

## *President's Letter*

This is my final letter to the SPEE membership as the 2014 SPEE President. My goodness, time flies when you are having fun, and it has been a fantastic year for SPEE. As I reflect on the year, I realize that there have been a number of impactful evolutions for our Society.

We are embarking on a change of leadership at the Reserves Definitions Committee (RDC) Chair position. After nearly eight years as the Chairperson, **Tim Smith** is moving to a committee member role on the RDC. Tim has worked tirelessly on behalf of the SPEE and says that his greatest accomplishment as Chair of the RDC has been the “elevation of recognition and ultimate respect of SPEE as a contributing society to the reserves industry.” He attributes much of this success to the constructive and impactful integration with SPE OGRC on PRMS, the Canadian regulatory agency with development of COGEH, and developed relationships with AAPG. From my perspective, Tim’s leadership and tenacity have elevated SPEE’s impact worldwide, from local legislative initiatives in Texas and Louisiana to his contributions at the UNECE EGRC. Tim has managed to promote and elevate the involvement and impact of the SPEE RDC across various industry initiatives (PRMS, Monograph 3 & 4, COGEH). Tim Smith, thank you for your long service and highest standards in professionalism. Personally, thank you for your contagious energy and attitude towards ‘Petroleum Economic Evaluation’ initiatives and our Society.

Taking his place as the RDC Chair is **Rod Sidle**. Rod has been a member of SPEE since 2006 and has 35 years of experience with Shell including extensive experience in SEC disclosures and reporting. In addition to his experience with Shell, Rod also worked at Oxy and Sheridan Production Company, a private E&P company. Throughout his career, Rod has maintained a focus on reserves. He also has experience teaching reserves, first at Shell, then Oxy and also through a two-year teaching position with the Petroleum Department at Texas A&M. He has extensive experience with SEC and PRMS reserve definitions and classifications, and has incorporated his knowledge through all facets of public reporting and bank reporting requirements. As Rod will tell you, he



has a strong sense of service to the industry, and as such, wants to share knowledge and information for all to benefit. Previously, Rod has also volunteered as a member of the SPE Oil and Gas Reserves Committee (OGRC). We are very fortunate to have Rod at the helm of SPEE’s most impactful and noteworthy committees. Welcome, Rod!

The Technical Training Committee, headed by **Jennifer Fitzgerald**, has enabled smooth coordination of SPEE Chapters hosting various training sessions. In 2014, the SPEE Technical Training Committee helped coordinate two Monograph 3 Training Courses. One course was hosted by **Gary Hunter** associated with the Oklahoma City Chapter. The other course was hosted by **David Wozniak** in Charleston, West Virginia, in a developing area which is targeted to be one of the SPEE’s next new chapters in formation. The acknowledgement of these courses wouldn’t be complete without recognition of **Russell K. Hall**, Monograph 3 Instructor, who continues to support SPEE and the dissemination of Monograph 3 information. Thank you to all for your support. Please contact Jennifer Fitzgerald if you would like to coordinate a training session in your neighborhood.

I’d also like to acknowledge the efforts of **Scott Stinson**, longtime SPEE member, who is sponsoring the formation of the Northern Rockies SPEE Chapter. Scott has recruited 10 members who have agreed to represent the formation of the chapter as Charter Members. The first meeting will be January 15, 2015, when the SPEE ExCom and BOD meets in Billings, Montana, to award the Charter and to attend the first

## 2014 Officers and Directors

### Executive Committee

President ..... Samantha Holroyd (Houston)  
Vice President..... Gary Gonzenbach (Central Texas)  
Secretary-Treasurer ..... Dee Patterson (Dallas)  
Past-President.....Richard Krenek (Dallas)

### Directors

Jennifer Fitzgerald (Houston) Simon McDonald (Europe)  
Brent Hale (Dallas) Floyd Siegle (Calgary)  
Don Jacks (Oklahoma City) Curt Taylor (Houston)  
Letha Lencioni (Denver) Mike White (Denver)  
Rod Sidle (Director-at-Large)(Houston)

### Bylaws Committees

Chair of Past Presidents' Council.....Marshall Watson  
Qualifications ..... Phil Kandel  
Committee: Steve Blair, Tim Gilblom, and Richard Rowe  
Nominating ..... Richard Krenek  
Grievance .....David Gold  
Committee: Frank Molyneaux and Dan Olds  
Reserves Definitions.....Rod Sidle  
Committee: Russ Long, S. Tim Smith, Stuart Filler, and John Etherington

### Individual Appointments

Ethics .....Tom Collier  
Evaluation Parameters Survey .....Dee Patterson  
Fair Market Value.....D. Russell Long  
Internet .....Mike White  
Membership..... Donald C. Jacks  
Newsletter Coordinator ..... Richard J. Miller  
Communications.....George Schaefer  
Production Tax Summary and University Interface .....Marshall Watson  
Recommended Evaluation Practices.....Daniel R. Olds  
Annual Meeting Advance Planning .....Barry Ashton  
Professional Registration ..... Marcus Snyder  
Monograph 3 - Evaluation of Resource Plays ..... Russell K. Hall  
Monograph 4 - Unconventional Developed Reserves .....John P. Seidle  
Technical Training.....Jennifer Fitzgerald  
SPE OGRC Oil and Gas Reserves Committee Observer ..... Ron Harrell  
JCORET (Joint Committee on Reserves Evaluator Training ..... Rod Sidle  
COGEH (Canadian Oil and Gas Evaluation Handbook)..... Robin Bertram  
UNECE Expert Group on Resource Classification .....S. Tim Smith

