

UNCONVENTIONAL[®]

RESOURCES TECHNOLOGY CONFERENCE

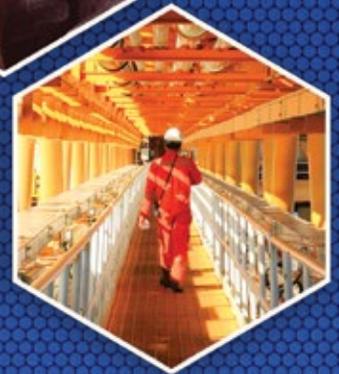
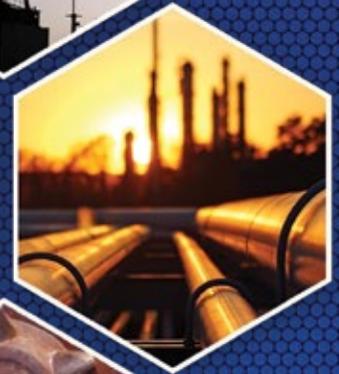
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The integrated event for unconventional resource teams

DENVER, COLORADO | 22-24 JULY 2019 | URTeC.org/2019

PROGRAM BOOK

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PROGRAM BOOK SPONSORED BY:

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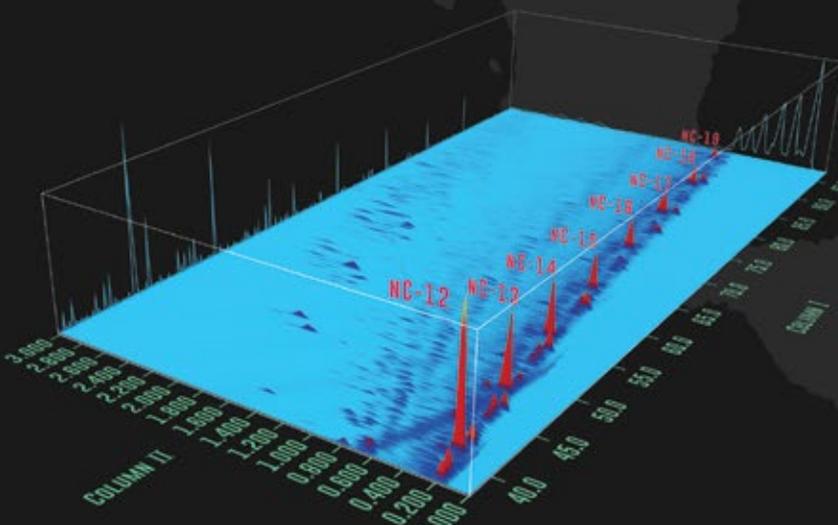
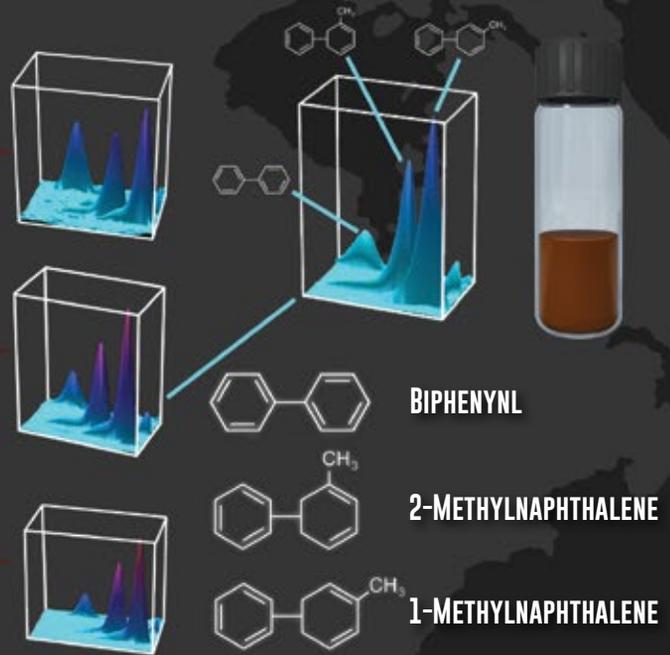
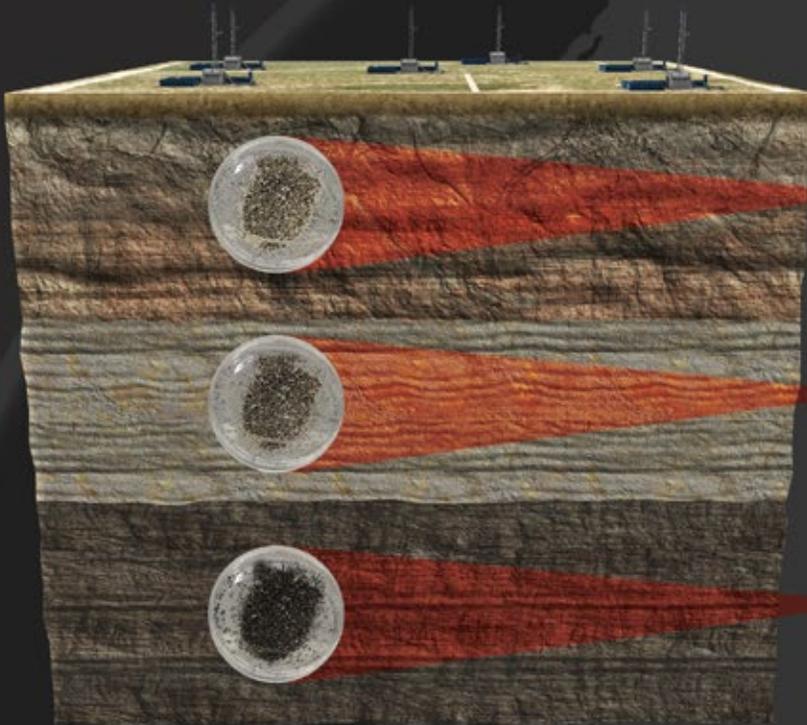


ENDORISING ORGANIZATIONS:



Information in A Drop of Oil

RESERVOIR CHARACTERIZATION AND MONITORING TOOL



SUBSURFACE RESERVOIR CHARACTERIZATION

- FINE-TUNED VERTICAL LANDING
- CALIBRATED RESERVE CALCULATION

TIME-LAPSE RESERVOIR MONITORING

- DRAINAGE FRAC HEIGHT
- COMPLETION DESIGN
- WELL PLACEMENT (STACKING & SPACING)
- EOR SCREENING

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Level IV



Level IV

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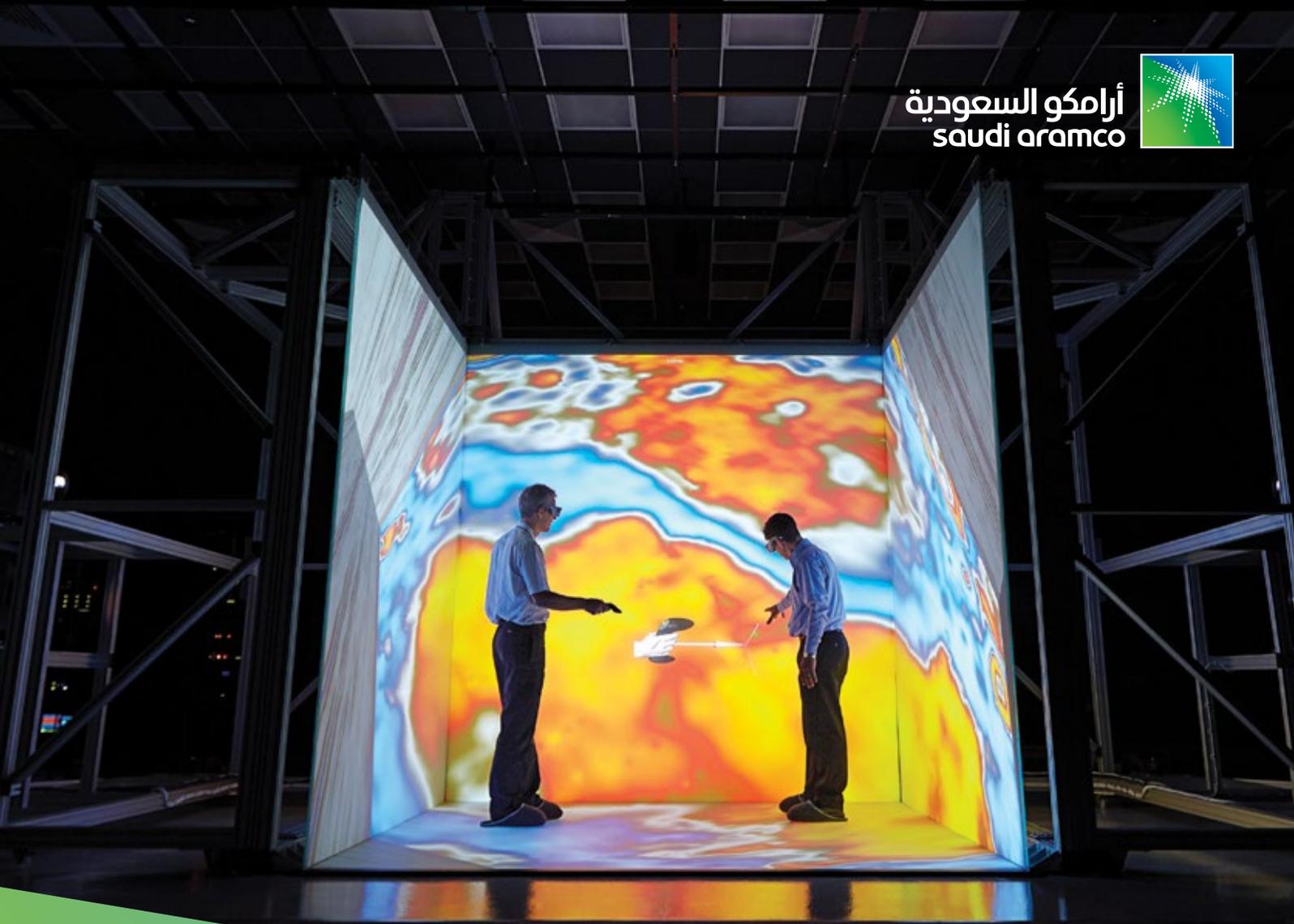
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We are seeking professionals with experience in unconventional resources to join our team in Saudi Arabia.

To find out how you can make an impact and be part of one of our many multidisciplinary teams, apply online at www.aramco.jobs/urtec

WELCOME TO URTeC 2019

LETTER FROM THE CO-CHAIRS

Dear Colleague,

On behalf of the 2019 Unconventional Resources Technology Conference (URTeC), its Sponsoring and Endorsing Organizations, and our Technical Program Committee, we welcome you to the seventh edition of URTeC, the preeminent global collaboration event in unconventional resources. Last year, URTeC exceeded all expectations with more than 6,000 attendees from all over the world. URTeC has become a true global must-attend event.

This year's conference features more than 400 technical papers focused on collaboration between geology, geophysics, geochemistry, geomechanics, petrophysics, drilling, completion and production engineering, well stimulation, reservoir engineering, midstream operations, HSE, and material science. In addition to the many technical sessions, noteworthy events are also planned such as:

- The Opening Plenary Session where leaders of our industry will discuss current affairs and impact on our energy future;
- The Operators' Forum where operating companies will present solutions to challenging issues;
- Special Sessions from ARMA (American Rock Mechanics Association) addressing geomechanics in modern completions and well construction, the very popular HFTS (Hydraulic Fracture Test Site) where the latest findings are discussed, and the SPWLA session highlighting the latest in unconventional petrophysics;
- Topical Breakfasts and Luncheons with engaging speakers addressing key challenges and solutions facing our industry;
- Panel discussions addressing emerging technology, artificial intelligence, sustainable development, induced seismicity, well integrity, and what can make Shale Plays successful.

Our Exhibit Hall features more than 200 companies with the latest in technology to help you safely produce more for less with an eye to environmental stewardship. In addition, the Exhibit Hall will feature selected technical presentations, the core exhibits, and the U-Pitch forum to connect technology entrepreneurs with potential partners and investors.

The Sponsoring Organizations—the Society of Petroleum Engineers (SPE), the American Association of Petroleum Geologists (AAPG), and the Society of Exploration Geophysicists (SEG), along with the eight Endorsing Organizations, recognize and appreciate that the economic climate over the past few years has greatly affected the exploration and exploitation of unconventional resources, but their potential contribution has never been higher. The technologies developed today to explore and exploit unconventional resources will define the hydrocarbon extraction industry of tomorrow.

Again, welcome. We are pleased to have you participate in URTeC 2019.

Sincerely,
Technical Program Co-Chairs



Jay Stratton (SPE)
Ultra Petroleum



Doug Valleau (AAPG)
*Strategia Innovation and
Technology Advisors*



Scott Singleton (SEG)
*Independence Resources
Management*

TECHNICAL PROGRAM COMMITTEE

TECHNICAL PROGRAM CO-CHAIRS

Jay Stratton, SPE Co-Chair, *Ultra Petroleum*

Doug Valleau, AAPG Co-Chair, *Strategia Innovation and Technology Advisors*

Scott Singleton, SEG Co-Chair, *Independence Resources Management*

THEME CHAIRS

Brian Driskill, *Shell Exploration and Production Company*, Theme 01: Operators' Forum

Rob Hull, *Pioneer Natural Resources*, Theme 01: Operators' Forum

Katerina Yared, *SM Energy*, Theme 02: Advanced Formation Evaluation of Unconventional Reservoirs

Stephanie Perry, *Anadarko*, Theme 02: Advanced Formation Evaluation of Unconventional Reservoirs

Neil Fishman, *PetroLogic Solutions, LLC.*, Theme 03: Geological Characterization of Unconventional Reservoirs

Steve Sonnenberg, *Colorado School of Mines*, Theme 03: Geological Characterization of Unconventional Reservoirs

Andrew Munoz, *Newfield Exploration*, Theme 04: Geophysical Characterization of Unconventional Reservoirs

David Langton, *Devon Energy*, Theme 04: Geophysical Characterization of Unconventional Reservoirs

Ahmad Ghassemi, *University of Oklahoma*, Theme 05: Geomechanics Integration: The Glue between Geoscience and Engineering

Gang Han, *Aramco Services Company*, Theme 05: Geomechanics Integration: The Glue between Geoscience and Engineering

Robert Hurt, *Pioneer Natural Resources*, Theme 05: Geomechanics Integration: The Glue between Geoscience and Engineering

Eric Michael, *ConocoPhillips*, Theme 06: Applied Geochemistry and Basin Modeling for Unconventionals

John Curtis, *GeoMark Research Ltd.*, Theme 06: Applied Geochemistry and Basin Modeling for Unconventionals

Birol Dindoruk, *Shell International Exploration and Production*, Theme 07: Machine Learning, AI, and Big Data in the Digital Oilfield

Randy Pharis, *ExxonMobil/XTO Energy Inc.*, Theme 07: Machine Learning, AI, and Big Data in the Digital Oilfield

Autumn Shannon, *Marathon Oil*, Theme 08: Increasing Recovery Efficiency in Unconventional Plays

Luis Baez, *Shell Exploration and Production Company*, Theme 08: Increasing Recovery Efficiency in Unconventional Plays

Mohan Manohar, *Noble Energy*, Theme 08: Increasing Recovery Efficiency in Unconventional Plays

Dilhan Ilk, *DeGolyer and MacNaughton*, Theme 09: Reserves Estimation and Production Forecasting

Susan Howes, *Subsurface Consultants & Associates, LLC.*, Theme 09: Reserves Estimation and Production Forecasting

Craig Cipolla, *Hess Corporation*, Theme 10: Production Performance of Tight Oil and Gas Reservoirs

George Koperna, *Advanced Resources International, Inc.*, Theme 10: Production Performance of Tight Oil and Gas Reservoirs

Andronikos Demarchos, *Range Resources*, Theme 11: New Materials and Novel Technologies for Unconventionals

Johannes Alvarez, *Chevron*, Theme 11: New Materials and Novel Technologies for Unconventionals

Benin Jeyachandra, *QRI*, Theme 12: Overcoming Gridlock: Unlocking the Midstream Bottleneck

Kyle Richter, *Occidental Petroleum Corporation*, Theme 12: Overcoming Gridlock: Unlocking the Midstream Bottleneck

Ali Sloan, *Parsley Energy*, Theme 13: Emerging Unconventional Plays and Novel Applications of Technology

Ulrich Zimmer, *Shell Exploration and Production Company*, Theme 13: Emerging Unconventional Plays and Novel Applications of Technology

Isaac Aviles, *Schlumberger*, Theme 14: Well Construction Optimization and Best Practices

Matthew Poole, *Shell Exploration and Production Company*, Theme 14: Well Construction Optimization and Best Practices

Pedram Fanailoo, *DNV GL*, Theme 15: License to Operate: Stakeholder Management and Social Performance

Steven Carpenter, *University of Wyoming, Enhanced Oil Recovery Institute*, Theme 15: License to Operate: Stakeholder Management and Social Performance

SUBCOMMITTEE CHAIRS

Baosheng Liang, *Chevron*, Topicals

David Hume, *Independent Consultant*, Topicals

Eric Marshall, *GEODynamics*, Topicals

Alexsandra Martinez, *DeGolyer and MacNaughton*, URTeC Events App

Livia Sivila, *Enverest*, URTeC Events App

Bin Yuan, *University of Calgary*, Exhibit Hall Papers

John Lassek, *Newfield Exploration*, Exhibit Hall Papers

Alejandro Lerza, *Chevron*, Panels and Invited Sessions

Shawn Maxwell, *Newfield Exploration*, Panels and Invited Sessions

Skip Rhodes, *Pioneer Natural Resources*, Plenary Session

Tom Blasingame, *Texas A&M University*, Plenary Session

GENERAL INFORMATION

ON-SITE REGISTRATION

Registration will be located inside the Exhibit Hall.

REGISTRATION HOURS:

Saturday	12:00pm–5:00pm
Sunday	9:00am–5:00pm
Monday	6:30am–5:30pm
Tuesday	6:30am–5:30pm
Wednesday	6:30am–1:00pm

CODE OF CONDUCT

The Unconventional Resources Technology Conference (URTeC) is conducted for the benefit of its members and interested parties to advance the science of geology, geophysics, and engineering, to promote technology, and facilitate networking and collaboration between professionals. URTeC values the participation of its members and guests and wants all URTeC attendees to have an enjoyable and fulfilling experience.

Accordingly, URTeC is dedicated to providing a harassment-free conference experience for everyone, regardless of gender, sexual orientation, disability, physical appearance, body size, race, or religion. We do not tolerate harassment of conference participants in any form. All attendees are expected to show respect and courtesy to other attendees throughout the conference and at all conference events, whether officially sponsored by URTeC or not.

If a participant engages in behavior that violates this code of conduct, URTeC reserves the right to take any action deemed appropriate, including warning the offender(s) or expelling the offender(s) from the convention with no refund. URTeC's complete URTeC anti-harassment policy can be found at URTeC.org/2019/Code-of-Conduct.

Reporting

If you have any questions or concerns, please notify a badged URTeC staff member or call +1 800 898 2274.

You can also communicate with us anonymously at www.urtec.org/carereport

URTeC SERVICE CENTER

Location:	Rooms 610/612
Hours:	Sunday 12:00pm–5:00pm
	Monday 7:00am–5:30pm
	Tuesday 7:00am–5:30pm
	Wednesday 7:00am–4:00pm

UPS BUSINESS CENTER

Location: Main Concourse, near Lobby F

The UPS Business Center provides services for conference attendees and exhibitors including copies, flyers, brochures, computer workstations with printers, faxing, office supplies, notary, as well as shipping and wheelchair rental. P: (720) 904 2300
E: store6611@theupsstore.com

Hours:	Monday – Friday 8:00am–6:00pm
	Saturday 9:00am–3:00pm
	Sunday Closed

LOST AND FOUND

Location: Registration – Exhibit Halls B/C

Items found during the conference should be turned into URTeC Show Management Personnel at Registration. If your lost item(s) have not been turned in, you can leave your contact information and we will contact you should it get turned in.

LUGGAGE CHECK

Location: Lobby B
Hours: Wednesday 6:30am–4:30pm

Items checked will be at \$3.00 per item. (No laptops or tablets)

NO-ELECTRONIC CAPTURING POLICY

Capturing or photographing contents of Exhibit Displays, Technical Sessions, Core Exhibits or Exhibit Hall Technical Sessions is strictly prohibited.

NO SMOKING POLICY

STATEWIDE Smoking Ban

In 2006, Colorado lawmakers passed the Colorado Clean Indoor Air Act to protect the health of both the public and employees by reducing their exposure to secondhand smoke. Effective 1 July 2006, restaurants, bars, and other indoor establishments in Colorado must be 100 percent smoke-free inside at all times. Some tobacco bars with humidors are exempt. Smoking is also prohibited 15 feet from any main entryway.

SOCIAL MEDIA

Make sure to follow URTeC on Facebook, Twitter, LinkedIn to stay connected and to get the latest updates on what's happening during the event. Use **#URTeC2019** to join the discussion online.

Download the URTeC Events App

Available for both iOS and Android devices, the URTeC Events App provides you with all the vital conference information in the palm of your hand. Download for free today.

SAFETY AND SECURITY

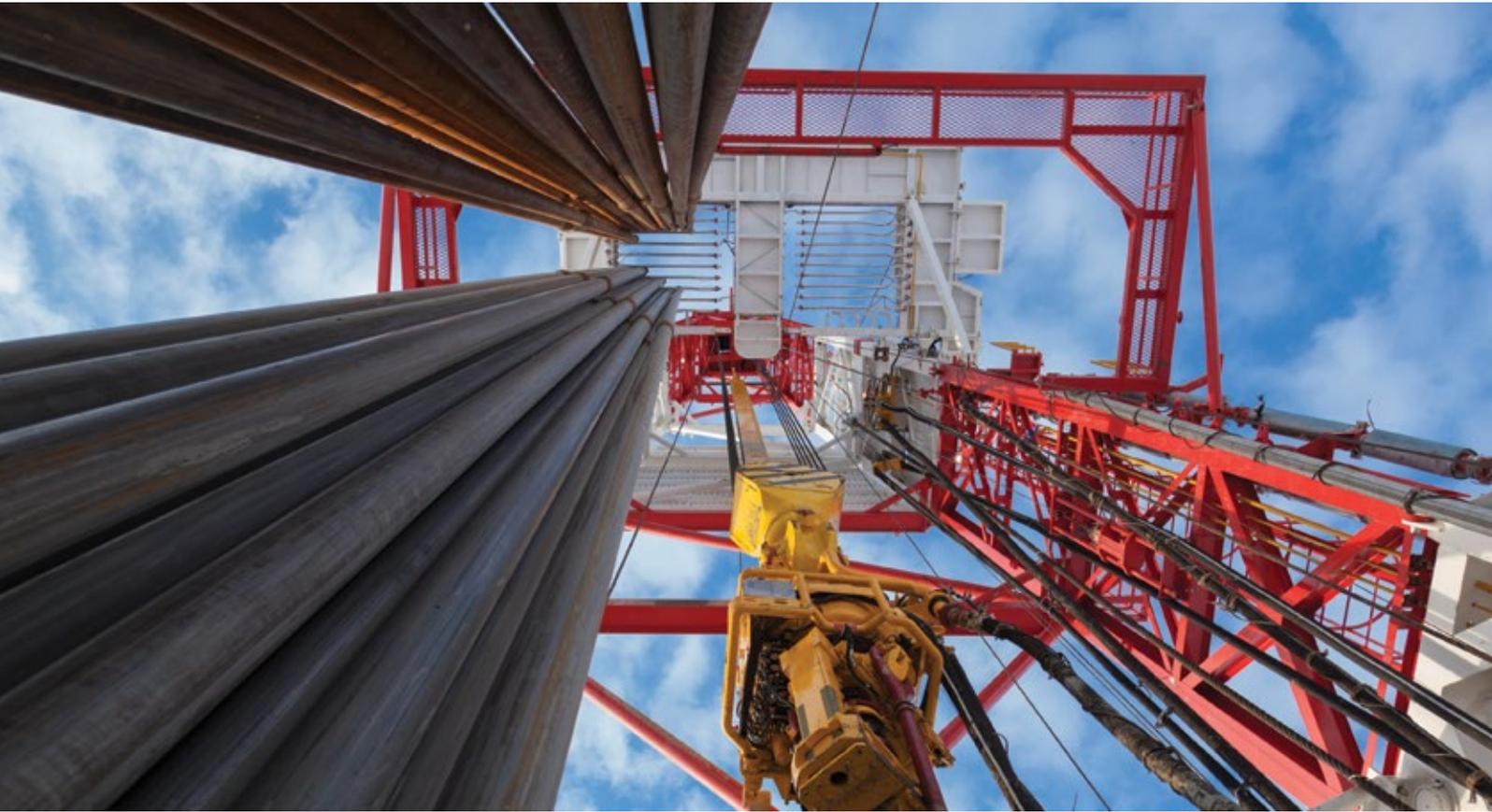
First Aid Location: Exhibit Hall #107

Hours:	Sunday 8:00am–6:00pm
	Monday 6:30am–7:00pm
	Tuesday 6:30am–6:00pm
	Wednesday 6:30am–5:00pm

Security and Emergencies:

Please report any security or emergencies to one of the following:

- Security officers located inside Registration and/or at the Exhibit Hall entrance.
- URTeC Staff Personnel located at Registration
- Kendra McColloch at +1 918 284 5451



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VOTING ON PRESENTATIONS

HOW TO VOTE ON TECHNICAL PRESENTATIONS

Make Your Vote Count – Help URTeC Select the Best of the Best

Use the URTeC App to help select the top 16 papers of 2019. Awardees will be recognized on the URTeC website and 2020 program book. The URTeC Events App is available for both iOS and Android devices. Download for free today!

1

Launch the URTeC events app and select URTeC 2019.

2

Click the agenda by event tile.

3

Select your technical session.

4

Choose the presentation you want to vote on.

5

Select survey to begin. Once finished click submit.



Print

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GETTING AROUND DENVER



Convention Center Information

Colorado Convention Center

700 14th Street

Denver, Colorado 80202

P: +1 303 228 8000

F: +1 303 228 8103

E: info@denverconvention.com

W: www.denverconvention.com

Public Transportation

Regional Transportation District (RTD)

Public transit for metropolitan Denver/Boulder. One-Day and Five-Day Passes are available for unlimited travel for bus and light rail service in the Denver metro area. Passes can be purchased individually or at a discount for large groups. Please visit the website for more information at www.rtd-denver.com.

Rideshare

Services from Uber and Lyft are available in the Mile High City. If you're a new Lyft user, enjoy up to \$20 in ride credits. Simply download the Lyft mobile app, enter the VISITDEN code under the app's "Promos" section, request a ride and you're on your way!

16th Street Mall Ride

MallRide, a free hybrid vehicle, scoots up and down the 16-block tree-lined retail core of downtown Denver, also home to hotels, restaurants, office buildings, residences, and public spaces. Hop on at any intersection on 16th Street between Civic Center Station at Broadway near the Colorado State Capital and Union Station on the west end.

Taxis

Taxi cabs offer a flat rate from the airport to downtown Denver of \$55.15 (rate includes airport access fee).

- Freedom Cab: +1 303 444 4444
- Metro Taxi: +1 303 333 3333
- Union Taxi: +1 303 922 2222
- Yellow Cab: +1 303 777 7777



FIELD TRIP

Unconventional Petroleum Reservoirs, Wattenberg Field Area, Northern Front Range (Sold Out)

Date: Thursday, 25 July
Field Trip Leader: **Steve Sonnenberg**, Professor and Boettcher Chair in Petroleum Geology, Director/PI MUDTOC Consortium, Colorado School of Mines
Sponsored by: Rocky Mountain Association of Geologists (RMAG)
Time: 8:00a-5:00p
Location: Departs from Colorado Convention Center (B Lobby)

Examples of unconventional petroleum reservoirs are well exposed in outcrops along the Front Range of Colorado. This one-day field trip will examine several types of unconventional petroleum systems including tight gas, tight oil, fractured reservoirs, heavy oil, and tar sands. Seven stops are planned for the one-day excursion. Lunch will be in scenic Lyons, Colorado.



Field Trip Leader:

Steve Sonnenberg is a Professor of Geology and holds the Charles Boettcher Distinguished Chair in Petroleum Geology at the Colorado School of Mines. He specializes in unconventional reservoirs, sequence stratigraphy, tectonic influence on sedimentation, and petroleum geology. He is the Director/PI for the MUDTOC Consortium. A native of Billings, Montana, Sonnenberg received B.S. and M.S. degrees in geology from Texas A&M University and a Ph.D. degree in geology from the Colorado School of Mines. Steve began teaching at Colorado School of Mines in 2007 after working in the petroleum industry for more than 25 years. Steve has served as President of several organizations including the American Association of Petroleum Geologists, Rocky Mountain Association of Geologists, RMS-AAPG, and Colorado Scientific Society.

Field trip stops include:

1. Lyons Niobrara Quarry: Examine Niobrara Formation stratigraphy and discuss fracture systems
2. J Sandstone, Middle Fork Road, off of HW 36 (N. Foothills Hwy.)
3. Codell Sandstone, HW 36 (N. Foothills Hwy.)
4. Niobrara Formation B Bench, Fort Hays, Six Mile Fold
5. Boulder Oil Field, discuss fractured Pierre Shale production
6. Rocky Flats to discuss Front Range Structure, HW 93
7. J Sandstone Turkey Creek, Turkey Creek Road and 470



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EXPLORE AND EXPERIENCE DENVER

Welcome to Denver!

Denver boasts the 10th largest, and one of the most exciting and walkable, downtowns in America. Within a mile radius, downtown Denver has three major sports stadiums, the nation's second-largest performing arts center, three colleges with 30,000 students, an assortment of art and history museums, a mint that produces 10 billion coins a year, a river offering white water rafting, a \$140 million theme and water park, a \$100 million aquarium, and an exciting variety of restaurants.

Exploring the City

While in Denver for URTeC 2019, take some time to enjoy the sights. With activities for everyone, there's plenty to see and do while you're in town. Visit www.denver.org for more information. Below are some of the exciting places you can visit during your stay.

- Red Rocks Park & Amphitheater
- Denver Union Station
- Coors Brewery Tour
- 16th Street Mall
- U.S. Mint
- Colorado Railroad Museum
- Denver Zoo

Downtown

The Colorado Convention Center is conveniently located in vibrant downtown Denver. It is within walking distance of some of the city's most popular attractions. Whether you spend time leisurely shopping at the 16th Street Mall, dining at one of the many high-quality restaurants, visiting inspiring museums, or enjoying a Colorado Rockies game, there is something for everybody in downtown Denver.

Denver Museum of Science and Nature

From stunning prehistoric fossils to an exploration of outer space, The Denver Museum of Nature & Science amazes visitors with realistic visions of the past, present, and future. The Gates Planetarium is one of the most sophisticated planetariums in the country, giving visitors unparalleled insight into the workings of the cosmos, and the Phipps IMAX Theater features brilliantly filmed IMAX entertainment.

Confluence Park

Denver was founded at Confluence Park as a gold mining camp in 1858. Today, the river park is the heart of Denver's 850-mile bike trail network and is surrounded by attractions. Ride the Platte River Trolley to the Downtown Aquarium to see stingrays and sharks and The Children's Museum of Denver, with dozens of interactive "playscapes" for younger kids. Eat and drink in the nearby neighborhoods of Riverfront, LoHi, and Highlands.



CONFERENCE AT A GLANCE (AS OF 12 JULY)



Purchase your Topical Breakfast and Luncheon tickets at registration.
Tickets are limited and required for admission.

