DSI PBL® Bypass System initially requested for a Split Flow application in Qatar, successfully delivered LCM material.

Challenge

A Major Operator in Qatar requested the DSI PBL® Bypass System for use in a Split Flow Application in their 12 ¼-in. hole sidetrack operation.

Originally, the PBL® would remain closed during the drilling operation and be activated at section TD. This would help improve hole cleaning through the PBL® ports while cooling the BHA components while tripping out of the well, saving time while pulling out of hole.

Solution

Unexpected losses were encountered during the early stages of drilling, so the PBL® needed to be activated four times during this operation. LCM of 350 microns with 100 ppb and a coarser LCM of 2,600 microns with 100 ppb were pumped through the tool.

Activation Depths/Inclinations:

- Activation 1 – 6,800 feet @ 25deg
- Activation 2 – 6,980 feet @ 26deg
- Activation 3 – 7,150 feet @ 30deg
- Activation 4 – 8,840 feet @ 66deg

Execution

The client provided BHA design and hydraulic information to the DSI engineering team to ensure that the DSI hydraulics program was effectively run and to confirm feasibility of the required flow option.

The calculations were approved and an 8 ¼-in. PBL® sub was configured with two x 16/32-in. nozzles in the ports and a one x 40/32-in. nozzle in the Dart to give a split of 57.5% downward flow (690gpm), a 42.5% sideway flow (510gpm), and a total flow of 1200gpm. The maximum flow rate while drilling was 1,000gpm. The PBL® Split Flow would provide 20% additional flow for hole cleaning.

Conclusion & Recommendation

Because of the unexpected losses, the tool was not required in the Split Flow mode for hole cleaning/BHA cooling in this section. The versatility of the PBL® tool allows it to be used either as a Split Flow tool or to displace LCM material. This proved to be a valuable feature and enabled the circulation of LCM during the drilling process while preventing plugging sensitive BHA components.

The client ran the PBL® tool in both Split Flow and standard mode in different hole sizes during this drilling program. They are planning to include the PBL® in future operations.