1
n-2
n-3
n-4
1.3
0.7
0.7
0.2
0.7
1.4
0.8
2.1
0.2
0.2
0.2
0.5
2.4
1.3
0.1
0.2
0.5
0.3
0.9
1.1
0.5
1.1
0.3
0.5
1
1.5
2
ANOMALOUS ZONE
POSSIBLE ANOMALOUS ZONE
NOTE
LOGARITHMIC CONTOUR INTERVAL

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

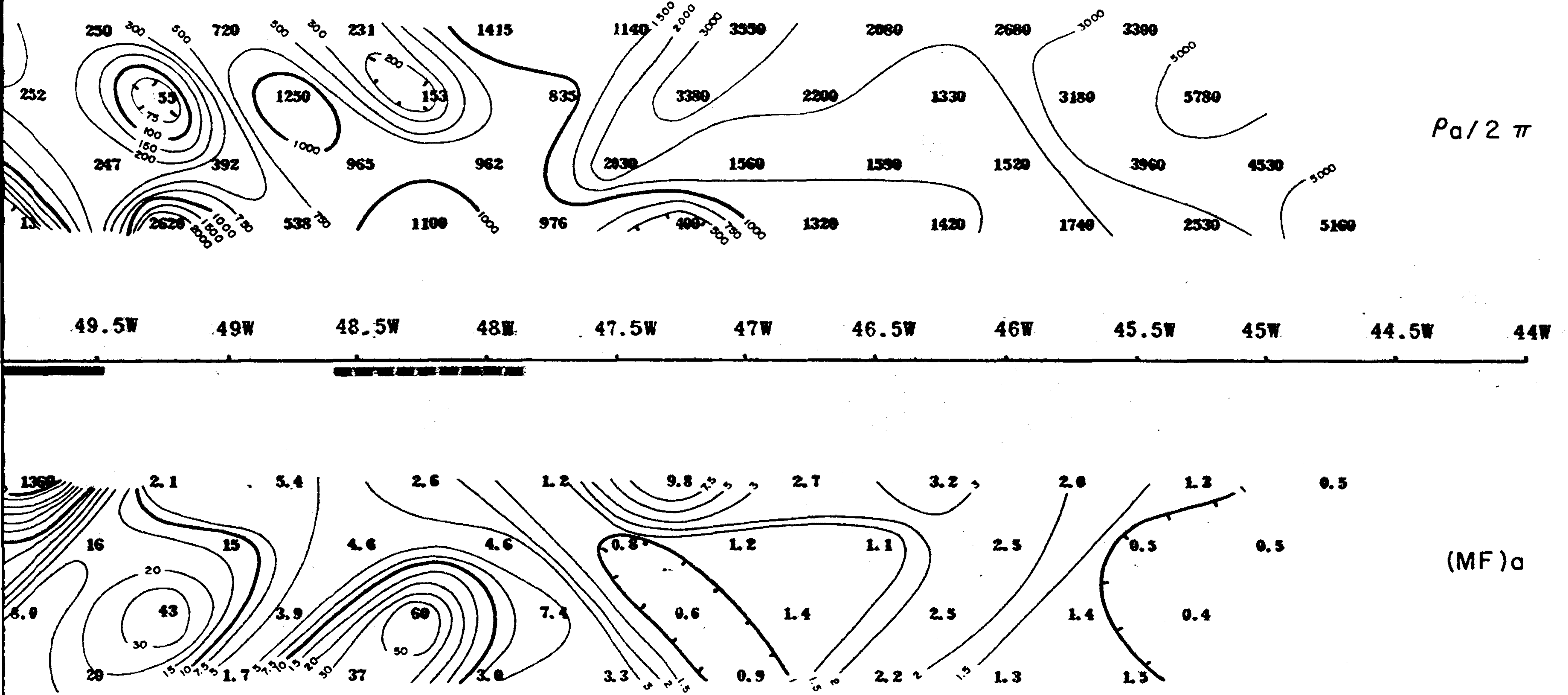


FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale – One inch = 50 Feet



LINE NO. BASE LINE

FREQUENCY .31 – 5 C.P.S.

