

GEOPHYSICAL REPORT ON  
AN INDUCED POLARIZATION SURVEY  
ON THE 92P/8 EAGLE CREEK GROUP  
OF ROYAL CANADIAN VENTURES LTD.  
LITTLE FORT, B.C., 51° 120° SE  
BY J.A. WOODARD, JULY 24th, 1968

1639

**GEOSEARCH CONSULTANTS LIMITED**

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INDUCED POLARIZATION SURVEY

for

ROYAL CANADIAN VENTURES LTD.

on the

92 P-8 EAGLE CREEK GROUP

LITTLE FORT AREA, B. C.

(To Accompany Map #68-40)

July 24th, 1968.

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Induced Polarization Profiles: 1" = 200'

Line 36W 1  
" 28W 2  
" 20W 3  
" 12W 4  
" 4W 5  
" 4E 6  
" 12E 7  
" 20E 8  
"

In Pocket: Plan of Induced Polarization Survey,  
1" = 400' 9

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## INTRODUCTION

A Variable frequency induced polarization survey, using the McPhar Model 650 equipment, was carried out for Royal Canadian Ventures Ltd., on the 92 P-8 Eagle Creek Group in June, 1968. The property is located 13 miles west of Little Fort, B. C. It is accessible from the Bridge Lake road via a Jeep road to Janice Lake.

The purpose of this survey was to locate sulphide zones which might prove to be base metal deposits of economic importance. Anomalous conditions were encountered on portions of three adjacent lines.

The accompanying maps show the area surveyed and the results obtained.

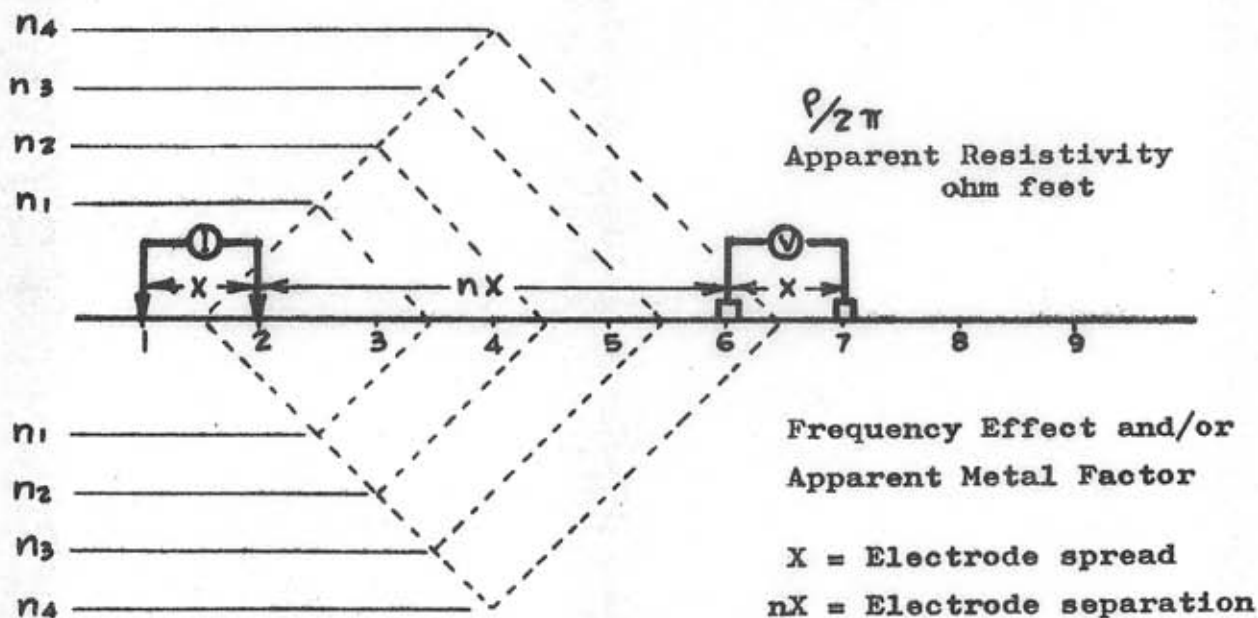
THE INDUCED POLARIZATION METHOD

Induced Polarization surveys have gained widespread acceptance in recent years among mining exploration geologists and geophysicists in the continuing search for mineral deposits. Although Schlumberger recognized polarization effects as early as 1920 it wasn't until the late forties that any application of the phenomena was made in North America.

