Advanced Drilling Technology Training

Course Price

£3050

Course Description

This course provides a working knowledge of well drilling beginning with the planning stage and progressing through the many processes involved. The course will cover theory, hands on exercises and application of case studies.

Course Objectives

To provide an in-depth knowledge of the theoretical and practical aspects of drilling operations. At the end of the course delegates will learn about the many processes involved in drilling operations, about drilling equipment, how to plan a well, and how to execute a drilling operation.

Who Should Attend

This short course is an advanced and comprehensive course intended for anyone responsible for Drilling activities and its management.

Course Content

Introduction to Well Planning

Data Collection

Predicting Formation Pressures

Fracture Gradient Determination

Casing Setting Depth Selection

Hole Geometry Selection
Bit Planning

Drilling Fluids Selection

Cementing

Directional Planning

Casing and Tubing Concepts

Casing Design

Tubing Design

Completions Effects on Well Planning and Drilling

Drillstring Design

Rig Sizing and Selection

Special Drilling Logs

Hydraulics

AFE Preparation

Fishing

Lost Circulation

Differential Pressure Pipe Sticking

The course will cover theory, hands on exercises and application of case studies.

Day 1

1. **Introduction to Well Planning**
   1. Well Planning Objectives
   2. Classification of Well Types
   3. Formation Pressure
   4. Planning Costs
   5. Overview of the Planning Process

2. **Data Collection**
   1. Offset Well Selection
   2. Data Sources
   3. Bit Records

3. **Predicting Formation Pressures**
   1. Pressure Prediction Methods
   2. Origin of Abnormal Pressures
4. Fracture Gradient Determination
   1. Theoretical Determination
   2. Field Determination of Fracture Gradients

5. Casing Setting Depth Selection
   1. Conventional Types of Casing and Tubing
   2. Setting Depth Design Procedures

Day 2

1. Hole Geometry Selection
   1. General Design Procedures
   2. Size Selection Problems
   3. Casing and Bit Size Selection

2. Bit Planning
   1. Drill Bits
   2. Bit Classification
   3. Bit Selection

3. Drilling Fluids Selection
   1. Purposes of Drilling Fluids
   2. Types of Drilling Fluids
   3. Field Testing Procedures
   4. General Types of Additives

4. Cementing
   1. Purposes of Oil Well Cementing
   2. Cement Characteristics
   3. Cement Additives
   4. Cementing Equipment
   5. Displacement Process

5. Directional Planning
   1. Purposes of Directional Drilling
   2. Design Considerations
   3. Calculation Methods
   4. Directional Drilling Techniques
   5. Multi-Lateral Production Wellbores

Day 3

1. Casing and Tubing Concepts
   1. Pipe Body Manufacturing
   2. Casing Physical Properties
   3. Pipe Connectors

2. Casing Design
   1. Maximum Load Concept
   2. General Casing Design Criteria

3. Tubing Design
   1. Tubing Design Criteria
   2. Producing Conditions Affecting Tubing Design
   3. Stress Evaluation
4. Burst, Collapse, and Tension Evaluation

4. Completions Effects on Well Planning and Drilling
   1. Reservoir and Production Parameters
   2. Surface and Subsurface Completion Equipment
   3. Types of Completions
   4. Packer Fluids
   5. Completion Factors Affecting the Well Plan and Drilling

Day 4

1. Drillstring Design
   1. Purposes and Components
   2. Drillpipe Selection
   3. Dogleg Severity Analysis
   4. Lateral Tool Joint Loading

2. Rig Sizing and Selection
   1. Rig Types
   2. Power Systems
   3. Mud Handling Equipment
   4. Rig Floor Equipment
   5. Blowout Preventers
   6. Rig Site Preparation

3. Special Drilling Logs
   1. Temperature Log
   2. Radioactive Tracers
   3. Noise Logging
   4. Stuck Pipe Logs
   5. Cement Bond Logs
   6. Casing Inspection Logs

4. Hydraulics
   1. Purposes
   2. Hydrostatic Pressure
   3. Buoyancy
   4. Flow Regimes
   5. Friction Pressure Determination
   6. Surface Equipment Friction Pressures
   7. Bit Pressure Drop
   8. Hydraulic Horsepower
   9. Jet Velocity
   10. Surge Pressures
   11. Cuttings Slip Velocity

Day 5

1. AFE Preparation
   1. Projected Drilling Time
   2. Time Categories
   3. Time Considerations
   4. Cost Categories
2. Fishing
   1. Preparation for Fishing
   2. Fishing for Stuck Pipe
   3. Wireline Tool Recovery

3. Lost Circulation
   1. Occurrences
   2. Prevention

4. Differential Pressure Pipe Sticking
   1. Recognizing the Problem
   2. Procedures to Free Drill String

CPD Unit
Continuing Professional Development
35 HOURS CPD