



Sensori™

Fracture Monitoring Service

Fracture Monitoring, Simplified!

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Sr. Product Line Manager – Sub-Surface Monitoring

Take the **VARIABILITY** out of frac optimization.

CAPITAL

Maximize returns.
Predictable cashflow.
Control performance.
Simplify execution

DESIGN

Which benches?
Impact of well interference?
Infill around wells?

DATA

Don't have it.
Too much of it.
Can't use it fast enough.

Sensori™

fracture monitoring system

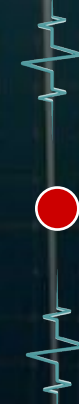
Your direct link to the subsurface
for faster, confident decisions.

- A single, simplified system for **ROUTINE MONITORING AT SCALE.**
- Real-time insights and actionable answers to **IMPROVE RECOVERY.**
- Low-cost, less complex diagnostics for **SIMPLIFIED OPERATIONS.**
- Advanced data delivery services for **FASTER, EASIER ACCESS TO DATA.**

Non-intrusive DIAGNOSTICS



Offset Pressure Gauges



In well pressure pulse tech



Offset well disposable fiber tech



Legacy Solution

Sensori™ system

FIELD EXECUTION



Reduced Footprint

AUTONOMOUS FIELD EXECUTION



ANALYSIS



Automate Data Processing

REMOTE CLOUD PROCESSING



ANALYTICS REPORT



4 WEEKS

Machine Learning & Analysis

AUTOMATED ANALYTICS



REAL-TIME

Faster, easier
access to **DATA**



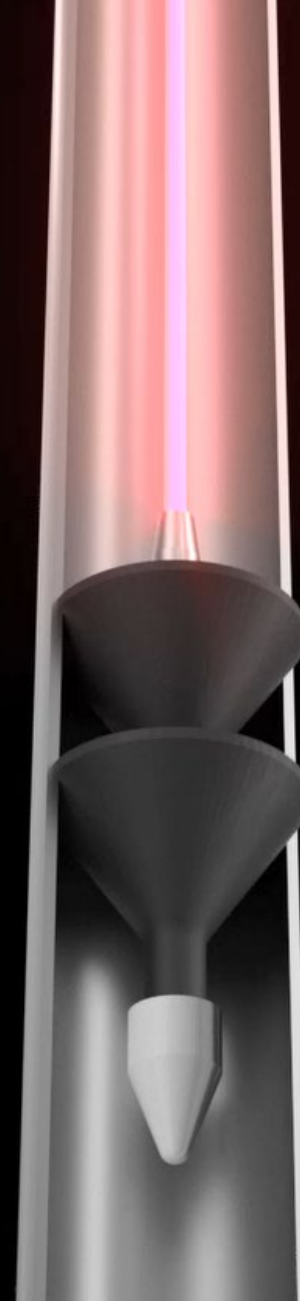
Remote Automated Monitoring System

- Enables transparent and seamless data acquisition across the pad.
- Plug and play with ExpressFiber™ service and SPIDR® system.
- Provides live feedback of fracture growth and behavior.
- Integrates the recording, processing, and transmission of live fracture data.
- Eliminates trailers, additional personnel, cranes, and extensive pressure control.

Disposable Fiber Technology

Economic, low-risk diagnostic for cross-well monitoring:

- Provides a direct measurement of well interference.
- Run in offset wells to acquire direct measurements of DAS microseismic, strain and temperature.

