PRIME ECO GROUP
Ecology Through Technology™

High Performance Proppant Placement Fluids

Presenters:

Jose Guzman, Principal Technologist / Inventor
Felipe Guzman, Managing Director

About Us

Jose Guzman, Principal Technologist

Geoscience professional, with + 30 yrs experience in E&P industry activities. Experiences with Venezuelan State Oil Research and Support Center (PDVSA/Intevep), SLB/MI Swaco in the areas of Fluid Flow in Porous Media, Rock-Fluid interaction during well construction and production, well productivity and formation damage.

Felipe Guzman, Managing Director

Business professional, with 15 yrs experience in O&G, manufacturing drilling, completion, and stimulation fluids. Overseas overall strategic portfolio, financial management, and implementation of all operation projects.

About Us

PRIME ECO GROUP
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- Founded in 1998 (+20 years)
- Specialty Chemical Manufacturer with plants in S.TX & W.TX. Lab in Houston.
- Less than 50 employees.
- Products (O&G space): Drilling fluid additives, Frac., Stimulation additives.
- Provide field and technical support
- Innovation driven culture with a strong technical team.

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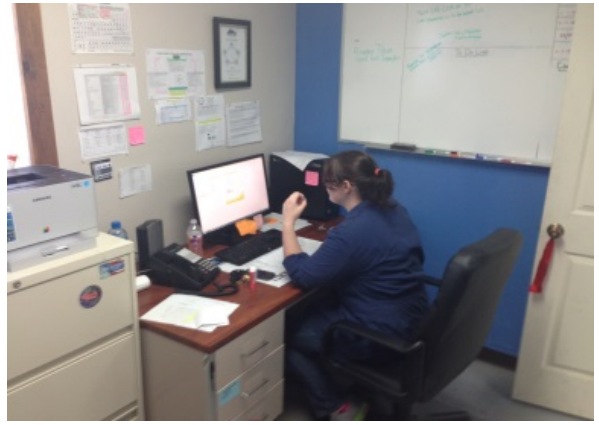
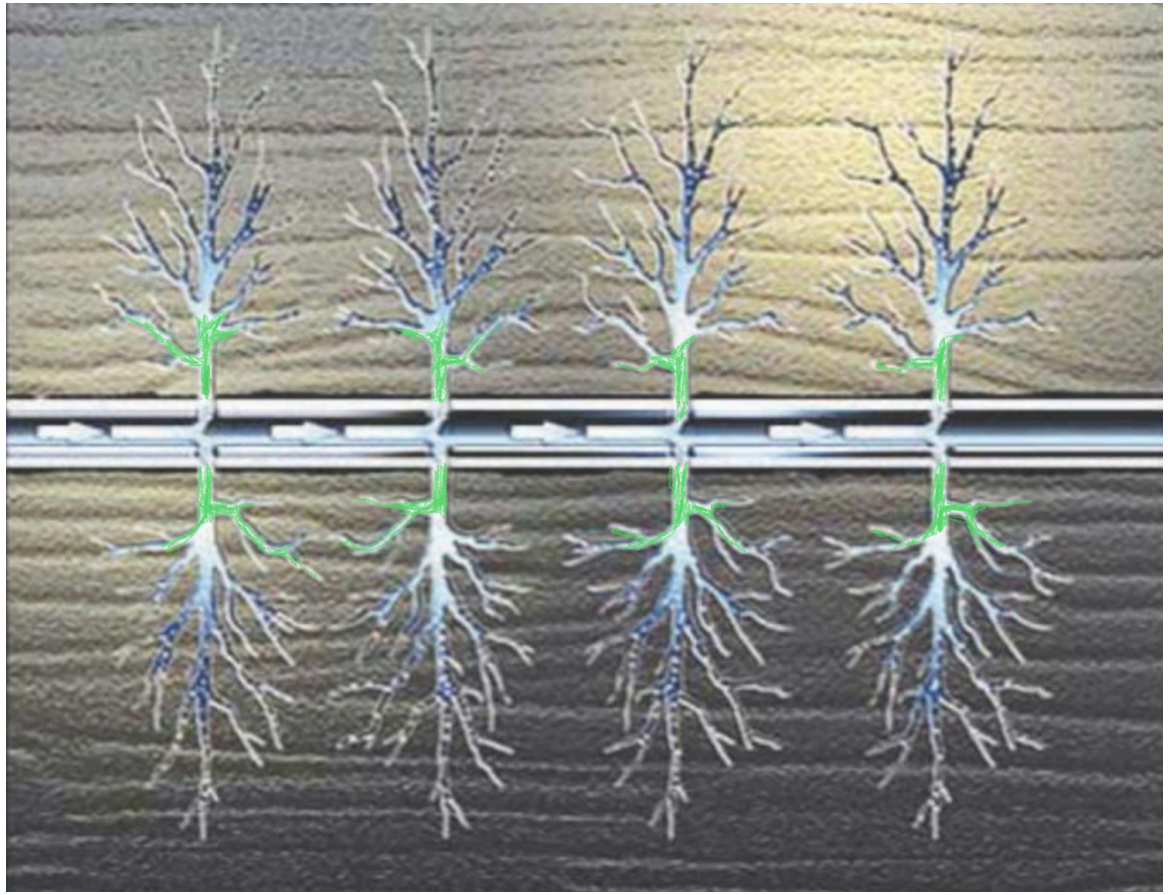


Current Market Conditions / Frac Fluids

Since 2010, innovation has centered around proppant placement into the fractured branched network.

1. Ultra light weight proppants
2. Fiber addition technology
3. Self suspending proppants
4. Open Channel Fracs
5. Fluids (Gels, Slickwater, HVFR's creating 'overflushing')
6. Reducing proppant sizes
7. Altering proppant shapes



Current Market Conditions / Frac Fluids

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After 9 + years, these innovations have resulted in:

