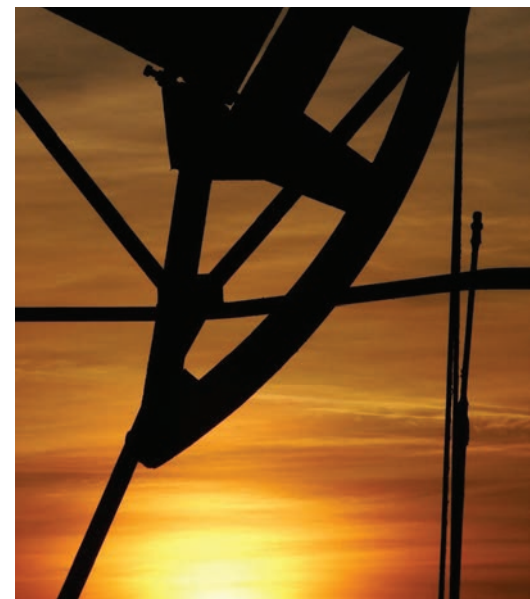


SPWLA 2019 SYMPOSIUM

The Woodlands, Texas



PRE-REGISTRATION BROCHURE

60th ANNUAL SYMPOSIUM
Society of Petrophysicists and
Well Log Analysts
June 15-19, 2019



*Celebrating
60 Years!*



2019 SYMPOSIUM ORGANIZING COMMITTEE

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Conference Liaison	Sharon Johnson, SPWLA
Technical Program	Stephanie Turner, SPWLA
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Field Trip Chairman	Lori Hathon, Univ. of Houston
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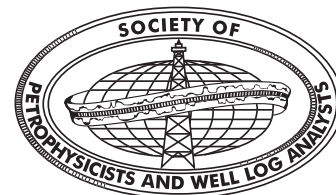
The information in this Brochure may change as Planning progress, and it is Recommended that delegates Check the symposium website www.spwla2019.com, for updates



SPWLA
2019



60th Annual Symposium
The Woodlands, TX



Contact

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WELCOME TO THE WOODLANDS!

The 60th Annual SPWLA Symposium



The Houston Chapter of the Society of Petrophysicists and Well Log Analysts (SPWLA) is pleased to invite you to attend the 60th Annual SPWLA symposium June 15-19, 2019 in The Woodlands, Texas. This symposium will be an opportunity to celebrate the 60th anniversary of the SPWLA, an organization that continues to globally promote and facilitate petrophysical education and an awareness of the role petrophysics plays in the oil and gas industry and scientific community.

The members of SPWLA are at the vanguard of petrophysical and formation evaluation (FE) development and the annual SPWLA symposium is the premier forum where these ideas are presented and exhibited to the community at large. The symposium serves to facilitate the confluence and distribution of this information, through short-courses, oral presentations, and the exhibition, in a readily consumable form that the delegates and selected distinguished speakers can then propagate to the global community. Apart from this, the social events serve to promote camaraderie and

networking within the petrophysical and FE community, serving as a significant motivation for delegate attendance. The 2018 symposium in London was a smashing success, and we expect that success to continue through the 2019 meeting in The Woodlands. The symposium will be held at The Woodlands Waterway Marriott Hotel and Convention Center in The Woodlands, Texas, a first-class venue located on the iconic Woodlands Waterway. The coupling of the hotel with the convention center affords the opportunity to host the short courses, technical presentations, exhibitions, and a good night's sleep under one roof. In the event that you want to venture outside the venue, a variety of restaurants and shops are located within walking distance. Furthermore, The Woodlands contains over 140 parks, 214 miles of hiking and bike trails, pools, public art, water sports, and signature golf courses. The city is aptly named, with much of the area's original forest left intact. The ubiquity of tree-lined roadways led a visiting architect to grant it the moniker of "the invisible city".

Prior to the technical sessions and exhibitions, the opening weekend plays host to two field trips, a variety of short courses, and the student paper competition. The events lead-off with a field trip to west Texas to observe an outcropping of the Eagle Ford shale and Austin Chalk and another trip to Galveston Island and the Brazos River Delta to study modern reservoir analogs, both hosted by geologists from ConocoPhillips and the University of Houston. An offering of seven short courses will be available, covering topics ranging from the practical applications of acoustics to advanced formation testing. On Sunday, come meet the industry's future leaders as the top students from around the world present their work in the Student Paper Competition. To cap-off the opening weekend and kick-off the technical sessions and exhibitions, Halliburton is hosting the Icebreaker social on Sunday evening.

The technical presentations and exhibition are set begin Monday morning. For an update on all things SPWLA, the annual business meeting luncheon will take place after the morning technical program. Monday ends with an invitation from Baker Hughes GE, to join them for an evening social event. Usually, Tuesday's schedule is very similar to Monday's. However, this year, the Tuesday technical programs will contain dual, concurrent sessions. Come honor the achievements of your peers at the annual awards luncheon following the morning program. On Tuesday evening, Schlumberger will be hosting the third and final evening social. Wednesday will see the close of the technical sessions and exhibition, with the annual Leadership Luncheon taking place after the morning program. Remember to stick around to the end of the afternoon technical session, where you can put your badge in the hat for a chance to win the door prize. While the delegates are participating in symposium activities, their families have a variety of wonderful activities available. From Monday to Wednesday, the Hospitality suite will be available for lounging, socializing, or grabbing a light snack. On Monday, a trolley tour of Market Street will familiarize guests with nearby dining and shopping. If you are up for a road trip to satisfy your sweet tooth and your penchant for history, a trip to Brenham, Texas for tours of the Blue Bell Creamery and the George Herbert Walker Bush Presidential Library is available. If your sweet tooth is still not satisfied, a visit to Chocolate Passion to sample their hand-made confections and coffees should do the trick. Since there are few things that complement chocolate as effectively as wine, this excursion also provides a selection of wine pairings and tour of the winery.

The Houston Chapter and organizing committee look forward to welcoming you to the 60th Annual SPWLA symposium in The Woodlands.

Jeff Crawford
General Chairman
SPWLA 2019 Committee

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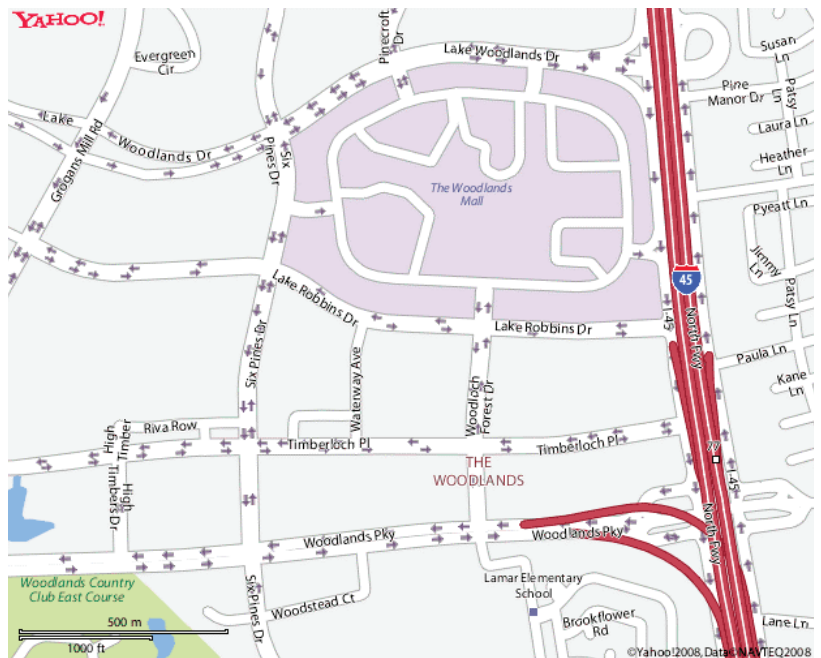
THE WOODLANDS MARRIOTT WATERWAY

George Bush Intercontinental/Houston Airport - IAH

- Hotel direction: 21 miles N
- Driving Directions: When exiting from the airport, take the Hardy Toll Road North. This will merge with I-45. Exit at Woodlands Parkway. At second traffic light, Six Pines Dr., turn right. At second traffic light, Lake Robbins Drive, turn right. Hotel is on your right.

Houston/William P Hobby - HOU

- Hotel direction: 45 miles N
- Driving Directions: When exiting airport, follow signs for I-45 North. Take I-45 North to Loop 610 East. Follow 610 Loop around to Hardy Toll Road North. Hardy Toll Road will merge with I-45. Take Woodlands Pkwy exit. At second traffic light, Six Pines Drive, turn right. At second traffic light, Lake Robbins Drive, turn right. Hotel is on your right.



No Hotel Shuttle Service available

- Alternate Transportation: Super Shuttle - www.supershuttle.com, Taxi fare: \$90.00 USD (one way), Uber or Lyft (must have your own account)

FREE PARKING in designated area:

Garage Parking Fees

Service	Rate
Valet - Overnight	\$25.00
Self - Overnight	\$18.00
Event Valet Parking	\$22.00

Hourly Self Parking Fees

Duration	Rate
0.1 Hours	\$6.00
1 to 2 Hours	\$10.00
2 to 3 Hours	\$12.00
3 to 4 Hours	\$15.00
Over 4 Hours	\$22.00

Notes:
 In the event of a concert at the Pavilion, guests will need to let the parking attendant know they are attending an event at the hotel and they will be advised to park on the 4th floor of the garage.
 The Hotel and Town Center Garage are connected by the sky bridge shown in blue above. The sky bridge connects from the 4th floor of the garage, to the 3rd floor of our Hotel.

GENERAL INFORMATION

Note: All events take place at Woodlands Waterway Marriott Hotel and Convention Center unless indicated otherwise.

REGISTRATION

Registration for all attendees, spouses and guests will be located in Town Center Assembly

Hours:

Saturday, June 15	7:00 a.m.-5:00 p.m.
Sunday, June 16	7:00 a.m.-5:00 p.m.
Monday, June 17	7:00 a.m.-5:00 p.m.
Tuesday, June 18	7:30 a.m.-5:00 p.m.
Wednesday, June 19	7:30 a.m.-12:00 noon

EXHIBITION

Town Center North Hall

Exhibit hours are:

Monday, Tuesday
and Wednesday 8:00 a.m.- 5:00 p.m.

Please note: For safety consideration, no one under the age of 13 will be allowed in the exhibit hall.

OPENING AND SPECIAL GUEST SESSION

Monday, June 17, 8:00 a.m.

Join us as General Chairman, Jeff Crawford officially opens the SPWLA 60th Annual Logging Symposium in Town Center South with brief opening remarks and the introduction of Key Note Speaker Arvind Sharma, TGS, VP of Data and Analytics. Immediately following, SPWLA Vice President of Technology, Jim Hemingway will officially orient the technical program.

SPEAKERS BREAKFAST

All speakers and Session Co-Chairmen/Co-Chairwomen are invited to attend a complimentary breakfast on the morning of their session. Breakfast is served Monday through Wednesday 6:00 a.m. – 8:00 a.m.

SPEAKER PREPARATION CENTER

All speakers are encouraged to view their presentation in the Preparation Center and have their file checked by the projectionist at their earliest convenience. The Preparation Center will provide a computer for speakers to load their PowerPoint® presentations onto the symposium's computer network and verify compatibility

and consistency with the system. The Preparation Center is open Sunday 9:00 a.m. - 5:00 p.m. and Monday - Wednesday 7:00 a.m. - 5:00 p.m.

POSTER PRESENTATIONS

Digital posters on touch screen monitors for open viewing in the Exhibition area Monday - Wednesday. Poster presentation sessions, authors in attendance with dedicated time and day.

SPOUSE/GUEST HOSPITALITY SUITE

Hospitality Suite is open Monday through Wednesday, 7:30 a.m. to 5:00 p.m.

DOOR PRIZE DRAWING

The door prize will be drawn immediately after the close of the technical session, Wednesday, June 19. **YOU MUST BE PRESENT TO WIN!**



SYMPOSIUM HIGHLIGHTS

All functions will be held in The Woodlands Waterway Marriott Hotel and Convention Center unless otherwise indicated. Please confirm exact location and timing prior to event from information available at registration.

Friday, June 14

Field Trip 1 - Departs from Marriott Hotel 8:00 a.m. Fri - 10:00 p.m. Sat

Saturday, June 15

Field Trip 2 - Departs from Marriott Hotel 8:00 a.m. - 6:00 p.m.
 Registration – Town Center Assembly 7:00 a.m. - 5:00 p.m.
 Workshop 1 – Practical Applications of Acoustics 8:00 a.m. - 5:00 p.m.
 Workshop 2 – Advanced Applications of Wireline Formation Testing 8:00 a.m. - 5:00 p.m.
 Workshop 3 – Saturation height modelling 8:00 a.m. - 3:00 p.m.
 Workshop 4 – Petrophysical Applications of Imaging 8:00 a.m. - 5:00 p.m.

Sunday, June 16

Registration - Town Center Assembly 7:00 a.m. - 5:00 p.m.
 Workshop 5 – Advances in Resistivity and Dielectric Logging 8:00 a.m. - 5:00 p.m.
 Workshop 6 – Value of Data: Getting the right balance in Exploration 8:00 a.m. - 5:00 p.m.
 Workshop 7 – Cased-hole Formation Evaluation 8:00 a.m. - 5:00 p.m.
 Workshop 8 – Applications of Geomechanics in Conventional 8:00 a.m. - 5:00 p.m.
 Student Paper Competition 8:00 a.m. - 5:00 p.m.
 Speaker Preparation Center 9:00 a.m. - 5:00 p.m.
 Technology Committee Meeting 5:00 p.m. - 6:00 p.m.
 VP Publications Meeting 5:00 p.m. - 6:00 p.m.
 Nuclear SIG Meeting 5:00 p.m. - 6:00 p.m.
 Icebreaker Reception 6:30 p.m. - 8:30 p.m.

