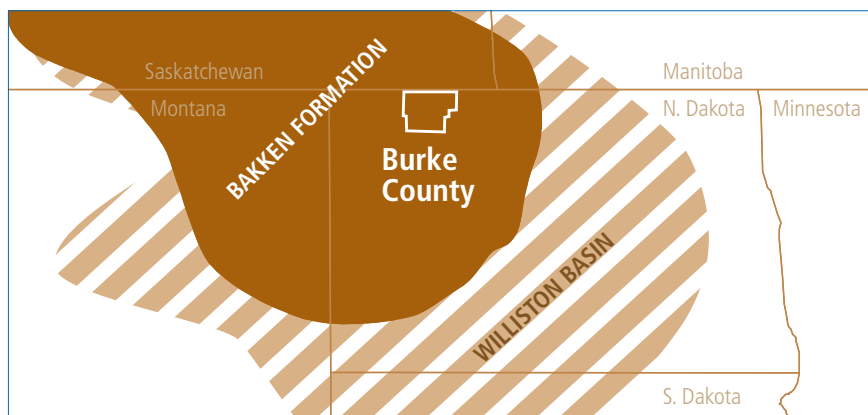




## StackFRAC HD allows for tighter interval spacing in the Bakken



### Background

The Bakken formation in the Williston Basin has increased in profile over the past five years due to the ability of operators to consistently deliver wells with high production and extraordinary economics. The steady advancement of technologies associated with drilling and completing horizontal wells has made this economic recovery possible. However, the majority of the wells are currently located in the core of the formation where reservoir pressure gradients are at their maximum. The magnitude of the Bakken formation means that the majority of the acreage is considered intermediate or outlying from the

core presenting the challenge of making the normal pressured reservoir in these areas also economically viable.

### The Challenge

An operator working in the middle member of the Bakken wanted to enhance access to the reservoir to increase production from their open hole horizontals in Burke County, ND. To achieve this, they decided to tighten fracture focus by shortening the interval spacing, thus increasing overall fracture coverage of the formation. In previous wells, the average stage length was 500 to 600 ft, covering laterals of 4,500 to 5,000 ft for a total of nine stages. The challenge was to find a technology that would allow for more

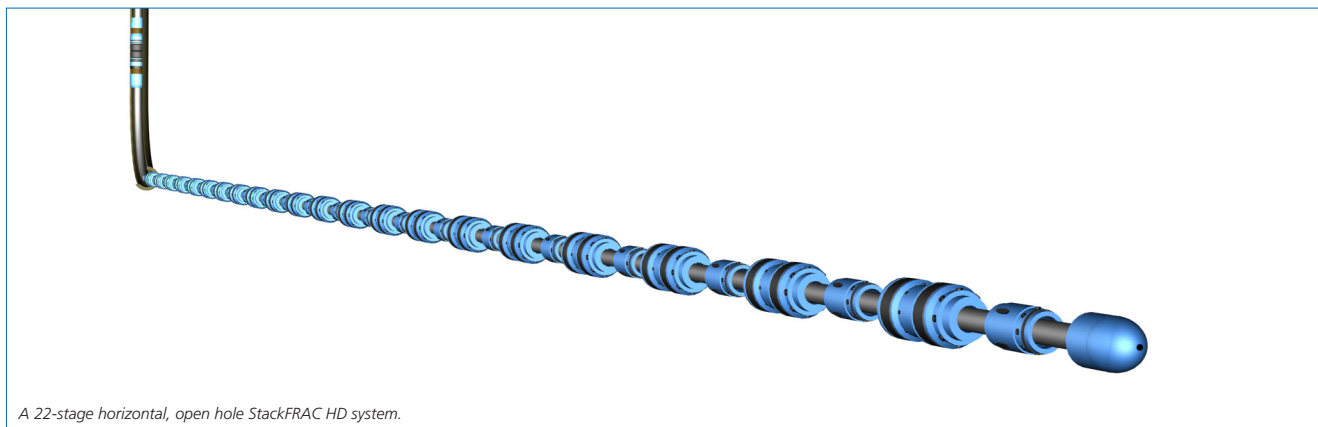
stages, and thus tighter fracture intervals, without adding a prohibitive amount of time or cost to the completion operation.

### The Solution

The operator's goal was to reduce the interval length to around 200 ft, thus increasing the fracture density along the lateral. They chose to run a 22-stage, 4 ½" StackFRAC® HD™ system in a 6" open hole wellbore. The system design was for a total depth of 13,775 ft with a 5,525 ft lateral. The average length between the stages was approximately 250 ft ranging from 217 to 260 ft. This was the second StackFRAC HD system to be deployed in the area, the first being a 15-stage system.

### The Results

All 22 stages were stimulated in a single pumping operation taking just over 32 hours for an average of 1.5 hours per stage. Logistically, this was a complex operation; however, due to the inherent simplicity of the Packers Plus StackFRAC HD system, the time savings made it the most economical choice. The operator was very pleased with the efficiency of the system and has since run six more 22-stage systems in their Bakken wells.



A 22-stage horizontal, open hole StackFRAC HD system.