

# Packers Plus® Case Study



## 20-stage StackFRAC HD system run in the Bakken

### New technology increases access to reservoir and production capacity

#### Background

Since its discovery in the 1950s, the Bakken formation has seen a progression of completions to allow increasing production of light oil from this resource play. Currently, the Packers Plus StackFRAC® Multi-Stage Fracturing System has become the completions method of choice in the Bakken because of its simplified operation and excellent production results. This field-proven success has operators working in the Bakken looking for technology that will allow for more stimulation stages to further increase production from their open hole horizontal wellbores.

#### The Challenge

An operator working in the Bakken formation in southeast Saskatchewan wanted to increase the number of fracs in their horizontal open hole wells to enhance access to the reservoir. Currently, StackFRAC systems are run with seven to eight stimulation stages on average, with the maximum number of stages being dependant on the liner size. The challenge was to design

a system capable of more stimulation stages without increasing the liner/frac string size, which would increase cost.

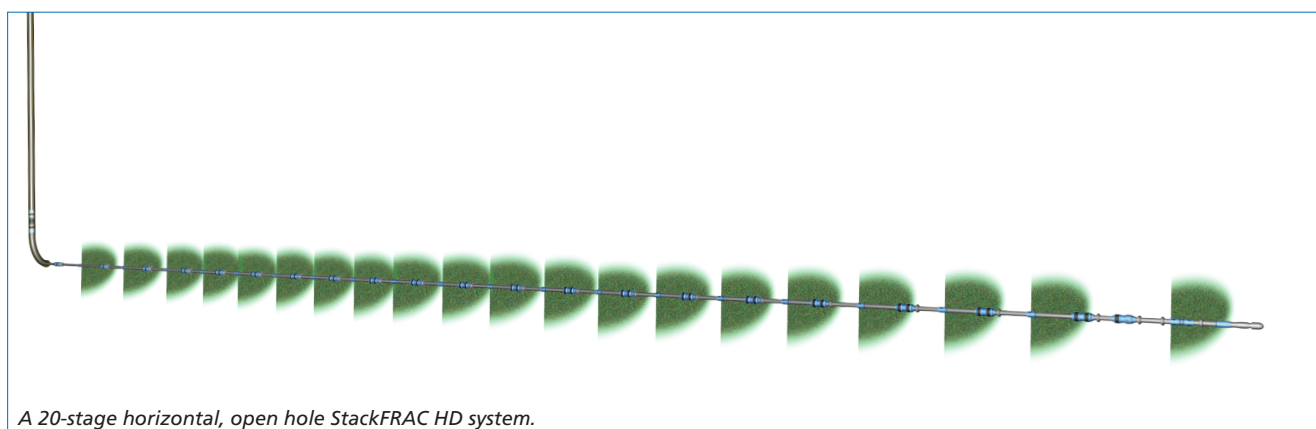
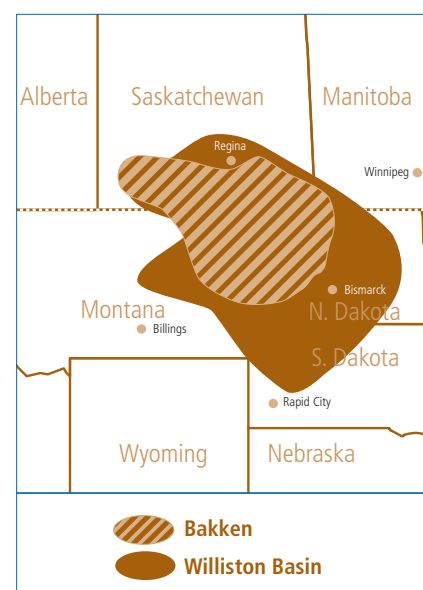
#### The Solution

Packers Plus designed the StackFRAC HD™ system with improved staging technology. This particular well used a 4 ½" liner, which would normally have a maximum of 11 stages. With the StackFRAC HD technology they were able to run a 20-stage system with an average of 65 m between stages along the 1,375 m open hole lateral.

#### The Results

The first eleven stages were treated in one day, followed by the remaining nine stages the next day. Stimulation was performed at low flow rates of ~0.65 m<sup>3</sup>/min with between 3 – 5 tonnes of sand injected per stage. Treatment pressure readings indicated that all actuation balls landed on seat allowing for the FracPORT™ sleeves to open. No pressure fluctuation was noted ahead of the ball seating indicating that the balls were able to run through the upstream seat.

Overall, the StackFRAC HD system was an operational success for the operator who is continuing to use this system in the Bakken. The benefits of this system are that it allows for increased production through longer laterals and shorter stage lengths, while keeping costs down through the ability to use smaller frac strings and liner sizes.



A 20-stage horizontal, open hole StackFRAC HD system.

Some or all of the systems, methods or products discussed herein may be covered by one or more patents, or patents pending, including US patent numbers 6,907,936; 7,134,505; 7,108,067; 7,543,634; 7,431,091; 7,021,384; 7,353,878. Copyright © 2010 Packers Plus Energy Services Inc. All rights reserved. CAN-11-AUG-10