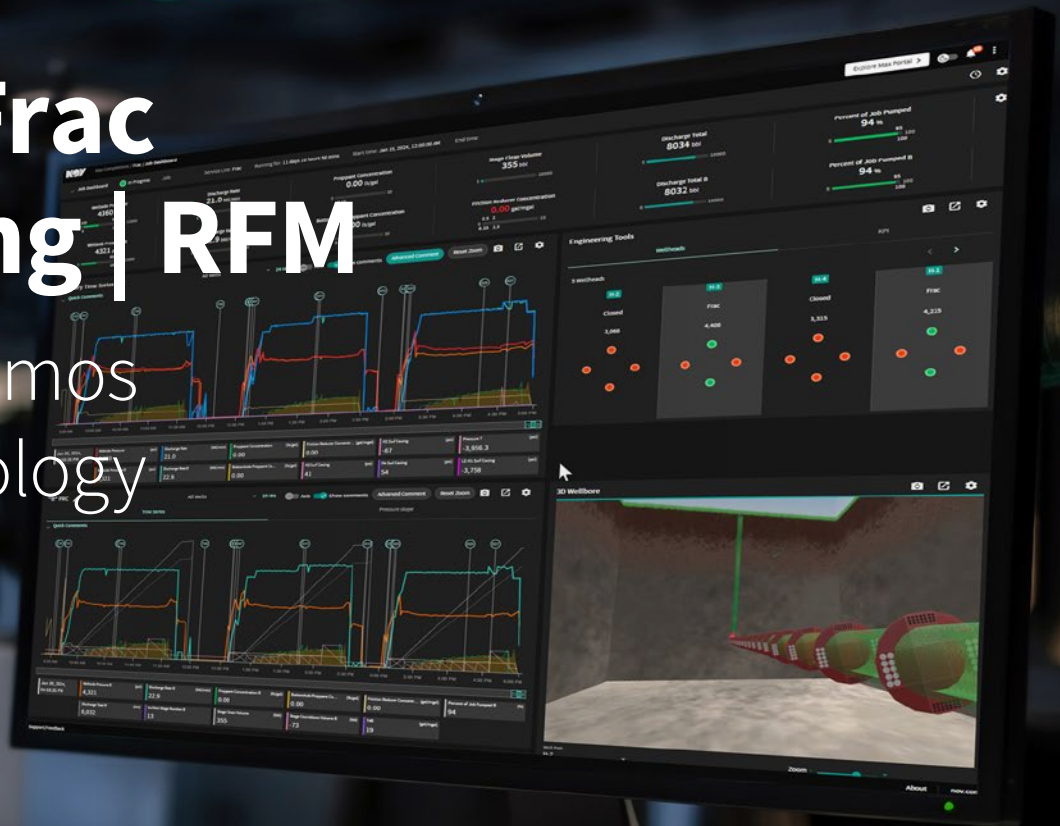


# Remote Frac Monitoring | RFM

Featuring Seismos  
SAFA™ Technology



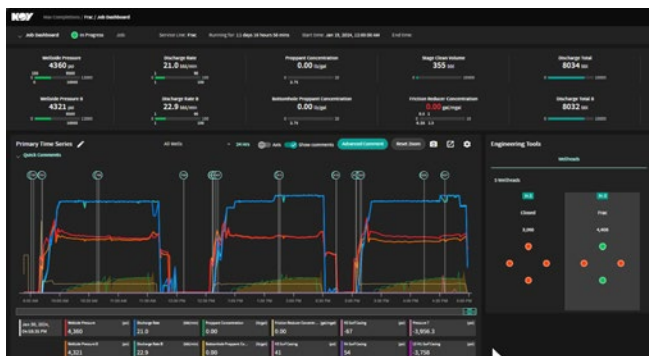
## Max Completions incorporates SAFA for real-time subsurface intelligence to optimize ongoing frac operations

Enhance the efficiency and economic benefits of operational monitoring without extra intervention with SAFA™ (Seismos Acoustic Friction Analysis) on NOV's Max Completions™ platform. SAFA delivers real-time data to operators, offering additional contextual information to assess critical completions metrics, including perforation efficiency and pipe friction. This non-invasive technology optimizes well performance, significantly lowers operational risks, and reduces costs.

SAFA works seamlessly with Max Completions alongside NOV's digital and hardware solutions to continuously monitor pressure data during stimulation. The system automatically detects rapid fluctuations in rate – whether planned or unplanned – and provides real-time pipe and perf friction measurements. These measurements are essential inputs for determining additional critical calculations, such as perforation efficiency, pipe friction factor, perf friction coefficient, uniformity index (UI), and initial entry hole diameter.

### Benefits

- Optimize perforation schemes, fluid composition, and pumping strategies with real-time perf efficiency
- Fine-tune fracturing fluid properties using pipe friction curves and bottomhole pressure data
- Track cluster flow distribution using UI
- Verify initial entry hole diameter before perforation conditions begin to change



Deliverables	Description
Pipe Friction Factor	Darcy-Weisbach friction factor
Perf Friction Coefficient	Quantifying perforation friction
Perf Efficiency	Efficiency of perforations
Uniformity Index (UI)	Volumetric distribution uniformity of slurry
Initial Entry Hole Diameter	Verifying initial EHDs to designed specifications
Plug Performance	Identify plug slip or leakage

### Benchmark

- Permanent fiber (92% match)
- Bottomhole pressure gauges (>99% match)
- Downhole imaging tools (96% match)