

WIRELINING AND FORMATION EVALUATION

DRL014

COURSE DESCRIPTION

The course is designed for engineers who are involved in the formation evaluation process, in which coring, mud logging productivity testing and wire line logging are the main components - well logs provide a comprehensive snapshot of all the formation penetrated by a borehole. The course stresses the theory, measurements, applications and limitation of the available logging tools. Interpretation methods for rock type, lithology, porosity and hydrocarbon saturation are reviewed.

COURSE GOAL

To enhance the participants' knowledge, skills, and ability necessary to understand theory, measurements, applications and limitation of the available logging tools.

COURSE OBJECTIVES

By the end of this course, participant will be able to:

- Understand why wireline formation testing and sampling: technologies, applications, and limitations.
- Assemble wireline testing programs, tool configurations.
- Conduct QC pressures and sampling in the wellsite.
- Interpret pressure gradient data for in-situ fluid densities, fluid contact levels.
- Compare multiple pressure gradient trends for reservoir connectivity/continuity.
- Perform statistical analysis and quantify uncertainties of pressure gradient and hydrocarbon-water levels (HWC) at various confidence level.
- Design and interpret pressure transient data for permeability.

WHO SHOULD ATTEND

- Geologists.
- Petrophysicists.
- Wellsite supervisors.
- Hydrodynamic specialists.
- Reservoir engineers.
- Geophysicists and geo-data interpretation technologists of multidisciplinary formation evaluation.
- Development teams that are actively engaged in G&G operations for hydrocarbon discovery.
- Reservoir management.

COURSE DURATION

5 Working Days

COURSE OUTLINES

- Definition of formation evaluation
- Scope and objective of integrated formation evaluation,
- Using cores mud logs, wire line logs and productivity tests
- Basic reservoir petrophysics
- Wireline log data
- Tools and techniques needed to manage the formation evaluation process
- Open-hole log analysis
- Cased-hole analysis
- Well testing concepts
- Basic reservoir models
- Dimensionless variables
- The skin effect
- Well storage
- Infinite acting radial flow semi log analysis
- Semi Log- log type curves
- Reservoir boundary response
- Dual porosity wells
- Fractured wells
- Multirate test buildup
- Computer- aided analysis
- Graphical presentations
- Derivative plot
- Diagnostic plot evaluation
- Gas well tests:
 - Real gas pseudo pressure and pseudo time
 - Calculating pseudo pressures
 - Rate dependent skin effect
- Multiphase well tests
- Perrine's approach

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- Pressure squared approach
- Designing well tests:
- Variable dependency
- Test duration
- Flow rate considerations
- Advanced topics
- Horizontal wells
- Multi-layered well analysis
- Calculating properties
 - Oil properties
 - Gas properties
 - Water properties
 - Rock properties
 - Total properties
- Work and field examples

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