

# SPWLA 62nd Annual Logging Symposium

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## Technical Program

### Session 1A – Production Logging

SPWLA-2021-0001

**PRODUCTION OPTIMIZATION OF SANDING HORIZONTAL WELLS USING A DISTRIBUTED ACOUSTIC SENSING (DAS) SAND MONITORING SYSTEM: A CASE STUDY FROM THE ACG FIELD IN AZERBAIJAN**  
Zahid Hasanov, Parviz Allahverdiyev and Fuad Ibrahimov, BP; Alberto Mendoza, Pradyumna Thiruvenkatanathan, Lilia Noble and Jonathan Stapley, LYTT Limited

SPWLA-2021-0111

**UTILIZING ULTRASONIC AND PULSED-EDDY CURRENT TECHNOLOGIES TO MAP THE LOCATION OF FIBER-OPTIC CABLE AND CLAMPS: A CASE STUDY**  
Roddy Hebert, Rojelio Medina, JC Pinkett and Tyler Costa, Halliburton

SPWLA-2021-0003

**DOPPLER VS. SPINNER PLT SENSING FOR HYDROCARBON VELOCITY ESTIMATE BY DEEP-LEARNING APPROACH**  
Klemens Katterbauer and Alberto Marsala, Saudi Aramco; Virginie Schoepf and Linda Abbassi, Openfield Technology

### Session 1B – Conventional Reservoir Petrophysics- I

SPWLA-2021-0004

**ADDRESSING RESERVOIR HETEROGENEITY BY INTEGRATION OF GEOCHEMISTRY AND PETROPHYSICAL LOGS IN CARBONATE PROSPECTS**  
Kemal C. Hekimoglu, Filippo Casali and Antonio Bonetti, Geolog International

SPWLA-2021-0005

**AN ADVANCED PETROPHYSICAL ORIENTED NUMERICAL METHOD FOR RELIABLE ASSESSMENT OF MECHANICAL PROPERTIES IN CARBONATE FORMATIONS AT THE PORE-SCALE DOMAIN**  
Mehdi Teymouri and Zoya Heidari, The University of Texas at Austin

SPWLA-2021-0006

**DECIPHERING LOW RESISTIVITY PAY TO DERISK A COMMERCIAL DISCOVERY: CASE STUDY FROM THE NORWEGIAN SEA**  
Mohammad Ibrahim Khan, Equinor; Harish Datir and Subhadeep Sarkar, Schlumberger; Bjarne Rafaelsen, Equinor

### Session 2A – Borehole Imaging

SPWLA-2021-0007

**WELLBORE IMAGES DIGITAL FUSION: BEYOND SINGLE-SENSOR PHYSICAL CONSTRAINTS**  
Simone Di Santo, Nadege Bize-Forest and Isabelle Le Nir, Schlumberger; Carlos Maeso, Retired

SPWLA-2021-0008

**TAMING THE THUNDER HORSE WITH AXES AND VECTORS**  
Bernd Ruehlicke, Andras Uhrin, Zbynek Veselovsky and Markus Schlaich, Eriksfiord

SPWLA-2021-0009

**FIELD-TESTING A THROUGH-THE-BIT HIGH-DEFINITION ELECTRICAL BOREHOLE IMAGER FOR OIL-BASED MUD**  
Richard Bloemenkamp, Elia Haddad, Nadege Bize-Forest, Laetitia Comparon and Peter Schlicht, Schlumberger

### Session 2B – Deepwater Reservoir Analysis

SPWLA-2021-0010

**DIGITAL FLUID SAMPLING IN DEEP WATER RESERVOIRS USING RESERVOIR FLUID GEODYNAMICS: THE BEGINNING OF THE DIGITAL FLUID SAMPLING REVOLUTION**  
Camilo Gelvez, The University of Texas at Austin; Gerardo Cedillo, Eric Soza, Doris Gonzalez, Benjamin S. Slotnick, Sol Moreno, Wilson Pineda and Milad Saidian, BP America; Oliver C. Mullins, Scott Paul, Jesus Cañas and Alok Kulkarni, Schlumberger

SPWLA-2021-0011

**A PRACTICAL GUIDE TO EFFECTIVE DEEP-WATER FLUID SAMPLING WHILE DRILLING**  
Matt Wandstrat, Consultant; Gerard Simms, LLOG Exploration Inc.; Femi Adegbola, Steve Smith and Vincent Liaw, Baker Hughes

SPWLA-2021-0012

**ENHANCING THE UNDERSTANDING OF ASPHALTENE PRECIPITATION: A NOVEL APPROACH UNDER IN-SITU CONDITIONS**

Rohin Naveena-Chandran, Farrukh Hamza, Gibran Hashmi and Jason Rogers, Halliburton; John Meyer and Sara Chapman, Kosmos Energy

**Session 3A – Formation Rock Analysis**

SPWLA-2021-0013

**THE IMPACT OF OVERBALANCED DRILLING FROM EXPLORATION/APPRaisal WELLS TO FIELD DEVELOPMENT PLAN**

Mohammadhossein Mohammadlou, Matthew Guy Reppert, Roxane Del Negro and George Jones, Neptune Energy Norway

SPWLA-2021-0014

**NANOTAGS FOR IMPROVED CUTTING DEPTH CORRELATION**

Martin E. Poitzsch, S. Sherry Zhu and Marta Antoniv, Aramco Research Center; Nouf M. Aljabri and Alberto F. Marsala, Saudi Aramco, EXPEC ARC

SPWLA-2021-0015

**ADAPTATION OF CRUSHED ROCK ANALYSIS TO INTACT ROCK ANALYSIS FOR IMPROVING WATER SATURATION ASSESSMENT AND FAST PRESSURE DECAY PERMEABILITY QUANTIFICATION**

Kai Cheng, J. Alex Zumberge, Stephanie E. Perry and Patrick M. Lasswell, GeoMark Research, Ltd

