

PRUITT CASE STUDY

Unconventional MPD Solution: 'Casing while Drilling' with 'CBHP MPD'

Pruitt recently expanded their range of Constant Bottomhole Pressure (CBHP) Managed Pressure Drilling (MPD) solutions to include 'MPD - Casing while Drilling' when they provided unconventional CBHP MPD solution to two different operators in North America. These operators had to set aside their plans to drill on these multi-well pads for over a decade because of extreme faulting and fracturing associated with these formations, practically eliminating any drilling window before reaching the Target Depth.

Optimal solution was to initiate drilling with Surface Backpressure (SBP) CBHP MPD with conventional drillpipe & BHA until drilling window ceased to exist, followed by CBHP MPD Drilling with Casing to TD.

Challenges/Problems: (a) Extreme fracturing and faulting in the formation resulted in several failed attempts to reach TD forcing different operators to wait for more than a decade to drill in these formations, and (b) non-existing drilling pressure window to reach TD with CBHP MPD setup using conventional drillpipe and BHA, due to drilling issues related to extremely narrow pressure windows, such as: surge-swab cycles, kick and loss cycles, casing running and cementing issues.

Action/Solution: Design, plan, and execute CBHP MPD in 2 phases (1) drill with conventional drillpipe & BHA using CBHP MPD until drilling window ceases to exist, (2) drill with CBHP MPD Drilling with casing to TD.

Execution/Results: Successfully drilled to Target Depth and completed multiple wells by staying within the pressure window. Any influx volume was limited to less than the maximum allowable limit using Pruitt's advanced kick detection system and was circulated out safely using Pruitt's CBHP MPD equipment.

Details: On these wells losses were seen very early. Drilling continued with Anchor Point MPD (100 ± 50 psi hydrodynamic/circulating and 800 ± 200 psi hydrostatic) followed by drilling with casing with similar backpressures.

The drilling, connections, trips and fluid displacements, casing running and drilling, and cementing operations were simulated using advanced drilling software and executed with the required amount of hydrostatic and/or hydrodynamic backpressures.

Pruitt's Generation 2 CBHP MPD package (with Coriolis meter and chokes) was used in these operations. The MPD system could detect faintest deviations in fluid gains and losses enabling very quick reaction time facilitating in quick control.

Training the casing drilling crew and integrating with their system was very straight forward.

Typical CBHP MPD Solution

