A REPORT

ON

AN INDUCED POLARIZATION SURVEY

FOR

CANYON CITY EXPLORATIONS LIMITED

VANCOUVER, BRITISH COLUMBIA

BY

EAGLE GEOPHYSICS LIMITED

VANCOUVER, BRITISH COLUMBIA

JANUARY 1969

This report has been examined by the Geological Evaluation Unit.
Approved as to technical worth by:

RESIDENT GEOLOGIST

Approved as to cost in the amount of: $ 8025.00

RESIDENT MINING ENGINEER

Accepted as representation work under Section 53(4) Yukon Quartz Mining Act.

COMMISSIONER OF YUKON

TABLE OF CONTENTS

INTRODUCTION

Between November 9th and 24th, 1968, Eagle Geophysics Limited carried out an Induced Polarization survey on a property, located in the White River Area of the Yukon Territory, held by Canyon City Explorations Limited.

The survey was carried out over handcut lines which were turned off at right angles from a N 40° E baseline, and which were chained and picketed at 100 foot intervals.

Severe difficulties were encountered in making electrical contact with the sub-surface on account of the frozen ground and these eventually led to the shutdown of the programme before the planned completion.

Measurements of apparent chargeability (the I.P. response parameter) were made on the line grid using the "three electrode array" method with a basic electrode separation of 200 feet and a station interval of 100 feet. Simultaneous measurements of apparent resistivity were also made.

In addition some measurements of apparent chargeability and resistivity were made on two lines over interpreted anomalous areas using a 100 foot electrode separation before cold weather and unsuitable ground conditions curtailed the survey.

The data are presented on plan maps of the line grid, maps E-143-1 to 3, that accompany this report. The chargeability and resistivity readings are presented in profile form of Maps E-143-1 and 2, while the 200 foot separation chargeability is shown in contoured form on Map E-141-3.

PROPERTY AND LOCATION

The property consisting of the C. C. Claim Group, is located in the Whitehorse Mining District of the Yukon Territory.

The claims are situated on Rabbit Creek approximately three miles north of the junction of the White and Generc Rivers at latitude 61° 50'N and 140° 53'W. They lie 18 miles to the north of the icefield ranges of the St. Elias Mountains and 6 miles to the east of the Alaska-Yukon border.

Access to the property can be obtained by either of two means.

(a) By fixed wing aircraft which can land on the airstrip on the property.

(b) Directly by helicopter, 220 air miles from Whitehorse, or 15 miles from Mile 1168 on the Alaska Highway. The latter means of access was employed on the November survey.

PURPOSE

The purpose of the survey was to try and locate by the Induced Polarization technique the presence of economic sulphide mineralization as suggested by mineralization occurring in two small showings on the property.

GEOLOGY

Glacial drift, a recent layer of thick volcanic ash, and a vegetation cover effectively blankets most of the region with the exception of the edges of the higher hills and ridges.

Sporadic outcroppings of two rock units occur in the general vicinity of the C.C., M. C., and surrounding claim groups. These are the Permian Cache Creek Group of altered andesite tuffs and breccias overlain in places by crinoidal limestone, and the Upper Triassic Mush Lake Group of porphyritic and amygdaloidal andesite.

Rock outcroppings occur on the periphery and to the west of the ridge that runs through the property. These are altered volcanics of the Cache Creek Group, mostly medium to fine grained, light grey to light green andesitic tuffs and amygdaloidal breccias. Overburden covers most of the property to the east of this ridge.

A northwest trending thrust fault at the eastern base of this ridge is indicated by regional geological mapping (G.S.E. Map 1177A) and by a series of elongated magnetic lows (Government Aeromag. Map 4260G).

Minor chalcopyrite mineralization is reported in two showings in the Cache Creek Group on the property.

SURVEY SPECIFICATIONS

The Induced Polarization (I.P.) Survey was carried out using a pulse-type system manufactured by Huntec Limited of Toronto, Ontario. Measurements with this system are made in the time domain.

