

KRONOS™

Deepwater Drilling Fluid Systems



NEWPARK
DRILLING FLUIDS



Deepwater Drilling Fluid

Newpark Drilling Fluids creates ground-breaking technologies that drive operational efficiencies for customers, in harmony with the environment. That's what differentiates Newpark from all others. As a proven service provider in the deepwater and ultra-deepwater markets, Newpark is now extending its offshore reach with a comprehensive deepwater initiative. Enhanced and customized fluids technology, expanded Fourchon infrastructure and deepwater-focused personnel demonstrate Newpark's commitment to customer service in the Gulf of Mexico.

TECHNOLOGY: Deepwater Drilling Fluid Systems

The Kronos™ drilling fluid is Newpark's synthetic-based invert emulsion system designed primarily to comply with the environmental requirements for non-aqueous fluids used in deepwater. The system design and components accommodate versatility of formulation for virtually any deepwater drilling application.

Features of the Kronos™ System

- > Thermal stability
- > Excellent environmental performance
- > Tolerant to contaminants such as salt, cement and drilled solids

Kronos™ Flat Rheology

The Kronos™ Flat Rheology system satisfies requirements for deepwater applications by providing consistent fluid rheology over a wide temperature range. Kronos™ fluids may be formulated for consistent rheology at temperatures ranging from 40°F to over 250°F to cost-effectively minimize equivalent circulating densities (ECD).

Benefits of the Kronos™ Flat Rheology System over conventional systems

In low-temperature sections (near sea floor)

- > Reduced gelation
- > Improved ECD control for reduced potential of lost circulation

In high-temperature sections (near the bit)

- > Efficient hole cleaning for reduced torque and drag
- > Barite suspension for sag control

Kronos™ Low ECD

Narrow margin drilling is a challenge for operators globally. The Kronos™ Low ECD system minimizes pressure losses and optimizes flow rates by lowering overall rheology characteristics and minimizing sag potential over a wide range of pressures and temperatures. The system features suitable suspension characteristics to effectively clean the wellbore while maintaining the ECD within the required pressure window. It is appropriate for well sections with small wellbore diameters.

Benefits of the Kronos™ Low ECD System compared to flat rheology formulations

Through finer weight material particle size

- > Lower sag tendencies
- > Lower ECD spikes for reduced lost circulation

Through thinner fluid with lower gels

- > Enhanced hole cleaning for reduced torque and drag
- > Increased ROP
- > Faster tripping
- > Improved cementing for enhanced well integrity

PEOPLE: Experience

The Newpark Drilling Fluids team consists of deepwater dedicated fluids chemists, engineers,



technicians and support staff. Recognizing the complex nature of deepwater projects, Newpark's training program focuses on key challenges including: downhole rheology and cuttings transport, hydraulics, shallow hazards, riserless drilling, gas hydrates, lost circulation, wellbore instability, well control, environmental compliance and safety. Investing in our people means that we are becoming our customers' most valued provider of technology-based drilling fluids, worldwide.

INFRASTRUCTURE: Port Fourchon Expansion

The Newpark Drilling Fluids presence at Port Fourchon is undergoing a major expansion to meet the growing needs of the deepwater market. Throughout the expansion, Newpark is using Lean Six Sigma principles such as Design for Manufacturing and 5S Housekeeping. Design for Manufacturing includes quality function deployment, lean flow process, system reliability and process efficiencies. 5S Housekeeping improves productivity through organization, neatness and standardization. An

example of the processes improved by Lean Six Sigma is a unique automated system capable of hauling bulk sack material to the mixing pits. This new system protects the wellbeing and safety of workers by eliminating manual handling requirements, while providing faster, more efficient transport for safe, streamlined operations.

Increasing the mixing capacity and transfer rates for both synthetic and water-based drilling fluid will allow for reduced time to build and load fluids for offshore delivery. The facility will be serviced by a larger fleet of barges to maintain the supply of offshore grade bulk barite from Newpark's wholly owned subsidiary, Excalibar Minerals LLC.



Newpark's unique focus on drilling fluids has created a dynamic customer-centric culture. From the support offices at the Newpark Technology Center to the rig floor, Newpark Drilling Fluids is dedicated to answering the call as the industry focuses on deepwater operations.



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