

# WIRELINER FORMATION TESTING AND INTERPRETATION

## EXP008

### COURSE DESCRIPTION

During the past period, wireline formation testing (WFT) has emerged as one of the critical formation evaluation means in the upstream hydrocarbon exploration activities. Modern wireline testers (MDT, RCI, and RDT) have gradually but increasingly claimed some of the duties of conventional drill-stem test programs, as a result of high drilling cost, environmental protection, operational safety, and WFT technology advances. Discussions on the "WFT vs. DST/well test" topic have widely been held in a variety of professional and technical arenas, from pressure applications to fluid typing and sampling. This course is tailored to satisfy the interdisciplinary need of geologists, petro-physicists, and reservoir engineers, who have basic understanding of wireline testers, but have an increasing use of wireline testers or deal with WFT data and want to become more knowledgeable on this subject. When the course ends, the participants are expected to apply the skills and lessons learned in designing better test programs, maximizing probabilities of getting quality tests, and benchmarking confidence levels to enhance results. The latest LWD formation testing technology and practice are also included in this course.

### COURSE GOAL

To enhance participants' knowledge, skills, and abilities necessary for understanding and awareness of wireline formation testing and interpretation.

### COURSE OBJECTIVES

By the end of this course, participant will be able to:

- Understand wireline formation testing technologies, applications, and limitations.
- Assemble wireline testing programs, tool configurations.
- QC pressure and fluid ID tests in the wellsite for the best quality data.
- Interpret pressure gradient data for in-situ fluid densities, fluid contact levels.
- Compare two gradient lines for reservoir connectivity/continuity.
- Perform error analysis and quantify uncertainties of P/D slopes and free water levels.
- Design and interpret pressure transient data for permeability.

### WHO SHOULD ATTEND

Geologists, petro-physicists, well-site supervisors, hydrodynamic specialists, reservoir engineers, geophysicists, and geo-data interpretation technologists of multidisciplinary formation evaluation and development teams that are actively engaged in G&G operations for hydrocarbon discovery and reservoir management.

## COURSE DURATION

5 Working Days

## COURSE OUTLINES

### 1. Wireline Formation Testers and Technologies

- Overview of wireline formation testers and their advancements.
- Understanding the capabilities and limitations of different testers.

### 2. Measurement Principles and Test Types

- Explanation of wireline formation testing measurements.
- Detailed exploration of probe pretest, extended flow, and dual packer tests.

### 3. Significance of Drawdown Mobility

- Importance of drawdown mobility in formation testing.
- Analyzing drawdown mobility data for reservoir characterization.

### 4. Data Quality Coding and Screening

- Techniques for quality control of pressure and fluid identification tests.
- Identifying and resolving data quality issues.

### 5. Pressure Gradient Analysis Principles

- Determining subsurface fluid densities through pressure gradient analysis.
- Error analysis for quantifying uncertainties in gradient data.

### 6. Free Water Level Interpretation and Uncertainty Quantification

- Interpreting free water levels and quantifying uncertainties.
- Impact of free water levels on reservoir connectivity.

### 7. Gradient Line Comparisons

- Comparing gradient lines to assess reservoir connectivity.
- Analyzing data from single wells and multiple wells.

### 8. Mud Filtration Phenomena

- Exploring mud filtration phenomena in wireline testing.
- Understanding wettability, capillary effect, and supercharging.

### 9. Fluid Identification and Sampling Principles

- Principles and procedures for fluid identification and sampling.
- Estimating fluid composition and obtaining representative samples.

## 10. Permeability Test and Interpretation

- Principles of permeability testing using short and extended flows.
- Interpreting permeability results for reservoir analysis.

## 11. Testing Depleted Zones and Temperature Measurement

- Strategies for testing low-pressure reservoirs.
- Techniques for temperature measurement during formation testing.

## 12. LWD Formation Testers

- Introduction to Logging-While-Drilling (LWD) formation testers.
- Understanding capabilities and limitations of LWD technology.

## 13. Test Program Design

- Designing effective wireline formation testing programs.
- Considerations for tool selection, sequencing, and data acquisition.

A large, light blue, lowercase sans-serif watermark of the word "arctic" is centered at the bottom of the page.