

RapidStart® Initiator CT Sleeve Helps Seneca Resources Pump an Extra Frac Stage

SINGLE TOE SLEEVE INCREASES RETURN ON INVESTMENT

PENNSYLVANIA, USA

CHALLENGE

- » Pump a frac stage and achieve the fracturing pumping rate through a single toe sleeve
- » Avoid the equipment costs required for running multiple frac sleeves

SOLUTION

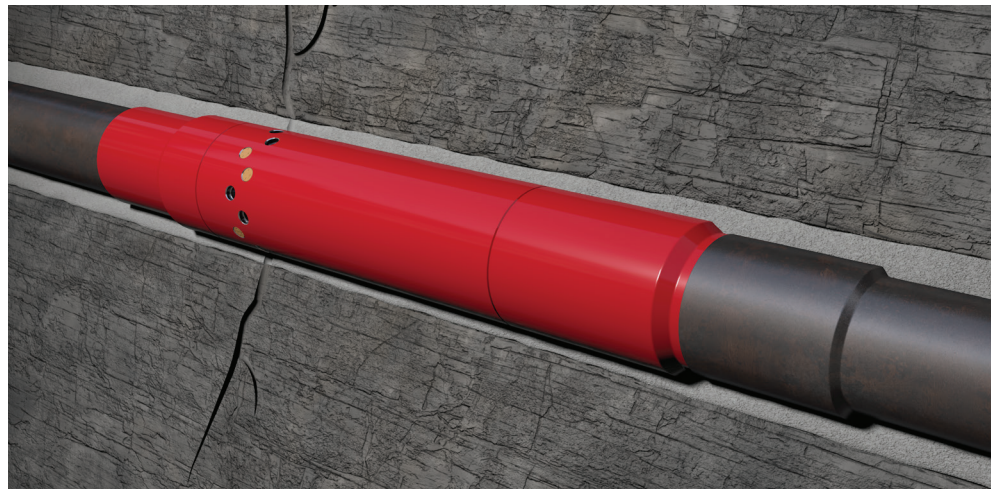
- » RapidStart® Initiator CT sleeve, as its full opening provides enough flow area to pump at required rates

RESULTS

- » Achieved required pumping rate to frac through single RapidStart Initiator CT sleeve
- » Reached maximum rates up to 105 bpm, and average rates up to 92 bpm
- » Placed up to 215,000 lb of proppant in created fracture
- » Provided higher ROI by stimulating entire lateral
- » Reduced cost for a single sleeve vs. multiple sleeves

OVERVIEW

Seneca Resources was completing a well in Pennsylvania and, like most operators, was looking for ways to do more with less. With the Halliburton 5½-in. RapidStart® Initiator CT (Casing Test) sleeve, the operator was able to achieve a maximum treatment rate of 105 bpm and an average rate of 92 bpm, thus allowing Seneca Resources to frac an additional stage and increase its return on investment (ROI).



The 5½-in. RapidStart® Initiator CT sleeve provides an interventionless means of establishing a flow path at the toe of a completion during multi-zone fracturing or plug and perf operations.

CHALLENGE

In horizontal wells, a toe sleeve is used to provide the necessary access from the wellbore to the formation at the toe of the well. Communication between the wellbore and the formation is needed to provide a flow path that will allow displacing either frac plugs and/or frac balls downhole so that multistage fracturing operations can commence. This initial flow path might also be used to place the first stimulation treatment, thus additional reserves can be reached from the subject wellbore. In order to get the right balance between the required pumping rate to create a fracture and the allowable pump pressure, enough flow area must be provided at the wellbore/formation communication point. Due to their design, some toe sleeves are not able to fully expose all the stimulation ports. This creates restriction to flow and high pumping pressure at a low pumping rate, hindering the operator's ability to create a fracture through the toe sleeve.



Doing more with less!

Seneca Resources realized a better ROI by fracturing an extra stage in its lateral through a single toe sleeve.



Some operators have found it challenging to achieve the rate needed in order to stimulate the toe-most stage with a single toe sleeve. Reduced pump rates can occur if a toe sleeve does not slide all the way open or if a burst disk or toe sleeve does not expose all ports due to pressure equalization. For this reason, it has often been necessary to use multiple sleeves at the toe of the well in order to achieve the desired pumping rate. This increases the cost since it requires two or three sleeves to achieve the rates needed to correctly stimulate the toe portion of the lateral.

Production from a toe stage becomes an additional concern after a stimulation is placed through a sleeve. Pumping a stage through a sleeve creates additional time and costs, which production return will need to outweigh.

SOLUTION

The Halliburton 5½-in. RapidStart Initiator CT sleeve design helps ensure that the sleeve will fully expose all flow port areas. The provided flow area allows a pumping crew to achieve the fracturing pumping rate through a single toe sleeve. Hydrocarbon and water tracers were used on four separate wells to ensure the additional cost and time for the stage were worth the investment.

RESULTS

One RapidStart Initiator CT sleeve was able to achieve a maximum rate up to 105 bpm with an average rate of up to 92 bpm and place up to 215,000 lb of proppant in the created fracture. Seneca Resources was able to fracture an additional stage and prove production with hydrocarbon tracer returns through the RapidStart Initiator CT sleeve on four wells. The additional production provided a higher return on investment at a lower cost than alternative options that require multiple burst disks or multiple toe sleeves.



Doing more with less!

Seneca Resources achieved a better ROI by fracturing an extra stage at the toe of the lateral.



Example Well	Maximum Rate	Average Rate
A	86	81
B	90	79
C	99	86
D	105	92
E	103	85
F	103	65

Maximum and average pump rates through the 5½-in. RapidStart® Initiator CT sleeve on Seneca Resources wells

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