

Training Title

ADVANCED SURFACE WELL TESTING

Training Duration

5 days

Training Venue and Dates

DE012	ADVANCED SURFACE WELL TESTING	5	24– 28 Jan, 2021	\$4,500	Dubai, UAE
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In any of the 5 star hotels. The exact venue will be informed once finalized.

Training Fees

- 4,500 US\$ per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch.

Training Certificate

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

TRAINING DESCRIPTION

This course will stress the practical application of modern techniques in well test analysis, with a special emphasis on the pressure derivative. Various pressure analysis techniques will be used to analyze flow tests, buildup tests with or without phase redistribution, multi-rate tests, interference tests, and pulse tests. Interpretation of pressure tests under multiphase flow conditions, hydraulically fractured wells, naturally fractured reservoirs, slanted wells, and horizontal wells will be discussed in great detail. Participants will be introduced to the TDS technique, which is an alternative option to type-curve matching technique, convolution, and regression analysis. The manual includes step-by-step procedures to interpret pressure transient tests, such that participants will be able to immediately apply the knowledge and skills gained to their job assignments upon course completion. Concepts will be illustrated by several daily Excel-based exercises and workshops.

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TRAINING OBJECTIVES

A basic understanding of fluid flow equations and a familiarity with fundamental concepts of reservoir engineering and subsurface production.

WHO SHOULD ATTEND?

Petroleum Engineers who want to understand well testing principles and want to apply advanced modern interpretation techniques to analyze pressure transient tests.

DMCT/OL/9/18(Rev3Dt:23/9/18)

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.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises
- 20% Videos & General Discussions

DAILY OUTLINE

Day 1

Application of Pressure and Derivative to Drawdown and Buildup Tests

- Review of fundamental concepts of well testing and measurement techniques (Video)
- Pressure-based analysis of flow and buildup tests
- Derivative-based analysis of flow and buildup tests, TDS technique
- Determining Average reservoir pressure
- Drainage area and pore volume of bounded systems, oil in place

On the first day, participants will learn how to understand the theory, applications, and practical limitations of conventional pressure analysis techniques. Acquiring the skill to use the pressure derivative by recognizing unique finger prints of various flow regimes will also be covered.

Day 2

Hydraulically Fractured Wells and Gas Well Testing

- Practical aspects of fracturing and acidizing (Video)
- Uniform-flux and infinite-conductivity models of hydraulic fractures
- Finite-conductivity: linear, bilinear, and elliptical flow
- Geometry of inclined hydraulic fractures
- Interpreting gas well tests using pressure and pseudo-pressure derivative

How a post-frac pressure test may well be the most important and only effective tool to assess, both qualitatively and quantitatively, the stimulation treatment will be covered. Participants will be given simple equations, based on the pressure derivative, for calculating permeability, skin factor, fracture length, fracture conductivity, and fracture inclination angle.

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Day 3

Naturally Fractured Reservoirs and Carbonates

- Evaluation of carbonate reservoirs (Video)
- Indicators and types of NFR
- Pseudo-steady state and unsteady state matrix flow models
- Storativity and Porosity Partitioning coefficient
- Fracture porosity from well logs and well test analysis
- Interpretation of interference and pulse tests, pressure derivative

The fact that carbonate reservoirs produce a major portion of the world's oil and gas will be the main focus on this day. Participants will also learn that they hold more than half of the world's largest crude oil and natural gas reserves. Yet, accurately predicting amounts and types of porosity and, therefore, original oil-in-place and reserves, is still a major challenge in carbonate reservoirs. Attendees will learn how to characterize the four different types of NFR, how to use unique finger prints of the pressure derivative to delineate the fracture system intensity and extent, as well as how to quantify reservoir pore volume.

Day 4

Multiphase Flow, Multirate Tests, and Partially Perforated Wells

- Role of fluid properties, Perrine Permeability
- Dynamic Reservoir Testing (Video)
- Conventional and modern interpretation of multi-rate tests
- Applications of TDS, convolution and deconvolution techniques
- Partially completed/penetrated/perforated wells
- Vertical permeability from spherical flow, MDT

On this day, participants will learn how fluid properties change with pressure and how they are used to calculate effective permeability to oil, gas, and water. How to use the TDS technique to analyze pressure buildup tests preceded by variable rate will also be covered. Determining vertical permeability will be one of the most important objectives of this day's presentations. Detailed discussion of spherical flow and MDT will be presented.

Day 5

Slanted and Horizontal Wells

- Effect of slant on pressure-response
- Determining angle of inclination of slanted well and partial penetration/perforation skin
- Overview of horizontal well completions and performance (Video)
- Flow regimes and analytical solutions

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- Applications of pressure derivative to calculate directional permeability values
 - Pressure analysis of hydraulically fractured horizontal wells
- Participants will become familiar with several methods to analyze pressure drawdown and buildup tests in horizontal wells, including pressure-based conventional techniques, and techniques that are strictly based on the pressure derivative. This is the only course where attendees will learn how to analyze the elliptical flow regime using the pressure derivative.

NOTE:

Pre & Post Tests will be conducted

Case Studies, Group Exercises, Group Discussions, Last Day Review & Assessments will be carried out.



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