Characterization of Clastic Reservoirs: Workflows for Reservoir Evaluation (G035)

Tutor(s)

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Overview

Reservoir mapping at production scale has to be performed with an understanding of clastic depositional systems, with full integration of core, core-plugs, well logs, seismic and production and engineering data. The variation in reservoir architecture of most common deposition-system morphotypes strongly influences development and production strategies, as well as in mapping techniques for not only the field scale but also to increase chances of finding near-field opportunities. The workshop examines common reservoir facies in transitional-marine to deep water systems, from fluvio-, wave- and tidal-dominated deltas, incised valleys, deep water channel systems and distributary channel lobe systems (deep water fans). Discussions include dimensional data of sand bodies in the different environments and recognition criteria in cores, well logs and seismic. The class will present optimized workflows for reservoir mapping, including the definition of the deliverables that need to be achieved in different business stages, focusing on when, why and how to develop them.

Duration and Logistics

Classroom version: 3 days; a mix of lectures (55%), core observation (10%) and hands-on exercises (35%). The manual will be provided in digital format and participants will be required to bring a laptop or tablet computer to follow the lectures and exercises.

Virtual version: Five 4-hour interactive online sessions presented over 5 days. A printed manual and exercise materials will be distributed to participants before the course and several exercises are to be completed by participants off-line.

Level and Audience

Advanced. This course is intended for geologists, geophysicists and petrophysicists with basic training in sequence stratigraphy and basic clastic facies.

Objectives

You will learn to:

1. Recognize different environments of deposition (EoDs) in cores, emphasizing typical facies stacking in common transitional marine and deep marine reservoirs.
2. Classify facies and stacking in typical transitional marine to deep marine EoDs.
3. Mechanisms for sediment transport in different EoDs and impact on reservoir rock properties.
4. Integrate core and core plug information in reservoir analysis, tying to well log and seismic data.
5. Recognize typical log patterns in different depositional systems.
6. Recognize typical seismic map views and cross-sectional views of sand-rich EoDs.
7. Apply mapping techniques for well logs and seismic with emphasis on identification of EoDs.

8. Make pre-drill predictions based on understanding of EoDs and seismic response.
9. Understand dimensional data for sandbodies in different EoDs
10. Implement reservoir mapping workflows that emphasize data integration and focus on deliverables in different business stages.

Course Content

Course Details

- Classification of clastic depositional environments.
- How to recognize different environments of deposition (EoDs) in cores, emphasizing typical facies stacking in common transitional marine and deep marine reservoirs.
- Facies classification and stacking in typical transitional marine to deep marine EoDs.
- Sediment transport mechanisms in different EoDs and impact in reservoir rock properties.
- Typical log patterns in different depositional systems.
- Typical seismic map views and cross-sectional views of sand-rich (EoDs).
- How to properly integrate core and core plug information in reservoir analysis, tying to well log and seismic data.
- Mapping techniques for well logs and seismic with emphasis on identification of EoDs.
- Pre-drill prediction based on understanding of EoDs and seismic response.
- Dimensional data for sandbodies in different EoDs.
- Reservoir mapping workflows emphasizing data integration and main deliverables in different business stages.