

2025 Annual Symposium Agenda

Meeting Information

Each year ResFrac hosts an Annual Symposium for our customers and clients. This year's symposium will be held at ExxonMobil, in Spring, TX, on June 12, 2025, from 8:00 a.m. to 4:00 p.m. At the Symposium, you can look forward to company updates, previews of future developments, a panel discussion with our operator partners, and ResFrac user presentations.

Tentative agenda

All times are listed in Central Time.

Start	End	Title	Presenter
7:30 a.m.	8:30 a.m.	Coffee, continental breakfast with the ResFrac team	
8:30 a.m.	9:45 a.m.	Welcome and updates	Dr. Mark McClure, Garrett Fowler <i>ResFrac</i>
9:45 a.m.	10:00 a.m.	Break	
10:00 a.m.	10:30 a.m.	Presentation: A Case Study on Reduced Cluster Spacing: Integrated Modeling and Field Diagnostics from a Permian Trial	Dr. Brian Gilmore <i>ExxonMobil</i> Dr. Erfan Sarvar Amini <i>ExxonMobil</i>
10:30 a.m.	11:00 a.m.	Presentation: Case Studies Applying the StageOpt Wellbore-Proppant Simulator in the Midland Basin, Montney, and Bakken Shale Plays	Chris Ponnors <i>ResFrac Corporation</i>
11:00 a.m.	11:15 a.m.	Break	
11:15 a.m.	12:00 p.m.	Presentation: Hydraulic Fracture Propagation Along Bedding Planes	Dr. Egor Dontsov <i>ResFrac Corporation</i>

		May Be More Prevalent Than We Think	
12:00 p.m.	1:00 p.m.	Lunch	
1:00 p.m.	2:15 p.m.	<p>Panel Discussion: Creative Ideas for Improving Recovery</p> <p>Topics will include: refracturing, chemical treatments, fracturing with hydrocarbons, and ADD wells</p>	<p>Craig Cipolla <i>Hess Corporation</i></p> <p>David Cramer <i>ConocoPhillips</i></p> <p>Kevin DeLapp <i>BlackBrush Oil & Gas</i></p> <p>Kevin Eichinger <i>BKV</i></p>
2:15 p.m.	2:30 p.m.	Break	
2:30 p.m.	3:00 p.m.	Presentation: Enhanced Oil Recovery in Unconventional Reservoirs	Dr. Jose Zaghloul <i>Continental Resources</i>
3:00 p.m.	3:30 p.m.	Presentation: Advances in Reservoir Engineering for Enhanced Geothermal Systems at Project Cape	Gerame Galban <i>Fervo Energy</i>
3:30 p.m.	4:00 p.m.	Wrap-up	Dr. Mark McClure, Garrett Fowler <i>ResFrac</i>

Panel Discussion: Creative Ideas for Improving Recovery

Moderated by Dr. Mark McClure, *ResFrac Corporation*

Craig Cipolla, *Hess Corporation*; David Cramer, *ConocoPhillips*; Kevin DeLapp, *BlackBrush Oil & Gas*; Kevin Eichinger, *BKV*

Panelist: [Craig Cipolla, Principal Engineering Advisor, Hess Corporation](#)



Craig Cipolla is Principal Engineering Advisor in the Hess Technology Team. His 40+ years of global experience includes a unique combination of hydraulic fracturing, geomechanics/geophysics, and reservoir engineering. Craig has co-authored 100 technical papers and was an SPE Distinguished Lecturer on hydraulic fracturing. He is the recipient of the SPE International Completion Optimization and Technology Award and is an SPE Distinguished member.

Panelist: [David Cramer, Senior Engineering Fellow, ConocoPhillips Global Completions](#)



Dave Cramer is a Senior Engineering Fellow on the ConocoPhillips Global Completions Engineering staff in Houston, TX, specializing in hydraulic fracturing applications and pressure analysis. He has published 75 technical papers and holds three U.S. patents and one provisional U.S. patent. He is a registered Professional Engineer in Colorado. Dave has been selected as an SPE Distinguished Lecturer on two occasions, in 2003-2004 and 2021-2022.