Induced polarization effects or "over voltage effects" are established whenever current is caused to flow across an interface between ionic and electronic conducting mediums, as in the case when current is passed through a volume of rock which contains metallic minerals such as most sulphides, graphite, magnetite and certain other oxides. Two field techniques have been developed to measure this phenomena and are usually referred to as the Transient or D.C.I.P. and the Variable Frequency or A.C.I.P. In the transient method a steady current is made to flow between current electrodes over a short period of time and then abruptly interrupted. The polarization effects are then measured over a short interval while the voltages decay slowly. This is also referred to as the "Time Domain" method.

During the present survey the second technique was used in which sinusoidal current at two low but well separated frequencies (0.31 and 5 cps) was passed through the current electrodes and the ground. The impedance of a system which can be polarized will vary with frequency and therefore if the ground can be polarized the impedances measured will vary with the various frequencies used. This "Frequency Effect" can be expressed as  $\frac{R_1 - R_2}{R_1} \times 100$  where  $R_1$  and  $R_2$  are the apparent resistivities at the lower and higher frequencies respectively.

During the present survey the Eltran electrode array was used which is illustrated in the accompanying diagram. In this procedure current is applied to the ground at two electrodes at a distance  $X$  apart. The potentials are measured at two other points also  $X$  feet apart and separated by a distance  $N$  times  $X$ . Measurements are made along a line keeping all electrodes in line at one or more separations or values of  $n$ .



ELTRAN ARRAY SHOWING PLOTTING POSITION

Both the apparent resistivity and frequency effect are measured for each change in electrode separation. These measurements are plotted as profiles or contoured sections, with the values being plotted at the intersection of grid line from the centre of the current electrodes and the centre of the potential electrodes. The resistivity values are shown above the line and the frequency effect and/or "metal factor" below the line.

- 3 -

The "Metal Factor" can be defined as  $\frac{FE}{Ra} X 1000$  and is often useful in that I.P. effects are emphasized, particularly where concentrated and conducting sulphides are expected.

The choice of electrode spacing (X) depends on the size of the body which can be expected and the depth of penetration desired. Penetration can also be achieved by measuring increasing values of n (1, 2, 3, 4, 5, and 6) however the time and expense involved may suggest increased values for X as a more practical approach.

Measurements of two or more values of n give a varying penetration and therefore are useful in estimating changes in I.P. effects and resistivity with depth. The "contoured profiles" should not however be considered true sections of the electrical properties of the ground below the survey line.

Metallic minerals are not the only causes of I.P. effects. A number of possible contributory agents have been established, such as some types of clay minerals, however many I.P. anomalies are as yet unexplained. The method, nevertheless, can be a valuable exploration tool when used in particular applications where its higher costs relative to other geophysical methods is justified.

## RESULTS

The area surveyed was underlain by a fairly thin layer of wet clay. This caused some problems as most of the current confined itself to this shallow layer, possibly masking induced polarization effects at depth. In some cases, usually on N3, it was impossible to obtain the required 45 microamperes of current between the two receiving electrodes. Readings in these cases have been question-marked; the F.E. readings being of doubtful validity. In other cases the electrode resistance was too high compared with the overall resistance. This sometimes resulted in negative F. E. readings and in some cases no readings could be obtained.

The "metal factor" values have been neither calculated nor plotted. The low resistivities would result in very high values for the metal factor which, in many cases, would be misleading.

The strongest anomaly was located on Line 20E from approximately 21N to 28N. There is a significant resistivity drop coinciding with higher than normal frequency effect readings. A possible anomalous zone has been indicated from 32N to 36N. The resistivities over this zone are higher than normal, hence it is classed only as "possible".

The readings seem to indicate a possible geological contact near 22N.

The anomalous zones located on Lines 12E and 4E are quite weak and have little significant resistivity drops. They probably are part of the same zone or zones located on Line 20E.



RECOMMENDATIONS

Detailed prospecting and mapping should be carried out in the vicinity of the anomalies. The decision whether to diamond drill should be made only after this work is completed.

Respectfully submitted,

MOREAU, WOODARD & COMPANY LTD.



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J. A. Woodard, P. Eng.,  
Consulting Geophysicist

JAW/om

ASSESSMENT WORK DETAILS

Field Work - June 15 - 29, 1968.

Operator - J. A. Woodard, Scarborough, Ont., ..... 10  
Operator - Robert Lee, Toronto, Ont., ..... 10  
Helper - Gordon Bryant, Toronto, Ont., ..... 10  
Helper - Marcel Saucier, Val D'Or, Quebec, ..... 10  
" " 10

Drafting, Consulting & Compilation - July 15-25, 1968.

