Prodigi™ Intelligent Fracturing Service Enables Operator to Optimize Cluster Efficiencies

INNOVATIVE SERVICE IMPROVES WELL PERFORMANCE WITH MORE EVENLY DISTRIBUTED FRACTURES ALONG WELLBORE

WILLISTON BASIN

OVERVIEW
An exploration and production company operating in the Williston Basin sought to improve well performance. The company joined with Halliburton to engineer a solution, with the primary effort focused on improving cluster efficiency while pumping. The solution was to deploy the Halliburton Prodigi™ intelligent fracturing service to optimize cluster efficiency in real time and to yield better production from the well. To validate the performance of the Prodigi service, the Halliburton team could also provide real-time monitoring of the fluid and proppant distribution in each cluster by using its StimWatch® stimulation monitoring service.

CHALLENGES
Hydraulic fracturing in the Williston Basin poses a number of challenges with reservoir heterogeneity and the varying thickness of target zones. Moreover, validating changes to completion designs in order to ensure improved stimulation and production can be difficult, leading to uncertainty.

One approach is to focus on stimulation cluster efficiency, particularly with longer stages and more clusters per stage. Additionally, to determine if more aggressive completion designs can be undertaken, it is important to be able to confirm if increases in the stage length and cluster count would be detrimental to well performance.

SOLUTION
To solve these challenges, Halliburton recommended its innovative Prodigi intelligent fracturing service. This service provides a repeatable and consistent approach to stimulation with adaptive, instantaneous changes to pumping rates that optimize formation breakdowns during fracture treatments. Prodigi service takes an immediate engineered approach that maximizes the cluster efficiency of each and every stage. Whereas a traditional formation breakdown focuses on delivering the designed rate as based on the personal preference of the individual running the job, with little regard for optimum downhole conditions, Prodigi service uniquely adapts the treatment by using real-time data to automatically adjust pump rates and achieve optimal cluster efficiency.
RESULTS

The application of Prodigi service yielded significant performance gains in the customer’s well. With the permanent installation of fiber-optic cable in the well, the Halliburton StimWatch® service provided real-time monitoring and validation of fluid and proppant distribution in each cluster.

For comparison, two stages were pumped in the same horizontal well, both executed with the same perforation design and the same maximum rate of treatment. Figure 1 charts the performance of traditional pumping: the StimWatch data reveals uneven fluid placement in each cluster. By contrast, Figure 2 shows the effectiveness of the Prodigi service: automatic real-time adjustment to pumping rates yielded a more even distribution of proppant and fluid in the clusters, resulting in significantly more consistent and efficient formation breakdown.

Traditional Pumping Stage

![Figure 1](HAL124805)

*Figure 1: A traditional manual formation breakdown in the Williston Basin leads to uneven distribution of flow to the clusters.*

Prodigi™ Enabled Pumping Stage

![Figure 2](HAL124804)

*Figure 2: Prodigi™ service enabled more even distribution of proppant and fluid to each cluster, resulting in improved well performance in the Williston Basin.*