Training Title

PETROPHYSICAL ENGINEER: WELL LOG INTERPRETATION & FORMATION EVALUATION

Training Duration

5 days

Training Venue and Dates

Petrophysical Engineer: Well Log Interpretation & Formation Evaluation	*5*	*07th to 11th September 2025*	*$5,500*	*Cairo, Egypt.*

Trainings will be conducted in any of the 4 or 5 star hotels.

Training Fees

- ***5,500 US$ per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch.***

Training Certificate

Prolific Consultants FZE Certificate of Course Completion will be issued to all attendees.

COURSE OVERVIEW

COURSE DESCRIPTION

Well logs provide an intricate documentation of geological formations penetrated by a borehole. These records represent critical and valuable data collected at various stages of a well's lifecycle, crucial for determining the petrophysical characteristics that ascertain the reservoir's economic worth. Consequently, the methodologies applied in analyzing and interpreting well logs are fundamental for the identification of hydrocarbon extraction potentials.

This Advanced Well Log Interpretation training course is meticulously designed to cover the entire spectrum of well logging, from the fundamental principles and tools involved in well log interpretation to the intricate techniques required for analyzing complex geological formations. Starting with the basics of well logging and petrophysical properties, the course quickly progresses to detailed sessions on electrical, sonic, and nuclear loggings, offering deep insights into each method's unique applications and challenges. Participants will then explore the cutting-edge realms of Nuclear Magnetic Resonance (NMR), Production Logging (PL), and Logging-While-Drilling (LWD), which are pivotal for real-time formation evaluation and optimizing drilling operations. The curriculum culminates in integrated data interpretation strategies and advanced topics, including log applications in complex carbonate reservoirs, shaly sands, and shale oil/gas formations, enriched with interpretation case studies. This comprehensive approach ensures that participants are well-equipped with the knowledge and skills to tackle the challenges of modern well log interpretation, making it an essential training

course for professionals aiming to excel in the evolving landscape of oil and gas exploration and production.

This Well Log Interpretation training course will feature:

- *Fundamentals of Well Log Interpretation*
- *Electrical, Sonic and Nuclear Loggings*
- *Nuclear Magnetic Resonance (NMR), Production Logging (PL) and Logging-While-Drilling (LWD)*
- *Integrated Interpretation of Well Logging Data*
- *Advanced Measurements and Topics,*
- *Complex Geological Applications*
- *Interpretation Case Studies*

COURSE OBJECTIVES:

By the end of this Advanced Well Log Interpretation training course, participants will be able to:

- *Understand comprehensively the fundamentals and advanced techniques of well log interpretation.*
- *Identify and evaluate petrophysical properties and formation evaluation using various logging tools.*
- *Apply integrated interpretation strategies to assess complex geological formations accurately.*
- *Utilize advanced measurements and methodologies for detailed reservoir characterization.*
- *Analyze and interpret log data in complex environments such as carbonate reservoirs, shaly sands, and shale oil/gas formations.*
- *Enhance decision-making skills for drilling and production optimization through real-time log analysis and case studies.*

SUITABLE FOR:

This Well Log Interpretation training course is suitable to a wide range of professionals but will greatly benefit:

- *Exploration Engineers*
- *Production Engineers*
- *Geologists, Geophysicist and Petrophysicist*
- *Petroleum, Reservoir and Drilling Engineers*
- *In general, all other oil & gas industry professionals who are involved in logging data interpretation and validation*

TRAINING METHODOLOGY:

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will

start by raising the most relevant questions, and motivate everybody find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.
Very useful Course Materials will be given.

COURSE OUTLINE :-

DAY 1

Fundamentals of Well Log Interpretation

- *Origination and Development of Well Logging*
- *Petrophysical Properties and Formation Evaluation*
- *Introduction to Common Well Logging Tools*
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    - *Open-Hole Logging Tools*
    - *Cased-Hole Logging Tools*
- *Basic Relationships of Well Log Interpretation*
- *Basic Information Needed in Log Interpretation*
- *Depth Measurements & Control*

DAY 2

Electrical, Sonic and Nuclear Loggings

- *Electrical Logging*
    - *Spontaneous Potential Logging*
    - *Resistivity Logs*
    - *Dipmeter Logging*
- *Sonic Logging*
    - *Sonic Log*
    - *Acoustic Wave Amplitude Logging*
    - *Ultrasonic Imager Logs (USI)*
    - *UltraSonic Borehole Imager (UBI)*
    - *Circumferential Borehole Imaging Log (CBIL)*
- *Nuclear Logging*
    - *Gamma Ray Logs*
    - *Interaction Between Formation and Neutron*
    - *Definitions for Neutron Logging*
    - *Nuclear Logging*
    - *Thermal Neutron Decay Time Logs*
    - *Carbon/Oxygen (C/O) Log*

DAY 3

Nuclear Magnetic Resonance (NMR), Production Logging (PL) and Logging-While-Drilling (LWD)

- *Nuclear Magnetic Resonance*

- *Principles of of Nuclear Magnetic Resonance (NMR)*
- *A Brief History of Nuclear Magnetic Resonance Tool*
- *LWD NMR*
- *Applications of Nuclear Magnetic Resonance*

- *Production Logging (PL)*
  - *Spinner Flowmeter Logging*
  - *Fluid-Identification Logs*
  - *Radioactive-Tracer Logging*
  - *Pulsed Neutron Logs for Flow Profiling*
  - *Repeat Formation Tester*
- *Logging-While-Drilling (LWD)*
  - *LWD Tools*
  - *Resistivity Measurements While Drilling*
  - *Density Measurements While Drilling*
  - *Nuclear Measurements While Drilling*
  - *Sonic Measurements While Drilling*
  - *Geosteering*

DAY 4

Integrated Interpretation of Well Logging Data

- *Reservoir Classification*
- *Formation Evaluation*
- *Method to Determine Lithology: M–N PLOT*
- *Umaa MID Plot*
- *Resistivity Versus Porosity Crossplots (Pickett Map)*
- *Porosity Determination in Complex Conditions*
- *Resistivity Ratio Methods to Identify Fluid Type*
- *Permeability Calculation*
- *Structure Analysis*
- *Multi-well Integrated Interpretation*

DAY 5

Advanced Measurements and Topics, Complex Geological Applications & Interpretation Case Studies

- *Pressure Measurements, Fluid Sampling & Analysis using Formation Testers*
- *Log Interpretation in Complex Carbonate Reservoirs*
  - *Macro-, meso- & micro-porosity issues, porosity determination in multiple lithologies*
  - *Determination of Rw & saturations, permeability in tight/fractured carbonates*
- *Log Interpretation in Shaly Sands*
  - *Clay properties & identification*
  - *Vsh determination*
  - *Clay double layer & excess conductivity,*

- *Different resistivity models/approaches for saturation determination*

- *Log Applications in Shale – Oil/Gas Formations*
  - *Source rock identification/kerogen/TOC/adsorbed gas estimation*
  - *Use of sonic and imaging logs to identify brittleness and select zones for frack design*

Case Studies, Last Day Review, Discussions & Pre & Post Assessments will be carried out.

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