

2026 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 25, 2026, 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.	9:30 a.m.	A Review of the Past Year and What's Coming Next	Dr. Mark McClure Garrett Fowler <i>ResFrac Corporation</i>
9:30 a.m.	9:45 a.m.	Break	
9:45 a.m.	10:15 a.m.	Presentation: Horizontal Fractures: Integrated Field Diagnostics and 3D Modeling	Michelle Johnston <i>ARC Resources</i> Dr. Sama Morsy <i>ResFrac Corporation</i>
10:45 a.m.	11:15 p.m.	Presentation: Visualizing Uneven Flow: Post-Frac Imaging and Pseudo-CFD Modeling Reveal Perf Strategy Impacts on Proppant Placement in Delaware Basin	Matthew Jones <i>Occidental Petroleum</i>
11:15 a.m.	11:30 a.m.	Break	
11:30 a.m.	12:00 p.m.	Presentation: Introducing	Dr. Danial Zeinabady

		ResFrac's Multisector Simulation Capability - Full-Lateral and Composite Models	Dr. Michael Nole <i>ResFrac Corporation</i>
12:00 p.m.	1:00 p.m.	Lunch	
1:00 p.m.	2:15 p.m.	Panel Discussion: Measurements to Models to Money Topics will include: reducing uncertainty in completion and development strategies, the evolving role of physics-based and AI/ML-driven models, the value of measurement technologies, and how operators balance data, field trials, and predictive tools to improve technical and economic outcomes.	Craig Cipolla <i>ResFrac Corporation</i> Lucas Martin <i>FourPoint Energy</i> Matthew Jones <i>Occidental Petroleum</i> Dr. Tim Benish <i>ExxonMobil</i> Brandon Williams <i>ConocoPhillips</i>
2:15 p.m.	2:30 p.m.	Break	
2:30 p.m.	3:00 p.m.	Presentation: A Western Canvas: Painting a Picture of Hydraulic Fracture Optimization in the Rocky Mountains	Magdalene Albrecht <i>Anschutz Exploration</i>
3:00 p.m.	3:30 p.m.	Presentation: Implications of VSR (Viscoplastic Stress Relaxation) for Predicting Hydraulic Fracture Propagation and Opening (and Slip) on Sub-Horizontal Planes	Mark Zoback <i>Stanford University</i>
3:30 p.m.	4:00 p.m.	Wrap-up	Dr. Mark McClure Garrett Fowler <i>ResFrac Corporation</i>

Panel Discussion: Measurements to Models to Money

Moderated by **Craig Cipolla**, Senior Technical Fellow, ResFrac Corporation

Panelists: **Lucas Martin**, SVP of Engineering and Development, FourPoint Energy; **Matthew Jones**, Senior Engineering Advisor, Occidental Petroleum; **Dr. Tim Benish**, Hydraulic Fracturing Principal, ExxonMobil; **Brandon Williams**, Staff Completions Engineer, ConocoPhillips; **Dr. Peggy Rijken**, General Manager, Geomechanics Center of Excellence, Chevron Corporation.

Moderator: [Craig Cipolla](#), Senior Technical Fellow, ResFrac Corporation



Craig Cipolla is a Senior Technical Fellow at ResFrac, providing hydraulic fracturing and unconventional reservoir engineering advisory services. Craig currently supports select companies deploying industry-leading technologies and brings more than four decades of global experience across hydraulic fracturing, subsurface fracture diagnostics, geomechanics, geophysics, and fractured-reservoir modeling.

Craig retired from full-time employment after a 45-year career in the energy industry, with roles at Dresser Titan, CER Corporation, Union Pacific Resources, Pinnacle Technologies/Carbo, SLB, and Hess/Chevron. Throughout his career, he has focused on the application of innovative technologies and workflows to improve well productivity and maximize hydrocarbon recovery.

Craig is widely recognized for his contributions to hydraulic fracturing and completion optimization. He has co-authored more than 90 technical papers, served as an SPE Distinguished Lecturer on hydraulic fracturing, and received the prestigious SPE International Completion Optimization and Technology Award. He is also an SPE Distinguished Member and has chaired and served on organizing committees for numerous SPE conferences, workshops, and forums.

Panelist: [Lucas Martin, SVP of Engineering and Development, Fourpoint Energy](#)



Lucas Martin is the SVP of Engineering and Development at FourPoint Energy, where he leads integrated subsurface and operations teams focused on optimizing development in the Uinta Basin.

Prior to FourPoint, Lucas held several leadership roles at Marathon Oil, including Development director for the Oklahoma and North Delaware assets and Director of the Integrated Performance Organization, supporting development optimization across Marathon's North American portfolio. He began his career at Apache Corporation, where he worked across exploration, production technology, new ventures, and Canadian operations. Lucas holds a B.S. in Petroleum Engineering with a minor in Geology from Texas A&M University.