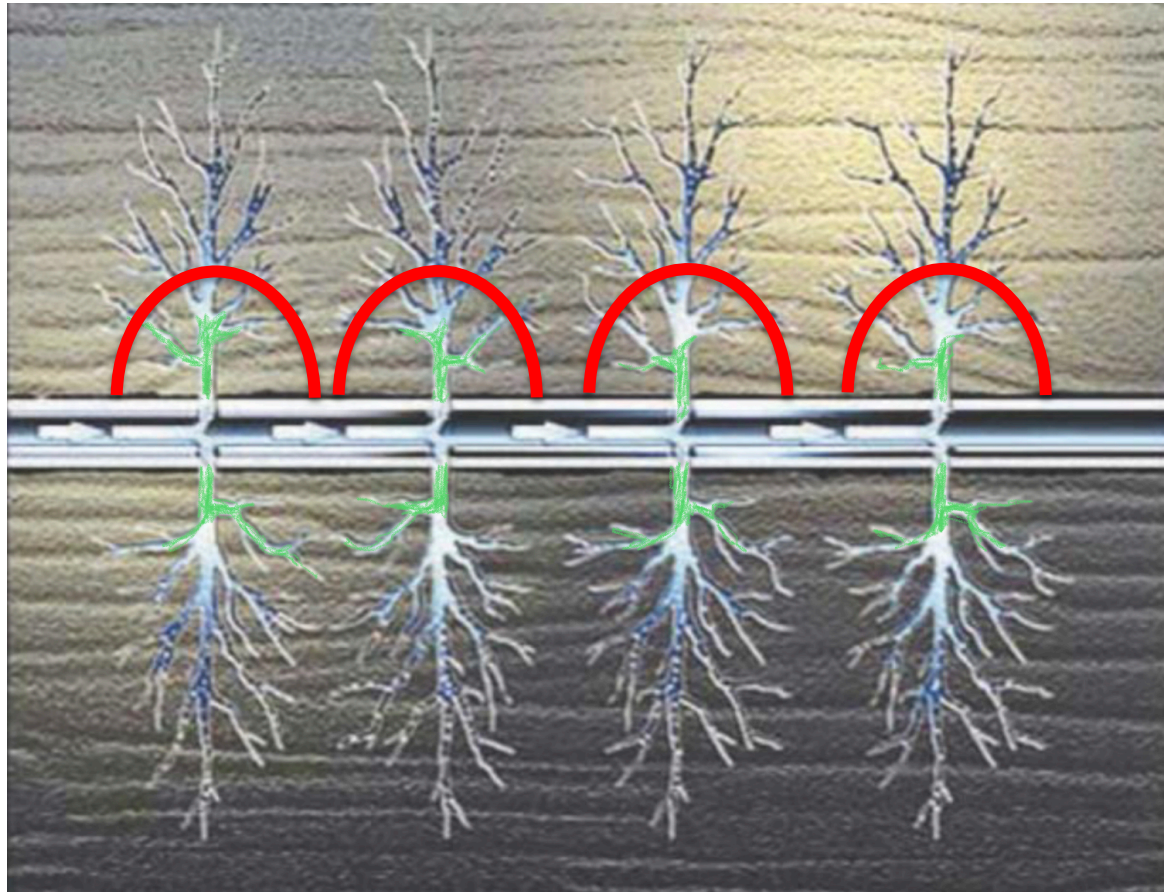
1. Productivity returns lower than expected
2. Uncertain fractured conductivity

Proppant Frac Volume decreases

↕

Proppant placement

3. Financial pressures to Operators and their supply chain



Current Market Conditions / Frac Fluids

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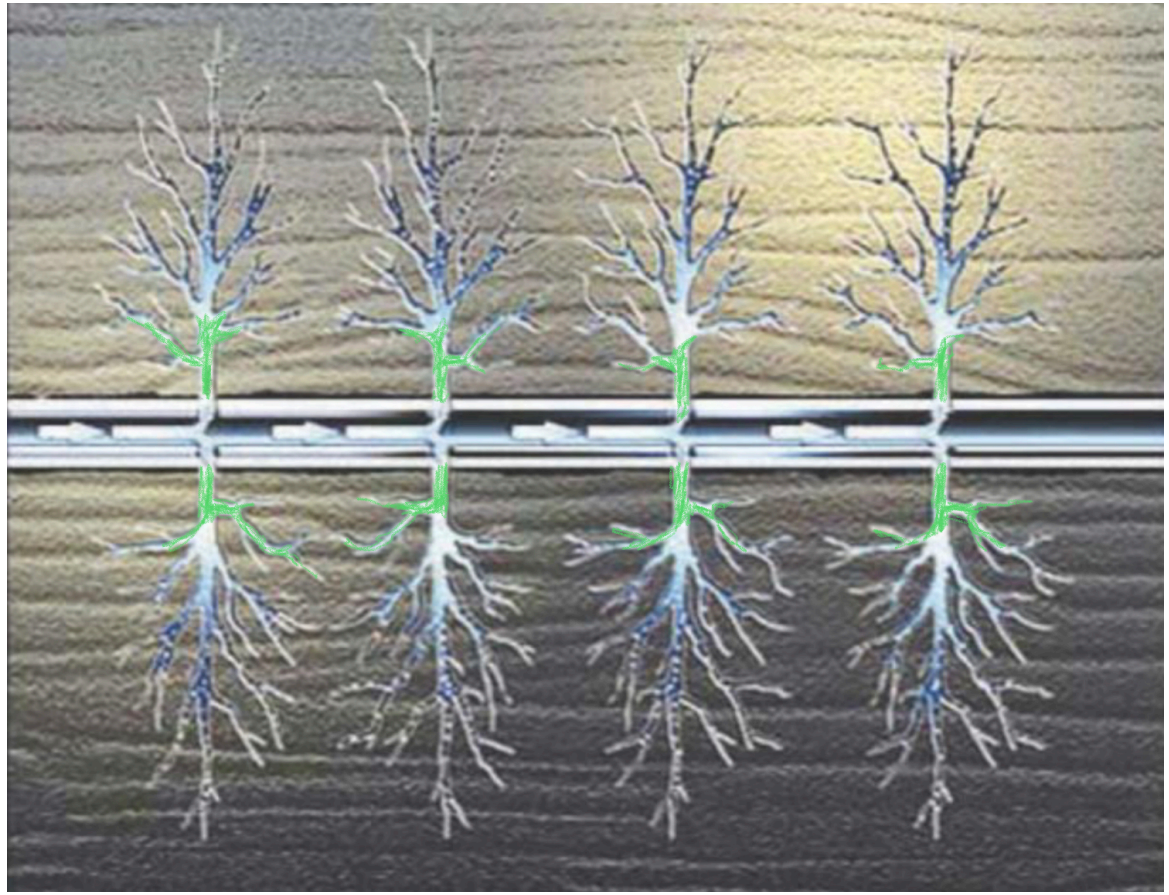
Principal Objectives:



