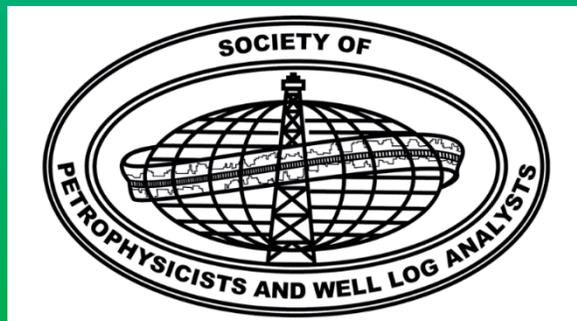


issue 2 | vol 4 | march 2021

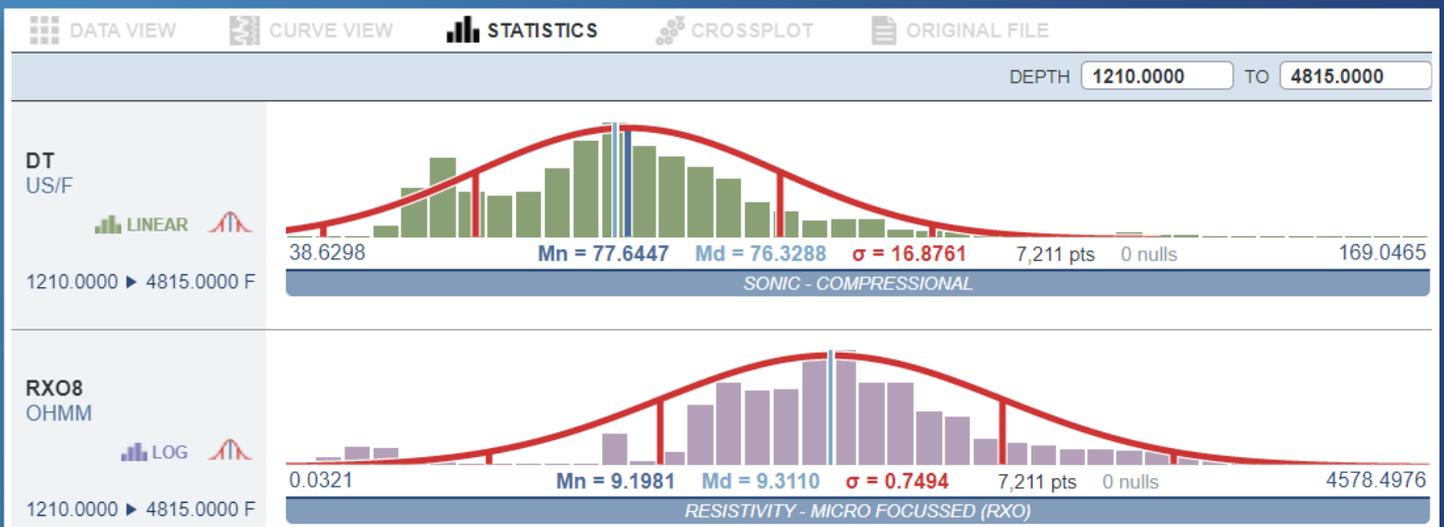
spwla today

petrophysics community newsletter



INSTANT LAS CURVE STATISTICS

- Mean Average, Median Value
- Standard Deviation, Standard Normal Distribution
- Histogram, Data Range, Number of Data Points & Nulls
- True Curve Depth Range, Depth Interval Selection

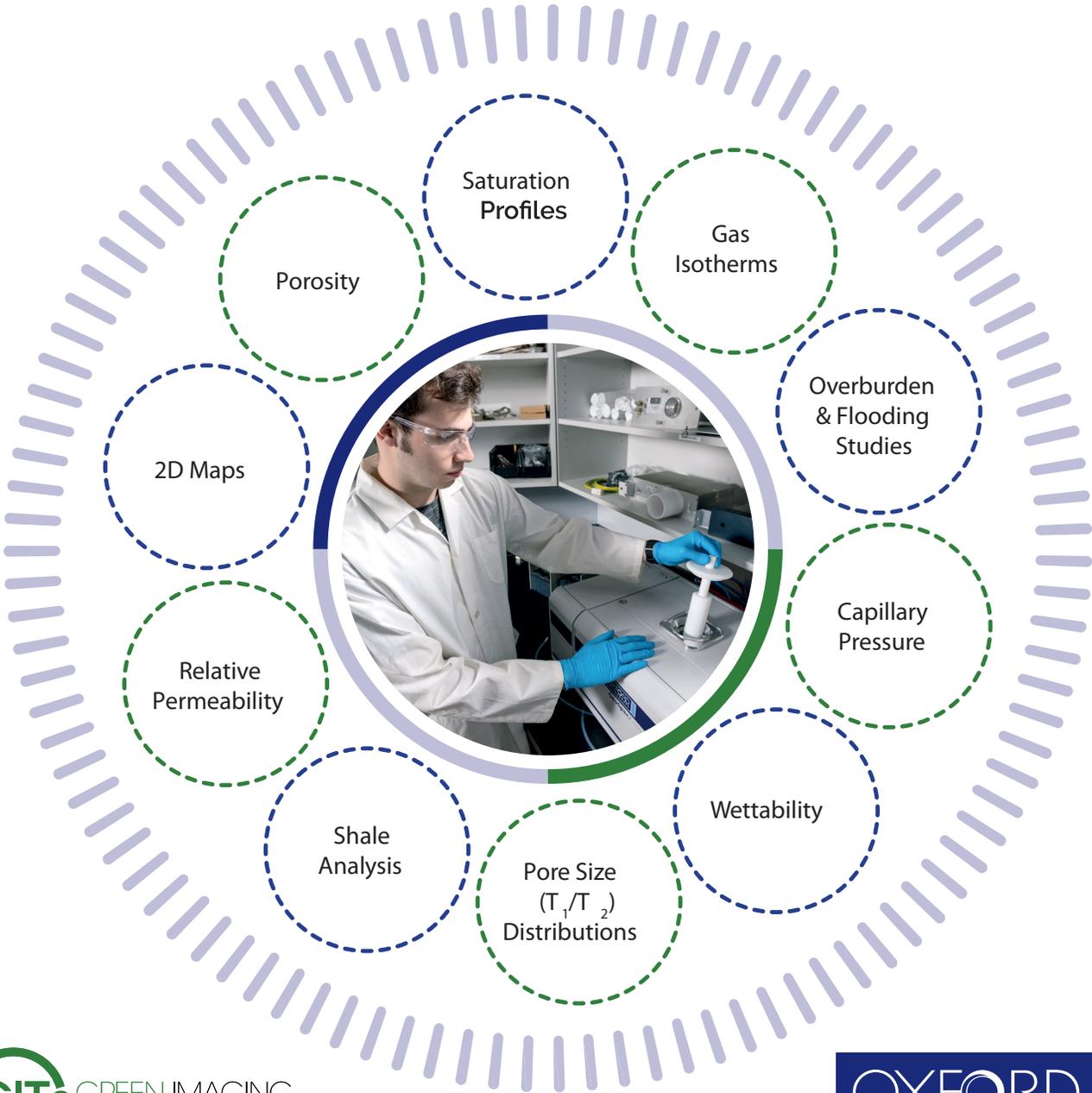


To get your
FREE LAS WORX EDIT TRIAL
go to edit.lasworx.com

Make NMR core analysis routine with GeoSpec

Contact us now to discuss your core analysis requirements.

No NMR expert, no problem



Inside This Edition

From the Editor	6
From the President	8
Up Next	10
Tech Today	12
Learning Opportunities	14
Informative Technology	17
Regional Understandings – Latin America.....	19
Throwback Thursday #TBT Series by Sonia Marino.....	20
How to Become a Petrophysicist? Introducing Petrophysics Skill Set Guidelines (PSSG)	23
Petrophysics Quiz and Delightful Statistics by Adam Haecker.....	27
Pandemics Sixty Years On	36
Why a Logging Company Would Hire a Post-Doc for a Field Engineer Job?	37
All the Reasons Why Petrophysicists Should Learn About... Geomechanics	39
Crowd-Sourced Article: How Do You Explain What You Do for a Living as a Petrophysicist?.....	45
SPWLA Technology Committee and Abstract Ranking Method	47
SPWLA 62nd Annual Logging Symposium Technical Program Abstracts	49
SPWLA Board of Director Minutes	65
2020 Bylaw and Article Proposed Change, Membership Vote Results.....	67
Chapter News	70
Welcome New Members: December 14, 2020–February 21, 2021	107

SPWLA Board of Directors 2020-21



President
James Hemingway
Consultant
Manitou Springs, CO,
USA
President@spwla.org



VP Finance
Doug Patterson
Baker Hughes
Houston, TX, USA
VP-Finance@spwla.org



President-Elect
Katerina Yared
SM Energy
Highlands Ranch, CO,
USA
President-Elect@spwla.org



VP Publications
Mayank Malik
Chevron
Houston, TX, USA
VP-Publications@spwla.org



VP Technology
Tegwyn Perkins
Lloyd's Register
Houston, TX, USA
VP-Technology@spwla.org



VP IT
Lin Liang
*Schlumberger-Doll
Research*
Cambridge, MA, USA
VP-InfoTech@spwla.org



VP Education
Fransiska Goenawan
Halliburton
Houston, TX, USA
VP-Education@spwla.org



Executive Director
Sharon Johnson
SPWLA
Houston, TX 77017
sharon@spwla.org

REGIONAL DIRECTORS



N. America 1
Robin Slocombe
Schlumberger
Houston, TX, USA
Director-NA1@spwla.org



Middle East/Africa
Nelson Suarez
*Dubai Petroleum
Establishment*
Dubai, UAE
Director-ME@spwla.org



N. America 2
Kelly Skuce
*Core Petrophysical
Consulting*
Calgary, Canada
Director-NA2@spwla.org



Asia and Australia
Jennifer Market
MPC Kinetic
Perth, Australia
Director-Asiapacific@spwla.org



Latin America
Bruno Menchio Faria
ENEVA
Rio de Janeiro, Brazil
Director-LA@spwla.org



Europe
Craig Lindsay
*Core Specialist
Services Ltd.*
Aberdeenshire, UK
Director-Europe@spwla.org



Managing Editor
Elizabeth Naggar
editor@spwla.org

Note: Articles published in SPWLA Today are not subject to formal peer review but are subject to editorial review and are verified for technical consistency and relevance.

Calendar of Events

SPWLA 62nd Annual Symposium 2021

YP-BRIDGE EDITORS



Siddharth Misra
Texas A&M
College Station, TX,
USA
misra@tamu.edu



Kanay Jerath
Occidental Petroleum
Houston, TX, USA
kanayjerath@gmail.com



Javier Miranda
*DeGolyer and
MacNaughton*
Houston, TX, USA
jmiranda@demac.com



Mathilde Luycx
ExxonMobil
Houston, TX, USA
mathilde.luycx@gmail.com

About the Cover

An electronic vehicle charging station at a Caltex service station. The COVID-19 pandemic has accelerated the transition towards net zero. Photo from Chevron's 2019 Supplement of Annual Report.

From the Editor



Unprecedented...that's not a word I wanted to hear in 2021! Yet, severe winter weather brought a big chill to many states across the US, with Texas particularly hard hit. Snow and ice events, combined with frigid temperatures not felt in decades, left many people dealing with power/internet/cell outages, frozen pipes, and local municipalities not used to extreme winter conditions. Most of oilfield operations in the state had to be shut down due to loss of power and/or the impact of below freezing temperatures.