Monday, June 17

Speakers Breakfast 6:00 a.m. - 8:00 a.m.
 Speaker Preparation Center 7:00 a.m. - 5:00 p.m.
 Registration - Town Center Assembly 7:00 a.m. - 5:00 p.m.
 Spouse/Partner Hospitality 7:30 a.m. - 5:00 p.m.
 Exhibition – Town Center North 8:00 a.m. - 5:00 p.m.
 Opening Remarks Keynote Address 8:00 a.m. - 8:30 a.m.
 Technical - Morning Sessions 8:30 a.m. - 11:30 a.m.
 Spouse/Partner Tour 1:00 p.m. - 5:00 p.m.
 Annual Business Meeting and Lunch 11:30 a.m.- 1:00 p.m.
 Digital Presentation Poster Session 1:10 p.m. - 1:30 p.m.
 Technical - Afternoon Sessions 1:50 p.m. - 5:30 p.m.
 Monday Night Social Reception 6:30 p.m. - 8:30 p.m.

Tuesday, June 18

Speakers Breakfast 6:00 a.m. - 8:00 a.m.
 Speaker Preparation Center 7:00 a.m. - 5:00 p.m.

Registration - Town Center Assembly 7:30 a.m. - 5:00 p.m.
 Spouse/Partner Hospitality 7:30 a.m. - 5:00 p.m.
 Exhibition – Town Center North 8:00 a.m. - 5:00 p.m.
 Technical – Dual Morning Sessions 8:00 a.m. - 11:30 a.m.
 Spouse/Partner Tour 7:00 a.m. - 5:00 p.m.
 Annual Awards Luncheon 11:30 a.m.- 1:00 p.m.
 Digital Presentation Poster Session 1:10 p.m. - 1:30 p.m.
 Technical – Dual Afternoon Sessions 1:50 p.m. - 5:30 p.m.
 Tuesday Night Social Reception 6:30 p.m. - 8:30 p.m.

Wednesday, June 19

Speakers Breakfast 6:00 a.m. - 8:00 a.m.
 Speaker Preparation Center 7:00 a.m. - 5:00 p.m.
 Registration - Town Center Assembly 7:30 a.m. - 12:00 p.m.
 Spouse/Partner Hospitality 7:30 a.m. - 5:00 p.m.
 Exhibition – Town Center North 8:00 a.m. - 5:00 p.m.
 Technical - Morning Sessions 8:30 a.m. - 11:30 a.m.
 Spouse/Partner Tour 10:00 a.m. - 5:00 p.m.
 Lunch Break – on your own 11:30 a.m.- 1:00 p.m.
 Leadership Lunch 11:30 a.m.- 1:00 p.m.
 Digital Presentation Poster Session 1:10 p.m. - 1:30 p.m.
 Technical - Afternoon Sessions 1:50 p.m. - 5:30 p.m.
 Closing Remarks and Door Prize Drawing 5:20 p.m.

Thursday, June 20

PDDA 2019 SIG Meeting 8:00 a.m. - 5:00 p.m.
 NMR SIG Meeting 8:00 a.m. - 5:00 p.m.



SYMPOSIUM SPONSORS AND EXHIBITORS

SPONSORS

Baker Hughes
Emerson/Paradigm
ExLog
Halliburton
Maxwell Dynamics
Schlumberger
Shell



EXHIBITORS

ALS Oil and Gas
Baker Hughes, a GE Company
Bruker Optics
CGG
Core Labs
ECOTEK Corp
Emerson/Paradigm
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ExLog
Fracture ID
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GOWell
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H2 Laboratories
KAPPA
Lloyd's Register
Neuralog
New England Research
Petromac
Schlumberger
Scientific Drilling International
The Imaging Systems Group
Task Fronterra Geoscience
SPWLA 2020 Host CWLS



Confirmed exhibitors and sponsors as of the date this brochure was sent to print.

TECHNICAL COMMITTEE

**2019 VP TECHNOLOGY:
Jim Hemingway, *Consultant***

TECHNOLOGY COMMITTEE

Geoff Page, *Baker Hughes - GE*

Jorge Sanchez, *BHP Billiton*

Mayank Malik, *Chevron*

Matthew Reppert, *Neptune Energy*

Donald L. Clarke, *ExxonMobil*

John Zhou, *Maxwell Dynamics*

Clive Sirju, *CNOOC Ltd*

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Edwin Ortega, *ConocoPhillips*

Jusmell Graterol Parodi, *Halliburton*

Weijun Guo, *Halliburton*

Mark Kittridge, *Hess*

Wanida Sritongthae, *PTTEP*

Nikita Seleznev, *Schlumberger*

Christoph Arns, *The University of New S Wales*

Chris Woods, *Woodside*

Pascal Debec, *Total*

Lu Chi, *Conoco Phillips*

Dapo Adeyemo, *Chevron*

Shyam Ramaswami, *Shell*

Ronald J. Deady, *APS Technology Inc.*

Feyzi Inanc, *Baker Hughes - GE*

Liz Davis, *BP*

Hesham El-Sobky, *ConocoPhillips*

Alberto Mendoza, *Imperial College*

Margaret Lessenger, *Rimrock Petrophysics and Analytics*

Benjamin Fletcher, *Consultant*

Iulian Hulea, *Shell*

Ferdinanda Pampuri, *Eni S.p.A.*

Nadege Bize, *Schlumberger*

Sap Basu, *CoP*

TECHNICAL PROGRAM

NOTE: Tentative Program: Selected papers listed below may not be in the order in which they will be presented. The final technical program may differ from that shown due to paper withdrawals. All technical sessions will be held in Town Center South at The Woodlands Waterway Marriott Hotel & Convention Center. Photography and video/audio recording of any kind is strictly prohibited in all areas including technical sessions, workshops and exhibition hall.

CASE STUDIES

APPLICATION OF GAMMA FUNCTION IN THE EVALUATION OF HEAVY OIL RESERVOIR IN PEREGRINO FIELD THROUGH NMR WELL LOGS; Jesus P. Salazar, Javier Borri and Roberto Arro, Baker Hughes a GE Company, Jose Eustaquio Barbosa and Katharine Sandler, Equinor

CHARACTERIZATION AND PRODUCTION INFLUENCE OF GEOLOGICAL FACIES IN THE EAGLE FORD; Abbas Jeremy Magness, Bhaskar Sarmah, Nicholas Garrison and Eli Bogle, Halliburton

ESTIMATION OF THOMSEN'S EPSILON AND DELTA IN A SINGLE CORE USING ULTRASONIC PHASE AND GROUP VELOCITY MEASUREMENTS; Gabriel Gallardo-Giozza, D. Nicolás Espinoza and Carlos Torres-Verdín, The University of Texas at Austin, Elsa Maalouf, American University of Beirut

EVALUATION OF LIGHT HYDRO-CARBON COMPOSITION, PORE SIZE AND TORTUOSITY IN ORGANIC-RICH CHALKS USING NMR CORE ANALYSIS AND LOGGING; Zeliang Chen, Philip M. Singer, Xinglin Wang and George J. Hirasaki, Rice University, Harold J. Vinegar, Vinegar Technologies LLC

FEASIBILITY STUDY OF DERIVING WATER SATURATION FROM LWD NMR TRANSVERSE RELAXATION TIME IN TWO SILICICLASTIC RESERVOIRS IN CHINA; Zhou Xin, Schlumberger

IDENTIFICATION OF BITUMEN IN NAJMAH SOURCE ROCK, UTILIZING ORGANIC AND INORGANIC ANALYSIS, A CASE STUDY; Jalal Dashti, Kuwait Oil Company

IMAGING, HIGH RESISTIVITY CARBONATE RESERVOIR DELINEATION AND WELL PLACEMENT – APPLICATION OF A NEW HTHP RESISTIVITY IMAGING WHILE DRILLING TOOL IN CHINA; Qim-ling Li, CNPC and Oliden Technology

LWD RESISTIVITY ANOMALIES IN OVERBURDEN SECTIONS PROVIDE CRITICAL INFORMATION ON DRILLING SAFETY AND BOREHOLE STABILITY: GULF OF MEXICO CASE STUDIES; Michael Rabinovich, John Bergeron, Gerardo Cedillo, Maryam Mousavi and Wilson Pineda, BP, Jeffrey Hamman, BP Retired, Fei Le and Hans-Martin Maurer, Baker Hughes, GE, Ettore Mirto and Keli Sun, Schlumberger

TURNING A NEGATIVE INTO A POSITIVE: SHALE ANNULAR BARRIER IDENTIFICATION FOR PLUG AND ABANDONMENT; David Lavery, Halliburton and Gulnara M. Shafikova, Vår Energi AS

UNCERTAINTY ANALYSIS IN FORMATION EVALUATION: RATIONALE, METHODS AND EXAMPLES; Philippe Gaillot, ExxonMobil Exploration Company, Roza Nursaidova, National Caspian Oil Company, Jerome Lewandowski, Exxon Mobil Upstream Research Company

WHAT IF THERE WAS A BETTER FORMATION-TESTING PROBE? A CASE STUDY ON OPTIMIZING FLOW GEOMETRY; Camilo Gelvez and Carlos Torres-Verdín, The University of Texas at Austin, Mayank Malik and Yegor Se, Chevron Corporation

COMPLETION PETROPHYSICS

A NEW PETROPHYSICAL CORRELATION FOR THE PERMEABILITY OF CARBONATE ROCKS; Yuhai Zhou, Ding Zhu and A. D. Hill, Texas A&M University

A PETRO-MECHANICAL APPROACH TO COMPLETIONS OPTIMIZATION IN THE BAKKEN; Carrie Glaser, Fracture ID, Kyle Trainor, NP Energy Services and Joel Mazza, Fracture ID

INTEGRATED APPROACH TO EVALUATE ROCK BRITTLENESS AND FRACTURABILITY FOR HYDRAULIC FRACTURING OPTIMIZATION IN SHALE GAS; Mohamed Ibrahim Mohamed, Colorado

School of Mines

DEEP WATER RESERVOIR ANALYSIS

A NEUTRON-INDUCED GAMMA-RAY SPECTROSCOPY LOGGING METHOD FOR DETERMINING FORMATION WATER SALINITY; Lili Tian, Feng Zhang, Quanying Zhang, Qian Chen, Xinguang Wang and Fei Qiu, China University of Petroleum

INTEGRATED RESERVOIR CHARACTERIZATION IN DEEPWATER GULF OF MEXICO USING NUCLEAR MAGNETIC RESONANCE (NMR) FACTOR ANALYSIS AND FLUID SUBSTITUTION; Tianmin Jiang, Jason Gendur, Li Chen, Weixin Xu, Dan Shan, Nnadozie Nwosu and Jesus Canas, Schlumberger

FORMATION EVALUATION BEHIND CASING

A SECOND LIFE FOR A GIANT: CASED-HOLE PULSED NEUTRON LOGGING IN COMPLEX COMPLETIONS AND CHALLENGING FLUID SCENARIOS; Gabriele Duci, Roberto Zarauti, Alessandro Fasto, Marco Pirrone and Giuseppe Galli, Eni S.p.A.

CALIPER BEHIND CASING - USING NUCLEAR LOGGING TOOLS TO REPLICATE OPENHOLE CALIPER MEASUREMENTS IN CASED HOLES; Ben Clarricoates and Manus Lang, Weatherford

IMPACT OF CEMENT QUALITY ON CARBON/OXYGEN AND ELEMENTAL ANALYSIS FROM CASED-HOLE PULSED NEUTRON LOGGING AND POTENTIAL IMPROVEMENT USING AZIMUTHAL CEMENT BOND LOGS; Haijing Wang, Michael Sullivan, Yegor Se, David Barnes, Michael Wilson and Michael Lazorek, Chevron

LESSONS LEARNED FROM CASED-HOLE FORMATION EVALUATION

TECHNICAL PROGRAM

ALONG UNCONVENTIONAL HORIZONTAL WELLS; Michael Sullivan, Haijing Wang, Alexei Bolshakov, Lisa Song, Michael Lazorek, Vahid Tohidi and Yegor Se, Chevron

FORMATION EVALUATION OF CONVENTIONAL RESERVOIRS

A LOGGING CASE STUDY OF A GULF OF MEXICO SUB-SALT DEEP MIOCENE WELL: HIGHLIGHTING NEW TECHNOLOGY AND APPLICATIONS IN A CHALLENGING ENVIRONMENT; Brian LeCompte, Murphy Oil, Charlie Jackson, Rohin Naveena-Chandran, Gary Kainer and Baris Guner, Halliburton, Nicola Capuzzo, Task Fronterra Geosciences, Ron Balliet and Glenn Wilson, Halliburton

A NEW APPARATUS FOR COUPLED LOW-FIELD NMR AND ULTRASONIC MEASUREMENTS IN ROCKS AT RESERVOIR CONDITIONS; Paul Connolly, University of Western Australia, Joël Sarout and Jérémie Dautriat, CSIRO, Eric F. May and Michael L. Johns, University of Western Australia

A NEW WORKFLOW FOR JOINT INTERPRETATION OF ELECTRICAL RESISTIVITY AND NMR MEASUREMENTS TO SIMULTANEOUSLY ESTIMATE WETTABILITY AND WATER SATURATION; Chelsea Newgord, Artur Posenato Garcia and Zoya Heidari, The University of Texas at Austin

A RAPID NON-INVASIVE EVALUATION METHOD FOR RESERVOIR FLUID SAMPLES; Ansgar Cartellieri, Erik Lehne and Maryam M. Alohalay, BHGE

APPLICATION OF AN INTEGRATED PETROPHYSICAL MODELING TO IMPROVE LOG BASED RESERVOIR CHARACTERIZATION AND OIL IN-PLACE ESTIMATE OF A FRESH WATER SHALY-SAND RESERVOIR; Sushanta Bose, Michael Myers, Peila Chen and Ganesh C. Thakur, University of Houston

BUILDING A RESERVOIR ROCK DIELECTRIC PROPERTIES DATABASE; Matthew Josh and Ben Clennell, CSIRO

CALCULATING POROSITY AND PER-

MEABILITY OF MINI PLUGS FROM A LOW-RESISTIVITY/LOW-CONTRAST HYDROCARBON RESERVOIR USING DIGITAL CORE ANALYSIS; Hijaz Kamal Hasnan, University of Malaya

COMBINING LOGGING-WHILE-DRILLING (LWD) RESISTIVITY AND CAPTURE SIGMA TO IDENTIFY AND EVALUATE WATER FLOOD ENCROACHMENT - CASE STUDY OF A FIELD WITH MULTILAYERED, COMPLEX RESERVOIRS; Doug Murray, Schlumberge, Miguel Ascanio, Matthew Hoehn and Patrick Garrow, Chevron

