

3501

A REPORT

ON

AN INDUCED POLARIZATION SURVEY

Kinaskan Lake Area, British Columbia

104 G / 9 W,

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 3501 MAP

FOR

IMPERIAL OIL ENTERPRISES LIMITED

Calgary, Alberta

MINING RECORDS  
RECEIVED BY REPLY  
FEB 7 1972  
VICTORIA, B. C.

BY

PETER E. WALCOTT & ASSOCIATES LIMITED

Vancouver, British Columbia

NOVEMBER 1971

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INTRODUCTION

Between September 15th and 38th, 1971, Peter E. Walcott & Associates Ltd. carried out a limited linecutting and induced polarization (I.P.) survey programme over part of a property, located in the Kinaskan Lake Area of British Columbia, optioned by Imperial Oil Enterprises Limited.

The survey was carried out over handcut picket lines which were turned off at right angles from north-south baseline, and which were chained and picketed at 100 foot intervals.

Measurements (first to fourth separation) of apparent resistivity and frequency effect (the I.P. response parameter) were made using the "dipole - dipole" method of surveying with a 300 foot dipole and frequencies of 0.3 and 5 c.p.s.

Considerable difficulty was encountered in carrying out the survey due to the rough terrain, the total lack of water for electrodes and the poor soil cover for emplacement of the foil electrodes thus making the progress rather slow.

The I.P. data are presented in contour form on individual line profiles contained in this report. In addition the first and second separation frequency effects are shown in contour form on a plan map of the line grid that accompanies this report (Map W-142-2).

PROPERTY, LOCATION & ACCESS

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

<u>Claim Name</u>		<u>Record Number</u>
SPECTRUM	1 - 4	45727 - 30
	7 - 18	45731 - 42
	21 - 30	49192 - 201
	31 - 50	49146 - 65
	51 - 59	50011 - 19
OWL	60 - 74	50734 - 47
	77 - 80	50750 - 53

The claims are situated between elevations of 3000 and 6000 feet on the west sides of Nuttlude and Kakkidi Lakes, some 15 miles west of Kinaskan Lake on the Stewart-Cassiar Highway.

Access can be obtained either by float plane to Nuttlude Lake, or by helicopter from the Stewart-Cassiar Highway in the vicinity of Kinaskan Lake. The latter means was used on the September survey.

PREVIOUS WORK

Previous work on the property consists of:

1. Geological mapping and prospecting.
2. Geochemical sampling.
3. Ground magnetic surveying.

The results of this work are well documented in a report by James S. Dodge P.Eng. of Spartan Explorations Ltd., dated October 29th, 1970.

PURPOSE

The purpose of the survey was to

- (1) investigate using the induced polarization (I.P.) technique the favourably mineralized area outlined by the geology.
- (2) outline the presence of disseminated sulphide mineralization as suggested by the geological environment.

GEOLOGY

The reader is referred to a report by James S. Dodge P.Eng.  
of Spartan Explorations Ltd., dated October 1970.

### SURVEY SPECIFICATIONS

The induced polarization (I.P.) survey was carried out using a system manufactured by McPhar Geophysics Limited of Don Mills, Ontario. Measurements with this system are made in the frequency domain.

The system consists basically of three units, a receiver, a transmitter and a motor generator. - The transmitter, which obtains its power from the 2.5 kw 400 cycle generator driven by a gasoline engine, injects current into the ground at two electrodes C<sub>1</sub> and C<sub>2</sub> at two preselected frequencies, while the receiver, a very stable and sensitive potentiometer tuned to the frequency selected, makes measurements of observed voltages across the potential electrodes P<sub>1</sub> and P<sub>2</sub>.

The data recorded in the field consists of careful measurements of the current (I) flowing through electrodes C<sub>1</sub> and C<sub>2</sub>, the voltage (V) appearing between the potential electrodes P<sub>1</sub> and P<sub>2</sub> on the low frequency, and the "percentage apparent frequency effect" appearing between P<sub>1</sub> and P<sub>2</sub> (the receiver is designed to measure directly

$$\text{the \%age F.E.} = \frac{(P_a \text{ low} - P_a \text{ high}) \times 100}{P_a \text{ high}}$$

The apparent resistivity (P<sub>a</sub>) in ohm-feet is proportional to the ratio of the measured voltage and current, the proportionality factor depending on the geometry of the array used. In practise  $\frac{P_a}{2\pi}$  is plotted.

A third parameter termed the "metal factor" is also calculated by dividing the apparent frequency effect by  $\frac{P_a}{2\pi}$  and multiplying by 1000.

The survey was carried out using the "dipole - dipole" electrode array. This electrode configuration and the methods of presenting the results are illustrated in the appendix. Depth penetration with this array is increased or decreased by increasing or decreasing "a" and/or n.

In practise the equipment is set up at a particular station of the line to be surveyed; three transmitting dipoles are laid out to the rear, measurements are made for all possible combinations of transmitting and receiving dipoles, the latter consisting of two porous pots filled with an electrolyte copper sulphate solution "a" feet apart, up to the fourth separation, i.e. n = 4; the equipment is moved 3 "a" feet along the line to the next set-up.



SURVEY SPECIFICATIONS cont'd

A 300 foot dipole was used on the survey.

## DISCUSSION OF RESULTS

The results of the I.P. survey, as performed with a 300 foot dipole, showed the area surveyed to exhibit generally high frequency effects as was expected from the known geology and as can be seen on the individual line profiles and from the contour map of the first and second separation measurements.

Three discernible features are observed from this limited survey, all of which are for the most undefined. They are:

- (1) An open zone of higher frequency effect, accompanied by higher resistivity readings, about 1600 feet wide and suggestive of higher sulphide concentration occurring on the eastern ends of Lines 0 and 10 N respectively, and believed by the writer to correspond to the phyllic zone as described by Dodge.
- (2) A zone of lower frequency effects and lower resistivity occurring in the centre portion of the area surveyed, open to the north and to the west under the basalts, and roughly corresponding with the area of copper mineralized outcrop, float, etc., and the copper soil anomaly.
- (3) A possible zone of higher frequency effects and higher resistivity, as suggested by the readings on the western ends of the northernmost and southernmost lines, that could indicate a phyllic zone to the west.

APPENDIX

(i)

COST OF SURVEY

Peter E. Walcott & Associates Limited undertook the I.P. survey and linecutting on a daily basis. Mobilization and draughting costs were extra so that the total cost of services provided was \$7,535.75.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Between September 15th and 28th, 1971, Peter E. Walcott & Associates Limited carried out a limited linecutting and induced polarization (I.P.) survey programme over part of a property optioned by Imperial Oil Enterprises Limited.

The property, the Owl and Spectrum claims, is located some 15 miles west of Kinaskan Lake on the Stewart-Cassiar Highway.

The I.P. survey showed the property to exhibit generally high frequency effects.

Three discernible features were observed on the survey. These are:

- (1) An open zone of higher frequency effects and higher resistivity on the east side, believed by the writer to correspond to the mapped phyllic zone.
- (2) An open zone of lower frequency effects and lower resistivity in the central portion roughly coincident with the mapped copper mineralization and geochemical anomaly.
- (3) A suggested open zone of higher frequency effects and higher resistivity on the west side possibly indicative of another phyllic zone.

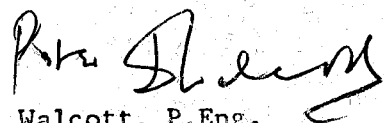
The writer concludes that the results obtained to date are typical of those expected from a porphyry situation as described by Dodge.

He therefore recommends

1. that the I.P. coverage be extended to define the possible zone of mineralization prior to investigation by borehole techniques.
2. that the location of any borehole be determined on the basis of geology and geochemistry within the I.P. zone.

Respectfully submitted,

PETER E. WALCOTT & ASSOCIATES LIMITED

  
Peter E. Walcott, P.Eng.  
Geophysicist

Vancouver, B.C.

