Summary

This course provides a better understanding of principles and practice of well test analysis in the area of transient and semi-steady state approaches. It also gives on introduction to distributed pressure measurment. It enables participants to develop skills from the perspective of deriving properties for improved reservoir description.

Learning Outcomes

Participants will learn:

1. Classical Well-test Basic Concepts: Theories of radial and non-radial flow including skin and Dietz shape factor. Productivity Index for various flow regimes.
2. Pressure transient analysis: Drawdown and build-up for permeability and skin calculations.
3. Wellbore storage and Supercharging: Available methods including their benefits and limitations.
4. Method and Order of analysis: Straight line, diagnostic derivative, type curves and auto match benefits and limitations including reliability of identified reservoir parameters.
5. Semi-infinite late transient analysis: Single, two (parallel or intersecting) and multi fault systems. Fully sealing or partially communication faults.
6. Semi-steady-state reservoir limit tests: Average reservoir pressure, shape factor and drainage area calculations.
7. Exploration and Field Development Application of Distributed Pressure Measurement: Examples are: 1) presence of gas cap, 2) fluid type and fluid contacts, 3) Identification of horizontal and vetical permeability barriers.
8. Numerical well testing: Basics and its application to characterize complex fluid and reservoir types.

Duration and Training Method

The course will be a three day classroom based course, with worked examples, hands-on exercises and discussion.

Who Should Attend

The course is designed for petroleum engineers, petrophysicists, geophysicists involved in evaluation, planning and development of reservoir with an emphasis on improved reservoir description preferably with 1-5 year experience (basic to mid level).

Prerequisites and Linking Courses

A basic knowledge of petroleum engineering is assumed. Basic geology, mathematics and/or reservoir engineering is desired.

Course Content

Day 1: Radial flow, skin, dietz shap factor, productivity index, drawdown and build-up data analysis to obatin permeability and skin.

Day 2: Wellbore storage and supercharging, straight line, derivative, type curve and auto match analysis methods, Semi-inifinite late transient (fault systems).

Day 3: Average reservoir pressure, shape factor and drainage area, Exploration & Field development application of distributed pressure measurement. Numerical well testing and its application to characterize complex fluid and reservoir types.

The examples used in the course are illustrated using both the PanSystem and Sapphire software packages. The course covers briefly both the operation of the well test and required surface testing equipment .