

Focus Areas for EGS Success

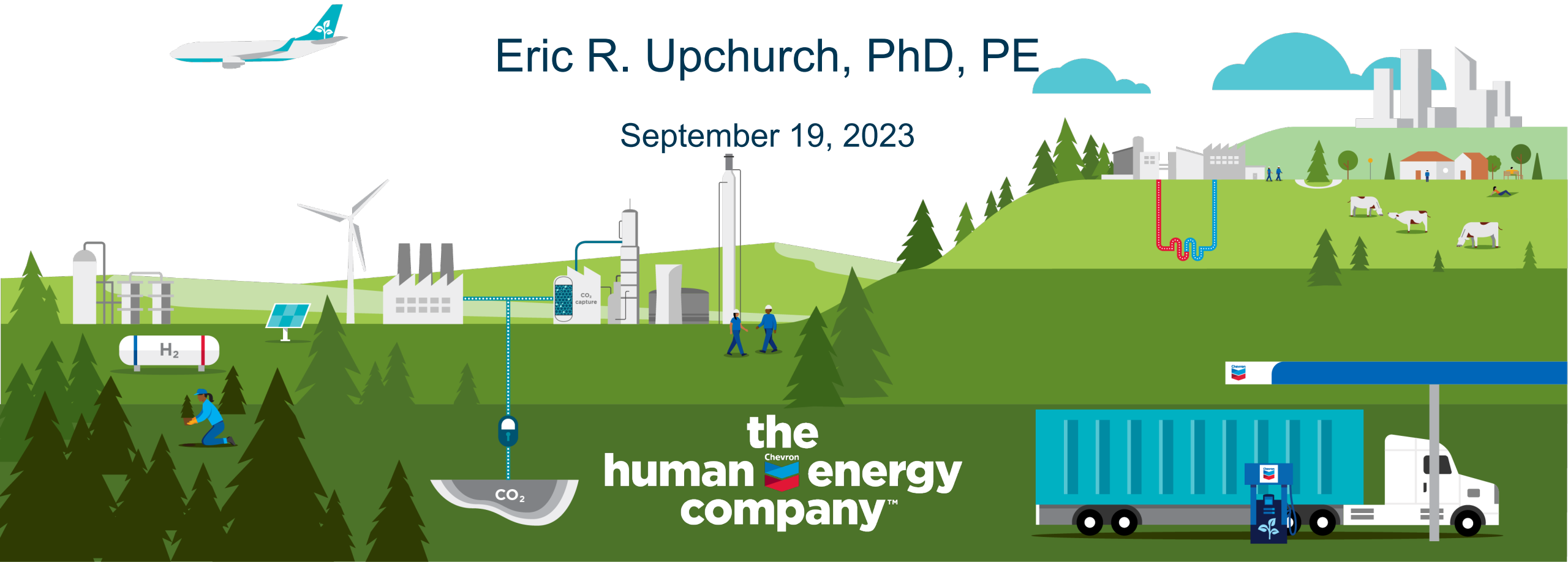
University of Utah

Energy & Geoscience Institute

2023 Annual Technical Conference