J. A. Woodard, Scarborough, Ontario, ..... 4  
8 hr. days

*J. A. Woodard*  
-----  
J. A. Woodard, P. Eng.

CERTIFICATION

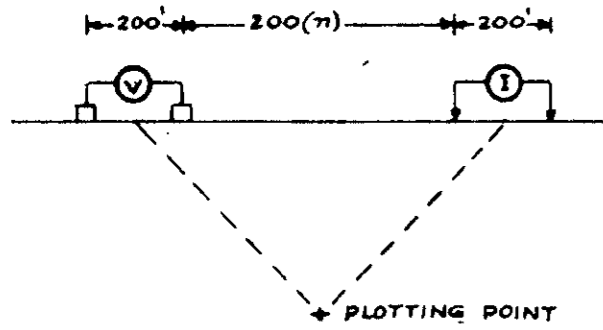
I, James Austin Woodard, of the Borough of Scarborough, in the Province of Ontario, hereby certify:

1. That I am a member of the Association of Professional Engineers, Province of Ontario and Province of Manitoba, residing at 77 Toynbee Trail, Scarborough, Ontario.
2. That I graduated from the University of Manitoba in 1947 with a B.Sc. degree.
3. That I have been engaged in mining exploration as a geologist and geophysicist for the past 20 years.
4. That I do not have, nor do I expect to receive either directly or indirectly, any interest in the property, or in the securities of Royal Canadian Ventures Limited.
5. That the information contained in this report is based on geophysical data measured by myself and personnel of Moreau, Woodard & Company, Ltd., under my direct supervision.

Dated this 24th day of July, 1968.

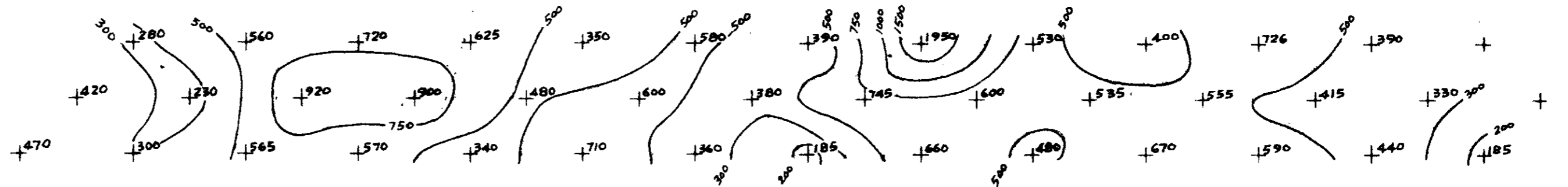
  
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J. A. Woodard, P. Eng.

**ELECTRODE CONFIGURATION**

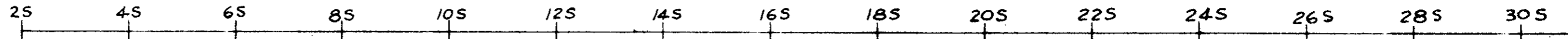


**INDUCED POLARIZATION & RESISTIVITY SURVEY  
BY  
MOREAU, WOODARD & CO. LTD.**

η 3 \_\_\_\_\_  
η 2 \_\_\_\_\_  
η 1 \_\_\_\_\_

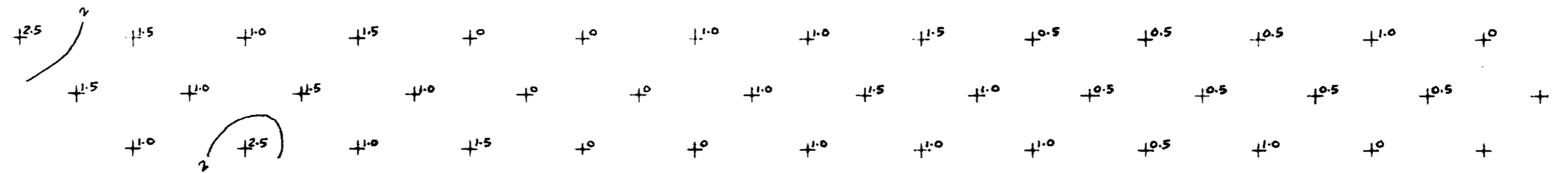


**APPARENT RESISTIVITY**



**METAL FACTOR + FREQ. EFFECT**

η 1 \_\_\_\_\_  
η 2 \_\_\_\_\_  
η 3 \_\_\_\_\_



**ANOMALOUS AREA**

DEFINITE —————  
PROBABLE - - - - -  
POSSIBLE |||||

FREQUENCIES : 0.3 & 5.0 Hz.

