Basic Drilling Technology in Oil & Gas

Course general description:

This introductory drilling course provides a fundamental overview of oil and gas well drilling technology. It covers essential equipment, procedures, and underlying scientific principles, making the process accessible to individuals with diverse backgrounds. Key concepts are explained in a clear and accessible manner incorporating some mathematical explanations for engineering purposes, with conceptual explanation enhanced for all participants using real reports that are utilized to reinforce key learnings.

Audience:

This course is designed for:

1. Entry to mid-level drilling engineers
2. Field supervisors
3. Technical support staff
4. Graduate engineers entering O&G industry
5. Non-drilling personnel requiring drilling operations understanding

Course objectives:

By end of the course participants will:

1. Master fundamental drilling concepts and terminology
2. Understand drilling equipment components and their functions
3. Learn well planning and drilling operations procedures
4. Develop knowledge of drilling fluids and well control
5. Gain insight into drilling optimization and problem-solving
6. Comprehend well completion basics

Course duration:

5 days

Course location:

Dubai

Course contents:

Day-1

- Pretest
- Overview of the drilling industry, terminology, and rig classifications.
- Basic well architecture and drilling rig systems.
- Key rig components: power systems, hoisting systems, and derrick assembly.
- Rotary system and circulation system basics.
- Drill string components and their roles.

Day-2

- Types of drill bits and Bottom Hole Assembly (BHA) design.
- Optimizing drilling parameters and hydraulics fundamentals.
- Key concepts: Equivalent Circulating Density (ECD) and flow rate calculations.
- Well control equipment, including BOP systems and procedures.
- Understanding and managing well control scenarios.

Day-3

- Drilling fluid types, functions, and property testing.
- Formation pressure concepts and kill methods for well control.
- Basics of casing design and primary cementing operations.

Day-4

- Basics of directional drilling and trajectory planning.
- Tools for directional drilling, including MWD/LWD systems.
- Real-time monitoring and geological considerations in well planning.
- Risk assessment and mitigation strategies.

Day-5

- Comprehensive review of key course topics.
- Case studies for practical application.
- Final assessment of knowledge.
- Course evaluation and feedback collection.
- Posttest

Methodology:

- 50% lectures & concepts
- 10% Videos
- 15% Case studies
- 15% Exercises
- 10% Discussions

Course code: (TDRL001)