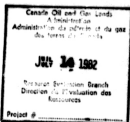


Mobil

057-06-04-113



REPORT ON SEISMIC SURVEY

**TRDUT LAKE, N.W.T.
(COLES LAKE, B.C.)**

**Submitted By: E.H. Kohse
J.G. Bunker**

RECORDED MARCH 1 to MARCH 12, 1981

BY MOBIL PARTY NO. 248 (Century Geophysical S-32)

PROJECT NUMBER 57-06-04-81-01

LAND USE PERMIT NUMBER N80B419

Mobil Oil Canada, Ltd.

March, 1982

ACTION SLIP

FINAL REPORTS

Project No. 57-06-04-81-01
57-06-04-113

The following action has been taken:

Receipt acknowledged✓

Branch Card made✓

Reports and maps date-stamped.....✓

Reports and maps labelled.....✓

Date rec'd entered in project ledger.....✓

Memo sent to Land Management.....✓

Reports for review list edited.....✓

Inventory sheet made✓

REVIEW and APPROVAL made by:

Eng. and Control✓

Resource Eval. DCM 1/2/72.....✓

Env. and Protect.

PLEASE STATE COMMENTS ON ATTACHED SHEET.

57-06-04-81-01
PROJECT NUMBER: 57-06-04-113
COMPANY: Mobil Oil Canada
REPORT TITLE: Seismic Survey
Trout Lake, NWT / Coles Lake, BC

COMMENTS:

ENGINEERING AND CONTROL BRANCH

ENVIRONMENTAL AND PROTECTION BRANCH

RESOURCE EVALUATION BRANCH

OK per

CANADA BENEFITS BRANCH

REPORT OF A
REFLECTION SEISMIC SURVEY

CONDUCTED FOR

MOBIL OIL CANADA, LTD.

057-06-04-113

BY

CENTURY GEOPHYSICAL CORPORATION OF CANADA

IN THE

TROUT LAKE AREA, N.W.T.
(COLES LAKE)

60° 00' NORTH, 122° 20' WEST

RECORDED MARCH 1/81 to MARCH 12/81

PROJECT NUMBER 57-06-04-81-01

LAND USE PERMIT #N80B419

E.H. KOHSE

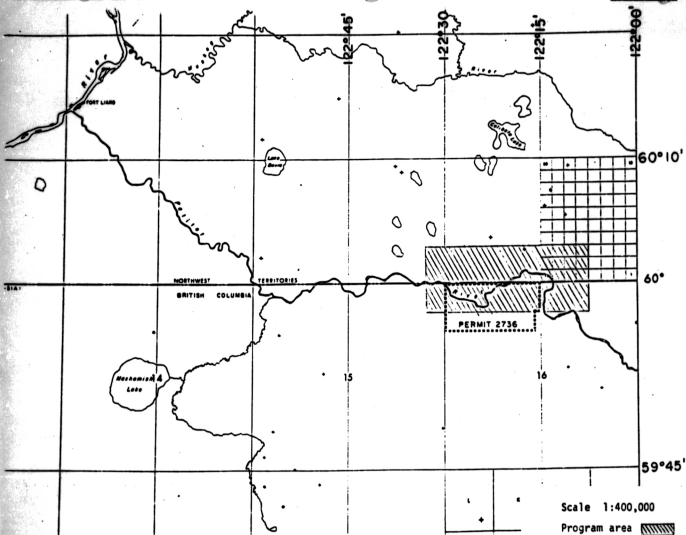
J.G. BUNKER

MARCH, 1982

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(Enclosures 1 to 4 and Record Sections in attached folder.)



INTRODUCTION

This report deals with a seismic survey conducted for Mobil Oil Canada, Ltd. by Century Geophysical Corporation of Canada in the general Coles Lake (Trout Lake) area of south western N.W.T. The survey was conducted from the border to approximately 6 km's north. Portions of a number of lines extend across the border into British Columbia. The general location of the area surveyed is shown on the index map.

Field operations by Mobil Party #248 (Century S-32) commenced in the area on February 21, 1981 when bulldozers started clearing seismic lines. Drilling commenced in the area on February 24, 1981 and recording on March 1, 1981. Shooting in the area was completed on March 12, 1981.

Recording time on this project was 9 days (10.95 shifts) not consecutive. Of this total an estimated 7.2 recording days (87 hours) were spent in the N.W.T. and 1.8 days (22.5 hours) in B.C. During this period 44.54 kms. of multifold seismic data were recorded of which 35.49 kms. were in the N.W.T. and the remaining 9.05 kms. were in B.C.