November 1971

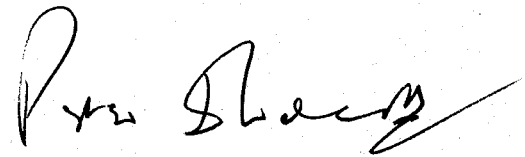
PERSONNEL EMPLOYED ON SURVEY

<u>Name</u>	<u>Occupation</u>	<u>Address</u>	<u>Dates</u>
Peter E. Walcott	Geophysicist	Peter E. Walcott & Assoc. 605 Rutland Court, Coquitlam, B.C.	Nov. 1st - 3rd, 1971
G. MacMillan	Geophysical Operator	" "	Sept. 15th - 28th Nov. 4th - 12th, Dec. 28th, 1971
V. Pashniak	"	" "	Sept. 15th - 28th, 1971
J. Walcott	Typing	" "	Nov. 10th, 1971
P. Charlie	Helper	General Delivery, Whitehorse, Y.T.	Sept. 15th - 28th, 1971
G. Gordon	"	" "	"
J. George	"	" "	"

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 nine 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 Owl and Spectrum claims nor do I expect to receive any.

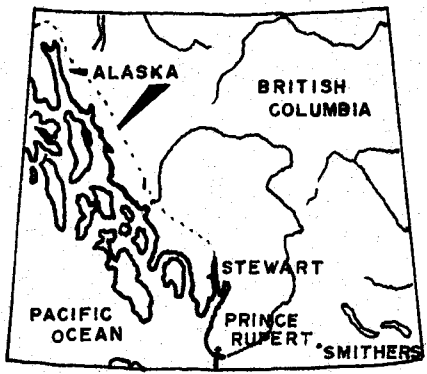
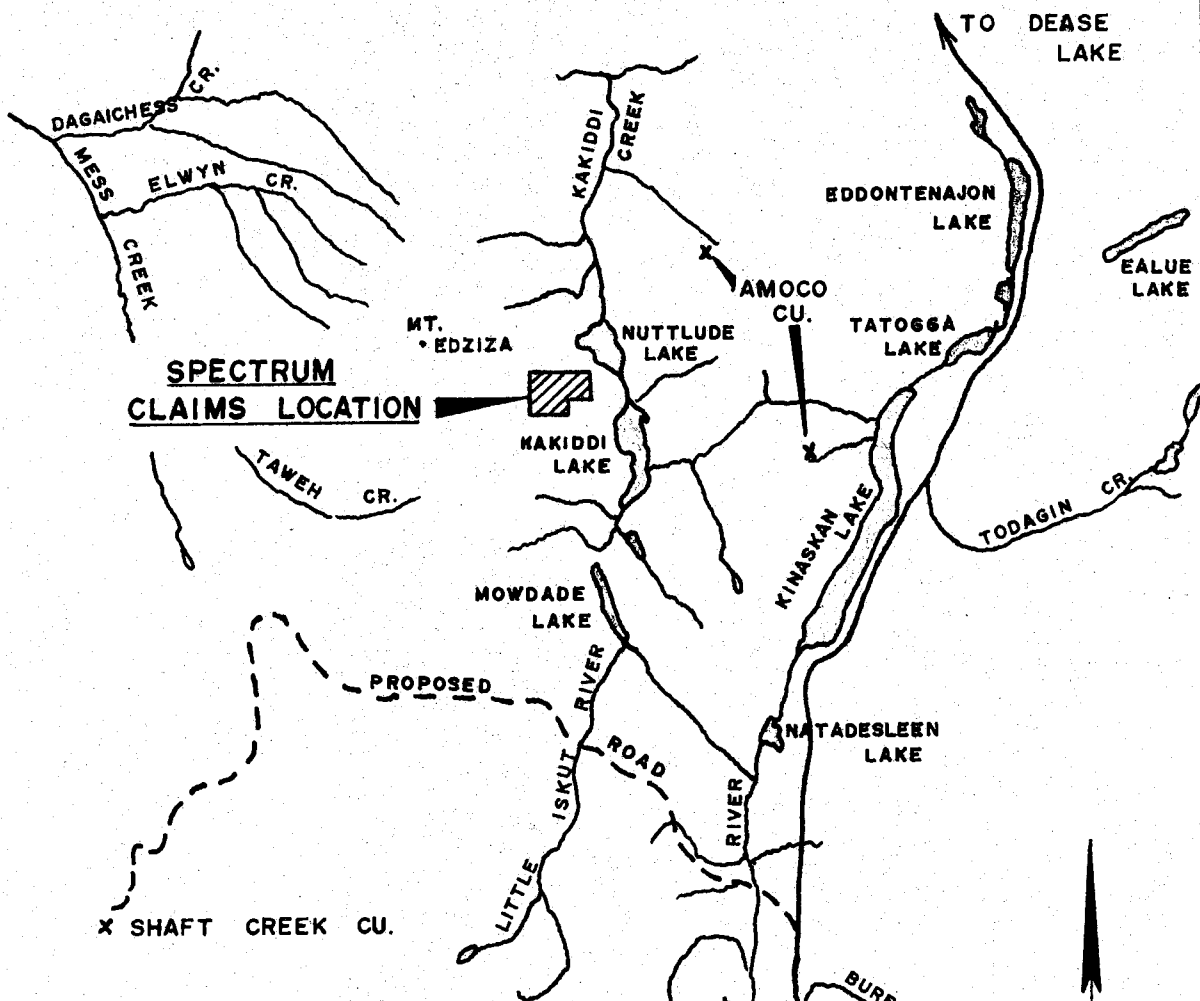


Peter E. Walcott, P.Eng.

Vancouver,  
British Columbia

November 1971

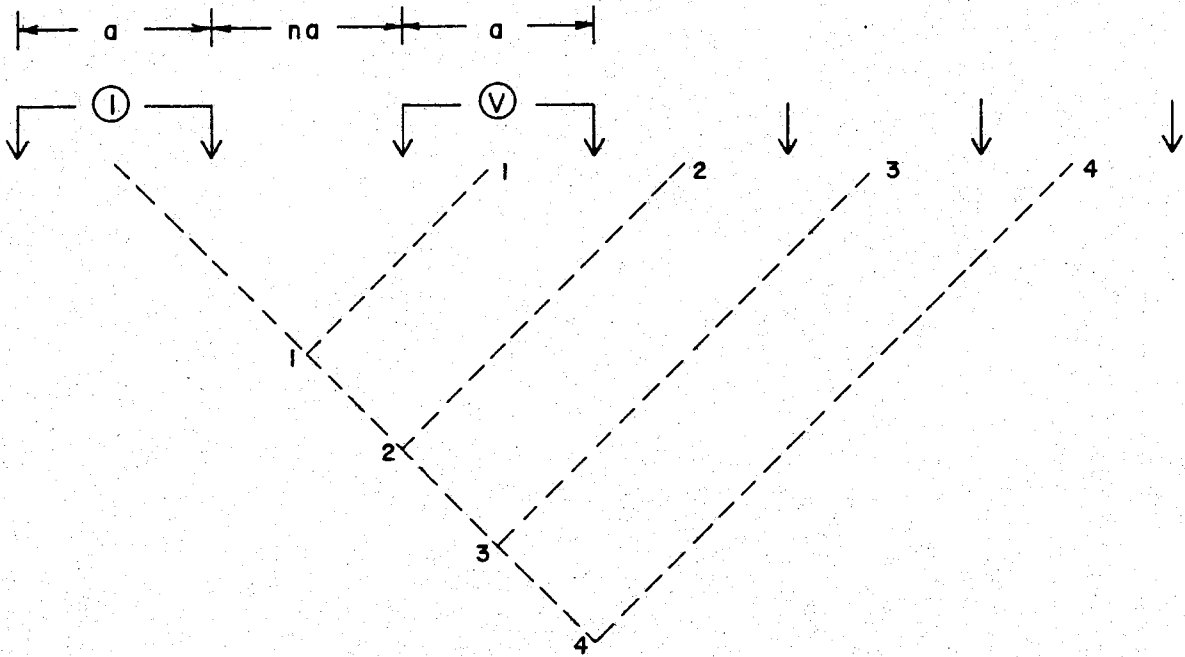
# LOCATION MAP



Department of  
Petroleum Resources  
ASSESSMENT REPORT  
No. 3501  
SCALE 1:500,000  
0 5 10 15 20 25  
MILES