## Chapter Officers - 2014

### Calgary

Chairman – Doug Wright  
Vice Chairman –  
Secretary – Floyd Williams  
Treasurer – Gary Metcalfe  
Membership – Mark Ireland

### California

Chairman - Brad DeWitt  
Vice Chairman – Rick Finken  
Secretary-Treasurer - Barry Evans  
Membership - John Davis

### Central Texas

Chairman – Joe Harris  
Vice Chairman –  
Secretary –  
Treasurer – Gary Gonzenbach  
Membership –

### Dallas

Chairman - Brent Hale  
Vice Chairman – Bill Gross  
Secretary - Alan Farquharson  
Treasurer - Joe Young  
Membership –

### Denver

Chairman – Fred LeGrand  
Vice Chairman - Steve Enger  
Secretary-Treasurer – Andrew Forcina  
Membership - John Wright

### Europe

Chairman – Martin Hubbig  
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Membership – Bob Harrison

### Houston

Chairman – Anna Hardesty  
Vice Chairman – Lucy King  
Secretary-Treasurer – Steve Davis  
Program Chairman – David Nordt

### Midland

Chairman – Robert Green  
Vice Chairman –  
Secretary-Treasurer – Gail Hankinson  
Membership Chairman – Russell Hall

### Oklahoma City

Chairman – Don Jacks  
Vice Chairman - Gary Hunter  
Secretary-Treasurer - Fletcher Lewis  
Membership - Bruce Heath

### Tulsa

Chairman - Marc Schutt  
Vice Chairman - Laura Stauffer  
Secretary-Treasurer -  
Membership Chairman - Phil Schenewerk

### Wyoming Chapter Coordinator Scott Stinson



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official meeting of the Northern Rockies Chapter. Thanks to Scott Stinson for his efforts and the Charter Members for their support. More importantly, Congratulations to the Northern Rockies Chapter!

The members in the California Chapter are spread across a large geographic area, and as such, look for alternatives to regular face-to-face meetings. At the request of SPEE's California Chapter, I hosted a webcast meeting presentation in September. The meeting was well received, and the technology was easy, even for me! We'll be trying to introduce more technology options to our membership as we identify opportunities. Let us know if you have a suggestion or want to volunteer to host an online meeting.

Finally, I would like to acknowledge the continued efforts and ongoing contributions of the entire Monograph 4 Committee. Under the leadership of John Seidle, the Committee has progressed the Monograph towards the first draft. At our meeting in January, the ExCom and BOD will meet with John Seidle to review and provide comments on the first draft of Monograph 4. Final publication is slated for second half of 2015.

In closing, the past, current and future success of SPEE is attributed to the quality of our membership and the efforts of those members who contribute to the society through various volunteer activities (Chapter Officers, Committee Chairs and Members, Board of Directors). As a member and the President of SPEE, I want to extend my appreciation and gratitude to all of the members of SPEE and specifically to the volunteers for all that you do to promote SPEE. Keep up the great work!

*Madam President, signing off*

## **New SPEE Chapter: Northern Rockies Chapter**

January 15, 2015 is set to be the first official meeting of the New Northern Rockies Chapter of SPEE. The meeting is to be held in Billings, Montana, in conjunction with the January Board of Directors meeting. A special thanks to the Board for their willingness to traveling to the northern part of the United States during January to present the Northern Rockies Chapter Charter. The new chapter covers a large geographical area (Wyoming, Montana, South Dakota and North Dakota) and hopes to address the unique technical issues associated with everything from the Bakken play to CO2 flooding, cold weather and Federal Ownership/NEPA impacts on projects.

The startup membership hails from across the region but are people whose activities are centered in the Northern Rockies.

Denver, CO	4
Laramie, WY	1
Sheridan, WY	1
Cody, WY	3
Billings, MT	1

We intend to move our meetings around the area to accommodate the broad geographic nature of the Chapter, to draw prospective new members, and to address the technical needs of our industry in our region. There has been a great deal of interest in attendance at our meetings; Over 25 professionals attended the last meeting held. Special thanks to Tom Hohn, Joe Sinner, Rick Vine and Mike Laird for their assistance in getting this chapter going. We would welcome anyone who would be willing to travel to make a presentation or just attend a meeting.

Speaking at the event will be Dr. John Seidle, providing an update on Monograph 4 and Reserves Assessments in Resource Plays.

