Cased hole Logging Design and Interpretation

Course Duration : 5 days

Date : November 10, 2025 to November 14, 2025

Location : Abu Dhabi

Type of Participant : This course is intended for petroleum industry professionals involved in well surveillance, production optimization, and well integrity assessment, including engineers, geoscientists, and logging specialists who require practical skills in cased hole logging design and interpretation.

Summary:

This course delivers an in-depth understanding of cased hole logging principles, tool physics, survey planning, and data interpretation techniques for reservoir evaluation, production monitoring, and well integrity diagnostics. Participants will learn how to design fit-for-purpose logging programs, apply effective data quality control methods, and interpret measurements from production logging, pulsed neutron, and cement evaluation tools. Real-world case studies and practical exercises using field datasets are included to ensure participants can apply the concepts confidently in operational settings.

Objective:

By the end of the course, participants will be able to:

- Understand the physics and principles behind various cased hole logging tools
- Design effective cased hole logging programs based on well objectives
- Interpret cased hole log data for reservoir evaluation and production optimization
- Diagnose well integrity issues using cased hole measurements
- Apply best practices for data quality control and validation

- Integrate cased hole data into field development and workover planning

Contents:

Module 1 – Introduction to Cased Hole Logging

- Overview of cased hole logging applications in reservoir management and well integrity
- Comparison between open hole and cased hole logging
- Common logging challenges in cased wells
- Tool conveyance methods: wireline, slickline, tractor, coiled tubing

Module 2 – Cased Hole Logging Tools and Principles

- **Production Logging Tools (PLT)**: spinner, temperature, pressure, density, capacitance tools
- **Pulsed Neutron Logging (PNL)**: sigma, capture cross-section, saturation monitoring
- **Cement Evaluation Tools (CET/CBL/VDL)**: bond logs, amplitude and travel time, ultrasonic imaging
- **Gamma Ray and Spectral Gamma Ray in cased hole**
- Tool responses and limitations in various well conditions

Module 3 – Well Integrity and Cement Evaluation

- Cased hole evaluation for casing corrosion, wear, and mechanical damage
- Cement evaluation: primary cement quality, micro-annulus detection, channels
- Ultrasonic and acoustic imaging interpretation
- Case studies: cement failure diagnostics and remediation planning

Module 4 – Data Acquisition, Quality Control & Interpretation

- Pre-job planning and survey design
- Depth correlation techniques
- Data acquisition parameters and quality control checks
- Interpretation workflows for:
  - Saturation evaluation behind casing
  - Production profiling and zonal contribution analysis
  - Cross-plot techniques for pulsed neutron data
- Case studies: integrating cased hole data with production history

Module 5 – Advanced Applications and Integration

- Time-lapse (4D) cased hole logging for reservoir monitoring
- Integration of cased hole data with reservoir models and surveillance plans
- Logging in challenging environments: high temperature, deviated, and horizontal wells
- Troubleshooting logging operations and common pitfalls
- Final workshop: design a cased hole logging program for a field case

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