

# High Resolution Processing

## Abstract

Abeer A/Razig, Snr Processor,BPC

**High resolution seismic data processing technique is a powerful tool for exploration and development in terms of precise definition of oil reservoir characters.**

**Seismic vertical resolution is the ability to detect and map thin events such as reservoir sand bodies while horizontal resolution is the ability to map lateral changes in reservoir. Horizontal resolution can approach vertical resolution if the seismic acquisition and processing are properly designed, this depends on frequency and velocity.**

**High resolution processing is a way to identify the extent and continuity of critical pay sand, characters of oil reservoir and small fault/blocks. It can give more accurate impedance inversion results and restore high frequency component and to compensate energy of high frequency lost.**

**The main technology for high resolution processing are the model analysis, relative amplitude, noise attenuation, de-convolution, velocity analysis, migration, static correction, high precision stack , PSTM and AVO.**

**Data analysis points out the original information and the relation between real seismic data frequency and thickness of the reservoir; then the flow for high resolution processing is defined. The high frequency components and lost energy are restored prior to stacking, applying an iterative static correction in different frequency bands. For post-stack improving resolution; the time variant spectral, whitening, zero phase de-convolution and blue filter are applied. Vertical resolution is improved by proper event migration and precise collapse of diffraction applying PSTM. Lateral resolution is improved utilizing amplitude versus offset technique.**

**It is concluded that, the high resolution processing can restore high frequency components and identify the extent and continuity of a thin sand body. Improving seismic resolution may lower seismic S/N ratio and only to be done for a target event. Conventional processing and structural interpretation are prior to high resolution processing.**