Texas doesn't have the infrastructure—like snowplows, salt reserves, and winterized power grid—in order to ensure lasting power throughout the worst of winter weather. Virtually no traffic was flowing to downtown Houston, the energy capital of the world, on a snow day.

It was remarkable how accurate various weather models were almost a week ahead of the cold weather. The science behind these weather models has progressed remarkably over the past few decades due to advances in satellite technology and numerical simulation. Even with ample warning about the harsh weather, the Texas power grid was completely unprepared (windmills not winterized, water pipes lacking insulation, not enough natural gas supply) and suffered a massive failure.

Losing power during a hurricane is awful, inconvenient, and sometimes dangerous when the temperatures are high. Losing power when it is below freezing can be deadly. So many of us throughout Houston have been impacted by this event. Pretty much a massive disaster hit Texas...it wasn't easy for a lot of folks. Our power grid had vulnerabilities; our water plant and pipes had issues. However, while news will make people believe that Texans were helpless...I saw a completely different narrative. I saw people helping one another, folks opening their doors as shelters for people without power, firewood/water being given out, and grocery stores giving free food when cash registers didn't work due to power outage.



And a week later, we are back to warm weather...time to pack up all the winter clothes.

Best Regards,
Mayank Malik
SPWLA VP-Publications 2020–2022
VP-Publications@spwla.org

From the President



Now that 2020 is behind us, let's all breathe a sigh of relief. And, until the next surprise hits us, let's try and pretend that things are improving.

One of the biggest changes we have implemented for 2021–2022 is to create a new position of Vice President Social Media. We previously had a Social Media committee, which was handled by the VP Education. Fransiska Goenawan is doing a great job as VP Education while handling what should have been a second board position at the same time. Our interaction with various social media platforms has become increasingly important over the past years, necessitating a dedicated BOD position. You will see candidates for this new position and all the positions up for re-election on the ballots scheduled to arrive in early March.

As the oil and gas industry goes through business cycles that are rarely predictable other than from the standpoint that there will always be cycles, we probably all have an opinion or guess about what will happen next. Because we are primarily a service industry within a cyclic industry, we get the butterfly effect. COVID-19 had a more disastrous impact on the economy than most had predicted. The slowdown of the general economy created an even more drastic slowdown in the energy sector. And, as we are involved primarily in new wells, our profession is even more severely affected than the energy industry as a whole. So, what happens when the trends reverse? At least that part we can predict, but unfortunately, we can't predict when. When people thought they were forward-thinking in the 1990s by predicting that oil would someday be 100 dollars a barrel, I gave a big Homer Simpson-style "Doh." Yes, but when? When I told people that oil would eventually be in the 30s after surpassing the 100-dollar barrier, again, there was some chuckling but some nervousness. But, since I didn't say "when," it wasn't a useful prediction. And, needless to say, I had no idea that the cycles we have experienced in 2020 were on the horizon. If I knew the whens, I'd be writing this from my yacht.

What should we be prepared for next? Change and uncertainty are all we can predict, but business as we know it will change. It won't be a downward spiral forever, and when things change and a new trend is established, that won't last either. However, being ready for anything will make us successful.

Hopefully, everyone will make plans to join us for the online symposium in May. Last year, things were a bit of a rush as we decided to hold the symposium online within just a couple of months of the actual symposium. And again, I'd like to thank the team for a fantastic symposium that was arranged on such short notice. This year, we have planned to be online since nearly the beginning and have made plans based on what we learned last year.

Let's hope for brighter, if not more interesting, days ahead.

Best Regards,
James Hemingway
SPWLA President 2020–2021
(+33) 6 25 16 57 19
President@spwla.org

Up Next



Dear Petrophysics Friends and Colleagues,

The year 2021 started on a positive note in terms of oil price going up a bit, and we are seeing a rise in job postings after the “tabula rasa” activities that happened last year in the workforce reduction efforts by companies to survive the strain of a pandemic and oil war. Follow me on LinkedIn to see new job posts almost daily, if not weekly.

The year 2021 brings opportunity and change. The pressure to adapt to a more sustainable and zero-emissions industry is a big deal for many majors. The message is clear and unavoidable from communities around the world. The challenge will be to do it in a consistent manner worldwide.

We, as petrophysicists, have a vital role to provide to our community. Even with the “transition” underway, there is a need for our problem-solving skills that are unique to our profession. We plan to address these topics of “green transition” in our symposium workshop. Look for the registration links coming out soon!

With the start of the New Lunar Year of the Ox, I feel empowered to take 2021 “by the horns” and leap into new opportunities never before thought possible in our industry! I know it requires some blind trust to do so sometimes, but I think it will be well worth it.

We look forward to seeing you at our annual symposium hosted virtually with the help of the SPWLA Boston Chapter (spearheaded by Paul Craddock) and our SPWLA VP Technology, VP IT, and VP Education Tegwyn, Lin, and Fransiska and their committees.

Amazing job, everyone! You will see we have a great show prepared for you!

As usual, I welcome your feedback and comments on any way we can serve you better. Send me an email (president-elect@spwla.org) or connect with me on LinkedIn.

With that, I wish everyone to continue staying healthy and safe!

I hope you all have a happy and healthy New Year 2021 and keep thriving!

A handwritten signature in blue ink that reads "Katerina Yared". The signature is written in a cursive style.

Katerina Yared

SPWLA President-Elect 2020–2021

President-Elect@spwla.org



Hello and welcome to my fifth column for the *SPWLA Today* newsletter. My wife has been after me for a while to update my photograph. I hope the new one is acceptable.

Preparations for SPWLA2021 are in full swing. From a total of 251 submitted abstracts, we have accepted 129. A complete listing of accepted abstracts and authors can be found [here](#), and a booklet with full abstracts can be found [here](#). All presentations will be prerecorded, and the top-ranked abstracts will be made available as a “live” broadcast during the symposium.

During the symposium week, we will be using Pheedloop (<http://pheedloop.com>) to deliver the technical sessions. Pheedloop provides a complete virtual event with an exhibit hall, sessions streaming, and networking facilities. Registrants receive a single sign-on and will have access to all events they are entitled to from the event lobby. This year’s format will feature dual sessions, and all presentations will be available on-demand, so if you miss one, you can catch up later.

Workshops will return for SPWLA2021. We have a diverse selection available, and the final list will be available shortly. We plan to stage them during the week before the symposium (May 10–13) as we don’t expect you to give up your weekends for an online course. Featured courses include:

- Machine Learning and Artificial Intelligence (ML/AI)
- Uncertainties in Petrophysics: Methods of Statistical Analysis and Data Visualization
- Energy Transition (Geothermal, CCUS, Rare Earth Evaporites)
- Distributed Fiber-Optic Sensing (DFOS)

Look for more details about all the events on <http://spwla.org> and <http://spwlaworld.org> in the near future. Please don’t hesitate to contact me at VP-Technology@spwla.org with any thoughts and suggestions regarding the symposium arrangements.

If you have submitted an abstract anytime in the past three years (i.e., using the WP Abstracts software), please consider completing this short survey to let us know what your experience was. We are always looking to improve the system, and your constructive feedback would be welcome: <https://www.spwlaworld.org/abstract-submission-survey/>.

Finally, it's SPWLA election time once more. Please consider voting this year and, ideally, for me. However, my rival for President-Elect, Jennifer Market, is a worthy adversary. Jennifer and I have worked together at two companies (Halliburton and LR/Senergy) in the past, and I consider her a friend and an excellent candidate.

Dydd Gŵyl Dewi Hapus.
Happy St David's Day.

Tegwyn J. Perkins
Vice President Technology 2020–21
VP-Technology@spwla.org

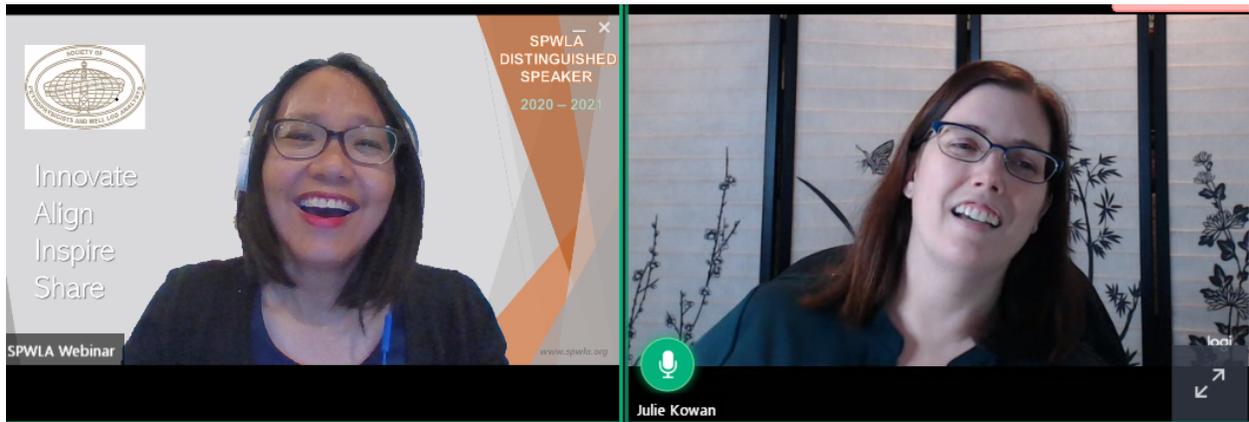
Learning Opportunities



Dear SPWLA Friends,

January and February have been great months for our monthly webinar, special edition webinar, the “More You Know” series, and chapter webinars.

I would like to thank Julie Kowan and Dario Reolon, our speakers for the January and February webinars. I also appreciate everyone who made time to attend the webinars. We were delighted to have you there.



Our expressions during the webinar.

For those who missed the webinar, please access the video recording via knowledgette. Knowledgette access is included in your membership.

I would like to express my gratitude to **Aria Abubakar**, 2020 SEG-AAPG Distinguished Lecturer, who successfully delivered our first special edition webinar entitled, **Automating Wellbore Workflows Using AI/ML Algorithms**. More than 110 people attended the webinar. Special thanks to **Chicheng Xu**, who served as our moderator for this webinar.

Upcoming SPWLA webinars:

1. 11 March—**First LWD Co-Located Antenna Sensors for Real-Time Anisotropy and Dip Angle Determination, Yielding Better Look-Ahead Detection** // SPWLA 5078 by **Hsu-Hsiang “Mark” Wu** (Halliburton).
2. 6 April—**Formation Evaluation with NMR, Resistivity, and Pressure Data—A Case Study of a Carbonate Oilfield Offshore West Africa** // SPWLA 5011 by **Ting Li** (Chevron).
3. 6 May—**Revealing Hidden Information; High-Resolution Logging-While-Drilling Slowness Measurements and Imaging Using Advanced Dual Ultrasonic Technology** // SPWLA 5077 by **Matthew Blyth** (Schlumberger).

The **Mineralogy class** by **Patricia Rodriguez** is back and now with a Spanish edition, too. Who needs to attend? This class is ideal for geoscientists and petrophysicists who would like to better understand or incorporate multimineral analysis into their toolbox to improve the characterization of complex lithologies in conventional and unconventional reservoirs. It is also suited for geologists, geophysicists interested in rock properties, and engineers with knowledge of basic petrophysical concepts who would like to understand the applications and limitations of multimineral analysis. Please check for details on the SPWLA website.

