CASE STUDY

HALLIBURTON

Oman

# EquiFlow® AICD boosts oil production, reduces significant water production in mature oil field

First EquiFlow® AICD completion in Oman proves successful

## CHALLENGE

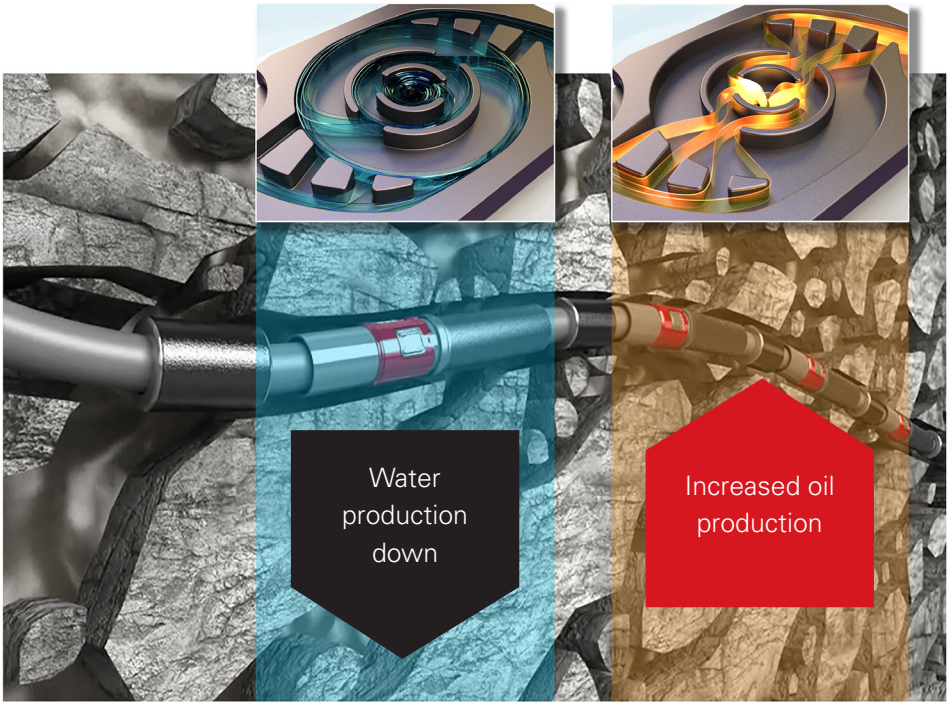
- Increase ultimate oil recovery and restrict water production in mature heavy-oil sandstone reservoir
- Maximize asset value with installation of innovative solution

## SOLUTION

Install EquiFlow® AICD to restrict early water breakthrough and enhance oil production

## RESULT

- Successfully installed first EquiFlow AICD completion in Oman with no NPT or service quality issues
- Exceeded operator's expectations/significantly enhanced oil recovery and reduced water production




## Overview

A major operator in Oman encountered early water breakthrough challenges in a heavy oil (19° API) faulted sandstone reservoir. In these mature brownfields, typical well production starts with medium water cut and can ramp up quickly above 90%. As a result, this will reduce the ultimate recovery from the fields. After consultation with Halliburton, the operator decided to install the EquiFlow® autonomous inflow control device (AICD), along with Swellpacker® isolation systems, in one of its wells to restrict early water breakthrough and improve oil production.

### Reservoir-centric completions for depleted reservoir

The Halliburton Completion Tools team in Oman worked with the operator's asset team to select the suitable well candidate and assess the benefit from deployment of the EquiFlow AICD technology.

There were many challenges from a reservoir perspective, such as thin heterogeneous sand and early water encroachment attributed to faults, as well as mobility contrasts of heavy oil and formation water. The well was put on production with artificial lift systems because of lower reservoir pressure.

The Halliburton team offered a combination of EquiFlow® AICDs with Swellpacker® isolation systems to mitigate the reservoir's challenges. Based on the final well logs, nearby reservoir properties, and well simulation, the EquiFlow AICD completion was modeled, designed, and installed successfully. Well test results showed a significant reduction in water production compared to the nearby offset wells. As the EquiFlow AICD acts like a self-adjusting device, it chokes back high-water producing zones while it allows other healthy oil-saturated zones to produce more from the well. Also, the completion was designed to reduce the drawdown from the heel and stimulate production from the toe side of the well to maximize ultimate recovery.

**First EquiFlow® AICD completion in Oman maximizes asset value**

As a result of the collaborative efforts between the operator and Halliburton, the first EquiFlow AICD completion in Oman was successfully installed without anynonproductive time (NPT) or service quality challenges.

Based on surrounding geological conditions and offset well data without EquiFlow AICD installed, the well was expected to experience high water cut that started initially around 45% and more than 70% over a period of three months. Thanks to EquiFlow AICD technology, the well improved significantly with only 15.9% initial water cut that reached 23% over the same period, and dramatically reduced water production by more than 65%. The well is stable and produces more oil and significantly less water, which resulted in higher expected ultimate recovery (EUR).

Because of this successful installation, the operator has chosen to screen many other wells with similar reservoir conditions and fluid properties to be completed with the EquiFlow AICD technology and Swellpacker isolation systems.

Successfully installed first EquiFlow® AICD completion in Oman with zero NPT or service quality issues

**For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com**