Dear SPE Denver Section Community,

With our first in-person meeting in over 18 months, and our Summer Social gathering, where we recognized the Regional and Sectional Award winners from 2020, the year has gotten off to a great start. Thank you to all who attended these events. You can find the complete list of award winners in this newsletter. Thank you, Justin Knapp and Andrea Ayala, for organizing a great Summer Social. Please check out our social media pages for photos.

These in-person events have been a nice change of pace, allowing us to talk face to face and catch up for lost time

This month we have quite a few events going on.

The Young Professionals will host a Lunch and Learn with Richard Smith, P.E. on October 5th to help us better understand Global Experience and Cross-discipline Knowledge. Richard has 40 years of industry experience and is a wealth of knowledge. Our Completions Study Group will be discussing Fracture Model Calibration with Leen Weijers, VP of Engineering at Liberty Oilfield Services, on October 26th.

Our Members in Transition (MIT) Team will be presenting on Economies and Policy Regarding the Energy Economy on October 14th.

Lastly, our General Meeting will host Dave Cramer, Senior Engineering Fellow with Conoco Phillips Global Completions, on October 20th. Dave will present his Distinguished Lecturer presentation on Integrating Multiple Diagnostic Methods to Determine Limited Entry Treatments. Check out all the details below in our newsletter.

The outreach team will be donating time to Denver Rescue Mission on October 19th and help the Special Olympics on October 30th. If you are interested in helping out, please reach out to us on our web page.

As always, please renew your membership and tell your office neighbor to do the same!

Warmest Regards,
Eric J. Lyche P.E.
SPE Chairperson 2021-2022

October 4, 2021

GENERAL MEETING—Distinguished Lecturer.

Integrating Multiple Diagnostic Methods to Determine Limited Entry Treatment Effectiveness

Dave Cramer, Senior Engineering Fellow, ConocoPhillips and 2021/2022 SPE Distinguished Lecturer.

Denver Athletic Club | 1325 Glenarm Pl, Denver, CO 80204
Wednesday, October 20th, 2021, 11:30 PM – 1:00 PM
Early-bird registration deadline: October 18 at 5:00 PM |
Click "Register Now" for more details.

Tickets:

Members	$35	Students	$15
Non-Members	$45	MiTs	$15
Walk-Ins	$45		

Register Now

Abstract:

This presentation covers the essential elements of limited entry treatment design and reviews a case study of plug-and-perf horizontal well treatments in an unconventional shale play. The case study used various diagnostic methods to understand better and quantify the factors determining limited entry effectiveness. Three diagnostic procedures were implemented: 1.) injection step-down tests and pressure analysis of the fracturing treatments, 2.) video-based perforation imaging, and 3.) distributed acoustic sensing (DAS).
In-situ stress variation and perforation erosion were determined to have significant impacts on treatment allocation among perforation clusters. Other undesirable effects such as heel-side flow preference were also observed. Camera images confirmed proppant-induced erosion at the scale of individual perforations. Measurements from the digital images provided comparison points for predictive software using surface pressure measurements. DAS results provided cluster level proppant distribution values. Correlations were observed between treatment allocation values from DAS data and values derived from perforation friction calculated from Bernoulli's equation using the image-based entry hole diameter data.
The case study results indicated that a staggered perforation design using more gradual changes among clusters would lead to a more balanced treatment. This scenario was evaluated along with a job design featuring high excess perforation friction and an equal number of perforations in each cluster. Fracture-simulation runs indicated that both tactics are likely to improve slurry allocation.
The key takeaway from this lecture is that limited entry treatments can result in effective stimulation along the entire wellbore when the best practices disclosed in the presentation are followed.

Biography:

Dave Cramer is a Senior Engineering Fellow on the ConocoPhillips Global Completions Engineering staff in Houston, TX, specializing in hydraulic fracturing applications. He has published 65 technical papers and holds 2 U.S. patents. He is a registered Professional Engineer in Colorado. Dave has been selected as an SPE Distinguished Lecturer on two occasions, in 2003-2004 and for the

SPE SECTION EXCELLENCE ★★★ AWARD ★★★ 2021

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upcoming 2021-2022 campaign. He was the SPE Region Director for the U.S. and Canada Rocky Mountain region from 2004-2007. His industry recognitions include the SPE International Cedric K. Ferguson Certificate (2020), SPE International Distinguished Member Award (2019), SPE International Completions Optimization and Technologies Award (2011), and SPE Denver Section Henry Mattson Technical Achievement Award (1993).