He was the SPE Region Director for the U.S. and Canada Rocky Mountain region from 2004-2007. His industry recognitions include the SPE/AIME Anthony F. Lucas Gold Medal for Technical Leadership (2024), SPE International Cedric K. Ferguson Certificate (2020), SPE International Distinguished Member Award (2019), SPE International Completions Optimization and Technologies Award (2011), and SPE Denver Section Henry Mattson Technical Achievement Award (1993).

Panelist: Kevin DeLapp, Vice President of Reservoir Engineering, BlackBrush Oil & Gas, L.P.



Kevin DeLapp has 20 years of oil and gas experience in both public and private sectors with a diverse background which includes strategic planning and partnerships, acquisitions and divestitures, reserves evaluation and estimation, EOR/Huff n' Puff planning and execution, public and private reserve reporting, finance, accounting, midstream, downstream, and land. Kevin held the previous position of Strategic Development & Reserves Director at EXCO Resources. He also served as Senior Business Development & Strategic Planning Representative for J-W Operating Company.

Panelist: Kevin Eichinger, Senior Completions Engineer, BKV Corporation



Kevin Eichinger serves as chairperson of the committee for the SPE Refracturing Workshop and is a senior completions engineer for BKV Corporation where he leads refracturing candidate selection, job design, and technical trials. Eichinger and his team have executed approximately 400 refrac projects to date and authored or coauthored two highly cited Unconventional Resources Technology Conference (URTeC) papers. One paper, detailing a creative and efficient “hybrid liner” refracturing method, was featured on the cover of [JPT's November 2023 issue](#). The other, which outlined a novel well-performance methodology for identifying refrac candidates, earned a “Best of Paper” award at URTeC.

Presentations

ExxonMobil Upstream Oil & Gas: A Case Study on Reduced Cluster Spacing: Integrated Modeling and Field Diagnostics from a Permian Trial

The trial included five benches with a consistent well density of 20 wells per section. Three pads used reduced cluster spacing; one pad with standard spacing served as control. A physics-based model was built and calibrated using fiber-optic data, time-lapsed geochemistry, bottom-hole pressures, and production history. A blind test was performed on the control pad to validate the model. The integrated model successfully replicated field behavior and passed blind validation. Although far-field fracture behavior between different cluster designs was not directly measured, modeling results indicate a comparable volume to first response (VFR) between the reduced and standard cluster spacing design. Near-field diagnostics from a nearby pad suggest improved cluster uniformity with reduced cluster spacing. Modeling results further show that reduced cluster spacing can enhance well performance; however, its effectiveness depends on specific reservoir characteristics, such as permeability and contacted pore volume. For instance, in deeper benches with tighter rock, reduced spacing appears to improve the performance by reducing the intra-bench communications. In contrast, in shallower benches with higher permeability, standard cluster spacing has been more effective in enhancing productivity by enabling hydraulic fractures to access a larger portion of the high permeable reservoir.

This will be a joint presentation given by **Dr. Brian Gilmore and Erfan Sarvar Amini**.



Dr. Brian Gilmore is a Reservoir Advisor at ExxonMobil Upstream Oil & Gas where he is working to integrate subsurface learnings and workflows as a part of the ExxonMobil-Pioneer merger. His current interests are field surveillance data collection, geomechanics and optimizing their use in subsurface model calibrations. He has 7 years experience using coupled fracture, flow numerical modeling to better understand subsurface mechanisms and impact business decisions within the field development process.

Prior to ExxonMobil, Dr. Gilmore worked with Pioneer Natural Resources in a similar role as with ExxonMobil in addition to roles evaluating and testing emerging technologies for drilling and hydraulic fracturing operations.

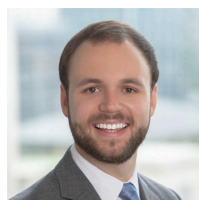
Dr. Gilmore holds six US patents and is a member of the Society of Petroleum Engineers, American Rock Mechanics Association, and the Academy of Miner Athletics. He earned both a Bachelor of Science and a Doctorate of Philosophy in Ceramic Engineering from the Missouri University of Science and Technology.



