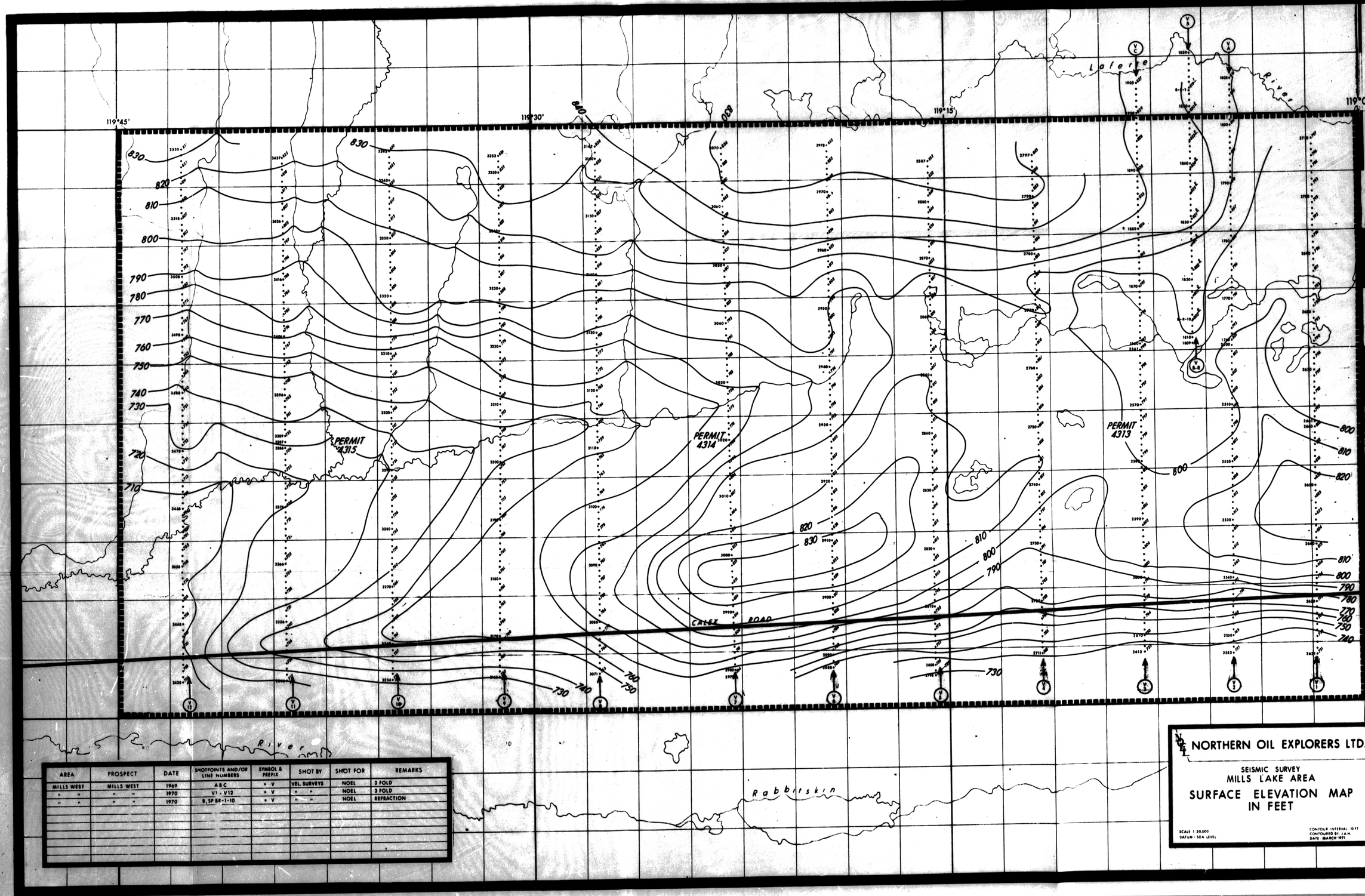

AREA	PROSPECT	DATE	SHOTPOINTS AND/OR LINE NUMBERS	SYMBOL & PREFIX	SHOT BY	SHOT FOR	REMARKS
MILLS WEST	MILLS WEST	1969	ABC	• V	VEL. SURVEYS	NOEL	3 FOLD
" "	" "	1970	V1 - V12	• V	" "	NOEL	3 FOLD
" "	" "	1970	B, SP BR-1-10	• V	" "	NOEL	REFRACTION


