



N483: Deepwater Stratigraphy and Facies Analysis from Seismic, Well Data and Outcrops

Instructor(s): Mike Mayall

Format and Duration

Classroom - 3 Days

Virtual - 6 Sessions

Summary

This course focuses on the stratigraphic interpretation of deepwater depositional systems with emphasis on utilising practical workflows for mapping, predicting, and quantifying deepwater reservoirs.

Business Impact: This course equips subsurface geoscientists with the skills and techniques required to more effectively map different deepwater facies, leading to better understanding of the reservoir distribution and stratigraphic trap potential. This can be utilised in all stages of the E&P cycle.

Learning Outcomes

Participants will learn to:

1. Develop a systematic approach to mapping and interpreting deepwater depositional systems at scales from basin to individual reservoirs.
2. Evaluate facies to create depositional models and predict reservoir presence, distribution, and quality.
3. Assess implications of interpretations on lithology, net-to-gross, and reservoir properties.

Training Method

This is a classroom or virtual classroom course comprising a mixture of lectures, discussion, case studies, and practical exercises.

Who Should Attend

Geoscientists working on deepwater sediments, whether in exploration, appraisal, development, or production.

Course Content

During the course, the following will be considered for the different depositional elements:

- Mapping methodologies
- Stratigraphic architecture
- Facies prediction and reservoir quality

The key topics to be covered are as follows.

Topic 1: Deepwater depositional systems – overview of the fundamentals

- Depositional processes and facies

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- Sequence stratigraphic setting
- Submarine Fan types and controls

Topic 2: Slope types and Key depositional elements (Channels, MTC's, Sheets)

An overview of slope types based on degree of structuration and confinement of depositional systems. Identification of the key facies elements common to all deep-water deposits. This will form the basis for the rest of the course.

Topic 3: Application of workflow for channel systems

Channels are major reservoir systems on slopes. We will investigate the downdip changes in channel style across a slope and the associated internal stratigraphic and facies architecture. Channels are very variable and the key is to recognise elements which are common to each as a basis for initial mapping. This allows us to develop a simple but highly effective workflow for systematic analysis of channel systems.

Topic 4: Application of workflow for sheet systems

Sheet sands occur in a wide variety of settings including ponded basis, stepped slopes, and basin floors. However, we can generate an analytical approach and workflow which is applicable in all of these settings. Controls of slope topography will be investigated.

Topic 5: Application of workflow for Mass Transport Complexes

Mass Transport Complexes only very rarely form reservoirs with sustainable production rates in deep water. However, we can recognise many ways in which they can be critical in controlling the distribution and character of reservoirs and as potential seals.

Topic 6: Stratigraphic traps

Stratigraphic traps can be important throughout a basin history from early exploration to new plays in a mature basin. Without strong, calibrated DHI's they will always be relatively high risk plays. The key is how we can keep them in our prospect portfolio to a point at which we might consider drilling one. We will discuss the significant factors that help us focus on areas with the greatest stratigraphic trapping potential.