

6505

A REPORT

ON

AN INDUCED POLARIZATION SURVEY

Whitesail Lake Area, Omineca M.D., B.C.

FOR

ASARCO EXPLORATION CO. OF CANADA LTD.

Vancouver, British Columbia

BY

PETER E. WALCOTT & ASSOCIATES LIMITED

Vancouver, British Columbia

OCTOBER 1977



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INTRODUCTION.

Between August 5th and 23rd, 1977, Peter E. Walcott & Associates Limited carried out a small linecutting and induced polarization (I.P.) survey programme for Asarco Exploration Co. of Canada Ltd. over their Ox Lake property, held jointly with Silver Standard Mines Ltd.

The survey was carried out over five east-west handcut lines of varying length which were turned off at right angles from a north-south baseline.

Measurements of first and second separation apparent chargeability (the I.P. response parameter) were made every 200 feet along the lines using the "pole-dipole" array and a 200 foot dipole. In addition simultaneous measurements of apparent resistivity were also made.

The data are presented in profile form on Maps W-243-1 and 2, and in contour form on plan maps of the line grid, Maps W-243-3 to 6, that accompany this report.

Severe difficulties were encountered on the linecutting phase of the programme occasioned by the occurrences of large windfalls around the lake and widespread growths of devils-club on the eastern and western portions of the lines.



PROPERTY, LOCATION AND ACCESS.

The property is located in the Omineca Mining Division of British Columbia, and consists at the present of the following claims:

<u>Name.</u>	<u>Record No.</u>
OX 1 - 13	62384 - 96
17 - 18	62400 - 01
37 - 38	62420 - 21
52 - 53	62435 - 36
54	63223
55 - 60	62437 - 42
HI 1 Fr - 4 Fr	75545 - 48
7 Fr - 9 Fr	75551 - 53
12 Fr	75556

The claims are situated on the south side of Tahtsa Lake approximately 75 miles south of the town of Smithers, British Columbia.

Access is obtained either by helicopter direct from Smithers, or by road to Tahtsa Landing and thence by chopper or boat to the south side of the lake.



PREVIOUS WORK.

Previous work on the property consisted of geological mapping, geochemical soil sampling and diamond drilling that was carried out during the late 1960's by Silver Standard Mines Ltd. and Asarco Exploration Co. of Canada Ltd.

The results of the above are well documented in reports held by the above mentioned companies.



PURPOSE.

The purpose of the survey was to (a) investigate the total sulphide occurrence around the known copper deposit and (b) to search for possible occurrence of sulphides to the west where limited work had been done to date.



GEOLOGY.

The reader is referred to the previously mentioned reports held by Asarco Exploration Co. of Canada Ltd.



### SURVEY SPECIFICATIONS

The induced polarization (I.P.) survey was carried out using a pulse type system, the principal components of which are manufactured by Hunttec Limited and Crone Geophysics Limited of Metropolitan Toronto, Ontario.

The system consists of basically three units: a receiver (Crone), a transmitter and a motor generator (Hunttec). The transmitter which provides a maximum of 7.5 kw d.c. to the ground, obtains its power from a 7.5 kw 400 c.p.s. three phase alternator driven by a gasoline engine. The cycling rate of the transmitter is 2 seconds "current-on" and 2 seconds "current-off" with the pulses reversing continuously in polarity. The data recorded in the field consists of careful measurement of the current (I) in amperes flowing through electrodes C<sub>1</sub> and C<sub>2</sub>, the primary voltage (V) appearing between the two potential electrodes, P<sub>1</sub> and P<sub>2</sub>, during the "current-on" part of the cycle, and the apparent chargeability (M<sub>a</sub>) presented as a direct readout (two samples of the decay curve M<sub>a</sub> (0.45 - 0.90 seconds) and N<sub>a</sub> (0.90 - 1.35 seconds) are taken for 3 current cycles, automatically averaged, adjusted to the 33M<sub>1</sub> standard and stored).

The apparent resistivity (P<sub>a</sub>) in ohm metres 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 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<sub>1</sub>, and the two potential electrodes, P<sub>1</sub> and P<sub>2</sub>, are moved in unison along the survey lines. The spacing "na" (n an integer) between C<sub>1</sub> and P<sub>1</sub> is kept constant for each traverse at a distance roughly equal to the depth to be explored by that traverse, while that of P<sub>1</sub> - P<sub>2</sub> (the dipole) is kept constant at "a". The second current electrode C<sub>2</sub> is kept constant at "infinity".