SATURDAY

12:00pm–5:00pm	Registration
8:00am–5:00pm	Short Course 5 (Day 1): Shale Gas Geomechanics (AAPG)
8:00am–5:00pm	Short Course 6 (Day 1): DFIT - The Unconventional Well Test: Theory, Design, and Interpretation (SPE)
8:00am–5:00pm	Short Course 7 (Day 1): Mitigating Bias, Blindness, and Illusion in E&P Decision Making (SPE)
8:00am–5:00pm	Short Course 8 (Day 1): Unconventional Reservoir Production (Rate-Transient) Analysis (SPE)
8:00am–5:00pm	Short Course 9 (Day 1): Shale and Tight Reservoir Technical Analysis (SPE)

SUNDAY

8:00am–5:00pm	Registration
8:00am–5:00pm	Short Course 5 (Day 2): Shale Gas Geomechanics (AAPG)
8:00am–5:00pm	Short Course 6 (Day 2): DFIT - The Unconventional Well Test: Theory, Design, and Interpretation (SPE)
8:00am–5:00pm	Short Course 7 (Day 2): Mitigating Bias, Blindness, and Illusion in E&P Decision Making (SPE)
8:00am–5:00pm	Short Course 8 (Day 2): Unconventional Reservoir Production (Rate-Transient) Analysis (SPE)
8:00am–5:00pm	Short Course 9 (Day 2): Shale and Tight Reservoir Technical Analysis (SPE)
8:00am–5:00pm	Short Course 11: Carbonate Essentials: Pores to Prospect (SEG)
8:00am–5:00pm	Short Course 12: Physics and Mechanics of Rocks: A Practical Approach (SEG)
8:00am–5:00pm	Short Course 13: Applied Petroleum Geochemistry (AAPG)
8:00am–5:00pm	Short Course 14: Applied Statistical Modeling and Data Analytics for Reservoir Performance Analysis (SPE)
8:00am–5:00pm	Short Course 15: Managing Your Business Using PRMS and SEC Standards (2018 Update) (SPE)

MONDAY

6:30am–5:30pm	Registration
8:25am–10:00am	Opening Plenary Session: State-of-Play in Unconventional Reservoirs – The Quest for Value
10:00am–7:00pm	Exhibition
10:00am–11:00am	Breakfast Bites with Exhibitors
10:30am–12:15pm	Technical Sessions – Exhibit Hall
10:45am–12:05pm	Panel Session: Sustainable Development Goals for Unconventionals
10:45am–12:05pm	Panel Session: Unconventional Play Development – A View from the Front Lines
10:45am–12:05pm	Technical Sessions – Session Rooms
12:05pm–1:15pm	Topical Luncheon: Shale Revolution—Is the Party Over?
12:05pm–1:15pm	Topical Luncheon: Targets, Training, and Technology in the 2020s: Where is Geoscience Headed?
1:45pm–3:30pm	Panel Session: Value Proposition of Microseismic Mapping of Hydraulic Fractures
1:45pm–5:35pm	Technical Sessions – Session Rooms
1:45pm–5:10pm	Technical Sessions – Exhibit Hall
3:00pm–4:00pm	Refreshment Break
5:00pm–7:00pm	Opening Reception

Visit URTeC.org/2019 for updates.



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TUESDAY

6:30am–5:30pm	Registration
7:00am–8:15am	Topical Breakfast: EOR Technologies for Unconventional Oil Reservoirs
7:00am–8:15am	Topical Breakfast: The Shale Revolution: The Next Phase
8:25am–10:10am	Panel Session: Hydraulic Fracturing and Its Effects on Well Integrity
8:25am–12:15pm	Technical Sessions – Session Rooms
9:00am–6:00pm	Exhibition
9:40am–12:15pm	Technical Sessions – Exhibit Hall
10:00am–11:00am	Refreshment Break
10:55am–12:15pm	Panel Session: Recent Experiences with Induced Seismicity
12:05pm–1:15pm	Topical Luncheon: Increasing Recovery: Basin-Specific Approach and Produced Water
12:05pm–1:15pm	Topical Luncheon: How to Protect Your Company from Extinction
12:05pm–1:15pm	Topical Luncheon: Horizontal Drilling in the Permian: A Look at the Objectives
1:45pm–5:35pm	Special Session: Hydraulic Fracture Test Site (HFTS)
1:45pm–5:35pm	Technical Sessions – Session Rooms
1:45pm–5:10pm	Technical Sessions – Exhibit Hall
3:00pm–4:00pm	Refreshment Break
5:00pm–6:00pm	Networking Reception

WEDNESDAY

6:30am–1:00pm	Registration
7:00am–8:15am	Topical Breakfast: Freshwater Neutral—Managing Water Use and Giving Back to the Environment
7:00am–8:15am	Topical Breakfast: Perforating Design Impacts on Hydraulic Fracturing
8:25am–10:10am	Special Session: ARMA—Principles, Simulation, and Practice
8:25am–10:10am	Special Session: Scratching the Surface: Midstream Challenges and Logistics Solutions in the Permian
8:25am–12:15pm	Technical Sessions – Session Rooms
9:00am–1:00pm	Exhibition
9:40am–12:15pm	Technical Sessions – Exhibit Hall
10:10am–10:50am	Refreshment Break
10:55am–12:15pm	Panel Session: Next Technology Frontier in Unconventionals—What’s Needed Versus What’s in Development
12:05pm–1:15pm	Topical Luncheon: Politics, Policies, and Passion: Lessons from Colorado
12:05pm–1:15pm	Topical Luncheon: Seismicity in Texas—What We’ve Learned from the First Three Years of TexNet-CISR Monitoring and Research
12:05pm–1:15pm	Topical Luncheon: Perforating Design Impacts on Hydraulic Fracturing
1:45pm–3:30pm	Panel Session: Data Analytics Update for Unconventionals—What’s Missing?
1:45pm–3:30pm	Special Session: Best of SPWLA
1:45pm–3:30pm	Technical Sessions – Session Rooms

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CONFERENCE HIGHLIGHTS

● MONDAY ●

● TUESDAY ●

● WEDNESDAY ●

● NETWORKING OPPORTUNITIES ●

● SHORT COURSES ●

MONDAY CONFERENCE HIGHLIGHTS



Purchase your Topical Breakfast and Luncheon tickets at registration. Tickets are limited and required for admission.

Opening Plenary Session - State of Play in Unconventional Reservoirs – The Quest for Value

Time: 8:25am–10:00am
Location: Mile High Ballroom 1/2
Moderators: **Tom Blasingame**, *Texas A&M University*
Skip Rhodes, *Pioneer Natural Resources*

The landscape of unconventional in North America has some unknowns, but is reasonably well-mapped (e.g., the Delaware and Midland Basins, the Bakken, the Niobrara-Codell, the Eagle Ford, etc.). The struggle for profitability continues, but there can be little argument that technical success can be achieved through careful geological targeting and tailored stimulation. This year's URTEC Executive Plenary considers the roles of legacy unconventional operators, as well as operators who are play-focused (or even intra-play focused).

Speakers:

- **Mike Henderson**, *Senior Vice President, Resource Plays North, Marathon Oil Corporation*
- **Clay Gaspar**, *President, WPX Energy*
- **Susan Cunningham**, *Advisor, Darcy Partners*
- **Brad Holly**, *Chairman, President and Chief Executive Officer, Whiting Petroleum Corporation*
- **Shawn Bennett**, *Deputy Assistant Secretary for Oil and Natural Gas, U.S. Department of Energy*

MONDAY PANEL SESSIONS

Sustainable Development Goals for Unconventionals

Time: 10:45am–12:05pm
Location: 601/603
Moderator: **Katerina Yared**, *SM Energy*

It can work! We can achieve a sustainable balance between oil and gas and other energy sources to accommodate an energy-thirsty world, while ultimately consciously lifting the global standard of living with minimal costs to our ecosystem.

The oil and gas industry plays a key role in the global energy system and as such, it is a key driver of social and economic development. This panel will discuss various aspects of where the oil and gas industry can impact and develop global sustainable development goals (SDGs), including community investment and development, emissions mitigation, ecosystem management, and supply chain sustainability, among others. This panel discussion aims for a panoramic view of our current energy resources and how we can use the bright minds at hand in our industry to make this world a better place for everyone "touched" by energy in one way or another, today and for the future generations to come.

Panelists:

- **Denise Cox**, *President of Storm Energy LTD, AAPG*
- **Ray Leonard**, *President of Anglo Eurasia LLC, AAPG*
- **Nancy House**, *SEG*
- **Linda Battarola**, *Colorado School of Mines, SPE*

Unconventional Play Development—A View from the Front Lines

Time: 10:45am–12:05pm
Location: 705/707/709/711
Moderators: **Steph Perry**, *Anadarko Petroleum Corporation*
Tom Blasingame, *Texas A&M University*

This panel brings the "field commanders" from the various "hot" shale plays to discuss their strategies, their activities, their successes, and their challenges. These are people who make development, completion, and operational decisions every day. This panel will provide orientation through short presentations, but also have a facilitated discussion sequence.

Panelists:

- **Chad McAllister**, *Vice President-Permian, Anadarko*
- **Dave Cannon**, *Vice President-Geoscience, Diamondback Representatives from the Eagle Ford, SCOOP/STACK, and Bakken plays*
- **Dale Kokoski**, *V.P. Eagle Ford, Marathon Oil Corporation*
- **Charlie Harman**, *Whiting Petroleum*

Value Proposition of Microseismic Mapping of Hydraulic Fractures

Time: 1:45pm–3:05pm
Location: 601/603
Moderator: **Julie Shemeta**, *MEQ Geo Incorporated*

A panel of technology advocates within oil and gas operating companies will discuss the benefits and limitations of applying microseismic monitoring. Panelists including engineers, geologists, and geophysicists representing mid-size to major oil companies will provide a critical look at the application and interpretation of microseismicity with special attention on the value proposition of the technology.

Panelists:

- **Craig Cipolla**, *Hess*
- **Ben Stephenson**, *Shell*
- **Mark D. Zoback**, *Stanford University*
- **Shawn Maxwell**, *Newfield*

MONDAY TOPICAL LUNCHEONS



Time: 12:05pm–1:15pm
Fee: \$60 per person



Shale Revolution—Is The Party Over?

Location: 107/109/111/113
Mike Wicherich, *Chief Executive Officer, Three Rivers Operating Company IV*
Leanne Churchward, *Vice President of Business Development, Three Rivers Operating Company IV*

In the past 12 months Wall Street Investors have turned their backs on Upstream Energy Companies. What does this mean to both Public and Private Equity Backed Companies?



Targets, Training, and Technology in the 2020s: Where is Geoscience Headed?

Location: 102/104/106
Rob Stewart, *Director, Allied Geophysical Labs; Hugh Roy and Lillie Cranz Cullen Distinguished University Chair in Exploration Geophysics; President Elect, SEG*

Geoscience, which encompasses both geology and geophysics, has several key challenges in the decade ahead, particularly in the unconventional arena. Among those challenges are the fact that unconventional plays are run more like production factories, which by its very definition minimizes the role of geoscience. We are challenged to drive the point home that mudrocks are not homogeneous and well drilling programs benefit greatly from targeting of laterals. We also face rapid technological advancements and the retirement of a large body of experienced geoscientists. How we meet these challenges in the decade ahead will determine if our discipline is able to survive.

TUESDAY CONFERENCE HIGHLIGHTS



Purchase your Topical Breakfast and Luncheon tickets at registration. Tickets are limited and required for admission.

TUESDAY TOPICAL BREAKFASTS

Time: 7:00am–8:15am
Fee: \$40 per person



EOR Technologies for Unconventional Oil Reservoirs

Location: 107/109/111/113
Ganesh Thakur, Director, Energy Industry Partnership and Distinguished Professor, University of Houston

Unconventional resources have transformed the landscape of the oil and gas industry in the USA and the world. The primary recovery from these oil reservoirs is predicted to be in the range of 2 to 8%, so EOR is essential to improving the recovery factor. A review of the IOR/EOR indicates that most of the EOR studies have been limited to experimental investigations and numerical simulation. Moreover, the research reveals that miscible gas injection is the most promising method among the EOR techniques. Experimental studies show that CO₂ injection has the highest potential of improved recovery followed by produced gas followed by surfactant. Further research and field trials are necessary to bridge the gap and improve the scaling from laboratory to field. Some ideas for future research are identified to improve the understanding of the complex mechanisms of EOR in unconventional oil reservoirs.



The Shale Revolution: The Next Phase

Location: 102/104/106
Gary Sernovitz, Managing Director, Lime Rock Management

The next phase of the U.S. shale revolution is vital due to the implications for the E&P and oilfield service industry, the environment, and America's place in the world. Will the U.S. shale producers live up to their much-discussed production potential, or will events conspire to slow them down?

TUESDAY TOPICAL LUNCHEONS

Time: 12:05pm–1:15pm
Fee: \$60 per person



Increasing Recovery: Basin-Specific Approach and Produced Water

Location: 102/104/106
Elena Melchert, Director, Upstream Research Division Office of Oil and Gas, Office of Fossil Energy, U.S. Department of Energy

Update of the Department of Energy (DOE) onshore research portfolio and recent advances in improving recovery of oil and gas from unconventional (shale) resources including activities related to produced water. Briefly describes new technology for increasing ultimate recovery, focusing on field sites, fundamental shale studies, and data-driven approaches, including technologies, particularly sensing and data analytics approaches, sponsored by DOE.



How to Protect Your Company from Extinction

Location: 103/105
M. J. Clark, Integrated Leadership Systems, Senior Leadership Consultant

Business success is not just about crunching numbers. It's about developing others; working on the business, not just in it; building trust; and giving Millennials and Gen Z employees the tools and empowerment to successfully lead your department or company. M. J. Clark's interactive session will provide researched principles and suggestions you can implement immediately to help you build a roadmap to avoid extinction and ensure a successful business future.



Horizontal Drilling in the Permian: A Look at the Objectives

Location: 107/109/111/113
J. Michael Party, President, Beryl Oil and Gas LP and AAPG President

The Wolfcamp, Spraberry, and Bone Spring zones have been talked about in considerable detail, from numerous conferences to company presentations, specifically as to where to land the horizontal and why these zones have become the main focus of horizontal drilling in the Permian Basin today. This talk will discuss a few interesting aspects of these zones but will look at numerous other zones that have been targeted by horizontal drilling over the years in the Permian Basin.

TUESDAY SPECIAL SESSION

Hydraulic Fracture Test Sites

Time: 1:45pm–5:35pm
Location: Four Seasons Ballroom 2/3
Chairs: Brian Driskill, Shell Exploration and Production Company
Dawn Hayes, Anadarko

The Hydraulic Fracturing Test Sites (HFTS) are field-based research experiments conducted in the West Texas Midland and Delaware basins, bringing together government and industry to improve recovery, continue enhancing environmentally responsible methods of optimizing production, and lowering costs in the Midland and Delaware Basins. Experiments at both the Midland HFTS1 and Delaware HFTS2 involve drilling, hydraulically fracturing, and monitoring multiple horizontal wells operated by host companies Laredo Petroleum and Anadarko, respectively. Coring a slant well through the stimulated rock volume is part of both projects. Approximately 600 feet of core were successfully recovered in HFTS1; slant coring at HFTS2 is scheduled for Q3/Q4 of 2019. The value of each project is roughly \$25 million.

Although hydraulic fracturing in unconventional is a standard practice, optimizing well spacing and completion design remains a challenge especially in areas with the potential for multiple vertical landing zones. HFTS1 and HFTS2 seek to address these issues through the collection and integration of geological, geochemical, geophysical, geomechanical, petrophysical, drilling, and completions data with a multi-well instrumentation and time-lapse geochemistry program. The project will advance hydraulic fracturing technology, optimize well spacing, and mitigate environmental impacts of shale development operations. The research will advance understanding of the hydraulic fracturing process in shale reservoirs, enabling the design and execution of effective fracture treatments that significantly contribute to production. Improved design and execution of fracture stages will also reduce the number of future infill wells drilled and reduce water volume and energy input. The ultimate goal for producers is an understanding of how to optimize parameters to meet individual internal performance metrics.

Presentations will include:

- **Shawn Bennett**, U.S. Department of Energy
- **Progress Update on the Hydraulic Fracturing Test Site (HFTS) in the Permian-Midland Basin, and an Overview of the Hydraulic Fracturing Test Site II (HFTSII) in the Permian-Delaware Basin:** J. Ciezobka (GTI)
- **Natural Fracture Characterization in the Wolfcamp Formation at the Hydraulic Fracture Test Site (HFTS), Midland Basin, Texas:** J. F. W. Gale, S. J. Elliott, J. Z. Li, S. E. Laubach (University of Texas at Austin)
- **Seismic Monitoring at the Hydraulic Fracturing Test Site (HFTS), Midland Basin, Texas:** A. Kumar¹, H. Hu², R. Hammack¹, A. Bear³, W. Harbert³ (1. National Energy Technology Laboratory; 2. Department of Earth and Atmospheric Sciences, University of Houston; 3. National Energy Technology Laboratory/Department of Geology and Environmental Science, University of Pittsburgh)
- **Learnings from the Hydraulic Fracturing Test Site (HFTS) #1, Midland Basin, West Texas - A Geomechanics Perspective:** S. Wang (Chevron)
- **Analysis and Interpretations of Pressure Data from the Hydraulic Fracturing Test Site (HFTS):** T. Li, W. Chu, P. A. Leonard (Pioneer Natural Resources)
- **Application of a New RTA and Simplified Modelling Method to HFTS-1 wells:** J. Acuna (Chevron)
- **A Comprehensive Diagnostic Assessment of Reservoir Response to Fracturing at the Hydraulic Fracturing Test Site:** D. Maity, J. Ciezobka (GTI)

TUESDAY PANEL SESSIONS

Hydraulic Fracturing and its Effects on Well Integrity

Time: 8:25am–10:10am
Location: 601/603
Moderator: Terry Palisch, Carbo Ceramics

As the industry has pushed the envelope on drilling longer horizontal laterals with an ever-increasing number of stages, clusters, proppant, and fluid volumes in unconventional, there has been an associated increase in the reports of well deformations and failures leading to partial or complete restrictions in the lateral. Early reports suggested these might be limited to select unconventional plays; however, it now appears that most, if not all, unconventional plays experience these issues. There are many potential contributing causes for this phenomenon—often rooted in the completion design, the well design, or the geomechanics of the play—but these deformations and failures present increasing challenges to the industry including lost production, inoperable wells, and the inability to work in some or all of the lateral. While there is much work to be done to achieve remediation and/or mitigation of the well deformations and failures seen in unconventional, this panel will focus on the extent of the challenge, potential causes, and potential efforts to address this issue. In addition, the goal of the panel is to provide a forum for open discussion on the topic from all attendees.

Panelists:

- **George King**, Viking Engineering
- **Neal N. Nagel**, OilField Geomechanics LLC
- **William Fleckenstein**, Colorado School of Mines
- **Eric Schmelzl**, NSC Multistage
- **Jay Brenner**, WPX Energy

Recent Experiences with Induced Seismicity

Time: 10:55am–12:15pm
Location: 601/603
Moderators: Hal Macartney and Shawn Maxwell

A panel of industry representatives will discuss the latest issues associated with injection induced seismicity. While seismicity associated with waste water disposal has begun to be successfully mitigated in Oklahoma and Kansas, attention has begun to focus on the Permian basin. Meanwhile, seismicity associated with hydraulic fracturing continues as a regulatory issue.

Panelist:

- **Tim Tyrell**, XTO, Houston, Texas
- **Paul Dubois**, Railroad Commission, Austin, Texas
- **Rob Braint**, B3 Insight, Houston, Texas
- **Peter Hennings**, BEG, Austin, Texas

WEDNESDAY TOPICAL BREAKFASTS

Time: 7:00am–8:15am
Location: 102/104/106
Fee: \$40 per person



Freshwater Neutral—Managing Water Use and Giving Back to the Environment

Karen Olson, Technology Director, Southwestern Energy

This SPE Distinguished Lecture presentation is focused on highlighting the challenges encountered, lessons learned, and best practices companies can implement in their efforts to be better stewards of freshwater resources.

In early 2013, a small multi-discipline team closely evaluated all elements within the operational water life cycle and identified cost-competitive ways to optimize the company's freshwater usage.

Although the processes dramatically reduced freshwater requirements by up to 30% in some operating areas and saved the company more than \$20 million dollars, another factor was required in order to completely offset the need for the remaining freshwater use.

Thus, investment in conservation projects was implemented to improve freshwater resources within basins where operations occurred, achieving freshwater neutral required improvements in everyday work practices and a change in the mindset of water management across the company.



Perforating Design Impacts on Hydraulic Fracturing

Location: 107/109/111/113
Steve Baumgartner, Senior Engineering Technical Advisor, GEODynamics, Inc.

The presentation will cover perforating techniques and designs, and how they affect hydraulic fracturing in horizontal well completions. Examples of limited entry designs and the fracture diagnostic tests used to evaluate perforating designs will be presented. Current and emerging perforation technologies will be discussed. Case histories comparing different perforating designs and techniques will be presented.

WEDNESDAY SPECIAL SESSIONS

ARMA—Principles, Simulation, and Practice

Time: 8:25am–10:10am
Location: Four Seasons Ballroom 2/3
Chair: John McLennan (University of Utah)

ARMA is the American Rock Mechanics Association. Membership includes specialization in all forms of surface and subsurface rock engineering—from tunneling to mine design to hydraulic fracturing to subsidence and compaction assessment. Membership is international, with members from 37 nations.

This session provides new insights from four senior researchers and practitioners. The theme of the session is application of rock mechanics principles, measurements, and simulations to characterize, comprehend, and exploit in-situ mechanical properties, discontinuities, stresses, and treatment parameters. These premier practitioners offer perspectives from national laboratories, industry, and academia.

- **Andrew Bunger**, Associate Professor and R.K. Mellon Faculty Fellow in Energy, University of Pittsburgh Department of Civil and Environmental Engineering and Department of Chemical and Petroleum Engineering: Implications of Experiments and Simulations for the Multi-Objective Optimization of Horizontal Well Completions

Co-authors: Cheng Cheng, Delal Gunaydin (University of Pittsburgh); Anthony Peirce (University of British Columbia)

- **Dave Cramer**, Senior Engineering Fellow—Completions, ConocoPhillips: The Role of Perforations in Balancing Stress Variations Along the Lateral During Plug-and-Perf Treatments
- **Robert Hurt**, Staff Engineer, Geomechanics, Pioneer Natural Resources Company: SRV Versus Hydraulic Fracture Geometry: Are Mixed-Mode Fractures the Missing Link?
- **Jack Norbeck**, Co-founder and Chief Technology Officer at Fervo Energy: Mixed-Mechanism Stimulation in Geothermal Reservoirs

Scratching the Surface: Midstream Challenges and Logistics Solutions in the Permian

Time: 8:25am–10:10am
Location: 708/710/712
Co-Chairs: Benin Jeyachandra (Schlumber), Kyle Richter (Oxy), and Phaneendra B. Kondap (University of Houston)

Innovation isn't just for the subsurface, and URTEC 2019 brings a renewed focus on midstream and facilities challenges via Theme 12, "Overcoming Gridlock: Unlocking the Midstream Bottleneck." This invited session within the theme will explore the latest technologies and business strategies for gas compression, pipeline operation, and water logistics. Without these important midstream drivers, the Permian is just another basin all dressed up with no place to go.

Panelists:

- **Josh Adler**, Chief Executive Officer, Source Water
- **Brad Wright**, Managing Director, Plains All American
- **Brett Wiggs**, Chief Executive Officer, Oxy
- **Greg P. Niehues**, National Gas Services Group Inc.

WEDNESDAY CONFERENCE HIGHLIGHTS



Purchase your Topical Breakfast and Luncheon tickets at registration. Tickets are limited and required for admission.

WEDNESDAY SPECIAL SESSIONS

Best of SPWLA

Time: 1:45pm–3:30pm
Location: 102/104/106
Co-Chairs: **Katerina Yared** (SM Energy), **Sam Fluckiger** (SM Energy) and **Peter Kaufman** (QEP Resources)

The Society of Petrophysicists and Well Log Analysts (SPWLA) is a non-profit organization dedicated to the advancement of petrophysics, log and core measurements, formation evaluation techniques, and hydrocarbon, mineral, and water resources. The SPWLA is pleased to showcase a selection of top-rated unconventional reservoir-focused papers presented at its 60th Annual Symposium June 2019. The papers will highlight new technologies and techniques that are designed for the specific issues faced by operators in tight oil/gas formations and shale-rich formations.

WEDNESDAY PANEL SESSIONS

Next Technology Frontier in Unconventionals—What's Needed Versus What's in Development

Time: 10:55am–12:15pm
Location: 107/109/111/113
Moderator: David Close (Santos)

The shale revolution was conceived thanks to the developments in technology that allowed drilling and completion of wells capable of producing oil and gas at economic rates from ultra-low permeability reservoirs. Through the years, industry and technology has focused on drilling longer wells, pumping more sand, and increasing the number of frac stages per well. This panel gathers industry experts to discuss the different perceptions on the next technology breakthrough required for unconventionals, and contrast it against the actual focus of technology development.

Panelists:

- **Rusty Mathis**, Chevron
- **Jon V. Ludwig**, Novi Labs
- **Sidd Gupta**, Nesh
- **David Craig**, Oxy
- **Erdal Ozkan**, Colorado School of Mines

Data Analytics Update for Unconventionals—What's Missing?

Time: 1:45pm–3:30pm
Location: 107/109/111/113
Moderator: Alejandro Lerza (Chevron)

This panel gathers industry experts from operator, service companies, and the academia to present their view of the current status of data analytics in the oil and gas industry, followed by an in-depth discussion on what else is being done and/or should be done on this subject within the industry.

Panelists:

- **Sebastien Matringe**, Manager of Reservoir Optimization and Analytics at Newfield Exploration
- **Patrick Rutty**, Senior Product Manager at Drillinginfo
- **Srikanta Mishra**, Institute Fellow and Chief Scientist at Batelle
- **Mariano Gurfinkel**, Manager Advanced Analytics at Marathon Oil Corporation
- **Tobias Hoeink**, Sr. Director Stimulation Software & Artificial Intelligence

WEDNESDAY TOPICAL LUNCHEONS



Time: 12:05pm–1:15pm
Fee: \$60 per person



Politics, Policies, and Passion: Lessons from Colorado

Location: 103/105
Dan Haley, *President and Chief Executive Officer, Colorado Oil & Gas Association*

For the past several years, Colorado has been the epicenter of a fight over responsible oil and natural gas production as out-of-state activists and outside money have pushed local bans on hydraulic fracturing and an extreme statewide setback. In 2018, Colorado voters rejected the 2,500-foot setback measure but efforts continue to regulate and restrict the industry. The lessons learned in Colorado are becoming more applicable across the country. In this session, you will find out what industry has done in Colorado to try and create a more stable and predictable political and regulatory environment



Seismicity in Texas—What We've Learned from the First 3 Years of TexNet-CISR Monitoring and Research

Location: 102/104/106
Peter Hennings, *Research Scientist and Lecturer Principal Investigator, Center for Integrated Seismicity Research, Texas Bureau of Economic Geology, Jackson School of Geosciences, The University of Texas*

The new TexNet Seismic Monitoring network recorded 3676 earthquakes in Texas in 2018 with 385 being of magnitude ($ML \geq 2.0$). The rate of seismicity, independent of enhancements to monitoring, has decreased in the Fort Worth Basin, increased in the Eagle Ford play area, and increased significantly in west Texas, especially in the Delaware Basin. Each seismically-active area has unique geological characteristics and operational influences that need to be understood as the hazard is characterized and effective mitigation measures are sought. The Texas Bureau of Economic Geology's TexNet-CISR public and industry partnership has established a broad portfolio of research and monitoring projects to address this key emerging topic.



The Role of Technology in Driving Down Unconventional Reservoir Cost-of-Supply—Historical Results and Future Projections

Location: 107/109/111/113
Greg Leveille, *Chief Technology Officer, ConocoPhillips*

As recently as ten years ago, unconventional reservoirs were believed by the majority of E&P industry participants to be marginal targets—destined to deliver single digit recovery factors and being unable to compete against conventional reservoirs on cost of supply. History has proven that this view was horribly pessimistic, with technological advancements and innovative approaches having propelled unconventionals to the top of almost every North American E&P company's portfolio. This talk will discuss the main drivers behind this remarkable transformation and will also look towards what the future may hold regarding further improvements, both from traditional E&P technologies as well as from data analytic and digital solutions.

NETWORKING OPPORTUNITIES



BREAKFAST BITES WITH EXHIBITORS

Stretch your legs after the Opening Plenary and grab a cup of coffee and a quick breakfast snack with Exhibitors as we open the Exhibit Hall for the seventh Annual URTeC.

Day: Monday
Time: 10:00am–11:00am
Location: Exhibit Hall B/C

OPENING RECEPTION

End your first day at URTeC and unwind with a drink and light hors d'oeuvres as you network with exhibitors and industry colleagues in the Exhibit Hall.

Day: Monday
Time: 5:00pm–7:00pm
Location: Exhibit Hall B/C

REFRESHMENT BREAKS

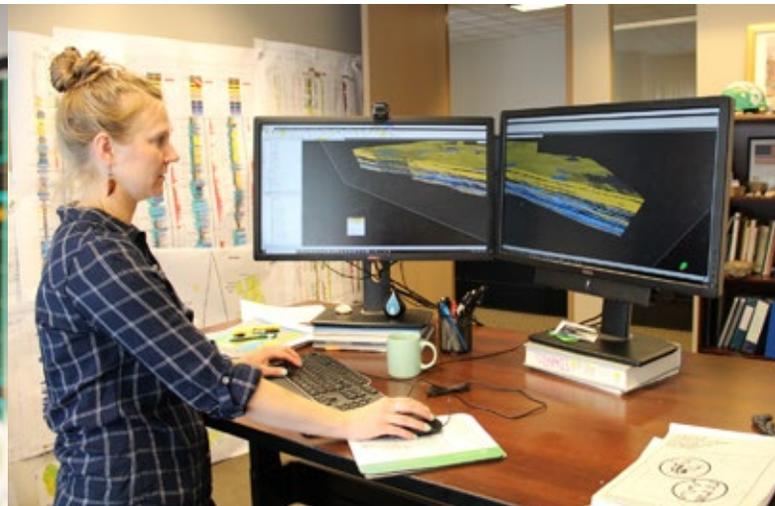
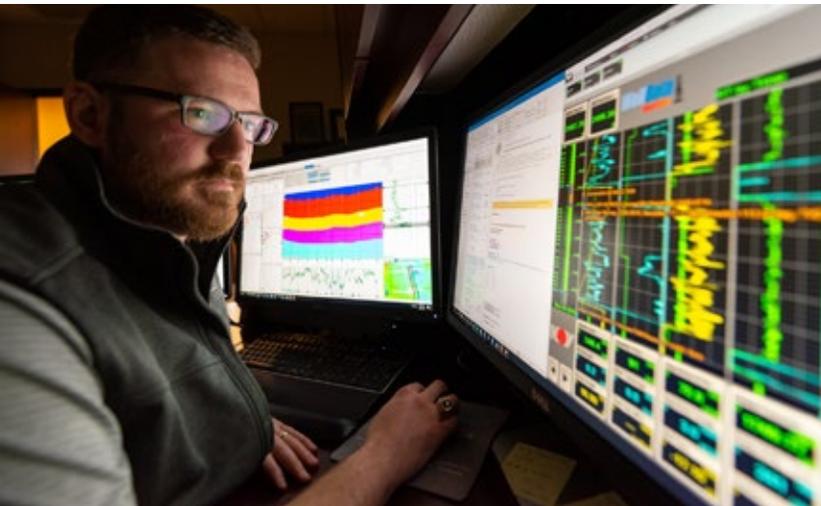
Grab a cup of coffee or tea in-between sessions and check out some of the exhibitor presentations to learn about the latest products and services.

Days: Monday–Wednesday
Times: 3:00pm–4:00pm (Monday and Wednesday)
10:00am–11:00am (Tuesday and Wednesday)
Location: Exhibit Hall B/C

NETWORKING RECEPTION

Finish up day two at URTeC with a drink while networking with exhibitors and other colleagues.