The SPWLA “The More You Know” series has been a great success. We appreciate **Dragan Veselinovic** (Green Imaging Technologies) for sharing **Quick and Data-Rich Capillary Pressure Using NMR** in the January edition and **Cameron Snow** (Danamics) for presenting **Effectively Executing Multiwell Petrophysical Projects** in the February edition. You can access SPWLA TMYK (as well as SPWLA Nuggets of Wisdom) on the SPWLA YouTube Channel. Please don’t forget to subscribe, like, and share. =D

The 2021 International Student Paper Contest (ISPC) is coming soon!! Students *at an accredited university or who have graduated within the 12 months preceding the ISPC* are qualified and invited to submit their paper at their relevant degree category: Undergraduate (BSc), Masters (MSc), or Doctorate (PhD).

The winners of Internal SCPC must submit their paper abstract to **ISPC** online by **Wednesday, March 31, 2021**. Students without a local SPWLA Student Chapter are also invited to submit their paper abstract at their relevant degree category directly to **ISPC** online by **Wednesday, March 31, 2021**.

Students selected to present at the **ISPC** will be notified by **Friday, April 16, 2021**. Please read all the detailed information at swplaworld.org or email me at vp-education@spwla.org for more information.

Thank you for being a faithful member of SPWLA!! Stay safe and keep on learning!!

Kind Regards,

Fransiska Goenawan

VP-Education@spwla.org

Follow us on social media:

@SPWLA SocialMedia (Linkedin)

@Society of Petrophysicists and Well Log Analysts (Facebook)

@spwlaorg (Twitter)



Dear SPWLA Community Members,

Unfortunately, as has been announced, this year's **annual symposium** will be held online again due to the continuing pandemic. The board, in collaboration with the Boston Chapter local committee, is actively preparing for the upcoming virtual event. Last year, the symposium was greatly simplified due to the short window for switching from a planned onsite event to a virtual one. This year, we aim to provide a complete version of the event that includes student paper competition, pre-symposium workshops, technical sessions, and virtual

exhibitions. The technical program will be organized in a dual-session format to invite more papers. To better accommodate audiences from different time zones, very likely, we will enable a play-back function so that the registrants can come back to the platform to listen to the past talks in a limited period. Should you have any suggestions or comments, please do not hesitate to send an email to vp-infotech@spwla.org. While many of you are drafting manuscripts for the symposium, for those who are used to **LaTeX**, you can find the template either from <https://www.spwlaworld.org/> or from the **SPWLA open-source** organization on **GitHub**, see <https://github.com/SPWLA-ORG/templates>.

SPWLA is hosting a channel on the **YouTube** platform, which has so far accumulated 197 subscribers. This channel currently hosts our “Nuggets of Wisdoms” and “The More You Know” series. We will constantly be adding more content, and you are encouraged to subscribe and share with other colleagues.

Data science and **machine learning** continue to be an active domain to work on in the industry. We have begun to see many good applications, especially for those topics where there were no good solutions or the previous solutions were labor-intensive. Many new machine-learning-based solutions have been proven to significantly enhance efficiency and achieve a substantial degree of automation. Encouraged by this progress, it is expected that the trend will continue for many years to come. The figures below show the statistics I performed based on the papers collected by **OnePetro** from 1980 to last year, which presents an exponential growth of machine-learning-related work.


SPWLA International
 197 subscribers


SUBSCRIBED 

HOME **VIDEOS** PLAYLISTS CHANNELS DISCUSSION ABOUT 

Uploads **PLAY ALL** ≡ SORT BY



SPWLAF Scholarship and Grants Application
3 views · 7 minutes ago



SPWLA TMYK: Quick and Data Rich Capillary Pressur...
68 views · 2 weeks ago



SPWLA NoW: Rethinking Hydraulic Fracturing - Base...
281 views · 1 month ago



SPWLA TMYK: Featuring PetroMar Technologies Team
52 views · 2 months ago



SPWLA TMYK: Back to the Future - You Can Log Every...
98 views · 3 months ago



SPWLA TMYK: Introduction to NMR for Core Analysis
74 views · 3 months ago



SPWLA Nuggets of Wisdom: Pressure Gradients - Myths...
248 views · 3 months ago



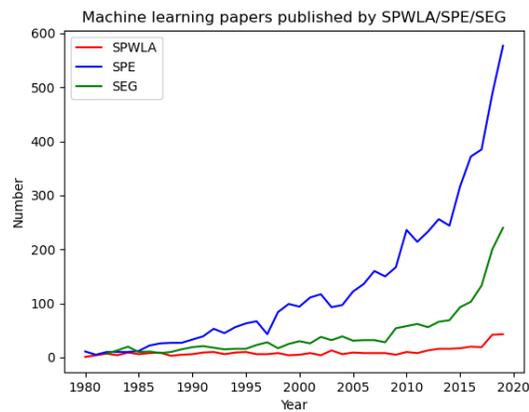
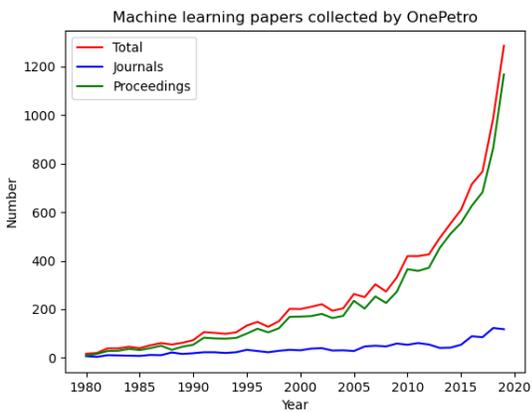
Accurate Measured Porosity on Cuttings: Going Beyond ...
105 views · 6 months ago



SPWLA TMYK: Electrical Properties of Clay...
388 views · 9 months ago



SPWLA TMYK: Deriving the Archie Model b...
304 views · 11 months ago



With the digital transformation across the entire industry, the new energy transition and social awareness of environmental challenges, and the exponential advancement of technology, we face a rapid change not only in our industry but also in every aspect of our life and society. We need to prepare for these changes, especially young professionals and those still in school.

Finally, best wishes to everyone for a safe and prosperous new year.

Lin Liang
 Vice President Information Technology
 (+1) 617-335-4469
VP-InfoTech@spwla.org

Regional Understandings – Latin America



Hello Petrophysical Community,

We started 2021 with high expectations since vaccination against COVID is taking place worldwide, and we have seen an improvement in the price of oil. We are moving on with new prospects and hoping that this year is better than the previous one.

An important piece of information is that the SPWLA has reduced annual fees for professionals from some countries that fall into the Professional Member Group 2. Almost all Latin American countries fall into this category, so it is a great opportunity to pay 40% of the total annual fee while receiving all the benefits of being a professional member. The novelty is that this discount has now been extended to students from this group of countries.

On March 24th and 25th, a Petrophysical Multimineral Analysis course will be held in Spanish by the SPWLA. It is an excellent opportunity to learn more about this important petrophysical evaluation technique.

I had the chance to give a lecture at the Petroweek event organized by the SPWLA UIS Student Chapter. I was impressed by the high level of organization of the event, the large number of participants, and the organizers' professionalism. Regarding Latin America, why not get all Latin American countries together at a similar event? Anyone interested in participating in the organization of a future event along these lines can feel free to contact me at any time.

Finally, I would like to hear a little more about the geothermal energy and carbon capture, utilization, and storage (CCUS) projects in Latin America. There is a growing interest in these clean energies, and petrophysicists have an important role in developing these technologies. If you have any relevant information that you would like to share and discuss, please email me.

Yours sincerely,

Bruno Menchio Faria

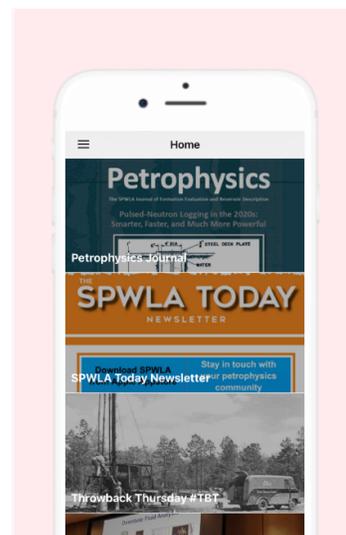
Latin America Regional Director

Director-LA@SPWLA.org



Let's be honest. After the traumatic year we just had and while we are still dealing with a lot of emotional difficulties caused by the new coronavirus pandemic and its devastating effects on our industry, we need some distraction and amusement. We need an escape with minimum effort. Grab your smartphone. Open your SPWLA mobile app. A fun trip down Memory Lane is waiting for you! It will bring a very welcome diversion, cheers you up, makes you smile, and maybe laugh, with minimum effort!

Since January 2021, the SPWLA app includes a Throwback Thursday section, easily accessible from the homepage, as shown in the picture on the right. In other words, your SPWLA app now has its very own #TBT hashtag! Everybody is talking about it, and if you don't want to look like you've been living on another planet for the last two months, you'd better check it out soon!



Below is what has been posted in the #TBT series so far: an early truck and tool sketch, pioneers, Alaska, and Africa. Enjoy and keep checking the SPWLA app every Thursday for more. Use the feedback section to send your thoughts and contributions.



January 7th, 2021

What better way to start our Throwback Thursday #TBT series than with Conrad Schlumberger's first truck equipped for electrical surface measurements? An assistant is setting up the experiment in St Eloy Les Mines in Central France, 1914.

From Schlumberger Anniversary Calendar published by Schlumberger.



January 14th, 2021

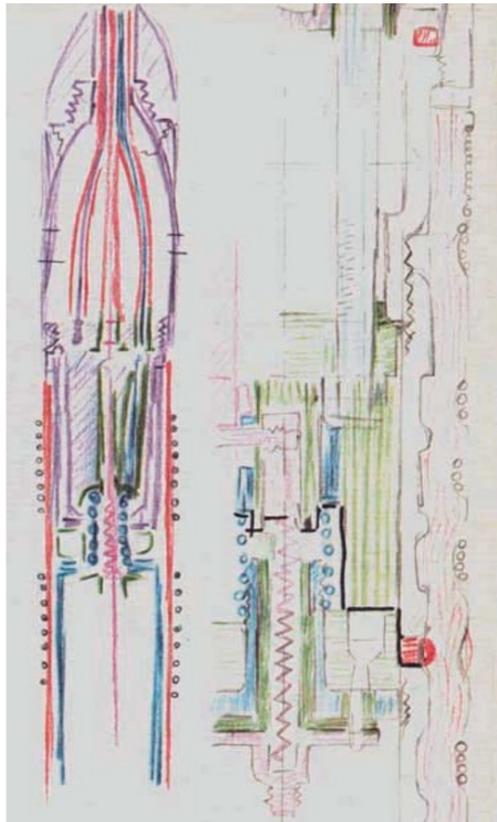
The SPWLA Chapter members had their first organizational meeting on January 29th, 1959 in Tulsa, Oklahoma. The SPWLA had just been founded!

Back Row: D. J. Timko, R. L. Braeutigam, J. E. Carothers, R. M. Kelseaux, J. D. Duren, J. H. Blackburn, L. G. Chombart.

