



DeepDrill® High-Performance Water-Based Drilling Fluid System Replaces Oil-Based Mud in Algeria, Matching ROP Performance and Meeting Environmental Regulations

The DeepDrill® Drilling Fluid System allowed the operator to adhere to strict environmental regulations while completing a successful drilling operation.

CHALLENGE	SOLUTION	RESULT
<ul style="list-style-type: none"> Due to new environmental restrictions, find a water-based drilling fluid capable of displacing traditional D-OBM extensively used in the area 	<ul style="list-style-type: none"> Newpark's proprietary HPWBM DeepDrill system 	<ul style="list-style-type: none"> The DeepDrill system is an environmentally friendly fluid solution and successful alternative to traditional D-OBM

OVERVIEW

To satisfy the new environmental requirements in the Hassi Messaoud (HMD) field and neighboring areas, an experienced operator was requested by the local authorities to gradually switch from the traditional OBM to a WBM.

CHALLENGE

In addition to the strict environmental considerations, the operator produced the following performance objectives which had to be met:

- Mud stability throughout the drilling process
- Ensure borehole stability and acceptable gauge hole
- An acceptable ROP compared to OBM
- Perform log, run casing to bottom, and perform cement job without any issues

SOLUTION

Newpark Drilling Fluids proposed the DeepDrill® System as a High Performance WBM alternative to the traditional Diesel OBM system which had been typically used by the operator. Extensive testing data confirmed that the use of the following key chemicals would be the best solution:

- Avapolyoil – a blend of polyhydroxyl alcohols designed to provide optimum inhibition and form wellbore membrane
- Avaperm NF - an environmentally friendly amine-based clay inhibitor



- Avapolymer 50/50 – a blend of organic polymers designed to stabilize hydratable and dispersible shale while at the same time reducing filtrate invasion

After evaluating drilling challenges in the offset wells, the project engineers established the following benchmarks for the design of an appropriate technical and cost-effective fluid solution:

- Use salt-saturated brine to avoid washout through salt formations
- Mud Weight up to 2.08 sg through the pressurized LD2 formation characterized by CaCl₂ brine influx

RESULTS

The operator successfully drilled the 16", 12 ¼" and 8½" section with HPWBM DeepDrill® for the first time in HMD area.

The system satisfied the performance criteria defined by the operator by providing adequate wellbore stability without any clay bit balling and accretion issues. In addition, the ROP was similar to OBM despite the use of RR/Poor HSI-Bits.

The well was successfully logged, and the casing was then successfully run into hole and cemented.