NTR-480
62,244 Ac.

NTR-479
62,568 Ac.

RIVER

TROUT

LAKE

NOV 9 1965

SHELL CANADA LIMITED	EXPLORATION AND PRODUCTION DEPARTMENT	SOUTHERN EXPLORATION DIVISION
TOPOGRAPHY		
TETCHO LAKE		
Party : 192	Datum :	
Interpreter : E.F. HUEMER	Elevation Corr. Velocity :	
Supervisor : A. ADENSMORE	Filter Base (Corr + D) : 1/25 – 1/60	
Date : MAY 1965	Shot Depths (Ds) : 40'	
Maps : EQ-19	Wx Comp. : UPHOLE REPLACEMENT	
Contour Interval : 25'		
Wavehent Title		
B. Function:	Load Factor Corr. :	
Map Scale : 1" = 4000	Grade Key :	
Enclosure No. :		

REFLECTION SEISMOGRAPH SURVEY OF THE

TETCHO LAKE AREA

NORTHWEST TERRITORIES, WINTER 1965

Shell Canada Limited
Southern Division Exploration
Edmonton, Alberta
October, 1965

CONTENTS

ENCLOSURES

1) Topography

REFLECTION SEISMOGRAPH SURVEY OF THE TETCHO LAKE AREA

NORTHWEST TERRITORIES, SHELL CANADA LIMITED, WINTER 1965

Permits #3026 and 3027, Tetcho Lake Area, N.W.T.

In compliance with section 54 (1) and 2 (b) of the Canada Oil and Gas Land Regulations, the following is a summary of the geophysical work done by Shell Canada Limited in the aforementioned permit area during 1965.

Location:

60° 30' - 60° 40'N, 120° 50' - 121° 50'W. The prospect lies in unsettled country. The crew operated out of a base camp located at the northeast tip of Trout Lake by the firth of Trout River.

Date of Survey:

Seismic recording was conducted between January 4, 1965 and February 13, 1965. Surveying started on December 12, 1964. The drills were in operation between January 1, 1965 and February 12, 1965.

Extent of Survey:

A total of 1187 profiles (including re-shoots) were recorded for 54 miles of subsurface coverage.

Field Conditions:

a) Surface outcrops

b) Topography

Elevation varied from 1750 feet above sea level in the south of the area to 1600 feet in the north.

c) Access Roads

An extension of the existing trail from Fort Nelson had to be cut to get to the base camp. Some previously cut lines were cleared and new lines cut in the course of the survey operations.

Extreme sub-zero temperatures maintained the ground surface in good solid condition throughout the duration of the program however, due to concurrent excessive amounts of snowfall, the lake shore remained fairly soft under the snow. This hampered the transportation of vehicles and equipment on to the lake ice for a number of lines extended into the lake.

d) Weather

During the period of the survey the average temperature during the day was about -20°F. High winds combined with up to -60° temperatures necessitated suspension of field work on several occasions.

Field Procedure:

A. Drilling:

a) Formations:

Formations encountered during drilling included muskeg, clay, sand and gravel.

b) Hole Depth:

The average hole depth was about 40 feet.

c) Casing:

No casing of holes was required.

d) Drilling Equipment:

Drilling equipment consisted of three sewell augers, one 1000 winterweiss and one 1000 mayhew, all truck mounted. One water truck was used in conjunction with the drills.

e) Drilling Problems:

Drilling problems were encountered in the northwest portion of the area (Latitude: 60°40' - 60°50'N, Longitude: 121°00' - 121°20'W), where rotary drills were employed on a much greater scale than had been anticipated. The programmed hole depth of 40 feet top was quite often difficult to attain due to the presence in the hole of wet sandy clay which prevented loading at drilling depth. Due to the importance of maintaining a consistent hole depth, for record quality control, several holes were re-drilled.

B. Recording:

Recording was carried out using a set of Geo Space model III amplifiers coupled with a Geo Space FM-300 magnetic recording system. Eight Electrotech (EVS-2, f = 20 cps. Z = 200 ohms) geophones per station at 20 foot spacing were used on the recording spread.

Shooting and recording parameters were varied considerably over the prospect recording was initiated using single holes (1 x 2½ lbs. @ 30'-40' Top) on every station (station interval = shotpoint interval = 200 feet), shot into 200' - 4800' roll along spreads. On several lines the recording spread was changed to 150' - 3600' with shotpoints on alternate stations (shotpoint interval - 300 feet, station interval = 150 feet).

