

WESTERN DECALTA PETROLEUM LIMITED
REPORT ON A SEISMIC SURVEY
of the
NORMAN WELLS AREA

N.W.T. PERMITS 3783, 3784, 3785

D.I.A.N.D. PROJECT NO. 19-6-5-69-1



WESTERN DECALTA PETROLEUM LIMITED

Report on a Seismic Survey
of the

* NORMAN WELLS AREA

N.W.T. PERMITS:

3783, 3784, & 3785

OPERATOR - WESTERN DECALTA PETROLEUM LIMITED

CONTRACTOR - HUNTEC LTD.

D.I.A.N.D. PROJECT NUMBER - 19-6-5-69-1

Submitted by

[Signature]

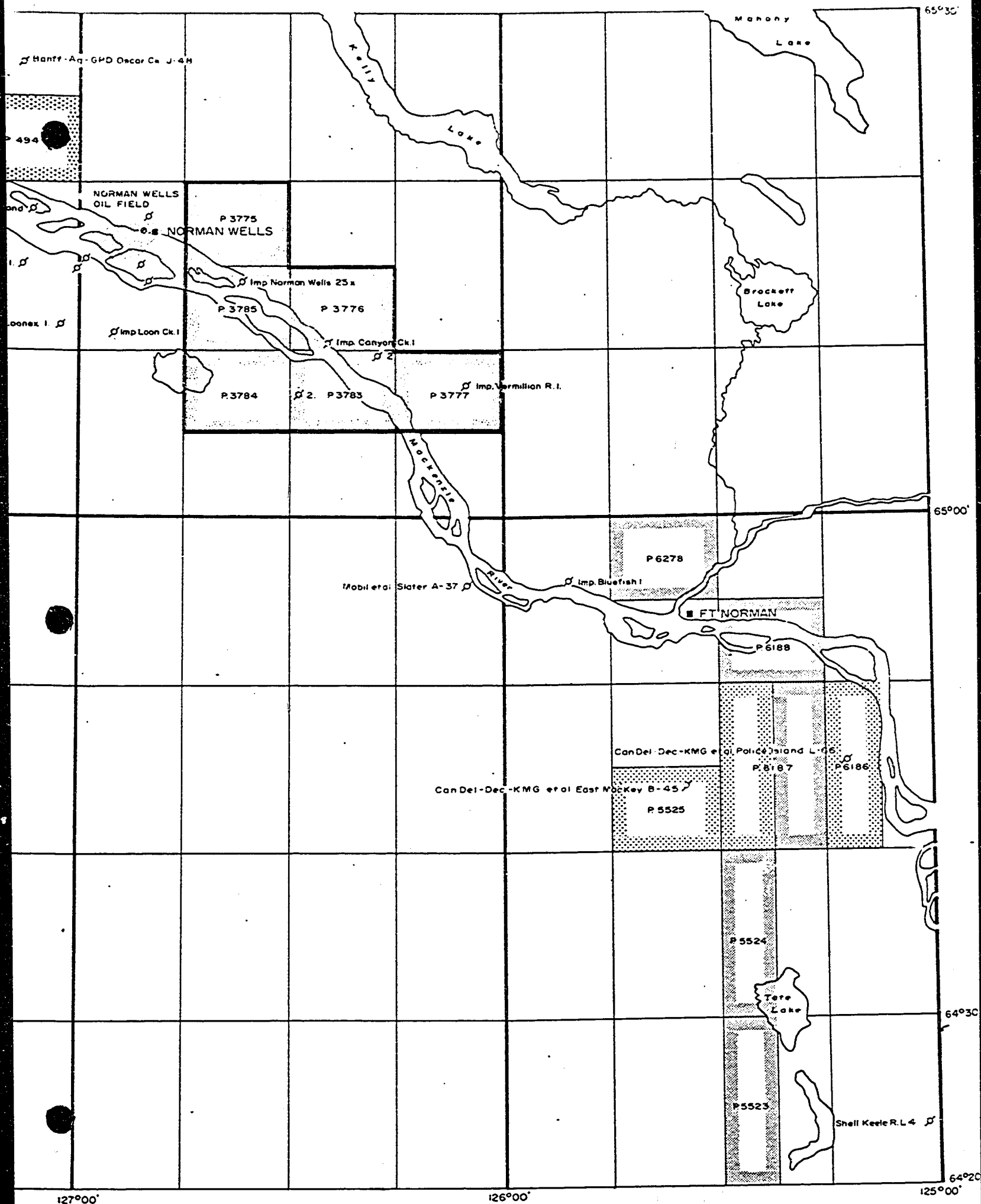
Date

March 7/73

C O N T E N T S

Project Summary	1
Part I Field (General)	1
Part II Field (Operating)	2
Prospect Area and Access	3
Recording	3
Drilling	4
Surveying	4
Bulldozing	4
Camp	4
Recommendations	5
Data Processing	6
Results	6

Enclosure - Shot Point Map



PROJECT AREA

PROJECT SUMMARY

Project No: 1346
Contract No: 2250
Party No: 50

PART 1 - FIELD (General)

Date of Commencement	February 5th, 1969.
Date of Completion	February 13th, 1969.
Supervisor	G.A. Scott
Licensee	Huntec Limited
License No:	N.W.T. Business Lic. No: A-11256

PLAN SUBMISSION

Territorial Timber Cutting
Permit (Inuvik Area)

FIELD COSTS

Number of miles shot	13.5 miles	
Cost 13.5 Miles @ \$3,210.00/mile		\$43,335.00
Additional Cat Cost		3,276.00
Move Cost		<u>8,910.00</u>
TOTAL COST . . .		<u>\$55,521.00</u>

PROJECT SUMMARY - Cont:

PART 11 - FIELD (Operating)

Party Manager

W.R. Slatnik

Surveyor

L. Neuwirth

SURVEYING

Instrument	-	Transit
Shotpoint Interval	-	440 Feet
Tie-in Control	-	Survey Monument " <u>Day</u> "

RECORDING

Shot Depth	-	60 Feet
Charge Size	-	1 x 5 pounds