**Session 3B – Well Integrity**

SPWLA-2021-0016

**A RESONANCE-BASED THROUGH-TUBING CEMENT EVALUATION TECHNOLOGY**

Jie Li, Qinshan Yang, Jinsong Zhao, Jeff Olson, Marvin Rourke, GOWell International LLC; Mohamed Larbi Zeglache, Saudi Aramco–EXPEC Advanced Research Center

SPWLA-2021-0017

**APPLICATION OF ELECTROMAGNETIC TECHNOLOGY FOR CORROSION MONITORING IN WELLS WITH DUAL COMPLETIONS**

Junwen Dai and Ahmed E. Fouda, Halliburton

SPWLA-2021-0018

**SUCCESSFUL SAND PRODUCTION MANAGEMENT THROUGH ADVANCED ANALYSIS OF WELL INTEGRITY LOGS IN CASABE FIELD, COLOMBIA**

Cristian Escarraga, Schlumberger; Emiro Leon, Ecopetrol; Marcia Benavides and Tatiana Taborda, Schlumberger

**Session 4A – Brownfields Petrophysics**

SPWLA-2021-0019

**SIDE FAULT MAPPING ENABLED BY 2D TRANSVERSE INVERSION ON NEW DEEP DIRECTIONAL RESISTIVITY MEASUREMENTS**

Michael Thiel, Haifeng Wang, Dzevat Omeragic and Jean-Michel Denichou, Schlumberger; Barry Goodin, Vermilion Oil & Gas Australia Pty Ltd

SPWLA-2021-0020

**UTILIZING NEAR AND FAR FIELD BOREHOLE MEASUREMENTS FOR A COMPREHENSIVE CARBONATE FRACTURE CHARACTERIZATION**

Amr M. Serry, Sultan D. Al-Hassani, Shafiq N. Ahmed, Owais A. Khan, Hassan F. Aboujmeih, Hasan Zakaria and Olivier P. Pippi, ADNOC Offshore; Israa A. Salim, Amro Abdel-Halim and Adam Donald, Schlumberger

SPWLA-2021-0021

**INTRINSIC CARBON-OXYGEN LOGGING FOR ENHANCED CONSISTENCY OF RESERVOIR SATURATION MONITORING**

Shouxiang Mark Ma, Saudi Aramco; Nacer Guergueb, Weijun Guo and Mahmoud Eid, Halliburton

**Session 4B – New Borehole – Logging Technologies**

SPWLA-2021-0022

**WELLSITE FULL WAVEFORM SONIC INTERPRETATION**

J. Adam Donald and Erik Wielemaker, Schlumberger; Chris Holmes, Denison Gas and Tom Neville, Asia-Pacific Formation Evaluation Services

SPWLA-2021-0023

**CAN A NEW DOUBLE PARTICLE DETECTOR-CLYC (CS<sub>2</sub>LIYCL<sub>6</sub>:CE) BE USED IN PN LOGGING FOR TIGHT GAS EVALUATION?**

Qixuan Liang, Feng Zhang, Xiaoyang Zhang, Qian Chen and Jilin Fan, China University of Petroleum (East China)

SPWLA-2021-0024

**DECIPHERING THE CAPABILITIES OF LOOK-AHEAD METHODS IN LWD**

Jun Zhu, Yong Die and Yuanshi Tian, LWD Center of China Petroleum Logging Co.Ltd. and John Zhou, Maxwell Dynamics Inc.

### **Session 5A – Formation Fluid Analysis – I**

- SPWLA-2021-0025 **PIONEERING APPLICATION OF EMERGING TECHNOLOGIES TO THE CHALLENGE OF SAMPLING NEAR-SATURATED FLUIDS IN TIGHT RESERVOIRS**  
Brett Wendt, Adam Lewis, ConocoPhillips Alaska; German Garcia and Hadrien Dumont, Schlumberger
- SPWLA-2021-0026 **IMPROVING RESERVOIR TESTING AND SAMPLING IN H<sub>2</sub>S CONTAMINATED FLUIDS BY ADAPTING STATE-OF-THE-ART SEMICONDUCTOR THIN FILM TECHNOLOGY FOR DOWNHOLE TESTER TOOLS**  
Jimmy Price, Darren Gascooke, Anthony Van Zuilekom and Christopher Jones, Halliburton
- SPWLA-2021-0027 **DEEP TRANSIENT TESTING DIGITAL PRODUCTS CREATE NOVEL REAL-TIME RESERVOIR INSIGHTS**  
Jansen Oliveira, Karl Perez H., Alejandro Martin V., Ricard Fernandez T., Teresa Polo N., and Lorenzo Villalobos V., REPSOL; Francois Xavier Dubost, Manuel Lavin V., Adriaan G. Gisolf, Richard R. Jackson, Simon Edmundson, Hadrien Dumont, Hugo Hernandez E. and Javier Espinosa, Schlumberger
- SPWLA-2021-0028 **COMPARATIVE SIMULATION OF WATER-BASED MUD-FILTRATE INVASION IN HIGH-PERMEABILITY AND TIGHT SANDSTONE RESERVOIRS USING LARGE-SIZED FORMATION MODULES**  
Junchen Wu, Yiren Fan and Shaogui Deng, School of Geosciences, China University of Petroleum (East China); Ruokun Huang, Research Institute of Petroleum Exploration and Development, PetroChina Tarim Oilfield Company; Fei Wu, Suzhou Niumag Analytical Instrument Corporation; Zhongtao Wang, China Petroleum Logging CO.LTD.