Panelist: [Matthew Jones, Senior Engineering Advisor, Occidental Petroleum](#)



Matt Jones is the Chief Completions Engineer and Worldwide Completions Team Manager within Oxy's Worldwide Drilling & Completions organization.

As Chief Completions Engineer, Matt shapes the strategic direction of the completions engineering discipline company-wide in partnership with business unit leadership and experienced engineers. This includes the development of practical capability models, standardized workflows, and best practices that drive consistency and performance across the enterprise. He is deeply committed to growing the next generation of completions engineers through mentorship, targeted training, and intentional career development pathways. In his capacity as Worldwide Completions Team Manager, he leads a group of senior completions engineers who provide technical expertise and operational support across all of Oxy's domestic and international business units.

Matt graduated from Texas A&M University in 2013 with a bachelor's degree in petroleum engineering, and his experience is largely based in production and completions. From 2014 to 2019, he worked multiple unconventional assets at Anadarko, including the Eagle Ford and Delaware Basin. Following Oxy's acquisition of Anadarko in 2019, he served as an engineering supervisor for the Delaware Basin completions team, an engineering advisor for the Worldwide Drilling & Completions team, and most recently as a senior engineering advisor on Oxy's Central Subsurface Engineering team. His technical focus areas include frac modeling, completion design optimization, and advanced downhole diagnostics.

Panelist: Dr Tim Benish, Hydraulic Fracturing Principal, ExxonMobil



Dr. Tim Benish is currently a Hydraulic Fracturing Principal for ExxonMobil's Completions and Wells Management team. Since joining ExxonMobil in 1999 with degrees from Georgia Tech and MIT, Tim has held assignments spanning US tight gas completions, Russian shale exploration, Norwegian subsea completions, and the development of novel completion technologies. He has spent most of his career in the area of unconventional stimulation with a recent focus on fracture diagnostics, and is currently the hydraulic fracturing principal for ExxonMobil.

Panelist: Brandon Williams, Staff Completions Engineer, ConocoPhillips



Brandon Williams is currently a Staff Completions Engineer for ConocoPhillips Global Wells. With 18 years of industry experience across 3 different operators, Brandon's current focus is on closed loop frac technology, fracture driven interactions, and frac design optimization for unconventional.

Presentations

ARC Resources and ResFrac Corporation: Horizontal Fractures: Integrated Field Diagnostics and 3D Modeling

Horizontal hydraulic fractures have been increasingly observed in unconventional shale developments, yet their formation mechanisms, geometric controls, and production impacts remain incompletely quantified. This study investigates horizontal fracture propagation in a multi-well pad through integrated numerical modeling, field-derived diagnostics, and extensive completion sensitivity analyses. A 3D hydraulic-fracture reservoir model was calibrated with fiber-optic strain, casing-deformation, and production data, enabling simulation of multiple horizontal fractures at distinct true vertical depths within a single wellbore. Model results demonstrate that horizontal fracture generation is primarily governed by the stress contrast between S_{hmin} and S_v , increased stress shadowing from adjacent stages, and the presence of mechanically weak or frictional interfaces at specific stratigraphic intervals. Simulated horizontal fractures align with observed casing deformation and fiber-response depths, confirming the model's ability to capture fracture reorientation and bedding-parallel growth.

A comprehensive sensitivity study shows that completion design strongly influences horizontal fracture development. Longer stage lengths, tighter cluster spacing, higher proppant loading, and increased fluid volumes amplify stress shadowing, promoting larger and more laterally extensive horizontal fractures that can extend more than 150m beyond the simulated stage. While these conditions can reduce early-time oil productivity up to ~25% in horizontal fracturing intensive cases, higher fluid and proppant intensities partially mitigate long-term recovery losses by increasing total stimulated fracture area. Horizontal fracturing conservative cases achieved through increased horizontal fracture toughness, elevated vertical tensile strength, and reduced stress shadowing generated horizontal fractures representing less than 5% of total fracture area, resulting in minimal early-time production impact and no observable oil EUR reduction.

Water production analysis indicates that horizontal fractures contribute to flow only when they intersect the wellbore explaining observed variability in early-time water cut. Overall, the results highlight that horizontal fractures are not anomalous features but predictable outcomes of geomechanical conditions and completion design. Proper calibration of fracture initiation criteria, in-situ stresses, and stress shadowing allows operators to manage horizontal fracture growth, balancing near-term productivity with long-term recovery in unconventional reservoirs.

This will be a joint presentation given by **Michelle Johnston and Dr. Sama Morsy**.



