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2012 – 2013**

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SPWLA – Houston Chapter News

February, 2013

Luncheon Meetings

Northside Mon, Feb 4th, 2013 The Greenspoint Club	Sample Size Effects on the Application of Mercury Injection Capillary Pressure for Determining the Storage Capacity of Tight Gas and Oil Shales by Joe Comisky, Apache Corporation
Downtown Wed, Feb 20th, 2012 Chevron Auditorium	Advanced Neutron Generator Derived Measurements While Drilling: A Performance Review of Radio-Isotope Free Density and Sigma Applications by Ana Peternell, Schlumberger
Westside Wed, Feb 13th, 2013 BP Westlake 4 – Townhall Room 107	A Review of the Pe Measurement and the Derivation of Accurate Pe Equations Using Computer Modeling by Gordon Moake, Halliburton

Local SPWLA Upcoming Events

Golf Tournament

April 26, 2013 (Blackhorse Golf Club)
Event Sponsors needed, contact Rob Hengel

Spring Topical Conference
May 15, 2013 (Chevron Auditorium)

54th Annual SPWLA Symposium
June 22nd to 26th
New Orleans, LA

[Complete Calendar of Events](#)

President's Corner

February, 2013



Dear Chapter Members,

We have kicked off our 2013 year with great expectations. The three VPs Mitch, Matt, and Libny continue working towards making our luncheons interesting. The rest of the board, Ankur, Rob, Jack, and "Z" remain diligently taking care of their duties and making the chapter a better one everyday!

Three interesting luncheons were hosted in January at the usual venues. Simon Clinch (Chevron) gave a presentation in the Northside focused on effective use of log and core data for reliable permeability predictions in low-perm reservoirs. David Kennedy (Southwestern Energy) shared his conductive model for Archie rocks with the Westside attendees, attracting a big crowd despite unfavorable weather conditions. Kate Washburn (Weatherford) completed the January luncheons with the very well attended talk in Downtown titled "Characterization of Artificially Matured Shale Samples using Low Field NMR Relaxometry".

Exciting luncheons will continue through April, 2013 but additional activities will fill up our agendas. Make sure to mark your calendars on **April 26th** for our traditional **golf tournament at the Blackhorse Golf Course**. The golf pro Randy Mitchell and our veteran Rob Hengel are organizing this event. We are not only looking for the participation of passionate golfers, but also enthusiastic sponsors. Please, contact Rob Hengel (treasurer@spwla-houston.org) or any of the officers for more information. Also, our **2013 Spring Topical Conference** will take place on **May 15th at the Chevron Auditorium**. We are working on an exciting agenda with themes of great interest for both operating and service companies.

I continue to thank those members who are making their payments in advance through Paypal when registering for the Northside and Downtown venues. Those members are making a big difference as they facilitate the meeting logistics. I would like to encourage those who are not yet using Paypal to be adventurous and give it a try.

Finally, I would like to thank all our sponsors and the Houston members for their continued support to our local Chapter. If you have questions or would like to give us your feedback or your suggestions, please, contact any of the officers. For more information about the Houston Chapter and upcoming events, visit our website (www.spwla-houston.org).

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

Thanks to our sponsors!!!



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Northside Luncheon Meeting

Date: Monday February 4th, 2013

Lunch: 11:30 Talk: 12:00

Reservations: Email [Mitch Pavlovic](mailto:MITCH.PAVLOVIC@APACHECORP.COM)

RSVP before 9:00 A.M., Thurs. Jan 31st

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

Place: The Greenspoint Club

16925 Northchase Drive, Houston, TX 77060

Sample Size Effects on the Application of Mercury Injection Capillary Pressure for Determining the Storage Capacity of Tight Gas and Oil Shales

Joe Comisky, Apache Corporation

Michael Santiago and Bruce McCollom – Poro-Labs, Inc

Aravinda Buddhala – Univ. of Oklahoma

Kent Newsham – Apache Corporation



Abstract

We measured Mercury Injection Capillary Pressure (MICP) profiles on tight shale samples with a variety of sample sizes. The goal was to optimize the rock preparation and data reduction workflow for determining the storage properties of the rock, particularly porosity, from MICP measurements. The rock material was taken from a whole core in the Cretaceous Eagle Ford Formation in the form of a puck or disc. A horizontal 1 inch core plug was cut from this disc and the remaining material was subsequently crushed and sieved through various mesh sizes. MICP profiles up to 60,000 psia were then measured on the 1 inch plug and all of the various crushed and sieved rock particle sizes. In parallel we subsampled the plug material to measure bulk volume, grain volume, and porosity using a crushed rock helium pycnometry method. These additional measurements provided a comparison set of standard petrophysical properties from which we could compare the MICP results.

In general our MICP profiles show a very strong dependence on sample size due to two reasons: pore accessibility and conformance. We verify the conformance correction approach of Bailey (2009) which specifically accounts for the pore volume compression of the sample before mercury has been injected into the largest set of interconnected pore throats. This new method is preferred over the traditional method of conformance correction when compared to crushed rock helium porosity since the latter is performed at unstressed conditions. Our results using Bailey's (2009) method reveals that the -20+35 sample size is optimal for determining porosity in the Eagle Ford, and potentially other tight oil and gas shales.

