

Contents Listing

Understanding Seismic Course

Seismic for Non-Geophysicists

Insight Training

Tutor: Peter Granger

Fundamentals

Seismic Rays

Seismic Sources

Vibrator Land Sources

Seismic Receivers

Reflection – Snell's Laws

Refraction

The Seismic Trace

Seismic Display

Acoustic Impedance

Synthetic Seismograms

Seismic Waves – P & S

Amplitude, Frequency, Phase

Fourier Analysis

Polarity Conventions - Minimum & Zero Phase

Digital Data – Aliasing

Single Fold Sections

Multi-fold Seismic

Acquisition Geometry

Constructing A Seismic Line

Normal Move-Out

NMO Correction

Mute

Stack

Edit

Amplitude Decay & Compensation

Velocity Analysis

Non-Hyperbolic Move-Out

Anisotropy

Seismic Velocities – RMS, Stacking, Dix

Noise Suppression & Data Enhancement Tools

Seismic Noise

Field Arrays – Array Simulation

Statics – Land & Marine

Frequency Filtering – Notch & Bandpass

Dip (FK) Filtering

Multiple Attenuation

Deconvolution

Equalisation & AGC

Seismic Imaging

Migration Overview

Mis-location of reflectors on stack

Diffractions

Time Migration

Migration Velocities
DMO
Depth Migration (PSDM) and Velocity Model Building
Pre or Post Stack Migration?

3D Seismic

Acquisition of 3D – brief overview
Advantages of 3D
Sideswipe
Migration Misties
3D Seismic Acquisition - Land & Marine
3D Display
Voxel Visualisation
Virtual Reality

Seismic Reservoir Characterisation & Fluid Monitoring (High Tech. Seismics and Ongoing Developments)

Seismic Resolution – Temporal and Spatial
Direct Hydrocarbon Indicators (DHI)
Seismic Attributes – Trace & Windowed
Dip/Azimuth
Coherency
Automatic Facies Characterisation
Acoustic Impedance Processing (AI)
Four Component Seismic (4C)
Time-Lapse Seismic (4D)
Amplitude versus Offset (AVO)
Vertical Seismic Profiles – Overview

Seismic Interpretation

A 6-line paper interpretation exercise to integrate learning about seismic quality and to show how geophysicists use the data to interpret and develop prospects. This real exercise also shows the challenge of visualising the 3rd dimension. Participants interpret, create a map and evaluate maps to generate prospects. This is an enjoyable yet challenging exercise that will set the theoretical aspects of the course in perspective and show how a knowledge of seismic quality issues and limitations is essential for an effective subsurface interpretation.