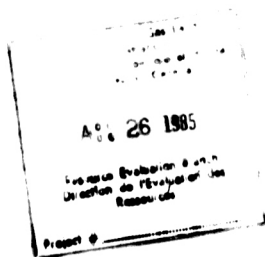
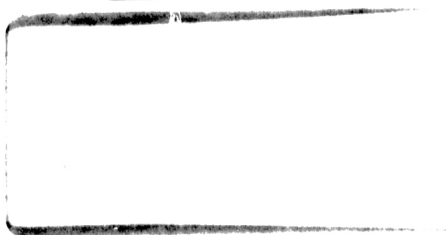
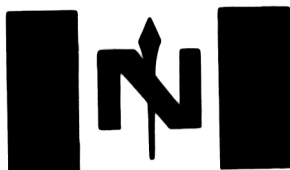


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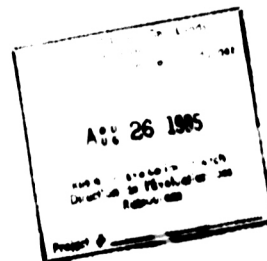


NORTHCOR ENERGY LTD.

92 0 N10 - 8E

Geophysical Report

92 N10 - 8E
TRAINOR LAKE, N.W.T.
E.A. No. 170



TRAINOR LAKE N.W.T.

Lat: 60 deg. 00 min. to 60 deg. 30 min. N
Long: 120 deg. 00 min. to 120 deg. 45 min. W

Program Number	9229-N10-8E
Operator's Report Name	Northcor Trainor Lake Seismic Program 1984
Type of Survey	Reflection Seismic
Survey Locality	Northwest Territories
Year of Field Work	1984
Operator	Northcor Energy Ltd., Calgary, Alberta
Prime Contractor	Sefel Geophysical Ltd., Calgary, Alberta
Exploration Agreement	E.A. No. 170
Author of Report	Empress Exploration Consultants Calgary, Alberta
Date of Report	December, 1984
Commencement of Survey	December 29, 1983
Completion of Survey	March 2, 1984

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Comments and Conclusions.....	12

ENCLOSURES

1. Seismic Shot Point Map
2. Seismic Sections: one pre-fold paper copy and
one film copy for Lines 1 to 32
3. Interpretive Maps: one pre-fold paper print of each

Time Structural Maps:

- Top Mississippian
- Top Devonian
- Jean Marie
- Near Top Slave Point

Isochronal Maps:

- Top Mississippian to Top Devonian
- Top Devonian to Near Top Slave Point

INTRODUCTION

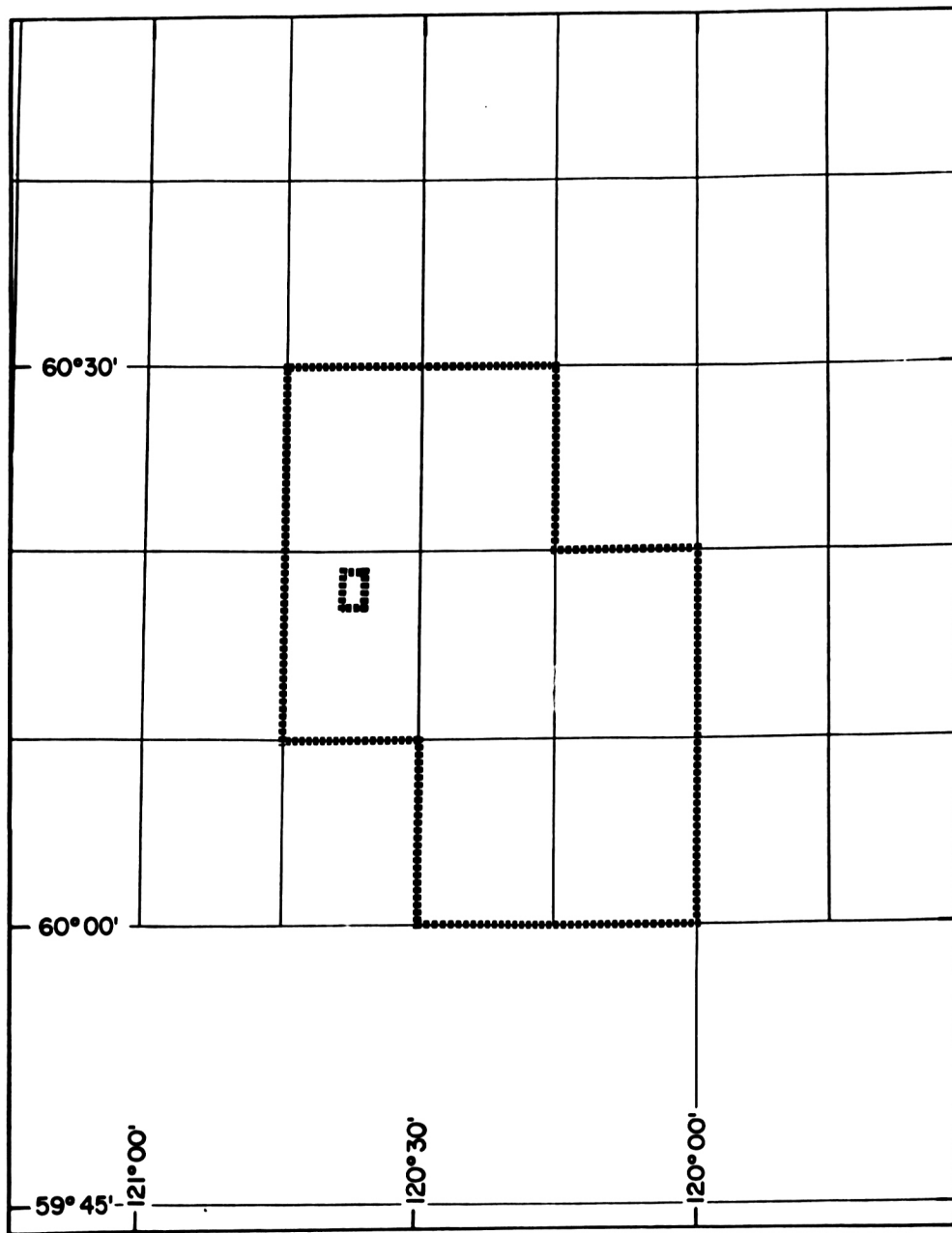
The Prospect lies immediately north of the southern boundary of the Northwest Territories, some 200 km northeast of Fort Nelson, B.C. and some 150 km east of Fort Liard, N.W.T.

