



info@mineoil.com

+44 (790) 991 9419

+44 (203) 166 3056

www.mineoil.com

jh

This may also be of interest

Advanced Well Test
Analysis

Pressure Rate Transient
Analysis (PTA/RTA) and
Production System
Performance

Well Productivity
Optimization

Description

This course is focused to describe the principles and practices of well transient tests analysis and interpretation methods applied in the oil and gas industry to develop reservoir properties and how to use the well testing techniques to develop reservoir properties to optimize the well productivity and to optimize the reservoir production strategies.

The course describe the application of up-to-date interpretations methods, classical and computer-aided, interpretation methods: Horner, Log-Log, type curves, etc., supported in field examples in homogeneous, fracture and double porosity reservoirs will be described, supported in field examples for different well test types, as drawdown, buildup, fall-off, interference, pulse, injectivity and DST. Practical examples and exercise guides will be provided for every subject.

Objectives

- Provide the participants with the principles and key elements of well test analysis.
- How to successfully obtain key reservoir parameters from well pressure transient tests,
- Describe the prime importance of detailed planning, supervision requirements, data retrieval, quality checks.
- Present the different methodologies to interpret well tests
- Describe interpretation methods applicable to vertical and horizontal wells in homogeneous, layered, fractured, compartmentalized reservoirs.

Audience

- Well completion engineers
- Production engineers
- Reservoir engineers
- Reservoir manager intending to enhance their technical skills and level of confidence in decision making by identifying well issues, causes of production anomalies and operational constraints etc.
- Field engineers
- Geoscientists & Well-site geologists
- Engineers and earth scientists involved in well and reservoir characterization and surveillance.
- Technical personnel involved in appraisal or field developments.

Content

Day 1

Objectives of well tests, flow equations and assumptions.

Introduction to Well Testing

Well test objectives in Exploration, Appraisal and Development Wells

Well performance and well test requirements

Darcy Law equation

Diffusivity equations, transient, pseudo steady and steady state.

Transient linear and pseudo radial flow in fractured wells

On the first day, participants will learn the theory, fundamental applications, and practical limitations of well tests, understanding the reservoir response under production injection disturbances.



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Day 2

Principles of Transient Pressure Tests, Well storage Storage and Skin Effects

- Draw Down tests
- Build Up tests, Horner graph
- Equivalent producing time
- Radius of investigation
- Wellbore Storage
- Pseudo Skin factors
- Productivity Index
- Fractured Wells Liner flow and pseudo radial flow
- Reservoir Boundaries and Channel Analysis
- Horizontal Well Tests.

On the second day, participants will have received directions to understand the different types of well tests, basic concepts and fractured well tests.

Day 3

Multiple well systems, Linear Barriers and multi rate tests & Diagnosis.

Multiple well system example
Image wells
No-Flow barrier
Constant pressure linear boundary
Multiple boundaries example
Parallel Boundaries and closed systems
Type curves
Field example
Recognizable Characteristic shapes
Detection of boundaries linear barrier and field example
Introduction of Type Curves as Diagnosis
Use of Type curves for Diagnosis
Multidiscipline approach
In the 3rd the participants will understand a multiple well system, linear barriers, boundaries interpretation with an integrated multidisciplinary approach.

Day 4

Limit Tests Average Pressures And Productivity Index and Gas wells

Reservoir limit tests
Estimation of average pressure
Productivity index
Multi well reservoir average pressure
Comparison of well tests and simulation results (Peaceman correction)
Diffusivity, Darcy equation for gas wells
Liquid form of Diffusivity equation
Real gas potential
Deliverability tests, conventional and isochronal tests.
Well test simulation and planning a well test.
Well tests equipment and limitations.
In day 4 the participants will have skills to understand fundamentals of limit tests, productivity index, multi-well tests, gas well tests, and how to plan and supervise a well test.



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Performance Production System

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Content (cont.)

Day 5 Special Tests

- Drill Steam Tests (DST)
- Injection well tests
- Mobility ratio
- Interference tests
- Reservoir heterogeneities
- Examples of field cases
- Final discussions and wrap up

End of the training