

Ball-activated proppant stimulation system successfully completed offshore

[International, Shilaif Titanium XV System](#)

Combining two Packers Plus technologies enabled an operator to successfully stimulate an offshore reservoir with proppant. The 8-stage [StackFRAC® Titanium XV](#) system was installed in a sidetrack lateral from an existing vertical offshore wellbore. Three months later, the first proppant stimulation in the Shilaif reservoir was completed and monitored using [ePLUS® Retina](#).



Challenge

Carbonate reservoirs in this region are typically stimulated with acid using coiled tubing. This method is effective for conventional reservoirs, but is less suitable for tight unconventional rock due to its low permeability. The operator was evaluating methods to optimize stimulation methods and further enhance their recoverable reserves for long horizontals.

Solution

The completion design process was integrated with petrophysical and geomechanical data acquired during drilling. This enabled the placement of packers to ensure optimal isolation between stages.

A 4.5-in. (114.3 mm) multi-stage StackFRAC Titanium XV system was run in the 6-in. (152.4 mm) open hole and suspended by a 7-in. (177.8 mm) x 4.5" (114.3 mm) liner hanger packer system. The completion system was installed in 3 days.

Packers Plus offered a completion system with a 15,000 psi (103 MPa) burst/collapse pressure rating, which other vendors could not deliver in the operator's requested time frame. The StackFRAC Titanium XV system was also one of the only vendors that could deliver a continuous pumping treatment solution for the offshore well within the requested time constraints.

Results

All 8 stages were completed in 48 hours, placing over 18,200 bbl (2,894 m³) of fluid and 67,200 lbs (30 t) of proppant. Pressure readings throughout the completion showed indications of proper isolation from the open hole Titanium XV RockSEAL® packers.

In addition, the ePLUS Retina monitoring system was also used for its first offshore operation to verify surface and downhole events, independently from the data van. All critical events, such as ball launches, landings and sleeve shifts were confirmed as expected. The system

prevented unnecessary use of extra balls or coiled tubing in cases of missing pressure signatures indicating port shifts. Retina charts were successfully live-streamed to the operator's office in the UAE.

Having proven the viability of proppant fracturing offshore, focus has shifted towards optimizing future operations. Improved logistics in staging material from supply ships will reduce non-productive time, and ongoing experience with the Retina monitoring system will also reduce or eliminate the need for coiled tubing for verification purposes.

This case study is based on a paper prepared for presentation at the Abu Dhabi International Petroleum Exhibition & Conference held in Abu Dhabi, UAE. 7-10 November, 2016.