CORE-LOG-GEOMODEL INTEGRATION: ADVANCED CLASSIFICATION AND PROPAGATION WORKFLOWS FOR THE CONSISTENT, RIGOROUS, AND PRACTICAL UPSCALING OF PETROPHYSICAL PROPERTIES; A. A. Curtis and E. Eslinger, eGAMLS Inc., S. Nookala, Cerrone Pvt Ltd

DIGITAL ROCK TECHNOLOGY FOR ACCELERATED RCA AND SCAL: APPLICATION ENVELOPE AND REQUIRED CORRECTIONS; Nishank Saxena, Justin Freeman, Amie Hows, Ronny Hofmann, Faruk O. Omer and Matthias Appel, Shell

DISCOVERY OF NEW HORIZONS IN A 36 YEARS-OLD CONVENTIONAL OIL AND GAS PLAY BY UTILIZATION OF STATE-OF-THE-ART FORMATION EVALUATION APPROACHES: A CASE STUDY FROM THRACE BASIN, TURKEY; Murat Fatih Tuğan and Ugur Yuce, TPAO

DIVERSE FLUID GRADIENTS ASSOCIATED WITH BIODEGRADATION OF CRUDE OIL; Oliver C. Mullins, Schlumberger, Yngve Bolstad Johansen and Joachim Rinna, AkerBP, John Mayer, Kosmos, Steve Kenyon-Roberts, Premier, Li Chen, Julia C. Forsythe, Vladislav Achourov, Richard Jackson, Soraya S. Betancourt, Julian Y. Zuo and Jesus A. Canas, Schlumberger

DOWNHOLE NEUTRON SPECTROSCOPY ELEMENT AND MINERAL ESTIMATES COMPARED TO A RING TESTED CORE REFERENCE; Yngve B. Johansen and Olav-Magnar Nes, AkerBP, Harish Dattir, Lalitha Venkataramanan and Paul Craddock, Schlumberger

ESTIMATING CAPILLARY PRESSURE FROM NMR MEASUREMENTS USING A PORE-SIZE-DEPENDENT FLUID SUBSTITUTION METHOD; You Wang, David Medellin and Carlos Torres-Verdín, The University of Texas at Austin

EXPERIMENTAL ESTIMATION OF RELATIVE PERMEABILITIES USING X-RAY COMPUTED TOMOGRAPHY; Andrés Felipe Ortiz, Edwar Herrera Otero, Nicolás Santos Santos and Luis Felipe Carillo, Universidad Industrial de Santander

FAST FORWARD MODELING OF BOREHOLE NUCLEAR MAGNETIC RESONANCE MEASUREMENTS IN VERTICAL WELLS; Mohammad Albusairi and Carlos Torres-Verdín, University of Texas at Austin

HETEROGENEITY IN THE PETROPHYSICAL PROPERTIES OF CARBONATE RESERVOIRS IN TAL BLOCK; Umar Farooq, Jawwad Ahmed, Kashif Mushir Ahmed Khan, Farrukh Siddiqi and Asad Ali Kazmi, SPE Pakistan

IMPROVING PRODUCTIVITY ESTIMATION IN DEVELOPMENT WELLS USING LWD FORMATION TESTERS AND GEOCHEMICAL LOGS; Ting Li and Chanh Cao Minh, Schlumberger, Xinlei Shi, CNOOC

INTEGRATED MULTI-PHYSICS WORKFLOW FOR AUTOMATIC ROCK CLASSIFICATION AND FORMATION EVALUATION USING MULTI-SCALE IMAGE ANALYSIS AND CONVENTIONAL WELL LOGS; Andres Gonzalez and Zoya Heidari, The University of Texas At Austin, Olivier Lopez and Harry Brandsen, Equinor

INTEGRATED RESERVOIR AND SOURCE ROCK CHARACTERIZATION: REFINED DOWNHOLE ANALYSES THROUGH ADVANCED SURFACE LOGGING TECHNOLOGY; Alessandro Pozzi and Filippo Casali, GEOLOG, Roselin Ebiakobo-Ngoma-Itoba, TOTAL EP CONGO, Antonio Bonetti, GEOLOG, Audrey Aymar Nkie-Ndion, TOTAL EP CONGO, Mario Ruggiero, GEOLOG, Emmanuel Caroli, TOTAL

INTERPRETING PORE STRUCTURE AND PERMEABILITY FROM NMR T2 SPECTRUM BASED ON A PORE-THROAT MODEL; He Meng, Tongji Uni-

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versity
MULTI-FREQUENCY INTERPRETATION OF ELECTRIC RESISTIVITY AND DIELECTRIC PERMITTIVITY MEASUREMENTS FOR SIMULTANEOUS ASSESSMENT OF POROSITY, WATER SATURATION, AND WETTABILITY; Artur Posenato Garcia and Zoya Heidari, The University of Texas at Austin

NMR MEASUREMENT OF POROSITY AND DENSITY FROM DRILL CUTTING OF UNCONVENTIONAL TIGHT RESERVOIRS; Stacey M. Althaus, Jin-Hong Chen and Jilin Zhang, Aramco Services Company

PETROPHYSICAL EVALUATION OF THINLY-LAMINATED DEPOSITIONAL SEQUENCES USING STATISTICAL MATCHING PROCEDURES; David Gonzalez and Carlos Torres-Verdín, The University at Austin

PORE-SIZE-DEPENDENT FLUID SUBSTITUTION METHOD FOR IMPROVED ESTIMATION OF NMR POROSITY, PERMEABILITY, AND RELAXATION TIMES; David Medellín, Ali Eghbali, You Wang and Carlos Torres-Verdín, The University of Texas at Austin

RECONCILING THE MODELED LOG AND CORE BASED SATURATION HEIGHT FUNCTIONS: A CASE STUDY FROM THE BAYU UNDA GAS-CONDENSATE RESERVOIR; Suryanarayana Karri, Sproule, Ernesto Pinto and Mateus da Costa, Autoridade Nacional do Petróleo e Minerais – Timor Leste

RESERVOIR FLUID GEODYNAMICS IN BRAZILIAN PRESALT CARBONATE FIELD; Andre Carlos Bertolini, Jacyra Monteiro, Jesus Alberto Canas, Soraya Betancourt, Oliver C. Mullins, Santiago Esteban Collaceli and Ralf K. Polinski, Schlumberger

TEMPERATURE CORRECTION MODEL FOR NMR RELAXATION TIME DISTRIBUTION IN CARBONATE ROCKS; Gabor Husan and Shouxiang Ma, Saudi Aramco RDD, Wei Shao and Songhua Chen, Halliburton

THE FINAL PIECE OF THE PUZZLE: 3D INVERSION OF ULTRA-DEEP AZIMUTH-

AL RESISTIVITY LWD DATA; Nigel Clegg, Timothy Parker and Bronwyn Djefel, Halliburton, David Marchant, Computational Geosciences Inc.

THE IMPACT OF PETROPHYSICAL UNCERTAINTY IN FORMATION EVALUATION AND RESERVOIR MODELLING– A ROBUST METHODOLOGY; Michele Arcangeli, Niccolò Ceresa, Maria Teresa Galli, Paola Cardola and Paolo Scaglioni, ENI

THE SENSITIVITY OF DIELECTRIC SIGNALS TO CATION EXCHANGE CAPACITY IN SHALY SAND FORMATIONS AND ITS DEPENDENCE ON SALINITY, POROSITY, AND TORTUOSITY; Chang-Yu Hou, Denise E. Freed and Jeffrey Little, Schlumberger

TOWARDS A PETROPHYSICALLY CONSISTENT IMPLEMENTATION OF ARCHIE'S EQUATION FOR HETEROGENEOUS CARBONATE ROCKS; Raghu Ramamoorthy, Independent, Suvodip Dasgupta and Ishan Raina, Schlumberger

UNRAVELLING THE UNDERSTANDING OF A COMPLEX CARBONATE RESERVOIR WITH THE USE OF ADVANCED LOGS INTEGRATION; Harish B. Datir and Karl-Erik Holm Sylta, Schlumberger Norway AS, Ingrid Piene Gianotten and Terje Kollien, Lundin Norway AS

WAVELENGTH-BASED AXIAL RESOLUTION LIMITATIONS OF FLEXURAL WAVE DISPERSION SONIC LOGGING; Kristoffer Walker, Ruijia Wang and Qingtao Sun, Halliburton

WETTABILITY ASSESSMENT IN COMPLEX FORMATIONS USING NMR MEASUREMENTS: WORKFLOW DEVELOPMENT AND EXPERIMENTAL VERIFICATION IN ROCKS WITH MODAL PORE-SIZE DISTRIBUTION; Chelsea Newgord, Saurabh Tandon and Zoya Heidari, The University of Texas at Austin

FORMATION EVALUATION OF UNCONVENTIONAL RESERVOIRS

CRUSHED ROCK ANALYSIS WORKFLOW BASED ON ADVANCED FLUID CHARACTERIZATION TECHNIQUES

FOR IMPROVED INTERPRETATION OF ACQUIRED CORE DATA; Melanie Durand, Anton Nikitin, Adam McMullen, Aidan Blount, Amie Hows and Brian Driskill, Shell

DETERMINING RESISTIVITY AND DIELECTRIC CONSTANT SIMULTANEOUSLY USING INDUCTION DATA IN THE PRESENCE OF STRONG INDUCED POLARIZATION; Gong Li Wang, Dean M. Homan, Natalie Uschner, Ping Zhang and Wael Abdallah, Schlumberger

DIELECTRIC RELAXATION TIME DISTRIBUTIONS FROM BROADBAND (40HZ-110MZH) FREQUENCY DOMAIN MEASUREMENTS OF PARTIALLY SATURATED SHALES; Paul Connolly, University of Western Australia, Matthew Josh, CSIRO, Keelan O'Neill, University of Western Australia, Michael B. Clennel, CSIRO, Eric F. May and Michael L. Johns, University of Western Australia

FEASIBILITY OF DIGITAL ROCK PHYSICS FOR STATIC AND DYNAMIC RESERVOIR PROPERTY CHARACTERIZATION IN CARBONATE RESERVOIRS-I; Shruti Malik and Ravi Sharma, Indian Institute of Technology, Roorkee

HIGH-RESOLUTION MINERALOGY MODELING- A CASE STUDY IN THE VACA MUERTA FORMATION, NEUQUÉN BASIN, ARGENTINA; Hao Zhang, Nora Alarcon and Guillermo Crespo, Baker Hughes, a GE Company, Diego Licitra, YPF, Carlos Hernandez, Chevron LC YPF

IMPROVED ANALYSIS OF NMR MEASUREMENTS IN ORGANIC-RICH MUDROCKS THROUGH QUANTIFYING HYDROCARBON-KEROGEN INTERFACIAL RELAXATION MECHANISMS AS A FUNCTION OF THERMAL MATURITY; Saurabh Tandon and Zoya Heidari, The University of Texas at Austin

INTEGRATED PETROPHYSICAL INTERPRETATION AND WORKFLOW FOR STACKED TIGHT GAS SANDS USING MODERN EVALUATION TECHNIQUES; A NORTH LOUISIANA MULTIWELL CASE STUDY; Rojelio Medina, Halliburton, Luke Fidler, Range Resources, Nick Garrison, Bhaskar Sarmah and John Quirein, Halliburton

TECHNICAL PROGRAM

INTEGRATING PILOT AND LATERAL OPEN-HOLE MEASUREMENTS FOR LATERAL LANDING POINT ASSESSMENT AND HYDRAULIC FRACTURE DESIGN – A CASE STUDY FROM THE DELAWARE BASIN, WEST TEXAS; Edgar Velez, Farhan Alimahomed, Elia Hadad, Lance Smith and Jorge Gonzalez, Schlumberger

INVERSION OF HIGH-RESOLUTION HIGH-QUALITY SONIC COMPRESSIONAL AND SHEAR LOGS FOR UNCONVENTIONAL RESERVOIRS; Ting Lei, Smaine Zeroug, Sandip Bose, Romain Prioul and Adam Donald, Schlumberger

INVESTIGATION OF PHYSICAL PROPERTIES OF HYDROCARBONS IN UNCONVENTIONAL MUDSTONES USING TWO-DIMENSIONAL NMR RELAXOMETRY; Z. Harry Xie and Zheng Gan, Core Laboratories L.P.