### **Session 5B – Core Analysis**

- SPWLA-2021-0029 **A DEEP-LEARNING APPROACH FOR LITHOLOGICAL CLASSIFICATION USING 3D WHOLE CORE CT-SCAN IMAGES**  
Kurdistan Chawshin, Carl Fredrik Berg, Damiano Varagnolo, Norwegian University of Science and Technology; and Olivier Lopez, Equinor ASA
- SPWLA-2021-0030 **A NEW OPTIMIZATION METHOD FOR ENHANCED FORMATION EVALUATION AND ROBUST PHYSICS-BASED AUTOMATIC ROCK CLASSIFICATION USING HIGH-RESOLUTION CT-SCAN IMAGE DATA AND CONVENTIONAL WELL LOGS**  
Andres Gonzalez and Zoya Heidari, The University of Texas at Austin; Olivier Lopez, Equinor
- SPWLA-2021-0031 **IMPACTS AND LESSONS LEARNED FROM AN APPLIED CASE STUDY IN THE WILLISTON, UINTA AND DJ BASINS UTILIZING OPEN VERSUS CLOSED RETORT QUANTIFICATION**  
Stephanie E. Perry, J. Alex Zumberge and Kai Cheng, GeoMark Research Ltd.
- SPWLA-2021-0032 **UNCERTAINTY QUANTIFICATION BY MONTE CARLO SIMULATION OF LAB-DERIVED SATURATION DATA FROM SPONGE CORES**  
Mohammed Alghazal and Dimitrios Krinis, Saudi Aramco

### **Session 6A – Dielectric**

- SPWLA-2021-0033 **DEEP DIELECTRIC-BASED WATER SATURATION IN FRESHWATER AND MIXED SALINITY ENVIRONMENTS**  
Ping Zhang, Wael Abdallah and Gong Li Wang, Schlumberger; Shouxiang Mark Ma, Saudi Aramco
- SPWLA-2021-0034 **INTERPRETATION OF MULTI-FREQUENCY DIELECTRIC PERMITTIVITY MEASUREMENTS FOR ASSESSMENT OF WATER SATURATION IN CARBONATE FORMATIONS WITH COMPLEX PORE STRUCTURE**  
Zulkuf Azizoglu and Zoya Heidari, The University of Texas at Austin
- SPWLA-2021-0035 **MODEL-BASED CORRECTION FOR DIP AND SHOULDER BED EFFECTS ON LWD PROPAGATION DIELECTRIC CONSTANT AND RESISTIVITY LOGS**  
Gong Li Wang, Dean Homan, Ping Zhang and Wael Abdallah, Schlumberger; Shouxiang Ma, Saudi Aramco

### **Session 6B – Machine Learning – I**

- SPWLA-2021-0036 **DATA QUALITY CONSIDERATIONS FOR PETROPHYSICAL MACHINE LEARNING MODELS**  
Andrew McDonald, Lloyd's Register

SPWLA-2021-0037 **FACIES CLASSIFICATION OF A COMPLEX RESERVOIR USING MACHINE LEARNING: CASE STUDY FROM VOLCANIC FORMATION, THE YURIHARA OIL FIELD, JAPAN**  
Yuki Maehara, Schlumberger; Takeaki Otani and Tetsuya Yamamoto, Japan Petroleum Exploration Co., Ltd.

SPWLA-2021-0038 **EFFICIENT PETROPHYSICAL UNCERTAINTY PROPAGATION VIA DATA-DRIVEN ANALYTICS**  
Carlo Cristiano Stabile and Marco Pirrone, ENI S.p.A.

### **Session 7A – Ultra-Deep Resistivity**

SPWLA-2021-0039 **DETECTION OF OFFSET WELLS AHEAD OF AND AROUND AN LWD ULTRA-DEEP ELECTROMAGNETIC TOOL**  
Nigel Clegg, Alban Duriez, Vladimir Kiselev and Supriya Sinha and Tim Parker, Halliburton; Fredrik Jakobsen and Erik Jakobsen, Aker BP; David Marchant and Christoph Schwarzbach, Computational Geosciences Inc.

SPWLA-2021-0040 **TOWARD THREE-DIMENSIONAL RESERVOIR MAPPING – A NEW APPROACH FOR MAPPING RESERVOIRS WITH ADVANCED ULTRA-DEEP AZIMUTHAL RESISTIVITY MEASUREMENTS**  
Haifeng Wang, Michael Thiel, Jean-Michel Denichou, Diogo Salim, Soazig Leveque, and Vera Krissetiawati Wibowo, Schlumberger; Chris Woods and Darren Baker, Woodside Energy Ltd.

SPWLA-2021-0041 **REAL-TIME 3D IMAGING OF COMPLEX TURBIDITIC RESERVOIR ARCHITECTURE**  
Supriya Sinha, Karol Riofrio, Arthur Walmsley and Nigel Clegg, Halliburton; Stig Sviland-Østre and Nicolas Gueze, Aker BP

### **Session 7B – Case Studies- I**

SPWLA-2021-0042 **X-RAY DIFFRACTION, X-RAY FLUORESCENCE, AND NEUTRON INDUCED SPECTROSCOPY BASED CORRECTION TO IVAR AASEN GEOMODEL: AN OILFIELD FROM THE NORWEGIAN NORTH SEA**  
Egil Romsås Fjeldberg, Yngve Bolstad Johansen, Lodve Hugo Olsborg, Geir Frode Kvilaas, and Tor-Ole Jøssund, Aker BP; Harish Datir, Schlumberger

SPWLA-2021-0043 **INTEGRATED EVALUATION OF LAMINATED SAND-SHALE GAS-BEARING RESERVOIR USING TENSOR MODEL: A CASE STUDY COMBINING DATA FROM TRIAXIAL RESISTIVITY, IMAGE, SONIC, AND RESERVOIR TESTING IN B-FIELD, MALAYSIA**  
Aditya Arie Wijaya, Ivan Zhia Ming Wu, Sarvagya Parashar and Mohammad Iffwad, Halliburton; Amirul Afiq B Yaakob, William Amelio Tolioe, Adib Akmal Che Sidid and Nadhirah Bt. Ahmad, Petronas Carigali

