Packers Plus® Case Study

StageFRAC Titanium Series system delivers optimum fracture treatment performance in record time for North Sea Operator

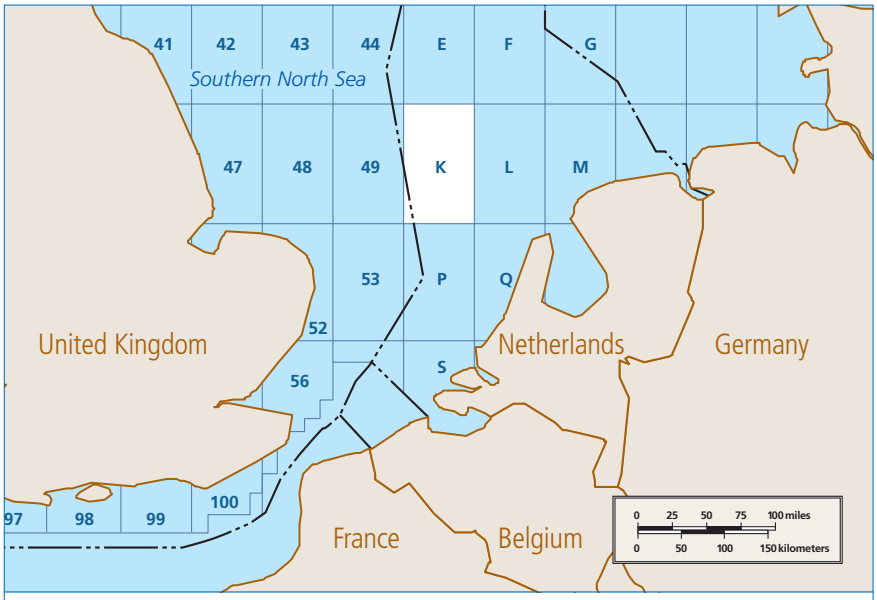

Figure 1. Exploration Blocks of the Southern North Sea

Background

For over 20 years, wells in the North Sea requiring stimulation have been completed using a cased hole, plug and perf technique. Due to a lack of robust and efficient open hole alternatives, this has always been the preferred method in the North Sea. Operators in this area are actively exploring new technology; however rig and vessel costs make it difficult to justify experimenting with unfamiliar equipment. Despite the perceived risks, a large German-based Operator working in the K-block of the Southern North Sea (Figure 1) determined that a more efficient method was necessary to complete their wells in a timely and cost-effective manner.

The Challenge

It was important to increase efficiency as the target formation is located within a military training zone where operations are limited to only a few months of the year. Reducing rig time would ensure that wells would be completed within the time constraints, with the added benefit of reduced cost. Weather also brings unplanned delays, therefore, the faster the work is performed, the less impact weather has on installation and stimulation operations.

To add to the challenges of the environment, the Operator's design for stimulation in this area incorporates intentional tip screen-outs during the treatments. These tip screen-outs result in large differential pressures. After extensive research on various completion methods, the Operator came to Packers Plus for a reliable open hole, multi-stage system solution.

The Solution

The field-proven StageFRAC* system is inherently capable of reducing rig time compared to the cased hole, plug and perf method due to its continuous pumping operation (Figure 2). This system eliminates the need for multiple coiled tubing runs required in the conventional plug and perf method to perforate, stimulate and clean out each stage. Instead, the StageFRAC system allows for fracture and stimulation of each consecutive stage in a single operation making it an attractive option due to the time restrictions imposed by the military training schedules in the area.

Driven by technology and innovation, Packers Plus designed a custom StageFRAC system to address the specific challenges of the job to ensure customer satisfaction. These systems are typically rated to 10,000 psi, but this application required a burst and collapse pressure rating of 13,000 psi to accommodate higher pressures encountered during the planned screen-outs. A specialized version of the StageFRAC Titanium® Series system incorporating 13% chrome material, as requested by the Operator, was designed, built and delivered in less than 10 weeks.

The Results

Working closely with experienced Packers Plus personnel, the Operator installed a 5-stage system, the first open hole, multi-stage system run in the Southern North Sea. The Packers Plus StageFRAC Titanium Series system builds on proven technology and integrates a corrosion resistant design, various anti-preset features along with premium threads and field-adjustable tool activation pressures. This

gave the Operator confidence in the robust system and allowed them to program fracture treatments as required.

A total of 2.5 million lb of proppant were successfully placed in the 5 stages. The operation was completed in 19 days, 10 of which were spent waiting on weather. A similar 5-stage well completed earlier by the same Operator in the Southern North Sea using plug and perf took 32 days with no downtime due to weather, making the StageFRAC Titanium Series system 3.5 times faster than the cased hole, plug and perf method. The Packers Plus system allowed the Operator to complete all work well within the given work window, and saved over 3 weeks of operating time.

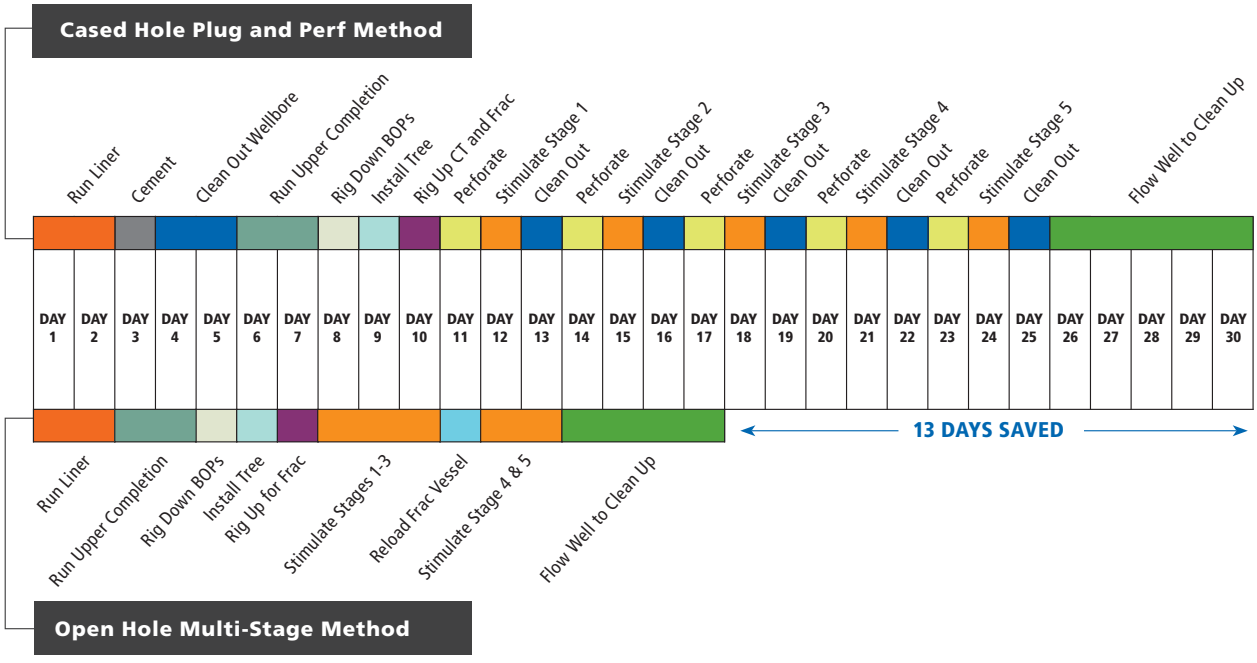

Figure 2. Typical offshore completion timeline