February 2018

SPWLA Houston Chapter Newsletter

We hope everyone engages and participates in our exciting 2018 events!

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Meet our Sponsors

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Upcoming Events

Downtown (Uptown) Luncheon | Color Cubing of Spectral Gamma Ray – A Novel Technique For Easier Stratigraphic Correlation and Rock Typing by Michael J. Sullivan, Chevron | February 21st ***[link]***

Northside Luncheon | Coherent Interpretation of Wideband Electromagnetic Measurements in the MHz to GHz Frequency Range by Nikita Seleznev, Schlumberger-Doll Research | *February 22nd* ***[link]***

SPWLA NMR SIG Conference 2018 | Everyday NMR: From Unconventionals to New Horizons | *February 23rd* ***[link]***

SPE GCS Hiring Event | *March 27th* ***[link]***

SPWLA International Spring Topical Conference | Petrophysical Data Driven Analytics: Theory and Application | *April 15th- 17th* ***[link]***

SPWLA Houston Chapter Spring Topical Conference | Log and Core Correlation | Chevron Auditorium *May 9th [link]*

Drilling Conference | End of May | More information coming soon

President's Corner

Dear members of the Houston Chapter,

Happy New Year! The first half of 2018 is promising to be busy and exiting with several interesting events. But before that let me give you a final update of 2017.

Thanks to our members generosity donated in total of $1,450 to the non-profit organizations helping during disasters and after the hurricane Harvey. The chapter has transferred the same amount as the match to Red Cross.

The Software Show was a great event with an increasing number of speakers and good attendance. We have received great feedback from participants. Please see our event recaps for the photos.

In January we had two luncheons, both covering NMR. Downtown event was hosted by BHP. Philip M. Singer, Rice University presented a talk on NMR in organic shale: current research activities at Rice University. Northside. Northside luncheon talk on the application of the combination of NMR logging and NMR measurements at RSWC samples at the well site to identify producible oil in tight rocks" was presented by Aidan Blount, Shell.

The Houston chapter has signed the new charter with SPWLA International and now is formally functioning under the SPWLA International umbrella. As we transition to the SPWLA Infrastructure there should be no changes for our members in the communication or event registration at this point.

The second edition of the Machine Learning for Petrophysics Bootcamp initially planned for January 2018 got postponed by the instructor request till the end of 2018. Expect updates in H2 2018.
Data Science and Analytics is a topic of high interest, we are working together with SPWLA International team on the SPWLA Spring 2018 Topical Conference "Petrophysical Data-Driven Analytics: Theory and Applications." Call for abstracts and Registration are open. Deadlines are approaching.

Please make sure that you'll check our calendar for other upcoming events.
The Houston Chapter is again co-sponsoring the SPE-GCS Hiring event in March. It had a good representation of companies and applicants and is expected to be of larger scale in March.
We'll have updates on the Houston Chapter Spring Topical Seminar (May 9, 2018 at Chevron), devoted to log-core correlation, coming up soon.

As always feel free to contact me if you have any questions or comments at president@spwla-houton.org.

Kind regards,
Irina Borovskaya
President
Houston Chapter of SPWLA

Irina Borovskaya
Houston Chapter President
president@spwla-houston.org

Useful links

Sign up for the Houston Chapter Mailing List [Link]

Houston Chapter

SPWLA International

Join SPWLA – become a member

Houston Chapter LinkedIn page

University of Houston SPWLA Student Chapter Distinguished Lecture

Lessons Learned in Permian Core Analysis: Comparison between Retort, GRI, and Routine Methodologies by Aidan Blount

Friday, February 16th 2018
U of H campus

Abstract

In today's competitive cost environment, core acquisition and analysis is too often dismissed as unaffordable. This forces the petrophysicist to make every dollar count in core evaluation. Tough choices, then, have to be made – many people chase the lowest bid, cheapest methodologies, reduced oversight, and less sampling. In this paper, insights will be shared from a comprehensive round-robin study directly comparing the results of the most common techniques (GRI/Retort/RCA) utilized by major vendors. Understanding differences in technique early in an evaluation process can help efficiently direct technical spending.
As with many comparison studies, this project started with the reconciliation of analysis sourced from different laboratories using different methodologies.

