

Applied Petrophysics - Basic (5 days)

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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. Understanding the methods used in petrophysical analysis, and the related uncertainty of the results and hence the derived models is essential knowledge for all E&P technical staff.

Who should attend:

Staff in the exploration and production department with no or limited petrophysical background: petroleum engineers, seismologists, petrophysical engineers, reservoir engineers, drilling engineers and geologists.

Content of the program:

Subjects that are covered are fundamental petrophysical relations, tool principles, modern interpretation methods and core measurements. The importance of interaction between seismology, geology, well log analysis, reservoir engineering and other disciplines is emphasized and illustrated.

Depending on the petrophysical level of the participants more emphasis can be given to a number of subjects. For example for fundamentals all topics will be discussed in five days. If more detail is required emphasis could be given to more specialized topics. For example one day on the application of capillary pressure curves:

- Principles, quality, editing and responses of the major Open Hole Logging Devices.
- Fundamentals on: lithology including shale volume, porosity, permeability, hydrocarbon content using Archie, Simandoux, Indonesia, Waxman-Smiths, Dual-Water and Capillary Pressure Curves, wireline formation testing.
- Core Analysis Program for exploration and development wells.
- Crossplots for Lithology, Porosity and oil/water/gas saturations.
- 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 with Excel spreadsheets. Each lecture of about 0.5 hour is followed by 0.5 hour of exercises. At the end of the 5 days a quick-look petrophysical evaluation of a typical well has been performed.