

7-6-4-108

REPORT COVERING REFLECTION SEISMIC PROGRAM

OTK.

FORT PROVIDENCE AREA

March, 1969

IMPERIAL OIL ENTERPRISES LTD.

by

O. FRIESEN

Jan. 4, 1972

Project 7-6-4-69-9

Date \_\_\_\_\_

IMPERIAL OIL ENTERPRISES LIMITED  
Producing Department - Western Region

Reflection Seismic Program

Fort Providence Area

Permits 4553, 4554 and 4610

Field work performed by:

Ray Geophysical Company - Party #13 from January 31st  
to March 19th, 1969.



I.O.E. P.W.O. No.'s: A0001-23  
K-081333

Department Code No.: 7-6-4-69-<sup>1</sup>  
\*  
7-6-4-69-9

by

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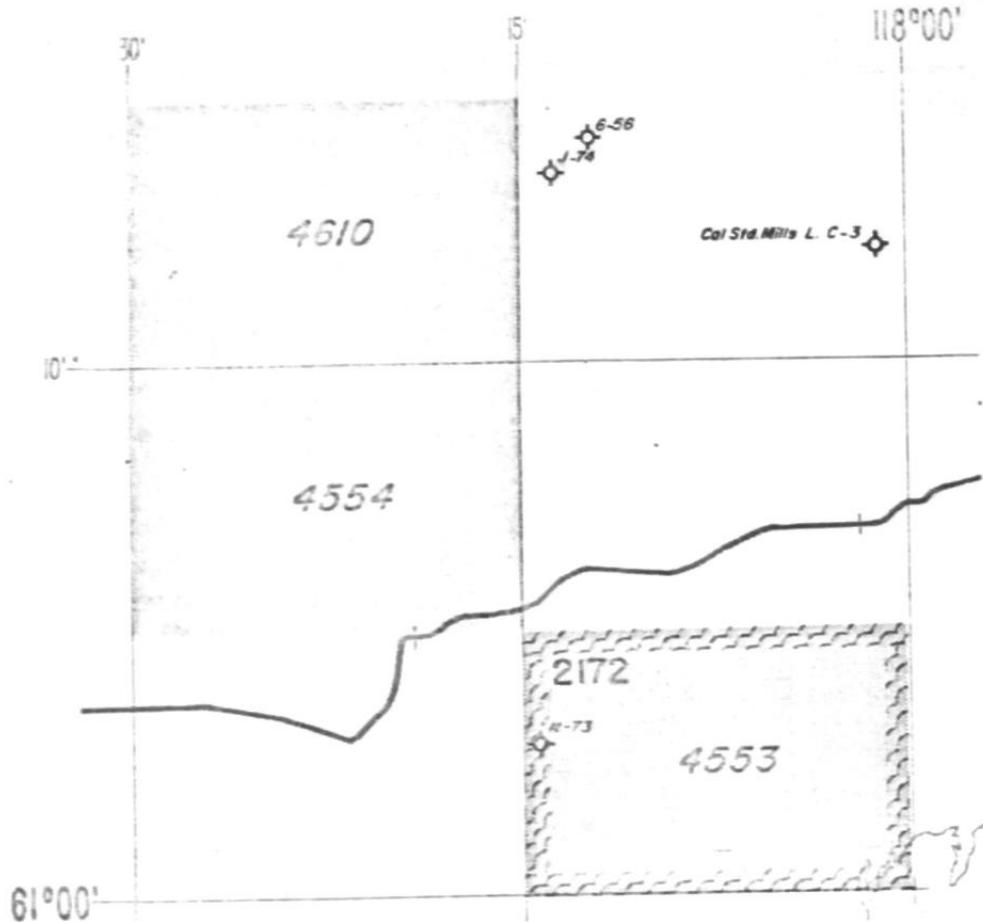
Date: January 4, 1972

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Introduction

This is a report of seismograph operations conducted by Ray Geophysical Co. Party 13 on behalf of Imperial Oil Enterprises Ltd. in the Fort Providence area during the period of March 10th, 1969 to March 19th, 1969.



