EARLY PRODUCTION SYSTEMS – WHEN DO THEY MAKE GOOD SENSE FOR YOUR PROJECT?

FEBRUARY 2015

FINDING AND WORKING WITH SMALL TECHNOLOGY COMPANIES
RESEARCH & DEVELOPMENT P. 9

LOST CIRCULATION RISK MITIGATION – EFFICIENT OPERATIONAL STRATEGIES
DRILLING P. 13

GRANITE WASH OPTIMIZATION – VALIDATING COMPLETION AND PRODUCTION TECHNIQUES
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1ST ANNUAL SPE-GCS OILSIM COMPETITION FUNDRAISER
P. 32

SPEGCS.ORG
Houston is not the Oil Capital of the World because we have the most oil; we are the Oil Capital of the World because we have the oil know-how – a critical mass of it! If we want to continue to be such, we need to develop more “home-grown” engineers. That means we must invest our time and our money in Science, Technology, Engineering, and Mathematics (STEM) initiatives.

Here are some sobering statistics that were shared at the Engineering, Science and Technology Council of Houston Leadership Retreat by former NASA astronaut Bonnie Dunbar, who heads up the University of Houston STEM Center:

- 70% of the PhD candidates in US universities are from other countries – and will go back home after earning their degrees.
- China has 10 times the number of US engineering graduates, and India has four times as many.
- The US ranks #27 of developed countries in proportion of college students earning science or engineering degrees.
- A 2012 report to the US President titled “Engage to Excel” stated we need 1 million more college graduates with STEM degrees.
- One-third of Houston’s jobs require graduates with STEM degrees. We are the #5 city in the US in terms of demand for such grads, but #72 in terms of supply.
- Of Houston’s current STEM-related workers, 24% were born in other countries, 38% were born in other states, and 38% were born in Texas.

Our Section’s Community Services Committee supports a variety of STEM programs to help develop future SPE members. Here are some events that need volunteers and judges:

- Science Engineering Fair of Houston needs 600 judges, Sat., Feb. 22 at the University of Houston Alumni Center. Register at www.sethouston.org. SPE Gulf Coast Section needs several judges of our own to award 1st, 2nd, and 3rd prizes for science fair projects dealing with oil or geoscience, as we do each year. We also donate $2,500 as an annual sponsor of this event.
- GEMS - Girls Exploring Math and Science, Sat., Feb. 21, 9 am to 1 pm, Houston Museum of Natural Science. Email kfriedemann@hmns.org.
- Serve as a high school student tour guide at OTC, Thurs., May 7, NRG Center. Email energyed@otcnet.org or call 713-457-6873.
- All-Earth Ecobot Challenge, Sat., May 16, NRG Park. Email Doug Kleiner at dkleiner@hcde-texas.org, or call 713-696-8290.

I encourage you to invest your time, talent, and treasure in STEM activities that will inspire school children to think that being an engineer is really pretty cool!
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SPE-GCS Directory

BOARD OF DIRECTORS MEETING
THURSDAY FEBRUARY 19TH / 7:30 AM TO 10:30 AM

Location SPE HOUSTON OFFICE
10777 Westheimer Rd., Suite 1075, Houston, TX 77042

Event Contact SHARON HARRIS
713-457-6821 / 713-779-4216 FAX / sharris@spe.org
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SPE-GCS MEMBERSHIP REPORT
December 2014

Total: 16,787 | Total: 16,535
YP: 4,070 | YP: 3,938

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| Total Paid/Unpaid | 18,873 | 3,027 | 18,501 | 3,147 |
| % Paid            | 86.2%  |       | 85.5%  |       |

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Russian Army advances in recent weeks have swept over all the oil fields and refineries in Poland and Hungary, leaving Germany only the oil fields and refineries near Vienna, Hamburg, and a few insignificant fields in other parts of Germany, Austria, and Czechoslovakia. Virtually all that Germany is left with are their underground storage and synthetic fuel plants.

Due to war-time restrictions and extremely low temperatures in the eastern U.S., gasoline, automobile tires, and fuel oil supplies will reportedly remain tight through at least the balance of 1945.

Two well-known names to Houstonians of the day are in the news, as Wallace Pratt resigns as vice president of Humble Oil’s parent company, Standard Oil of New Jersey, and is replaced by former AIME president and Lucas Medal winner John Suman, previously vice president of Humble Oil.

A new method of electrical prospecting for petroleum involving the measurement of subsurface electrical potentials, developed by the U.S. Naval Research Laboratory, is approved for a patent.

East Texas crude oil - $1.25/bbl

Texas Senator and soon-to-be contender for the 1976 Democratic nomination for President, Lloyd Benson, goes to bat for the independent oil producer by sponsoring a bill that would do away with much of the foreign tax benefits and domestic percentage depletion while keeping the depletion allowance for the first 3,000 bbl/day of production by the independents.

Meanwhile next door in the House, Texas Republican Representative Bill Archer is battling in the House Ways and Means Committee to retain the domestic percentage depletion for all operators.

The U.S.G.S. and the Department of Interior press the oil industry to expedite subsea completion technology development for use in certain offshore leases.

A noted Canadian oil executive states that the price of Canadian crude oil must reach a minimum of $13/bbl if Canada is to maintain its petroleum self-sufficiency.

