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SPE

The Denver SPE Section would like to wish you all a Merry Christmas and Happy Holidays! Please read below for events happening over the next month.

December 5, 2016

## GENERAL MEETING

**\*\*\*Due to the Holiday Season, the general meeting is on the 2nd Wednesday of December\*\*\***

### Inert Gases in the Rocky Mountains: Implications for Risk, Opportunity, and New Understanding in Natural Gas Reservoirs

*Bryan McDowell, Ph.D. Candidate, Colorado School of Mines*

📍 Denver Athletic Club  
📅 December 14, 2016, 11:30 AM - 1:00 PM

#### Tickets:

Members	\$25
Non-Members	\$35
Walk-Ins	\$45

[Register Now](#)

**Abstract:** Inert gases, such as carbon dioxide, nitrogen, and helium, are a common occurrence within natural gas reservoirs in the Uinta and Piceance basins. These gases can be a nuisance or opportunity depending on field location, zone of interest, and relative concentration. Additionally, their presence or absence may shed light on gas migration within a basin.

The U.S. Federal Government conducted annual helium surveys within the United States from 1917 to 2007. These reports include a wealth of information from natural gas wells, including hydrocarbon compositions, inert gas concentrations, heating values, and specific gravities. This dataset is publically-available, yet largely ignored.

The Piceance and Uinta basins are large natural gas provinces which constitute three percent of domestic gas production. These reservoirs produce a wide range of inert gas concentrations from a variety of plays. Detailed analysis shows distinct differences between discrete stratigraphic intervals and geographic areas. Nitrogen and helium are correlated by multiple linear trends, suggesting nitrogen is the carrier gas for helium and multiple "source rocks" and/or migration pathways are present. Vertical fractionation can be seen by differences between highly-charged Paleozoic rocks versus inert-free Tertiary reservoirs. In Mancos B fields, the presence of helium indicates commingling between distinct petroleum systems; signifying a more significant structural control (i.e., faulting) than previously recognized.

Integrating inert gas relationships and regional geology delineate areas of low and high concentrations, important parameters when exploring for new prospects or planning production facilities. Additionally, the recent rise in helium prices may create new opportunities where methane-rich wells are uneconomic. This study proposes inert gas relationships as a potential tool for natural gas exploration and risk evaluation within the Colorado Plateau and other gas-rich provinces.

**Biography:** Bryan McDowell is a graduate student at Colorado School of Mines currently pursuing a Master's degree in Petroleum Engineering and a Ph.D. in Geology, concurrently. His research focuses on high-field nuclear magnetic resonance in the Eagle Ford Shale and basin- to reservoir-scale fluvial stratigraphy in western Colorado, respectively. He received his Bachelor's in Engineering Geology from Texas A&M University in 2010 and aims to graduate from Mines in December 2017.



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## CONTINUING EDUCATION

## Horizontal Well Completions

Dr. Jennifer L. Miskimins, P.E., Associate Professor and Assistant Department Head, Colorado School of Mines  
 Location: Brown Palace Hotel and Spa, 321 Seventeenth Street, Denver, CO 80202, (303) 297-3111  
 Registration Deadline: Friday, January 6, 2017  
 Course Dates: Tuesday-Wednesday, January 31 - February 1, 2017  
 Course Details: [ContinuingEducation\\_HorizontalWellCompletions.pdf](#)

## Reservoir Engineering Aspects and Forecasting Well Production in Unconventional Resources

Thomas A. Blasingame, Ph.D., P.E., Professor, Texas A&M University  
 Dilhan Ilk, Ph.D., Vice President and Staff Engineer, DeGolyer and MacNaughton  
 Location: Brown Palace Hotel and Spa, 321 Seventeenth Street, Denver, CO 80202, (303) 297-3111  
 Registration Deadline: Friday, February 3, 2017  
 Course Dates: Tuesday-Wednesday, February 21-22, 2017  
 Course Details: [ContinuingEducation\\_ReservoirEngineeringAspects.pdf](#)



You can find a full list of 2016/2017 Continuing Education Courses here: [2016-2017 Denver Section SPE Training Courses.pdf](#)


For questions and further details, contact [Darren O'Brien](#).