Thus usually 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

This survey was carried out using a 200 foot dipole and obtaining first and second separation readings.

In all some 6.5 miles of line were cut and some 6.2 miles of I.P. traverses undertaken.



### DISCUSSION OF RESULTS.

The first and second separation resistivity and chargeability results show great similarity as can be seen from their respective profiles on Maps W-243-1 & 2.

The I.P. survey gave low chargeability values over the barren intrusive around the lake on L - 0 and 4 S respectively with an increase in chargeability to the west over the known copper deposit and to the east of the monzonite porphyry and/or surrounding volcanics. The resistivity survey showed the barren intrusive to exhibit fairly low resistivity values suggesting it to be badly fractured.

The I.P. survey was really dominated by a NNW trending chargeability high, associated with a strong resistivity low, that is located to the west of the main copper mineralization. This feature seems to be structurally controlled and appears to consist of two parallel zones although it has some characteristics of a double peaked anomaly.

Its northward projection passes through the break in the surrounding ridge to the west of the copper deposit and suggests its causative source to be sulphides associated with a fault structure.

Further westwards lower chargeability (background) readings appear to be associated with sediments and/or volcanics as observed in outcroppings (not mapped) on the western slope of the above northward trending ridge. These readings are generally associated with higher resistivity readings.

West of this towards the extremities of L - 4S, 8S & 12S, particularly on the n = 1 separation, a build up of chargeability can be noticed.

This zone is undefined to the west and could be subject of further investigation depending on the results of the soil sampling survey although the overburden cover appears to considerably thicken westwards from the base of the hill.

High chargeability readings were obtained over all of the lines east of the lake. These appear to be due to pyrite in the monzonite porphyry and/or surrounding volcanics i.e. the pyrite halo around the known copper occurrence.

No resistivity contrast was observed between the monzonite porphyry and the volcanics.



DISCUSSION OF RESULTS cont'd

In all the resistivity survey, with the exception of the pronounced low as discussed previously, did little except indicate overburden and bedrock conductivity as suggested by a comparison with the topography.



SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.

Between August 5th and 23rd, 1977 Peter E. Walcott & Associates Limited carried out a small linecutting and induced polarization survey programme for Asarco Exploration Co. of Canada Ltd. over their Ox Lake joint venture property.

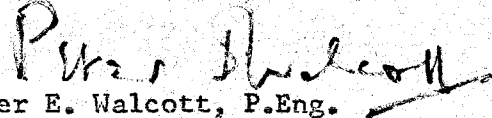
The survey indicated three chargeability features of possible interest - namely

- (a) a strong apparently structurally controlled feature, associated with a resistivity low, trending NNW across the grid and undefined at each extremity.
- (b) an area of high chargeability, apparently associated with pyrite in the rocks to the east of the lake, and undefined to the north, east and west.
- (c) a zone of moderate chargeability on the western side of the grid and open to the same.

As a result the writer recommends that the survey results be closely compared with those of the geology, recent geochemistry and previous drilling to determine if possible the significance of the above mentioned features before contemplation of further work.

Respectfully submitted,

PETER E. WALCOTT & ASSOCIATES LIMITED

  
Peter E. Walcott, P.Eng.  
Geophysicist

Vancouver, B.C.

October 1977



APPENDIX

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COST OF SURVEY.

Peter E. Walcott & Associates Limited undertook the linecutting and the I.P. survey on a daily basis. Mobilization and draughting costs were extra so that the total cost of services provided was \$11,015.36.

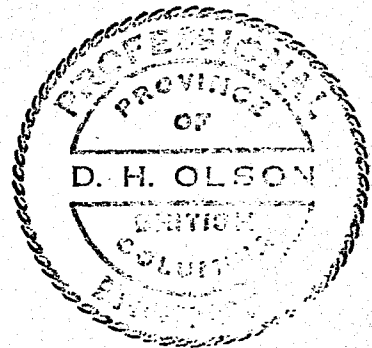


EXPENDITURES - OX CLAIMS

(1)	Rotary Wing Charter 7, 14 & 22nd August/77	\$ 3,276.18
(2)	Travel Time - personnel	1,150.00
(3)	Line cutting & IP Survey	6,110.00
(4)	Accommodation & Meals	1,140.00
(5)	Truck rentals & gasoline	1,406.75
(6)	Motel and Meals in transit	406.96
(7)	Taxis	27.20
(8)	Freight	121.05
(9)	Airfare	253.40
(10)	Report and Map Preparation	1,680.00
TOTAL		<u>\$ 15,571.54</u>

*D. H. Olson*  
*P. Eng.*

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GOVERNMENT AGENT  
SMITHERS, B.C.





