A REPORT

ON

# AN INDUCED POLARIZATION SURVEY

Summerland Area, Okanagan Valley, B.C.

FOR

CANADIAN OCCIDENTAL PETROLEUM LTD.

Toronto, Ontario

BY

PETER E. WALCOTT & ASSOCIATES LIMITED
Vancouver, British Columbia



NOVEMBER 1974

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| 2 " " " " a = 200' n = 2 | W-191-2 |
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## INTRODUCTION

Between October 7th and 21st, 1974 Peter E. Walcott & Associates Limited carried out an induced polarization (I.P.) survey over part of a property, located near Summerland, British Columbia, held by Canadian Occidental Petroleum Ltd.

The survey was carried out over handcut N 25° E lines which were turned off at right angles from a N 65° W baseline, and which were chained and picketed at 100 foot intervals.

Measurements (first and second separation) of apparent chargeability (the I.P. response parameter) were made along these lines using the "pole-dipole" method of surveying with a 200 foot dipole. Simultaneous measurements of apparent resistivity were also made.

In addition some 100 foot dipole first separation measurements were made on Line 32 S.

Considerable difficulties were encountered in carrying out the survey due to the poor electrical contacts made with the sandy soil thus making the progress of the survey rather slow.

The I.P. data are presented in contour form on plan maps of the line grid, Maps W-191-1 to 4, that accompany this report.

## PROPERTY, LOCATION AND ACCESS

The property is located in the Osoyoos Mining District of British Columbia and consists of the following claims:

| Claim Name | Record Number | Expiry Date |
|---|---|---|
| ARNIE 4 - 7 | 30032 - 35 | May 14, 1978 |
| COL 1 - 30 | 31162 - 91 | Sept. 27, 1974 |
| JOHN 1 - 3 | 26607 - 09 | June 15, 1977 |
| JOHN 8 | 28288 | June 15, 1977 |

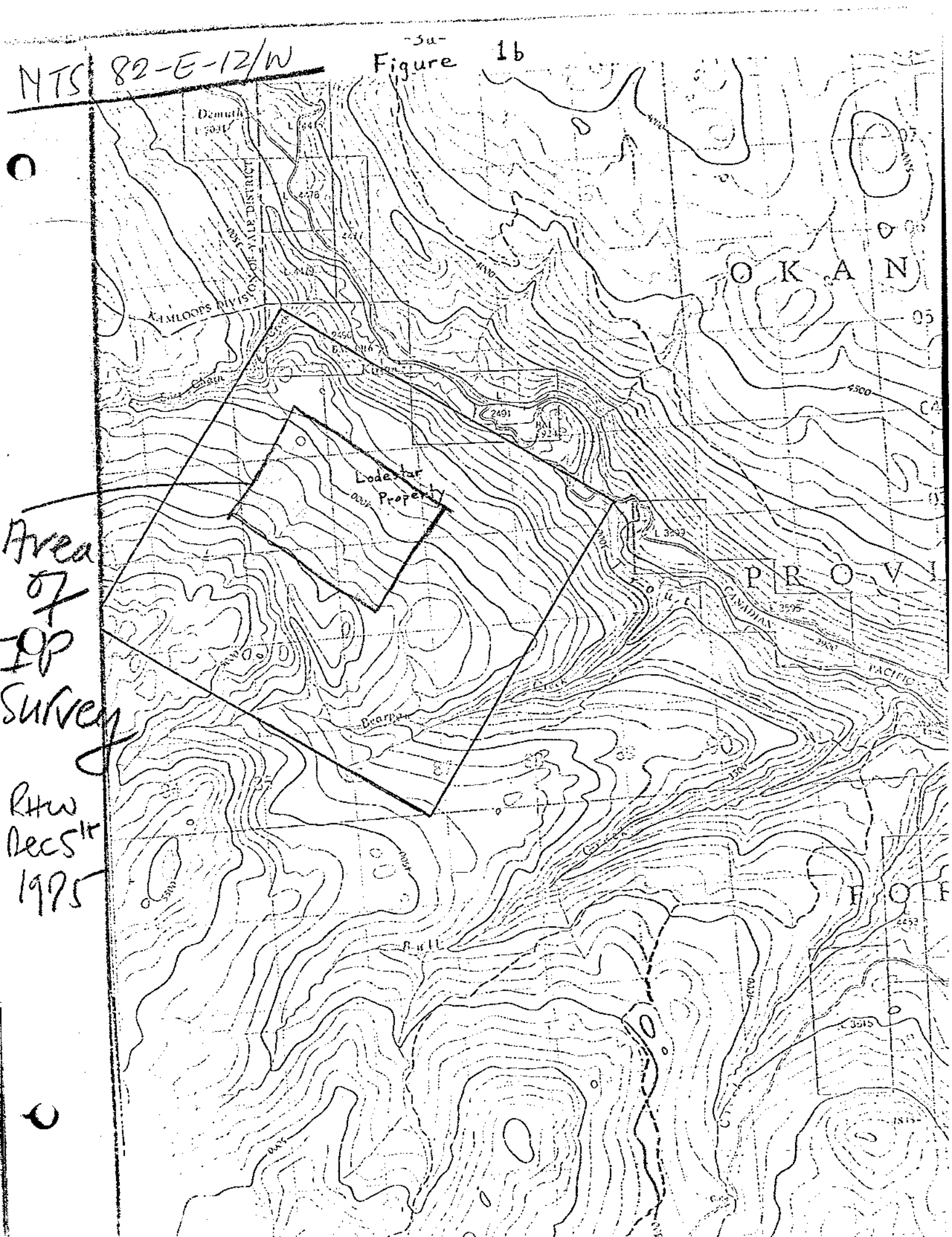
The claims are situated on the south side of Trout Creek some 14 miles northwest of the town of Summerland, British Columbia.

