REFLECTION SEISMOGRAPH SURVEY OF THE PEEL PLATEAU AREA

YUKON AND NORTHWEST TERRITORIES

FOR SHELL CANADA LIMITED

SUMMER 1965

SHELL CANADA LIMITED

NORTHERN DIVISION EXPLORATION

EDMONTON, ALBERTA MARCH 1966.

CONTENTS

ENCLOSURES

Not included with Report

1) Near Base Cretaceous

2) Near Base Canol

3) Near Top Cambrian

✓ 4) Surface Elevations

F O R E W O R D

REFLECTION SEISMOGRAPH SURVEY OF THE PEEL PLATEAU AREA YUKON AND NORTHWEST TERRITORIES FOR SHELL CANADA LIMITED SUMMER 1965.

Permits: #1232, #1233, #2428-2433 inclusive, #3406-3412 inclusive, #3456-3461 inclusive, #3490-3505 inclusive, #3572-3576 inclusive, #3602-3617 inclusive.

In compliance with Section 54 (1), 2(b) of the Canada Oil and Gas Land Regulations, this report is submitted with regard to a geophysical exploration program performed in the subject permits and surrounding areas.

This geophysical survey was conducted by Parama Exploration Limited, with headquarters based in Calgary, Alberta.

REFLECTION SEISMOGRAPH SURVEY - PEEL PLATEAU AREA

YUKON AND NORTHWEST TERRITORIES

FOR SHELL CANADA LIMITED

SUMMER 1965.

I AREA WORKED

Most of the survey was conducted in the area between 133° 58' to 135° 50'W and 66° 20' to 67° 10'N with a minor amount of work performed in the area between 132° 05' to 132° 21'W and 65° 47' to 65° 55'N.

II CAMP LOCATION

The base camp was located on the east bank of the Peel River, approximately 3 miles north of the mouth of the Road River.

III STATISTICS

Drilling operations	-	June 16 to September 9, 1965.
Recording operations	-	June 27 to September 13, 1965.
Subsurface control	-	249.7 miles.
End shots	-	71.
Profiles	-	425.
Total number of shots	-	496.
Powder expended	-	23,470 lbs.
Caps used	-	1015.
Holes drilled	-	564.
Footage drilled	-	25,394.

Recording days - 54.

Profiles per recording day - 10.4.

Profiles per day in prospect - 7.14.

Days lost due to weather - 17.

IV FIELD CONDITIONS

Terrain

Most of the terrain worked (plateau) is covered by light growth and numerous muskeg patches. No work was attempted in the valleys where the tree growth is considerably greater.

The area is drained by a dendritic pattern of streams into the Snake and Peel Rivers. All the streams and river valleys are deeply incised and, along with numerous lakes encountered in the area, necessitated frequent skips, or detours, in the seismic coverage.

Accessibility

There are no roads within or near the area except for the dozed seismic lines cut in previous winters and which would suffice only as winter roads. Access to the area was effected by float equipped aircraft, helicopters and river transportation.

Line Cutting

Seismic lines were cleared by hand using power saws and axes.

The line cutters worked out of advance tent camps usually located within easy reach of the line being worked, while the recording and drilling crews worked mostly out of the base camp.

Weather

The recording crew lost approximately 17 days due to inclement weather - mostly rain and fog, although snow and blizzard conditions were experienced in early September.

V FIELD PROCEDURE

Drilling

Air drilling was used in the early phase of the program. However, the bits "mudded up" in the wet sticky clay formations and the drills were then converted to use water. Many holes were either abandoned after four hours drilling due to caving in of the bore hole walls, or to the bits "mudding up", or were loaded with less than the required charge at shallow depths.

(a) Hole Depth.

The average hole depth was 35 feet, although the desired depth was 50 feet.

(b) Drilling Equipment.

3 Heli-Drills, produced by Big Indian Drilling of Calgary, were used. These drills were converted from air to water drilling midway through the job. The drills weighed around 7000 lbs. and were designed to be broken down into two packages of 3500 lbs. for helicopter transportation.

1 - 204 Bell Jet Turbine Helicopter was used for transporting the drills.

(c) Formations.

The near surface formations were mostly clay and boulders with some sand and gravel locations. In the area to the southeast, surface

formations were mostly shattered sandstones. Perma frost was encountered in all holes.

Recording

(a) Recording Parameters.

A mile split spread, with shot points at half mile intervals, type of continuous profiling was used. 2 - 13-trace, 220 foot station interval cables were used to record each shot. 6 seismometers placed at 25 foot intervals were used at each station. A spread diagram is included with this report.

(b) Charges.

The optimum charge was deemed to be 50 lbs., bottomed at a depth of 50 feet. However, the average charge was 40 lbs. due to the many shallow holes that were loaded with less powder for safety.

(c) Instruments.

Amplifiers - SIE P.T. 100 A type using F.M. Tapes.

Seismometers - Mandrel "EVS-15" - 14 cycle frequency.

Base Filter - 1-25-78.

(d) Transportation.