DIPOLE - DIPOLE ARRAY

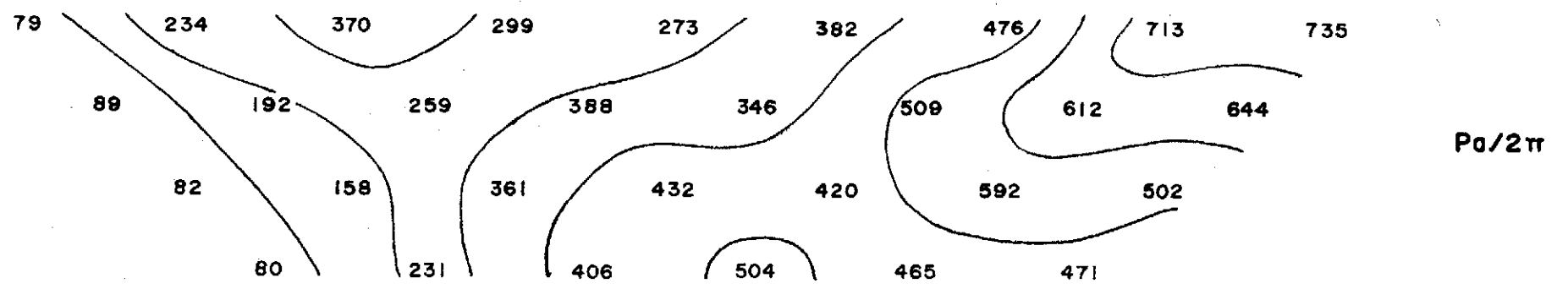
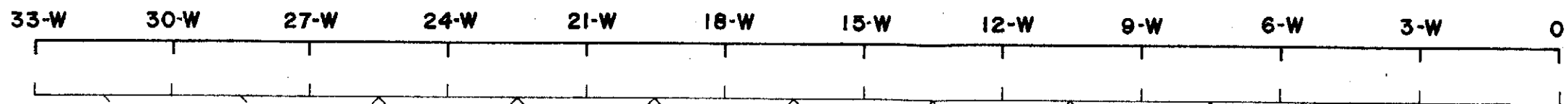


ANOMALOUS ZONE

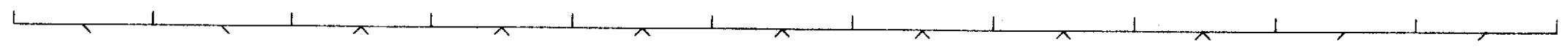


POSSIBLE ANOMALOUS ZONE

3501 M4



Po/2π

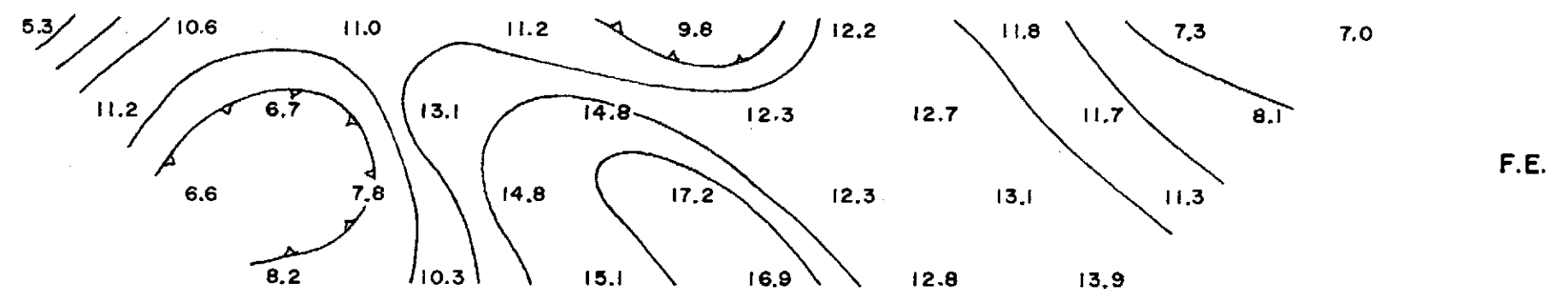


IMPERIAL OIL ENTERPRISES LTD.

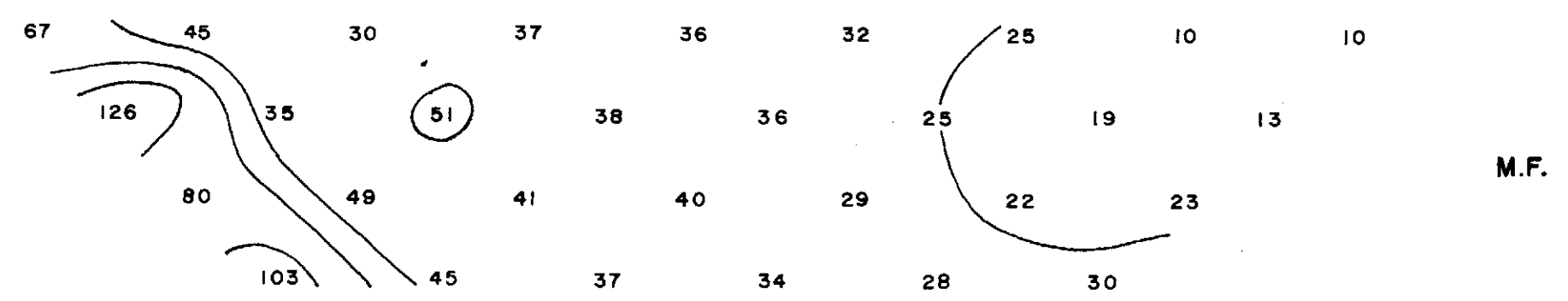
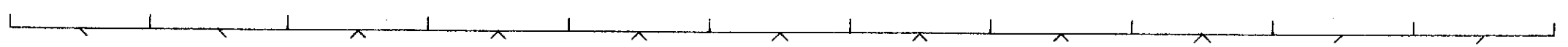
KINASKAN LAKE AREA

LINE 0+00

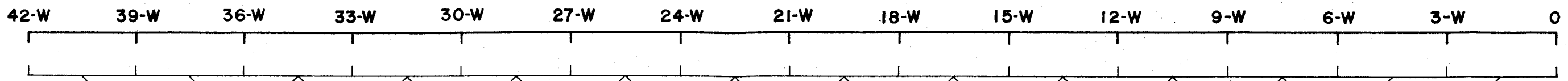
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F.R. - 5+0.3 C/SEC.  
a=300'



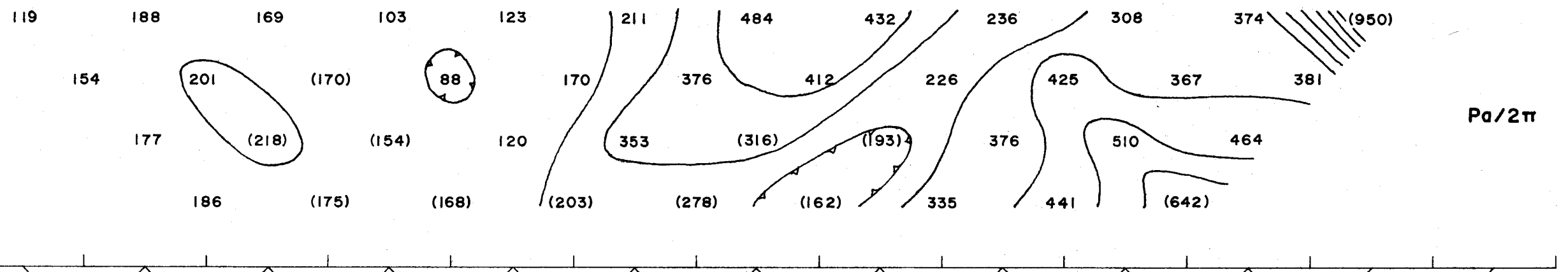
F.E.