DATE SURVEYED NOV. 1961

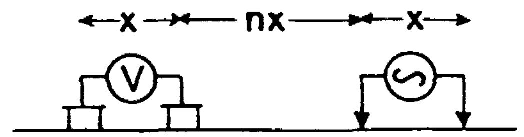
APPROVED PH

DATE 12/7/61

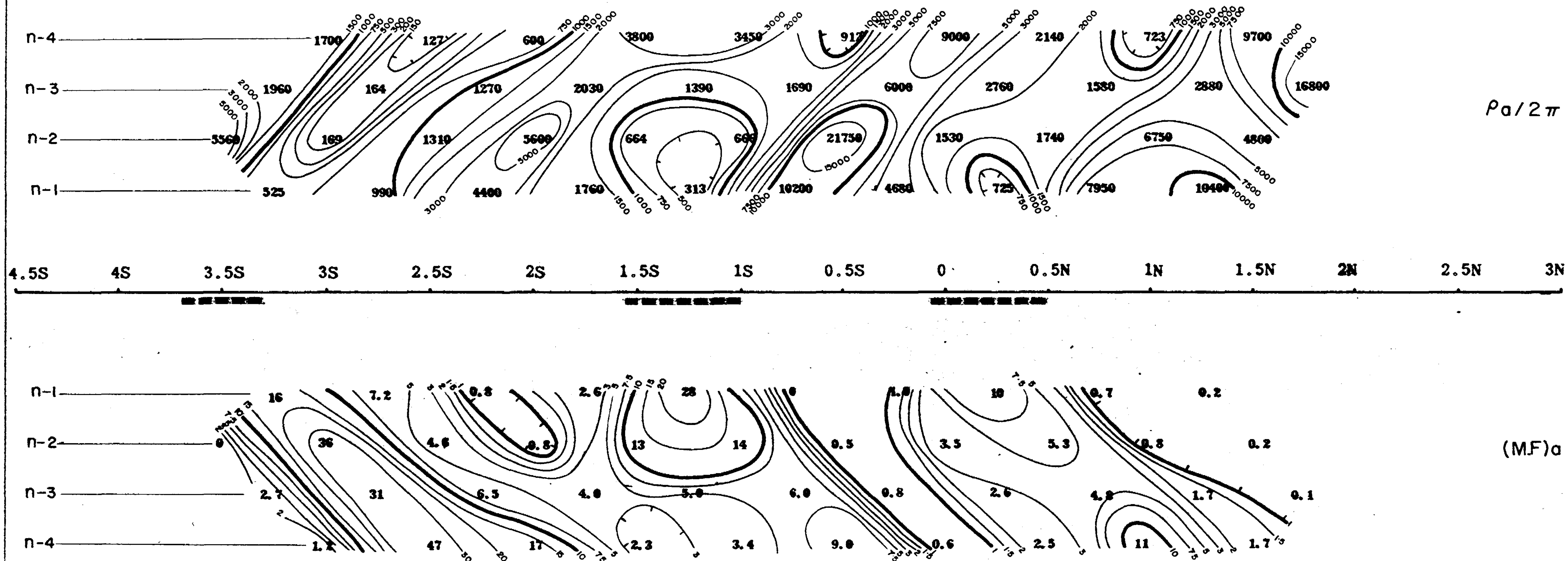
DWG. NO.-I.P.-2867-I

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



ELECTRODE CONFIGURATION
X - 50



LINE NO. 36 W

FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale - One inch = 50 Feet

ANOMALOUS ZONE
POSSIBLE ANOMALOUS ZONE
NOTE
LOGARITHMIC CONTOUR INTERVAL

FREQUENCY .31 - 5 CPS.

DATE SURVEYED NOV. 1961

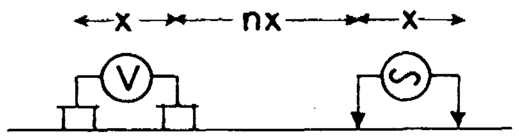
APPROVED PH

DATE 12/7/61

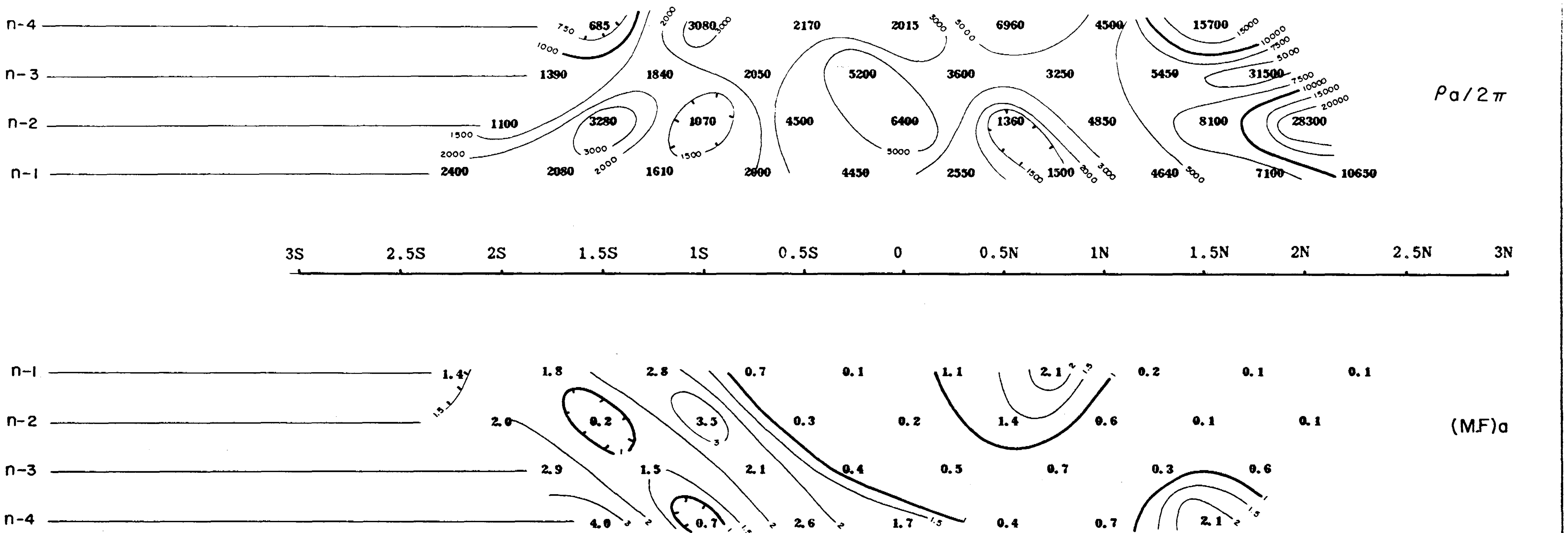
DWG. NO.-I.P.-2867-2

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



ELECTRODE CONFIGURATION
X - 50



FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale- One inch = 50 Feet

ANOMALOUS ZONE

POSSIBLE ANOMALOUS ZONE

NOTE
LOGARITHMIC CONTOUR INTERVAL

FREQUENCY .31 - 5 CPS.

