Gas Condensate Reservoirs

Course Price

£3050

Course Description

This course enables participants to develop skills to analyse and manage gas condensate reservoirs. It 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.

Course Objectives

Who Should Attend

This short course is intended for all engineers engaged in the oil and gas industry, in particular for those engineers involved with gas condensate reservoirs.

Course Content

1. Phase behaviour:

Equations of state; fluid sampling and laboratory PVT tests (CCE, CVD tests, two-phase z-factor, K equilibrium constant and molar balance consistency checks); Equation of state modelling (Ideal and Real gas law (two and three-parameters corresponding state), two and three parameters van der Waals Cubic EOS (Pen-Robinson, Schmidt-Wenzel, Patel-Teja and Soave-Redlich-Kwong) for pure and mixtures, prediction of phase behaviours and reservoir fluid properties; Tuning of EOS using experimental data and field application of fluid data in commercial simulators; a comparison of black oil and compositional models

2. Condensate issues:

Condensate formation and growth; critical condensate saturation, gravity drainage, residual trapped gas and condensate; condensate banking; and well remedial

3. Reservoir Flow:

Relative permeability measurement methods; single and two phase inertial factor estimation methods;
waterflood; relative permeability variations with velocity & interfacial tension due to coupling (capillary number) and inertial effects; mechanistic models of coupling; relative permeability correlations and calculations for use in simulators and using the next generation (universal) method.

4. **Estimating volumes and production mechanisms:**

Material balance equations (gas in-place, calculations drive mechanism identification); high pressure and high temperature reservoirs, depletion for dry, wet and gas condensate systems; active aquifers and pressure maintenance (including gas injection).

5. **Well issues:**

Steady state and pseudo-steady state flow equations; well productivity calculations; perforation and fracture characteristics and effective parameters; perforation and fracture design; estimation of skin for perforated, fractured, deviated and horizontal wells.

**CPD Unit**

**Continuing Professional Development**

**35 HOURS CPD**