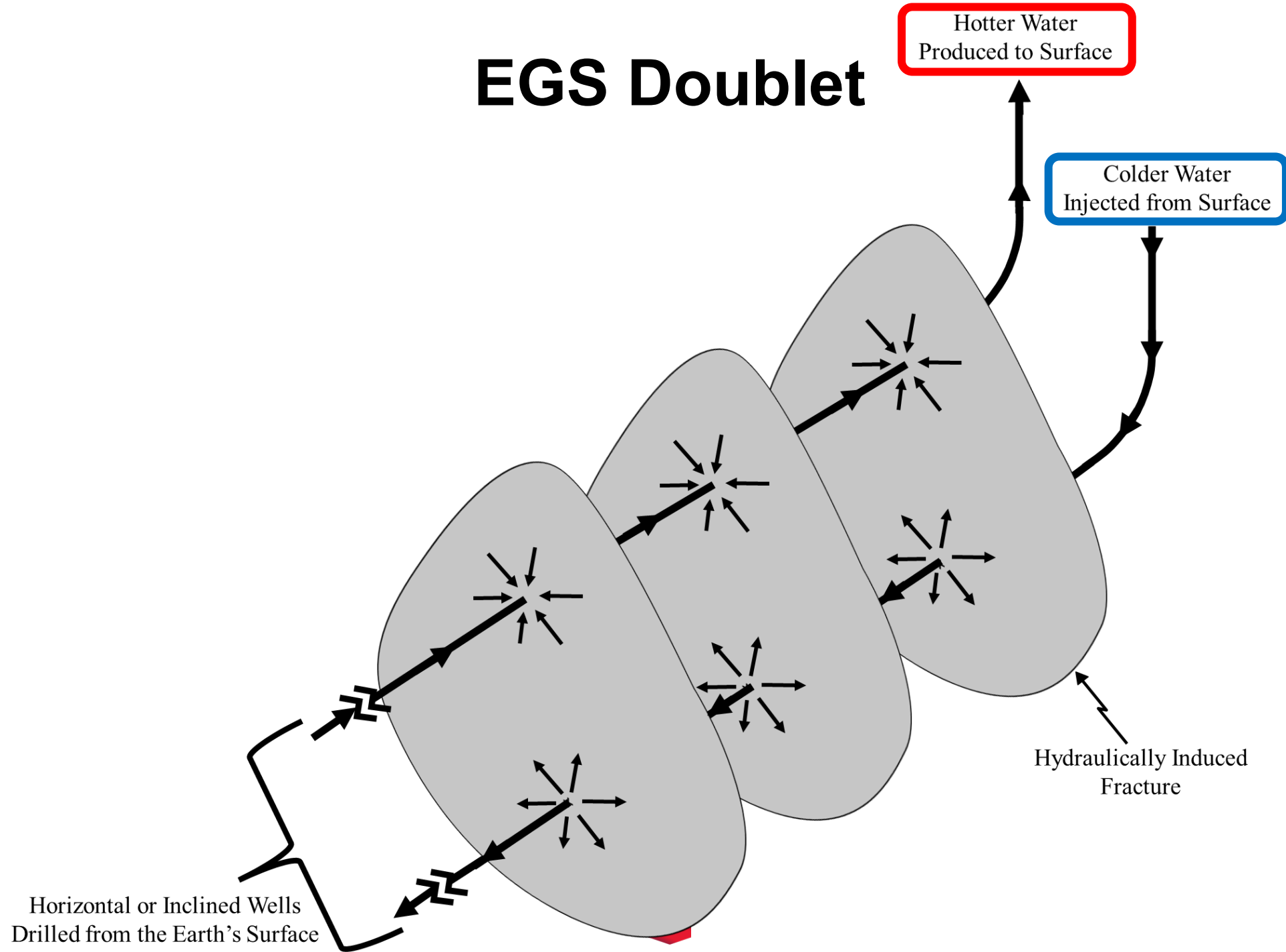
Eric R. Upchurch, PhD, PE

September 19, 2023



the
human  energy
company™

EGS Doublet

