SEISMIC SEQUENCE STRATIGRAPHY

Overview

Sequence stratigraphy, based on sedimentary response to changes in relative sea level gives the explorationist and the development geoscientist a powerful new predictive tool for regional basin analysis, shelf to basin correlation and reservoir heterogeneity. Perhaps most importantly, sequence stratigraphy gives the geoscientist a superior framework for the integration of geologic, geophysical and engineering data and expertise.

Seismic data offer more than structural information only; they can help define the chronostratigraphic framework of a sedimentary basin fill and provide valuable information on facies distributions within depositional sequences identified. Based on this it allows making reservoir predictions both in exploration and production working domains.

The integrated approach permits detailed reconstruction of the basin fill history in exploration domain and helps delineating flow units within a reservoir sequence in field development. The range in observation scale makes the tool useful for basin analysis and reservoir modelling. The technique is essential for modern seismic reservoir characterization studies adopting a multi-disciplinary approach.

We will develop the basic concepts of sequence stratigraphy such as the integration of eustasy and tectonic subsidence which gives rise to the basic cycle hierarchy that can be observed in the geologic record. Using these basic concepts, we will build a general predictive stratigraphic model emphasizing the petroleum system and particularly stressing shelf to basin correlation.

Objectives and Key Outcomes

This five-day course covers the concepts and practical applications of sequence stratigraphy for oil and gas exploration, appraisal and production. The course is delivered interactively through engaging class lectures, presentations, practical exercises; all concepts are illustrated with examples of seismic, well-log, core, and outcrop data and the exercises emphasize the recognition of termination patterns, sequence stratigraphic surfaces and systems tracts on seismic lines, well logs and outcrops.

The ultimate objective of the course is to provide the practitioner with tools and methodologies of sequence stratigraphy to effectively predict the presence and quality of reservoir, source rock and seal and define the key architectural elements of stratigraphic traps.

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By the end of the course, delegates will be able to learn the:

Main contents of the course are:

- Historical framework
- Seismic geometries
- Unconformities and their correlative surfaces
- Relative and absolute sea levels
- Parasequences and their stacking patterns
- Parasequences as a correlation tool
- Cycle hierarchy
- The sequence stratigraphic model in clastics
- The sequence stratigraphic model in carbonates
- World-wide cycle chart and its application
- Use of logs for sequence stratigraphic interpretation
- Digital forward modelling of marine sequences as a tool for predicting reservoir characteristics
- Exploration and production scaled case histories and strategies

The course can be modified also only covering carbonate sequence stratigraphy.

Who Should Attend

The course is designed for Geologists, geophysicists, biostratigraphers and engineers (with some knowledge of geology) needing a fundamental understanding of the principles and applications of seimic sequence stratigraphy.

Course Duration

5 days