Front Row: E. S. Griffith, L. G. Huntley, F. S. Millard, R. G. Hamilton, G. W. Haynes.

Not present: J. C. Albright, D. A. Butler, W. B. Belknap, E. V. Landrigan, G. T. N. Roberts, E. W. Sutton, J. Petta.

Picture shared by Hani Elshahawi.



January 21st, 2021

Marcel Schlumberger's sketch of the early sidewall coring tool, around 1930. To date hundreds of thousands of core samples have been collected for oil and gas exploration.

From Schlumberger – The First Years published by Schlumberger.



January 28th, 2021

Northern end of the Trans-Alaska pipeline before it was hooked up in 1977. The 800-mile-long Trans-Alaska Pipeline System (TAPS) is one of the largest pipeline systems in the world. To this date it has successfully conveyed more than 18 billion barrels of oil from Prudhoe Bay to Valdez, Alaska.

From Chris Skelt – Personal Collection.



February 4th, 2021

Let's travel to the West Coast of Africa for our 5th #TBT!
Rig up operations in Gabon for the Royal Dutch Shell in 1989.

Picture shared by Wade Samec.



February 11th, 2021

Gustavus E. Archie (1907 – 1978)

The excellent article "50th anniversary of the Archie Equation: Archie left more than just an equation," written by E.C. Thomas for The Log Analyst in 1992 and published again in SPWLA Today in September 2018, is full of interesting information.

But did you know that Gus Archie was awarded a Gold Medal for Technical Achievement by the SPWLA in 1978? Submit your answer in the Feedback section below and be the first to win a prize!! The correct answer was 1978.

Mark your calendar! There will be a #TBT contest on March 25th with an Amazon gift card to win.

How to Become a Petrophysicist? Introducing Petrophysics Skill Set Guidelines (PSSG)

Petro Pop Quiz

So, you want to become a petrophysicist and don't know how to get there? Ask the experts in our industry, and you will get different answers. It's petroleum pop quiz time. Which is the correct answer to the title question, "How to Become a Petrophysicist?":

- a) A physicist designing tools and modeling logging tool performance
- b) An engineer staying up hours and days logging wells
- c) A specialist processing and interpreting logs
- d) A scientist describing, measuring, and studying rocks, fluids, and their interactions
- e) An expert integrating all data to make sense of formation evaluation and reservoir dynamical performance
- f) All of the above

Comprehensive Scientific Knowledge

Traditionally, petrophysicists are "born" from experienced logging engineers, geologists, core analysts, geophysicists, and tool physicists. Each discipline comes with its own unique skill sets developed over many years that can transfer into becoming a multidisciplinary petrophysicist in the oil patch. All must have a wide array of science, technology, engineering, and math foundations, complemented with advanced computing and data science knowledge to become an aspiring petrophysicist. *If you answered f), you are correct!*

Evolution of a Petrophysicist

As an example, Zach's educational background is a BS degree in electrical engineering, followed by an MSE degree in petroleum engineering. He started his career in the oil industry about 20 years ago working for Schlumberger as a software engineer, programming logging tool software and data-processing algorithms. Along the way, he completed internal and external specialized training in well logging and other key aspects of petrophysics. It didn't take him long to realize that he needed to learn more about geology. So, he completed an MS degree in petroleum geology. To stay updated in an industry where things can change rapidly, he knew that continual education, practical solutions, appropriate leading-edge software, and practice are the keys. The evolution of Zach's petrophysical career path has been further enhanced with additional studies in economics, petroleum land, and data science.

Training Roadmap and Career Progression

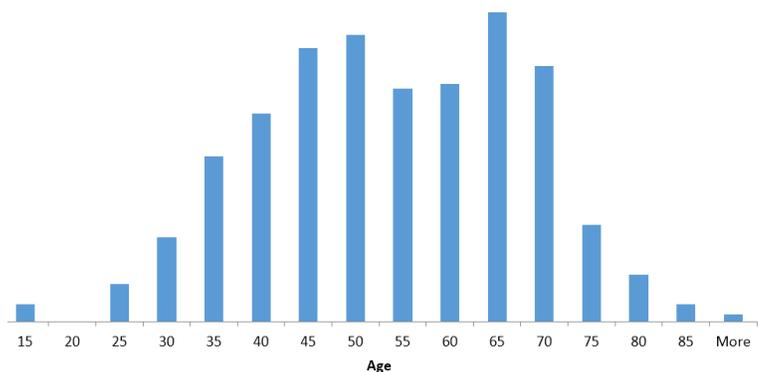
Looking in the rearview mirror, Zach thought to himself, “Gee, it sure would have been nice and rather useful if someone had handed me a roadmap of the required skills for beginning petrophysicists.”

Suggestions from experts on how to kick off a petrophysical skill set are documented in a list of recommendations of “Educating the Petrophysicist” 2014 SPWLA Topical Conference, “A Minimum Set of Standards in Terms of Both Knowledge and Skills (Competencies) for an Entry-Level Petrophysicist.” Similar guidelines have been expressed by T. Loermans in his 2002 SPWLA paper, “The Petrophysical Skills List.”

In an effort to update and expand the discipline of the evergreen petrophysical skills list, several SPWLA Education SIG brainstorming sessions took place in 2019 and 2020. Please allow us to introduce the first comprehensive version of the Petrophysics Skill Set Guidelines (PSSG). It is noted and acknowledged that PSSG is a dynamic roadmap to be maintained by the SPWLA Education SIG as periodic updating would be required with emerging and evolving new technologies such as evidenced by the ongoing IR (Industrial Revolution) 4.0.

The PSSG were envisioned in response to the lack of a formal petrophysics degree program in most universities. We also considered the lessons learned from previous industry downturns. A genuine concern for the industry is commonly known as “The Great Crew Change.” This refers to the ongoing waves of senior professionals reaching retirement age—a time when

SPWLA Member Age Distribution. The Big Crew Change



the next generation of professionals are expected to be there and ready to be able to step into their shoes and start their own long-lasting petrophysical careers. To prepare for The Great Crew Change and stop the skill gap from growing wider, we must work hard to educate and mentor aspiring petrophysicists. As we all have learned over the past year, higher education has been pummeled by the sudden pandemic, creating a shift in how we learn.

The easily accessed PSSG digital document is intended as a useful progression of training arranged for the life cycle of a petrophysicist—from students and entry-level positions just getting started, a service and operating company designing a training program for professionals drawing from different disciplines to become petrophysicists, to an organization interested in elevating individuals and subsurface teams to customize and develop skills, and skill assessment for petrophysicists to advance their careers.

Fundamentals of PSSG

The outline of the PSSG document is as follows:

- I. General Geoscience and Engineering Operations
- II. Fundamental Petrophysical Data Acquisition
- III. Integrated Formation Evaluation
- IV. LWD Petrophysics in Formation Evaluation and Geosteering
- V. Reservoir Dynamic Surveillance
- VI. Integrated Petrophysical Modeling
- VII. Data-Driven Petrophysics

You can follow the link to read the PSSG document on the [SPWLA website](#). As a society, these guidelines belong to all of us, intended to be a living document to reflect the current and future technologies and industry trends. Comments and feedback are encouraged. Contact: PSSG@spwla.org and join SPWLA.

About the Authors



Zach Liu is a committee member of SPWLA Education SIG and was the 2018–2019 SPWLA International President. He is a licensed Professional Petroleum Engineer (P.E.) and CFA charter holder. Zach has over 18 years of broad experience in the oil and gas E&P, focusing on US onshore conventional, unconventional, and EOR assets. Previously, he worked for Kinder Morgan, BP, and Schlumberger. He earned his first MS degree in petroleum engineering from the University of Texas at Austin and his second MS degree in petroleum geology from the University of Houston. Zach has published 10+ technical papers and has been granted 3 US patents. He enjoys golf and running. And, he can ride a unicycle.

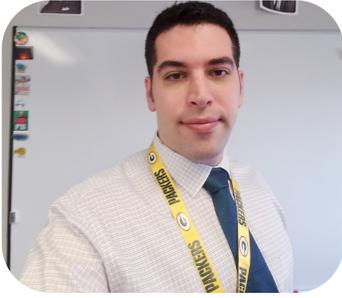


S. Mark Ma is an SPWLA Education SIG member, a Petrophysics journal editor, an SPWLA Saudi Arabia Chapter VP, and was the 2018–2020 SPWLA Director representing the Middle East and Africa region. A chairperson of the SPE Formation Evaluation Award Committee, SPE ATCE Formation Evaluation Committee, and IPTC Education Week Committee, Mark served two terms from 2015 to 2020 on the JPT Editorial Committee responsible for formation evaluation. A senior petrophysics consultant at Saudi Aramco, Mark has worked at Exxon Production Research Company, Wyoming Western Research Institute, New Mexico Petroleum Recovery Research Center, and Yangtze University since 1982. With about 100 technical publications and 30 patents and patent applications, Mark was awarded the SPE International Distinguished Membership award and the SPE Formation Evaluation award in the Middle East and North Africa region. Mark holds a BS degree from China Petroleum University and MS and PhD degrees from New Mexico Tech, all in petroleum engineering.

Hydrocarbon Haiku by Katerina Yared

**"Das graue Gestein,
so unscheinbar doch,
voller Geheimnis!"**

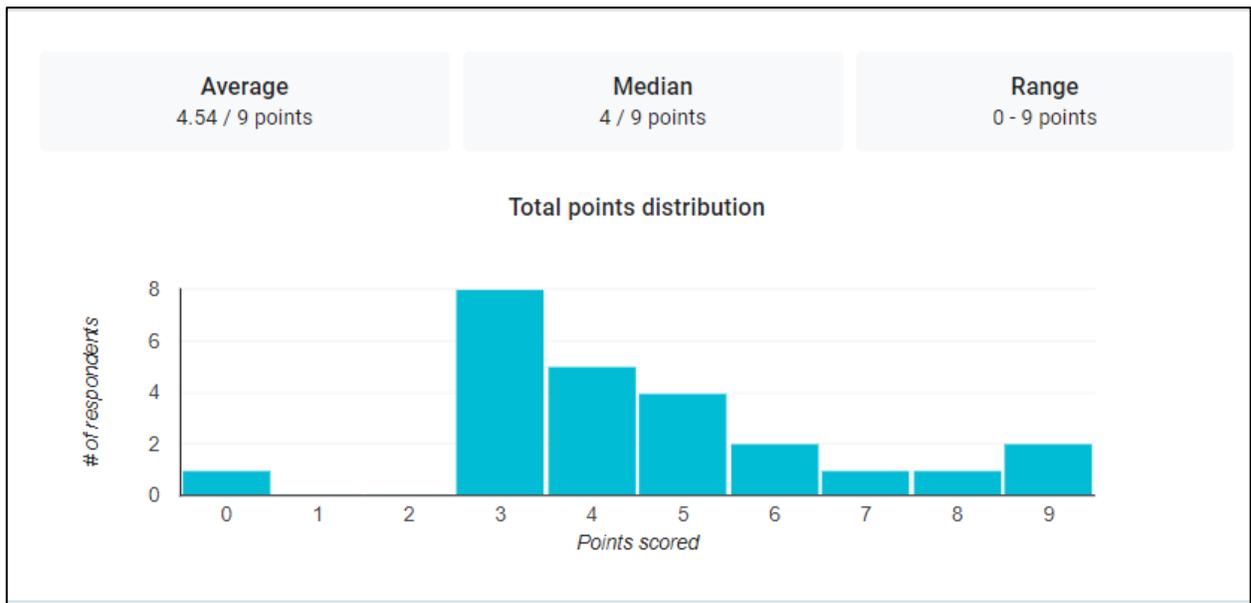
**"Great unknown today,
gives room for fantasies.
It is adsorbed oil!"**



Hello All, it has been a few months since answers were posted for the quiz. Here are the answers for the December and January quiz on the SPWLA app. Please download the app and check out the February questions. The app can be downloaded for Android devices via the [Google Play store](#) and iOS devices via [Apple's App store](#).

