A REPORT

on

AN INDUCED POLARIZATION SURVEY

Rhyolite Creek Area, Yukon Territory

FOR

IMPERIAL OIL ENTERPRISES LIMITED

Calgary, Alberta

BY

PETER E. WALCOTT & ASSOCIATES LIMITED

Vancouver, British Columbia

AUGUST 1971

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ACCOMPANYING MAPS, Scale 1" = 200 ft. — MAP POCKET

INTRODUCTION

Between July 3rd and 13th, 1971, Peter E. Walcott & Associates Limited carried out limited induced polarization (I.P.) surveys over parts of a property, located in the Rhyolite Creek area of the Yukon Territory, optioned by Imperial Oil Enterprises Ltd.

The survey was carried out over two handcut line grids, the lines of which were turned off at right angles from east-west baselines, and chained and picketed at 100 foot intervals.

Measurements of apparent chargeability (the I.P. response parameter) and resistivity were made over the grid areas using the "pole - dipole" method of surveying with various combinations of electrode separation (na) and dipole length (a).

The data are presented in profile form on plan maps of the line grid, Maps W-135-1 to -4 inclusive, that accompany this report.

PROPERTY, LOCATION & ACCESS

The property is located in the Whitehorse Mining District of the Yukon Territory and consists of the following claims:

MAX 1 - 4, 25 - 28, 39 - 42, 58, 60, 63, 64, 66
68, 70, 72, 74, 76, 78, 80, 85 - 130, 133,
134, 137 - 160, 300 - 307

The claims are located between the headwaters of Rhyolite and Onion Creeks some 45 miles northeast of the settlement of Burwash Landing on the Alaska Highway.

Access is obtained by means of helicopter from Burwash.

PREVIOUS WORK

Previous work on the property includes geological, geochemical and ground magnetic surveys by Atlas Explorations Limited in 1970.

GEOLOGY

The reader is referred to reports by Gary Pearse, P.Eng. of Atlas Explorations Limited and by Frank Hassard of Trigg Woollet & Assoc. Ltd.

PURPOSE

The purpose of the survey was to try and locate by the induced polarization technique the presence of economic sulphide mineralization on the property as suggested by the favourable geology and by the geochemical survey results.

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 two 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 "pole - dipole" 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 "na" (n an integer) between C_1 and P_1 is kept constant for each traverse at a distance roughly equal to the depth to be explored by that traverse, while that of P_1 - P_2 (the dipole) is kept constant at "a". The second current electrode C_2 is kept fixed at "infinity".

Thus, on a "pole-dipole 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 separations, more precise estimates can be made of depth, width, thickness and percentage of sulphides of causative bodies located by the I.P. method.

SURVEY SPECIFICATIONS cont'd

The survey on Grid 1 was conducted using a 200 foot dipole with various electrode separations, while that on Grid 3 was conducted using a 400 foot dipole and making first and second separation measurements.

DISCUSSION OF RESULTS

Grid 1.

The results of the I.P. survey as performed for the most with a 200 foot dipole show the majority of the grid to exhibit high chargeability response as can be seen from Map W-135-1.

The main molybdenum showing with associated pyrrhotite on Line 0 is readily discernible on the 100 foot spacing, is not defined on its southern extremity on the 200 and 400 foot spacing (a = 200' n = 1 & 2) where it is masked by the high background of surrounding quartzites containing pyrite and/or pyrrhotite, and is hardly discernible on the 600 and 800 foot spacing (a = 200', n = 3 & 4).

The other molybdenum showing near Line 7 E is believed to be reflected by the I.P. anomaly on Line 8 E, 3 N and its possible extension to Line 12 E, as can be seen from the 400 and 600 foot spacings on Map W-135-1.

These molybdenum showings appear to occur in two different zones as evidenced by the relatively flat profiles on Line 4 E.