*Scott Stinson  
Chapter Sponsor*



**PLAN  
AHEAD**

**SPEE Annual Meetings**

**June 5 - 9, 2015 Halifax, Nova Scotia  
The Westin Nova Scotian**

**June 3-8, 2016 Lake Tahoe, Nevada  
Ritz Carlton**

**Contact Barry Ashton to provide suggestions  
on locations and venues for future meetings.**

# Chapter News

## Calgary

Meetings - 3rd Tuesday of each month except June, July and August. Membership - 55

## California

In an attempt to bridge geographical barriers utilizing available technology, SPEE President Samantha Holroyd hosted the California Chapter's first-ever webinar meeting in September. The test-case webinar covered Ms. Holroyd's "President's Message" presented at the SPEE Annual Meeting in Stowe, Vermont. The webinar format enabled the participants to directly interact with the presenter and materials in real time. The overall reviews from participants indicated the webinar was a success and that the format is a viable option to bring together SPEE members within, and between, various Chapters. The Chapter is planning to use the webinar format for its next general meeting.

Membership - 22

## Central Texas

Membership - 33

## Dallas

Meetings - Bimonthly from September through May at the Brookhaven College Geotechnology Institute. Membership - 58

## Denver

On October 8th the Denver Chapter held its fourth meeting of 2014 with 58 in attendance, 24 members and 34 guests. Steven Gardner was the speaker and spoke on the topic *SEC Comments Summary 2013*.

Steve is a Senior Vice-President with Ryder Scott and Company in Denver. He began his talk with an overview of the SEC reserve disclosure comment letters received by companies in 2013 relating to disclosures for Yearend 2012. He broke down the comments into 12 different categories covering a range of topics from the most common general topic of PUD development to miscellaneous comments including standardized measure application. Several comments were specifically reviewed giving the audience a useful overview of the nature of SEC commentary. Steve made a specific observation that the 2013 comments had a new focus upon

expiring acreage determination relating to PUD development plans. He ended the talk with summary commentary and then opened up the floor for questions.

Other business conducted at the October meeting included the nomination of Steve Gardner as the 2015 Denver Membership Chair. A poll of the membership showed unanimous support for him entering the SPEE Denver officers rotation. The Denver Chapter is grateful for his continuing support and contributions.



2015 Officers: Steve Enger - Chairman, Andrew Forcina - Vice-Chairman, Dr. John Wright - Secretary-Treasurer, Steve Gardner - Membership

The Denver Chapter will host its fifth and final meeting for 2014 on December 3rd. The topic will be *Ethics: A Case Study Approach*. The presentation will be given jointly by Andrew Forcina and Fredrick LeGrand. Certificates of attendance will be presented to participants seeking to fulfill annual ethics requirements relating to their SPEE membership.

Meetings - 2nd Wednesday of first month of each quarter - Denver Athletic Club - The New Petroleum Club. Membership - 65

## Europe

The European Chapter is actively promoting the SPEE throughout Europe and beyond. The next Chapter Meeting (November 20th) will be held in Vienna, Austria. Besides electing a new Board Member for outgoing Chairman Martin Hubbig, interesting talks will be given by Graeme Simpson on *Sub-classifications by Project Maturity* and Paul Taylor on *New COGEH-ROTR Guidelines*, which will undoubtedly lead to lively debate. The membership situation is promising, with several applicants waiting for membership approval and several more potential candidates in Europe and the Asia-Pacific region.

Meetings - Four per year. Membership - 28

## Houston



Houston Chairperson, Anna Hardesty, and new members Mark Clemans (left) and Joe Harris (right) being presented their membership certificates at September luncheon.

On Wednesday, Oct 1<sup>st</sup>, the Houston chapter hosted our monthly luncheon at the Houston Petroleum Club. Ben Shattuck, Upstream Analyst, Wood Mackenzie, presented economic research on *Update of the Wolfcamp – Permian Basin*. The study examined what is driving the boom in West Texas in both the Midland and Central Basins.

On Wednesday, November 5<sup>th</sup>, Marcial Nava, Senior Economist, BBVA Compass Bank, presented an overview of Mexico's energy reform and its potential impact on the Texas Gross Domestic Product, employment and fiscal revenues. He also addressed the reform's economic implications for South Texas and the Texas-Mexico border.

*Meetings – 1st Wednesday of each month except June, July and August – Houston Petroleum Club. Membership – 184*

## Midland

The Midland Chapter meetings are scheduled bimonthly starting in January on the 2<sup>nd</sup> Wednesday of the month. They are held at the Petroleum Club of Midland at 11:30 AM and feature a sit-down plate served luncheon. The meetings are open to non-members to reach out to the technical community and attract new members.

The chapter held meetings in September and November 2014.

Our September meeting featured Chad Kronkosky, our newest chapter member and a PhD student at Texas Tech University. Yes, he is closely associated with Past President and Department Chairman Dr. Marshall Watson. Chad presented *Statistical Analysis of the Wolfberry Using “R” – Infill Drilling Study (80 ac to 20 ac Spacing)*. In spite of our chapter struggles to fill vacant officer positions we had 32 members and guests attended the meeting, 13 members and 19 non-members.

November's meeting featured Ray Flumerfelt, Senior Reservoir Engineering Manager, Southern Wolfcamp Shale, Pioneer Natural Resources. He addressed Pioneer's *Technical Learnings to Date in the Midland Basin Wolfcamp Shale*. The technical results maintained rapt attention of all persons present. We had an exceptional turnout of over 46 attendees, 15 members and 31 non-members.

