

---

## N483: Geological Seismic Interpretation of Deepwater Systems: Depositional Environments, Reservoir Architecture and Stratigraphy

Format and Duration  
Classroom - 3 Days  
Virtual - 6 Sessions

Instructor(s): Mike Mayall

---

### Summary

**Business Impact:** Provides 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 course focuses on the seismic stratigraphic interpretation of deepwater depositional systems and has an emphasis on utilising practical workflows for mapping, predicting and quantifying deepwater reservoirs. Through this, the course provides seismic interpreters with the skills and techniques required to more efficiently 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 seismic 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.

### Prerequisites and Linking Courses

Participants will benefit if they have some knowledge of deepwater sedimentology but this will be covered to a fundamental level on the course. Participants should have at least basic experience in seismic interpretation.

There are a wide range of linking Nautilus Training Alliance field courses that explore deepwater clastic systems worldwide, including N009 (Sedimentology, Stratigraphy and Reservoir Geology of Deepwater Clastic Systems - County Clare, Ireland) and N033 (Characterisation, Modelling, Simulation and Development Planning in Deepwater Clastic Reservoirs -Tabernas, Spain).

## **N483: Geological Seismic Interpretation of Deepwater Systems: Depositional Environments, Reservoir Architecture and Stratigraphy**

**Format and Duration**  
Classroom - 3 Days  
Virtual - 6 Sessions

Instructor(s): Mike Mayall

---

N485 (Advanced Seismic Interpretation) provides further information about the interpretation of features on seismic profiles.

### **Course Content**

Lectures will provide a summary of the fundamentals of deepwater depositional systems. The principal goal of the course is to provide subsurface seismic interpreters with practical workflows for interpretation and hands-on experience in seismic stratigraphic interpretation.

#### **Topic 1: Deepwater depositional systems – fundamentals**

A brief overview and reminder so we are all using similar language

- Depositional processes and facies
- 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.

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

#### **Topic 4: Application of workflow for sheet systems**

Sheet sands occur in a wide variety of setting 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.

- Mapping methodologies
- Stratigraphic architecture

---

## N483: Geological Seismic Interpretation of Deepwater Systems: Depositional Environments, Reservoir Architecture and Stratigraphy

Format and Duration  
Classroom - 3 Days  
Virtual - 6 Sessions

Instructor(s): Mike Mayall

---

- Controls of slope topography
- Facies prediction and reservoir quality

### 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. We will investigate the following:

- Mapping methodologies
- Stratigraphic architecture
- Impact on reservoir distribution

### 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:

- Significance
- Definition