

Stimulation for the Digital Asset™ Workflow

Optimize stimulation treatments and return on investment in real time

Business Challenge

Improve effectiveness of hydraulic fracturing treatments and optimize well placement to maximize the return from your well, reservoir and asset.

Overview

The key to increasing output of your reservoir through stimulation is better understanding of your treatment, such as actual height, length and width – and pay zone coverage. Understanding these will help you optimize not only the current well but the next well and the entire field.

The Stimulation for the Digital Asset™ workflow helps enable you to design the best stimulation treatments, select the best candidates for stimulation and, through analysis of production, maximize your return on investment. In the end, this workflow will help you optimize ultimate recovery and value of your reservoir.

Stimulation for the Digital Asset custom designed solution helps you:

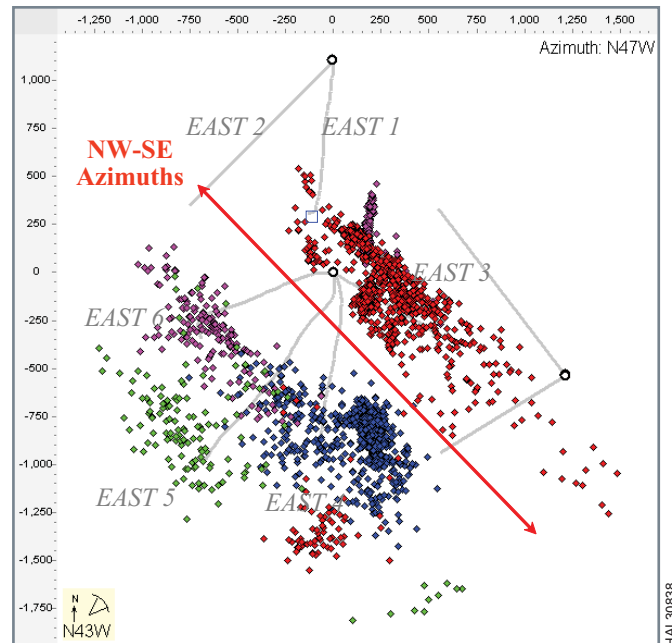
- Maximize stimulated reservoir volume and production
- Maximize stimulation effectiveness
- Optimize spacing and layout of wells for treatment of the field
- Minimize stimulation uncertainty

Maximize Stimulated Reservoir Volume and Production and Maximize Stimulation Effectiveness

Understanding how effective the stimulation treatment is and the probable production begins with understanding the treatment itself. Understanding parameters such as azimuth and fracture length can help you optimize the well location to maximize recovery; knowing fracture height can help you optimize your perforation strategy; knowing fracture coverage can help you optimize completion and treatment design. With the Stimulation for the Digital Asset workflow, you can see the height, width, and length of the stimulation treatment (to understand where and how the fracture is growing) and make adjustments in real time.

Optimize Spacing and Layout of Wells for Treatment of the Field

Stimulation data can be integrated with geological and geophysical information to understand how the reservoir will fracture and respond to stimulation treatment.



Fracture mapping can help in determining fracture azimuth and fracture half-length so you can optimize well location to maximize recovery and optimize fracture stage volume.

The Stimulation for the Digital Asset workflow will help you to obtain the optimal spacing and layout of wells and help you optimize future stimulation treatments. This will help enable you to reduce drilling costs by minimizing the number of wells required or optimize completion treatments for future wells by balancing the best treatment design by stimulated reservoir zone.

Extending beyond the single well stimulation treatment, the engineering data can be combined with geological and geophysical information to improve understanding of your overall reservoir. This will aid in development well placement, stimulation design, and enhanced recovery planning for the reservoir, helping to extend its life and increase its value.

Minimize Stimulation Uncertainty

Stimulation treatments can be optimized by understanding where the treatment is going and how the fracture is growing in real time through the use of fracture mapping, tiltmeters or distributed temperature sensing methods.

Stimulation for the Digital Asset workflow helps you move beyond simply measuring data and allows you to understand how these data relate to the geology and provide insight into what is needed to optimize fracture treatments. This workflow can help you better understand if diversion processes are working; enable you to quantify how much fluid is entering each zone during the treatment; and let you estimate fracture propagation during the treatment.

