

Magnus RSS, MPD Techniques Delivered 6-in. Reservoir Section in Deep Drilling in One Run, Avoided Any Failures, Eliminated NPT

Objectives

- Drill a section from the Dharuma to the Middle Marrat formation. The wide mud weight range and narrow gradients of this reservoir section proved challenging when trying to control the well.
- Avoid stuck tools and loss situations by closely monitoring the equivalent circulating density (ECD).
- Drop the inclination from 42° to 22°.

Our Approach

- Even though the well was planned with a competitor, the operator turned to Weatherford for its demonstrated success rate of drilling these kinds of sections for the first time with this type of casing and well profile using managed pressure drilling (MPD) techniques.
- Weatherford experts recommended the Magnus rotary steerable system (RSS) for the dexterity of its push-the-bit technology to deliver reliable, high-performance drilling with precise directional control.
- In addition to the Magnus RSS, the bottomhole assembly (BHA) included the MFR tool and the HEL system.
- Field personnel deployed the BHA and drilled 1,258 ft (383 m) of the 6-in. section with the required dogleg and trajectory. The BHA featured 3 stabilizers to mitigate the downhole vibration encountered in this type of well and section.
- While MPD techniques were not initially used, the wide range of mud weights compelled Weatherford personnel to mobilize an MPD solution before entering the reservoir section.
- The operation continued drilling the section safely to total depth (TD). The BHA was tripped out of the hole safely and the objective was achieved without any failure.

Value to Customer

- Weatherford reached the target depth, and the section was safely drilled with MPD in one run.
- Key to the success of this operation was the capability of activating and deactivating the tools at the optimal time and place, enabling proper steering and maintaining the trajectory per the well plan. This capacity conserved the batteries and avoided any failures that would require field personnel to trip the string out of the wellbore.



The Magnus RSS uses proportional steering control along with autopilot mode to optimize wellbore quality and minimize downlink time.

LOCATION

Kuwait

FORMATION

Dharuma to Middle Marrat

HOLE SIZE AND ANGLE

6-in. section, from 42° to 22°

DEPTH

1,258 ft (383 m)

PRODUCTS/SERVICES

- Magnus RSS
- Managed Pressure Drilling
- MFR™ multi-frequency resistivity
- HEL™ hostile-environment-logging measurement-while-drilling system