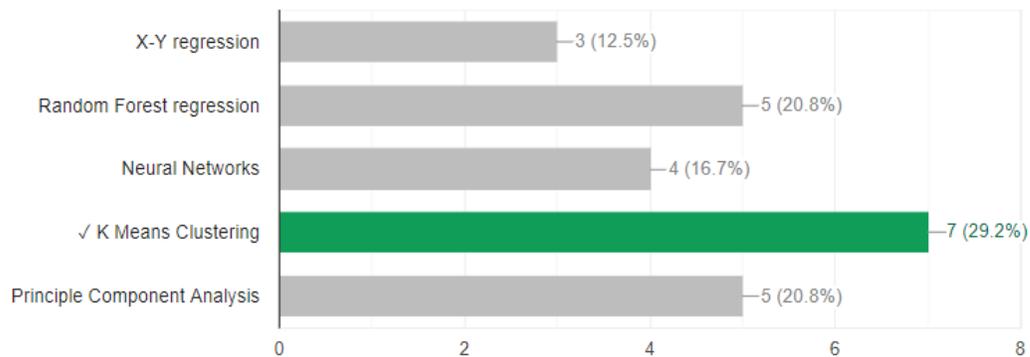
The December quiz had several questions that had high variability. I think this was our most challenging quiz to date, as the median was only 4 points. Of the machine-learning question, K-means clustering was the only unsupervised method there. Also, for the NMR question, I think many people were thinking of T_1 . The question was looking for problems with a high-magnetic field gradient, so diffusion must be happening, right? Finally, for the pleochroism question, I should have been clearer. Several minerals on there have very weak pleochroism or pleochroism at different wavelengths. I was looking for a pleochroic mineral in daylight. Sorry about not clarifying that one!

December Quiz



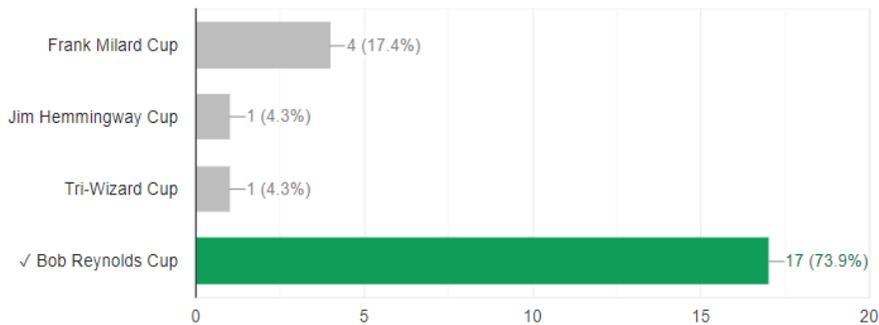
Which of the following are types of UNSUPERVISED Machine Learning

7 / 24 correct responses



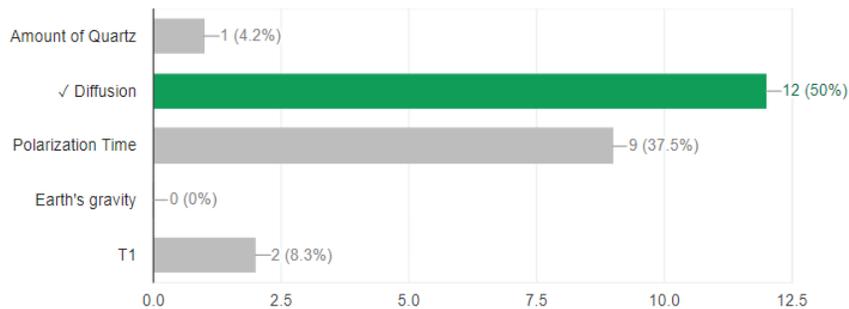
What Biannual competition is run by the clay mineral society to determine the world's best group at quantifying minerals. Even in 2020, despite the pandemic, it was completed and a company (that will not be named) out of Belgium was the winner.

17 / 23 correct responses



In the presence of a high magnetic field gradient, which property is most likely to make interpretation of NMR T2 data difficult unless accounted for?

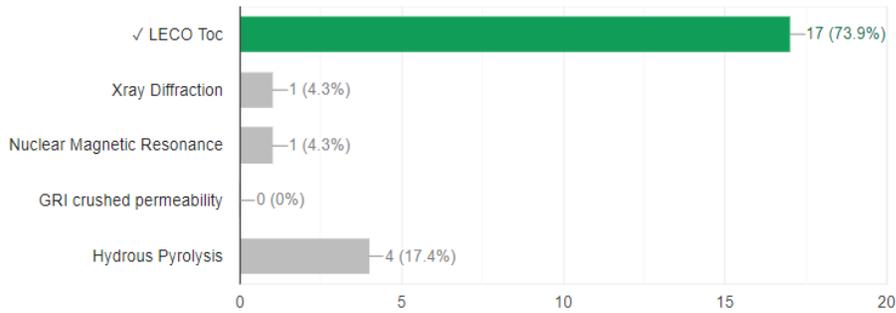
12 / 24 correct responses



Which of the following tests can best be described as: Samples are powdered, weighed, and chemically treated prior to analysis to remove the inorganic carbon (carbonate) from the rock. The sample is then combusted to 1350C in the presence of excess oxygen, allowing carbon dioxide to form from the free (organic) carbon in the rock.

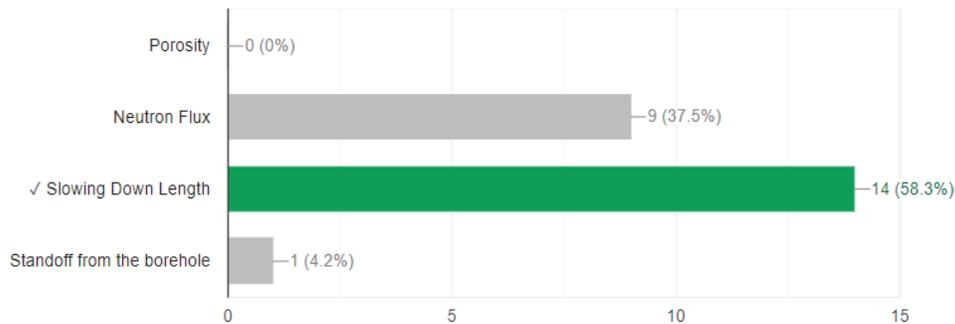


17 / 23 correct responses



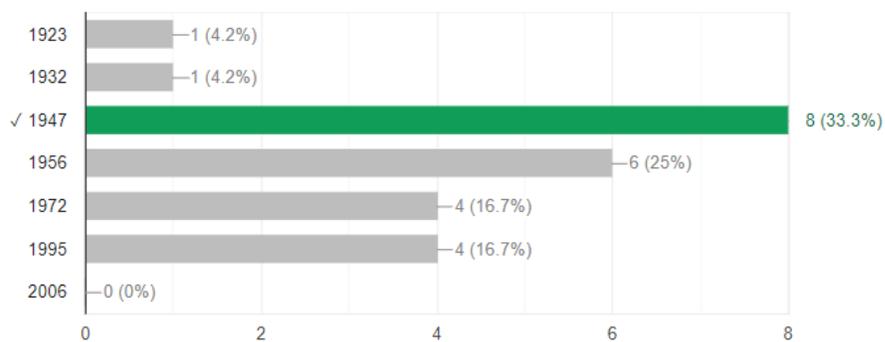
Thermal Neutron Tools actually measure which property before using a correlation to determine porosity?

14 / 24 correct responses



The first Hydraulic Fracture Treatment was pumped by the Pan American Petroleum Company in the Hugoton field in Grant County, Kansas in what year?

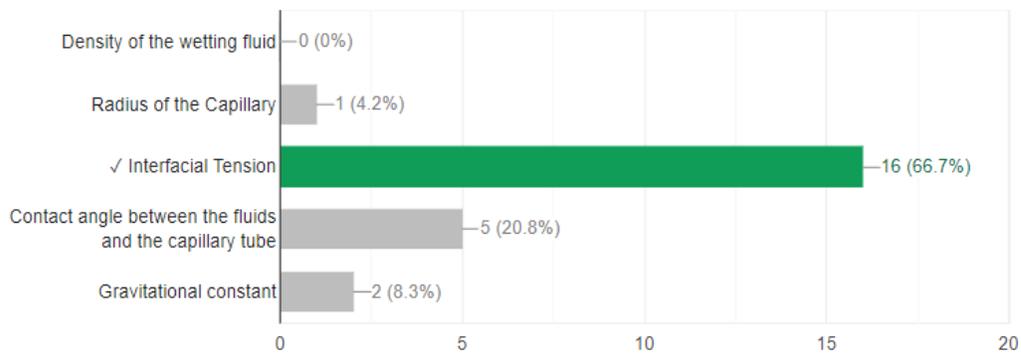
8 / 24 correct responses



In the study of Capillary pressure, the Washburn Equation, shown below, σ stands for what variable?

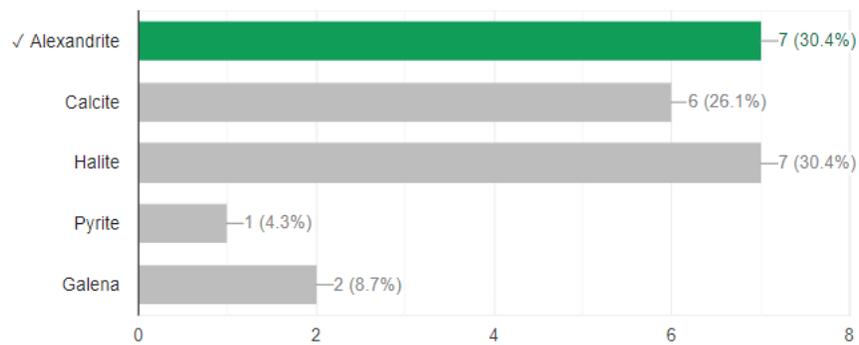


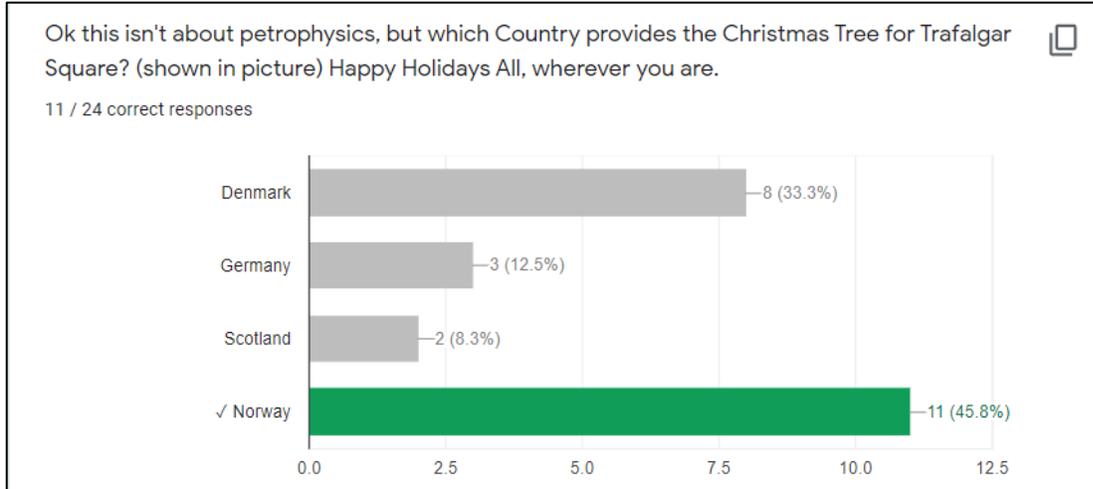
16 / 24 correct responses



Which of the following minerals has the property known as Pleochroism, an optical phenomenon in which a substance has different colors when observed at different angles, especially with polarized light.