Model, Measure, Optimize Approach

Critical to the success of all our Digital Asset workflows is our model, measure, optimize approach. For the Stimulation workflow:

- Model the stimulation treatment in the context of the geological model.
- Measure how the reservoir responds to the stimulation treatment and how the fractures are propagating
- Optimize the stimulation design (volume, rate, fluid type, time, positioning, orientation); and optimize selection of the most economical targets for stimulation across the field.

Stimulation Expertise

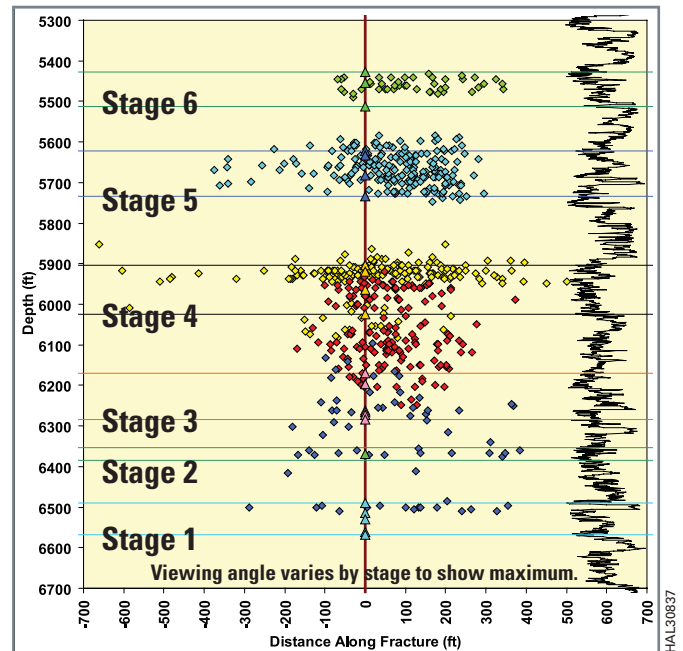
Halliburton is the market leader in stimulation treatments and fracture mapping. We provide an experienced multi-discipline team to work collaboratively with you to design and implement a solution to optimize your asset. Our customers worldwide rely on our experience to improve stimulation performance.

The Digital Asset® Environment

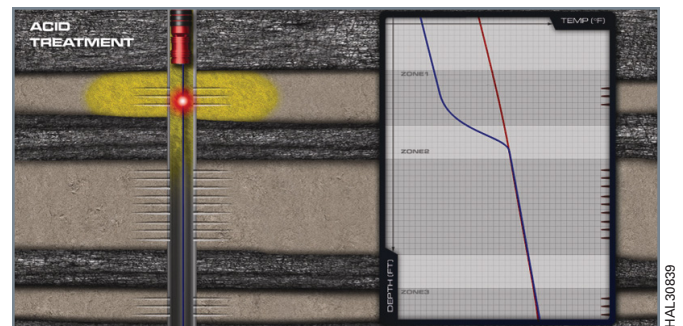
Halliburton's goal is to drive efficiencies in operations for our customers, while helping to lower finding and lifting costs. In order to do this, we are creating a real time collaborative, open environment in which we can model, measure and optimize the your asset. We call this the Digital Asset.

With the Digital Asset environment we are focusing on integrated workflows to enable these efficiencies and cost savings, ultimately to help improve production and recovery rates. Today we are focused on three workflows: Geosteering, Drilling and Stimulation for the Digital Asset.

The Digital Asset workflow environment is core to Halliburton's strategy; it leverages and integrates all the technologies, products, processes, tools, and support necessary to provide customized solutions to address your challenges.



Fracture mapping aids in determining fracture height for example, which can help to optimize perforation strategy and reduce out of zone growth, allowing you to potentially increase fracture half-length.



Stim Watch® stimulation monitoring service utilizes the OptoLog® DTS fiber optic distributed temperature monitoring system to provide continuous temperature profiles over the entire length of the well while the stimulation treatment is being done.

Learn more at www.halliburton.com/digitalasset

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