The system consists basically of three units, a receiver, a transmitter and a motor-generator. The transmitter, which provides a maximum of 7.5 kw d.c. to the ground, obtains its power from the 7.5 kw 400 cycle, three phase generator driven by a gasoline engine. The cycling rate of the transmitter is 1.5 seconds "current on" and 0.5 seconds "current off" with the pulses reversing continuously in polarity. The data recorded in the field consists of careful measurements of the current (I) in amperes flowing through electrodes C_1 and C_2, the primary voltage (V) appearing between the potential electrodes, P_1 and P_2, during the "current on" part of the cycle, and a secondary or overvoltage (V_s) appearing between P_1 and P_2 during the "current off" part of the cycle.

The apparent chargeability (M_a) is calculated by dividing the secondary voltage by the primary voltage and multiplying by 400, which is the sampling time in milliseconds of the receiver unit. The apparent resistivity (P_a) in ohm-meters is proportional to the ratio of the primary voltage and the measured current, the proportionality factor depending on the geometry of the array used. The chargeability and resistivity obtained are called apparent as they are values which that portion of the earth sampled would have if it were homogeneous. As the earth sampled is usually inhomogeneous the calculated apparent chargeability and

resistivity are functions of the actual chargeability and resistivity of the rocks.

The survey was carried out using the "three electrode array" method of surveying. In this method the current electrode C_1 and the two potential electrodes P_1 and P_2 are moved in unison along the survey lines. The spacing between these three electrodes is kept constant for each traverse at a distance roughly equal to the depth to be explored by that traverse. The second current electrode C_2 is kept fixed at "infinity".

Thus, in a "three electrode array" traverse with an electrode spacing of 200 feet, a body lying at a depth of 100 feet will produce a strong response, whereas the same body lying at a depth of 200 feet will only just be detected. By running subsequent traverses at different electrode spacings, more precise estimates can be made of depth, width, thickness and percentage of sulphides of causative bodies located by the I. P. method.

DISCUSSION OF RESULTS

The results of the Induced Polarization survey, as performed with a 200 foot electrode separation, show a low chargeability background above which one large and three small anomalous areas are discernible. (Maps E-143 1 and 3).

The large anomalous area, as roughly outlined by the 4.0 millisecond chargeability contour anomaly on Map E-143-3 is approximately 1600 feet long and 500 feet wide, and is open at both its east and west ends. It strikes approximately northeast and straddles Rabbit Creek. It could conceivably be related to minor faulting associated with the major overthrust.

Detail work done with the 100 foot electrode separation on lines 86N and 88N before the shutdown of the survey gave similar results to the 200 foot spacing. However insufficient detail work was completed to truly assess the potential of the anomaly.

The resistivity survey indicated a resistivity low, i.e. a conductivity high, to be associated with the chargeability high (Map E-143-2). As the anomaly straddles Rabbit Creek this resistivity low is probably more attributable to the conductivity of wet overburden than to conductivity directly associated with the chargeability high. However low resistivity values are obtained with high chargeability ones on lines 98N and 100N where the anomalous area veers away from the creek.

It is interesting to note that the two showings of minor chalcopyrite occur on the western edge of the outlined interpreted anomalous area and hence it is believed that economic sulphide mineralization could be the cause of the I. P. anomalies.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Between November 9th and 24th, 1968, Eagle Geophysics Limited carried out an Induced Polarization survey over part of a property held by Canyon City Explorations Limited.

The property, i.e. C. C. claim group, is located in the White River Area of the Yukon Territory, some 220 air miles northwest of Whitehorse.

The Induced Polarization survey, as performed with a 200 foot electrode separation, indicated the presence of a large undefined anomalous area straddling Rabbit Creek.

The resistivity survey indicated a resistivity low, i.e. a conductivity high generally coincident with the above chargeability high, but this low was considered mainly attributable to wet overburden associated with Rabbit Creek.

Insufficient work was done to truly assess the anomaly, as it was neither completely outlined or detailed with other electrode separations due to foreclosure of the survey by the unsuitable ground conditions, but it is felt that economic sulphide mineralization could be its cause.