Michelle Johnston is a Staff Reservoir Engineer at ARC Resources. graduated from The University of Calgary with a Bachelors of Science in Chemical Engineering (Minor in Petroleum Engineering), and started her career at GLJ Ltd. creating oil and gas reserve reports for various Canadian producers. She moved on to pursue reservoir engineering both in the Canadian and international industries, and worked at Senergy Ltd. in the UK providing reservoir support to companies with assets across the North Sea. After Senergy, Michelle returned to Canada to work for PennWest and now works at ARC Resources Ltd. and is focused on modeling Montney assets. In her free time, Michelle enjoys spending time in the mountains either on a snowboard or mountain bike.



Dr. Sama Morsy is a Reservoir and Completions Technical Team Lead at ResFrac, where she provides value to the energy industry by optimizing the development of fracturing and reservoir projects. Sama worked at Chevron for over 6 years as a reservoir and petroleum engineer, leading and completing performance improvement projects in the Permian Basin. Prior to chevron, Sama worked as instructor at Cairo University for five years teaching undergraduate petroleum engineering courses.

She earned a PhD from Texas Tech University in 2014 focusing on improving shale assets production by proposing different enhanced and improved oil recovery methods. Sama has a master's degree from Cairo University in 2007 specialized in shaly sand petrophysics analysis, and in 2009 she took a second master's degree from the University of Wyoming on waterflooding surveillance analysis. She attended Cairo University where she completed her bachelor's degree in petroleum engineering in 2004. Sama received several awards along her career including the prestigious Fulbright award in 2011 and exceptional achievement awards during her career at Chevron, and published more than 25 peer review and SPE papers and filed for four pending patents to optimize shale well development.

Occidental Petroleum: Visualizing Uneven Flow: Post-Frac Imaging and Pseudo-CFD Modeling Reveal Perf Strategy Impacts on Proppant Placement in Delaware Basin



Non-uniform proppant placement across perforation clusters is a persistent driver of completion inefficiency, but quantifying it downhole has been difficult. This work shows how perforation erosion data from post-frac imaging can be used to calibrate a near-wellbore proppant and fluid placement model, turning it into a practical design optimization tool. Three Delaware Basin designs are compared: a legacy phased design, a single-shot oriented design, and a modern in-line oriented design. The calibrated model is then used to evaluate the impacts of perf diameter, perf friction pressure, gun orientation, shots per cluster, treatment rate, and proppant mesh size against slurry, proppant, and erosional uniformity indices. The combined results confirm that the most eroded perfs consistently land on the low side of the

casing, that heel-toe biases are systematic, and that in-line oriented designs reliably outperform phased designs on cluster uniformity.

This presentation will be given by **Matt Jones**. Matt is the Chief Completions Engineer and Worldwide Completions Team Manager within Oxy's Worldwide Drilling & Completions organization.

As Chief Completions Engineer, Matt shapes the strategic direction of the completions engineering discipline company-wide in partnership with business unit leadership and experienced engineers. This includes the development of practical capability models, standardized workflows, and best practices that drive consistency and performance across the enterprise. He is deeply committed to growing the next generation of completions engineers through mentorship, targeted training, and intentional career development pathways. In his capacity as Worldwide Completions Team Manager, he leads a group of senior completions engineers who provide technical expertise and operational support across all of Oxy's domestic and international business units.

Matt graduated from Texas A&M University in 2013 with a bachelor's degree in petroleum engineering, and his experience is largely based in production and completions. From 2014 to 2019, he worked multiple unconventional assets at Anadarko, including the Eagle Ford and Delaware Basin. Following Oxy's acquisition of Anadarko in 2019, he served as an engineering supervisor for the Delaware Basin completions team, an engineering advisor for the Worldwide Drilling & Completions team, and most recently as a senior engineering advisor on Oxy's Central Subsurface Engineering team. His technical focus areas include frac modeling, completion design optimization, and advanced downhole diagnostics.

ResFrac Corporation: Introducing ResFrac's Multisector Simulation Capability - Full-Lateral and Composite Models

ResFrac's new multisector simulation capability provides an efficient framework for modeling variations in well geometry and completion design along horizontal wells while leveraging parallel computing resources to reduce simulation time. Traditionally, these variations have been represented by constructing multiple single-sector models and combining their results during post-simulation analysis. The multisector feature streamlines this workflow by enabling all sectors to be defined, simulated, and analyzed within a single model. In addition to streamlined integration of independent (uncoupled) sector models, the multisector capability will also support coupled modeling of multiple sectors in one unified model.

This presentation introduces the concepts of full lateral and composite multisector modeling, describes the implementation of the multisector feature, and demonstrates the workflow for converting a single-sector model into a multisector model using the multisector setup wizard.