U.S. active rig count – 1,603

As a result of strong oil and gas prices and the sizable amounts of cash being generated, E&P executives forecast strong merger and acquisition activity in 2005. Despite opposition by New Mexico Governor and former Energy Secretary Bill Richardson, the BLM opens limited leasing on environmentally sensitive public lands in the Chihuahuan Desert in Otero and Sierra Counties, New Mexico.

BP begins construction of a 9MW wind farm at its oil and oil products import-export terminal at the port of Amsterdam. (No, the workers there will not be wearing wooden shoes).

Light sweet crude oil - $46.08/bbl; Natural gas - $6.11/MMbtu;

U.S. active rig count – 1,280

This month we continue our look back at the life and times of industrialist and philanthropist Andrew Carnegie.

One of Andrew’s skills was harnessing brainpower—he was one of the first U.S. industrialists to pay close attention to laboratory research. Another skill was developing a management team. His management team was strong. One of his key foremen was the legendary William "Captain Bill" Jones, who had a fierce love for the smoke, stench, clamor, and drama of the steel mill, and he infused his men with his excitement. As one historian wrote about Jones, he savored every moment of his working life, even when he was “seared by the heat of the blast furnaces, deafened by the noise of metal rolling over metal, and nearly blinded by the white, incandescent heat of molten iron."

Carnegie’s steel became the structural basis of American greatness, the foundation of the nation’s railroads, factories, skyscrapers, and refineries. And in the process, Andrew Carnegie became a multi-millionaire.

Carnegie felt divided in his attitude toward the rugged men who made his steel. On the one hand, his idealistic side led him to support an enlightened labor policy, such as the creation of the industry’s first eight-hour workday in 1877. On the other hand, he was forever plagued by the need to cut costs to stay competitive. He was also a bit of a martinet—
he never quite developed empathy for Americans who struggled with low wages, perhaps because his own success had come so quickly. In 1892, in the days before unions were protected by law, Carnegie approved a strategy of breaking up a steelworker’s union at his Homestead mill. A terrible strike ensued, and 10 people died in the resulting violence, including strikers and Pinkerton detectives. The union was eventually crushed.

It was without a doubt the worst moment of Carnegie’s career. He hadn’t expected armed conflict and was horrified by it. He was visiting Scotland at the time, but despite his absence, he was deemed to be the responsible party and took withering criticism from many quarters. He hated that. He wanted to be loved. He dealt with the pain of the Homestead strike by blurring its details in his memory in a way that reduced his culpability. Perhaps he could not have lived with his idealistic side if he had not done so.

Next month, Andrew begins to enjoy the fruits of his labors.

**THEN & NOW FEBRUARY QUIZ**

Which of the following groups of U.S. oil companies failed to earn a combined $1 million in net profit in calendar year 1974: a) Kerr McGee, Occidental, and Phillips b) Tenneco, Atlantic Richfield, and Getty c) Standard Oil of Indiana, American Petrofina, and Murphy; or d) Sun, Continental, and Tenneco.

**ANSWER TO JANUARY’S QUIZ**

In 1904 Standard Oil entered Romania with a producing and refining subsidiary, its first oil venture outside North America except for marketing.

**CONGRATULATIONS TO DECEMBER’S WINNER**

Claire Harnsberger with Oil Plus

If you would like to participate in this month’s quiz, e-mail your answer to contest@spe.org by noon, February 15. The winner, who will be chosen randomly from all correct answers, will receive a $50 gift card to a nice restaurant.

Marathon Oil increases productivity in Eagle Ford Shale well by 21%.

The BroadBand Sequence* fracturing technique effectively stimulated perforation clusters that would not have produced by conventional techniques. Enabled by a proprietary engineered composite fluid of degradable particles and fibers, the BroadBand Sequence technique increased production by 21% over 115 days.

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Finding and Working with Small Technology Companies

The February R&D lunch will focus on how to find, evaluate, contract and work with small technology companies that have unique technologies that could advance your company’s new product and/or technology development efforts. Christina Karapataki from Schlumberger will provide insights on how she approaches small technology companies to help further Schlumberger’s new product and technology agenda. In addition, we will have a couple of small technology companies discuss their technologies and their perspectives on finding and working with large company partners.

CHRISTINA KARAPATAKI

Christina Karapataki is a Venture Principal in the Early Stage Technology Investments group at Schlumberger Technology Corporation. In this role she works closely with Schlumberger Business Units and Engineering Centers to assess joint development opportunities and lead investment evaluations. She specializes in early stage investments in energy, advanced materials and sustainability technologies. Prior to her current role, Christina worked for ExxonMobil Gas & Power Marketing in both the European and North America offices, and gained venture experience evaluating oil and gas technology investments with Venrock Management LLC in 2011. She was also a Business Development Associate for Oscomp Systems, a start-up company developing natural gas compression systems. Christina’s background is in Chemical Engineering with B.A. and M.Eng. degrees from the University of Cambridge. She is a graduate of MIT, with an S.M. degree in Energy Technology and Policy, where her research at the MIT Energy Initiative focused on evaluating water management technologies for shale gas production operations.
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Robert J. “Bobby” Elmore is a senior drilling engineer and completions specialist with Signa Engineering Corp. He received a B.S. degree in petroleum engineering from Texas A&M University in 1972. Mr. Elmore specializes in Managed Pressure Drilling (MPD), UnderBalanced Operations (UBO), MudCap Drilling (MCD), casing drilling, coiled tubing intervention and other critical well control operations. He has worked around the globe, including China, Russia (Sakhalin Island), Venezuela, Alaska, Mexico and the North Sea, as well as domestically.

