MERCURY

Drilling Optimization Techniques Course

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Introduction:

Drilling time is costly, and non-productive drilling time is exceptionally expensive. This drilling optimization techniques course is essential for adequately defining and monitoring KPIs, data management, quantifying uncertainty in the subsurface, risk assessment, and leveraging modern drilling technologies and trends. Drilling performance optimization plays a significant role in improving these aspects.

With oil prices stabilizing due to the rise of fracking and enhanced oil recovery, even as several large oil producers face significant challenges, it has become imperative for engineers to enhance the optimization of drilling operations to reduce non-productive drilling time and, consequently, production costs.

In the era of Big Data, the benchmarking, identification, application, and implementation of drilling optimization techniques are crucial and must be used by knowledgeable engineers to effectively achieve oil well drilling optimization.

Targeted Groups:

This drilling optimization techniques course is for professionals in various sectors, such as engineering, oil and gas exploration, geology, and reservoir modeling.

This drilling optimization techniques training aims to deepen their understanding of drilling parameters optimization. The course illustrates the interdependence of data across departments, benefiting:

- Reservoir Engineers.
- Petroleum Engineers.
- Risk Managers.
- Drilling Managers.
- Field Service and Related Operations.
- Tool Pushers.
- Drillers.

Course Objectives:

Upon completing this drilling optimization techniques course, participants will:

- Recognize the influence of drill string mechanics.
- Understand strategies to avoid drilling problems.
- Appreciate the environmental impact of drilling activities.
- Implement methods to manage and control non-productive time.
- Identify and closely monitor Key Performance Indicators KPIs.
- Implement real-time well construction and optimization management, utilizing drilling optimization software and techniques.

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Targeted Competencies:

Participants in this drilling optimization techniques training will develop competencies in:

- Integrate reservoir modeling with drilling operations and well design.
- Perform essential engineering calculations.
- Complement conventional petroleum engineering analysis with Big Data Analytics.
- Understand non-conventional drilling methodologies.
- Exploring advanced drilling technologies.

Course Content:

Unit 1: Drilling and Well Engineering Calculations:

- Drill String Mechanics.
- Oil and gas Well Design Concepts.
- Drilling Fluid Calculations.
- Directional Drilling.
- Measurement while Drilling Systems MWD.
- Controllable and Uncontrollable Non-Production Time NPT.

Unit 2: Drilling Optimization:

- Introduction to Drilling Optimization.
- Petroleum Rock Mechanics.
- Establishing KPIs.
- Reference to Common Industry KPIs.
- Wellbore Stability Analysis.
- Rock Strength and Rock Failure Dynamics.

Unit 3: Quantitative Risk Assessment:

- Overview of the Risk Management Process.
- Cost-time Analysis in Drilling Projects.
- Identifying and Mitigating Common Drilling Problems.
- Measurement and Evaluation of Risk in Drilling Operations.
- Introduction to Limit State Function and Probability Failure Function.

Unit 4: Well Engineering Design and Construction Optimization

- Optimization of the Drilling Process and Its Components.
- Craft an Effective Drilling Plan.
- Monitor the Rate of Penetration.
- Additional Goals of Well Drilling and Construction.
- Technical Limits and Quantum Change in Drilling Limits.

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Unit 5: Drilling Optimization Tools and Technologies

- Explore Advanced Drilling Techniques.
- Unveil New Developments in Drilling Technology.
- Leverage Drilling Optimization Software for Enhanced Performance.
- Optimization Techniques for Well Site Parameters and Drill String Inventory.
- Utilize and Importance of Kill Sheets in Drilling Operations.

Conclusion:

Upon completing the drilling optimization techniques course, participants will become drilling optimization engineers capable of implementing cutting-edge technologies and methodologies to streamline drilling processes and drive industry standards.