

# Stratigraphy Sequence, Seismic & Integrated Stratigraphic Analysis

## INTRODUCTION

- The objective of this Stratigraphy training seminar is to get more out of seismic and well data through the use of sequence and seismic stratigraphy and integrated stratigraphic analysis to further constrain geological models. Ultimately, it can be used to predict and discover more hydrocarbon plays, to improve the estimation of play and prospect risk and to determine what lithology is going to be drilled ahead of the drill bit.
- This 5-day interactive Stratigraphy training seminar will deal with the fundamentals and practical applications of sequence and seismic stratigraphy. It will include exercises and case histories for some interpretation and workshop discussion.

This training seminar will feature:

- The History of Sequence Stratigraphy
- The Models and Principles of Seismic and Sequence Stratigraphy
- Controls on Basin Stratigraphy
- Sequence Definition from Wells and Seismic
- The Fundamentals of Sequence Stratigraphy in Carbonate Systems
- Relative Sea Level Lowstands and Reservoir Development
- Sequence Stratigraphy in Lacustrine Environments
- Integration of other Stratigraphic Information, Biostratigraphical, Radiometric Dating, Chemostratigraphical

## OBJECTIVES

By the end of this training seminar, participants will be able to:

- Understand the critical use of chronostratigraphy in providing a temporal and spatial display of depositional packages
- Have a full understanding of sedimentary basin types and their depositional patterns
- Identify the main sequences on seismic
- Integrate other geological data and then identify sequences and parasequences on well logs
- Have awareness with the terms and definitions used in sequence and seismic stratigraphy
- Use sequence and seismic stratigraphy towards new play definition and as an aid in play and prospect risking

## **ORGANISATIONAL IMPACT**

An understanding of the concepts and the application of sequence and seismic stratigraphy in identifying clastic and carbonate hydrocarbon reservoirs and predicting their distribution is critical in optimizing exploration efforts for a company and obtaining the most from seismic and well data that has already been acquired at huge expense. For the organisation, the benefits will include:

- Getting the most out of expensively acquired seismic and well data
- Prediction of play trends for new acreage acquisition
- More accurate assessments of geological risk for prospects
- Identification of new plays and new leads and prospects
- Development of staff with new oil finding skills that can be applied to ongoing exploration projects immediately
- More accurate assessment of the prediction of reservoir presence and effectiveness in both clastic and carbonate plays
- More accurate estimations of Expected Monetary Value (EMV) for prospect economic assessments

## **PERSONAL IMPACT**

Developing key interpretation skills in exploration play, lead and prospect generation provides a real personal benefit. The individual will enhance his predictive skills to become the proven oil finder that organisations are looking for. They will also become better at estimating geological risk which is key for accurate prospect portfolio generation. Personal impact includes:

- The ability to recognize and integrate sequences identified both from well log and seismic data
- Identification of systems tracts, bounding stratal surfaces and key geometries in shelf to basin transects
- Upon understanding the above to be able to predict the presence and distribution of clastic and carbonate reservoirs and to identify new plays, leads and prospects
- Have improved skills in geological risk assessments
- Have improved oil finding skills and better company and professional recognition

## **WHO SHOULD ATTEND?**

- This Stratigraphy training seminar is suitable for exploration and development geologists, seismic interpreters, sedimentologists, petrographers and other upstream subsurface professionals who are interested in optimally utilizing geological data as a predictive tool in sedimentary basins and for identifying hydrocarbon plays in active petroleum systems.

## Course Outline

### An Overview and the Use of Chronostratigraphy

- Outline and Overview
- The History of Sequence Stratigraphy and Stratigraphic Models
- Chronostratigraphy and Seismic Models
- Condensation Surfaces
- Erosion and Non-deposition Surfaces
- Coastal Onlap and Eustatics

### Seismic Stratigraphy and Controls on Basin Stratigraphy

- Principles and the Geometry of Depositional Systems
- Types of Seismic Reflector Terminations
- Changes in Accommodation Space
- Controls on Basin Stratigraphy
- Orders of Cyclicity
- Types of Sedimentary Basins

### The Models and Principles

- The Exxon Model
- Sequence Boundary Types and Systems Tracts
- Other Systems Tract Types and Variations on the Ideal Model
- Genetic Stratigraphic Sequences
- Sequences on Seismic
- Sequence Boundary Recognition

### Sequence Definition from Wells and Seismic

- The Use of Well Log Data
- Definition of Surfaces and Systems Tracts
- Recognition of Systems Tracts on Seismic
- Recognition of Stratal Surfaces on Seismic
- Seismic Facies Analysis
- Analysis of Seismic Attributes

### Sequence Stratigraphy of Carbonates and Relative Sea-level Lowstands

- Carbonate Systems Overview
- Introduction to Carbonate Sequence Stratigraphy
- Carbonate Platform Drowning and Causes
- Highstand Shedding
- Controls on Carbonate Production and Sedimentation
- Relative Sea Level Lowstands, Carbonate, Evaporate and Siliclastic Partitioning