The remaining anomalous areas are believed to be caused by pyrite and/or pyrrhotite with possible associated chalcopyrite and molybdenite in the quartzites surrounding the quartz monzonite plug.

The resistivity survey did little except indicate overburden thickness and conductivity, and bedrock conductivity as evidenced in particular by the resistivity lows obtained over Rhyolite Creek and the creek on Lines 4 and 8 W respectively.

Grid 3.

The results of the I.P. survey as performed with a 400 foot dipole show the area surveyed to exhibit a high chargeability background above which several anomalous conditions are discernible (Map W-135-3).

These zones, occurring on Lines 44, 48 and 56 E respectively, are believed to be caused by concentrations of pyrite and/or pyrrhotite with possible associated chalcopyrite and molybdenite in the underlying quartzites.

A chargeability low occurs on the northern ends of Lines 52 and 51E respectively, and is indicative of a change in rock type,

DISCUSSION OF RESULTS cont'd

believed by the writer to be an acidic dyke.

No chargeability anomaly was obtained over or near the observed molybdenum showing near Line 56 E.

The resistivity survey mostly indicated overburden thickness, and overburden and bedrock conductivity, and showed the possible presence of a fault zone at the base of the hill at the northern extremity of the lines.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Between July 3rd and 13th, 1971, Peter E. Walcott & Associates Limited carried out limited induced polarization (I.P.) surveys over two grids on a property optioned by Imperial Oil Enterprises Ltd.

The property, the Max claims, is located in the Rhyolite Creek area of the Yukon Territory some 45 miles northeast of the settlement of Burwash Landing.

The I.P. survey showed both grids to exhibit high chargeability backgrounds above which several anomalous zones were discernible.

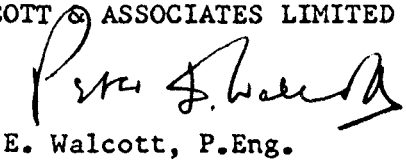
These zones, with the exception of two on Grid 1, are believed by the writer to be caused by concentrations of pyrite and/or pyrrhotite with possible associated chalcopyrite and molybdenite in the underlying quartzite.

Two zones on Grid 1 occur within or near the mapped quartz monzonite intrusive and are believed to be associated with the known pyrrhotite - molybdenite mineralization.

As a result of the above surveys the writer recommends that, due to the abundant occurrence of pyrite and pyrrhotite, any borehole investigations to be done on the property be heavily dependent on geology and geochemistry for their locations.

Respectfully submitted,

PETER E. WALCOTT & ASSOCIATES LIMITED



Peter E. Walcott, P.Eng.
Geophysicist

Vancouver,
British Columbia

August 1971

APPENDIX

COST OF SURVEY

Peter E. Walcott & Associates Limited provided a geophysicist, operator and equipment on a daily basis. Mobilization charges were extra so that the total cost of services provided was $3,550.00.

PERSONNEL EMPLOYED ON SURVEY

Name	Occupation	Address	Date
Peter E. Walcott	Geophysicist	Peter E. Walcott & Assoc. 605 Rutland Court, Coquitlam, B.C.	Jul. 3rd, 7 - 13th & Aug. 3rd, 71
V. Pashniak	Geophysical Operator	Same	Jul. 3rd - 13th, 1971
S. Scurvey	Helper	General Delivery, Whitehorse, Y.T.	Jul. 7th - 13th 1971
P. Charlie	Helper	" "	Jul. 7th - 13th 1971
J. Walcott	Typing	Peter E. Walcott & Assoc. 605 Rutland Court, Coquitlam, B.C.	Aug. 4th, 1971
K. Jones	Draughting	" "	Aug. 1st - 7th, 1971

CERTIFICATION

I, Peter E. Walcott, of the Municipality of Coquitlam, British Columbia, hereby certify that:

1. I am a Graduate of the University of Toronto in 1962 with a B.A.Sc. in Engineering Physics, Geophysics Option.

2. I have been practising my profession for the last eight years.

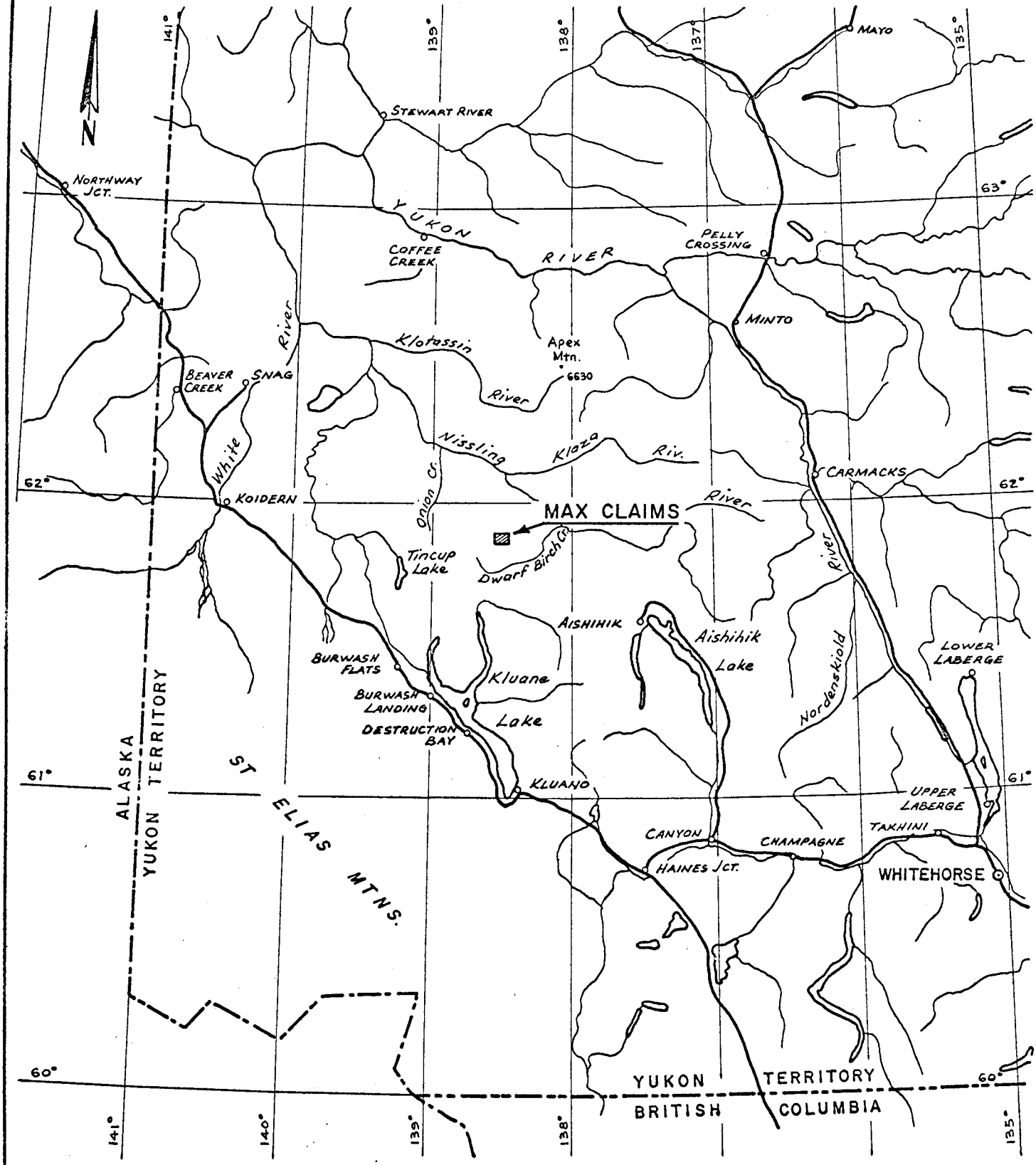
3. I am a member of the Association of Professional Engineers of British Columbia, Ontario and the Yukon Territory.