ROBERT J. ELMORE

An HPHT well in East Texas with a reservoir BHT of 334°F and approximately 13,900 psi reservoir pressure proved extremely challenging. Managed Pressure Drilling (MPD) was originally selected to avoid a classic “Kick-Loss-Kick” scenario while drilling deep into the Austin Chalk formation. One primary goal of MPD, ascertaining the downhole pressure environment limits, was accomplished, but the greatest benefit was achieved by handling several well control incidents that occurred in the HPHT reservoir section.

As HPHT drilling technology matures, the line between flow control and well control begins to blur. Rather than transitioning back and forth, drilling and well control activities tend to become parts of a single process. This process must take into account the effect of variations in the drilling fluid properties, use of the entire active pit system while circulating out kicks, and handling uncertainties in the downhole pressure regime. Knowledge of the pressure and temperature limits and the effects of HPHT on composition of pressure-sealing elements in all surface and downhole tools proved critical. Optimization of alternative casing design for well control while circulating a kick (influx) and using unconventional drilling techniques will also be described.

MPD Techniques Optimize HPHT Well Control

Robert J. “Bobby” Elmore is a senior drilling engineer and completions specialist with Signa Engineering Corp. He received a B.S. degree in petroleum engineering from Texas A&M University in 1972. Mr. Elmore specializes in Managed Pressure Drilling (MPD), UnderBalanced Operations (UBO), MudCap Drilling (MCD), casing drilling, coiled tubing intervention and other critical well control operations. He has worked around the globe, including China, Russia (Sakhalin Island), Venezuela, Alaska, Mexico and the North Sea, as well as domestically.

EVENT INFO

Tuesday
2.10.15
12:00 PM TO 1:30 PM

SPEAKER
Robert J. “Bobby” Elmore
Senior Drilling Engineer
Signa Engineering Corp

LOCATION
Greenspoint Club
16925 Northchase Dr.
Houston, Texas 77060

EVENT CONTACT
Sumitra Mukhopadhyay
281-784-5742
smukhopadhyay@superiorenergy.com

MEMBERS
$35 / $50 WALK-IN

NON-MEMBERS
$40 / $50 WALK-IN

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Robert Barba
Petrophysicist

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Lost Circulation when handled appropriately could be a simple or difficult problem, but often it is mis-handled and is made to look complex. So, this presentation is aimed at discussing operational strategies to un-complex lost circulation employing a preventive or remedial approach. Just like in dealing with any other problem, having a proactive plan always saves money and time. In this presentation, a preventive strategy to deal with lost circulation that includes getting on-board right from well design stage, best drilling practices and best possible LCM application techniques will be discussed.

Just having a plan does not mean that it works all the time. Every well is different and one plan might not work on another well. So, this presentation will also discuss the contingency plan or remedial strategy to battle any un-expected losses. The benefits of having a loss contingency plan and the importance of knowledge capture on LCM solutions (both success and failures) will also be discussed. With the above preventive and remedial operational strategies, it is expected that lost circulation can be dealt with in a much simpler way.

SHARATH SAVARI

Sharath Savari is the Global Technical Advisor for Lost Circulation Prevention & LCM Applications at Halliburton Baroid in Houston, TX. He is the subject matter expert (SME) for Halliburton on Lost Circulation Prevention, LCM Solutions and LCM field applications. He has 7 years of experience in the oil and gas service industry, all with Halliburton. Prior to this role, he was involved in Research & Development at Halliburton Technology Centers in India & Houston and was mainly focused in the area of Lost Circulation Control and Mitigation methods, Wellbore Strengthening and Wellbore Stability. He has M.S. Degree in Chemical Engineering from Indian Institute of Technology (IIT) Kanpur, India.

He has presented multiple papers in various SPE/AADE conferences on the subject of lost circulation control. He has been on the Steering Committee for 2014 SPE ATW on Lost Circulation held in Dubai, 2014 AADE Fluids conference, held in Houston and 2012 SPE ATW on Wellbore Integrity held in Abu Dhabi. He is currently on the Steering Committee for SPE/IADC Drilling Conference and Exhibition, London 2015 and SPE ATW on Lost Circulation, Dubai 2015.
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Crude and Refined Product Metering: Meter Selection for Loading/Unloading Applications and Meter Proving

Petroleum and its products bought and sold on the worldwide market may be transported over thousands of miles and change ownership many times from the well head to the end user. Each time the product changes ownership, a “custody transfer” is completed and both buyer and seller expect their asset exchange to be accurately measured. The dynamic measurement provided by most modern measurement systems is a convenient and accurate means to measure valuable petroleum products. Selecting the right meter for the application and ensuring the proper design of the meter system is imperative to guarantee accurate measurement with a high level of confidence at the lowest cost of ownership.

The basic operating principles of four metering technologies: Positive Displacement (PD) Meters, Coriolis Mass Meters, Turbine Meters, and Ultrasonics will be discussed and the application range of each one of these technologies in terms of viscosity and flow rate will be covered.

Also, key to custody transfer is the verification or “proving” of the meters under actual operating conditions. Proving assures both parties in the custody transfer transaction that the meters are accurate and repeatable. Proving fundamentals and the most common types of prover types will be covered as well.

