

PressurePro® Set-Point Choke System

Maintained CBHP During MPC Operations, Enabled Drilling of Two Geological Units in One Hole Section

Objectives

- Safely manage narrow operative window while tripping liner in the hole, drilling mud displacement, and managing pressure during cementing operations without associated influxes in the upper section and losses of drilling mud in the lower part of the 8 1/2-in. hole section.
- Perform managed pressure cementing (MPC) of the 7 1/4-in. liner in the tight operating drilling window, avoiding any losses of cementing slurry into the wellbore.
- Drill a 6-in. hole section to divert the fluid returns flow path through the PressurePro set-point choke system.
- Perform a differential sticking test with the help of the managed pressure drilling (MPD) system prior to drilling geological formation #2. Geological formation #2 will be drilled only if both the openhole formation integrity test with the rig choke and differential sticking tests with MPD choke are successfully completed.
- Add flexibility to the drilling operations by adjusting the bottomhole pressure instantly by the means of the MPD choke manifold.
- Reduce the potential nonproductive time (NPT) related to a kick/loss scenario. Allow a kick and loss detection capability and the ability to manage bottomhole pressure while the drillpipe is moving.

Our Approach

- Weatherford experts deployed the PressurePro system, including a Coriolis mass flowmeter and rotating control device RCD 7100. The customer decided to divert flow through the PressurePro system after reaching total depth (TD) of the 8-1/2 in. hole section in an attempt to balance the pit volume gain/loss trend.
- The system's capability helped the customer balance the well and reduce NPT. Managed pressure cementing of 7 1/4-in. liner was followed by a Weatherford-prescribed MPC schedule to maintain stability of the cementing operation as precisely as possible in almost no window condition with its implied kick/loss scenarios.
- At the bottom of geological formation #1, Weatherford experts performed two stages of a differential sticking test with applied surface backpressure (SBP) SBP of 1,100 psi (7.5 MPa) and 2,140 psi (14.7 MPa), accordingly. With the successful results of the MPD differential sticking test, it was possible to drill further to the desired target depth in the same hole section for the first time in the history of the customer's drilling operations in West Kazakhstan.



MPD solutions, including the rotating control device, enabled closed-loop drilling to the target depth with no NPT.

LOCATION

West Kazakhstan

WELL TYPE

Onshore, J-type, development

FORMATION

Salt, anhydrite, sandstone

MEASURED DEPTH

16,108 ft (4,910 m) with 26.50° inclination

PRODUCTS/SERVICES

- Constant bottomhole pressure (CBHP) application
- PressurePro set-point choke
- RCD Model 7100
- Coriolis mass flowmeter
- 4-in. HP/LP flowline



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Value to Customer

- Used the MPD constant bottomhole pressure (CBHP) technique in a narrow, challenging operating window in the 8 1/2-in. hole section.
- The MPC operation of the 7 1/4-in. liner was performed with the PressurePro set-point choke system without any health, safety, or environment (HSE) incidents.
- The MPD system enabled the customer to drill deeper in geological formation #2 in one hole section and to reach a reservoir with significant potential for production and profits. The application of MPD techniques to the target depth of 16,108 ft (4,910 m) was achieved in safe conditions.
- By performing the CBHP variant of MPD with the electric PressurePro system, Weatherford personnel performed the running through the 7 1/4-in. and lower completion faster and safer than previous operations without any associated NPT.

