**Channel Fracturing Increases Production by 37% for Petrohawk in the Eagle Ford Shale**

HiWAY technology improves fracturing performance and EUR for horizontal wells in South Texas

**Challenge**

Improve oil and gas production in the Eagle Ford Shale.

**Solution**

Apply HiWAY® flow-channel hydraulic fracturing technique in horizontal completions to increase the effective stimulated reservoir volume by creating stable channels and limitless fracture conductivity.

**Results**

Increased initial gas production by 37% and initial oil production by 32%. Petrohawk announced increase in estimated ultimate recovery (EUR) for the field and converted all Schlumberger fracturing activity to the HiWAY technique.

**Case Study**

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**Challenging conditions**

Working in the Hawkville field near Cotulla, Texas, Petrohawk aims at improving production and EUR from the Eagle Ford Shale. The formation mainly comprises limestones and shales with

- 6% to 10% porosity
- 200 to 600 nD
- 7,000-10,000 psi bottomhole pressure
- 2.0 to 4.5 Mpsi Young’s modulus.

Production from this area is driven by the effective stimulated reservoir volume (SRV) and the reservoir connectivity with the wellbore that can be established via hydraulic fracturing. The field has high fracturing gradients (typically 0.91-1.00 psi/ft) and high bottomhole temperatures (270-300 degF) at depths between 10,000 and 13,000 ft. These are challenging conditions for the successful execution of fracturing treatments.

Since its discovery in 2008, this section of the Eagle Ford formation has generally been stimulated using multistage horizontal completions with high-rate slickwater treatments. However, recently there has been a trend to use polymer-based crosslinked and hybrid treatments. This evolution has led to a moderate improvement in production results.

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"Petrohawk has converted 100% of frac services provided by Schlumberger in the Eagle Ford to HiWAY. Currently, Petrohawk is utilizing all available capacity of this technology."

Petrohawk press release

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The HiWAY technique gave Heim #2H well a maximum initial rate of 14.5 Mcf/d, or 37% higher initial gas production than the best comparable offset well. The HiWAY technique gave the Dilworth #1H well a maximum initial production rate of 820 bbl/d, or 32% higher initial oil production rate than the best comparable offset.
Flow-channel creation for two wells
Petrohawk chose to implement Schlumberger HiWAY flow-channel hydraulic fracturing technique to address these challenges and improve well performance for the stimulation of wells in the Hawkville field.

Two wells were selected to build an initial assessment: Heim #2H well, located in a gas-producing window of the field, and Dilworth #1H well, located in a condensate-producing window of the field. Results were compared with those from valid offsets previously stimulated by using conventional techniques.

Rather than leaving fracture flow dependent on proppant pack conductivity, the HiWAY fracturing technique created stable channels for hydrocarbons to flow through, thus increasing the effective stimulated reservoir volume.

Outstanding production results
The enhanced stimulation of the reservoir provided by HiWAY channel fracturing gave the Heim #2H well a maximum initial rate of 14.5 Mcf/d, or 37% higher initial gas production than the best comparable offset well. The HiWAY technique gave the Dilworth #1H well a maximum initial rate of 820 bbl/d, or 32% higher initial oil production rate than the best comparable offset. Production rates and wellhead pressures for these two wells remain the highest among all wells in their corresponding areas.

In a recent press release, the results of the HiWAY technique were mentioned by Petrohawk:
“In Hawkville Field, a new frac design has significantly improved the Company’s EUR estimates. . . . Two wells with sufficient production history to estimate EUR’s are the Heim #2H, which is projected to produce an estimated 8.9 Bcf and 260 Mbngl, and the Dilworth #1H, which is projected to produce an estimated 2.1 Bcf and 400 Mbc and 208 Mbngl.”

Based on these results, Petrohawk has increased its utilization of Schlumberger HiWAY technology and has requested the deployment of an additional fracturing fleet in the Hawkville field. More than 900 HiWAY treatments have been performed for Petrohawk in over 50 wells to date.