Modus™ Managed Pressure Wells Solution

Overcomes Total Fluid Loss Conditions, Saves $4.1 Million For Operator In Debut Adoption

The Modus managed pressure wells solution enhances operational performance with simple, precise pressure management while capturing data in a digital platform.

Objectives

- Engineer a solution for safe and efficient drilling of formations with a history of total losses and stability issues.
- Eliminate invisible lost time spent on ballooning and associated recovery procedures.
- Establish an alternative methodology that will significantly reduce the amount of mud losses, lost circulation material (LCM) pills, and cement plugs encountered in offset wells.

Our Approach

- During the planning and preparation phases, Weatherford experts collaborated closely with the operator to develop a solution using managed pressure drilling (MPD) techniques. Since this was the operator's first experience with MPD, a comprehensive understanding of the available technologies and features to address the specific challenges was provided.
- Weatherford engineers analyzed data from previous wells and recommended the Modus managed pressure wells solution as the appropriate technology tier to mitigate the formation issues. During the preplanning phase, Weatherford provided MPD training to both the operator and drilling contractor personnel. These training sessions offered a foundational understanding of MPD and its ability to overcome various drilling challenges.

LOCATION
Middle East

HOLE SIZE AND ANGLE
12-1/4 in., horizontal

CASING SIZE
11-3/4 in.

LINER SIZE
11-3/4 in.

DEPTH

MPD drilling in PMCD mode:
7,800 to 9,500 ft (2,377 to 2,895 m)

Total loss circulation:
7,800 ft (2,377 m)

PRODUCTS/SERVICES

- Model 7875 rotating control device
- Modus managed pressure wells solution

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Our Approach (continued)

- Classroom instruction was complemented by using a drilling and MPD simulator, creating a realistic learning environment that helped personnel become comfortable using the technology under different well conditions.
- Weatherford field personnel installed the Modus package on the rig with minimal impact on rig uptime and successfully completed pressure and fingerprinting tests. While drilling the 12 1/4-in. section, the losses-prone formation was encountered at 7,800 ft (2,377 m), resulting in a loss of circulation identified by the Modus system.
- After conventional lost circulation treatments proved ineffective, the operator agreed to transition to pressurized mud cap drilling (PMCD) as per the engineered solution that was designed for this scenario. By using seawater as the light annular fluid and applying surface backpressure, drilling continued successfully to the target depth of 9,500 ft (2,895 m) measured depth (MD). The section was then underreamed to 14 in. in PMCD mode, and the 11 3/4-in. liner was run and cemented in place without issue, securing the well.

Value to Customer

- Collaboration between Weatherford engineering and the operator drilling and subsurface departments resulted in a well-structured MPD strategy to address anticipated formation challenges. This enabled a seamless transition to PMCD using the Modus system after conventional LCM treatments failed.
- The implementation of PMCD allowed for the successful drilling and underreaming of the 12 1/4-in. section to target depth, saving four days of rig time compared to the same section in an offset well drilled in the same formation.
- Significant material savings were also achieved, including reduced consumption of LCM and drilling mud. Based on historical well data, this resulted in cost savings of $3.2 million for the operator, excluding logistics costs.
- By using the Modus managed pressure wells solution, total value generated for the operator in this section amounted to $4.1 million.

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