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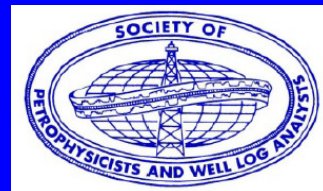
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# SPWLA - Houston Chapter News

## March, 2014



## Luncheon Meetings

<b>Northside</b> <b>Mon, Mar 3, 2014</b> <b>The Greenspoint Club</b>	NMR Logging for Characterizing Unconventional Source-Rock Reservoirs.  By Songhua Chen, Haliburton.
<b>Downtown</b> <b>Wed, Mar 19, 2014</b> <b>Kinder Morgan</b>	ADVANCED RESERVOIR EVALUATION USING DOWNHOLE FLUID ANALYSIS AND ASPHALTENE FLORY-HUGGINS-ZUO EQUATION OF STATE  By Hani Elshahawi, Shell.
<b>Westside</b> <b>Wed, Mar 12, 2014</b> <b>BP Plaza Westlake 4</b>	Mechanical Characterization in Unconventional Reservoirs: A Facies Based Methodology  By Dave Amendt, ConocoPhillips

## Local SPWLA Upcoming Events

### Spring Topical Conference

**“Petrophysics Meets Geophysics: A Multi-Disciplinary Approach to Reservoir Challenges”**

**Cohosted by the Geophysical Society of Houston  
Chevron Auditorium, Downtown Houston, April 30th**

### 55<sup>th</sup> Annual SPWLA Symposium

**May 18<sup>th</sup> to 22<sup>nd</sup>**

**Abu Dhabi, UAE**

**[Complete Calendar of Events](#)**

# President's Corner

March, 2014

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*Dear Chapter Members,*

After the break in December and the Christmas/New Year period, the chapter has returned to the fray with our regular speaker meeting schedule through January, February and into March. Three speaker sessions took place in January. Jennifer Market (Weatherford) presented to a packed house on “Choosing the Right Sonic Service” at the Downtown luncheon. On the Westside, John Priest (Baker Hughes) delivered a talk on “The effects of Logging Speed on Log Resolution and Log Sampling” and up on the Northside, SPWLA Distinguished Lecturer Hani Elshahawi (Shell) presented on “Advanced Reservoir Evaluation Using Downhole Fluid Analysis and Asphaltene Flory-Huggins-Zuo Equation of State”. During February an additional three meetings took place. Margaret Lessenger (Newfield Exploration) delivered a very well attended talk at the Northside meeting entitled “Application of Dielectric and Standard Logging Suites to Characterize the Stratigraphic Variations in Archie parameters in Greater Monument Butte Field”. On the west side Hani Elshahawi repeated the same presentation he delivered to the Northside in January and Tad Smith (Apache) delivered a talk to sell out audience at the Downtown venue on “Practical Seismic Petrophysics: The Effective use of Log Data for Seismic Analysis”. Once again I would like to thank all those who attended and helped to support the activities of the chapter. We will hold speaker luncheons through until April when we will break before the SPWLA Annual Convention and the summer before resuming again in the fall.

The December software show was a great success. This year it was held in a new venue downtown and I would like to thank Kinder Morgan for letting us use their room to host this event. I would also like to thank all those vendors and SPWLA chapter members who attended. We had a full quota of vendors present and in fact we are exploring the option of increasing the space available for next year's show.

We are now focusing on this year's Spring Topical Conference. The conference will take place at the Chevron Auditorium downtown, on April 30th, slightly earlier than previous years to allow for the fact that the Annual Convention is in May this year. This year's topic will be “Petrophysics Meets Geophysics: A Multi-Disciplinary Approach to Reservoir Challenges” and the aim is to look at the role of rock physics in helping to understand Petrophysical problems. I am very happy to announce that the Geophysical Society of Houston will cohost the conference with us. This topic will dovetail with the GSH's Spring Symposium, which will take place in March and which I would encourage you to attend also (details are on in the GSH website [www.gshtx.org](http://www.gshtx.org)). We will be posting more details on the chapter website and at the speaker meetings. If you, or anyone you know, are interested in presenting then please feel free to contact any member of the chapter board.

## ***SPWLA Houston Chapter News – March, 2014***

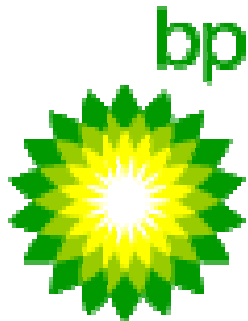
We are also looking at holding a chapter social event this year, likely in late April or early May, details of which will be announced shortly.