**ROYAL CANADIAN VENTURES LTD.**

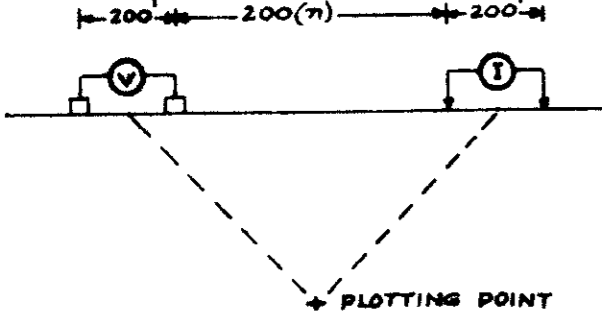
92P-8 EAGLE CREEK GROUP  
LITTLE FORT AREA  
BRITISH COLUMBIA

SCALE : 1 INCH = 200 FEET

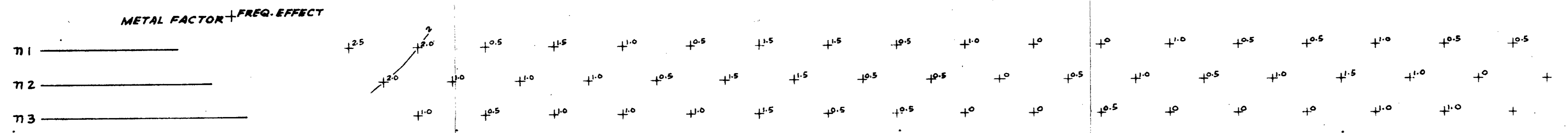
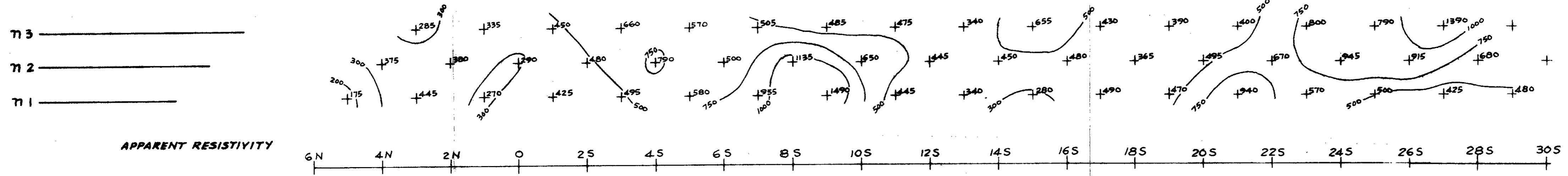
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LINE 36W

**ELECTRODE CONFIGURATION**



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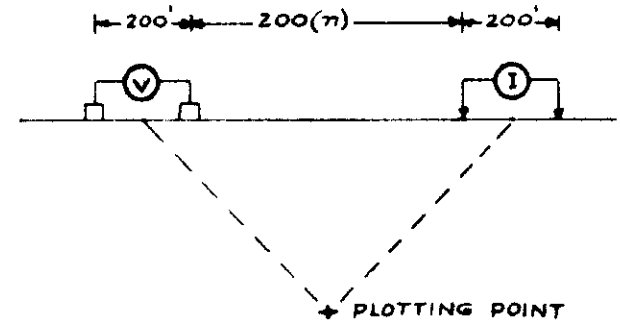
**ANOMALOUS AREA**  
DEFINITE —————  
PROBABLE - - - - -  
POSSIBLE // // // // //  
FREQUENCIES : 0.3 & 5.0 Hz.

