

**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

#### RECEIVERS

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  
 $1/t^*v^{**2}$ , 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 msecs @ 25m  
750-3000 msecs @ 1650m

**FILTER**

Bandpass Filter, 10-15-45-55 Hz

**ITERATE:**

**REFLECTION STATICS**

Maximum power automatic statics  
Horizon keyed, 30 msecs max shift

**VELOCITY ANALYSIS**

Interactive velocity analysis  
CDP interval <60

**TRIM STATICS**

Horizon keyed CDP statics  
Max shift 10 msecs

**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 Kotaneelie 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.