

React Clean Out Valve Eliminates Plugging of Screens for Major Operator

Background

A major North Sea oilfield is being produced by advanced multi-lateral (MLT) wells to maximize reservoir contact. Open-hole sidetrack laterals (twigs) are produced on multiple wells through the standalone screen completions in the laterals and main bore. When producing from twig junctions, a major risk is the initial flowback of drilling mud, solids, and lost-circulation materials (LCM) plugging the screen section. It is typically not possible to install long sections of screens in the junctions to eliminate the plugging problem, so alternative solutions were required to prevent screen plugging and loss of long-term production and recoverable reserves.

Solution

NOV's ReAct™ portfolio allows for a wide range of remote operating capabilities built into downhole valves and sleeves. This includes circulation valves, electronic liner shoes, clean out valves, tracer valves, and inflow valves with or without sand-control screens. The ReAct clean out valve (COV) is a remotely operated sliding sleeve designed to be run as part of the reservoir liner. It is run in the open position and is pre-programmed to close remotely as required. It features a debris-tolerant design with a large flow area allowing cleanup/unloading of drilling mud and associated solids. The clean out valve was installed across the twig junction together with standalone screens. The large flow ports in the COV allowed the initial production to bypass the screen and enter the COV. After a pre-determined number of days, when the initial cleanup was expected to be completed, the COV shifted to the closed position, and the flow was routed through the screen.

Results

The ReAct clean out valve was installed with a time delay on the closing mechanism. It was designed to close 77 days after installation. Successful closing of the COV was confirmed by an observed pressure drop at the expected time of closure. Use of the ReAct clean out valve resulted in a main bore reduction of an estimated 100 to 400 m of screens to assist in the initial flowback and clean up compared to a conventional completion design. The ReAct COV helped reduce overall well cost, enable an initial clean out period, and protect the main bore screen section from plugging.

Case study facts

Location: North Sea

Well type: Multi-lateral

Hole size, depth, and angle: 8½ in., 3,280-mMD, 90°

Screen size: 7½ in.

Well design pressure: 242 bar

Products

- ReAct clean out valve

