

Customized Chemistry Improves Well Performance

HALLIBURTON SOLUTION ENABLES OPERATOR TO REALIZE SIGNIFICANT IMPROVEMENT IN PRODUCTION

MIDLAND BASIN, TEXAS

CHALLENGE

- » Improve production in an existing field without making big changes to the completion design

SOLUTION

- » RockPerm™ service to customize fracturing fluid design
- » Transcend™ permeability enhancers to improve load recovery and production

RESULTS

- » Compared to offset wells, first three months of initial production demonstrated 61 percent increase in BOE
- » Incremental production revenue exceeded USD 1.7 million

OVERVIEW

In the Permian region, Halliburton worked with a Midland Basin operator to incorporate customized chemistry into its fracturing designs. Using a structured design approach that included reservoir analysis, reservoir and fracturing fluid lab testing, and fracturing design and modeling, Halliburton customized the fracturing fluid by utilizing Transcend™ permeability enhancers. Implementing the customized fluid design recommendations to the fracturing treatments resulted in an improved load recovery and a 61 percent increase in barrels of oil equivalent (BOE) when compared to equivalent direct offset wells that did not utilize the Transcend service.

CHALLENGE

After evaluating its asset performance, the operator determined that improved well productivity was necessary to justify a continued drilling program in the Midland Basin. The challenge presented to Halliburton was to make significant improvements to well productivity with only minor changes to the fracture design and overall operations. With 62 offset wells to base the design on, the operator wanted to see improved production over these wells while using only similar completion practices. The standard chemistry utilized in this play at the time included conventional chemical additives, such as friction reducers, breakers, and biocides.

SOLUTION

The key to the solution was customization. Through our targeted design approach and ongoing collaboration with the customer, a solution was developed to meet the customer's expectations of improved production with minimal changes to the completion. At the core of the solution was Transcend chemistry, optimized with the Halliburton RockPerm™ service, which provides a testing protocol solution based on sound stimulation fluid and reservoir engineering principles. RockPerm service is a laboratory testing service performed by specially trained technicians in local-area labs. This process provides pre-stimulation scientific testing with actual formation cuttings, reservoir fluids, and stimulation treatment fluids and additives. The testing assesses the fluids' and reservoir's responses to stimulation

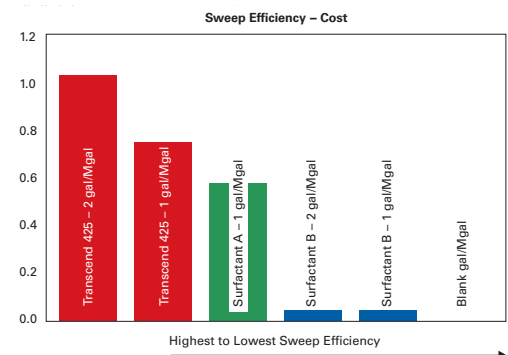


Figure 1. RockPerm™ service test results

Compared to offset wells, the first three months of initial production demonstrated a 61 percent increase in BOE, and incremental production revenue exceeded USD 1.7 million.

fluid additives. Through these results, Halliburton engineers are able to optimize the fracturing fluid design to improve the stimulation treatment success and overall reservoir production.

The operator provided cuttings and formation fluid samples. Using the proposed stimulation fluids, RockPerm service was performed to determine an optimized permeability enhancer package for improving fluid mobility in the formation, ultimately resulting in increased production. Figure 1 illustrates the results from RockPerm service. Transcend 425 permeability enhancer proved to be the optimum additive.

RESULTS

After testing and analysis were completed, the operator agreed with the fluid recommendations and implemented the design changes on the next well. Utilizing the RockPerm service allowed Halliburton engineers to not only design the best additive, the Transcend 425 permeability enhancer, but to also implement it in the most effective concentration. The stimulation treatment was complete as per the design. After the treatment, as compared to similar offset wells, the wells with Halliburton Transcend service demonstrated higher load recovery. Additionally, compared to offset wells, the first three months of initial production demonstrated a 61 percent increase in BOE (Figure 2), and incremental production revenue exceeded USD 1.7 million.

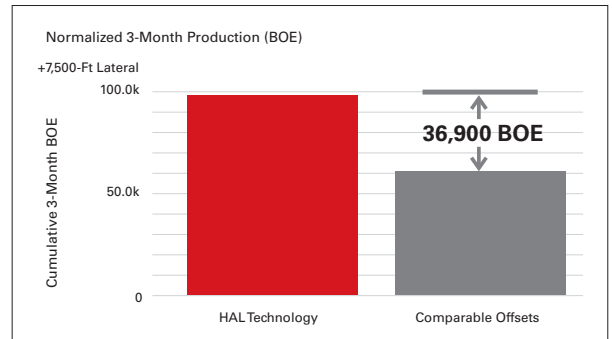
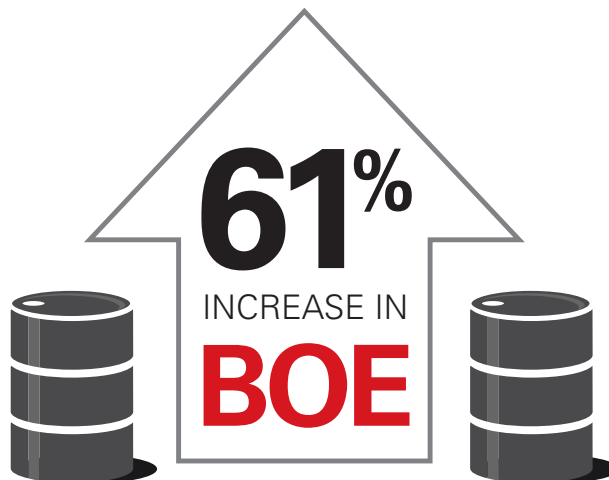


Figure 2. Normalized three-month production



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