SPWLA-2021-0044 **AN INTEGRATED PETROPHYSICAL CHARACTERIZATION OF A SILICICLASTIC TIGHT GAS RESERVOIRS IN NEUQUÉN BASIN, WESTERN ARGENTINA**  
Nicolas Carrizo and Emiliano Santiago, YPF S.A. and Universidad Nacional del Comahue; Pablo Saldungaray, Schlumberger

### **Session 8A – Case Hole Logging - I**

SPWLA-2021-0045 **THROUGH-TUBING CASING DEFORMATION AND TUBING ECCENTRICITY IMAGE TOOL FOR WELL INTEGRITY MONITORING AND PLUG-ABANDONMENT**  
Qinshan Yang, Kuang Qin, Jeff Olson and Marvin Rourke, GOWell International

SPWLA-2021-0046 **IDENTIFICATION OF BREAKOUT BEHIND CASING: METHODOLOGY TO OBTAIN OPENHOLE EQUIVALENT CALIPER MEASUREMENTS THROUGH SLOTTED LINER USING THE DENSITY TOOL**  
Laurent Mosse, Schlumberger; Stephen Pell, Santos Ltd. and Thomas Neville, Asia-Pacific Formation Evaluation Services Pty Ltd

SPWLA-2021-0047 **A NOVEL THROUGH-CASING CORRECTION ALGORITHM FOR A 4-DETECTOR GAMMA DENSITY TOOL**  
Ya Jin\* and Shang Jie, Lin Huang, Zenghui Yu and Min Li, China Oilfield Services Limited; Chen ZengHai, CNOOC China Limited Pengbo Operating Company; Yulian Li\*, Wei Tang, Yating Hu, Lvlin Lin, Qinzhong Zhang and Qiong Zhang, University of Electronic Science and Technology of China (Ya Jin\* and Yulian Li\* are co-first authors)

### **Session 8B – Borehole Imaging- II**

SPWLA-2021-0048 **A NEW PSEUDO-VELOCITY-BASED METHOD TO MITIGATE LWD IMAGE INTERPRETATION RISKS**  
Tianhua Zhang, Shiduo Yang, Chandramani Shrivastava, Adrian A and Nadege Bize-Forest, Schlumberger

SPWLA-2021-0049 **EVALUATION OF LWD HIGH RESOLUTION ULTRASONIC IMAGING TECHNOLOGY AND APPLICATIONS IN**

#### **SLIM HOLE SIZE**

Mohamed M. Hashem, Saudi Aramco; Ahmed Taher, Mohamed Fouda and Rehab Al-Khalifah, Halliburton

SPWLA-2021-0050

#### **ASSESSMENT OF NEW HIGH-DEFINITION BOREHOLE IMAGING-WHILE-DRILLING TECHNOLOGY: LEARNINGS FROM PRE-SALT CARBONATES OF BRAZIL**

Nicolas Orban, Shashank Garg and Mikhail Shaldaev, TOTAL; Chandramani Shrivastava, Guillermo Cuadros, Victor Marquinez, Adrian A, Vera Wibowo and Ricardo Domingos, Schlumberger

### **Session 9A – Petrophysics**

SPWLA-2021-0051

#### **RESERVOIR SCALE CHEMOSTRATIGRAPHY AND FACIES MODELING USING HIGH SAMPLE RATE GEOPHYSICAL SCANS OF WHOLE CORE**

John J. Degenhardt, Jr., Safdar Ali, Mansoor Ali, Brian Chin and W. D. Von Gonten, Jr., W. D. Von Gonten Laboratories and Eric Peavey, Shell Fellow-UROC and Dept. of Geology & Geophysics, Texas A&M University

SPWLA-2021-0052

#### **ENHANCED ASSESSMENT OF FLUID SATURATION IN THE WOLFCAMP FORMATION OF THE PERMIAN BASIN**

Sabyasachi Dash and Zoya Heidari, The University of Texas at Austin

SPWLA-2021-0053

#### **WELL-TEST LOGGING TO ENDEAVOR MAPPING THE CARBONATES PERMEABILITY, OFFSHORE ABU DHABI**

Antoine Jacques and Vincent Jaffrezic, TOTAL SE; Benoit Brouard, BROUARD Consulting; Shafiq Ahmed, Amr Mohamed Serry, Raymond Nguyen and Yann Bigno, ADNOC Off Shore

### **Session 9B – Case Studies – II**

SPWLA-2021-0054

#### **ACQUISITION, ANALYSIS, AND INTEGRATION OF WELLBORE LOGS TO CHARACTERIZE A FRACTURED GEOTHERMAL RESERVOIR: THE CASE OF RITTERSHOFFEN, FRANCE**

Giovanni Sosio, Andrea Mandiuc and Annalisa Campana, Schlumberger; Jeanne Vidal, Universidad de Chile; Régis Hehn, GéoPlusEnvironnement; Clément Baujard, ÉS Géothermie

SPWLA-2021-0055

#### **3D PETROPHYSICS FOR HAWAII: CASE STUDIES**

Alexander Kolomytsev, GazpromNeft; and Yulia Pronyaeva, Schlumberger

SPWLA-2021-0056

#### **STRESS MEASUREMENT CAMPAIGN IN SCIENTIFIC DEEP BOREHOLES: FOCUS ON TOOL AND METHODS**

Jean Desroches, Rocks Expert; Emilie Peyret, Adriaan Gisolf, Ailsa Wilcox, Mauro Di Giovanni and Aernout Schram de Jong, Schlumberger; Siavash Sepehri, Independent; Rodney Garrard and Silvio Giger, Nagra

### **Session 10A – Acoustics - I**

SPWLA-2021-0057

#### **ENHANCING THE RESERVOIR PERFORMANCE BY ACCESSING THE RESERVOIR SWEET SPOTS GUIDED BY FAR-FIELD SONIC IMAGING: AN INTEGRATED CASE STUDY FROM THE NORWEGIAN NORTH SEA**

