

Stimulating a Barefoot Completion with Multiple Sand Fracture Treatments Using an Inflatable Packer Straddle System

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Abstract

A new method to create multiple fractures in a barefoot completion with a sand fracture treatment has been successfully deployed in Canada. This new method, utilizing an inflatable packer straddle system, has allowed all potential pay intervals to be effectively stimulated, as compared with traditional methods. This new approach of stimulating the open hole, without having permanent packers and frac sleeves or a cemented liner has resulted in reduced completion costs and improved production results.

In an effort to effectively, efficiently, and affordably stimulate these wells proven technology was modified to perform sand fracture treatments without depending on a liner. The system can be deployed on jointed pipe or coil tubing. The Bakken Formation in Southeast Saskatchewan and Southwest Manitoba was a prime candidate for trial testing due to the low treatment pressures and sand volumes.

Most recently the two typical completion methods in the Canadian Bakken use either open hole mechanical packers with ball activated frac sleeves, or cemented liner and hydrojet perforations placing the fracture treatment with coil tubing.

One of the primary concerns about the conventional liner methods is assurance of knowing where the fracture is being placed. There is no way to determine that there was adequate annular isolation to ensure where any of the planned fracture treatments were placed. Using a straddle system with a five meter (16.4 feet) interval allows the operator to know exactly where the fracture was placed in the reservoir.

Knowing the location of the fracture can provide clarity when analyzing production results. Producing as a barefoot completion may add incremental production from naturally fractured intervals that otherwise would have been sealed off with cement. Additionally, a barefoot completion provides flexibility for interventions or adding additional laterals since there is no liner that creates a restriction.

Main considerations of how the tool was developed to resist erosion and how the tool operates will be discussed. Case histories will be presented highlighting the job procedure as well as the economic advantage of using the inflatable packer straddle system. Reductions in completion and stimulation costs of 40% less than a liner completion have been achieved.

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