Due to poor quality data obtained on certain lines or portions of lines, some re-shooting was done either with shorter station intervals (150') or with 3-hole patterns.

Field experimentation with the instrument established optimum recording parameters. A 1/25 - 1/60 filter setting was used throughout the area. Shooting radio problems during the first 2 days of shooting and sporadic equipment failures due to severely low temperatures resulted in some lost time.

C. Surveying:

Surveying was performed using a Wild theodolite. Spreads were laid out using a calibrated chain. Vertical and horizontal control were obtained from tellurometer stations located by Shell Canada Limited and by ties to previous seismic stations established during the operations in 1961. All survey data were forwarded to Shell Canada Limited Survey Department. There were no major survey problems.

Record Quality:

While field data in the southern portion of the project was generally fair to very good, the lines to the northwest (coinciding with the bad drilling area described above), were of poorer quality.

Re-shooting a portion of one line was an attempt to improve data quality.

The overall improvement by the re-shooting was quite marked on about 40% of the re-shoots, marginal on about 30% and nil on the remaining 30%.

Main factors effecting the outgoing signal and thus contribution to quality variations are believed to be: Hole-depth, muskeg thickness and permafrost level.

Office Procedure:

A datum of 1675 feet above sea level was chosen and all elevations corrected to it using an elevation correction velocity of 7000 feet/second. Weathering corrections for each shotpoint were applied, step-out removed and a shallow event correlated for flattening.

Record sections derived using this method were correlated and data plotted on cross sections.

Maps Submitted:

/ Topography Map

Prepared by Southern Division

Exploration - Geophysical Section

Under the supervision of B.M. Veilleux,

Manager Southern Division Exploration,

Shell Canada, Limited.

October, 1965.

MELVILLE ISLAND AREA

TABLE OF FORMATIONS

****

CENOZOIC

Quaternary

Q, QA, QB	Overburden undifferentiated, alluvium, "beach" deposits.

Tertiary

T	Tertiary undifferentiated

CENOZOIC AND MESOZOIC

Tertiary and Cretaceous (?)

TKes	Eureka Sound Formation

MESOZOIC

Cretaceous

Kkg	Kanguk Formation
Khl	Hassel Formation
Kct	Christopher Formation
Kis	Isachsen Formation

Cretaceous and Jurassic

KJmo	Mould Bay Formation

Jurassic

Jwp	Wilkie Point Formation

Triassic

Tr bj	Bjorne Formation

PALEOZOIC

Permian

Ptf	Troll Fiord Formation
Pa	"Assistance" Formation
Psa	Sabine Bay Formation
Pbc	Belcher Channel Formation

Pennsylvanian

PN	Pennsylvanian undifferentiated
PNcf	Canyon Fiord Formation

Devonian

(Western Melville)		(Eastern Melville)	
D	Devonian undifferentiated	D4	Uppermost lithologic unit
		D3	Upper middle lithologic unit (unsubdivided)
		D3c	Dark banded unit
		D3b	Light toned marker
		D3a	Dark toned unit
		D2	Light toned sandstone unit
Dhb	Hecla Bay Formation		
	(u) Upper unit		
	(l) Lower unit		
Dw	Weatherall Formation	D1	Dark banded unit
Dmc	McCormick Inlet Formation	Dbi	Bird Fiord Formation
		Dbl	Blue Fiord Formation

Silurian

S	Silurian undifferentiated

Siluro-Ordovician

OS	Silurian and Ordovician undifferentiated
OScp	Cape Phillips Formation

Ordovician

Oc	Cornwallis Formation

Ordovician and Cambrian

OCcr	Canrobert Formation

REFLECTION SEISMOGRAPH SURVEY OF THE TETCHO LAKE AREA NORTHWEST TERRITORIES, WINTER 1965

Shell Canada Limited
Southern Division Exploration
Edmonton, Alberta
October, 1965

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Maps Submitted:

Topography Map

Carlson (Dcl) Time Structure

Tetcho (Dte) Time Structure

Middle Devonian Carbonates (Dm) Time Structure

Carlson (Dcl) to Tetcho (Dte) Isotime

Tetcho (Dte) to Middle Devonian Carbonates (Dm) Isotime

Prepared by Southern Division

Exploration - Geophysical Section

Under the supervision of B.M. Veilleux,

Manager Southern Division Exploration,

Shell Canada, Limited.

October, 1965.

Enclosures

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