

7-9-05-79-03

PROJECT NUMBER: 7-9-05-370.....

COMPANY: Esso Resources.....

REPORT TITLE: Geophysical Survey  
Norman Wells NWT.....

COMMENTS:

ENGINEERING AND CONTROL BRANCH

ENVIRONMENTAL AND PROTECTION BRANCH

RESOURCE EVALUATION BRANCH

See 1981 program for composite SP maps  
(7-6-5-377)

CANADA BENEFITS BRANCH

007-09-05-370

Esso Resources Canada Limited  
Western Region - Alberta/B.C. District

Report on Geophysical Survey - 1979

Norman Wells Area - N.W.T.

Work done in field by Teledyne Exploration  
Data processing done by Esso Resources Canada Ltd.

Exploratory Permits

Norman Wells Proven Agreement Area and  
Leases to be grouped: 2918, 1842-1848 incl., 1980-1989 incl.

by  
T.J. Hawkings  
March, 1982

Canada Oil and Gas Lands Administration Administration du pétrole et du gaz des terres du Canada
JUL 20 1982
Resource Evaluation Branch Direction de l'évaluation des ressources
Project # .....

Project No. 07-09-05-79-03

## MAPS AND SECTIONS

### Maps

One copy of the following maps is included with this report.

<u>Map</u>	<u>Scale</u>	<u>Area</u>
Shotpoint	1:100,000	Norman Wells, N.W.T.
Isochron - Kee Scarp to Hume	1:62,500	Norman Wells, N.W.T.

### Sections

One copy of the final stacked sections is also included with the report. These seismic sections are shown on the shotpoint map. The sections submitted are:

79 I11 83194  
79 I11 83195  
79 I11 83196  
79 I11 83197  
79 I11 83198  
79 I11 83199  
79 I11 83200  
79 I11 83201  
79 I11 83202  
79 I11 83203  
79 I11 83204  
79 I11 83205  
79 I11 83206  
79 I11 83207  
79 I11 83208  
79 I11 83209  
79 I11 83210

## INTRODUCTION

This report covers the geophysical survey conducted by Teledyne Exploration on behalf of Esso Resources Canada Limited during 1979 on and off permits in the Norman Wells area shown on the index map.

The purpose of this Shallow Marine Seismic program was to record approximately 170 km of High Resolution shallow penetration data along the Mackenzie River using sleeve exploders as a source.

The seismic data acquired in this survey was processed by Esso Resources Canada Limited in Calgary, Alberta.

## EXPLORATORY PERMITS

1. Norman Wells Proven Agreement area.

2. Leases to be grouped:

2918, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1980, 1981,  
1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989

## EXPLORATORY LAND OFF PERMITS

Open Crown Land adjoining the above leases.



## DATA ACQUISITION

### Statistical Data

#### Dates

Recording days	Recorded line
July 2, 1979	83196, 83208
July 3, 1979	83194, 83195, 83208, 83209, 83210
July 4, 1979	83197, 83198, 83199, 83200, 83201
July 5, 1979	83198, 83202, 83203, 83204, 83205, 83206, 83207
July 6, 1979	83207
Demobilization	July 7, 1979

#### Production

Number of kilometres shot	172.0
Number of days worked	5

#### Equipment

Shóp - Arctic Surveyor

#### Navigation

Miniranger III Radio Positioning System

#### Personnel

- 1 Captain
- 1 Mate
- 1 Engineer
- 1 Oiler
- 2 Deck Hands
- 1 Cook
- 1 Cook's Helper
- 2 Navigators
- 2 Operators
- 2 Junior Operators
- 4 Gun Mechanics/Shooters
- 2 Cable Watchers
- 1 Party Manager

### Field Procedure

Source	Exxon Sleeve Exploder
Amplifier	DFS V
Tape format	SEGB
Sample rate	4 ms
Number of traces	12
Group interval	20 m
Spread length	240 m
Shot interval	10 m
Fold	1200%

Also in use Single Trace Exxon Amplifier with 0.25 ms sample rate and minisleeve source.

## DATA PROCESSING

The following steps were involved in processing by Esso Resources Canada Limited.

1. Demultiplex of field tape
2. Edit and Gain Recovery
3. Null Filter to alternate linear noise
4. Normal Moveout Correction (checked by use of long trace single fold)
5. Automatic Trim Statics in CDP order
6. Front End Mute
7. Stack of Common Depth Points (1200%) with no Datum Corrections
8. Deconvolution
9. Band Pass Filter
10. Gain Scaling for Display



## RESULTS AND INTERPRETATION

Lines 83194-83201, inclusive, and 83208-83210, inclusive, were shot using large sleeve exploders and a multidetector cable. These results are generally fair-to-good. Several of these lines provide reasonably good definition of the Norman Wells reef.

Line 83207 was shot at the same location as line 83208 but 83207 is inferior because it was shot using minisleave exploders.

Note that only parts 1 and 3 of line 82196 were processed. Part of that line was not processed because it was largely experimental and there was no location information.