Finally we are approaching the time to hold elections for the 2014/2015 chapter board. If you are interested in standing for any of the available positions and potentially becoming a member of the Houston SPWLA committee then we will be open for nomination submissions from March 1st – 23rd. We will then hold the ballot during early April and the results will be announced at the Spring Topical Symposium at the end of April. If you have any questions about what the different board positions entail then please feel free to contact anyone on the current board and they will be happy to help.

As always if your company is interested in sponsoring the Houston Chapter or one of our events then please contact our chapter treasurer (Zhipeng 'Z' Liu) for details – [treasurer@spwla-houston.org](mailto:treasurer@spwla-houston.org) . Once again thank you to all those that attended our January speaker sessions. Remember, we always welcome your feedback and ideas and for more information on chapter events please visit our website [www.spwla-houston.org](http://www.spwla-houston.org).

Matt Blyth  
Houston Chapter President  
[president@spwla-houston.org](mailto:president@spwla-houston.org)

# Thank you to our sponsors!!!



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**NMR Log Processing**

There's still time to add *YOUR* company ad.

## **Northside Luncheon Meeting**

Date: Monday, March 3rd, 2014

Lunch: 11:30 Talk: 12:00

Reservations: Email Robin Slocombe

RSVP before NOON, Friday 28<sup>th</sup> February

Place: The Greenspoint Club,

16925 Northchase Drive, Houston, TX 77060

Parking: Visitor parking is available in the parking lot below the Greenspoint Club

Cost: \$35 (please use PayPal)

Lunch is included.



### **NMR Logging for Characterizing Unconventional Source-Rock Reservoirs.**

**Presenter:** Songhua Chen (Halliburton Energy Services)

#### **Abstract**

The presence of organic pores in unconventional source rocks posts new challenges for many logging tools and corresponding interpretation techniques. For nuclear magnetic resonance (NMR) logging, it also faces measurement difficulties attributed to the fast relaxation time and low porosity associated with the proton NMR signals in organic shales. Despite these challenges, NMR logging has been proven valuable for porosity, TOC, and hydrocarbon identification for organic-shale reservoir characterization. This talk begins with a brief description of the theoretical expectations of NMR logging responses in organic shale, followed by a case study including 19 wells belonging to the Eagle Ford shale formation and additional wells from Woodford and Haynesville shale plays. The study investigates the different NMR logging responses between organic-rich shale reservoirs and conventional reservoirs, and the difference between the organic-rich lower Eagle Ford vs. organic-poor upper Eagle Ford shales. Most of these wells are located in oil or gas condensates window but a few wells in the gas windows are also included for completeness. This talk mainly presents statistically significant results and discussions; individual well results are used only for the purpose of illustrating trends and features common to most of the wells studied. This presentation is based on SPWLA paper 2013-Z.

#### **Biography**

Songhua Chen is currently Sr. Manager of NMR Sensor Physics group at Halliburton. Prior to joining Halliburton in early 2011, he had been with Baker Hughes for more than 15 years, starting as a Sr. Scientist, progressed to Staff Scientist, Sr. Staff Scientist, and Sr. Manager of Petrophysics and Integrated Interpretation. In the last 20 years, he has been actively involved in various projects in the area of NMR interpretation, sensor development, petrophysics, and carbonate rock models. Before working at Baker Hughes, he was a Sr Research Scientist at Texas Engineering Experiment Station doing researches in the area of applying NMR imaging and relaxometry techniques for multiphase flow characterization in porous media. Songhua got his B.S. from Nanjing Institute of Technology in Nanjing, China and a Ph.D. from University of Utah in Salt Lake City, Utah, U.S.A., both in physics.

## **Downtown Luncheon Meeting**

Date: Wednesday, March 19th, 2014

Lunch: 11:30 Talk: 12:00

Reservations: Email Michael Ashby

RSVP before NOON, Friday March 17th

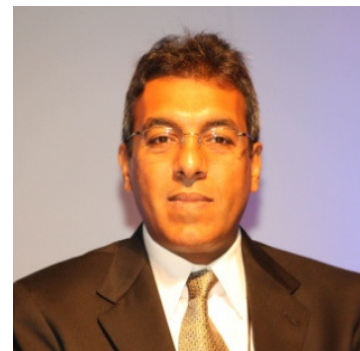
Place: We have changed location – Kinder Morgan – First Floor Conference Room

1001 Louisiana St Houston, TX 77002

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

### **ADVANCED RESERVOIR EVALUATION USING DOWNHOLE FLUID ANALYSIS AND ASPHALTENE FLORY-HUGGINS-ZUO EQUATION OF STATE**

**Presenter:** Hani Elshahawi, Shell



#### **Abstract**

Early understanding of reservoir complexities such as compartmentalization and compositional gradients is crucial for optimal field development, especially in deepwater environments. Downhole fluid analysis (DFA) measures composition, gas/oil ratio (GOR), density, optical density, and fluorescence intensity. The industry's first predictive asphaltene equation of state, the Flory-Huggins-Zuo (FHZ) EOS has been developed based on the Yen-Mullins model of asphaltene science and DFA measurements. It has been successfully used to estimate asphaltene concentration gradients and help predict reservoir connectivity and subsequently proven by production data.

