



N410: Sequence Stratigraphy Applied to Exploration and Production

Instructor(s): Vitor Abreu

5 Days

Competence Level:
Skilled



Classroom Course

Summary

This is a practical introduction to the use of sequence stratigraphy to describe, correlate, and map strata. The terminology of surfaces, systems tracts, sequence sets and stratigraphic hierarchy will be described, and then applied to subsurface data exercises in non-marine, shallow marine, and deep marine depositional settings. The emphasis will be on the recognition and mapping of play elements from exploration to production scales.

Learning Outcomes

Participants will learn to:

1. Characterize and map hydrocarbon play elements in different settings.
2. Assess and interpret cores, well-logs, and seismic lines.
3. Implement sequence stratigraphic methods to define plays and prospects, and to predict play element presence and quality on seismic data.
4. Describe how the concepts of sequence stratigraphy were developed and apply the basic terminology and definitions of sequence stratigraphy.
5. Apply the concept of facies, facies stacking, and shoreline trajectory to define parasequences, surfaces, and system tracts.
6. Evaluate main controls on depositional sequences.
7. Describe the Accommodation Succession Method and Sequence Stratigraphy Hierarchy.
8. Apply chronostratigraphic techniques.
9. Apply the sequence stratigraphic method in non-marine, shallow marine, and deep marine environments.
10. Apply sequence stratigraphy in fine-grained environments.

Duration and Training Method

A five-day classroom course with classroom lectures, discussions and exercises covering a wide variety of environments.

Who Should Attend

This course is intended for petroleum geologists, geophysicists, reservoir modelers, seismic interpreters, reservoir engineers, petrophysicists and sedimentologists who require a working knowledge of the concepts of sequence stratigraphy.

Prerequisites and Linking Courses

Participants are expected to have a working knowledge of fundamental geological concepts, such as presented in Basic Application courses N155 (Introduction to Clastic Depositional Systems: a Petroleum Perspective).

Suitable follow-on courses at Skilled Application level include N349 (Practical Methods for Sequence Stratigraphic Prediction) and field courses such as N011 (High Resolution Sequence Stratigraphy: Reservoir Applications (Utah, USA)), N042 (Reservoir Sedimentology and Stratigraphy of Coastal and



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Shelfal Successions: Deltas, Shorelines and Origins of Isolated Sandstones (NW Colorado, USA)), and N451 (Practical Oil-Finders Guide to Siliciclastic Sequence Stratigraphy (Wyoming, USA)),

Course Content

This is a “hands-on” introduction to the concepts of Sequence Stratigraphy. This is a method developed to support geoscientists in the geologic interpretation of subsurface data, with the objective of predicting play elements, presence, and quality before drilling. The method can be applied to cores, well logs, seismic lines (2-D and 3-D), and outcrops in all depositional environments.

Day 1

- Introduction and Class Objectives
- Stratigraphy History
- Lithostratigraphy vs Chronostratigraphy Correlations
- Price River C- Core Description, and Interpretation
- Sequence Stratigraphy Concepts
- Sequence Stratigraphy Method Applied to Well-Logs

Day 2

- Urdanetta Exercise - Well Log interpretation and Correlation
- Well-Log Loop-Tie Interpretation and Mapping
- Sequence Stratigraphy Method Applied to Seismic
- Idealized Depositional Sequences
- Seismic Facies Mapping
- Woodbine Seismic Facies and EoD Mapping

Day 3

- Sequence Sets and Composite Sequences
- Seismic Stratigraphic mapping at Exploration Scale
- Pelotas Basin Exercise

Day 4

- Application of Sequence Stratigraphy for Unconventional Resources
- Vaca Muerta Exercise
- Reservoir Distribution in Deep Water Settings
- Play Definition at Regional Scale - North Sea Example
- Identification of Stratigraphic Traps in Deep Water Settings

Day 5

- Reservoir Compartments in Deltaic and DW Reservoirs
- High Resolution Mapping at Production Scale - Deltaic reservoirs



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