YOUNG PROFESSIONALS—LUNCH & LEARN

Value in Global Experience and Cross-Discipline Knowledge

Richard W. Smith, Petroleum Engineer.

Liberty Oilfield Services | 950 17th Street. Ste 2400, Denver, CO

Tuesday, October 5th, 2021, 11:30 PM – 1:00 PM

FREE! Pizza and soft drinks will be provided, courtesy of Liberty Oilfield Services.

Register Now

Abstract:

In an open-discussion format, this talk will demonstrate how decades of global experience can inform unique and powerful solutions in Petroleum Engineering. The first portion of the talk will be centered around a major case study from one of the largest oilfields in the western hemisphere, then will be opened to the audience for questions and discussion.
A second example from the Pantano region of Venezuela will also be shown to demonstrate how easy it can be for a major oil and gas operator to lose a billion dollars. This example too will be focused on the lessons learned, the solution applied, and how a diversified and ranging background can be used to prevent catastrophe.

Biography:

Richard W. Smith is a registered professional petroleum engineer with more than 40 years' experience in the Continental and North Slope USA, Canada, Gulf of Mexico, South America, Canada, Europe and the North Sea, the Middle East, Malaysia, Africa, and Kazakhstan. His experience includes operations, integrated studies, reservoir simulation, petroleum economics, evaluation and risk analysis, reserves management, advisory positions to NOCs, IOCs, boards, and executive management, multiple publications in peer reviewed journals including SPE, and a range of consultancy and management positions for various operators and firms globally.

COMPLETIONS STUDY GROUP

Fracture Model Calibration for Conventional and Unconventional Rocks

Leen Weijers, VP of Engineering, Liberty Oilfield Services.

Liberty Oilfield Services | 950 17th Street. Ste. 2400, Denver, CO 80202

October 26th, 2021 11:30AM – 1:00PM

Abstract: Fracture growth modeling has seen two dramatic changes over the last two decades. First, the completions industry found a way to stimulate unconventional rocks economically. Second, fracture modelers “got their eyes” through commercial development and proliferation of direct fracture diagnostics such as micro-seismic fracture mapping.
Direct observations from fracture mapping enabled calibration of fracture models, resulting in a “roller coaster ride” of changes to frac modelers’ understanding of how fractures grow. To explain these observations, modelers incorporated new physical mechanisms – simultaneous growth of multiple fractures, fracture tip effects, and composite layering effects – into their models.
The speaker would like members to take away from this lecture because model calibration has become a vital part of the fracture modeling process, creating ever more realistic fracture growth predictions. Calibration has made fracture models more valuable as tools to evaluate economic tradeoffs, making fracture models more practical tools than ever before.

Speakers:

Dr. Leen Weijers is VP of Engineering at Liberty Oilfield Services and served as its Business Manager at Liberty’s founding. Leen worked at Pinnacle Technologies from 1995 to 2011, where he oversaw the development of a commercial fracture growth simulator, FracproPT. Leen has authored dozens of publications and completed his doctoral research at the Faculty of Mining and Petroleum Engineering at the Delft University of Technology in the Netherlands.
Please note that the Study Group is a bring your own lunch event.

SPE—Denver Chapter 2021-2022 Membership Services Survey!

Denver Section

Help us to serve you better? Tap the picture above to respond! Or contact Eric Lyche directly. Here.

SPE—COMMUNITY OUTREACH

Do you want to teach young students about energy, serve breakfast at the Denver Rescue Mission, or judge science fairs? Join other SPE members in giving back to our community!

Upcoming Events:

SPE Serves Breakfast at the Denver Rescue Mission
Date: October 19th, 2021
Time: 6:15 am – 8:30am
Location: Lawrence Street Community Center | 2222 Lawrence Street, Denver, CO 80205

Limit: 10 volunteers
Free

Description:
Please join SPE Denver in their support of the Denver Rescue

Mission, a nonprofit organization helping the poor and homeless populations of the Denver area at the Denver Coliseum. More than 85% of the services of the Denver Rescue Mission are operated by volunteers, serving people experiencing homelessness and poverty in our community since 1892. Please come and bring friends or family.