Day: Tuesday
Time: 5:00pm–6:00pm
Location: Exhibit Hall B/C



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SHORT COURSES

	Title	Instructor(s)	Location	Day(s)/Time(s)	Fees
5	Shale Gas Geomechanics (AAPG)	Hamed Soroush (Global Geomechanics Director, PETROLERN Engineering and Geosciences Advisors)	Colorado Convention Center, Room 111	Saturday-Sunday, 20-21 July 8:00am-5:00pm	Professionals \$1295 / Students \$300
6	DFIT - The Unconventional Well Test: Theory, Design, and Interpretation (SPE)	David P. Craig (Director Stimulation Design, Oxy)	Colorado Convention Center, Room 102	Saturday-Sunday, 20-21 July 8:00am-5:00pm	Professionals \$1400 Members \$1800 Non-Members / Students \$500
7	Mitigating Bias, Blindness, and Illusion in E&P Decision Making (SPE)	Creties Jenkins (Partner, Rose and Associates)	Colorado Convention Center, Room 103	Saturday-Sunday, 20-21 July 8:00am-5:00pm	Professionals \$1400 Members \$1800 Non-Members / Students \$500
8	Unconventional Reservoir Production (Rate-Transient) Analysis (SPE)	Chris Clarkson (Professor and the Encana-AITF Chair, Unconventional Gas and Light Oil Research)	Colorado Convention Center, Room 104	Saturday-Sunday, 20-21 July 8:00am-5:00pm	Professionals \$1400 Members \$1800 Non-Members / Students \$500
9	Shale and Tight Reservoir Technical Analysis (SPE)	Steve Hennings (Principal, Source Rock Engineering)	Colorado Convention Center, Room 105	Saturday-Sunday, 20-21 July 8:00am-5:00pm	Professionals \$1400 Members \$1800 Non-Members / Students \$500
11	Carbonate Essentials: Pores to Prospect (SEG)	Christopher Liner (Professor, University of Arkansas)	Colorado Convention Center, Room 112	Sunday, 21 July 8:00am-5:00pm	Professionals \$685 / Students: \$150
12	Physics and Mechanics of Rocks: A Practical Approach (SEG)	Manika Prasad (Colorado School of Mines)	Colorado Convention Center, Room 110	Sunday, 21 July 8:00am-5:00pm	Professionals \$325 / Students \$100
13	Applied Petroleum Geochemistry (AAPG)	Richard Patience (Houston Representative, Applied Petroleum Technologies) & Joe Curiale (Petroleum Geochemist, Geochemical Advisory Services)	Colorado Convention Center, Room 113	Sunday, 21 July 8:00am-5:00pm	Professionals \$695 / Students \$150
14	Applied Statistical Modeling and Data Analytics for Reservoir Performance Analysis (SPE)	Srikanta Mishra (Institute Fellow and Chief Scientist (Energy), Battelle Memorial Institute)	Colorado Convention Center, Room 106	Sunday, 21 July 8:00am-5:00pm	Professionals \$750 Members \$950 Non-Members / Students \$300
15	Managing Your Business Using PRMS and SEC Standards (2018 Update) (SPE)	Joshua, Oletu, (Principal Advisor at Gaffney, Cline & Associates)"	Colorado Convention Center, Room 107	Sunday, 21 July 8:00am-5:00pm	Professionals \$750 Members \$950 Non-Members / Students \$300

Cancelled Short Courses:

1. Shale Play Production Facilities (ASME), 2. Frac School (ASME), 3. Seismic Attributes for Resource Plays (SEG), 4. Geophysical Application to Petroleum Engineering (SEG), 10. Recent Advances in Artificial Lift for Shale Plays (ASME)

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TECHNICAL PROGRAM

● TECHNICAL SESSIONS AT A GLANCE ●

● TECHNICAL PROGRAM – MONDAY ●

● TECHNICAL PROGRAM – TUESDAY ●

● TECHNICAL PROGRAM – WEDNESDAY ●

● PRESENTER CROSS REFERENCE ●

Theme 01: Operators' Forum: Case Studies Highlighting the Multidisciplinary Approach to Exploration, Appraisal, Pilot Tests, and Development of Unconventional Resources

Theme 02: Advanced Formation Evaluation of Unconventional Reservoirs

Theme 03: Geological Characterization of Unconventional Reservoirs

Theme 04: Geophysical Characterization of Unconventional Reservoirs

Theme 05: Geomechanics Integration – The Glue between Geoscience and Engineering

Theme 06: Applied Geochemistry and Basin Modeling for Unconventionals: From Source Rock to Produced Hydrocarbons

Theme 07: Machine Learning, AI, and Big Data in the Digital Oilfield

Theme 08: Increasing Recovery Efficiency in Unconventional Plays

Theme 09: Reserves Estimation and Production Forecasting

Theme 10: Production Performance of Tight Oil and Gas Reservoirs

Theme 11: New Materials and Novel Technologies for Unconventionals

Theme 12: Overcoming Gridlock: Unlocking the Midstream Bottleneck

Theme 13: Emerging Unconventional Plays and Novel Applications of Technology

Theme 14: Well Construction Optimization and Best Practices

Theme 15: License to Operate: Stakeholder Management and Social Performance

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TECHNICAL SESSIONS AT A GLANCE

Sessions are numbered by theme – see page 24 for the full list.

Session Rooms	Four Seasons 1	Four Seasons 2/3	Four Seasons 4	108/110/112	601/603	605/607
Monday Morning	Opening Plenary					
	Panel: Unconventional Play Development - A View from the Front Lines	Theme 5: Microseismic Interpretation	Theme 2: Advanced Formation Evaluation I	Theme 3: Depositional Processes of Unconventional Reservoirs I	Panel: Sustainable Development Goals for Unconventionals	Theme 10: Shale Facilities and Artificial Lift Optimization
Monday Afternoon	Theme 7: Machine Learning, AI, and Big Data II	Theme 5: Frac Modeling I: from Physics to Field	Theme 9: Reserves Estimation and Production Forecasting: Well Spacing and Interference Impact	Theme 3: Depositional Processes of Unconventional Reservoirs II	Panel: Value Proposition of Microseismic Mapping of Hydraulic Fractures	Theme 10: Flow, Production, and Phase Behavior for Tight Oil and Shale Oil/Shale Gas Reservoir Systems
	Theme 1: Operators' Forum: Case Studies for the Midland Basin in Texas				Theme 2: Advanced Formation Evaluation II - Flow Capacity/ Permeability	
Tuesday Morning	Theme 1: Operators' Forum: Case Studies Optimizing Well Performance	Theme 3: Aligning Geoscience and Engineering Workflows	Theme 2: Advanced Formation Evaluation III - Nuclear Magnetic Resonance	Theme 9: Reserves Estimation and Production Forecasting II: Performance Prediction and Future of Production Forecasting	Panel: Hydraulic Fracturing and Its Effects on Well Integrity Panel: Recent Experiences with Induced Seismicity	Theme 10: Pressure Transient Testing, DFIT, and Well Testing
Tuesday Afternoon	Theme 1: Operators' Forum: Case Studies Highlighting Modeling and Technologies	Special Session: Hydraulic Fracture Test Sites	Theme 2: Advanced Formation Evaluation IV -Saturation/Volumes, and Recovery	Theme 7: Machine Learning, AI, and Big Data IV	Theme 3: Imaging Unconventional Reservoir Rocks at Various Scales	Theme 10: Reservoir Modeling for Unconventionals: Bringing Together Data, Disciplines, and Design
Wednesday Morning	Theme 1: Operators' Forum: Case Studies From Geology to Completions	Special Session: Best of ARMA	Theme 2: Advanced Formation Evaluation V: Data Integration and Modelling	Theme 7: Machine Learning, AI, and Big Data V	Theme 15: License to Operate: Stakeholder Management and Social Performance II	Theme 6: Oil/Gas/ Water: Fluid-Fluid, Fluid-Rock Interactions & Chemostratigraphy I
		Theme 10: Furthering the Understanding of Fracture Behavior, Flowback, and SRVs I			Panel: Next Technology Frontier in Unconventionals - What's Needed Versus What's in Development	
Wednesday Afternoon	Theme 1: Operators' Forum: Case Studies with an International Focus	Theme 10: Furthering the Understanding of Fracture Behavior, Flowback, and SRVs II	Theme 13: Emerging Unconventional Plays and Novel Applications of Technology II	Theme 9: Reserves Estimation and Production Forecasting: Reserves Implications	Panel: Data Analytics Update for Unconventionals - What's Missing?	Theme 3: Rock Quality and Horizontal Strategies and Challenges



702/704/706	705/707/709/711	708/710/712	Station A	Station B	Station C	Station D
Theme 4: Optimizing Geophysical Data for Unconventionals	Theme 8: Case Studies in IOR/EOR Field Pilots	Theme 11: Theme 11: New Technology Applications	Theme 9: Reserves Estimation and Production Forecasting: Case Studies	Theme 13: Emerging Unconventional Plays and Novel Applications of Technology I	Theme 4: Source Rock Characterization Using Geophysics	Theme 7: Machine Learning, AI, and Big Data I
Theme 4: Reservoir Characterization Using DAS/DTS Fiber Optics	Theme 6: Time Lapse Geochemistry & In Situ Versus Produced Fluids	Theme 14: Improving Drilling Performance and Design Using New Technologies, Methods, and Computing Power	Theme 8: Nanofluids, Surfactants, and Friction Reducers	Theme 3: Geoscience Investigations of Unconventionals Theme 15: License to Operate II	Theme 5: Frac Modeling III: from Physics to Field	Theme 5: DFNs/ Microseismic/ Case Studies
Theme 4: Deriving Rock Properties from Seismic	Theme 5: Frac Modeling II: from Physics to Field	Theme 6: Geochemistry of Oil-Prone and Gas-Prone Unconventional Resource Plays	Theme 11: Proppant Transport and Novel Technologies	Theme 7: Machine Learning, AI, and Big Data III	Theme 2: Advanced Formation Evaluation VI - Nuclear Magnetic Resonance, Permeability, and Recovery	Theme 8: Enhanced Gas Recovery Methods in Unconventionals
Theme 5: Rock Characterization for Fracturing and Drilling	Theme 8: Gas Injection EOR Theme 8: EOR in the Permian Basin	Theme 11: Proppant Placement and Novel Completion Technologies	Theme 2: Advanced Formation Evaluation VIII - Integration	Theme 4: Novel Techniques in Geophysics for Reservoir Characterization	Theme 6: Geochemistry, Chemistratigraphy, and Fluid/Rock Interaction	Theme 5: Geomechanics Integration and Rock Characterization
Theme 5: Geomechanics Case Studies: Spacing, Interference, and Optimization	Theme 8: Huff and Puff in the Eagle Ford Basin	Special Session: Scratching the Surface: Midstream Challenges and Logistics Solutions in the Permian Theme 12: Overcoming Gridlock: Unlocking the Midstream Bottleneck	Theme 14: Well Design and Drilling Advancements and Methods	Theme 9: Reserves Estimation and Production Forecasting: Performance Prediction and Case Studies	Theme 2: Advanced Formation Evaluation VII - Integration, Saturation, and Recovery	Theme 8: Flow Conformance and Sweep Efficiency Strategies
Theme 5: DFNs: from Characterization to Simulation	Special Session: Best of SPWLA		Exhibit Hall Closed			

MONDAY TECHNICAL PROGRAM

Monday Morning

Opening Plenary Session

State-of-Play in Unconventional Reservoirs – The Quest for Value

Mile High Ballroom 1/2

Moderators: T. Blasingame and S. Rhodes

- 8:25** **Introductory Remarks**
8:30 **Mike Henderson**, Vice President, Resources Plays North,
Marathon Oil Corporation
8:40 **Clay Gaspar**, President, WPX Energy
8:50 **Susan Cunningham**, Advisor, Darcy Partners
9:00 **Brad Holly**, Chairman, President and Chief Executive Officer,
Whiting Petroleum Corporation
9:10 **Shawn Bennett**, Deputy Assistant Secretary for Oil and Natural
Gas, U.S. Department of Energy
9:20 **Moderated Q&A**

Session Rooms

Panel: Unconventional Play Development—A View from the Front Lines Four Seasons Ballroom 1

Moderators: S. Perry and T. Blasingame

Please see page XX for more information on this panel.

- 10:45** **Introductory Remarks**
10:50 **Delaware Basin: Chad McAllaster**, Anadarko Petroleum
Corporation
11:00 **Midland Basin: Dave Cannon**, Diamondback Energy
11:10 **Eagle Ford: Dale Koski**, Marathon Oil
11:20 **Williston Basin: Charlie Harman**, Whiting Petroleum
11:30 **Moderated Discussion**
11:50 **Audience Q&A**

Theme 5: Microseismic Interpretation

Four Seasons Ballroom 2/3

Co-Chairs: C. M. Sayers and A. Mubarak

- 10:45** **Introductory Remarks**
10:50 **A Methodology for Unstructured Damped Stress Inversion
of Microseismic Focal Mechanisms:** B. Q. Li¹, J. Du²
(¹Massachusetts Institute of Technology; ²Total SA)
11:15 **Investigation of Micro-Seismicity and Permeability Evolution
in Shale Fractures During Stimulation:** Z. Ye, A. Ghassemi
(The University of Oklahoma)
11:40 **Stress Inversion Using Microseismic Moment Tensors in the
Vaca Muerta Shale:** Y. Tan, S. Cuervo, S. Malhotra, S. Wang
(Chevron Corporation)

Theme 2: Advanced Formation Evaluation I

Four Seasons Ballroom 4

Co-Chairs: C. G. Glaser and S. Fluckiger

- 10:45** **Introductory Remarks**
10:50 **New 4¼-Inch High-Resolution Ultrasonic Borehole Imaging
for Unconventional Reservoir Evaluation:** J. Lee, P. Li, A. Taher,
R. Coates, R. Marlow (Halliburton)
11:15 **Identification and Quantification of Parasequences Using
Expectation Maximization Filter: Defining Well Log Attributes
for Reservoir Characterization:** S. Sinha (University of
Oklahoma)

- 11:40** **Advanced Simultaneous Formation Evaluation and
Completion-Oriented Rock Classification in the Midland Basin
Using Integrated Analysis of Well Logs, Core Measurements,
and Geostatistical Data:** A. Rostami¹, A. Jagadisan¹,
Z. Heidari^{*1}, B. Fairhurst², I. Yurchenko², S. Ikonnikova²,
S. Hamlin² (¹The University of Texas at Austin; ²Bureau of
Economic Geology)

Theme 3: Depositional Processes of Unconventional Reservoirs I

Room 108/110/112

Co-Chairs: A. Grau and A. Tokan-Lawal

- 10:45** **Introductory Remarks**
10:50 **Stratigraphic Architecture of the Bone Spring Formation
(Leonardian), Delaware Basin, New Mexico and Texas: An Interim
Report:** D. L. Carr (The University of Texas at Austin)
11:15 **Petrophysical Rock Typing in Unconventional Shale Plays:
The Niobrara Formation Case Study:** A. Kamruzzaman, M. Prasad,
S. Sonnenberg (Colorado School of Mines)
11:40 **Leveraging Regional Geology and Sequence Stratigraphic
Concepts at the Field and Reservoir Scale: Building More
Reliable Earth Models Under Sparse Data Conditions:** J. Yarus,
K. Evans*, E. Mohsenian, J. Montero, J. Zhang (Halliburton)

Panel: Sustainable Development Goals for Unconventionals

Room 601/603

Moderator: K. Yared (SM Energy, SWPLA)

Please see page 17 for more information on this panel.

- 10:45** **Introductory Remarks**
10:50 **Denise Cox**, Storm Energy Ltd, AAPG Past President (AAPG)
11:00 **Ray Leonard**, Anglo Eurasia LLC (AAPG)
11:10 **Nancy House**, SEG Past President (SEG)
11:20 **Dr. Linda Battalora**, Colorado School of Mines (SPE)
11:30 **Moderated Discussion**
11:50 **Audience Q&A**

Theme 10: Shale Facilities and Artificial Lift Optimization

Room 605/607

Co-Chairs: T. Mallinson, A. Oudinot, and G. Koperna

- 10:45** **Introductory Remarks**
10:50 **Experimental Investigation of Propped Fracture Conductivity
and Proppant Diagenesis:** A. K. Gupta, C. S. Rai,
C. H. Sondergeld (University of Oklahoma)
11:15 **Production Modeling for Velocity String Applications in
Unconventional Wells:** A. S. Bagci, T. Chang (Baker Hughes,
a GE Company)
11:40 **Analytical and Numerical Studies of Sand Erosion in Electrical
Submersible Pump (ESP) Systems:** S. Gomez Diaz de Bonilla,
H-Y. Chen (New Mexico Institute of Mining and Technology)

Theme 4: Optimizing Geophysical Data for Unconventionals

Room 702/704/706

Co-Chairs: D. Langton and A. Biholar

- 10:45** **Introductory Remarks**
10:50 **Delaware Basin Horizontal Wolfcamp Case History: HTI
Fracture Analysis to Avoid H₂S and Extraneous Water Linked
to Graben Features:** S. W. Cook¹, M. McKee², S. Bjorlie² (¹Tricon
Geophysics, Inc.; ²Jetta Permian, LP)
11:15 **Shallow Velocity Model Building Considerations for Pre-Stack
Depth Migration in Unconventionals:** M. Perz, J. Heim,
C. Bruins (TGS)





11:40 Marcellus Shale Energy and Environmental Laboratory (MSEEL) Results and Plans: Improved Subsurface Reservoir Characterization and Engineered Completions: T. R. Carr¹, P. K. Ghahfarokhi¹, B. Carney², J. J. Hewitt¹, R. Vargnetti³ (¹West Virginia University; ²Northeast Natural Energy, LLC; ³USDOE National Energy Technology Laboratory)

Theme 8: Case Studies in IOR/EOR Field Pilots

Room 705/707/709/711

Co-Chairs: A. L. Lerza and H. Kalaei

10:45 Introductory Remarks
10:50 Geomechanical Effects on IOR in the Bakken Formation: S. Yang, L. Zhang, X. Yu, Z. Chen, Y. Gao* (University of Calgary)
11:15 Industry-First Hydrocarbon-Foam EOR Pilot in an Unconventional Reservoir: Design, Implementation, and Performance Analysis: A. Katiyar¹, P. Patil¹, P. Rozowski¹, J. Evans², T. Bozeman², Q. Nguyen³ (¹The Dow Chemical Company; ²MD America Energy LLC; ³The University of Texas at Austin)
11:40 A Novel Enhanced Oil Recovery Approach to Water Flooding in Saskatchewan's Tight Oil Plays: M. Kiani, T-P. Hsu, A. Roostapour, M. Kazempour, E. Tudor (Nalco Champion, An Ecolab Company)

Theme 11: New Technology Applications for Unconventionals

Room 708/710/712

Co-Chairs: Z. Wang and Y. Liu

10:45 Introductory Remarks
10:50 Elastic Properties of Propped and Unpropped Eagle Ford Shale and 3-D Printed Fractured Models Under Multistage Iso-Static Stress: S. Dande, R. R. Stewart, M. Myers, L. A. Hathon, N. Dyaur (University of Houston)
11:15 Regional Sands and the Possible Impacts on Friction Reducer Performance: M. Sinkey, C. Drennon, M. Thompson (Calfrac Well Services)
11:40 The Effect of Surface-Gas Interaction on Mean Free Path for Gases Confined in Nanopores of Shale Gas Reservoirs: Y. Gao¹, K. Wu¹, S. Yang², X. Dong¹, Z. Chen¹, Z. Chen^{2,1}, (¹State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum; ²Department of Chemical and Petroleum Engineering, University of Calgary)

Exhibit Hall Stations

Theme 9: Reserves Estimation and Production Forecasting III: Case Studies

Exhibit Hall Station A

Co-Chairs: N. Moridis, C. Virues, and P. Sainani

10:30 Introductory Remarks
10:35 Statistical Analysis of Unconventional Well Productivity Drivers With Particular Focus on Child Well Impact: Permian Delaware Example: A. Ramos-Peon, A. Abramov (Rystad Energy)
11:00 Faster Tight Oil Decline Rates Could Mean Growing Project Spend and More Deals: R. Clarke, R. Duman (Wood Mackenzie)
11:25 The Sensitivity of Well Performance to Well Spacing and Configuration—A Marcellus Case Study: A. Khodabakhshnejad, A. Rahimi Zeynal, C. W. Neuhaus, A. Fontenot, (MicroSeismic, Inc.)

Theme 13: Emerging Unconventional Plays and Novel Applications of Technology I

Exhibit Hall Station B

Co-Chairs: A. Sloan and D. Livasy

10:30 Introductory Remarks
10:35 Khalij Al Bahrain Basin: The Emerging Unconventional Play of the Middle East: Y. Alansari, A. Alrumaidh, A. Fateh, A. Shehab (Tatweer Petroleum)
11:00 Highly Productive Zones' Characterization Through an Integrated Electrofacies- Core Workflow in Vaca Muerta Formation, Neuquen Basin, Argentina: F. Vittore, C. Bernhardt, F. Gonzalez Tomassini, F. Lozano, G. Manestar (YPF SA)
11:25 Cenomanian Shilaif Unconventional Shale Oil Potential in Onshore Abu Dhabi, UAE: P. Van Laer, K. Leyrer, M. Povstyanova, M. Z. Baig, G. Makarychev, H. Al Marzooqi, M. R. Al Zaabi (ADNOC)
11:50 Mesozoic Unconventional Potential of the Burgos Basin, Mexico: G. Zimbrick (Dolan Integration Group)

Theme 4: Source Rock Characterization Using Geophysics

Exhibit Hall Station C

Co-Chairs: A. Munoz and C. Story

10:30 Introductory Remarks
10:35 Modeling the Effect of Maturity on the Elastic Moduli of Kerogen Using Atomistic Simulations: A. Kashinath¹, M. Szulczewski¹, A. Dogru² (¹Aramco Services Company; ²Saudi Aramco)
11:00 Correlation of TOC Core Measurements to Wireline Logs Across the Delaware Basin: I. Deighton¹, D. Smith², J. Keay¹ (¹TGS; ²IRT)
11:25 Developments Relating Total Organic Carbon Conversion in Unconventional Reservoirs to 3-D Seismic Attributes: N. J. House¹, J. D. Edman² (¹Integrated Geophysical Interpretation Inc., LLC; ²Edman Geochemical Consulting, LLC)
11:50 How Organic Carbon Content and Thermal Maturity Affect Acoustic Properties (and Ultimately Seismic Response) in a Shale Gas/Oil Formation: Woodford Shale, Permian Basin: N. B. Harris¹, A. Moghadam², T. Dong³ (¹University of Alberta; ²Northern Alberta Institute of Technology; ³China University of Geosciences [Wuhan])

Theme 7: Machine Learning, AI, and Big Data I

Exhibit Hall Station D

Co-Chair: M. Nance

10:30 Introductory Remarks
10:35 Optimizing Unconventional Completion Designs: A New Engineering- and Economics-Based Approach: S. Schubarth¹, R. Chabaud¹, S. Holditch² (¹Schubarth Software Systems LLC; ²Texas A&M University)
11:00 Bulk Data Sharing Process Improves Collaboration and Saves Time While Increasing Trust in Data Accuracy: P. Neri (Energistics)
11:25 Machine Learning for Estimating Rock Mechanical Properties Beyond Traditional Considerations: A. Gong¹, M. Mehana², I. El-Monier¹, F. Xu^{4,3}, F. Xiong¹, (¹The Ohio State University; ²University of Oklahoma; ³China National Oil and Gas Exploration and Development Corporation (CNODC); ⁴Research Institute of Petroleum Exploration and Development CO., LTD, CNPC)
11:50 Innovative Deep Autoencoder and Machine Learning Algorithms Applied in Production Metering for Sucker-Rod Pumping Wells: Y. Peng (RIPED PetroChina)



MONDAY TECHNICAL PROGRAM

Monday Afternoon

Session Rooms

Theme 7: Machine Learning, AI, and Big Data II

Four Seasons Ballroom 1

Co-Chairs: B. Dindoruk and R. Pharis

- 1:45 **Introductory Remarks**
1:50 **Why Most Models Fail: The Importance of Blind Validation:** K. J. Wallace, A. Dang Atkinson, T. H. Yotter, C. P. Bernet, C. Gourgues (Encana Corporation)
2:15 **An Artificial Intelligence Decision Support System for Unconventional Field Development Design:** N. Tamimi, S. Samani, M. Minaei, F. Harirchi (NeuDax)
2:40 **Investigation of Time-Series Clustering to Forecast Wells With a Short Producing Life:** R. Khaksarfard, H. Tabatabaie, L. Mattar (IHS Markit)

Theme 1: Operators' Forum: Case Studies for the Midland Basin, Texas

Four Seasons 1

Co-Chairs: B. Liang and B. Schulz

- 3:50 **Introductory Remarks**
3:55 **Maximizing Asset Value by Full Field Development—Case Studies in the Permian Basin:** H. Xiong, R. Ramanathan, K. Nguyen (University Lands/Texas Oil & Gas Institute)
4:20 **Hydraulic Fracturing Stimulation Monitoring with Distributed Fiber Optic Sensing and Microseismic in the Permian Wolfcamp Shale Play:** V. Jayaram, R. Hull, J. Wagner, S. Zhang (Pioneer Natural Resources)
5:10 **3-D Driven Rock Quality Mapping and Landing Target Selection in the Wolfcamp Formation: A Case Study on How to Combine Geologic, Geophysical, and Engineering Data to Produce Better Well Results, Midland Basin, Texas:** A. Fisher¹, F. O'Keefe¹, C. Niedz¹, B. Wehner¹, N. Kramer², P. Heuermann², S. Patrick³ (¹Tracker Resource Development; ²Apex Petroleum Engineering; ³Fracture ID)

Theme 5: Frac Modeling I: From Physics to Field

Four Seasons Ballroom 2/3

Co-Chairs: A. Ghassemi, D. Haddad, and W. Wu

- 1:45 **Introductory Remarks**
1:50 **Modeling and Analysis of Proppant Transport and Deposition in Hydraulic/Natural Fracture Networks:** D. Kumar, A. Ghassemi* (University of Oklahoma)
2:15 **Proppant Placement in Perforation Clusters in Deviated Wellbores:** M. Zhang, C-H. Wu, M. M. Sharma (The University of Texas at Austin)
2:40 **What Do Hydraulic Fractures Look Like in Different Types of Reservoirs? Implications From a Series of Large-Scale Polyaxial Hydraulic Fracturing Experiments From Conventional to Unconventional:** Y. Peng, H. Fu, M. Cui, W. Cai (RIPED PetroChina)
3:05 **Refreshment Break**
3:55 **Quantifying the Induced Stresses During Multi-Stage, Multi-Well Stacked-Lateral Completions to Improve Pad Productivity:** R. Suarez-Rivera, E. Dontsov, B. Abell (W.D. Von Gonten Laboratories)
4:20 **Geomechanical, Geological, and Engineering Controls of Hydraulic Fracturing:** G. Han¹, K. Bartko², U. Mutlu³ (¹Aramco Services Company; ²Saudi Aramco; ³Rockfield Global)

- 4:45 **Integrated Natural and Hydraulic Fracture Modeling: A Permian Basin Wolfcamp Case Study:** F. Bessa, V. Sahni, S. Liu, J. Tan, M. Frass, J. Kessler (Occidental Petroleum Corporation)
5:10 **Optimizing Completions in Tank Style Development:** P. S. Kaufman¹, M. McClure², N. Franciose¹, S. Owens¹, F. Srur¹, D. Russell¹ (¹QEP Resources, Inc.; ²ResFrac Corporation)

Theme 9: Reserves Estimation and Production Forecasting II: Well Spacing and Interference Impact

Four Seasons Ballroom 4

Co-Chairs: Y. Pradhan, D. S. Jones, and J. McLaughlin

- 1:45 **Introductory Remarks**
1:50 **Production Effects From Frac-Driven Interactions in the Southeastern Midland Basin, Reagan County, Texas:** B. McDowell, A. Yoelin, B. Pottebaum (Discovery Natural Resources)
2:15 **Numerical Investigation of Key Factors on Successful Subsequent Parent Well Water Injection to Mitigate Parent-Infill Well Interference:** N. Li, K. Wu, J. Killough (Texas A&M University)
2:40 **Intra-Well Interference in Tight Oil Reservoirs: What Do We Need to Consider? Case Study from the Meramec:** M. Almasoodi¹, R. Vaidya¹, Z. Reza² (¹Devon Energy; ²University of Oklahoma)
3:05 **Refreshment Break**
3:55 **Well Spacing Optimization in Shale Reservoirs Using Rate Transient Analytics:** C. Aniemena, C. LaMarca (BP)
4:20 **Eagle Ford Fluid Variation and Completion Optimization: A Case for Data Analytics:** F. Siddiqui¹, A. Rezaei¹, M. Y. Soliman¹, B. Dindoruk^{1,2}, (¹University of Houston; ²Shell International Exploration and Production)
4:45 **Analytical Model to Estimate the Fraction of Frac Hits in Multi-Well Pads:** O. M. Molina (Louisiana State University)
5:10 **Impact of Natural Fractures on the Shape and Location of Drained Rock Volumes in Unconventional Reservoirs: Case Studies From the Permian Basin:** A. Khanal, K. Nandlal, R. Weijermars (Texas A&M University)

Theme 3: Depositional Processes of Unconventional Reservoirs II

Room 108/110/112

Co-Chairs: D. Anderson and W. Hawkins

- 1:45 **Introductory Remarks**
1:50 **Unraveling the Secrets of the Eaglebine:** A. Donovan (Texas A&M University)
2:15 **The Effects of the Maness Shale on Eagle Ford Water Production:** R. A. Denne, S. A. Patterson (Texas Christian University)
2:40 **Stratigraphic Partitioning and Distribution of Reservoir Attributes Within the Late Devonian Duvernay Formation, Western Canada Sedimentary Basin:** A. M. Thorson¹, S. C. Atchley¹, J. A. W. Weissenberger², D. W. Yeates¹, E. G. Rau¹ (¹Baylor University; ²Gran Tierra Energy)
3:05 **Refreshment Break**
3:55 **Reservoir Facies, Depositional Processes, and the Implications on Reservoir Characterization of the Wolfcamp A, Texas Delaware Basin:** J. Colborne, S. Sonnenberg (Colorado School of Mines)
4:20 **Reservoir Characterization of the Bone Spring and Wolfcamp Formations, Delaware Basin, Ward County, West Texas:** A. N. Bievenour, S. A. Sonnenberg (Colorado School of Mines)
4:45 **Sedimentologic and Stratigraphic Controls on Reservoir Sweet Spots in Wolfcamp 'A', Howard County, Midland Basin:** A. N. Flotron, E. K. Franseen, R. H. Goldstein (Kansas Interdisciplinary Carbonates Consortium [KICC], University of Kansas, Department of Geology)





5:10 Anomalous Fluid Distribution Due to Late-Stage Gas Migration in a Tight Oil and Gas Deltaic Sandstone Reservoir: P. K. Pedersen (University of Calgary)

Panel: Value Proposition of Microseismic Mapping of Hydraulic Fractures

Room 601/603

Moderator: J. Shemeta

Please see page 17 for more information on this panel.