Lines 83202-83206, inclusive, were shot with minisleave exploders and were recorded by a single geophone. These results are too poor to provide reliable information on subsurface conditions. The sections obtained on this project were used in seismic interpretation of the Norman Wells area specifically for the recognition of on-reef off-reef criteria in the productive areas of the reef and buildup.

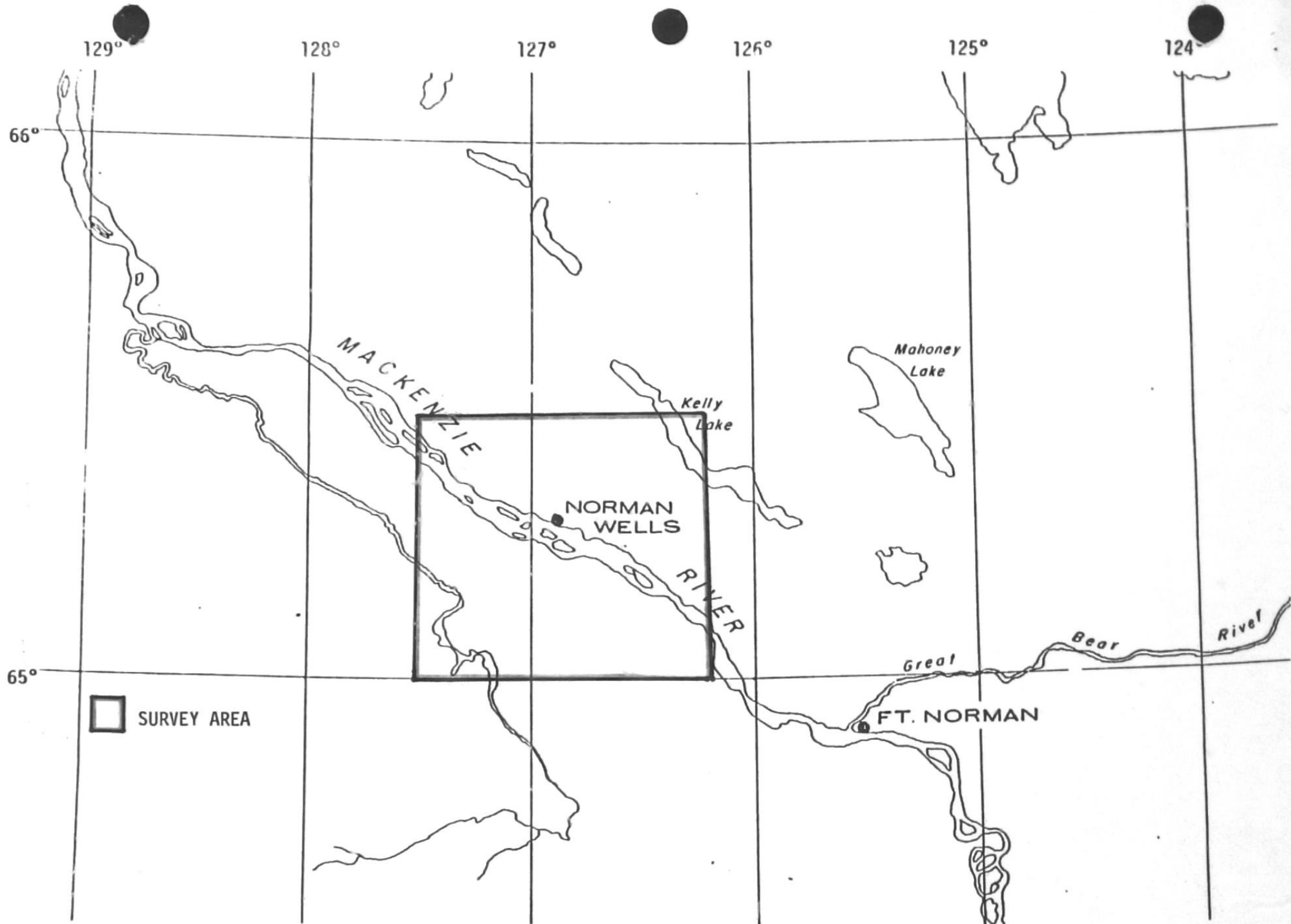
The results were incorporated in the Kee Scarp-Hume Isochron map, the main tool for delineation of reefal buildups in the Norman Wells area.

## SUMMARY AND CONCLUSIONS

Shallow marine seismic using large sleeve exploders and a multidetector cable was shot on the MacKenzie River in the vicinity of the Norman Wells reef.

The lines were primarily used in the recognition of on-reef off-reef criteria in the Norman Wells pool. Because of their quality, they only provide a fair to good definition of the reef edge.

Additional lines shot with minisleeve exploders and recorded by a single geophone provided unuseable data.



PROJECT NO: 07-09-05-79-04  
SHALLOW MARINE SEISMIC

NORMAN WELLS