DATE SURVEYED NOV. 1961

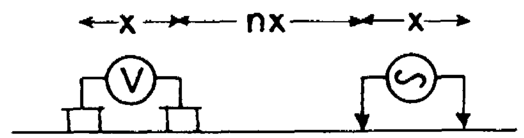
APPROVED PH

DATE 12/7/61

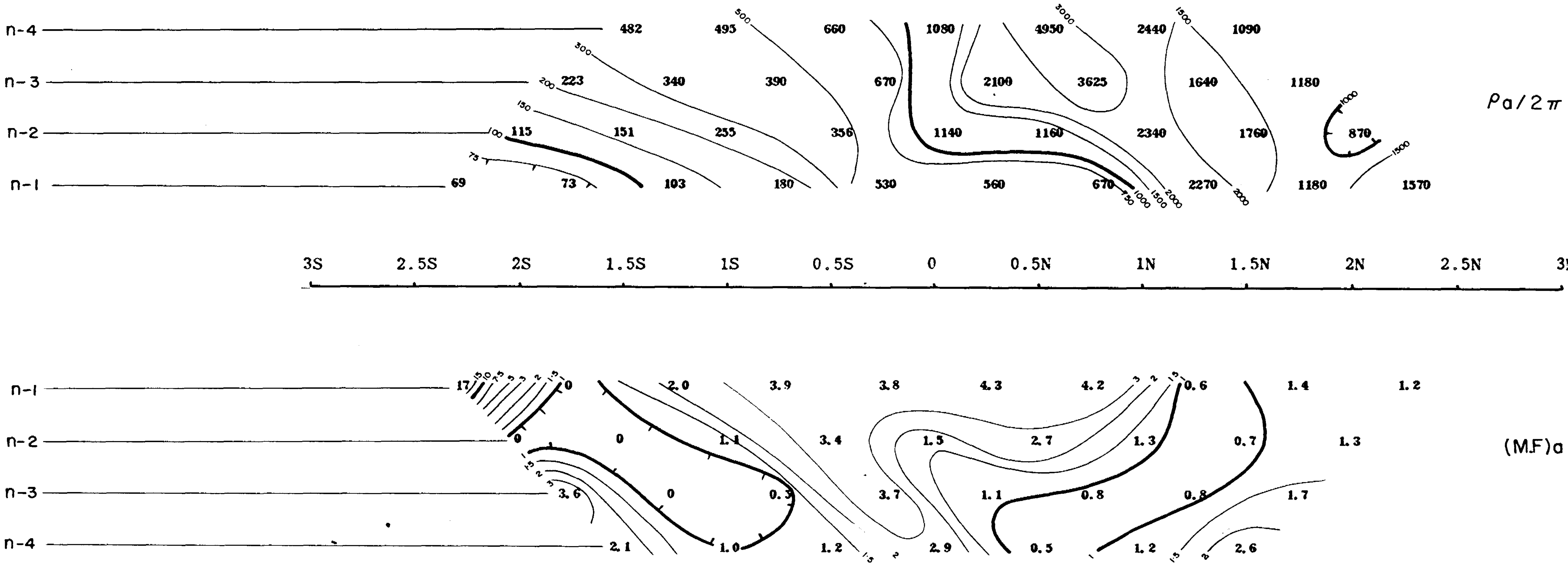
DWG. NO.-I. P.-2867-3

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



ELECTRODE CONFIGURATION
X – 50



LINE NO. 40 W

FREQUENCY .31 – 5 C.P.S.