PERSONNEL EMPLOYED ON SURVEY.

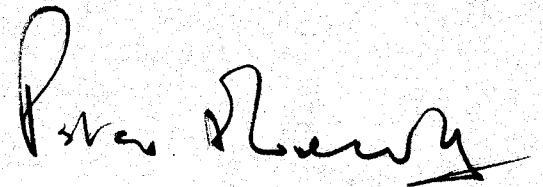
Name	Occupation	Address	Dates
Peter E. Walcott	Geophysicist	Peter E. Walcott & Assoc. 605 Rutland Court, Coquitlam, B.C.	Aug. 13th - 23rd, Sept. 5th, Oct 9th - 13th, 77
J. Kieley	Geophysical Operator	" "	Aug. 5th - 23rd, 77
C. Ladkin	"	" "	Aug. 6th - 23rd, 77
J. Flanagan	"	" "	Aug. 13th - 23rd, 77
V. Tanzini	"	" "	"
J. Walcott	Typing	" "	Oct. 13th, 1977
J. Winfield	Draughting	Altair Drafting Services Vancouver, B.C.	Sept. 28th - Oct. 13, 1977



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 fifteen 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 Asarco Exploration Co. of Canada Ltd., nor do I expect to receive any.

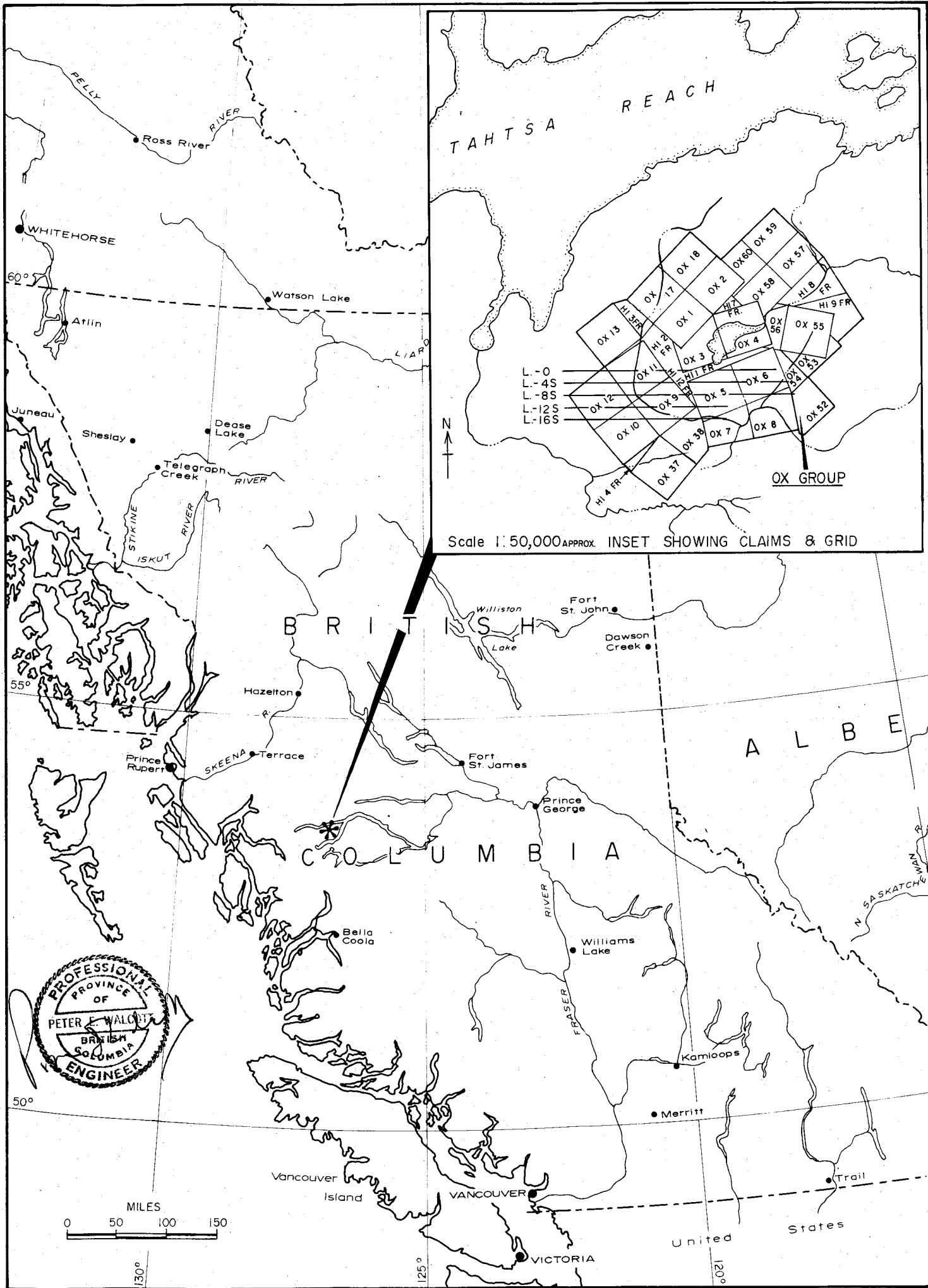


Peter E. Walcott, P.Eng.

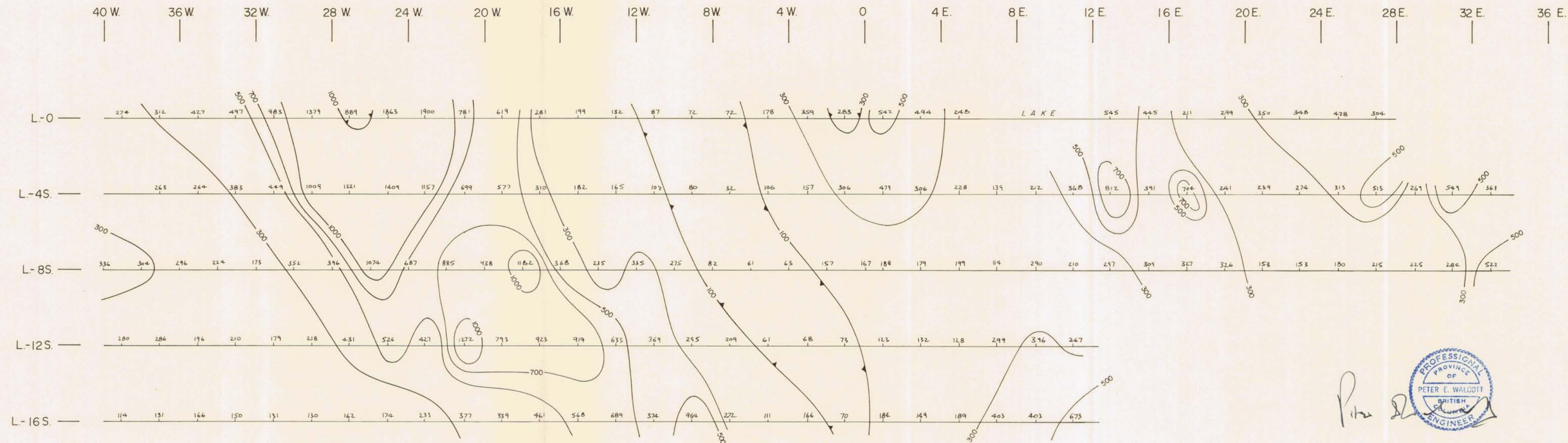
Vancouver, B.C.

October 1977





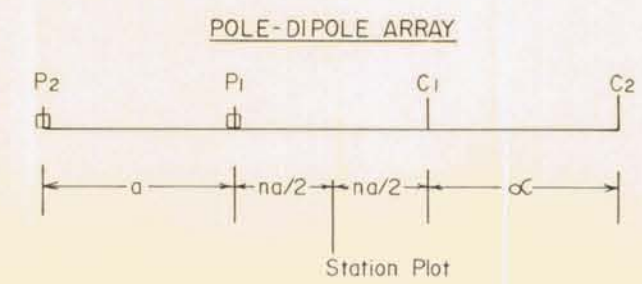




*Peter E. Walcott*

PROFESSIONAL  
OF  
PETER E. WALCOTT  
BRITISH  
ENGINEER

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OX PROPERTY, OMINECA M.D., B.C.