Harish Datir, Schlumberger; Knut Arne Birkedal, Aker BP; Sachin Kriplani and Hege Porten, Schlumberger; Nils Andre Aarseth, Aker BP

SPWLA-2021-0058

#### **ULTRASONIC ANGLE-DEPENDENT REFLECTIVITY IN COMPLEX ROCKS FOR IMPROVED INTERPRETATION OF SONIC AND ULTRASONIC LOGS**

Daria Olszowska, Gabriel Gallardo-Giozza and Carlos Torres-Verdín, The University of Texas at Austin

SPWLA-2021-0059

#### **AUTOMATIC LOGGING-WHILE-DRILLING DIPOLE SONIC SHEAR PROCESSING ENABLED BY PHYSICS-DRIVEN MACHINE LEARNING**

Lin Liang, Ting Lei and Matthew Blyth, Schlumberger

SPWLA-2021-0060

#### **CHARACTERIZING CEMENT BOND QUALITY USING SLIP-INTERFACE THEORY AND COUPLING STIFFNESS**

Xuelian Chen, Xiaoming Tang, Shengqing Li and Yuanda Su, China University of Petroleum

### **Session 10B – Conventional Reservoirs – II**

SPWLA-2021-0061

#### **USING HIGH FIDELITY CONTINUOUS CORE DATA FOR A FAST AND OBJECTIVE ESTIMATION OF RESERVOIR QUALITY**

Izral Izarruddin Marzuki and Thanapala Murugesu, Petronas; Christophe Germy, Tanguy Lhomme and Luc Perneder, EPSLOG

SPWLA-2021-0062                    **LEARNINGS FROM SPECTRAL GR MEASUREMENTS FROM LWD AND FROM CUTTINGS IN HIGH AND LOW ANGLE WELLS**  
Mohamed Azizi Ibrahim and Faisal Al-Enezi, Saudi Aramco; Marie Van Steene and Alan Fernandes, Schlumberger

SPWLA-2021-0063                    **FROM PLUG MEASUREMENTS TO DYNAMIC SIMULATIONS: UPSCALING EFFECTS ON MODELED HYDROCARBON VOLUMES**  
Iulian N. Hulea, Shell Global Solutions International B.V.

SPWLA-2021-0064                    **AUTOMATIC FLOW-CALIBRATED PERMEABILITY LOG ESTIMATION THROUGH DUAL RANDOM FOREST ALGORITHM: HOW PREDICTIVE ANALYTICS ENHANCES THE CHARACTERIZATION OF HETEROGENEOUS CARBONATE RESERVOIRS**  
Federica Di Maggio, Giulia Barbacini, Nicola Raimondi Cominesi, Dario Reolon, Marco Pirrone, ENI S.p.A

### **Session 11A – Case Hole Logging - II**

SPWLA-2021-0065                    **A NOVEL METHOD FOR FORMATION DENSITY MEASUREMENT IN CASED WELLS**  
Xinguang Wang, China University of Petroleum (East China); Dong Li, China Oilfield Services Limited; Lei Zhang, China National Offshore Oil Corporation International Limited; Feng Zhang and Wenhao Wang, China University of Petroleum (East China); Hui Gao, Xi 'an HuiNeng Electronic Equipment Co. LTD

SPWLA-2021-0066                    **THEORETICAL METHOD AND EXPERIMENTAL RESEARCH ON HIGH PRECISION FOUR DETECTOR DENSITY LOGGING**  
Shanqing Cai, Juntao Liu, Lanzhou University; Xusheng Wang, Fudan University and Zhiyi Liu, Lanzhou University

SPWLA-2021-0067                    **DETERMINING THE DENSITY OF MULTIPLE LAYERS USING GAMMA SPECTROSCOPY**  
Mayir Mamtimin and Jeffrey Crawford, Halliburton

### **Session 11B – Machine Learning - II**

SPWLA-2021-0068                    **THE APPLICATION OF PATTERN RECOGNITION AND MACHINE LEARNING TO DETERMINE CEMENT CHANNELING & BOND QUALITY FROM AZIMUTHAL CEMENT BOND LOGS**  
Andrew Imrie, Halliburton

SPWLA-2021-0069                    **ENHANCED MINERAL QUANTIFICATION AND UNCERTAINTY ANALYSIS FROM DOWNHOLE SPECTROSCOPY LOGS USING VARIATIONAL AUTOENCODERS**  
Paul Craddock, Prakhhar Srivastava, Schlumberger-Doll Research Center; Harish Datir, David Rose, Tong Zhou, Laurent Mosse and Lalitha Venkataramanan, Schlumberger

SPWLA-2021-0070                    **NOVEL METHODOLOGY FOR AUTOMATION OF BAD WELL LOG DATA IDENTIFICATION AND REPAIR**  
Ryan Banas, PetroRes Consulting; Andrew McDonald and Tegwyn J. Perkins, Lloyd's Register

### **Session 12A – Formation Evaluation**

SPWLA-2021-0071                    **ANALYTICAL UNCERTAINTY PROPAGATION IN FACIES CLASSIFICATION WITH UNCERTAIN LOG-DATA**  
Fabio Ciabbarri, Marco Pirrone and Cristiano Tarchiani, Eni S.p.A

SPWLA-2021-0072                    **APPLICATION OF IMAGE LOGS FOR ENHANCED RESISTIVITY-BASED WATER SATURATION ASSESSMENT IN ORGANIC-RICH MUDROCKS**  
Sabyasachi Dash and Zoya Heidari, The University of Texas at Austin

SPWLA-2021-0073                    **GAMMA RAY INDEX-SHALE VOLUME TRANSFORMS**  
David Kennedy, QED Petrophysics LLC

### **Session 12B – Unconventional Reservoirs - I**

SPWLA-2021-0074                    **RV/RH ANISOTROPY IN UNCONVENTIONAL FORMATIONS: RESOLVING THE RIDDLE OF RESISTIVITY**  
Andrew Barry and Adam Haecker, Continental Resources Inc. and Siddharth Misra, Texas A&M University