Gail Hankinson was affirmed as the Chapter Secretary/Treasurer at the September meeting, replacing our transferred-to-Houston member Karl Gulick.

The Midland Chapter is a small chapter with 22 members and for the past two years we have had an average of 12-13 members present at the chapter meetings (60% attendance rate). November's meeting hosted 70 percent of our members and two non-members requested applications. Most of our non-members are too young to be Associate Members but we are fulfilling our mission to our community. Many of the non-members have perfect attendance and we hope they will become members when they can.

*Meetings – 2nd Wednesday odd months – Midland Petroleum Club. Membership - 22*

## Oklahoma City Chapter

During the third quarter of 2014, the Oklahoma City Chapter Vice Chairman of Programs, Gary Hunter, organized two excellent lunch meetings.

On September 25<sup>th</sup>, the OKC SPEE Chapter hosted Tim Loser, Manager of US Operations for Energy Navigator. He presented an internal study of forecast accuracy over time and related that to the impact on determining P90 reserves. Attendance was 25 members and guests.

On October 23<sup>rd</sup>, we hosted Dee Patterson, SPEE Board member and Managing Director at Moyes & Co. Dee presented the results from the 2014 Survey of Economic Parameters Used in Property Evaluation. Attendance was 20 reservations for members and guests.

*Meetings – Every odd-numbered month. Membership - 23*

## Tulsa

*Meetings – Tuesday of each month – Petroleum Club. Membership – 24*

# SPEE Recommended Evaluation Practice #2

## Presentation of Hydrocarbon Production, Sales, and Lease Use Quantities in Reserve Reports

**Editor's Note:** At the SPEE 2000 Annual Meeting, the SPEE adopted a pilot program to develop a series of Recommended Evaluation Practices (SPEE REPs). The SPEE REPs were envisioned to be short position papers outlining petroleum evaluation on specific evaluation issues and offering suggestions for handling those issues. To date, SPEE has written, approved, and published ten REPs which are posted on the SPEE website. Since we have many new Members who may not be familiar with the REPs, along with Members who might like a reminder, the REPs will be published in the SPEE Newsletter as space allows. The Recommended Evaluation Practices Committee, chaired by Dan Olds, is active and would entertain suggestions for additional REPs.

**Issue:** The quantities of hydrocarbons (oil, gas, condensate, natural gas liquids) forecasted in a reserve report represent the basis for all cash flow projections. The U.S. Securities and Exchange Commission (SEC) regulations consider reserves as proved if economic producibility is supported. As the term economical producibility infers quantities that are involved in a commercial transaction, it follows that a SEC reserve report should project sales quantities of hydrocarbons, rather than some other quantity, such as production.

SPEE recognizes that preparers of reserve reports<sup>1</sup> often report quantities other than net sales for a variety of reasons. Examples observed include:

1. Gross Production Stream - with the production stream unadjusted for lease fuel use and/or line loss/measurement loss;
2. Gross Production Stream - unadjusted for non-hydrocarbon impurities, such as CO<sub>2</sub> or H<sub>2</sub>S, etc.;
3. Predominance of Production Data - Due to governmental reporting requirements, it is more common to have gross production data available rather than net sales data, or there may not be sufficient data to determine net salable quantities;
4. Need for Gross Production Stream Reporting - reasons may exist for gross reporting, such as royalties or taxes based on production, calculation of reversionary interests or production payments based on production quantities;
5. Reservoir Analysis – accounting for total fluid production to facilitate proper reservoir analysis.

**Lease Use:** Lease use volumes and line loss/measurement loss represents volumes that are consumed or lost between the wellhead and the point of custody transfer. SPEE has observed a variety of treatments of these volumes, including:

1. Ignoring these losses altogether;
2. Adjusting produced volumes downward;
3. Adjusting operating expenses upward to reflect lease use;
4. Adjusting product prices downward to reflect net realized price;
5. Adjusting production tax rates to reflect net realized revenue;
6. Presenting additional cash flow summaries with negative volumes to represent the lease use.

### Purchased Gas

In some instances, operators may purchase gas from third parties for lease use fuel, gas lift use, or re-pressuring. Operators generally desire to carefully account for purchased gas for reasons such as to avoid paying duplicative royalties or production taxes and ensuring proper accounting treatment

### SPEE Recommended Evaluation Practice:

SPEE's recommendation on the presentation of hydrocarbon volumes is to present net salable volumes, i.e., lease fuel should be deducted from the volume available for sales. For instances where the preparer of the reserve report chooses to handle these reductions in another manner, the cover letter should discuss the treatment in a manner that leaves the user with a clear understanding.

SPEE further recognizes that in some cases, the difference between gross production and net salable quantities is immaterial. The term immaterial is generally used to indicate that the difference is so small that it can be ignored. In many general situations, a value of +/- 10% is often used as a threshold of materiality absent an agreement otherwise. SPEE believes that 10% is too high for a threshold of materiality for gross production versus salable quantities for hydrocarbon production. In the context of the difference between gross production and net salable volumes, SPEE suggests a threshold of materiality as being the level of non-hydrocarbon impurities allowed by usual and customary sales agreements in the region. For example, many U.S. gas sales contracts allow for contaminants up to 2%. If the preparer of a reserve report chooses to ignore immaterial differences between gross production and net salable volumes, SPEE would recommend that the preparer consider the level of non-hydrocarbons allowed in usual and customary sales agreements as a threshold of materiality.

