TETRA TECH

N695: Introduction to Drilling, Completion and Workover Operations

Format and Duration
Classroom - 5 Days

Instructor(s): Kevin Gray

Summary

This course provides a comprehensive introduction to drilling, well completion, and workover operations, covering the people, equipment, and processes involved in each discipline. No prior industry knowledge is required—concepts are introduced in simple terms and then expanded upon to build a solid foundation of understanding.

The course emphasizes well integrity and how it is maintained across all three disciplines. Participants will gain insight into how drilling, completion, and workover operations fit within the full lifecycle of an oilfield, from exploration and appraisal to development, production, and eventual well abandonment. By the end of the course, participants will be able to communicate effectively with industry professionals, understand the key processes and technologies, and see how different disciplines interact to ensure safe and efficient operations.

This course is designed for individuals new to the industry or those seeking a foundational understanding of drilling, completion, and workover operations.

This course is delivered in partnership with Black Reiver Consulting Ltd.

Learning Outcomes

Participants will learn how to:

1. Understand key drilling, completion, and workover concepts and how they fit within the oilfield lifecycle.
2. Communicate effectively with industry professionals, understanding common terminology and acronyms.
3. Recognize the roles and responsibilities of different personnel in drilling, completion, and workover operations.
4. Understand how drilling equipment and well control systems ensure safety and environmental protection.
5. Identify the major components of well design, including drill strings, wellheads, tubing, and completion equipment.
6. Differentiate between drilling, completion, and workover fluids and their specialized roles.
7. Gain insight into formation evaluation techniques and how geology influences well design.
8. Recognize the importance of well integrity in maintaining safety and operational efficiency.

Training Method

This is a classroom course comprising a mixture of lectures, discussion, case studies, and practical exercises.

- Hands on classroom demonstrations using models and simulations.
- Instructor led interactive sessions combining PowerPoint overviews, whiteboard explanations, and class discussions.
- Step by step explanations that progressively build knowledge across drilling, completion, and workover operations.
- Extensive Q&A opportunities, allowing participants to explore specific areas of interest.
- *Optional: Half Day Rig Visit at selected locations, providing real-world exposure to rig operations.

Who Should Attend

This course is ideal for:

- Newcomers to the drilling industry or those considering a career in oil & gas.
- Geoscientists & Reservoir Engineers seeking a better understanding of drilling and completions.
- Finance, logistics, and supply chain professionals working in the upstream sector.
- Suppliers & service providers supporting the upstream oil & gas industry.
- Individuals at any academic level with an interest in drilling and well operations.

Course Content

1. Introduction to the Drilling Process

- Who does what? – The drilling team and their roles in planning, mobilization, and well execution.
- Drilling Equipment & Operations
- Rotary drilling rigs and specialist tools for directional control.
- Well surveying techniques – how we track and position the well.

2. Directional Drilling & Well Design

- Extended reach, high angle, and multilateral drilling techniques.
- Drill String Design.
- Components of the drill string and their role in well construction.
- Well surveying and positioning requirements.

3. Geological Considerations & Formation Evaluation

- Understanding the Rock & Wellbore Conditions
- Pore pressure & fracture gradient – Their role in well design and stability.
- Formation Evaluation Techniques
- Mud logging, coring, and electric line logging (LWD and wireline logging).
- How formation evaluation helps identify hydrocarbons and assess reservoir quality.

4. Drilling Fluids & Well Control Fundamentals

- The Role of Drilling Fluids (Mud)
- How drilling fluids cool, lubricate, and clean the wellbore.
- Choosing the right fluid properties for different drilling conditions.
- Completion & Workover Fluids
- How drilling fluids differ from completion and workover fluids.
- Use of brines and specialized fluids to maintain well control.

5. Well Control & Safety Considerations

- How the industry keeps hydrocarbons in the reservoir while drilling, completing, and working over the well.

6. Well Completion Design & Equipment

- Well Completion Components
- Tubing, packers, and wellhead design – Ensuring safe and efficient production.
- Completion Strategies
- Different types of completion configurations and their applications.

7. Introduction to Stimulation Techniques & Workover Options

- Well stimulation methods – hydraulic fracturing, acidizing, and well treatments.

8. Well Integrity & Lifecycle Management

- Ensuring Well Integrity Across the Lifecycle
- Design, installation, and operational considerations for well integrity.
- Wellhead & Subsurface Safety Systems
- Preventing blowouts, leaks, and integrity failures.

9. Workover Planning & Execution

- How workovers extend well life and optimize production.
- Workover methods to restore or enhance well productivity.

10. Well Abandonment & Decommissioning

- Safe and compliant procedures for well plug & abandonment (P&A).

This introductory course provides a comprehensive foundation in drilling, completion, and workover

operations. Participants will gain a well-rounded understanding of the people, equipment, and processes involved in these critical operations. By the end of the course, attendees will be able to confidently engage with industry professionals, understand well integrity principles, and recognize the key challenges of drilling and completion operations.

*Optional Rig Visit: In select locations, participants will have the opportunity for a half day drilling rig visit to observe real-world drilling and completion activities.