1 Alouette Helicopter - used to transport the instruments and recording crew during record operations.

VI SURVEYING

The survey crew consisted of 2 surveyors and 4 rodmen, forming 2 survey teams. The surveyors directed the brush cutters while surveying the lines using WILD T-1A Theodolites. Shell Canada Limited surveyors were responsible for obtaining horizontal and vertical control base stations within the prospect area. This was accomplished by triangulation and telluro-

meter readings on Government Monuments in the Richardson Mountains. The Alouette Helicopter was used to transport the triangulation surveyors and their tellurometer, etc. equipment, while the line surveyors, along with the base cutters, were normally serviced with the Bell 204 Jet Turbine Helicopter.

VII OFFICE PROCEDURE

(a) Weathering Corrections.

The uphole delay time method of computing weathering corrections was used. The correction velocity was chosen as 10,000 f.p.s.

WC - Uphole Time - Depth of Shot/10,000 f.p.s.

(b) Elevation Corrections and Datum.

A velocity of 10,000 f.p.s. was used to correct the seismic times to a + 1,000 datum.

(c) Other Corrections.

No filter correction was necessary to adjust record times to those obtained from previous surveys.

Shot point and trace corrections were obtained in the normal manner.

Record sections were played out and used for correlation and mapping purposes.

VIII RESULTS

Record quality can be considered as averaging fair throughout the prospect except for the western part of the survey, where record quality was very poor.

The following maps are submitted with this report:

1) Near Base Cretaceous.

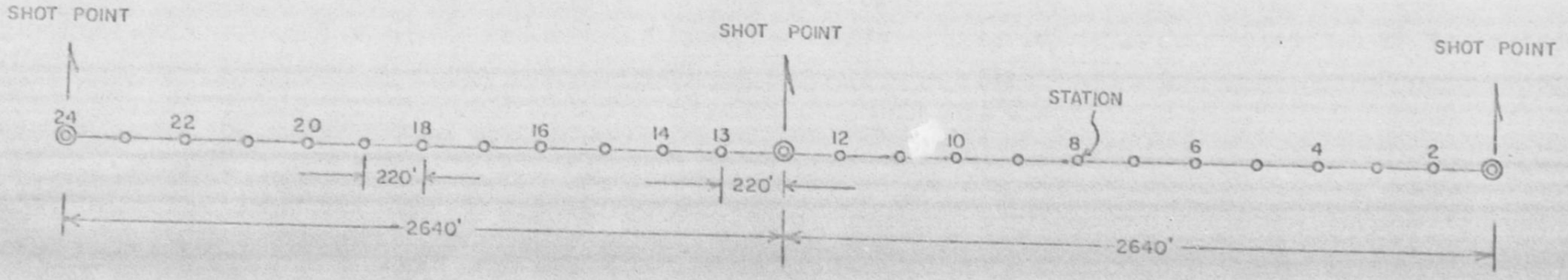
2) Near Base Canol.

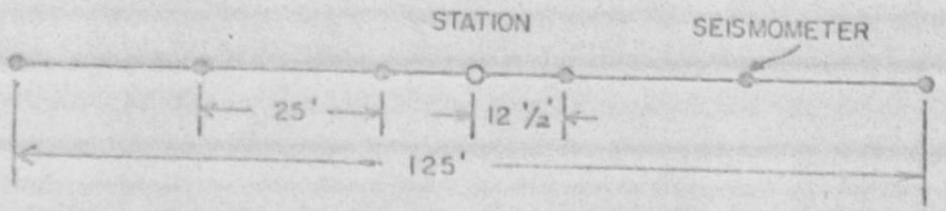
3) Near Top Cambrian

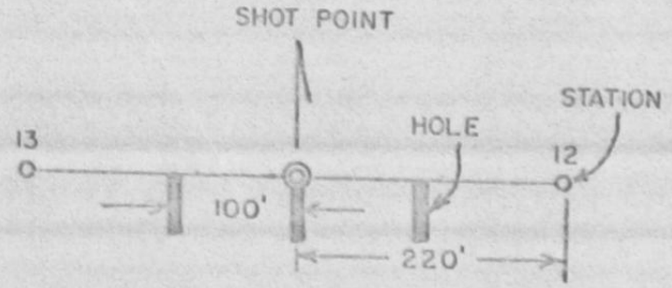
4) Surface Elevations.

PEEL PLATEAU AREA

SPREAD LAYOUT







D. W. Smith

**Prepared by Northern Division
Exploration - Geophysical Section
under the Supervision of D. W. Smith
Manager, Northern Division Exploration,
Shell Canada Limited, March 1966.**

1000
1200
1400
1600
1800
2000
2200
2400
2600
2800

MANY BEAVERS

BEAVERS

1800

2000

NORTHWEST TERRITORIES — YUKON TERRITORY

CRAUSWICK RIVER

1963 Summer Reflection Shooting

SHELL CANADA LIMITED	EXPLORATION AND PRODUCTION DEPT.	NORTHERN EXPLORATION DIVISION

SEISMIC ELEVATION MAP

PEEL PLATEAU AREA

Review ☐ Interpretation ☒ Field ☐ Contractor ☐	Interpreter: W. Semkow	Supervisor: J.J. Hamilton
	Date: Jan., 1966	Grid: Composite
Scale: 1" = 8,000'	Datum: Sea Level	Contour Int.: 200'
Shade Key:		
Depth Comp.:		
To Accompany: Con't. Report, March 1966		
Enclosure No.:	Revised By:	Date: Drawing No.: XJ-15

APR 12 1966

37-6-6269

XJ-15