Shooting Parameters	-	300% C.D.P. coverage 1320 Foot splits

INSTRUMENTS

T I A C - D F S 111 Binary Gain System with an

S.I.E. VRO - 6 DF Camera

Tape Format - 21 Track T I A C DFS 111

SETTINGS

Release Rate 6 db/30ms

Final Gain 126

Field Filtering
Lo. 27 cycles, slope of 36
Alias 124 cycles

PROJECT SUMMARY - Cont:

GEOPHONES

Type H S J 14 cycle

In groups of 9 over 150 feet

Hook-up Series Parallel

A. PROSPECT AREA AND ACCESS

The prospect is located five (5) miles south of Norman Wells, N.W.T. on the south side of the MacKenzie River. Access to the area was obtained by use of existing line from the Canol Base Camp.

The terrain is gently rolling muskeg with numerous gullies and steep river banks near the MacKenzie River. The area is lightly covered with stunted evergreen growth.

B. RECORDING

1. Equipment

The instrument used to record the data was a T I A C DFS 111 Binary Gain System. An S.I.E. VRO - 6 DF Camera was used to produce monitors and direct playbacks.

The recording tape format was a standard 21-track T I A C DFS 111 format with a slight modification made to put the Timebreak on channel 25 from channel 28 and the Up Hole on channel 31 from channel 29. The changes do not in any way affect the seismic data channels or gains.

The Recorder, Shooting Vehicle and the two (2) Geophone and Cable Vehicles are mounted on Modwells and are radio equipped for field communication. Additional support vehicles used were a track mounted Gin Pole Vehicle, a Personnel Carrier, Party Manager Truck, Survey Unit, a Fuel Truck and two (2) Water Trucks.