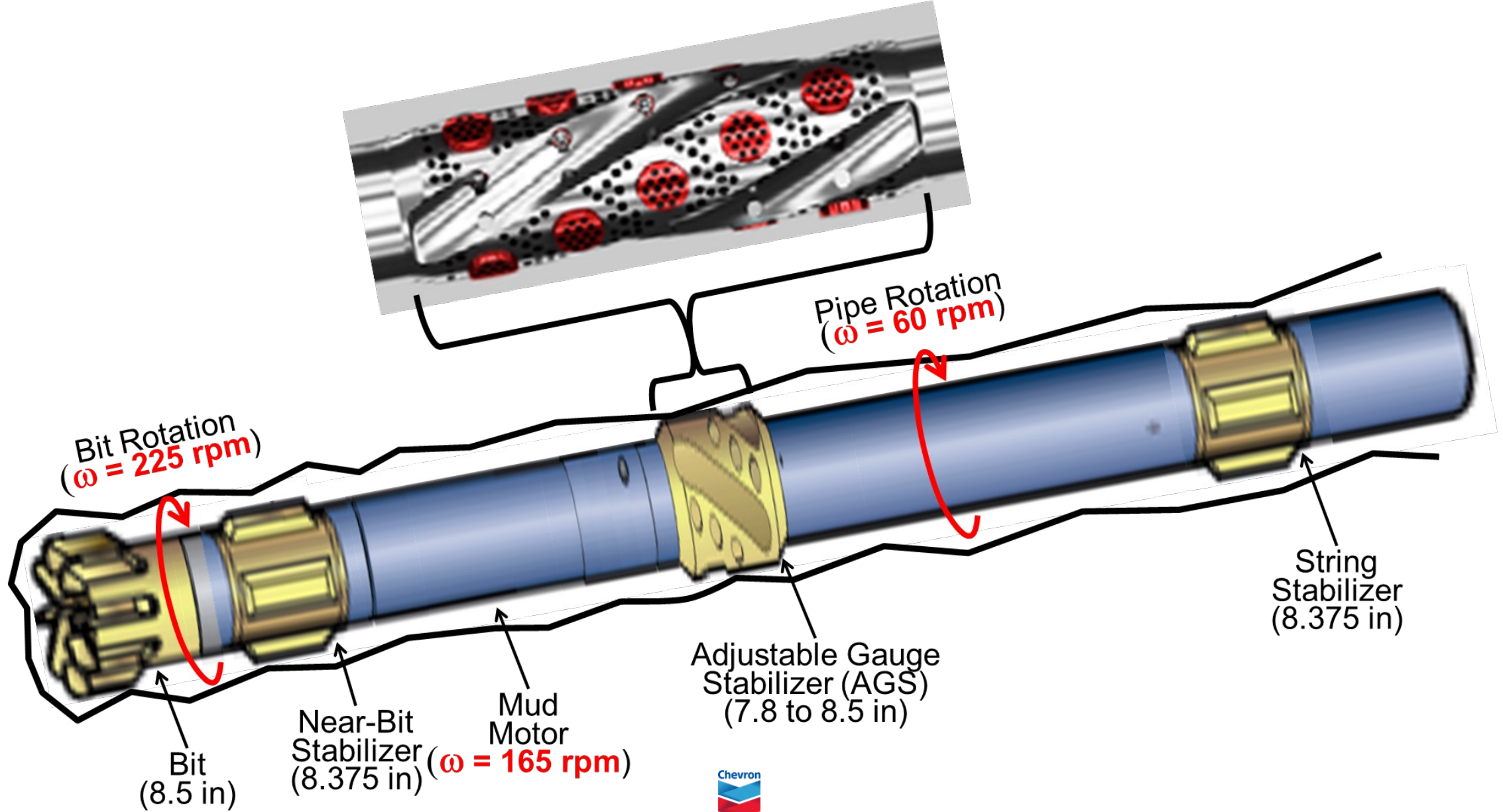


Focus Areas for EGS Success

- Cheaper/Lower-Tech Rotary Drilling BHAs
 - Rely less on RSS or steerable mud motors



