

Advanced Well Test Analysis and Interpretation Training Course

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Overview

Advanced Well Test Analysis and Interpretation Training Course is a one-week advanced course for reservoir, petroleum, production, well-test, and subsurface functions who leave with a Well Test Interpretation and Decision File. Participants apply pressure transient analysis, pressure derivative diagnostics, pressure and rate history conditioning, and well test model selection to drawdown, buildup, injection, and interference data. The course links data quality to permeability, skin, flow-regime, and boundary decisions. Agile Leaders Training Center presents advanced well test interpretation practice.

Who Should Attend

- Reservoir engineering functions responsible for pressure-transient interpretation and reservoir-property estimates
- Petroleum engineering functions responsible for test objectives, technical integration, and subsurface decisions
- Production technology functions responsible for rate histories, well performance, and operating evidence
- Well-test functions responsible for test design, gauge data, synchronization, and interpretation delivery
- Subsurface analysis functions responsible for diagnostic plots, model comparison, and uncertainty records
- Technical review functions responsible for challenging assumptions, evidence, and recommended actions

The course assumes participants already use reservoir-flow concepts, pressure and rate data, logarithmic plots, and engineering units, and it leaves out well-log interpretation, formation evaluation, casing design, stimulation design, and surface-test equipment operation.

Departments and Industries

The course supports departments and industries that use transient pressure response to evaluate wells and connected reservoir volumes.

- Oil and gas exploration and production
- Underground gas storage and carbon-storage operations
- Reservoir engineering and subsurface studies
- Production technology and well performance
- Well testing and petroleum engineering
- Technical assurance and asset development

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Learning Objectives

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

- Apply a test-objective and duration design method
- Analyze synchronized pressure and rate histories
- Diagnose flow regimes with pressure derivative plots
- Evaluate permeability, skin, storage, and boundaries
- Compare models for gas, multiphase, and fractured wells
- Build an uncertainty-controlled interpretation decision file

Course Agenda

Day 1: Design the Test and Condition the Data

- Test Objective and Decision Question Map
- Drawdown, Buildup, Injection, and Interference Test Selection Matrix
- Pressure Gauge Quality and Time-Synchronization Checklist
- Pressure and Rate History Conditioning Worksheet
- Test Duration and Detectable-Boundary Design Method

Day 2: Diagnose Transient Flow Regimes

- Diffusivity Equation and Radial-Flow Assumption Map
- Log-Log Pressure and Pressure-Derivative Diagnostic Plot
- Wellbore Storage and Skin Signature Identification Method
- Semilog Straight-Line Permeability and Skin Calculation
- Superposition and Variable-Rate History Correction Method

Day 3: Select Models for Complex Wells

- Sealing Fault, Constant-Pressure, and Channel Boundary Models
- Hydraulically Fractured-Well Flow-Regime Diagnostic Map
- Dual-Porosity Interporosity-Flow Interpretation Model
- Gas Pseudopressure and Non-Darcy Flow Correction
- Horizontal-Well and Multiphase Response Comparison Matrix

Day 4: Integrate Special Tests and Uncertainty

- Injection Falloff Test Interpretation Workflow
- Interference and Pulse Test Connectivity Method
- Gas Deliverability Test Analysis Table
- Competing Well Test Model Selection Scorecard
- Parameter Uncertainty and Decision-Sensitivity Register

Day 5: Practice Well Test Interpretation

- Suggested Exercise: Condition a Noisy Pressure and Rate History
- Suggested Exercise: Identify Radial Flow, Storage, and Skin
- Suggested Exercise: Compare Fracture, Porosity, and Boundary Models
- Suggested Exercise: Challenge Parameters with an Uncertainty Register
- Capstone Exercise: Complete the Well Test Interpretation and Decision File

Practical Exercises

The course uses suggested activities to convert transient measurements into traceable reservoir interpretations and decisions.

- Suggested activity: align gauge and rate records, flag uncertain intervals, and prepare a conditioned analysis history.
- Suggested activity: use pressure derivative diagnostics to identify flow regimes and select valid analysis windows.
- Suggested activity: compare competing models and test permeability, skin, storage, fracture, and boundary interpretations.
- Suggested activity: document assumptions, parameter ranges, uncertainty, decision sensitivity, and review evidence.

FAQs

Who suits advanced well test analysis and interpretation training, and what does it assume?

Advanced well test training suits reservoir, petroleum, production, testing, subsurface, and review functions. It assumes working use of reservoir-flow concepts, pressure-rate data, logarithmic plots, and engineering calculations.

How does pressure transient well testing differ from well-log interpretation?

Pressure transient well testing evaluates dynamic pressure response after rate changes to infer connected flow behavior. Well-log interpretation evaluates measurements along the wellbore to characterize formations and fluids.

How do pressure derivative diagnostics support well test interpretation?

Pressure derivative diagnostics expose response shapes associated with storage, radial flow, fractures, dual porosity, and boundaries, helping analysts choose valid time windows and compare models.

How are permeability and skin evaluated in well test analysis?

Permeability and skin are evaluated from identified flow regimes, conditioned rate histories, pressure response, derivative behavior, and model assumptions, with parameter ranges checked against data quality and uncertainty.

Conclusion

Participants take back a Well Test Interpretation and Decision File linking objectives, conditioned data, diagnostic plots, model choices, parameter estimates, and uncertainty. It changes isolated plots into a traceable interpretation path. The file supports technical review, comparison of competing explanations, and reservoir decisions based on stated evidence and limitations.

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