DATE SURVEYED NOV. 1961

FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale – One inch = 50 Feet

APPROVED PH

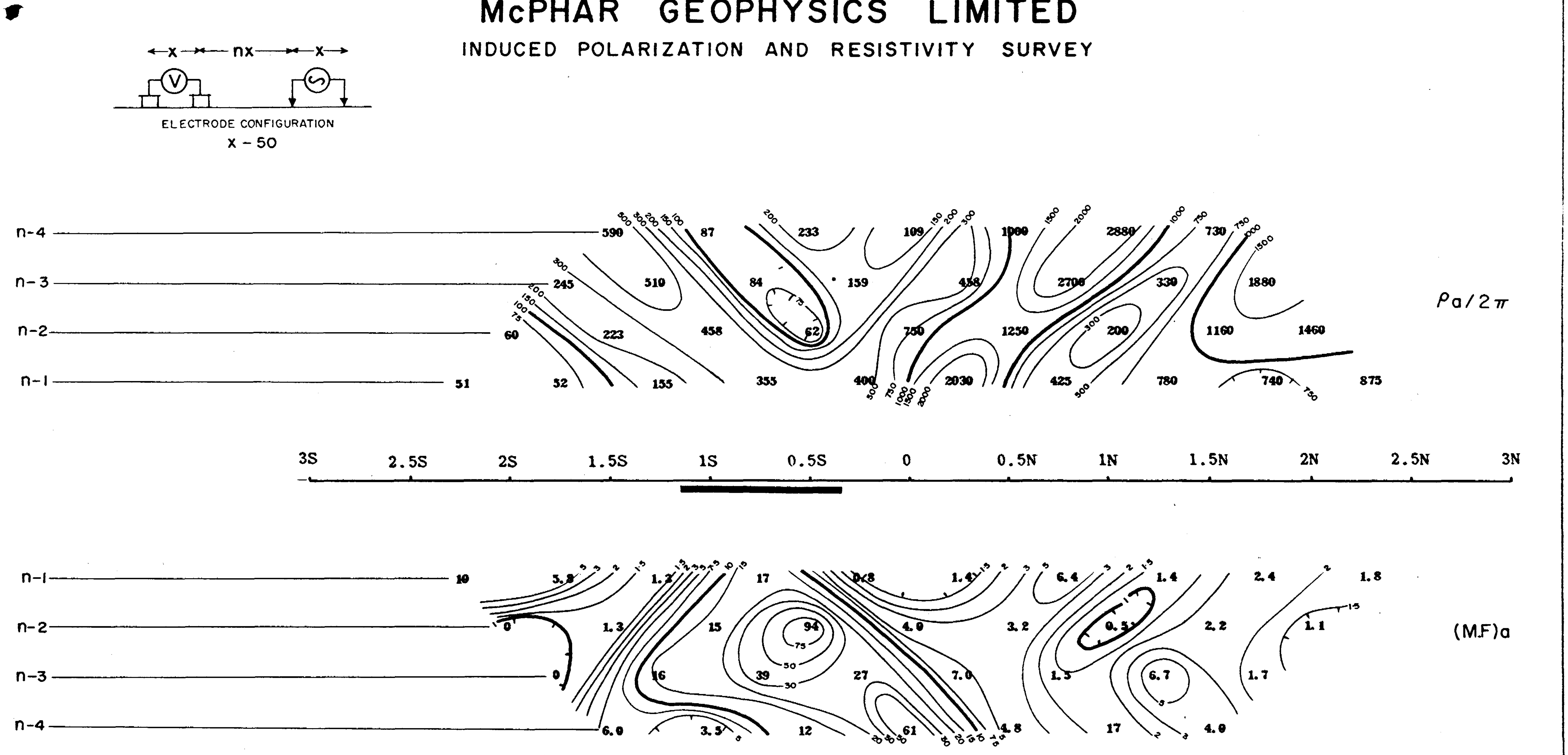
DATE 12/7/61

ANOMALOUS ZONE
POSSIBLE ANOMALOUS ZONE
NOTE
LOGARITHMIC CONTOUR INTERVAL

DWG. NO.-I. P.-2867-4

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale - One inch = 50 Feet

ANOMALOUS ZONE

POSSIBLE ANOMALOUS ZONE

NOTE
LOGARITHMIC CONTOUR INTERVAL

FREQUENCY .31 - 5 CPS.

DATE SURVEYED NOV. 1961

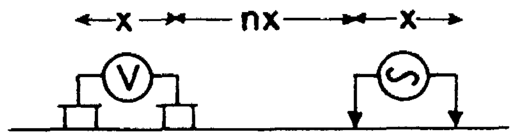
APPROVED PH

DATE 12/7/61

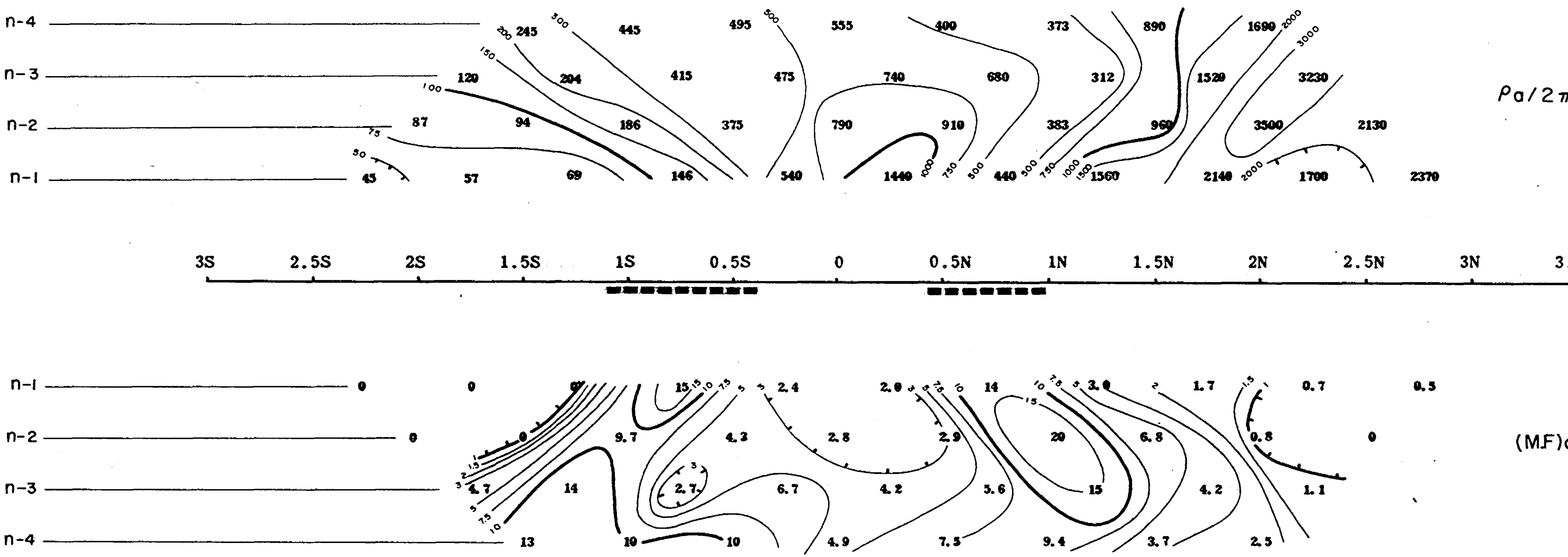
DWG. NO.- I.P.-2867-5

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



ELECTRODE CONFIGURATION
x - 50



LINE NO. 44 W

FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale - One inch = 50 Feet

ANOMALOUS ZONE
POSSIBLE ANOMALOUS ZONE
NOTE
LOGARITHMIC CONTOUR INTERVAL

FREQUENCY 31 - 5 CPS.

