

The DSI PBL® Bypass System helped an offshore operator in Mexico save hundreds of thousands of dollars in NPT by enabling LCM and cement displacement in a single trip for a deepwater well



Challenge

A major drilling operator in Mexico contacted the DSI team to request a DSI PBL® Circulating Sub as a contingency measure to proactively manage significant mud losses while drilling the 12 ¼-in. section in the deep waters of the Cuenca Salina Basin.

Solution

An 8¼-in. PBL® Multiple Activation Bypass tool was strategically placed in the BHA, allowing high concentrations of LCM (770 kg/m³) and thixotropic cement to be displaced through the two PBL® ports, each with a 1.35-in. industry leading diameter to effectively bypass the sophisticated directional tools below.

Execution

While severe mud loss of 350 bbl/hr was experienced at a depth of 4470m, a 2 ½-in. PBL® Activation Ball was deployed to activate the tool. An LCM pill, consisting of 50 ppb Form-a-Blok, 10 ppb OPTISEAL III, 20 ppb coarse CaCO₃, 10 ppb extra-coarse CaCO₃ was displaced through the PBL® bypass ports, and the tool was successfully deactivated using two steel balls of 1 ¾-in.

As the mud loss persisted at a rate of 58 bbl/hr, the PBL® tool was activated again (2nd cycle). The operator then displaced a cement squeeze batch consisting of 60 bbl of 12.8 ppg

Tuned Spacer III with 8 ppb of Bridge Marker II LCM, 100 bbl of 15.8 ppg cement slurry (H grade), and 15 bbl of 12.8 ppg spacer through the PBL® bypass ports, followed by 15 bbl of oil-based mud. While monitoring the well, further losses of 90 to 110 bbl/hr were observed, a second cement plug with the same composition was displaced, effectively curing the losses. Two 1 ¾-in. steel balls were then dropped to deactivate the tool, and the PBL® tool was successfully deactivated, restoring the flow through the directional tools below.

Results & Benefits

The first cycle helped the operator displace the LCM and reduce the mud loss rate from 350 bbl/hr to 58 bbl/hr, significantly reducing the NPT and minimizing drilling fluid volume losses.

By utilizing the second cycle, the operator successfully displaced two cement plugs through the PBL® ports, effectively curing the mud losses. (A standard PBL® tool can be used for up to 10 cycles)

In both instances, the use of the PBL® tool eliminated the need for dedicated trips by efficiently displacing aggressive pills and cement through its larger bypass ports. This showcased its value to the operator by providing flexibility, which reduced both NPT and mud loss costs. Its reliable design ensures a successful operation while protecting the expensive and sophisticated directional tools below.



DSI



The tool remained fully functional and flawless despite being exposed to an aggressive environment.