

Report to Government of Canada  
Reflection Seismograph Survey

POPLAR RIVER "B" PROJECT  
Ft. Simpson Area, N.W.T.  
1970

By: United 594

For: H.B.O.G.



Geophysical Report  
To  
Government of Canada  
On  
Reflection Seismograph Survey

POPLAR RIVER "R" PROJECT  
FT. SIMPSON AREA, N.W.T.  
1970

Shot For  
Hudson's Bay Oil and Gas Company Limited  
By  
United Geophysical Company of America  
On  
C.P.&N.G. Permit No. 4302

Exploration Licence No. 1690  
Timber Permit No. 4402

C. L. LAKE  
November 1970

## INTRODUCTION

This report covers a reflection seismograph survey conducted about 40 miles south of Ft. Simpson, N.W.T. The work was done in March 1970 by United Geophysical Company of America under contract to Hudson's Bay Oil and Gas Company Limited. The project consisted of detail program across a localized anomaly on C.P.&N.G. Permit No. 4302. This permit is held 62% by H.B.O.G. and 38% by Great Plains Development Company of Canada, Ltd.

## LOCALITY MAP

The location of C.P.&N.G. Permit No. 4302, and the local area within it which was surveyed, is shown on Plate I.

## STATISTICAL DATA

Field Crew:	United Geophysical Party 594
Arrival of first equipment on Project site:	March 16, 1970
Recording commenced:	March 19, 1970
Recording completed:	March 23, 1970
Miles recorded:	14.5
Average miles recorded per day:	2.9
Profiles recorded:	174
Number of shots:	212
Recording hours worked:	56.5
Hours lost time:	0
Pounds of explosives used:	1108.75
Number of caps used:	212
Footage drilled:	9260



Number of holes drilled: 177  
Hours drilling: 594

EQUIPMENT

Recording truck equipment consisted of a 24 trace set of SIE Model PT 100 amplifiers coupled with a PMR-20 tape transport. Mark Product 48 channel cables were used. Geophones were 14 cycle Geospace Model 11 D. Two cable trucks and one shooting truck were employed.

Six drills were used on the job. Four of them were Mayhew 1000's. The other two were subcontracted and the make and model is not known by the writer.

Three cats were used. Two of them were D-6's and one was a D-7.

Surveying was done using a T 16 Theodolite.

PERSONNEL LIST

1 Party Manager  
1 Observer  
1 Shooter  
2 Cable Truck Drivers  
7 Recorder Helpers  
2 Surveyors  
6 Drillers  
6 Drillers' Helpers  
1 Supplyman  
1 Mechanic

- 1 Cook
- 1 Cook's Helper
- 1 Camp Attendant
- 3 Cat Operators

#### OPERATING CONDITIONS

Operating conditions were excellent. Temperatures varied from 15° to 45° with an averaging 25°. Winds were light to moderate.

#### FIELD PROCEDURES

Coverage:	600% CDP
Spreads:	2640' split - near offset 110'
Station Interval:	220'
Shot Point Interval:	440' (single holes)
Charge Size:	5 pounds
Shot Depth:	50'
Geophones:	9/trace
Geophone Spacing:	25'

#### DATA PROCESSING

Elevation and weathering corrections were computed by Western Geophysical Company. Computations were supplied to Continental Oil Company at Ponca City, Oklahoma, where data processing was done using an SDS Sigma 7 computer. Digital processing was applied sequentially as follows:

1. Deconvolution:

Window .1 to 1.5 sec., Operation Length .150 sec., 15-65 CPS.

2. Normal moveout and static corrections
3. Trace equalization
4. Statistical Automatic Static corrections

5. 600% stack
  6. Adjusted trace corrections:  
Window .4 to 1.2 sec., min. correlation coefficient .3,  
max. shift .020 sec.
  7. Light adjacent trace mixing
  8. Trace equalization
- Elevation Reference: + 1000 feet
- Near Surface Velocity: 9000 feet/sec.
- NMO Velocity Source: H.B.O.G. Gt. Plains Simpson D-25  
(61° 21' N. 121° 45' W.)

#### RESULTS AND INTERPRETATION

Submitted with this report are the following maps:

Shot Point Location

Hume Structure

Pre-Cambrian Basement Structure

Hume to Pre-Cambrian Basement Isochron

Record quality was good.

This survey confirmed the presence of a pinnacle reef covering about 500 acres.

