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SPWLA – Houston Chapter News

October, 2012

Luncheon Meetings

Northside Mon, Oct 1, 2012 The Greenspoint Club	Horizontal Well Completion Optimization Using Acoustic Logs by Eric Wigger, Schlumberger Data Services
Westside Wed, Oct 10, 2012 BP Plaza Pond View 1-2	Beyond Volumetrics: Petrophysical Characterization using Rock Types to Predict Dynamic Flow Behavior in Tight Gas Sands by Shujie Liu, BP America
Downtown Wed, Oct 15, 2012 Chevron Auditorium	Advances in Rotary Core Formation Sampling by Chris Tevis, Schlumberger

Local SPWLA Upcoming Events

Houston SPWLA Software/Hardware Show

December 2012

Event Sponsors needed, contact [Rob Hengel](#)

Golf Tournament

Spring 2013

Event Sponsors needed, contact [Rob Hengel](#)

54th Annual SPWLA Symposium

June 22nd to 26th

New Orleans, LA

[Complete Calendar of Events](#)

President's Corner

October, 2012



Dear Chapter Members,

We had a great start with our September luncheons. Mitch Pavlovic kicked off the season with the well-attended Northside talk on the Eagle Ford formation by Joel Walls (Ingrain). The crowd was so curious; they kept on asking questions until almost 1:30 p.m! Matt Blyth's Westside venue hosted Ron Hayden (Schlumberger) with a talk on "New Developments in Tri-Axial Induction Applications". Libny Leal's downtown luncheon had a good attendance and interesting talk on water chemistry by Steve Uchytil (Hess Corporation). The three presentations were of great interest among the chapter members and reflected the diversity that the Chapter offers, not only in topics but also in company representation. Now, the three VPs are actively working on the agenda for October.

In an effort to improve the Northside and Downtown meeting logistics, we seek your personal participation in using Paypal when registering at these two venues. Advance payments through widely available web-based technology significantly reduce check-in time and secure your seat at the luncheon.

During the month of September, our SPWLA President Roland Chemali actively promoted the SPWLA membership in our luncheons. Participation in the Houston Chapter does not automatically make you a member of the international SPWLA. On behalf of the Houston Chapter and the Young Professional Membership Committee, I would like to encourage you to join our mother society or to initiate/join your student chapter. The SPWLA member benefits are invaluable and reflect your public commitment to excellence in petrophysics.

We would like to thank all the sponsors who renewed their membership and those who recently joined for the first time. The chapter continues to show appreciation to our sponsors by acknowledging them in every venue. There are still plenty of opportunities to support our chapter, not only throughout the year but also by sponsoring specific events like the golf tournament. Please, feel free to contact our treasurer Rob Hengel (treasurer@spwla-houston.org) to learn more about sponsorship.

I would like to acknowledge the contributions of the board during the beginning of our season. They are individuals whose extra-time and effort are making a difference! This is a great start and I look forward to continuing working with all of them throughout the season.

The Houston Chapter board values your opinion and welcomes your suggestions. If you have questions, please, visit our website (www.spwla-houston.org) or contact any of the officers.

Thaimar Ramirez
Houston Chapter President
president@spwla-houston.org

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Northside Luncheon Meeting

Date: Monday October 1, 2012

Lunch: 11:30 Talk: 12:00

Reservations: Email [Mitch Pavlovic](#)

RSVP before 9:00 A.M., Thurs. Sept. 27.

Walk-ins are welcome; lunch may not be available without advance payment.

Place: The Greenspoint Club
16925 Northchase Drive, Houston, TX 77060

Horizontal Well Completion Optimization Using Acoustic Logs

Presenter and co-author: Eric Wigger, Schlumberger Data Services

Additional Co-authors:

Kirby Walker, Schlumberger Well Services, Pittsburgh, PA

Kevin Wutherich, Schlumberger Well Services, Pittsburgh, PA



Abstract

This presentation demonstrates the effective use of tractor conveyed wire-line tools to engineer stage placement and perforation spacing in horizontal wells drilled in unconventional gas shale reservoirs. While many operators drill vertical pilot wells to determine the ideal lateral landing point based on wire-line logs, very few horizontal wells are logged to determine how reservoir and mechanical properties vary as the well progresses away from the vertical data set. The majority of completion designs rely on geometric stage and perforation spacing, which neglects the heterogeneity of physical properties of the rock layers traversed by the well. Not accounting for the rock properties' changes along laterals has led to varying production rates between sister wells from the same pad, non-producing perforation clusters, and an increased risk of screening out during completion.

Three projects using acoustic stress profiles to engineer stage and perforation placement will be presented showing results from the Barnett Shale as well as results from the Marcellus Shale. For the Marcellus Shale project, eight horizontal wells were logged with a cross-dipole acoustic tool to assess completion quality continuously over the length of the laterals. Anisotropic mechanical properties computed from the acoustic data were then used to determine the optimal number and location of stages as well as the ideal number of perforations per stage and the perforations' locations. Production logs run on two wells in addition to overall production and completion data were used to determine how successful the engineered completions were as compared to non-engineered, geometrically designed completions. A case study based on this data set shows the logged wells with designed completions had lower treating pressures and higher gas production rates compared to nearby geometrically completed wells. Additionally, no screenouts were experienced during the completion of the designed wells while previous geometrically spaced completions had screened out at a rate of 35%.

