PETROPHYSICS
BASIC
GEP001

COURSE DESCRIPTION

Petrophysics is fundamental to all aspects of the petroleum business. Principles, applications, and integration of petrophysical information for reservoir description will be discussed in depth. Through a combination of class discussion and exercises/workshops, participants will learn how to conduct competent quick-look evaluations. Using data from open hole logs, logging-while-drilling, and core data you will evaluate porosity, permeability, and saturation in a variety of reservoirs. Knowing how to integrate petrophysical information with other data sources will improve participants' ability to assess technical risk when examining hydrocarbon opportunities.

COURSE GOAL

To enhance the participants' knowledge, skills and abilities necessary determine the reservoir geological and engineering parameters using petrophysical techniques.

COURSE OBJECTIVES

By the end of the course, participants will be able to:

- Understand the position of petrophysics in the workflow of reservoir evaluation and characterization
- Understand the physical reservoir properties (porosity, saturation, fluids, permeability, capillary pressure) required for clastic and carbonate rock evaluation
- Understand the physical background of well-logging methods and the response with respect to reservoir characterization (physical principle and primary information from logging methods)
- Apply the Rules for an optimal log combination
- Apply Basic equations and models for log interpretation
- Employ fundamental techniques of log interpretation - a quick-look interpretation

WHO SHOULD ATTEND

Geologists, Geophysicists, Petroleum & Reservoir Engineers, Drilling Engineers, Managers and Supervisors

COURSE DURATION

5 Working Days

COURSE OUTLINES

1. Fundamental concepts of petrophysics

2. Petrophysical properties of reservoir rocks
   - Reservoir rocks and types
   - Porosity, permeability
   - Capillary pressure, water saturation
   - Basic rock models

3. Fundamentals of well logging
   - The borehole and its environment
   - Open hole and cased hole logging
   - Electric and electromagnetic methods
   - Acoustic methods
   - Nuclear methods
   - Nuclear magnetic methods
   - Imaging methods
   - Technical logs
   - LWD and MWD techniques
   - Coring and core investigations, core-log integration

4. Log analysis - formation evaluation
   - Fundamental problems of formation evaluation
   - Profile description and reservoir detection
   - Reservoir characterization

5. Basic interpretation methods
   - V shale, porosity, water saturation
   - Permeable zones

6. Advanced interpretation methods
   - Combined determination of porosity and rock composition
   - Cross-plot methods
   - Shaly-sand interpretation
   - Fractured reservoirs
   - Saturation determination, movable fluids
   - Permeability estimation
   - Thin bed evaluation and anisotropic reservoirs