M.F.



3501 M-5



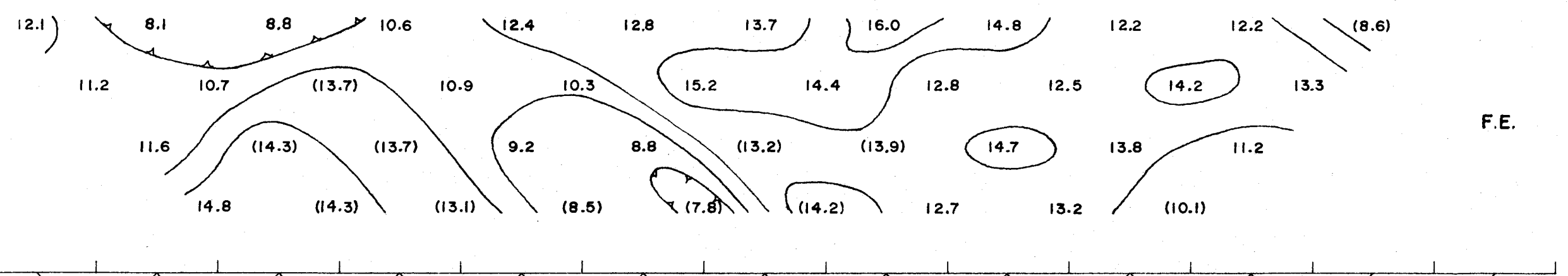
Pa/2π

IMPERIAL OIL ENTERPRISES LTD.

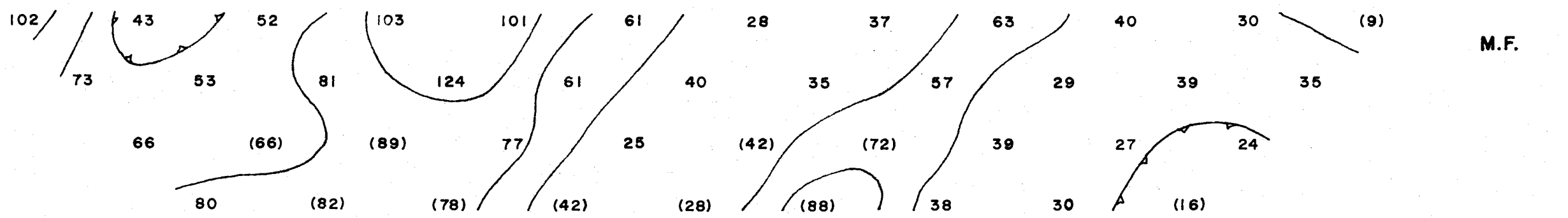
KINASKAN LAKE AREA

LINE 10+00 N

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 a = 300'

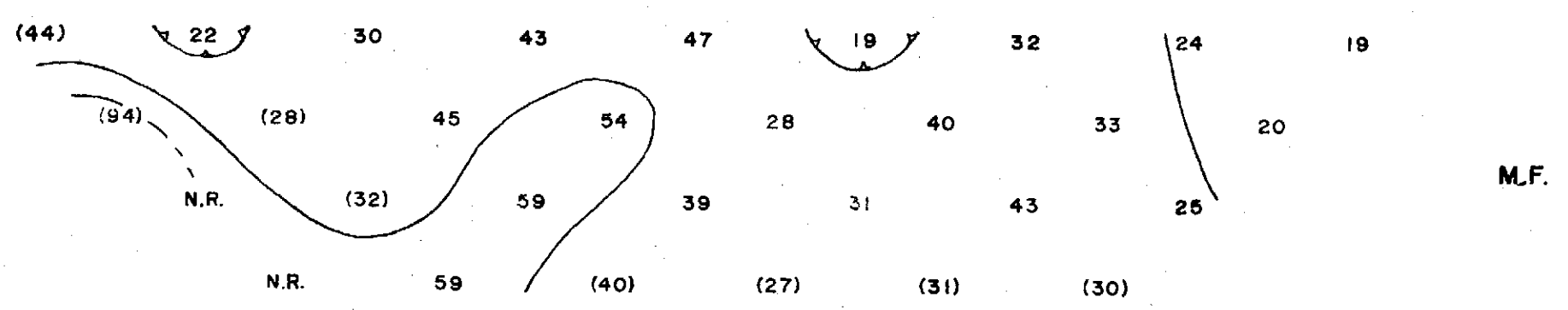
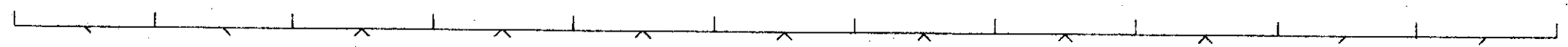
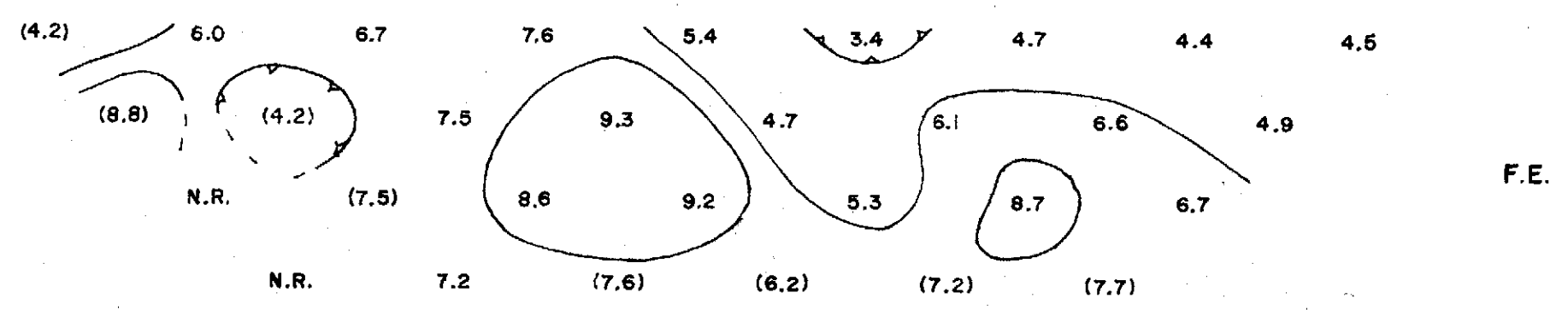
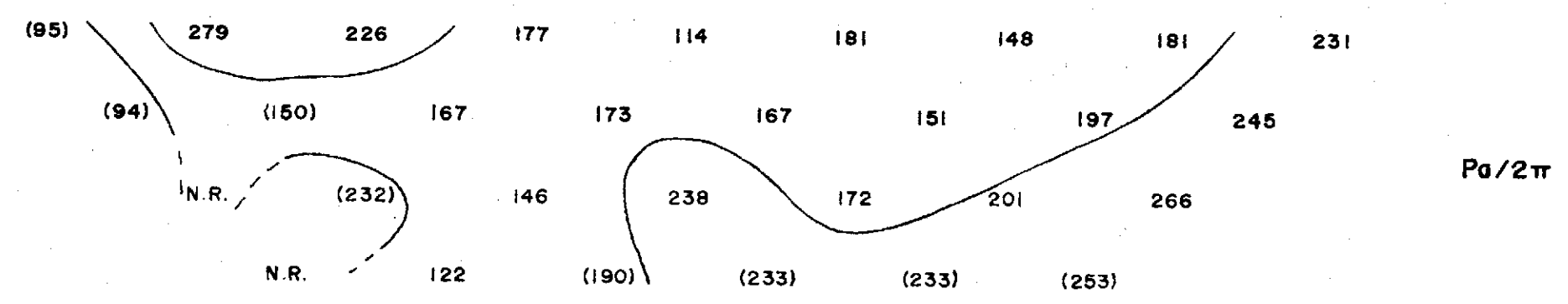
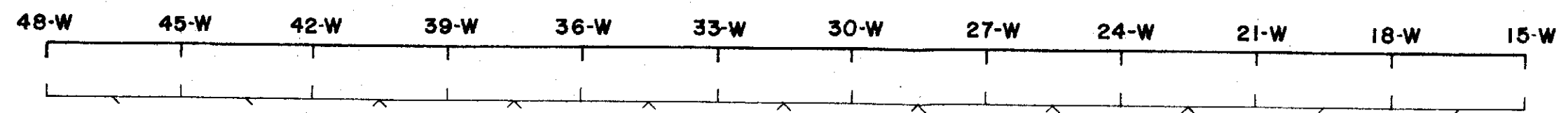


F.E.