2. Personnel

- 1 - Party Manager
- 1 - Operator
- 1 - Junior Operator
- 1 - Shooter
- 7 - Recording Crew Helpers

3. Shooting Procedures -

The shooting was done using 1320 foot splits with a shotpoint interval of 440 feet giving 300% CDP subsurface coverage. A single hole was shot at an average depth of 55 feet with a 5 pound charge.

4. Record Quality -

The record quality in this prospect was poor. Improvement could be seen on records shot using multiple holes.

C. DRILLING

The drilling was carried out by two (2) Air Drills, two (2) Top Drives and one (1) Conventional Drill. Additional equipment used were a track mounted water vehicle and two (2) water trucks.

The drilling conditions were poor and hampered by extremely cold temperatures. There were numerous gullies crossing the lines which made drill movement difficult. Localized pockets of gravel and sandstone made drilling difficult for the Top Drives while the Air Drills experienced difficulties in the wet clay and gumbo areas along the river banks.

D. SURVEYING

A Transit was used for field surveying. The resultant information was plotted on plane table sheets. Tie-in control for this area was obtained by use of Survey Monument "Day".

E. BULLDOZING

Three (3) D-6 caterpillars with wide pads were used on this project. It was necessary on occasion to have a cat with the recording crew to move the vehicles over some of the detours made necessary by the numerous gullies.

F. CAMP

The camp consisted of eight (8) trailer units mounted on sleds with accomodation for 36 men. The design of the trailers is a knock-down helicopter type and can be converted from conventional winter operations to a helicopter crew operation.

RECOMMENDATIONS:

The drilling formation on the line shot was of a sticky clay nature. This resulted in the air rigs being uneconomical for drilling this particular line. Top drive augers worked very well. As this line was very close to the river bank the formation encountered may not be indicative of that farther back from the river. Drilling in the general Norman Wells area, from our experience, is best suited to air drills.

It is recommended that future shooting should be done with 300% CDP and 1320 foot split spreads.

A deep hole in the order of 125 feet should be tried as well as multiple holes. A lower filter on the low cut side may prove to be helpful.

- 6 -

DATA PROCESSING -

Flattened on Hume.

Bandpass filter 20-25/65-70.

300% Stack.

RESULTS -

Record quality on this program was so poor that no attempt was made to map the results. The program is shown on the accompanying map but these shotpoints are not shown on the maps for the subsequent programs - 19-6-5-70-2 and 19-6-5-71-3.

WESTERN DECALTA PETROLEUM LIMITED
REPORT ON A SEISMIC SURVEY
OF THE
NORMAN WELLS AREA

N.W.T. PERMITS: 3783, 3784, 3785, 3776.
D.I.A.N.D. PROJECT NO. 19-6-5-71-3

WESTERN DECALTA PETROLEUM LIMITED
Report on a Seismic Survey
of the

NORMAN WELLS AREA

N.W.T. PERMITS:

3783, 3784, 3785, 3776



OPERATOR - WESTERN DECALTA PETROLEUM LIMITED

CONTRACTOR - GEOPHYSICAL SERVICE INC.