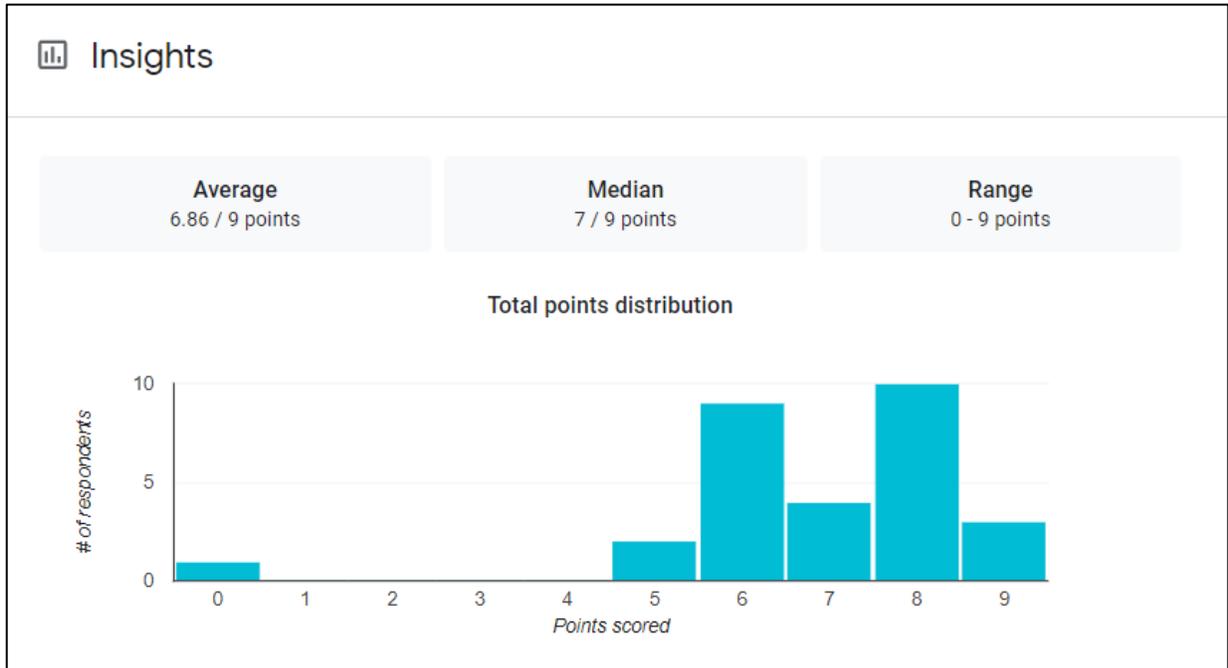
7 / 23 correct responses





Here are the answers to the January quiz. I think the matrix-inversion one tripped several people up. For the record, a computer cannot consult a chart last I checked, although there may be some new machine-learning algorithms I am unaware of. LOL! If computers can tell dogs from cats, they can probably read a chartbook. I hope everyone enjoyed the subduction question. So long to 2020 and good riddance. The median was a much more enjoyable 7 on this quiz, so I think the difficulty is back to where it needs to be for a fun quiz.

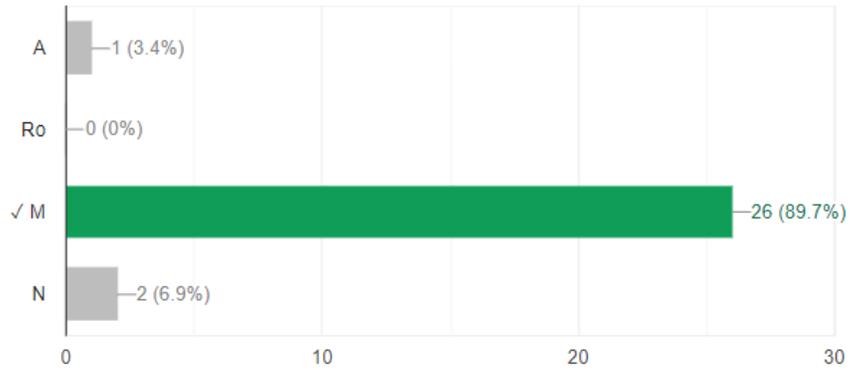
January Quiz



Which of the following is colloquially known as the "cementation factor", although it has been shown to have very little to do with cementation actually?



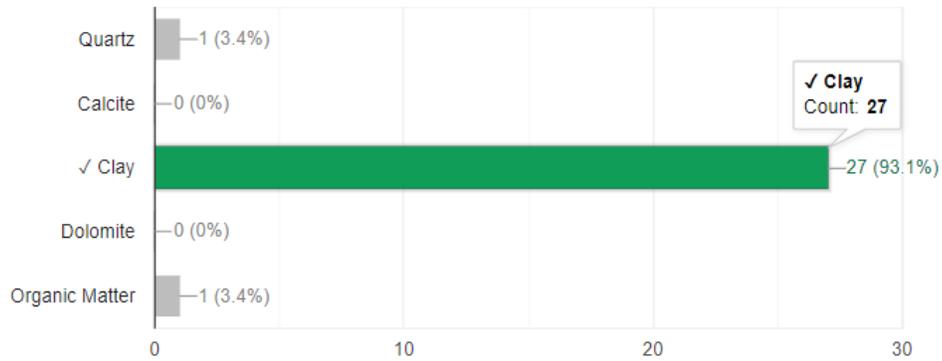
26 / 29 correct responses



What mineral type that is often a subject of much discussion in Petrophysics is pictured here? This Mineral family generally has the property of having excess conductivity and cation exchange capacity

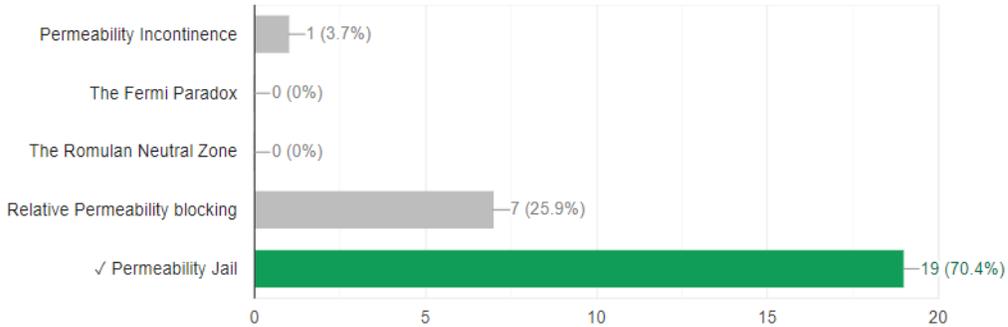


27 / 29 correct responses



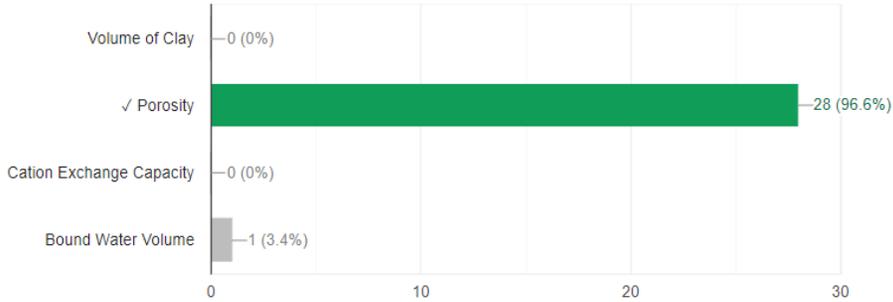
Viewed in a common water saturation space the two critical saturations move apart with decreasing permeability, producing a widening range of water saturations at which both phases are effectively immobile. What do we informally call this no flow region? The Term was originally coined in 1992

19 / 27 correct responses



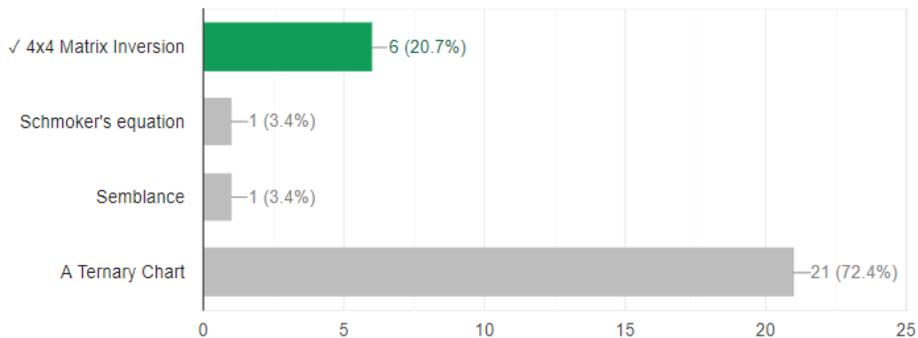
Although there are many water saturation equations in existence, what must all equations contain?

28 / 29 correct responses



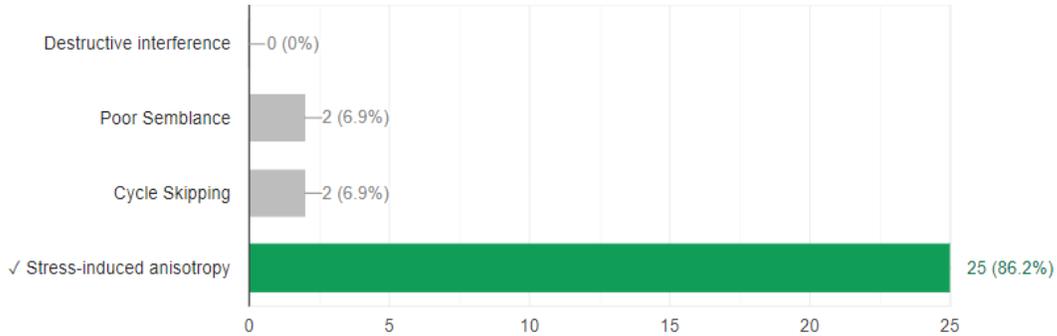
The so called "3 mineral model" uses what method to solve for mineral volumes deterministically in most software?