4. I hold no interest, direct or indirect, in the securities or properties of Imperial Oil Enterprises Ltd.

Peter E. Walcott, P.Eng.

Vancouver,
British Columbia

August 1971



KEY MAP

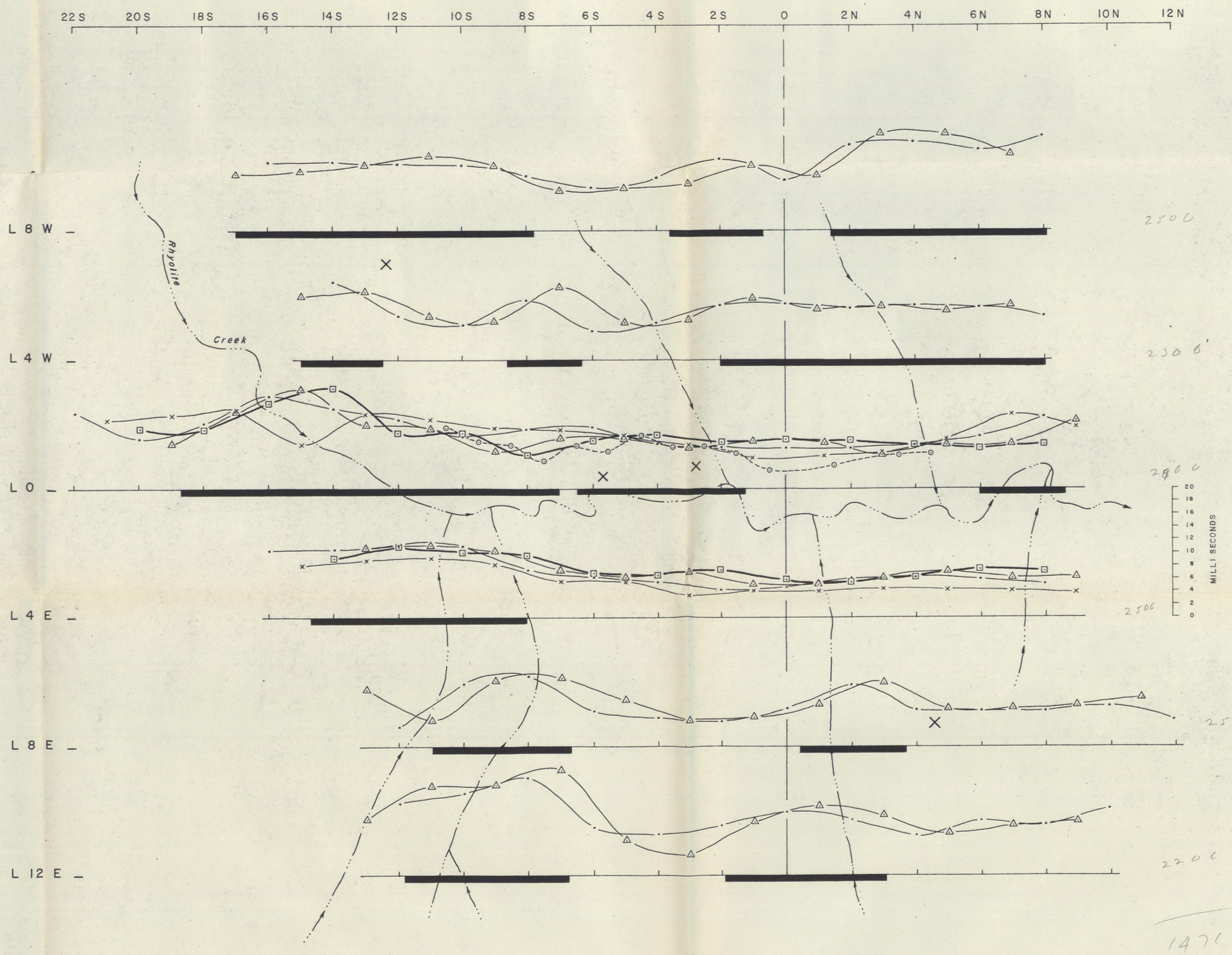
MAX CLAIM GROUP

NISLING RANGE, YUKON TERRITORY

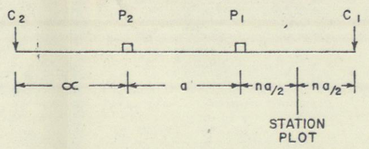
SCALE: 1 INCH = 32 MILES

32 16 0 32 64

MILES



POLE - DIPOLE ARRAY a = 200'



LEGEND

- SHOWING OR MINERAL OCCURRENCE
- CREEK
- I.P. ANOMALOUS ZONE

IMPERIAL OIL ENTERPRISES LIMITED

MAX CLAIMS, RHYOLITE CREEK, WHITEHORSE M.D., YUKON TERRITORY

INDUCED POLARIZATION SURVEY

GRID No. 1

PROFILES OF APPARENT CHARGEABILITY

(IN MILLI SECONDS)

SCALE - 1 INCH = 200 FEET

200 100 0 200 400 600
FEET FEET

MAP No. W - 135 - 1
TO ACCOMPANY A REPORT BY
PETER E. WALCOTT P. Eng.
DATED - AUGUST 1971

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA PETER E. WALCOTT

PETER E. WALCOTT & ASSOC. LTD.

JULY 1971

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

L 8 W

L 4 W

L 0

L 4 E

L 8 E

L 12 E

Rhyolite Creek

40000
20000
10000
8000
6000
4000
2000
1000
800
600
500
OHM - METRES

25

23

29

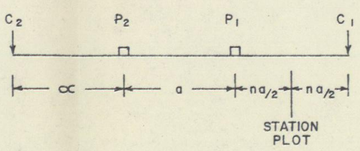
25

25

23

15.000

POLE - DIPOLE ARRAY a = 200'



n = 1

n = 2

n = 3

n = 4

n = 1 a = 100'

LEGEND

SHOWING OR MINERAL OCCURRENCE

CREEK

N

IMPERIAL OIL ENTERPRISES LIMITED

MAX CLAIMS, RHYOLITE CREEK, WHITEHORSE M.D., YUKON TERRITORY

INDUCED POLARIZATION SURVEY

GRID No. 1

PROFILES OF APPARENT RESISTIVITY

(IN OHM-METERS)