TONY PETITTO

Tony Petitto has more than 30 years of experience with flow measurement and liquid custody transfer applications. Tony started in Field Service working with tank gauging systems, automatic sampling systems, and bunker blending systems. Since moving from the practical side where he witnessed and suffered from the effects of poor meter selection, he has been a champion of proper metering system selection. By providing training in meter systems design, specification, operation and proving (calibration), Tony is ensuring fit-for-purpose metering systems are being selected for the various metering applications found in the oilfield from North to South America and beyond. Tony has a BS in Electrical Engineering and has spent 14 years with FMC Technologies in Technical Sales and Training.

REMINDER: SPRING SERIES SESSION I

Liquid Metering Selection

WEDNESDAY 2.4.15

WHAT YOU NEED TO KNOW ABOUT ATTAINING AND MAINTAINING ACCURATE FISCAL AND ALLOCATION METERING SYSTEMS

SPEAKER
Del Major
Liquid Measurement Advisor
Shell E&P

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TRICAN GEOLOGICAL SOLUTIONS
Early Production Systems - When Do They Make Good Sense for Your Project?

This presentation will discuss the design aspects that drive value of an Early Production System (EPS) and introduces a stepwise approach for teams to follow to frame and evaluate dynamic tests and EPS design options using a generic deepwater case example. Alternatives ranging from a drill stem test (DST) to an EPS to a tie-back are compared and sensitized to understand under which conditions each option might be worthwhile, ultimately providing information for an informed decision.

Many teams believe an EPS will be valuable for their offshore projects, but struggle when asked to make the business case for an EPS. Typically, if there is value in an EPS, it is derived either from (i) early resource sales and/or (ii) providing information on key dynamic uncertainties in order to decide whether and/or how to optimize development. The latter often is the driver of value.

As the industry moves to deeper and deeper waters, getting quality information on dynamic uncertainties gets more expensive and for some situations, becomes cost prohibitive. As a result, companies either need to be willing to sanction expensive developments with sizable risk (potentially bearing a higher risk tolerance) or find ways to make extended tests or an EPS financially and technically compelling.

The key dynamic uncertainties teams often want to reduce before sanctioning development are (i) reservoir compartmentalization, (2) natural or enhanced drive mechanism and/or (3) initial production rate. Each is linked to different decisions which can be optimized if uncertainty in the situation is reduced. Compartmentalization directly affects the number of development wells, drive mechanism affects the need for injection, and associated well count and initial rate directly affect facility size.

Ultimately, the key to deriving value from an EPS resides in its design, which includes the type of EPS vessel, the associated fiscal terms and the quality of the information gathered from the early production system prior to finalizing development. This includes the tests and data to be collected, as well as the duration of the production period prior to making the important development decisions.

ELLEN COOPERSMITH

Ellen Coopersmith is the founder of Decision Frameworks, L.P., which is headquartered in Houston and has offices in Calgary, Canada and Frankfurt, Germany. She is based in Houston and specializes in Decision Analysis consultation, facilitation, training and implementation.

Prior to founding Decision Frameworks in 1999, Ellen spent 16 years at Conoco, where she led their implementation of Decision Analysis in Upstream for five years. She is an accomplished technical and managerial facilitator, as well as a published and invited speaker on both the implementation and the technical elements of Decision Analysis.

Ellen’s passion for and focus on Decision and Risk Analysis is on skill development and on making framing, uncertainty analysis, and valuing information easy, day-to-day asset management tools in our client industries. She is a Petroleum Engineer with a degree from the Colorado School of Mines.
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- Production Operations 1 — PO1:
  16-27 March, 1-12 June
- Applied Reservoir Engineering — RE:
  16-27 February, 20 Apr - 1 May, 1-12 June
- Completions and Workovers — CAW:
  23-27 February, 9-13 March, 20-24 April, 18-22 May

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This presentation will provide a case study on how one operator with acreage in the Frio County oil window of the Eagle Ford was able to significantly improve production results by testing different drilling targets, completion types (sliding sleeves and plug-and-perf), and fracture treatment designs. Early results were mixed, with initial plug-and-perf completions underperforming earlier sliding sleeve wells. It was determined through data analysis and production normalization techniques that the plug-and-perf treatments were under-stimulated with inadequate proppant being placed in individual fractures.

Once proppant amount per cluster was identified as a high-impact parameter, subsequent stimulations were performed with larger proppant volumes. These later wells experienced significant improvements in production performance, with each step-wise increase in stimulation design consistently resulting in better production performance. Scatter plots, cumulative production charts, and fracture modeling runs comparing different design scenarios will be presented to show how these factors were discovered.

WADHAH AL-TAILJI

Wadhah Al-Tailji is a Basin Technical Manager at StrataGen, focusing on the Eagle Ford Shale, where he assists clients with fracture stimulation design, evaluation, optimization, and field supervision. He has been involved with Eagle Ford stimulation optimization for over three years, and has authored two SPE papers highlighting some of his successes. He joined StrataGen in 2010 as a field consultant, supervising hydraulic fracturing treatment in various plays, such as the Haynesville Shale, Permian Basin, Uinta Basin, Williston Basin, and Eagle Ford Shale.

Prior to joining StrataGen, Wadhah worked for BJ Services Company for over 4 years in East Texas and was involved in fracturing, acidizing, and cementing services. He holds B.S. and M.S. degrees in Petroleum Engineering from New Mexico Tech.
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You will need to provide your Curriculum Vitae, a detailed description of research interests (not to exceed 10 pages), a teaching philosophy statement (2 pages), and the names and email addresses of three references whom we may contact.