NORTHERN OIL EXPLORERS LTD
SEISMIC SURVEY
MILLS LAKE AREA
SCALE: 1 = 30,000'
TOP OF LONELY BAY
STRUCTURE
CONTOUR INTERVAL .010 SECONDS
CONTOURED BY JAH
DATUM PLANE 602' ASL.
CORRECTION VELOCITY 1200'/SEC.
PERMIT 4315
PERMIT 4314
PERMIT 4313
CALEX ROAD
Lolette River
Rabbitskin River
119°45'
119°30'
119°15'
119°00'
61°59'
61°45'
61°40'
.250
.260
.270
.280
.290
.300
.320

695-6-4-4

Report on a

Seismic Survey

Conducted on the

MILLS LAKE AREA

P.& N.G. Permits 4313, 4314, 4315 (Group 316)

Conducted by

Velocity Surveys Ltd.

March 1969 & January, February 1970

Report prepared by

J. A. Hudson, P. Geoph. (Alta.)

February 1971

Project Number 76-6-4-70-1

& 695-6-4-68-4 (part)

Report on a

Seismic Survey

Conducted on the

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February 1971

Project Number 76-6-4-70-1

& 695-6-4-68-4 (part)

TABLE OF CONTENTS

Field Procedures

300% CDP shooting, using a spread length of 1950-0-1950 feet was shot in the Mills Lake Area. Lines A, B, C were shot in March 1969, and were included in project 695-6-4-68-4. Lines VI - V12 inclusive were shot in January, February 1970, and comprise project 76-6-4-70-1. Three hole patterns were drilled to a 40 foot depth, with 50 to 75 foot surface separation. The recording instruments used were SIE PT 800 series Binary Gain digital recording, with nine EVS2 20 cycle phones per trace. The nine phones were connected in a series - parallel hookup. Station interval was 150 feet to group centres, and shot point flag interval was 600 feet, giving approximately 8 shot points per mile.

Data Processing

The seismic sections were prepared by Cendac and processed in the following sequence.

1. Edit - convert from field recording to sequential format
2. Normal Moveout correction
3. Filter - 100 point, 15 - 65 cps.
4. Deconvolution
5. Equalize - Gate .200 to .400
6. Display

.....2

7. Static corrections applied
8. 3 fold Stack
9. Trace scale
10. Filter - as 3 above
11. Re static - (trim)
12. Final display

Structure sections only were prepared, as only one event was recorded, the Lonely Bay limestone.

Results & Interpretation

Map of the only reflector - Lonely Bay was prepared by NOEL staff. The specimen section shows the results of a typical line of shooting. While other events can be seen on the section, the Lonely Bay event is the only horizon which exhibits any degree of confidence.

The map, of the Lonely Bay surface, indicates a generally southwesterly dipping surface, with some of the re-entrant features no doubt due to the weathering correction. Two features of note are evident, the closed features in Permit 4314 and 4313. One of these features, in Permit 4314, has been drilled and found to be a reef buildup.

Summary & Conclusions

The seismic method will delineate reef buildups on the Lonely Bay platform, although positive identification from seismic

