CalVisc™ Fracturing Fluid System

Bakken Formation, Williston Basin

OVERVIEW

The CalVisc™ fluid system was introduced in the Williston Basin in 2014 as an alternative to traditional crosslinked fluid systems. CalVisc provides many completion advantages including fracture complexity, minimal to no loss in fracture conductivity, improved clean-up and fewer chemicals pumped.

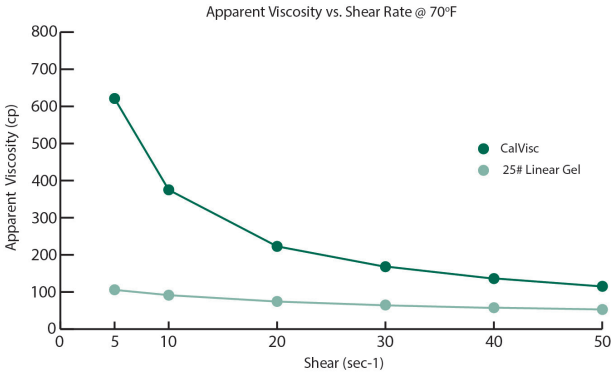
CHALLENGE

Traditionally it was believed that high concentrations of friction reducer (FR) would be detrimental to both the execution of a fracture treatment and the resulting production. High concentrations of FR pumped into formation were believed to cause large amounts of formation damage and result in poor clean-up and less than ideal production. Additionally, it was believed that FR-based fluid systems were unable to carry sand through ~10,000-foot lateral wellbores unless pumped at high rates that would aid in transporting sand to formation. However, recent industry studies show that high concentrations of FR may provide clean-up results that are far superior to guar-based gellant(s). Calfrac is currently using CalVisc to place the exact same sand schedules previously thought to require crosslinked fluids.

SOLUTION

CalVisc places up to 4 ppg sand through a ~10,000 foot lateral.

- Fluid viscosities of 15-30 cp at 511 sec -1
- Greater viscosities at low shear rates (>500 cps at shear <10sec-1) within the fracture
- Shear thinning characteristics reduce friction pressures within the wellbore
- Treatment uses the same sand design as crosslinked guar systems



RESULTS

Calfrac has placed hundreds of fracture treatments with the CalVisc fluid system in the Bakken Formation.

- Reduced pressures with same rates and proppant concentrations
- Customers have documented up to 20% production improvement relative to original completion designs
- Fewer pieces of equipment mean improved economics