The writer therefore recommends that the following programme be carried out next summer to fully investigate the potential of the anomaly and the property:

1) A ground magnetometer survey be undertaken on 100 x 200 foot centres on the established line grid.

2) Should any magnetic association be encountered with the chargeability highs detail magnetic measurements be made on 50 x 100 centres over the anomalous area or areas.

3) The induced polarization survey be completed with the anomalous areas fully delineated and detailed.

4) Detail targets be selected on the basis of the induced polarization and magnetic results, and on geological studies and subsequently drilled.

Respectfully submitted

EAGLE GEOPHYSICS LIMITED

Peter E. Walcott, P. Eng.
Geophysicist

Vancouver, B. C.

January 1969.

APPENDIX

COST OF SURVEYS

Eagle Geophysics Limited undertook the induced polarization survey on a daily basis. Therefore, the total cost of the services provided by Eagle Geophysics Limited was $5,016.20.

PERSONNEL EMPLOYED ON SURVEYS

NAME	OCCUPATION	ADDRESS	DATE
Peter E. Walcott	Geophysicist	Eagle Geophysics Ltd. 815-736 Granville St. Vancouver 2, B. C.	Jan. 6 and 7, 1968.
Gary M. MacMillan	Geophysical Operator	"	Nov. 9 to 24, 1968.
Victor A. Pashniak	"	"	"
E. Scurvie	Helper	General Delivery, Whitehorse, Y.T.	"
P. Charlie	"	"	"
L. Tommy	"	"	"
P. Nieman	Cook	"	"
W. Wadman	Draughting	Eagle Geophysics Ltd. 815-736 Granville St. Vancouver 2, B. C.	Jan. 2, 3, 4, 5, 1969.
Rory Stephens	Typing	"	Jan. 21, 1969.

REFERENCES

Bostock, H. S., 1952 — Geology of Northwest Shakwak Valley, Yukon Territory, G.S.C. mem. 267.

Miller, J. E., 1967. — Kluane Lake Map Area, Yukon Territory G.S.C. mem. 340

Cairnes, D.D., 1915 — Upper White River District, Yukon G.S.C. mem. 50, pp. 133-141

70 E 72 E 74 E 76 E 78 E 80 E 82 E 84 E 86 E 88 E 90 E 92 E 94 E 96 E 98 E 100 E 102 E 104 E 106 E 108 E 110 E

BASE LINE

AIR STRIP

38° 30'