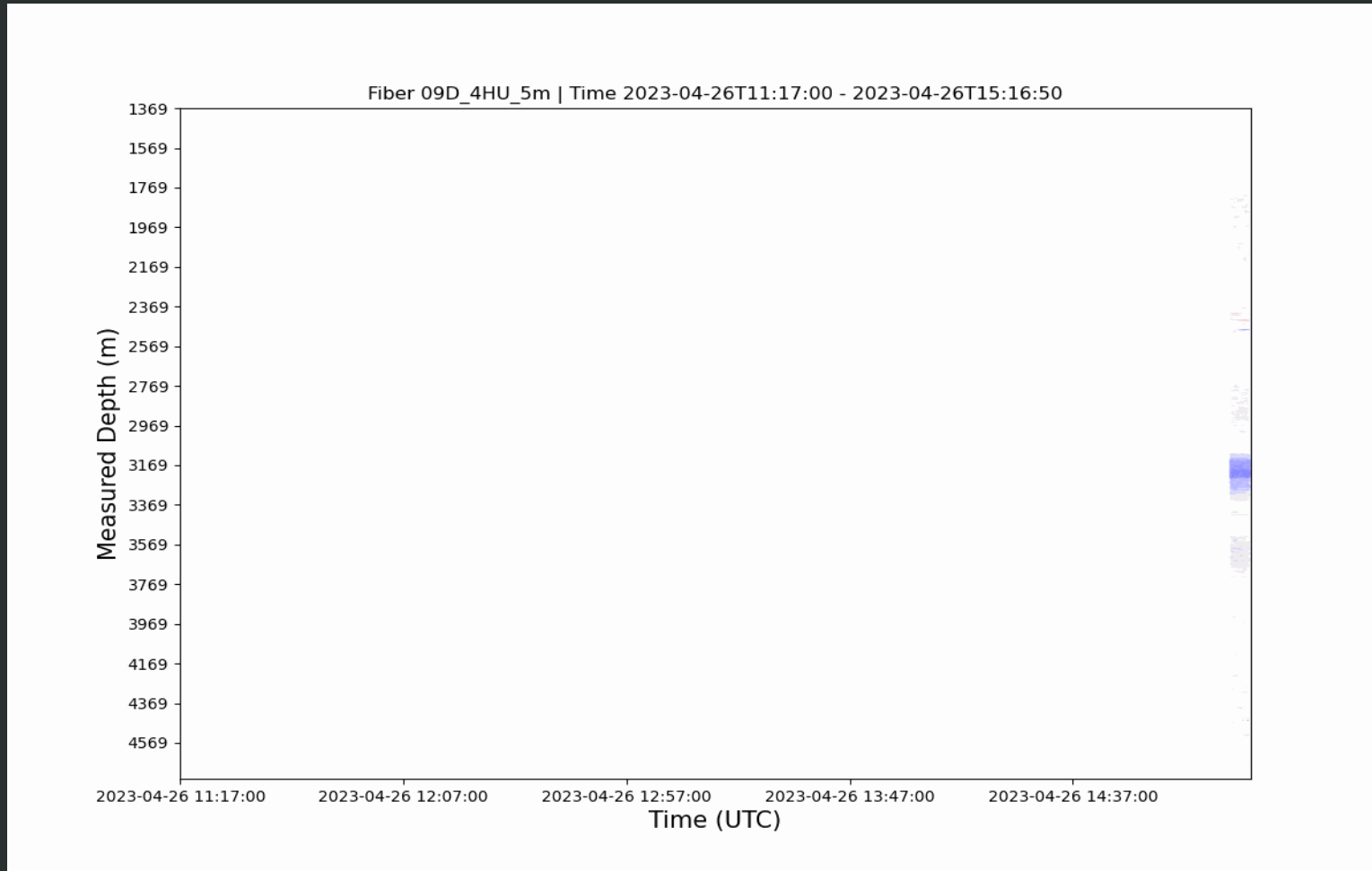


Wireline Deployment vs Disposable Fiber

Limited footprint, no crane needed, less red zone exposure.



