

# FIV Formation Isolation Valves Protect Reservoirs from Fluid Damage

Case study: System facilitates completion fluid change-out without sand control system or reservoir damage and conserves rig time

## Challenge

Prevent reservoir damage by weighted completion fluids in well completions that include horizontal sand screens while minimizing operating time.

## Solution

Install FIV\* formation isolation valves.

## Results

Saved operator substantial rig time and the related rig costs, while preventing reservoir damage.

## Control of weighted fluid losses during completions

During completion operations in its North Sea wells, the operator needed to control sand production with screens; to protect the reservoir and screens from damage that could be caused by the required weighted completion fluid; and to prevent the inadvertent production of fluids. The operator had been using through-tubing interventions to run and pull plugs to facilitate this process. The use of plugs was not practical because several intervention runs would have been required, each consuming costly rig hours.

## FIV valve technology

After a detailed review of the products available that were capable of performing these functions yet would minimize the rig time required for activation, the operator concluded that Schlumberger FIV technology provided the most reliable means to safeguard the formations. Therefore, the FIV valve was selected to meet long- and short-term requirements in the environmentally sensitive North Sea wells.

The use of an FIV valve as a barrier allows the use of lighter non-water-based annulus fluids, preventing sand screen, reservoir, and formation damage while preventing flowback to the floating production, storage, and off-loading vessels. Therefore, the bidirectional sealing and tubing pressure activation of the FIV design was considered critical to the success of these completions.



FIV formation isolation valve.

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FIV valves provide a two-way barrier to protect costly sand-control operations from completions fluid damage. By isolating formations without applying kill fluid, the FIV tool protects the formations and sand control systems from damage caused by fluid loss during completions and workover operations. This technology is especially useful in deepwater and high-pressure, high-temperature environments, gravel-pack operations, horizontal wells, and underbalanced conditions. The FIV valve can also serve as a downhole lubricator valve and as a safe means to suspend or temporarily abandon a well.

## Valve of choice

Since 1998, the FIV valves have been installed in more than 22 completions for this North Sea operator. The FIV tools have met requirements and saved the company substantial rig time at each installation. Moreover, compared with through-tubing plug systems, these valves have provided a substantial costs savings. As a result, the operator has determined that the FIV valve is the valve of choice for these and future North Sea applications.

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