Access can be obtained using a two wheel drive vehicle by means of a logging road that crosses the property and joins the Teepee Lake gravel road that originates on the outskirts of Summerland some 16 miles away.


7414
7411
7413
7412
COL 1-30
COL 35-96
NTS 82 E 12 W½
1:50,000
MINING RECORDER
RECEIVED
OCT 27 1975
N.R. # $
OSOYOOS MINING DIVISION

NTS 82-E-12/W

Figure 1b



## PREVIOUS WORK

Previous work on the property appeared to consist of some geophysical survey(s) and some diamond drilling as evidenced by the old line grid in the northwestern corner of the present grid and by the presence of old drill sites and drill core respectively.

**PURPOSE**

The purpose of the survey was to investigate the possibility of economic sulphide occurrence(s) as suggested by sulphide intersections in one of the old drill holes, the location of which is not known, and by the favourable geological environment.

## GEOLOGY

The reader is referred to reports and data held by the staff of Canadian Occidental Petroleum Ltd.

## 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 was carried out using a 200 foot dipole and obtaining first and second separation readings, these being considered the best spacings to detect the kind and size of mineralization that the geologists had envisioned.

In addition some 100 foot dipole first separation work was carried out on Line 32 S.

## DISCUSSION OF RESULTS

The I.P. results showed the area surveyed to exhibit a low chargeability background i.e. 2 - 3 milliseconds, normal for granodiorite, above which some small areas of slightly higher chargeability are discernible (Maps W-191-3 & 4).

These areas are not considered by the writer to be large enough in size and/or to have strong enough responses to be worthy of further investigation.

The resistivity survey (Maps W-191-1 & 2) gave similar results on both separations but showed little except to reflect bedrock and/or overburden conductivities.

Readings marked with an asterik on maps W-191-3 & 4 are higher than they should be due to the fact that resistance across the potential electrodes was greater than 50k ohms - the percentage increase being dependent on a function of the resistance as well as on the strength of the primary voltage. Thus none of these readings are considered anomalous by the writer.

The results (not plotted) of some 100 foot dipole first separation work done on Line 32 S around the area where the sulphide mineralization noted in the drill core was thought to occur were extremely similar to the 200 foot dipole first separation work.

