

# FracCON

## Hydraulic fracturing control and conformance

### APPLICATIONS

- High-water-cut wells
- STIMPAC\* treatments for sand control completions
- Fracture height containment
- Reservoir permeabilities from 50 mD to 3 D

### BENEFITS

- Improved treatment economics with mitigated water cut
- More production with increased fracture half-length and productivity
- Time savings with simpler logistics

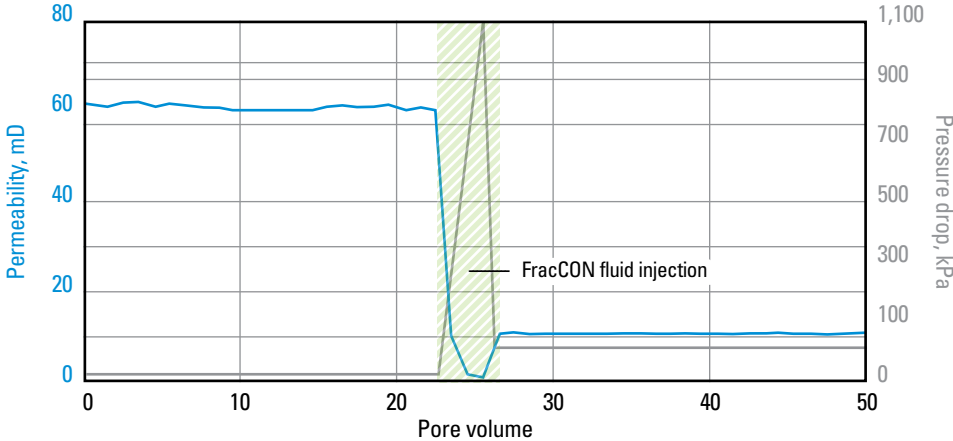
### FEATURES

- Controlled fluid leakoff in high-permeability formations
- Lower hydraulic horsepower requirements
- Low friction pressure
- Simple three-additive system
- Fiber-assisted proppant transport
- High retained proppant pack conductivity

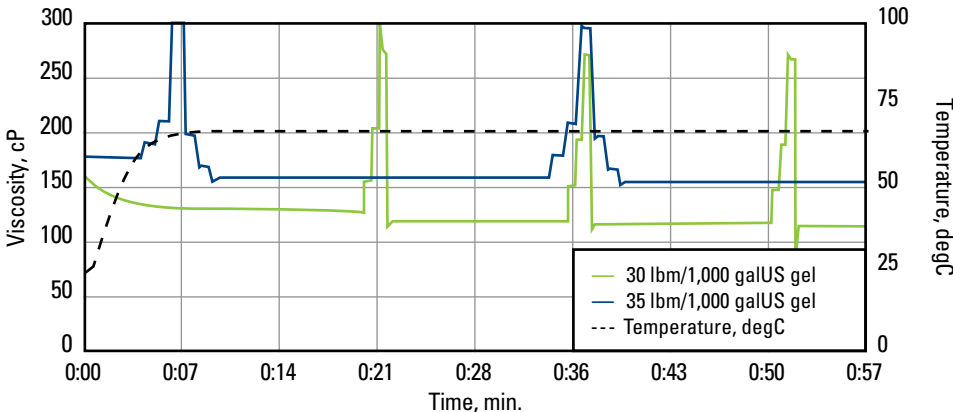
FracCON\* water-conformance fracturing fluid was specifically developed for high-water-cut wells with recoverable reserves near oil-to-water contact (OWC) or gas-to-water contact (GWC). It features a new-generation relative permeability modifier (RPM) capable of producing enhanced fracture geometry and increased proppant pack conductivity while mitigating water cut after fracture stimulation treatments.

To achieve a more contained fracture, FracCON fluid has lower viscosity than conventional fluids while retaining excellent proppant transport characteristics. The unique fluid rheology enables the fracture to stay in zone, and less fluid and proppant are required to achieve longer and more conductive fractures, resulting in an increase in oil production and a decrease in problematic water production. Even if the hydraulic fracture breaks through the OWC or GWC, the fluid prevents the flow of water by the adsorption of the RPM onto the fracture faces, reducing effective permeability to water. The ionic nature of FracCON fluid enhances its adsorption characteristics and minimizes desorption during the production cycle, prolonging the effective life of the treatment.