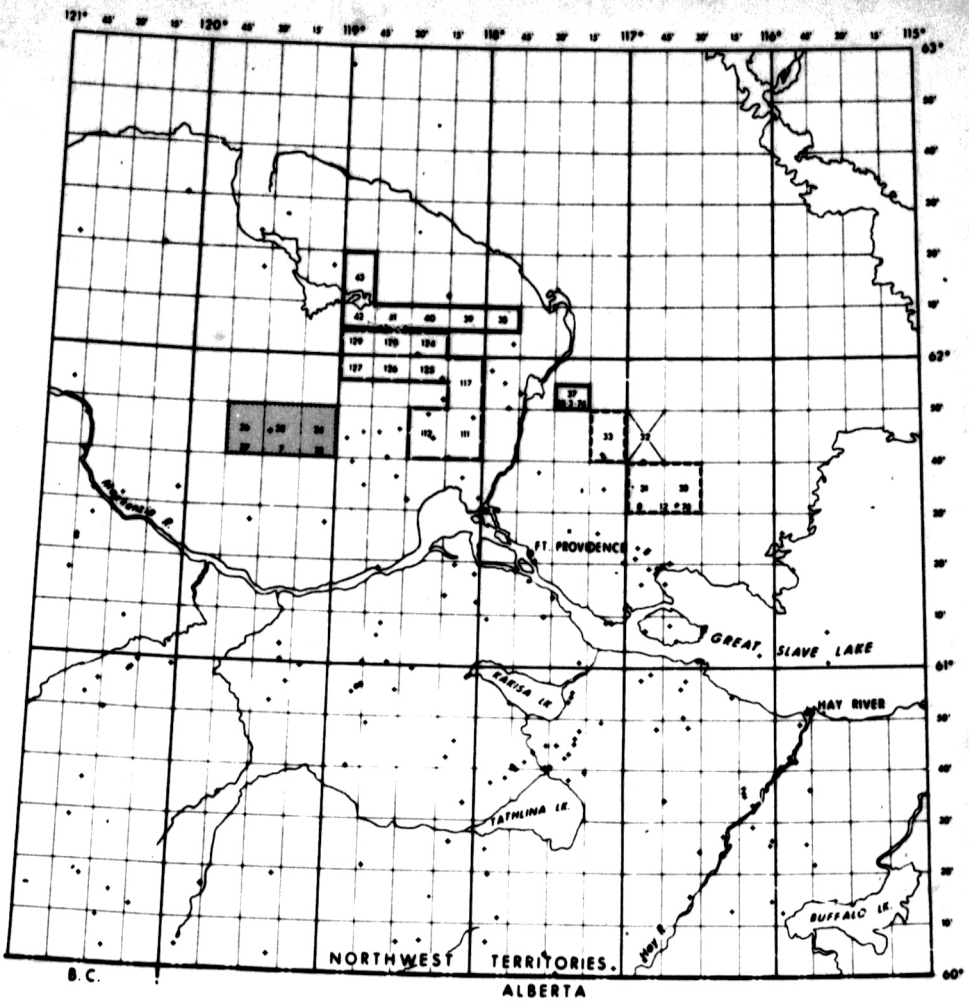
.....3

data is tenuous in this area due to the lack of other events above or below the Lonely Bay. Although the well drilled in Permit 4314 was not economic, a test of the feature in 4313 is recommended.

Statistical Data

Dates of shooting	March 6, 7, 8, 1969 January 15 - February 18, 1970		
Dates of line cutting	March 1, 2, 3, 1969 December 31, 1969 - February 7, 1970		
Miles shot	15.75, 115.3	131.05	Total
Number of shots	144, 1018	1162	Total
Average daily production	3.75		
Days worked	3, 32	35	Total
Move days	5		
Recorder breakdown	2 days		
Waiting on drills	3 days		
Number of drills	6		
Survey control	Net set up from NTS bench		
Personnel	Party Manager Observer 5 Recording Helpers Shooter Shooters Helper Surveyor Rodman Reel Truck Driver 6 Drillers 6 Drill Helpers 2 Cook Staff 1 Mechanic 6 Bulldozer Operators		
Terrain	Muskegs. Highest Elevation 845 feet. Lowest Elevation 701 feet.		

J. A. Hudson



APPENDIX I

SURVEYED AREA IN COLOR

NORTHERN OIL EXPLORERS LTD.

MILLS LAKE

NORTHWEST TERRITORIES

SCALE

0 16 32

MILES

612

DATE: JAN. 15, 1971

REV.