The survey was undertaken to evaluate the geological configuration of the Area, primarily the attitude and nature of the Slave Point carbonate edge.

Party 501 of Sefel Geophysical Ltd., under the direction of Empress Exploration Consultants, Calgary, Alberta, began recording operations December 29, 1983. A total of approximately thirty-five (thirty-one recording) days were worked, during which time four hundred and nineteen and one-half kilometers of twelve hundred percent CDP continuous sub-surface coverage were surveyed. Field work was completed March 2, 1984. The data were processed by Sefel Geophysical Ltd., Calgary, Alberta.

One hundred and seventy-three kilometers of 1983 shooting were reviewed, the results being incorporated into the 1984 study.

Reflection quality is good. The character, amplitude and definition of most events are correlative. The Chinchaga and Basement events vary from well-developed to undeveloped - at times the two co-interfering.



TRAINOR LAKE
2

STATISTICAL SUMMARY

Tractors arrived at the program site December 29, 1983, drilling began December 30, 1983, and recording commenced January 4, 1984. Operations were intentionally temporarily interrupted to proceed to the Island River Prospect. The field survey was completed March 2, 1984 - a total of thirty-five days being worked of which thirty-one were recording days.

Forty-three Canadian personnel - the total field complement - were employed on the program.

Basic Crew

- 1 - Party Manager
- 1 - Clerk
- 1 - Mechanic
- 3 - Camp Staff (Cook, Helper and Camp Attendant)
- 4 - Survey Crew
- 1 - Observer
- 1 - Junior Observer
- 1 - Shooter
- 1 - Shooter's Helper
- 4 - Line Truck Drivers
- 8 - Recording Helpers
- 4 - Drillers
- 4 - Drill Helpers
- 2 - Water Truck Drivers
- 4 - Cat Skinners
- 1 - Tractor Operator
- 1 - Cat Foreman
- 1 - Cat Supervisor

Four hundred and nineteen point five kilometers of seismic coverage were obtained, the daily production averaging thirteen point five kilometers. No serious delays were experienced.

The muskeg-covered terrain is mostly flat with some gentle hills, which gave no problem to vehicular movement. Sufficient ice accumulated on the lakes and rivers to allow safe travel for equipment and air- servicing.