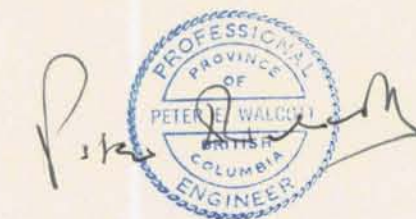
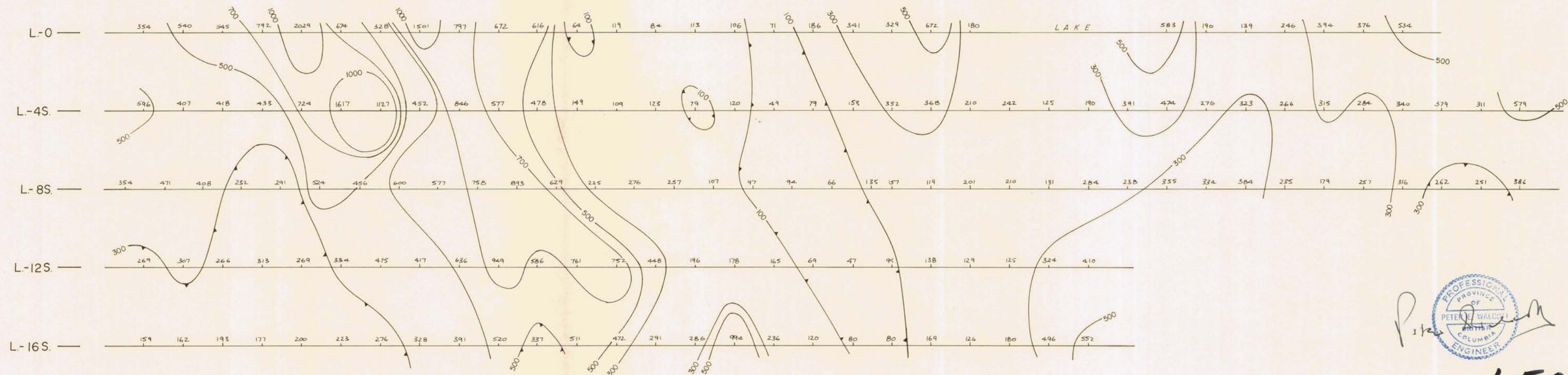
INDUCED POLARIZATION SURVEY  
CONTOURS OF APPARENT RESISTIVITY  
(Ohm-metres)  
 $a = 200'$ ,  $n = 1$   
SCALE: 1 INCH = 400 FEET

MAP NO. W-243-3  
TO ACCOMPANY A REPORT BY  
PETER E. WALCOTT P. Eng., DATED OCT.-1977

PETER E. WALCOTT & ASSOC. LTD.  
AUGUST 1977



40 W. 36 W. 32 W. 28 W. 24 W. 20 W. 16 W. 12 W. 8 W. 4 W. 0 4 E. 8 E. 12 E. 16 E. 20 E. 24 E. 28 E. 32 E. 36 E.



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ASARCO EXPLORATION CO.  
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OX PROPERTY, Omineca M.D., B.C.

INDUCED POLARIZATION SURVEY  
CONTOURS OF APPARENT RESISTIVITY

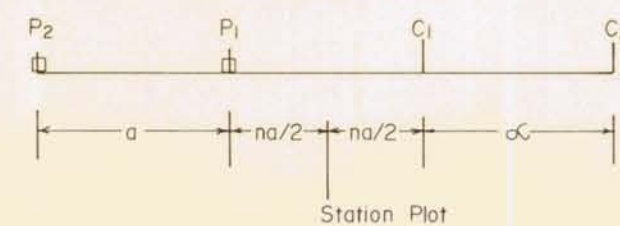
(Ohm-metres)  
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SCALE: 1 INCH = 400 FEET

