MERCURY

Surface Well Testing for the Oil and Gas Industry Course

18 – 22 April 2027
Manama (Bahrain)



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Introduction

Surface well testing plays a vital role in evaluating reservoir behavior, fluid properties, and production performance within upstream operations. This Surface Well Testing for the Oil and Gas Industry course provides a structured theoretical framework that explains how surface testing supports informed engineering and production decisions. The course explores the full lifecycle of surface well testing operations, from planning and equipment selection to data interpretation and performance evaluation. It emphasizes the technical logic behind testing workflows used across exploration, appraisal, and production stages.

Participants develop a clear understanding of how surface testing contributes to reservoir characterization and production optimization. The Surface Well Testing for the Oil and Gas Industry program also explains the interaction between surface facilities and subsurface behavior. Strong focus on safety philosophy, operational discipline, and testing accuracy. By the end, learners gain a comprehensive conceptual foundation applicable to modern oilfield well testing environments.

Targeted Groups

This Surface Well Testing for the Oil and Gas Industry training targets professionals seeking knowledge and skills:

- Petroleum engineers work in production operations.
- Well testing engineers supporting field evaluation activities.
- Oilfield technicians are involved in surface testing operations.
- Production engineers are monitoring well performance.
- Reservoir engineers are analysing production test data.
- Field supervisors manage well site operations.
- Surface facility engineers supporting testing layouts.
- Maintenance personnel handling testing equipment.
- Oil and gas project engineers coordinating field execution.
- Professionals entering oilfield well testing roles.

Course Objectives

Participants will achieve the following objectives by completing the Surface Well Testing for the Oil and Gas Industry course:

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- Understand the purpose of surface well testing within upstream operations.
- Explain the role of testing in reservoir and production evaluation.
- Identify surface well testing operations used in different field phases.
- Recognize the function of major surface well test equipment.
- Describe well the test planning and execution workflows.
- Analyze the behavior of pressure, temperature, and flow conceptually.
- Interpret oil and gas production testing results accurately.
- Evaluate well productivity and deliverability indicators.
- Understand surface production testing system configurations.
- Apply structured approaches to sound test planning and execution.
- Explain the behavior of multiphase flow during production well testing.
- Assess operational risks associated with testing activities.
- Apply safety and environmental control principles in testing.
- Interpret well testing data trends for performance monitoring.
- Understand reporting requirements in testing engineering.
- Recognize common testing challenges and mitigation approaches.
- Strengthen technical communication of testing outcomes.
- Support informed decision-making using test results.

Targeted Competencies

Participants will gain the following competencies during the Surface Well Testing for the Oil and Gas Industry program:

- Strong understanding of surface well testing fundamentals.
- Ability to evaluate surface well testing operations logically.
- Knowledge of standard well testing techniques.
- Conceptual skill in surface well test analysis training methods.
- Improved interpretation of production testing indicators.
- Understanding of the logic for oil and gas well performance testing.
- Competence in the functionality of surface well test equipment.
- Awareness of testing engineering standards and procedures.
- Ability to identify abnormal testing behavior.
- Structured thinking for testing planning scenarios.
- Understanding of well-testing data interpretation and training concepts.
- Awareness of safety-critical testing systems.
- Analytical thinking applied to surface production testing results.
- Improved technical reporting competence.

Studying Scenarios

In this Surface Well Testing for the Oil and Gas Industry training, participants develop skills through the following scenarios:

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- Evaluating surface well testing objectives for new wells.
- Reviewing surface well test equipment configurations.
- Analyzing flow rate variations during production testing.
- Interpreting pressure behavior trends from test data.
- Assessing separator performance during testing operations.
- Identifying risks in oil and gas well test planning and execution.
- Reviewing abnormal readings in surface well test analysis.
- Examining multiphase flow challenges at surface facilities.
- Assessing oil and gas well performance testing outcomes for field decisions.
- Reviewing testing reports for operational clarity.

Course Content

Unit 1: Fundamentals of Surface Well Testing Operations

- Define surface well testing and its role in the oilfield.
- Understand why oil and gas well testing training is essential.
- Explain the relationship between reservoir behavior and surface data.
- Identify phases of testing during exploration and production.
- Understand the objectives of production well testing.
- Describe surface flow paths and fluid movement.
- Review surface testing philosophies used in field operations.
- Explain key principles of oil and gas production testing.
- Identify constraints affecting surface well testing operations.
- Understand how testing supports reservoir evaluation strategies.

Unit 2: Surface Well Test Equipment and Systems

- Understand separator principles in surface well test equipment training.
- Identify functions of two-phase and three-phase separators.
- Explain choke manifolds and flow control logic.
- Understand pressure control systems in well testing engineering training.
- Review surface safety valves and emergency shutdown systems.
- Explain the flow measurement technologies used in oilfield well testing training.
- Understand turbine, orifice, and Coriolis meter concepts.
- Review data acquisition systems for surface training well test analysis.
- Understand flare and burner system principles.
- Explain equipment layout and flow routing fundamentals.

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Unit 3: Well Test Planning and Execution Principles

- Understand the objectives of oil and gas well test planning and execution.
- Identify data required before surface testing activities.
- Explain test duration selection principles.
- Review production rate estimation logic.
- Understand separator pressure and temperature planning.
- Identify surface equipment sizing considerations.
- Explain flow assurance challenges during testing.
- Review contingency planning for testing operations.
- Understand coordination between field teams and testing engineers.
- Apply surface well testing best practices and training concepts.

Unit 4: Surface Well Test Data Acquisition and Interpretation

- Understand pressure measurement principles during testing.
- Review temperature monitoring behavior at surface facilities.
- Explain flow rate stabilization concepts.
- Identify data quality control requirements.
- Understand transient behavior during testing periods.
- Interpret oil, gas, and water production trends.
- Review surface production testing efficiency indicators.
- Identify abnormal data patterns and deviations.
- Integrate surface data with reservoir understanding.
- Apply well-testing data interpretation concepts.

Unit 5: Advanced Applications and Best Practices

- Review advanced well testing techniques used in complex fields.
- Understand multiphase flow behavior during surface testing.
- Explain the applications of the mobile well test unit.
- Review early production testing system concepts.
- Understand environmental management in testing operations.
- Applied well testing for oil and gas principles.
- Review digital monitoring and automation concepts.
- Understand remote data transmission in testing engineering training.
- Identify common operational pitfalls in surface well testing.
- Apply continuous improvement approaches in testing workflows.

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Final Insights & Key Takeaways

Surface well testing remains a cornerstone of reliable production and reservoir evaluation. A strong theoretical understanding of testing operations enhances decision quality and operational confidence. This Surface Well Testing Training Course strengthens knowledge across the planning, execution, and interpretation stages. Participants complete the program with a clear, structured understanding of modern surface well testing practices across the oil and gas industry.