**ROYAL CANADIAN VENTURES LTD.**  
92P-8 EAGLE CREEK GROUP  
LITTLE FORT AREA  
BRITISH COLUMBIA  
SCALE : 1 INCH = 200 FEET

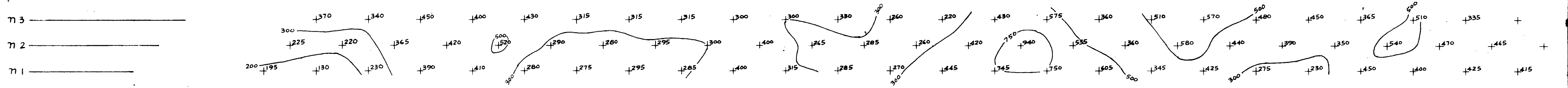
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LINE 28W

**ELECTRODE CONFIGURATION**



**INDUCED POLARIZATION & RESISTIVITY SURVEY**  
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APPARENT RESISTIVITY

24N 22N 20N 18N 16N 14N 12N 10N 8N 6N 4N 2N 0 2S 4S 6S 8S 10S 12S 14S 16S 18S 20S 22S 24S 26S

METAL FACTOR + FREQ. EFFECT

η1	+0.5	0	+0.5	+0.5	+1.0	+1.5	+1.5	+1.0	+0.5	+0.5	+1.0	+1.5	+1.0	+1.5	+1.5	+1.0	+1.0	+0.5	+1.0	+1.0	0	+1.0	+1.5	+1.0	+0.5
η2	+1.0	0	+1.0	0	+2.0	+1.5	+1.5	+1.5	+1.0	0	+2.0	0	+2.0	+1.5	+1.5	+0.5	+1.0	+1.5	+1.5	+1.0	+0.5	+0.5	+1.5	+1.0	+0.5
η3	0	+1.0	+1.5	+1.0	+2.0	+1.5	+2.0	0	+1.5	0	+2.0	+1.0	+1.5	+2.0	+1.0	+1.5	+1.0	+0.5	+1.5	+1.0	+1.0	+0.5	+0.5	+0.5	0

**ANOMALOUS AREA**

- DEFINITE —————
- PROBABLE - - - - -
- POSSIBLE // // // // //

FREQUENCIES : 0.3 & 5.0 Hz.

**ROYAL CANADIAN VENTURES LTD.**

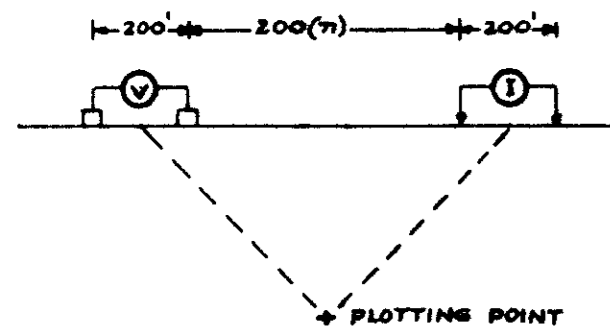
92P-8 EAGLE CREEK GROUP  
LITTLE FORT AREA  
BRITISH COLUMBIA

SCALE : 1 INCH = 200 FEET

1639

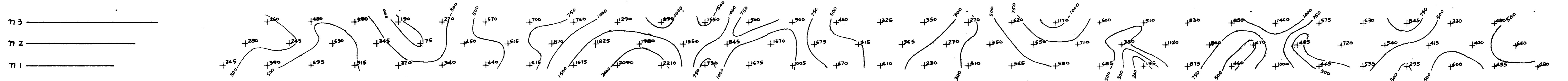
LINE 20W

**ELECTRODE CONFIGURATION**



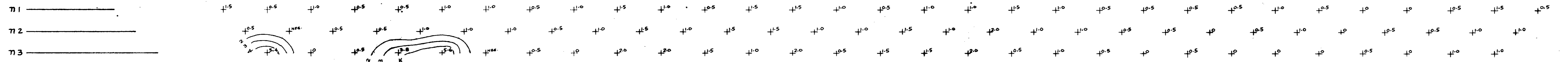
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BY  
**MOREAU, WOODARD & CO. LTD.**



APPARENT RESISTIVITY

METAL FACTOR + FREQ. EFFECT



**ANOMALOUS AREA**

- DEFINITE —————
- PROBABLE - - - - -
- POSSIBLE / / / / /

FREQUENCIES : 0.3 & 5.0 Hz.