Practical applications and modeling considerations are presented to illustrate how multisector simulation can improve modeling efficiency while preserving the ability to capture along-well variations and sector interactions. The presentation also discusses the tradeoffs between full lateral and composite multisector approaches and provides guidance for selecting the appropriate simulation strategy for different modeling objectives.

This will be a joint presentation given by **Dr. Danial Zeinabady** and **Dr. Michael Nole**.



Dr. Danial Zeinabady is a Senior Software Developer at ResFrac Corporation. Before joining ResFrac, Danial served as a reservoir engineering specialist at ShearFrac, where he spearheaded the development of a fully automated application for real-time post-fracture pressure decay analysis. He holds a PhD in petroleum engineering from the University of Calgary and a Bachelor's degree in reservoir engineering from the Petroleum University of Technology in Iran. During his doctoral research, Danial focused on advancing the design and analysis of the diagnostic fracture injection test-flowback analysis (DFIT-FBA) method. During this time, he collaborated with leading oil and gas companies such as Orintiv, Birchcliff Energy,

ConocoPhillips, Origin Energy, TotalEnergies, and Encino Energy to implement the DFIT-FBA technique.



Dr. Michael Nole is a Senior Reservoir Simulation Engineer at ResFrac. Prior to joining ResFrac, Michael was a staff scientist at Pacific Northwest National Laboratory where he developed reservoir simulation software to study coupled multiphase flow and reactive transport processes in the subsurface. Here he worked on developing capabilities to model carbon storage and mineralization, critical mineral recovery, and geothermal energy.

Prior to this, he was a staff scientist at Sandia National Laboratories developing simulation software to model fluid flow and reactive transport processes associated with deep geologic disposal of radioactive waste, led a formal QA of software for use as a safety assessment code for an operating geologic repository, and developed software capabilities for modeling methane accumulation in marine and Arctic permafrost environments.

Michael obtained a B.S. in Civil & Environmental Engineering from the University of California at Berkeley, and an M.S. and Ph.D in Petroleum & Geosystems Engineering from the University of Texas at Austin.

ResFrac Corporation: Implications of VSR (Viscoplastic Stress Relaxation) for Predicting Hydraulic Fracture Propagation and Opening (and Slip) on Sub-Horizontal Planes



Dr. Mark D. Zoback Dr. Mark D. Zoback is a Senior Executive Advisor at ResFrac. He is the Benjamin M. Page Professor of Geophysics, Emeritus at Stanford University, where he was also the Director of the Stanford Natural Gas Initiative and Co-Director of the Stanford Center for Induced and Triggered Seismicity and the Stanford Center for Carbon Storage and a Senior Fellow in the Precourt Institute for Energy. Dr. Zoback conducts research on in situ stress, fault mechanics, and reservoir geomechanics with an emphasis on shale gas, tight gas and tight oil production as well as CO₂ sequestration. Dr.

Zoback served on the Secretary of Energy Subcommittee on shale gas development and the National Academy of Engineering Committee that investigated the Deepwater Horizon accident. He is the author of two textbooks and the author/co-author of approximately 400 technical papers. His most recent book, *Unconventional Reservoir Geomechanics*, was written with Arjun Kohli, and published in 2019 by Cambridge University Press. His online course, *Reservoir Geomechanics*, has been completed by over 13,000 people around the world. Dr. Zoback has received a number of awards and honors including election to the U.S. National Academy of

Engineering in 2011. He was awarded an Einstein Chair Professorship of the Chinese Academy of Sciences in 2013 and received the Robert R. Berg Outstanding Research Award of the AAPG in 2015. He was the 2020 chair of the Society of Petroleum Engineers Technical Committee on Carbon Capture, Utilization and Storage and 2021 Honorary Lecturer for the Society of Exploration Geophysicists. In 2023, he was selected as a Hagler Distinguished Lecturer at Texas A&M University and awarded the Rolf Emmermann medal of the German Research Centre for Geosciences. In 2024 he was awarded the Maurice Ewing Medal, the highest honor of the Society of Exploration Geophysicists.

Anschutz Exploration Corporation: A Western Canvas:Painting a Picture of Hydraulic Fracture Optimization in the Rocky Mountains



Maggie Albrecht is a Senior Staff Reservoir Engineer at Anschutz Exploration Corporation in Denver, CO. She is actively involved in asset development, reservoir characterization, field performance surveillance, and using simulation to understand and optimize performance. She has worked conventional and unconventional plays including offshore Equatorial Guinea, Gulf of Mexico, Bakken, Western Canadian/Liard Basins, the Permian Basin, Eagle Ford, and the Rockies. She previously worked for Apache Corporation, Hess Corporation, and SM Energy and has a degree in Chemical Engineering from the University of Notre Dame.