DFA and the FHZ EOS have been used to analyze black oil columns with steep asphaltene gradients as well as light oil columns with large compositional gradients. For one black oil column, detailed analysis of recently available pressure data suggests that this oil column is disconnected from the aquifer and from the regional pressure regime. For one light oil column, five DFA stations were conducted, and the delumping technique (Zuo et al., 2008) was used to obtain compositions from the DFA data. The cubic EOS was applied to describe the large variations observed in composition, gas/oil ratio (GOR) and density. The obtained results were also in good agreement with the measurements. The FHZ EOS has also been used to model fluorescence intensity gradient instead of optical density gradient for light oils with very low optical absorption. Several case studies will be presented in this lecture to highlight how the methodology provides an advanced reservoir evaluation tool, reducing uncertainty in reservoir characterization.

#### **Biography**

Hani Elshahawi is Shell Deepwater Technology Advisor. Previously, he led FEAST, Shell's Fluid Evaluation and Sampling Technologies centre of excellence and before that spent 15 years with Schlumberger in over 10 countries in Africa, Asia, and North America during which he has held various positions in interpretation, consulting, operations, marketing, and technology development. He holds several patents and has authored over a hundred technical papers in various areas of petroleum engineering and the geosciences. He was the 2009-2010 President of the SPWLA, distinguished lecturer for the SPE and the SPWLA 2010-2011, and recipient of the SPWLA Distinguished Technical Achievement Award in 2012. His email is [Elshahawi@gmail.com](mailto:Elshahawi@gmail.com).

## **Westside Luncheon Meeting**

Date: Wednesday, March 12th, 2014 PLEASE NOTE REVISED DATE

Lunch: 11:30 Talk: 12:00

Reservations: Email Shujie Liu

RSVP before NOON, Tuesday March 11th

Place: We have changed location -- BP Plaza Westlake 4-- Townhall Room 107  
200 Westlake Park Boulevard, Houston, TX 77079

Parking: Visitor parking is available at Westlake 4 overflow lot

Cost: Free

Lunch is not provided, bring your own or purchase in the BP cafeteria.



### **Mechanical Characterization in Unconventional Reservoirs: A Facies Based Methodology**

**Presenter:** Dave Amendt (ConocoPhillips)

#### **Abstract**

A new core testing protocol has been created to characterize rock mechanical parameters based on lithologic composition and rock texture. The goal is to characterize the main rock types using the geologic model as the integration point. High quality mechanical core test calibration data is a fundamental requirement to reduce stress analysis uncertainty, the workflow presented includes systematic quality control measures to ensure data integrity. A four point quality control process using CT scan of core material, elastic repeatability and rock compressive failure criteria will be reviewed and discussed.

The mechanical data supports log-based stress models by providing the static to dynamic transforms of the elastic properties. The elastic transforms can be used to calibrate common frac gradient models. The data also supports facies based geological models, such as those requiring layer-by-layer properties, using the concepts of mechanical lithofacies and mechanical stratigraphy. The mechanical stratigraphy is constructed by integrating the mechanically characterized rock types with a stratigraphic layering model created from core or log descriptions. This geologically conditioned mechanical facies model containing elastic, inelastic, and failure properties is developed as an alternative but complimentary mechanical methodology to the standard log-derived elastic model.

#### **Biography**

Dave Amendt is a Principal Petrophysicist for the Structure & Geomechanics team in GRE Technology at ConocoPhillips. He joined ConocoPhillips in 2004 with the Canadian Business Unit and relocated to Houston in 2008. Prior to ConocoPhillips, Dave spent 14 years at Schlumberger in various technical and operational roles. In his current position, Dave coordinates mechanical testing for non-conventional cores and develops mechanical stratigraphy applications for Geomechanical stress models. Dave has a Bachelor's Degree in Physics and a Master's Degree in Nuclear Physics both from the University of Saskatchewan. Dave has been invited to participate in the 2013-2014 SPWLA Distinguished Speaker Series, his 2013 SPWLA conference paper was selected for the Petrophysics Special Issue: 'Best of 2013 Symposium'.