LEVERAGING DIGITAL ROCK PHYSICS WORKFLOWS IN UNCONVENTIONAL PETROPHYSICS: A REVIEW OF OPPORTUNITIES, CHALLENGES, AND BENCHMARKING; Shaina Kelly, ConocoPhillips, Ayaz Mehmani and Carlos Torres-Verdín; The University of Texas at Austin
MICRO/NANOFLUIDIC INSIGHTS ON FLUID DELIVERABILITY CONTROLS IN TIGHT ROCKS; Shaina Kelly, ConocoPhillips, Ayaz Mehmani and Carlos Torres-Verdín, The University of Texas at Austin

NOVEL MEASUREMENT OF POROSITY AND SATURATIONS OF DRILL-CUTTINGS USING NUCLEAR MAGNETIC RESONANCE AND INFRARED SPECTROSCOPY; Ravinath Kausik, Kamilla Fellah, Shin Utsuzawa, Paul Craddock, Mary-Ellen Loan and Shawn Taylor, Schlumberger-Doll Research, Jonathan Mitchell, Schlumberger Cambridge Research

QUANTIFICATION OF UNCERTAINTIES RELATED TO THE ASSESSMENT OF FREE AND ADSORBED GAS IN PLACE FOR SHALE GAS RESERVOIRS; Rafay Ansari, German Merletti, Peter Armitage and Pavel Gramin, BP

QUANTIFYING BITUMEN PLUGGING USING GEOCHEMICAL AND NMR LOGGING IN TIGHT GAS RESERVOIR; Azzan Al-Yaarubi, Schlumberger, Khalsa Al-Hadi-

di, Ali Al-Mahrouqi and Marcel Ellie, Petroleum Development Oman

QUANTIFYING OF IMPACT OF GEO-CHEMISTRY, TEMPERATURE, AND PRESSURE ON THE WATER ADSORPTION CAPACITY AND WETTABILITY OF KEROGEN USING MOLECULAR SIMULATIONS AND EXPERIMENTAL MEASUREMENTS; Archana Jagadisan and Zoya Heidari, The University of Texas at Austin

RELIABLE AND FAST SATURATION-DEPENDENT RELATIVE PERMEABILITY MEASUREMENT IN TIGHT ROCK SAMPLES; Andres Gonzalez, Saurabh Tandon and Zoya Heidari, The University of Texas at Austin, Pavel Gramin and German Merletti, BP

RESERVOIR PRODUCIBILITY INDEX (RPI) BASED ON 2D NMR T1-T2 LOGS; Ravinath Kausik and Tianmin Jiang, Schlumberger-Doll Research, Lalitha Venkataramanan, Schlumberger, Albina Mutina, Schlumberger-Doll Research, Erik Rylander and Richard Lewis, Schlumberger

TGIP-NMR MEASUREMENTS OF THE APPALACHIAN UNCONVENTIONAL SHALE BASED ON 2D T1-T2 NMR LOGS; Natalie Uschner-Arroyo, Schlumberger, Ravinath Kausik and Lalitha Venkataramanan, Schlumberger Doll Research, Tianmin Jiang, Erik Rylander and Richard Lewis, Schlumberger

THERMAL MATURITY-ADJUSTED LOGGING IN SHALE; Paul R. Craddock, Schlumberger-Doll Research, Richard E. Lewis, Schlumberger, Jeffrey Miles and Andrew E. Pomerantz, Schlumberger-Doll Research

UNRAVELING DISCREPANCIES IN ARRAY LATEROLOG AND INDUCTION RESISTIVITY RESPONSE IN UNCONVENTIONAL SHALE RESERVOIRS; Isabelle Dubourg, Richard Leech, Nasar Khan, Martin G. Lüling and Gong Li Wang, Schlumberger

MACHINE LEARNING

A DEEP-LEARNING APPROACH FOR BOREHOLE IMAGE INTERPRETATION; Kinjal Dhar Gupta, Valentina Vallega, Hiren

Maniar, Philippe Marza, Hui Xie, Koji Ito and Aria Abubakar, Schlumberger

A MACHINE LEARNING FRAMEWORK FOR AUTOMATING WELL LOG DEPTH MATCHING; Thai Le, The Pennsylvania State University, Lin Liang, Schlumberger, Timon Zimmermann, École Polytechnique Fédérale de Lausanne, Smaine Zeroug and Denis Heliot, Schlumberger

A MULTI-SCALE PATH FOR THE CHARACTERIZATION OF HETEROGENEOUS KARST CARBONATES: HOW LOG-TO-SEISMIC MACHINE LEARNING CAN OPTIMIZE HYDROCARBON PRODUCTION; Francesco Bigoni, Marco Pirrone, Fabio Pinelli, Gianluca Trombin and Fabio Vinci, Eni S.p.A.

ADVANCED PETROPHYSICAL APPLICATIONS FOR THE AUSTRALIAN MINING INDUSTRY; Jennifer Market, Lloyd's Register, Huw Rossiter and Brenton Armitage, MPC Kinetic

ARTIFICIAL INTELLIGENCE APPLIED TO NMR LOGGING FOR ROCK AND FLUID TYPING IN HEAVY OILS; Pedro A. Romero Rojas, Alexandrina Cristea and Paul Pavlakos, Weatherford, Okan Ergündüz, Tayfun Keçecioğlu and S.Fatih Alpay, ARAR

AUTOMATED FORMATION TOP LABELING AND WELL DEPTH MATCHING BY MACHINE LEARNING; Shirui Wang and Qiuyang Shen, University of Houston, Yu Liu and Xianping Wu, Shell, Xuqing Wu and Jiefu Chen, University of Houston

AUTOMATED RESISTIVITY INVERSION AND FORMATION GEOMETRY DETERMINATION IN HIGH-ANGLE AND HORIZONTAL WELLS USING DEEP LEARNING TECHNIQUES; Hu Li, Maxwell Dynamics Inc., Gang Liu, Shansen Yang, He Huang, Mingzong Dai, Yuanshi Tian, CNPC Logging, LWD Center

AUTOMATIC INTERPRETATION OF WELL LOGS WITH LITHOLOGY-SPECIFIC DEEP-LEARNING METHODS; Xiaowen Zhang and Joaquin Ambia, The University of Texas at Austin, Jochim Strobel, Wintershall, Carlos Torres-Verdín, The University of Texas at Austin

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AUTO-NAVIGATION OF OPTIMAL FORMATION PRESSURE TESTING LOCATIONS BY MACHINE LEARNING METHODS; Bin Dai, Christopher Jones, James Price and Anthony van Zuilekom, Halliburton

CARBONATE LOG INTERPRETATION MODELS BASED ON MACHINE LEARNING TECHNIQUES; Wei Shao, Mahmoud Eid and Gabor Hursan, Halliburton

CLASS-BASED MACHINE LEARNING FOR NEXT GENERATION WELLBORE DATA PROCESSING AND INTERPRETATION; Vikas Jain, Schlumberger

DOMAIN TRANSFER ANALYSIS – A ROBUST NEW METHOD FOR PETROPHYSICS ANALYSIS; Ravi Arkalgud, Helio Flare, Andrew McDonald, Derek Crombie and Jennifer Market, Lloyd's Register

ENHANCED RESERVOIR GEOSTEERING AND GEOMAPPING FROM REFINED MODELS OF ULTRA-DEEP LWD RESISTIVITY INVERSIONS USING MACHINE-LEARNING ALGORITHMS; Hsu-Hsiang (Mark) Wu, Cindy Dong and Michael Bittar, Halliburton

ESTIMATION OF DYNAMIC PETROPHYSICAL PROPERTIES FROM MULTIPLE WELL LOGS USING MACHINE LEARNING AND UNSUPERVISED ROCK CLASSIFICATION; Mohamed Bennis and Carlos Torres-Verdín, The University of Texas at Austin

INVESTIGATING HOW LOGGING DATA PRECISION AND ACCURACY DEGRADATION IMPACTS MACHINE LEARNING; Jeffrey L. Baldwin, Lehne George and Alexander Klebanov, Chesapeake Energy

LEVERAGING PROBABILISTIC MULTIVARIATE CLUSTERING ANALYSES OF WELL LOGS TO IDENTIFY “SWEET SPOT” INTERVALS IN HETEROGENEOUS CONVENTIONAL AND UNCONVENTIONAL RESERVOIRS; Eric Eslinger, Francis Boyle and A.A. Curtis, eGAMLS Inc.

QUANTITATIVE INTERPRETATION OF OIL-BASE MUD MICRORESISTIVITY IMAGER VIA ARTIFICIAL NEURAL NETWORKS; Zikri Bayraktar, Dzevat Omeragic

and Yong-Hua Chen, Schlumberger-Doll Research

ROLE OF MACHINE LEARNING IN BUILDING MODELS FOR GAS SATURATION PREDICTION; Yagna Deepika Oruganti, Peng Yuan, Feyzi Inanc and Yavuz Kadioglu, Baker Hughes, A GE Company

THE USE OF MACHINE LEARNING TO PREDICT A PERMEABILITY MODEL FROM NRM LOGS: AN EXAMPLE OF PRE-SALT CARBONATES OF SANTOS BASIN; Laura Louise Demarch, George Correa de Araujo and Alexandre Campana Vidal, Unicamp

USING A PHYSICS-DRIVEN DEEP NEURAL NETWORK TO SOLVE INVERSE PROBLEMS FOR LWD AZIMUTHAL RESISTIVITY MEASUREMENTS; Yuchen Jin, Xuqing Wu and Jiefu Chen, University of Houston, Yueqin Huang, Cyentech Consulting LLC

NEW BOREHOLE LOGGING TECHNOLOGY

A CONCEPT PLATFORM FOR HIGHLY EFFICIENT AND ACCURATE PRESSURE, SAMPLING AND SIDEWALL CORING OPERATIONS USING WIRELINE CONVEYANCE; German Garcia, Hadrien Dumont, Vinay K. Mishra, Li Chen, Christopher Babin and Ron Hayden, Schlumberger

A FAST BAYESIAN INVERSION METHOD FOR THE GENERALIZED PETROPHYSICAL AND COMPOSITIONAL INTERPRETATION OF MULTIPLE WELL LOGS WITH UNCERTAINTY QUANTIFICATION; Tianqi Deng, Joaquin Ambia-Garrido and Carlos Torres-Verdín, University of Texas at Austin

A NEW MULTI-FREQUENCY ARRAY-DIELECTRIC LOGGING SERVICE: TOOL PHYSICS, FIELD TESTING, AND CASE STUDIES IN THE PERMIAN BASIN WOLFCAMP SHALE; Stanislav Forgang, Bill Corley, Alejandro Garcia, Amer Hanif, Fei Le, John Jones, Yinxi Zhang and Elton Frost, Baker Hughes a GE Company, Stephanie Perry, Anadarko Petroleum Corporation

A NEW THROUGH-CASING ACOUSTIC LOGGING TOOL USING DUAL-SOURCE TRANSMITTERS; Xiaoming Tang, China University of Petroleum (East)

ACCURATELY ESTIMATING SHEAR SLOWNESS USING DATA-DRIVEN QUADRUPOLE SONIC LOGGING-WHILE-DRILLING DATA PROCESSING; Ruijia Wang and Richard Coates, Halliburton

ADVANCED LWD OBM IMAGING IN CHALLENGING SUB-SALT DEEPWATER ENVIRONMENTS; Gerardo Cedillo and Dann Halverson, BP GoM, Carlos Maeso, David Maggs and Hathairat Watcharophat, Schlumberger

CAN THE EVALUATION ACCURACY OF ELEMENTAL CONCENTRATION BE FURTHER ENHANCED IN GEOCHEMICAL LOGGING?—A BREAK ATTEMPT TO OBTAIN PURER INELASTIC GAMMA SPECTRUM; Chao Yuan, Chaoliu Li and Cancan Zhou, PetroChina Research Institute of Petroleum Exploration and Development

DEDUCTING DISPERSIVE PERMITTIVITY FROM LWD RESISTIVITY MEASUREMENTS; Stein Ottar Stalheim, Equinor
DIRECT MID-IR OPTICAL MEASUREMENT OF SYNTHETIC DRILLING FLUID FILTRATE CONTAMINATION DURING FORMATION-TESTER PUMPOUTS; Ralph Piazza, Alexandre Vieira and Luiz Alexandre Sacorague, Petrobras, Christopher Jones, Bin Dai, Megan Pearl and Helen Aguiar, Halliburton

ENHANCING THE LOOK-AHEAD-OF-THE-BIT CAPABILITIES OF DEEP DIRECTIONAL RESISTIVITY MEASUREMENTS WHILE DRILLING; Michael Thiel, Dzevat Omeragic and Jean Seydoux, Schlumberger

EXPERIMENTAL INVESTIGATION OF MUD-FILTRATE INVASION USING RAPID MICRO-CT IMAGING; Colin Schroeder and Carlos Torres-Verdín, The University of Texas at Austin

FIELD TEST OF A HTHP LATEROLOG ARRAY RESISTIVITY AND IMAGING WHILE DRILLING TOOL; Qiming Li, Olliden Technology

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FROM HOUSTON API CALIBRATION PITS... TO ARTIGUELOUTAN LOGGING METROLOGICAL FACILITY; Pierre Chuilon, Gilles Puyou and Emmanuel Caroli, TOTAL SA, Jose Inciarte, Bill Dillon, Joao Vilela and Francisco Collado, Halliburton

GEOSTEERING IN COMPLEX CHANNEL SANDS: SUCCESSFUL USE OF A NEW DETERMINISTIC PARAMETRIC INVERSION OF ULTRA-DEEP RESISTIVITY MEASUREMENTS; Joseph Wilding-Steele, Schlumberger

IMPROVING PRODUCTION IN CHILD WELLS BY IDENTIFYING FRACTURES WITH AN LWD ULTRASONIC IMAGER: A CASE STUDY FROM AN UNCONVENTIONAL SHALE IN THE U.S.; Claudia Amorocho, Cory Langford and Gregory Warot, Weatherford International, Erich Kerr, EP Energy

INFORMATION CONTENT AND RESOLUTION POTENTIAL OF DEEP DIRECTIONAL RESISTIVITY MEASUREMENTS FOR 3D RESERVOIR MAPPING; Dzevat Omeragic, Schlumberger, Hanming Wang, Chevron, Hezhu Yin, ExxonMobil, Michael Thiel, Niloofer Farnoosh, Jean Seydoux and Jean-Michel Denichou, Schlumberger

INTEGRATED RESERVOIR FLUID MAPPING WHILE DRILLING ALONG HIGH-ANGLE-HORIZONTAL WELLS; Artur Kotwicki and Nicolas Gueze, AkerBP, Maria Cecilia Bravo, Mirza Hassan Baig, Mathias Horstmann, Yon Blanco, Chanh Cao Minh, Julian Pop and Scott Paul, Schlumberger

MONITORING CO₂ SATURATION USING THREE-DETECTOR PNC LOGGING TECHNIQUE FOR CO₂ EOR IN HEAVY OIL RESERVOIR; Feng Zhang, Quanying Zhang and Lili Tian, China University of Petroleum (East China), Xiaoyang Zhang, Qingdao University of Science and Technology, Qian Chen and Jilin Fan, China University of Petroleum (East China)

NEW 4¾-IN. ULTRASONIC LWD TECHNOLOGY PROVIDES HIGH-RESOLUTION CALIPER AND IMAGING IN OIL-BASED AND WATER-BASED MUDS; Peng Li, Jonathan Lee, Richard Coates and Rodney Marlow, Halliburton

NEW ADVANCED MATERIAL AND COATING TECHNIQUE FOR TRACE HYDROGEN SULFIDE SAMPLING; Christopher Jones, Jimmy Price, Mickey Pelletier, William Soltmann, Darren Gascooke and Anthony van Zuilekom, Halliburton

PRE-JOB PLANNING BASED ON NUCLEAR MODELING LEADS TO SUCCESSFUL DOWNHOLE MINERALOGY DETERMINATION IN EXTREMELY CHALLENGING LOGGING CONDITIONS; Haijing Wang, Lorelea Samano, Kenneth Kelsch, Ela Manuel and Janet Yun, Chevron,

PSEUDO-FOCUSING PROCESSING OF ARRAY INDUCTION LOGGING MEASUREMENT IN HIGH-ANGLE WELLS; Hu Li, Maxwell Dynamics, Inc, Chao Yuan, Chaoliu Li, Xia Li, Cancan Zhou, PetroChina Research Institute of Petroleum Exploration & Development, John Zhou, Maxwell Dynamics, Inc.

