

# DIRECTIONAL DRILLING AND SURVEYING

## DRL043

### COURSE OVERVIEW

The goal of the course will be to enable participants to understand the operations carried out by directional drillers. They will also learn how to contribute to the design of directional and horizontal wells. The course will cover the fundamentals, design considerations, and operational aspects of directional and horizontal drilling.

### COURSE OBJECTIVES

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

- Make survey calculations.
- Interpret TVD, polar and rectangular coordinates, and vertical section.
- Interpret dogleg severity and the problems associated with dogleg severity.
- Plan a two-dimensional directional well.
- Plan horizontal wells based on the objectives of the well.
- Recognize the anti-collision and well planning.
- Understand the well Geosteering.
- Apply the best survey instrument for the job.
- Directionally drill with rotary BHAs, jetting, whipstocks, motor, steerable motors, and rotary steerable systems.
- Drill horizontally underbalanced.
- Interpret torque and drag and determine what factors will affect the torque and drag.

### WHO SHOULD ATTEND

Drilling, production and operations engineers, field supervisors, toolpushers, managers, and technical support personnel.

### COURSE DURATION

5 Working Days

## **COURSE OUTLINES**

- 1. Pre course evaluation**
- 2. Directional Drilling Fundamentals and Terminology**
  - Fundamentals, applications, and limitations
  - Terminology, well objectives, and target issues
  - Well planning: positioning and coordinate systems
- 3. Surveying and Advanced Well Planning**
  - Survey calculation methods
  - Anti-collision and well planning
  - Surveying tools
  - MWD, LWD and mudlogging
- 4. Downhole Equipment**
  - Drilling tools and deflection methods
  - Drilling motors overview
  - BHA design
  - Rotary steerable systems
- 5. Well Planning and Path Design**
  - Directional well path design
  - Horizontal well planning and calculations
  - Horizontal drilling planning
  - Drill string design
  - Torque, drag, shocks and vibrations
- 6. Hole Cleaning and Wellbore Stability**
  - Hole cleaning
  - Well bore stability
  - Introduction to multilateral wells
  - Geosteering
  - Directional drilling problems and solutions
- 7. Post course evaluation.**

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