Tangent Drilling BHA Concept



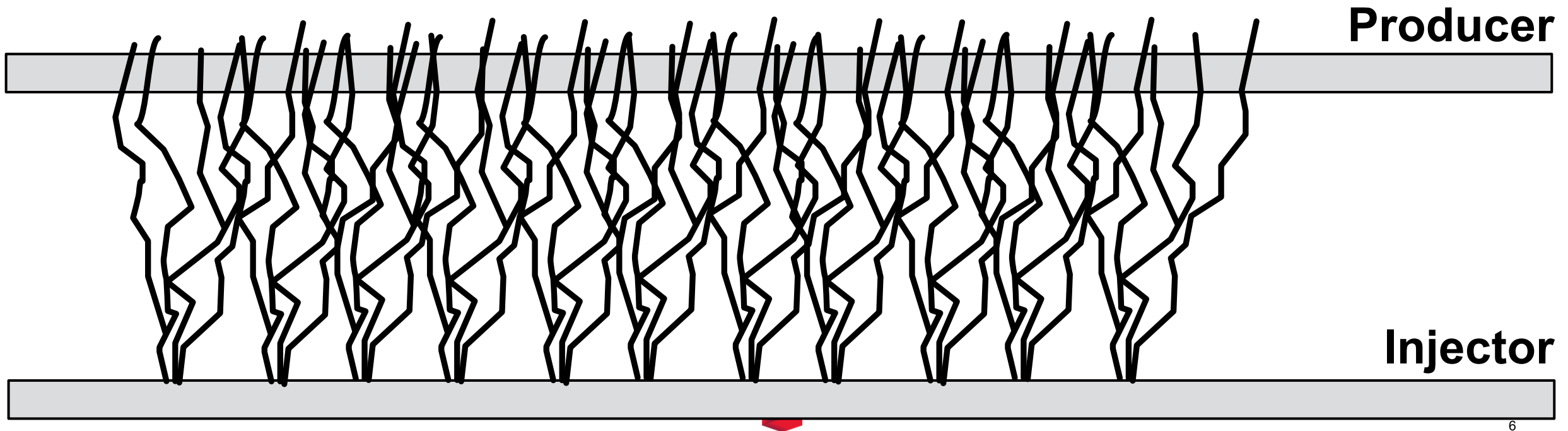
Focus Areas for EGS Success

- Cheaper/Lower-Tech Rotary Drilling BHAs
 - Rely less on RSS or steerable mud motors
- Fracture Geometry vs Injector/Producer Separation