MAGNETIC NORTH

TRUE NORTH

L 100 N

L 98 N

L 96 N

L 94 N

L 92 N

L 90 N

L 88 N

L 86 N

L 84 N

L 82 N

L 80 N

L 78 N

L 76 N

APPARENT CHARGEABILITY 10 9 8 7 6 5 4 3 2 MILLISECONDS 1 0

CREEK

RABBIT CREEK

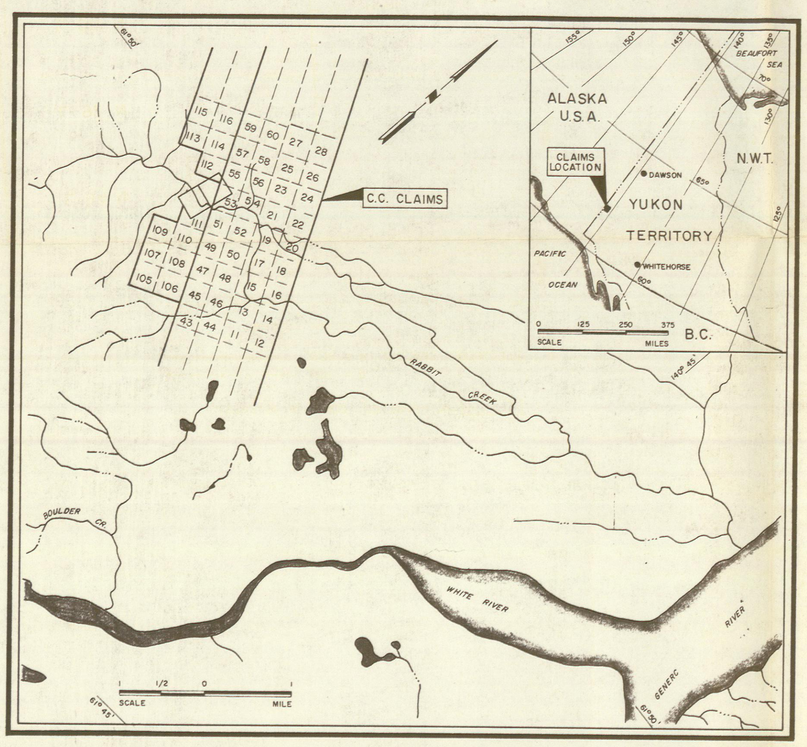
SHOWING No. 2

SHOWING No. 1

PORTAL

PORTAL

CREEK



LEGEND

P_2 — a — P_1 — a/2 — C_1 — a — C_2

STATION LOCATION

ELECTRODE SPACING a = 200'

a = 100'

INTERPRETED ZONE OF INTEREST

CANYON CITY EXPLORATIONS LTD.

C.C. CLAIMS, RABBIT CREEK AREA, WHITEHORSE MINING DIVISION, YUKON TERRITORY

INDUCED POLARIZATION SURVEY

APPARENT CHARGEABILITY PROFILES

SCALE : 1 INCH = 200 FEET

200 100 0 200 400 600 FEET FEET

MAP No. E-143-1

TO ACCOMPANY A REPORT BY
PETER E. WALCOTT P.Eng.
DATED JANUARY, 1969

EAGLE GEOPHYSICS LIMITED

NOVEMBER, 1968

70 E 72 E 74 E 76 E 78 E 80 E 82 E 84 E 86 E 88 E 90 E 92 E 94 E 96 E 98 E 100 E 102 E 104 E 106 E 108 E 110 E

AIR STRIP

BASE LINE

35° 30'