M.F.

# 3501 M-6



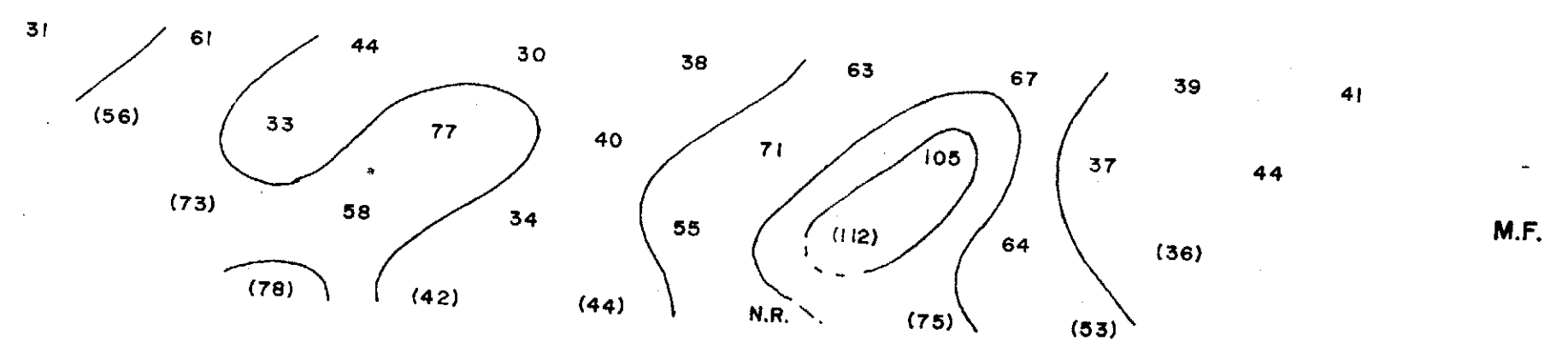
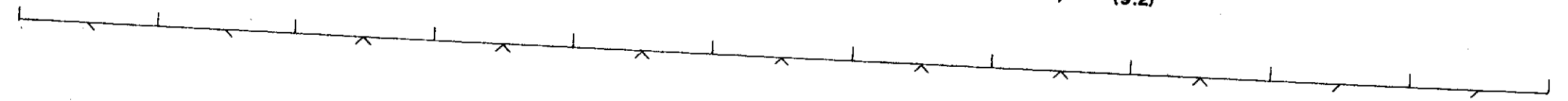
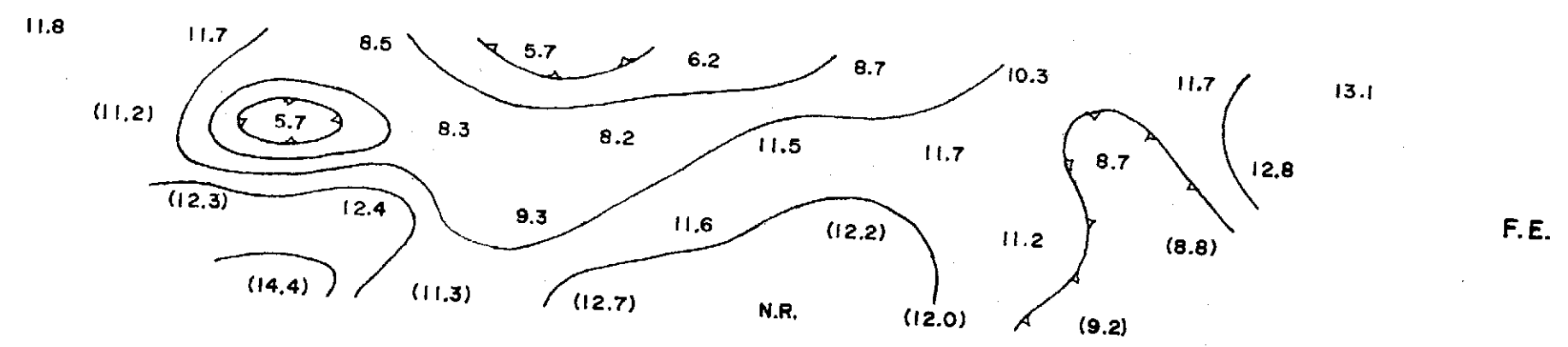
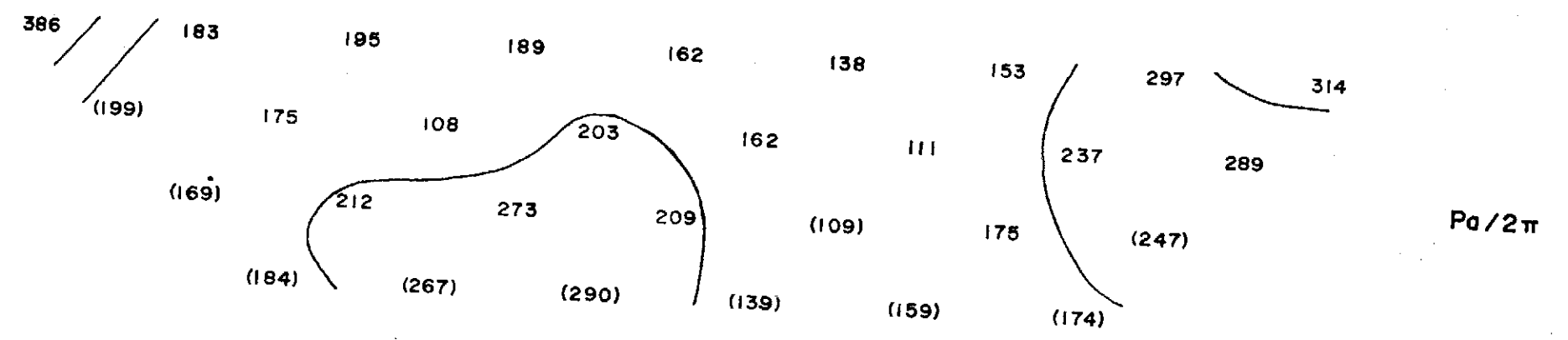
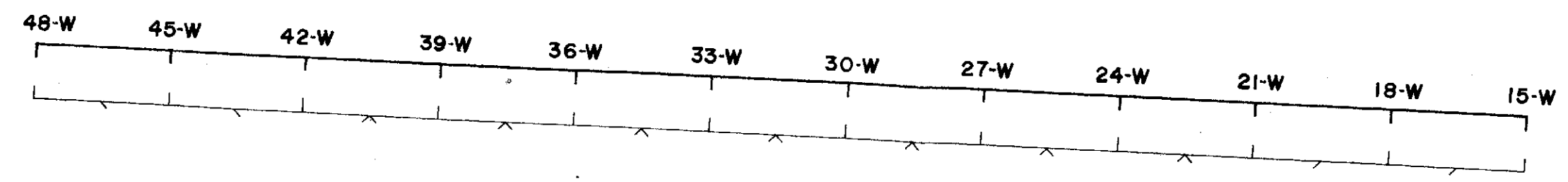
IMPERIAL OIL ENTERPRISES LTD.