REAL-TIME DOWNHOLE MID-IR MEASUREMENT OF CARBON DIOXIDE CONTENT; Christopher Jones, Halliburton, Ralph Piazza, Alexandre Vieira and Luiz Alexandre Sacorague, Petrobras, Bin Dai, Megan Pearl and Helen Aguiar, Halliburton

REAL-TIME EM LOOK-AHEAD: A MATURING TECHNOLOGY TO DECREASE DRILLING RISK IN LOW INCLINATION WELLS; Jean Seydoux, Jean-Michel Denichou, Irlan Amir, Vera Wibowo, Thorsten Bauch, Diogo Salim, Shim Yen Han, Mauro Viandante, Guillermo Cuadros, Michiko Hamada, Sarwa Tan and Yao Feng, Schlumberger

RESOLUTION ENHANCEMENT OF SONIC LOGS SUPPORTED BY ULTRASONIC DATA; Jingxuan Liu, Ali Eghbali and Carlos Torres-Verdín, The University of Texas at Austin

WELL DEPTH MEASUREMENT QUALITY IMPROVEMENT: USE OF WAY-POINT TO IMPROVE DRILL PIPE DEPTH MEASUREMENT AND QUANTIFY UNCERTAINTY; Harald Bolt, Depth Solutions Ltd.

RESERVOIR AND PRODUCTION SURVEILLANCE

‘LOG-SOAK-LOG’ EXPERIMENT IN TENGIZ FIELD: NOVEL TECHNOLOGY FOR UNCERTAINTY REDUCTION AND DECISION SUPPORT IN AN IMPROVED OIL RECOVERY PROJECT; Yegor Se, Tengizchevroil, Mauricio Villegas, Chevron USA, Elrad Iskakov and Ted Playton, Tengizchevroil, Ernesto Cordova, Karl Lindsell and Aizhan Turmanbekova, SPE, Haijing Wang, Chevron, USA

CEMENT BOND EVALUATION WITH A LOGGING-WHILE-DRILLING SONIC TOOL; Franck Michel, Ruijia Wang, Chung Chang, Richard Coates and Jonathan Lee, Halliburton

EOR PILOT PERFORMANCE EVALUATION IN A GIANT MATURE FIELD IN ARGENTINA; Silvio Pedro Figliuolo and María Leticia Legarto, Y-TEC, Andrés López Gibson, YPF, Facundo Arillo, Halliburton

FROM THE BOREHOLE WALL INTO THE FORMATION – COMBINING BOREHOLE IMAGES WITH DEEP SHEAR WAVE IMAGING TECHNOLOGY; Stefan Schimschal, Stephen Fayers, Nicklas Ritzmann and Martin Cox, Baker Hughes, a GE Company, Iain Whyte, Tullow Oil

INCREASING THE DIMENSIONAL VIEW IN BOTH CEMENT EVALUATION AND MECHANICAL INTEGRITY SURVEILLANCE DELIVERS SOLUTIONS BEYOND THE CURRENT NORM; Gary Frisch, Phil Fox and Roddy Hebert, Halliburton

NOVEL COUPLING SMART SEAWATER FLOODING AND CO₂ FLOODING FOR SANDSTONE RESERVOIRS; SMART SEAWATER-ALTERNATING-CO₂ FLOODING (SMSW-AGF); Hasan Al-Saedi, Missouri University of Science and Technology

THE NEUTRON DANCE: A QUEST FOR RELIABLE CASED-HOLE NEUTRON DATA FOR HIGH-TEMPERATURE STEAMFLOOD SURVEILLANCE; Abbie Morgan, Aera Energy LLC

WORKSHOPS

WORKSHOP 1: PRACTICAL APPLICATIONS OF ACOUSTICS

Instructors: Alexei Bolshakov, Chevron, Doug Patterson, BHGE, Jennifer Market, Lloyd's Register, Matt Blyth, Schlumberger, Philip Tracadas, Halliburton, Brian Hornby, Halliburton, Rob Vines, Shell International E&P

Date: **Saturday, June 15, 2019**

Time: 8:00 a.m. - 5:00 p.m.

Place: TBA

Fee: \$375.00 for registered attendees; \$475.00 non-registered (includes lunch)

About the Course

Borehole acoustics measurements deliver answers that can be used across a wide range of oilfield applications, linking the geophysics world, through petrophysics and geomechanics, to applications within completions, long term production success and field development. This short course will focus on the value that borehole acoustics can bring by helping to solve many common problems or to provide useful information that cannot easily be obtained from any other sources. Topics covered will include: Topical segments will include:

- Basics of borehole acoustics
- Petrophysics Applications: Sourceless porosity and fluid ID
- Geomechanics Applications: Rock mechanics and borehole stability
- Acoustics for completion design (including anisotropic rock mechanics)
- Geophysical Applications: QI and seismic interpretation
- Cased-hole Applications: Well Integrity and Formation Evaluation
- Operational issues, including job planning and basic QC to ensure successful data acquisition

The course will include a short review of the basics of borehole

acoustics but the focus of the course is on the practical application of the measurements. It will be assumed that attendees will have a basic working knowledge of how borehole acoustics tools work and how the data is processed for the primary acquisition modes. The workshop would be held in partnership with the SPWLA Acoustics SIG and instructors will be sourced to deliver both the service company and operator perspective.

WORKSHOP 2: ADVANCED APPLICATIONS OF WIRELINE FORMATION TESTING

Instructors: Shyam Ramaswami, Shell; Sefer Coskun, BHGE; Richard Jackson, Schlumberger; Tony Van Zuillekom, Halliburton; 2 other experts from operating companies : yet to be confirmed

Date: **Saturday, June 15, 2019**

Time: 8:00 a.m. - 5:00 p.m.

Fee: \$375.00 for registered attendees; \$475.00 non-registered (includes lunch)

Abstract

Wireline Formation Testing has developed beyond the basic applications around pressures and fluid sampling and now forms an important sub-discipline on reducing key uncertainties in development projects.

This workshop aims to provide a series of talks that provide insight into:

- Latest technologies from service companies in the wireline formation testing domain
- Examples from Operating companies on how advanced wireline formation testing applications have helped reduce key rock and fluid property uncertainties for projects

Part of the workshop will be aimed at answering specific problems that are pre-submitted by workshop participants and utilising the expertise of the leading experts in the field of formation testing to help provide solutions to those problems.

This workshop is aimed at promoting constructive discussions of both existing and emerging technologies that can help reduce uncertainties.

Some of the applications that would be presented and discussed in this workshop include:

- Advanced Formation Fluid Typing and trends
- Geomechanical applications, particularly MicroFRAC operations: Key challenges and technologies to overcome these
- Dynamic testing : Expanding the envelope of deliverables of Wireline Formation Testing : Extended Wireline Formation Testing PTA (aka MiniDST)
- Extending the application of Wireline Formation Testing in tight reservoirs : Frac and Flow techniques
- Intergrated Interpretation : The importance of integration with other subsurface discipline and examples

This workshop is aimed at discussing the pros and cons of different techniques and to promote healthy discussion on not just the technical merit of some of the advanced applications, but ideas on how to handle operational discussions with internal and external stakeholders.

WORKSHOPS

WORKSHOP 3:

Saturation height modelling SHM : from SCAL and Logs to a Unified Integrated Reservoir Model

Instructors: Iulian Hulea, Shell Global Solutions BV

Date: **Saturday, June 15, 2019**

Time: 8:00 a.m. - 3:00 p.m.

Place: TBA

Fee: \$375.00 for registered attendees;
\$475.00 non-registered (includes lunch)

About the Course

Saturation height models (SHM) combined with fundamental rock properties like porosity and permeability form the base for most subsurface reservoir models. In contrast to porosity and permeability that are rock properties, saturation height models are the result of fluids interaction with the rock. The saturation height model has a profound impact on the viability of a project hence we aim at having the highest possible accuracy. In building a SHM two main routes can be taken depending on data availability. Core derived SHM can be derived with the aid of core capillary pressures measurements, alternatively, log saturation can be used to derive a SHM. Ultimately, independent of the data source, the models have to be brought in agreement or Quality Controlled against other data already available in the models.

The objective of the short course is to provide the attendees with an overview of the principals of Saturation height modelling from core and logs. The shortcomings of these techniques are going to be highlighted as well as their strengths. Best route to obtain a robust model is going to be highlighted, an essential input in the Integrated reservoir model. Also, the application of core capillary pressure data for Rock typing will be touched upon. The critical importance of robust Quality Control

of the models obtained on different working streams is illustrated by a strong emphasis on practical exercises as well as presenting the most advanced developments in the SHM area.

During the course the instructor (a hands-on practitioner) will attempt to use open literature data sets to illustrate various aspects of the SHM work and its applications.

The course will cover the following aspects:

1. Fundamentals of capillary pressures measurements

- High level measurement techniques overview
- Corrections needed vs advice
- Combining measurements obtained using different fluids in a single model
 - Fundamental assumptions
 - Exercise – From measurement to pore throat
- Mathematical expressions used in parameterization (Brooks-Corey, Thomeer, Lambda, van Genuchten, etc)
 - Exercise - pore throats expressions
- How to obtain a SHM from a simple data set?
 - QC the input
 - Parameter dependencies to focus on
- Rock Typing
 - Exercise – how many RTs?

2. The Fundamentals of Log derived Saturation Height models:

- Deriving water saturation in the log domain
- Fundamental assumptions around building a SHM in the log domain
 - Exercise: check input data and derive a log based SHM
- From Saturation Height Model to “contact”

- Exercise: contact and capillarity
- Universality in entry pressure - valuable source for benchmarks?
 - Exercise: Rock quality and contact

3. Saturation height modelling-other inputs and consequences:

- QCing a SHM model
 - Exercise: Bring one SHM own example for discussions (even better if prepared by somebody not present) and permeability data for the same rock
- Free water levels (FWL), impact on SHM
- Equilibrium: contact variation across a field
- Equilibrium: Free water level (FWL) across the field
- Wettability and imbibition
- Open discussion

4. What is SHM teaching us about capillarity/fluids/etc:

- OIL RIMS
- Perching
 - Exercise: Permeability, relative permeability and capillary pressures (SHM)
- Open discussion

Handy pre-read:

Hulea, I.N., Frese, D. and Ramaswami, S., 2016, Heterogeneous Carbonate reservoirs: Ensuring Consistency of Subsurface Models by maximizing the use of Saturation- Height Models and Dynamic Data. *Petrophysics* v. 57(3): p 223.

Thomas E.C. and Murphy D. P., 2018, Capillary pressure tutorial, PI, II and III, *Petrophysics*, V59N4T1, V59N5T1, V59N6T1.

Hulea, I.N. ,2018 , Saturation Height Modelling: Assessing Capillary Pressures Stress Corrections, *Petrophysics* v 59, No 2, p. 397.

WORKSHOPS

WORKSHOP 4: **PETROPHYSICAL APPLICATIONS OF IMAGING AND IMAGE ANALYSIS**

Instructors: J. Funk and L.A. Hathon,
University of Houston

Date: **Saturday, June 15, 2019**

Time: 8:00 a.m. - 5:00 p.m.

Place: TBA

Fee: \$375.00 for registered attendees;
\$475.00 non-registered (includes lunch)

Course Summary

This 1-day seminar introduces participants to the analysis, application and integration of core computed tomography (CT), and nuclear magnetic resonance (NMR) imaging techniques. In addition it introduces techniques for modeling rock properties using detailed analysis of thin section images. The physics, equipment and data processing for CT and NMR measurements are reviewed and applied for reservoir characterization and recovery examples. The course covers both basic and advanced applications extending from basic core depth shift considerations to core orientation and differentiation of rock fluid interactions. Applications of quantitative image analysis of thin section images, including modeling of absolute permeability, pore volume compressibility, and acoustic properties will also be discussed.

Who Should Take the Course?

- Geologists, geophysicists, reservoir engineers, or petrophysicists recommending or directing core analysis measurements
- Core analysts or formation damage specialists working to develop improved laboratory measurements and procedures

Course Outline

Section 1: CT Imaging and Applications

- X-ray interactions and laboratory x-ray imaging tools
- Image file formats and processing
- Quantitative petrophysical measurements from Hounsfield CT numbers
- CT imaging for fluid transport studies
- Dual energy CT for mineralogical classification
- CT image data for core orientation with image logs.

Section 2: NMR Imaging and Applications

- NMR fundamentals and laboratory tools
- NMR pulse sequence data and processing
- NMR T2 and diffusion methods for pore size and transport property measurements
- NMR spatial T2 distributions
- NMR and CT combination methods for heterogeneity
- NMR methods for fluid identification
- NMR methods and ROS determinations

Section 3: Applications of Transmitted Light Imaging

- Quantitative Image Analysis in Thin Section: Beyond Point Counting
- Implications of Image Processing Workflow: Fractal Dimension Correction
- Modeling Absolute Permeability
- Modeling Pore Volume Compressibility
- Acoustic Properties of Unconsolidated Sands
- Quantifying Anisotropy and Strain

About The Instructors:

James Funk is currently manager of Core Imaging Consultants, LLC. Previously he was the core analysis subject matter expert and a Senior

Petroleum Engineering Consultant with the Reservoir Engineering Technology Team of Saudi Aramco. Prior to his eighteen years with Saudi Aramco he spent twenty-one years at Texaco EPTD. His experience in the design, implementation and modelling of petrophysical laboratory measurements has provided the basis for over thirty publications and three patents in geosciences, petrophysics, and core analysis. He holds a B. A. in Chemistry from the University of Houston and a M. ChE. from the University of Florida.

Lori Hathon received a PhD in Sedimentary Petrology from the University of Missouri in Columbia. She spent approximately 25 years in industry principally at Shell International E&P, Inc. working on forward modeling of reservoir quality, imaging and image analysis, and modeling physical rock properties using image data. Dr. Hathon is now an Assistant Professor of Petroleum Engineering at the University of Houston.