**ROYAL CANADIAN VENTURES LTD.**

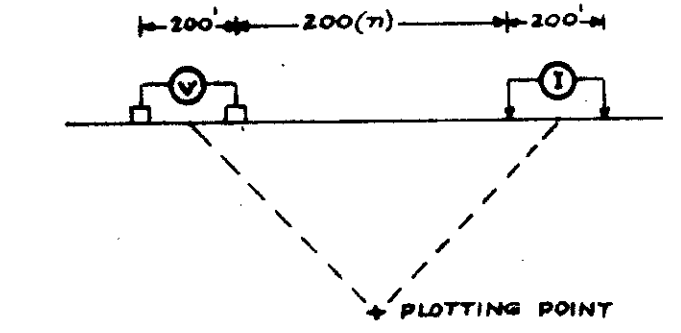
92P-8 EAGLE CREEK GROUP  
LITTLE FORT AREA  
BRITISH COLUMBIA

SCALE : 1 INCH = 200 FEET

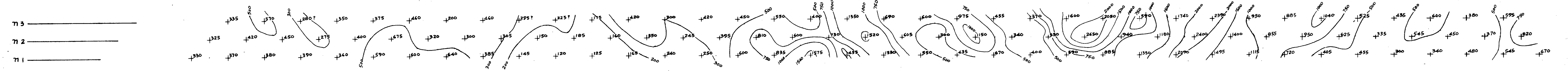
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LINE 12W

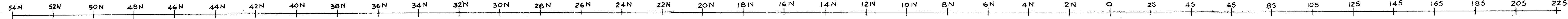
ELECTRODE CONFIGURATION



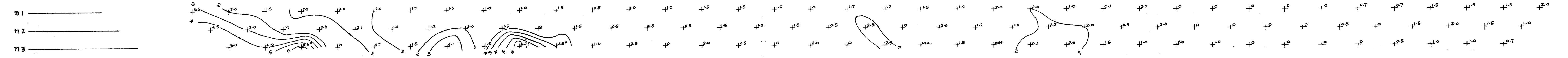
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BY  
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APPARENT RESISTIVITY



METAL FACTOR + FREQ. EFFECT



ANOMALOUS AREA  
DEFINITE ———  
PROBABLE - - - - -  
POSSIBLE / / / / / / / / /  
FREQUENCIES: 0.3 & 5.0 Hz.

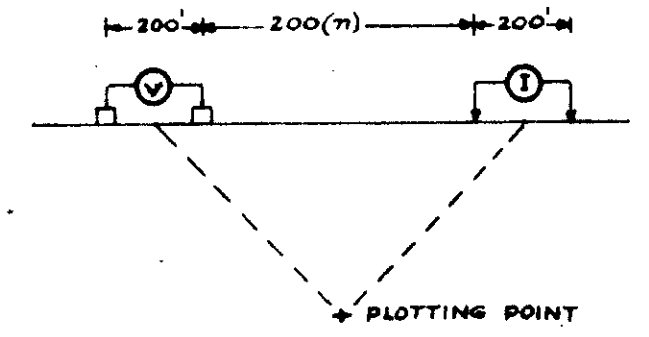
ROYAL CANADIAN VENTURES LTD.  
92P-8 EAGLE CREEK GROUP  
LITTLE FORT AREA  
BRITISH COLUMBIA  
SCALE: 1 INCH = 200 FEET

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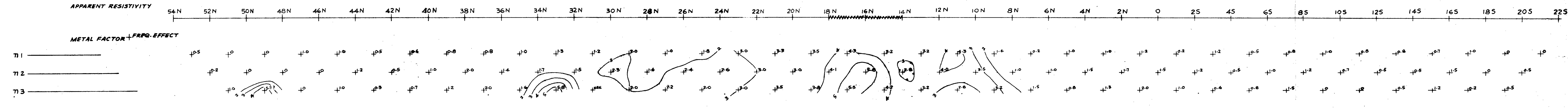
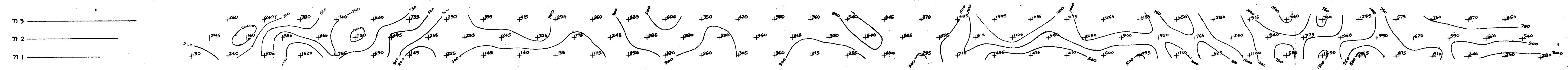
LINE 4 W



**ELECTRODE CONFIGURATION**



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BY  
**MOREAU, WOODARD & CO. LTD.**



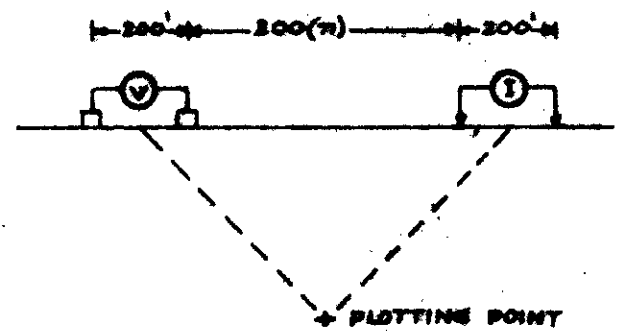
**ANOMALOUS AREA**  
DEFINITE ———  
PROBABLE - - - - -  
POSSIBLE //////////////  
FREQUENCIES : 0.3 & 5.0 Hz.