Current Market Conditions / Frac Fluids

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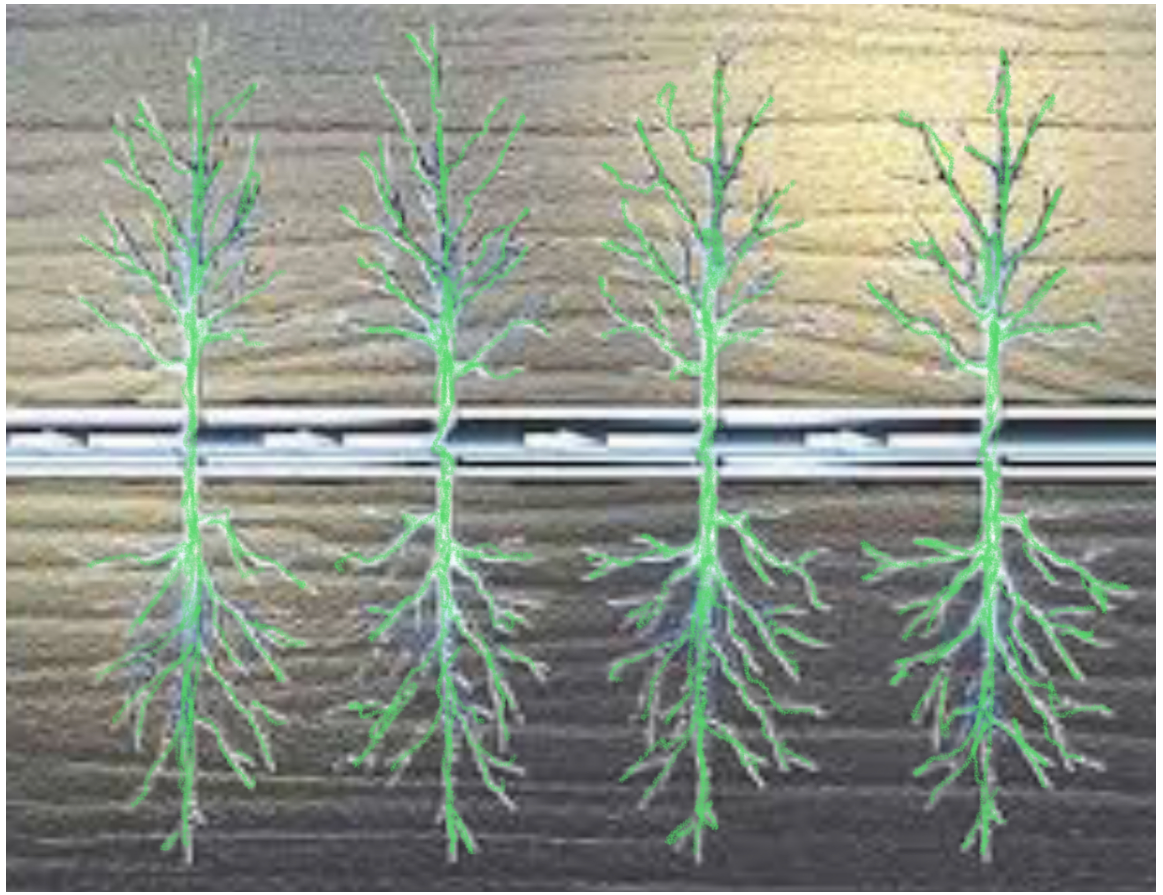
Principal Objectives:

1. Establish Fluid flow where Proppant and Fluid move in one phase.
2. Deliver and Place Total Proppant Suspension in Time
3. Increase fracture conductivity and increasing productivity index.



Proppant Placement Critical

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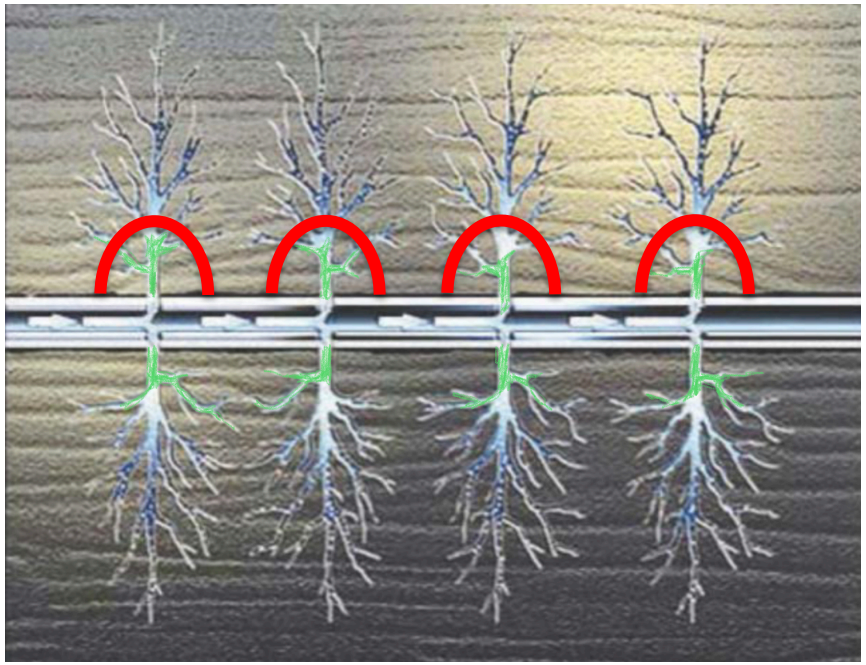
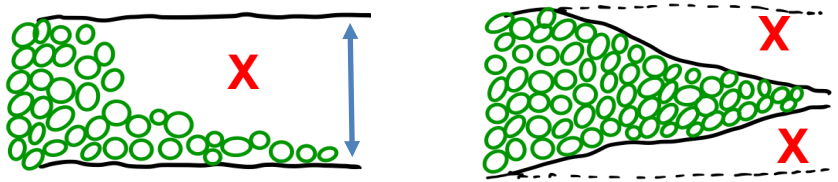
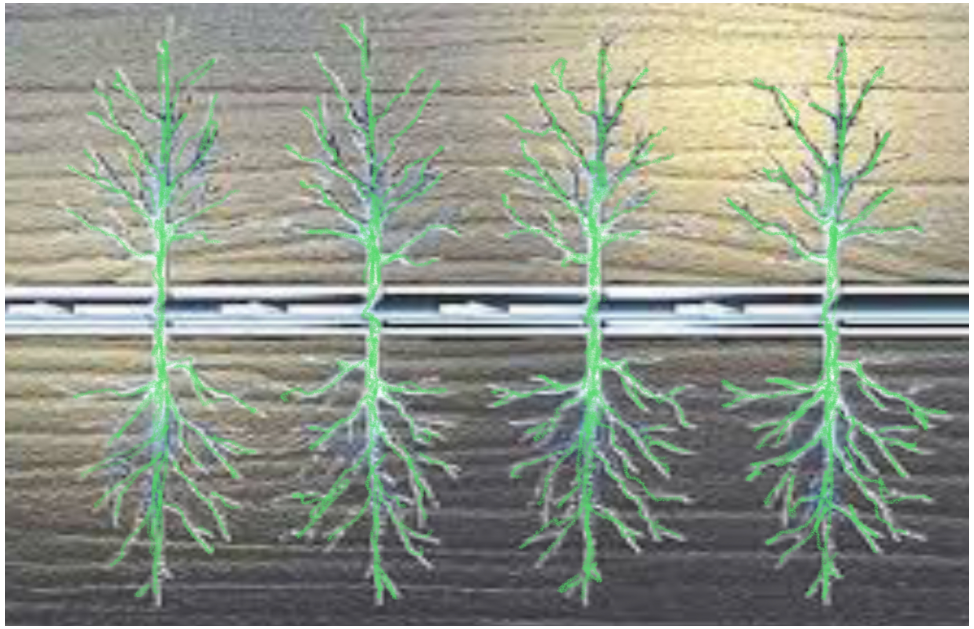
Poor Fracturing Conductivity (FC)