DATE SURVEYED NOV. 1961

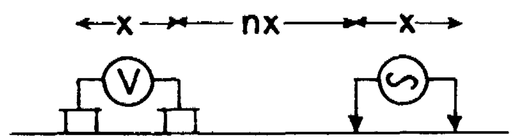
APPROVED PH

DATE 12/7/61

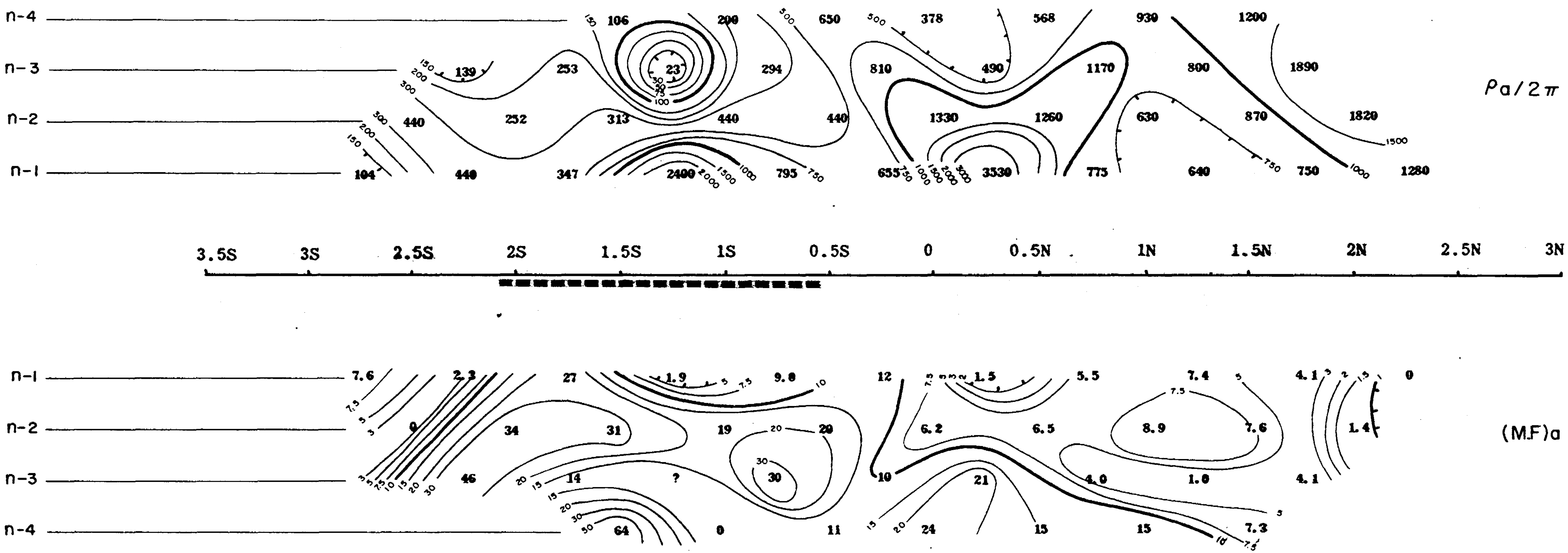
DWG. NO.- I. P.- 2867-6

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



ELECTRODE CONFIGURATION
x - 50



LINE NO. 46 W

FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale - One inch = 50 Feet

ANOMALOUS ZONE

POSSIBLE ANOMALOUS ZONE

NOTE
LOGARITHMIC CONTOUR INTERVAL

FREQUENCY .31 - 5 CPS.

