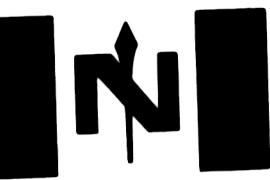


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NORTHCOR ENERGY LTD.

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Geophysical Report

92 9 - N 10 - 9 E

ISLAND RIVER, N.W.T.
E.A. No. 169

ISLAND RIVER N.W.T.

Lat: 60 deg. 00 min. to 60 deg. 35 min. N
Long: 121 deg. 00 min. to 121 deg. 30 min. W

Program Number	9229-N10-9E
Operator's Report Name	Northcor Island River 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. 169
Author of Report	Empress Exploration Consultants Calgary, Alberta
Date of Report	December, 1984
Commencement of Survey	January 7, 1984
Completion of Survey	February 24, 1984

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Instrumentation and Field Parameters.....	5
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ENCLOSURES

1. Seismic Shot Point Map
2. Seismic Sections: one pre-fold paper copy and
one film copy for Lines 1 to 36
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 175 km northeast of Fort Nelson, B.C. and some 125 km east of Fort Liard, N.W.T.

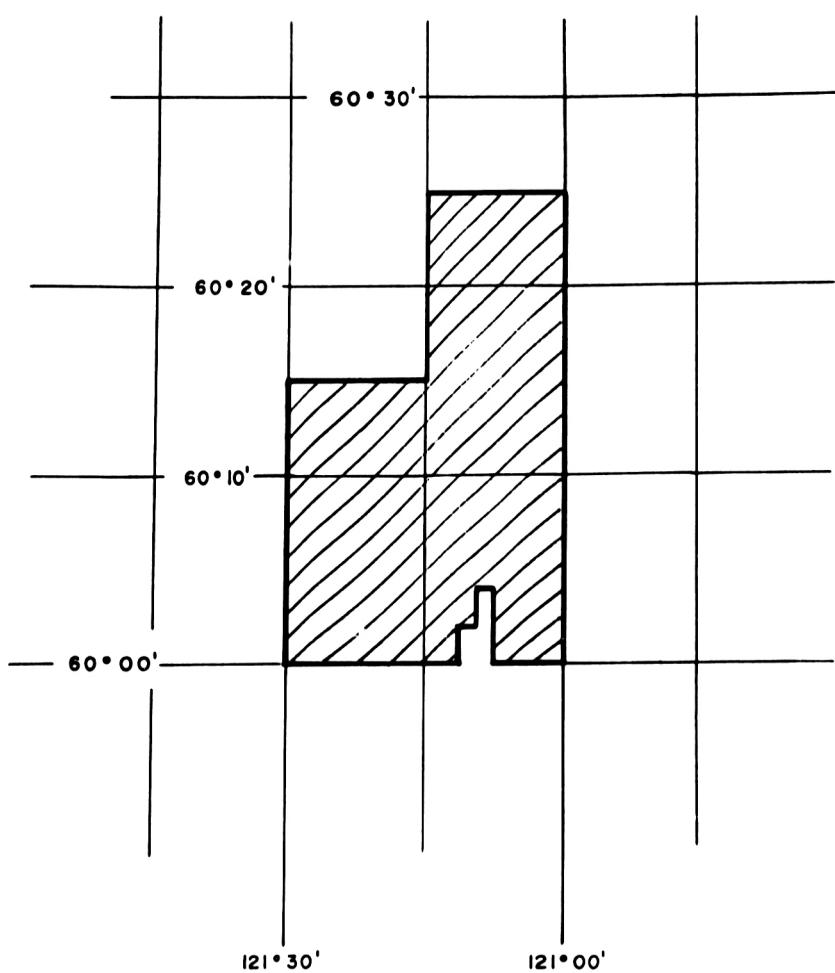
The survey was undertaken to evaluate the geological configuration of the Area, primarily the attitude and nature of the Slave Point limestone/dolomite edge.

Party 501 of Sefel Geophysical Ltd., under the direction of Empress Exploration Consultants, Calgary, Alberta, began recording operations January 16, 1984. A total of approximately thirty-eight (twenty-nine recording) days were worked, during which time four hundred and thirty-five kilometers of twelve hundred percent CDP continuous sub-surface coverage were surveyed. Field work was completed February 24, 1984. The data were processed by Sefel Geophysical Ltd., Calgary, Alberta.