*C. L. Lake*

C. L. LAKE

District Geophysicist

HUDSON'S BAY OIL AND GAS COMPANY LIMITED

CPONG PERMIT  
4302

REACT



12° 15'

61° 15'

122° 00'

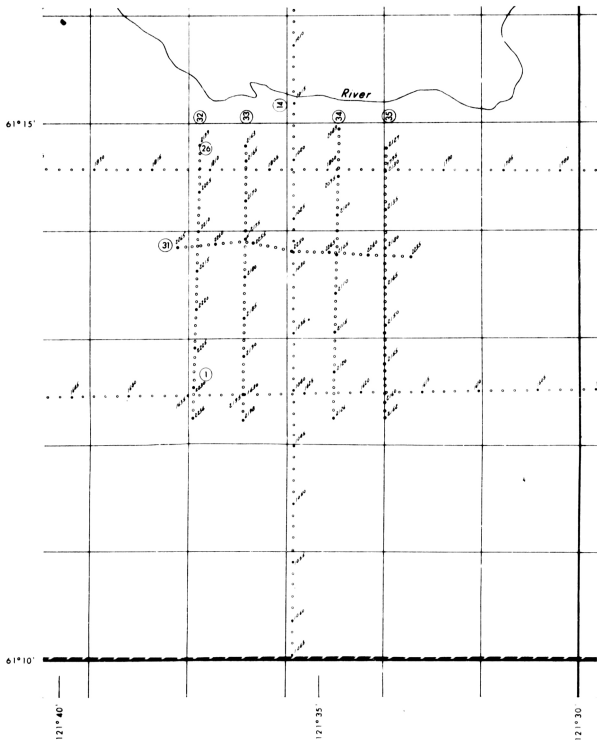
45'

30'

15'

To Fort Nelson

PLATE I



11 of

61°15'

61°10'

121°40'

121°35'

121°30'

## Hudson's Bay Oil and Gas Company Limited

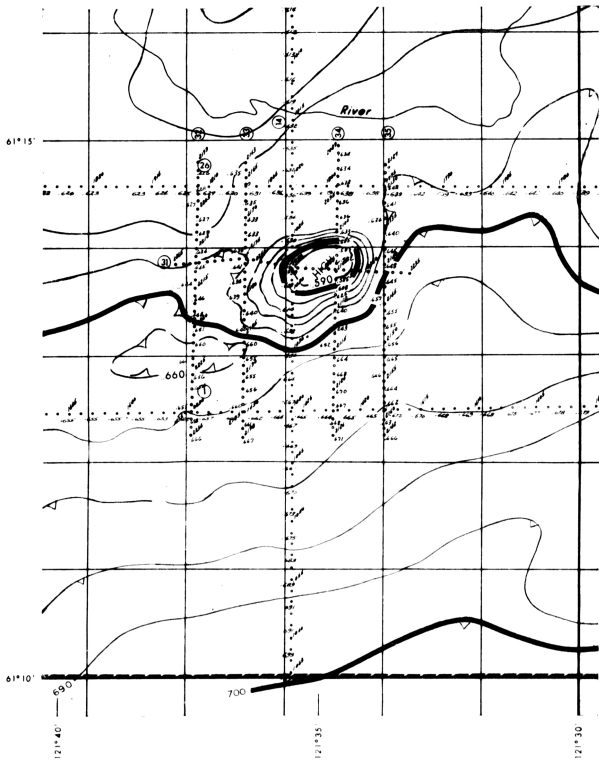
EXPLORATION DEPARTMENT  
(CALGARY) ALBERTAPOPLAR RIVER "B"  
GEOPHYSICAL MAP

## SHOT POINT LOCATIONS

CONTOUR INTERVAL sec ( " for " /sec )  
 TIME or INTERVAL sec THICKNESS or DEPTH ft  
 ELEVATION REFERENCE ft VELOCITY /sec