DATE SURVEYED NOV. 1961

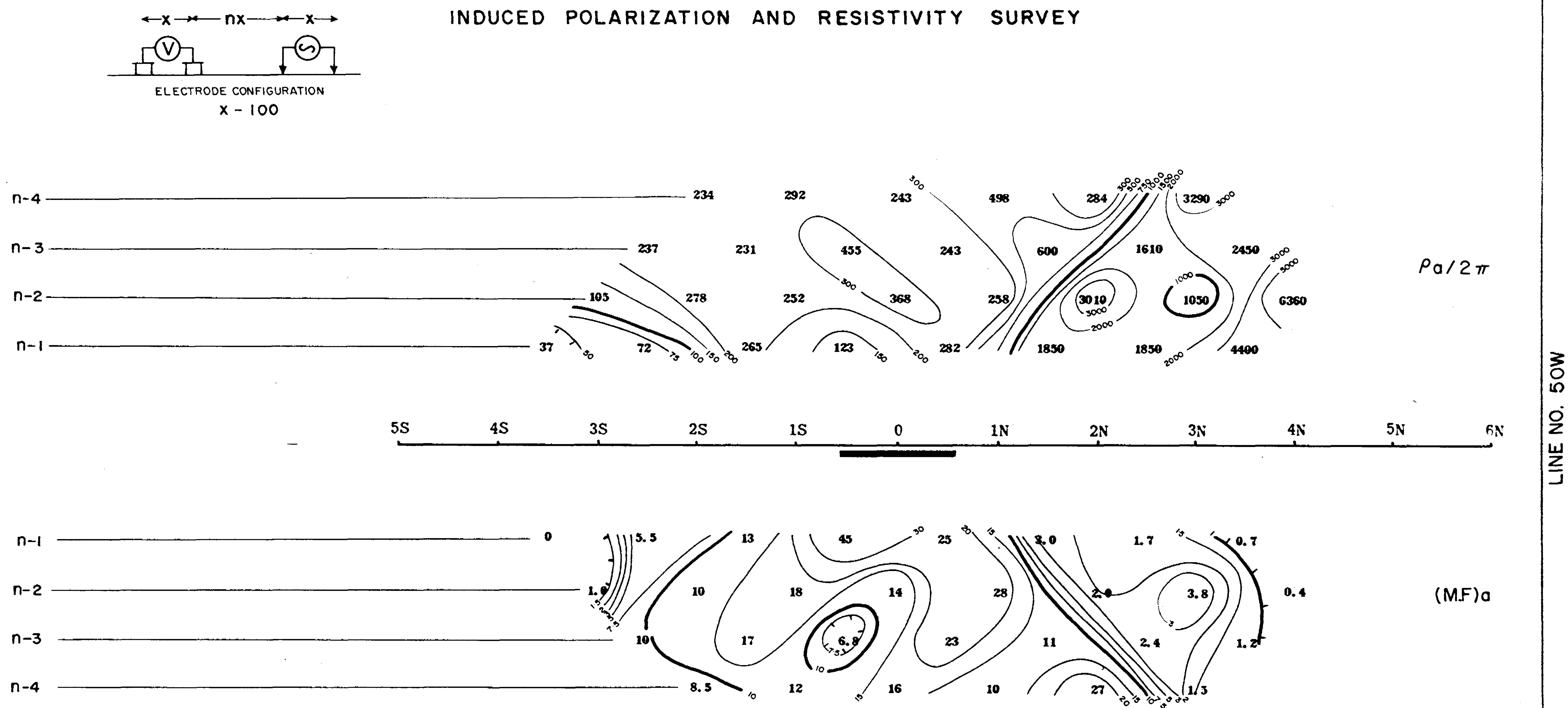
APPROVED [signature]

DATE 12/7/61

DWG. NO.-I.P.-2866-I

McPHAR GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY



FIDELITY MINING INVESTMENTS LIMITED

BOSTON CREEK PROPERTY

PACAUD TWP. ONTARIO

Scale - One inch = 100 Feet

ANOMALOUS ZONE

POSSIBLE ANOMALOUS ZONE

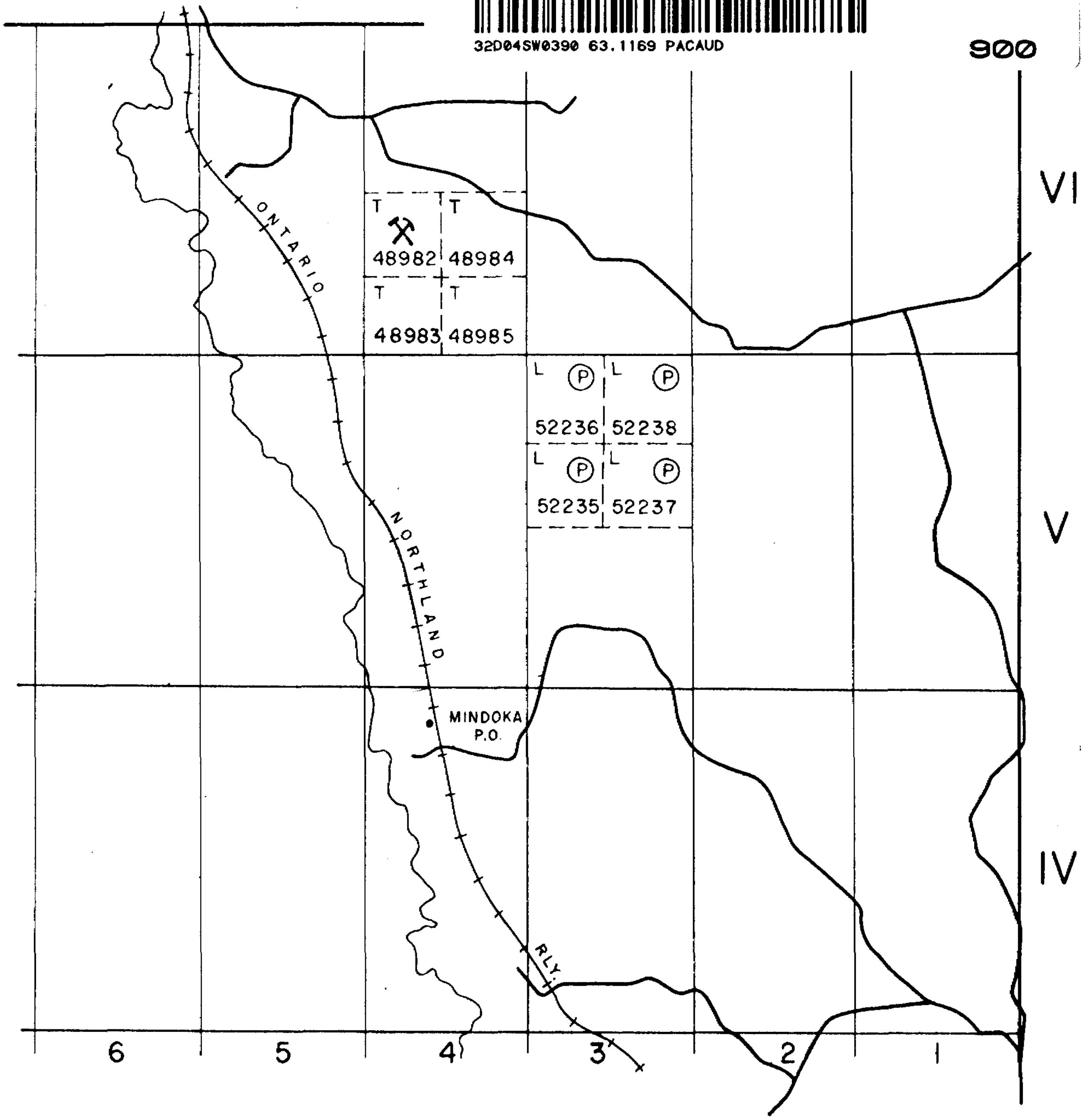
NOTE
LOGARITHMIC CONTOUR INTERVAL

FREQUENCY .31 - 5 CPS.