## RESERVOIR & COMPLETIONS STUDY GROUP

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### The Wolf of Wall Street - Using Reservoir Engineering Insight to Guide Oil & Gas Investment Decisions

*David Anderson, Director, Anderson Thompson Reservoir Strategies*

 December 15, 2016 | 11:30 AM - 1:00 PM

 Halliburton Offices | 19th Floor Training Room | 1125 17th Street, Denver, CO 80202



**Abstract:** Ever wonder why some operators seem to consistently perform better than others? Does it make you nervous to spend millions of dollars drilling, completing and stimulating wells without being able to predict how they will perform, much better than simply rolling the dice? These and other similar questions are not always front and center in the investment community, but are critical to profitability in the oil patch. The answers are elusive, but to even get close requires some insight into the reservoir and what drives production. There is a sea of oil and gas data that is used to generate research reports and investor materials. Conclusions that are reached from analyzing this data may appear logical, but are often incorrect. This presentation focuses on using reservoir engineering insight to sort through the noise, identify common fallacies and find hidden gems using publicly available oil and gas data. Topics to be presented:


- Robbing PDP to pay PUD- The impact of infill drilling on reserves bookings
- If you torture data enough it will confess to anything- the peak rate fallacy, false causality and statistics 101
- Unrealized potential – using reservoir insight to find hidden upside


## DRILLING STUDY GROUP

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### Improved Wellbore Placement Accrury to Optimize Field Development

*Dr. Stefan Maus, Magnetic Variation Services, LLC*

 December 20, 2016 | 11:30 AM - 1:00 PM

 Schlumberger Offices | Suite 700 | 1675 Broadway, Denver, CO 80202



**Abstract:** Wellbores steered by standard Measurement While Drilling have large uncertainties. Their Ellipses of Uncertainty (EOUs) reach hundreds of feet in diameter at the end of the well. In congested oil fields and closely spaced new developments, low separation factors between adjacent wellbores create significant collision risk. Furthermore, inaccurate wellbore placement leaves resources stranded, reducing overall recovery from the field.

Uncertainties in wellbore placement can be reduced by over 50% using advanced survey management techniques. This effectively doubles the separation factors between adjacent wellbores. Since errors in the magnetic declination directly translate into azimuth errors, the first step is to apply In-Field Referencing (IFR) using local airborne magnetic overflights. The next step is to carry out a Multi-Station Analysis (MSA) of the accelerometer and magnetometer measurements in order to identify and correct for instrument bias and scale errors. Finally, the accuracy of vertical depth can be improved significantly by correcting for BHA Sag, slide/rotate sequences and micro doglegs. Applied operationally in realtime, these techniques reduce collision risk, enable tighter wellbore spacing and provide more accurate TVD for geosteering and integrating LWD data into geomodels.

**Bio:** Dr. Stefan Maus is a Senior Scientist at the University of Colorado, Boulder, where he and his co-workers analyze satellite, airborne, marine and ground magnetic data to model contributions to the geomagnetic field originating in the Earth's core, mantle, crust, oceans and space. His work has supported the Department of Defense (DoD), National Oceanic and Atmospheric Administration (NOAA), Coast Guard, Federal Aviation Association (FAA), NASA and other agencies to meet their needs for accurate geomagnetic reference information for navigation and pointing. Dr. Maus led the development and release of the World Magnetic Model WMM2005 and WMM2010, led the production and release of the International Geomagnetic Reference Field (IGRF2005 and IGRF2010), and developed the Enhanced Magnetic Model (EMM2010), the High Definition Geomagnetic Model (HDGM) and the Earth Magnetic Anomaly Grid (EMAG2). He is the Project Leader of International Standard 16695 - Geomagnetic Reference Models, and he serves on the panel for the 2017-2027 Decadal Survey for Earth Science and Applications from Space of the National Academy of Sciences, Engineering and Medicine.


Dr. Maus holds an advisory role in the *Swarm* triple-satellite constellation mission, which was launched successfully in November 2013. In his previous position at Helmholtz Center Potsdam, he worked as a CHAMP satellite mission scientist specializing in crustal magnetic anomalies. Dr. Maus has published more than 100 peer-reviewed scientific and technical papers and regularly presents at SPE, IADC, SEG, AADE, ISCWSA, URTEC, and other industry and scientific conferences and workshops.


Recognizing the need of the directional drilling industry for more accurate downhole surveying, Dr. Maus founded *Magnetic Variation Services (MagVAR)* in 2010. Responding to oil field customer demand for 24 hour services and support, a Real-Time Operations Center *Surcon* was added in 2014, co-managed by business partner Shawn DeVerse.