MAGNETIC NORTH

TRUE NORTH

L 100 N

L 98 N

L 96 N

L 94 N

L 92 N

L 90 N

L 88 N

L 86 N

L 84 N

L 82 N

L 80 N

L 78 N

L 76 N

APPARENT RESISTIVITY 8000 5000 2000 1000 500 OHM - METRES 200

CREEK

RABBIT CREEK

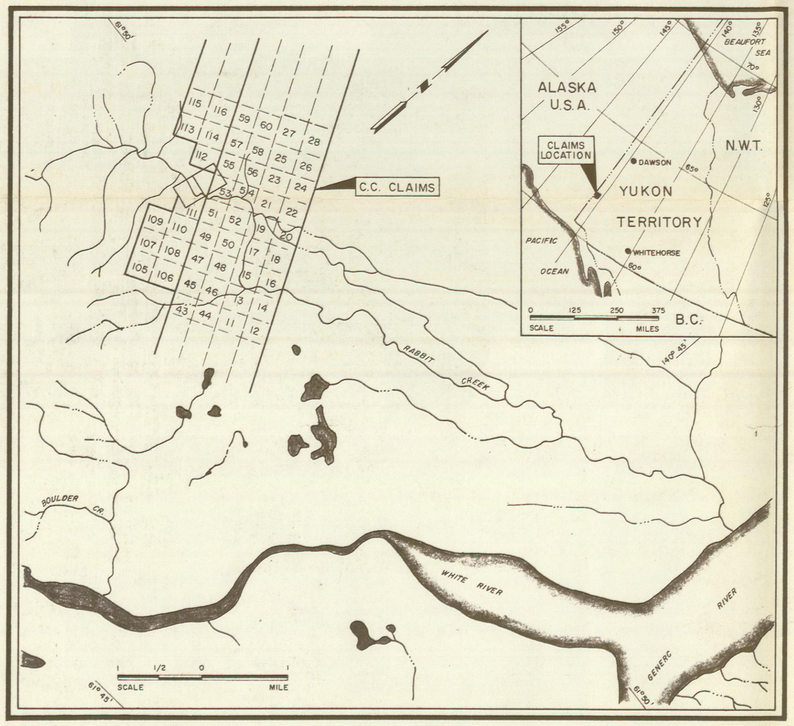
SHOWING No. 2

PORTAL

SHOWING No. 1

PORTAL

CREEK



LEGEND

P_2 a P_1 a/2 a/2 C_1 ∞ C_2

STATION LOCATION

ELECTRODE SPACING a = 200' •——•——•

a = 100' x——x——x

CANYON CITY EXPLORATIONS LTD.