LEGEND

- LOCATION
- OIL WELL
- GAS WELL
- ABANDONED

DIGITAL PROCESSING

PROCESS	SEQ.	TYPE	OPERATION LENGTH	WINDOW
VIBROSEIS CORRELATION				
RESAMPLE				
NMO	1			
DECONVOLUTION	3	W. L.	36 pts 24 ms Pred	250 - 850
FILTER (CONV)				
FILTER (M.G.)	2, 9		200 ms	15 - 65cps
STATIC	6			
RESIDUAL NMO				
TRACE GATHER				
RE STATIC	8			
PHASE ALIGNMENT				
CORRELATION ALIGNMENT				
STACK	7			
TRACE SCALE				
EQUALIZE	4	AVM	RM = 2000	200 - 400
DISPLAY PAPER	5			
DISPLAY FILM	10			

DATE MAR 3/70 | DATUM 600' | CORR. VELOCITY 12,000'/s

CENDAC # 4052

CENDAC

CENTURY DATA ANALYSIS CENTRE

CENTURY GEOPHYSICAL CORPORATION OF CANADA

MILLS LAKE
PROSPECT

NORTHERN OIL EXPLORERS LTD.
CLIENT

1
LINE No.

N →
DIRECTION

DATA PREPARATION BY CENTURY GEOPHYSICAL
PARAMETER SELECTION BY NORTHERN OIL EXPLORERS
RECORDED BY VELOCITY SURVEYS

RAW		SPREAD LENGTH	300 - 1950
NMO			
STACKED ISOCHRON		GR. INTERVAL	150
STACKED STRUCTURAL	X	S.P. INTERVAL	600
100% ISOCHRON		RECORD LENGTH	1,200
100% STRUCTURAL		SAMPLE INT.	2 ms
TRACE GATHER		FOLD	300 %

RECORDING INSTRUMENTS		DIGITAL	ANALOG
TAPE		9 TRACK 21 TRACK FORMAT	TECHNO SIE — AM SIE — FM
GAIN		PGC AGC BINARY	PGC AGC ST. GAIN
FIELD FILTER		HI	HI
SWEEP FREQ.		LOW	LOW