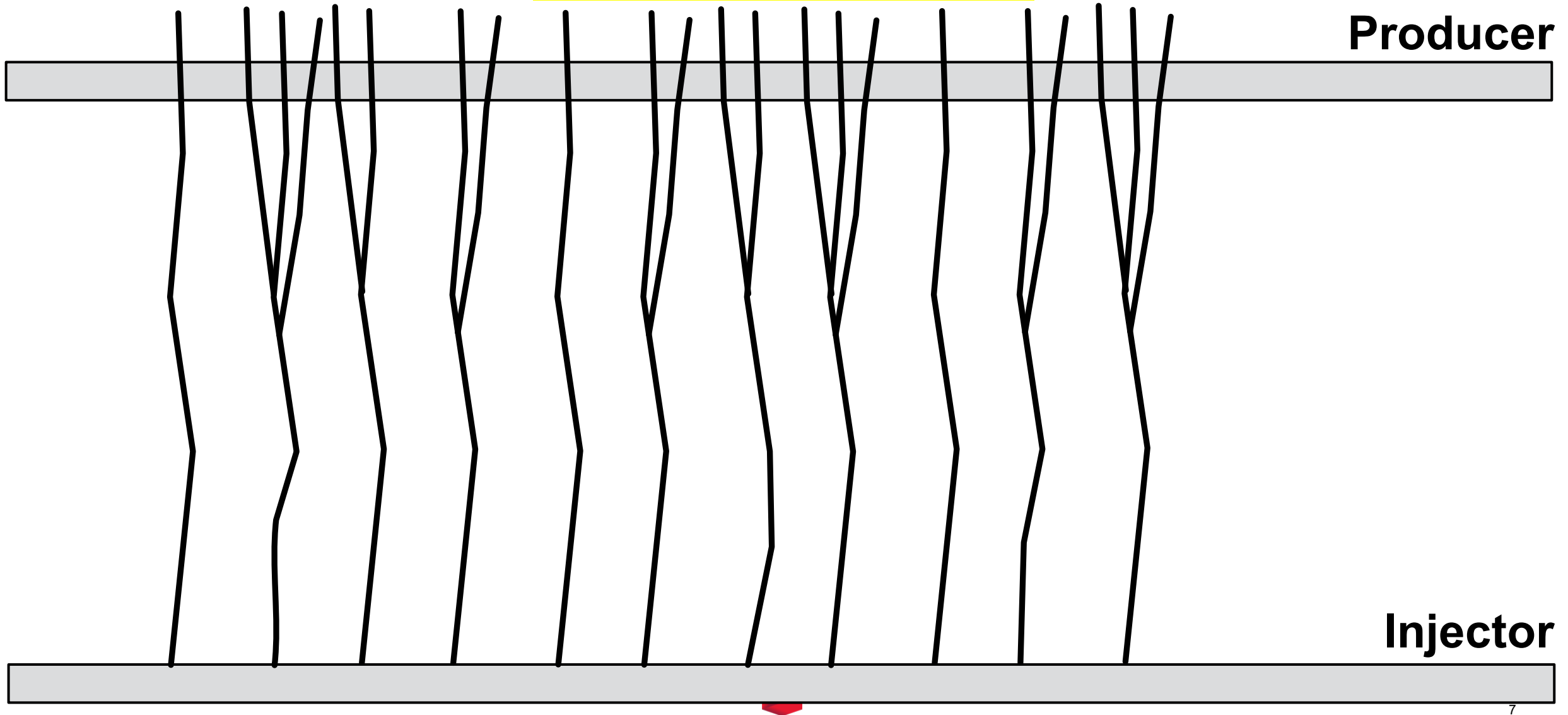
Fracture Geometry and Well Spacing

Linear Frac Fluid



Fracture Geometry and Well Spacing

Cross-Linked Frac Fluid

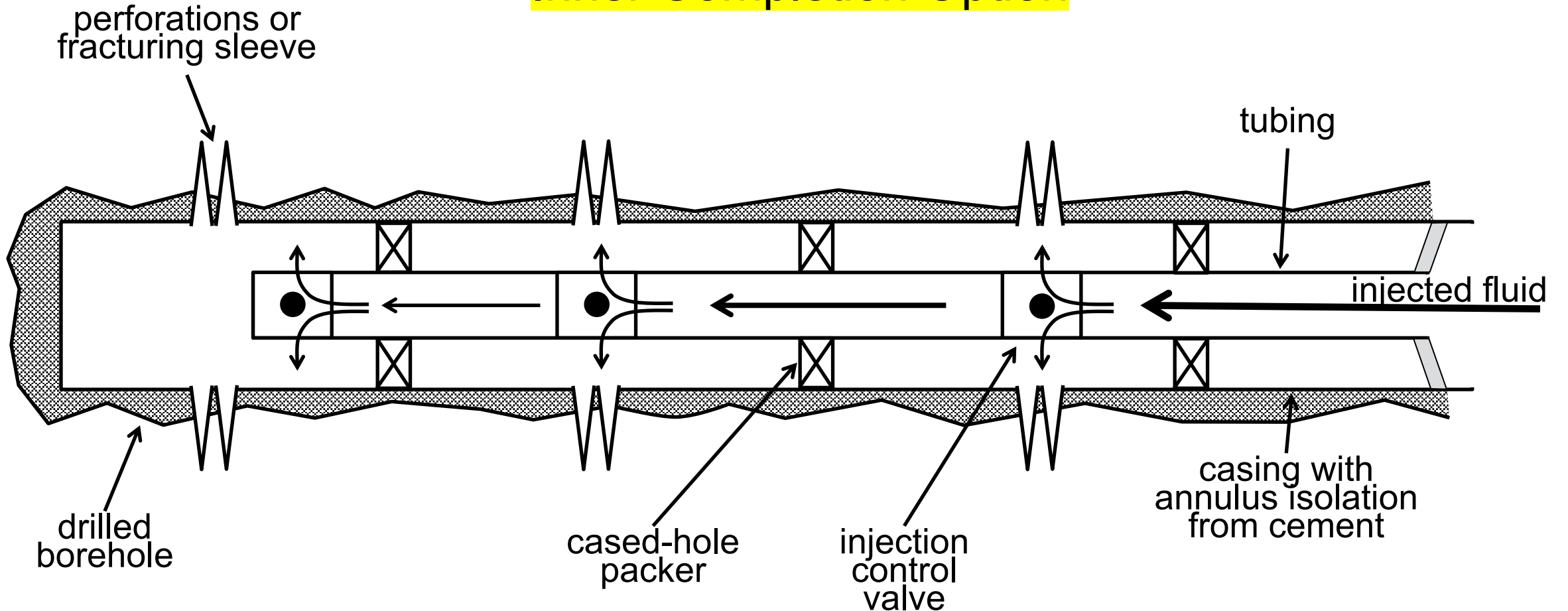


Focus Areas for EGS Success

- Cheaper/Lower-Tech Rotary Drilling BHAs
 - Rely less on RSS or steerable mud motors
- Fracture Geometry vs Injector/Producer Separation
- Fluid Distribution Control Systems
 - Autonomous
 - Self-regulating
 - Inner Completion vs Cemented in Place

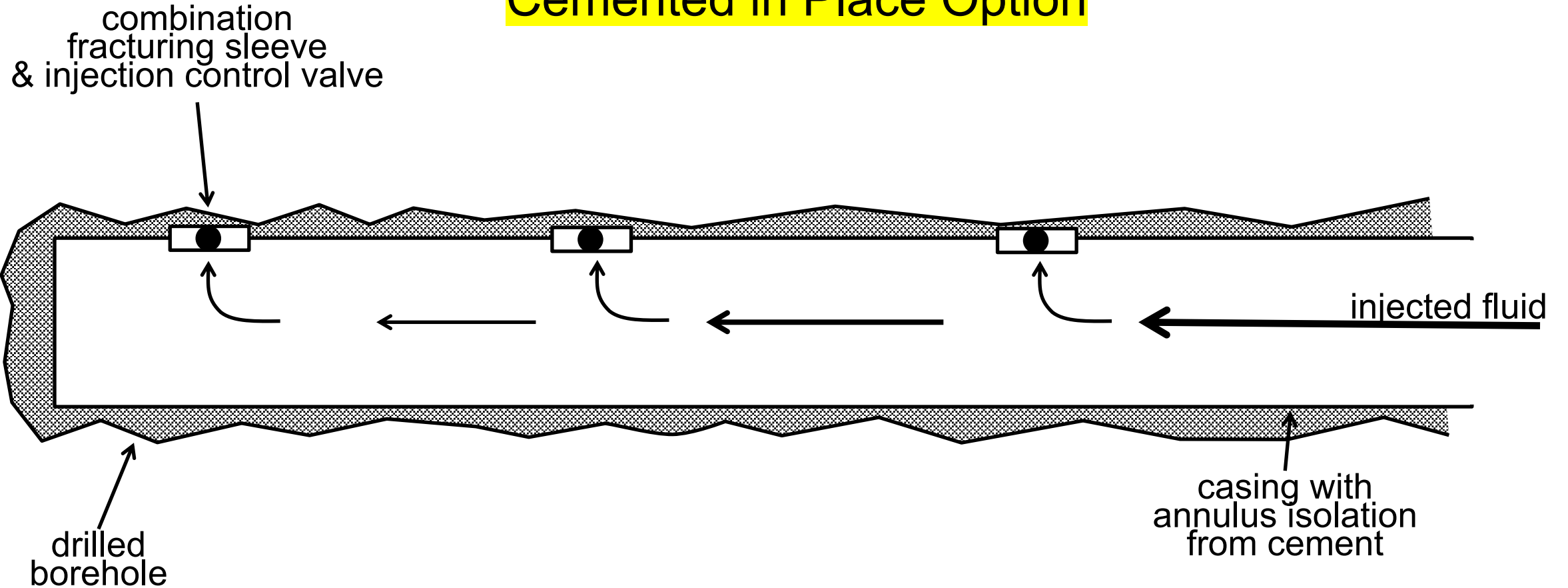
Injection Fluid Distribution

Inner Completion Option



Injection Fluid Distribution

Cemented in Place Option



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 - Rely less on RSS or steerable mud motors
- Fracture Geometry vs Injector/Producer Separation
- Fluid Distribution Control Systems
 - Autonomous
 - Self-regulating
 - Inner Completion vs Cemented in Place
- **Overall Sense of Urgency**
 - **Learn fast by taking calculated risks.**
 - **Execute as if your life depends on it.**