C.C. CLAIMS, RABBIT CREEK AREA, WHITEHORSE MINING DIVISION, YUKON TERRITORY

INDUCED POLARIZATION SURVEY

APPARENT RESISTIVITY PROFILES

SCALE: 1 INCH = 200 FEET

200 100 0 200 400 600 FEET

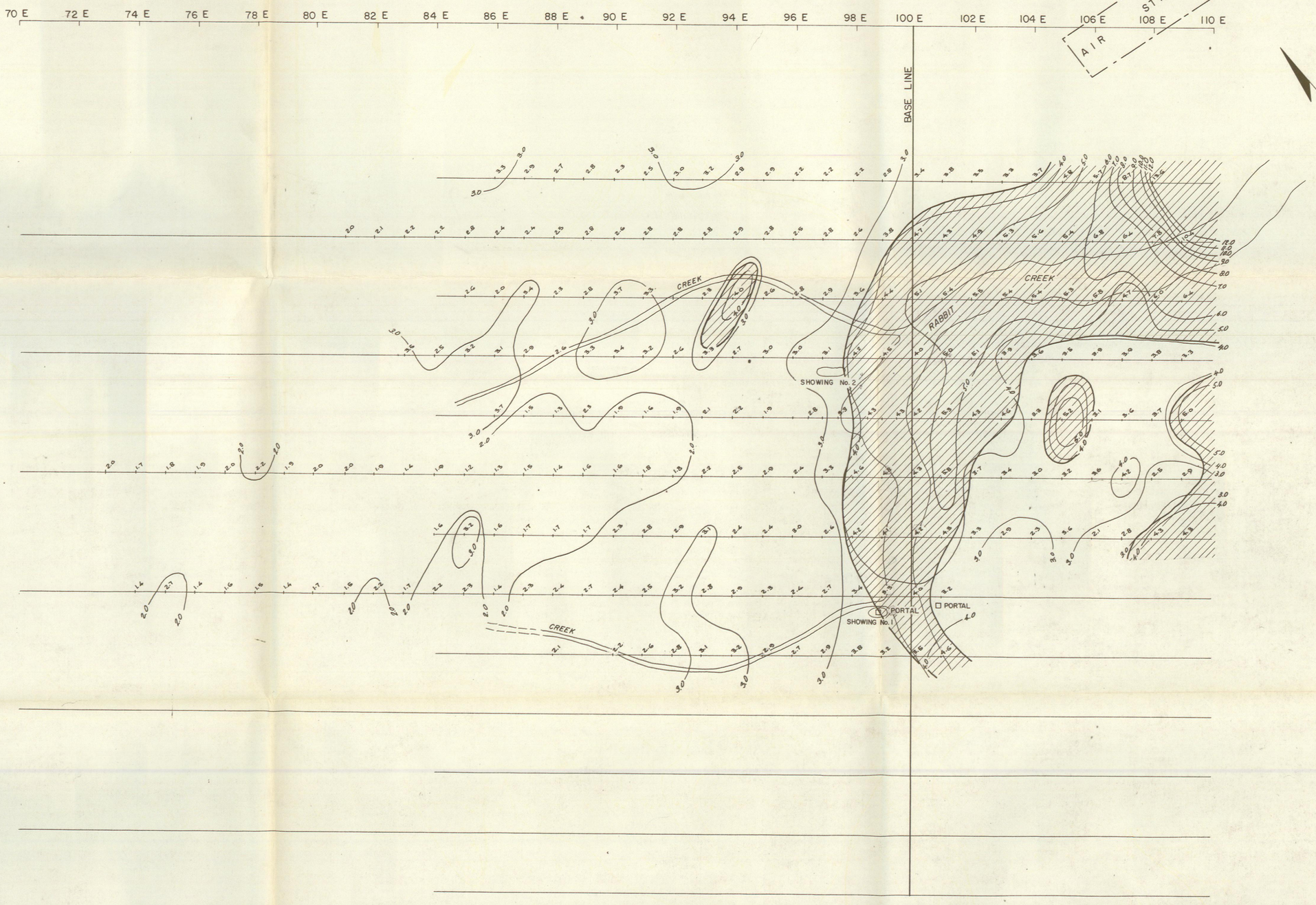
MAP No. E-143-2

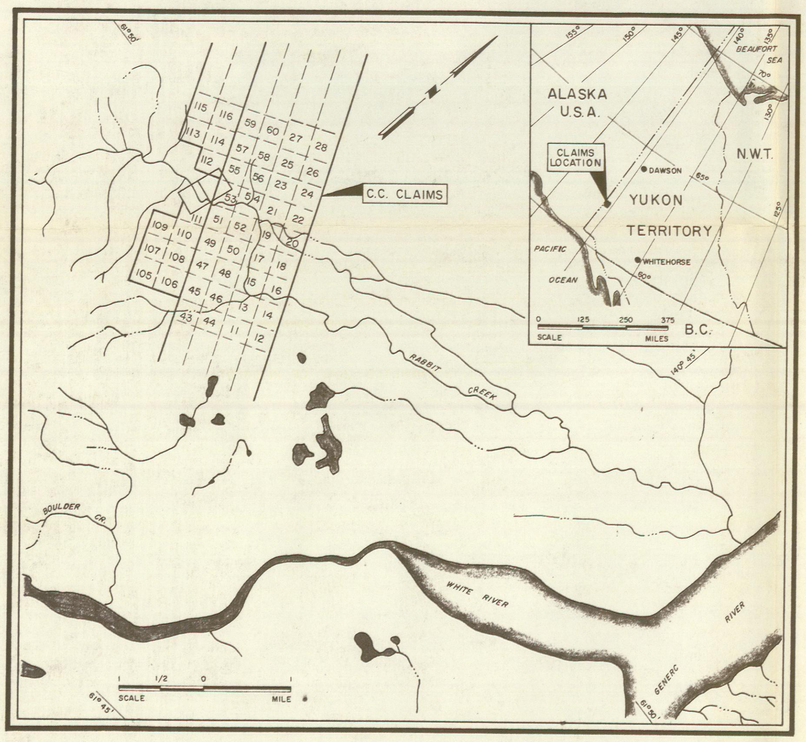
TO ACCOMPANY A REPORT BY PETER E. WALCOTT P.Eng. DATED JANUARY, 1969

EAGLE GEOPHYSICS LIMITED

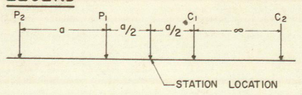
NOVEMBER, 1968

Peter E. Walcott





LEGEND



INTERPRETED ZONE OF INTEREST

CANYON CITY EXPLORATIONS LTD.

C.C. CLAIMS, RABBIT CREEK AREA, WHITEHORSE MINING DIVISION, YUKON TERRITORY

INDUCED POLARIZATION SURVEY

APPARENT CHARGEABILITY CONTOURS

SCALE : 1 INCH = 200 FEET

200 100 0 200 400 600
FEET FEET

MAP No. E-143-3
TO ACCOMPANY A REPORT BY
PETER E. WALCOTT P.Eng.
DATED JANUARY, 1969

EAGLE GEOPHYSICS LIMITED

NOVEMBER, 1968

Peter E. Walcott