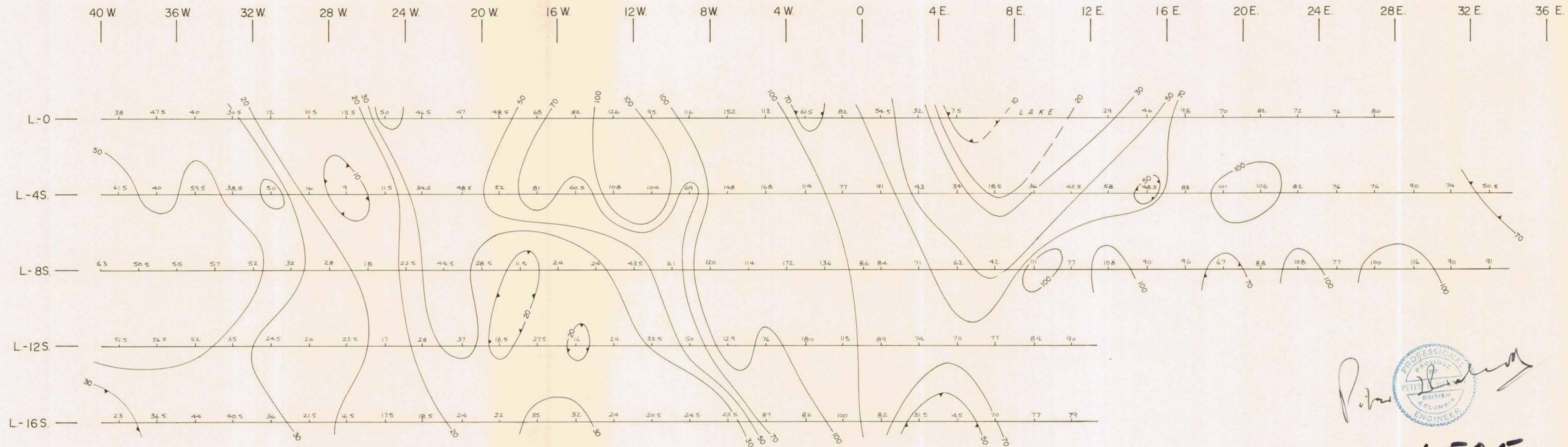


MAP NO. W-243-4  
TO ACCOMPANY A REPORT BY PETER E. WALCOTT & ASSOC. LTD.  
PETER E. WALCOTT P. Eng., DATED OCT.-1977 AUGUST 1977