Forty-six 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.

ISLAND RIVER



STATISTICAL SUMMARY

Tractors arrived at the program site January 7, 1984, drilling began January 14, 1984, and recording commenced January 16, 1984. Operations were intentionally temporarily interrupted to return to the Trainor Lake Prospect. The field survey was completed February 24, 1984 - a total of thirty-eight days being worked of which twenty nine 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 thirty-five kilometers of seismic coverage were obtained, the daily production averaging fifteen 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,
18 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	1981
SHOT BY	SEFEL GEOPHYSICAL LTD.
SOURCE TYPE	PARTY NO. 501
SOURCE PATTERN	DYNAMITE
CHARGE SIZE	SINGLE HOLE
GEOPHONE TYPE	2 KG AT 12 M
GEOPHONE PATTERN	MARK-10 HZ
INSTRUMENTS	9 AT 3 M INTERVALS
FORMAT	MDS-10 96 TRACES
RECORDING FILTER	SEGB
RECORD LENGTH	12/18 - 125/72 HZ
SAMPLE INTERVAL	3 SEC
GROUP INTERVAL	2 MS
SHOT POINT INTERVAL	25 M
SPREAD GEOMETRY	100 M
	1200-25-X-25-1200

DIGITAL PROCESSING

1 DEMULTIPLEX WITH GAIN REMOVAL	2 MS
PROCESSING SAMPLE RATE	
2 INSTRUMENT PHASE COMPENSATION	
3 GEOPHONE PHASE COMPENSATION	
4 CDP TRACE GATHERS	1200 PERCENT
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-HITTING	1 PERCENT
7 WEATHERING STATIC	
DATUM ELEVATION	700 M ASL
DATUM VELOCITY	2750 M/SEC
WEATHERING VELOCITY	610 M/SEC
8 VELOCITY ANALYSIS	
9 NMO	
10 AUTOMATIC RESIDUAL STATIC	
MAX CORRELATION LAG	+30 MS
WINDOW	400-1100 MS
11 COMMON OFFSET STACK	
12 RESIDUAL NMO	
13 MUTE	
14 STACK	1200 PERCENT
15 WAVE EQUATION MIGRATION	
16 BANDPASS FILTER	8/16 - 100/120 HZ
17 EQUALIZATION	
WINDOW	400-1400 MS
18 FILM DISPLAY	16 TRACES/JN 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:

NIR - 1	NIR - 10	NIR - 19	NIR - 28
- 2	- 11	- 20	- 29
- 3	- 12	- 21	- 30
- 4	- 13	- 22	- 31
- 5	- 14	- 23	- 32
- 6	- 15	- 24	- 33
- 7	- 16	- 25	- 34
- 8	- 17	- 26	- 35
- 9	- 18	- 27	- 36

j. BATHYMETRY not applicable

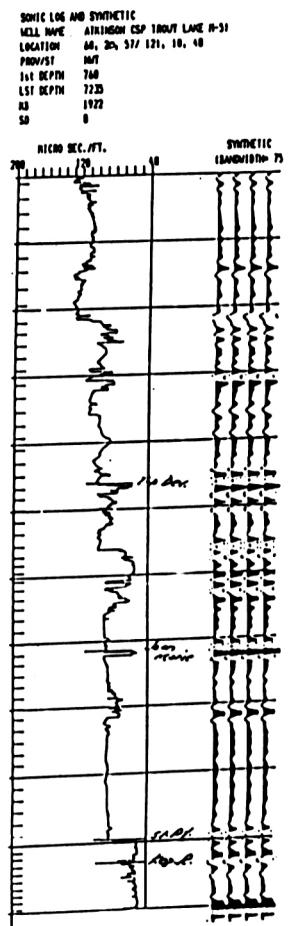
k. INTERPRETIVE MAPS

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

1. RELATED INTERPRETIVE INFORMATION

A synthetic seismogram for the Atkinson CSP Trout Lake M-51 well (Lat: 60 deg. 20 min. 57 sec. N, Long: 121 deg. 10 min. 48 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. However, a broad Mississippian positive is noted on Line NIR-10 extending from Shot Point 117 to Shot Point 310, some 4800 meters; and a monoclinal energy return within the Mississippian is shown by several adjacent northwest/southeast lines (e.g. Lines NIR-20, 21, 22).