DATE SURVEYED NOV. 1961

APPROVED

DATE 12/7/61



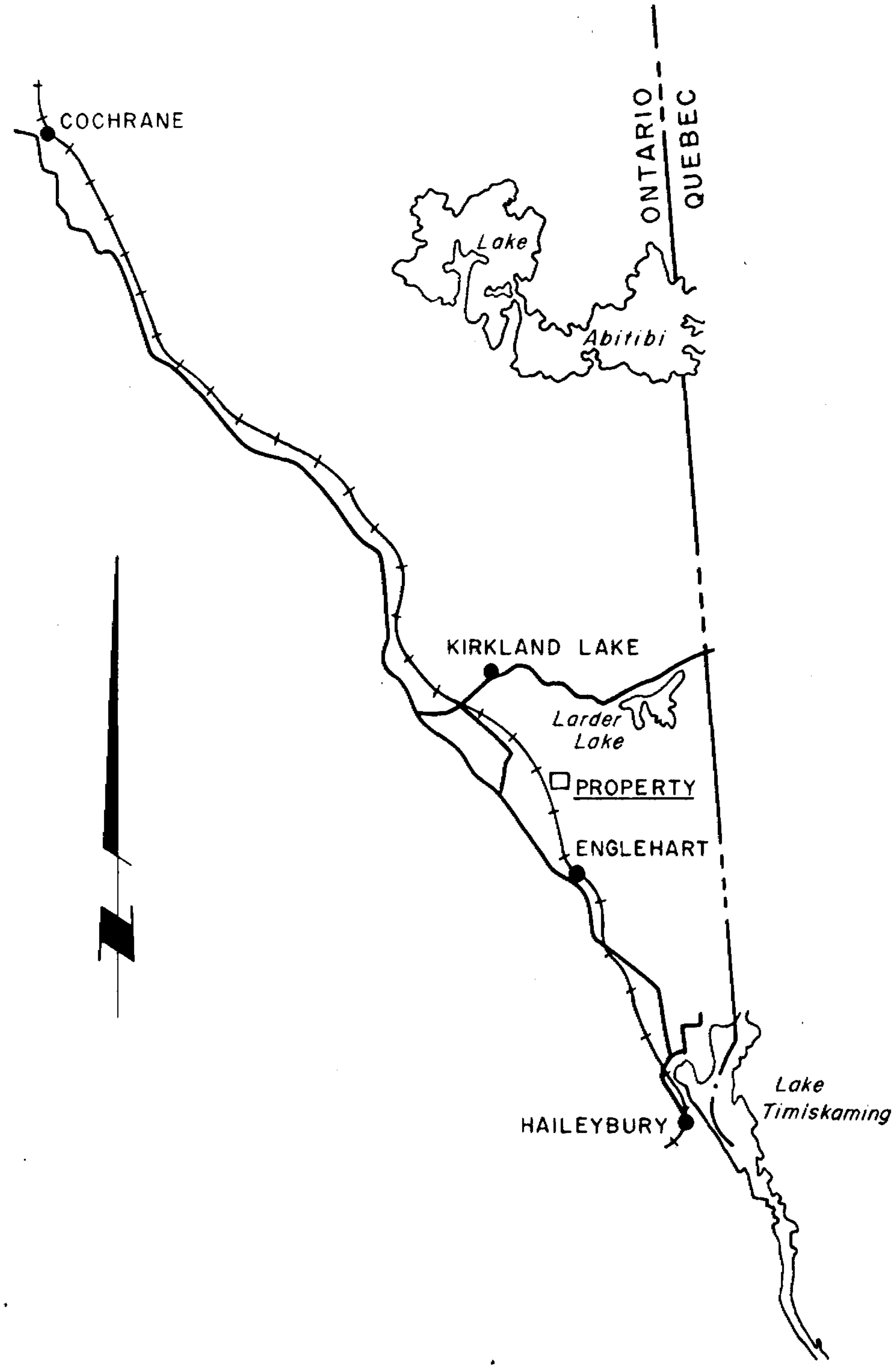
CLAIMS PLAN.

TOWNSHIP OF PACAUD DISTRICT OF TIMISKAMING

FIDELITY MINING INVESTMENTS LTD.

