SPWLA - Houston Chapter News
October, 2011

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Luncheon Meetings

Northside **Monday, Oct 3, 2011** The Greenspoint Club	**Net Pay Cutoffs from Capillary Pressure** *by Andy May, Devon Energy*
Westside **Wednesday, Oct 12, 2011** BP Plaza Terrace Room	**Unconventional Reservoir Fracture Evaluation Utilizing Deep Shear-Wave Imaging** *by Doug Patterson, Baker Hughes*
Downtown **Wednesday, Oct 19, 2011** Chevron Auditorium	**Case Studies in Evaluation of Cement with Wireline Logs in a Deep Water Environment** *by Pavel Shaposhnikov, Schlumberger*

Local SPWLA Upcoming Events

SPWLA Topical Conference – Computational Petrophysics
9th to 12th October
Asheville, North Carolina

Golf Tournament
18 November
Blackhorse Golf Club (Fry Rd, just south of US290)
To sponsor the Event, contact Rob Hengel

Software and Hardware Vendor Show
6th December
OMNI Hotel, Westside

Spring Topical Conference
16th May, 2012 (topic to be confirmed)
Chevron Auditorium, 1500 Louisiana St, Houston, 77002

53rd Annual SPWLA Symposium
16th to 20th June
Cartagena, Columbia

Complete Calendar of Events

President's Corner

October, 2011

Dear Chapter Members,

I hope you had a chance to attend one of our September Luncheon Seminars, three very interesting topics were presented: new dielectric log technology on the Westside, reservoir compartment assessment via formation testing Downtown, and far-field fracture identification using deep shear log technology on the Northside. You'll have another chance to hear the latter, as it will be presented in October at our Westside meeting. Two other topics of current interest will be presented this month; capillarity and net pay on the Northside, and cement evaluation in deepwater settings at our Downtown location.

Northside attendees, keep a keen eye on the day/date for each month's Luncheon Seminar this year, as they change each month subject to the scheduling that we were able to arrange with the Greenspoint Club. This venue has proven to be very successful in drawing larger attendance to our Northside meetings, and the advance payment process we've instituted via the Chapter Website has streamlined the check-in process very nicely. These improvements come in exchange for the "regularity" of the Northside scheduling we've had in the past, but still maintain at our Westside and Downtown venues.

Our Golf Tournament has landed on the calendar……Friday, November 18th at the Blackhorse Golf Club. The Blackhorse is located on Fry road just south of US 290. Our two-man committee of Randy Mitchell and Rob Hengel showed some mercy and pushed it out a little farther in time to try and ensure that some cooler weather (and maybe some rain?) would come to the area by then. Look for additional details under the "Events" menu from the Home Page of the Chapter Website. We are in the process of canvassing for sponsors; please contact either Randy ramitchell@hess.com or Rob treasurer@spwla-houston.org if you are interested in sponsoring a hole, drink cart, awards, etc.

Finally, we have also finalized the scheduling of our Software/Hardware Vendors Show for Tuesday, December 6th. It will again be held at the OMNI Westside Hotel, on the northwest corner of the intersection of Eldridge with the I-10 Katy Freeway. Additional information will appear soon under the "Events" page of the Chapter Website.

I hope to see you at some of the October Luncheon Seminars.

Paul Connolly
Houston Chapter President

Westside Luncheon Meeting

Date: Wed, Oct 12, 2011 **Lunch:** 11:30 **Talk:** 12:00 **Place:** BP Plaza Terrace Room, 1st floor, next to cafeteria *501 Westlake Park Boulevard, Houston, TX 77079*	**Unconventional Reservoir Fracture Evaluation Utilizing Deep Shear-Wave Imaging** ***by Doug Patterson, Baker Hughes*** **RSVP Thaimar Ramirez before 3:00 p.m. Tuesday, Oct 11** E-mail: Thaimar Ramirez
Cost: Free. *Lunch is not provided, bring your own or purchase in the BP cafeteria.* **Parking:** BP Plaza Garage **Map** (4200 Westlake Park Boulevard, Houston, TX 77079).	

