



# N072: Workshop in Geological Seismic Interpretation: Deep Marine Systems

Instructor(s): Lesli Wood

3 Days

Competence Level:  
Skilled



Classroom Course

## Summary

The course is aimed at seismic interpreters working in areas dominated by deepwater depositional systems. Through a combination of lectures and case studies, the participants are exposed to many aspects of seismic stratigraphic interpretation, with emphasis on predicting, mapping and quantifying deepwater reservoirs.

## Learning Outcomes

Participants will learn to:

1. Assess, map, and quantify deepwater depositional systems.
2. Evaluate seismic facies to create a depositional model and predict reservoir presence, distribution, and quality.
3. Construct seismic interpretations by integrating analogues, models and wells.
4. Evaluate reflection terminations and configurations on seismic data.
5. Assess implications of interpretations on lithology, net-to-gross, and reservoir properties.
6. Evaluate the geomorphology of deepwater depositional systems using quantitative seismic geomorphologic techniques.

## Duration and Training Method

A three-day classroom course comprised of a mixture of lectures, workshop, exercises and case studies.

## Who Should Attend

Geoscientists working on deepwater sediments, whether in exploration, appraisal, development or production. The workshop format demands a high degree of commitment and involvement by participants, who are strongly encouraged to bring relevant material that can contribute to the discussion.

## Prerequisites and Linking Courses

Participants will benefit most from the course if they have previously attended Nautilus Training Alliance field courses in deep marine systems or equivalents, and are familiar with the seismic expression of such sediments. The field courses include N009 (Sedimentology, Stratigraphy and Reservoir Geology of Deepwater Clastic Systems, Ireland), N033 (Characterization, Modelling, Simulation and Development Planning in Deepwater Clastic Reservoirs, Spain), N252 (Deepwater Depositional Systems of SE France), N112 (Basin-Scale Analysis of a Confined Turbidite System, Grès d'Annot, SE France), N028 (Sand-rich Turbidite Systems and Megaturbidites: From Slope to Basin Plain. Facies, Stacking Patterns and Controlling Factors), N302 (Deepwater Reservoir Presence and Architecture, West Texas, USA), N315 (Deepwater Slope Canyons and Channel Complexes of Southern and Central California), N247 (Sedimentology, Stratigraphy and Architecture of Fluvial, Deltaic and Deepwater Reservoirs: An Outcrop Perspective of Linked Depositional Systems, Arkansas) and N292 (Deepwater Depositional System Stratigraphy for Exploration and Development, Arkansas, USA).



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## Course Content

The lecture content provides a summary of the fundamentals of deep marine systems. The principal goal of the course is to provide subsurface interpreters with a methodology and hands-on experience in seismic stratigraphic interpretation of deepwater depositional systems. The course is intended to generate instructive discussion among experienced professionals, moderated and guided by the tutor. Participants are encouraged to bring examples of their own data to discuss.

### Day 1

#### Introduction, overview, goals

- Course logistics, goals, overview of agenda and relevance of deepwater reservoirs in the E&P business

#### Deepwater depositional systems – fundamentals

- Model- vs. process-based approach
- Factors controlling deposition in the deepwater environment
- Depositional elements
- Slope to basin changes in depositional architecture

#### Seismic facies analysis

- Key surfaces in deepwater environments
- Reflection terminations
- Reflection configurations
- Seismic facies maps
- Other techniques/workflows in seismic facies interpretation
- Review of integrated workflow and case studies

Exercises

### Day 2

#### Interpretation of deepwater environments using seismic facies

- Seismic geomorphology
- Channel and Levee systems
- Elements of the channel levee systems
- Sheets and fan lobes

Exercises



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## Day 3

- Morphometrics of deepwater depositional systems
- Deepwater canyon formation and fill
- Evolution, nature and implications of mass transport processes and deposits