

North Sea, Norway

# New technology provides an engineered solution for operator to perform complex wellbore cleanup

Flawless cleanup operation in difficult conditions

## CHALLENGE

A single-trip operation to perform a negative test of a liner top, clean four casing sections and displace the well prior to running the completion.

## SOLUTION

Deploy Halliburton wellbore cleanup tools are designed to perform single-trip operations.

- Turbo Tech® II valve allows high flow rates when open during cleanup
- String allows reciprocation during displacement
- Single-trip saves time and cost

## RESULT

Flawless execution which prepared well for completion operations

- Cleaned and prepared casing sections for completion assemblies
- Successful negative test on liner top
- Well displaced to completion fluid, met operator's required fluid cleanliness specification
- Eliminated an additional two runs



Turbo Tech® II valve

## Overview

A major operator in the Norwegian sector of the North Sea planned a single-trip inflow test and displacement wellbore cleanup run on one of its high-profile wells. The operator required a string design that provided the flexibility to perform a negative test and allow for high flow rates during the reverse circulation phase when displacing the well to seawater. A complex string set up was necessary to achieve all the requirements as a single-trip solution.

## Challenge

The operator asked Halliburton to design a single-trip solution to scrape packer setting areas, conduct a negative test, and perform a full wellbore displacement. This well had four casing sections (5, 7 3/4, 10 3/4, and 13 5/8-in.) to a depth greater than 20,000 ft.

The operator needed Halliburton to effectively clean all casing sections, conduct a negative test on the 7 3/4-in. × 10 3/4-in. liner top, and achieve high enough annular velocities to prevent solids from dropping out in all casing sections during the displacement of the well from mud to completion fluid. Cleanup of the smaller liner sections was key and a cause for concern in previous wells contracted with another service company.

## Solution

The Halliburton Turbo Tech® II valve circulating sub provided the operator with a reliable weight- set tool, which meant the string could be pulled clear of the liner top for high-rate circulations.

Additionally, the tools could rotate and reciprocate the string during fluid displacement, to improve the efficiency and reduce the time necessary to complete the well. The Inflow Tech® packer combined with the Setting Control Module (SCM) allowed the operator to place the negative test packer as closely to the liner top as possible for testing, as well as to pull the string into tension and reciprocate the string during cleanup. The key elements to this customized solution were Halliburton's capability to provide a single-trip cleanup, negative test, and displacement string.



“This was the most complicated cleanout I have seen in my career and it went flawlessly.”

-operator's completion engineering manager

## Result

The operation was executed flawlessly and exceeded the operator's expectations for such a complicated wellbore cleanup operation. Challenges like the space-out between the four casing strings, the functioning of ball activated tools, as well as two compression-set tools to complete the single trip operation were completed successfully because of proper planning and Halliburton's capability to provide the best engineered solution.

Achievement of the operator's objectives in a single-trip allowed two additional runs to be eliminated and the recovery of 82 kg of debris, which saved both time and money.

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