

Modular Solutions Lead to Subsea Development Success

HALLIBURTON TECHNOLOGIES PROVIDE RELIABLE, COST-EFFECTIVE ZONAL ISOLATION AND SAND CONTROL

NORTH SEA

CHALLENGES

The operator required completion solutions for several potential reservoir conditions that would not be quantified until drilled:

- » 8.5 and 6-inch Openhole completion options
- » Gas cap zonal isolation and selective production
- » Sand control for oil-bearing zone and gas cap
- » Encroaching oil/water contact (OWC)

SOLUTIONS

Halliburton recommended modular solutions that allow for flexibility and a final decision after drilling to total depth. The following options were prepared and mobilized to a mobile offshore drilling unit:

- » PoroMax® Sliding Side-Door® screen
- » Slip-on Swellpacker® oil-swelling (OS) and water-swelling (WS) systems
- » PetroGuard® wire-wrap screen
- » ZoneGuard® HE (High-Expansion) openhole packer

RESULTS

Lower ZoneGuard HE packer and two slip-on Swellpacker systems were run successfully with PetroGuard wire-wrap screens:

- » Hydrostatic ZoneGuard HE packer provided mechanical OWC isolation and a sump to facilitate gravel packing
- » Slip-on Swellpacker WS system provided an annular barrier to the rising OWC
- » Additional Swellpacker OS system provided an annular baffle to mitigate OWC

OVERVIEW

Halliburton provided completion solutions for a subsea producer with several production challenges in the UK central North Sea. This infill development design was based on extensive experience with reservoir difficulties. Previous completions had a single gravel-packed interval and experienced water ingress from encroaching oil/water contact (OWC) and inability to stimulate due to lack of zonal isolation. The planned well was drilled as a sidetrack of a previous producer that was producing intermittently with high water cut. This almost vertical well was completed with less than 100 feet of producing interval.



THE GRAVEL PACK WAS COMPLETED WITH
>100% PACK EFFICIENCY

KEY CHALLENGES AND SOLUTIONS

Halliburton was tasked with providing several compatible modular options to complete a robust well, address several eventualities and mitigate the need for future intervention. The options included selective Sliding Side-Door® screens, wire-wrap screens, hydrostatic ZoneGuard® HE openhole packers and slip-on oil-swelling (OS) and water-swelling (WS) Swellpacker® systems.

- » **OWC:** Combination of a Zoneguard HE (High-Expansion) packer and Swellpacker WS system installed below the screens. This application provided dual benefits — water control and the sump for the gravel pack. Within the performance target drilling, the rathole is dependent on log results and cannot always be controlled.
- » **Selective gas cap production:** Combination of ZoneGuard HE packer and Swellpacker OS system to provide zonal isolation and PoroMax® Sliding Side-Door® screen to providesand control and selective production.
- » **Oil zone sand control:** PetroGuard wire-wrap screens in conjunction with 20/40-mesh gravel pack to provide reliable sand barrier.
- » **Zonal isolation:** Slip-on Swellpacker® system that allows for drill floor changes to the completion design, optimizing production for a limited payzone.

RESULTS

Reservoir analysis post-drilling showed the gas cap was not economically recoverable with a dedicated zone. The completion design was finalized offshore and all options deployed, except the selective gas cap zone.

Integrated service provided by Halliburton enabled a cohesive and efficient operation between the completion installation and gravel-pack pumping. The gravel pack was completed successfully with greater than 100% pack efficiency.

The results were a customized solution that best addressed the reservoir conditions on a short timescale, providing a competent sand control completion while reducing the impact of future water production.

Utilizing our extensive experience, Halliburton proposed several compatible modular solutions to provide the optimum design for a short producing zone. Selective shifting profiles were utilized to allow production from a potential gas cap in the future.



Swellpacker® Slip-On Isolation System after Installation on Basepipe



ZoneGaurd® HE Packer

www.halliburton.com

Sales of Halliburton products and services will be in accord solely with the terms and conditions contained in the contract between Halliburton and the customer that is applicable to the sale.

H013827 04/21 © 2021 Halliburton. All Rights Reserved.

HALLIBURTON