Poor FC

Good Fracturing Conductivity (FC)



Good FC

Productivity Index

$$PI = \frac{Q}{\Delta P}$$

PECOFRAC

proppant placement fluids

About ‘The Technology”

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Reduce Fluid/Water consumption by ≥ 50%

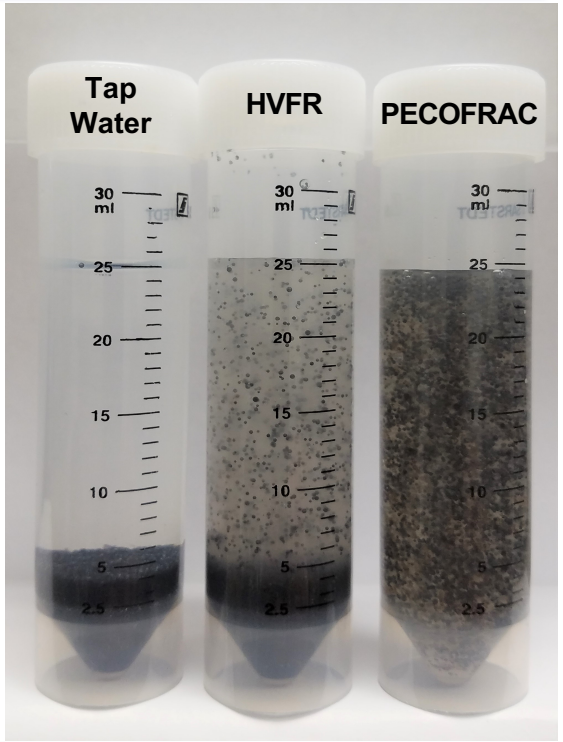
Increase Fracture Conductivity

Reduce total stage cost by ≥ 20%

Greater environmental footprint

Additive dosages of 2 to 3 gpt

Increase Proppant Dosages (4 to 6 ppa)



About ‘The Technology”

Lab-works completed

All specific data available upon request.

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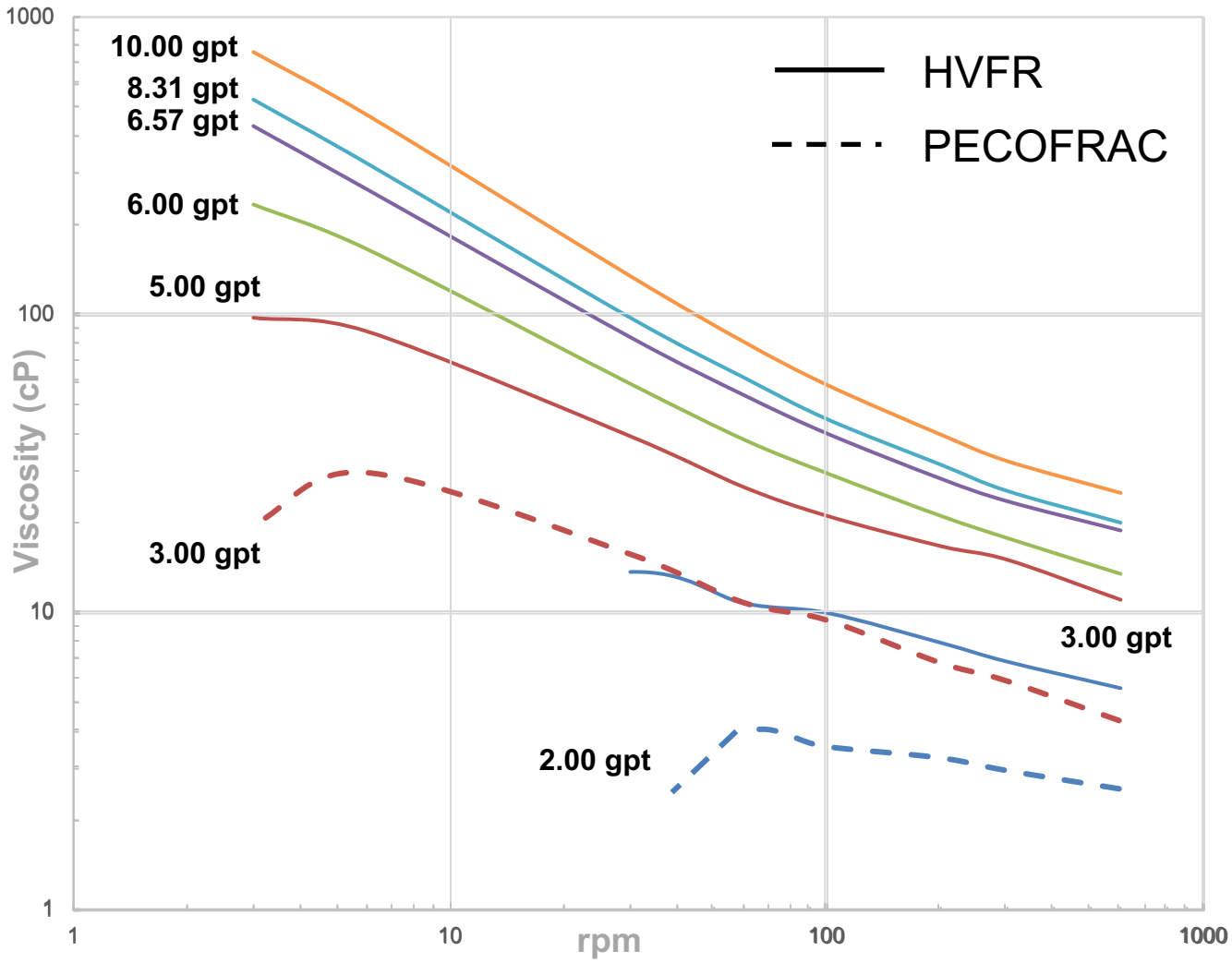
Lab-works completed

- **Rheology and viscosity profiles of various versions of our fluid.**



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About ‘The Technology”