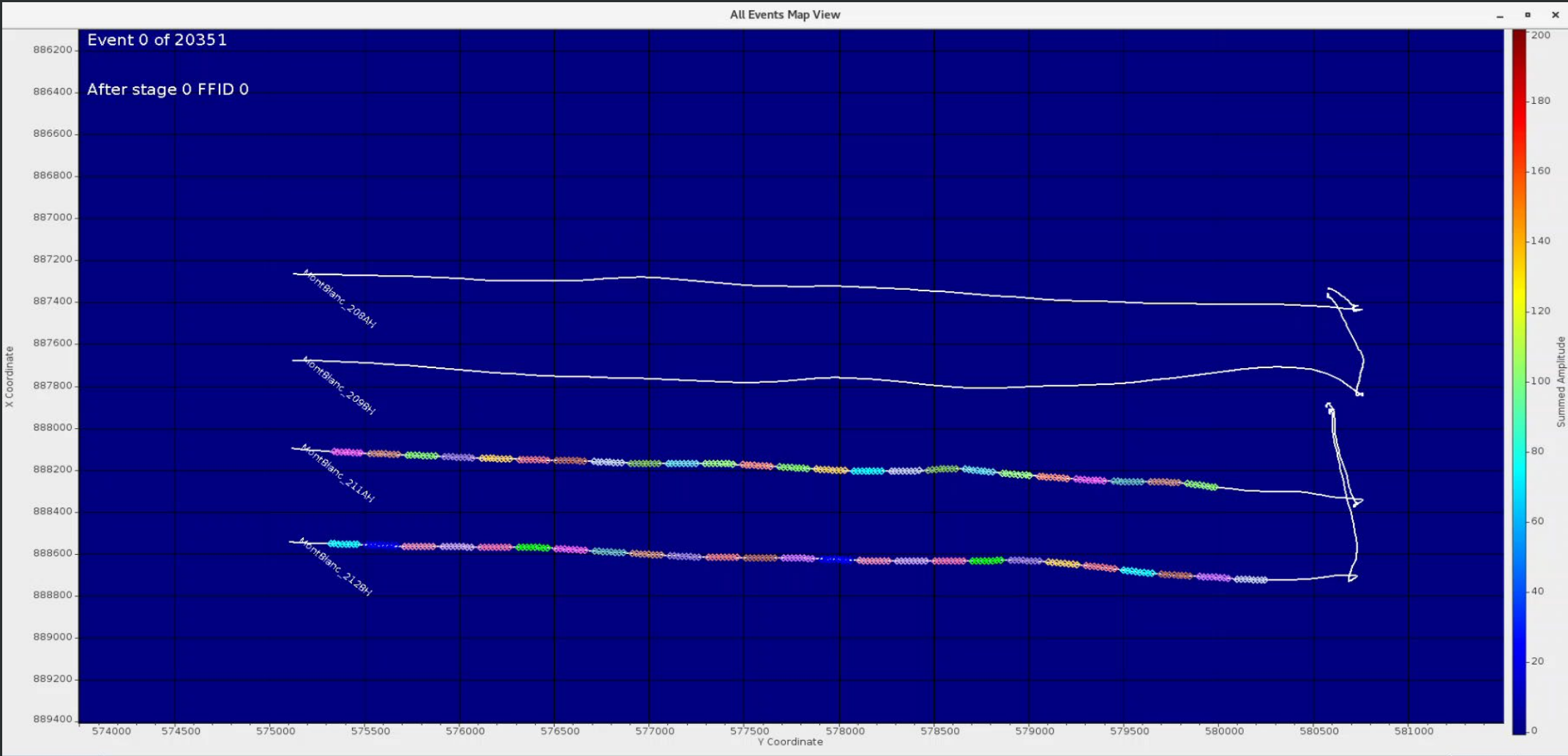
Automating Cross-well Data



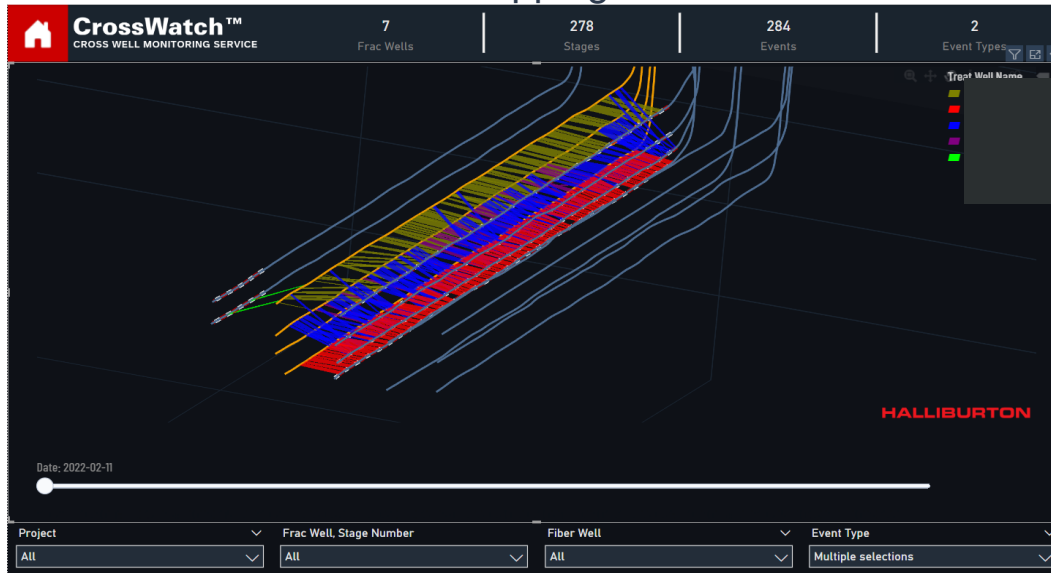
Wells Map View



Automating Cross-well Data – MSM



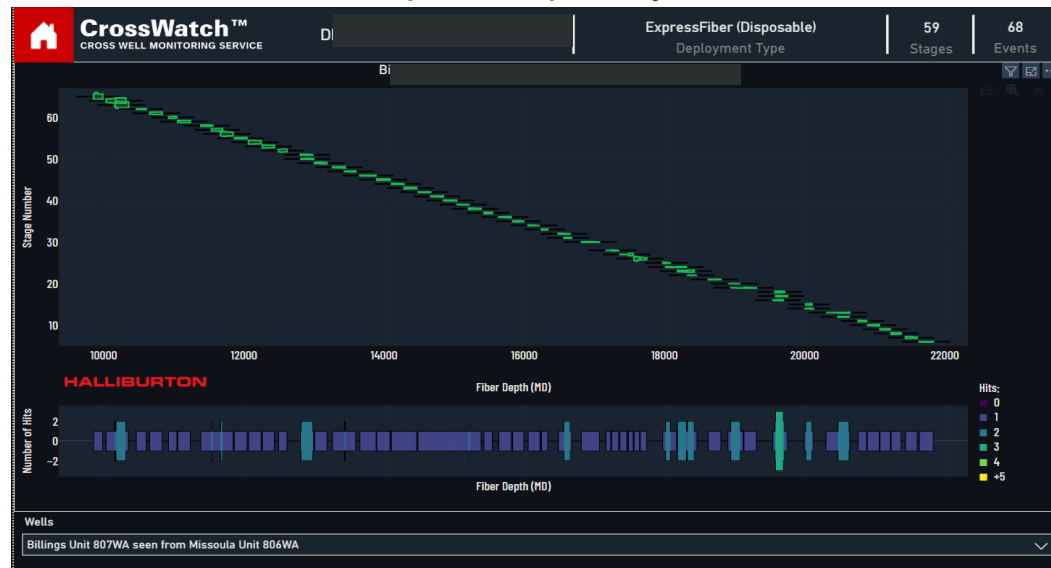
3D Mapping View



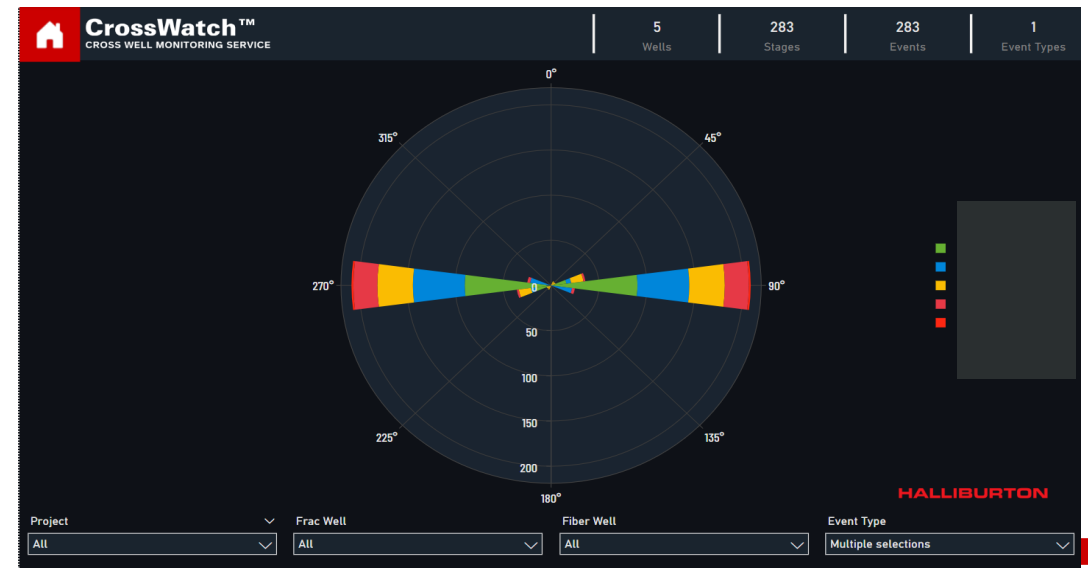
Event Statistics



Gap/Overlap Analysis

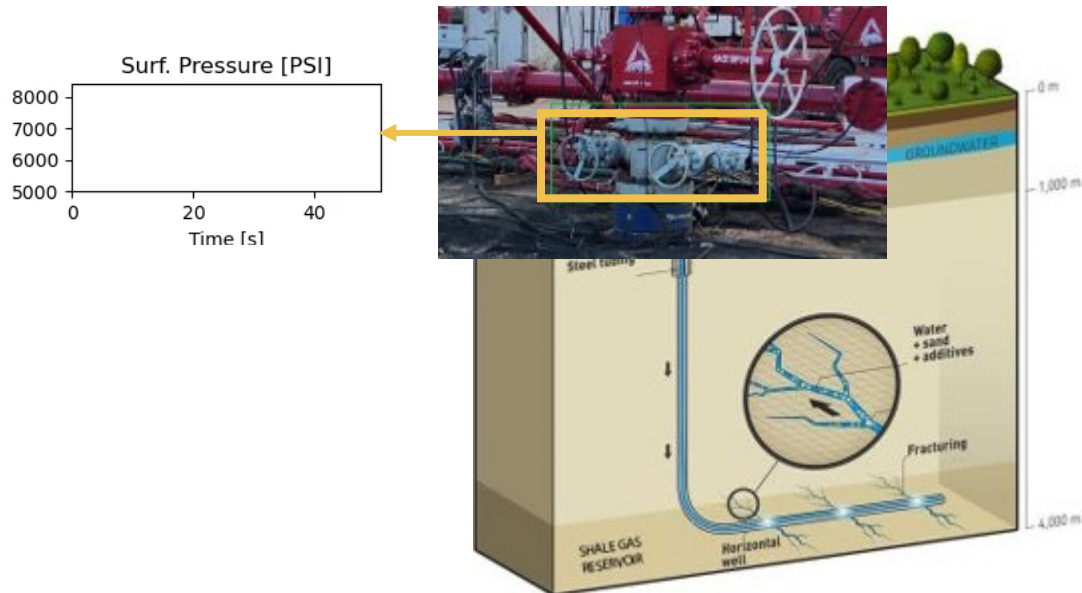


Event Azimuths



Pressure Pulse Technology

- Utilizes existing HHP on well site to generate pulse.
- Provides a quantitative metric.
- Automated processing for real time feedback.



Generates a pressure wave that travels down the wellbore, interacting with fractures to generate a pressure response.

Sensori™ Pulse

pressure pulse service

Pressure response is analyzed and processed in real time to calculate a measurement of stage efficiency.

SOLVING everyday challenges with the Sensori™ system



Are your fractures staying in zone?



CHALLENGES

- Understanding far field fracture propagation can be complex and difficult.
- Multiple target benches add complexity to completions design and execution.