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92P-8 EAGLE CREEK GROUP  
LITTLE FORT AREA  
BRITISH COLUMBIA  
SCALE : 1 INCH = 200 FEET

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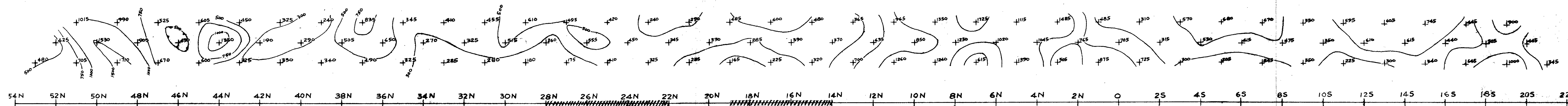
LINE 4E

ELECTRODE CONFIGURATION



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MOREAU, WOODARD & CO. LTD.

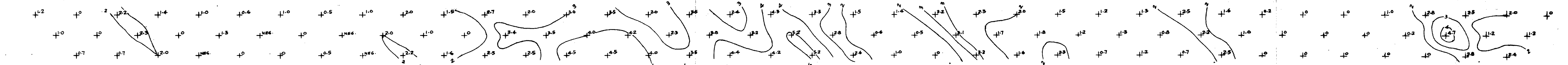
η 3  
η 2  
η 1



APPARENT RESISTIVITY

METAL FACTOR + FREQ. EFFECT

η 1  
η 2  
η 3



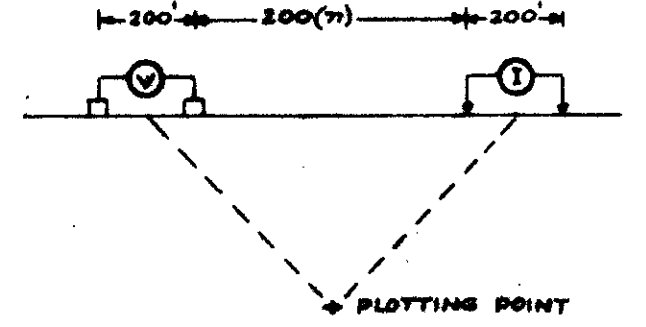
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DEFINITE ———  
PROBABLE - - - -  
POSSIBLE // // // // //  
FREQUENCIES : 0.3 & 5.0 Hz.

ROYAL CANADIAN VENTURES LTD.  
92P-B EAGLE CREEK GROUP  
LITTLE FORT AREA  
BRITISH COLUMBIA  
SCALE : 1 INCH = 200 FEET

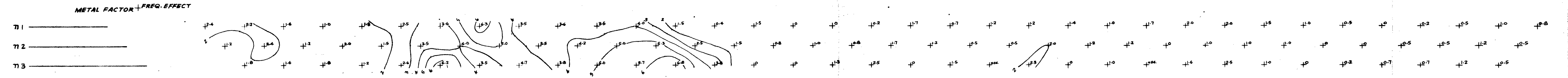
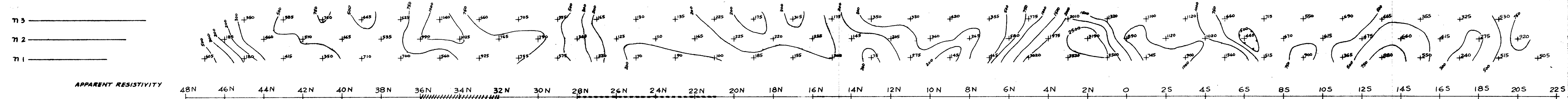
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LINE 12E