1:45 Introductory Remarks
1:50 Mark Zoback, Stanford University
2:00 Craig Cipolla, Hess Corporation
2:10 Ben Stephenson, Shell
2:20 Shawn Maxwell, Encana
2:30 Moderated Discussion
2:50 Audience Q&A

Theme 2: Advanced Formation Evaluation II: Flow Capacity and Permeability

Room 601/603

Co-Chairs: K. Jerath and M. Manohar

3:50 Introductory Remarks
3:55 An Advanced Nano Permeameter: Transformation From Point by Point Method to the Direct Measurement of Permeability Pressure Function: H. Liu, H. Chen, J. Zhang, G. Eppler (Aramco Research Center)
4:20 Gas Relative Permeability and Evolution During Water Imbibition in Unconventional Reservoir Rocks: Direct Laboratory Measurement and a Conceptual Model: S. Peng (The University of Texas at Austin)
4:45 A Novel Non-Destructive and Rapid Cleaning Method for Intact Ultra-Low Permeability Rocks: A. Guedeux, W. Mickelson, S. Aldin, D. Gokaraju, A. Mitra, A. Thombare, R. Patterson, M. Aldin (MetaRock Laboratories)
5:10 Estimation of the Permeability of an Unconventional Formation Core by History-Matching the Saturation With CO₂: Z. Chen, X. Wang, G. Jian, L. Zhang, P. M. Singer, G. J. Hirasaki (Rice University)

Theme 10: Flow, Production, and Phase Behavior for Tight Oil and Shale Oil/Shale Gas Reservoir Systems

Room 605/607

Co-Chairs: G. Gupta and T. Firincioglu

1:45 Introductory Remarks
1:50 Experimental and Mechanism Study of CO₂ and Bakken Oil Interactions at Equilibrium and Non-Equilibrium Conditions: Y. Yang, Q. Fu, X. Li, J-S. Tsau, R. Barati, S. Negahban (University of Kansas)
2:15 Field-Wide Equation of State Development: B. Younus, C. H. Whitson, M. L. Carlsen, S. Martinsen, K. Singh, A. Alavian (PERA AS)
2:40 Confined Behavior of CO₂/Hydrocarbon System in Nanopores of Tight and Shale Rocks: X. Dong¹, H. Liu¹, K. Wu¹, Y. Liu¹, J. Qiao¹, Y. Gao¹, Z. Chen² (¹China University of Petroleum (Beijing); ²University of Calgary)
3:05 Refreshment Break
3:55 Measurement of Gas-Oil Relative Permeability in Unconventional Rocks: S. S. Chhatre, A. L. Chen, M. Al-Rukabi, D. W. Berry, R. Longoria, K. B. Guice, D. R. Maloney (ExxonMobil Upstream Research Company)
4:20 Numerical Investigation of Water Blockage in Secondary Fractures and Apparent Permeability Modeling in Shale Gas Production: C. Zhong, J. Leung* (University of Alberta)

4:45 Effect of Proppant Design on Production Decline of Shale Wells: A. Yang, R. Carbrey, A. Abramov, A. Ramos-Peon (Rystad Energy)
5:10 Experimental Study of the Phase Behavior of Hydrocarbon Fluids in Porous Media at Atmospheric and Elevated Pressures: T. Regueira, D. R. Sandoval E. H. Stenby, W. Yan (Center for Energy Resources Engineering [CERE], Technical University of Denmark)

Theme 4: Reservoir Characterization Using DAS/DTS Fiber Optics

Room 702/704/706

Co-Chairs: S. Maxwell and D. Kahn

1:45 Introductory Remarks
1:50 Time-Lapse Seismic Monitoring of Individual Hydraulic Frac Stages Using a Downhole Distributed Acoustic Sensing Array: G. Binder¹, A. Titov¹, D. Tamayo¹, J. Simmons¹, A. Tura¹, D. Monk², G. Byerley² (¹Colorado School of Mines; ²Apache Corporation)
2:15 Time-Lapse WAW VSP Imaging of an Unconventional Reservoir Using DAS Fiber Optics: J. A. Chavarria¹, D. Kahn², D. Langton², S. Cole¹, X. Li¹ (¹OptaSense; ²Devon Energy)
2:40 Seismic Reflection Imaging with Active Sources and Microseismic Events Recorded on Horizontal DAS Cables: D. Langton¹, D. Kahn², B. Fuller³ (¹Devon Energy; ²Formerly Devon Energy; ³Sterling Seismic & Reservoir Services)
3:05 Refreshment Break
3:55 Estimation of Hydraulic Fracture Height and Pressure Deflation Using a Pulsed Vertical Seismic Profile and a DAS Fiber in the Midland Basin: R. Meek¹, R. Hull¹, K. Woller¹, B. Wright¹, M. Martin¹, H. Bello¹, J. Bailey² (¹Pioneer Natural Resources; ²VSProwess)
4:20 Fiber Optic Sensing-Based Production Logging Methods for Low-Rate Oil Producers: G. Jin, K. Friehauf, B. Roy, J. J. Constantine, H. W. Swan, K. R. Krueger, K. T. Raterman (ConocoPhillips)

Theme 6: Time Lapse Geochemistry and In Situ Versus Produced Fluids

Room 705/707/709/711

Co-Chairs: H. Long and R. Hill

1:45 Introductory Remarks
1:50 Understanding Dynamic Production Contribution from Hydraulically Fractured Middle Bakken and Three Forks Wells in the Williston Basin Using Time-Lapsed Geochemistry: S. Wright¹, S. G. Franks², J. Pantano³, M. Kloska¹, J. Wolters¹ (¹Hess Corporation; ²RockFluid Systems; ³Consultant)
2:15 Naturally Occurring Isotopic Tracers Provide Insight into Hydraulic Fracturing Flowback and Horizontal Well Clean-Up Dynamics: P. Travers¹, B. Burke², A. Rowe², S. Hodgetts¹, M. Dolan¹ (¹Dolan Integration Group; ²HighPoint Resources)
2:40 Assessing Drainage Dynamics in the Eagle Ford Using Produced Water Geochemistry: J. Jweda, T. Deptola, B. Gross, E. Michael, K. McLin, R. Hofer (ConocoPhillips)
3:05 Refreshment Break
3:55 Heterogeneity of STACK/SCOOP Production in the Anadarko Basin, Oklahoma—Geochemistry of Produced Oils: C. Symcox, R. P. Philp (University of Oklahoma)
4:20 Production Fractionation and Efficiency Indicators from Phase Snapshots: B. Horsfield¹, N. Mahlstedt¹, E. Michael², N. McMahon³, M. H. Tobey⁴ (¹GEOS4 GmbH; ²ConocoPhillips; ³Kimmeridge Energy; ⁴Encana Corporation)



MONDAY TECHNICAL PROGRAM

- 4:45 Petroleum System Analysis Using Unconventional Gas Geochemistry: Examples from the Montney Play of Western Canada:** T. Euzen¹, N. Watson³, J-Y. Chatellier², A. Mort⁴, X. Mangenot⁵ (¹IFP Technologies (Canada) Inc.; ²Tecto Sedi Integrated; ³Enlighted Geoscience Ltd.; ⁴Geological Survey of Canada; ⁵Caltech)
- 5:10 High Resolution Fluid Tracking from Verticals and Laterals Using Subsurface DNA Diagnostics in the Permian Basin:** L. Ursell², M. Hale^{*1}, E. Menendez¹, J. Zimmerman², B. Dombroski², K. Hoover², Z. Everman², J. K. Liu¹, H. Shojaei¹, E. Percak-Dennett², T. Ishoey² (¹Novo Oil & Gas LLC; ²Biota)

Theme 14: Improving Drilling Performance and Design Using New Technologies, Methods, and Computing Power

Room 708/710/712

Chair: I. Aviles

- 1:45 Introductory Remarks**
- 1:50 Multilaterals—An Unconventional Approach to Unconventional Reservoirs:** D. Wilcox¹, S. Cappiello¹, M. Sevilla², E. Shafer², G. Gill², I. Kress², N. Sanchez² (¹Halliburton; ²ConocoPhillips)
- 2:40 Automated Surface Measurements of Drilling Fluid Properties: Field Application in the Permian Basin:** S. Gul¹, E. van Oort¹, C. Mullin², D. Ladendorf³ (¹The University of Texas at Austin; ²Pioneer Natural Resources; ³Royal Dutch Shell)
- 3:05 Refreshment Break**
- 3:55 New Low-Density Cement Technology Overcomes Limitations for Improved Well Design in the Williston Basin:** A. Jordan¹, L. Albrighton¹, M. Spirek¹, R. Pernites¹, B. Rollins², T. Lauer² (¹BJ Services; ²Whiting Petroleum Corporation)
- 4:20 Selection of Logging While Drilling Measurements for Geosteering of Horizontal Wells in Unconventional Reservoirs:** J. M. Gremillion¹, Z. Newnam², J. Campbell², M. Flowers¹, N. Tvrđy¹, M. Okoro¹ (¹Schlumberger; ²Sierra Resources LLC)
- 4:45 Cybersteering: Automated Geosteering by Way of Distributed Computing and Graph Databases in the Cloud:** T. Arbus, S. Wilson (Devon Energy)

Exhibit Hall Stations

Theme 8: Nanofluids, Surfactants, and Friction Reducers

Exhibit Hall Station A

Co-Chairs: Y. Shin and A. Martinez

- 1:45 Introductory Remarks**
- 1:50 Quantification of Dynamic Sand Settling Velocity in High-Viscosity Friction Reducers and Correlation with Rheology:** Y. Hu, P. Kurian (Nalco Champion, An Ecolab Company)
- 2:15 A Cationic Friction Reducer Fully Compatible with Produced Water:** L. Shen, S. Khan, D. Heller, D. Fu (BJ Services)
- 2:40 Abiotic Transformation Kinetics of Surfactants used in Hydraulic Fracturing Fluid:** B. C. McAdams^{1,2}, L. C. Burrows^{1,2}, J. A. Hakala¹, (¹National Energy Technology Laboratory; ²Oak Ridge Institute of Science and Education)
- 3:05 Novel Oil Flow Enhancement Chemistry for Unconventional Formations Evaluated and Optimized by Cutting-Edge Methodology:** E. S. Cambre¹, K. Boyle², A. Abedini², X. Zhang², E. Hughes³ (¹Tendeka; ²Interface Fluidics; ³Aculon)
- 3:30 Experimental and Numerical Study of Shale Oil EOR by Surfactant Additives in Fracturing Fluid:** J. Tu, J. Sheng (Texas Tech University)
- 3:55 Rapid Development of a Smart Stimulation Fluid Additive:** A. Recio III, K. Henkel-Holan, D. Benoit (Halliburton)

- 4:20 Effect of Nanoparticles and Surfactants on Oil/Water Interfacial Tension: A Coarse-Grained Molecular Dynamics Simulation Study:** C. Li, H. Pu, S. Zhang, J. Zhao (University of North Dakota)
- 4:45 Comprehensive Study of Elasticity and Shear-Viscosity Effects on Proppant Transport Using HFVRs on High-TDS Produced Water:** M. Ba Geri (Missouri University of Science and Technology)

Theme 3: Geoscience Investigations of Unconventionals

Exhibit Hall Station B

Co-Chairs: L. Canter and A. A. Curtis

- 1:45 Introductory Remarks**
- 1:50 Azimuthal Gamma Imaging and Continuous Inclination Applications to Spatial and Stratigraphic Wellbore Placement in the Southern Midland Basin:** C. Viens (Nabors Drilling Solutions)
- 2:15 Unconventional Rock Requires Unconventional Analysis: Methods for Characterization:** S. Butler, A. Azenkeng, B. Mibeck, K. Eylands, B. Kurz (University of North Dakota Energy & Environmental Research Center)
- 2:40 A Powerful and Practical Workflow for a Naturally Fractured Reservoir with Complex Fracture Geometries from Modeling to Simulation:** F. Xu^{2,1}, X. Li², Y. Gong³, C. Lei², X. Li², W. Yu^{4,5}, J. Miao^{4,6}, Y. Ding¹, (¹CNODC; ²RIPED, CNPC; ³The Ohio State University; ⁴The University of Texas at Austin; ⁵Texas A&M University; ⁶SimTech LLC.)
- 3:05 Probing Impact of Chemical Diagenesis on the Evolution of Migration Pathways in Unconventional Resources Using Multi-Physics Multi-Scale Modeling: Woodford Shale:** Y. Zapata, K. N. Garrett, R. D. Elmore, Z. Reza (University of Oklahoma)
- 3:30 Integrating Elemental Concentration Logs and Electrical Images Logs to Map Sedimentary Distribution for Black Shale: A Case Study from WuFeng-LongMaxi Shale in Sichuan Basin, China:** X. Liang¹, G-C. Wang¹, P. Feng^{*2}, Y. Rui¹, Y. Wang², L. Zhang¹, J. Mei¹, K-X. Li², H-P. Zhao² (¹PetroChina Zhejiang Oilfield; ²Schlumberger)

Theme 15: License to Operate: Stakeholder Management and Social Performance I

Exhibit Hall Station B

Co-Chairs: S. M. Carpenter and P. Fanailoo

- 3:50 Introductory Remarks**
- 3:55 Regional Geologic Characterization of the Grayburg San Andres Reservoir for Salt Water Disposal Management, Midland Basin, Texas:** T. Wilson, M. Handke, D. Loughry, L. Waite, B. Lowe (Pioneer Natural Resources)
- 4:20 Fracture Modeling for Cap Rock Integrity and Completion Evaluation in Produced Water Re-Injection Wells:** A. S. Bagci (Baker Hughes, a GE Company)

Theme 5: Frac Modeling II: From Physics to Field

Exhibit Hall Station C

Co-Chairs: K. Wu and E. Dontsov

- 1:45 Introductory Remarks**
- 1:50 Robust 3-D Modeling of Hydraulic Fracture Propagation in Naturally Fractured Reservoirs:** A. Kamali, A. Ghassemi (The University of Oklahoma)
- 2:15 Optimizing Proppant Placement in Rough-Walled Rock Fractures:** M. Zhang, M. Prodanović (The University of Texas at Austin)



MONDAY & TUESDAY TECHNICAL PROGRAM

- 2:40** **Fracture Surface Area Estimation from Main Hydraulic Fracture Treatment Pressure Falloff Data:** G. Liu¹, T. Zhou², C. Ehlig-Economides¹ (¹University of Houston; ²Sinopec)
- 3:05** **Rapid Modeling of Injection and Production Phases of Hydraulically Fractured Shale Wells Using the Fast-Marching Method:** J. Park¹, A. Iino¹, A. Datta-Gupta¹, J. Bi², S. Sankaran² (¹Texas A&M University; ²Anadarko Petroleum Corporation)
- 3:30** **Fracture Analysis Before and After Hydraulic Fracturing in the Marcellus Shale Using the Mohr-Coulomb Failure Criteria:** K. G. Evans, T. M. Ore, J. T. Smith, R. T. Toth*, T. R. Carr, P. K. Ghahfarokhi (West Virginia University)
- 4:20** **Bayesian Probabilistic Analysis to Quantify Uncertainties in Hydraulic Fracture Geometry—Application to Laminations and Their Impact on Fracture Height:** M. Paryani, A. Ouenes (FracGeo)
- 4:45** **Simulating the Life of Hydraulically Fractured Wells Using a Fully-Coupled Poroelastic Fracture-Reservoir Simulator:** R. Manchanda¹, S. Zheng¹, D. Gala², M. M. Sharma¹ (¹The University of Texas at Austin; ²ExxonMobil Upstream Research Company)

Theme 5: DFNs, Microseismic, and Geophysical Case Studies

Exhibit Hall Station D

Co-Chairs: B. Lai and H. Hosseinpour

- 1:45** **Introductory Remarks**
- 1:50** **Textural Characteristics of Shale Deformations, and Associated Distribution Models: Implications for Shale Reservoir Fluid Flow:** J. Buckman, G. Couples*, H. Lewis (Heriot-Watt University)
- 2:15** **Integrated Geomechanical Interpretation of Hydraulic Stimulation Operations Using Distributed Vibration Sensing:** M. Williams, J. Le Calvez*, C. Wilson, A. Rodriguez-Herrera (Schlumberger)
- 2:40** **Microseismic Bedding-Plane Slip Theory—Requires a Very Slippery Slope or a Very Large S_{hmax} :** O. J. Teran, M. P. Thornton (MicroSeismic, Inc.)
- 3:05** **Comparative Laboratory Scale Reservoir Study on Geomechanical Property Alterations Arising From Osmosis Pressure Distribution Within Organic-Rich Shales:** O. Adekunle, A. Tutuncu (Colorado School of Mines)
- 3:30** **Impact of Pore Pressure on Modeled Hydraulic Fracture Geometry and Well Spacing in the East Duvernay Shale Basin, Canada:** F. Alimahomed¹, E. Wigger¹, M. Drouillard¹, G. Garcia Rosas¹, C. Kolbeck² (¹Schlumberger; ²Outlier Resources Limited)

Tuesday Morning

Session Rooms

Theme 1: Operators' Forum: Case Studies Optimizing Well Performance

Four Seasons Ballroom 1

Co-Chairs: G. Ugueto, B. Pownall, and R. Roper

- 8:25** **Introductory Remarks**
- 8:30** **Optimizing Perforating Schemes to Achieve Uniform Proppant Distribution:** M. Fry, A. Altieri (Rockdale Energy)
- 8:55** **First Ever Polymer Flood Field Pilot to Enhance the Recovery of Heavy Oils on Alaska North Slope—Polymer Injection Performance:** S. Ning¹, J. Barnes¹, R. Edwards¹, K. Dunford¹, K. Eastham¹, A. Dandekar², Y. Zhang², D. Cercione³, J. Ciferno³ (¹Hilcorp; ²University of Alaska, Fairbanks; ³National Energy Technology Laboratory)

- 9:45** **Developing New Soaking Correlation for Shale Gas Wells:** A. F. Ibrahim, M. Ibrahim, P. Chester (Apache Corporation)
- 10:10** **Refreshment Break**
- 11:00** **Flow Regulation in Horizontal Wells: Evaluating a Tailpipe System Designed to Optimize Artificial Lift Performance in Horizontal Wells:** N. B. Dye¹, D. Kimery², C. Gallo¹ (¹ConocoPhillips; ²Heal Systems)
- 11:25** **How To Quantify The Volume-of-investigation In Diagnostic Fracture-injection/falloff Testdesign For Shale Gas Wells?** Z. Chen, K. Sepehrnoori (The University of Texas at Austin)

Theme 3: Aligning Geoscience and Engineering Workflows

Four Seasons Ballroom 2/3

Co-Chairs: R. Blood and M. French

- 8:25** **Introductory Remarks**
- 8:30** **Fault Risk Assessment Using Quantitative Structural Geology Techniques:** N. Eichelberger¹, W. B. Hawkins*² (¹StructureSolver LLC; ²GeoFlite Solutions LLC)
- 8:55** **An Integrated, Multiscale Geomodel of the Northern Delaware Basin:** R. Dommissie¹, X. Janson¹, F. Male², B. Price³, S. Payne⁴, A. Lewis⁵ (¹Bureau of Economic Geology, University of Texas; ²Hildebrand Department of Petroleum and Geosystems Engineering, University of Texas; ³Department of Geological Sciences, Jackson School of Geosciences, The University of Texas at Austin; ⁴Ikon Science; ⁵Fairfield Geotechnologies)
- 9:20** **A Geomechanics-Driven Facies Model to Reconcile Production, Inform Completion Strategies, and Determine Landing Zones in the Green River Basin:** J. Mazza¹, T. Mullen², J. Havens¹ (¹Fracture ID ; ²Jonah Energy LLC.)
- 9:45** **The Influence of Micro-Fabric Heterogeneity on Sheared Rock Properties:** D. Crandall¹, M. Gill², J. Moore², S. Brown³, P. Mackey⁴ (¹National Energy Technology Laboratory; ²National Energy Technology Laboratory, LRST; ³West Virginia Geological and Economic Survey; ⁴National Energy Technology Laboratory, ORISE)
- 10:10** **Refreshment Break**
- 11:00** **Successful Downhole Microfracture and PVT-Quality Formation Fluid Sampling From an Unconventional Reservoir:** J. Corredor¹, E. Hutto*², F. Hamza², B. Grieser², R. Naveena-Chandran² (¹Devon Energy; ²Halliburton)
- 11:25** **Lithologically Controlled Pore Pressure Prediction and Geomechanical Modeling Using Probabilistic Multivariate Clustering Analysis and an Expert System:** A. A. Curtis¹, E. Eslinger¹, R. Nickerson², S. Nookala³, F. Boyle¹ (¹eGAMLS Inc.; ²Caza Petroleum; ³Cerone Pvt Ltd)

Theme 2: Advanced Formation Evaluation III: Nuclear Magnetic Resonance

Four Seasons Ballroom 4

Co-Chairs: V. Ceden Montoya and B. Hill

- 8:25** **Introductory Remarks**
- 8:30** **NMR Wettability Index Measurements on Unconventional Samples:** M. Dick¹, D. Veselinovic¹, D. Green¹, A. Scheffer-Villarreal², R. Bonnie², S. Kelly², K. Bower² (¹Green Imaging Technology; ²ConocoPhillips)
- 8:55** **NMR Signature and Quantification of Bitumen in Unconventional Source Rocks:** S. M. Althaus, J. Chen, D. Jacobi, J. Brothers (Aramco Services Company)
- 9:20** **Effects of Temperature and Gas Pressurization on the Interpretation of NMR Hydrocarbon Measurements in Organic-Rich Shale:** S. T. Dang, C. Sondergeld, C. Rai (University of Oklahoma)



TUESDAY TECHNICAL PROGRAM

9:45 A High-Frequency NMR Investigation of Eagle Ford Shale Cores: J. S. S. Kanwar¹, A. N. Tutuncu², Y. Yang³ (¹Colorado School of Mines; ²Petroleum Engineering Department and Unconventional Natural Gas and Oil Institute, Colorado School of Mines; ³Chemistry Department, Colorado School of Mines)

10:10 Refreshment Break

11:00 High-Frequency (20 MHz) NMR and Modified Rock-Eval Pyrolysis Methods as an Integrated Approach to Examine Producibility in Kerogen-Rich Source-Reservoirs: H. Carvajal-Ortiz, T. Gentzis, H. Xie (Core Laboratories)

11:50 Accurate Pore Size Measurement via NMR on Unconventionals: M. Dick, D. Green, D. Veselinovic (Green Imaging Technology)

Theme 9: Reserves Estimation and Production Forecasting II: Performance Prediction and Future of Production Forecasting

Room 108/110/112

Co-Chairs: U. Ahmed, S. Howes, and G. Gupta

8:25 Introductory Remarks

8:30 Flow Regimes-Based Decline Curve for Unconventional Reservoirs: Generalization to Anomalous Diffusion and Power Law Behavior: V. Artus, O. Houze (KAPPA Engineering)

8:55 Does Depletion Matter? A Child Well Workflow: D. Loughheed, H. Behmanesh, D. M. Anderson (NCS Reservoir Strategies)

9:20 Using Dynamic Modeling to Correct Decline Curve for Liquid-Rich Shale Reservoirs: C. Chen¹, X. Liu², A. Girardi¹, A. McMullen¹, G. Gao³, S. Bhattacharya¹, R. Cao¹, N. Chowdhury¹ (¹Shell Exploration and Production Company; ²Shell International Exploration and Production; ³Shell Global Solutions U.S. Inc.)

9:45 Application of Machine Learning for Production Forecasting for Unconventional Resources: C. Zhan, S. Sankaran, V. LeMoine, J. Graybill (Anadarko Petroleum Corporation)

10:10 Refreshment Break

11:00 Multiphase Production Data Analysis for Shale and Tight Reservoirs Using the Diffusive Diagnostic Function: Y. Zhang, C. Yang, J. He, Z. Wang, J. Xie, X-H. Wen (Chevron ETC)

11:25 Modified Fetkovich Type Curve Enhances Type Well Construction for Horizontal Wells with Multiple Fractures: A. C. Eleiott, J. Lee*, N. Moridis (Texas A&M University)

11:50 Part 1: Empirical Workflow for Predicting Infill Performance in the Marcellus: A. Chin¹, A. S. Staruiala¹, H. Behmanesh¹, D. Anderson¹, C. Alonzo¹, D. Jones², S. M. Rivera Barraza², L. Lasecki², K. McBride² (¹NCS Multistage; ²Chesapeake Energy)

Panel: Hydraulic Fracturing and Its Effects on Well Integrity

Room 601/603

Moderator: Terry Palisch

Please see page 19 for more information on this panel.

8:25 Introductory Remarks

8:30 George King, Viking Engineering

8:40 Neal N. Nagel, Oilfield Geomechanics LLC

8:50 William Fleckenstein, Colorado School of Mines

9:00 Eric Schmelzl, NSC Multistage

9:10 Jay Brenner, WPX Energy

9:30 Moderated Discussion

9:50 Audience Q&A

Panel: Recent Experiences With Induced Seismicity

Room 601/603

Moderators: H. Macartney and S. Maxwell

Please see page 19 for more information on this panel.

10:55 Introductory Remarks

11:00 Tim Tyrell, XTO

11:10 Paul Dubois, Railroad Commission

11:20 Rob Braunt, B3 Insight

11:30 Peter Hennings, BEG

11:40 Moderated Discussion

12:00 Audience Q&A

Theme 10: Pressure Transient Testing, DFIT, and Well Testing

Room 605/607

Co-Chairs: K. Srinivasan and N. Bansal

8:25 Introductory Remarks

8:30 A Collaborative Study on DFIT Interpretation: Integrating Modeling, Field Data, and Analytical Calculations: M. McClure¹, V. Bammididi², C. Cipolla³, D. Cramer⁴, L. Martin⁵, A. Savitski⁶, D. Sobernheim², K. Voller⁷ (¹ResFrac Corporation; ²Keane Group; ³Hess Corporation; ⁴ConocoPhillips Company; ⁵Formerly with Apache Corporation, now with Marathon Oil Company; ⁶Shell International Exploration and Production Inc.; ⁷Range Resources Corporation)

8:55 Quantifying Total Apparent Hydraulic Fracture Conductivity and Its Significant Degradation From Systematic Bottom-Hole Pressure Measurements in Permian Wells: L. Zhan¹, A. Tokan-Lawal¹, P. Fair¹, R. Dombrowski¹, X. Liu¹, V. Almaraz², A. Girardi², Z. Li², R. Li², M. Pilko² (¹Shell International Exploration and Production; ²Shell Exploration and Production Company)

9:20 Diagnosing Multi-Cluster Fracture Propagation Using Dynamic Poroelastic Pressure Transient Analysis: P. Seth¹, R. Manchanda¹, B. Elliott², S. Zheng¹, M. Sharma¹ (¹The University of Texas at Austin; ²Devon Energy)

9:45 Let's Combine Well Testing and Logging: A Pre- and Post-Frac Gas Shale Case: A. Jacques¹, B. Brouard², V. Jaffrezic¹, S. Manivannan³, P. Berest³ (¹TOTAL SA; ²Brouard Consulting; ³École Polytechnique)

10:10 Refreshment Break

11:00 Post-Fracture Pressure Decay: A Novel (and Free) Stage-Level Assessment Method: M. J. Sullivan¹, B. Zanganeh², A. Springer¹, C. Clarkson² (¹Chevron; ²University of Calgary)

11:25 Fully 3-D Simulation of Diagnostic Fracture Injection Tests with Application in Depleted Reservoirs: S. Zheng, R. Manchanda, H. Wang, M. M. Sharma (The University of Texas at Austin)

11:50 Evaluation of Water Hammer Analysis as Diagnostic Tool for Hydraulic Fracturing: X. Ma, F. Zhou, J. A. Ortega Andrade*, S. V. Gosavi, D. Burch (ExxonMobil Upstream Research Company)

Theme 4: Deriving Rock Properties From Seismic

Room 702/704/706

Co-Chairs: A. Munoz, M. Rauch-Davies, and K. Dowdell

8:25 Introductory Remarks

8:30 Pore-Pressure Prediction in the Permian Basin Using Seismic Prestack Inversion: C. M. Sayers, L. den Boer (Schlumberger)

8:55 Seismic Reservoir Characterization of the Bone Spring and Wolfcamp Formations in the Delaware Basin With Efforts at Quantitative Interpretation—A Case Study: S. Chopra (TGS Canada)

9:20 Frac Hit Prevention and Engineered Treatment Design in the Permian Basin Using In-Situ Stress from 3-D Seismic: M. Shoemaker, J. Hawkins, J. Becher, V. Gonzales, S. Mukherjee, R. Garmeh, D. Kuntz (Callon Petroleum Company)

9:45 Monitoring of Hydraulic Fracturing Flowback in the Permian Basin Using Surface-Based, Controlled Source Electromagnetics: D. Jones¹, C. Pieprzica², O. Vasquez¹, J. Oberle¹, P. Morton¹, S. Trevino¹, M. Hickey¹ (¹Deep Imaging; ²Apache Corporation)

10:10 Refreshment Break

11:00 Understanding the Spatial Geological Heterogeneity of the Delaware Basin From Pre-Stack Seismic Inversion:

S. S. Payne¹, A. Lewis², B. Hardy¹, V. Anantharamu¹, I. Russell-Hughes¹ (¹Ikon Science; ²Fairfield Geotechnologies)





AAPG ANNUAL CONVENTION & EXHIBITION

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Submit your abstracts today for the American Association of Petroleum Geologist (AAPG) 2020 Annual Convention and Exhibition (ACE) at the George R. Brown Convention Center in Houston, Texas 7–10 June. Your research, knowledge, and expertise helps our geoscience community navigate towards a successful future. Submissions will be accepted under the following themes:

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- ▶ Theme 5: Unconventional Resources
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For questions or additional information please contact:

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TUESDAY TECHNICAL PROGRAM

- 11:25 **Seismically Driven Estimation of Stress Rotation and Anisotropy and Its Impact on Well Performance—Application to the Delaware Basin:** C. Story¹, V. Sen¹, M. Perz², N. M. Umholtz³, A. Ouenes³ (¹Anadarko Petroleum Corporation; ²TGS; ³FracGeo)
- 11:50 **Estimation of Total Organic Carbon (TOC) Content of Shale From AVO Inversion: A New Crossplot Approach Based on Zoeppritz Equations:** U. Y. Lim, R. L. Gibson, N. Kabir (Texas A&M University)

Theme 5: Frac Modeling II: From Physics to Field

Room 705/707/709/711

Co-Chairs: G. Han, K. Huffman, and V. Sesetty

- 8:25 **Introductory Remarks**
- 8:30 **Modeling Dense-Arrays of Hydraulic Fracture Clusters: Fracture Complexity, Net Pressure and Model Calibration:** V. Sesetty, A. Ghassemi (University of Oklahoma)
- 8:55 **Standardizing Offset Pressure Characterization for Infill Completion in Unconventional Reservoirs:** E. Coenen, J. Mayorga* (Reveal Energy Services)
- 9:20 **Ultrafast Hydraulic Fracturing Model for Optimizing Cube Development:** E. Dontsov¹, A. Bunger², B. Abell¹, R. Suarez-Rivera¹ (¹W. D. Von Gonten Laboratories; ²University of Pittsburgh)
- 9:45 **Simulating Production From Complex Fracture Networks: Impact of Geomechanics and Closure of Propped/Unpropped Fractures:** S. Zheng, A. Kumar, D. Gala, K. Shrivastava, M. M. Sharma (The University of Texas at Austin)
- 10:10 **Refreshment Break**
- 11:00 **Quantifying Hydraulic Fracture Height Reduction in the Presence of Laminations and Weak Interfaces—Validation with Microseismic Moment Tensor Inversion in the Montney Shale:** M. Ng¹, N. Umholtz*², C. Hammerquist², J. Wang², Y. Aimene², A. Ouenes² (¹Painted Pony; ²FracGeo)
- 11:25 **Height Growth in Layered Unconventional Reservoirs: The Impact of Formation Moduli, Interfaces and In-Situ Stress:** Q. Gao, A. Ghassemi (The University of Oklahoma)
- 11:50 **Making Frac Hits History with Computational Physics:** D. Cotrell, T. Hoeink, S. Ghorpade, E. Odusina (Baker Hughes, a GE Company)

Theme 6: Geochemistry of Oil-Prone and Gas-Prone Unconventional Resource Plays

Room 708/710/712

Co-Chairs: O. Woodruff and C. Donohue

- 8:25 **Introductory Remarks**
- 8:30 **Using Solvent Extracts to Estimate the Amount of Producing Oil in Cores Selected From the Lower Eagle Ford Marl:** A. S. Kornacki (Stratum Reservoir)
- 8:55 **Use of Petroleum Geochemical Data to Assess the Presence of Conventional Migrated Oil in Produced Shale Oil—Example From the Midland Basin:** R. Patience¹, G. Hansen¹, S. Secret², B. McDaniel² (¹Applied Petroleum Technology; ²Petrolegacy Energy II LLC)
- 9:20 **Vaca Muerta Unconventional Oil Study—Insights From Organic Geochemistry:** N. Mahlstedt¹, B. Horsfield¹, H. Karg², P. David², T.U. Garlichs² (¹GEOS4 GmbH; ²Wintershall Holding)
- 9:45 **Variability in Results From Mineralogical and Organic Geochemical Interlaboratory Testing of U.S. Geological Survey Shale Reference Materials:** J. E. Birdwell, S. A. Wilson (U.S. Geological Survey)
- 10:10 **Refreshment Break**

- 11:00 **Raman Spectroscopy Based Maturity Profiling of the Vaca Muerta Formation, Neuquén Basin, Argentina:** A. C. Ortiz¹, B. Sauerer², J.-P. Lafournère², P. Saldungaray², W. Abdallah² (¹YPF; ²Schlumberger)
- 11:25 **Variability in Oil Generation and Migration with Thermal Maturity: Wolfcamp and Spraberry Formations, Northern Midland Basin, Texas:** W. R. Drake¹, A. Bazzell¹, J. E. Zumberge², J. B. Curtis² (¹QEP Resources, Inc.; ²GeoMark Research, Ltd.)
- 11:50 **Applied Petroleum Source Rock Evaluation and High-Resolution Sequence Stratigraphy of La Luna Formation, Venezuela: Integrating for Finding the Unconventional Sweet Spots:** A. D. Liborius-Parada, R. M. Slatt, R. P. Philp (The University of Oklahoma)

