2-6-4-38

FINAL GEOPHYSICAL REPORT

REFLECTION SEISMIC SURVEY

North Trainor Lake Project, N. W. T.

(Project No. 2-6-4-66-4)

Report of work performed on Permits
No. 3580 to 3585, inclusive, during the
period August, 1966 to March, 1967.

Seismic program shot for British
American Oil Company Ltd. (Gulf Oil Canada Ltd.)
by British American Seismic Party No. 10 and
Independent Exploration Seismic Party No. 315.

R. A. Halvorsen

R. A. Halvorsen, Geophysicist
Gulf Oil Canada

Date: November 17, 1969

A: TABLE OF CONTENTS

The following maps are supplied with this report and are located in the attached expanding envelope:

Figure No. 1 - Project Location Map

Figure No. 2 - Portions of Unit Map 85-D-SW
Shot Point Locations & Elevations

Figure No. 3 - Portions of Unit Map 85-D-SW
Contours on Interval between Intermediate and Deep Horizons
(Near Top of Devonian to Slave Point)

Figure No. 4 - Portions of Unit Map 85-D-SW
Contours on Intermediate Horizons
(Near Top of Devonian)

Figure No. 5 - Portions of Unit Map 85-D-SW
Contours on a Deep Horizon
(Near Top of Slave Point)

B: STATISTICAL DATA

B: STATISTICAL DATA

1. DATES:

(a) B. A. Seismic Party No. 10 -

August 22, 1966 - Personnel, equipment and camp facilities left Peace River, Alberta.

August 23, 1966 - Camp set up; No production.

August 24, 1966 - Crew personnel returned to Peace River for time off.

September 1, 1966 - Crew personnel were transported from Peace River, Alberta.

September 2, 1966 - First day of recording crew production.

September 13, 1966 - No recording crew production moving to new camp location.

September 20, 1966 - Crew personnel transported to Peace River for time off.

October 1, 1966 - Crew personnel transported from Peace River to Trainor Lake project camp.

October 2, 1966 - No production; vehicle maintenance.

October 3, 1966 - First day of production for October.

October 13, 1966 - Last day of production on Trainor Lake project.

October 14, 1966 - 18, 1966 - Camp and equipment moved out of Trainor Lake project, and left in Thurston Lake Area. Crew transported to Peace River, Alberta.

(b) Independent Exploration Party No 315 -

January 2 to 6, 1967 - Move from Calgary to Trainor Lake and set up camp.

January 7, 1967 - First day of production.

January 10 - 13, 1967 - Waiting on drills (stuck), no production.

January 14, 15, 1967 - Instrument breakdown, no production.

January 21, 1967 - Waiting on drills, no production.

January 30, 1967 - Last day of shooting, January.

January 31, 1967 - Crew moved out on time off.

2. PRODUCTION:

Holes drilled	-545	(54 holes off-permit)
Holes shot	-555	(54 holes off-permit)
Mileage	- 55½	(2½ miles 100%, 53 miles C.D.P.)
Total work days	- 70	(5½ off-permit)
Production days	- 46	(3 off-permit)
"No production" days due to equipment failure		- 2
"No production" days due to travel time, camp moves on project area, waiting on cats or drills		-22
Average daily production	1.2 miles	(Based on 46 production days.)

3. EQUIPMENT:

(a) British American Party No. 10 -

All the following equipment was track-mounted. Bombardier and Nodwell units were utilized as basic vehicles.

3 Mayhew drills with air compressors for optional air drilling. These drills required tandem full drive units.
2 Water tankers
1 Survey vehicle
2 Line laying vehicles
1 Recording unit
1 Kitchen utility unit on tracks

Recording instrumentation consisted of the following:
Gulf Model 60 Amplifiers
SIE-PMR magnetic tape system
Gulf Model 59 (30 cycle) geophones
SIE-1/3 mile detector lines

Accommodations were based on portable tent units.

(b) Independent Exploration Party No. 315 -

Since this crew operated after the normal freezup the equipment was wheel-mounted.