There was a significant business driver to this work as we noticed differences in porosity and fluid saturations which contribute to (~25%) difference in hydrocarbon pore volume among vendors using alternative techniques. These differences directly impact log calibration objectives as well as estimations of hydrocarbons in place.

We began to ask simple questions -- should we use crushed samples or routine core plugs? What is the impact of analytical technique on the results? What role does lithology and organic content play in the results from different analytical techniques? What is the role of sample size? What is the variability between vendors for identical procedures? If there is variability, what is the apparent cause?

Ten twin Permian samples from the Delaware Basin will be discussed in-depth using a plethora of available information including X-Ray Diffraction (XRD), Total Organic Carbon (TOC)/RockEval, Retort, and Dean-Stark/Gas Research Institute (GRI) protocol analysis from two labs and RCA from one lab. These 10 samples were picked to represent varying lithofacies with a range of organic, mineralogical, and water/oil content. The level of oversight at each data source was also tracked.

Through detailed analysis of the raw data from these measurements, we address the questions above. With these results, we hope to 1) maximize every dollar spent in core analysis, 2) focus oversight where it is truly required, and 3) accurately and consistently evaluate the core analysis in the Permian play for fast and value-driven business decisions**.**

Aidan Blount is a Petrophysicist with Shell. He joined the company in 2013 after graduating from the University of Texas at Austin with a B.S. in Petroleum Engineering. Since joining Shell, Aidan worked on several basins as a part of a regional exploration team before joining the Permian asset in 2015.

Downtown (Uptown) Luncheon

Color Cubing of Spectral Gamma Ray – A Novel Technique For Easier Stratigraphic Correlation and Rock Typing by Michael J. Sullivan

Wednesday, February 21st, 2018
Lunch: 11:30 Talk: 12:00-1:00
Register Online by Tuesday Feb. 20th 12pm to reserve lunch
Lunch Cost: $15 and $10 for students and in transition professionals
1500 Post Oak Blvd. Houston, TX 77056 8th floor Conference Room
Parking is free in both 1360 and 1500 buildings (easier to find free spots in 1360)
Attendees need to register in 1500 level 1 to receive a badge to access 8th floor

Abstract

SPECTRAL GAMMA RAY DATA HAS LONG BEEN RECOGNIZED FOR ITS USEFULNESS IN CLAY TYPING AND ROCK TYPING, INCLUDING DISTINGUISHING ORGANIC RICH SHALES AND RADIOACTIVE SANDS FROM CONVENTIONAL SHALES. THE USE OF THIS DATA HAS NOT BEEN WIDESPREAD, HOWEVER, POSSIBLY BECAUSE THE ANALYSIS OFTEN INVOLVES POINT-BASED TERNARY DIAGRAMS AND THE RESULTS ARE NOT EASILY PRESENTED IN A DEPTH BASED LOG. COLOUR CUBING IS A TECHNIQUE FOR TURNING THE PORTION OF THE TOTAL GAMMA RAY SIGNAL THAT IS DUE TO POTASSIUM, URANIUM, AND THORIUM INTO DISTINCT AND MEANINGFUL COLOUR PATTERNS. COLOUR CUBING USES THE RED-GREEN-BLUE (RGB) COLOUR AXES TO DEPICT THE CHANGING PROPORTIONS OF THREE ATTRIBUTES (SIMILAR TO HOW A COLOUR TV CAN CREATE ANY COLOUR FROM RGB MIXING). USING THIS COLOUR SHADING ON THE TOTAL GAMMA RAY CURVE RESULTS ILLUSTRATES BOTH THE TOTAL GAMMA AND ITS COMPOSITION.

WE HAVE FOUND THIS VERY USEFUL FOR A VARIETY OF APPLICATIONS. IT RESULTS IN A STEP CHANGE IMPROVEMENT IN OUR ABILITY TO RECOGNIZE MARKERS WHEN DOING INTER-WELL STRATIGRAPHIC CORRELATION. SEDIMENTS FROM A COMMON SOURCE WILL HAVE A COMMON MIXTURE OF RADIOACTIVE ELEMENTS, SO LAYERS OF SEDIMENTS RICH IN POTASSIUM, URANIUM, AND THORIUM APPEAR AS DISTINCT BLUE, RED & GREEN BANDS IN CROSS SECTIONS, WHICH GREATLY EASES STRATIGRAPHIC CORRELATION. WHETHER DILUTED OR CONCENTRATED, IF THE RADIOACTIVE MIXTURE DOES NOT CHANGE, THE COLOUR WILL REMAIN THE SAME, TELLING US THE SEDIMENTS ARE LIKELY FROM THE SAME SOURCE.