Exhibit Hall Stations

Theme 11: Proppant Transport and Novel Technologies

Exhibit Hall Station A

Co-Chairs: N. Moridis and Y. Liu

- 9:40 **Introductory Remarks**
- 9:45 **Design of High Pressure CO₂-in-Mineral Oil Emulsions, CH₄-in-Mineral Oil Foams and N₂-in-Mineral Oil Foams Stabilized by Novel Oil-soluble Surfactants for Waterless Hydraulic Fracturing and Proppant Transport:** S. Alzobaidi¹, G. Rodriguez², P. Lemaire², C. Lu¹, R. Enick*², K. Johnston¹ (¹The University of Texas at Austin; ²University of Pittsburgh)
- 10:10 **An Efficient Three-Dimensional Multiphase Particle-in-Cell Model for Proppant Transport in the Field Scale:** S. Mao, S. Zhi, K. Wu (Texas A&M University)
- 10:35 **An Experimental Investigation of Proppant Transport in High Loading Friction-Reduced Systems Utilizing a Horizontal Wellbore Apparatus:** F. A. Ahmad, J. L. Miskimins (Colorado School of Mines)
- 11:00 **Successful Implementation of High Viscosity Friction Reducers From Laboratory to Field Scale: Middle Bakken Case Study:** M. Ba Geri (Missouri University of Science and Technology)
- 11:25 **Experimental Study of Proppant Transport in Complex Fractures with Horizontal Bedding Planes for Slickwater Fracturing:** T. Chun, Z. Zhang, K. Wu (Texas A&M University)

Theme 7: Machine Learning, AI, and Big Data III

Exhibit Hall Station B

Co-Chairs: T. Firincioglu and C. Dai

- 9:40 **Introductory Remarks**
- 9:45 **An Effective Physics-Based Deep Learning Model for Enhancing Production Surveillance and Analysis in Unconventional Reservoirs:** Y. Pan, R. Bi, P. Zhou, L. Deng, J. Lee (Texas A&M University)
- 10:10 **Demystifying Data-Driven Neural Networks for Multivariate Production Analysis:** A. Rastogi¹, K. Agarwal², E. Lolon², M. Mayerhofer², O. Oduba² (¹Colorado School of Mines; ²Liberty Oilfield Services)
- 10:35 **Ensemble Learning: A Robust Paradigm for Data-Driven Modeling in Unconventional Reservoirs:** J. Schuetter, S. Mishra*, L. Lin, D. Chandramohan (Battelle Memorial Institute)
- 11:00 **Machine Learning Regression Techniques to Predict Synthetic Sonic and Identify Brittle Zones:** I. Gupta, D. Devegowda, V. Jayaram, C. Rai, C. Sondergeld (University of Oklahoma)





Theme 2: Advanced Formation Evaluation III: Nuclear Magnetic Resonance, Permeability, and Recovery
Exhibit Hall Station C

Co-Chairs: L. Sivila, A. Mitra, and H. Wang

- 9:40 **Introductory Remarks**
- 9:45 **Impact of Thermal Maturity on Water Production in Organic-Rich Mudrocks:** A. Jagadisan, Z. Heidari* (The University of Texas at Austin)
- 10:10 **Nuclear Magnetic Resonance Estimation of Petrophysical Properties and Evaluation of Hydrocarbon Huff-and-Puff Gas Injection in Lower Eagle Ford Shale Oil Samples:** S. Cudjoe¹, I. Oraki¹, R. Barati¹, J-S. Tsau¹, C. Zhang¹, B. Nicoud², K. Bradford², A. Baldwin³, D. Mohrbacher² (¹University of Kansas; ²Chesapeake Energy)
- 10:35 **Mechanistic Analysis of Shale Permeability Evolution Data:** R. Shi¹, J. Liu², D. Elsworth³ (¹China University of Geosciences; ²The University of Western Australia; ³The Pennsylvania State University)
- 11:00 **Modeling Mineralogy and Total Organic Carbon (TOC) From X-ray Fluorescence (XRF) Elemental Data for Improved Formation Evaluation in the Powder River Basin:** N. R. Hart, M. C. Dix, P. Mainali, H. D. Rowe, A. Morrell, M. Matheny (Premier Oilfield Group)
- 11:25 **Formation Stabilization: Is Bigger Better in Cationic Polymers?:** D. N. Benoit, K. Henkel-Holan*, M. Brown, R. Morgan, M. McCabe (Halliburton)

Theme 8: Enhanced Gas Recovery Methods in Unconventionals
Exhibit Hall Station D

Co-Chair: V. Artus and L. Baez

- 9:40 **Introductory Remarks**
- 9:45 **The Effect of Microwave Irradiation on Coal for Enhanced Gas Recovery of Coalbed Methane:** J. Zhu^{1,2}, (¹Southwest Petroleum University; ²The University of Texas at Austin)
- 10:10 **Permeability Enhancement in Gas Shale Due to Nitrogen Flooding:** B. Schwartz, D. Elsworth (The Pennsylvania State University)
- 10:35 **Embedded Discrete Fracture Model Assisted Study of Gas Transport Mechanisms and Drainage Area for Fractured Shale Gas Reservoirs:** W. Yu¹, K. Wu², L. Zuo², J. Miao³, K. Sepehrnoori¹ (¹The University of Texas at Austin; ²Texas A&M University; ³SimTech LLC)
- 11:00 **In Situ Logs of Gas Composition of CO₂-ECBM Trial in Buchanan County, Virginia, with Downhole Reservoir Raman System:** G. Myers¹, A. Cookman¹, N. Ripepi² (¹WellDog; ²Virginia Polytechnic Institute and State University)

Tuesday Afternoon

Session Rooms

Theme 1: Operators' Forum: Case Studies Highlighting Modeling and Technologies

Four Seasons Ballroom 1

Co-Chairs: Y. Pradhan, D. S. Jones, and F. Tovar

- 1:45 **Introductory Remarks**
- 1:50 **Hydraulic Fracture Modeling and Innovative Fracturing Treatment Design to Optimize Perforation Cluster Efficiency, Lateral Placement, and Production Results in a Mancos Shale Gas Appraisal Well:** S. W. French¹, I. Gil², C. Yuan², K. Cawiezal², D. Schoderbek¹, A. Goma² (¹BPX Energy; ²BP)

- 2:15 **Using a Metamodel-Based Approach for Optimization of Stimulated Rock Volume Geometry, Hydrocarbon Production, and Related Field Development Costs:** H. Pourpak¹, J. Will², N. Mottet¹ (¹Total SA; ²Dynardo)
- 2:40 **Practical Reservoir Simulation for Small Development Teams—Customizing Stimulation Designs by Landing Zone in the Midland Basin:** T. Tran, R. Miller, B. Pottebaum, B. McDowell*, A. Yoelin, L. Steinke (Discovery Natural Resources)
- 3:05 **Refreshment Break**
- 3:55 **A Data-Driven Modeling Methodology to Support Unconventional Reservoir Development Decisions: Application to the STACK Play in Oklahoma:** M. Burton, S. Matringe, T. Atchison, M. Houser, A. Munoz, M. Taing (EnCana)
- 4:20 **Uncertainties in Step-Down Test Interpretation for Evaluating Completions Effectiveness and Near-Wellbore Complexities:** S. Mondal¹, G. Ugueto², P. Huckabee², M. Wojtaszek³, T. Daredia⁴, S. Vitthal², D. Nasse², F. Todea⁴ (¹Shell International Exploration and Production; ²Shell Exploration and Production Company; ³Shell Global Solutions International; ⁴Shell Canada Limited)

Special Session: Hydraulic Fracture Test Site (HFTS)

Four Seasons Ballroom 2/3

Co-Chairs: B. Driskill and D. Hayes

Please see page 12 for more information on this special session.

- 1:45 **Introductory Remarks**
- 1:50 **Opening Remarks:** Shawn Bennett, US. Department of Energy
- 2:00 **Progress Update on the Hydraulic Fracturing Test Site (HFTS) in the Permian-Midland Basin, and an Overview of the Hydraulic Fracturing Test Site II (HFTSII) in the Permian-Delaware Basin:** J. Ciezobka (GTI)
- 2:25 **Natural Fracture Characterization in the Wolfcamp Formation at the Hydraulic Fracture Test Site (HFTS), Midland Basin, Texas:** J. F. W. Gale, S. J. Elliott, J. Z. Li, S. E. Laubach (University of Texas at Austin)
- 2:50 **Seismic Monitoring of Hydraulic Fracturing Activity in the Wolfcamp Shale of Midland Basin, Texas:** A. Kumar¹, H. Hu², R. Hammack¹, A. Bear³, W. Harbert³ (¹National Energy Technology Laboratory/Leidos Research Support Team; ²University of Houston; ³National Energy Technology Laboratory; ⁴National Energy Technology Laboratory/University of Pittsburgh)
- 3:15 **Refreshment Break**
- 3:55 **Learnings From the Hydraulic Fracturing Test Site (HFTS) #1, Midland Basin, West Texas – A Geomechanics Perspective:** S. Wang (Chevron)
- 4:20 **Analysis and Interpretations of Pressure Data From the Hydraulic Fracturing Test Site (HFTS):** T. Li, W. Chu, P. A. Leonard (Pioneer Natural Resources)
- 4:45 **Application of a New RTA and Simplified Modelling Method to HFTS-1 Wells:** J. Acuna (Chevron)
- 5:10 **A Comprehensive Diagnostic Assessment of Reservoir Response to Fracturing at the Hydraulic Fracturing Test Site:** D. Maity, J. Ciezobka (GTI)

Theme 2: Advanced Formation Evaluation IV: Saturation, Volumes, and Recovery

Four Seasons Ballroom 4

Co-Chairs: K. Yared, L. Jin, and J. Raftery

- 1:45 **Introductory Remarks**
- 1:50 **Laboratory Investigation of CO₂ Injectivity and Adsorption Potential Within the Bakken Formation:** S. Smith, B. Kurz, J. Sorensen, C. Beddoe, B. Mibeck, A. Azenkeng, S. Hawthorne, C. Gorecki (University of North Dakota Energy & Environmental Research Center)



TUESDAY TECHNICAL PROGRAM

- 2:15 Confinement Facilitates Wetting Liquid Slippage Through Mixed-Wet and Heterogeneous Nanoporous Shale Rocks:** D. Fan¹, W. Wang², A. Ettehadvakkol^{*3}, Y. Su² (¹University College London; ²China University of Petroleum (East China); ³Texas Tech University)
- 2:40 Assessment of Improved Oil Recovery by Osmotic Pressure in Unconventional Reservoirs: Application to Niobrara Chalk and Codell Sandstone:** O. Uzun, H. Kazemi (Colorado School of Mines)
- 3:05 Refreshment Break**
- 3:55 Saturation Isn't What It Used to Be: Towards More Realistic Petroleum Fluid Saturations and Produced Fluid Compositions in Organic-Rich Unconventional Reservoirs:** A. S. Pepper¹, S. Perry², L. Heister² (¹This is Petroleum Systems LLC; ²Anadarko Petroleum Corporation)
- 4:20 Scale-Dependent Correlation to Improve Water Saturation and Permeability Estimates in Unconventional Reservoirs:** A. Kotb, S. L. Eichmann*, M. Sengupta (Aramco Services Company)
- 4:45 A Pore-Scale Mechanistic Investigation of Shale Gas Condensate at Near Saturation Pressure on Fluid Flow in Shale:** S. Pan¹, J. Ma², J. Y. Zuo³, N. Hamed¹ (¹Schlumberger; ²Heriot-Watt University; ³Fluid Modeling Group)
- 5:10 Quantifying the Impacts of Competitive Adsorption of Kerogen and Clay Minerals on Wettability of Organic-Rich Mudrocks:** A. Jagadisan, Z. Heidari* (The University of Texas at Austin)
- 2:15 Property Upscaling in Porosity Systems With Under-Resolved Features Using Image-Based Rock Physics:** S. Zhang, A. Byrnes*, J. J. Howard (DigiM Solution)
- 2:40 Semi-Quantitative SEM Analysis of the Vaca Muerta Formation and Its Impact on Reservoir Characterization, Neuquen Basin, Argentina:** F. Gonzalez Tomassini¹, L. B. Smith Jr.², M. G. Rodriguez¹, I. Jausoro³, M. A. Florida³, M. Cipollone³, A. Caneiro³, G. Sagasti¹ (¹YPF SA; ²SmithStrata; ³YPF Tecnología SA [Y-TEC])
- 3:05 Refreshment Break**
- 3:55 Imaging Microcrystalline Quartz in a Sandstone Reservoir to Understand the Formation of Microcrystalline Quartz in the Wolfcamp a Siliceous Mudstones, Southern Delaware Basin:** M. W. French, J. Colborne (Colorado School of Mines)
- 4:20 Unconventional Reservoir Microstructural Analysis Using SEM and Machine Learning:** A. S. Knaup, J. D. Jernigen, M. E. Curtis, J. W. Sholeen, J. J. Borer, C. H. Sondergeld, C. S. Rai (University of Oklahoma)
- 4:45 Integration of Microfacies Analysis, Inorganic Geochemical Data, and Hyperspectral Imaging to Unravel Mudstone Depositional and Diagenetic Processes in Two Cores From the Triassic Shublik Formation, Northern Alaska:** K. J. Whidden¹, J. E. Birdwell^{*1}, J. A. Dumoulin¹, L. C. Fonteneau², B. Martini² (¹U.S. Geological Survey; ²Corescan Pty Ltd)
- 5:10 Continuous Mineral Mapping of Core Using Hyperspectral Imaging: Example from the Upper Cretaceous Austin Chalk Marathon 1 Robert Todd Core, Central Louisiana:** T. Kosanke¹, R. G. Loucks², T. Larson², J. Greene³, P. Linton³ (¹Independent Consultant; ²Bureau of Economic Geology, Jackson School of Geosciences, The University of Texas at Austin; ³TerraCore)

Theme 7: Machine Learning, AI, and Big Data IV

Room 108/110/112

Co-Chairs: S. Carpenter and D. Zhou

- 1:45 Introductory Remarks**
- 1:50 Development and Application of a Real-Time Drilling State Classification Algorithm with Machine Learning:** Y. Ben, C. James, D. Cao (Anadarko Petroleum Corporation)
- 2:15 Cloud-Based ROP Prediction and Optimization in Real Time Using Supervised Machine Learning:** K. Singh, S. S. Yalamarty, M. Kamyab, C. Cheatham (Corva AI, LLC)
- 2:40 An Integrated Machine Learning Framework for Optimizing Unconventional Resources Development:** H. Zhou, B. Lascaud (ConocoPhillips)
- 3:05 Refreshment Break**
- 3:55 Empowering Completion Engineers to Calibrate Petrophysical Facies Models to Hydraulic Fracturing Treatment Responses:** C. Glaser, J. Mazza, J. Frame (Fracture ID)
- 4:20 Reservoir Fluid Data Acquisition Using Advanced Mud Gas Data in Shale Reservoirs:** T. Yang, I. H. Arief, M. Niemann, M. Houbiers (Equinor ASA)
- 4:45 Improving Field Development Decisions in the Vaca Muerta Shale Formation by Efficient Integration of Data, AI, and Physics:** H. Klie¹, A. Klie¹, A. Rodriguez², J. Monteagudo², A. Primera³, M. Quesada³ (¹DeepCast.ai; ²OpenSim Technology; ³Primera Resources)
- 5:10 Unsupervised Machine Learning Applications for Seismic Facies Classification:** S. Chopra (TGS Canada)

Theme 3: Imaging Unconventional Reservoir Rocks at Various Scales

Room 601/603

Co-Chairs: T. Olson and R. Denne

- 1:45 Introductory Remarks**
- 1:50 Visualization of Pore Connectivity Using Mercury Injection Capillary Pressure Measurements, Micro X-Ray Computed Tomography, and Cryo-Scanning Electron Microscopy:** M. E. Curtis, C. H. Sondergeld, C. S. Rai (University of Oklahoma)

Theme 10: Reservoir Modeling for Unconventionals: Bringing Together Data, Disciplines, and Design

Room 605/607

Co-Chairs: A. Martinez and J. McLaughlin

- 1:45 Introductory Remarks**
- 1:50 Anomalous Diffusion or Classical Diffusion in an Anomalous Reservoir? Evaluation of the Impact of Multi-Phase Flow on Reservoir Signatures in Unconventional Reservoirs:** C. R. Clarkson¹, B. Yuan¹, Z. Zhang¹, F. Tabasinejad¹, H. Behmanesh², H. Hamdi¹, D. Anderson², J. Thompson², D. Lougheed² (¹University of Calgary; ²NCS Multistage)
- 2:15 Multi-Resolution Grid Connectivity-Based Transform for Efficient History Matching of Unconventional Reservoirs:** H. Kim¹, F. Olalotiti-Lawal², A. Datta-Gupta¹ (¹Texas A&M University; ²Quantum Reservoir Impact)
- 2:40 An Efficient Method for Modeling Discrete Fracture Networks in Geomechanical Reservoir Simulations:** A. Kumar, K. Shrivastava, R. Manchanda*, M. M. Sharma (The University of Texas at Austin)
- 3:05 Refreshment Break**
- 3:55 Workflow Development and Sensitivity Investigation of Offset Well-to-Well Interference Through 3-D Fracture Modeling and Reservoir Simulation in the Denver-Julesburg Basin:** T. H. Levon, J. Miskimins (Colorado School of Mines)
- 4:20 Applying Rate Transient Analysis (RTA) to Assist Fracturing Technique Selection in Unconventional Wells in Saudi Arabia:** J. I. Rueda, J. D. Valbuena, A. M. Al-Momen, N. I. Al-Mulhim (Saudi Aramco)
- 4:45 A Direct Method for Short-Term Forecasting of Multi-Phase Production Rates Using Flowback Data:** M. R. Jones¹, B. Bajgier¹, T. Blasingame² (¹Anadarko Petroleum Corporation; ²Texas A&M University)





Theme 5: Rock Characterization for Fracturing and Drilling

Room 702/704/706

Co-Chairs: J. Kessler, N. Park, and Y. Fang

- 1:45** **Introductory Remarks**
1:50 **Experimental Study of Fracture Permeability With and Without Proppants on Vaca Muerta Gas Shale:** K. Su¹, M. Santacoloma², P. Barlet¹, H. Pourpak¹, S. Estrada³ (¹TOTAL SA; ²TOTAL Austral; ³Total E&P)
- 2:15** **Triaxial Direct Shear Fractured Marcellus (MSEEL) Shale—Peak and Residual Shear Strength, Permeability, and Hydroshear Potential:** N. J. Welch¹, L. P. Frash¹, A. Menefee², J. W. Carey¹ (¹Los Alamos National Laboratory; ²Department of Civil and Environmental Engineering University of Michigan)
- 2:40** **Assessing the Stratigraphic and Spatial Variations in Geomechanical Properties of the United Kingdom Bowland Shale Using Wireline and Seismic Data: How Could These Guide the Placement of Lateral Wells?:** I. Anderson¹, J. Ma¹, X. Wu², D. Stow¹, J. R. Underhill¹ (¹Heriot-Watt University; ²British Geological Survey)
- 3:05** **Refreshment Break**
3:55 **A Dynamic Fractal Permeability Model for Heterogeneous Coalbed Reservoir Considering Multiphysics and Flow Regimes:** J. Tian¹, J. Liu¹, D. Elsworth², Y-K. Leong¹, W. Li¹, J. Zeng¹ (¹Department of Chemical Engineering, The University of Western Australia; ²Department of Energy and Mineral Engineering, The Pennsylvania State University)
- 4:20** **Establishing an Empirical Relationship Between Impulse Hammer and Triaxial Test Derived Rock Mechanical Properties:** M. Hussain¹, A. Muqtadi², A. Amao², K. Al-Ramadan², L. Babalola² (¹BHGE; ²KFUPM)
- 4:45** **Impact of Natural Fracture-Induced Elastic Anisotropy on Completion and Frac Design in Different Shale Reservoirs:** E. C. Dundar, A. Alhemdi, M. Gu* (West Virginia University)
- 5:10** **High-Resolution Measurements of Elasticity at Core Scale. Improving Mechanical Earth Model Calibration at the Vaca Muerta Formation:** A. Padin (Total Exploration & Production)

Theme 8: Gas Injection EOR

Room 705/707/709/711

Co-Chairs: M. Manohar and X. Li

- 1:45** **Introductory Remarks**
1:50 **Huff-and-Puff Enhanced Oil Recovery in the Liquids-Rich Portion of the Montney: Applications for Gas Condensates:** J. A. Rivero, M. Faskhoodi, G. Garcia Ferrer, A. Zhmodik, H. Mukisa (Schlumberger Canada)
- 2:15** **Laboratory Studies of Rich Gas Interactions With Bakken Crude Oil to Support Enhanced Oil Recovery:** S. Hawthorne¹, J. Sorensen*¹, D. Miller¹, C. Gorecki¹, J. Harju¹, G. Pospisil² (¹University of North Dakota Energy & Environmental Research Center; ²Liberty Resources LLC)
- 2:40** **Chemical Blend CO₂ Huff-and-Puff for Shale Oil EOR:** K. Mohanty, T. Zeng, C. Miller (The University of Texas at Austin)

Theme 8: EOR in the Permian Basin

Room 705/707/709/711

Co-Chairs: M. Manohar and X. Li

- 3:50** **Introductory Remarks**
3:55 **A Set of Successful Chemical Enhanced Oil Recovery Trials in Permian Basin: Promising Field and Laboratory Results:** M. Moradi Bidhendi, M. Kazempour, U. Ibanga, D. Nguyen, M. Lantz, C. Mazon, J. Arruda (Nalco Champion, An Ecolab Company)

- 4:20** **Water/Oil Displacement by Spontaneous Imbibition Through Multiscale Imaging and Implication on Wettability in Wolfcamp Shale:** S. Peng¹, Y. Liu², L. T. Ko¹, W. Ambrose¹ (¹The University of Texas at Austin; ²SLAC National Accelerator Laboratory)
- 4:45** **Field Pilots of Unconventional Shale EOR in Permian Basin:** J. X. Jin, P. Zhao (New Aero Technology LLC)
- 5:10** **Application of Miscible Ethane Foam for Gas Conformance in Low-Permeability Heterogeneous Harsh Environments:** M. Salman, K. Kostarelos, P. Sharma, J. H. Lee (University of Houston)

Theme 11: Proppant Placement and Novel Completion Technologies

Room 708/710/712

Chair: T. Mallinson and Y. Tan

- 1:45** **Introductory Remarks**
1:50 **A Novel Approach to Monitor Proppant Consolidation During Hydraulic Fracturing Using Dynamic Measurement: Experimental Study:** M. H. Alqam¹, A. H. Al-Makrami*¹, H. H. Abass², E. T. Caliboso¹ (¹Saudi Aramco; ²Colorado School of Mines)
- 2:15** **Geophysical Monitoring With Seismic Metamaterial Contrast Agents:** Q. R. Miller, T. Schaef (Pacific Northwest National Laboratory)
- 2:40** **Far-Field Proppant Imaging Offsetting Depletion: A STACK Case History:** K. Haustveit¹, M. Almasoodi¹, W. Al-Tailji², S. Mukherjee², T. Palisch², R. Barber³ (¹Devon Energy; ²CARBO Ceramics Inc.; ³Formerly Devon Energy)
- 3:05** **Refreshment Break**
3:55 **Tracer Eluting Proppants for Shale Fracturing:** K. Mohanty, B. Zhao, K. Panthi (The University of Texas at Austin)
- 4:20** **Quasi-Dry CO₂ Fracturing—A New Breakthrough of Dry CO₂ Fracturing:** L. Jin¹, Y. Zheng² (¹BrightGold Consulting LLC; ²APPolymer Technology)
- 4:45** **High Performance Fracturing Fluid Diverters With Broad Spectrum Applicability:** D. Dreyer¹, P. Kurian¹, T. Hu¹, P. Tonmukayakul¹, R. Calaway², C. Hodges², K. Peoples² (¹Nalco Champion, An Ecolab Company; ²Quintana Energy Services)
- 5:10** **Novel Wettability Modifiers for Improved Oil Recovery in Tight Oil Reservoirs:** M. Wang, G. A. Abeykoon, F. J. Argüelles Vivas, R. Okuno* (The University of Texas at Austin)

Exhibit Hall Stations

Theme 2: Advanced Formation Evaluation VIII: Integration of Geomechanics in Petrophysical Analysis

Exhibit Hall Station A

Co-Chairs: K. Hartig and M. Ashby

- 1:45** **Introductory Remarks**
1:50 **Petrophysical Evaluation of Geomechanical Data in a Horizontal Well Predicts Problem Stages Using Process Zone Stress:** T. Levon, C. Glaser (Fracture ID)
- 2:15** **Characterization of Subsurface Bedding-Parallel Shear Fractures and Their Influence on Shale Gas Enrichment in the Wufeng-Longmaxi Formation, Sichuan Basin, China:** J. Li-Wei¹, H. Yong¹, S. Dong-Chu¹, N. Wei¹, P. Feng*², W. Yue², L. Kai-Xuan², Z. Hai-Peng², T. Yu³ (¹PetroChina Zhejiang Oilfield Company; ²Schlumberger; ³PetroChina Southwest Oil and Gas Company)



TUESDAY & WEDNESDAY TECHNICAL PROGRAM

2:40 Multi-Scale Integration of Mudstone Properties in Interbedded Reservoirs, Insights into Additional Criteria for Evaluating Unconventional Reservoirs: Examples from the Duvernay Formation (Alberta, Canada) and the Woodford Shale (Oklahoma, USA): H. Galvis-Portilla¹, D. Becerra-Rondon¹, P. K. Pedersen¹, R. Slatt² (¹University of Calgary; ²University of Oklahoma)

3:05 Elastic Mechanical Properties from SEM Imaging in Tight Formations: J. Walls¹, J. Dvorkin², G. Davalos¹ (¹Halliburton; ²Consultant)

3:30 Using High Resolution Geomechanical Data and Machine Learning to Inform Drilling Decisions and Completions Operations in the Wolfcamp, Delaware Basin: J. Edwards, C. Glaser, E. Romberg (Fracture ID)

3:55 Pore Pressure Estimation in Complex Lithologies: A Novel Approach in Delaware Basin Wolfcamp: A. Popielski (ConocoPhillips)

4:20 X-Ray Fluorescence and Laser-Induced Breakdown Spectroscopy for Advanced Rock Elemental Analysis: H. Han, S. Dang, J. Acosta, J. Fu, C. Sondergeld, C. Rai (University of Oklahoma)

Theme 4: Novel Techniques in Geophysics for Reservoir Characterization

Exhibit Hall Station B

Co-Chairs: J. Rich and S. Wright

1:45 Introductory Remarks

1:50 The Calibration of Double-Ended Distributed Temperature Sensing for Production Logging Purposes: G. Jin, B. Roy, K. Friehauf (ConocoPhillips)

2:15 Analytical Approach for Injectivity Profiling Through Warm-Back Analysis in Multilayer Reservoirs: R. G. Hashish, M. Zeidouni (Louisiana State University)

2:40 Two Inversion Case Studies from the SCOOP and STACK Area of Oklahoma: S. Chopra (TGS Canada)

3:05 Workflow for Nonlinear AVO Inversion to Estimate Seismic Anisotropy and Geomechanical Properties of Shale: U. Y. Lim, R. L. Gibson, N. Kabir (Texas A&M University)

3:30 Resonance Frequencies in Passive Recordings Map Fracture Systems: Eagle Ford and Albany Shale Examples: C. J. Sicking, J. Vermilye (Ambient Reservoir Monitoring)

Theme 6: Geochemistry, Chemistratigraphy and Fluid/Rock Interaction

Co-Chairs: S. Macalello, D. Ebnother, M. Formolo, and G. Zhang

1:45 Introductory Remarks

1:50 Physical Properties and Whole-oil Gas Chromatography Geochemical Characterization Of Produced Crude From Eagle Ford Shale: T. Zhang, X. Sun, A. Gherabati (The Bureau of Economic Geology, The University of Texas at Austin)

2:15 Laser-Induced Breakdown Spectroscopy (LIBS): An Emerging Spectroscopic Technique for Shale Rock Characterization: J. C. Jain, D. A. Hartzler, D. L. McIntyre, J. E. Moore, D. M. Crandall (USDOE National Energy Technology Laboratory)

2:40 Origin of Shale Gases from Around the World: Implication for Exploration: A. V. Milkov¹, G. Etiope² (¹Colorado School of Mines; ²Istituto Nazionale di Geofisica e Vulcanologia)

3:05 Geochemical, Mineralogical, and Lithological Linkages in a Thick, Early Permian, Siliciclastic Succession, Midland Basin, West Texas, USA: H. Hammon, T. Prather, H. Rowe, R. Krumm, M. Matheny, P. Mainali (Premier Oilfield Group)

3:30 A New Approach to Controlling Barite Scaling in Unconventional Systems: A. D. Jew¹, Q. Li², D. Cercione³, G. E. Brown², J. R. Bargar¹ (¹SLAC National Accelerator Laboratory; ²Stanford University; ³National Energy Technology Laboratory)

3:55 Geochemical Modeling of Iron (Hydr)oxide Scale Formation During Hydraulic Fracturing Operations: Q. Li^{2,1}, A. D. Jew¹, D. Cercione³, J. R. Bargar¹, G. E. Brown^{2,1}, K. Maher², (¹SLAC National Accelerator Laboratory; ²Stanford University; ³National Energy Technology Laboratory)

4:20 Enhanced Oil Recovery of Shale Oil: A Molecular Simulation Study: A. Takbiri-Borujeni¹, M. Kazemi², J. R. Hansel¹ (¹West Virginia University; ²Slippery Rock University of Pennsylvania)

4:45 CO₂-Shale Reactivity at the Matrix-Fracture Interface: A. Goodman, S. Sanguinito, B. Kutchko, S. Natesakhawat, P. Cvetic (National Energy Technology Laboratory)

Theme 5: Geomechanics Integration and Rock Characterization

Exhibit Hall Station D

Co-Chairs: R. Manchanda and M. Sarkar

2:10 Introductory Remarks

2:15 3-D Geomechanical Modeling for Field Development of a Colombian Shale Play: L. Arias Medina, A. N. Tutuncu (Colorado School of Mines)

2:40 Anisotropic Borehole Stability Analysis for the UK's First Horizontal Shale Gas Well in the Bowland Basin: H. Clarke¹, H. Soroush² (¹Cuadrilla Resources Ltd; ²PETROLERN LLC)

3:05 An Experimental Investigation of the Anisotropic Dynamic and Static Properties of Eagle Ford Shales: Y. Wang¹, D-h. Han¹, L. Zhao², A. Mitra³, S. Aldin³ (¹University of Houston; ²Tongji University; ³MetaRock Laboratories)

3:30 Optimization of Coalbed Methane Multi-Lateral Drilling in the San Juan Basin via Wellbore Stability Modeling and Data Analytics: J. D. Escobar Gomez, H. LaReau, J. H. Hornbuckle, J. J. Melick, D. A. Schoderbek (BPX Energy)

Wednesday Morning

Session Rooms

Theme 1: Operators' Forum: Case Studies from Geology to Completions

Four Seasons Ballroom 1

Co-Chairs: B. Driskill, M. Handke, and J. Hernandez

8:25 Introductory Remarks

8:30 Tailoring Completion Design to Reservoir and Geologic Quality Changes Across the Uinta Basin: T. S. Ong, J. Reamer, J. Lassek, M. Quakenbush (Encana Corporation)

9:20 Analysis of a Drained Rock Volume: An Eagle Ford Example: K. Raterman, Y. Liu, L. Warren (ConocoPhillips)

Refreshment Break

10:10 Delaware Basin Horizontal Wolfcamp Case Study: Mitigating H₂S and Excessive Water Production Through Isolating Densely Fractured Intervals Correlative to Seismically Mapped Shallow Graben Features in the Delaware Mountain Group: K. Charzynski¹, K. Faith¹, Z. Fenton¹, M. McKee², S. Bjorlie², M. Richardson², A. Shedeed³ (¹UpCurve Energy LLC; ²Jetta Permian, LP; ³UpCurve Energy)



WEDNESDAY TECHNICAL PROGRAM

Special Session: ARMA—Principles, Simulation, and Practice

Four Seasons Ballroom 2/3

Chair: J. McLennan

Please see page 19 for more information on this special session.