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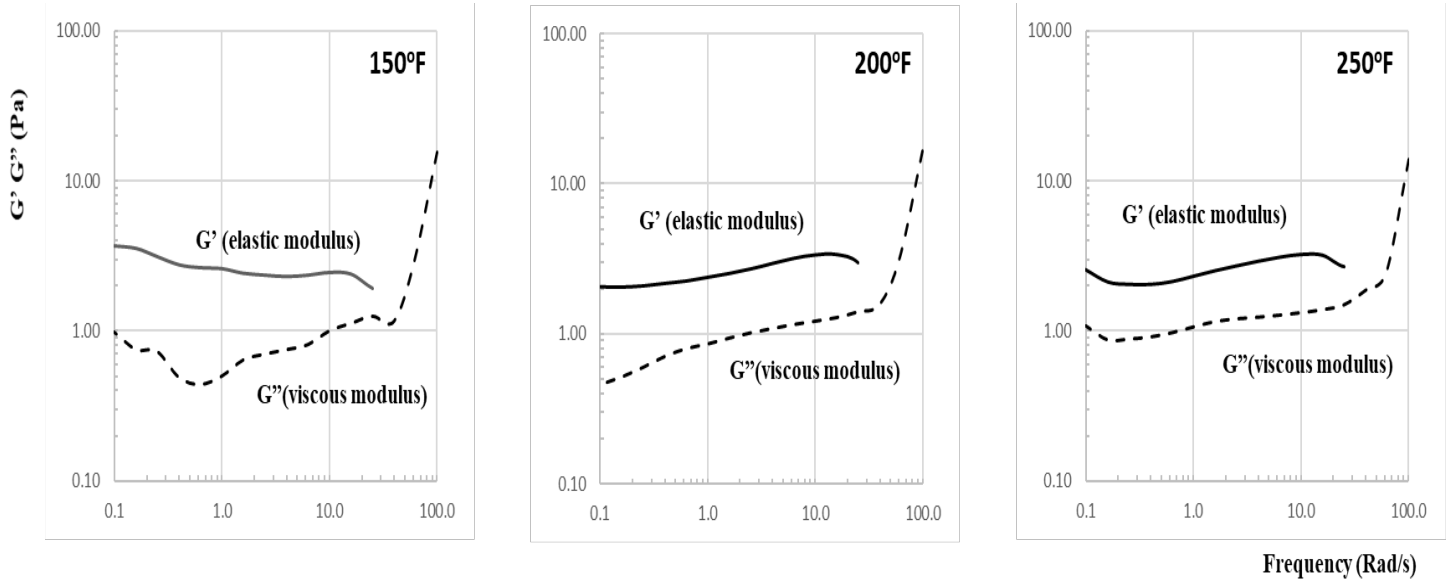
- Rheology and viscosity profiles of various versions of our fluid.
- **Elastic Modulus using Anton Parr at various temperature ranges.**



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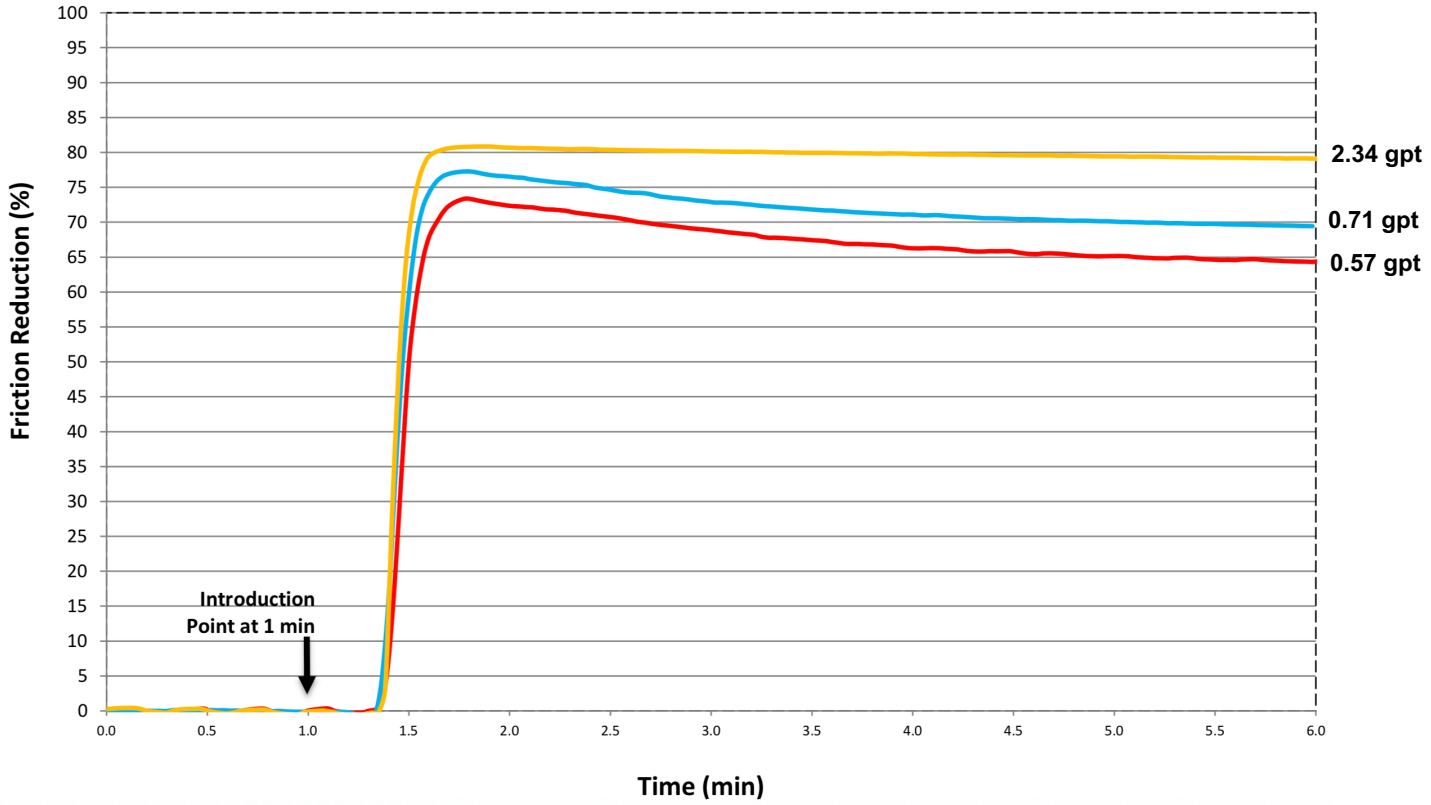
About ‘The Technology”

Lab-works completed

- Rheology and viscosity profiles of various versions of our fluid.
- Elastic Modulus using Anton Parr at various temperature ranges.
- **Friction reduction analysis using Flowloop and at various dosages.**