*MagVAR* and *Surcon* offer a unique suite of products and services, which improve wellbore positioning, reduce vertical depth errors, shrink ellipses of uncertainty, and increase separation factors between adjacent wells for anti-collision. Providing quality control and confidence in wellbore placement, *MagVAR* and *Surcon* have expanded rapidly, now serving over 60 rigs for more than 50 oil field operators and service companies worldwide.

## PETROBOWL

### PetroBowl Question Writing Session

 December 13, 2016 | 3:00 PM - 5:00 PM

 MHA Petroleum Consultants | 730 17th Street Suite 410, Denver, CO 80202


Calling all volunteers who would like to be involved in writing questions for the North American Petrobowl competition. We are expecting over 50 teams from across North America, with the competition to be held in Denver in February 2017. We will provide references and example questions to help you, all you need to do is turn up to help write questions! For all enquires please contact Deb Ryan, email: [dryan@mhausa.com](mailto:dryan@mhausa.com)


## YOUNG PROFESSIONAL UPDATES

### DECEMBER LUNCH & LEARN

#### Horizontal Well Completions

*Dr. Jennifer L. Miskimins, PhD, P.E., Senior Consulting Engineer, Barree & Associates*

 December 14, 2016 | 11:30 AM - 1:00 PM


 Liberty Oilfield Services | 950 17th Street Suite 2000, Denver, CO 80202

Dr. Jennifer L. Miskimins, PhD, P.E., is a Senior Consulting Engineer with Barree & Associates in Lakewood, Colorado, where she specializes in stimulation treatment design and analysis, as well as teaches a variety of short courses. Prior to joining Barree & Associates, she was an Associate Professor in the Petroleum Engineering Department at the Colorado School of Mines. Dr. Miskimins holds B.S., M.S., and Ph.D. degrees in Petroleum Engineering. She is a member of SPE, AAPG and RMAG, and currently serves as the Production & Operations Technical Director on the SPE International Board of Directors.

If you've ever been to one of Dr. Miskimins' talks / classes, you know this will be a valuable session. **RSVP to Anne Becker** ([anne.becker@qepres.com](mailto:anne.becker@qepres.com)) by 1:00 PM Tuesday, December 13<sup>th</sup> – lunch will be provided.

### SPE – YP HOLIDAY PARTY

Ugly Sweater Technical Symposium

 December 14, 2016

 Stout Street Social | 1400 Stout Street, Denver, CO 80202

Join friends, contacts, colleagues, and new connections to celebrate 2016. Wear your best ugly sweater and enjoy a couple drinks, appetizers, networking, and holiday cheer with the group.

## 2017 SNEAK PEAK

Add these dates to your calendar today!

- **January Lunch & Learn:** Wednesday, January 11, 2017, 11:30 AM – 1:00 PM
- **SPE – YP Hockey Night:** Thursday, January 12, 2017 (thanks to RockPile Energy Services for their suite donation; sign-up email coming later this month)
- **February Lunch & Learn:** Wednesday, February 8, 2017, 11:30 AM – 1:00 PM
- **3<sup>rd</sup> Annual SPE – YP Spring Fling Ski Trip:** February 10 – 12, 2017, Copper Mountain (sign-up details and sponsorship opportunities coming soon)

## SPE AWARD NOMINATIONS

### Applaud excellence in the E&P industry by nominating a colleague for an annual award given by the Society of Petroleum Engineers.

SPE Awards recognize expertise and contributions to the upstream oil and gas industry.

Awards will be presented at the regional and international levels for:

- Technical contributions
- Professional excellence
- Career achievement
- Service to colleagues
- Industry leadership
- Public service

On-line regional award nomination process only takes 15-20 minutes! PLEASE think of someone who deserves recognition for their outstanding work in the E&P industry and visit [www.spe.org/awards](http://www.spe.org/awards) today!

You will also see international awards listed at this link. Please consider nominating a colleague for an international award as well.

**Nominations will be accepted November 15, 2016 – February 15, 2017.**

### Society of Petroleum Engineers - Denver Section

#### Americas

222 Palisades Creek Dr.  
Richardson, TX 75080-2040 USA

#### Asia Pacific

Level 35, Gardens South Tower  
Mid Valley City, Lingkaran Syed Putra  
59200 Kuala Lumpur, Malaysia

#### Europe

1st Floor, Threeways House  
40/44 Clipstone Street  
London W1W 5DW UK

#### Middle East

Fortune Towers, 31st Floor  
Offices 3101/2, JLT Area  
P.O. Box 215959, Dubai, UAE

+1.972.952.9393 | E-mail |

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