- 8:25** **Introductory Remarks**
8:30 **Implications of Experiments and Simulations for the Multi-objective Optimization of Horizontal Well Completions:** A. Bungler¹, C. Cheng¹, D. Gunaydin¹, A. Peirce² (¹University of Pittsburgh, Pittsburgh, PA, ²University of British Columbia, Vancouver, BC, Canada)
8:55 **The Role of Perforations in Balancing Stress Variations Along the Lateral During Plug-and-Perf Treatments:** D. Cramer (ConocoPhillips)
9:20 **SRV Versus Hydraulic Fracture Geometry: Are Mixed-Mode Fractures the Missing Link?:** R. Hurt (Pioneer Natural Resources)
9:45 **Mixed-Mechanism Stimulation in Geothermal Reservoirs:** J. Norbeck (Fervo Energy)

Theme 10: Furthering the Understanding of Fracture Behavior, Flowback, and SRVs I

Four Seasons Ballroom 2/3

Co-Chairs: C. Yang and D. Riestenberg

- 10:55** **Introductory Remarks**
11:00 **Advanced Flowback in the Powder River Basin: Securing Stimulation Investments:** M. A. Campos, D. Potapenko, K. Moncada, J. Krishnamurthy (Schlumberger)
11:25 **Estimating Residual Fracture Pore Volume by Analyzing Post-Flowback Water Production: An Eagle Ford Black-Oil Case:** S. Hossain, O. Ezulike, H. Dehghanpour (University of Alberta)
11:50 **Rigorous Modeling of Salt Transport During Frac, Shut-in, and Flowback to Constrain Hydraulic Fracture/Reservoir Property Estimates:** Z. Zhang, C. R. Clarkson, J. D. Williams-Kovacs, B. Yuan, A. Ghanizadeh (University of Calgary)

Theme 2: Advanced Formation Evaluation V: Data Integration and Modeling

Four Seasons Ballroom 4

Co-Chairs: A. Duncan and S. Borchardt

- 8:25** **Introductory Remarks**
8:30 **Enhanced Reservoir Characterization for Optimizing Completion Decisions in the Permian Basin Using a Novel Field-Scale Workflow Including Wells With Missing Data:** A. Garcia, A. Jagadisan, Z. Heidari* (The University of Texas at Austin)
8:55 **Accurate Rock Mineral Characterization With Nuclear Magnetic Resonance:** H. Wang, B. Sun, Z. Yang, S. Seltzer, M. Wigand (Chevron Corporation)
9:20 **Facies-Calibrated Petrophysical and Geocellular Property Modeling Using Data Analytics and Multi-Point Statistics in the Delaware Basin, USA:** M. Lessenger¹, T. Gladczenko², J. Hardt³, M. Houston³ (¹Rimrock Petrophysics and Analytics, LLC; ²Applied Geostats, LLC; ³Piedra Companies)
10:10 **Refreshment Break**
11:00 **An Integrated Deep Learning Solution for Petrophysics, Pore Pressure, and Geomechanics Property Prediction:** E. Zabihi Naeini¹, S. Green¹, M. Rauch-Davies² (¹Ikon Science; ²Devon Energy)
11:25 **Combined Inversion Recovery and CPMG NMR Interpretation Method for More Accurate Quantification of Liquid Saturations in Organic-Rich Mudstones:** R. L. Krumm, J. J. Howard (Premier Oilfield Group)

- 11:50** **Compositional Controls on Micro-Scale Fluid Distribution in Tight Rocks: Examples from the Montney Formation (Canada):** D. J. Cronkwright¹, C. R. Clarkson¹, C. DeBuhr¹, C. Song¹, H. J. Deglint¹, A. Ghanizadeh¹, O. Ardakani² (¹Department of Geoscience, University of Calgary; ²Geological Survey of Canada)

Theme 7: Machine Learning, AI, and Big Data V

Room 108/110/112

Chair: A. L. Lerza

- 8:25** **Introductory Remarks**
8:30 **Implementing an Integrated Production Surveillance and Optimization System in an Unconventional Field:** D. Molinari¹, S. Sankaran¹, D. Symmons², M. Perrotte¹, E. Wolfram¹, I. Krane¹, J. Han¹, N. Bansal¹ (¹Anadarko Petroleum Corporation; ²Wilcox Wiggins Inc.)
8:55 **Data-Driven Approach to Optimize Stimulation Design in Eagle Ford Formation:** A. Monaco, F. Herrero Clar* (Pluspetrol S.A.)
9:20 **Continuous Mineralogical Characterization of the Bakken-Three Forks Formations: New Geological Insights from Hyperspectral Core Imaging:** B. A. Martini¹, J. Bellian², D. Katz³, L. Fonteneau⁴, R. Carey⁴ (¹Corescan Inc.; ²Whiting Petroleum Corporation; ³Encana Corporation; ⁴Corescan Pty Ltd)
9:45 **Machine Learning Applied to 3-D Seismic Data from the Denver-Julesburg Basin Improves Stratigraphic Resolution in the Niobrara:** C. Laudon, S. Stanley, P. Santogrossi (Geophysical Insights)
10:10 **Refreshment Break**
11:00 **Integrating Geostatistical Modeling with Machine Learning for Production Forecast in Shale Reservoirs: Case Study from Eagle Ford:** A. Bakay¹, J. Caers¹, T. Mukerji¹, Y. Dong², A. Briceno², D. Neumann² (¹Stanford University; ²Repsol US)
11:25 **Application of Assisted History Matching Workflow to Shale Gas Using EDFM and Neural Network-Markov Chain Monte Carlo Algorithm:** S. Tripopoom^{2,1}, W. Yu², K. Sepehrnoori², J. Miao^{2,3}, (¹PTT Exploration and Production PLC.; ²The University of Texas at Austin; ³Sim Tech LLC.)
11:50 **Application of Artificial Intelligence for Recognition of Depositional Facies—Permian Basin:** R. S. Miller¹, S. Rhodes², D. Khosla³, F. Nino¹ (¹Core Laboratories; ²Pioneer Natural Resources; ³HRL Laboratories)

Theme 15: License to Operate: Stakeholder Management and Social Performance II

Room 601/603

Chair: S. M. Carpenter

- 8:25** **Introductory Remarks**
8:30 **Data-Driven Approach to Quantify Oilfield Water Lifecycle and Economics in the Permian Basin:** A. Sharma, I. Thomasset (DrillingInfo)
8:55 **Evaluating the Ellenburger Reservoir for Salt Water Disposal in the Midland Basin: An Assessment of Porosity Distribution Beyond the Scale of Karsts:** T. Sanchez, D. Loughry, V. Coringrato (Pioneer Natural Resources)
9:20 **Permian Produced Water: Impact of Rising Handling Costs and Larger Water Cuts on Wolfcamp Growth:** R. Duman (Wood Mackenzie)
9:45 **Salt Water Disposal Modeling of Dakota Sand, Williston Basin, to Drive Drilling Decisions:** S. Basu, T. Cross, S. Skvortsov* (ConocoPhillips)



WEDNESDAY TECHNICAL PROGRAM

Panel: Next Technology Frontier in Unconventionals—What's Needed Versus What's in Development

Room 601/603

Moderator: D. Close

Please see page 13 for more information on this panel.

- 10:55 **Introductory Remarks**
11:00 **Rusty Mathis**, Reservoir Optimization and Analytics, Chevron
11:10 **Frederic Wasman**, Project Manager at iShale™
11:20 **Jon V. Ludwig**, Chief Executive Officer, Novi Labs
11:30 **Sidd Gupta**, Co-founder and Chief Executive Officer, Nesh
11:40 **David Craig**, Director Stimulation Design at Oxy
11:50 **Erdal Ozkan**, Professor at Colorado School of Mines
12:00 Moderated Discussion

Theme 6: Oil/Gas/Water: Fluid-Fluid, Fluid-Rock Interactions and Chemostratigraphy I

Room 605/607

Co-Chairs: S. Kelly and L. Wenger

- 8:25 **Introductory Remarks**
8:30 **Geochemical Perspectives on Cuttings-Based Chemostratigraphy and Mineral Modeling in the Delaware Basin, Texas and New Mexico:** H. Rowe¹, P. Mainali¹, M. Nieto¹, J. D. Grillo¹, H. B. Rowe² (¹Premier Oilfield Group; ²Data Analytics Consultant)
8:55 **Understanding the Impact of Sampling Resolution on the Efficacy and Utility of Elemental Datasets in the Delaware Basin:** M. Wright¹, B. Driskill², N. Martinez¹, E. Mathia¹ (¹Chemostrat; ²Shell Exporation and Production Company)
9:20 **Source(s) of Produced Water in the Permian Delaware Basin, West Texas: A Geochemical Analysis:** L. T. Bryndzia, A. M. Hows, R. J. Day-Stirrat, A. Nikitin, O. Huvaz (Shell International Exploration and Production)
9:45 **Is It in the Water? Elucidating Mineral Scale Precipitation Mechanisms on Unconventional Production String Components:** J. Mackey, J. Gardiner, B. Kutchko, M. Brandi, J. Fazio, A. Hakala (National Energy Technology Laboratory)
10:10 **Refreshment Break**
11:00 **Application of Raman Spectroscopy in Investigating the Effect of Source and Temperature on the Maturity of the Organic Matter Exposed to Hydrocarbon Gas Injection:** S. Cudjoe¹, R. Barati¹, C. P. Marshall¹, R. H. Goldstein¹, J-S. Tsau¹, B. Nicoud², K. Bradford², A. Baldwin², D. Mohrbacher² (¹University of Kansas; ²Chesapeake Energy)
11:25 **The Impact of Fracture Surface Area to Rock Volume Ratio on Spontaneous Imbibition in Tight Rocks:** W. Chaisoontornyotin¹, A. I. Mohamed¹, S. Bai¹, S. A. Afari¹, A. Recio III², M. Pearl², M. Piri¹ (¹University of Wyoming; ²Halliburton)
11:50 **Models for Headspace Isotope and Compositional Analysis: Gas in Place, Permeability, and Porosity Prediction and Completions Planning:** S. Wu¹, A. Sneddon² (¹Power Energy and Environmental Research Institute; ²Paladina Geoservices)

Theme 5: Geomechanics Case Studies: Spacing, Interference, and Optimization

Room 702/704/706

Co-Chairs: R. Hurt, A. Momin, and Z. Ye

- 8:25 **Introductory Remarks**
8:30 **Interpreting Inter-Well Poroelastic Pressure Transient Data: An Analytical Approach Validated With Field Case Studies:** B. Elliott¹, R. Manchanda², P. Seth², M. Sharma² (¹Devon Energy; ²The University of Texas at Austin)

- 8:55 **Impact of Parent Well Depletion on Stress Changes and Infill Well Completion in Multiple Layers in Permian Basin:** A. Sangnimmuan, J. Li, K. Wu*, S. A. Holditch (Texas A&M University)
9:20 **Impact of Geology and Geomechanics on Stimulated Rock Volume and Productivity in a Multi-Landing Zone Development: A Case Study on the Vaca Muerta:** R. A. Wagner, H. Pourpak, S. Vidal-Gilbert (Total SA)
9:45 **Estimation of 3-D Distribution of Pore Pressure from Surface Drilling Data—Application to Optimal Drilling and Frac Hit Prevention in the Eagle Ford:** J. Kalinec¹, M. Paryani², A. Ouenes² (¹Equinor ASA; ²FracGeo)
10:10 **Refreshment Break**
11:00 **A Comparative Study of Organic Richness and Maturity Impact on Anisotropic Geomechanical Properties in Shale Reservoirs:** A. N. Tutuncu (Colorado School of Mines)
11:25 **Case History Study of Seismic-Driven 3-D MEM Calibrated With 1-D MEMs and Petrophysics in Arkoma Basin, Oklahoma:** V. Swami¹, J. Tavares¹, V. Pandey¹, T. Nekrasova¹, D. Cook², J. Moncayo², D. P. Yale³ (¹CGG; ²Bravo Natural Resources; ³Yale Geomechanics Consulting)

Theme 8: Huff and Puff in the Eagle Ford Basin

Room 705/707/709/711

Co-Chairs: A. Shannon and J. Alvarez

- 8:25 **Introductory Remarks**
8:30 **Compositional Tracking of a Huff-and-Puff Project in the Eagle Ford:** M. L. Carlsen¹, M. Majzoub Dahouk¹, C. H. Whitson¹, B. Younus¹, I. Yusra¹, E. Kerr², J. Nohavitza², M. Thuesen², R. Ambrose², J. H. Drozd², S. Mydland³ (¹Whitson; ²EP Energy; ³NTNU)
8:55 **Quantitative Evaluation of Recovery Mechanisms for Huff-n-Puff Gas Injection in Unconventional Reservoirs:** T. Hoffman, D. Reichhardt (Montana Tech)
9:20 **Experimental and Numerical Investigation of the Diffusion-Based Huff-n-Puff Gas Injection into Lower Eagle Ford Shale Samples:** Q. Fu¹, S. Cudjoe¹, R. Barati¹, J-S. Tsau¹, X. Li¹, K. Peltier², D. Mohrbacher³, A. Baldwin³, B. Nicoud³, K. Bradford³ (¹University of Kansas; ²University of Kansas-Tertiary Oil Recovery Project (TORP); ³Chesapeake Energy)
10:10 **Refreshment Break**
11:00 **Eagle Ford—Introducing the Big Bad Wolf:** S. Malo, N. Volkmer, J. McNamara, E. Amirian (RS Energy Group)
11:25 **Gas Injection EOR in Eagle Ford Shale Gas Condensate Reservoirs:** R. Ganjandesh¹, W. Yu¹, M. Fiallos Torres¹, E. C. Kerr², K. Sepehrnoori¹, R. Ambrose² (¹The University of Texas at Austin; ²EP Energy)
11:50 **An Integrated Pore-Scale Characterization Workflow for Hydrocarbon Gas Huff-and-Puff Injection into the Lower Eagle Ford Shale:** S. Cudjoe¹, R. Barati¹, R. H. Goldstein¹, J-S. Tsau¹, B. Nicoud², K. Bradford², A. Baldwin², D. Mohrbacher² (¹University of Kansas; ²Chesapeake Energy)



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WEDNESDAY TECHNICAL PROGRAM

Special Session: Scratching the Surface: Midstream Challenges and Logistics Solutions in the Permian

Room 708/710/712

Co-Chairs: B. Jeyachandra, K. Richter, and P.B. Kondapi

Please see page 19 for more information on this special session.

- 8:25** **Introductory Remarks**
8:30 **Josh Adler**, Chief Executive Officer, Source Water
8:55 **Brad Wright**, Managing Director, Plains All American
9:20 **Brett Wiggs**, Chief Executive Officer, Oxy
9:45 **Greg P. Niehues**, National Gas Services Group Inc.,

Theme 12: Overcoming Gridlock: Unlocking the Midstream Bottleneck

Room 708/710/712

Co-Chairs: B. Jeyachandra, K. Richter, and P.B. Kondapi

- 10:55** **Introductory Remarks**
11:00 **Monetizing Growing Permian Basin Supply: A Holistic Midstream Approach to Understanding Potential Bottlenecks:** E. Kim (Wood Mackenzie)
11:25 **Haynesville Midstream: Capacity Constraints and Differential Pressures:** S. Kainz (RS Energy Group)
11:50 **Leak Detection in Wet Natural Gas Transportation Within Hilly Terrain Pipelines:** T. Lunger, H. Karami (University of Oklahoma)

Exhibit Hall Stations

Theme 14: Well Design and Drilling Advancements and Methods

Exhibit Hall Station A

Co-Chairs: M. Poole and E. Lunn

- 9:40** **Introductory Remarks**
9:45 **Unconventional Advanced High Performance Micromaterial for Enhancing Drilling Mud Cleaning Performance of Spacer Fluids in Horizontal Wells: From Laboratory Development to** C. McNeilly, W. Iqbal, J. Lacorte, E. Gonzalez, M. Embrey (BJ Services)
10:10 **A Methodology for Selecting Optimal Pipe Rocking Regimes During Slide Drilling:** I. Rostagno¹, P. Ashok¹, E. van Oort¹, M. Yi¹, B. Potash², C. Mullin² (¹The University of Texas at Austin; ²Pioneer Natural Resources)
10:35 **An Integrated Workflow to Detect and Avoid Shallow Karst Drilling Hazards in the Delaware Basin:** P. Hoang, K. A. Soofi, P. R. Boyle, B. Lascaud (ConocoPhillips)
11:25 **Subseismic Fault Identification Using the Fault Likelihood Attribute: Application to Geosteering in the DJ Basin:** R. Harris¹, K. Bracken¹, B. Miller², S. Angelovich², T. O'Toole^{*2} (¹Anadarko Petroleum Corporation; ²Halliburton)

Theme 9: Reserves Estimation and Production Forecasting: Performance Prediction and Future of Production Forecasting

Exhibit Hall Station B

Co-Chairs: X. Wu, B. Yuan, and D. Illk

- 9:40** **Introductory Remarks**
9:45 **Shale Gas Well Production Optimization using Modified RTA Method – Prediction of the Life of a Well:** S. Baek¹, I. Y. Akkutlu¹, B. Lu², S. Ding², W. Xia³ (¹Texas A&M University; ²Sinopec Research Institute for Petroleum Engineering; ³Harding Shelton Petroleum Engineering & Technology Limited)

- 10:10** **A New Method for Production Forecasting: Predictive Analytics Versus Conventional Methods in the Montney:** M. Popp, A. Renaud (geoLOGIC Systems Ltd)
11:00 **Decline Curve Analysis in Unconventional Reservoirs Using a Variable Power Law Model: A Barnett Shale Example:** U. O. Odi, S. Bacho, J. Daal (Devon Energy)
11:25 **Kerogen-Bitumen-Porosity Nexus: Insights from Multi-Basinal Collocated SEM-Optical Light Petrography:** S. Kelly¹, M. Johnston¹, B. Lee², R. San Martin³ (¹ConocoPhillips; ²Innova Plex; ³FIB-X)

Theme 2: Advanced Formation Evaluation VII: Integration, Saturation, and Recovery

Exhibit Hall Station C

Co-Chairs: A. Webster and S. Perry

- 9:40** **Introductory Remarks**
9:45 **Experimental and Molecular Insights on Sieving of Hydrocarbon Mixtures in Niobrara Shale:** Z. Zhu¹, C. Fang², R. Qiao², X. Yin¹, E. Ozkan¹ (¹Colorado School of Mines; ²Virginia Polytechnic Institute and State University)
10:10 **A Methodology Using Triple-Combo Well Logs to Quantify In-Place Hydrocarbon Volumes for Inorganic and Organic Elements in Unconventional Reservoirs, Recognizing Differing Reservoir Wetting Characteristics—An Example from the Niobrara of the Denver-Julesburg Basin, Colorado:** M. Holmes, A. M. Holmes, D. I. Holmes (Digital Formation)
10:35 **Delaware Basin Trapped Fluid Analysis: An Evaluation of Resource Potential Utilizing Cuttings:** M. Polowczyk¹, J. Chao¹, D. Hall¹, R. Lishansky¹, R. Moore¹, N. Mozhaeva¹, S. Cowan¹, D. Groves¹, S. Feiner², W. Phiukhao³ (¹Schlumberger Reservoir Laboratories; ²University of Minnesota Minneapolis; ³TPS Enterprises LLC)

Theme 8: Flow Conformance and Sweep Efficiency Strategies

Exhibit Hall Station D

Co-Chairs: B. Dindoruk and D. Maity

- 9:40** **Introductory Remarks**
9:45 **Micromodel Study of the Impacts of Fracture Connectivity and Wettability on Matrix Sweep Efficiency:** Y. Du¹, A. Mehmani¹, K. Xu², M. T. Balhoff¹, C. Torres-Verdin¹ (¹The University of Texas at Austin; ²Massachusetts Institute of Technology)
10:10 **A Pore-Scale Study of Non-Aqueous Foam for Improving Hydrocarbon Miscible Flooding in Water-Sensitive Tight Oil Formations:** C-Y. Sie, Q. P. Nguyen (The University of Texas at Austin)
10:35 **Process-Based Microfluidics: Tools for Quantifying the Impact of Reservoir Quality on Recovery Factor:** L. Mejia, A. Mehmani, M. Balhoff, C. Torres-Verdin (The University of Texas at Austin)
11:00 **Experimental Investigation on the Application of Biological Enzymes for EOR in Shale Formations:** S. Salahshoor, S. A. Gomez Mejia, M. Fahes (The University of Oklahoma)
11:25 **A Rapid Evaluation Technique of Sweep Efficiency for Tight Oil Reservoirs Recovered With Gas Flooding:** L. Mu¹, X. Liao¹, X. Zhao¹, J. Zhang², J. Zou¹, H. Chu¹, X. Shang¹ (¹China University of Petroleum (Beijing); ²CNPC Engineering Technology R&D Company Limited)
11:50 **Impact of Polymer or Surfactant Flooding on Permafrost Stability:** D. Wang, S. Namie, C. Li (University of North Dakota)
D. Tovar¹ (¹Schlumberger; ²MDC Texas Energy)





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WEDNESDAY TECHNICAL PROGRAM

Wednesday Afternoon

Session Rooms

Theme 1: Operators' Forum: Case Studies Highlighting Completion Optimization With an International Focus

Four Seasons Ballroom 1

Co-Chairs: H. Sun and D. Livasy

- 1:45 **Introductory Remarks**
1:50 **HPHT Horizontal Multistage Completion Operations Planning and Execution:** M. H. Jubran (Saudi Aramco)
2:40 **Starting Development in an Unconventional Play in Argentina: The Road to First FID:** H. Mandler, E. Kruijs, P. Fita, Y. Gonzalez (Shell International Exploration and Production)
3:05 **Understanding 3-D Distribution of Organic-Rich Units in the Vaca Muerta Formation:** R. F. Dominguez, M. Di Benedetto (YPF SA)

Theme 10: Furthering the Understanding of Fracture Behavior, Flowback, and SRVs II

Four Seasons Ballroom 2/3

Co-Chairs: C. Yang and D. Riestenberg

- 1:45 **Introductory Remarks**
1:50 **Modeling Frac-Hits Using Dynamic Microseismicity-Constrained Enhanced Fracture Regions:** P. M. Moradi, D. Angus (ESG Solutions)
2:15 **SRV Characterization and Optimum Lateral Well Spacing Study of a Two-Well Pad in the Midland Basin:** J. Park¹, C. Janova² (¹Texas A&M University; ²Parsley Energy)
2:40 **Multigeneration Section Development in the Wolfcamp Delaware Basin:** R. Malpani¹, F. Alimahomed¹, C. Defeu¹, L. Green², A. Alimahomed², L. Valle², D. Entzminger², D. Tovar¹ (¹Schlumberger; ²MDC Texas Energy)

Theme 13: Emerging Unconventional Plays and Novel Applications of Technology II

Four Seasons Ballroom 4

Co-Chairs: R. Fulks and M. Tobey

- 1:45 **Introductory Remarks**
1:50 **Making the Connection Between Conventional and Unconventional:** N. Masood¹, O. Ishteiwy¹, W. Dawson¹, M. Rylance¹, S. Al Harrasi¹, D. White¹, S. Kurniadi² (¹BP; ²Schlumberger)
2:15 **Integrated Approach to Assess Storage and Productivity Potential of a Frontier Unconventional Shale Oil Play in a Rift Basin, Lower Barmer Hill Formation, Barmer Basin, India:** S. Dutta¹, R. K. Yadav¹, J. Dolson², U. Kuila¹, B. Naidu¹, A. Mandal¹, S. Dasgupta¹, P. Mishra¹, P. Mohapatra¹ (¹Cairn Oil & Gas, Vedanta Ltd.; ²DSP Geosciences and Associates LLC)
2:40 **Geology of the Turner Sandstone, Finn Shurley Field, Powder River Basin, Wyoming:** S. Sonnenberg (Colorado School of Mines)

Theme 9: Reserves Estimation and Production Forecasting III: Reserves Implications

Room 108/110/112

Co-Chairs: J. Ciezobka, F. Male, and K. Srinivasan

- 1:45 **Introductory Remarks**
1:50 **Assessment of the Reliability of Reserves Estimates of Public Companies in the U.S. and Canada:** D. M. Gomez, W. J. Lee, D. A. McVay* (Texas A&M University)

- 2:15 **Production Diagnostic Type Curves for Performance Evaluation: An Extension of the Universal Type Curve Approach:** K. Joshi, V. Muralidharan, D. Patel (Occidental Petroleum Corporation)
2:40 **Estimating Reserves and Tracking the Classification of Reserves and Resources Other Than Reserves (ROTR) in Unconventional Reservoirs:** N. Moridis¹, J. Lee¹, V. Jochen¹, W. Sim², T. Blasingame¹ (¹Texas A&M University; ²Aucerna)
3:05 **Powder River Basin Production Review from 2011 Through 2018: How Refinements in Completions and Operations Have Led to Increasing Production in the Upper Cretaceous Formations of Campbell and Converse Counties, Wyoming:** J. Kegel, T. Mirenda, N. Lenz, J. Keay, C. O'Reilly (TGS)

Panel: Data Analytics Update for Unconventionals—What's Missing? Room 601/603

Moderator: A. Lerza

Please see page 14 for more information on this panel.

- 1:45 **Introductory Remarks**
1:50 **Sebastien Matringe**, Operator – Hess, Principal Advisor, Subsurface Technology, Hess
2:00 **Patrick Rutty**, Service Company – DrillingInfo, Director of Technical Consulting, DrillingInfo
2:10 **Srikanta Mishra**, Research and Development – Battelle, Senior Research Leader, Battelle Memorial Institute
2:20 **Mariano Garfinkel**, Operator - Marathon Oil, Advanced Analytics Manager, Marathon Oil
2:30 **Tobias Hoeink**, Sr. Director Stimulation Software & Artificial Intelligence
2:40 Moderated Discussion
2:55 Audience Q&A

Theme 3: Rock Quality and Horizontal Strategies and Challenges Room 605/607

Co-Chairs: P. Pedersen and A. Flotron

- 1:45 **Introductory Remarks**
1:50 **Real-Time Target Optimization: Multi-Well Case Study Utilizing While Drilling XRD, XRF, and Mass Spectrometry, Niobrara and Codell Formations, D-J Basin, Colorado:** A. Grau¹, R. Sterling², R. King³, G. Yemidale³ (¹WPX Energy; ²Confluence Resources LP; ³Reservoir Group)
2:15 **Horizontal Targeting Strategies and Challenges: Examples from the Marcellus Shale, Appalachian Basin, USA:** D. R. Blood¹, G. G. Lash², T. E. Cahill¹ (¹EQT; ²SUNY Fredonia)
2:40 **Characterizing Quartz Phases in the Meramec and Osage of the STACK Region Using X-Ray Diffraction:** H. Howe, B. Hollon, R. Schulze, M. King, N. Rasmussen (Weatherford)
3:05 **Outcrop to Subsurface Reservoir Characterization of the Mississippian Sycamore/Meramec Play in the SCOOP Area, Arbuckle Mountains, Oklahoma, USA:** B. M. Milad, R. M. Slatt (University of Oklahoma)

Theme 5: DFNs: From Characterization to Simulation Room 702/704/706

Co-Chairs: A. N. Tutuncu and S. Zheng

- 1:45 **Drill Bit Geomechanics and Fracture Diagnostics Optimize Completions in the Powder River Basin:** E. L. Scott¹, E. Romberg¹, C. Ramos² (¹Fracture ID; ²Core Laboratories)
2:15 **A Geomechanical Approach for Evaluating Hydraulic Stimulation in Complex Stratigraphies:** W. Dershowitz¹, H. Hosseinpour², M. Cottrell³ (¹GeoFractal LLC; ²Golder Associates Inc; ³Golder Associates UK Ltd)





2:40 Experimental and Numerical Investigation of the Slippage of a Natural Fracture Resulting from an Approaching Hydraulic Fracture: L. Hu¹, B. Hemami¹, A. Ghassemi¹, S. Riley², D. Kahn², D. Langton² (¹The University of Oklahoma; ²Devon Energy)

3:05 Laboratory Investigation of Leak-Off During Hydraulic Fracturing into Bedding Interfaces: B. Abell¹, P. Xing¹, A. Bunger^{2,3}, E. Dontsov¹, R. Suarez-Rivera¹ (¹W.D. Von Gonten Laboratories; ²Department of Chemical and Petroleum Engineering, University of Pittsburgh; ³University of Pittsburgh)

Special Session: Best of SPWLA

Room 705/707/709/711

Co-Chairs: K. Yared, S. Fluckiger and P. Kaufman

Please see page 14 for more information on this special session.

