

Reprocessing and Interpretation report

EL379

Kotaneelee Anticline

Northwest Territories

Conducted by Resolution Seismic Imaging

July-September 1996

for

NORCEN ENERGY RESOURCES LTD.

November 1996

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ENCLOSURES

1. Shotpoint location map
2. Near Top Nahanni TWT Structure Map
3. Synthetic Seismogram O-67
4. Seismic line KOT-1

INTRODUCTION

This report details the reprocessing and interpretation of approximately 43 kilometers of 2D seismic data on, and adjacent to, Exploration License 379, Kotaneelee Anticline Northwest Territories (enclosure 1). This exploration license was granted to Norcen Energy Resources Ltd. effective April 10, 1996. The data was purchased to allow Norcen the ability to try and improve data quality through reprocessing. The processing contract was awarded to Resolution Seismic Imaging of Calgary, Alberta. The project was initiated in July of 1996 and completed in late September of 1996.

Both pre- and post-stack migration processes were applied to the data. However, after reviewing the trials it was determined that the best results were obtained with post-stack migration and these results were filmed.

The most significant mapable seismic horizon with economic significance is the near top Nahanni marker. This was picked and mapped as a time structure surface.

1. Seismic acquisition parameters

ACQUISITION

Project	Kotaneelee
Date Shot	03 July 1983
Shot By	Sefel Geophysical Ltd.
Shot For	Northcor Energy
Party Number	521

SOURCE

Source Type	Dynamite
Charge Size	2 x 26 Kg
Charge Depth	10-18m
Source Array	Two Holes
Source Interval	100m

RECIEVERS

Geophone Type	Mark L-15 14 Hz
Geophone Array	18 over 50m
Group Interval	25m

INSTRUMENTS

Recording System Sercel 338HR
Recording Format SEG B
Gain Type IFP
Record Length 6 sec
Sample Interval 2 ms
Number of Channels 96
Lo cut Filter Out
Hi cut Filter 125 Hz
Hi cut slope 24 db/oct
Notch Filter Out

SPREAD

T1.....T48 . T49.....T96
1200m 25m SP 25m 1200m

2. Processing Sequence

DEMUX

SEG-B multiplexed format, 2 msec sample interval

GEOMETRIES

Green Mountain Geoscribe

GAIN RECOVERY

Spherical divergence correction
 $1/t \cdot v^2$, trace/trace equalization

ELEVATION STATICS

Datum elevation 1250m
Replacement velocity 4000 m/sec

DECONVOLUTION

Surface consistent Predictive deconvolution
80 ms operator length, 36 ms predictive distance

Design gate

400-3000 msec @ 25m

750-3000 msec @ 1650m

FILTER

Bandpass Filter, 10-15-45-55 Hz

ITERATE:

REFLECTION STATICS

Maximum power automatic statics

Horizon keyed, 30 msec max shift

VELOCITY ANALYSIS

Interactive velocity analysis

CDP interval <60

TRIM STATICS

Horizon keyed CDP statics

Max shift 10 msec

NMO/MUTE/STACK

All offsets

POST STACK

Band pass filter- 10-14-45-55

Time Variant Scaling

FD Migration using 60% of Velocity

PLOT

Create CGM+ plot file

3. Lines Processed

A total of five lines were included in the reprocessing effort, these included:

KOT-1

KOT-2

KOT-3
KOT-7N
KOT-7S

4. Interpretation

The results of reprocessing have helped with correlation of events seen on the original data and allowed the mapping of the near top Nahanni surface (enclosure 2). A seismic tie was established with the Kotaneelee O-67 well. This well was drilled in 1969 to a TD of 2804 m within the Manetoe facies of the Nahanni carbonates. Utilizing the sonic log a synthetic seismogram was generated (enclosure 3) and a series of reflections were identified on the nearest seismic line, KOT-1 (enclosure 4).

The data illustrates at the Nahanni level a N to S oriented anticline with a steeper western limb. To the south a northerly verging thrust fault is seen on line KOT-7S. Based on this sparse data set it would appear that the O-67 well is located near the crest of the feature at the Nahanni level.