



N500: Structure and Sedimentology of a Petroleum System (*Wessex Basin, UK*)

Instructor(s):

Format and Duration

Field - 5 Days

Low Physical Demand

Summary

The course is a field-based exploration of a working petroleum system. Using examples from the Devon and Dorset coast the components of the Wytch Farm oilfield can be examined, including source rocks (the Kimmeridge Clay), reservoir rocks in the Permian and Jurassic, cap/seal facies and trapping structures. All elements can be considered at a variety of scales, from large-scale reservoir geometries to smaller heterogeneities, both structural and sedimentological. The characteristics of fault zones are viewed as well as the geometries of fault/fold inversion structures. Outcrop and subsurface data are integrated in this course.

Learning Outcomes

Participants will learn to:

1. Review the components of a working petroleum system through examination of key aspects at field locations.
2. Examine the characteristics of a major source rock interval, the Kimmeridge Clay.
3. Consider the reservoir characteristics of continental and shallow marine clastic units.
4. Consider shallow marine limestones as potential reservoirs.
5. Evaluate different lithologies as potential seal horizons.
6. Determine the importance of the structural history of the area in terms of creation of trap geometries and fault seal properties.
7. Consider the timing of formation of reservoir facies, seals, structural geometries and petroleum migration in the oil field history.

Training Method

A five-day field course in southern England.

Physical Demand

The course is graded **LOW** according to the Tetra Tech RPS field course grading system.

Course Content

Course Itinerary

Please note that the following itinerary is subject to weather and tidal conditions.

Day 0: Arrival



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- Group to meet at Heathrow Airport for transfer to Sidmouth

Day 1

- Dawlish: aeolian-fluvial sandstones as reservoirs
- Exmouth: impacts of faults and fault damage zones on reservoir characterisation

Day 2

- Budleigh Salterton/Sidmouth: top-seals for reservoirs
- Ladram Bay: clastic reservoir heterogeneity

Day 3

- Watton Cliff, West Bay: fault seal and stress fields; effects of cemented bands within sandstones on reservoir performance
- Freshwater Bay, Isle of Portland: carbonates as reservoirs

Day 4

- Durdle Door and Man o'War Cove: chalk reservoirs; consideration of drilling and completions
- Lulworth Cove: source rocks, structural styles
- Kimmeridge Bay: source rocks, fault systems

Day 5

- Wytch Farm overview of operating hydrocarbon field
- Transfer to Heathrow Airport