Propel SSP® vs. Traditional Fluid Systems

PROPPANT TRANSPORT & FRAC GEOMETRY OPTIMIZATION

POISED FOR RESERVOIR OPTIMIZATION:

Create fractures based on reservoir properties, not operating constraints

WHAT CONTROLS...	Propel SSP®	Slickwater	Crosslinked Gel
Frac Growth (Basis For Design)	Pump rate & proppant load (reservoir properties)	Pump rate & fluid volume (operating constraints)	Fluid viscosity & pump rate (operating constraints)
Effective "Propped" Height (How)	Proppant load (proppant stacks)	Fluid volume (proppant dunes)	Fluid viscosity (inhibit settling)
Effective "Propped" Length* (How)	Proppant volume & load (proppant flows with fluid)	Fluid volume, rate (proppant rolls over the dune)	Fluid volume (viscosity carries proppant)
Pack Density (Relative lb/ft²)	Proppant load (medium)	Settling (high, decrease toward tip)	Proppant load & settling (medium/high)

EFFICIENCY:

Effective geometry (propped length x height) is a function of proppant load and proppant volume, not viscosity, pump rate and fluid volume (further relating to less chemical, energy and time)

DESIGN CONSIDERATIONS...	Propel SSP®	Slickwater	Crosslinked Gel
Typical Max Proppant Load	> 6 ppa	< 2 ppa	4-6 ppa
Proppant Distribution	Uniform grain spacing	Potential pillars & bridging	Potential particle agglomeration
Performance Limitations	Low water/proppant ratio; good leak off control	High water/proppant ratio; No leak off control	Low water/proppant ratio; good leak off control
Operating Constraints	Fluid that is greater than 350k PPM TDS	Horsepower, pressure, proppant substrate/mesh	Horsepower, pressure
Performance Limitations	—	Formation permeability loss (reservoir damage)	Pack conductivity loss (gel damage)

*Propped height above fracture midpoint