This report is submitted in fulfillment of the requirements set forth by the "Notice of Commencement of Exploratory Work" document, Project #57-06-04-81-01 obtained by Mobil Oil Canada, Ltd.

Lines shot during the survey are shown on the accompanying shot point map labelled Enclosure 1 and surface elevations can be found on maps labelled Enclosure 2.

FIELD OPERATIONS

Access to the project was by the Cabin Lake Road and a portion of the Simpson Trail, all within British Columbia. The campsite was located on the Simpson Trail just south of the Petitot River crossing. No campsite was occupied in the N.W.T. An existing seismic line was opened from the Simpson Trail to the program area where shooting commenced on Line 248-0-107. Work progressed from this point to the westward. When drive time became excessive helicopters were used to transport the field personnel from camp to the area of operations. No airstrips were constructed. Access and detours are shown on Enclosure 3.

The most serious problem encountered in this survey was the difficult terrain where the lines crossed streams tributary to the Petitot River. Local relief of 60 - 100 m. can be encountered in these sharply incised valleys. Away from the river, terrain presented no problem since it is dominated by flat open muskeg with patches of light timber cover.

A second problem was the lack of water for shot-hole drilling. Water from the Petitot River was not readily available due to the long haul back to the Simpson Trail crossing. Most of the lakes shown on the map are shallow and were frozen to the bottom. Streams are generally dry.

It would be advisable to increase the normal complement of two water trucks to three if further work is contemplated for this area.

Surveying was accomplished by a four man crew from Horkoff Surveys' who were contracted to Century. Vertical and horizontal traverses were run using a Wild T-16 theodolite. Survey control was based on geodetic

benchmarks along the Simpson Trail and the B.C./N.W.T. boundary monuments. Final co-ordinates were given in six degree U.T.M. grid. All closures were satisfactory and within the limits imposed for this prospect. The survey tied satisfactorily with previous surveys in the area.

Bulldozing commenced on February 21, 1981 and was completed on March 5, 1981. Bulldozing equipment was contracted from Ken Borek of Dawson Creek, B.C. and consisted of two D6D bulldozers with wide pads and one John Deere farm tractor for dragging the lines. The bulldozers were double shifted and were generally able to provide sufficient open line for the recording crew. The farm tractor was on single shift.

Line clean up and restoration was contracted to Bee Ant Holdings Ltd. (Phil Gillis) of Fort Nelson, B.C. The work was completed by spring breakup. The lines were inspected and approved by the Land Use Inspector from Fort Liard.

Shot-hole drilling commenced on February 24 and was completed on March 7 (entire project). Seven drills were used to complete the project. These consisted of 4 Sewell 5 ft. Augers, 2 Top Drive 10 ft. Augers and 1 conventional Mayhew 1000. Drilling conditions in the muskeg away from the river were fair to good. However, much poorer conditions were encountered near the river or its tributaries where gravel was present. Where gravel was present near the surface it could only be drilled by the conventional rig. In such cases the production was low, being from 1-3 holes per day. No flowing holes were reported.

Shot hole depth for this project was 15 to 18 m. (50 to 60 ft.) which was established from previous experimental work done in this area.

A typical hole log was clay, clay and boulders, and gravel in the locations noted above. The best drill production was provided by the Top drives who drilled an average of 118.9 m. per 10 hr. shift. This was followed by the Sewell Augers with an average of 117.4 m. per 10 hr. shift and the conventional with an average of 24.2 m. per 10 hr. shift. For the total project, including B.C., 422 holes were drilled for a total of 7,165.6 m. Of this total 323 shot-holes (5,484.5 m.) were drilled in the N.W.T.

Recording commenced in the area on March 1, 1981 and was completed on March 12, 1981. Instrumentation, parameters and geophone array details are listed below. Note that Appendix A shows various spreads utilized for this program. Appendix B gives details of intervals, hole depth, charge size and geophone array on a line by line basis.

Traces/Record	48
Spread - Bilateral	24 - 24
- Asymetric Bilateral	36 - 12
Subsurface Coverage	1200% and 2400%
Shotpoint spacing	130 m.; 100 m.; 65 m.
Receiver group interval	65 m.; 50 m.
Receiver group length	66 m. (12 phones)
	132 m. (24 phones)
Geophones/Group	12 or 24
Geophone interval	6 m.
Near trace offset	65 m.; 100 m.; 130 m.
Geophone type	GSC 20D (8 HZ.)
Recording Instruments	DFS V

Gain Mode	I.F.P.
Sample rate	2 ms.
Format	SEG B (1600 B.P.I.)
Recording filters	lo cut 12 HZ. @ 18 db/oct. hi cut 128 HZ.
Record length	3 sec.
Energy source	Dynamite (single hole)
Charge size	1.1 kg. or 0.5 kg.
Charge depth	18 m. or 15 m.