WORKSHOP 5: **ADVANCES IN RESISTIVITY AND DIELECTRIC LOGGING**

Instructors: Hanming Wang,
Roland Chemali, Hezhu Yin, John
Rasmus, Teruhiko Hagiwara, Michael
Rabinovich, Nikita Seleznev

Date: **Sunday, June 16, 2019**

Time: 8:00 a.m. - 5:00 p.m.

Place: TBA

Fee: \$375.00 for registered attendees;
\$475.00 non-registered (includes
lunch)

About the Course

This event is an updated version of successful course held during the 53rd, 54th & 59th Annual Symposium in Cartagena, New Orleans and London.

WORKSHOPS

Resistivity logs continue to gain importance in Formation Evaluation, Well Placement, Reservoir Mapping. This one-day short course describes the latest technologies in electrical logging and dielectric logging and their multiple applications in the domains of petrophysics, reserve evaluation, and real time decisions. Several topics will be covered in this one-day workshop.

Electrical Anisotropy

Resistivity anisotropy logging plays a dual role. For the petrophysicist, it is one of the preferred methods for evaluating hydrocarbon content in laminated reservoirs, including turbidites. For the geologist anisotropy logs also measure structural dip. Wireline and LWD sensors for measuring anisotropy, and practical applications of the measurements will be presented and discussed. Case study from triaxial induction logging to identify potentially by-passed low resistivity pay formation, to predict folded geological structure nearby the salt flank and many more will be shared in the class.

Dielectric Log and Resistivity Frequency Dispersion

Introduced in the 1970's to help evaluate fresh water bearing formations, the dielectric log is also used to describe formation texture and other petrophysical parameters, based on electrical dispersion. In this topic, modern dielectric dispersion tool and interpretation methodology will be discussed. Case study will demonstrate the main applications of the dispersion measurement such as shallow resistivity curve from dielectric logging, water filled porosity independent from water salinity and "Archie" parameters, saturation in formation with variable water salinity, thin bed analysis and carbonate texture analysis and many more.

Interpretation of Resistivity Logs in HA/HZ Wells

In HAHZ wells, deep reading resistivity

logs may be significantly influenced by nearby boundaries. This phenomenon sometimes called "polarization horns" which is very useful for geosteering, but detrimental for accurate formation evaluation. Advanced resistivity sensors and dedicated workflow helps lift the associated uncertainties. In this topic, we will discuss tool response characteristics of resistivity tools (wireline induction, LWD propagation, LWD azimuthal resistivity) in HAHZ well, briefly review modeling and inversion technique to achieve "true" resistivity and formation boundary and share case studies to demonstrate improving petrophysical analysis and reserve calculation through advanced processing.

LWD Deep, Ultra-Deep Azimuthal Resistivity:

Since LWD azimuthal resistivity was first introduced a decade ago followed by ultra-deep azimuthal resistivity a few years ago, the new service brought significant upside to oil business. The main application of deep, ultra-deep azimuthal resistivity are, but not limited to, well placement, reservoir mapping, geo-stopping and look-ahead. In this topic, we will discuss the measurement physics, how to interpret Picasso-plot offered by service providers, the measurement sensitivity to distance-to-boundary, to dip angle and to anisotropy. We will share the successful stories, lessons learned and the best practice through case studies.

Interpretation of the Anomalies of LWD Resistivity Logs in Common Complex Scenarios

Interpreting LWD resistivity logs is of importance for real-time operation decision. However, the anomalies resulting from borehole, tool eccentricity, anisotropy, distance-to-boundary, drilling induced fracture, time-lapse and dielectric make the interpretation of real-time LWD resistivity logs a challenging

task. In this chapter, numerical modeling result and cased studies will be shared to understand the tool response characteristics of LWD resistivity logs in aforementioned common complex scenarios.

The format will be a combination of presentations by the instructors, interactive discussion and exercises in small groups working on real problems.

WORKSHOP 6: VALUE OF DATA: GETTING THE RIGHT BALANCE IN EXPLORA- TION AND APPRAISAL WELLS

Instructors: Shyam Ramaswami, Shell;
Clive Sirju, CNOOC Intl

Date: **Sunday, June 16, 2019**

Time: 8:00 a.m. - 5:00 p.m.

Place: TBA

Fee: \$375.00 for registered attendees;
\$475.00 non-registered (includes lunch)

Abstract

Getting the right data in exploration and appraisal wells to be able to make informed development project decisions is key but has been constrained in the recent past due to low oil price and uncertainty in the industry. Companies base major investment decisions on the data acquired to:

- Demonstrate the existence of potential field development prospects.
- Appraise field development opportunities to optimise development concepts.
- De-risk field development activities.
- Optimise field production.

This workshop aims to promote ideas and discussions on how the guardians of data acquisition deal with the tensions that have developed around value and



WORKSHOPS

cost, and techniques to better define the value of data.

The format of the workshop will be a series of talks by different companies providing insights on:

- How companies handle value of data and define data acquisition programs
- Examples where projects have had sub-optimal definition due to lack of front end data loading

The second half of the workshop will concentrate on a group exercise designed to probe thinking around development of data acquisition programs.

This workshop example will give hands on application of a workflow you can use to help:

- Gain clarity on well objectives
- Review the Key Issues (i.e. risks and uncertainties) that need to be addressed
- Develop a blue-print for fit for purpose plan for well Data Acquisition Plan (e.g. data acquisition, processing and interpretation requirements) that focuses on addressing the Key Issues, and to prioritise actions.
- Communicate the Data Acquisition Plan in a simple and clear way, to secure buy-in from all stakeholders including partners.

The objective of the workshop is to share ideas on how to map out exactly what information we need to acquire at different stages of a project which meets stakeholder expectations, and more importantly how the tensions of well versus project costs are dealt with.

WORKSHOP 7: CASED-HOLE FORMATION EVALUATION

Instructor: Ahmed Badruzzaman and Dale Fitz

Date: **Sunday, June 16, 2019**

Time: 8:00 a.m. - 5:00 p.m.

Place: TBA

Fee: \$375.00 for registered attendees; \$475.00 non-registered (includes lunch)

Abstract

This workshop will survey the basics and practices of determining hydrocarbon location and hydrocarbon volumes behind casing and distinguishing borehole fluids from formation fluids, using modern pulsed-neutron techniques including emerging multiple-detector tools. The latter make multiple measurements simultaneously and delineate gas better than older pulsed neutron tools. The topics to be covered include pulsed-neutron capture (PNC) vs. carbon/oxygen (C/O) for saturation determination, especially in complex completions, three-phase saturation computation, gas delineation using newly developed three-detector tools, and approaches to locate water entry, quantify zonal communication, and determine fluid hold-ups in the well-bore. Tool designers and operating company practitioners of the art will share their perspectives. The discussion will include best practices, job planning, and tips on performing quality control of interpreted results. Attendees will see examples from a variety of cased-hole tools to judge their strengths and weaknesses. They will then do in-class exercises with field examples to consolidate concepts discussed.

Organizer Bios

Ahmed Badruzzaman has spent over thirty-five years studying nuclear logging techniques including over twenty of them as a Cased-hole subject matter expert

at Chevron Energy Technology before his retirement. He currently teaches PetroSkills' four/five-day Cased-hole Formation Evaluation Course, consults for the US Department of Energy on alternatives to radionuclide-based logging techniques, and offers a Big Ideas course at University of California, Berkeley. He is writing a text-book on nuclear logging based on the course he offered at Berkeley. Author of over 45 papers and two patents both on cased-hole technology, Ahmed is a two-time SPWLA Distinguished Speaker, a two-time SPE Distinguished Lecturer, former Editor of the journal, *Petrophysics*, the founder and chairperson of the SPWLA Nuclear Logging SIG, and Fellow of American Nuclear Society. He holds a Ph. D. in Nuclear Engineering and Science from Rensselaer Polytechnic Institute, Troy, NY.

Dale Fitz spent thirty four years studying open-hole shaly sand techniques and cased-hole formation fluid contact monitoring techniques, and practicing production logging at various ExxonMobil affiliates. He was a co-developer of Exxon's Cased-hole Nuclear Logging School and was the primary developer of ExxonMobil's Cased-hole and Production Logging School. He spent his last six years at ExxonMobil as a Senior Technical Consultant in Formation Evaluation and Operations Geology. Since retiring, he teaches a five-day course on Production Logging for Petroskills and is currently working to redevelop this course as a blended-learning, on-line training course for Petroskills. He has authored 41 papers, is a former SPWLA Distinguished Speaker, former SPWLA and SPE Associate Editor, a member of the SPWLA and the SPE, and a co-founder of the SPWLA Nuclear Logging SIG. He has a Ph.D. in Physical Chemistry from the University of Illinois.

WORKSHOPS

WORKSHOP 8: APPLICATIONS OF GEOMECHANICS IN CONVENTIONAL AND UNCONVENTIONAL RESERVOIR DEVELOPMENT

Instructors: A. Mitra, MetaRock Laboratories; M.T. Myers, L.A. Hathon, University of Houston

Date: **Sunday, June 16, 2019**

Time: 8:00 a.m. - 5:00 p.m.

Place: TBA

Fee: \$375.00 for registered attendees;
\$475.00 non-registered (includes lunch)

Course Summary

Depletion of existing conventional reservoirs and exploitation of unconventional, ultra-tight reservoirs are putting new challenges in front of today's petrophysicists. In addition to understanding rock-fluid interactions and modeling reservoir volumes, they are also being asked whether the wellbore will remain stable in complex deep water environments or how hydraulic fractures will propagate in shale reservoirs. Along with knowledge of the physics of rocks and fluids, understanding the principals of solid mechanics applicable to rock deformation, termed geomechanics, is critical. This short course intends to provide a background on geomechanics principles and laboratory geomechanics measurements, address in detail various geomechanics issues in drilling, completion and production for both conventional and unconventional reservoirs, and illustrates how a wellbore-centered geomechanical model can be built from wireline data, and calibrated using laboratory measurement.

Course Outline

Section 1: Introduction

Importance of Geomechanics in exploration and production
Principles of Geomechanics
Geomechanics data acquisition – laboratory measurement

Introduction of stress path in laboratory measurement
Geomechanics on laboratory, production, and geologic time scales
Standard and advanced geomechanics testing

Section 2: Geomechanics in Conventional Reservoirs

Wellbore Stability – an introduction
Overburden properties
Pore volume compressibility
Anisotropy

Section 3: Geomechanics in Unconventionals

Hydraulic fracturing and geomechanics
Elastic anisotropy in shale
Stress-induced anisotropy in shale
Impact of shale fabric and constituents on hydraulic fracturing
Brittleness and Fracability
Drilling through shale

Section 4: Construction of Geomechanics model

Modeling in situ stress state
Pore pressure prediction
Rock strength from logs
Construction of 1D mechanical model from laboratory measurement and logs

About The Instructors:

Abhijit Mitra received a B.S. and an M.S. in Mining Engineering from Indian Institute of Engineering Science and Technology, and a PhD in Engineering Science from Southern Illinois University. He is currently a Geomechanics Consultant with MetaRock Laboratories in Houston. Prior to joining MetaRock he was with Schlumberger conducting applied research technical service related to geomechanics and core petrophysics. He is a board member of SPE's Geomechanics Technical Section.

Michael Myers received a PhD in Physics from the University of Michigan. He then joined Shell Oil Company and spent most of his career in Shell's

research organization. During his time at Shell he ran their Petrophysical Sciences laboratory, and the Rock Physics Laboratory. He spent his last three years at Shell as their Principal Technical Expert for coring and core analysis. Dr. Myers is now an Associate Professor of Petroleum Engineering at the University of Houston.

Lori Hathon received a PhD in Sedimentary Petrology from the University of Missouri in Columbia. She spent approximately 25 years in industry principally at Shell International E& P, Inc. working on forward modeling of reservoir quality, imaging and image analysis, and modeling physical rock properties using image data. Dr. Hathon is now an Assistant Professor of Petroleum Engineering at the University of Houston.

WORKSHOPS

**Fee: \$375 Pre-registered attendees
 \$475 Non-registered attendees**

Each course requires a minimum number of participants to proceed and each course has a maximum number that can be accepted. Early booking is recommended.

Non-registered rates are for applicants who do not plan to attend the Symposium. Booking preferences will be given to Pre-registered attendees.

FIELD TRIPS

FIELD TRIP 1

Pre-Symposium 2-Day Tour:

Date: **Friday, June 14 – Saturday, June 15, 2019**

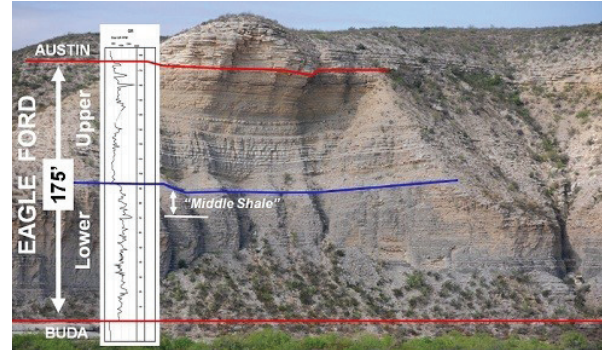
Place: Departs Marriott

Fee: Professionals: \$600 and Students: \$300 (Limited)

Limit: 30 People

Includes: Round trip ground transportation to Del Rio and the outcrop locations. Breakfast (day 2), lunch (day 2), dinner (day 1 and day 2), hotel (day 1), refreshments and guidebook.

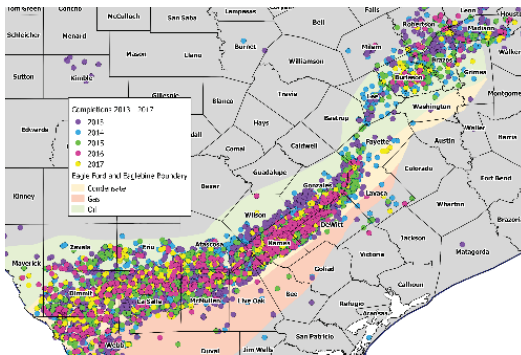
Notes: Day time temperatures in June in south Texas are typically more than 90 degrees Fahrenheit. Care should be taken to limit sun exposure including the use of a wide-brimmed hat and long pants/sleeves as well as sunblock. Closed toed shoes, preferably field boots with ankle support, are required for this trip.



Depositional Processes and Their Influence on Reservoir Properties of the Eagle Ford Formation

William R. Morris, PhD, and Ryan Phelps, PhD.