Numerous structural highs at the top of the Slave Point, back from the Slave Point edge, have been delineated. Tests O-12, M-51, E-56 and G-42 have unsuccessfully tested four of these. Tests P-34 and G-50 did not test anticlinal anomalies.

An attempt was made to carry a Chinchaga event which is frequently questionable - a contoured map of this event is, therefore, not presented.

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

- a) Line NIR-7 S.P. 341 to 365: the lower Keg River energy ceases, a pull-up of five milliseconds is indicated by the Chinchaga/Basement. However, the Slave Point appears synclinal, the Upper Keg River flat and the Chinchaga/Basement reflection does not deteriorate. The anomaly is graded poor/fair.
- b) Line NIR-10 S.P. 442 to 462: positive relief is indicated at both the Slave Point and the Keg River levels, and the Chinchaga/Basement reflections deteriorate. The anomaly is graded fair.

- c) Line NIR-11 S.P. 135 to 175: a relatively large feature (800 meters) wherein the Keg River zone exhibits dips and relief; the Chinchaga deteriorates; Basement pull-up is suggested and the Slave Point is structurally high. The anomaly is graded good.
- d) Line NIR-19 S.P. 280 to 300: a lower Keg River anomaly immediately beyond the Slave Point front. The Chinchaga strata definitely cease, the shale equivalent to the Keg River weakens and the Basement exhibits a distinct positive or pull-up. The anomaly is graded good.
- e) Line NIR-21 S.P. 109 to 147: energy, possibly Keg River platform, ceases and the Chinchaga/Basement exhibits slight (8 milliseconds) pull-up; however, the underlying returns do not deteriorate and there is no appreciable Slave Point structure. The anomaly is graded fair/poor.
- f) Line NIR-21 S.P. 221 to 232 and S.P. 242 to 260: the Lower Keg River (platform?) reflection is interrupted, overlying dips are suggested and the Chinchaga energy deteriorates between S.P. 242 and 260. The anomalies, because of their lack of relief above the platform (?), are graded fair/poor.
- g) Line NIR-26 S.P. 901 to 918: all horizons show positive relief; the Chinchaga energy return deteriorates and the Keg River shows some relative increase in structure. However, post Chinchaga events carry through and the areal extent is small (although this may be due to the positioning of Line NIR-26). At this time the anomaly is graded as interesting - requiring further control.

- h) Line NIR-29 S.P. 225 to 253: the Keg River energies are disrupted, the Chinchaga event deteriorates, but the Basement does so only slightly. The Basement exhibits pull-up and the Slave Point is anticlinal. The anomaly is graded good.
- i) Line NIR-31 S.P. 465 to 485: beyond the Slave Point front; the Klua and the lower Otter Park shale reflections cease; the Muskwa and Otter Park appear structurally high with a "soft" apex; the Chinchaga/Basement expresses some pull-up and is altered in definition. The anomaly is graded fair.
- j) Line NIR-35 S.P. 560 to 595: the Keg River suggests build-up, and the platform energy returns cease. The Chinchaga/Basement indicates pull-up and deteriorates; the Slave Point has positive relief. Unfortunately, the anomaly is quite weak on cross-Line NIR-27. The C-60 well's total depth is approximately 200 meters below the Slave Point Top.

COMMENTS AND CONCLUSIONS

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

Exploration history tells that none of the Slave Point wells, located more than two kilometers back from the Carbonate edge, have encountered economical accumulations of hydrocarbons - many being non-porous. The presence and/or recognition of a seismic phenomenon immediately below the Top of the Slave Point energy return, which might be indicative of porosity development, has not been established - although, at times, such a diagnostic characteristic is suspected (e.g. S.P. 247 Line NIR-17 at site of G-38 probe but not at S.P. 420 Line NIR-30 at site of M-41).

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 needs be associated with Top Slave Point prospects to warrant their current testing.



~~N.E. Klinck, P. Eng.~~
Empress Exploration Consultants