D.I.A.N.D. PROJECT NUMBER - 19-6-5-71-3

Submitted by

Paul Pastus

Date

March 2/73

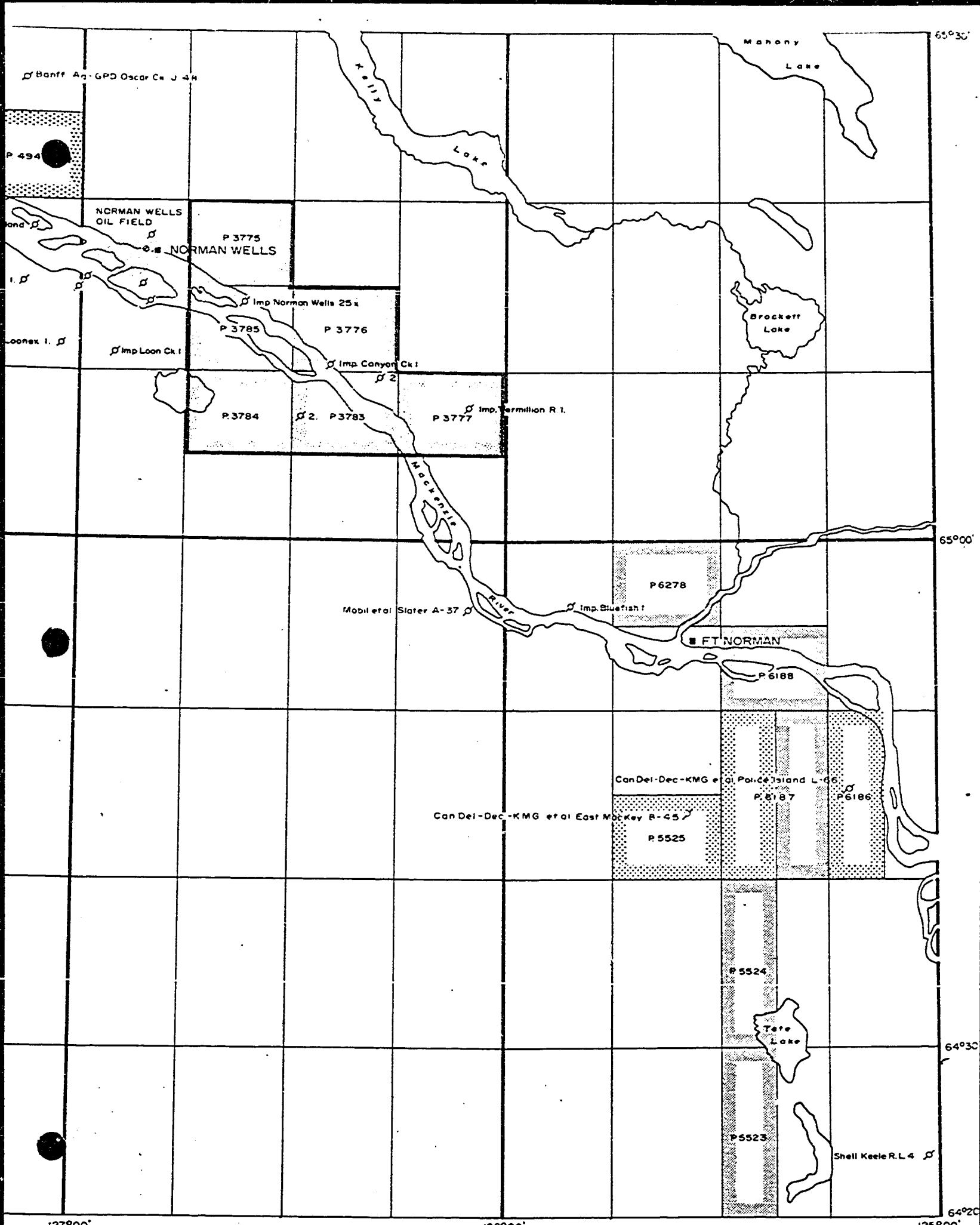
C O N T E N T S

Introduction	1
General Field Information	1
Production Shooting Parameters	1
Recording Instrumentation	2
Production Statistics	2
Equipment	3
Personnel	3
Data Processing	4
Results	4

Enclosures -

Time Structure: Middle Devonian Hume Formation

Isochron: Middle Devonian Hare Indian or Kee Scarp to
Middle Devonian Hume



PROJECT AREA

SCALE 1 INCH = 8 MILES

A. INTRODUCTION

This report summarizes the field procedures followed by Geophysical Service Incorporated, Party 493, on a digital seismic survey conducted in the Norman Wells area from January 18, to February 6, 1972.