KINASKAN LAKE AREA

**LINE 10+00 S**

SCALE 1" = 300'  
 F.R. — 5+0.3 C/SEC.  
 α = 300'

3501 M-7



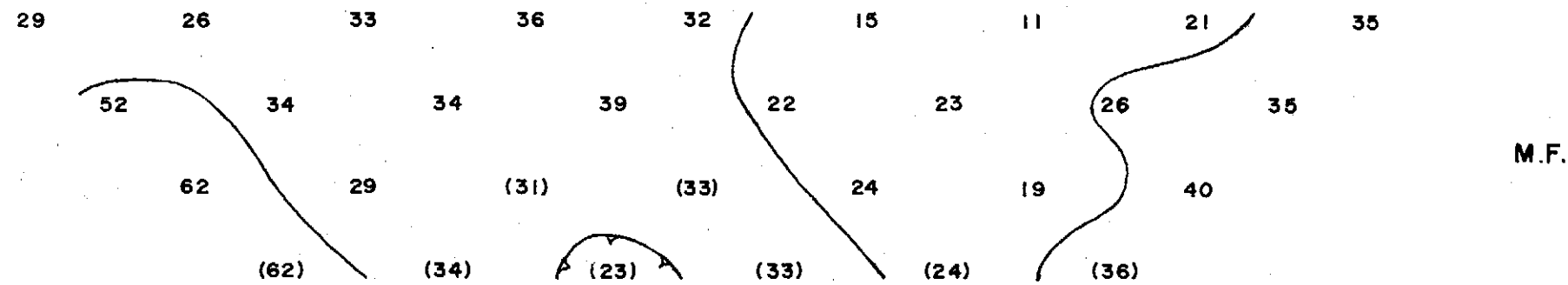
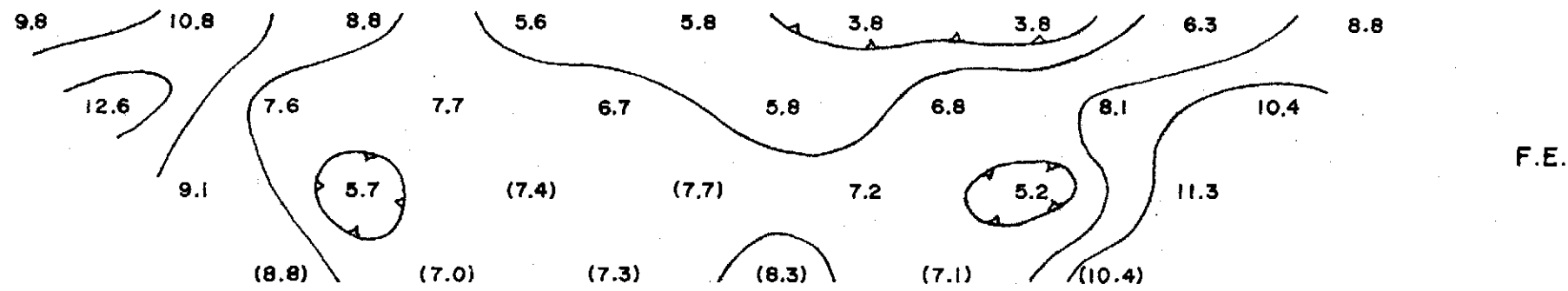
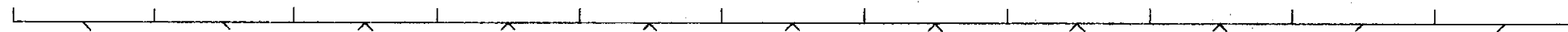
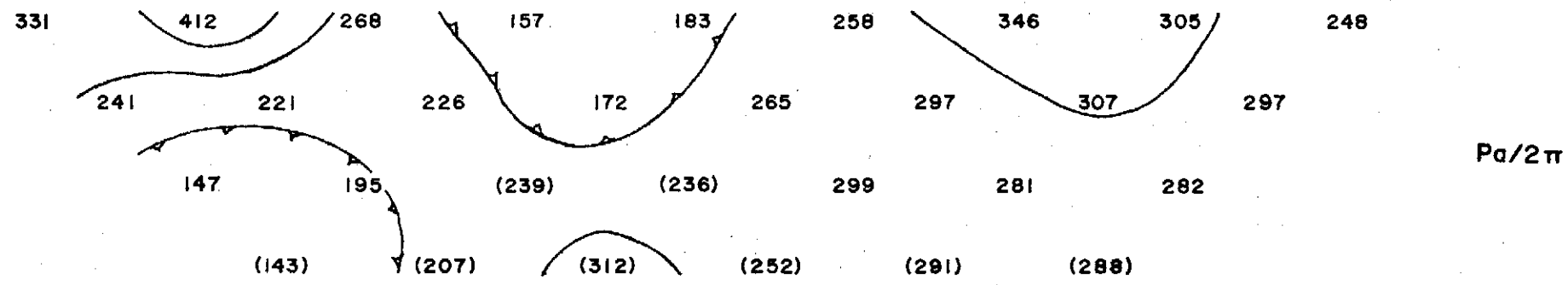
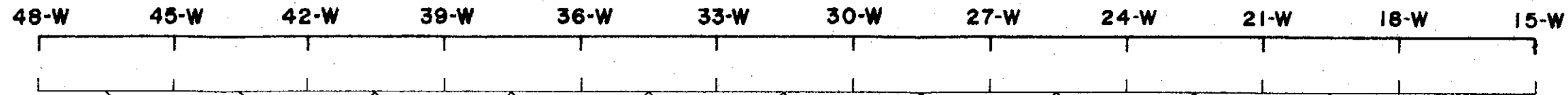
IMPERIAL OIL ENTERPRISES LTD.

KINASKAN LAKE AREA

LINE 16+00 N

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a=300'

3501 M-8



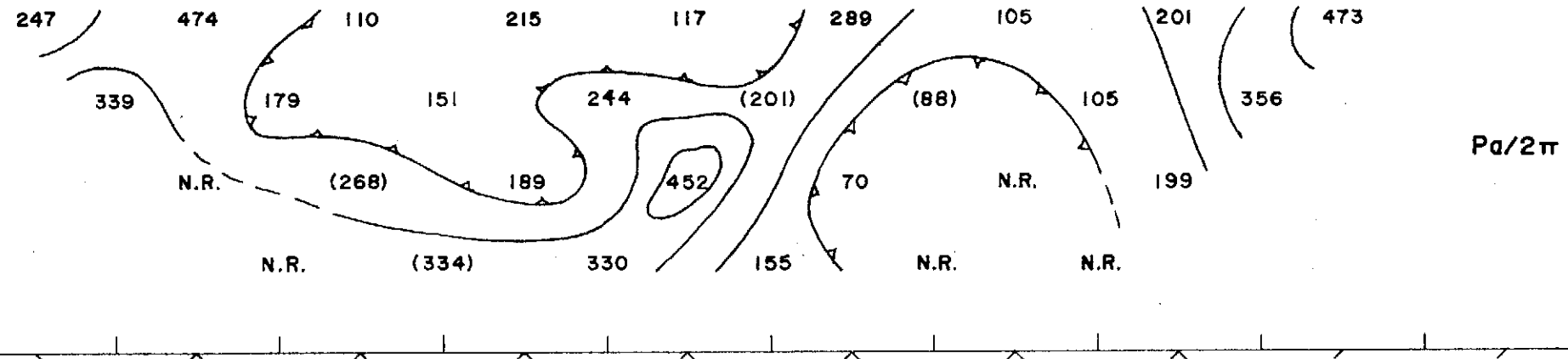
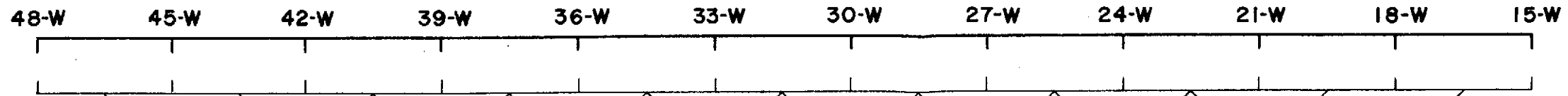
IMPERIAL OIL ENTERPRISES LTD.