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- Rheology and viscosity profiles of various versions of our fluid.
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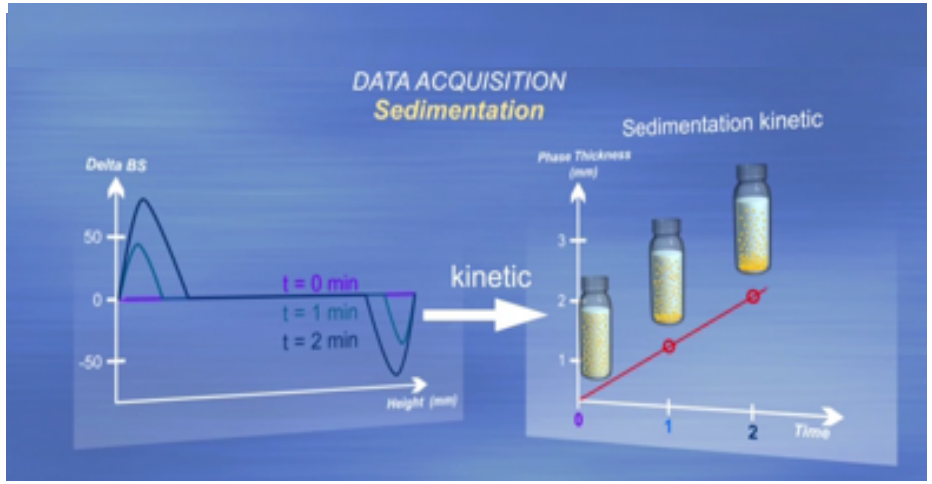
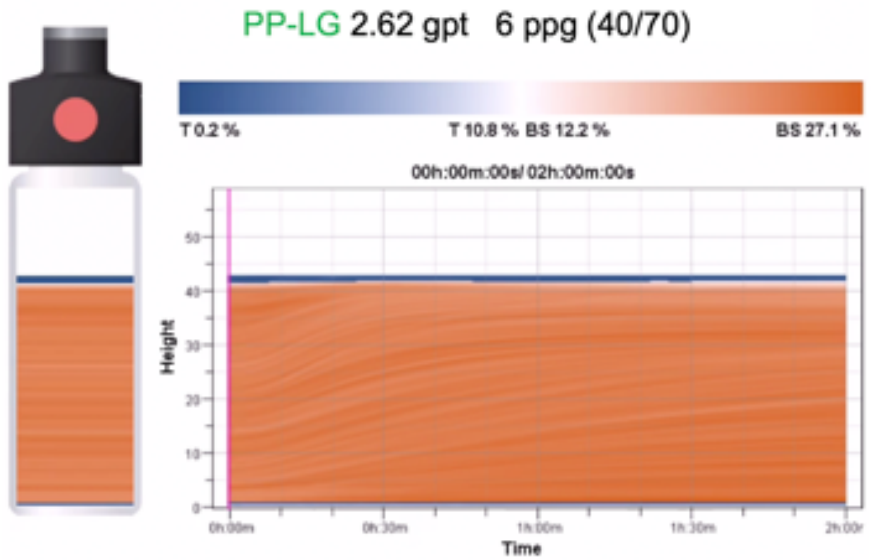
- **Sand settling suspension using Multi-Light Scattering analyzers**





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- Rheology and viscosity profiles of various versions of our fluid.
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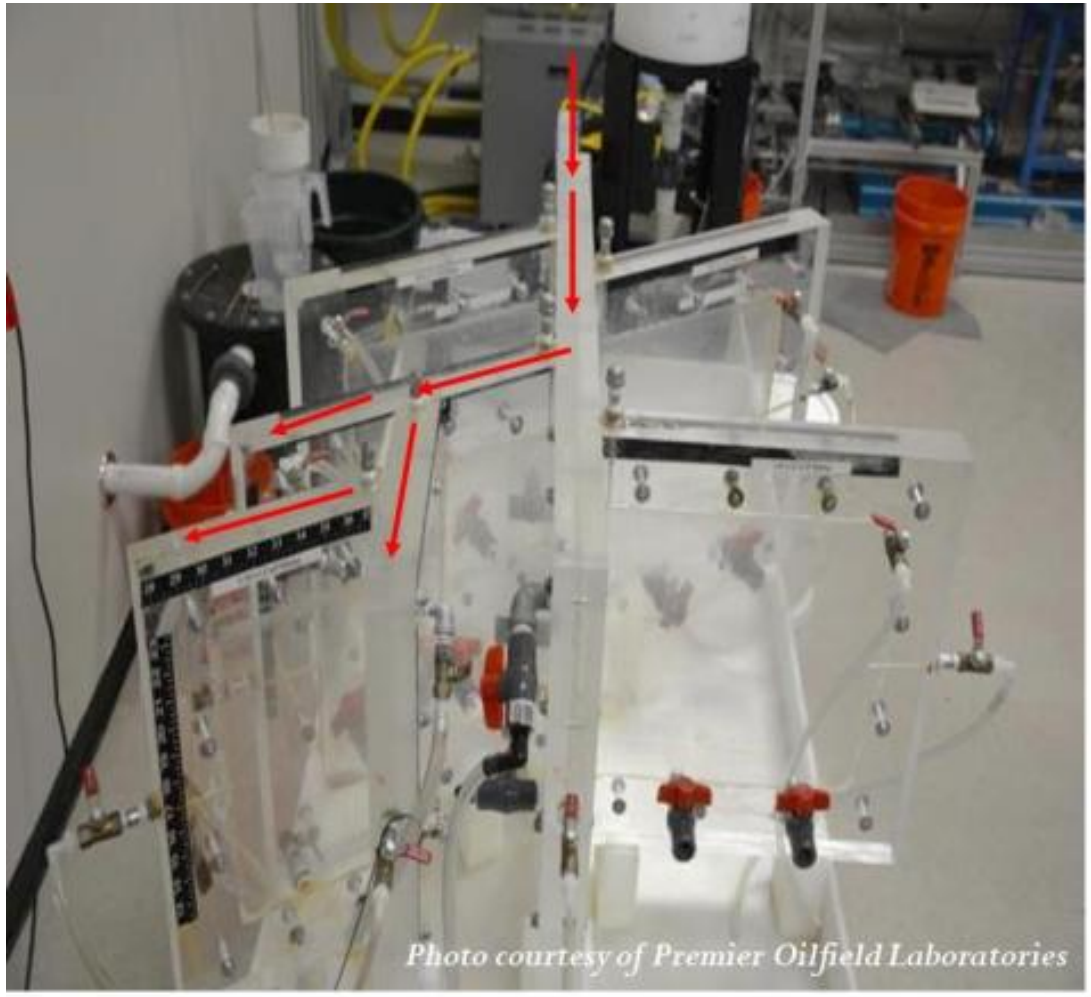
- Sand settling suspension using Multi-Scattering Light analyzers.
- **Proppant Transport Simulation**



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- Friction reduction analysis using Flowloop and at various dosages.
- Sand settling suspension using Multi-Scattering Light analyzers.
- Proppant Transport Simulation
- **Chemical compatibility**
- **Water analysis (Fresh, Brackish, High Brine)**

All specific data available upon request.

