Bullmastiff Frac Sand Control System

Maximizing well life production while maintaining completion's integrity

Background

A major Russian operator produced viscous heavy oil from a relatively shallow reservoir based out of non-consolidated sandstone in one of its fields. Typically, oil was produced by horizontal wells with sand screens of various types. High oil viscosity, strong filter cake, and formation damage were the key negative factors for production rate of such wells. The client was looking for a method to increase the production rate of new wells drilled to this reservoir and considered hydraulic fracturing as an effective method. The strong requirement for sand control was an ultimate challenge.

Solution

The operator spent significant effort in order to create a proper treatment design and was looking for a completion system that would combine both multistage fracturing and sand control functions. NOV's BullMastiff™ system was an optimum solution for this challenge. The system is based on Bulldog™ MOC frac sleeves and BullMastiff screen subs.

The Bulldog MOC full-bore frac sleeve is specifically designed for horizontal multistage applications. It is activated using the proprietary, coiled tubing deployed Bulldog frac bottom hole assembly (BHA), which allows operators to locate, shift open, and stimulate each isolated stage. The BullMastiff screen sub MOC is a sand screen with a multiple open-close capability. It can be configured with different sand screens to suit various sand control requirements. Screen subs are run in the closed position and remain closed until all the frac stages are pumped. This allows not only selective multistage fracturing, but also mud circulation through the liner shoe during run-in-hole (RIH) and at the target depth. Circulation while RIH significantly eases the running process which is critical for shallow horizontal wells, and circulation at the target depth allows good mud displacement and proper filter cake removal with dedicated breaker. The screen sub is fully compatible with the Bulldog frac BHA. Large open flow area of the screen sleeve is critical for heavy and viscous production fluid. When the well is ready for production, all the frac sleeves can be closed and screens opened in a single run.

Case study facts

Location: Russia

Well type: Onshore, production

Results

To date, two liners with the BullMastiff system have been run into client's wells. The first well had six Bulldog MOCs (six frac stages) and 20 BullMastiff screen subs with wire-wrap screen section (two to four per zone) separated by hydraulic packers. All six frac stages (25 tons of ceramic proppant each) were pumped successfully

Upon completion of the stimulation of all the stages, the Bulldog MOC frac sleeve were closed, and the well was pressure tested successfully confirming well integrity with consequent opening of all the Bullmastiff screen subs. The well was then handed over to production.