The weather remained reasonably cold, winds relatively light and snowfall average. Hence, no weather-related delays were experienced.

f. DESCRIPTION OF DATA ACQUISITION EQUIPMENT AND FIELD PROCEDURES

(see also the attached section label)

energy/source array: 2 kg dynamite charge in a single hole 12 m deep, holes spaced 100 m apart in-line with spread

detector type/array: 10 Hz Mark L-15 geophones using an in-line pattern grouping 9 geophones at 3 m intervals in a symmetrical split spread 1200 m - 25 m x 25 m - 1200 m with groups 25 m apart

recording system: 96 channel MDS-10 recording instrument employing the SEGB format recording 3 seconds of data at 2 ms sampling interval. The recording filter was 12/18 - 125/72 Hz.

g. DESCRIPTION OF DATA PROCESSING

(see also the attached section label)

1. Seismic Reflection

- demultiplex with gain removal, 2 ms sample rate
- instrument and geophone phase compensation
- CDP trace gathers - (1200%)
- gain application
- spiking deconvolution; 60 ms operator,
1% pre-whitening, window 300-1800 ms
- weathering statics; datum 700 m above sea level,
weathering velocity 610 m/sec.
- datum velocity 2750 m/sec.
- velocity analysis
- normal move-out
- automatic residual statics -
(400-1100 ms window, + - 30 ms lag)
- common offset stack
- residual NMO
- mute
- stack - (1200%)
- wave equation migration
- bandpass filter - (8/16 - 100/120 Hz)
- trace equalization - (400 - 1400 ms window)

FIELD RECORDING

DATE SHOT	1982
SHOT BY	SEFEL GEOPHYSICAL LTD.
	PARTY NO. 501
SOURCE TYPE	DYNAMITE
SOURCE PATTERN	SINGLE HOLE
CHARGE SIZE	2 KG AT 12 M
GEOPHONE TYPE	MARK-10 HZ
GEOPHONE PATTERN	S AT 3 M INTERVALS
INSTRUMENTS	NOS-10 96 TRACES
FORMAT	SEGB
RECORDING FILTER	12/18 - 125/72 HZ
RECORD LENGTH	3 SEC
SAMPLE INTERVAL	2 MS
GROUP INTERVAL	25 M
SHOT POINT INTERVAL	100 M
SPREAD GEOMETRY	1200-25-X-25-1200

DIGITAL PROCESSING

1 DEMULTIPLEX WITH GAIN REMOVAL	
PROCESSING SAMPLE RATE	2 MS
2 INSTRUMENT PHASE COMPENSATION	
3 GEOPHONE PHASE COMPENSATION	1200 PERCENT
4 CDP TRACE GATHERS	
5 AUTOMATIC GAIN CURVE APPLICATION	
6 SPIKING DECONVOLUTION	
OPERATOR DESIGN WINDOW	
MIN OFFSET	300-1300 MS
MAX OFFSET	800-1800 MS
OPERATOR LENGTH	60 MS
PRE-WHITENING	1 PERCENT
7 WEATHERING STATICS	
DATUM ELEVATION	700 M ASL
DATUM VELOCITY	2750 M/SEC
WEATHERING VELOCITY	610 M/SEC
8 VELOCITY ANALYSIS	
9 NMO	
10 AUTOMATIC RESIDUAL STATICS	
MAX CORRELATION LAG	+/-30 MS
WINDOW	400-1100 MS
11 COMMON OFFSET STACK	
12 RESIDUAL NMO	
13 MUTE	1200 PERCENT
14 STACK	
15 WAVE EQUATION MIGRATION	8/16 - 100/120 HZ
16 BANDPASS FILTER	
17 EQUALIZATION	400-1400 MS
WINDOW	16 TRACES/IN
18 FILM DISPLAY	7.5 INCHES/SEC

PROCESSING PARAMETERS SELECTED BY
EMPRESS EXPLORATION CONSULTANTS

2. Gravity not applicable

3. Magnetics not applicable

h. SEISMIC SHOT POINT MAP - enclosed

i. PROCESSED SECTIONS

one paper pre-fold copy and one film copy
of sections for Lines:

NTL - 1	NTL - 9	NTL - 18	NTL - 27
- 2	- 10	- 19	- 28
- 3	- 11	- 20	- 29
- 3a	- 12	- 21	- 30
- 4	- 13	- 22	- 31
- 5	- 14	- 23	- 32
- 6	- 15	- 24	
- 7	- 16	- 25	
- 8	- 17	- 26	

j. BATHYMETRY not applicable

k. INTERPRETIVE MAPS

time structural maps

- Near Top Mississippian
- Near Top Devonian
- Jean Marie
- Near Top Slave Point

isochronal maps

- Top Mississippian to Top Devonian
- Top Devonian to Near Top Slave Point

A synthetic seismogram for the Union Pan Am Trainor O-72 well (Lat: 60 deg. 11 min. 48 sec. N, Long: 120 deg. 13 min. 50 sec. W) was prepared and is presented below:

A synthetic seismogram for the Union Pan Am Trainor O-72 well (Lat: 60 deg. 11 min. 48 sec. N, Long: 120 deg. 13 min. 50 sec. W) was prepared and is presented below:



DISCUSSION OF STUDY

Anomalous conditions are mainly confined to the Slave Point and the deeper part of the section. A structurally high trend on the east, angling northwest toward the Carbonate front, is most prominent.

