

GAS FIELD RESERVOIR MANAGEMENT

RSE031

COURSE OVERVIEW

Natural gas production has become a major part of every petroleum company's asset base and continues to grow in importance throughout the world. This course will help participants understand the engineering drivers on gas reservoir management and how a gas reservoir's value can be maximized through sound engineering practices. A full spectrum of gas reservoir engineering techniques is addressed and their application to a large variety of gas resource management options is discussed.

COURSE OBJECTIVES

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

- Evaluate gas reservoir data and prepare it for engineering calculations.
- Apply commonly used gas reservoir engineering techniques.
- Perform production decline type curve analysis.
- Understand gas reservoir fluid properties and interpret laboratory reports.
- Conduct gas reservoir fluid flow and well testing, including deliverability testing and testing for hydraulically fractured and horizontal wells.
- Determine the original gas-in-place using material balance techniques.
- Analyze gas flow in wellbores and pipelines, including pressure drop and restrictions to gas production.
- Predict future reservoir performance and ultimate recovery using decline curves, coupled material balance, deliverability techniques, and reservoir simulation.
- Determine gas well spacing and evaluate the need for infill drilling.
- Address special topics such as reservoir management of water-drive gas reservoirs, predicting gas condensate reservoir performance, and coalbed methane reservoirs.

WHO SHOULD ATTEND

Engineers actively involved with the operation and management of gas reservoirs; geoscientists working with gas reservoirs in field development and expansion planning would also benefit from attending this course.

COURSE DURATION

5 Working Days

COURSE OUTLINES

Day 1

- Pre course evaluation.
- Evaluating gas reservoir data
- Preparing data for engineering calculations
- Applying frequently used gas reservoir engineering techniques
- Perform production decline type curve analysis
- Using other advanced reservoir calculations such as simulation

Day 2

- Solving reservoir engineering calculations through the use of many practical exercises
- Gas reservoir fluid properties:
 - Gas condensate sampling
 - Understanding laboratory reports

Day 3

- Gas reservoir fluid flow and well testing:
 - Deliverability testing
 - Non-darcy flow
 - Testing for hydraulically fractured wells
 - Horizontal wells
 - Gas condensate reservoirs

Day 4

- Determination of original gas-in-place:
 - Material balance techniques for various drive mechanisms and reservoir types
 - Alternate plotting techniques
 - Production decline type curves
- Gas flow in wellbores and pipelines:
 - The gas production system
 - Pressure drop in wellbores and flowlines
 - Restrictions to gas production

Day 5

- Prediction of future performance and ultimate recovery:
 - Decline curves
 - Coupled material balance

- Deliverability techniques
- Reservoir simulation
- Gas well spacing
- Infill drilling
- Special topics
- Reservoir management of water-drive gas reservoirs
- Predicting gas condensate reservoir performance
- Coalbed methane reservoirs
- Post course evaluation.

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