

# Ultrahigh-resolution nanoparticle tracer technology uncouples frac hit myths from opportunities

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Talgat Shokanov, CEO of QuantumPro, Inc. - will speak on Thursday March 31, 2022. The seminar will be at 9:00 Central Time.

The topic is “Ultrahigh-resolution nanoparticle tracer technology uncouples frac hit myths from opportunities”.

## Abstract

As shale operators expand infill development amid ever-tightening well spacing and nebulous economics, frac hit issues re-emerge in asset development strategies. However, as affordable stage-level flow mapping data from nano-particle-based tracers clearly demonstrate, not all frac hits are alike, and some types of inter-well communication are tolerable in promoting maximum reservoir drainage.

While industry statistics indicate frac-to-frac communication is responsible for upwards of \$21 billion in lost production revenue and mitigation expenses over the past two years alone, direct frac hits account for only 12% of detected events. By contrast, an estimated 82% of frac hit signal characteristics are, in fact, fluid migration between the existing Tier One "parent" well and the newly drilled "child" well. Fluid migration not only has a minimal and short-lived effect on production, but without it, an inordinate area between the wells will be left un-stimulated, leaving potentially significant reserves stranded. The key is to put detected inter-well flow communication events in the proper perspective.

To detect a frac hit, infill development projects may include chemical tracers, offset well pressure gauges and costly microseismic or fiber-optic measurements. If a severe frac hit is detected, hasty reactive measures, such as pumping far-field diverters, usually follow. These and other traditional approaches to seal off detected inter-well communications not only significantly increase costs, but can be ineffectual and even harmful to production and estimated ultimate recovery (EUR) rates. Alternatively, the

hackneyed efforts to promote maximum production efficiency in unconventional wells should be abandoned in favor of a more surgical and stage-specific approach that relies on inter-well flow mapping and stage-by-stage flow profiles to precisely define the proximal characteristics and types of a frac hit. Until now, however, stage-level flow mapping was economically out of reach, except for the roughly 1% of so-called "science" wells.

The development of unique particle-based smart tracers and data-driven diagnostics has narrowed the economic chasm, making stage-level flow data accessible for standard unconventional wells. Field data confirm the capacity of the smart tracers to consistently deliver near real-time detection with high accuracy beyond the capabilities of chemical tracers. Importantly, the technology does so at a fraction of the costs in relation to the total cost of completions and competing alternatives.

### **Biography**

Talgat Shokanov is CEO of QuantumPro, Inc., which he founded in 2017, following a 15-year career at Schlumberger, where he held a variety of international and technology development assignments. He previously spearheaded the Schlumberger's Drill Cuttings Re-Injection unit, including subsurface engineering, disposal domain mapping, and downhole pressure diagnostics analysis. He holds numerous patents and has authored over 50 technical papers in complex fracturing. Shokanov holds BS and MS degrees in Petroleum Engineering from Satbayev University in Kazakhstan.