

Case Study



The Science of Enhanced Oil Recovery

BrightWater Technology in the North Sea *Improving Conformance in a Subsea Waterflood*

Situation

A major oil producer operating in the North Sea was experiencing declining production due to poor sweep efficiency of the existing seawater injection flood. Water cuts on the producers are increasing and oil cut is declining. Producers are challenged to increase production without drilling new or re-completing the production or injection wells. All the wells in this field are sub-sea completed with very long tiebacks to an existing fixed leg platform.

Situational Analysis

The operator and the Nalco BrightWater team worked closely together to better understand the producing reservoir and design multiple reservoir models and scenarios to improve sweep efficiency and increase oil production. The team decided the new low temperature (50°C) activated BrightWater product EC9398A would effectively shut off the injection water thief zone, create a new waterflood sweep pattern and increase oil production.

Program

The field implementation of 100 tons of BrightWater EC9398A and 50 tons of dispersant EC9360A would be injected in the umbilical at the platform. The treatment would be injected as a solution with the existing seawater injection over a period of 8 days. The BrightWater product would travel into the formation and activate creating a 'water block' deep in the reservoir.

Results

With the implementation of the BrightWater technology, the operator has experienced incremental oil gains in excess of 100,000 barrels in less than 12 months. The predicted incremental oil gain due to the BrightWater treatments is expected to exceed 300,000 barrels.

Based on these results, the operator is once again working with the Nalco team to evaluate other wells in the field and to implement a second treatment on the previously treated well.