

Mustagh Resources Ltd.

SEISMIC OVERVIEW FOR MANAGERS AND NON-GEOPHYSICISTS 2-DAY COURSE OUTLINE

Day One

- 1. Overview and Introduction (8:30-9:00)**
Introduce Mustagh and instructor(s)
Introduce participants and background
Roll of seismic in exploration cycle
“Pictures” of the subsurface
Various displays
 - List of numbers
 - Trace
 - Section
 - Chair display
 - Time slices
- 2. Seismic Fundamentals (9:00-10:00)**
Elastic Waves – Compressional and Shear
Surface and boundary waves
Simple model of wavefield
Measuring the wavefield at the surface
The seismic field record
An example of stacking

- 15 Minute Coffee Break -
- 3. Basic Principles (10:15-12:00)**
What is a wavelet?
What is Bandwidth?
What are vertical and lateral resolution?
Resolution versus detectability

- 1 Hour Lunch Break -
- 4. Limits of Seismic (1:00-2:30)**
Transmission losses in a variety of basins
Mode conversion and AVO
Spherical divergence
Absorption – a non-linear loss
Why is seismic imaging limited?
Field record versus Stacked data
Apparent wavelengths
Measuring the Wavefield

- 15 Minute Coffee Break -
- 5. Types of Noise (2:45-4:45)**
Random – time variant
Source Generated – offset variant
 - Trapped Mode
 - Guided waves
 - Scattered surface waves
 - Ground Roll
 - Shear converted surface wavesCase histories
Defence tools?
 - Acquisition
 - Processing
 - Interpretation

Day Two

- 6. Geometry principles (8:30-10:00)**
CDP method
Normal Move out
2D Fold
3D Fold
Case History (Out-of-Plane effects)

- 15 Minute Coffee Break -
- 7. Basic Processing Corrections (10:15-12:00)**
The synthetic trace
Geometry
Amplitudes in time and offset
Deconvolution
Normal Move out
Statics
Pre-stack gather
Migration
 - Post-stack
 - Pre-stack
- 1 Hour Lunch Break -
- 8. Interpretation Basics (1:00-2:30)**
Structural
 - Time versus Depth
 - Lateral position accuracyStratigraphic
 - Wavelet characteristics
 - Post-stack
 - Pre-stackGeologic input and calibration
Case Histories

- 15 Minute Coffee Break -
- 9. The Value of Seismic (2:45-4:15)**
Cost Factors
 - Target depth
 - Geographic location
 - Geophysical objectives
 - Noise conditionsImage Quality and Confidence
 - Design parameters
 - Quality of implementation
 - Quality of Processing
 - Target depth
 - Geologic complexity
 - Noise conditionsValue
 - Finding desired features
 - Avoiding undesired features
- 10. Discussion and Wrap-up (4:15-4:45)**