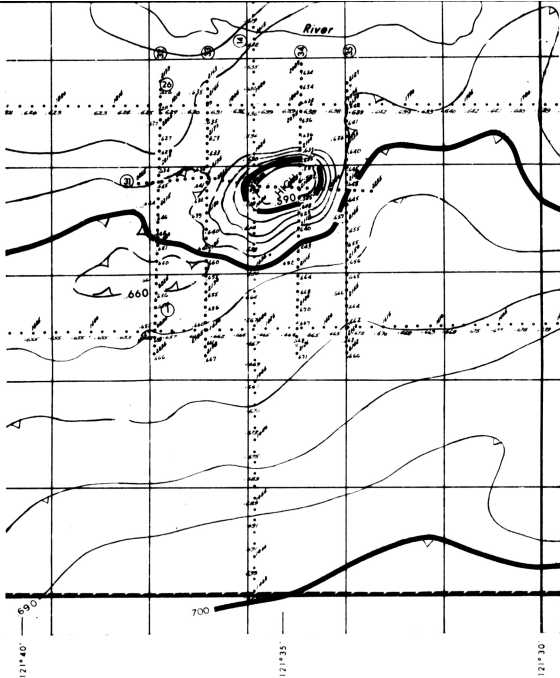
SCALE 1" = 4000' AUTHOR C. LAKE DATE NOV 1970  
 FILE No

2 of 2



61°15'

61°10'



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EXPLORATION DEPARTMENT

D.A. CAMP

ALBERTA



# POPLAR RIVER "B" GEOPHYSICAL STRUCTURE MAP HUME

CONTOUR INTERVAL 0.010 sec. ( "for" = " /sec. )

TIME or INTERVAL 0.550 sec. THICKNESS or DEPTH

ELEVATION REFERENCE 1000 ft. VELOCITY 9000' /sec.

SCALE 1" = 4000'

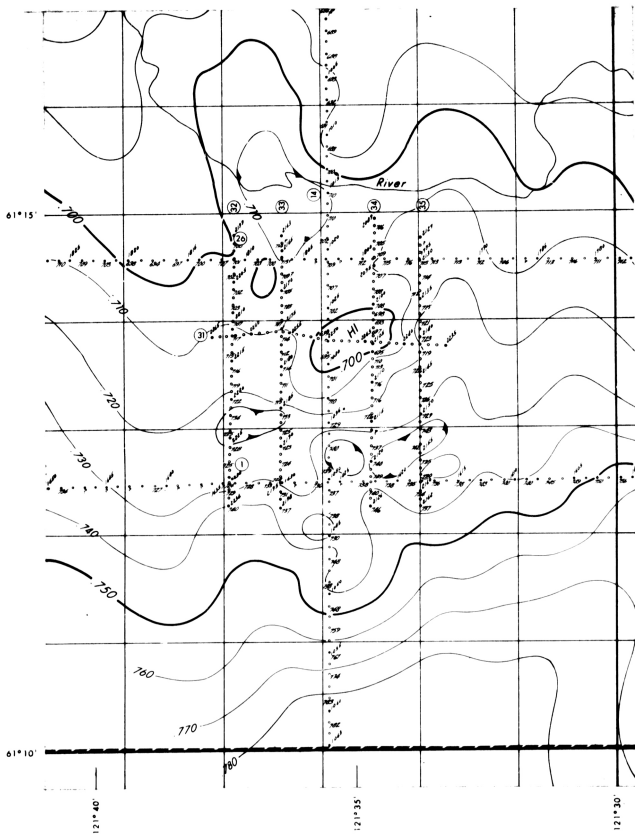
AUTHOR C. LAKE

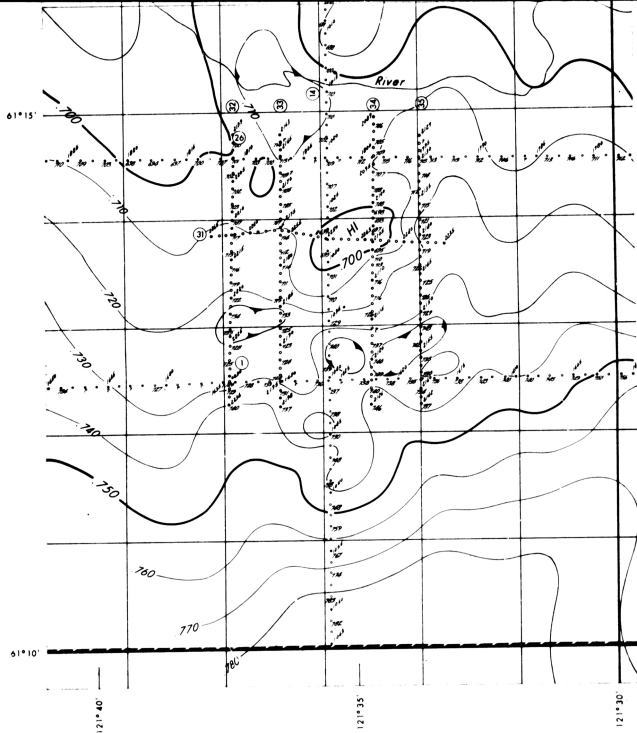
DATE NOV. 1970

FILE No.

