

Case Study

Wireline shifting BHA enables operator to reduce operation costs and benefit from flexibility of closeable sliding sleeves

CANADA, NORTH SEA
STACKFRAC HD-X SYSTEM, DC (DRILLABLE CLOSEABLE) FRACPORT

An offshore operator, working in a challenging environment of the United Kingdom's North Sea, required a multi-stage lower completion system that could provide the long-term flexibility to selectively choose when to produce or shutoff each zone. The operator worked closely with Packers Plus to develop a solution that would provide the required long term operational flexibility, while enabling interventions to be conducted on wireline, and specifically e-line, to eliminate the need for a coiled tubing unit offshore. This innovative solution was deployed on two wells, both installed and stimulated successfully, realizing the anticipated operational savings.

Challenge

Working in an offshore environment brings a unique set of challenges compared to onshore operations. Due to uncertainties in long-term reservoir production, lower completion solutions are often required to allow an operator to selectively produce, stimulate or isolate certain sections of the formation. This is typically achieved using sliding sleeves that can be shifted using coiled tubing.

An operator working in the Scottish North Sea, near the Shetland Islands, was looking to push the technical limits of what has previously been undertaken in the field since oil was first discovered more than 40 years ago.

The Clair field sits below water depths up to 140 m and the target is an oil rich sandstone layer that is approximately 500 m thick at a total depth of 1850 m. Due to the constraints of both limited space and cost of having a coiled tubing unit on the platform during the offshore operations, the operator wanted a solution that allowed for shifting using e-line in place of coiled tubing.

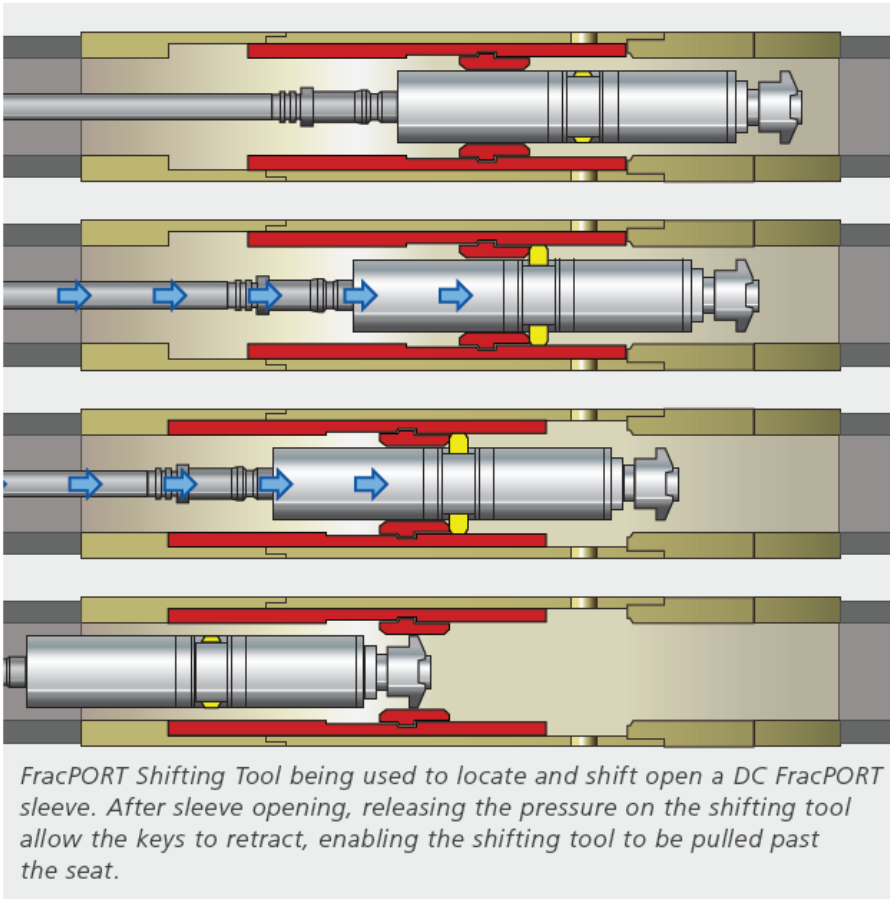


Solution

An open hole StackFRAC® HD multi-stage stimulation system with Drillable Closeable (DC) FracPORT™ sleeves was selected because it enabled the operator to control each stage independently. The StackFRAC system is most commonly actuated by dropping balls or by using a shifting tool that is hydraulically activated and conveyed on coiled tubing.

Packers Plus worked closely with the operator to develop adapt the StackFRAC system in a way that would eliminate the need for coiled tubing on the platform and enable shifting operations with wireline.

A dedicated e-line shifting bottom hole assembly (BHA) for the DC FracPORT sleeves was designed, tested and qualified for the operator. The BHA consisted of a shifting tool and stroker to generate the required downward force during downhole operations to shift the sliding sleeves. The best practices developed by Packers Plus over the last 20 years of installing and shifting sleeves were essential in ensuring that the BHA would function within any inner diameter constraints throughout the length of the upper or lower completion.



Results

The operator deployed the StackFRAC HD completion systems in two wells, totaling nine DC FracPORT sleeves. Both systems were installed successfully with the guidance of the Packers Plus offshore field specialists.

Following the installation of the upper completion, the specially designed BHA was run in the hole on e-line and all the sleeves in both wells were successfully opened, requiring just one run on each well. Following the planned shifting operations, the well was then brought on to production.

The successful operation of the initial shifting of the DC FracPORT sleeves using e-line has given the operator confidence that the sleeves can be manipulated closed or reopened if required using the same shifting tools run on e-line. This provides the operator the opportunity to selectively stimulate a zone or, alternatively, close it if required due to the formation having a high water cut or any other adverse circumstance to production.

By eliminating the need for a coiled tubing unit offshore, there was considerable savings in both space and cost while still maintaining the full functionality and performance of the

StackFRAC stimulation system.

Packers Plus specializes in providing solutions for multi-stage completions and technically challenging applications in horizontal, multi-lateral, high pressure/high temperature wells, geothermal and offshore wells. Well solutions can be customized based on operator requirements and adapted based on changing industry demand.