Abstract

Unconventional shale reservoir evaluation and development are extremely challenging. One of the most dominating aspects is permeability, which is measured in the nano-darcy range. Although these wells are stimulated to enhance production, the presence or absence of natural fractures can have a large impact on the production results. In addition, the fracture variation across a reservoir can be substantial, leading to large production variations even in adjacent wells. Gaining insight about the natural fracture system, both intersecting and around the borehole, is crucial and can often help determine the economic success of a well and/or reservoir.

The standard means of fracture evaluation, such as borehole imaging, Stoneley permeability analysis, and azimuthal shear-wave anisotropy evaluation from cross-dipole, provide valuable information when evaluating fractures. These standard methods, however, can only investigate a limited area around the borehole—imaging looks at the borehole wall and the other borehole acoustic methods rely on refracted and guided modes that respond to an area as large as 2 to 4 ft out into the formation. The flexural wave from the dipole is one of the guided modes that generally reads the deepest and is used in the standard cross-dipole analysis. In addition to flexural mode, the dipole source creates shear body waves that radiate away from the borehole and into the formation. When these shear waves impinge on a fracture, their energy reflects back to the borehole, allowing the facture to be imaged. The reflection strength is a function of the shear-wave polarization and the nature of the fracture, with the strongest response occurring from the shear waves intersecting a fluid/gas-filled fracture and polarizing in the fracture's strike direction.

Another important aspect is that these shear waves have azimuthal sensitivity, providing a means to determine the fracture direction. These features permit the evaluation of fractures over a much larger area around the well, often looking out in excess of 60 ft from the borehole and even detecting major fractures that do not intersect the well.

We will look at the application of this deep shear-wave imaging technology in several unconventional reservoirs across North America. Our review includes conventional methods and the deep shear-wave imaging analysis, showing its value in gaining important insight about the natural fracture system around the borehole, especially non-intersecting fractures.

Biography

Doug Patterson is the Acoustic Research Manager within the Houston Technology Center (HTC), Baker Hughes, Inc. where he focuses on development of both wireline and LWD devices. Doug received his BSME from Memphis University in 1978 and over his career has held positions in operations, sales, technical marketing, and technology development. In 1992, Doug joined Acutec Logging Services, where he focused extensively on the development of downhole acoustic equipment, processing software, and interpretation methods. He was with Acutec until May of 1996 when the company was acquired by Baker Atlas.

Northside Luncheon Meeting

Date: **Monday, Oct 3, 2011**
Lunch: 11:30 **Talk:** 12:00
Place: The Greenspoint Club
16925 Northchase Drive,
Houston, TX 77060
Map

Net Pay Cutoffs from Capillary Pressure

by Andy May, Devon Energy

RSVP before 9:00 a.m. Thursday, Sep 29

E-mail: **Jack Douglas**

Cost: **Pre-payment. Please, use** PayPal
$35 (lunch* if paying at the door)
$32 (lunch* if using PayPal)
$20 (venue charge without lunch)
Cash, Check or Credit Card is acceptable for payment. Receipts will be provided.
*This is a fixed meal package including Chef's choice of salad, chicken entrée served with vegetable and starch, dinner rolls, dessert, iced tea, and coffee. The salads, desserts and beverages will be pre-set menu.

Directions: **Map**
From I-45, go East on Greens Rd. Turn right at 3rd light, onto Northchase Drive. The Greenspoint club is 1/4 mile on the right.
From Beltway 8 (going West), Exit Imperial Valley and turn right. Turn left at first light onto Benmar. Stay on Benmar to Northchase. Turn right onto Northchase Drive. The Greenspoint club is on the left.
From Beltway 8 (going East), Exit and turn left on Greenspoint Drive. Go right at first light onto Benmar. Turn left at next light onto Northchase Drive. The Greenspoint club is on the left.
Parking: Ground, 4th and 5th Levels. To access the 4th & 5th levels, pull up to the contract parking gates. There is a call box on the left-hand side. Press the button, release and gates will open. Follow park signs to the 4th and 5th level. The Greenspoint Club is located on the 5th Floor.

Abstract

Cutoffs are used to define "net pay" and "reservoir rock." Reservoir rock is sometimes referred to as "net sand." Reservoir rock, as used herein, is rock that is permeable enough to allow hydrocarbons to move to the well bore. It meets the permeability cutoff and/or the porosity cutoff, volume of shale cutoff, and other appropriate reservoir quality criteria.