EXPERIMENTAL SHOOTING

Field parameters for this project were determined from experimental work conducted in the area in 1979 and 1980. At the beginning of the present survey a minor amount of testing was done in a poor data area north of the Petitot River. This consisted of tests to determine optimum charge size depth, and geophone array. One line was shot 2400X in an attempt to enhance data quality.

DATA PROCESSING

Computer processing of all data gathered was performed on Mobil's Phoenix computer facility based in Calgary, Alberta.

The following computer processes were applied:

- 1) Demultiplex
- 2) Remove DC Bias
- 3) Binary gain recovery
- 4) Trim
- 5) Trace edit to delete poor traces
- 6) Gather
- 7) Trace mute to suppress high energy first arrivals
- 8) Deconvolve
- 9) Weathering statics
- 10) Velocity determination
- 11) Normal move-out corrections
- 12) Filter
- 13) Elevation - Datum statics
- 14) Surface consistent statics
- 15) Residual statics
- 16) Stack
- 17) Trim
- 18) Gapped deconvolution for multiple suppression
- 19) Filter
- 20) Migrate (F-K domain)
- 21) Trim

The above was standard procedure however, an exception to the above were Lines 248-0-107 and 214, which were not migrated but were flattened on the Upper Devonian Tetcho Horizon.

INTERPRETATION AND RESULTS

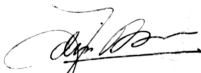
The data quality was generally fair to good throughout the area.

The seismic events which can be mapped include the Upper Devonian Kotcho and Tetcho and the Middle Devonian Slave Point. The Upper Devonian Jean Marie can be mapped on the two lines in the eastern part of the area, (248-0-107 and 248-0-214) but is generally not evident on the remainder of the lines to the west.


A typical basin to reef crossing is shown on the western portion of Line 248-0-93. The current program confirms the interpretation of previous data and also provides additional detail with regard to local faulting and structural conditions. A contoured isochron map is attached and is designated as Enclosure 4.



E.H. Kohse,
Geophysical Specialist.



J.C. den Boer,
Geophysical Manager.



J.G. Bunker,
Sr. Geophysicist.

STATISTICAL SUMMARY

	<u>N.W.T.</u>	<u>TOTAL</u>
Number of recording crew days worked	7.2 (87 hrs.)	(9 days 109.5 hrs.)
Number of shot holes drilled	323	(422)
Total drilled (meters)	5,484.5	(7,165.6)
Total profile	301	(400)
Coverage obtained (Kms.)	35.49	(44.54)

Please note that these statistics have been adjusted to apply to the portion of the program in the N.W.T.

The figures for the total project, including B.C., are shown in brackets on the far right.

APPENDIX "A"

Spread Designs Used:

North or East

1. Tr. #48 — Tr. #25 — SP — TR. #24 — Tr. #1
1560 m 65 m 0 65 m 1560 m

Applies to Line Nos. 248-0-93, 248-0-94 and 248-0-95

2. Tr. #48 — Tr. #25 — SP — TR. #24 — Tr. #1
1625 m 130 m 0 130 m 1625 m

Applies to Line Nos. 248-0-96 and 248-0-97

3. Tr. #48 — Tr. #13 — SP — TR. #12 — Tr. #1
1850 m 100 m 0 100 m 650 m

Applies to Line Nos. 248-0-214 and 248-0-107

APPENDIX "B"

Geophone Intervals, etc. Used:

<u>Line No.</u>		<u>Station Interval</u>	<u>Shotpoint Interval</u>	<u>Charge Size & Depth</u>	<u>Geophones Per Trace</u>
248-0-93	1200%	65 m	130 m	1.1 kg @ 18 metres & 0.55 kg @ 15 metres	24
248-0-94	2400%	65 m	65 m	As above	24
248-0-95	1200%	65 m	130 m	As above	24
248-0-96	1200%	65 m	130 m	1.1 kg @ 18 metres only	24
248-0-97	1200%	65 m	130 m	1.1 kg @ 18 metres & 0.55 kg @ 15 metres	24
248-0-214	1200%	50 m	100 m	1.1 kg @ 15 metres	12
248-0-107	1200%	50 m	100 m	1.1 kg @ 15 metres	12