Michael J. Sullivan is a Formation Evaluation Advisor working for Chevron in Calgary. Mike has had previous assignments as a Cased and Open Hole Petrophysicist in Angola, Calgary, and Houston, as Team leader for Petrophysics R&D with Chevron Energy Technology Company in San Ramon, Ca., and as Reservoir Surveillance Coordinator for the Tengiz field in Kazakhstan.
He has also held a variety of positions in Petroleum and Production Engineering starting in 1979. Sullivan is a Distinguished Member of SPE, has authored several technical papers, and has been a Distinguished Lecturer with both SPE and Distinguished Speaker with the SPWLA.
Email: Michael.sullivan@chevron.com

Northside Luncheon

Coherent Interpretation Of Wideband Electromagnetic Measurements In The Millihertz To Gigahertz Frequency Range by Nikita Seleznev

Thursday, February 22nd, 2018
Lunch: 11:30 Talk: 12:00-1:00
Register Online by Monday Feb. 19th 12pm
Weatherford Lab, 5200 N. Sam Houston Pkwy West Suite 500
Houston, TX 77086
Visitors are requested to reverse park, note license plate # and sign in at main reception

Abstract

Electromagnetic formation evaluation currently relies on low-frequency resistivity and high-frequency dielectric measurements that are typically not interpreted jointly. In consideration that formation electromagnetic responses in different frequency ranges are controlled by different physical phenomena, analysis of a wideband electromagnetic response can provide new and complementary sensitivities to formation petrophysical parameters**.**

We analyzed the wideband electromagnetic measurements by applying the rock model in the full frequency range. Wideband data inversion enabled the estimation of five formation parameters: water-filled porosity, water salinity, cation exchange capacity, dominant grain size, and cementation exponent. Our analysis also demonstrated that the use of only low- or only high-frequency data subsets is not sufficient to reliably invert the full set of formation parameters.

The ability to invert for a broad set of formation parameters provides comprehensive characterization that is unattainable with currently practiced methods. Besides providing grain size as a new petrophysical parameter from electromagnetic formation evaluation, the methodology eliminates interpretation uncertainties associated with current approaches in which some parameters are independently provided as input**.**

Nikita Seleznev is a Principal Scientist and Petrophysics Program Manager at Schlumberger-Doll Research (SDR) center in Cambridge, MA. He joined Schlumberger in 1998 as a Wireline field engineer. Since 2000 he has been conducting research at SDR in dielectric and resistivity logging tools and techniques as well as various other aspects of Petrophysics of conventional and unconventional reservoirs. His current interests include formation evaluation with wideband electromagnetic methods and petrophysical applications of the dielectric dispersion logging for unconventional reservoirs. Nikita obtained PhD in Petrophysics from the Delft University of Technology, The Netherlands. Nikita is a member of the SPWLA Technical Committee

SPE GCS Hiring Event

SPWLA-Houston chapter is co-sponsoring SPE-GCS Upstream Oil & Gas Professionals Hiring Event. Job seekers, employers, recruiters, sponsors and collaborating professional organizations are all welcome.

Please check out their official event page for more information

Events Recap

At the Software Show held in December at Weatherford, various representatives from leading software companies gave excellent presentations on the advantages of their software. It was very informative and instructional. Please find the Agenda and Abstracts here.

Green Imaging Technologies, Mark MacKenzie : Measuring Gas Isotherms in Shales Using NMR

Antaeus Technologies:Oswaldo Viloria presenting on Secure Cloud-based Software Platform for the Energy Industry: A new Collaboration Proposition

INT, Inc., Paul Schatz : E&P Visualization in the Cloud: A Critical Component of Your Digital Transformation

Eriksfiord, Inc , Bernd Ruehlicke : Borehole image logs to bracket the Stress Tensor - take out the guess work

iTomography, Dr. Michael Frenkel : iTomography's Disruptive Microct 3D Image Reconstruction Workflow and Software for Digital Rock Applications

