

FUNDAMENTALS OF LWD PETROPHYSICS

General:

Discipline: Drilling/Petrophysics

Level: Basic

Duration: 4 days (3h a day)

Instructor: Nidal Hazboun

Purpose:

This course is designed to complement your understanding with details of the similarities and differences between LWD (Logging While Drilling) with the traditional WL (wire line) technologies. The principles will be reviewed together with the impact of having them mounted in a drilling collar. Examples will be presented for exercises and class discussions. In this class we allow the students to bring their own set of logs in case they already apply LWD.

This course is a complement of “Fundamentals of Petrophysics” but can be taken separately if the student has a WL background.

Designed for:

Beginner’s geoscientists, geologist, geophysics, petrophysics and engineers using petrophysical data and other technical staff at all experience levels wanting a fundamental background in the petrophysical discipline.

You Will Learn:

- Data transmission to surface principle and limitations
- How LWD can achieve similar WL readings
 - GR
 - Resistivity
 - Density Neutron – with and without radioactive sources
 - Image – geological interpretation
 - Sonic
 - Seismic
 - Formation Pressure Tester
 - Magnetic Resonance
 - Transmission
 - Cost x Benefit
- Understand how LWD tools work and their differences with original WL tools
- Have an awareness on selecting LWD fit for porous sets based on project objectives
- Understand the components for a real time well placement project

Course Content:

- When to apply LWD tools and its advantages
- GR – Resistivity
 - GR principles and limitations
 - Resistivity principle and frequency domain
 - Attenuation and Phase Shift measurements
 - Precision/Accuracy/Environmental effects
- LWD sources of images differences and applicability
- Sonic and Seismic principles and applications
- Formation Pressure Measurements and sampling tool
- Magnetic Resonance
- Example of LWD completeness set in real time

Software applications:

- Office

Text and consulting books:

- "Fundamentals of Well Placement ", Roger Griffth 2009
- "Log Interpretation Principles / Applications", Schlumberger 1989
- "Log Interpretation Charts", Schlumberger, 1998
- "Fundamentals of Well Logs Interpretation 1,2", O. Serra Elsevier, Amsterdam 1984.
- "Logging While Drilling", Schlumberger, 1993
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