SCALE - 1 INCH = 200 FEET

200 100 0 200 400 600

FEET FEET

MAP No. W - 135 - 2

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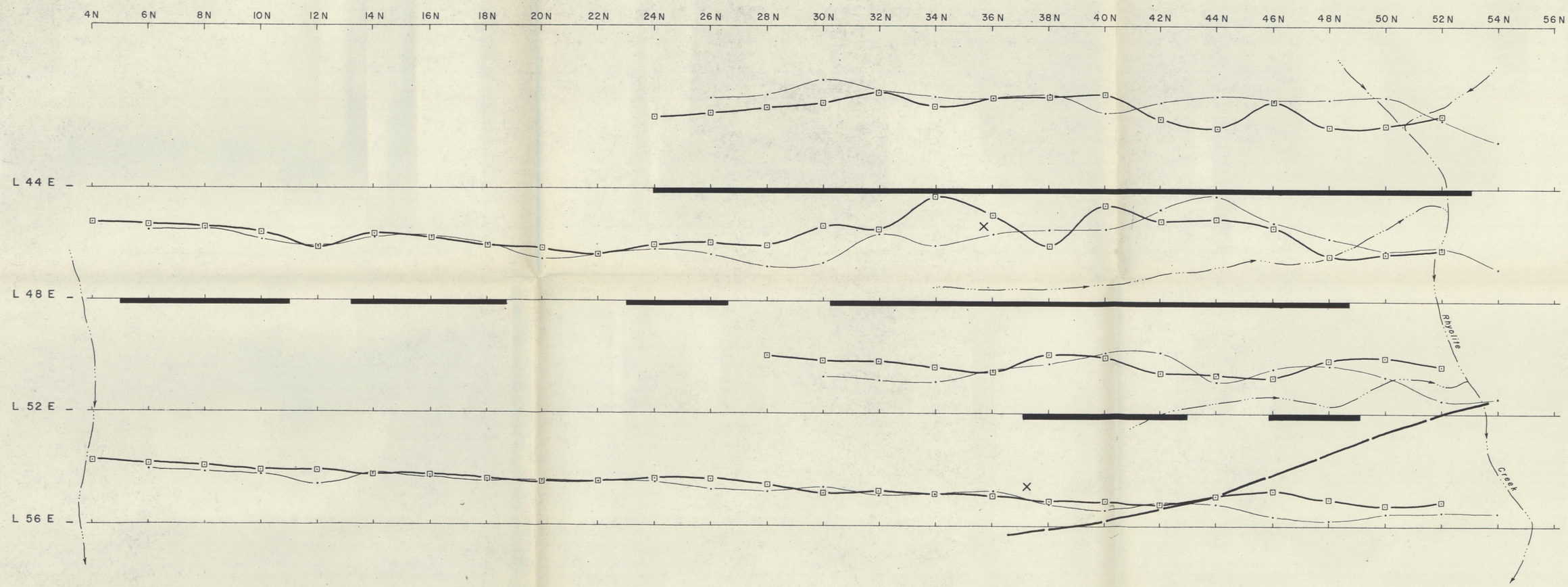
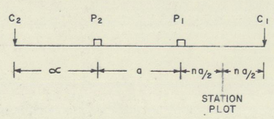


POLE - DIPOLE ARRAY a = 400'



LEGEND

- SHOWING OR MINERAL OCCURRENCE
- CREEK
- I.P. ANOMALOUS ZONE
- INTERPRETED CONTACT

IMPERIAL OIL ENTERPRISES LIMITED

MAX CLAIMS, RHYOLITE CREEK, WHITEHORSE M.D., YUKON TERRITORY

INDUCED POLARIZATION SURVEY

GRID No. 3

PROFILES OF APPARENT CHARGEABILITY

(IN MILLI SECONDS)

SCALE - 1 INCH = 200 FEET

200 100 0 200 400 600

FEET FEET

MAP No. W - 135 - 3

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4N 6N 8N 10N 12N 14N 16N 18N 20N 22N 24N 26N 28N 30N 32N 34N 36N 38N 40N 42N 44N 46N 48N 50N 52N 54N 56N

L 44 E

L 48 E

L 52 E

L 56 E

Rhyolite Creek

OHM - METRES
50000
40000
20000
10000
8000
6000
4000
2000
1000
800
600
500

POLE - DIPOLE ARRAY a = 400'

C_2 P_2 P_1 C_1

∞ — a — $na/2$ — $na/2$

STATION PLOT

n = 1

n = 2

LEGEND

SHOWING OR MINERAL OCCURRENCE

CREEK

INTERPRETED FAULT

N

IMPERIAL OIL ENTERPRISES LIMITED

MAX CLAIMS, RHYOLITE CREEK, WHITEHORSE M.D., YUKON TERRITORY

INDUCED POLARIZATION SURVEY

GRID No. 3

PROFILES OF APPARENT RESISTIVITY

(IN OHM-METERS)

SCALE - 1 INCH = 200 FEET

200 100 0 200 400 600
FEET FEET

MAP No. W - 135 - 4

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