SCALE : 1 INCH TO 40 CHAINS

DATE : SEPTEMBER 1961

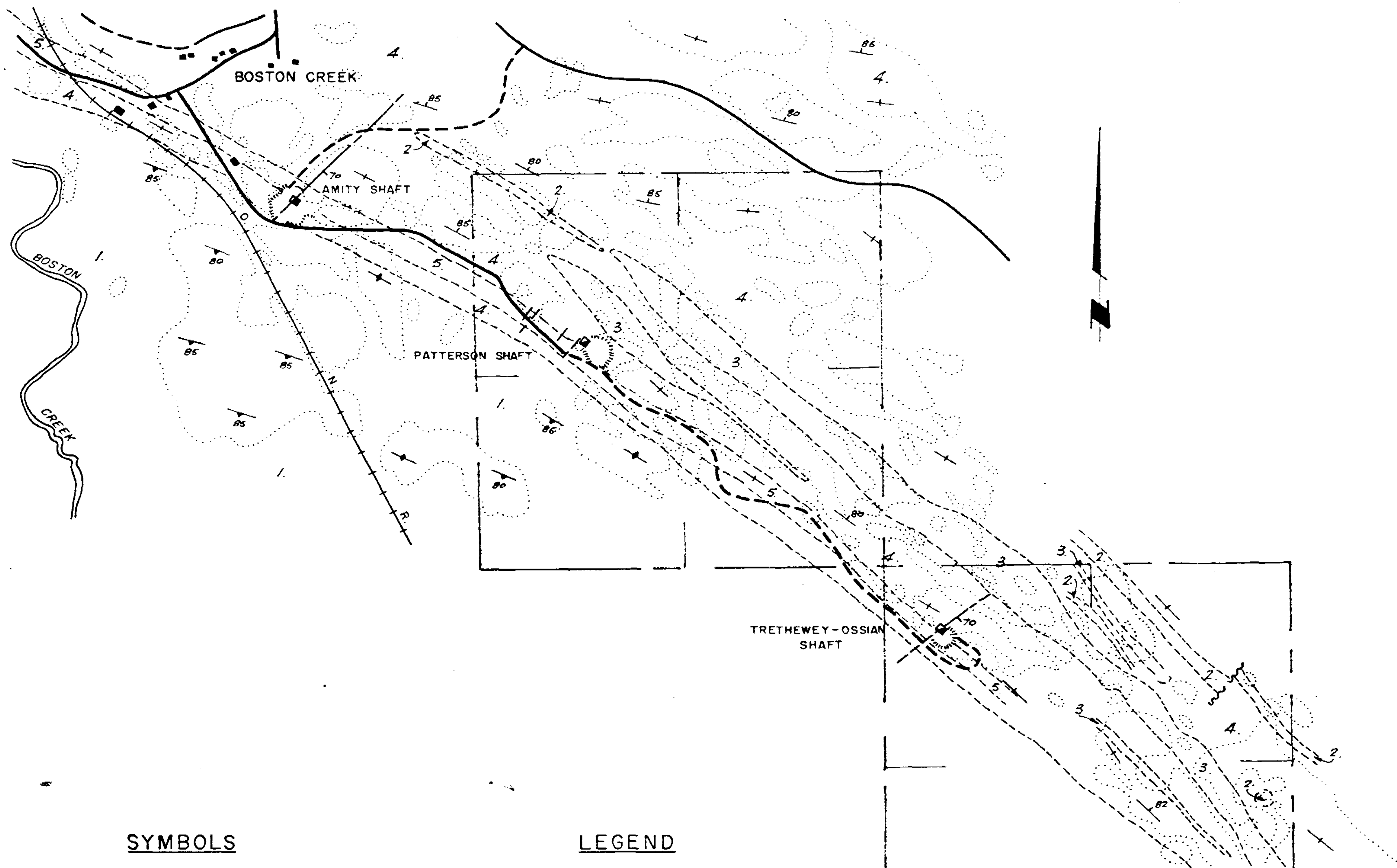


LOCATION MAP

FIDELITY MINING INVESTMENTS LTD.

SCALE : 1 INCH TO 20 MILES

DATE : SEPTEMBER 1961



SYMBOLS

- SECONDARY ROAD
- WAGON ROAD
- ASSUMED GEOLOGICAL BOUNDARY
- ROCK OUTCROP
- VERTICAL MINE SHAFT

LEGEND

1.	BATHOLITHIC GRANITE
2.	FELDSPAR PORPHYRY
3.	DIORITE (INTRUSIVE)
4.	DARK GREY TUFF
5.	ACID TUFF

FIDELITY MINING INVESTMENTS LTD.

GEOLOGY PLAN

SCALE : 1 INCH to 800 FEET | DATE : SEPTEMBER 1961


LEGEND
FAULTING (KNOWN, ASSUMED)
GEOLOGICAL BOUNDARY
CLAIM POST & BOUNDARY
BASE & PICKET LINE
40+00
TWO COMPARTMENT SHAFT
PIT, TRENCH
DIAMOND DRILL HOLE
1 IRON FORMATION
2 RHYOLITE TUFF
3 DACITE TUFF
4 ANDESITE TUFF
5 ANDESITE FLOW
6 DIORITE
7 AMPHIBOLITE
8 RHYOLITE DIKE
9 QUARTZ-FELDSPAR PORPHYRY
10 GRANITE GNEISS
Q QUARTZ
SULPHIDES - PYRITE-Py, CHALCOPYRITE-Cpy, PYRRHOTITE-Po.
FIDELITY MINING INVESTMENTS LTD.
BOSTON CREEK PROPE
PACAUD TOWNS ONTARIO
SCALE - 1 inch - 100 FEET
NOV. 9, 1961
63.1169
BASE LINE

CONTOUR INTERVAL

2000γ
1200γ
800γ
600γ
500γ
400γ
200γ

FIDELITY MINING INVESTMENTS LTD.

BOSTON CREEK PROPERTY

PACAUD TOWNSHIP

MAGNETOMETER SURVEY

SCALE 1" to 100'

OCTOBER 1961

63.1169

210

FIDELITY MINING INVESTMENTS LTD.

BOSTON CREEK PROPERTY

PACAUD TOWNSHIP

ELECTRO-MAGNETIC SURVEY

SCALE : 1" to 100'

OCTOBER 1961

63.1169

220