6 / 29 correct responses



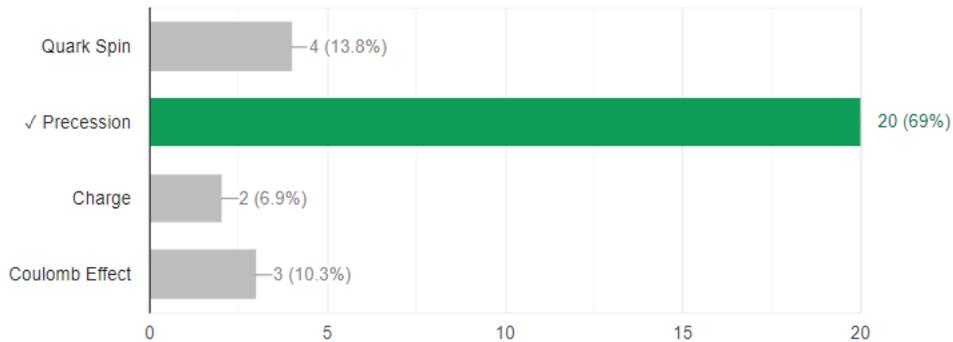
In Dipole acoustic logging. The presence of shear dispersion crossover at a given depth indicates what property?

25 / 29 correct responses



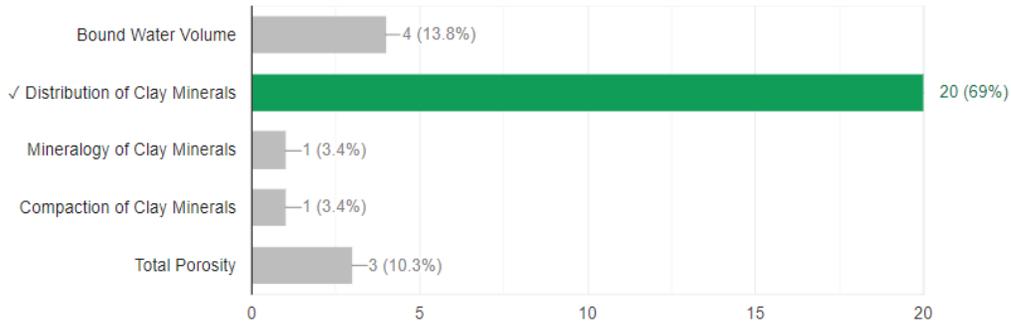
When a NMR tool induces a magnetic field and tips nuclei away from the dominant magnetic field, it causes nuclei to spin like a top around an axis. This movement is referred to as what? (blurred out in diagram)

20 / 29 correct responses



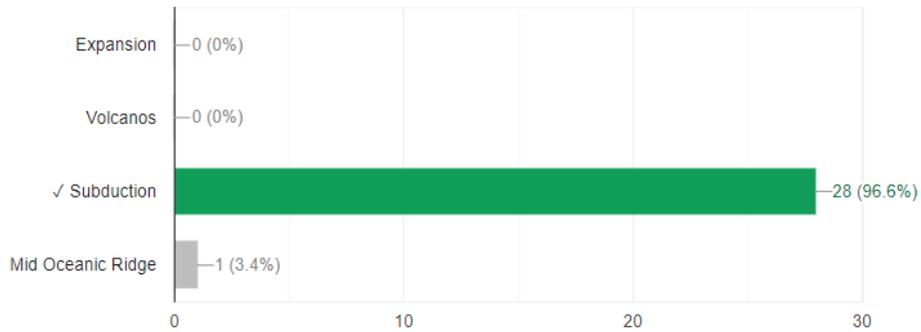
The Thomas-Steiber model is used to determine what property?

20 / 29 correct responses

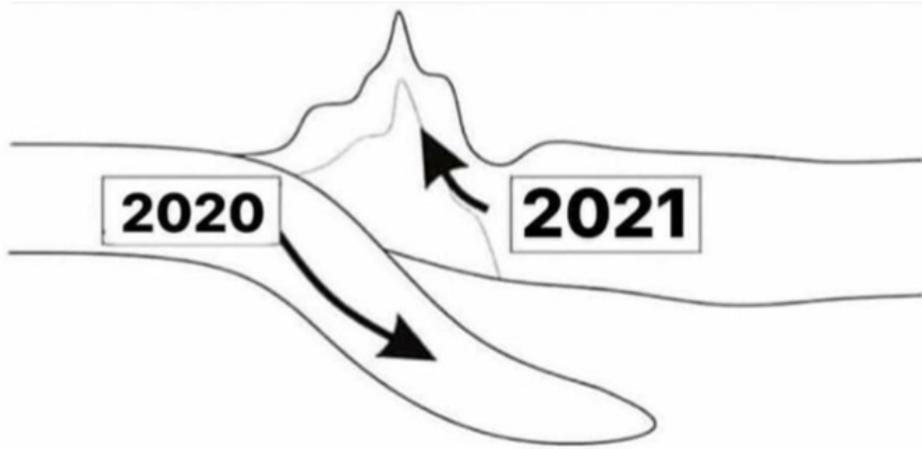


In plate tectonics, this type of movement where old oceanic crust is recycled into the Mantle at convergent boundaries is known as what? One such example is the plate boundary on the west coast of Chile where the Nazca plate moves under the South American plate.

28 / 29 correct responses



Happy New Year to All Petrophysicists!





Richard Bateman is a veteran of the oil patch and an occasional contributor to the SPWLA's publications, both as a petrophysicist and as a raconteur. He is now retired and living in the Appalachians.

Yellow Fever

In the early 1960s, a yellow fever epidemic in eastern Venezuela led to the deaths of a substantial number of the Creole company's staff. Creole, being a subsidiary of Standard Oil of New Jersey (a forerunner of Exxon), had a large staff of ex-pats working in the area at the time, based in the Caripito camp. Among the dead were a number of Americans. Accordingly, the company sent down a supply of coffins from the States in order to evacuate the bodies in the style that was customary. As it turned out, more coffins than needed were actually shipped, and the excess was stored in one of the company warehouses, known as Galpon C.

This warehouse was guarded nightly by a watchman who had discovered that the coffins were very comfortably lined with velvet and fitted with satin pillows. They made excellent beds. At the start of his nightly duties, he would sneak into the nearest coffin, close the lid almost all the way, leaving a 36-in. wrench to keep a crack open for air, and gently snooze his way through his tour. Unbeknownst to him, one of the Creole supervisors, by the name of Gomez, needed to get some supplies from the warehouse in the middle of the night and went down to Galpon C and opened up the doors. The noise woke the watchman, who then reached his hand out and opened the lid of the coffin. Gomez, hearing the creak of an un-oiled hinge, turned on the lights and stood transfixed by the vision of a dead man rising up from his coffin, and when the watchman actually called out his name, "Gomez! Gomez!", the supervisor took off like a bat out of hell and ran for his life.



Philippe Theys is a logging data quality expert. After six years as a logging field engineer (France, Sweden, Germany, Austria, Gulf of Mexico, and Eastern and Western Australia), he has spent 42 years with a dozen (major) companies, written several books (the last one, Quest for Quality Data has been translated in Chinese), and is the 278th most traveled person in the world. He has been SPWLA President, then SPWLA Foundation President. When airlines, cruise lines, and trains allow it, he is splitting his time between Houston, an 18th-century house in Creuse, France, and some future destinations to explore.

At the end of the 2020 award ceremony, there was only one question: Why Schlumberger would hire a post-doc for a field engineer job?

It is a very good question, and I would like to complement Charlie Flaum's answer.

Some Historical Background

In the 1920s, the first underground electrical experiments were performed by people with a very high level of education. Marcel Schlumberger got a degree from Ecole Centrale de Paris, and Conrad Schlumberger and Henri Doll, from Ecole Polytechnique, the two most prestigious engineering schools in France. In spite of these degrees that should have kept them in comfortable top management offices, they spent a considerable amount of time in the field. The subsequent hires had similar degrees.

Later, from the 1940s till the mid-60s, **outside US land** where logistics were acceptable, in places such as the Sahara and Middle East deserts (Algeria, Libya, Saudi), the Borneo or Sumatra jungles, and offshore, communication was extremely difficult or nonexistent. The field engineers had to face mechanical, electrical, or electronic challenges without the help of a hotline, a computer, or even the ability to phone. Outside the US, Schlumberger was hiring graduates in general engineering from the top European universities. Preferred recruiting places for field engineers were Centrale Paris, Supelec, and Arts et Métiers in France, and Oxford and Cambridge in the UK. Other logging companies were recruiting ex-Schlumberger employees.

Most of these engineers, after years in the field, were invited to work in research centers or engineering and develop log interpretation. There are some legendary names: Poupon, Dumanoir, Tixier, Desbrandes, Gartner, Clavier, and more recently, Sibbit, Brie, Flaum, and

Citerne (sorry, as you can guess, I have spent many years getting some blue-and-white vaccinations and boosters. Representatives of other companies can complete the list).

Back to the 2020s

From an impossible job in the late 1920s, when a person with a high IQ was needed at the wellsite, logging companies have developed training and processes so that people with less prestigious diplomas and demanding lower pay would be acceptable. Then, two revolutions changed that: 1/ **an incredible advance and miniaturization in electronic devices**. Until the 1970s, the field engineer working outside the US needed to understand individual components (some were vacuum tubes) to be able to repair a logging tool, which he (no female engineer at the time) was performing at the rigsite to the amazement of the drilling crews. From the 90s on, there has been no need to have such detailed knowledge. In case of failure, the complete inoperative component module is changed. 2/ **Extreme communication**. Fifty years ago, there was no way to get support or advice in case of a problem. Now, help is available after a few keystrokes or finger swipes.

This explains why high-level diplomas are no longer required for field engineers. It is also a huge saving for the logging companies.

But, to develop answers in log interpretation, it is very important to have a good understanding of field conditions. How depth and tension are affected in while-drilling or wireline operations? How mud composition and calibration affect measurements? And many more questions.

There is no better preparation for a log interpreter than some training in the field. I personally would not trust a log interpretation from a person who has never set foot on a drilling rig. Working in the field also develops lateral thinking. One of the best examples is Charlie Flaum, a nuclear physicist dealing with gamma rays who became a specialist in nuclear magnetic resonance dealing with spins, a very different expertise.



SPWLA Young Professionals
Newsletter

the
bridge

Written by Dr. Nicolas Espinoza

Throughout their career, FE specialists are expected to augment their interpretation capability and understanding of the subsurface through collaborations with a wide range of experts in other disciplines. To deliver integrated subsurface characterizations, it is especially useful to gain a basic understanding of these related disciplines. Therefore, as part of The Bridge's efforts to reach out to young professionals in the FE community, we would like to introduce and highlight some of the disciplines intimately related to petrophysics and formation evaluation. Dr. Nicolas Espinoza, a geomechanics specialist and an associate professor in the Hildebrand Department of Petroleum and Geosystems Engineering at The University of Texas at Austin, begins this series with the topic of geomechanics.

Dr. Espinoza earned his Civil Engineering diploma from Universidad Nacional de Córdoba in 2006, and his MS and PhD degrees from the Georgia Institute of Technology in 2008 and 2011. His primary research interests include the mechanics and physics of natural porous solids and granular media, including applications to advanced completion techniques, reservoir geomechanics, geophysics, and formation evaluation. The main fields of application of Espinoza's research are energy recovery from unconventional and carbon geological storage. Dr. Espinoza has coauthored over 80 technical articles, served as an expert reviewer for several scientific and engineering journals, and given seminars at various leading research and educational institutions. Dr. Espinoza has made several contributions to the formation evaluation community, including the development of new acoustic methods to reveal the presence of fractures in shale formations, development of new methods to measure rock intrinsic mechanical anisotropy in a single tight rock plug, measurement and publication of petrophysical data of emerging unconventional formations, and identification and measurement of petrophysical properties of reservoir and seal rocks for safe CO₂ geological storage.