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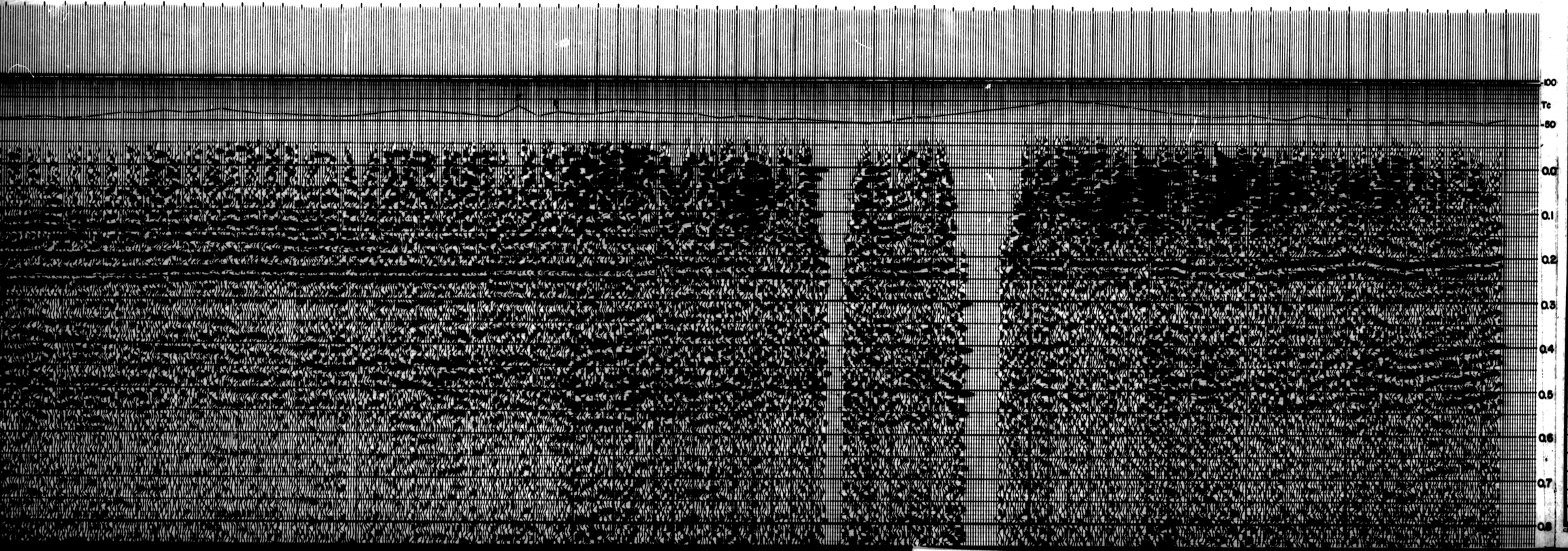
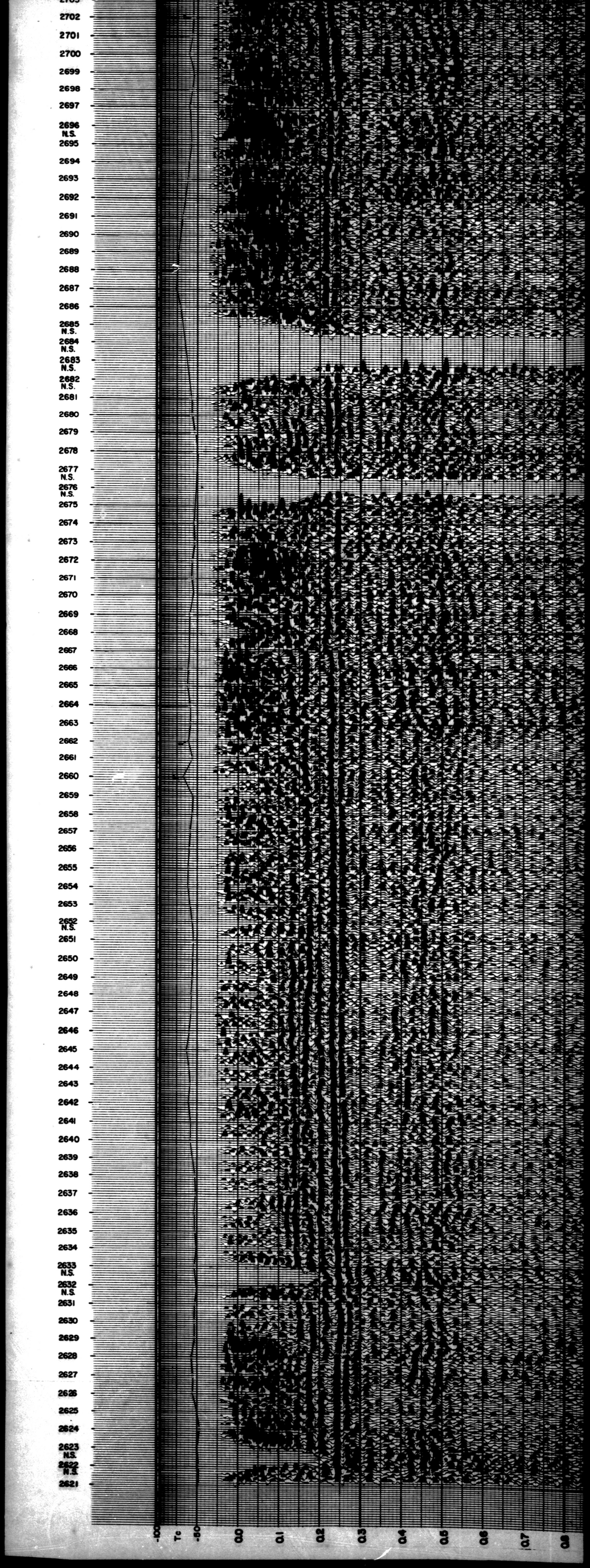


DIGITAL PROC	
PROCESS	SEQ.
VIBROSEIS CORRELATION	
RESAMPLE	
NMO	1
DECONVOLUTION	3
FILTER (CONV)	
FILTER (M.G.)	2, 9
STATIC	6
RESIDUAL NMO	
TRACE GATHER	
RE STATIC	8
PHASE ALIGNMENT	
CORRELATION ALIGNMENT	
STACK	7
TRACE SCALE	
EQUALIZE	4
DISPLAY PAPER	5
DISPLAY FILM	10
DATE MAR 3/70	DATUM 600

CENDAC # 4082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2633 N.S.
2632 N.S.
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2629
2628
2627
2626
2625
2624
2623 N.S.
2622 N.S.
2621
-100
Tc
-80
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8