

NORTHERN OIL EXPLORERS LTD.

SEISMIC SURVEY

MILLS LAKE AREA

SURFACE ELEVATION MAP

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1:25,000

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695-6-4-11

Report on a

Seismic Survey

Conducted on the

MILLS LAKE AREA

N.O.E.L.

P. & N.G. Permits 4051-4054, 4058, 4059,

4064, 4065, 4124, 4125

Group 252 - Canada-Cities Service Petroleum

Conducted by

Velocity Surveys Ltd.

January to March, 1969

Report prepared by

J. A. Hudson, P. Geoph. (Alta.)

May 1971

Project Number 695-6-4-68-4

Report on a
Seismic Survey
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TABLE OF CONTENTS

	<u>Page</u>
FIELD PROCEDURES	1
DATA PROCESSING	1
RESULTS AND INTERPRETATION	2
SUMMARY AND CONCLUSIONS	2
STATISTICAL DATA	3

ENCLOSURES:

SURFACE ELEVATION

LONELY BAY - STRUCTURE

Field Procedures

300% CDP shooting, using a spread length of 1950-0-1950 feet was shot in the Mills Lake area. Three hole patterns were drilled to a depth of 40 feet each, with 50 to 75 foot surface separation. The recording instruments used were SIE PT 800 series amplifiers, with PDR 89 tape transport, with 24 trace capabilities, being fed by nine EVS 20 cycle phones per group. The phones were connected in a series parallel hookup.

Station interval was 150 feet to group centres, and shot point flag interval was 600 feet, giving approximately 8 shot points per mile.

Data Processing

Seismic sections were prepared by GEODIGIT, in Calgary, and processed in the following sequence.

1. Edit - convert from field recording to sequential format
2. N.M.O. Correction
3. Statics - Flat to 0.300 sec.
4. Filter - 15/20 - 60/70
5. Deconvolution 50 ms operator
6. Amplitude Recovery
7. Structure corrections
8. Stack and paper display
9. Film display

Structure sections only were prepared, due to the lack of a suitable event to flatten.

Further data processing was done from the seismic data, by listing all the shot point values on digital cards and maps of the Lonely Bay, Precambrian and the interval Lonely Bay-Precambrian being prepared on a flat-bed plotter. Various trend surface maps were attempted, but no useable data was gleaned in this manner.

Results and Interpretation

Map of the only reliable event - Lonely Bay was prepared by NOEL staff. Due to the lack of continuity of the computer maps, they are not regarded as useable.

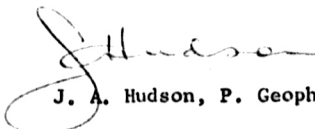
The Lonely Bay horizon exhibits a generally southwest dipping structure, with several small local anomalies. The reversal in the north, to a northeast dip, is thought to be due in part to the thick overburden, and the possible incomplete weathering correction in this area.

Summary and Conclusions

No buildups of the Lonely Bay event diagnostic of reefing were observed. Several local highs were recommended for testing, to check on the possibility of porous zones in the Lonely Bay.

Statistical Data

Dates of shooting	January 13, 1969 - March 5, 1969 March 9, 1969 - March 25, 1969
Dates of line cutting	January 1, 1969 - March 25, 1969
Miles shot	268 miles
Number of shots	2275 shots
Average daily production	3.95 miles
Days worked	64 days
Move days	3 days
Recorder breakdown	2 days
Waiting on drills	2 days
Number of drills	5 days
Survey control	Net set from NTS Bench
Personnel	Party Manager Observer 5 Recording Helpers Shooter Shooter Helper Surveyor Rodman Reel Truck Driver 6 Drillers 6 Drill Helpers 2 Cook Staff 1 Mechanic 6 Bulldozer Operators


J. A. Hudson, P. Geoph. (Alta.)