1:45 Introductory Remarks

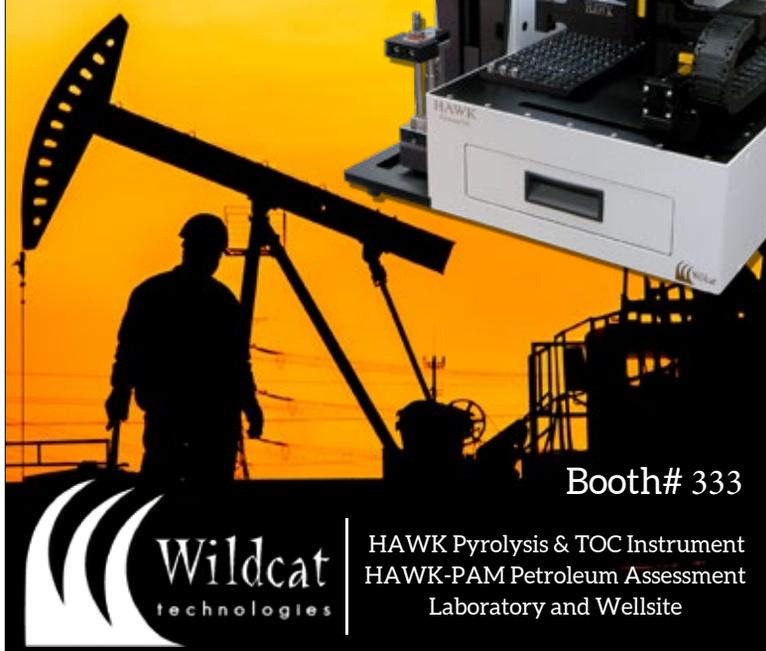
1:50 Improved Analysis of NMR Measurements in Organic-Rich Mudrocks Through Quantifying Hydrocarbon-Kerogen Interfacial Relaxation Mechanisms as a Function of Thermal Maturity: S. Tandon, Z. Heidari* (The University of Texas at Austin)

2:15 Thermal Maturity-Adjusted Logging in Shale: P. R. Craddock, R. E. Lewis*, J. Miles, A. E. Pomerantz (Schlumberger)

2:40 Investigation of Physical Properties of Hydrocarbons in Unconventional Mudstones Using Two-Dimensional NMR Relaxometry: H. Xie, Z. Gan (Corelab)

3:05 High-Resolution Mineralogy Modeling – A Case Study in the Vaca Muerta Formation, Neuquen Basin, Argentina: H. Zhang, N. Alarcon, G. Crespo, D. Licitra, C. Hernandez (Baker Hughes)

Re-think your Pyrolysis



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Name	Day	Time	Location	Session Title
Abell, Bradley	Wed	3:05pm	702/704/706	Theme 5: DFNs: From Characterization to Simulation
Acuna, Jorge	Tue	4:45pm	Four Seasons 2/3	Special Session: Hydraulic Fracture Test Sites
Adekunle, Olawale	Mon	3:05pm	Exhibit Hall Station D	Theme 5: DFNs, Microseismic, and Geophysical Case Studies
Adler, Josh	Wed	8:30am	708/710/712	Special Session: Scratching the Surface: Midstream Challenges and Logistics Solutions in the Permian
Ahmad, Faraj	Tue	10:35am	Exhibit Hall Station A	Theme 11: Proppant Transport and Novel Technologies
Alansari, Yahya	Mon	10:35am	Exhibit Hall Station B	Theme 13: Emerging Unconventional Plays and Novel Applications of Technology I
Alimahomed, Farhan	Mon	3:30pm	Exhibit Hall Station D	Theme 5: DFNs, Microseismic, and Geophysical Case Studies
Al-Makrami, Adnan	Tue	1:50pm	708/710/712	Theme 11: Proppant Placement and Novel Completion Technologies
Almasoodi, Mouin	Mon	2:40pm	Four Seasons 4	Theme 9: Reserves Estimation and Production Forecasting: Well Spacing and Interference Impact
Althaus, Stacey	Tue	8:55am	Four Seasons 4	Theme 2: Advanced Formation Evaluation III: Nuclear Magnetic Resonance
Anderson, Iain	Tue	2:40pm	702/704/706	Theme 5: Rock Characterization for Fracturing and Drilling
Aniemena, Chigozie	Mon	3:55pm	Four Seasons 4	Theme 9: Reserves Estimation and Production Forecasting: Well Spacing and Interference Impact
Arbus, Tristan	Mon	4:45pm	708/710/712	Theme 14: Improving Drilling Performance and Design Using New Technologies, Methods, and Computing Power
Arias Medina, Leonardo	Mon	2:15pm	Exhibit Hall Station D	Theme 5: Geomechanics Integration and Rock Characterization
Arief, Ibnu Hafidz	Tue	4:20pm	108/110/112	Theme 7: Machine Learning, AI, and Big Data IV
Artus, Vincent	Tue	8:30am	108/110/112	Reserve 9: Reserves Estimation and Production Forecasting II: Performance Prediction and Future of Production Forecasting
Ashok, Pradeepkumar	Wed	10:10am	Exhibit Hall Station A	Theme 14: Well Design and Drilling Advancements and Methods
Ba Geri, Mohammed	Mon	4:45pm	Exhibit Hall Station A	Theme 8: Nanofluids, Surfactants, and Friction Reducers
Ba Geri, Mohammed	Tue	11:00am	Exhibit Hall Station A	Theme 11: Proppant Transport and Novel Technologies
Baek, Seunghwan	Wed	9:45am	Exhibit Hall Station B	Theme 9: Reserves Estimation and Production Forecasting: Performance Prediction and Case Studies
Bagci, Ali	Mon	4:20pm	Exhibit Hall Station B	Theme 15: License to Operate: Stakeholder Management and Social Performance I
Bagci, Ali	Tue	11:15am	605/607	Theme 10: Shale Facilities and Artificial Lift Optimization
Bakay, Alexander	Wed	11:00am	108/110/112	Theme 7: Machine Learning, AI, and Big Data V
Barati, Reza	Wed	9:20am	705/707/709/711	Theme 8: Huff and Puff in the Eagle Ford Basin
Battalora, Linda	Mon	11:20am	601/603	Panel: Sustainable Development Goals for Unconventionals
Bazzell, Aaron	Tue	11:25am	708/710/712	Theme 6: Geochemistry of Oil-Prone and Gas-Prone Unconventional Resource Plays
Ben, Yuxing	Tue	1:50pm	108/110/112	Theme 7: Machine Learning, AI, and Big Data IV
Bennett, Shawn	Mon	9:10am	Mile High Ballroom	Opening Plenary Session: State-of-Play in Unconventional Reservoirs—The Quest for Value
Bennett, Shawn	Tue	1:50pm	Four Seasons 2/3	Special Session: Hydraulic Fracture Test Sites
Bessa, Fadila	Mon	4:45pm	Four Seasons 2/3	Theme 5: Frac Modeling I: From Physics to Field
Bievenour, April	Mon	4:20pm	108/110/112	Theme 3: Depositional Processes of Unconventional Reservoirs II
Binder, Gary	Mon	1:50pm	702/704/706	Theme 4: Reservoir Characterization Using DAS/DTS Fiber Optics
Birdwell, Justin	Tue	9:45am	708/710/712	Theme 6: Geochemistry of Oil-Prone and Gas-Prone Unconventional Resource Plays
Birdwell, Justin	Tue	4:45pm	601/603	Theme 3: Imaging Unconventional Reservoir Rocks at Various Scales
Blood, David	Wed	2:15pm	605/607	Theme 3: Rock Quality and Horizontal Strategies and Challenges
Braint, Rob	Tue	11:20am	601/603	Panel: Recent Experiences with Induced Seismicity
Brenner, Jay	Tue	9:10am	601/603	Panel: Hydraulic Fracturing and its Effects on Well Integrity
Bryndzia, L.	Wed	9:20am	605/607	Theme 6: Oil/Gas/Water: Fluid-Fluid, Fluid-Rock Interactions and Chemostratigraphy I
Bunger, Andrew	Wed	8:30am	Four Seasons 2/3	Special Session: Best of ARMA
Burton, Mac	Tue	3:55pm	Four Seasons 1	Theme 1: Operators' Forum: Case Studies Highlighting Modeling and Technologies
Butler, Shane	Mon	2:15pm	Exhibit Hall Station B	Theme 3: Geoscience Investigations of Unconventionals
Byrnes, Alan	Tue	2:15pm	601/603	Theme 3: Imaging Unconventional Reservoir Rocks at Various Scales
Cambre, Elizabeth	Mon	3:05pm	Exhibit Hall Station A	Theme 8: Nanofluids, Surfactants, and Friction Reducers
Campos, Mario	Wed	11:00am	Four Seasons 2/3	Theme 10: Furthering the Understanding of Fracture Behavior, Flowback, and SRVs I
Cannon, Dave	Mon	11:00pm	Four Seasons 1	Panel: Unconventional Play Development – A View from the Front Lines
Carlsen, Mathias	Wed	8:30am	705/707/709/711	Theme 8: Huff and Puff in the Eagle Ford Basin
Carr, David	Tue	10:50am	108/110/112	Theme 3: Depositional Processes of Unconventional Reservoirs I
Carr, Timothy	Mon	11:40am	702/704/706	Theme 4: Optimizing Geophysical Data for Unconventionals
Carvajal-Ortiz, Humberto	Tue	11:00am	Four Seasons 4	Theme 2: Advanced Formation Evaluation III: Nuclear Magnetic Resonance
Chavarria, J. Andres	Mon	2:15pm	702/704/706	Theme 4: Reservoir Characterization Using DAS/DTS Fiber Optics
Chen, Chaohui	Tue	9:20am	108/110/112	Reserve 9: Reserves Estimation and Production Forecasting II: Performance Prediction and Future of Production Forecasting
Chen, Zeliang	Mon	5:10pm	601/603	Theme 2: Advanced Formation Evaluation II: Flow Capacity and Permeability
Chen, Zhiming	Tue	11:25am	Four Seasons 1	Theme 1: Operators' Forum: Case Studies Optimizing Well Performance
Chhatre, Shreerang	Mon	3:55pm	605/607	Theme 10: Flow, Production, and Phase Behavior for Tight Oil and Shale Oil/Shale Gas Reservoir Systems
Chin, Adam	Tue	11:50am	108/110/112	Reserve 9: Reserves Estimation and Production Forecasting II: Performance Prediction and Future of Production Forecasting
Chopra, Satinder	Tue	8:55am	702/704/706	Theme 4: Deriving Rock Properties from Seismic
Chopra, Satinder	Tue	2:40pm	Exhibit Hall Station B	Theme 4: Novel Techniques in Geophysics for Reservoir Characterization



Chopra, Satinder	Tue	5:10pm	108/110/112	Theme 7: Machine Learning, AI, and Big Data IV
Chun, Troy	Tue	11:25am	Exhibit Hall Station A	Theme 11: Theme 11: Proppant Transport and Novel Technologies
Ciezobka, Jordan	Tue	2:00pm	Four Seasons 2/3	Special Session: Hydraulic Fracture Test Sites
Cipolla, Craig	Mon	2:00pm	601/603	Panel: Value Proposition of Microseismic Mapping of Hydraulic Fractures
Clarke, Robert	Mon	11:00am	Exhibit Hall Station A	Theme 9: Reserves Estimation and Production Forecasting: Case Studies
Clarkson, Christopher	Tue	1:50pm	605/607	Theme 10: Reservoir Modeling for Unconventionals: Bringing Together Data, Disciplines, and Design
Colborne, Jacqueline	Mon	3:55pm	108/110/112	Theme 3: Depositional Processes of Unconventional Reservoirs II
Cook, Scott	Mon	10:50am	702/704/706	Theme 4: Optimizing Geophysical Data for Unconventionals
Cotrell, David	Tue	11:50am	705/707/709/711	Theme 5: Frac Modeling II: From Physics to Field
Couples, Gary	Mon	1:50pm	Exhibit Hall Station D	Theme 5: DFNs, Microseismic, and Geophysical Case Studies
Cox, Denise	Mon	10:50am	601/603	Panel: Sustainable Development Goals for Unconventionals
Craig, David	Wed	11:40am	601/603	Panel: Next Technology Frontier in Unconventionals – What's Needed Versus What's in Development
Cramer, Dave	Wed	8:55am	Four Seasons 2/3	Special Session: Best of ARMA
Crandall, Dustin	Tue	9:45am	Four Seasons 2/3	Theme 3: Aligning Geoscience and Engineering Workflows
Cronkwright, David	Wed	11:50am	Four Seasons 4	Theme 2: Advanced Formation Evaluation V: Data Integration and Modeling
Cudjoe, Sherifa	Tue	10:10am	Exhibit Hall Station C	Advanced Formation Evaluation VI: Nuclear Magnetic Resonance, Permeability, and Recovery
Cudjoe, Sherifa	Wed	11:00am	605/607	Theme 6: Oil/Gas/Water: Fluid-Fluid, Fluid-Rock Interactions and Chemostratigraphy I
Cudjoe, Sherifa	Wed	11:50am	705/707/709/711	Theme 8: Huff and Puff in the Eagle Ford Basin
Cunningham, Susan	Mon	8:50am	Mile High Ballroom	Opening Plenary Session: State-of-Play in Unconventional Reservoirs—The Quest for Value
Curtis, A	Tue	11:25am	Four Seasons 2/3	Theme 3: Aligning Geoscience and Engineering Workflows
Curtis, Mark	Tue	1:50pm	601/603	Theme 3: Imaging Unconventional Reservoir Rocks at Various Scales
Dande, Suresh	Mon	10:50am	708/710/712	Theme 11: New Technology Applications for Unconventionals
Dang, Son	Tue	9:20am	Four Seasons 4	Theme 2: Advanced Formation Evaluation III: Nuclear Magnetic Resonance
Deighton, Ian	Mon	11:00am	Exhibit Hall Station C	Theme 4: Source Rock Characterization Using Geophysics
Denne, Richard	Mon	2:15pm	108/110/112	Theme 3: Depositional Processes of Unconventional Reservoirs II
Dershowitz, William	Wed	2:15pm	702/704/706	Theme 5: DFNs: From Characterization to Simulation
Dick, Michael	Tue	11:50am	Four Seasons 4	Theme 2: Advanced Formation Evaluation III: Nuclear Magnetic Resonance
Dominguez, Ricardo	Wed	3:05pm	Four Seasons 1	Theme 1: Operators' Forum: Case Studies with an International Focus
Dommissie, Robin	Tue	8:55am	Four Seasons 2/3	Theme 3: Aligning Geoscience and Engineering Workflows
Dong, Xiaohu	Mon	2:40pm	605/607	Theme 10: Flow, Production, and Phase Behavior for Tight Oil and Shale Oil/Shale Gas Reservoir Systems
Donovan, Art	Mon	1:50pm	108/110/112	Theme 3: Depositional Processes of Unconventional Reservoirs II
Dontsov, Egor	Tue	9:20am	705/707/709/711	Theme 5: Frac Modeling II: From Physics to Field
Dreyer, Daniel	Tue	4:45pm	708/710/712	Theme 11: Proppant Placement and Novel Completion Technologies
Du, Yujing	Wed	9:45am	Exhibit Hall Station D	Theme 8: Flow Conformance and Sweep Efficiency Strategies
Dubois, Paul	Tue	11:10am	601/603	Panel: Recent Experiences with Induced Seismicity
Duman, Ryan	Wed	9:20am	601/603	Theme 15: License to Operate: Stakeholder Management and Social Performance II
Dutta, Sandipan	Wed	2:15pm	Four Seasons 4	Theme 13: Emerging Unconventional Plays and Novel Applications of Technology II
Dye, Natasha	Tue	11:00am	Four Seasons 1	Theme 1: Operators' Forum: Case Studies Optimizing Well Performance
Edman, Janell	Mon	11:25am	Exhibit Hall Station C	Theme 4: Source Rock Characterization Using Geophysics
Edwards, Jason	Tue	3:30pm	Exhibit Hall Station A	Theme 2: Advanced Formation Evaluation VIII: Integration of Geomechanics in Petrophysical Analysis
Eichmann, Shannon	Tue	4:20pm	Four Seasons 4	Theme 2: Advanced Formation Evaluation IV: Saturation, Volumes, and Recovery
Elliott, Brendan	Wed	8:30am	702/704/706	Theme 5: Geomechanics Case Studies: Spacing, Interference, and Optimization
Enick, Robert	Tue	9:45am	Exhibit Hall Station A	Theme 11: Proppant Transport and Novel Technologies
Escobar Gomez, Juan	Mon	3:30pm	Exhibit Hall Station D	Theme 5: Geomechanics Integration and Rock Characterization
Ettehadtavakkol, Amin	Tue	2:15pm	Four Seasons 4	Theme 2: Advanced Formation Evaluation IV: Saturation, Volumes, and Recovery
Euzen, Tristan	Mon	4:45pm	705/707/709/711	Theme 6: Time Lapse Geochemistry and In Situ Versus Produced Fluids
Evans, Kate	Tue	11:40am	108/110/112	Theme 3: Depositional Processes of Unconventional Reservoirs I
Feng, Pan	Mon	3:30pm	Exhibit Hall Station B	Theme 3: Geoscience Investigations of Unconventionals
Feng, Pan	Tue	2:15pm	Exhibit Hall Station A	Theme 2: Advanced Formation Evaluation VIII: Integration of Geomechanics in Petrophysical Analysis
Fenton, Zach	Wed	11:00am	Four Seasons 1	Theme 1: Operators' Forum: Case Studies from Geology to Completions
Fisher, Aaron	Mon	5:10pm	Four Seasons 1	Theme 1: Operators' Forum: Case Studies for the Midland Basin in Texas
Fleckenstein, William	Tue	8:50am	601/603	Panel: Hydraulic Fracturing and its Effects on Well Integrity
Flotron, Alyssa	Mon	4:45pm	108/110/112	Theme 3: Depositional Processes of Unconventional Reservoirs II
French, Marsha	Tue	3:55pm	601/603	Theme 3: Imaging Unconventional Reservoir Rocks at Various Scales
French, Samuel	Tue	1:50pm	Four Seasons 1	Theme 1: Operators' Forum: Case Studies Highlighting Modeling and Technologies
Fry, Matt	Tue	8:30am	Four Seasons 1	Theme 1: Operators' Forum: Case Studies Optimizing Well Performance
Gale, Julia	Tue	2:25pm	Four Seasons 2/3	Special Session: Hydraulic Fracture Test Sites
Galvis-Portilla, Henry	Tue	2:40pm	Exhibit Hall Station A	Theme 2: Advanced Formation Evaluation VIII: Integration of Geomechanics in Petrophysical Analysis
Ganjdanesh, Reza	Wed	11:25am	705/707/709/711	Theme 8: Huff and Puff in the Eagle Ford Basin
Gao, Qian	Tue	11:25am	705/707/709/711	Theme 5: Frac Modeling II: From Physics to Field
Gao, Yanlin	Mon	10:50am	705/707/709/711	Theme 8: Case Studies in IOR/EOR Field Pilots

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Gao, Yanling	Mon	11:40am	708/710/712	Theme 11: New Technology Applications for Unconventionals Panel: Data Analytics Update for Unconventionals – What’s Missing? Opening Plenary Session: State-of-Play in Unconventional Reservoirs–The Quest for Value Theme 5: Frac Modeling I: From Physics to Field Theme 7: Machine Learning, AI, and Big Data IV Theme 10: Shale Facilities and Artificial Lift Optimization Theme 7: Machine Learning, AI, and Big Data I Theme 3: Imaging Unconventional Reservoir Rocks at Various Scales Theme 6: Geochemistry, Chemistratigraphy & Fluid/Rock Interaction Theme 3: Rock Quality and Horizontal Strategies and Challenges Theme 14: Improving Drilling Performance and Design Using New Technologies, Methods, and Computing Power Theme 5: Rock Characterization for Fracturing and Drilling Theme 2: Advanced Formation Evaluation II: Flow Capacity and Permeability Theme 14: Improving Drilling Performance and Design Using New Technologies, Methods, and Computing Power Theme 10: Shale Facilities and Artificial Lift Optimization Theme 7: Machine Learning, AI, and Big Data III Panel: Next Technology Frontier in Unconventionals – What’s Needed Versus What’s in Development Theme 6: Time Lapse Geochemistry and In Situ Versus Produced Fluids Theme 6: Geochemistry, Chemistratigraphy & Fluid/Rock Interaction Theme 5: Frac Modeling I: From Physics to Field Theme 2: Advanced Formation Evaluation VIII: Integration of Geomechanics in Petrophysical Analysis Panel: Unconventional Play Development – A View from the Front Lines Theme 4: Source Rock Characterization Using Geophysics Advanced Formation Evaluation VI: Nuclear Magnetic Resonance, Permeability, and Recovery Theme 4: Novel Techniques in Geophysics for Reservoir Characterization Theme 11: Proppant Placement and Novel Completion Technologies Theme 3: Aligning Geoscience and Engineering Workflows Theme 2: Advanced Formation Evaluation I Advanced Formation Evaluation VI: Nuclear Magnetic Resonance, Permeability, and Recovery Theme 2: Advanced Formation Evaluation IV: Saturation, Volumes, and Recovery Theme 2: Advanced Formation Evaluation V: Data Integration and Modeling Special Session: Best of SPWLA Opening Plenary Session: State-of-Play in Unconventional Reservoirs–The Quest for Value Advanced Formation Evaluation VI: Nuclear Magnetic Resonance, Permeability, and Recovery Panel: Recent Experiences with Induced Seismicity Theme 7: Machine Learning, AI, and Big Data V Theme 14: Well Design and Drilling Advancements and Methods Panel: Data Analytics Update for Unconventionals - What’s Missing Theme 8: Huff and Puff in the Eagle Ford Basin Opening Plenary Session: State-of-Play in Unconventional Reservoirs–The Quest for Value Theme 2: Advanced Formation Evaluation VII: Integration, Saturation, and Recovery Theme 6: Time Lapse Geochemistry and In Situ Versus Produced Fluids Theme 10: Furthering the Understanding of Fracture Behavior, Flowback, and SRVs I Panel: Sustainable Development Goals for Unconventionals Theme 3: Rock Quality and Horizontal Strategies and Challenges Theme 5: DFNs: From Characterization to Simulation Theme 8: Nanofluids, Surfactants, and Friction Reducers Special Session: Best of ARMA Theme 5: Rock Characterization for Fracturing and Drilling Theme 3: Aligning Geoscience and Engineering Workflows Theme 1: Operators’ Forum: Case Studies Optimizing Well Performance Theme 10: Pressure Transient Testing, DFIT, and Well Testing Theme 6: Geochemistry, Chemistratigraphy & Fluid/Rock Interaction Theme 1: Operators’ Forum: Case Studies for the Midland Basin in Texas Theme 6: Geochemistry, Chemistratigraphy and Fluid/Rock Interaction Theme 4: Reservoir Characterization Using DAS/DTS Fiber Optics Theme 4: Novel Techniques in Geophysics for Reservoir Characterization Theme 8: EOR in the Permian Basin Theme 11: Proppant Placement and Novel Completion Technologies Theme 4: Deriving Rock Properties from Seismic Theme 10: Reservoir Modeling for Unconventionals: Bringing Together Data, Disciplines, and Design Theme 14: Improving Drilling Performance and Design Using New Technologies, Methods, and Computing Power
Garfinkel, Mariano	Wed	2:20pm	601/603	
Gaspar, Clay	Mon	8:40am	Mile High Ballroom	
Ghassemi, Ahmad	Mon	1:50pm	Four Seasons 2/3	
Glaser, Carrie	Tue	3:55pm	108/110/112	
Gomez Diaz de Bonilla, Saul	Tue	11:40am	605/607	
Gong, Yiwen	Mon	11:25am	Exhibit Hall Station D	
Gonzalez Tomassini, Federico	Tue	2:40pm	601/603	
Goodman, Angela	Tue	4:45pm	Exhibit Hall Station C	
Grau, Anne	Wed	1:50pm	605/607	
Gremillion, Joseph	Mon	4:20pm	708/710/712	
Gu, Ming	Tue	4:45pm	702/704/706	
Guedez, Andreina	Mon	4:45pm	601/603	
Gul, Sercan	Mon	2:40pm	708/710/712	
Gupta, Abhishek	Tue	10:50am	605/607	
Gupta, Ishank	Tue	11:00am	Exhibit Hall Station B	
Gupta, Sidd	Wed	11:30am	601/603	
Hale, Michael	Mon	5:10pm	705/707/709/711	
Hammon, Helen	Tue	3:05pm	Exhibit Hall Station C	
Han, Gang	Mon	4:20pm	Four Seasons 2/3	
Han, Heyleem	Tue	4:20pm	Exhibit Hall Station A	
Harman, Charlie	Mon	11:20pm	Four Seasons 1	
Harris, Nicholas	Mon	11:50am	Exhibit Hall Station C	
Hart, Nicole	Tue	11:00am	Exhibit Hall Station C	
Hashish, Refaat	Tue	2:15pm	Exhibit Hall Station B	
Haustveit, Kyle	Tue	2:40pm	708/710/712	
Hawkins, William	Tue	8:30am	Four Seasons 2/3	
Heidari, Zoya	Mon	11:40am	Four Seasons 4	
Heidari, Zoya	Tue	9:45am	Exhibit Hall Station C	
Heidari, Zoya	Tue	5:10pm	Four Seasons 4	
Heidari, Zoya	Wed	8:30am	Four Seasons 4	
Heidari, Zoya	Wed	1:50pm	705/707/709/711	
Henderson, Mike	Mon	8:30am	Mile High Ballroom	
Henkel-Holan, Kristina	Tue	11:25am	Exhibit Hall Station C	
Hennings, Peter	Tue	11:30am	601/603	
Herrero Clar, Francisco	Wed	8:55am	108/110/112	
Hoang, Phuong	Wed	10:35am	Exhibit Hall Station A	
Hoeink, Tobias	Wed	2:30 PM	Room 601/603	
Hoffman, Todd	Wed	8:55am	705/707/709/711	
Holly, Brad	Mon	9:00am	Mile High Ballroom	
Holmes, Michael	Wed	10:10am	Exhibit Hall Station C	
Horsfield, Brian	Mon	4:20pm	705/707/709/711	
Hossain, Sabbir	Wed	11:25am	Four Seasons 2/3	
House, Nancy	Mon	11:10am	601/603	
Howe, Haleigh	Wed	2:40pm	605/607	
Hu, Lianbo	Wed	2:40pm	702/704/706	
Hu, Yuntao	Mon	1:50pm	Exhibit Hall Station A	
Hurt, Robert	Wed	9:20am	Four Seasons 2/3	
Hussain, Maaruf	Tue	4:20pm	702/704/706	
Hutto, Ere	Tue	11:00am	Four Seasons 2/3	
Ibrahim, Ahmed	Tue	9:45am	Four Seasons 1	
Jacques, Antoine	Tue	9:45am	605/607	
Jain, Jinesh	Tue	2:15pm	Exhibit Hall Station C	
Jayaram, Vikram	Mon	4:20pm	Four Seasons 1	
Jew, Adam	Tue	3:30pm	Exhibit Hall Station C	
Jin, Ge	Mon	4:20pm	702/704/706	
Jin, Ge	Tue	1:50pm	Exhibit Hall Station B	
Jin, Jacob Xiaochun	Tue	4:45pm	705/707/709/711	
Jin, Liang	Tue	4:20pm	708/710/712	
Jones, Drew	Tue	9:45am	702/704/706	
Jones, Matthew	Tue	4:45pm	605/607	
Jordan, Andrew	Mon	3:55pm	708/710/712	



Joshi, Krunal	Wed	2:15pm	108/110/112	Theme 9: Reserves Estimation and Production Forecasting: Reserves Implications
Jubran, Mohammed	Wed	1:50pm	Four Seasons 1	Theme 1: Operators' Forum: Case Studies with an International Focus
Jweda, Jason	Mon	2:40pm	705/707/709/711	Theme 6: Time Lapse Geochemistry and In Situ Versus Produced Fluids
Kainz, Stephanie	Wed	11:25am	708/710/712	Theme 12: Overcoming Gridlock: Unlocking the Midstream Bottleneck
Kalinec, James	Wed	9:45am	702/704/706	Theme 5: Geomechanics Case Studies: Spacing, Interference, and Optimization
Kamali, Amirhossein	Tue	1:50pm	Exhibit Hall Station C	Theme 5: Frac Modeling III: From Physics to Field
Kamruzzaman, Asm	Tue	11:15am	108/110/112	Theme 3: Depositional Processes of Unconventional Reservoirs I
Kanwar, Jyoti Swarup Singh	Tue	9:45am	Four Seasons 4	Theme 2: Advanced Formation Evaluation III: Nuclear Magnetic Resonance
Kashinath, Abishek	Mon	10:35am	Exhibit Hall Station C	Theme 4: Source Rock Characterization Using Geophysics
Katiyar, Amit	Mon	11:15am	705/707/709/711	Theme 8: Case Studies in IOR/EOR Field Pilots
Kaufman, Peter	Mon	5:10pm	Four Seasons 2/3	Theme 5: Frac Modeling I: From Physics to Field
Kegel, Jason	Wed	3:05pm	108/110/112	Theme 9: Reserves Estimation and Production Forecasting: Reserves Implications
Kelly, Shaina	Wed	11:25am	Exhibit Hall Station B	Theme 9: Reserves Estimation and Production Forecasting: Performance Prediction and Case Studies
Khaksarfard, Reza	Mon	2:40pm	Four Seasons 1	Theme 7: Machine Learning, AI, and Big Data II
Khanal, Aaditya	Mon	5:10pm	Four Seasons 4	Theme 9: Reserves Estimation and Production Forecasting: Well Spacing and Interference Impact
Khodabakhshnejad, Arman	Mon	11:25am	Exhibit Hall Station A	Theme 9: Reserves Estimation and Production Forecasting: Case Studies
Kiani, Mojtaba	Mon	11:40am	705/707/709/711	Theme 8: Case Studies in IOR/EOR Field Pilots
Kim, Eugene	Wed	11:00am	708/710/712	Theme 12: Overcoming Gridlock: Unlocking the Midstream Bottleneck
Kim, Hyunmin	Tue	2:15pm	605/607	Theme 10: Reservoir Modeling for Unconventionals: Bringing Together Data, Disciplines, and Design
King, George	Tue	8:30am	601/603	Panel: Hydraulic Fracturing and its Effects on Well Integrity
Klie, Hector	Tue	4:45pm	108/110/112	Theme 7: Machine Learning, AI, and Big Data IV
Knaup, Amanda	Tue	4:20pm	601/603	Theme 3: Imaging Unconventional Reservoir Rocks at Various Scales
Kokoski, Dale	Mon	11:10pm	Four Seasons 1	Panel: Unconventional Play Development – A View from the Front Lines
Kornacki, Alan	Tue	8:30am	708/710/712	Theme 6: Geochemistry of Oil-Prone and Gas-Prone Unconventional Resource Plays
Kosanke, Tobi	Tue	5:10pm	601/603	Theme 3: Imaging Unconventional Reservoir Rocks at Various Scales
Krumm, Robert	Wed	11:25am	Four Seasons 4	Theme 2: Advanced Formation Evaluation V: Data Integration and Modeling
Kumar, Abhash	Tue	2:50pm	Four Seasons 2/3	Special Session: Hydraulic Fracture Test Sites
Langton, David	Mon	2:40pm	702/704/706	Theme 4: Reservoir Characterization Using DAS/DTS Fiber Optics
Laudon, Carolan	Wed	9:45am	108/110/112	Theme 7: Machine Learning, AI, and Big Data V
Le Calvez, Joel	Mon	2:15pm	Exhibit Hall Station D	Theme 5: DFNs, Microseismic, and Geophysical Case Studies
Lee, Jonathan	Mon	10:50am	Four Seasons 4	Theme 2: Advanced Formation Evaluation I
Lee, W. John	Tue	11:25am	108/110/112	Reserve 9: Reserves Estimation and Production Forecasting II: Performance Prediction and Future of Production Forecasting
Leonard, Raymond	Mon	11:00am	601/603	Panel: Sustainable Development Goals for Unconventionals
Lessenger, Margaret	Wed	9:20am	Four Seasons 4	Theme 2: Advanced Formation Evaluation V: Data Integration and Modeling
Leung, Juliana	Mon	4:20pm	605/607	Theme 10: Flow, Production, and Phase Behavior for Tight Oil and Shale Oil/Shale Gas Reservoir Systems
Levon, Taylor	Tue	1:50pm	Exhibit Hall Station A	Theme 2: Advanced Formation Evaluation VIII: Integration of Geomechanics in Petrophysical Analysis
Levon, Taylor	Tue	3:55pm	605/607	Theme 10: Reservoir Modeling for Unconventionals: Bringing Together Data, Disciplines, and Design
Lewis, Richard	Wed	2:15pm	705/707/709/711	Special Session: Best of SPWLA
Li, Bing	Mon	10:50am	Four Seasons 2/3	Theme 5: Microseismic Interpretation
Li, Chuncheng	Mon	4:20pm	Exhibit Hall Station A	Theme 8: Nanofluids, Surfactants, and Friction Reducers
Li, Ning	Mon	2:15pm	Four Seasons 4	Theme 9: Reserves Estimation and Production Forecasting: Well Spacing and Interference Impact
Li, Qingyun	Tue	3:55pm	Exhibit Hall Station C	Theme 6: Geochemistry, Chemistratigraphy and Fluid/Rock Interaction
Li, Tianyu	Tue	4:20pm	Four Seasons 2/3	Special Session: Hydraulic Fracture Test Sites
Liborius-Parada, Andreina	Tue	11:50am	708/710/712	Theme 6: Geochemistry of Oil-Prone and Gas-Prone Unconventional Resource Plays
Lim, Un Young	Tue	11:50am	702/704/706	Theme 4: Deriving Rock Properties from Seismic
Lim, Un Young	Tue	3:05pm	Exhibit Hall Station B	Theme 4: Novel Techniques in Geophysics for Reservoir Characterization
Liu, Guoqing	Tue	2:40pm	Exhibit Hall Station C	Theme 5: Frac Modeling III: From Physics to Field
Liu, Huihai	Mon	3:55pm	601/603	Theme 2: Advanced Formation Evaluation II: Flow Capacity and Permeability
Lougheed, Dylan	Tue	8:55am	108/110/112	Reserve 9: Reserves Estimation and Production Forecasting II: Performance Prediction and Future of Production Forecasting
Ludwig, Jon	Wed	11:20am	601/603	Panel: Next Technology Frontier in Unconventionals – What's Needed Versus What's in Development
Lunger, Taylor	Wed	11:50am	708/710/712	Theme 12: Overcoming Gridlock: Unlocking the Midstream Bottleneck
Mackey, Justin	Wed	9:45am	605/607	Theme 6: Oil/Gas/Water: Fluid-Fluid, Fluid-Rock Interactions and Chemostratigraphy I
Mahlstedt, Nicolaj	Tue	9:20am	708/710/712	Theme 6: Geochemistry of Oil-Prone and Gas-Prone Unconventional Resource Plays
Maity, Debotyam	Tue	5:10pm	Four Seasons 2/3	Special Session: Hydraulic Fracture Test Sites
Malo, Scott	Wed	11:00am	705/707/709/711	Theme 8: Huff and Puff in the Eagle Ford Basin
Malpani, Raj	Wed	2:40pm	Four Seasons 2/3	Theme 10: Furthering the Understanding of Fracture Behavior, Flowback, and SRVs II
Manchanda, Ripudaman	Tue	2:40pm	605/607	Theme 10: Reservoir Modeling for Unconventionals: Bringing Together Data, Disciplines, and Design

