93-N Chuchi

GEOSEARCH CONSULTANTS LIMITED

INDUCED POLARIZATION SURVEY

for

ROYAL CANADIAN VENTURES LTD.

ON THE

93 N-1 CHUCHI GROUP

FORT ST. JAMES AREA, B. C.

(To Accompany Map #68-41)

July 24th, 1968.

INTRODUCTION

A variable frequency induced polarization survey, using the McPhar Model 650 equipment, was carried out for Royal Canadian Ventures Ltd., on the 93N-1 Chuchi Group in July, 1968. The property is located 55 miles north of Fort St. James at 55° 14'N and 124° 28'W. It is accessible by a foot trail from Chuchi Lake which is accessible by road from Fort St. James.

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 4 adjacent lines.

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

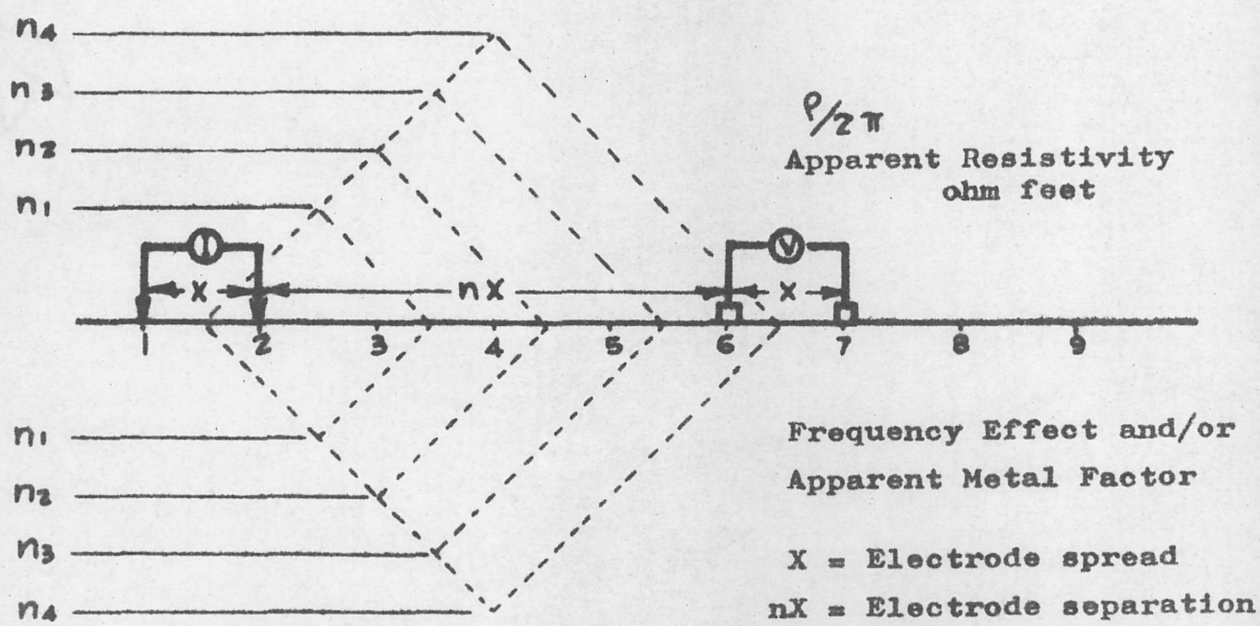
THE INDUCED POLARIZATION METHOD

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.

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 found to have very low resistivity. In some cases, even though a generator was used with a maximum voltage of 830 volts, it was impossible to obtain the required 45 microamperes between the two receiving electrodes. Readings in these cases have been question-marked; the F.E. readings being of doubtful validity. In other cases, especially on the esker and sand plains, the electrode resistance was too high compared with the over-all resistance. This tended to result 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 48E from approximately 13N to 15N. A weaker zone appears to extend to 20N. The resitivities are not significantly lower than background. A corresponding zone was located on Line 44E from approximately 10N to 16N. The portion from 13N to 16N appears to be the strongest. As on Line 48E the corresponding resistivities are on a gradient increasing to the north, with the maximum resistivity between 18N and 19N in both cases. The anomalous zones shown on Line 52E are very weak, especially the one between 20N and 24N. Thepattern of the F.E. anomalous readings suggests that the anomalies should be in the 'doubtful' category. The anomaly located between 16N and 18N on Line 56E is also very weak; however, its corresponding location with the zones to the west tend to give it some significance.

RECOMMENDATIONS

The results of this survey should be carefully correlated with the results of previous surveys. It should be borne in mind that disseminated magnetite could cause weak I.P. anomalies similar to the ones located by this survey. In the event that diamond drilling is planned, the best initial target appears to be at 14N on Line 48E.

Respectfully submitted,

Moreau, Woodard & Co. Ltd.

J. A. Woodard

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

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ASSESSMENT WORK DETAILS

Field Work - July 1 - 11th, 1968.

Operator	- J. A. Woodard, Scarborough, Ontario	10½	10 hr. days
Operator	- Robert Lee, Toronto, Ontario	10½	10 hr. days
Helper	- Gordon Bryant, Toronto, Ontario	10½	10 " "
Helper	- Marcel Saucier, Val D'Or, Quebec	10½	10 " "

Draughting, Consulting & Compilation - July 15-25, 1968

J. A. Woodard, Scarborough, Ontario	5	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:

L. 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.

J. A. Woodard

J. A. Woodard, P. Eng.