

GEOSCIENCE COURSES

(1) Well Log Interpretation Principles and Applications

WHO SHOULD ATTEND

This course is designed for engineers and geoscientist that has some interest to learn more about petrophysics. Participants will gain the abilities to read and understand a set of oil well logs and briefly produce an interpretation quick look plus some calculations based on the readings and local knowledge.

COURSE OBJECTIVES

This short course is intended to cover most of the tools principles, rock modelling and parameters, review the main logging suites, interpretation principles, quantitative interpretations, overview the different scenarios: Shaly sand formations and carbonates. Recent techniques used on unconventional reservoirs.

CONTENT

- a) Introduction of well logging operations
- b) Fundamentals of rock modelling, general parameters: porosity, resistivity permeability, temperature and pressure. Water saturations
- c) Understanding logs: Logs presentations, scales, typical curves
- d) Basic tools: spontaneous potential, gamma ray, natural gamma ray spectral logs, calipers and cable tension.
- e) Resistivity logs: laterolog, induction logs, micro resistivity devices. Depth of investigation, tool responses, borehole corrections.
- f) Porosity logs: Neutron logs, density and photoelectric effect. Tool's principle of operation, porosities derived from neutron and density logs. Borehole effects.
- g) Acoustics: sonic logs, porosity derived from sonic logs, Wyllie time average equation. Introduction to shear logging. Rock mechanics principles
- h) Interpretation principles, Archie equation, cross plots Density Neutron, M-N, picket plots, R_w determination, Lithology determination
- i) Log quality control
- j) Geological logs: Dipmeter logs and formation images. Geological interpretation.
- k) Modern logging: Nuclear magnetic, dielectric tools.