2 of 2







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CALGARY

ALBERTA

POPLAR RIVER "B"  
GEOPHYSICAL STRUCTURE MAP  
PRE - CAMBRIAN

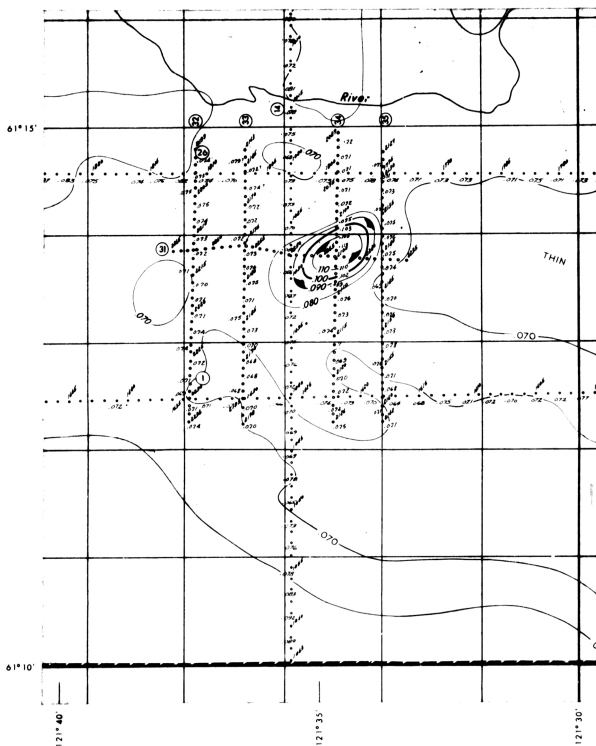
CONTOUR INTERVAL 3 010 sec ( 53' for VA = 10,600' / sec )  
TIME or INTERVAL 0.700 sec THICKNESS or DEPTH 3710 ft.  
ELEVATION REFERENCE +1000 ft VELOCITY 9000' / sec

SCALE 1" = 4000' AUTHOR C. LAKE

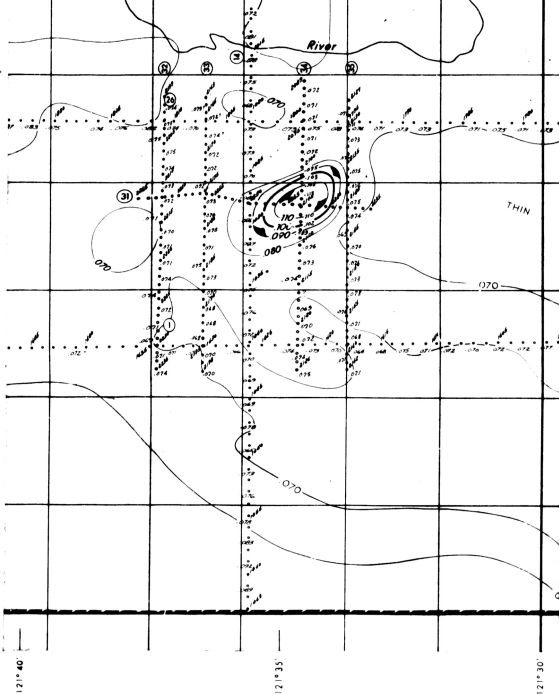
DATE NOV. 1970

FILE No.

272



61°15'



61°10'

121°40'

121°35'

121°30'

Hudson's Bay Oil and Gas Company Limited

EXPLORATION DEPARTMENT

CALGARY

ALBERTA

# POPLAR RIVER "B" GEOPHYSICAL ISOCHRON MAP HUME TO PRECAMBRIAN

CONTOUR INTERVAL 0.010 sec. (100' for  $V_1 = 20000'$ /sec.)

TIME or INTERVAL 0.070 sec. THICKNESS or DEPTH 550 ft.

ELEVATION REFERENCE ft. VELOCITY /sec.

SCALE 1" = 4000' AUTHOR C. LAKE

DATE NOV. 1970

FILE No.