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Between October 7th and 21st, 1974, Peter E. Walcott & Associates Limited carried out an induced polarization survey over part of a property held by Canadian Occidental Petroleum Ltd.

The property, i.e. Arnie, Col & John claims, is located about fourteen miles northwest of Summerland, B.C.

The I.P. survey showed the property to exhibit a low chargeability background above which several small areas of slightly higher chargeability were discernible.

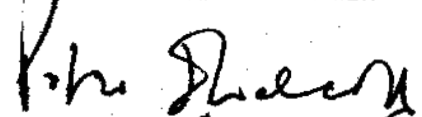
The resistivity survey was mostly indicative of bedrock and/or overburden conductivity.

As a result the writer concludes that although the areas of higher chargeability readings could be due to sulphide mineralization in the granodiorite these areas appear to be too small and exhibit too low a response to warrant further investigation at this time.

He therefore recommends that if any further work is contemplated on the area surveyed it take the form of geological and deep induced polarization investigations as the present survey was limited by its 300 - 350 feet depth of penetration.

Respectfully submitted,

PETER E. WALCOTT & ASSOCIATES LIMITED



Peter E. Walcott, P.Eng.
Geophysicist

Vancouver,
British Columbia

November 1974

# APPENDIX

## COST OF SURVEY

Peter E. Walcott & Associates Limited undertook the survey on a daily basis. Mobilization costs were extra so that the total cost of services provided was $9,502.76.

## PERSONNEL EMPLOYED ON SURVEY

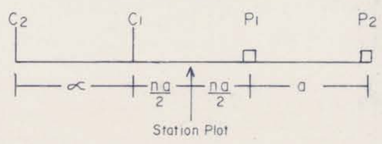
| Name | Occupation | Address | Dates |
|---|---|---|---|
| Peter E. Walcott | Geophysicist | Peter E. Walcott & Assoc.<br>605 Rutland Court,<br>Coquitlam, B.C. | Oct. 7th - 16th &<br>Oct. 28th, 1974 |
| G. MacMillan | Geophysical Operator | " " | Oct. 7th - 21st, 74 |
| L. Perreault | " | " " | " " |
| S. Scurvey | Helper | " " | " " |
| P. Charlie | " | " " | " " |
| T. George | " | " " | Oct. 10th - 21st, 74 |
| H. Charlie | " | " " | Oct. 14th - 21st, 74 |
| J. Walcott | Typing | " " | Nov. 28th, 1974 |
| J. Winfield | Draughting | Altair Drafting Ltd.<br>Vancouver, B.C. | Incomplete at time of writing |

L-0 L-4S L-8S L-12S L-16S L-20S L-24S L-28S L-32S L-36S L-40S L-44S L-48S L-52S L-56S L-60S

24-E
20-E
16-E
12-E
8-E
4-E
BASE LINE
4-W
8-W
12-W
16-W
20-W
24-W

CI

POLE-DIPOLE ARRAY




* P1 – P2 resistance > 50 K ohms

5572 MAP 1

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5572 MAP 1

CANADIAN OCCIDENTAL PETROLEUM LTD.

ARNIE, COL, JOHN CLAIMS, OSOYOOS MINING DIVISION, BRITISH COLUMBIA

# INDUCED POLARIZATION SURVEY
## CONTOURS OF APPARENT RESISTIVITY

a=200' n=1

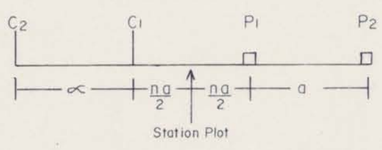
SCALE: 1 INCH = 400 FEET

400 200 0 400 800

MAP No. W-191-1
TO ACCOMPANY A REPORT BY
PETER E. WALCOTT, P. Eng.
DATED NOVEMBER, 1974

PETER E. WALCOTT & ASSOC. LTD.
OCTOBER - 1974


POLE-DIPOLE ARRAY




* P1 – P2 resistance > 50 K ohms

5572 MAP 2

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5572 MAP 2

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
PETER E. WALCOTT

CANADIAN OCCIDENTAL PETROLEUM LTD.