Please get in touch with community outreach team member Nico Cosca for more details! nicolas.cosca@hpinc.com

Register Now

Denver Metro Regional Science & Engineering Fair "Speak with a Scientist" Series

Date: October 6th, November 9th, and December 2nd, 2021
Time: 6:00 pm – 7:00 pm
Location: Virtual

Limit: 4 volunteers/session
Free

Description:
Want to help students discover their passion for science? Well, now is your chance! Join DMRSEF for virtual chats with students to talk about your career path, what kind of work you do, and advice on charting their own educational or career paths. Each 1-hour Zoom session will include brief presentations by STEM panelists, followed by time for a question and answer period.

Please get in touch with community outreach team member Julie Tannehill for more details!

Register Now

Women of Mines Alumni Interest Group "Cashing in on Confidence" Event

Date: October 7th, 2021
Time: 3:00 pm – 4:00 pm
Location: Virtual

Limited spot available
Free

Description:
The Colorado School of Mines Women of Mines Alumni Interest Group would like to extend an invite to SPE members to join them for a fantastic virtual event for women in STEM offered and led by Jamie Dandar McKinney, author of Speak Up, Sister.

Please get in touch with community outreach team member Katrina Baer for more details!

Register Now

SPE Volunteers with Special Olympics at Denver Region West Bowling Tournament

Date: October 30th, 2021

Time: 7:00am – 2:30pm (multiple shift times)
Location: Bowlero Lakewood | 945 S Kipling Parkway, Lakewood, CO 80226

Limited volunteers
Free

Description:
Please join SPE Denver in their support of the Special Olympics Colorado at the Denver Bowling West Tournament. Volunteer roles include checking in volunteers, cheering on and helping athletes stay in the rotation, keeping score, and assisting with the awards ceremony! Friends and family are welcome!

Please Contact Community Outreach Team-member, Nico Cosca, for more details!

Register Now

Watch this space for additional upcoming volunteer opportunities in the Denver area.

JOINT EFFORT— SPE Denver Section and Rocky Mountain MiT

There is a new effort afoot to help Rocky Mountain region oil industry professionals affected by the industry downturn that has been amplified by the pandemic. Several professional societies have banded together to launch Rocky Mountain Members in Transition, or MiT. This is an outgrowth of the MiT effort by the Society of Petroleum Engineers (SPE) in Houston that the Association of American Petroleum Geologists (AAPG) has joined. Other associated Rocky Mountain organizations now include SPE, AAPG, COGA, DWLS, RMAG, WEN, WOGA, and the University of Colorado, Denver GEM Program. The purpose is to help association members amid a career transition. For more information, please contact Susan Nash at snash@aapg.org or Terrilyn Olson at tmolson8550@gmail.com.

Upcoming Events:

Members in Transition Webinar: WHERE ARE ECONOMICS AND POLICY MOVING THE ENERGY ECONOMY?

Date: October 14th, 2021
Time: 12:00 pm MDT
Location: Online Webinar via RingCentral

Free

Description:
Join our panel discussion to get an overview of the economics and policy driving economic decisions around energy. Topics to include pros and cons of a carbon tax, electricity markets, and critical minerals. We will get expert opinions on optimizing the economics of the energy transition (how to not pay too much for conversion to renewable sources) and the competition between storage and transmission of electricity. We will also touch on needed skill sets

and job opportunities in the new energy economy. Registration is available on RMAG's website here:

Register Now

Panelists:

Ian Lange is the Mineral and Energy Economics program director and an Associate Professor in the Division of Economics and Business at the Colorado School of Mines. He has previously held positions in the U.S. federal government at the Environmental Protection Agency, Department of Energy, and Council of Economic Advisers.

Steven Dahlke is a senior economist at the Colorado Public Utilities Commission. His work at the PUC has focused on electric resource planning, regional electricity markets, economic development tariffs, and power plant economics. Steven has a Ph.D. in mineral and energy economics from the Colorado School of Mines.

Meaghan Langley is New Energy Business Development Lead for Schlumberger in Denver. She has an M.S. in Mineral and Energy Economics from the Colorado School of Mines.

Please get in touch with Members in Transition SPE liaison Shishir Shivhare for more details! shishir.shivhare@sproule.com