SPWLA-2021-0075                    **EVALUATION OF RELATIVE PERMEABILITY OF A TIGHT OIL FORMATION IN DAQING OILFIELD**

D. Leslie Zhang, CNPC USA Corp.; Chunyan Qi, Beijing Huamei Century International Technology Co.; Xiaodong Shi, Jianfei Zhan and Xue Han, Exploration and Development Research Institute of Daqing Oilfield Company Ltd.; Xiangyun Li, Beijing Huamei Century International Technology Co., Ltd.; Ze Wang and Baojun Bai, Missouri University of Science and Technology

SPWLA-2021-0076

**MACRO-PORE HYDROCARBON SATURATION FROM NMR  $T_1$  -  $T_2$  MAPS IN THE UNCONVENTIONAL POINT-PLEASANT FORMATION**

Xinglin Wang, Philip M. Singer, Zeliang Chen, Yunke Liu and George J. Hirasaki, Rice University; Zheng (Elton) Yang, Scott J. Seltzer, Boqin Sun, Marcus O. Wigand and Jon E. Burger, Chevron Technical Center

**Session 13A – Geochemistry**

SPWLA-2021-0077

**INTEGRATING A NOVEL CHLORINE MEASUREMENT WITH RESISTIVITY, DIELECTRIC DISPERSION, AND 2D NMR TO RESOLVE SALINITY AMBIGUITY: CASE STUDIES IN ORGANIC SHALE FORMATIONS**

Andrew C. Johnson, Jeffrey Miles, Laurent Mosse, Robert Laronga, Violeta Lujan, Niranjana Aryal and Dozie Nwosu, Schlumberger

SPWLA-2021-0078

**REVISING THE INTERPRETATION OF COMPLEX CARBONATE RESERVOIRS WITH THE USE OF NOVEL ADVANCED LOGS INTEGRATION TECHNIQUES**

Harish B. Datir and Laurent Mosse, Schlumberger and Terje Kollien, Lundin Energy Norway

SPWLA-2021-0079

**A GEOCHEMISTRY-ORIENTED WORKFLOW FOR WETTABILITY ASSESSMENT AT RESERVOIR CONDITION USING MOLECULAR DYNAMICS SIMULATIONS**

Isa Silveira de Araujo, Archana Jagadisan and Zoya Heidari, The University of Texas at Austin

**Session 13B – Borehole Imaging – II**

SPWLA-2021-0080

**INVERSION-BASED MEASUREMENT INTERPRETATION OF A NEW THROUGH-THE-BIT OBM PHOTOREALISTIC BOREHOLE IMAGER**

Yong-Hua Chen, Richard Bloemenkamp, Peter Schlicht, Lin Liang and Laetitia Comparon, Schlumberger

SPWLA-2021-0081

**AN AI-BASED APPROACH TO ENHANCED FRACTURE RESOLUTION IN IMAGE LOGS**

James Howard, Joe Tracey, Mike Shen and Shawn Zhang, Digim Solution LLC

SPWLA-2021-0082

**DEEP-LEARNING-BASED AUTOMATED SEDIMENTARY GEOMETRY CHARACTERIZATION FROM BOREHOLE IMAGES**

Marie Lefranc, Zikri Bayraktar, Morten Kristensen, Hedi Driss, Isabelle Le Nir, Philippe Marza and Josselin Kherroubi, Schlumberger

**Session 14A – Case Studies – III**

SPWLA-2021-0083

**MULTISCALE LOGGING WHILE DRILLING DATA INTEGRATION UNVEILED COMPLEX GEOLOGICAL SCENARIO WHILE GEOSTEERING**

Maurizio Mele, Filippo Chinellato, Andrea Leone and Francesca Arata, Eni S.p.A.; Caterina Cappannelli, and Matteo Medaglia, Mizamtec Operating Co. S. de R.L. de C.V.

SPWLA-2021-0084

**IDENTIFICATION OF NATURAL OPEN FRACTURES, INDUCED FRACTURES AND MATRIX PERMEABILITY IN CARBONATES WHILE DRILLING**

Jalal Dashti, Bader Al-Ajmi and Hawas Farwan, Kuwait Oil Company; Ahmad Shoeibi, Milton Sanclemente, Alberto Martocchi and Eliana R. Russo, Geolog International B.V.

SPWLA-2021-0085

**INTERPRETATION OF LWD ACOUSTIC BOREHOLE IMAGE LOGS: CASE STUDIES FROM NORTH AMERICAN SHALE PLAYS**

Bo Gong, Ela Manuel, Youfang Liu, David Forand, Tom Malizia, Vahid Tohidi and Alex Saldana, Chevron

**Session 14B – Conventional Reservoirs – III**

SPWLA-2021-0086

**FORMATION PRESSURE ESTIMATION IN ULTRA-LOW PERMEABLE RESERVOIRS EMPLOYING FORMATION RATE ANALYSIS (FRA) AND ARTIFICIAL INTELLIGENCE CONTROLLED TOOLS**

Yamal Askoul and Gavin JG Sibbald, Baker Hughes; Art Hooker and John Banks, TOTAL E&P UK LTD

SPWLA-2021-0087

**ANISOTROPY QUANTIFICATION USING HIGH-RESOLUTION WHOLE-CORE CT-SCAN IMAGES**

Andres Gonzalez, Mehdi Teymouri and Zoya Heidari, The University of Texas at Austin; Olivier Lopez,



Equinor

SPWLA-2021-0088

**ROCK TYPING AND NOVEL APPROACH FOR FLUID-SATURATION DISTRIBUTION IN TILTED WATER/OIL CONTACT RESERVOIRS**

Kresimir Vican, Venkat Jambunathan, Ehab Negm, Nacer Guergueb, Reinaldo Jose Angulo Yznaga, Halliburton; Francis Eriavbe, Al Dhafra Petroleum