B. GENERAL FIELD INFORMATION

Type of Survey - Reflection

Location - 65° - $65^{\circ}15'$ latitude and $126^{\circ}15'$ - 127° longitude

Party Headquarters - Field Camp

Topography - Gently sloping toward the McKenzie River

Weather - Cold and Stormy

Survey Procedures - Control established by Theodolite. Vertical and Horizontal control was tied to old seismic lines and wellsites in area.

Drilling Procedures - 4 drills on tracks (2 conventional air rigs and 2 Wet Auger drills) Drilling was generally good.

C. PRODUCTION SHOOTING PARAMETERS

Reflection Spread - Split, roll along shooting, 2640-0-2640, with 55 feet from shotpoint flag to centre of groups 24 and 25. Several coverage shots were taken because of lakes.

Group Interval - 110 FEET

Number of Groups - 48

Type of Geophones - Hall Sears 14HZ

Geophones per group - 9

Group Length - 120 FEET

Group Layout - Inline with spread

Type of coverage - 600% CDP



Shotpoint Spacing - 440 Feet

Shot Pattern - Single holes, inline with spread

Charge Size - 10 lbs.

Charge Depth - 60 Feet.

D. RECORDING INSTRUMENTATION

Instruments - Texas Instruments DFS III 9 track system (48 trace)

Filter Settings - High 124 Hz
Low 18 Hz
Slope 36 db/octave

Record Length - 4 seconds

Sample Rate - 2 milliseconds

Camera Speed - 10 inches/second

E. PRODUCTION STATISTICS

Reflection Profiles	588
Surface Coverage	49.0 miles
Recording Time	20 days
Number of Field Tapes used	16 tapes
Number of holes drilled	589
Total footage drilled	34,550 feet
Average hole depth	58.7 feet
Number of drill hours	655 hours
Drilling Rate	52.7 feet/hour
Dynamite used	5885 lbs.
Caps used	596
Insert Bits used	116
Rock Bits used	4
Cat time	1020 hours



F. LIST OF EQUIPMENT

Recorder - 1-6T Foremost with Instrument Doghouse

Reel Trucks - 2-6T Foremosts

Shooting - 1-S100 Foremost

Survey - 1-S100 Foremost

PM Unit - 1-4x4 1969 Dodge $\frac{1}{2}$ ton truck

Drills - 2 Yukon mounted Mayhew 1000 Air Water combination
drills from Scisform Drilling, Wetaskiwin
- 2-6T Foremosts with Carey Auger Drills
- 2 Nodwell Water Units

Cats - 2D7E and 1D6C Cats from Lyle Adam, Grande Prairie

Camp - GSI owned sleigh mounted camp consisting of
3 - 12 Man Sleepers
1 - Office Sleeper
1 - Kitchen Diner
1 - Utility
1 - Workshop
1 - Fuel Sleigh

G. KEY PERSONNEL

PARTY MANAGER - C. SHATOSKY

INSTRUMENT ENGINEER - R. STONE

JUNIOR OBSERVER - G. MOSKAL

SHOOTER - R. HOULE

SURVEYOR - A. BOURGET

DRILLERS - J. GILLIS
B. HIETRICH
R. KEENER
M. TONHAUSER

CAT FOREMAN - P. GULICK



DATA PROCESSING -

Structure to datum 500' ASL. Replacement velocity 10,000'/sec. Bandpass filter in frequency domain 20-25/60-70 using time gates 0-3.0 sec.

Time domain deconvolution with 50 sec. operator length and window of 0.4-1.1 sec. with whitening factor 130%.