Applications should be submitted online via the following links:
1. Assistant/Associate/Full Professor: apply at http://jobs.uh.edu/postings/23170
2. Assistant Professor: apply at http://jobs.uh.edu/postings/23160

Please direct inquiries for additional information to Thomas K. Holley, Ph.D., Director of the Petroleum Engineering Program, at tkholley@uh.edu

The University of Houston is an Equal Opportunity/Affirmative Action employer. Minorities, women, veterans, and persons with disabilities are encouraged to apply.
Challenges and Solutions in Multiphase Flow Measurement for Onshore, Offshore and Subsea Applications

Accurate measurement of oil, gas and water can be challenging enough when the fluids are fully separated through a properly sized test separator. But not all applications will allow for test separators to be installed – due to cost, size or complexity – and the measurements of the individual fluids will need to be determined with an inline multiphase flow meter system. This presentation will discuss some of the applications where multiphase meters are currently used, what challenges are commonly seen, and how the use of multiphase meters can effectively be used for these complex scenarios. The current status of multiphase meters will be covered, and examples of successful (and not so successful) applications of multiphase meters in real life applications will be presented.

LARS FARESTVEDT

Lars Farestvedt is the General Manager of FMC Technologies’ MPM Houston office, and is responsible for MPM’s business in the Western Hemisphere. Prior to joining MPM in 2008, Lars spent 9 years in various management positions in FMC Measurement Solutions and FMC Subsea Systems. Lars has an Electrical Engineering Degree from West Virginia University, and has directly or indirectly been involved with multiphase metering for 25 years.

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MEMBERS
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EVENT CONTACT
Brad Nelson
832-230-8246
bnelson@maxoilsolutions.com

LOCATION
Wood Group Mustang
Clydesdale Building Events Room
17320 Katy Freeway
Houston, TX 77094

SPRING SERIES SESSION III

Wednesday 2.18.15
4:30 PM TO 6:00 PM
### A Better Way to Frac

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<table>
<thead>
<tr>
<th>Feature</th>
<th>MM 200</th>
<th>Slickwater FR</th>
<th>Guar</th>
<th>MM 301</th>
</tr>
</thead>
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<tr>
<td>Drag Reduction Dose&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>&lt;0.2 gpt&lt;sup&gt;(2)&lt;/sup&gt;</td>
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<td>&lt;0.2 gpt</td>
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<tr>
<td>Sand Suspension Dose</td>
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<td>6-9 gpt</td>
<td>3-5 gpt</td>
</tr>
<tr>
<td>Sand Loading/Stage&lt;sup&gt;(3)&lt;/sup&gt;</td>
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<td>None</td>
<td>100%&lt;sup&gt;(4)&lt;/sup&gt;</td>
<td>120-150%</td>
</tr>
<tr>
<td>Divalent/TDS&lt;sup&gt;(4)&lt;/sup&gt;</td>
<td>Up to 10% TDS</td>
<td>Varied</td>
<td>Low</td>
<td>Unlimited</td>
</tr>
<tr>
<td>Crosslinkable&lt;sup&gt;(5)&lt;/sup&gt;</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Temperature Stability</td>
<td>275 F</td>
<td>275 F</td>
<td>200 F</td>
<td>300 F</td>
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<tr>
<td>Return Flow</td>
<td>Excellent</td>
<td>Good</td>
<td>Okay</td>
<td>Excellent</td>
</tr>
<tr>
<td>Shale Stability</td>
<td>Excellent</td>
<td>Good</td>
<td>Okay</td>
<td>Excellent</td>
</tr>
<tr>
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<td>None Required</td>
<td>Multiple</td>
<td>None Required</td>
</tr>
<tr>
<td>Truckload Lead Time</td>
<td>Immediate</td>
<td>60 days</td>
<td>Immediate</td>
<td>Immediate</td>
</tr>
</tbody>
</table>

<sup>(1)</sup> Dose at 67+ percent drag reduction;  
<sup>(2)</sup> Instantaneous drag reduction 40% better than standard FR's at one-third the dosage;  
<sup>(3)</sup> 100% for guar as reference value;  
<sup>(4)</sup> Including salts, acids, bases, crosslinker, shale stabilizers, etc.- excellent for coil;  
<sup>(5)</sup> Any breaker except sodium bromate.

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Granite Wash Optimization – Validating Completion and Production Techniques

The Granite Wash formation continues to be a prolific hydrocarbon producer, with over 1600 wells drilled during the past 10 years. During 2012 and 2013 an extensive development program was initiated by one operator in which 144 wells were drilled and completed with multi-stage hydraulically stimulated horizontal wells. These wells utilized various types of completion diagnostics to: (1) evaluate vertical and horizontal communication within the Granite Wash, (2) identify potential horizontal loading problems and (3) characterize long-term fracturing fluid movement. This presentation will share highlights from a very large completion diagnostic dataset and the resultant applications to production optimization.

CHAD SENTERS

Chad Senters is the Region Engineering Advisor for the ProTechnics division of Core Laboratories in Oklahoma City, specializing in completion diagnostics. Chad has over 8 years of experience in the oil and gas industry during which he has focused on stimulation, coiled tubing and downhole tools. Chad graduated from the University of Missouri Rolla with a BS degree in chemical engineering. This presentation was coauthored by Linn Energy and was first presented in Amsterdam at the 2014 SPE ATCE.