**Session 15A – Machine Learning – III**

SPWLA-2021-0089

**PREDICTION AND ANALYSIS OF GEOMECHANICAL PROPERTIES OF JIMUSAER SHALE USING A MACHINE LEARNING APPROACH**

Lianteng Song\*, Zhonghua Liu, Chaoliu Li, Congqian Ning, China National Petroleum Corporation; Yating Hu\*, Yan Wang, Feng Hong, Wei Tang, Yan Zhuang, Ruichang Zhang, Yanru Zhang, Qiong Zhang, University of Electronic Science and Technology of China (\*Lianteng Song and Yating Hu are co-first authors)

SPWLA-2021-0090

**MACHINE LEARNING FOR PRODUCTIVITY PREDICTION IN HETEROGENEOUS CARBONATE GAS RESERVOIRS, CENTRAL SICHUAN BASIN, CHINA**

Zuoan Zhao, PetroChina SWOGC; Dali Wang, Schlumberger

SPWLA-2021-0091

**AUTOMATED SELECTION OF INPUTS FOR LOG PREDICTION MODELS USING A NEW FEATURE SELECTION METHOD**

Ravi Arkalgud, Helio Flare Ltd; Andrew McDonald and Ross Brackenridge, Lloyd's Register

SPWLA-2021-0092

**AUTO-NAVIGATION ON PRESSURE AND SAMPLING LOCATION IN WIRELINE AND LWD: BIG DATA CHALLENGES AND SOLUTIONS**

Mehdi Alipour K, Bin Dai, Jimmy Price, Christopher Michael Jones, Darren Gascooke, Anthony VanZuilekom, Hoda Tahani, Fahad Ahmed, Farrukh Hamza, Radompon Sungkorn and Cameron Rekully, Halliburton

**Session 15B – Nuclear Magnetic Resonance**

SPWLA-2021-0093

**RELIABLE QUANTIFICATION OF PORE GEOMETRY IN CARBONATE ROCKS USING NMR AND ELECTRICAL RESISTIVITY MEASUREMENTS FOR ENHANCED ASSESSMENT OF PERMEABILITY AND CAPILLARY PRESSURE**

Zulkuf Azizoglu, Artur Posenato Garcia and Zoya Heidari, The University of Texas at Austin

SPWLA-2021-0094

**MEASURING KEROGEN, SOLID ORGANICS, AND OIL PRODUCTION POTENTIALS OF UNCONVENTIONAL SOURCE ROCKS USING SOLID TYPE 20-MHZ NMR TECHNIQUES**

Z. Harry Xie, Thomas Gentzis and Humberto Carvajal-Ortiz, Core Laboratories, LP

SPWLA-2021-0095

**NMR DRILL CUTTING ANALYSIS: METHODOLOGY EVALUATION AND OPERATIONAL BEST PRACTICES**

Gabriela Singer, Mark Flaum and Songhua Chen, Halliburton; S. Mark Ma, Saudi Aramco

SPWLA-2021-0096

**NMR WETTABILITY INDEX MEASUREMENTS AND METHODS COMPARED ON A VARIETY OF UNCONVENTIONAL SAMPLES**

Shaina Kelly and Ron J.M. Bonnie, ConocoPhillips Company; Micheal J. Dick and Dragan Veselinovic, Green Imaging Technologies

**Session 16A – Pulsed Neutron Logging**

SPWLA-2021-0097

**DETERMINATION OF RESIDUAL OIL SATURATION IN A WATER AND GAS FLOODED GIANT OIL RESERVOIR USING CORE, CONVENTIONAL AND PULSED NEUTRON LOGS**

Mike Davenport, Rufat Guliyev, Kasim Sadikoglu, Pavel Gramin and Adrian Zett, BP Exploration Operating Company

SPWLA-2021-0098

**DERIVING SYNTHETIC BULK DENSITY USING FAST NEUTRON CROSS-SECTION IN A LOG-INTEGRATED APPROACH FROM SLIM PULSED NEUTRON LOGGING IN CASED-HOLE ENVIRONMENT**

Khaled Saleh, Aly Morad, Chiara Cavalleri, Schlumberger; Emad Abdel Hakim, Mohamed Farouk, Eslam Atwa, Mohamed Ameen, Youssif Youssif, Kareem Mamdouh, General Petroleum Company

SPWLA-2021-0099

**AN ENHANCED METHOD FOR CRACK EVALUATION UTILIZING NEUTRON GAMMA TRACER IMAGING LOGGING TECHNOLOGY IN CARBONATE RESERVOIR**

Qian Chen, Feng Zhang, Lili Tian and Xiaoyang Zhang, China University of Petroleum (East China); Xianghui Li, Isotope Research Institute of Henan Academy of Sciences Co.Ltd; Qunwei Fang and Junting Fan, China University of Petroleum (East China)



## **Session 16B – Acoustics – II**

- SPWLA-2021-0100      **INTRODUCING SONIC IMAGING WITH A SLIM-DIPHOLE MEASUREMENT IN HIGH-ANGLE WELLS**  
Olusegun Akinyose and Rima Ali, Saudi Aramco; Rajeev Kumar and J. Adam Donald, Schlumberger
- SPWLA-2021-0101      **ENHANCING WELLBORE LEAK LOCALIZATION WITH CONTINUOUS LOGGING DATA FROM A SONIC SENSOR ARRAY**  
Yao Ge, Yadong Wang, Xiang Wu, Ruijia Wang and Freeman Hill, Halliburton
- SPWLA-2021-0102      **ROBUST SONIC LOG TRACKING USING A MULTI-RESOLUTION APPROACH**  
Ting Lei, Michiko Hamada, Adam Donald and Takeshi Endo, Schlumberger