PRESENTER CROSS REFERENCE

Manchanda, Ripudaman	Tue	4:45pm	Exhibit Hall Station C	Theme 5: Frac Modeling III: From Physics to Field
Mandler, Holger	Wed	2:40pm	Four Seasons 1	Theme 1: Operators' Forum: Case Studies with an International Focus
Mao, Shaowen	Tue	10:10am	Exhibit Hall Station A	Theme 11: Proppant Transport and Novel Technologies
Martini, Brigitte	Wed	9:20am	108/110/112	Theme 7: Machine Learning, AI, and Big Data V
Masood, Nabeel	Wed	1:50pm	Four Seasons 4	Theme 13: Emerging Unconventional Plays and Novel Applications of Technology II
Mathis, Rusty	Wed	11:00am	601/603	Panel: Next Technology Frontier in Unconventionals – What's Needed Versus What's in Development
Matringe, Sebastien	Wed	1:50pm	601/603	Panel: Data Analytics Update for Unconventionals – What's Missing?
Maxwell, Shawn	Mon	2:20pm	601/603	Panel: Value Proposition of Microseismic Mapping of Hydraulic Fractures
Mayorga, Justin	Tue	8:55am	705/707/709/711	Theme 5: Frac Modeling II: From Physics to Field
Mazza, Joel	Tue	9:20am	Four Seasons 2/3	Theme 3: Aligning Geoscience and Engineering Workflows
McAdams, Brandon	Mon	2:40pm	Exhibit Hall Station A	Theme 8: Nanofluids, Surfactants, and Friction Reducers
McAllaster, Chad	Mon	10:50am	Four Seasons 1	Panel: Unconventional Play Development – A View from the Front Lines
McClure, Mark	Tue	8:30am	605/607	Theme 10: Pressure Transient Testing, DFIT, and Well Testing
McDowell, Bryan	Mon	1:50pm	Four Seasons 4	Theme 9: Reserves Estimation and Production Forecasting: Well Spacing and Interference Impact
McDowell, Bryan	Tue	2:40pm	Four Seasons 1	Theme 1: Operators' Forum: Case Studies Highlighting Modeling and Technologies
McVay, Duane	Wed	1:50pm	108/110/112	Theme 9: Reserves Estimation and Production Forecasting: Reserves Implications
Meek, Robert	Mon	3:55pm	702/704/706	Theme 4: Reservoir Characterization Using DAS/DTS Fiber Optics
Mejia, Lucas	Wed	10:35am	Exhibit Hall Station D	Theme 8: Flow Conformance and Sweep Efficiency Strategies
Milad, Benmadi	Wed	3:05pm	605/607	Theme 3: Rock Quality and Horizontal Strategies and Challenges
Milkov, Alexei	Tue	2:40pm	Exhibit Hall Station C	Theme 6: Geochemistry, Chemistratigraphy & Fluid/Rock Interaction
Miller, Quin	Tue	2:15pm	708/710/712	Theme 11: Proppant Placement and Novel Completion Technologies
Miller, Randall	Wed	11:50am	108/110/112	Theme 7: Machine Learning, AI, and Big Data V
Mishra, Srikanta	Tue	10:35am	Exhibit Hall Station B	Theme 7: Machine Learning, AI, and Big Data III
Mishra, Srikanta	Wed	2:10pm	601/603	Panel: Data Analytics Update for Unconventionals – What's Missing?
Mohanty, Kishore	Tue	2:40pm	705/707/709/711	Theme 8: Gas Injection EOR
Mohanty, Kishore	Tue	3:55pm	708/710/712	Theme 11: Proppant Placement and Novel Completion Technologies
Molina, Oscar	Mon	4:45pm	Four Seasons 4	Theme 9: Reserves Estimation and Production Forecasting: Well Spacing and Interference Impact
Molinari, Diego	Wed	8:30am	108/110/112	Theme 7: Machine Learning, AI, and Big Data V
Mondal, Somnath	Tue	4:20pm	Four Seasons 1	Theme 1: Operators' Forum: Case Studies Highlighting Modeling and Technologies
Moradi, Peyman	Wed	1:50pm	Four Seasons 2/3	Theme 10: Furthering the Understanding of Fracture Behavior, Flowback, and SRVs II
Moradi Bidhendi, Mehrnoosh	Tue	3:55pm	705/707/709/711	Theme 8: EOR in the Permian Basin
Moridis, Nefeli	Wed	2:40pm	108/110/112	Theme 9: Reserves Estimation and Production Forecasting: Reserves Implications
Mu, Lingyu	Wed	11:25am	Exhibit Hall Station D	Theme 8: Flow Conformance and Sweep Efficiency Strategies
Myers, Grant	Tue	11:00am	Exhibit Hall Station D	Theme 8: Enhanced Gas Recovery Methods in Unconventionals
Nagel, Neal	Tue	8:40am	601/603	Panel: Hydraulic Fracturing and its Effects on Well Integrity
Neri, Philip	Mon	11:00am	Exhibit Hall Station D	Theme 7: Machine Learning, AI, and Big Data I
Niehues, Greg	Wed	9:45am	708/710/712	Special Session: Scratching the Surface: Midstream Challenges and Logistics Solutions in the Permian
Ning, Samson	Tue	8:55am	Four Seasons 1	Theme 1: Operators' Forum: Case Studies Optimizing Well Performance
Norbeck, Jack	Wed	9:45am	Four Seasons 2/3	Special Session: Best of ARMA
Odi, Uchenna	Wed	11:00am	Exhibit Hall Station B	Theme 9: Reserves Estimation and Production Forecasting: Performance Prediction and Case Studies
Okuno, Ryosuke	Tue	5:10pm	708/710/712	Theme 11: Proppant Placement and Novel Completion Technologies
Ong, Tee Suan	Wed	8:30am	Four Seasons 1	Theme 1: Operators' Forum: Case Studies from Geology to Completions
Ortega Andrade, Jose Alberto	Tue	11:50am	605/607	Theme 10: Pressure Transient Testing, DFIT, and Well Testing
Ortiz, Alberto	Tue	11:00am	708/710/712	Theme 6: Geochemistry of Oil-Prone and Gas-Prone Unconventional Resource Plays
O'Toole, Tom	Wed	11:25am	Exhibit Hall Station A	Theme 14: Well Design and Drilling Advancements and Methods
Ozkan, Erdal	Wed	11:50am	601/603	Panel: Next Technology Frontier in Unconventionals – What's Needed Versus What's in Development
Padin, Anton	Tue	5:10pm	702/704/706	Theme 5: Rock Characterization for Fracturing and Drilling
Pan, Shu	Tue	4:45pm	Four Seasons 4	Theme 2: Advanced Formation Evaluation IV: Saturation, Volumes, and Recovery
Pan, Yuewei	Tue	9:45am	Exhibit Hall Station B	Theme 7: Machine Learning, AI, and Big Data III
Park, Jaeyoung	Tue	3:05pm	Exhibit Hall Station C	Theme 5: Frac Modeling III: From Physics to Field
Park, Jaeyoung	Wed	2:15pm	Four Seasons 2/3	Theme 10: Furthering the Understanding of Fracture Behavior, Flowback, and SRVs II
Paryani, Mohit	Tue	4:20pm	Exhibit Hall Station C	Theme 5: Frac Modeling III: From Physics to Field
Patience, Richard	Tue	8:55am	708/710/712	Theme 6: Geochemistry of Oil-Prone and Gas-Prone Unconventional Resource Plays
Payne, Simon	Tue	11:00am	702/704/706	Theme 4: Deriving Rock Properties from Seismic
Pedersen, Per Kent	Mon	5:10pm	108/110/112	Theme 3: Depositional Processes of Unconventional Reservoirs II
Peng, Sheng	Mon	4:20pm	601/603	Theme 2: Advanced Formation Evaluation II: Flow Capacity and Permeability
Peng, Sheng	Tue	4:20pm	705/707/709/711	Theme 8: EOR in the Permian Basin
Peng, Yi	Mon	11:50am	Exhibit Hall Station D	Theme 7: Machine Learning, AI, and Big Data I
Peng, Yi	Mon	2:40pm	Four Seasons 2/3	Theme 5: Frac Modeling I: From Physics to Field
Pepper, Andrew	Tue	3:55pm	Four Seasons 4	Theme 2: Advanced Formation Evaluation IV: Saturation, Volumes, and



Pernites, Roderick	Wed	9:45am	Exhibit Hall Station A
Perz, Mike	Mon	11:15am	702/704/706
Polowczyk, Marzena	Wed	10:35am	Exhibit Hall Station C
Popielski, Andy	Tue	3:55pm	Exhibit Hall Station A
Popp, Melanie	Wed	10:10am	Exhibit Hall Station B
Pourpak, Hamid	Tue	2:15pm	Four Seasons 1
Ramos-Peon, Alexandre	Mon	10:35am	Exhibit Hall Station A
Rastogi, Ayush	Tue	10:10am	Exhibit Hall Station B
Rateman, Kevin	Wed	9:20am	Four Seasons 1
Recio III, Antonio	Mon	3:55pm	Exhibit Hall Station A
Recio III, Antonio	Wed	11:25am	605/607
Regueira, Teresa	Mon	5:10pm	605/607
Rivero, Jose	Tue	1:50pm	705/707/709/711
Rowe, Harry	Wed	8:30am	605/607
Rueda, Jose	Tue	4:20pm	605/607
Rutty, Patrick	Wed	2:00pm	601/603
Salahshoor, Shadi	Wed	11:00am	Exhibit Hall Station D
Salman, Mohamad	Tue	5:10pm	705/707/709/711
Sanchez, Taylor	Wed	8:55am	601/603
Sayers, Colin	Tue	8:30am	702/704/706
Schmelzl, Eric	Tue	9:00am	601/603
Schubarth, Stephen	Mon	10:35am	Exhibit Hall Station D
Schwartz, Brandon	Tue	10:10am	Exhibit Hall Station D
Scott, Ellen	Wed	1:50pm	702/704/706
Sesetty, Varahanaresh	Tue	8:30am	705/707/709/711
Seth, Puneet	Tue	9:20am	605/607
Sharma, Akash	Wed	8:30am	601/603
Shen, Lingjuan	Mon	2:15pm	Exhibit Hall Station A
Shi, Rui	Tue	10:35am	Exhibit Hall Station C
Shoemaker, Michael	Tue	9:20am	702/704/706
Sicking, Charles	Tue	3:30pm	Exhibit Hall Station B
Siddiqui, Fahd	Mon	4:20pm	Four Seasons 4
Sie, Chao-Yu	Wed	10:10am	Exhibit Hall Station D
Singh, Kriti	Tue	2:15pm	108/110/112
Sinha, Saurabh	Mon	11:15am	Four Seasons 4
Sinkev, Matthew	Mon	11:15am	708/710/712
Skvortsov, Sergey	Wed	9:45am	601/603
Smith, Steve	Tue	1:50pm	Four Seasons 4
Sonnenberg, Stephen	Wed	2:40pm	Four Seasons 4
Sorensen, James	Tue	2:15pm	705/707/709/711
Soroush, Hamed	Mon	2:40pm	Exhibit Hall Station D
Stephenson, Ben	Mon	2:10pm	601/603
Story, Chip	Tue	11:25am	702/704/706
Su, Kun	Tue	1:50pm	702/704/706
Suarez-Rivera, Roberto	Mon	3:55pm	Four Seasons 2/3
Sullivan, Michael	Tue	11:00am	605/607
Swami, Vivek	Wed	11:25am	702/704/706
Symcox, Carl	Mon	3:55pm	705/707/709/711
Takbiri-Borujeni, Ali	Tue	4:20pm	Exhibit Hall Station C
Tamimi, Naser	Mon	2:15pm	Four Seasons 1
Tan, Yunhui	Mon	11:40am	Four Seasons 2/3
Teran, Orlando	Mon	2:40pm	Exhibit Hall Station D
Thorson, Anna	Mon	2:40pm	108/110/112
Tian, Jianwei	Tue	3:55pm	702/704/706
Toth, Randy	Tue	3:30pm	Exhibit Hall Station C
Travers, Patrick	Mon	2:15pm	705/707/709/711
Tripoppoom, Sutthaporn	Wed	11:25am	108/110/112
Tu, Jiawei	Mon	3:30pm	Exhibit Hall Station A
Tutuncu, Azra	Wed	11:00am	702/704/706

Recovery
 Theme 14: Well Design and Drilling Advancements and Methods
 Theme 4: Optimizing Geophysical Data for Unconventionals
 Theme 2: Advanced Formation Evaluation VII: Integration, Saturation, and Recovery
 Theme 2: Advanced Formation Evaluation VIII: Integration of Geomechanics in Petrophysical Analysis
 Theme 9: Reserves Estimation and Production Forecasting: Performance Prediction and Case Studies
 Theme 1: Operators' Forum: Case Studies Highlighting Modeling and Technologies
 Theme 9: Reserves Estimation and Production Forecasting: Case Studies
 Theme 7: Machine Learning, AI, and Big Data III
 Theme 1: Operators' Forum: Case Studies from Geology to Completions
 Theme 8: Nanofluids, Surfactants, and Friction Reducers
 Theme 6: Oil/Gas/Water: Fluid-Fluid, Fluid-Rock Interactions and Chemostratigraphy I
 Theme 10: Flow, Production, and Phase Behavior for Tight Oil and Shale Oil/Shale Gas Reservoir Systems
 Theme 8: Gas Injection EOR
 Theme 6: Oil/Gas/Water: Fluid-Fluid, Fluid-Rock Interactions and Chemostratigraphy I
 Theme 10: Reservoir Modeling for Unconventionals: Bringing Together Data, Disciplines, and Design
 Panel: Data Analytics Update for Unconventionals – What's Missing?
 Theme 8: Flow Conformance and Sweep Efficiency Strategies
 Theme 8: EOR in the Permian Basin
 Theme 15: License to Operate: Stakeholder Management and Social Performance II
 Theme 4: Deriving Rock Properties from Seismic
 Panel: Hydraulic Fracturing and its Effects on Well Integrity
 Theme 7: Machine Learning, AI, and Big Data I
 Theme 8: Enhanced Gas Recovery Methods in Unconventionals
 Theme 5: DFNs: From Characterization to Simulation
 Theme 5: Frac Modeling II: From Physics to Field
 Theme 10: Pressure Transient Testing, DFIT, and Well Testing
 Theme 15: License to Operate: Stakeholder Management and Social Performance II
 Theme 8: Nanofluids, Surfactants, and Friction Reducers
 Advanced Formation Evaluation VI: Nuclear Magnetic Resonance, Permeability, and Recovery
 Theme 4: Deriving Rock Properties from Seismic
 Theme 4: Novel Techniques in Geophysics for Reservoir Characterization
 Theme 9: Reserves Estimation and Production Forecasting: Well Spacing and Interference Impact
 Theme 8: Flow Conformance and Sweep Efficiency Strategies
 Theme 7: Machine Learning, AI, and Big Data IV
 Theme 2: Advanced Formation Evaluation I
 Theme 11: New Technology Applications for Unconventionals
 Theme 15: License to Operate: Stakeholder Management and Social Performance II
 Theme 2: Advanced Formation Evaluation IV: Saturation, Volumes, and Recovery
 Theme 13: Emerging Unconventional Plays and Novel Applications of Technology II
 Theme 8: Gas Injection EOR
 Theme 5: Geomechanics Integration and Rock Characterization
 Panel: Value Proposition of Microseismic Mapping of Hydraulic Fractures
 Theme 4: Deriving Rock Properties from Seismic
 Theme 5: Rock Characterization for Fracturing and Drilling
 Theme 5: Frac Modeling I: From Physics to Field
 Theme 10: Pressure Transient Testing, DFIT, and Well Testing
 Theme 5: Geomechanics Case Studies: Spacing, Interference, and Optimization
 Theme 6: Time Lapse Geochemistry and In Situ Versus Produced Fluids
 Theme 6: Geochemistry, Chemostratigraphy and Fluid/Rock Interaction
 Theme 7: Machine Learning, AI, and Big Data II
 Theme 5: Microseismic Interpretation
 Theme 5: DFNs, Microseismic, and Geophysical Case Studies
 Theme 3: Depositional Processes of Unconventional Reservoirs II
 Theme 5: Rock Characterization for Fracturing and Drilling
 Theme 5: Frac Modeling III: From Physics to Field
 Theme 6: Time Lapse Geochemistry and In Situ Versus Produced Fluids
 Theme 7: Machine Learning, AI, and Big Data V
 Theme 8: Nanofluids, Surfactants, and Friction Reducers
 Theme 5: Geomechanics Case Studies: Spacing, Interference, and

PRESENTER CROSS REFERENCE

Tyrell, Tim	Tue	11:00am	601/603	Optimization
Umholtz, Nicholas	Tue	11:00am	705/707/709/711	Panel: Recent Experiences with Induced Seismicity
Uzun, Ozan	Tue	2:40pm	Four Seasons 4	Theme 5: Frac Modeling II: From Physics to Field
Van Laer, Pierre	Mon	11:25am	Exhibit Hall Station B	Theme 2: Advanced Formation Evaluation IV: Saturation, Volumes, and Recovery
Veselinovic, Dragan	Tue	8:30 AM	Four Seasons 4	Theme 13: Emerging Unconventional Plays and Novel Applications of Technology I
Viens, Christopher	Mon	1:50pm	Exhibit Hall Station B	Theme 2: Advanced Formation Evaluation III: Nuclear Magnetic Resonance
Vittore, Franco	Mon	11:00am	Exhibit Hall Station B	Theme 3: Geoscience Investigations of Unconventionals
Wagner, Roberto	Wed	9:20am	702/704/706	Theme 13: Emerging Unconventional Plays and Novel Applications of Technology I
Wallace, Kerstan	Mon	1:50pm	Four Seasons 1	Theme 5: Geomechanics Case Studies: Spacing, Interference, and Optimization
Walls, Joel	Tue	3:05pm	Exhibit Hall Station A	Theme 7: Machine Learning, AI, and Big Data II
Wang, Dongmei	Wed	11:50am	Exhibit Hall Station D	Theme 2: Advanced Formation Evaluation VIII: Integration of Geomechanics in Petrophysical Analysis
Wang, Haijing	Wed	8:55am	Four Seasons 4	Theme 8: Flow Conformance and Sweep Efficiency Strategies
Wang, Shugang	Tue	3:55pm	Four Seasons 2/3	Theme 2: Advanced Formation Evaluation V: Data Integration and Modeling
Wang, Yang	Mon	3:05pm	Exhibit Hall Station D	Special Session: Hydraulic Fracture Test Sites
Welch, Nathan	Tue	2:15pm	702/704/706	Theme 5: Geomechanics Integration and Rock Characterization
Wiggs, Brett	Wed	9:20am	708/710/712	Theme 5: Rock Characterization for Fracturing and Drilling
Wilcox, David	Mon	1:50pm	708/710/712	Special Session: Scratching the Surface: Midstream Challenges and Logistics Solutions in the Permian
Wilson, Tawnya	Mon	3:55pm	Exhibit Hall Station B	Theme 14: Improving Drilling Performance and Design Using New Technologies, Methods, and Computing Power
Wright, Brad	Wed	8:55am	708/710/712	Theme 15: License to Operate: Stakeholder Management and Social Performance I
Wright, Milly	Wed	8:55am	605/607	Special Session: Scratching the Surface: Midstream Challenges and Logistics Solutions in the Permian
Wright, Shawn	Mon	1:50pm	705/707/709/711	Theme 6: Oil/Gas/Water: Fluid-Fluid, Fluid-Rock Interactions and Chemostratigraphy I
Wu, Kan	Wed	8:55am	702/704/706	Theme 6: Time Lapse Geochemistry and In Situ Versus Produced Fluids
Wu, Sheng	Wed	11:50am	605/607	Theme 5: Geomechanics Case Studies: Spacing, Interference, and Optimization
Xie, Harry	Wed	2:40pm	705/707/709/711	Theme 6: Oil/Gas/Water: Fluid-Fluid, Fluid-Rock Interactions and Chemostratigraphy I
Xiong, Hongjie	Mon	3:55pm	Four Seasons 1	Special Session: Best of SPWLA
Xu, Feng	Mon	2:40pm	Exhibit Hall Station B	Theme 1: Operators' Forum: Case Studies for the Midland Basin in Texas
Yang, Alex	Mon	4:45pm	605/607	Theme 3: Geoscience Investigations of Unconventionals
Yang, Yuhao	Mon	1:50pm	605/607	Theme 10: Flow, Production, and Phase Behavior for Tight Oil and Shale Oil/Shale Gas Reservoir Systems
Ye, Zhi	Mon	11:15am	Four Seasons 2/3	Theme 10: Flow, Production, and Phase Behavior for Tight Oil and Shale Oil/Shale Gas Reservoir Systems
Younus, Bilal	Mon	2:15pm	605/607	Theme 5: Microseismic Interpretation
Yu, Wei	Tue	10:35am	Exhibit Hall Station D	Theme 10: Flow, Production, and Phase Behavior for Tight Oil and Shale Oil/Shale Gas Reservoir Systems
Zabihi Naeini, Ehsan	Wed	11:00am	Four Seasons 4	Theme 8: Enhanced Gas Recovery Methods in Unconventionals
Zapata, Yuliana	Mon	3:05pm	Exhibit Hall Station B	Theme 2: Advanced Formation Evaluation V: Data Integration and Modeling
Zhan, Cheng	Tue	9:45am	108/110/112	Theme 3: Geoscience Investigations of Unconventionals
Zhan, Lang	Tue	8:55am	605/607	Reserve 9: Reserves Estimation and Production Forecasting II: Performance Prediction and Future of Production Forecasting
Zhang, Hao	Wed	3:05pm	705/707/709/711	Theme 10: Pressure Transient Testing, DFIT, and Well Testing
Zhang, Min	Mon	2:15pm	Four Seasons 2/3	Special Session: Best of SPWLA
Zhang, Min	Tue	2:15pm	Exhibit Hall Station C	Theme 5: Frac Modeling I: From Physics to Field
Zhang, Tongwei	Tue	1:50pm	Exhibit Hall Station C	Theme 5: Frac Modeling III: From Physics to Field
Zhang, Yanbin	Tue	11:00am	108/110/112	Theme 6: Geochemistry, Chemostratigraphy and Fluid/Rock Interaction
Zhang, Zhenzihao	Wed	11:50am	Four Seasons 2/3	Reserve 9: Reserves Estimation and Production Forecasting II: Performance Prediction and Future of Production Forecasting
Zheng, Shuang	Tue	9:45am	705/707/709/711	Theme 10: Furthering the Understanding of Fracture Behavior, Flowback, and SRVs I
Zheng, Shuang	Tue	11:25am	605/607	Theme 5: Frac Modeling II: From Physics to Field
Zhou, Hui	Tue	2:40pm	108/110/112	Theme 10: Pressure Transient Testing, DFIT, and Well Testing
Zhu, Jingyi	Tue	9:45am	Exhibit Hall Station D	Theme 7: Machine Learning, AI, and Big Data IV
Zhu, Ziming	Wed	9:45am	Exhibit Hall Station C	Theme 8: Enhanced Gas Recovery Methods in Unconventionals
Zimbrick, Grant	Mon	11:50am	Exhibit Hall Station B	Theme 2: Advanced Formation Evaluation VII: Integration, Saturation, and Recovery
Zoback, Mark	Mon	1:50pm	601/603	Theme 13: Emerging Unconventional Plays and Novel Applications of Technology I
				Panel: Value Proposition of Microseismic Mapping of Hydraulic Fractures



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EXHIBITION

● EXHIBITION HIGHLIGHTS ●

● EXHIBITORS ●

● FLOOR PLANS ●

● U-PITCH ●

● EXHIBITOR DIRECTORY ●

● CORE EXHIBITS ●

EXHIBITION HIGHLIGHTS



Make time to visit the Exhibit Hall, which provides engaging networking opportunities and events designed to turn initial introductions into long-term business relationships as well as providing the latest technologies and product launches in the market.

URTeC Delivers:

- Four Exhibit Hall Technical Sessions
- URTeC Societies Booth and Bookstore (#1533)
- Core Display (#126)
- U-Pitch Presentations, see page 62 for more information

EXHIBITION HOURS (The Exhibit Hall is located on the Upper Level in Hall B/C)

Monday

10:00am–7:00pm

Tuesday

9:00am–6:00pm

Wednesday

9:00am–1:00pm

Monday

- Breakfast Bites with Exhibitors at 10:00am
- Exhibition Paper Presentations all-day
- Core Exhibits all-day
- Refreshment Break at 3:00pm
- Opening Reception at 5:00pm

Tuesday

- Refreshment Breaks at 10:00am and 3:00pm
- Exhibition Paper Presentations all-day
- Core Exhibits all-day
- Networking Reception at 5:00pm

Wednesday

- Refreshment Break at 10:00am
- Exhibition Paper Presentations all morning
- Core Exhibits all morning

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Actenum Corporation.....	1423	Dynamic Graphics, Inc.	935	MicroSeismic/FracRx.....	225
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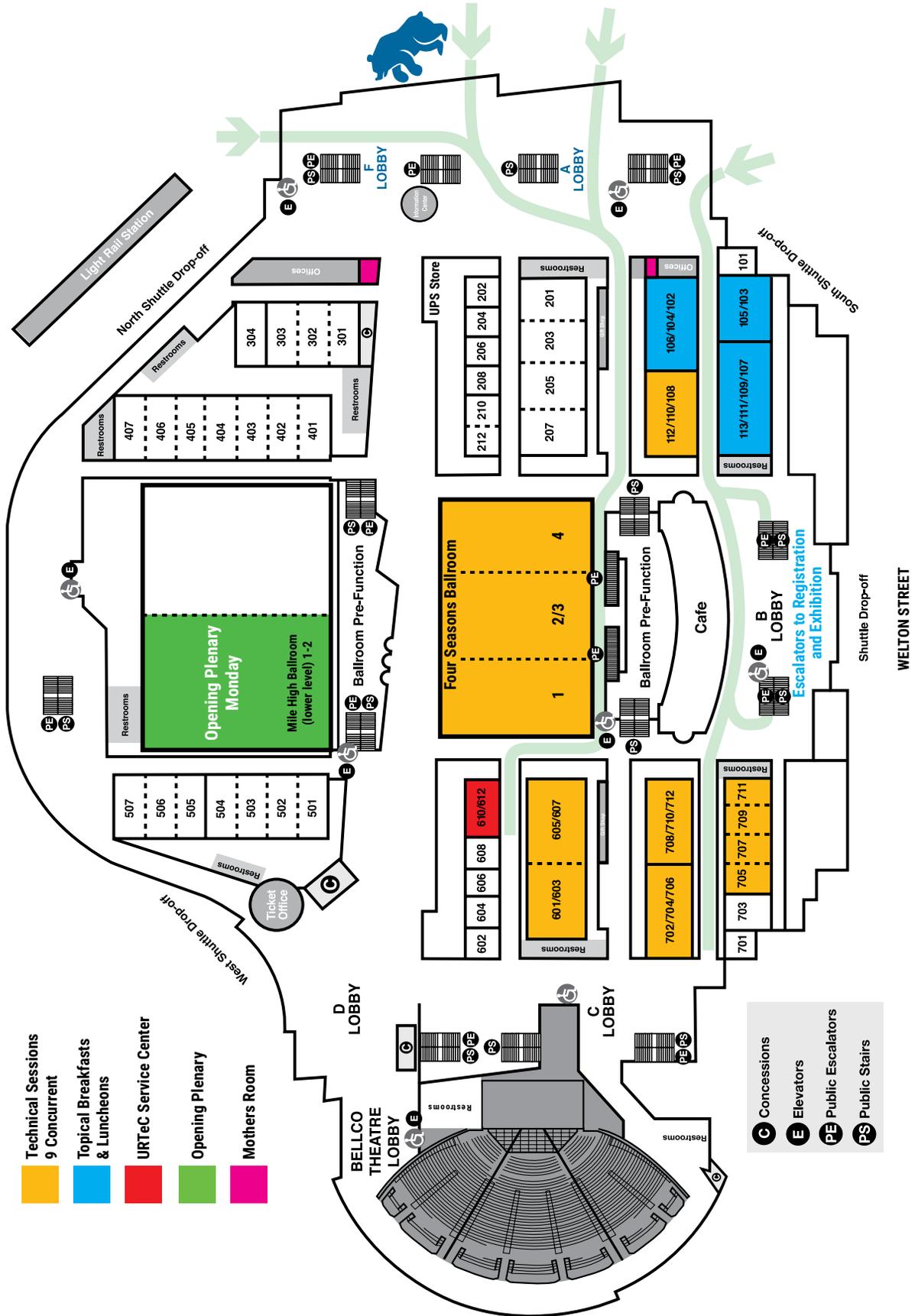
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EXHIBITION FLOOR PLAN



- Available Booths
- Reserved Booths

U-PITCH

MONDAY

Time	Pitch	Speaker
10:30	2-min quick pitches ALL PITCHES	
15 minute pitches		
12:00	Solgix's Novel Dissolvable Frac Plug	Sylvain Bedouet
12:15	DCiii Chemical Injection Automation & Control	Chad Hammond
12:30	Automatic Field Development Platform	Arturo Klie
12:45	Proppant Placement High Performance Fluid	Felipe Guzman
1:00	Zero2 Oxygen eliminator from Natural Gas	Jeff Wilson
1:15	Translating Data into Actions for Operations	Wes Hamer
1:30	OpenSim: Open modeling software platforms	Adolfo Rodriguez
1:45	Seismoelectric ground fluid survey	Chi Dong
2:00	Reservoir Fluid Tracking using DNA	Luke Ursell
2:15	Science-based forecaster	Duc Lam
2:30	Hydrocarbon recovery in aerobic conditions via natural chemical reaction (HCAC)	Ahmet Cemal Saydam
2:45	Next Generation Geomechanics and Fracturing	Hamed Soroush
3:00	Realistic and fast estimation of stress-dependent permeability and porosity in tight hydrocarbon systems	Chris Clarkson
3:15	Terrabotics' PADS™: Petroleum Activity Detection Service	Anna Dawson
3:30	FracOptimal Frac Sleeve	William Fleckenstein
3:45	KAIA nonintrusive Pressure Measurement & Core Flooding System	Umit Kaya
4:00	Converting P&As to P1s in the Vertical Tight Gas Market	Robert Barba
4:15	University of Houston Rock Properties Measurement, Microscopy and Modeling Consortium	Lori Hathon
4:30	Sustainable Drilling Waste Recycling – Recover Energy Services	Shane Kozak
Technology Ventures, Capital, and Commercialization Partners		
4:45	David Forsberg	Ascent Energy Ventures
5:00	Rusty Gilbert, Luis Alcoser, Jessica Parker	Chevron Technology Ventures
5:15	Matt Bell	Premier Oilfield Group
5:30	Sean Ebert	Altira Group
5:45	Charles Ro	The Energy Data Group
6:00	Timothy Smith	PetroLucrum
6:15	Alex Bruns	BHGE
6:30	MEET AND GREET	

TUESDAY

Time	Pitch	Speaker
10:00	2-min pitches ALL PITCHES	
15 minute pitches		
11:30	DeepData engineered completion design	Mike Hogan
11:45	Cordax	Don Herman
12:00	Engage Mobilize digital field management platform	Robert Ratchinsky
12:15	Adaptive, smart, self contained fire fighting system	Ian J. Hanlon
12:30	DelfinSia: unstructured to structured data & M/L decision-making	Alec Walker
12:45	SOTAOG Predictive Analytics IIOT platform	Sarah Tamilarasan
1:00	Expandable Liner For Refracs & Recompletions	Travis Latz
1:15	Realtime 3D pipeline integrity imaging & self-healing for gathering systems pipelines	Nautilus Technologies
1:30	Waterless Fracturing	BongJu Lee
1:45	E-Sal: wettability alteration for boosting production	Geoffrey Thyne
2:00	Mineral Intelligence Platform	Kyle Chapman
2:15	NexRes, Subsurface Logistics & Commerce Platform: EPAM Systems & Sigma Ledger	Ron Clymer
2:30	Petrocubic: oil&gas consultants and software on-demand	Vitaly Meyer
2:45	DarkVision high-resolution downhole imaging technology	Stephen Robinson
3:00	Nesh: The Smart Assistant for Oil and Gas	Sidd Gupta
3:15	Direct Swap commodities hedging optimization platform	Chip Horton
3:30	BEARD: Borehole Enhanced and Automated Realtime Description and other AI tools for geologists	JS Marcil
3:45	Exprodat Unconventionals Analyst - Unconventional well planning and reserve area mapping made easy	Phillip Hicken
Technology Ventures, Capital, and Commercialization Partners		
4:00	Tanya Andrien	DrillingInfo
4:15	Martyn Millwood Hargrave	IkonScience
4:30	Jared Ciferno	DOE NG Infrastructure Program
4:45	Aric Glasser	WPX Energy
5:00	Francisco Ortigosa	Repsol Technology Ventures
5:15	Anupam Singh	Saudi Aramco Energy Ventures
5:30	Ethan Smith	Frost & Sullivan
5:45	Christopher Tolleson	Wipro
6:00	MEET AND GREET	

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The Marcellus Shale Energy and Environment Laboratory (MSEEL) at West Virginia University is funded by the US Department of Energy National Energy Technology Laboratory. MSEEL provides a long-term collaborative field site to develop and validate new knowledge and technology to improve recovery efficiency and minimize environmental implications of unconventional resource development

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