Log interpretation advance for geologist & Geophysicist

Course Duration	:	5 days
Date	:	02-Dec-2024 to 06-Dec-2024
Location	:	Abu Dhabi
Type of Participant	:	This training course is designed for and will greatly benefit Exploration Engineers, Production Engineers, Geologists, Geophysicists and Petrophysicist, Petroleum, Reservoir and Drilling Engineers. In general, all other oil & gas industry professionals are involved in logging data interpretation and validation.

Summary:

This interactive, application-driven 5-day Advanced Logging Methods, Interpretation and Implementation training course will highlight the techniques and principles of advanced well log interpretation for oil industry professionals who need to deal with wireline and/or LWD logs in their daily job.

This training course will explore the tool's response explained from their physical principles as well as their relationship with the rock and fluid properties, most existing open-hole logging technologies will be covered explaining their main applications and limitations. Advanced interpretation methods will be discussed with numerous examples and exercises including complex lithology interpretation techniques.

At the end of the training course, we will hold a mini-workshop on optimum logging program selection based on: the minimum set of logs needed for a proper evaluation, company budget, and tools' limitations.

Objective:

Upon the successful completion of this course, each participant will be able to:

- Understand the physical principles of most existing logging tools
- Apply basic quality control techniques to validate logging data
- Know the main applications and limitations of the different tool readings
- Perform a quantitative formation evaluation on a complex lithology
- Understand the uses of advanced logging tools in complex lithology interpretation

Contents:

Basic Concepts Review and Resistivity Tools

Conductivity and Nuclear Logging Tools

Acoustic and Geological Logging Tools

Advanced Logging Tools and Introduction to Formation Evaluation

Complex Lithology Evaluation, Formation Testers, and Mini-Workshop

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:-

30% Lectures

20% Workshops & Work Presentations

20% Case Studies & Practical Exercises

30% Videos, Software & Simulators

Pre-Test and Post-Test

Group Work

Discussion

Presentation

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Daily Program:

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

Welcome & Introduction

PRE-TEST

Basic Concepts Review and Resistivity Tools

- Petrophysics concepts review
- Introduction to Well Logging
- Log classification according to the measured properties
- Auxiliary measurement uses and common issues
- Basic measurements: Gamma Ray and Spontaneous Potential
- Resistivity Theory, principles, and applications of laterologs
- Advanced Laterolog logging tools: array and azimuthal
- Microresistivity devices, principles and applications

Day 2

Conductivity and Nuclear Logging Tools

- Conductivity tools uses and limitations
- LWD resistivity determination tools
- Advanced Induction logging tools, 3D induction
- RT and invasion profile determination
- Formation density tools, principles, and applications
- The photoelectric factor, a key lithology indicator
- Neutron tools principles and applications
- Porosity determination from density and neutron logs
- LWD nuclear logging tools
- Lithology determination, calibrations and log quality control parameters

Day 3

Acoustic and Geological Logging Tools

- Basic sonic tools, borehole compensation
- Dipole sonic tools, applications
- Mechanical properties determination and uses
- Sonic scanner principles and applications
- Common sonic issues in the borehole
- LWD acoustic tools
- Dipmeter interpretation principles
- Geological Image Logging Tools
- Structural and Stratigraphic Interpretation Principles
- Open, partially open and healed fractures interpretation
- Faults and unconformities interpretation examples
- Facies analysis for reservoir characterization with image logs
- Ultrasonic logging tools

Day 4

Advanced Logging Tools and Introduction to Formation Evaluation

- Nuclear Magnetic Resonance, principles and applications
- Relaxation mechanisms and their association with fluid and rock properties
- Porosity, irreducible water saturation and permeability determination
- Advanced fluid determination methods: 3D map T1-T2-Diffusion
- Dielectric tools principles and applications
- Saturation determination parameters, m, n and CEC
- Geochemical Logging tools
- Complex lithology evaluation examples
- Formation evaluation principles
- Rw determination methods
- Crossplots utilization, Hingle and Pickett plots
- Graphical interpretation techniques for porosity and lithology

Day 5

Complex Lithology Evaluation, Formation Testers and Mini-Workshop

- Saturation determination equations and techniques
- Complete formation evaluation for Complex lithology
- Reservoir pressure determination tools
- Pre-test interpretation
- Lost seal, dry tests and supercharging
- Pressure gradient interpretation
- Fluid sampling, optical and composition fluid analyzers
- Advanced probes for special well and reservoir conditions
- Permeability determination
- Mini-workshop on logging program selection

Course Conclusion

POST-TEST

Presentation of Course Certificates

Lunch & End of Course