## **Session 17A – Geosteering**

- SPWLA-2021-0103      **VENDOR-NEUTRAL STOCHASTIC INVERSION OF LWD DEEP AZIMUTHAL RESISTIVITY DATA AS A STEP TOWARD EFFICIENCY STANDARDIZATION OF GEOSTEERING SERVICES**  
Mikhail Sviridov, Anton Mosin, Sergey Lebedev, ROGII Inc. and Ron Thompson, Beach Energy Limited
- SPWLA-2021-0104      **REAL-TIME 2.5D INVERSION OF LWD RESISTIVITY MEASUREMENTS USING DEEP LEARNING FOR GEOSTEERING APPLICATIONS ACROSS FAULTED FORMATIONS**  
Kyubo Noh and Carlos Torres-Verdín, The University of Texas at Austin; David Pardo, UPV/EHU, BCAM, Ikerbasque
- SPWLA-2021-0105      **REAL-TIME ENSEMBLE-BASED WELL-LOG INTERPRETATION FOR GEOSTEERING**  
Nazanin Jahani, NORCE Norwegian Research Centre; Joaquín Ambía, The University of Texas at Austin; Kristian Fossum, Sergey Alyaev and Erich Suter, NORCE Norwegian Research Centre and Carlos Torres-Verdín, The University of Texas at Austin

## **Session 17B – Completion Petrophysics and Reservoir Surveillance**

- SPWLA-2021-0106      **LESSONS LEARNED FROM CROSS-VALIDATION OF FIBER OPTICS AND PRODUCTION LOGGING CLUSTER PERFORMANCE ASSESSMENT IN THE UNCONVENTIONAL WELLS**  
Yegor Se, Chevron ETC; Michael Sullivan, Vahid Tohidi, Michael Lazorek and, Chevron Canada; Ahmed Attia, Phillip Chen, Ziebel US; Linda Abbassi, Virginie Schoepf, Openfield Technology
- SPWLA-2021-0107      **FIELDWIDE DYNAMIC PRESSURE SURVEILLANCE WITH FPWD TECHNOLOGY**  
Yon Blanco, Schlumberger; Ben Fletcher and Robert Webber, CNOOC International; Alistair Maguire and Velerian Lopes, Schlumberger
- 11:45** SPWLA-2021-0108      **CASE STUDIES ON MULTI-STRING ISOLATION EVALUATION IN P&A OPERATIONS**  
Jun Zhang, Probe; Dan T. Mueller, ConocoPhillips Company; David Bryce, Probe; Tom A. Brockway, ConocoPhillips Company and Fady Iskander, Probe

## **Session 18A – Conventional Reservoirs – IV**

- SPWLA-2021-0117      **APPLICATION OF LWD ACOUSTIC DISPERSIVE DATA PROCESSING FOR HIGH-QUALITY SHEAR SLOWNESS LOGS IN SLOW FORMATIONS**  
Ruijia Wang, Jiajun Zhao and Taher Kortam, Halliburton
- SPWLA-2021-0118      **SATURATION EXPONENT AS A FUNCTION OF RESERVOIR HETEROGENEITY AND WETTABILITY IN THE TAMBAREDJO OIL FIELD, SURINAME**  
Elias R. Acosta, Dunia Technology Solutions; Bhagwanpersad Nandlal, Staatsolie Maatschappij and Ryan Harripersad, Former Petrophysics Trainee at Staatsolie Maatschappij
- SPWLA-2021-0119      **A NEW LOOK AT THE DUAL DEPTH OF INVESTIGATION OF LWD PROPAGATION RESISTIVITY LOGGING**  
Gong Li Wang, Dean Homan, David Maggs and David Allen, Schlumberger

## **Session 18B – Formation Fluid Analysis – III**

- SPWLA-2021-0112      **COMPRESSIVE SENSING BASED OPTICAL SPECTROMETER FOR DOWNHOLE FLUID ANALYSIS**  
Bin Dai, Christopher Jones, Jimmy Price, Darren Gascooke and Anthony van Zuilekom, Halliburton

SPWLA-2021-0113

**AUTOMATED WORKFLOW TO INDICATE RESERVOIR CONNECTIVITY THROUGH ASPHALTENE EQUILIBRIUM**

Melanie Jensen, Lalitha Venkataramanan, Li Chen, Sandip Bose, Peter Tilke and Oliver C. Mullins, Schlumberger

SPWLA-2021-0114

**USING PROXY SIMULATOR FOR RESERVOIR ZONE SELECTION AND REDUCING THE FORMATION TESTER CLEANUP OPERATIONAL TIME**

Andre C. Bertolini, Vanessa Simoes, Marianna Dantas and Patrick Pereira Machado, Schlumberger

**Session 19A – Unconventional Reservoirs – II**

SPWLA-2021-0115

**AN ACCURATELY DETERMINING POROSITY METHOD FROM PULSED-NEUTRON ELEMENT LOGGING IN UNCONVENTIONAL RESERVOIRS**

Feng Zhang, Fei Qiu, Qunwei Fang, Xiaoyang Zhang, Hui Zhang, Fangwei Tang and Jilin Fan, China University Of Petroleum (East China)

SPWLA-2021-0116

**A COUPLED PETROPHYSICAL AND GEOMECHANICAL WORKFLOW TO INTERPRET DIPOLE SONIC VELOCITIES FOR IN-SITU STRESS**

Tom Bratton, Tom Bratton LLC

**Session 19B – Case Studies – IV**

SPWLA-2021-0109

**RAPID CROSS-PLOT DISCRIMINATION OF COMMERCIAL POTASH MINERALIZATION – CASE HISTORIES**

Donald G. Hill, Consulting Petrophysicist and E.R. Crain, Petrophysical Advisor and Mentor

SPWLA-2021-0110

**PETROPHYSICS SKILL SET GUIDELINES FOR INDEPENDENT PETROPHYSICAL CONTRIBUTORS**

Z. Zach Liu and S. Mark Ma, SPWLA Education SIG