



Well Test Analysis and Interpretation

Course Description

This course provides detailed discussions, and hands-on training related to analysis and interpretation of pressure transient tests for oil and gas wells. The course will provide fundamental knowledge of the main applications of well tests from the mathematical basis to the interpretation of complex reservoir conditions by using a holistic approach. Class exercises will be performed by using specialized spreadsheets which will help to better assimilate the theory covered during the training. Participants will be able to apply core knowledge and skills they gain in this course to their actual jobs after completion of it. This course covers material for conventional reservoirs only.

The course will be supplemented by practical class examples, group exercises and interactive group discussion designed to consolidate and reinforce learning, identify and offering solutions to specific problems associated with well test analysis and interpretation.

Who Should Attend?

This course is designed for reservoir engineers, geologist, assets managers, and others who want to comprehend well testing principles and main interpretation techniques to design, analyze, and interpret transient well tests from oil and gas wells.

What You Will Gain:

- Understanding the applications of transient tests in reservoir characterization
- Learning how to perform well test analysis (draw-down and build-up) and interpretation for oil and gas wells
- Learning how to design well tests for oil and gas wells
- Identifying flow regimes for vertical and horizontal wells using the log-log diagnostic plot
- Understanding the specific conditions where to use type curve
- Learning how to calculate average reservoir pressure, average permeability and pseudo skin from well tests
- Understanding the log-log pressure derivative response in horizontal wells, hydraulically fractured wells, and naturally fractured reservoirs
- Understating the pressure response of closed systems and under constant pressure boundary effects
- Understanding the importance of well testing in reservoir characterization and compartmentalization studies



Training Methodology

The training will combine lectures (30%) with workshop/ presentations (30%), interactive class exercises and case studies (20%), case studies and general discussions (20%).

Course Content

Overview of well test analysis. Basic concepts

- Reasons to perform well test and results analysis
- Reservoir model assumptions
- Diffusivity equation
- Radius of investigation
- Time of stabilization
- Types of well tests
- Flow regimes for a vertical and horizontal well

Interpretation of transient test for oil wells. Build-up tests, and DST.

- Flow regime and diagnostic plot
 - Horner plot or semi-log plot interpretation
 - Log-Log plot interpretation
- Average reservoir pressure calculations, average reservoir permeability and skin factor
- Matthews, Brons y Hazebroeck (MBH)
- Boundaries identification
- Importance of well testing in reservoir characterization and compartmentalization studies

Interpretation of transient tests for a gas well

- Well test interpretation for gas wells
- Flow equations for gas wells. Mathematical models.
- Concept of Pseudo-pressure
- Interpretation of well tests for gas wells

Type curve for well test interpretation. Well test design

- When do we use type curve for transient test interpretation?
- Dimensionless variables
- Type curve matching workflow
- Well test design
- Case studies
- Class exercise



YH PROVIDER
CONSULTING

Practical session using spreadsheet and commercial software

- Well test interpretation of an oil well
- Objective: generate semi-log and log-log plots using spreadsheet
- Identify flow regimes
- Determine the time to reach pseudo steady state condition
- Determine: average reservoir pressure, average reservoir permeability, average skin factor, identify type of boundary condition
- Compare spreadsheet and commercial software results