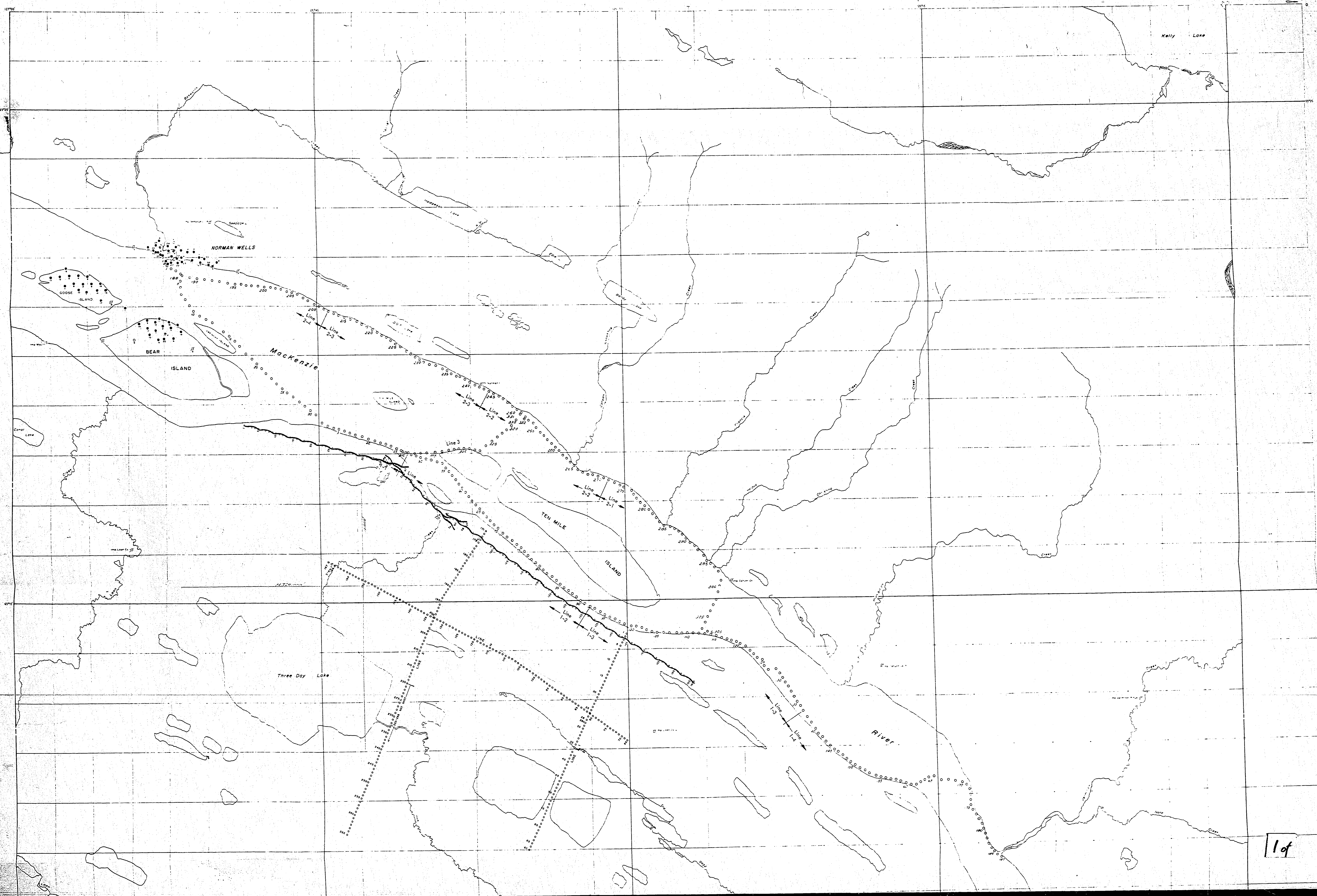
300% stack.

