TETRA TECH RPS ENERGY | TRAINING

N696: Drilling Rig Selection and Inspection for Performance Optimization

Format and Duration
Classroom - 5 Days

Instructor(s): Kevin Gray

Summary

The selection and inspection of drilling rigs are critical to ensuring safe, efficient, and cost-effective well construction operations. This course provides a comprehensive approach to rig selection, inspection techniques, and performance optimization, enabling participants to make informed decisions that reduce nonproductive time (NPT), minimize operational risks, and improve overall drilling performance.

The course will cover rig selection criteria, explaining how to choose the right rig based on technical, operational, and commercial considerations. Inspection practices will be covered to enable a good understanding of regulatory, technical, and cybersecurity risks associated with rig operations. The techniques and practices for rig performance optimization to improve rig efficiency, safety, and quality management. By the end of the course, participants will have the knowledge and tools to effectively select and inspect drilling rigs, ensuring performance optimization throughout the rig's operational lifecycle. This course is at Foundation to Skilled level and is designed for professionals involved in rig selection, inspection, and performance optimization in drilling operations.

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

Learning Outcomes

Participants will learn how to:

1. Select the optimal drilling rig based on well design, operational needs, and risk management.
2. Evaluate rig specifications and capabilities to ensure safe and efficient performance.
3. Use inspection as a proactive tool to mitigate risks from tendering through operations.
4. Identify and manage emerging risks beyond mechanical failures, including cybersecurity threats.
5. Optimize rig performance through effective quality management and operational strategies.

Training Method

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

- Instructor led technical sessions covering real-world case studies.
- Step-by-step guidance on rig selection, contracting, and performance analysis.
- Handson exercises and group discussions to reinforce learning.
- Comparative analysis of rig inspection frameworks and emerging industry risks.
- Practical problem solving exercises using real-world rig performance scenarios.

Who Should Attend

This course is ideal for:

N696: Drilling Rig Selection and Inspection for Performance Optimization

Format and Duration
Classroom - 5 Days

Instructor(s): Kevin Gray

- Drilling Engineers involved in rig selection and well construction planning.
- Wellsite Supervisors & Rig Managers overseeing rig operations.
- Field Support Personnel managing equipment and logistics.
- Geoscientists & Reservoir Engineers who collaborate with drilling teams.
- Procurement & Contract Managers responsible for rig contracting and inspection.
- Anyone involved in the drilling process who needs a better understanding of rig selection and performance management.

Course Content

1. Rig Selection – Choosing the Right Rig for the Job

- Fundamentals of Rig Selection – Types of rig
- Basic rig sub systems
- Understanding Rig Requirements
- Key rig selection criteria based on well design, location, and technical needs.
- Importance of well design calculations in selecting a rig.
- How project scope influences rig selection (e.g., HPHT wells, deepwater operations, extended reach drilling).

2. Technical Considerations in Rig Selection

- Evaluating rig specifications – Hoisting capacity, mud systems, BOP ratings, power systems.
- Matching rig capabilities with operational requirements – Depth capacity, torque, circulation rates.
- Importance of rig equipment – Differences between land rigs, jackups, semisubmersibles, and drillships.

Practical Exercise – Rig Selection Bingo (For selected deliveries of course). Participants work in groups to analyse available rigs and select the best option for a specific well design. Teams present their decisions, discussing the trade-offs and risks in rig selection. Based on simulated tender process.

3. Additional Rig Selection Considerations

- Risk Based Approach to Rig Selection
- Identifying key risks associated with underspecified rigs.
- Understanding technical, financial, and operational trade-offs.

4. Evaluating Commercial & Performance History

- Analysing historical rig performance – What past data does and doesn't tell you.
- Assessing contractor reliability and safety records.

N696: Drilling Rig Selection and Inspection for Performance Optimization

Format and Duration
Classroom - 5 Days

Instructor(s): Kevin Gray

5. Rig Inspection – Ensuring Operational Readiness

- Fundamentals of Rig Inspection
- Introduction to Rig Inspection Standards
- Overview of key regulatory bodies & industry standards (API, IADC, ISO, IMO for marine rigs).
- Inspection types – Precontract, premobilization, operational, and end of contract inspections.
- How different types of inspection impact operations.

6. Special Considerations for Marine Rigs (Optional module)

- Unique challenges of floating rigs and MODUs (Mobile Offshore Drilling Units).
- Compliance with maritime classification societies (ABS, DNV, Lloyd's Register).

7. Expanding the Role of Inspection

- Proactive Inspections for Performance Assurance
- Ensuring the rig meets technical and safety expectations.
- How inspections can reduce NPT and enhance efficiency.
- Inspection as a continuous process beyond regulatory compliance.

8. Emerging Risks: The Role of Cybersecurity in Rig Operations (Optional Module)

- Cybersecurity threats in modern rig systems.
- Digital security best practices for rig management.
- Case studies of cyber threats in the drilling industry.

9. Rig Performance Optimization

- What Inspections Won't Tell You
- Understanding the Limitations of Inspections
- Why inspections don't always reflect real world rig performance.
- The difference between quality management vs. safety management.

10. Maintaining Quality in Rig Operations

- How to ensure continued performance after inspections.
- Operational practices for maintaining rig efficiency.
- Optimizing Performance & Managing Underpowered Rigs
- Managing the Challenges of Underpowered Rigs
- Dealing with limitations in hoisting capacity, circulation, and torque.
- When and how to upgrade rig equipment.

N696: Drilling Rig Selection and Inspection for Performance Optimization

Format and Duration
Classroom - 5 Days

Instructor(s): Kevin Gray

11. The Role of People & Processes in Performance Optimization

- Why performance is more than just equipment – The impact of crew competence and workflows.
- Best practices for ensuring operational excellence.

This comprehensive training program provides participants with:

- A structured approach to rig selection and inspection, improving wellsite safety and efficiency.
- The ability to identify key selection criteria, ensuring rigs meet operational and technical requirements.
- A deep understanding of inspection best practices, from regulatory compliance to emerging risks like cybersecurity.
- Practical experience in analysing rig performance, optimizing drilling efficiency, and managing operational risks.

Participants will leave equipped with the knowledge and tools to select, inspect, and optimize drilling rigs, ensuring safe and efficient operations throughout the well's lifecycle. This course can be tailored to regional regulations, company specific requirements, and operational priorities.