

## N655: Fluvial-Aeolian Reservoir Analogues - Outcrop to Subsurface Perspectives NE Scotland and Orkney

Instructor(s): Adrian Hartley

Format and Duration

Field - 5 Days

Low Physical Demand

---

### Summary

This course offers a highly applied field-based experience for energy professionals involved in any part of the E&P life-cycle. This course will develop predictive models at a range of scales for subsurface application in the exploration, appraisal and production of fluvial and aeolian reservoirs. Focus will be placed on understanding likely controls on reservoir presence, distribution, architecture and heterogeneity using outcrop and subsurface examples. Participants will be able to add value immediately upon return to the office. Although this course focuses on Devonian and Permo-Triassic strata the stratigraphic concepts discussed are relevant to fluvial and aeolian reservoir successions around the globe. Factors important for carbon storage, including reservoir heterogeneity and top seal effectiveness in these environments will also be discussed. Outcrops represent onshore analogues to North Sea and West of Shetland reservoirs and seismic well and core data from these and other basins will be used where appropriate. The trip is organised and ordered through the lens of reservoir geology, with other petroleum systems elements also discussed and evaluated.

### Learning Outcomes

Participants will learn to:

1. Identify the key characteristics of fluvial and aeolian reservoirs in outcrop and subsurface datasets.
2. Understand the predictive models that can apply to fluvial and aeolian systems.
3. Apply predictive models to subsurface datasets.
4. Appreciate the range and distribution of different heterogeneity types within fluvial and aeolian sedimentary systems.
5. Construct strong narratives and deploy these analogues to illustrate technical presentations and build the case for investment.
6. Work efficiently in teams on exercises that are designed as “learning by doing” industry scenarios.

### Training Method

This is a field course, supported by classroom sessions in a 80:20 ratio. Field localities are supplemented with a number of informative, short exercises designed to emphasise key learning outcomes.

### Physical Demand

The physical demands for this course are **LOW** according to the RPS field course grading system; the course requires basic fitness levels. Access to the outcrops involves short walks of up to several kilometres along clifftop paths and beach sections.

### Who Should Attend

Although the course is aimed at geoscientists with at least 5 years of experience, petrophysicists, reservoir engineers, petroleum engineers, and drilling engineers will also find attending this course highly valuable. Additionally, team leaders or managers in need of a field experience to refresh their knowledge of fluvial and aeolian systems would benefit.

---

## N655: Fluvial-Aeolian Reservoir Analogues - Outcrop to Subsurface Perspectives NE Scotland and Orkney

Instructor(s): Adrian Hartley

Format and Duration  
Field - 5 Days  
Low Physical Demand

---

### Course Content

#### Day 0: Arrival

- Travel to Aberdeen and stay overnight

#### Day 1:

- Cowie: The Highland Boundary Fault, examination of a plate boundary fault and the unconformity at the base of the Old Red Sandstone succession
- Dunnottar: Devonian coarse grained proximal fluvial fan deposits
- Crawton: Devonian coarse grained proximal to medial fluvial fan deposits
- Review of depositional models for fluvial systems
- Stay in Aberdeen

#### Day 2:

- Clashach Bay – aeolian laminae types and correlation, impact of large-scale faulting
- Clashach to Hopeman – examination of different aspects of aeolian systems – correlation and fluvial-aeolian interaction
- Review of depositional models for aeolian systems
- Stay in Elgin

#### Day 3:

- Cummington – aeolian, impact of faulting and compartmentalisation
- Burghead – Triassic fluvial
- Brora – Middle Jurassic shallow marine
- Lothbeg – Upper Jurassic submarine fan system sand Kimmeridge Clay source rock
- Helmsdale – Upper Jurassic deep water slumps and debris flows generated by syn-rift faulting
- Overnight Wick

#### Day 4:

- Wick – Devonian lacustrine source rock and deltaic succession
- Portskerra – Basement unconformity overlain by alluvial fan and mature axial fluvial system
- Dwarwick and Dunnet Head – major axial fluvial system, excellent reservoir quality
- Ferry to Stromness at 19.00 (arrive 20.30)
- Overnight Stromness

#### Day 5:

- Yesnaby – exhumed hydrocarbon reservoir in fluvial and aeolian deposits
- Birsay – deep water lacustrine deposits

**N655: Fluvial-Aeolian Reservoir Analogues - Outcrop to  
Subsurface Perspectives NE Scotland and Orkney**

Instructor(s): Adrian Hartley

**Format and Duration**  
Field - 5 Days  
Low Physical Demand

---

- Ring of Brodgar – archaeological site
- Scara Brae – archaeological site
- Flight to Aberdeen 4.25 pm