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Enhanced Recovery in Unconventional Liquid Reservoirs by Use of CO₂

Technological advances in multiple-stage hydraulic fracturing and horizontal drilling have improved the overall profitability of oil-shale plays by enhancing matrix/wellbore connectivity. However, as the reservoir matures, primary-production mechanisms no longer drive oil to the hydraulic fractures, making the improvement of matrix/wellbore connectivity insufficient to provide economically attractive production rates. This study presents experimental results on the use of carbon dioxide (CO₂) as an enhanced-oil-recovery (EOR) agent in preserved, rotary sidewall reservoir core samples with negligible permeability.

DR. DAVID SCHECHTER
Dr. David Schechter is an associate professor at the Petroleum Engineer Department at Texas A&M University. He has a Ph.D. in Physical Chemistry from Bristol University, England, 1988 and a BS, Chemical Engineering from The University of Texas at Austin, 1984. His current research includes:

- Spraberry Trend Area
- Geological and Petrophysical Analysis
- Wettability Determination and Imbibition Experiments
- Numerical Modeling
- Reservoir Simulation
- CO₂ Flooding and Gas Injection

EVENT INFO
Thursday 2.19.15
11:30 AM TO 1:00 PM

SPEAKER
Dr. David Schechter
Associate Professor Texas A&M University

LOCATION
Sullivan’s Steakhouse
4608 Westheimer Rd
Houston, TX 77027

EVENT CONTACT
Rafael G. Barroeta
713-366-5356
Rafael_barroeta@oxy.com

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Natural Gas – Have the Contrarians Finally Been Vindicated?

Please join us at the Four Seasons Hotel for a panel discussion on the oil and gas industry’s response to the current commodity price environment of falling oil prices and relatively steady gas prices.

Since at least 2011, the vast majority of E&P companies have been part of the “herd” positioning their companies to become “liquids focused.” The robust transaction activity in the Permian, Eagle Ford, Bakken, and Mid-Con was the outcome of strong demand for liquid-weighted assets as oil prices continued to hold steady at $100+. Meanwhile a few hardy contrarians pursued gas-weighted assets despite the market’s focus on oil. Have these contrarians finally been vindicated?

Some companies are now beginning to shift their focus from crude oil to natural gas as they see continued downward oil price pressures for the foreseeable near future. The result has been:

- Increased M&A&D activity in gas-weighted assets due to less volatility in natural gas prices, depressed oil prices, and the lack of quality oil-weighted assets on the market
- Increased natural gas permitting and drilling activity due to a shift in capital from uneconomic oil locations to gas opportunities
- Rebalancing of asset portfolios given the current commodity price environment

What are public and private companies doing in the face of the new commodity price environment? Who are the big winners and losers in the new commodity price environment? What should we expect in terms of natural gas weighted M&A&D transaction activity?

We welcome you to join us for this informative hosted and moderated panel discussion.

SEASON PASS HOLDERS

You do not need to register for this event, as your Season Pass has automatically registered you for all 2014-15 Business Development events. Thank you for being a Season Pass holder.

EVENT INFO

Thursday
2.25.15
5:00 PM TO 7:00 PM

SPEAKER
TBD

LOCATION
Four Seasons Hotel
1300 Lamar
Houston, TX 77010

EVENT CONTACT
Matt Bormann
281-345-8019
mbormann@wwtco.co

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Global gas demand continues to outpace oil, increasing its contribution to overall energy use. Major upstream developments together with midstream transportation systems and downstream feedstock projects continue to increase. As this revolution evolves, there will be a dramatic rise in the requirement for high-accuracy measurement at every point in the gas value chain.

This value chain can be subdivided into four major categories within which metering is carried out: Gas Production, Gas Transmission, Gas Storage and Gas Distribution. Within these categories there is a huge array of different gas metering applications and a similar number of potential solutions. This can lead to confusion when selecting the optimum solution for the application.

Two of the traditional approaches have been to use orifice plates or turbine meters; however, newer technologies, in particular ultrasonic and coriolis meters, are being utilized more frequently. The aim of this presentation is to address meter selection and provide pointers to assist engineers within the four major categories listed above.

This session is scheduled as a one (1) hour presentation followed by a thirty (30) minute Q&A session. We expect a large turnout, so please book early and we hope you attempt to attend all four sessions. The PF&C study group appreciates the support of our SPE-GCS members and we look forward to seeing you there.

**DAN HACKETT**

Dan is Business Development Director of Ultrasonics for the Daniel Measurement & Control Division of Emerson Process Management based in Houston, Texas. Dan develops key business opportunities for Daniel’s gas and liquid ultrasonic meter business and provides technical sales training to the Daniel sales channel as well as conducting measurement seminars throughout the world. He has extensive experience in custody transfer measurement of oil and gas.

Dan has authored numerous papers presented at various API, AGA, ISA and NEL conferences. He has participated on several committees and working groups of the API Committee on Petroleum Measurement, most recently Chapter 5.8 Measurement of Liquid Hydrocarbons by Ultrasonic Flow Meters. Dan is a member of the AGA Transmission Measurement Committee, which is responsible for AGA 9 Measurement of Gas by Multipath Ultrasonic Meters.

Dan is a 1980 graduate of Texas A&M University.
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SPE-GCS Night at the Movies
PRESENTED BY HSSE-SR AND YOUNG PROFESSIONALS

Please join SPE-GCS HSSE-SR and Young Professionals groups for an evening of networking and learning.