Objectives

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What are we looking for:

Partner to help:

- Finalize any pending technical & laboratory analysis.
- Field trialing investments for final proof of concept.
- Introduce us to operators, service companies, other chemical companies for potential commercialization.
- Growth and expansion finance modeling
  - (CAPEX in place to start production of 500,000 gal. per mo.)

Can be in production by 4th Qtr

Thank you

Jose Guzman joseg@primeecogroup.com
Felipe Guzman felipe@primeecogroup.com

Proppant Transport Simulation (Slot Test)

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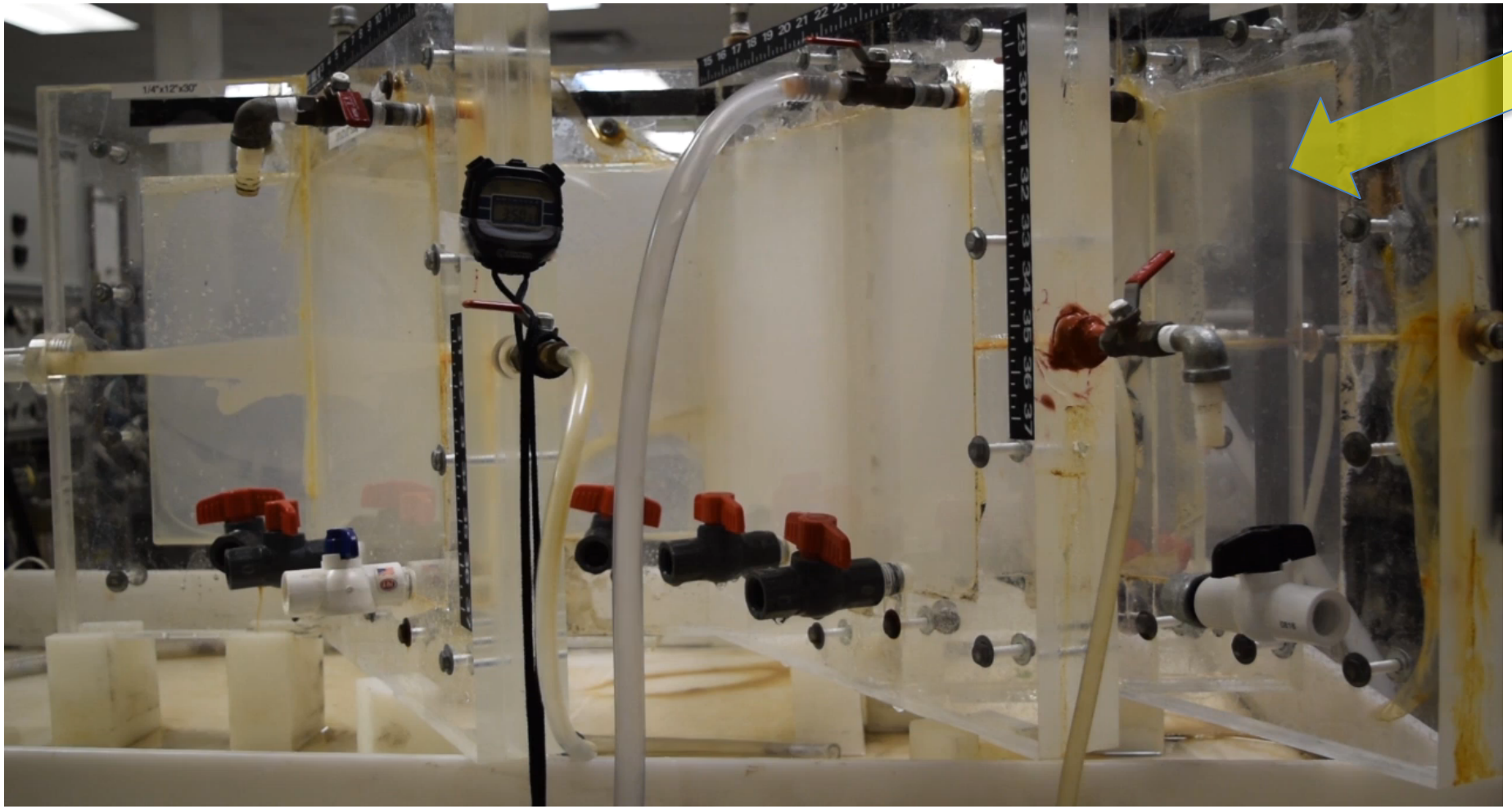
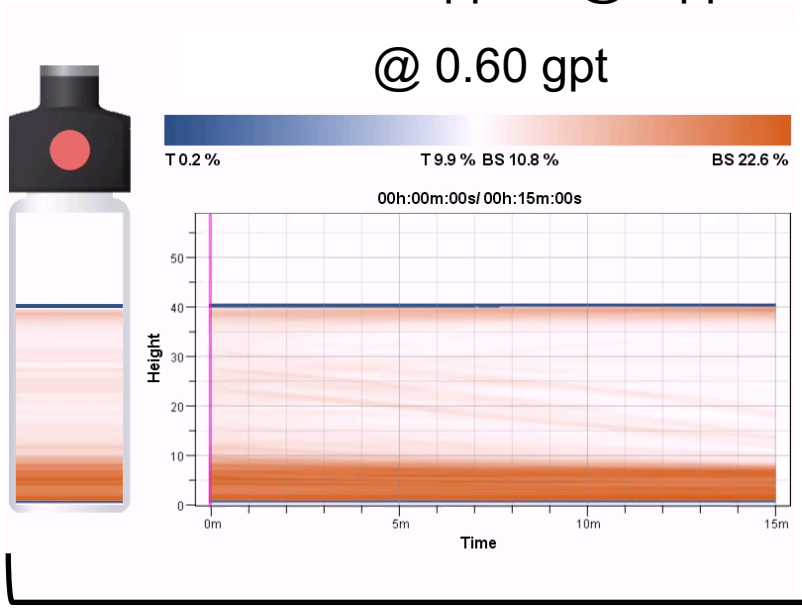
PECOFRAC @ 2.34 GPT with 2 ppg 40/70 mesh