In situations where there are third-party purchases of hydrocarbons that are utilized on the lease, SPEE recommends that the preparer of the reserve report consider including a separate cash flow projection that illustrates the purchase situation as either an operating cost or a capital investment, depending on the particular accounting treatment chosen by the owner. For instances where the preparer of the reserve report chooses to handle these reductions in another manner, the cover letter should discuss the treatment in a manner that leaves the user of the report with a clear understanding of the issue.

## **SPEE Recommended Evaluation Practice #3**

### **Inclusion of Revenue from Non-Hydrocarbon Sources in Reserve Reports**

**Issue:** Preparers of reserve reports<sup>1</sup> sometimes include income from sources other than hydrocarbon reserves, i.e. oil, gas, condensate, natural gas liquids. Examples of such non-hydrocarbons commonly encountered include: sulfur, carbon dioxide, helium, income from operation of third party facilities, income from disposal of salt water from third parties, income from compression, transportation, cogeneration, steam, or marketing of production from partners or third parties.

U.S. Securities and Exchange Commission (SEC) reserve guidelines specify that only hydrocarbon reserves be included in SEC reports.

#### **SPEE Recommended Evaluation Practice:**

Preparers of reserve reports that include revenues from non-hydrocarbon sources should prepare separate cash flow forecasts for such revenue sources. These non-hydrocarbon revenue forecasts should be clearly labeled as such. Further, non-hydrocarbon revenue sources should additionally be labeled “not for inclusion in SEC reserve reports.” If there is more than one type of non-hydrocarbon revenue source, reserve preparers are urged to present the information in sufficient detail to allow the user of the reserve report to identify each non-hydrocarbon revenue source. If the report is prepared for SEC purposes, summary level information should be presented both without and with any non-hydrocarbon revenue source cash flow forecasts included, and those summaries that include any non-hydrocarbon revenue sources should be clearly labeled as “not for inclusion in SEC reserve reports.” The cover letter accompanying the cash flow forecasts should reveal the presence and discuss the treatment of non-hydrocarbon revenue sources in a manner that leaves the user of the report with a clear understanding of the issue.

*1 The terms “Preparers of Reserve Reports” or “Preparer” are used herein to signify the person(s) responsible for the contents of the report*

## **New Board of Directors Members**

The polls are closed and SPEE's 2014 elections are now complete. We are pleased to announce our newest Directors, each elected to serve for a three-year period beginning in early 2015. New members of SPEE's Board of Directors include Brad DeWitt from Bakersfield, California, Robert Green from Odessa, Texas, and Rawdon Seager from Houston, Texas. The SPEE Board plays an important role in formulating and guiding the activities of the Society, and the willingness of these individuals to serve in such a capacity is highly appreciated. Likewise, the careful consideration of all voting members is also highly appreciated.

***Richard Krenek, Chair, Nominating Committee***

# Ethical Dilemmas Associated with Data and Image Manipulation

“Manipulation – that term sounds so negative...”

## Image Manipulation

Long before the days of Photoshop® or even personal computers<sup>1</sup>, I had my first experience with image manipulation and ethics. A friend of mine and I spent a summer together at an honors program for high school students. My research using fuming acids was fun, but a complete failure. He had been doing research on developing chemicals that would attract cockroaches towards a trap (that would kill them). A key photograph showed a large group of *Blattella Germanica* all heading towards the scented piece of wood. One lone cockroach faced away from the scent. My friend airbrushed the dissenter out of the photograph for the photo that would soon be front and center on the Science Fair poster --- simply to eliminate what he would consider irrelevant questions. The top prize was won and the scholarships awarded. I switched from Chemistry to Physics but the roach’s disappearance bothered me. The stray cockroach had vanished from the photo like someone standing next to Stalin in a photograph after a “purge.” The guidelines for scientific handling of images has been well established; however, studies of images submitted to scientific journals show a large number of images that have been manipulated in ways that violate ethical guidelines even if they do not alter the conclusions of the study<sup>2</sup>. Interestingly, many scientists submitting the altered images seemed unaware of the issues involved. Some typical guidelines can be found at Elsevier<sup>3</sup>, Rossner and Yamada<sup>4</sup>.

Acceptable image manipulation includes such harmless changes as adjusting contrast and brightness or cropping to focus on the desired subject. This can escalate to a wide range of practices that may be acceptable with appropriate disclosure. Other practices may be ethical violations. Cropping can be used to eliminate contradictory results like the stray cockroach. Nonlinear filters can overly enhance attractive features. Other manipulations such as merging multiple images may be justified if sources are clearly described. Smudging edges, cloning, deletion of data and many similar ways of touching up images made possible by sophisticated computer technology is almost always unacceptable.

## Data Manipulation

Data manipulation is an even bigger problem in scientific research. Data manipulation can include fabrication of results and falsification of data (omitting measurements, changing data or altering processes.) Society of Petroleum Evaluation Engineers members must be aware of and avoid ethical violations of any type; these may seem inconsequential but are more common than most people might recognize. Here is one example “inspired by actual events” along with another recent example from my personal experience.