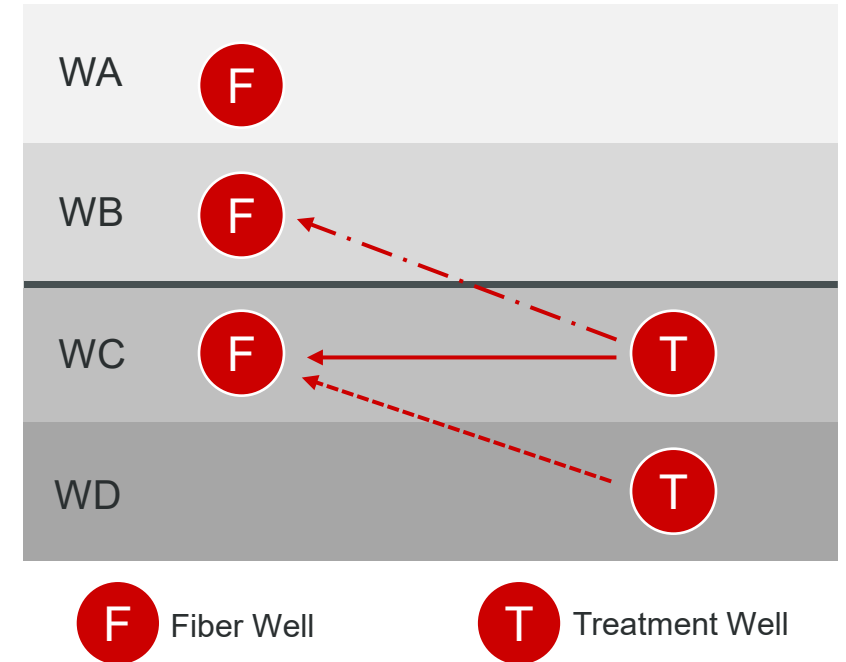
SOLUTION

- Deploying ExpressFiber in offset wells in each zone to observe any cross-well communication during treatment.

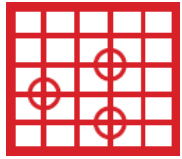


RESULTS

- Understand which wells or designs are in or out of zone.
- Optimize completions to obtain the desired outcomes.
- Increase production and stimulated reservoir volume.



Interested in a well surveillance system?



CHALLENGES

- Monitoring frac propagation to avoid frac communication between treatment wells and offset drilling pads.
- Analyzing fracture propagation data and making recommendations for future SIMOPs buffers.



SOLUTION

- Deploying ExpressFiber in offset wells to identify and quantify fracture interactions.



RESULTS

- Treatment pad and drilling operations were able to operate within the SIMOPs buffer without standby time.
- Preliminary reductions to SIMOPs buffers approved.

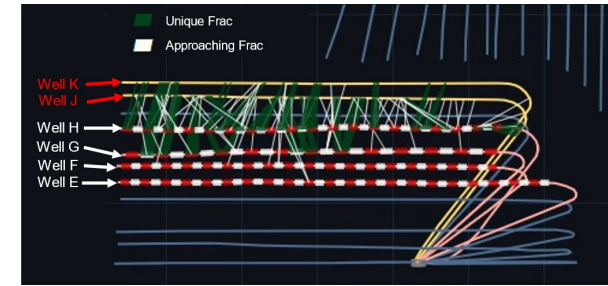
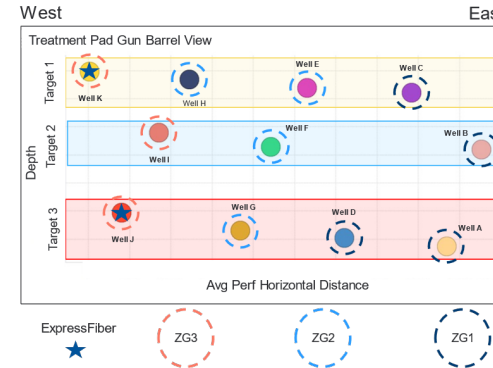
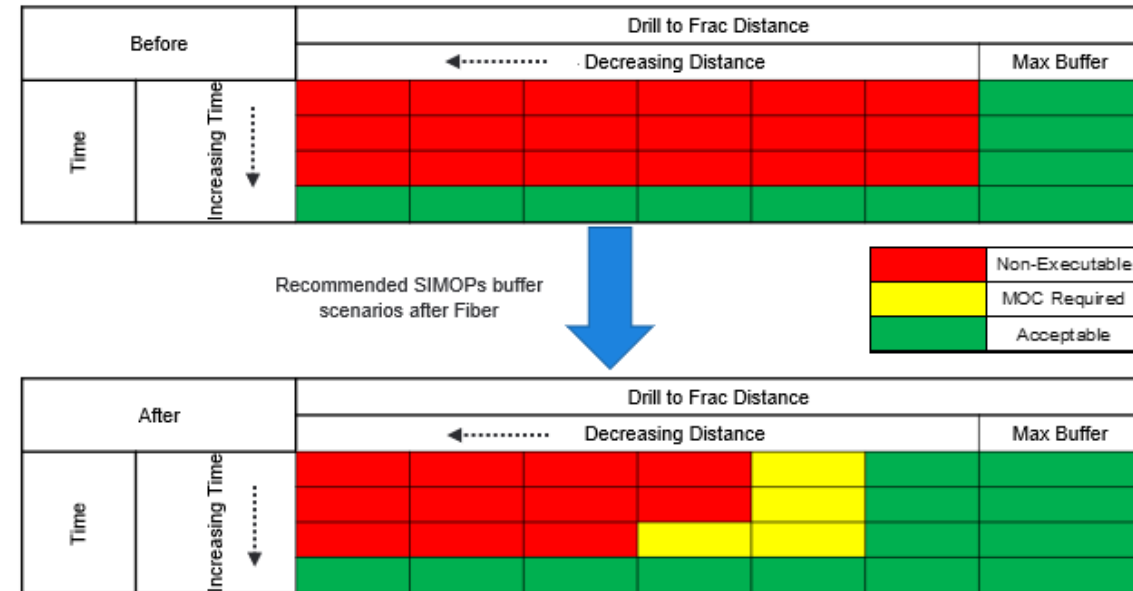