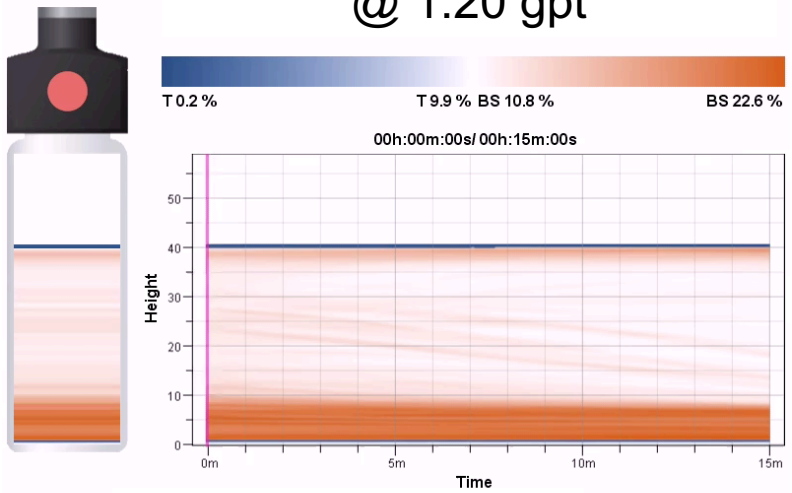
Note: Proppant arriving with no dunning to the 3rd tertiary branch.

Suspending Microproppants @ 120ºF

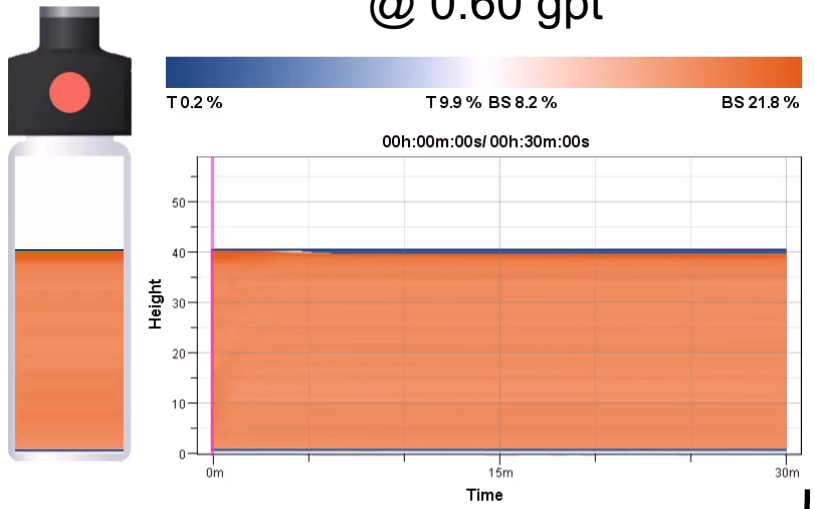
HVFR
Micro-Proppant @ 2 ppa
@ 0.60 gpt



HVFR
Micro-Proppant @ 2 ppa
@ 1.20 gpt



PECOFRAC
Micro-Proppant @ 2 ppa
@ 0.60 gpt



after 30 min. (static)

Proppant Transport Simulation (Slot Test)

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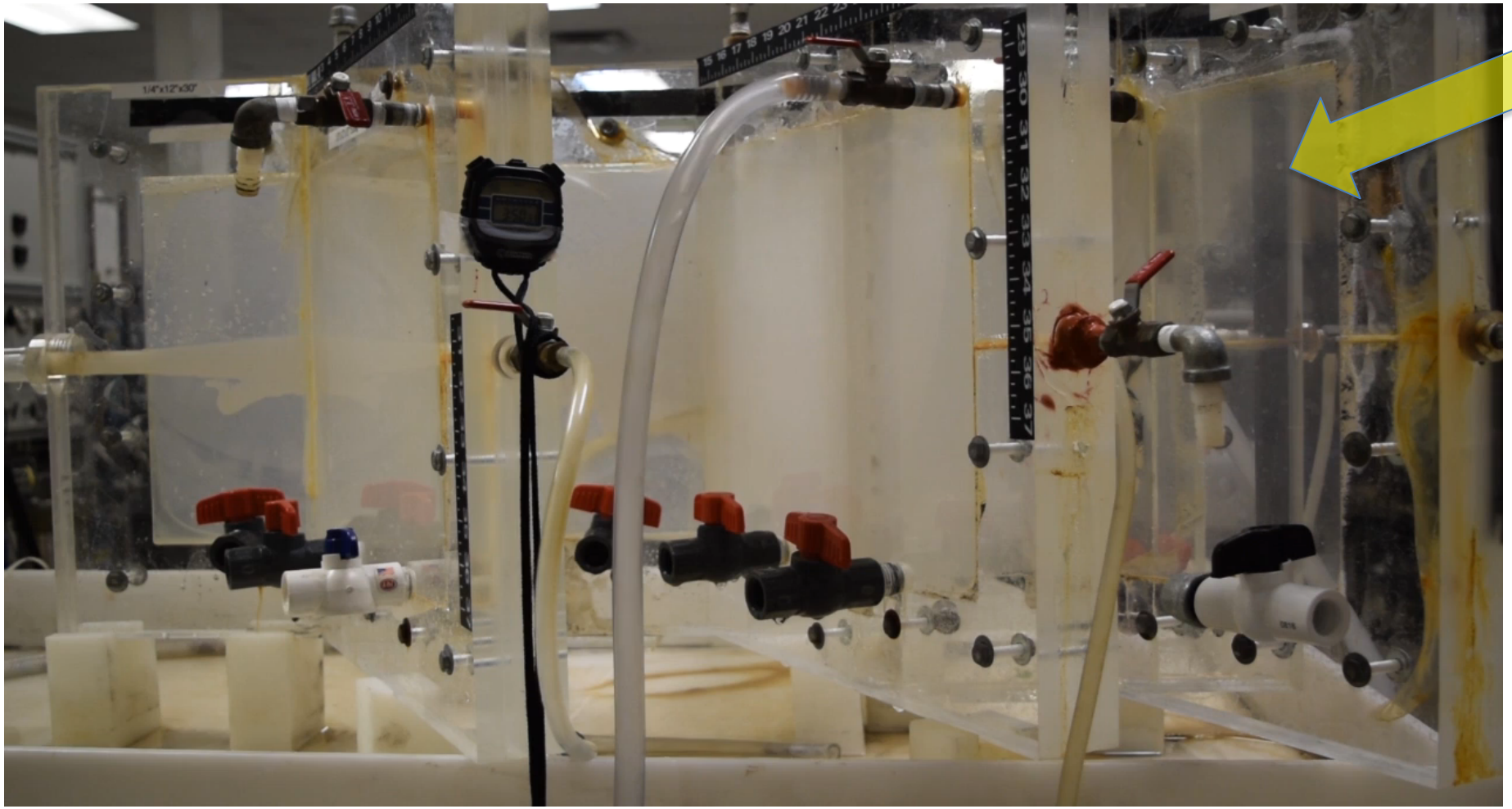

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