Applied Petrophysics – Advanced (5 days)

By: Peter Betts

Business context:

In the E&P business, integrated petroleum engineering studies and field development plans are management tools which are used to maximise economic recovery of hydrocarbons. Petrophysical engineers fulfil a key role in analysing and interpreting subsurface reservoir data, which form the basis for reservoir models. E&P technical staff and team leaders involved in integrated studies require more than general skills in petrophysical interpretation techniques to produce quality input to development plans.

Who should attend:

Staff in the exploration and production department with some petrophysical background: petroleum engineers, seismologists, petrophysical engineers, reservoir engineers, drilling engineers and geologists.

Content of the program:

Subjects that are covered are petrophysical relations, tool principles, modern interpretation methods and core measurements. The various methods to arrive at the shale volume, porosity, water saturation and permeability will be compared in-depth using field examples:

- Principles, quality, editing and responses of the major Open Hole Logging Devices.
- Lithology, porosity, permeability, hydrocarbon content using Archie, Simandoux, Indonesia, Waxman-
- Smits, Dual-Water and Capillary Pressure Curves, wire-line formation testing.
- Core Analysis Program for exploration and development wells.
- Cross-plots for lithology, porosity and oil/water/gas saturations.
- Comparison of shale volume, porosity, saturation and permeability methods.
- Capillary pressure curves.
- Rock property derivation for seismic applications.
- Cutoff criteria to arrive at average reservoir properties.
- Uncertainty analysis.

Learning, methods and tools:

Throughout the course, work sessions will be held on Personal Computers. The importance of interaction between seismology, geology, well log analysis, reservoir engineering and other disciplines is emphasized and illustrated. At the end of the 5 days a quick-look petrophysical evaluation of a typical well will have been performed.