Biography

Eric Wigger is a senior petrophysicist specializing in hard rock geomechanics and acoustic signal processing for Schlumberger Data and Consulting Services in Oklahoma City. Wigger received a bachelors' degree in chemical engineering from the University of Oklahoma in 2003. He has worked with Schlumberger since 2004, and is currently the Technical Team Leader for the Oklahoma City Acoustics and Geomechanics team. His job includes processing and interpreting sonic waveform data for geomechanical modeling and reservoir stress characterization for unconventional shale reservoirs. He is currently involved in creating and supporting horizontal completion optimization work flows in the Eagleford Shale, Marcellus Shale, and Utica Point Pleasant.

Westside Luncheon Meeting

Date: Wednesday, Oct 10, 2012

Lunch: 11:30 Talk: 12:00

Reservations: Email [Matthew Blyth](#)

RSVP before 3:00 P.M., Tuesday Oct 9

Place: BP Plaza Terrace **Pond View 1&2**, next to cafeteria
501 Westlake Park Boulevard, Houston, TX 77079

Beyond Volumetrics: Petrophysical Characterization using Rock Types to Predict Dynamic Flow Behavior in Tight Gas Sands

Presenter and author: Shujie Liu, BP America



Abstract

Cotton Valley tight gas sands in the East Texas Basin consist of very fine-grained, well-sorted quartz arenites and subarkoses, overprinted by significant diagenetic processes. Hydrocarbon production is controlled dominantly by stratigraphic variations in rock types. Hydraulic fracturing has been utilized to establish economic gas production, yet water management strategies are required to handle high water yields. These water yields are in excess of expected water condensation production, and it is clear that free water exists in the low permeability reservoir. Traditional formation evaluation methods are challenged by this unconventional hydrocarbon reservoir.

A static petrophysical rock typing study using routine and special core analyses, including nuclear magnetic resonance and high-pressure mercury injection capillary pressure data, was previously published. This work builds upon that study and extends the rock typing work into the realm of dynamic reservoir characterization. Additional petrophysical analysis of relative gas permeability and capillary pressure measurements enabled the development of relative permeability models for gas and water.

Dynamic rock typing focuses on using the basic reservoir petrophysical properties including rock type, porosity, and effective permeability at reservoir conditions to divide the reservoir into flow units. Dynamic rock type models provide insight into fractional flow behaviour and mobile water prediction ahead of completions. Flow profiles reveal that in the Cotton Valley tight gas sand, although gas dominates the production, free water can be produced depending on rock type and water saturation. Good correlation exists between the stratigraphic flow profile and the well production performance.

In summary, tight gas petrophysical studies need to go well beyond the routine calculation of volumetrics, and should consider both static (storage) and dynamic (flow) properties.

Biography

Shujie Liu is a Petrophysicist with BP North America Gas. She studied Oil and Gas Exploration in China National Oil and Gas Research Institute, Beijing, and studied Reservoir Evaluation and Management in Heriot-Watt University, Edinburgh. She holds a PhD in Oil and Gas Exploration and an MSc in Reservoir Management. She has worked as a Petrophysicist and Reservoir Engineer in China oil & gas fields, UK North Sea fields, USA Prudhoe Bay field, and is now working with East Texas unconventional resources.

She is a member of SPWLA.

Downtown Luncheon Meeting

Date: Wednesday, Oct. 15th, 2012

Lunch: 11:30 Talk: 12:00

Reservations: Email [Libny Leal](#)

RSVP before 4:00 P.M., Monday, Oct. 12th

Cost: \$30 (includes lunch*) Please, use PayPal.

Place: **Chevron Auditorium**, Ground Floor
1500 Louisiana St., Houston, Texas 77002

Advances in Rotary Core Formation Sampling

Presenter: Chris Tevis, Schlumberger



Abstract

Wireline conveyed formation coring was recognized early as an important tool for formation evaluation, due to the ability to retrieve an actual physical sample from a known depth. While early wireline coring was accomplished by firing a sampling bullet into the borehole wall and retrieving it back to surface, this proved impractical for very hard formations. Additionally, the compressional forces exerted during bullet impact skew core properties. To alleviate these issues, highly complex mechanical wireline tools were developed, implementing a motor-driven diamond tipped bit to cut and retrieve sidewall cores. This presentation will discuss Schlumberger's latest advances in technology for sidewall rotary coring on wireline and what services will be available in the very near future.

Biography

Chris Tevis currently works in Sugar Land, TX at the Houston Pressure and Sampling Integration Center as the Coring Product Champion. Chris originally joined Schlumberger in 2001 having earned BS degree in Mechanical Engineering from Columbia University. He owns a wealth of experience operating in both domestic and international wireline field locations. Most recently he served as Quality Operations Support Manager for the East Asia GeoMarket (Malaysia, Thailand, Vietnam, Philippines, Myanmar, and Brunei).