



N942: Gas Condensate Reservoir Engineering including HPHT

Instructor(s): Jami Ahmady

5 Days

Competence Level:
Skilled



Classroom Course

Summary

This course enables participants to develop skills to analyse and manage gas condensate reservoirs. It draws on Heriot-Watt's world leading expertise and addresses: phase behaviour; relative permeability varying with velocity and interfacial tension; material balance equations; well productivity and pseudo-pressure calculation for different completion strategies, condensate banking and gravity drainage; practical fluid and flow simulation models; and demonstrating NeW-COIN software.

Learning Outcomes

Participants will learn to;

1. Assemble an in-depth understanding of fluid and flow behaviour of gas condensate systems.
2. Evaluate, select and apply the appropriate methods for analysing gas condensate reservoirs.
3. Apply the appropriate well and reservoir models for analysis.
4. Assemble the well and reservoir data needed for analysis.
5. Perform realistic well performance predictions for different completion strategies.
6. Formulate and recommend well and reservoir management actions.

Duration and Training Method

Five days, classroom based, with micro-model reservoir condition flow visualization videos, lab visit, practical field and worked examples, hands-on exercises and discussion. Lectures supported and illustrated by exercises and multi-stage case studies. Participants are encouraged to bring issues associated with their own reservoirs for discussion.

Who Should Attend

The course is designed for mid to senior level Reservoir and Production Engineers involved in the evaluation, planning and development of gas condensate reservoirs.

Prerequisites and Linking Courses

A good general knowledge of reservoir engineering is assumed through your own work, or having attended N933: Reservoir Engineering Fundamentals. As a potential follow on class, the N936 class (Reservoir Engineering Principles and Practice) is ideally suited for those having taken this class.

Course Content

Day 1: Introduction

- Relative Permeability
- Phase Behavior
- Equations of state
- Fluid sampling
- Laboratory PVT tests
- Equation of State modelling



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Day 2:

- Condensate formation and issues
 - Formation and growth
 - Critical condensate saturation
- Gravity drainage
- Residual trapped gas and condensate
- Condensate banking
- Empirical relative permeability correlations

Day 3:

- Reservoir Flow
- Estimation methods
 - Single phase
 - Two phase
- Relative Permeability
- Coupling
- Reservoir Simulations
- Material balance
- Depletion
- High pressure and high temperature reservoirs

Day 4:

- Well issues
- Flow equations
- Fracture Characteristics
- Deviated and highly deviated horizontal wells

Day 5:

- Phase Behavior Models in reservoir simulations
- Field Examples
- New-COIN
- Summary