Well Testing and Pressure Transient Analysis

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Düsseldorf (Germany)

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PARTNER



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Introduction

Well testing is a vital process in the field of petroleum production, used to assess reservoir characteristics, well performance, and flow properties. This course is designed to provide participants with a comprehensive understanding of well testing and pressure transient analysis PTA. From fundamental equations and theoretical foundations to advanced analytical techniques for both homogeneous and non-homogeneous reservoirs, this course covers all the essential aspects needed for effective well testing and analysis. Key topics include fluid flow equations, pressure transient analysis basics, well test design, and specialized equipment usage.

This course is designed to help participants understand well testing methods, including formation testing, production testing, and other advanced well testing techniques. Through real field data, case studies, and hands-on exercises, participants will learn how to interpret testing results and minimize the risks involved in well testing.

Course Objectives

By the end of this course, participants will:

- Gain a deep understanding of pressure transient analysis and its role in reservoir engineering.
- Learn the fundamentals of well testing and well performance analysis.
- Understand various well testing methods and how to design well tests for different reservoir conditions.
- Develop the ability to analyze production testing data and make informed decisions.
- Use real field data to apply well testing techniques and understand their limitations and accuracy.
- Learn to identify risks associated with well testing and adopt best engineering practices to mitigate those risks.
- Appreciate the value of interdisciplinary teamwork in the well testing process.
- Understand the design and operational aspects of well testing equipment.



Course Outlines

Day 1: Introduction to Well Testing and Theoretical Foundations

- Introduction to well testing and its objectives.
- Overview of the key concepts in pressure transient analysis.
- Derivation of the Radial Diffusivity Equation: Group exercise.
- Basic principles of fluid flow equations and fundamental solutions for well testing.

Day 2: Well and Near-Well Effects

- Analysis of infinite acting reservoirs and their impact on pressure transient data.
- Pressure build-up analysis for infinite acting reservoirs: Tutorial with examples.
- Practical application of infinite acting examples to analyze pressure data.

Day 3: Superposition Theory and Bounded Reservoirs

- Superposition theory for analyzing bounded reservoirs.
- Case studies of Dai Hung and Timor Sea reservoirs.
- Interference test analysis: Exercise on interference testing data interpretation.

Day 4: Gas Well Testing and Fractured Reservoirs

- Gas well testing formulation and analysis.
- Well test design and operations for gas wells and naturally fractured reservoirs dual porosity.
- Case study and practical exercise on gas well testing.
- Discussion on test data, reporting, and safety procedures during production testing.

Day 5: Advanced Well Testing Techniques

- Computer-aided analysis of naturally fractured reservoirs.
- Techniques for analyzing layered reservoirs and hydraulically fractured wells.
- Case studies on hydraulically fractured gas wells.
- Introduction to horizontal well tests, interference testing, and pulse testing.



Why Attend This Course: Wins & Losses!

- Comprehensive understanding of well testing techniques, including pressure transient analysis, formation testing, and production testing.
- Proficiency in interpreting real field data and applying analytical methods to evaluate well performance.
- Ability to effectively design well tests and choose the appropriate well testing methods based on reservoir conditions.
- In-depth knowledge of advanced techniques such as dual porosity analysis, hydraulically fractured wells, and interference testing.
- Enhanced ability to mitigate risks associated with well testing and apply best engineering practices in the field.
- Access to case studies that will deepen your understanding of well testing scenarios and their practical applications.

Conclusion

This well testing course is designed to provide participants with a comprehensive understanding of pressure transient analysis and its practical application in the field of reservoir engineering. By the end of the course, you will have a solid grasp of the different well testing methods, including formation testing and production testing, and will be equipped with the tools necessary to analyze and interpret well testing data effectively.

The course emphasizes the importance of well test design, the use of specialized testing equipment, and the significance of interdisciplinary teamwork. With hands-on case studies and real-world applications, you will be able to apply your knowledge to improve your well testing practices and minimize associated risks.

