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## N403: Reservoir Sedimentology of Fluvial - Shallow Marine Facies (*Isle of Wight, UK*)

Instructor(s): Gary Nichols

### Format and Duration

Field - 3 Days

Low Physical Demand

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## Summary

The course will analyse the distribution, architecture, internal characteristics and reservoir quality of Cretaceous-age sandstone bodies from a range of clastic depositional settings including, fluvial, shelfal and estuarine. Focus will be placed on sedimentological and stratigraphic examination of the successions, including a range of tidally-influenced facies. Attendees will learn to recognise and interpret a diverse range of shallow marine facies within a basinal framework and consider different scales of heterogeneity.

## Learning Outcomes

Participants will learn to:

1. Interpret the sedimentology, stratigraphic architecture and reservoir potential of fluvial and tidal/wave dominated shorelines/shelves.
2. Analyse fluvial channel deposits in terms of channel styles, net to gross variation and associated overbank deposits.
3. Examine the spatial distribution of tidally-influenced sandstone bodies in a basinal framework and assess the nature of intraformational seals, permeability barriers and baffles in the bodies.
4. Consider the different scales of heterogeneity in sandstone reservoirs.
5. Interpret a shallow marine stratigraphic succession in terms of sediment supply and sea level controls.

## Training Method

This is a field course to the southern coast of the Isle of Wight, comprising field examination of depositional systems at both seismic and, more commonly, sub-seismic, sandstone body scale. The proportion of field time to classroom time is approximately 80:20 and participants will learn via lectures, field- observations, exercises and group discussion.

## Physical Demand

The physical demands for this class are **LOW** according to the Tetra Tech RPS field course grading system. The class requires basic fitness levels. The majority of stops are beach locations with walking distances of up to 2 km (1.5 miles). All transport during the class is by coach.

## Who Should Attend

Geoscientists who wish to gain insights into the nature of a wide range of reservoir analogue sandstone bodies, with a particular focus on those deposited in a tide-influenced shallow marine and fluvial settings.

The course would suit those working in any aspect of exploration, appraisal and field development in



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fluvial, coastal and shallow marine reservoirs.

### Course Content

The geology of the Isle of Wight can broadly be divided into two parts, based upon a north-south division through the island as denoted by the structural feature known as the Isle of Wight Monocline: the north exposes the youngest rocks of the Paleogene, whereas the south exposes the older rocks of the Lower and Upper Cretaceous. The field elements of the course will focus on the Cretaceous succession exposed on the south facing cliffs in East and West Wight.

### Itinerary

#### Day 1:

- Travel to Isle of Wight
- Field location 1: Sandown Bay (East Isle of Wight). Cretaceous succession of tidal, coastal, inner and outer shelf facies; reservoir sandstone units.

#### Day 2:

- Field location 2. Compton Bay (West Isle of Wight). Cretaceous succession of fluvial channel deposits, tidal sandbars, shallow marine sandstone and mudstone facies in a sequence stratigraphic context.
- Field location 3: Shepherds Chine (West Isle of Wight). Barnes High Sandstone (Early Cretaceous): tidal shallow marine sandstone unit, transgressive/regressive.

#### Day 3:

- Field Location 4: Brook Chine (West Isle of Wight). Reservoir sedimentology and heterogeneity of a large (1600m wide) fluvial channel sandstone complex.
- Return Travel