

HORIZONTAL AND MULTILATERAL WELLS ANALYSIS & DESIGN

RSE032

COURSE OVERVIEW

This course is designed to better advance well concepts including horizontal and multilateral wells as they have become a dominant feature of new field development and redevelopment opportunities. They can, when used appropriately, dramatically improve the economic profitability of field development operations, for both unconventional and conventional resources. The complex, interdisciplinary decisions in advanced well projects are emphasized in this course. The application and benefits of horizontal and multilateral wells are analyzed.

The process of candidate screening and selection, involving geological, reservoir, and production characteristics are considered, as well as constraints on drilling and completion options. Methods to predict well performance and recovery from horizontal and multilateral wells are presented with integration of inflow and wellbore flow performance for individual and multilateral wells. Well completion options and its impact on well performance for horizontal and multilateral wells are summarized. The improvement by well stimulation (multistage hydraulic fracturing and matrix acidizing) is evaluated. Economic and risk analysis are also presented with a number of case histories to highlight the performance and benefits of horizontal wells and the elements of risk and uncertainty at the initial design stage.

COURSE OBJECTIVES

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

- Identify and evaluate applications of horizontal and multilateral wells.
- Predict well productivity using integrated reservoir and well flow models.
- Assess formation damage and completion effects on advanced well performance.
- Diagnose and analyze problems in advanced wells.
- Evaluate well stimulation treatments and their impact.
- Understand the design and field applications of intelligent wells.
- Minimize technical and economic risks in advanced well projects.
- Analyze the benefits of advanced well systems.
- Apply reservoir applications for different well types.
- Screen and categorize advanced well applications based on geological structure.
- Analyze wellbore flow and integrated well performance.
- Manage commingled production and cross flow in multilateral wells.
- Evaluate formation damage in horizontal and multilateral wells.

- Assess well completion options and their impact on performance.
- Optimize well stimulation design for productivity improvement.
- Consider reservoir simulation in advanced well projects.
- Apply intelligent completion techniques in advanced wells.
- Identify and assess risks associated with advanced well design.

WHO SHOULD ATTEND

Geologists, reservoir engineers, production and completion engineers, and development, asset, and project managers.

COURSE DURATION

5 Working Days

COURSE OUTLINES

Day 1

- Pre course evaluation.
- Identifying the applications of:
 - Horizontal
 - Multilateral
 - Intelligent wells from geological and reservoir aspects
- Assessing multidisciplinary inputs for successful screening of advanced well projects
- Predict horizontal and multilateral well productivity with integrated reservoir flow and well flow models

Day 2

- Evaluate formation damage and well completion effects on advanced well performances
- Diagnose problems in advanced wells and conduct the necessary sensitivity analyses
- Evaluate well stimulation treatments
 - Multiple-stage fractured horizontal well performance
 - Matrix acidizing results

Day 3

- Intelligent well concept
 - Design
 - Field applications
- Minimize technical and economic risk in advanced well projects
- Technical and economic benefits of advanced well systems
- Reservoir applications for various well types

Day 4

- The screening of applications for advanced well applications
- Geological structure characteristics
- Classification of advanced wells
- Reservoir inflow performance at different boundary conditions
- Wellbore flow and integrated well performance
- Commingled production and cross flow in multilateral wells
- Formation damage in horizontal and multilateral wells

Day 5

- Well completion and combined effect of completion and damage on well performance
- Well stimulation evaluation by productivity improvement
- Optimal design of stimulation
- Reservoir simulation considerations
- Applications of intelligent completion in advanced wells
- Risk identification and assessment
- Post course evaluation.

arctic