3 Drill units
4 Water trucks
1 Survey pickup
2 Line trucks
1 Recording truck

Recording equipment is listed below:

Model 65 Gulf Amplifiers
SIE-PMR magnetic tape system
Geospace detectors (9 geophones/group at 20 feet spacing)
"Rollalong" cables (5060 feet)

4. PERSONNEL:

(a) British American Party No. 10 -

1 -Field Supervisor
1 -Party Foreman
1 -Operator
1 -Shooter
2 -Shooters assistants
1 -Surveyor
1 -Mechanic
7 -Helper grade workers
6 -Drill crew (Garnity & Baker)
2 -Catering staff

(b) Independent Exploration No. 315 -

A total of 28 men were employed in the field (exclusive of bulldozer contractors crew).

1 -Operator -B. A. employee
1 -Operator trainee -B. A. employee
-Line crew
-Drill crew
-Catering staff

5. NAVIGATION:

(a) British American Party No. 10 -

A compass survey was run with a K & E transit. This survey was tied to near-by well control and 34th Base Line.

(b) Independent Exploration Party No. 315 -

Suspected errors in old survey led the contract surveyor to disgard the compass and to run a survey using the "Plates" only. This survey was tied to the Shell Alexandria #6 wildcat well and also to the 34th Base line. A star shot on "Dubhe" was taken.

The old control grid was adjusted to agree with this new survey data.

6. CONDITIONS:

(a) British American Party No. 10 -

Autumn field conditions dictated the use of tracked equipment. The program was laid out along existing trails and a bulldozer crew was not required.

Occasional snow storms slowed production but did not halt field operations.

Communications with the base office in High Level, Alberta were maintained by radio. Short supplies and mail were brought in by light aircraft.

(b) Independent Exploration Party No. 315 -

Party No. 315 moved into the project area in January, 1967. Bulldozers were required to clear access trails and to cut seismic lines.

Despite the late season the muskeg was not frozen to a depth adequate to support the drill trucks. Wheel-mounted equipment broke through and frequently required the assistance of the bulldozers.

Radio reception was poor.

A single Beaver aircraft serviced the camp from High Level, Alberta.

C: FIELD PROCEDURES"

(a) British American Party No. 10 -

For the first portion of the project a six-fold stack was obtained using hole spacing of 480' and 1/3 mile lines. The average was reduced to a 4-Fold stack during the latter part of the project in an attempt to increase production.

An experimental stack using 320' spacing was tried in an effort to reduce a severe multiple problem. No appreciable improvement was noted.

Hole depth averaged 40 feet and light charges (2½ to 5 lbs.) were used.

(b) Independent Exploration Party No. 315 -

Single hole shot points were used with a "roll-along" detector cable. A 4-fold Common Depth Point coverage was obtained.

Shot holes were drilled to 40 feet.

The average dynamite charge was 2½ pounds.

D: DATA PROCESSING

Elevations, weathering and Normal Moveout corrections were computed. The data was presented in variable density and wiggle trace record sections. As noted in the preceeding comments the control consisted of 100% coverage, 400% C.D.P. and 600% C.D.P. data. All computing, processing and reproduction was performed by British Americans Geophysical Division, Calgary, Alberta.

E: RESULTS and INTERPRETATION

Maps covering the report area are located in the attached expanding envelope.

Weathering corrections were determined by the first arrival method. The records were corrected to a 6,000 ft/sec. marker. Long shots were also used to acquire additional velocity information. An 8,000 ft/sec. marker was plotted using this data.

