TETRA TECH RPS ENERGY | TRAINING

N357: Operational Seismic Stratigraphy

Instructor(s): Rob Kirk

Format and Duration

Classroom - 5 Days
Virtual - 10 Sessions

Summary

The aim is to supply participants with an international spread of real-world examples, which can serve as an analogue database for future work. This course includes multiple class exercises and case history examples, integrated with lectures on sequence stratigraphic concepts. The lectures will present common pitfalls and case studies demonstrating things that went wrong, as well as where facies mapping worked. Participants will have the opportunity to construct seismic facies maps during the course.

Business Impact: An understanding and application of the principles of sequence stratigraphy is essential for the successful prediction and analysis of seismic and well log facies in the subsurface. This course provides the relevant knowledge and skills for participants to successfully use sequence stratigraphy in exploration and prospect identification.

Learning Outcomes

Participants will learn to:

1. Formulate the observational techniques used to interpret both well and seismic facies (clastic and carbonate) within a simple stratigraphic framework.
2. Evaluate the use and integration of the Exxon model, system tracts, chronostratigraphy and seismic stratigraphy.
3. Assess the principles of facies mapping methods to sequence stratigraphy and describe the possible pitfalls in interpretation; mispicking, scale, depositional environment, mounds and (HRDZ's) Hydrocarbon Related Diagenetic Zones.
4. Appraise and locate Lowstand facies; slope fans, prograding complexes, incise valleys, sediment waves and contourites, basin floor fans and debrites.
5. Appraise and recognise Transgressive facies; basal transgressive sands and source rocks.
6. Appraise and pin point Highstand facies; prograding slope and shelves, fluvial and alluvial sediments.

Training Method

This is a classroom or virtual classroom workshop comprising practical exercises interspersed with lectures and discussion.

Who Should Attend

This workshop is hands-on and is suitable for both geologists and geophysicist, or anyone interested in deducing geology from seismic and well data.

Course Content

1. Introduction

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- Format, content, aims and objectives

2. Sequence Stratigraphy

- The Exxon model
- Other models
- System tracts
- Chronostratigraphy
- Seismic stratigraphy
- Well facies

3. Seismic Facies Mapping

- Introduction
- Scales, phase, datumming
- ABC method
- Other methods
- Automated methods
- Exercise: ABC mapping

4. Lowstand Seismic Facies

- Basin floor fans and debrites
- Slope fans
- Sediment waves and contourites
- Prograding complexes
- Incised valleys
- Exercises: Deepwater sediments in the Gulf of Mexico, Carnarvon and Canning Basins
    - The Carnarvon exercise will include a relative sea level change curve calculation and prediction of basinal facies

5. Transgressive Seismic Facies

- Basal transgressive sands
- Source rocks
- Exercises: Source rocks in China and North Slope; basal transgressive sands in Pakistan and Carnarvon Basin

6. Highstand Seismic Facies

- Prograding slopes and shelves
- Fluvial
- Alluvial

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- Exercises: Prograding deltas and carbonates in Morocco, Vietnam, and the Great Australian Bight

7. Stratimagic Examples

8. Pitfalls and "Oddball" Facies

- Scale
- Misspicking
- Mounds
- HRDZ's
- Other problems

9. Seismic Facies Mapping Exercise

- Exercise: The Pearl River Mouth Basin, China