

# Work-over and Completion Operations

## INTRODUCTION

- Workover is performed after the initial completion to re-establish commercial production or injection, repair of a mechanical problem in the well, or plug and abandon the well. Workover operations are usually initiated as hydrocarbon production rates decline substantially. Undesired fluid production could be the result of a poor primary cement job or water / gas coning. These workovers typically involve a remedial cement job to control the unwanted water / gas production.
- Well completion is performed at the completion of drilling operations to establish initial production from or injection into a well. Procedures of completion will vary depending on the completion type and the area. For Example flowing wells can simply be perforated and put on production. Low reservoir pressure areas often require an artificial lift mechanism (rod or submersible pump, gas lift valves, etc.) to produce at economic rates.

This training course will highlight:

- Types of Completions
- Reasons for Workovers and well preparation
- Overview of Surface and Subsurface Wellbore Equipment and Procedures
- Barriers, Completion and Workover Fluids
- Kick Causes, Warning Signs, kill methods and Risk awareness and Organizing a Well Control Operation

## OBJECTIVES

By the end of this training course, participants will learn to:

- Plan, design, manage and execute completion operation
- Improve the overall operational performance during workover operations
- Select or recommend completion equipment for given field conditions and applications
- Select the most commonly used downhole tools and explain their function

## TRAINING METHODOLOGY

- Introduction and pretest to evaluate the level of attendees to know the major points they do not know to cover it
- Presentation with clear font and background including animation and videos
- Exercise and round table discussion
- Post Test to evaluate the level of attendees understanding after the course

## ORGANISATIONAL IMPACT

Organization will gain (direct and indirect) the following:

- Employees who receive training have increased confidence and motivations
- Lower cost of production – eliminates risks because trained personnel are able to make better
- Lower turnover – brings a sense of security at the workplace which in turn reduces labor turnover
- Change management –involvement of employees in the change process

## PERSONAL IMPACT

Personnel will gain the following:

- Supervise work over operations
- Improve risk awareness for workover and completion operations
- Troubleshooting the well problems
- Minimize downtime for well operations
- Prepare full workover program

## WHO SHOULD ATTEND?

This training course is designed for those involved in the work over operations and completion design:

- Production Technologists
- Production Engineers
- Operations Engineers
- Field Technicians
- Workover Engineers

## Course Outline

### Types of Completions

- Introduction
- Wellhead Configuration
- Functional Requirements of a Completion
- Completion Equipment
- Flow Control Devices
- Packers
- Tubing
- Circulation Devices
- Expansion Joints
- Sub-Surface Safety Valves
- Christmas Trees and It's Types
- Surface Equipment

### Reasons for Workovers and Well Preparation

- Formation Damage
- Sand Control
- Acidizing
- Corrosion
- Hydraulic Fracturing
- Mechanical Problems
- Well Preparations for Work Over
- Tree and BOP Removal / Installation



### Overview of Surface and Subsurface Wellbore Equipment and Procedures

- Blowout Preventer Stacks and Components
- Workstring and Production Tubing
- Auxiliary Well Control Equipment
- Plugs & Packers
- Verification of Shut-in
- Monitoring and Recording During Shut-in
- Preparing for Well Entry
- Wireline Open Hole Operations
- Contingency Procedure for Wireline
- Contingency Procedures for Coiled Tubing
- Contingency Procedure for Coiled tubing

## Barriers, Completion and Workover Fluids

- Philosophy and Operation of Barrier Systems
- Levels of Barriers
- Types of Barriers
- Barrier Management
- Influx Detection
- Gas Characteristics and Behavior
- Pressure and Volume Relationship (Boyles Law)
- Workover / Completion Fluid Functions
- Liquids and Fluid Properties
- Testing of Downhole Completion Equipment
- Testing of Well Control Equipment Connections
- Well Control Drills

## Kick Causes, Warning Signs, Kill Methods, Risk Awareness & Organizing a Well Control Operation, Natural Flowing & Artificial Well Work Over Programs

- Well Shut-in and Well Kill Considerations
- Well Control Problems
- Objective of Well Control Techniques
- Bullheading
- Volumetric Method
- Lube and Bleed
- Forward Circulation
- Driller's Method
- Reverse Circulation
- Handling Kill Problems
- Potential Impacts of a Well Control Event
- Well Integrity
- Pressure Control Equipment / Barrier Envelope Considerations
- Personnel Assignment
- Plan Responses to Anticipated Well Control Scenarios
- Blockages & Trapped Pressure in Tubing / Wellbore
- Blockage & Restricted Access in Tubing / Wellbore
- Hydrates
- H<sub>2</sub>S considerations
- Natural Flowing and Artificial Well Work Over Programs