### Example 1: Just the facts

In a hearing before the Texas Railroad Commission, an expert witness presents two large exhibits. One shows about a dozen gas wells drilled in the last few years in Field A with large red dots. Dates and pressures are annotated. The expert says “Here are some wells I looked at in Field A. The G-1 shut-in pressures are noted. On the next exhibit I have plotted those pressures over time. From these wells it appears that the initial pressure in the field encountered by these wells has declined significantly over time.” Figure 1 is his second exhibit.

Hard to argue with the facts, right?

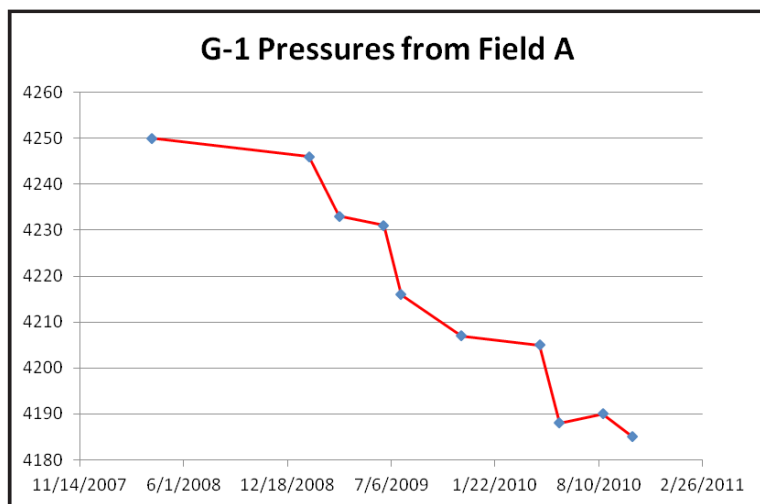


Figure 1 Exhibit B G-1 Pressures from selected wells

<sup>1</sup> OK, this story actually predates Watergate, so it goes way back there.

<sup>2</sup> Manipulation and Misconduct in the Handling of Image Data, Cathie Martin, Editor-in-Chief The Plant Cell and Mike Blatt, Editor-in-Chief Plant Physiology, Published online before print September 2013, doi: <http://dx.doi.org/10.1105/tpc.113.250980> The Plant Cell September 2013 vol. 25 no. 9 3147-3148

<sup>3</sup> [http://www.elsevier.com/\\_data/assets/pdf\\_file/0003/183405/ETHICS\\_RF01a\\_updatedURL.pdf](http://www.elsevier.com/_data/assets/pdf_file/0003/183405/ETHICS_RF01a_updatedURL.pdf)

<sup>4</sup> Rossner M., Yamada K.M. (2004). What's in a picture? The temptation of image manipulation. J. Cell Biol. 166: 11–15.



On cross examination the expert maintains that although the field has “tight gas” and that the short buildup times may not in fact represent true reservoir pressures; however, to him the results seem incontrovertible. But if every well in the field is plotted, the results are more like Figure 2. In this figure the first expert’s “selected wells” are shown connected with a light red dashed line and the suggestions from “all of the wells” is that there is essentially no change over time as suggested by the very slight negative slope of the “best fit” line. This illustration portrays the first expert’s analysis in a very dim light indeed. But perhaps some of the data points in Figure 2

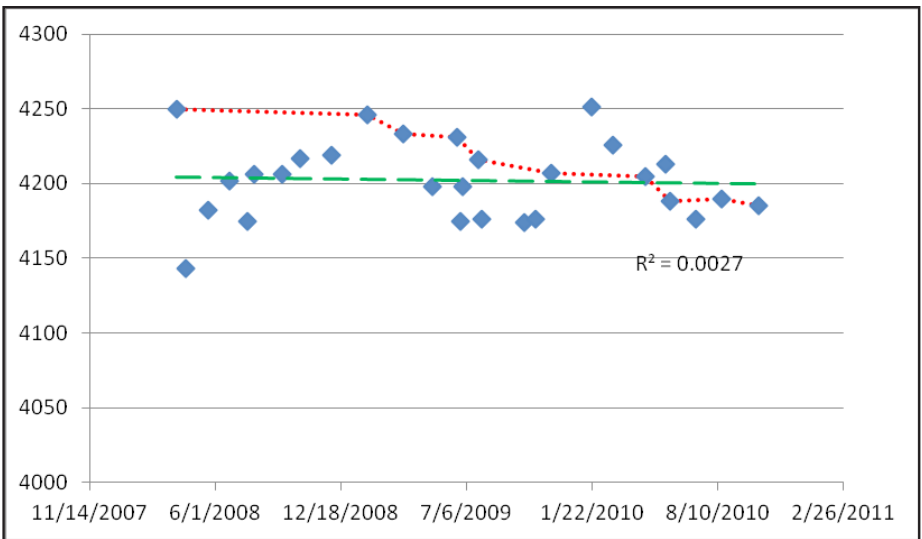
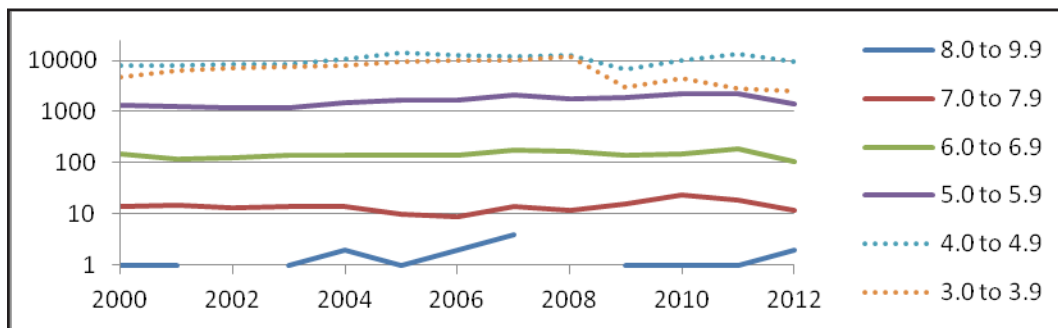