Erfan Sarvar Amini is a Staff Reservoir Engineer at ExxonMobil, supporting Permian Basin development through advanced hydraulic fracturing and reservoir simulation. He joined ExxonMobil following the merger with Pioneer Natural Resources, where he focused on integrated completions and modeling. Prior to that, he worked as a Completion Design Engineer with PETRONAS Energy Canada. Erfan holds a Ph.D. in Geomechanical Engineering, specializing in the optimization of unconventional reservoirs. With nearly 20 years of multidisciplinary experience spanning completions, geomechanics, and reservoir simulation, he brings a deep understanding of subsurface systems and data-driven decision-making to optimize development strategies.

[ResFrac Corporation: Case studies applying the StageOpt wellbore-proppant simulator in the Midland Basin, Montney, and Bakken Shale Plays](#)

StageOpt is a fast running wellbore-proppant transport simulator, which accounts for a wide range of phenomena, including proppant suspension, proppant settling, perforation erosion, perforation pressure drop, inertial effects, perforation orientation, and random variance, among others. Recent work provided the opportunity to calibrate the simulator to downhole imaging measurements of perforation erosion from wells in the Midland Basin, Montney, and Bakken Shale plays. We will discuss some of the outcomes of this work including the addition of new physics, convergence in some history matching parameters, key take-aways in measuring treatment uniformity, and optimization trends resulting in improvements in cluster-level uniformity index of proppant placement ranging from 0.12 to 0.19.



This presentation will be given by **Chris Ponnors**. Chris is the Reservoir and Completions User Success Lead at ResFrac, where he uses physics-based modeling to explore development projects with the dual goal of economic optimization and enhancement of subsurface knowledge. He brings a background in energy finance with experience in the mineral rights and mezzanine financing spaces, having conducted production forecasting, reserves evaluations, economic analyses, and the development plan appraisals in all major U.S. shale basins. Prior to joining ResFrac, he served as Managing Director at Meadowood Energy Partners and as Reservoir Engineer at Tregan Energy Partners, mineral and royalty interest investment firms. Chris also has reservoir engineering experience with Apache Corporation and Netherland, Sewell & Associates where he performed extensive reservoir modeling, fracture characterization, and directional drilling optimization. Chris received a Bachelor of Science in Petroleum Engineering from The University of Texas at Austin, graduating with Highest Honors and a certificate in Computational Science in Engineering. While at the University of Texas, Mr. Ponnors authored a thesis on his research in Enhanced Oil Recovery technologies and studied

petroleum geology at Delft University of Technology in the Netherlands. He resides in Seattle, Washington where he is a hockey player, musician, and DIY enthusiast.

ResFrac Corporation: Hydraulic fracture propagation along bedding planes may be more prevalent than we think

Most commercial unconventional plays exhibit vertically oriented fractures. As the industry explores hydraulic fracturing in a greater diversity of locations, there is mounting evidence that hydraulic fractures may propagate along sub-horizontal bedding planes in some instances. We utilize a fully coupled hydraulic fracturing and reservoir simulator with horizontal fracture capability to quantify the effect of hydraulic fracture propagation along sub-horizontal bedding planes. In particular, it is assumed that mode I horizontal fractures will propagate when the value of fluid pressure at a location of the interface or perforation exceeds the local value of vertical stress plus vertical tensile strength. Given the finely layered nature of shales, the latter tensile strength is relatively small and is assumed to be negligible for the weak interface. In addition, the horizontal fractures generally do not have any barriers and propagate for relatively large distances. First, we provide simple estimates to quantify conditions under which the horizontal fractures are likely to form. These are especially important in the context of viscous stress relaxation in clay rich formations that makes stress anisotropy very small. This analysis applies to both small-scale hydraulic fractures associated with DFITs and shut-in pressures associated with individual frac stages. To better quantify the effect of horizontal fractures on the efficiency of reservoir stimulation, a representative multi-stage field case is considered for further analysis.