The Eagle Ford is the most active shale play in the world with approximately 100 rigs currently in operation. The play is located in south Texas and produces from depths between 4,000 - 14,000 ft. Recent data from the U.S. Energy Information Administration suggest that the Eagle Ford contains 5.2 billion barrels of proved oil reserves. It is second only to the Baaken Shale in tight oil reserves in the onshore U.S. In addition, the Eagle Ford contains 23.7 trillion cubic feet of natural gas reserves, making it the third largest gas play in the country.



Who Should Attend

Geoscientists, petrophysicists, and engineers who aim to gain insight into how depositional environmental controls have influenced the reservoir properties of this economically important unconventional reservoir.

Objectives

See the entire vertical succession of the Eagle Ford Formation in the field. Examine relationships with bounding lithologies, and observe the lateral and vertical variability of sedimentary processes and depositional environments. Examine depositional (and geochemical) controls on reservoir properties and gain an understanding of their implications for drilling and completion in this highly heterogeneous reservoir. Relate observed properties in the field to subsurface reservoir properties and producibility as a function of thermal maturity.

Itinerary

Day 1 – Friday, June 14

Participants assemble at the conference hotel to board bus at 12 noon. Prior to departure there will be a safety briefing. Arrive in Del Rio at approximately 5:00 p.m. A buffet-style dinner will be accompanied by lectures and discussion.

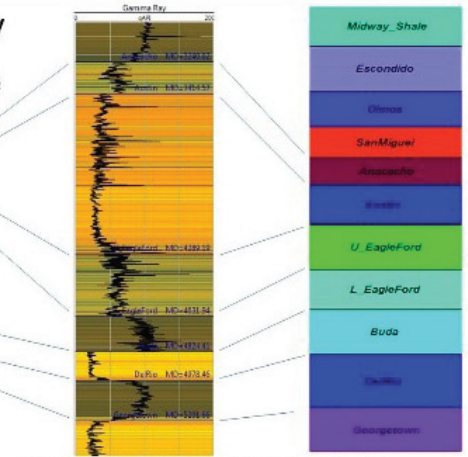
Stratigraphy

Stratigraphic picks

Escondido
Olmos
Anacacho
Austin
U_EagleFord
L_EagleFord

Buda
DelRio
Georgetown

* Same location as previous slide
drillinginfo



FIELD TRIPS

Day 2 – Saturday, June 15

8:00 a.m. Depart Hotel

8:30 a.m. The bus will pass through a border security check point. ALL NON-US CITIZENS WILL NEED TO SHOW PROOF OF LEGAL STATUS IN THE U.S., INCLUDING PASSPORT AND APPROPRIATE VISA INFORMATION. US Citizens should have a valid driver's license on their person.

9:00 a.m. Stop 1: Middle Eagle Ford Outcrop

10:30 a.m. Stop 2: Contact between Buda Limestone and Lower Eagle Ford

11:30 a.m. Stop 3: Lunch and Lower Cretaceous overview

1:00 p.m. Stop 4: Middle to Upper Eagle Ford

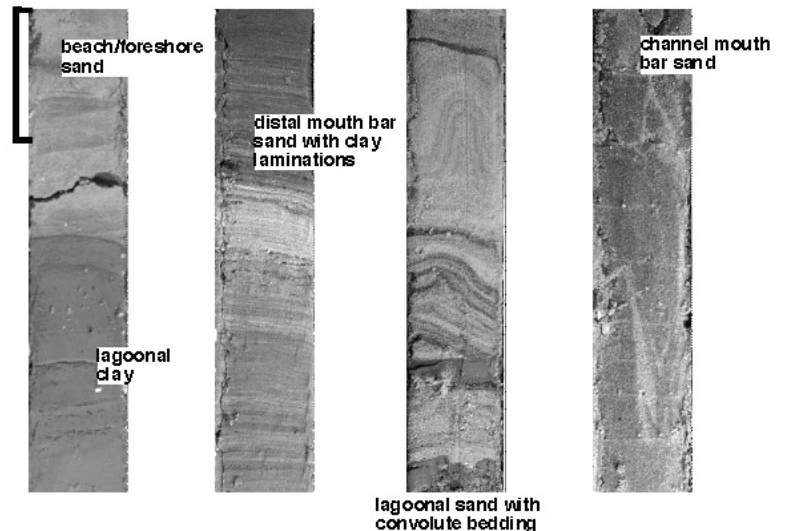
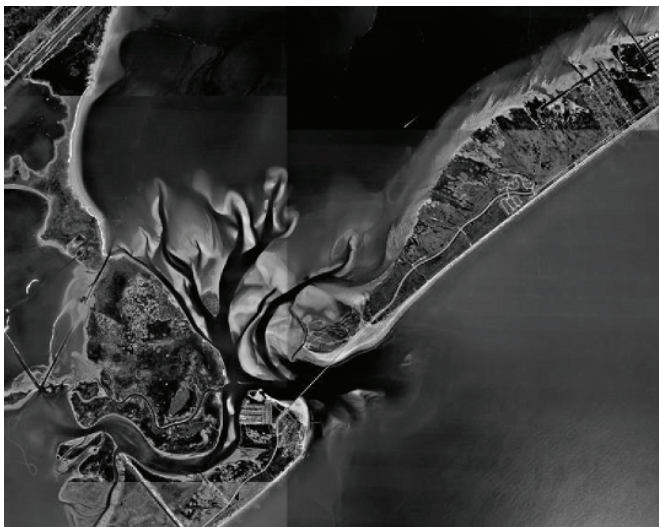
2:30 p.m. Stop 5: Austin Chalk (lateral equivalent to the Niobrara Formation)

3:30 p.m. Begin return trip to Houston. Including a stop for dinner, we will return to the conference hotel at approximately 10:00 p.m.

About the Instructors:

Dr. William Morris has spent most of his career in the Petroleum Industry working for Arco, Phillips and ConocoPhillips in both technology and exploration. For the last 8 years he has been a specialist on mudstone depositional systems, working on some of the most productive and important unconventional units including the Eagleford, Permian, Niobrara, Mowry and Vaca Muerta systems. As a sedimentary geologist, Bill began his studies on the stratigraphic framework and depositional processes of clastic turbidite systems while recently he has focused on understanding distribution of reservoir facies in hybrid and mudstone systems.

Dr. Ryan Phelps has 15 years of experience working carbonate and mudstone depositional systems through The University of Texas at Austin and ConocoPhillips. His technical emphasis is placed on regional stratigraphy, sedimentology, and reservoir characterization. Major unconventional systems Ryan has studied from both technology and field development perspectives include the Eagle Ford, Austin Chalk, Niobrara, Bakken, and Permian.





FIELD TRIPS

FIELD TRIP 2

1-Day Tour:

Date: **Saturday, June 15, 2019**

Time: 8:00 a.m. - 6:00 p.m.

Place: Departs Marriott

Fee: Professionals: \$150 and Students: \$75 (Limited)

Limit: 30 People

Includes: Ground transportation, lunch, refreshments and guidebook.

Notes: Day time temperatures in June in south Texas are typically more than 90 degrees Fahrenheit. Care should be taken to limit sun exposure including the use of a wide-brimmed hat and long pants/sleeves as well as sunblock.

Modern Galveston Island and the Brazos River Delta as Reservoir Analogs

Julia Smith Wellner, PhD

Deltas have proved to be important oil and gas provinces on a global scale. Deltas are the point sources from which sediment is introduced onto continental shelves and ultimately into deep water basins. The interaction of fluvial and receiving basin processes results in the juxtaposition of reservoir, source and seal facies. Major accumulations of hydrocarbons occur in the deltaic deposits of nearly all of the world's great river systems. Understanding the distribution of reservoir and seal facies in these systems will facilitate successful exploration in these settings.

Who Should Attend

Geoscientists, petrophysicists, and engineers actively exploring in deltaic and coastal/barrier island settings.

Objectives

To see typical vertical and lateral facies associations in fluvial, deltaic and barrier island sedimentary successions. Fluvial processes dominate on the upper delta plane, whereas the lower delta plain is subject to marine influence. Delta fronts comprise nested complexes of distributary channels, mouth bars, tidal bars, and reworked delta-front sediments. Learn to recognize these facies types and how depositional processes influence reservoir properties (primary mineralogy and particle size distributions).

Itinerary

Day 1 – Saturday, June 15

Participants assemble at the Woodlands Waterway Marriott to board bus at 8 a.m. Breakfast is on your own. Prior to departure there will be a safety briefing.

- Stop #1 The Brazos River Modern Point Bar
- Stop #2 New Brazos Delta and
- Stop #3 Old Brazos River Delta at Surfside Beach: Lunch There may be bathrooms at this stop.
- Stop #4 Follets Island
- Stop #5 San Luis Pass There may be bathrooms at this stop.
- Stop #6 Galveston Island Beach
- Stop #7 Galveston Island Sea Wall
- Return to Marriott around 6:00 pm.

About the Instructor:

Julia Wellner earned her Ph.D. in 2001 in geology and geophysics from Rice University, where she also completed a post-doctoral fellowship. She is a marine geologist who works primarily offshore Antarctica on questions related to the sedimentary record of glacial variability, climate history, and sea-level change. She and her students also work in the Gulf of Mexico, examining details of recent stratigraphic units as analogs for petroleum reservoirs and on coastal response to sea-level rise.

SOCIETY FUNCTIONS / SOCIAL EVENTS

STUDENT PAPER COMPETITION

Date: **Sunday, June 16**

Time: 8:00 a.m. - 5:00 p.m.

This event will allow students competing to engage with colleagues from other schools and industry professionals. Graduate and undergraduate students will share their work and research for the opportunity of being awarded "best paper presentation". The competition will be held in three groups: Bachelor, MSc and PhD.

SPWLA ANNUAL BUSINESS MEETING AND LUNCH

Date: **Monday, June 17**

Fee: \$45

The SPWLA Annual Business Meeting is a lunch meeting open to all delegate attendees. During this lunch the 2018-2019 President and Board Members will share the accomplishments made during their tenure. Followed by the introduction and welcoming of the 2019-2020 President and Board Members.

SPWLA AWARDS PRESENTATION AND LUNCH

Date: **Tuesday, June 18**

Fee: \$45

The Annual Awards luncheon is open to all symposium delegates, their spouses and guest. During the lunch, individuals will be honoured and rewarded for their outstanding achievements and contributions to the Society and the industry.

SPWLA LEADERSHIP LUNCH*

Date: **Wednesday, June 19**

Fee: Complimentary with registration (check the box on the form to reserve a ticket)

*All current SPWLA Chapter Presidents (outgoing and incoming), SPWLA Parent, Past and Present Presidents, SPWLA Parent Regional Directors and SIG coordinators are invited to join this luncheon.

PDDA SIG Meeting

Date: **Thursday, June 20**

Place: Anadarko Corporation Headquarter, The Woodlands, Texas

Registration Fee: Non SPWLA Member \$125,
Member \$100, Student \$50

NMR SIG MEETING

Date: **Thursday, June 20 and Friday, June 21**

Place: Southwest Energy Office, Spring Texas

Registration Fee: Industry \$100, Student \$50

EVENING RECEPTIONS

You are invited to spend your evenings while at SPWLA 2019 at receptions proudly hosted by our sponsors. We thank our loyal sponsors for their generous contributions and hospitality during our program.

ICEBREAKER RECEPTION

Date: **Sunday, June 16**

HALLIBURTON

Place: TBA

Time: 6:30 p.m. - 8:30 p.m.

Fee: Complimentary with registration (check the box on the form to reserve a ticket)

Hosted by Halliburton

Join your colleagues at the Halliburton Ice Breaker event on Sunday night. Catch up with old friends and mingle with new ones as we celebrate the first evening of the symposium. Within walking distance to the Marriott, the venue is convenient to all.

Cocktails and hors d'oeuvres will be served
Open to the first 400 attendees.

MONDAY EVENING SOCIAL

Date: **Monday, June 17**

Time: 6:30 p.m. – 8:30 p.m.

Place: TBA

Fee: Complimentary with registration (check the box on the form to reserve a ticket)

Hosted by Baker Hughes, a GE company



Enjoy an evening with industry friends and new acquaintances. This is a night to unwind after a full day at conference and exhibition.

TUESDAY EVENING SOCIAL

Date: **Tuesday, June 18**

Time: 6:30 p.m. – 8:30 p.m.

Place: TBA

Fee: Complimentary with registration (check the box on the form to reserve a ticket)

Hosted by Schlumberger



Make plans to attend. While the logistics are still being finalized rest assured, we will have a great time!

SPOUSE/GUEST PROGRAM

SPOUSE HOSPITALITY SUITE

Date: Monday – Wednesday

Time 7:30 a.m. – 5:00 p.m.

Place: TBA

Fee: \$90.00

A comfortable place to hang out, meet with friends, or plan the day's activities. Light snacks and refreshments will be available in the suite. Our Hospitality suite will be available to all registered spouse/guests. This is a place for you to relax while the conference is in progress.



SPOUSE/PARTNER TOURS

MONDAY

Date: **Monday, June 17, 2019**

Time 1:00 p.m. – 5:00 p.m.

Place: Afternoon Shopping Tour to Market Street in a Trolley

Fee: \$0.00

Kick of the conference proceedings by attending Shopping Tour to Market Street. Market Street is a shopping area made to look like an old town square. Everything is available here including food, entertainment, clothing stores and many specialty shops. The center often has events or bands playing. There is a high-end hotel on the loop and an HEB grocery store across the parking lot. If you are visiting The Woodlands, it is worth a visit to the Market Street shops. This activity will help you familiarize with all things to do in the Woodlands area. Discover all the great dining and shopping activities, which are within minutes away from the symposium hotel.



TUESDAY

Date: **Tuesday, June 18, 2019**

Time 7:00 a.m. – 5:00 p.m.

Place: Tour to the Blue Bell Creamery & Bush Presidential Museum

Fee: \$80 (adults) and \$50 (Children). Includes lunch at Café Eccell in College Station, Texas and Ice Cream at Blue Bell.

Begin an exciting day of excursion with a tour to Blue Bell Ice Cream production facility in Brenham, Texas. Famous for making ice cream the “old-fashioned way”, its secret family recipe has been enhanced for over 100 years. A guided tour followed by a short video about how the ice cream is made will conclude with a



SPOUSE/GUEST PROGRAM

taste test. Then, you will be treated with a Blue Bell ice cream of your choice (two scoops) to taste their delicious samples.