Figure 2 Complete field data G-1 pressures

purported to be from the entire field include perforations over a different interval or depth. Maybe they are overly sampled from one part of the field? Of course the “best fit line” shows essentially no correlation and the ordinate scale of this graph has been expanded to minimize the appearance of data variability.

The use of logarithmic scales, selective times and similar manipulation of data can be misleading and unethical. But clearly there are gray areas. In a recent analysis I wrote about the frequency of earthquakes in a certain area over time. I offer the following plot. From this analysis I conclude that earthquake frequency in this area has not changed significantly in recent years (and specifically as a result of an increase in hydraulic fracturing).



I selected the data for 3.0 (and above) magnitude earthquakes because earthquakes smaller than 3.0 can generally not be felt at the surface or cause any sort of damage. Another research group plotted just 1.0 to 2.0 magnitude earthquakes over an overlapping time period from a smaller number of measurement loca-

tions and showed what might be significant increases in such small earthquakes. A reader might reach very different conclusions from looking at the two figures we generated even though both of us clearly pointed out all of the assumptions we had made. If we look at all of the increases in earthquakes spatially there is some correlation with oilfields, more with regional faults, quite a bit with the locations of larger historical earthquakes. In some areas there is a smaller but not a negligible correlation with areas corresponding to high levels of hydraulic fracturing activity.

As scientists and engineers we have to analyze data and display our analyses. In some ways our ability to make sense of data is what we are paid for. Unfiltered, unedited, uncorrected data are meaningless if not misleading. Some editing simply makes it possible to compare apples to apples such as correcting pressure to a common subsea depth. Others have judgment calls involved. Hundreds, if not thousands of unconventional wells to analyze? Maybe we want to include those with “similar completion practices.” Volumes? Fluids? Numbers of stages? Approaches to spacing? Rates? Well-intentioned engineers attempting to elucidate statistical data from large datasets may well reach disturbingly different results. I am curious to hear your stories of ethical dilemmas associated with either data or image manipulation.

**D. Nathan Meehan**

## THE ETHICS COLUMN

Have you ever been faced with an ethical dilemma at work? Have you ever had to take an action that you considered right but that had a very real negative impact on a specific individual? If you have, you've learned that ethical decision making is not a trivial exercise; it has implications for real world business decisions. How we treat those we work with is as important as any decision on how to handle reserve bookings or what to include in a trial testimony. This is not to say that interpersonal concerns trump business concerns. It simply means that each should be carefully considered. Ethical business decisions treat people fairly, but making them properly is not always easy.

We recently attended an industry presentation about engineering ethics. During the Q&A afterwards, a senior level engineer in the crowd related a dilemma he had faced more than 15 years earlier. It involved an obvious ethical breach by an employee. Although he had fired the employee, his question was whether he should have also reported this breach to the appropriate licensing board. It was apparent that he had not. The presentation speaker offered his opinion of what should have been done, as did several members of the audience. Those opinions varied widely. The engineer's body language made clear that he was no more satisfied with the advice he was hearing that day than he was with his own handling of the dilemma years ago.

A few things were clear from this exchange. The first was that, even many years later, this engineer was troubled about how he had handled the incident. He never achieved closure that he had done the best he could. In this case, he had no legal obligation to notify the licensing board. But did he have an ethical obligation to do so? Had the dismissed employee gone on to repeat his transgression with yet another employer? While regulations attempt to codify ethical actions, compliant behavior may fall short of ethical behavior. It was also clear that solving a complex problem by employing nothing more than opinion based on "gut feel" or experience can easily lead to a suboptimal and ultimately unsatisfactory solution. This is as true for ethical problems as it is for technical ones.

The difficulty is not typically in deciding what to do when there is a clear choice between "right" and "wrong." Our professional and company codes of conduct (and legal departments) give us specific guidance on how to avoid the "wrong" (non-compliant) behavior. The more perplexing problem occurs when there are elements of "right" in multiple actions we may choose, and we must decide which "right" should prevail.

