Prodigi™ Intelligent Fracturing Service Eliminates Screenouts in Challenging Field

INNOVATIVE SERVICE DELIVERS MORE CONSISTENT STAGE-TO-STAGE EXECUTION THAN TRADITIONAL METHODS

HAYNESVILLE AND BOSSIER SHALE FORMATIONS, NORTHERN LOUISIANA

OVERVIEW

An operator targeting the Haynesville and Bossier shale formations in northern Louisiana collaborated with Halliburton when recently completing both formations. The toe stages proved to be very difficult to stimulate, resulting in multiple screenouts. The operator’s focus was straightforward: collaborate with Halliburton to design and execute a stimulation treatment in line with the basin’s operational trends, while utilizing proven Halliburton technology to mitigate screenouts, place proppant, and maximize production.

CHALLENGES

Operating in the high-pressure/high-temperature (HP/HT) environment is particularly challenging. The Haynesville/Bossier shale is characterized by high formation stresses, which leads to higher treating pressures during stimulation. Furthermore, treating pressures can be unpredictable. Designed treatment rates are difficult to reach and proppant is difficult to place, often resulting in longer than anticipated treatment times and screenouts. Thus, frac jobs are frequently not pumped as designed, and delivering consistent fracture treatments is very difficult, if not impossible. Despite these challenges, production results from offset wells in the completion program were very positive, so this operator challenged Halliburton to focus on mitigating screenouts while optimizing the stimulation treatment.

SOLUTION

Halliburton studied the high treating pressures and inconsistencies of the frac jobs. To solve these issues, Halliburton introduced its Prodigi™ intelligent fracturing service to provide a repeatable and consistent approach to the stimulation treatment. Prodigi service provides adaptive and instantaneous changes to pumping rates in order to optimize the formation breakdown during a fracturing treatment. The service provides an engineered approach to the formation breakdown process to maximize cluster efficiency for each stage. This means proppant is placed more evenly along the well which leads to improved production. Traditionally, formation breakdown was focused on delivering the designed rate as fast as possible. What makes Prodigi service unique is that it adapts to these downhole conditions.
and autonomously adjusts pump rates during the treatment.

RESULTS

The results from Prodigi service have been impressive for this operator. Once Prodigi service was deployed, screenouts were eliminated and 100 percent of the designed proppant was placed in nearly every stage due to improved cluster efficiency and formation breakdown. Furthermore, the designed treating rate was achieved earlier than when using traditional breakdown methods. In fact, Prodigi service reduced the overall treatment time, on average, by 10 minutes per stage, while observing a lower average treating pressure. Additionally, this technology eliminated human intervention during the breakdown and rate ramping intervals – thus bringing consistency to the formation breakdown process from stage to stage. The traditional engineered approach to pressure management often resulted in unnecessary pressure spikes on the surface, which could cause delays, and incorrect diagnoses of downhole conditions. Prodigi service reduce the variability in the overall stimulation treatment, resulting in this operator’s ability to plan future development and completion activities by eliminating screenouts. All of this has translated into better wells.

Haynesville/Bossier impact: Eliminating screenouts by breaking down all clusters with Prodigi™ service results in lower overall pressure and complete placement of all stimulation stages.