Afterwards we will visit the museum at the George Herbert Walker Bush Presidential Museum and Library. The core exhibit at the museum traced the life of George H.W. Bush from his childhood during the 1920's as a torpedo bomber pilot during World War II, a U.S. Congressman, Ambassador to the United Nations, Director of the Central Intelligence Agency(CIA), Vice President and Finally as the President of United States from 1989-1993.

The museum is an interactive experience with a concurrent program for children. Through artifacts, film, photographs, documents, music, sound effects and interactive videos, this special museum experience encompasses much of U.S. history since 1941. See a World War II Avenger Torpedo Bomber, a 1947 Studebaker, and a slab of the Berlin Wall. Experience the White House Situation Room and President Bush's Camp David, see actual spy equipment used by CIA agents during that time, or test the flight simulator of a replica WWII aircraft. You can even have your picture take in the Oval office! A special section is dedicated to First Lady Barbara Bush and her efforts on behalf of literacy, AIDS awareness and prevention, and volunteerism. A recorded self-guided tour with guides posted at each exhibit will be available.



WEDNESDAY

Date: **Wednesday, June 19, 2019**

Time 10:00 a.m. – 5:00 p.m.

Place: Chocolate and Wine Pairing with Winery Visit

Fee: \$85 (Includes transportation, food, chocolate and wine).

You will start the day with brunch at Chocolate Passion, a Venezuelan chocolatier using fine and rare Criollo chocolate located in Conroe. Chocolate connoisseurs seek for Venezuelan organic cacao for its flavor, tasting notes, texture, smoothness on the palate and finish. This visit will include a chocolate presentation and wine pairing. Brunch will include a glass of wine or other beverage of your choice and coffee. Then board the bus to go to the beautiful Tuscan-style award-winning Bernhardt winery located in Plantersville, for sumptuous wine tasting and a tour with the proprietor.

ACCOMODATIONS - WHERE TO STAY!

THE WOODLANDS WATERWAY MARRIOTT HOTEL & CONVENTION CENTER

A meandering waterway within a wooded retreat lies The Marriott Woodlands Waterway Hotel and Convention Center, a state of the art facility offering a distinct setting.

The Woodlands area features, along with the hotel, entertainment venues, retail shops, upscale dining, and uptown living. This hotel has earned the prestigious ENERGY STAR label from the U.S. Environmental Protection Agency (EPA) for its efforts to conserve water and energy and protect the environment.



The Woodlands Waterway Marriott Hotel & Convention Center hotel has a smoke-free policy. Luxurious bedding - down comforters, custom duvets, cotton-rich linens. Upgraded shower heads and curved shower rods for the ultimate rejuvenating experience. Bath and Body Works aromatherapy amenities in our Texas hotel bathrooms. Guest rooms feature a variety of amenities including work desk, coffee-maker, iron & ironing board. Wonderful views from our guest rooms enhance your stay.

Complimentary self parking is available. Valet parking is offered for a nominal fee.

Reservation Information

Guest Room Rate - \$190.00 Single/Double + Tax

For reservations go online to the SPWLA web site: www.spwla2019.com or the hotel's link https://www.marriott.com/meeting-event-hotels/group-corporate-travel/groupCorp.mi?resLinkData=SPWLA%20%2060th%20Annual%20Symposium%5Ehoumw%60spwspwa%60190.00%60USD%60false%604%606/14/19%606/20/19%6005/24/19&app=resvlink&stop_mobi=yes

GROUP RATE cut off date is May 24, 2019. Reserve early to guarantee a room at the conference site!

The Woodlands Waterway Marriott Hotel & Convention Center

1601 Lake Robbins Dr.

The Woodlands, TX 77380

Phone: (281) 367-9797

**BOOK EARLY DISCOUNT RATES EXPIRE MAY, 24 2019!
FOR FULL DETAILS OF HOTELS LISTED IN THIS BROCHURE
VISIT OUR WEBSITE WWW.SPWLA2019.COM**

REGISTRATION INFORMATION

Pre-registration Deadline: June 1, 2019

WAYS TO REGISTER

By Mail: SPWLA Symposium
8866 Gulf Freeway, Suite 320
Houston, TX 77017

By Fax: +1-713-947-8747
The fax line is open 24 hours.
DO NOT send another copy by mail.

Online: www.spwla.org

**Full payment must accompany registration.
Delegates may not register as a spouse or guest.**

REGISTRATION TYPE/PACKAGE INCLUDES

DELEGATES:

- Admission to technical program and exhibits
- Symposium transactions on USB
- Complimentary Tickets to Social Events
(check the box on the form to reserve a ticket)

SPOUSE/PARTNER:

- Admission to Spouse Hospitality Suite
- Admission to the Exhibition Hall
- Complimentary Tickets to Social Events
(check the box on the form to reserve a ticket)

STUDENT:

- Admission to technical program and exhibits
- Symposium transactions on USB
- Complimentary Tickets to Social Events
(check the box on the form to reserve a ticket)

DAY PASS:

- \$375.00 per day
- Admission to the technical program and exhibits
- Symposium transactions on USB

HOW TO PAY FOR REGISTRATION

Registration cannot be processed unless full payment is received with your registration form.

Please register one attendee per form. If your spouse or guest is attending, be sure to include that person's full name for the computerized badge. **Delegates cannot register as a spouse or guest.** Methods of payment accepted:

- Check or Money Order payable in US dollars to: SPWLA Symposium
- Credit Card (Visa, Master Card, Discover or American Express)
- Wire Transfer (Bank Information must be requested by sending email to stephanie@spwla.org)

REGISTRATION*

Before June 1, 2019

\$ 650.00 SPWLA Member
\$ 750.00 Non-member
\$ 90.00 Spouse
\$ 30.00 Student

On-Site

\$ 755.00 SPWLA Member
\$ 855.00 Non-member
\$ 90.00 Spouse
\$ 30.00 Student

**Registrations made after June 1, 2019 are subject to on-site pricing.*

On-Site Registration Hours

Saturday, June 15 7:00 a.m. to 5:00 p.m.
Sunday, June 16 7:00 a.m. to 5:00 p.m.
Monday, June 17 7:00 a.m. to 5:00 p.m.
Tuesday, June 18 7:30 a.m. to 5:00 p.m.
Wednesday, June 19 7:30 a.m. to 12:00 noon

CONFERENCE PROCEEDINGS

Conference Proceedings are available digitally hosted on OnePetro© library or on USB and are included in full registration fee. Additional copies may be purchased for \$40.00 each on site.

REGISTRATION INFORMATION

CONFIRMATION

You will receive a confirmation notice by email listing your registration fees and activities. Please check confirmation for accuracy. Should you need assistance email stephanie@spwla.org

REQUEST FOR NAME CHANGE

All name substitutions addressed to stephanie@spwla.org before June 1, 2019, will be processed at no extra charge. Requests made thereafter and on-site will be subject to a \$35.00 processing fee.

CANCELLATION POLICY

General conditions - All cancellation notices must be made in writing to stephanie@spwla.org
Refunds will be issued after the Symposium in accordance with the Cancellation Terms and Conditions.
Hotel cancellations must be made directly with the hotel.

CANCELLATION TERMS AND CONDITIONS

Registration, field trip, paid lunches, spouse/partner tours and workshop fees:

Cancellation notices received on or before June 1, 2019: Full refund (less 25% admin fee)

Cancellation notices received after June 1, 2019: **No refund.**

COMPLIMENTARY FUNCTIONS

Admittance to complimentary functions is by Ticket:

- Check the box on the registration form to reserve a ticket
- Tickets are 1 per registered guest.
- Tickets will be distributed on a first come, first serve basis.
- Tickets are not guaranteed.
- Tickets can be transferred but not sold.



PRE-REGISTRATION DEADLINE - June 1, 2019

SPWLA MEMBER NUMBER: _____

SPWLA Member Status: Member Honorary
 Senior Member Student Member Non-Member
 Please check one: Oil Company Service Company
 Software Company Independent Academia
 Retired Other

Name (first, last) _____

Nickname for badge (if desired) _____

Partner name for badge (ONLY IF REGISTERING) _____

Company (name for badge) _____

Mailing address _____ Apt/suite # _____

City _____ State/country _____ Zip/postal code _____

Phone number (area/country code) _____ Fax number (area/country code) _____

Email _____

Special needs (dietary/disabled, etc.) _____

Please check if applicable: 01/Former Int'l President
 02/Int'l Officer 03/Current Chapter President 04/Speaker

PAYMENT INFORMATION Credit Card Check (enclose with form)
CREDIT CARD VISA / MASTERCARD / AMEX / DISCOVER

Card no. _____ Exp. date _____

Signature _____ Print name _____

CHECK Please make payable to SPWLA. Send registration form and check to SPWLA, 8866 Gulf Freeway, Suite 320, Houston, TX 77017. Our office number is +1-713-947-8727.

HOTEL INFORMATION Reservations can be made directly with hotel of your choice, for a list of local hotels see SPWLA 2019 website, www.splwa2019.com.



PRE-REGISTRATION FORM

* REGISTRATION FEES BEFORE June 1, 2019

Cat No.	Registration Category	Before June 1, 2019	Cost
101	SPWLA Member * (includes proceedings USB)	\$650	
102	Non-Member ** (includes proceedings USB)	\$750	
103	Partner/Spouse	\$90	
104	Student **	\$30	
105	One Day Technical Pass Member	\$375	
106	One Day Technical Pass Non-Member	\$475	
Subtotal - Registration Fees			

Note: * Price included in registration fee. ** Proof of status is required. Please attach a copy of student ID to this registration form.

FIELD TRIP AND WORKSHOPS

Cat No.	Date	Event	No. of tickets	Fee	Cost
TX200	June 14-15	Field Trip 1 - Depositional Processes...		\$600	
TX200		Student Fee		\$300	
TX201	June 15	Field Trip 2 - Modern Galveston...		\$150	
TX201		Student Fee		\$75	
TX202	June 15	Workshop 1 - Practical Applications of...		\$375	
TX203	June 15	Workshop 1 - non-registered***		\$475	
TX204	June 15	Workshop 2 - Advanced Applications of...		\$375	
TX205	June 15	Workshop 2 - non-registered***		\$475	
TX206	June 15	Workshop 3 - Saturation height modelling		\$375	
TX207	June 15	Workshop 3 - non-registered***		\$475	
TX208	June 15	Workshop 4 - Petrophysical Applications		\$375	
TX209	June 15	Workshop 4 - non-registered***		\$475	
TX210	June 16	Workshop 5 - Advances in Resistivity...		\$375	
TX211	June 16	Workshop 5 - non-registered***		\$475	
TX212	June 16	Workshop 6 - Value of Data		\$375	
TX213	June 16	Workshop 6 - non-registered***		\$475	
TX214	June 16	Workshop 7 - Cased-hole Formation Evaluation		\$375	
TX215	June 16	Workshop 7 - non-registered***		\$475	
TX216	June 16	Workshop 8 - Applications of Geomechanics		\$375	
TX217	June 16	Workshop 8 - non-registered***		\$475	

*** Non-Registered: access only to field trip and/or workshop. Discount for participants attending full conference.

PARTNER ACTIVITIES

Cat No.	Date	Event	No. of tickets	Fee	Cost
TX218	June 17	Trolley Shopping Tour to Market Street		\$0	
TX219	June 18	Blue Bell Creamery/Bush Pres. Museum		\$105	
TX220	June 19	Chocolate and Wine Winery Visit		\$85	

SOCIETY FUNCTIONS

Cat No.	Date	Event	Fee	Cost
TX221	June 17	Annual Business Meeting & Lunch	\$45	
TX222	June 18	Awards Presentation & Lunch	\$45	
TX222	June 19	Leadership Luncheon	\$0	
TX222	June 20	NMR SIG Meeting	Industry \$100 Student \$25	
TX223	June 20	PDPA SIG Meeting	Non Member \$125 Member \$100 Student \$50	

TOTAL AMOUNT DUE (REGISTRATION and ALL ACTIVITIES)



SPWLA BOARD OF DIRECTORS

SPWLA BOARD OF DIRECTORS 2018-2019



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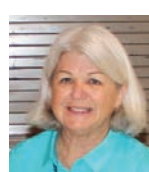
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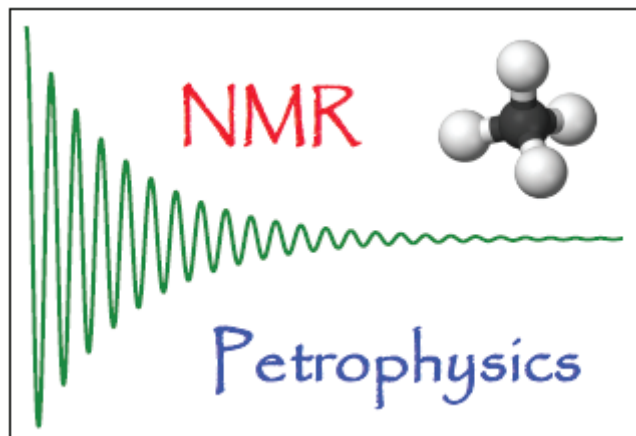


Society of Petrophysicists and Well Log Analysts
Petrophysical Data-Driven Analytics

Petrophysical Data Driven Analytics (PDDA)

*Machine Learning, Deep Learning, Artificial Intelligence, Petrophysical Interpretation,
Reservoir Characterization*

June 20, 2019, Anadarko Corporation Headquarter, The Woodlands, TX



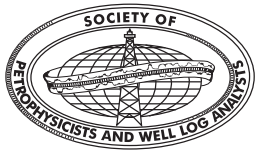
Nuclear Magnetic Resonance SIG

NMR Today and Tomorrow - Downhole, at the Wellsite, and in the Lab

June 20th - 21st, 2019, Southwestern Energy, Spring, TX



*Welcome to
The Woodlands*



SPWLA
8866 Gulf Freeway, Suite 320
Houston, TX 77017

Presorted
First Class Mail
US Postage Paid
Permit# 184
Webster, TX

FORWARDING SERVICE REQUESTED



PRE-REGISTRATION
ends June 1, 2019

More information:
www.spwla2019.com

