RipTide® Quattro Reamer, Magnus® RSS

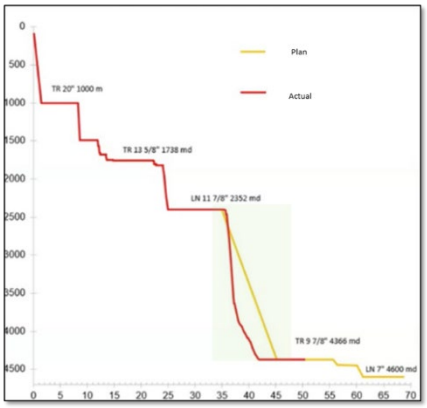
Drills, Reams 6,400 ft in One Run in First Deployment in Mexico, Saves $270,000 USD

Objectives

- Drill 6,467 ft (1,971 m) in one run, enlarging the wellbore from 10-5/8 to 12-1/4 in.
- Maintain the continuity of the well while enlarging up to the casing point and isolating the high-pressure zone from the next low-pressure section (naturally depleted formation) and sustain the equivalent circulating density (ECD) within the stability window.
- Optimize the rate of penetration (ROP) to no less than 32.80 ft/hr (10 m/hr) while drilling different formations with uniaxial compressive strength (UCS) from 5,000 to 18,000 psi and pass through a normal geological fault.
- Stay within 16 ft (5 m) of separation from the planned well trajectory.

Our Approach

- After setting 13 3/8-in. casing to a measured depth (MD) of 7,870 ft (2,400 m), the customer decided to drill the next interval with a 10 5/8-in. bit to enlarge the hole to 12-1/4 in. Based on the historical performance of the Weatherford RipTide cutter blocks as manufactured by Ulterra, the goal was to reach the casing point in a single run.
- The Weatherford drilling engineering team analyzed the offset well data and well profile and recommended a fit-to-purpose bit to be run with the Magnus rotary steerable system (RSS) and the RipTide reamer. The team provided a specific cutting structure to meet the expected ROP, durability, and mitigate torsional vibration.
- A key advantage helping the selection of the RipTide Quattro reamer is the deactivating option, a feature required to eliminate contact points during the trip when flow is necessary.
- The synchronization between the RipTide Quattro reamer and the Ulterra PDC bit achieved a footage over 6,233 ft (1,900 m) in abrasive and consolidated formations, with the cutters experiencing minimal wear compared to the hostile conditions of the formation.
- The Weatherford team, with support from the Real-Time Operations Center, analyzed real-time data 24/7 to optimize the drilling process, resulting in 225 operational hours, 168 circulating hours, and 6,466 ft (1,971 m) drilled.
- Two complete cycles were used successfully, and two activations and two deactivations were achieved through the extrusion balls. Field personnel validated the parameters on the surface that guaranteed the operation of the RipTide Quattro controller.



In the first run of the tools in Mexico, the combination of the RipTide Quattro reamer and the Magnus RSS reached the top of the Upper Cretaceous formation with accurate directional control, saving 3 days of drilling vs. scheduled.

LOCATION
Mexico

WELL TYPE
Offshore, slant

FORMATION
Shale, mudstone, and bentonite

HOLE SIZE
10 5/8 x 12 1/4-in.

CASING SIZE
Intermediate, 9-7/8 in.

TEMPERATURE
273°F (134°C)

DEPTH
In-depth: 7874 ft (2,400 m)
TD: 14,340 ft (4,370 m)

PRODUCTS/SERVICES

- Magnus RSS
- RipTide Quattro drilling reamer
- MFR™ multi-frequency resistivity sensor
- HAGR® high-temperature azimuthal gamma ray sensor
- ShockWave™ sonic tool
- BAP™ bore and annular pressure sensor
- HEL™ hostile-environment-logging measurement-while-drilling system

Weatherford®

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Value to Customer

- The programmed ROP of 32.8 ft/hr (10 m/hr) was optimized with | an actual ROP of 60.6 ft/hr (18.5 m/hr), saving three days of drilling vs. scheduled.
- The Weatherford solution successfully completed the 9 7/8-in. casing to TD, effectively isolating the high-pressure zone and ensuring an integrated zone for drilling the reservoir stage.
- Weatherford drilling technologies helped maintain the planned well trajectory, finishing the hole section with a distance-from-planned trajectory of 13.8 ft (4.22 m).
- The optimization of the section (10-5/8 x 12-1/4 in.) reduced operating time and avoided trips to change directional tools, underreamer, or the bit.
- The performance of the cutter blocks allowed borehole enlargement in hard formations with a PDC bit dull grading of 0-1-BT-S-X-I-NO-TD and a RipTide reamer dull grading of 0-1-CT-D-X-I-NO-TD.
- The flawless execution at all levels reduced the customer's overall operating costs.