ARNIE, COL, JOHN CLAIMS, OSOYOOS MINING DIVISION, BRITISH COLUMBIA

# INDUCED POLARIZATION SURVEY
## CONTOURS OF APPARENT RESISTIVITY

a=200' n=2

SCALE: 1 INCH = 400 FEET

400 200 0 400 800

MAP No. W-191-2
TO ACCOMPANY A REPORT BY
PETER E. WALCOTT, P. Eng.
DATED NOVEMBER, 1974

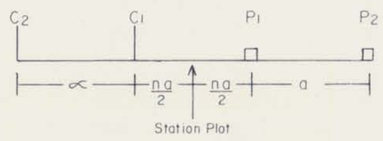
PETER E. WALCOTT & ASSOC. LTD.
OCTOBER - 1974

L-0 L-4S L-8S L-12S L-16S L-20S L-24S L-28S L-32S L-36S L-40S L-44S L-48S L-52S L-56S L-60S

24-E
20-E
16-E
12-E
8-E
4-E
BASE LINE
4-W
8-W
12-W
16-W
20-W
24-W

C1

POLE-DIPOLE ARRAY




* P1 – P2 resistance > 50 K ohms

5572 MAP3

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5572 MAP 3

# CANADIAN OCCIDENTAL PETROLEUM LTD.

ARNIE, COL, JOHN CLAIMS, OSOYOOS MINING DIVISION, BRITISH COLUMBIA

## INDUCED POLARIZATION SURVEY
### CONTOURS OF APPARENT CHARGEABILITY

a=200' n=1

SCALE: 1 INCH = 400 FEET

400 200 0 400 800

MAP No. W-191-3
TO ACCOMPANY A REPORT BY
PETER E. WALCOTT, P.Eng.
DATED NOVEMBER, 1974

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OCTOBER - 1974

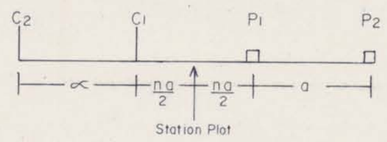
L-0 L-4S L-8S L-12S L-16S L-20S L-24S L-28S L-32S L-36S L-40S L-44S L-48S L-52S L-56S L-60S

C1

24-E
20-E
16-E
12-E
8-E
4-E
BASE LINE
4-W
8-W
12-W
16-W
20-W
24-W

C1

POLE-DIPOLE ARRAY




* P1 - P2 resistance > 50 K ohms

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5572 MAP 4

5572 MAP 4

CANADIAN OCCIDENTAL PETROLEUM LTD.

ARNIE, COL, JOHN CLAIMS, OSOYOOS MINING DIVISION, BRITISH COLUMBIA

# INDUCED POLARIZATION SURVEY
## CONTOURS OF APPARENT CHARGEABILITY

a = 200' n = 2

SCALE: 1 INCH = 400 FEET

400 200 0 400 800

MAP No. W-191-4
TO ACCOMPANY A REPORT BY
PETER E. WALCOTT, P. Eng.
DATED NOVEMBER, 1974

PETER E. WALCOTT & ASSOC. LTD.
OCTOBER - 1974

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA PETER E. WALCOTT

CANADIAN OCCIDENTAL PETROLEUM LTD
MINERALS DIVISION

# LODESTAR PROPERTY

OSOYOOS MINING DIVISION, BRITISH COLUMBIA, 82-E-12/W

## CLAIM & GRID LOCATION MAPS

SCALE: 1 INCH = 400 FEET

MAP No. W-181-5
TO ACCOMPANY A REPORT BY
PETER E. WALCOTT, P.Eng.
DATED NOVEMBER, 1974

PETER E. WALCOTT & ASSOC. LTD
OCTOBER-1974

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5572 MAP 5

LEGEND

- Topographic contour
- Stream
- Swamp
- Claim post - located, inferred
- Claim line
- Road

NOTE - Claim record no. 3190 (not tag no.) shown

BASE LINE

TIE LINE

Creek

Trout

N