Jean Marie phenomena exist on Line NTL-3 Shot Points 409 to 433, on Line NTL-23 Shot Points 173 to 197 wherein there is a cessation of energy within the Jean Marie, and on Line NTL-14 Shot Points 261 to 325 wherein is illustrated a character change immediately below the initial Jean Marie reflection. Between Shot Points 565 and 573 on Line NTL-19 a marked drop to the southwest exists for the Devonian Kotcho Limestone. Note the Devonian feature described below (d).

The various Keg River etc. zone anomalies which could be reefal, are:

- a) Line NTL-2 S.P. 297 to 315: the Chinchaga/Basement deteriorates, the Keg River zone is altered, and the Slave Point is locally anticlinal. The anomaly is graded good/fair.
- b) Line NTL-4 S.P. 841 to 869: the Klua (?) energy is disrupted, the Slave Point, or its equivalent, indicates gentle positive relief; the anomaly is graded fair.
- c) Line NTL-6 S.P. 220 to 240: the Chinchaga deteriorates. The Keg River and Chinchaga show 10 milliseconds pull-up, the Lower Keg River (Klua?) energy is

interrupted, the Slave Point is markedly anticlinal. The anomaly is graded good.

- d) Line NTL-11 S.P. 163 to 178: a Devonian feature above the Jean Marie. Relief of 8 to 10 milliseconds is shown along with a cessation of lateral energy. There is a corresponding positive shown by the Slave Point which remains at the Jean Marie but which is eliminated by Near Top Devonian time. The anomaly is graded poor.
- e) Line NTL-21 S.P. 1285 to 1305: Chinchaga does not deteriorate but does indicate a seven millisecond pull-up. The Lower Keg River energy is interrupted and the Slave Point exhibits slight positive relief. The anomaly is graded fair.
- f) Line NTL-21 S.P. 1517 to 1543: the Slave Point is slightly anticlinal (ledge?), the Keg River reflections cease and minor pull-up of the Chinchaga/Basement is shown. The anomaly is graded fair/good.
- g) Line OSL-4 S.P. 485 to 517: the Chinchaga/Basement reflection deteriorates, the Keg River zone energies are lost, the Top of the Keg River energy ceases and the Slave Point is anticlinal. The anomaly is graded poor/fair.
- h) Line OSL-6 S.P. 1501 to 1513: the Chinchaga/Basement reflection deteriorates and slight pull-up is indicated, the Keg River energy return ceases, the platform is strengthened and the Slave Point is distinctively anticlinal. The anomaly is of small areal extent but otherwise is graded good.

On Line NTL-21 S.P. 1617 to 1680: a build-up appears at the top of the Slave Point. The Chinchaga/Basement energy returns completely deteriorate as do the expected Keg River reflections. The "softness" of the interpreted Slave Point reflection may represent porosity development. The proximity to the Carbonate front is most interesting as is the phenomenon's association with the sinuous positive paralleling the mapped Carbonate front. The anomaly is graded most interesting and should be compared to the Slave Point configuration surrounding the successful C-39 test.

COMMENTS AND CONCLUSIONS

The Slave Point front has been delineated to the extent of the seismic control - and attractive locations for Slave Point hydrocarbon accumulation in favourable sedimentary conditions have been identified along the narrow lip of the Slave Point edge (refer: Slave Point Structural Map).

The structurally high Slave Point northwest trend noted in the eastern half of the Prospect may be an expression of lithological changes within the Slave Point and may be related to the variations in under-lying sediments (e.g. Klua Shales facies change to carbonates).

The presence and/or recognition of a seismic phenomenon immediately below the Top of the Slave Point energy return, which could be indicative of porosity development, has not been established. However, there is an energy return immediately below the Slave Point event, as shown at Shot Points 1575, 1576 Line OSL-6, and at Shot Point 1069 Line OSL-7, in the vicinity of the C-39 gas well which is most

interesting. Similar, but not equivalent, conditions are noted at other locations (e.g. Shot Points 405 to 410 and 424 to 434 Line NTL-3).

Various grades of potential Keg River anomalies have been suggested. However, the Slave Point front is the prime economical target. Other anomalies should be considered secondary and therefore would need be associated with Top Slave Point prospects to warrant their current testing.

N.E. Klinck

N.E. Klinck, P. Eng.

Empress Exploration Consultants