Best Technology Solutions **BTS**

Well Test Design & Analysis Training Program

Introduction:

This course stresses practical application of well test theory to design and interpretation of pressure transient tests. An integrated approach to well test interpretation is emphasized throughout the course. Class exercises involving hand calculations and simple spreadsheet applications will reinforce the concepts covered in class. Concepts will be illustrated by both synthetic data sets and real field examples. The candidates will be able to apply the knowledge and skills in their job assignments upon course completion.

This course will focus on the different types of tests and techniques, both analytical and graphical, for data representation and analysis of well tests. Types of techniques covered will include diagnostic plots-derivative for draw down, and buildup tests. Participants will learn about the interpretation of complex data, such as those from well test in naturally fractured reservoirs, hydraulically fractured wells, horizontal wells, along with gas and gas condensate reservoirs. Each day participants will see examples of the types and techniques discussed along with practice problems.

Who Should Attend?

Geoscientists, Petroleum Engineers, Drilling Engineers, Production Engineers, Reservoir Engineers and other disciplines engineers who want to understand well testing principles and interpretation techniques to design, analyze report, evaluate results or intelligently participate in the well testing process

Course Objectives:

By the end of this course delegates will be able to:

- Analyze drawdown and buildup tests in oil and gas wells
- Identify flow regimes using the log-log diagnostic plot
- Describe characteristic pressure behavior for common bounded reservoir geometries
- Identify well test data affected by various wellbore and near-wellbore phenomena
- Design a well test to meet desired objectives
- Estimate average drainage area pressure
- Analyze well tests in hydraulically fractured wells
- Analyze well tests in horizontal wells
- Analyze well tests in naturally fractured reservoirs

Course Outline:

Introduction to Well Testing
Types of Test Analysis

- Steady state, semi-steady state, and transient well performance
- Basic concepts for test analysis
- Drawdown and buildup testing
- Semilog analysis and estimating average reservoir pressure

Diagnostic and Derivative Analysis

- Diagnostic and derivative analysis
- Wellbore storage and type curve matching
- Sealing faults and stratigraphic pinchouts
- Late time boundary and depletion effects

Types of Well Testing

- Interpretation of well test data
- Analysis of post-fracture tests
- Variable rate analysis methods
- Horizontal well testing
- Multi-well testing

Analysis Gas and Gas Condensate Reservoirs

- Modifications for gas wells and multiphase flow
- Well test analysis in gas and gas condensate reservoirs
- Pseudo-pressure and type curve analysis techniques
- Phase redistribution

DST

- DST key features
- DST design and analysis
- Interference tests
- Reservoir limit tests
- Well test design and step-by-step procedure

Radial Flow

Log-log Type Curve Analysis

Pressure Transient Testing for Gas Wells

Flow Regimes and the Log-log Diagnostic Plot

Bounded Reservoir Behaviour

Wellbore and Near-wellbore Phenomena

Well Test Interpretation

Well Test Design

Estimation of Average Drainage Area Pressure

Hydraulically Fractured Wells

Naturally Fractured Reservoirs