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A. Summary of Seismic Operations.

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2. Surface Elevations.

THIRD YEAR REPORT
OF
NORTHWEST TERRITORIES
PETROLEUM & NATURAL GAS PERMITS 1054 AND 1055.

INTRODUCTION

N.W.T. Oil and Gas Permits 1054 and 1055 are situated between longitudes $122^{\circ}30'$ W and $122^{\circ}45'$ W and latitudes $60^{\circ}10'$ N and $60^{\circ}30'$ N in the N.W.T. and contain 126,746 acres. The permits were issued on December 10, 1956 to Mobil Oil of Canada, Ltd., for the purpose of conducting exploratory work in the search for conditions favorable to hydrocarbon accumulation.

METHOD OF INVESTIGATION

Surface geological and reflection seismograph work was carried out over the permits. The exploratory costs applicable to this reservation are shown on an audited statement. A summary of the seismic work follows.

The reflection seismograph survey of the permits was conducted by Mobil Oil of Canada, Ltd., during the month of March, 1959. A contract seismic crew owned by Exploration Consultants Incorporated was employed to do the survey. The crew completed a total of 25 days (12 hours each average) of reflection seismograph work. A cumulative total of 202 profiles, were recorded by the crew.

The following maps are included with this report:

- (a) A shot hole location map with ground surface elevations at each shot point.
- (b) A map showing the location and two-way corrected time of a reflecting horizon at the top of the Paleozoic at each shot point.

PHYSICAL CONDITIONS

The Muskeg river flows west through the northern half of Permit 1055 and has cut a deep gorge with several sharp canyons extending from both sides. Otherwise the elevations dip gently toward the river. Elevations range from 975 feet on the Muskeg river to 1654 feet in the northern part of Permit 1054. Several small lakes, surrounded by muskeg are scattered throughout the area. Light timber covers most of the area with one heavy and dense stand extending northwest-southeast through the southern half of Permit 1054.

ACCESS

Access to the area is via the Simpson Trail, a winter tractor road from Ft. Nelson, B.C., to Fort Simpson in the N.W.T. The permits can be reached by travelling up this winter road approximately 105 miles and following seismic lines in a westerly direction for about 40 miles. The permits can also be reached by air travel and are about a one hour's flight from Ft. Nelson. There are several lakes on the permits suitable for an Otter or Beaver aircraft to operate from.

CAMP

The field crew and interpretive staff, a total of approximately 20 men were based in a trailer camp consisting of 10 units. Supplies were obtained from Ft. Nelson.

COMMUNICATION

Communications were maintained with Ft. Nelson and Dawson Creek by means of an MRT-600 radio. Three frequencies were available.

EQUIPMENT

Three bulldozers were used for clearing seismic lines. Bulldozing contractors provided their own camps and supplies and employed seven men.

Two truck mounted Mayhew 1000 drills, adapted for use with water only, were used for drilling. Water trucks of approximately 700 gallon capacity supplied the drilling water from small lakes and rivers within the permits.

The recording equipment was truck mounted and consisted of 24 regular seismic amplifiers used in conjunction with an S.I.E. MR 4 FM tape recording system.

SURVEYING

All elevations and locations are referred to Monument No. 53 on the Northwest Territories and British Columbia boundary. All vertical traverses were double run with an alidade and the horizontal traverse was run by transit.

TYPICAL HOLE LOG

A typical hole log for these permits is:

0 - 20 feet - muskeg, clay and boulders.
20 - 40 feet - soft or hard shale with occasional sandstone stringers.

Bran and polygel were used for blind holes.

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The field crew and interpretive staff, a total of approximately 20 men were based in a trailer camp consisting of 10 units. Supplies were obtained from Ft. Nelson.

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RECORD QUALITY

The record quality varied from poor to very good and appeared to be dependent on the surface conditions and relative hole depth. Continuity and character correlation of most horizons are good.

DISCUSSION

The geologic section was believed to be contained within a time zone of 1.5 seconds measured from the time break. The regional strike appears to be northwest - southeast. Strong dip is indicated on the Mississippian horizon.

COPY (Original) D. V. Bigelow
Signed

ACK/DVB/rg.

D. V. Bigelow.
Staff Geophysicist.