## FORT PROVIDENCE AREA

Scale 1: 250,000

1 inch to 4 Miles approximately

0 5 10 15

Statistical Data

Note: The statistical data for this project was included in a report of work done by Ray Geophysical Co. Party 13 on permits 4151 to 4160, 4193, 4194, 4490, 4491, 4494, 4495, 4560 and 4561 by Mr. O. Friesen to the Department of Indian Affairs and Northern Development dated November 16, 1970. See Department Code Number 7-6-4-69-1. The following amendments should be made to that report:

Title Page:

Stage I Ray Geophysical Co. Party 13  
from January 31 to March 9, 1969.  
I.O.E. P.W.O. No. A 0002-25  
Department Code No. 7-6-4-69-1

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Stage I Ray Geophysical Co. Party 13

Dates: The move into the Fort Providence area from Fort Simpson was completed on January 30, 1969 and recording commenced on January 31. The program was completed with the vehicles moving to another project on March 9, 1969.

Production: 120 miles, 1426 shot points, average daily production 3.2 miles, 38 working days. No down days.

Project No. 7-6-4-69-9 Statistical Data

Dates: The move from another project in the Fort Providence Area was completed on March 9, 1969 and recording commenced on March 10, 1969. The project was completed and the vehicles released on March 19, 1969.

Production: 28 miles, 329 shot points, average daily production was 2.8 miles per day. The crew worked 10 days on these permits. There were no down days.

Equipment: Recorder, shooting truck, reel truck, 2 survey vehicles, 5 shot hole drilling rigs, 2 water trucks, 2 bulldozers. The Imperial Oil Aztec aircraft was used for supervisory and scouting trips. The supplies were purchased locally or brought in by air charter service provided by Keir Transport and Mercury Flights.

Twenty-four trace digital PFS 2-10 system recording instruments were used.

Personnel: Party Manager, Operator and Assistant, Shooter and assistant, 2 surveyors, 2 rodmen, 4 geophysical helpers, 5 drillers, 5 drill helpers, 1 water truck driver, 4 dozer operators, 1 cook, 1 cooks helper and 1 camp attendant.

Surveying: Horizontal angles were measured to + or - 20 seconds with a Wilde T-16 theodolite. Horizontal and vertical control was based on baseline survey and previous seismic control.

Conditions: Weather conditions were normal for the time of year. Temperatures varied from 10°F to -40°F.

#### Field Procedures

A 300% C.D.P. method of shooting was used. Single shot holes were used, with hole spacing of 440'; stations were spaced 110' apart

with 8 geophones over 110'. Charge sizes varied from 2 1/2 to 10 pounds of "Geogel". The most common charge size was 5 pounds. The average shot hole depth was 40 feet. Drilling was difficult over much of the project.

#### Data Processing

All of the seismograms were corrected to a datum of +1500' A.S.L. using a datum velocity of 10,000'/sec. Weathering corrections were applied where the base of shot did not penetrate the weathering layer.

The data was played back digitally with 3-fold stacked sections produced on variable density film. All of the data was filtered with selective filters to remove low frequency interference energy. Multiple interference was considered to present no problems, therefore the data was not deconvolved. The processing was done in Imperial Oil's Processing Centre.

#### Results and Interpretation

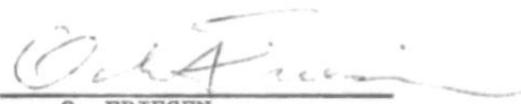
The quality of seismograms obtained was fair to good for this area. The only consistent reflection which could be carried was the Middle Devonian Carbonate. A time structure map on this reflection was constructed. Weak, discontinuous reflections both above and below the Middle Devonian Carbonate were seen but were not consistent enough to map. Thus no isochron maps were constructed. The interpretation of this area was made from this map with assistance from geological control. The seismic coverage was tied into a velocity survey on a well in the Fort Providence area.

As a result of the interpretation made from this seismic coverage, most of the area appeared to be "regional" with no significant anomalies. A fault with a downthrow of approximately 100' was seen.

Note: A previous report on permit no. 4553 (see Department Code No. 7-6-4-71-2) gives a slightly more complete interpretation of the southern part of the area.

Summary and Conclusions

In summary 28 miles of 300% C.D.P. seismic coverage were shot on permits 4553, 4554 and 4610 by this party. This shooting has been interpreted to show some faulting in the southern part of the area, with little else obviously anomalous.



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