KINASKAN LAKE AREA

LINE 23+00 S

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F.R. — 5+0.3 C/SEC.  
 $\alpha = 300'$

3501 M-9

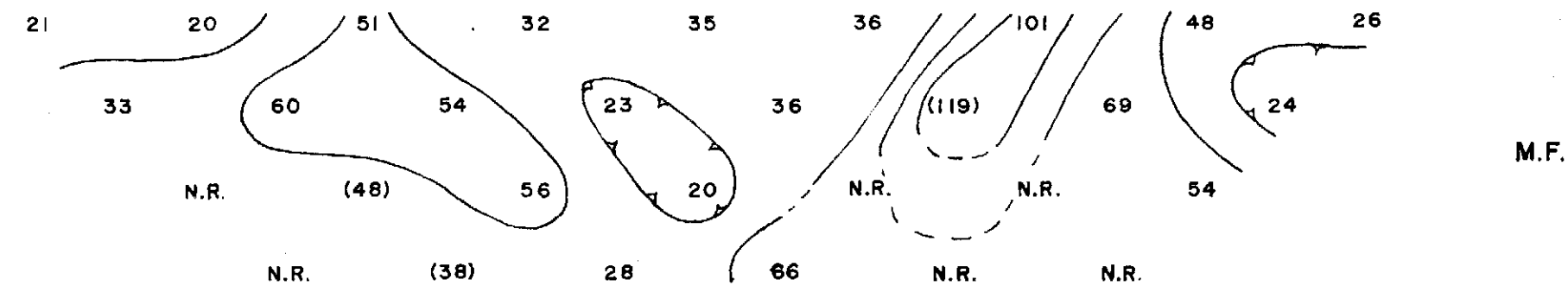
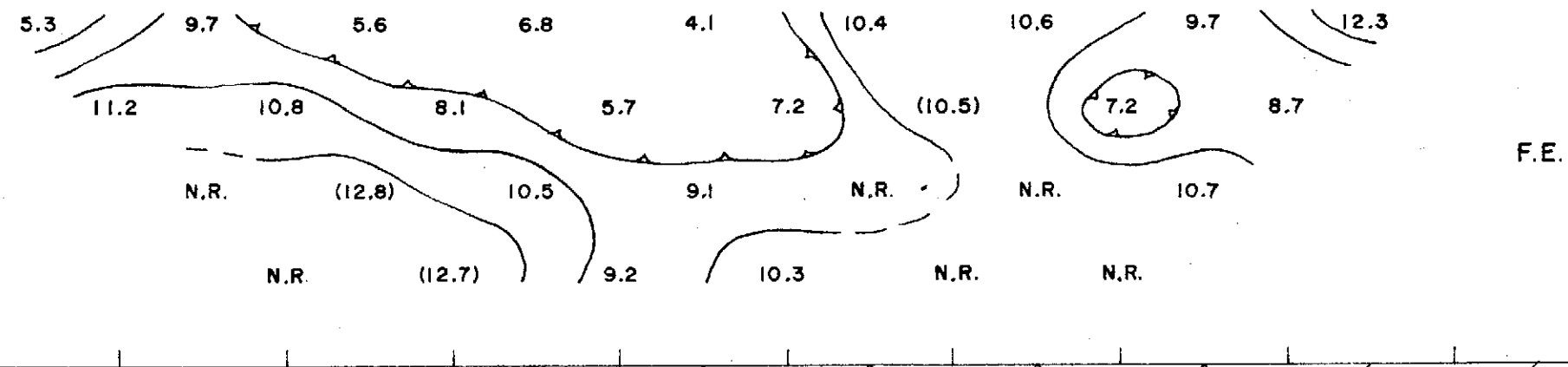


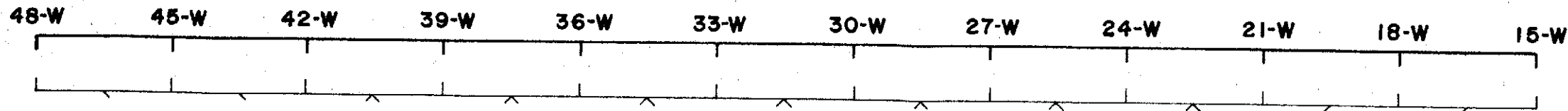
IMPERIAL OIL ENTERPRISES LTD.

KINASKAN LAKE AREA

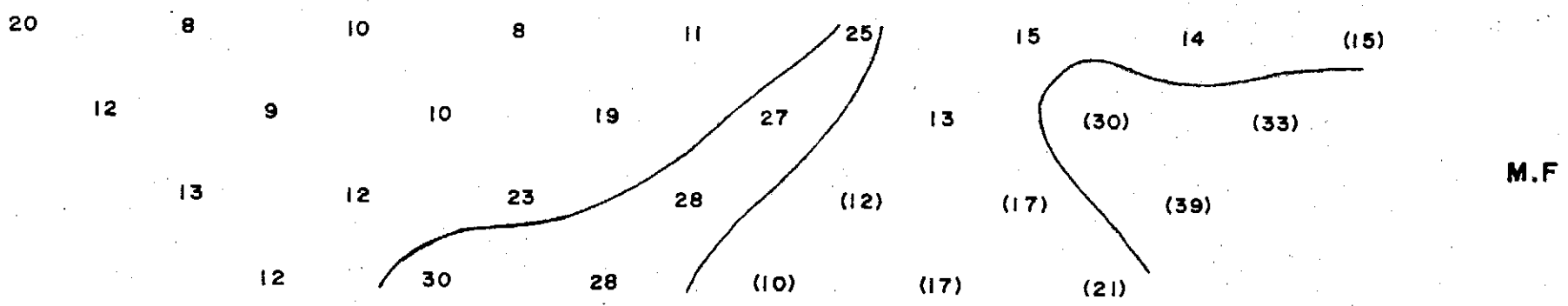
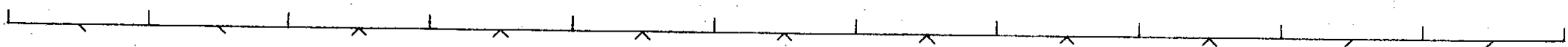
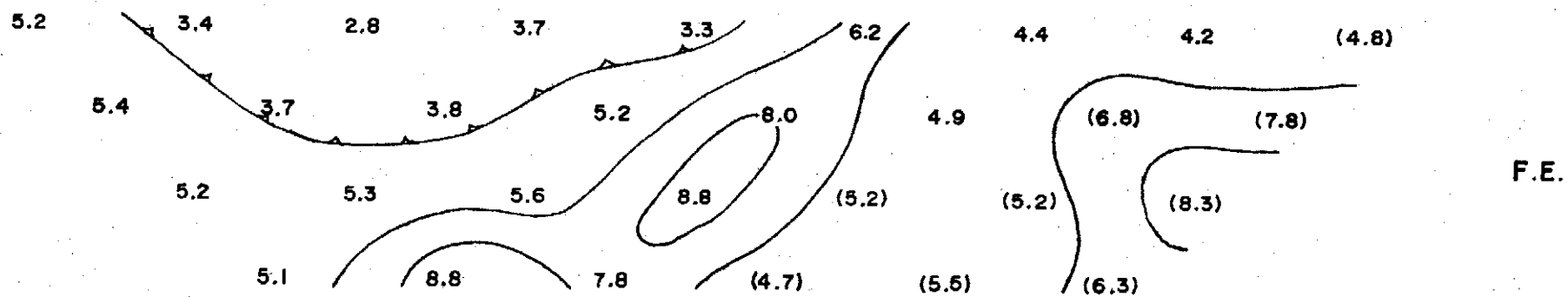
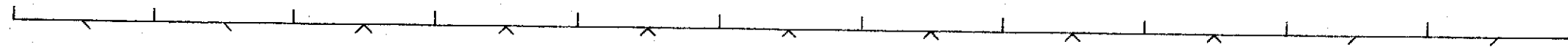
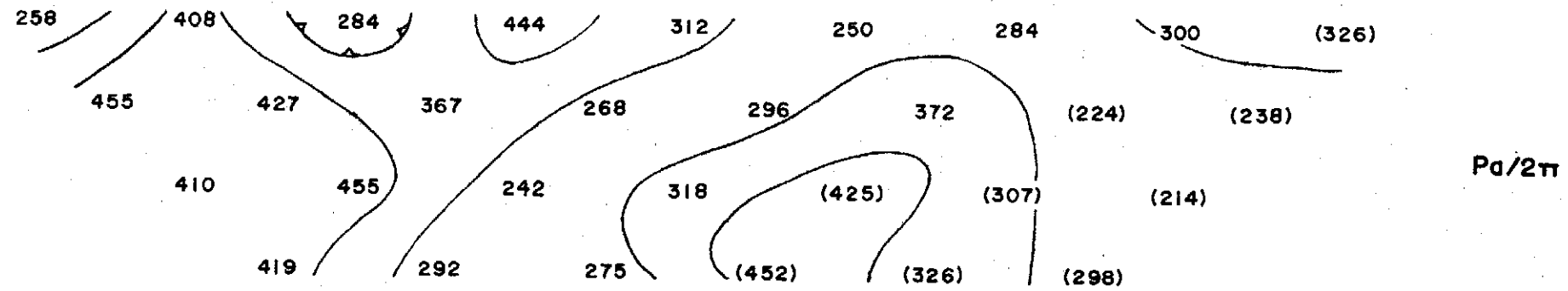
LINE 24+00 N

