NZ3D seismic data volume – Preliminary post stack time migration (PSTM)

This document contains grid and data parameters for loading the seismic volume in a workstation, along with the processing work flow.

1) Grid and data parameters

3D Grid Parameters:

Inline1	1 to 500	step 1	X origin 679919.00 UTM	Spacing 37.5 m
Crosslines	1- 3000	step 1	Y origin 5676560.0 UTM	Spacing 25 m

Grid inline orientation 301°
Crossline direction from inlines +90
UTM zone: 60H

Data Parameters:

Sample rate: 4.0 msec
Number of samples per trace: 2376
Number of traces per inline: 2451
Inline range:100-410
Crossline range: 200-2650
Time range: 0 – 9500 msec

SEGY trace header:

EBCDIC header is correct
Crossline: byte 181
Inline number: byte 185
X CMP: byte 89
YCMP: byte 85
Number of samples: 115

2) 3-D volume processing work flow

The goal of this preliminary processing was to conduct sufficient processing for an initial assessment of the data and preliminary interpretation. There is no multiple suppression, and the multiple interferes substantially. The results of this preliminary volume were used only for close examination of shallow structures above the seafloor multiple, and an overall assessment of the main structures below the seafloor multiple. Advanced processing to remove multiples, build accurate velocity models, and conduct prestack depth imaging were efforts that followed this initial volume.

Processing sequence:

1. Conversion to SEGY and resample to 4 msec
2. 3D geometry assignment
3. Bin assignment using bins 37.5 m inline spacing and 25 m cross line spacing for CMP bins.
4. Swell noise suppression up to 3 Hz.
5. Trace sort into CMP bins.
6. Preliminary 3D Velocity model building from CMP Semblance analysis at 10 x 200 inline/crossline CMP spacing.
7. Outside mute to minimize stretching
8. Normal moveout using 3D velocity model with stretch mute of 100%
9. Trace stack
10. Kirchhoff poststack time migration using preliminary velocity model, 5000 m inline and 5000m crossline aperture, migrated from 0 -9.5 s