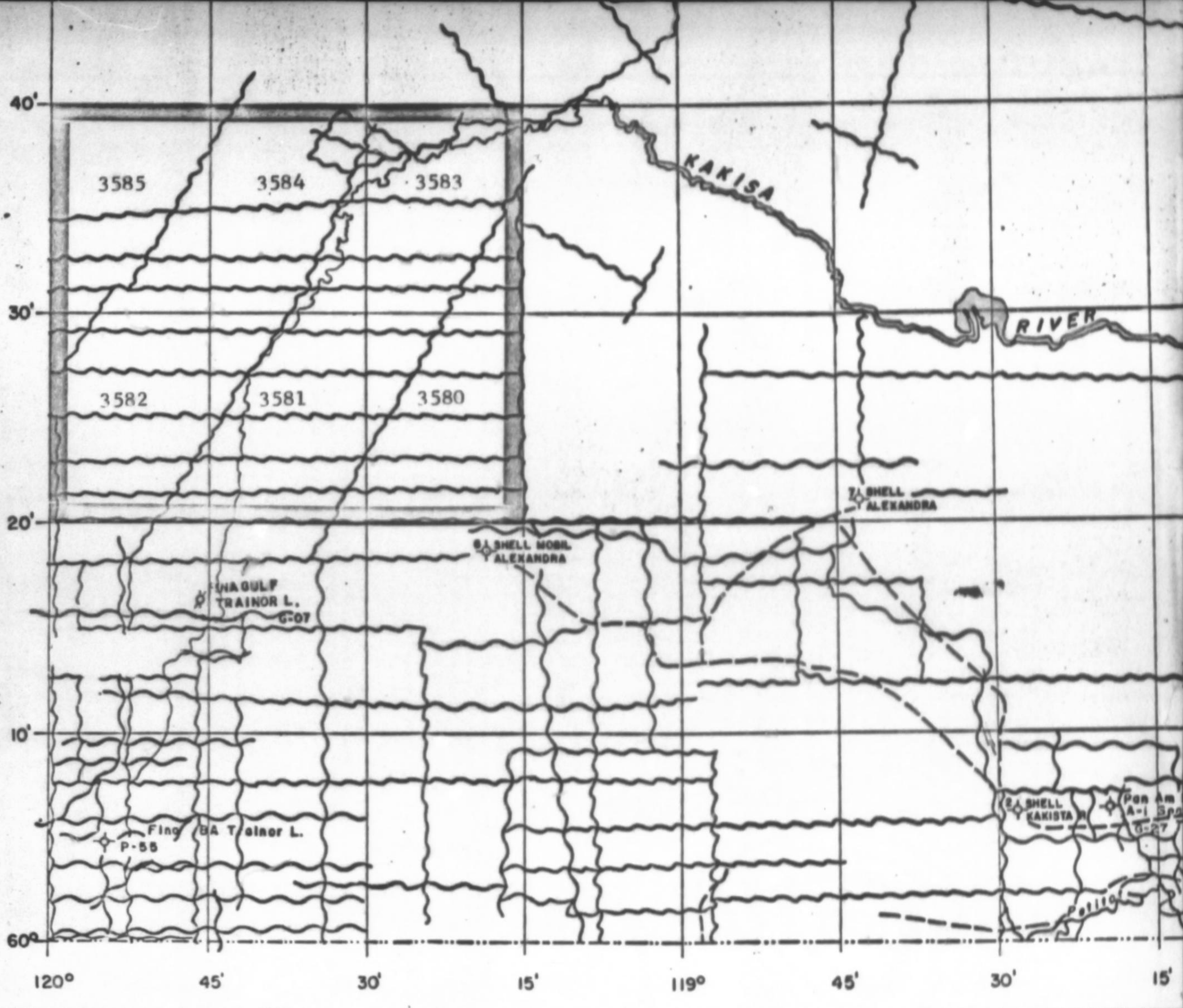
Elevations corrections were made to a Datum of 1,500 feet AMSL, using a 7,000 ft/sec. velocity.

The quality of data varied from fair to good. Mapping was carried out on two events identified as Top of Devonian and Top of Slave Point, and the resultant interval.

Multiple reflections are a serious problem. First, second and third order multiples of Mississippian events are evident on portions of this area, and occur in the time zone of the Slave Point event. Attempts to increase multiple attenuation were not successful in reducing this interference.

Regional dip is moderate and generally southwest. The structure maps are compatible in showing a series of low relief high and low axis trending northeast by southwest across the project. Little interval change is related to these features. At Slave Point level moderate dip reversal is evident on a high axis located in the central area of Grid 119°30' - 60°30'. A similar feature is mapped in the vicinity of the south line of Grid 119° 15' - 60°30'. A pair of small high closures, based on one or two shot point values each are also contoured on the Slave Point map. These mapped features, however, are of such small areal extent and/or vertical scale that they present little opportunity for the structural entrapment of migrating hydrocarbons.

Prior to programming the surveys described in the preceeding portions of this report British American acquired by trade from Pan American the data plotted as dark, solid shot points. This data consists of 110 miles of 100% reflection shooting on magnetic tapes.



GULF OIL CANADA LIMITED
CALGARY, ALBERTA

NORTHERN DIVISION
EXPLORATION

Final Geophysical Report

NORTH TRAINOR LAKE PROJECT, N. W. T.

Project Location Map

Outline of Project Area [redacted]

Scale: 1 inch = 8 miles

By: R. A. Halvorsen
R. A. Halvorsen, Geophysicist
Northern Division Exploration

Date: November 17, 1969

Figure No. 1