SCALE 1" = 300'  
F.R. — 5+0.3 C/SEC.  
 $a=300'$





3501 M-10



IMPERIAL OIL ENTERPRISES LTD.

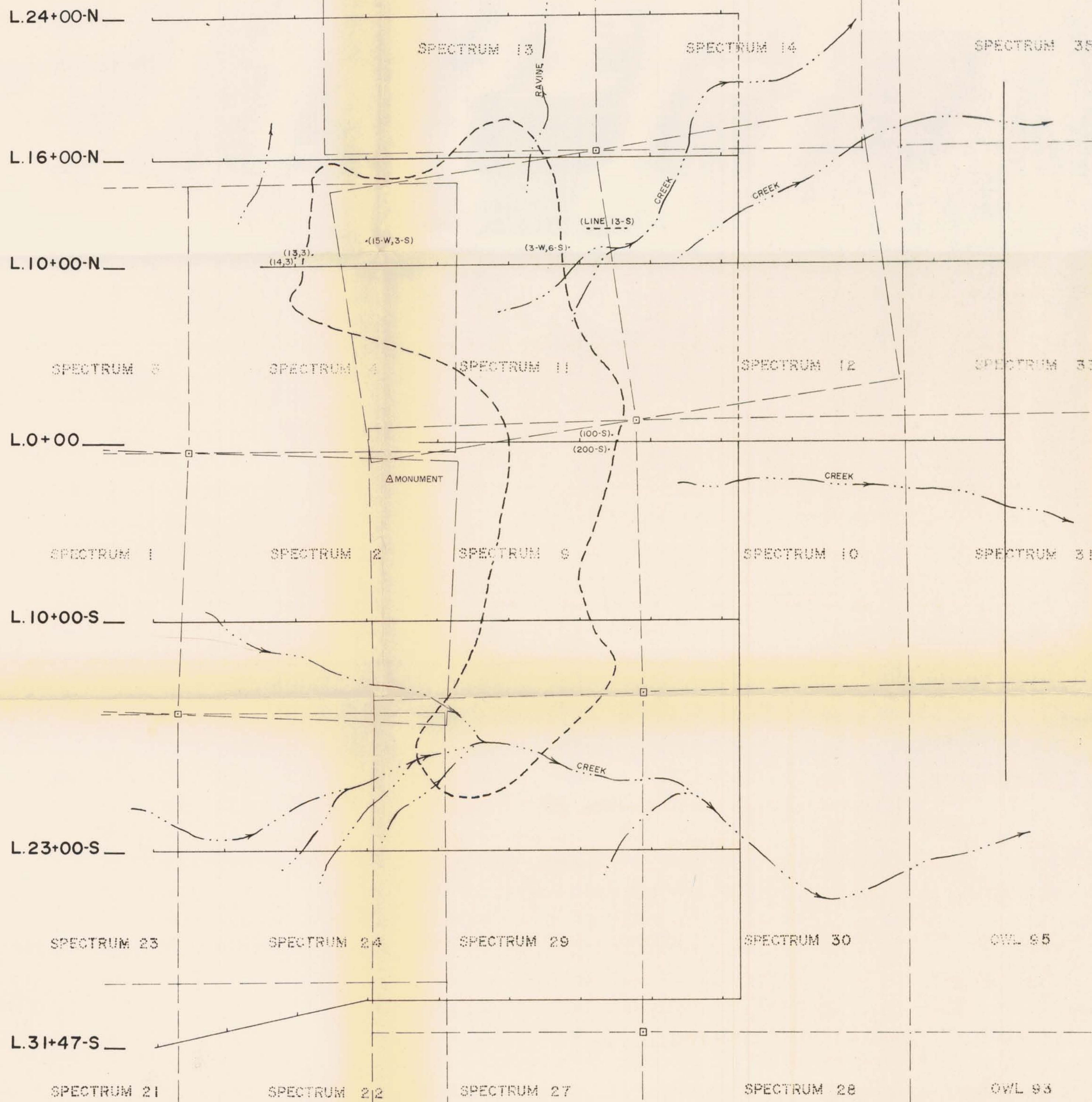
KINASKAN LAKE AREA

LINE 31+47 S

SCALE 1" = 300'  
 F.R. — 5+0.3 C/SEC.  
 a=300'



48-W 44-W 40-W 36-W 32-W 28-W 24-W 20-W 16-W 12-W 8-W 4-W B.L.



**LEGEND**

- SURVEY CUT LINE
- - - CLAIM LINE
- LOCATED CLAIM POSTS
- △ ALTITUDE MONUMENT
- ~ CREEKS—DRY & RUNNING
- ⊖ AREA OF MINERALIZED OUTCROP CONTAINING > 0.1% ESTIMATED Cu.

3501 M-2

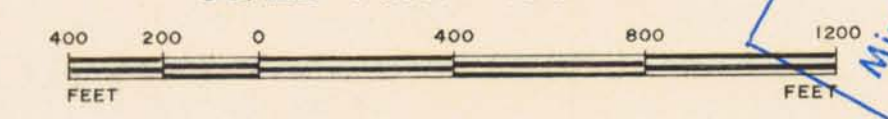
**IMPERIAL OIL ENTERPRISES LIMITED**

KINASKAN LAKE AREA ; LIARD M.D. , BRITISH COLUMBIA

SPECTRUM CLAIMS

**BASE MAP**

SCALE - 1 INCH = 400 FEET



Department of  
 Mines and Petroleum Resources  
 ASSESSMENT REPORT  
 NO. 3501 MAP #2

MAP No. W-142-1  
 TO ACCOMPANY A REPORT BY  
 PETER E. WALCOTT, P. Eng.  
 DATED - NOVEMBER 1971



PETER E. WALCOTT & ASSOC. LTD.

SEPTEMBER 1971