Many methods for skillfully resolving ethical dilemmas have been presented over the years. One of the most popular is from Rushworth Kidder's book, *How Good People Make Tough Choices* (1995). Kidder identifies the four types of ethical dilemmas that he calls "right vs. right dilemmas." He then offers three different ways to view those dilemmas: ends-based (What action will produce the most good in this particular instance?), rules-based (What if everyone took this action all the time?), and care-based (What would you want someone else to do to you?) While his method does not provide a definitive resolution to the dilemma, it is a very useful tool for organizing one's thoughts. Dr. Larry Brown has utilized Kidder's approach in the SPE short course, *Ethics for Engineers*.

Some choose to dig more deeply into the academic approaches of consequential reasoning (utilitarianism), deontological reasoning (justice/fairness or rights), and the Golden Rule (common in some form to almost all religions). The key is to find the analytical framework that works for you and enhances the quality of your decision making. A framework aids skillful decision making in several ways. It helps you to define the focus of ethical analysis to identify all those who will be affected by your action. It helps you pinpoint any personal biases so you can attempt to mitigate them. A framework also helps to characterize the primary type of conflict to be resolved and the critical questions you must ask yourself to resolve that conflict. The level of thoughtfulness required to work through the framework often results in a "light bulb" moment when an entirely new and superior solution pops into your head. Ultimately, the framework provides you with the tools to settle on an action that you can defend and the confidence that you acted as fairly as you possibly could have.

As professionals we are committed to performing our duties with rigorous attention to our ethical principles. To that end, we keep the topic fresh in our minds by attending industry presentations, discussing it with our peers, and reading articles such as this. Although ethics principles can be somewhat detailed and complex when applied to a particular field of endeavor, they should always make sense to us on a gut level because they are anchored in natural law. They represent our common goal that all we do in the course of business should be intended to benefit others and avoid harm. Recognizing ethical dilemmas and committing to approach them in a rigorous and methodical way is critical to achieving that goal.

*Tim Gilblom, PE and Jan Gilblom, PE*

# Membership Applicants

The following member applicants have been processed by the Qualifications Committee. The by-laws require that names be presented to the membership for at least 30 days as a pre-membership requirement. Any member with an objection should address the objection to the Executive Committee (see by-laws regarding other important details) since the applications have already passed through the Qualifications Committee.

APPLICANT	SPONSOR	APPLICANT	SPONSOR
<b>Adeyeye, Adedeji A.</b> Petroleum Engineering Consultant Ryder Scott Company 1100 Louisiana, Suite 4600 Houston, TX 77002	Tosin Famurewa Anna Hardesty Lucy King	<b>Petropoulos, Larry Van</b> Director Corporate Banking Oil & Gas Engineering BMO Capital Markets 900, 525 8th Avenue SW Calgary, Alberta T2P 1G1 Canada	Katherine Crerar Phil Welch Michael Woolfer
<b>Cooling, Turlough</b> Director of Petroleum Reservoir & Economics Group CGG Services (UK) Limited Fugro House, Hithercroft Road Wallingford, Oxfordshire OX10 9RB United Kingdom	Jerry Hale Robert Harrison Simon McDonald	<b>Romoser, Russell Wayne</b> Vice President Research Engineering Comstock Resources, Inc. 5300 Town and Country Blvd., Suite 500 Frisco, TX 75034	Daryl Duvall Chris Jacobsen G. D. Simon
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<b>Londono, Fabio Enrique</b> Reservoir Engineer Occidental Petroleum Corporation 5 Greenway Plaza, Suite 110 Houston, TX 77046	Jorge Faz John Ritter Rod Sidle	<b>Virues, Claudio Juan Jose (Associate)</b> Staff Reservoir Engineer Nexen Energy ULC 8010 7th Avenue SW Calgary, Alberta T2P 3P7 Canada	John Etherington Gregory Graves Juan Rosbaco
<b>McLaughlin, John M.</b> Senior Reservoir Engineer Ryder Scott Company 1100 Louisiana, Suite 4600 Houston, TX 77002	Gualde Ramirez Mike Stell Kent Williamson		
<b>Miller, Emily A.</b> Reservoir Engineer Senior Staff WPX Energy 1001 17th Street, Suite 1200 Denver, CO 80202	Steve Bausch Steven Gilbert Rich McClure		

# Welcome New Members

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**The SPEE Membership Directory is available for purchase and payment on the website - [www.spee.org](http://www.spee.org). The cost is \$55.00 plus shipping.**

## IN MEMORIUM



We regret to note  
the passing of:



**KEVIN CHARLES MCNICHOL**  
Houston, Texas  
June 14<sup>th</sup>, 1958 to October 14<sup>th</sup>, 2014

Family, friends and colleagues said goodbye to Kevin McNichol in October after a year-long battle with cancer. Kevin was a sound engineer, a great husband and terrific father. He graduated from Michigan Technological Institute in May, 1981 with a degree in Geological Engineering. Over the course of his career he worked for Amoco, Cox & Perkins, Hite, McNichol & Associates and Macquarie Tristone. Most recently Kevin helped start the M&A business at Bank of Montreal where, as a Managing Director, he represented clients selling upstream energy assets.

Kevin was well respected by both his clients and his coworkers. He was a longtime member of the SPEE and participated in the economics seminars and annual meetings. He is survived by his wife, Michele, and their three children and will be deeply missed by all.