**ELECTRODE CONFIGURATION**



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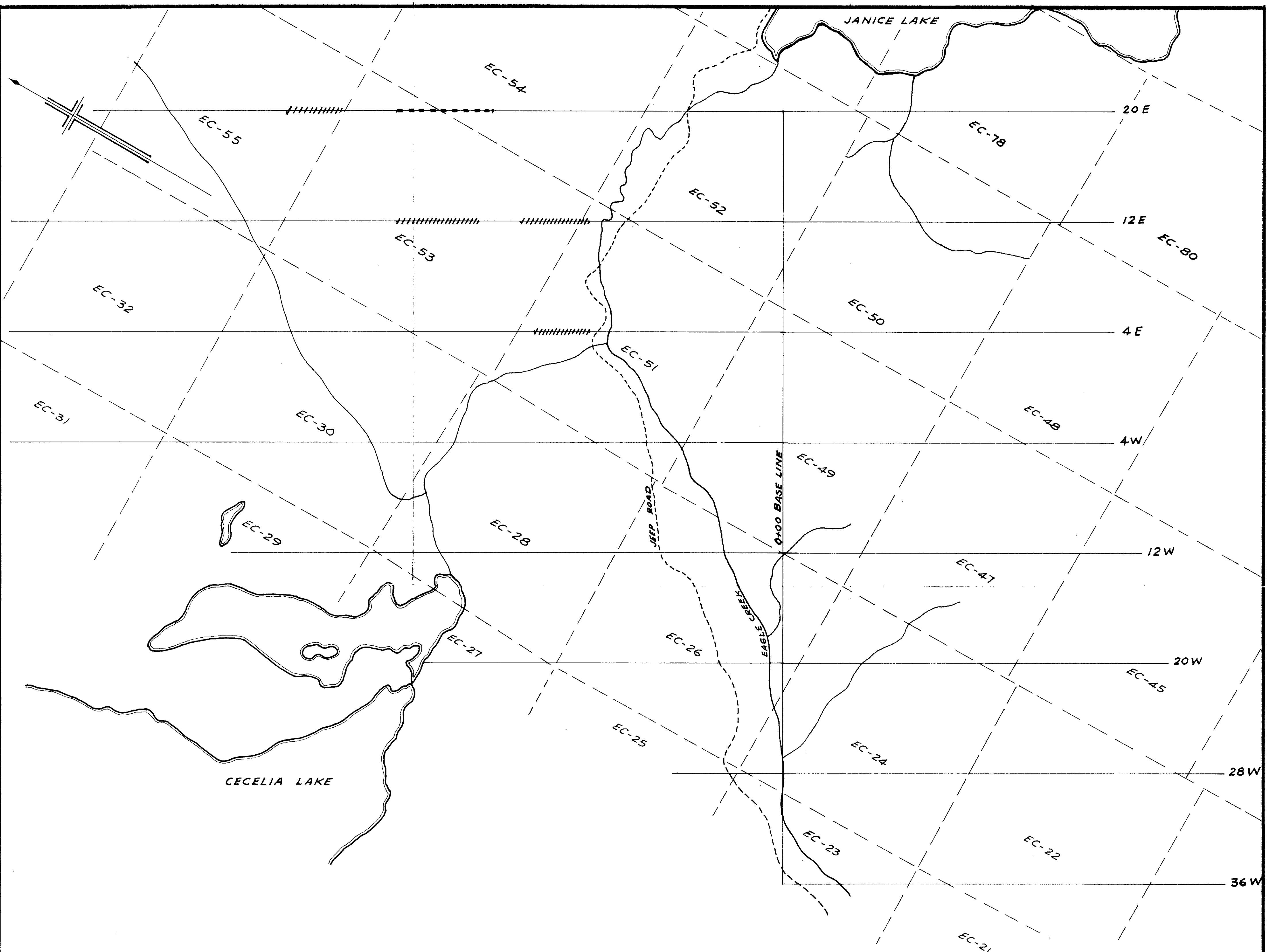


**ANOMALOUS AREA**  
DEFINITE —————  
PROBABLE - - - - -  
POSSIBLE //////////////  
FREQUENCIES : 0.3 & 5.0 Hz

**ROYAL CANADIAN VENTURES LTD.**  
92P-8 EAGLE CREEK GROUP  
LITTLE FORT AREA  
BRITISH COLUMBIA  
SCALE : 1 INCH = 200 FEET

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LINE 20E



to accompany report on an Induced Polarization Survey, by J. Woodard, dated July 24th, 1968

ANOMALOUS AREA  
 PROBABLE - - - - -  
 POSSIBLE ||| ||| ||| ||| |||

PLAN  
 OF  
 INDUCED POLARIZATION SURVEY  
 BY  
 MOREAU, WOODARD & CO. LTD.  
 FOR  
 ROYAL CANADIAN VENTURES LTD.  
 92P-8 EAGLE CREEK GROUP  
 LITTLE FORT AREA  
 BRITISH COLUMBIA  
 SCALE: 1 INCH = 400 FEET  
 DRAWN BY: J.W.  
 DATE: JULY, 1968

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