

RipTide® Tandem Reamer, Magnus® RSS

Drilled, Enlarged Section of Well and Rathole Killer, Saved 40 Hours Rig Time

Objectives

- Drill and enlarge a 12 1/4- x 14 1/2-in. hole section (including rathole killer) in the Cretaceous and Jurassic formation in two runs. The first run was from 4,619 to 6,525 ft (1,408 to 1,989 m), the second run from 6,525 to 7,142 ft (1,989 to 2,177 m), with principal and rathole killer to 7,142 ft (2,227 m).
- Maintain ROP values not less than 22.97 ft/hr (7 m/h) for the first run and 19.69 ft/hr (6 m/h) for the second run, including the rathole killer.
- Maintain the trajectory in a tangential section with an inclination of 25° and an azimuth of 298°, stay within 16.4 ft (5 m) of the planned well trajectory and maintain good well quality.

Our Approach

- Before the job, the Weatherford drilling and evaluation team met with the customer to establish the scope of work and analyze offset well data. To counteract torsional vibration while improving drilling efficiency, the team recommended a different bit with specialized cutter technology.
- Using proprietary drilling engineering software and criteria, the team performed an extensive analysis including bottomhole assembly (BHA) design and stabilization, torque and drag analysis, hydraulics modeling, bit nozzle optimization, and a bending stress test considering the well profile to achieve an optimized drilling assembly and with improved drilling performance.
- The drilling assembly included the Magnus rotary steerable system (RSS), RipTide drilling reamer, HEL™ hostile-environment logging system, and the MFR™ multi-frequency resistivity sensor. The RSS and reamer combination enabled the customer to improve hole conditions while drilling, resulting in rig time savings and seamless casing deployment.
- The RipTide drilling reamer achieved an ROP of 31.6 ft/hr (9.65 m/h), 38% faster than the target ROP for the first run, and, on the second run, achieved a 39% increase in ROP vs plan.
- A drilling engineering and optimization team at a real-time operation center (RTOC) analyzed live data transmitted from the rigsite via WITSML to optimize the drilling process, which resulted in 208 circulating hours—the most on a Magnus RSS run to date.
- The total enlargement section was 2,687 ft (819 m) with an average ROP of 30 ft/hr (9.14 m/h) there were RSS drilled for 5,367 ft (1,636 m) until reaching total depth (TD) at 13,741 ft (4,107 m). The entire underreaming-while-drilling operation was completed without nonproductive time (NPT).



The RFID RipTide rathole killer drilling reamer can be activated by both pressure cycling and RFID to simultaneously drill and enlarge boreholes while eliminating ratholes.

LOCATION

Ciudad del Carmen, Mexico

WELL TYPE

Offshore, J-type, oil

HOLE SIZE AND ANGLE

12-1/4 x 14-1/2 in., 25°

DEPTH

7,332 ft (2,235 m)

PRODUCTS/SERVICES

- RipTide drilling reamer
- Magnus RSS
- HEL MWD system
- MFR multi-frequency resistivity sensor
- RTOC



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Value to Customer

- The RipTide drilling reamer tandem with the rathole killer and the Magnus RSS enabled the customer to reach the planned TD with the rathole killer only 26.2 ft (8 m) from the bottom of the hole to eliminate the requirement for an additional dedicated run to ream out the rathole, saving 40 hours of rig time.
- Dull Grading classification on the cutter blocks used for the two runs showed the cutter blocks to be in very good condition with an option for reuse in future rathole elimination applications to optimize cost.