POLE-DIPOLE ARRAY

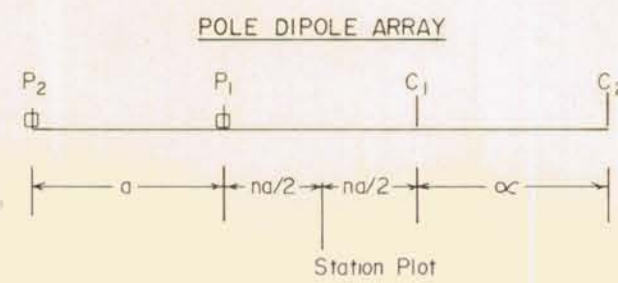






*Peter E. Walcott*  
 PROFESSIONAL  
 ENGINEER  
 PROVINCE OF  
 BRITISH COLUMBIA

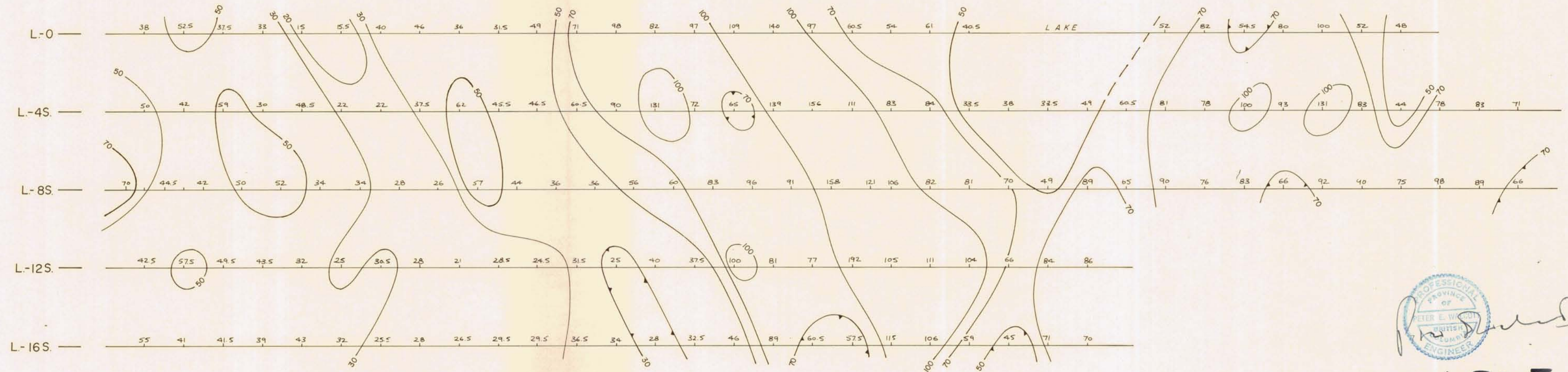
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ASARCO EXPLORATION CO.  
 OF CANADA LTD.  
 OX PROPERTY, OMINECA M.D., B.C.  
 INDUCED POLARIZATION SURVEY  
 CONTOURS OF APPARENT CHARGEABILITY  
 (Milliseconds)  
 $a = 200'$ ,  $n = 1$   
 SCALE: 1 INCH = 400 FEET  
 MAP NO. W-243-5  
 TO ACCOMPANY A REPORT BY  
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 AUGUST 1977



40 W. 36 W. 32 W. 28 W. 24 W. 20 W. 16 W. 12 W. 8 W. 4 W. 0 4 E. 8 E. 12 E. 16 E. 20 E. 24 E. 28 E. 32 E. 36 E.



PROFESSIONAL  
OF  
PETER E. WILCOX  
BRITISH COLUMBIA  
ENGINEER

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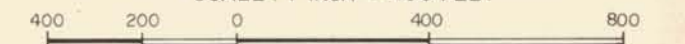
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OX PROPERTY, OMINECA M.D., B.C.

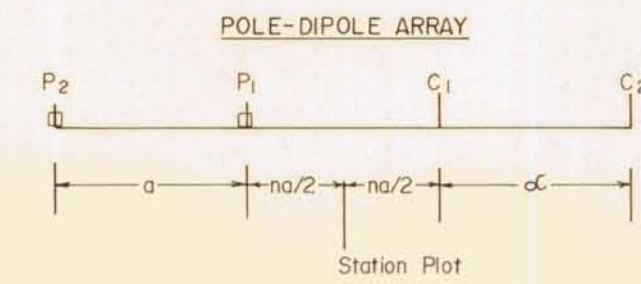
INDUCED POLARIZATION SURVEY  
CONTOURS OF APPARENT CHARGEABILITY  
(Milliseconds)

