PerfFRAC Technology Lowers Chevron’s Completion Costs by 10%

Case study: Multizone stimulation process in Northeast Texas reduces time to market by 4 days

Challenge

Decrease time and expense to complete multizone wells.

Solution

Used PerfFRAC selective perforating, fracturing, and zone isolation with ball sealers.

Results

Lowered completion costs by 10% and reduced time to market by 4 days.

Traditional limits

Completion economics were critical to the success of a Chevron drilling program near Carthage in Northeast Texas. Many wells in the Deadwood field have multiple zones of interest, and conventional completion techniques were too time-consuming to justify treating all of them. However, bypassing zones would result in a reduction in potential recovery.

Traditional completions require a 5-day completion process on a lower prolific zone, including perforating, fracture stimulating, and flowback. If production during the flowback is sufficient, the well is turned over to production. If production is not sufficient, a composite bridge plug is run to isolate the lower zone, and an upper zone is completed through the same process of perforating, fracture stimulating, and flowback. When flowback is completed, the composite plug is milled out and the two zones are put on production.

A superior solution

The PerfFRAC service, which combines perforating, fracturing, and isolating in a single, continuous pumping operation, offered Chevron an alternative to the conventional technique.

The PerfFRAC process includes the following steps:

- Guns are run in the hole and the first zone is perforated.
- While the first zone fracturing job is being pumped, the guns are moved up the hole and positioned to shoot the holes for the second zone.
- When first zone stimulation is complete, ball sealers are pumped in the well to seal the first zone perforations.
- As pressure begins to rise, the guns positioned at the second zone are fired.
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This process is repeated until all zones of interest have been stimulated. Because the PerfFRAC approach requires no composite bridge plugs, there is no need for a coiled tubing unit to drill through the plugs.

Chevron compared the cost and time of the conventional completion process with the PerfFRAC process, which allowed completing two zones with minimal time and cost as compared to the conventional one-zone completion. The additional benefit of the PerfFRAC process enabled immediate production from and increased recoverable reserves in the second zone without the additional time, cost, and risks associated with the conventional two-zone operation.

"The Schlumberger PerfFRAC service allowed us to complete several pay zones in less time. Our operations became simpler, safer, and more cost efficient. This technique proved to be a successful method; we will be happy to use it during next drilling campaign."

Doug Blaskowsky
Senior Drilling Engineer
Chevron, Mid-Continent/Alaska Business Unit

Exceptional results
In the Deadwood project, the goal was to reduce time to market and cost without compromising reservoir contact and production efficiency. The entire process required a single wireline trip and was completed in less than a day as compared to 5 days using the conventional process. This resulted in significant cost savings for the client amounting to approximately 10% of the total completion costs.

About the Contact family
PerfFRAC technology is part of the intervention category of the Contact® four-category portfolio of staged fracturing and completion services. These technologies maximize reservoir contact by offering the most efficient and effective services for each well. The Contact intervention category enables multiple stages to be perforated/jetted, fractured, and isolated in one intervention. Contact services can be enhanced with real-time measurement options.

The spinner survey verifies production from all treated zones. The production log shows flow from both zones treated with the PerfFRAC technology, confirming the effectiveness of the treatment.