5:00 PM  Social Hour
6:00 PM  Feature Film: Big Men
7:30 PM  Panel Discussion

Sponsorship Opportunities Available!

EVENT INFO

TUESDAY
2.17.15
5:00 PM - 8:30 PM

LOCATION
Studio Movie Grill - City Centre
805 Town & Country Lane
Houston, TX 77024

COST
$10 Members / $20 Non-Members
$30 Walk-ins

EVENT CONTACTS
Diana Smith
dianaksmith4@gmail.com
Pavitra Sainani
pavitra.a.sainani@exxonmobil.com

Please welcome the new Board members for the 2015-2016 program year which starts in August 2015. In accordance with by-laws, the Succession Planning and Nominating committees identify the best candidates with the skills and leadership talent to manage the section and provide service to all the members. These positions are elected by the Board and presented to the membership each year in the February newsletter.

In addition to the elected members to the right, one appointed member was also named at the December Board meeting. Simeon Eburi, Chevron, will become the Education Chair in August 2015. Simeon is the past YP chair, the 2015 Engineer Week coordinator, 2014 Young Engineer of the Year, and involved in numerous YP activities.

Congratulations to all new Board members.

New Board Members

VICE CHAIR | DEEPAK GALA, SHELL
Deepak is currently the At Large Director and is active in SPEI and GCS.

VICE TREASURER | DAVID FLORES, CONSULTANT
David is a former SPE-GCS Director as Career Management and Secretary. He continues to support many GCS activities.

SECRETARY | GABRIELLE GUERRE, RYDER SCOTT
Gabrielle is a current Board member for the Education Committee and active in GCS and Young Professional functions.

AT LARGE DIRECTOR | ALVIN BARBER, SCHLUMBERGER
Alvin has more than 15 years with SPE and in the industry. He was previously with ExxonMobil. Alvin is involved in Star Scholarship, ATCEs, Fracking Conference, Artificial Lift Conference and others.

AT LARGE DIRECTOR | MARK FLEMING, SUNTRUST ROBINSON HUMPHREY
Mark has more than 25 years in the industry and SPE working primarily in reservoir engineering functions. He has recently moved into investment banking.

AT LARGE DIRECTOR | JOHN JACKSON, UNIMIN ENERGY
Over the past 3 years, John Jackson has served multiple positions on the Young Professionals board while serving as Editor of the Gulf Coast Section Newsletter.
The 1st Annual Society of Petroleum Engineers Gulf Coast Section OilSim Competition Fundraiser will be held on Friday, April 10, 2015 at the offices of The Frontline Group of Texas, LLC located at 15021 Katy Freeway, Suite 575, in Houston, Texas. Proceeds from the fundraiser benefit the SPE-GCS Scholarship Fund. In combination with other section functions, there have been 33 new scholarships for incoming college freshman studying petroleum engineering, math and sciences, and 70 renewed scholarships which include sophomores, juniors and seniors for their continued education in petroleum engineering. The OilSim Competition Fundraiser would like to add to these numbers in 2015.

What happens at the OilSim Competition Fundraiser, you might ask? Participants are grouped in teams and each team acts as a virtual petroleum company in the business simulation OilSim. The team challenge is to explore and discover oil and gas, then create and implement a plan for developing the field, and finally operating it until it is abandoned. An experienced OilSim instructor guides the participants through the process.

Sponsors are a welcome and an essential part of making this event a success. All sponsors will be recognized in the competition program and on the sponsorship billboard that is exhibited throughout the competition. Please see the Sponsor Form for sponsorship levels. In-kind donations for ditty bags and door prizes are also accepted.

On behalf of the entire 2014-2015 SPE-GCS OilSim Competition Fundraiser Committee, we look forward to seeing everyone for a fun-filled day of competition!
SPE-GCS 1st Annual Texas Hold ‘Em Scholarship Fundraiser

Tournament registration will begin at 5:30 PM, followed by a Texas BBQ buffet dinner. Cash bar will be available. Tournament will begin at 6:00 PM. Eliminated players may stay and watch the rest of the tournament. Blackjack and craps tables will be available for guests and eliminated players. The award ceremony is planned for 9:30 PM.

Participation is open to members, nonmembers, guests, and friends of SPE and Hess Club, but poker professionals are not allowed. Entries are accepted on a first-come, first-served basis. Please register in advance as seats are limited. Guest Fee is for attendees who do not play in the poker tournament itself, but may play at the blackjack table and craps table.

Please support this new scholarship fundraiser and have some fun! Register online to reserve your seat today!

QUESTIONS
Akhan Mukhanov
Akhan.Mukhanov@gmail.com
832-341-3733

LOCATION
Hess Club
5430 Westheimer Road, Houston, TX 77056

FEES
Tournament Fee
$50 Early Bird
$60 After 2/28

Guest Fee
$25 Early Bird
$30 After 2/28

Fees are non-refundable after registration deadline: March 26th, 2015

Saturday
March 28th

SPONSORSHIP OPPORTUNITIES
Proceeds from the sponsorships of this tournament benefit the SPE-GCS Scholarship Fund, which has awarded more than $3 million in scholarships since 1963 to local engineering students.