Net pay is reservoir rock that meets the water saturation cutoff. The water saturation cutoff is generally thought of as the highest Sw (or Swe in an effective porosity methodology) that will still produce hydrocarbons, the Sw where the oil or gas cut is roughly 1% or higher.

Hydrocarbons exist in most reservoirs in rocks that are not considered either net pay or reservoir rock. Using conventional petrophysical and reservoir engineering methods, these hydrocarbons will not be included in the computation of hydrocarbons-in-place. So, by using cutoffs to compute net pay, a portion of the hydrocarbon-in-place is excluded from the reserves calculation. Great care must be used in selecting cutoffs so that the hydrocarbons excluded are truly not producible using current and foreseeable technology.

Capillary pressure analysis, backed up with proper core measurements, can provide justification for cutoffs. This sort of analysis can also be used to help select the proper cutoffs. The talk describes one method of building a capillary pressure model, how the parameters are selected, and how the model can be used to pick appropriate cutoffs in a heavy oil reservoir.

Biography

Andy May is a Senior Petrophysical Advisor for the Devon Energy Southern Division in Houston, Texas. He has been a petrophysicist and occasionally a geologist for 37 years for Cities Service, Exxon, Scientific Software-Intercomp, Kerr-McGee, Fronterra Geosciences, and Devon Energy. Andy is a member of the SPWLA, AAPG, and SPE. He has published 13 papers and presentations on petrophysics, geology and computer science. He has received the AAPG Certificate of Merit and is a past President of the Oklahoma City SPWLA and a past Vice President of the Houston SPWLA. He currently specializes in shale gas petrophysics and in fractured reservoirs in the US Onshore Gulf Coast.

Downtown Luncheon Meeting

Date: **Wed, Oct 19, 2011** **Lunch:** 11:30 **Talk:** 12:00 **Place:** Chevron Auditorium Ground Floor 1500 Louisiana St *Houston, TX 77002*	**Case Studies in Evaluation of Cement with Wireline Logs in a Deep Water Environment** ***by Pavel Shaposhnikov, Schlumberger*** **RSVP: before 4:00 p.m. Monday, Oct 17** E-mail: **Tsoan Ma**

Cost: **$15 Pre-payment** (includes lunch*) **Please, use** PayPal
Cash, Check or Credit Card is acceptable for payment. Receipts will be provided.
*Lunch will be a boxed sandwich, chips, cookie and soda or water.
Parking: Regency Parking, Allen Center Visitor Garage, various outdoor lots.

Abstract

The evaluation of cement placement and zonal isolation in deep water environments is increasingly challenging. Traditional wireline evaluation methods rely on contrasting attenuation rates of sonic or ultrasonic waves to discriminate between cement and fluid behind pipe. In today's deepwater environment, heavy synthetic based drilling fluids can have properties that render the evaluation of the typical lightweight cements extremely difficult. In addition, cement evaluation logs are often run within 48 hours of pumping the cement which results in lower acoustic impedance at the time of logging. This further reduces the contrast in acoustic impedance between the cement and heavy synthetic based muds that are used in this environment. As a result, traditional cement evaluation logs can be ambiguous and difficult to interpret which has led to industry suspicion regarding the application of these measurements. A recently developed ultrasonic measurement called flexural attenuation combined with traditional measurements addresses these uncertainties, and results in more accurate cement evaluation under these difficult conditions.

This presentation focuses on the practical application and interpretation of this recently developed measurement and will detail case studies from Gulf of Mexico offshore wells comparing results from traditional CBL/VDL and ultrasonic measurements, with methods that include the utilization of flexural attenuation. The physics of measurement and limitations of each measurement are reviewed and a workflow is presented to integrate all of the data to provide quantitative cement evaluation. Examples are used to illustrate the reduction in uncertainty that can be achieved using this workflow and the combination of these measurements leading to a more definitive determination of zonal isolation.

Biography

Pavel Shaposhnikov is Schlumberger's North America Offshore Well Integrity Domain Champion. He joined Schlumberger Wireline in Raduzhniy Russia in 1997 where he worked as a field engineer and since then, he has served in various assignments including engineer, deepwater offshore coordinator, and Field Quality Champion. He was involved in development of Lean and standardized well integrity evaluation operations in Gulf of Mexico. He received a MS in physics from Saint-Petersburg State Technical University.