Figure 7: Map view of ZG#2 showing FDIs



Are you seeing the full picture with offset gauge data?



CHALLENGES

- Pressure responses seen with gauges in offset wells can be difficult to quantify in terms of the level of interaction with the treatment well.
- Multiple hits and azimuth data can be hard to decipher using only pressure data.



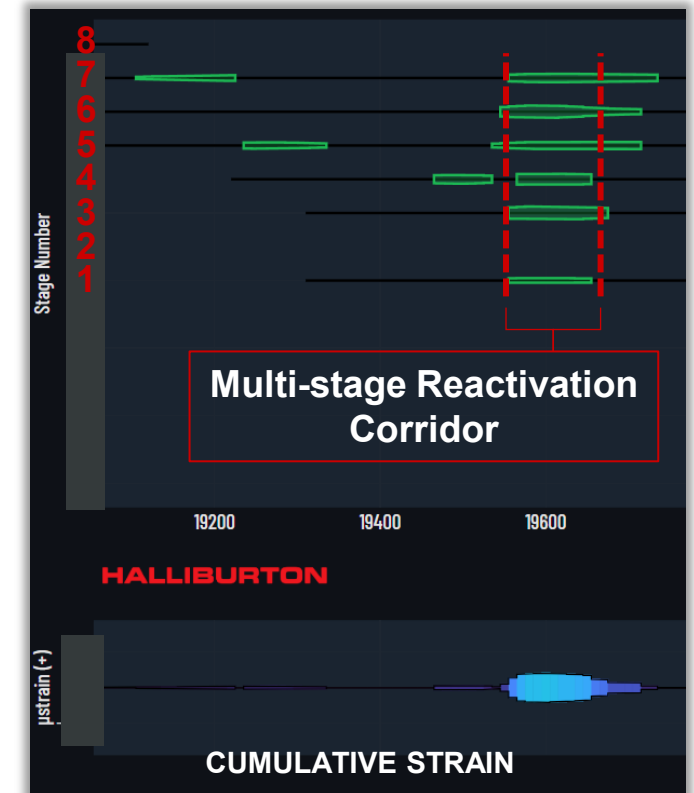
SOLUTION

- Cross-well events can be correctly identified and classified using ExpressFiber.
- Cumulative strain and azimuth calculations can give a better picture of where fractures are intersecting the observation well stage by stage.



RESULTS

- Build accurate models with confidence in event classification.
- Quantify stain along offset laterals with cumulative strain and understand where gaps or overlap in your lateral coverage exist.





THANK YOU

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