This presentation will be given by **Dr. Egor Dontsov**. Dr. Dontsov currently works at ResFrac Corporation, where he focuses predominantly on simulator development. In particular, he recently improved hydraulic fracture propagation logic, while currently working on the problem related to dynamics of proppant in a wellbore. Previously, Egor worked at W. D. Von Gonten Laboratories and as an Assistant Professor at the University of Houston. He has over 50 peer-reviewed journal publications and over 20 conference papers, most of which are related to hydraulic fracture modeling and proppant transport.

Continental Resources: Enhanced Oil Recovery in Unconventional Reservoirs

Enhanced Oil Recovery (EOR) presents a pivotal opportunity for oil and gas companies in the USA's shale play, offering the potential for increased production and optimized resource recovery. EOR techniques enable the extraction of oil and gas from reservoirs that is limited by traditional hydraulic fracturing.

In our unconventional reservoirs, characterized by nano Darcy permeability rock, economically viable production necessitates horizontal multi-fractured wells. Yet, primary depletion typically yields low recovery rates, ranging from 4% to 16% across unconventional oil footprints. This leaves substantial resources untapped, estimated at hundreds of billions of barrels. These resources often remain technically and economically unrecoverable without further intervention to reduce residual oil saturation within pore spaces.

One of the primary techniques leveraged in unconventional reservoirs to achieve recovery is intermittent miscible gas injection, commonly referred to as Huff n Puff gas injection. Huff n Puff EOR can bolster production rates, extend well lifespans, and optimize resource utilization. In a context where oil demand is surging and assets are maturing, efficient hydrocarbon exploitation assumes paramount significance. EOR also holds the potential to reduce environmental impact by enhancing production from existing wells, instead of drilling new ones or refracturing older wells with suboptimal completion designs. However, EOR implementation mandates careful assessment of costs, technology, and environmental considerations.

Challenges for EOR implementation exist:

- Adapting EOR for unconventional reservoirs will necessitate advanced engineering and geological expertise and experience.
- EOR implementation entails expenses related to specialized equipment, gas, sometimes chemicals (e.g. surfactants, foam, etc), and operational intricacies.

Our technical discussion will focus on describing the mechanisms at play for EOR in unconventional resources, discussing a case study highlighting key physics necessary for modeling UEOR, and presenting some of the metrics used to optimize a pilot performance.



This presentation will be given by **Dr. Jose Zaghloul**, Reservoir Engineering Advisor at Continental Resources. Dr. Zaghloul has over 30 years of experience in the field of reservoir engineering. Throughout his career, Dr. Zaghloul has played a pivotal role in the development of primary and secondary recovery strategies across both conventional and unconventional fields, both in the USA and internationally. Dr. Zaghloul's secondary and tertiary recovery experience includes waterfloods, continuous gas floods, N₂ and CO₂ Enhanced Coal Bed Methane, and Huff n Puff EOR in conventional and unconventional reservoirs. His journey has included tenures at renowned industry leaders such

as BP America, BHP Billiton, Ecopetrol, and Chesapeake Energy. Dr. Zaghloul's expertise encompasses a wide spectrum of skills, including fluid characterization, PVT and EoS modeling, Rate Transient Analysis, Fracture Modeling, and Integrated Reservoir Modeling. Notably, Dr. Zaghloul was recently a key figure in the modeling and design of several unconventional EOR pilots. His commitment to advancing reservoir engineering continues at Continental Resources. Dr. Zaghloul holds a Ph D in Petroleum and Natural Gas Engineering from Penn State University.

Fervo Energy: Advances in Reservoir Engineering for Enhanced Geothermal Systems at Project Cape



This presentation will be given by **Gerame Galban**, Lead Reservoir Engineer at Fervo Energy. Since joining Fervo in June 2023, Gerame has been leading the subsurface optimization of Cape Station's 500 MW enhanced geothermal project in Beaver County, Utah. He holds 15+ experience in thermal reservoir simulation and hydraulic fracturing and a Petroleum Engineering degree from the Colorado School of Mines.