



Hydros™ High-Performance Water Based Fluid System Drills Intermediate Sections Under Budget and Ahead of Schedule in Ultra-Deepwater, Utilizing Controlled Mud Level (CML) Managed Pressure Drilling, Gulf of Mexico

Hydros™ high-performance water-based fluid system (HPWBM) designed to increase operational efficiency, reducing HSE exposure, and deliver enhanced hole-cleaning in ultra-deepwater environment

CHALLENGE	SOLUTION	RESULT
<ul style="list-style-type: none"> • >9,300' water depth • Hole angle @ 91° • Low fracture gradient & potential lost circulation • Minimize ECD • Formation Inhibition 	<ul style="list-style-type: none"> • Hydros™ HPWBM system • Lost circulation prevention & mitigation plan decision tree created • ClearTrack™ Hydraulics Modeling Software with CML Capabilities 	<ul style="list-style-type: none"> • Reduced operational steps • Reduced ECD and surge pressures • Excellent Directional performance • Enabled successful running of casing and cementing

OVERVIEW

Narrow margin drilling is a significant challenge for operators in deepwater. In using an HPWBM, the goal is to streamline workflow with a reduced number of operational steps, without compromising drilling performance.

The Hydros™ HPWBM system is not only environmentally friendly, but also provides excellent clay swelling inhibition and anti-accretion performance.

CHALLENGE

A major operator in the GOM Ultra-Deepwater market planned the intermediate section as part of a larger horizontal, open hole gravel pack completion project. This project represents the use of CML to drill and complete a well in a water depth of >9,300'.

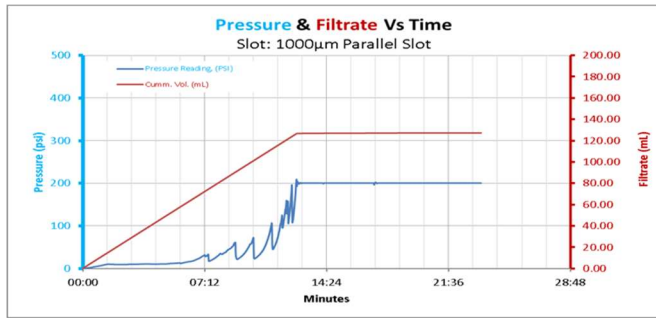
The drilling window margins was 0.1 lb/gal. An anticipated low pore pressure and low fracture gradient created a potential for lost circulation.

SOLUTION

On the intermediate sections, the operator displaced to Hydros HPWBM system with a density of 9.8 lb/gal (1.17 sg). During the interval, Newpark maintained the maximum observed ECD with cuttings on average @ 9.85 lb/gal (1.18 sg). The average deviation in low shear rheology and gel strengths throughout the interval was less than 3%.

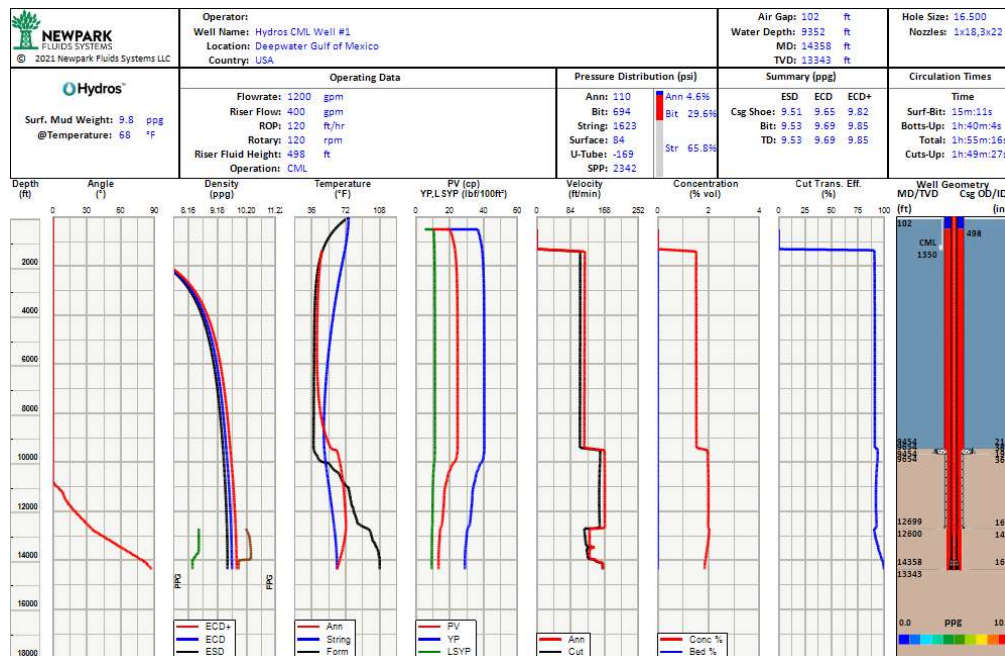


Background LCM Lab Testing:



The results showed that the Background LCM blend used had the ability to seal the 1,000micron slot up to a max differential pressure of 200 psi in <14 minutes. The amount of fluid that passed upon reaching maximum differential pressure was <130 ml. Once maximum pressure was achieved it was held for ~10 minutes for observation. The seal did not break back during the entire test.

Hole cleaning and hydraulics were modeled also using Newpark's ClearTrack™ software with CML Capabilities.



RESULTS

The Hydros HPWBM system was used to drill the intermediate interval, achieving all planned performance specifications, such as wellbore stability, ROP, hole-cleaning, reduced torque and drag, as well as prevention of bit balling and accretion.

The Hydros system provided low viscosity at low flowline temperatures and delivered low, flat gel strength. Hydros reduced ECD spikes and eased surge pressures while running the casing.

Environmental benefits included reductions in HSE exposure, rig cleaning time and the elimination of potential waste streams.

The transition to Hydros also eliminated the need for a dedicated wellbore cleanout run further reducing well cost.

No losses to the formation were experienced as a result of following the customized LCM Decision Tree Matrix.

Newpark delivered the section ahead of time and under budget.