Completion and Workover

Course Duration : 5 Days

Date : 02-Sep-2024 to 06-Sep-2024

Location : London

Type of Participant : This course is designed to give the required knowledge to production, completion and drilling Engineers and Supervisors for a practical understanding of well completion design and workover operations, completion operations, including perforation, well stimulation and workover planning. It explains how completion configurations are varied to meet well objectives and to maximize well productivity. Design concepts and methods are presented together with the use of various downhole completion tools and their selection criteria.

Summary:

This course will cover extensively the completion types and design for vertical, horizontal and multilateral wells. The tubing design and optimization based on tubing performance analysis (Inflow performance analysis, liquid and gas hold up during fluid flow and forces on tubing), will be also covered. In addition, the downhole equipment, tubing accessories, wellhead equipment including subsea completions will be analyzed. Also, fluid flow through perforations and perforation techniques, communication tests, wireline operations, reservoir stimulation, and hydraulic fracture treatment design and optimization are extensively reviewed during the courses and real case studies will be presented and explained.

Objective:

By the end of the course participants will be able to:

- Apply systematic techniques in well testing, completion and operations, well stimulation and workover

- pressure losses in tubing for different rock & fluid properties
- Use different subsurface completion equipment and accessories and select packers and packer settings
- Operate the well head equipment properly and calculate geometries and dimensions casing and tubing hangers
- Identify the different special consideration for horizontal and multilateral completions on wellbore, tubing and casing configuration
- Recognize the components of perforation of oil and gas wells such as completion fishing operations, well stimulation and fracturing, well testing, and well integrity
- Carryout the various procedures of communication tests
- Practice the process of wireline operations
- Discuss the elements of reservoir stimulation and increase the knowledge in understanding of stress and rock properties involved in the simulation techniques

Contents:

Workover operations, remedial work, completion design, Inflow Performance Analysis (IPR), tubing design and optimization based on tubing performance analysis, downhole equipment, tubing accessories, wellhead equipment, perforation techniques and operations, communication tests, wireline operations, reservoir stimulation and hydraulic fracture treatments design and operations.

Daily Program:

Day 1:

- Well Completion Design Single and Dual Completion Design (Packers, Nipples, Tubing, DHSV's, Blast Joints Flow Couplings, Seal Assemblies, Expansion Joints, WLEG, Sliding Sleeves, Ported Nipples).
- Planning Essentials Prior to Drilling (Safety, Economics) Wellbore Tubing-Casing Configuration.
- Completion Procedures (Well Completion Fluids, Well Control and Damage Prevention) Work Over Considerations.

- Artificial Lift Requirements on Completion Design Inflow Performance.
- Completion Variations (Primary Completion - Oil and Gas Wells, Multiple Completion, Secondary Recovery Production Well Completion and Injection Well Completion)

Day 2:

- Interval Selection Consideration and Optimization of Tubing Dimensions for Maximum Production and Mechanism for Different Reservoir Types
- Completion Efficiency Considerations. Inflow Performance Relationship (IPR) and Effect of Partial Penetration on IPR
- Typical IPR Case Studies for Both Oil and Gas Reservoirs. Bottom Hole Flowing Pressure Requirements
- Estimation of Pressure Losses in Tubing for Different Rock and Fluid Properties
- Development of Tubing Performance Curve and Optimization of Tubing Dimensions for Maximum Production

Day 3:

- Subsurface Completion Equipment and Accessories. Packers and Material Selection
- Running and retrieving techniques of Packers
- Selection Consideration of Packers and Packer Setting operations. Tubing Accessories and Subsurface Safety and Flow Control Valves
- Typical Case Studies. Casing and Tubing Hangers
- Well Heads for Topsides
- Flow Lines, Chokes and Other Control equipment
- Valves and Flow Regulating Valves

Day 4:

- Special Consideration for Horizontal and Multilateral Completions
- Wellbore considerations, Tubing and Casing Configuration
- Well Killing
- Tubing Size Selection

- Special Equipment for Horizontal and Multilateral Completions
- Running and Operational Procedures of Subsurface Equipment
- Perforation Operations, Methods and Equipment
- Basics of Shape Charge perforation and its Penetration Mechanism
- Review of Perforating planning and Cased Hole Logs
- Selection and Evaluation of Shape Charges and API Testing
- Procedures for Shape Charge Penetration, Gun Categories and their Applications
- Special Tools and Operations
- Calculation of Flow through Perforation Tunnels and Production Estimation from the Perforation Interval
    - Well Testing
    - Well Integrity
    - Coiled Tubing Operations
    - Nitrogen Lifting
    - Wireline Operations

Day 5:

- Reservoir Stimulation and Introduction to different Stimulation Acidizing Techniques.
- Understanding of Stress and Rock Properties Involved in the Selection of Stimulation Techniques
- Hydraulic fracturing principles
- Design and Procedure of Hydraulic Fracture Treatment
- Economic Evaluation of Stimulation Treatment Coupled with Production gains
- Case Studies and Analysis of those.