Case study: Hydraulic fracturing
Location: Permian Basin and Eagle Ford Shale

Operator Saves >18 h by Using Automated Valve Greasing System for Zipper Frac Operations During 3-Well Program

Optimized valve maintenance reduces grease consumption, removes personnel from the red zone, and improves efficiency across 200 stages

By using a remotely operated, automated system for greasing frac tree and manifold valves, a Texas operator streamlined hydraulic fracturing operations and reduced risk.

Improve valve maintenance safety and efficiency during zipper frac operations

Valves on the frac tree and manifold require regular maintenance (grease injection) during hydraulic fracturing operations. The conventional manual technique—which is often on the critical path—and the absence of a data-driven approach to defining maintenance schedules waste time and resources, increase risk, and frequently lead to NPT because of improper valve maintenance. Personnel have to enter the red zone, more crew members are required, and estimating the optimal amount of grease depends on individual skill.

An operator with projects in the Permian Basin and Eagle Ford Shale tried to address the safety issues by keeping the grease injection equipment outside the hazardous area and using longer hoses. However, the grease had to travel farther, which increased the job duration. A more efficient solution was required.

Use remotely controlled automated valve greasing

Cameron proposed its automated valve greasing system, which comprises a remote-control skid that houses a human machine interface outside the red zone and a grease injection unit that is placed in the red zone to minimize the distance travelled by the grease. Greasing hoses are affixed to each valve during rig-up and remain in place until rig-down.

A technician uses the intuitive remote-control panel to select the valve that needs greasing. A high-pressure pump on the unit in the red zone pushes grease to the valve. This minimizes risk of human error. The optimal volume of grease is determined at the user interface via feedback from instrumentation. A backup pump is provided for redundancy. Because no personnel enter the red zone, normal fracturing operations can continue uninterrupted, improving wellsite efficiency.

Save time and costs while minimizing risk

During zipper frac operations involving 200 stages, the automated system reduced greasing time by 25% and grease consumption by 11% (approximately 580 lbm). No greasing operations were performed on the critical path, and even freezing conditions had no impact on the system. A single technician was required to operate the unit, with no need to enter the red zone. The operator saved more than 18 hours during 648 greasing events, with zero NPT.

Copyright © 2021 Schlumberger. All rights reserved. 21-SURPS-883943

slb.com/cameron-frac-flowback