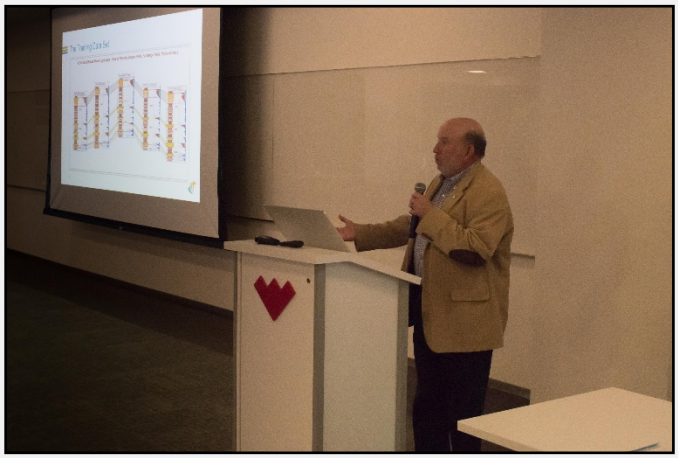
Perigon, Chris Hanton : Data management doesn't have to be daunting

Harvey Rock Physics, Nicholas Harvey : LogScope - A Mobile and Agile Solution

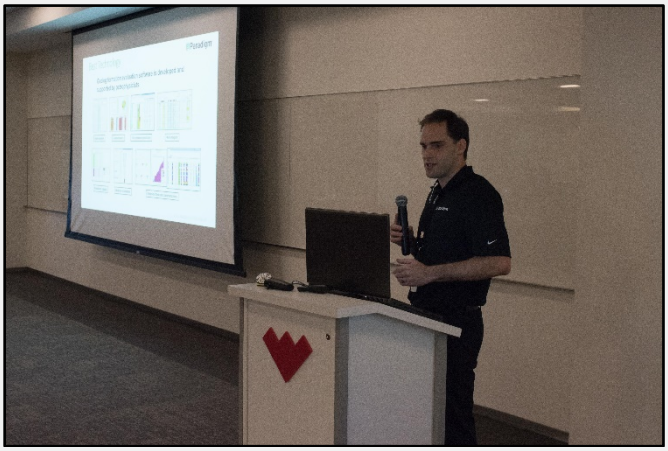
Houston Chapter President Irina Borovskaya and Event Coordinator Jeff Crawford calling out raffle winners!

CEO of Antaeus Technologies Pierre Jean Daniel giving a demonstration

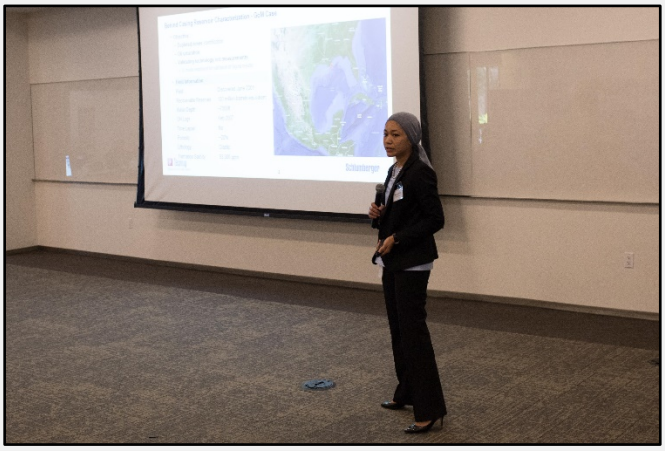
Constantine Vavourakis of Paradigm giving a demonstration of Geolog 8



CGG GeoSoftware, Fred Jenson : Machine Learning Using Python via PowerLog Extensions



Paradigm, Constantine Vavourakis : Geolog 8 - Building the industry standard field development platform



Schlumberger, Samira Ahmad : Petrophysical Evaluation in a Cased Well with Complex Completions: A case Study Using the Next Generation High Temperature Pulsed Neutron Logging Tool

Rogii, Inc., Igor Uvarov : StarSteer Geosteering Software: Extensive data integration for real-time geosteering and geological interpretation

WellDrive, Derek Garland : It's 3am. Where is your data?

Ingrain, Inc., Jacob Proctor : Using RhoB and PE values obtained from Digital Rock Analysis for validation of wireline data

WellLogData, Ted Kernan : Well log data made easy