

PBL® Split Flow System Helps Middle East Operator Improve Hole Integrity and Circulation Efficiency in High-ROP Operations



Challenge

A Middle East Operator was completing drilling operations, but the rig encountered persistent hole cleaning challenges that required four circulation cycles to achieve acceptable cuttings removal. This was further complicated by a low bed of cuttings, especially above the top of the liner, where debris accumulated. This buildup required several Hi-vis sweeps, increasing time and fluid costs.

Maintaining hole integrity became increasingly critical as the operation moved into a high-ROP interval, where inadequate cleaning can quickly escalate into stuck pipe risks, poor borehole quality, and inefficient trips.

Execution

To address the cleaning inefficiencies, the DSI team deployed the PBL® Split Flow Bypass System in the 6 1/8-in. directional interval. Key operational details:

- Openhole section: 2,700 ft
- Distance drilled in Split Flow mode: 1,200 ft
- Mud type: Brackish water
- Split Flow activation: Achieved at depth by dart deployment

Before the Split Flow activation, no cuttings were visible on the shakers, indicating limited hole cleaning efficiency due to the wellbore geometry and drilling parameters. Once the PBL® tool was activated and shifted into Split Flow mode:

- 78% of the flow was diverted through the tool
- High-velocity jetting efficiently lifted accumulated cuttings above the liner top
- The system significantly enhanced hole cleaning despite the low-viscosity fluid

During the high-ROP interval, the operator reported exceptional cuttings transport, demonstrating the Split Flow system's ability to maintain hole integrity under aggressive drilling conditions.

Results & Benefits

- At TD, circulation cycles dropped from three to 1.5, cutting hole cleaning time by 50%.
- No additional cleaning was needed at the 7-in. liner shoe, an improvement over previous offsets.
- The drillstring was pulled from the open hole with no drag, tightening, or indications of poor hole condition.
- An estimated two hours of rig time were saved due to improved cleaning efficiency.
- The operation successfully eliminated two Hi-vis pills, reducing chemical costs and fluid handling requirements.

The PBL® Split Flow System proved highly effective in improving hole cleaning in high-ROP intervals and brackish-water applications. By enhancing debris removal, maintaining borehole condition, and reducing required circulation time, the Split Flow configuration delivered safer operations, measurable rig-time savings, and greater overall efficiency. This performance reinforces Split Flow as a reliable solution for operators focused on drilling optimization and consistent borehole integrity.