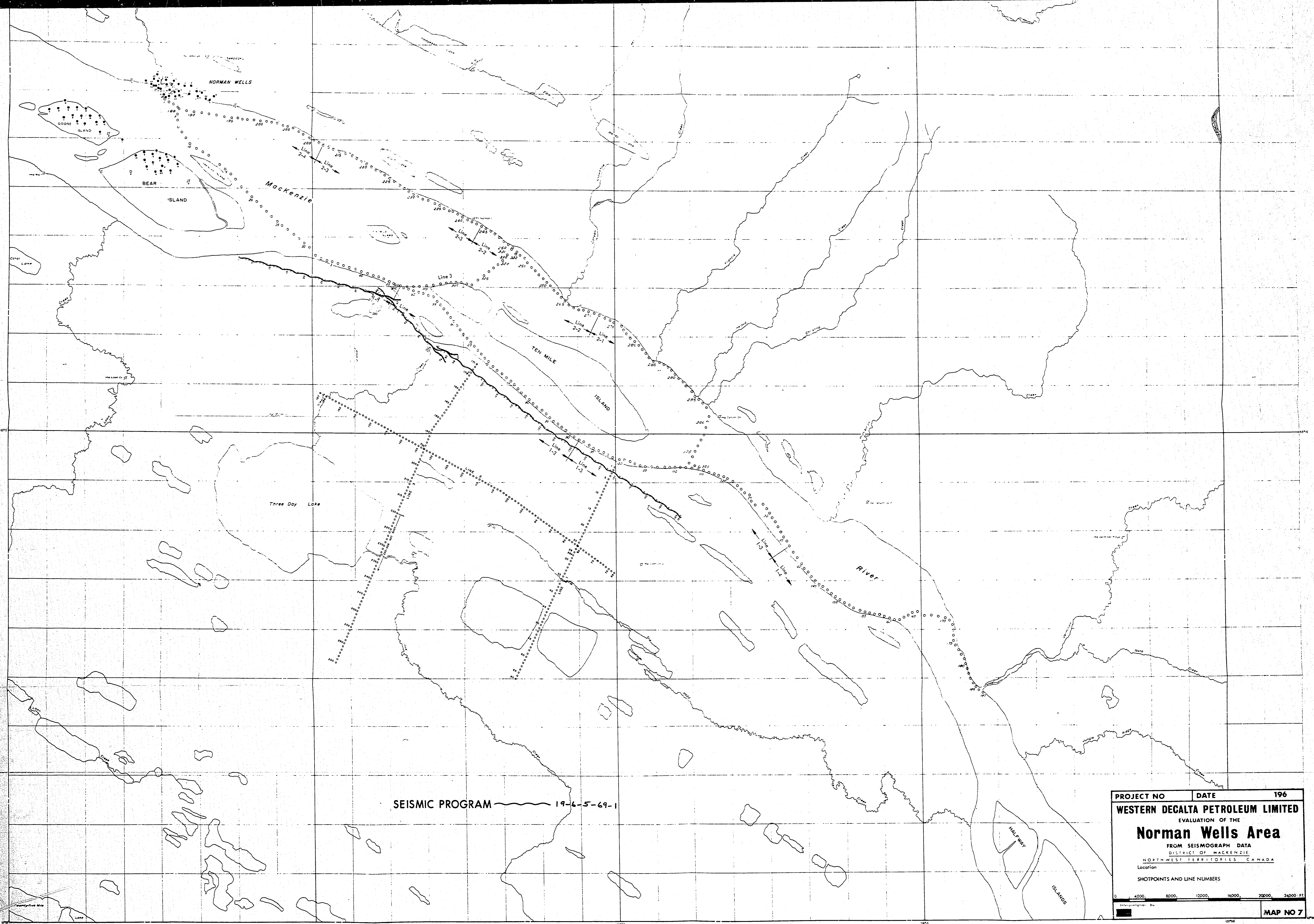
RESULTS -

Record quality was good.

A Time Structure map of the Middle Devonian Hume Formation was made over all the area.

An Isochron map of Middle Devonian Kee Scarp or Hare Indian to Middle Devonian Hume was made over part of the area.





PROJECT NO	DATE	196
WESTERN DECALTA PETROLEUM LIMITED		
EVALUATION OF THE		
Norman Wells Area		
FROM SEISMOGRAPH DATA		
DISTRICT OF MACKENZIE		
NORTH WEST TERRITORIES CANADA		
Location		
SHOTPOINTS AND LINE NUMBERS		
0 4000 8000 12000 16000 20000 24000 FT		
MAP NO 7		