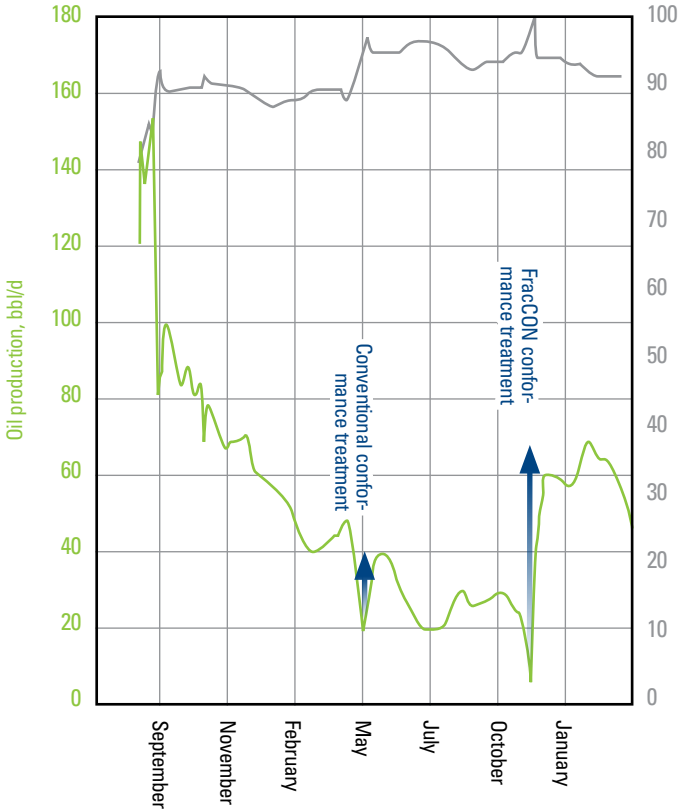
The FracCON fluid is a linear gelled polymer fluid with excellent fluid loss control and drag reduction properties resulting in low friction pressure. The addition of an encapsulated breaker further reduces viscosity following the fracturing treatment, optimizing the proppant pack conductivity



Using FracCON fluid reduces effective permeability to water after treatment.



FracCON rheology at 66 degC.



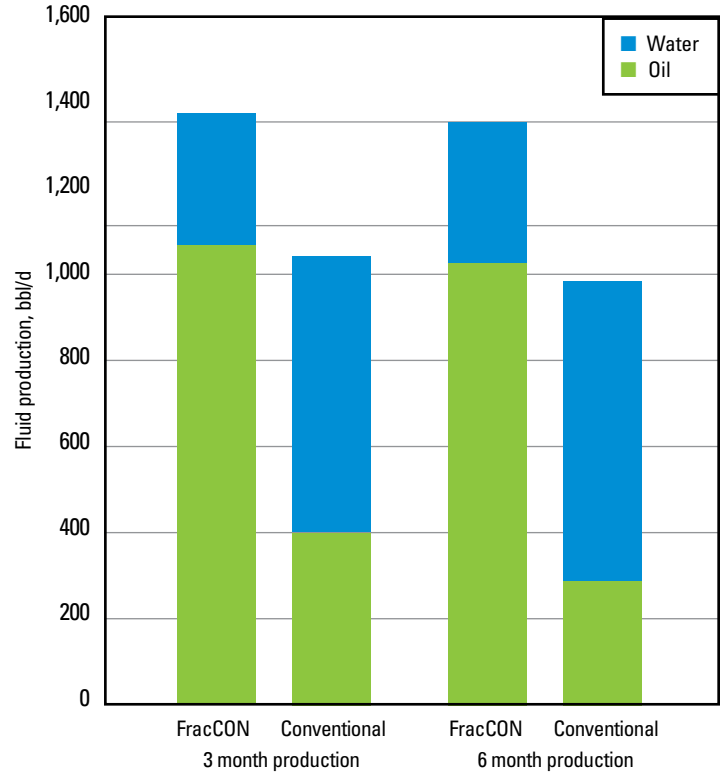
A FracCON conformance treatment reduced base sediment and water (BSW) production and tripled oil production compared with a conventional treatment.

and effective fracture half-length. The breaker is designed for the proppant-laden stages and is easily metered through dry-additive feeders.

### Threefold production increase for high-water-cut well

In a marginal Colombian oil field with low reservoir pressure and water breakthrough from injection wells, an operator faced increasing water disposal challenges, with most wells producing large amounts of water. In an attempt to increase oil production, another service company performed a conventional water conformance fracturing treatment. Oil production decreased, and water cut increased to nearly 100%.

The operator then treated an offset well with the innovative FracCON water-conformance fracturing fluid pumped at 18 bbl/min with 40,000 lbm of 12/20 proppant. Production increased threefold, and water cut was reduced by 5%. FracCON treatments are now routinely performed in this field to maximize oil production while minimizing water production.



The FracCON treatment markedly reduced water production compared with a conventional treatment.

### STIMPAC service to control water production while maximizing oil production

Working in a Llanos basin field in Colombia, an operator needed to access additional reserves from a 3,000-mD, 190-degF sandstone with a strong water drive. The decision was made to complete the wells using STIMPAC\* fracturing/gravel-packing service to bypass damage using the FracCON fluid for the fracturing treatment. The job was pumped to completion at 17 bbl/min, placing 9,000 lbm of 16/20 ceramic proppant in the formation. The results of the treatment exceeded expectations. The operator continues to use StimPAC completions with FracCON fluid to maximize production from this reservoir.