Biography

Joe Comisky is a petrophysicist with Apache Corporation in Houston, TX. His particular interests within the field of petrophysics include the measurement and estimation of permeability, capillary pressure and electrical properties. Other areas of expertise lie in seismic rock properties, geomechanics, and pore pressure analysis. Joe is a graduate of the Penn State Petroleum Geosystems Initiative with a MS (2002) and BS (1999) in Geosciences. Previous employers include Anadarko Petroleum and ConocoPhillips.

Current research is on understanding the geological and petrophysical aspects of fine-grained reservoirs, a topic for which he is a 2012 AAPG Distinguished Lecturer, and he is currently developing an AAPG short course on this topic.

Downtown Luncheon Meeting

Date: Wednesday, Feb 20th, 2013

Lunch: 11:30 Talk: 12:00

Reservations: Email [Libny Leal](#)

RSVP before 4:00 P.M., Monday, Feb 19th

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

Place: **Chevron Auditorium**, Ground Floor

1500 Louisiana St., Houston, Texas 77002

Advanced Neutron Generator Derived Measurements While Drilling: A Performance Review of Radio-Isotope Free Density and Sigma Applications

Ana Peternell, Schlumberger

Abstract

Pore pressure uncertainties and depleted zones are examples of major safety hazards encountered while drilling in the fields of North Gulf Coast. Exploratory or development wells can face the risk of not being able to use radioactive sources while drilling or using wireline conveyance. Pulse-neutron generators (PNG) have been historically used by the logging industry to acquire a variety of measurements and are now the key towards the Sourceless Formation Evaluation platform. The implementation of this electronic PNG Source in Logging while drilling technology, instead of the traditional neutron chemical Americium-Beryllium source, has allowed for years the acquisition of not only sourceless neutron porosity, but spectroscopy and sigma measurements while drilling. Today, it's allows the acquisition of a Radioisotope-free density measurement, the Neutron-Gamma Density.

This presentation includes the performance analysis of two of the unique PNG derived measurements: Sourceless Neutron-Gamma Density and Sigma applications for reservoir characterization under different job conditions related to Offshore Gulf of Mexico. The ability to simultaneously acquire the Sourceless Density with the conventional radio-isotope derived density (¹³⁷Cs) makes it possible to analyse side by side examples in both Shelf and Deep Water environment in Gulf of Mexico.

Biography

Ana Peternell is the North Gulf Coast (NGC) LWD Petrophysics Domain Champion for Drilling and Measurements in Schlumberger. She received her BS degree in Control Engineering from UANL, Mexico. Ana started her career with Schlumberger as a wireline field engineer back in 1999. Later on, she moved to Data and Consulting Services where she held several positions as Petrophysicist/LWD Interpretation Development in NGC and Mexico. She has authored diverse papers regarding LWD technology as well as contributed in the development of new LWD answer products. Ana is an SPWLA member.

Westside Luncheon Meeting

Date: Wednesday, Feb 13th, 2013

Lunch: 11:30 Talk: 12:00

Reservations: Email [Matthew Blyth](mailto:Matthew.Blyth@spwla.org)

RSVP before NOON, Tuesday Feb 12th

Place: **New location on BP Campus** -- BP Plaza Westlake 4-- Townhall Room 107
501 Westlake Park Boulevard, Houston, TX 77079 (The BP complex WL4 is on the North
West corner of the 4 way stop and is close to I-10) [Click to see map.](#)

A Review of the Pe Measurement and the Derivation of Accurate Pe Equations Using Computer Modeling

Gordon L. Moake, Halliburton



Abstract

Over the years, several equations have been used to compute the photoelectric log of a formation (P_e). Some of these equations lack a density term, resulting in errors; this is obvious when the tool is placed in a tank of water. In addition, the lack of quality test standards or marker beds makes P_e accuracy difficult to verify in all but a few conditions. This leads to the question: what is the proper response equation for computing P_e ?

To answer that question for a wireline density tool, a Monte Carlo computer-modeling study was undertaken. Two features of computer modeling make it ideal for studying this problem. First, any formation can be easily simulated, so a wide variety of data points can be used to determine the response. Second, non-physical formations can be modeled, which enables the density and P_e responses of the tool to be studied independently. Because the physics behind the P_e measurement is essentially the same for all density tools, the form of the final equation should be applicable to many tools.

This study used the ratio of high-energy to low-energy count rates as the primary variable for the calculation. For a given density, it is possible to obtain an accurate P_e response from 0.4 to 15 using a simple function of the ratio. As expected, the generalized equation that is appropriate for all rock densities requires a density term. Accuracy of the technique breaks down for $P_e > 15$.

The new P_e equation is illustrated in several log examples that compare results obtained with the new algorithm to those obtained with a previous algorithm.

A review of the physics and concepts behind the P_e measurement explains why the measurement breaks down when $P_e > 15$, and clarifies why the P_e measurement should be treated as a unitless quantity.

Biography

Gordon L. Moake is a chief scientific advisor for Formation Evaluation in the Halliburton Drilling and Evaluation division. His primary focus is the development of wireline and LWD nuclear tools, although he is also involved with non-nuclear projects. Before joining Halliburton in 1984, he worked four years at Baker Tubular, developing electromagnetic flaw detectors. Moake obtained BS degrees in math and in physics from the University of Wisconsin, and MS and PhD (1979) degrees in physics from Purdue University. A member of SPWLA and SPE, he holds 19 U.S. patents related to the oil and gas industry.