Basic Drilling, Completion and Workover Operations - BDC - eLearning course

COURSE

About the Course

Offered in an entirely online format via approximately 40 hours of self-paced, online work.

This course presents the basics of drilling and completion operations, plus post-completion enhancement (workovers). Participants will learn to visualize what is happening downhole, discover what can be accomplished, and learn how drilling and completion can alter reservoir performance. Learn to communicate with drilling and production personnel.

Target Audience

Technical, field, service, support, and supervisory personnel desiring to gain an awareness of wellbore operations. Excellent for cross-training of other technical disciplines such as reservoir and facility engineers, geoscientists, supervisors, service personnel, and anyone who interacts with drilling, completion or workover engineers.

You Will Learn

Drilling Operations & Well Completions

- The advantages and disadvantages of early and modern types of drilling styles
- Rig type classification and selection for onshore and offshore drilling
- Types of platforms and techniques used for offshore rigs
- The purpose and function of non-vertical drilling, including directional and horizontal drilling
- The components of a drilling system
- The components of a drilling rig
- The drilling systems of a rig
- The purpose and function of the rotating system
- Drilling fluid properties and function
- Purpose and function of blowout preventers
- Purpose of casing and cementing
- Purpose and function of the wellhead
- Overview of different types of well completions
- Formation damage
- Methods of well perforation
- Sand production problems and control strategies in reservoirs

- Common well stimulation strategies

Defining Well Objectives

You will learn how to:

- Identify stakeholders in an effort to define well objectives
- Explain how various well objectives contribute to understanding of the asset
- Identify activities focused on achieving well objectives and how they may impact the well plan
- Explain why well objectives change over the life of the asset
- Identify commonly employed performance metrics for the drilling discipline

Bit & Hydraulics

You will learn how to:

- Identify design features and selection criteria for roller cone bit types
- Explain failure modes for roller cone bits and how this information can be used to improve performance
- Identify design features and selection criteria for fixed cutter bit types
- Explain failure modes for fixed cutter bits and how this information can be used to improve performance
- Explain tool system options which allow wellbore enlargement to a diameter greater than the internal drift diameter of a previously installed casing string
- Discuss situations where this may be required
- Explain rotary coring bit options
- Explain the relationship between cost per foot of a bit run and the cost of a bit, its rate of penetration, footage drilled, and the cost of the drilling operation
- Determine optimum time to pull a used bit based upon its cost per foot trend
- Balance competing objectives for the drilling hydraulics system
- Maintain ECD below fracture pressure of open hole
- Select nozzle sizes for adequate bit hydraulics
- Maintain operating pressure and total pump power demands within rig capabilities

Drill String & BHA

You will learn how to:

- Identify drill string components and their suppliers
- Explain the purposes of the various drill string components
- Determine drill string performance properties
- Diagnose drill string mechanisms
- Identify steps to prevent drill string failures

Drilling Fluids & Solids Control

You will learn how to:

- Identify functions of drilling fluids
- Explain fluid types and their selection criteria
- Identify fluid properties, how they are measured, and additives used to control them
- Explain benefits of solids control, solids control equipment function, and system configuration

Directional Drilling & Trajectory Design

You will learn how to:

- Describe the objectives of directional drilling
- Recognize trajectory design options and selection criteria for given surface and downhole requirements
- Clarify trajectory measurement and wellbore position calculation techniques and limitations

Oilfield Casing

You will learn how to:

- Describe the purpose of casing in an oilfield well
- State how joints of casing are connected together
- Recognize the steps in the process for drilling and cementing casing in an oil/gas well
- Demonstrate knowledge of the API/ISO casing naming convention
- Discuss the advantages and disadvantages to casing produced with seamless and ERW properties
- Identify casing descriptions and dimensions and, when appropriate, describe the correlation between them
- Identify where the four different casing applications are in a wellbore schematic

Primary & Remedial Cementing

- The manufacturing processes to blend composite materials that make up oilfield cement
- The various uses of additives to modify cement properties
- The cementing tools at the surface and downhole and the related cement displacement process to achieve a quality primary cement job to isolate a casing string
- The casing cement evaluation tools and methods to assess cement job quality
- The various practices that comprise options to attempt repair of primary cementing jobs that are referred to as cement squeeze operations
- How to calculate typical casing string cement volume requirements