DIAMOND SCHOLARSHIP SPONSORS
$5,000
Includes 8 tournament participants
Visual media and banners in the Texas Ballroom
Logo on the event page on the SPE-GCS website
Verbal mention at the event
Post-event coverage in the SPE-GCS Newsletter

PLATINUM SCHOLARSHIP SPONSORS
$2,500
Includes 6 tournament participants
Foam board on easel at the registration table
Logo on the event page on the SPE-GCS website
Verbal mention at the event
Post-event coverage in the SPE-GCS Newsletter

GOLD SCHOLARSHIP SPONSORS
$1,000
Includes 4 tournament participants
Banner under the bar counter in recreation room
Logo on the event page on the SPE-GCS website
Verbal mention at the event
Post-event coverage in the SPE-GCS Newsletter

SILVER SCHOLARSHIP SPONSORS
$500
Includes 2 tournament participants
Logo on the event page on the SPE-GCS website
Verbal mention at the event
Post-event coverage in the SPE-GCS Newsletter

QUESTIONS
Akhan Mukhanov
Akhan.Mukhanov@gmail.com
832-341-3733

LOCATION
Hess Club
5430 Westheimer Road, Houston, TX 77056

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Visual media and banners in the Texas Ballroom
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$2,500
Includes 6 tournament participants
Foam board on easel at the registration table
Logo on the event page on the SPE-GCS website
Verbal mention at the event
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GOLD SCHOLARSHIP SPONSORS
$1,000
Includes 4 tournament participants
Banner under the bar counter in recreation room
Logo on the event page on the SPE-GCS website
Verbal mention at the event
Post-event coverage in the SPE-GCS Newsletter

SILVER SCHOLARSHIP SPONSORS
$500
Includes 2 tournament participants
Logo on the event page on the SPE-GCS website
Verbal mention at the event
Post-event coverage in the SPE-GCS Newsletter
PetroBowl XIII kicked off the very exciting week at the SPE Annual Technology Conference and Exhibition 2014 in Amsterdam. This year’s competition featured 36 colleges from all over the world battling for scholarship money, a stunning trophy, and of course overall bragging rights. Congratulations goes to the University of Tulsa who emerged as the victors for Petrobowl XIII, with University of Oklahoma (OU) taking a close second, and Colorado School of Mines finishing third.
Thank you to Permian Basin, Community Service and Continuing Education groups for providing photos from their latest events. We’d like to feature more photos from our section events and luncheons in the Connect. If your committee or study group has photos, please send the original high-resolution file to the Connect editor at editor@spegcs.org.
Each year the Young Professionals partner with elementary schools to encourage students in kindergarten through third grade to improve reading skills, behavior and attendance. Those students who committed to a special monitoring program and fulfilled all the necessary requirements were rewarded with a bike! SPE Young Professionals assisted with assembling some of 10,000 bikes that were delivered to these students the week before Christmas. Thanks for your commitment to our next generation!
Texas A&M SPE Visits Greens Prairie Elementary School

As we work towards increasing the positive publicity of the oil and gas industry, Texas A&M SPE had the privilege of visiting the second grade class of Greens Prairie Elementary school in Bryan, TX on the 14th of November, 2014 with tremendous success in increasing awareness of the oil and gas industry.

Three concepts were introduced, “What is oil and gas?”, “How do we get it out?”, and “What is the industry doing to keep the environment safe?” Not only were we able to teach the next generation about the oil & gas industry, we also attracted their teachers’ attention and with the success of the event, the 4th grade class from Greens Prairie Elementary has asked us to return on the 27th of February, 2015 to provide a similar demonstration.

We look forward to establishing an annual relationship with Greens Prairie, and hopefully expand to more schools in the Bryan/College Station area as part of our efforts as an outreach committee to increase positive publicity and try to negate mythical/false assumptions.

Annual Texas A&M SPE Paintball Tournament

Texas A&M SPE has had tremendous success in all of our social and networking events this year. This was only possible because of the great support from our sponsors and everyone who participated in each one of our events.

We have a full calendar planned for next spring as well! On this occasion, we would like to invite everyone to our Annual Texas A&M SPE Paintball Tournament. This event will take place on February 20th from 4:00pm to 6:00pm at Zoomz Paintball, College Station. This is a great opportunity to improve relationships between students and industry representatives in a more relaxed environment.

If you are interested in sponsoring or being included in the sign up email, please email Ana Victoria Perez at ana.victoria92@tamu.edu.

We would love to see everyone there!

TAMU SPE 25th Anniversary Party

EVENT INFO

THURSDAY
2.26.15
LOCATION
Texas A&M University

FOR MORE INFO CONTACT
Ana Victoria Perez
ana.victoria92@tamu.edu

Our student chapter is proud to be celebrating our 25th Anniversary this year! We will be having a party in the Memorial Student Center at 7 PM on February 26, 2015. There are three ways for you to get involved with this event.

The first is by attending! The party is conveniently scheduled for the evening of the Career Enhancement Event, so if you are planning to be on campus to recruit, you are encouraged to stay and celebrate with us. However, anyone is welcome to come to town for the party! Tickets for SPE members and guests will be available for purchase.

The second is by submitting a video of yourself talking about the Texas A&M Student Chapter. You may tell us about a particular memory you have from your time here in petroleum engineering, leadership positions you held, or anything you admire about our student chapter. These videos will be used in a montage, which will be shown at the party. Please aim for less than 1 minute long. You may email your video to jwisler@tamu.edu or text it to 281-733-8801.

The third is by sponsoring this event. We want to celebrate in style, and we can only do this with the support of our sponsors. If you or your company is interested in sponsoring the 25th Anniversary Celebration, please contact Ana Victoria Perez.
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February
CALENDAR

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