

# Effective limited entry treatment and improved production with QuickPORT V technology

[International](#), [Middle East](#)  
[QuickFRAC System](#)

Success of open hole matrix acidizing technology dates back to 2007 when single port acidizing was found to provide increased initial production. Since that time, the evolution of open hole technology has shifted focus from single port technology to limited entry multi-stage technology. An operator working in the Middle East completed multiple wells using Packers Plus QuickPORT™ V sleeves to provide an effective limited entry treatment in order to improve reservoir productivity.

## Challenge

In the acidizing of prolific carbonate reservoirs, efficient acid placement can be a major challenge since acid tends to flow towards areas of higher permeability. This can result in overstimulation of some intervals and leave lower permeability intervals untreated. In such instances, treatments may not meet expectations and a stimulation job can sometimes result in the preferential treatment of high permeability sections of a reservoir associated with water.

## Solution

QuickPORT V technology provided controlled injection and even distribution into the intervals by using limited entry nozzles which are sized based on an application specific pressure pumping analysis. The technology enabled controlled injection and leak off for an even distribution of acid into each isolated stage.

For their wells, the operator grouped multiple sleeves into one stage to maximize reservoir contact. Each group of sleeves was activated for stimulation with a single ball pumped from surface, with balls of incrementally larger size for multiple stages being pumped downhole in a continuous operation. Each producing stage was isolated with robust and reliable hydraulically set mechanical RockSEAL® H2 packers, enabling the open hole annulus to be effectively isolated. Two different sleeve configurations were used (Figures 1 and 2).



QuickFRAC® limited entry setup: Figure 1. Multiple sleeves separated by two zonal isolation packers; Figure 2. Each sleeve in a cluster individually separated by zonal isolation packers

The first well run by the operator was a 4-stage limited entry system installed in a 2,500-ft lateral of a tight dolomite, gas-producing well in the configuration shown in Figure 1. The first stage consisted of a Drillable Closeable (DC) Hydraulic FracPORT™ sleeve followed by

three stages of QuickPORT V sleeves in clusters of 4,5 and 4. The second well was a 2-stage system designed for a horizontal well application in a gas-bearing, prolific calcite interval, also consisting of a DC Hydraulic FracPORT sleeve for the first stage, and single stage of 3 QuickPORT V sleeves, each isolated by RockSEAL H2 packers.

## Results

All stages for both wells were opened and stimulated as designed, with treating pressures reaching as high as 8,000 psi for the second well. 11 of the 13 QuickPORT V sleeve shifts for the first well were verified in real-time with the ePLUS® Retina monitoring system (Figure 3).



Figure 3. Retina confirms the ball activating the four ports in stage 2 of first well

A post-evaluation of the Retina data also confirmed the shifting of the two initially undetected ports, which were unrecognizable from the pressure signals alone. The confirmation of the two port shifts proved the value of using Retina as a secondary method of port shift verification.

The system installations provided the operator with an effective acid placement medium, with exceptional production results and nonproductive time eliminated. Due to the efficiencies provided by the QuickPORT V technology, completion and stimulation techniques have improved and many benefits have been recognized including improved lateral contact, enhanced fluid distribution and ultimately increased production.

Packers Plus is the innovator of open hole multi-stage fracturing systems, providing field-proven and cost-effective methods for completing horizontal wells with superior production results in numerous formations around the world, including mature reservoirs.