

ORCA for WBM: Maximizes production in big-bore high-rate gas wells



"Operators use slow acting clean-up systems like ORCA for WBM because they give a proper cleanup. Our experience in these major gas wells proves how true this is."

Senior production technologist, major global operating company

ORCA for WBM clean-up treatments delivered extremely high gas production rates in a world-leading field development in Norway. ORCA tackled cleaning of open hole gravel packed wellbores in a challenging completion in a North Sea sandstone formation. Effective filter cake cleanup by ORCA resulted in very low skin, maximizing extraction potential over time.

The challenge

The operator was drilling large bore vertical wells in the North Sea, capable of delivering up to 10 MSm³/day (350 MMScf/day) of gas. The drill-in reservoir fluid used was water-based. The project presented special challenges, as well as the usual North Sea operating conditions.

For a start, all fluids, including the ORCA for WBM breaker fluid, had to be formulated from chemicals that met Norway's tough environmental demands. The ORCA breaker fluid had to be used as the gravel packing fluid. What's more, hydrostatic pressure caused by deep water and unusually low seabed water temperature increased the risk of gas hydrate formation. So ORCA for WBM also had to be compatible with the selected hydrate inhibitors..

The solution

ORCA for WBM is a patented solution, ideal for treating water based carbonate polymer mud damage in sandstone wells. Unlike many other treatments, it combines acid generation and polymer breaking enzymes to achieve thorough cleaning. Because it generates acid relatively slowly – usually over a couple of days – cleaning is achieved in a controlled way, ensuring low skin and maximizing potential production rates.

ORCA for WBM in action

The ORCA for WBM breaker chemicals were carefully formulated to avoid premature mud cake break through during gravel packing. The formulation was also designed for effective dissolution of carbonate and polymer components of the drill-in fluid. Following a shut-in period where the ORCA for WBM could achieve cleanup, the well was put on production.



The result

After ORCA for WBM was used, production results in the first series of wells were excellent. The first three wells operated at the planned rate of 9 MSm³/day, showing that low formation damage and an efficient cleanup was achieved. Skin values were significantly lower than the operator expected.

The operator went on to use ORCA treatments on the subsequent new wells in this major offshore development project. The first thirteen highly productive lower completions produced close to 70 MSm³/day. When the field comes into full production, it will make Norway the second largest exporter of natural gas in the world and will supply 20% of the UK's gas needs.

Productivity of the wells is higher than originally predicted, with the improvement mainly due to higher than expected permeability combined with lower skins than expected.

References:
SPE 112292 SPE 144089.

Get in touch

Cleansorb has a team of ORCA for WBM specialists to advise you on the best strategy for your circumstances. Please e-mail contact@cleansorb.com for more information.