- How to evaluate a cement bond log and make recommendations
- How to conduct plug and abandonment operations, what they are, basic equipment used and expected results to securely isolate the wellbore from the environment and human interaction for the future

Onshore Conventional Well Completion

- The purpose and basic operational aspects of wellhead, flow control equipment, and the major components used in a basic well completion in conventional plays
- The impact that drilling practices may have on reservoir productivity
- Specify the production target of a well and describe the type of completion or workover design components required to achieve the target
- Describe the basic properties and function of tubing
- Describe which fluid systems are the most important for implementing successful completions and workovers in wells in conventional plays
- Describe the most common equipment components used in conventional wells and what they are used for
- Describe the most relevant steps for implementing completion procedures in wells in conventional resources plays and the proper interaction with all parties involved required
- Describe the most relevant aspects of HSE in completion operations
- Describe how a well flows, the impact of well control on fluid flow, and the most common control and monitoring devices
- Describe the basic requirements to abandon conventional wells
- Specify the production target of a horizontal well, and describe how this differs from a typical vertical well

Hydraulic Fracturing

You will learn how to:

- Describe the significance of rock mechanics in all relevant production engineering operations
- Describe the most common non-chemical stimulation methods, their objectives and limitations in conventional resources plays
- Describe the most common non-chemical stimulation methods, their objectives and limitations in unconventional resources plays
- Describe the basic principles of hydraulic fracturing in conventional plays, the difference between acid and proppant treatments, and how to select optimum stimulation candidates
- Describe the basic principles of hydraulic fracturing in unconventional resource plays, the difference between slickwater and cross-linked treatments, and how to select optimum stimulation candidates

Formation Damage & Matrix Stimulation

- The basic causes of oilfield formation damage and how they are recognized

- The concept of “True Formation Damage” and the principles of formation remediation once it has been correctly identified as being the cause of lost production
- How “pseudo” damage and differs from True Formation Damage
- The principles of limestone matrix acidizing, and the chemistry and reactions involved
- The principles of sandstone matrix acidizing, and the chemistry and reactions involved
- Formation damage identification and the positive results achieved by successfully conducting matrix acidizing jobs

Sand Control

You will learn how to:

- Identify the need for sand control
- Recognize the causes of sand movement
- Define what consolidated sand is, and what it is not
- Identify both non-mechanical and mechanical methods of sand control
- Recognize that rate restriction is a valid practice to manage sand production
- Recognize that minor sand volume produced may be tolerated
- Identify various screen types for sand control
- Outline aspects of pre-packed screens for sand control
- Describe the principles of sand control screen and gravel completions
- Identify the three steps comprising a gravel pack completion design
- Describe various fluid options for pumping gravel slurry into a gravel pack completion
- Outline the function of a gravel pack “crossover tool”
- Outline the function of a gravel pack “shunt tube”
- Describe the function of a frac pack completion
- Outline the frac pack completion well performance results
- Outline the function of an expandable sand screen completion
- Identify the components of an expandable screen and possible benefits resulting from the use of expandables

Well Intervention

You will learn how to: describe the main components of the following:

- Slickline unit
- Braided wireline unit
- Electric line unit
- Conventional workover (completion) unit
- Snubbing (hydraulic workover) unit
- Coiled tubing unit

You will learn how to compare the critical operational benefit and/or constraints of each of these methods

Course Content

This course is comprised of the following skill modules (Approx. 3 Hours Each):

- Drilling Operations & Well Completions
- Defining Well Objectives
- Bit & Hydraulics
- Drill String & BHA
- Drilling Fluids & Solids Control
- Directional Drilling & Trajectory Design
- Oilfield Casing
- Primary & Remedial Cementing
- Onshore Conventional Well Completion
- Hydraulic Fracturing
- Formation Damage & Matrix Stimulation
- Sand Control
- Well Intervention

Product Details

Categories: Upstream

Disciplines: Multi-Discipline Training

Levels: Basic

Product Type: Course

Formats Available: On-Demand Virtual

Instructors: PetroSkills Specialist

On-Demand Format

|	Course |	On-Demand (Available Immediately)	$3,890.00