$a = 200'$ ,  $n = 2$

SCALE: 1 INCH = 400 FEET



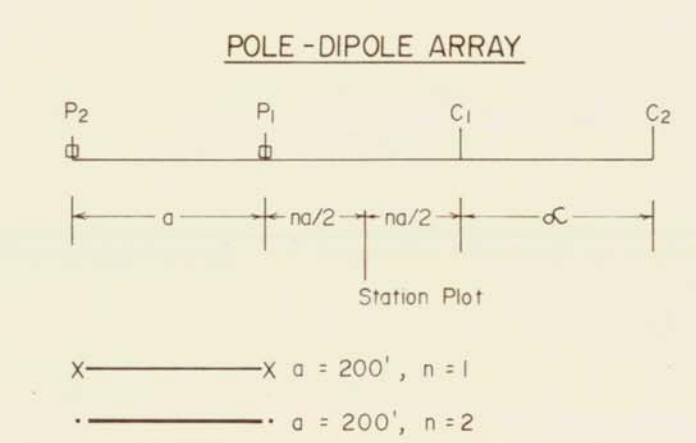
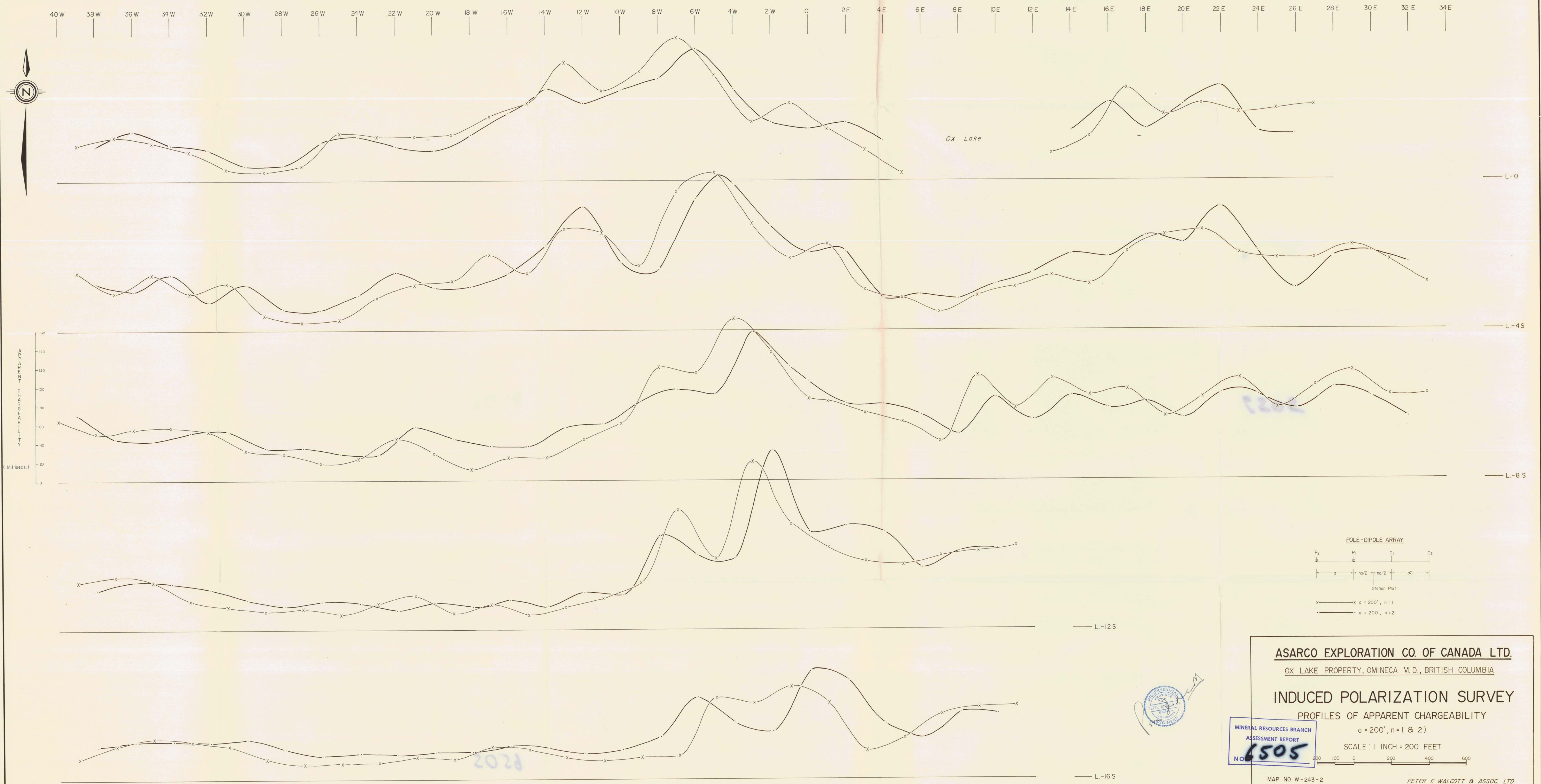
MAP NO. W-243-6  
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PETER E. WILCOX P. Eng., DATED OCT.-1977 AUGUST 1977











MINERAL RESOURCES BRANCH  
ASSESSMENT REPORT  
NO. **1505**

ASARCO EXPLORATION CO. OF CANADA LTD.  
OX LAKE PROPERTY, OMINECA M.D., BRITISH COLUMBIA  
**INDUCED POLARIZATION SURVEY**  
PROFILES OF APPARENT CHARGEABILITY  
a = 200', n = 1 & 2  
SCALE: 1 INCH = 200 FEET  
200 100 0 200 400 600

MAP NO. W-243-2  
TO ACCOMPANY A REPORT BY  
PETER E. WALCOTT P.Eng., DATED OCT-1977

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AUGUST 1977



