







SIMMONSTON LAKE AREA, N. W. T.

Permit # 5357

*Jussey*  
Program Number 86-6-4-69-2



HUSKY OIL LTD.

Seismic Reflection Survey

Sibbeston Lake Area, N. W. T., Canada

Work Initiated March 9, 1969 - Completed March 29, 1969

Name of Operator - Husky Oil Ltd.

Seismic Field Work By:

Canwest Geophysical Limited, Calgary, Alberta

Party Number 5

Permit over which the work was performed - Permit #5357

Oil & Mineral Division Program Number 86-6-4-69-2

Date of Report -- December 1969

Interpretation: L. R. Vye  
Vye Exploration Co. Ltd.

W. A. Craig  
Chief Geophysicist

## TABLE OF CONTENTS

### I. MAPS SUBMITTED WITH THIS REPORT:

- A. Surface Elevation.
- B. Nahanni Structure - Values Only.
- C. Nahanni Structure - Contoured.
- D. Permit Area.

### II. WRITTEN DISCUSSION:

- A. Introduction.
- B. Locality Map.
- C. Statistical Data.
- D. Field Procedure.
- E. Data Processing.
- F. Results and Interpretation.
- G. Summary and Conclusions.



INTRODUCTION

The purpose of this seismic reflection survey was to obtain more detailed coverage, to complement previous seismic, and evaluate subsurface structural features on Permit No. 5357 (Farmin from Champlin Petroleum Company) in the Sibbeston Lake Area, N. W. T. for Husky Oil Ltd.

The Sibbeston Lake Area is located approximately forty miles southwest of the town of Fort Simpson, N. W. T. Page-size sketch maps indicating the permits covered by the survey with respect to Sibbeston Lake are included with this report.

PERMIT NO. 5357



SIBBESTON  
LAKE

SIBBESTON LAKE AREA  
REFLECTION SEISMOGRAPH MAP  
OF THE  
HUSKY OIL LTD.  
VVE EXPLORATION CO LTD

DATE	DATE ACQUIRED
SCALE	CONTOUR INTERVAL
DATE	REVISION

STATISTICAL DATA

Dates:

Dozers	started	March 9
	completed	March 24
Drills	started	March 10
	completed	March 27
Recorder	started	March 24
	completed	March 29

Production:

Number of miles - 40.  
Number of shotpoints - 440.  
Average daily production - 76.7 holes per day.  
Days recorder worked - 6.

Equipment (Geophysical):

Vehicles - Wheel Mounted (Camwest Geophysical):

1 Recorder

Instruments:

Electro Tech SA-400 amplifiers

Techno Tape

1 Shooting Truck

2 Line Trucks

1 Party Manager Truck

1 Survey Truck

1 Supply Truck

1 Auger Drill (Wheel Mounted) Sedco Drilling

1 Conventional 1000 Mayhew Drill (Wheel Mounted)  
Sedco Drilling

2 D7 Cats - Pearson Construction

1 Wheel Mounted Camp (complete)

Crown Catering



Personnel:

Recording Crew --

- 1 Field Supervisor
- 1 Party Manager
- 1 Observer
- 1 Junior Observer
- 1 Shooter
- 1 Shooter's Helper
- 2 Line Truck Drivers
- 4 Line Helpers
- 1 Mechanic

Survey Crew --

- 1 Surveyor
- 1 Helper

Drilling Crew --

- 2 Drillers
- 2 Helpers

Dozer Crew --

- 1 Dozer Foreman
- 4 Dozer Operators

Catering Crew --

- 1 Cook
- 2 Helpers

Survey:

Transit Survey

Conditions:

Field Operations were hampered by cold weather conditions (20 degrees below 0) and heavy snowfall.

FIELD PROCEDURE

A 24 channel Techno Tape recorder and Electro-Tech SA-400 amplifiers mounted on a truck were used for recording. All field tapes were recorded on 1/16 - 1/out filter setting and a medium A.G.C.

C.D.P. or Roll-along shooting technique using split profile shooting was executed by our company. The split arrangement of two 1320 spreads each containing twelve groups of nine (20 cycles) geophones placed 13 feet apart with a group interval of 110 feet. Single holes were drilled to a depth of 45 feet and shot using a  $2\frac{1}{2}$  lb. charge of dynamite. The holes were located at 440 foot intervals for the 300 percent coverage.

Horizontal and vertical control was obtained by use of a transit. All shotpoint locations, seismometer locations, and spread distances were chained.

One wheel mounted auger and a wheel mounted conventional 1000 Mayhew were used for drilling shot holes. Drilling conditions were generally fair to good. Average hole depth for the area was forty five feet.

# DATA PROCESSING

All record times were computed to a flat reference plane of 1200 feet above sea level. A velocity of 11,300 feet per second was used to correct the observed reflection times from the depth of the shot to the reference plane. The actual observed uphole time was used to correct from the depth of the shot to the surface. When the depth of the shot was not below the base of the low velocity layer the intercept method was used to compute an additional time correction.

Digitach Ltd. of Calgary employed the following process sequence on the basic field tapes in order to produce a set of structure record sections.

1. A/D conversion - Sample rate 2 MHz.
2. Normal Moveout.
3. Digital Filtering 10/15 - 120/125.
4. Deconvolution - gate 250-1000, length 21 gms.
5. Trace Equalization.
6. Digital Filtering 23/28 - 48/53.
7. Amplitude Recovery

Gain	0 -	300
	300 -	450
	450 -	700
	1200 -	2000



8. Create Digital Reel.
9. F. B. Mute.
10. Trace Gather.
11. D/A Conversion to Paper.
12. Static Edit and Application.
13. Stack -- 3 to 1 Fold.
14. Digital Filtering 23/28 - 48/53.
15. D/A Conversion to Film.

#### RESULTS AND INTERPRETATION

The following maps are included with this report: Surface Elevation, Nahanni - time structure - with values only, Nahanni - time structure - contoured, and a map outlining the permit area.

Principal drainage is to the north, with some additional drainage into Sibbeston Lake to the west. Maximum elevation change across the prospect is approximately 900 feet.

Identification of the Nahanni reflection was made from nearby Well Velocity Seismograms.

The seismic program provided more detail on known features and confirmed the presence of several interesting

structures. We are currently drilling one of these structures. Our well location is on line 1, shotpoint 1085, Longitude  $122^{\circ} 41' 45''.00$  Latitude  $61^{\circ} 58' 28''.00$  indicated by a red circle on the enclosed plat.