Geomechanics has had different meanings in the petroleum industry. Originally, it was related to drilling and wellbore stability. Then, its application broadened to encompass a wider range of reservoir issues, such as sand production and subsidence. In the last decade, geomechanics became intimately intertwined with oil and gas production efforts in unconventional reservoirs due to hydraulic fracturing. Geomechanics is relevant to all these issues and more! It should be considered each time rock deformation can have an impact on engineering and geoscience decision making in exploration, development, and production. In particular, geomechanics can be instrumental in optimizing decisions and resolving issues in the following situations:

- (1) Exploration: Surface weathering processes and the movement of tectonic plates have changed the shallow lithosphere over millions of years. The current state of the subsurface is the result of the evolution of the Earth's lithosphere over geological time. Recent advances in geomechanics and structural geology have helped explain many features in the subsurface that, until recently, were not well understood. For example, current basin-scale geomechanical models can help predict pore pressure and the state of stress near salt domes, which are otherwise extremely challenging to estimate.
- (2) Drilling and wellbore stability: Geomechanics helps minimize drilling and wellbore stability issues, thus saving operators millions of dollars by minimizing nonproductive time during drilling. Moreover, accurate geomechanical models and drilling techniques have enabled the drilling of HP/HT extended-reach wells in offshore environments.
- (3) Hydraulic fracturing: In conventional reservoirs, petrophysicists focus on delivering interpretations to estimate storage properties. In unconventional reservoirs, understanding rock mechanical properties is at least as important as estimating storage properties because the reservoir stress state is the primary control for hydraulic fracture growth. Understanding the reservoir stress state significantly impacts well placement and well completion decisions.
- (4) Production: Geomechanics helps prevent undesired phenomena such as excessive sand production and reservoir compaction and subsidence. Some of these not only affect production rates but also negatively impact surface facilities and adjacent wellbores. Geomechanics also plays an important role in EOR planning. Water or polymer injection may fracture wells and results in early breakthrough times with poor sweep efficiency. On the other hand, shale EOR can benefit from fractures when fracture geometry is used to set advantageous injection-production layouts.
- (5) Waste disposal: Geomechanics has been of great help to reduce instances of induced seismicity due to the disposal of produced water. Such response is very site and rock specific, and recent advances have helped understand and control the link between pore-pressure increase and fault reactivation. Geomechanics is also helping transition towards a net-zero carbon energy scenario. Carbon geological storage is a key player to continue using fossil fuels while aiming for net-zero carbon dioxide emission. Similar to the injection of produced water, an excessive rise of pore pressure due to CO₂ injection can reactivate adjacent faults.
- (6) Renewable energy: New breakthroughs in geomechanics are enabling a new era for deep geothermal energy production. Advances in hydraulic fracturing, directional drilling, and reservoir geomechanics are making possible geothermal systems with much higher power output than conventional single or double vertical well systems.

Many of the geomechanics applications described in the previous paragraph leverage log inputs and log-based interpretations. FE specialists, especially when working with unconventional assets, must therefore have a good understanding of rock geomechanical properties and their implications on reservoir stresses and hydraulic fracturing to collaborate with geomechanics experts, completion engineers, and drilling engineers. Geomechanics is also valuable in offshore environments with abnormal pore pressures. In these cases, LWD logging is critical to prevent well kicks and identify safe wellbore trajectories.

Therefore, the last section of this article introduces fundamental geomechanical concepts particularly useful for petrophysicists.

Solids deform when subjected to stress σ . The deformation (or strain ϵ) resulting from applied stress is inversely proportional to the material stiffness or elastic modulus, i.e.,

$$\text{strain} = (1/\text{Modulus}) * \text{stress}$$

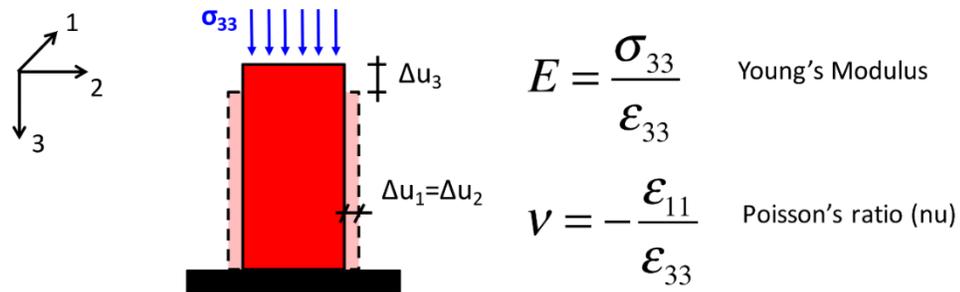


Fig. 1—Unconfined stress loading (compression) of a linear elastic isotropic solid.

Porous media are often filled with fluids at a given pressure. Hence, an appropriate correction for predicting solid strain is

$$\text{strain} = (1/\text{Modulus}) * (\text{effective stress}) = (1/\text{Modulus}) * (\text{total stress} - \text{pore pressure}).$$

When rocks are subjected to loading in one direction, as shown in Fig. 1, the elastic modulus is Young's modulus (E). 2D and 3D geomechanics applications require incorporating the perpendicular expansion effect resulting from the compression in the loading direction. This is quantified by the Poisson ratio, which is equal to the ratio between lateral strain and axial strain times -1 .

Young's modulus characterizes the stiffness of a rock but does not tell us how strong it is. The rock strength is the maximum stress it can resist before showing significant irrecoverable strains or failure. For example, in Fig. 2, the strength of the rock under unconfined conditions is the peak stress $\sim 3,800$ psi, known as "unconfined compression strength." Rock strength can vary depending on in-situ conditions. Stiffer rocks tend to be stronger, but there is no universal relationship for such a trend.

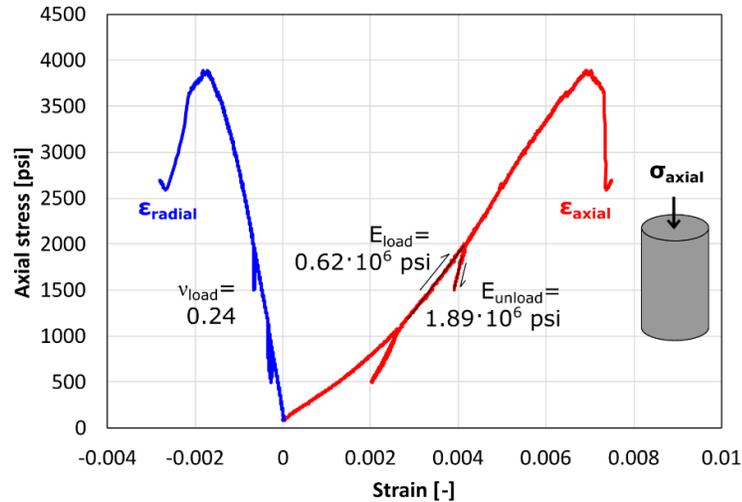


Fig. 2—Example of measurement of shale rock Young’s modulus, Poisson’s ratio, and strength under unconfined compression.

The equations above for stress and strain consider the rocks to be isotropic, yet many times this assumption does not hold for sedimentary rocks. Because of rock layering and particle orientation imposed in depositional environments, both stiffness and strength of sedimentary rocks are different in a direction parallel (horizontal) and perpendicular to bedding (vertical). A practical simplification for sedimentary rocks is the assumption of vertical transverse isotropy (VTI). Such extension requires quantifying two Young moduli (E vertical and E horizontal), two Poisson ratios (vertical and horizontal), and the vertical shear modulus. Usually, $E(\text{horizontal}) > E(\text{vertical})$ for intact rock, but the presence of vertical fractures can sometimes reverse this relationship.

Core measurements have paramount importance to accurately predict in-situ stresses and rock strength. Acoustic logs provide “small-strain” and high-frequency (fast-loading) elastic measurements. These are the so-called “dynamic mechanical properties.” However, in-situ stress and reservoir response over long times depend on mechanical properties that reflect large strain and slow processes. Such loadings can be approximated through large strain and slow loading in the laboratory under triaxial conditions. These are the so-called “static mechanical properties.” Correlations between dynamic and static properties are required to build and calibrate mechanical earth models and predict initial stresses and stress changes through time. Laboratory dynamic properties can also help establish these relationships, where $E_{static} = F_{ds} * E_{dynamic}$, with the empiric parameter F_{ds} ranging typically from ~ 0.4 to 0.8 . Figure 3 shows an example of laboratory results for the relationship between static and dynamic properties for an unconventional shale formation. The relationships are site-specific and can be improved by working with a petrophysicist to recognize and group lithofacies.

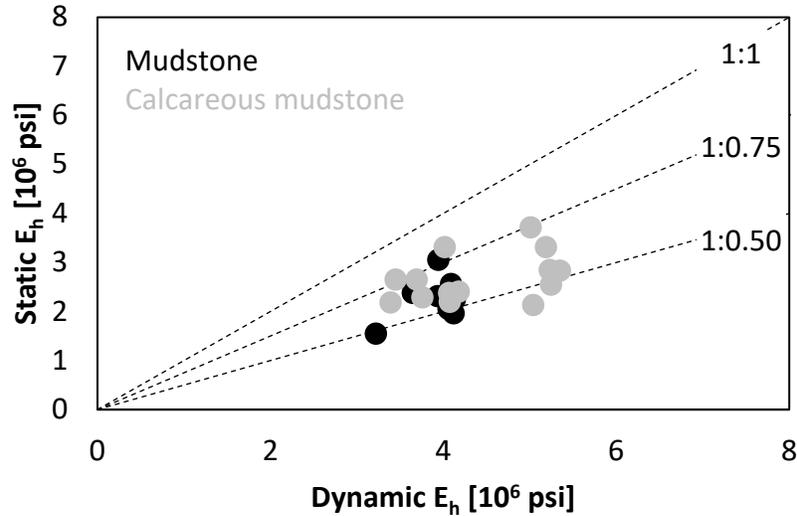


Fig. 3—Relationship between static and dynamic horizontal Young modulus for an unconventional formation. Static Young’s modulus is usually 40 to 80% of the dynamic Young’s modulus measured through acoustic traveltimes.

The workflow to build a geomechanical model from acoustic logs consists of the following steps (Fig. 4):

- (1) Use the density log and directional survey to determine total vertical stress. The effective vertical stress must be calculated using direct or indirect pore-pressure measurements.
- (2) Use the acoustic logs to determine the dynamic mechanical properties along the well (E and ν for the isotropic case; E_h and E_v , ν_h , and ν_v for the VTI case). These values can be converted to the static Young’s modulus and Poisson ratio using the static-dynamic correlations, i.e., parameter F_{ds} .
- (3) Finally, the calculated mechanical properties along the well can be used together with a lateral loading assumption and the theory of linear elasticity to predict stresses as a function of “tectonic strains.” The “tectonic strains” are calibration parameters that depend on the tectonic setting and can be adjusted based on field data such as DFIT tests and wellbore breakout angle measurements. The final stress calculation along the well is often called a “stress log.”

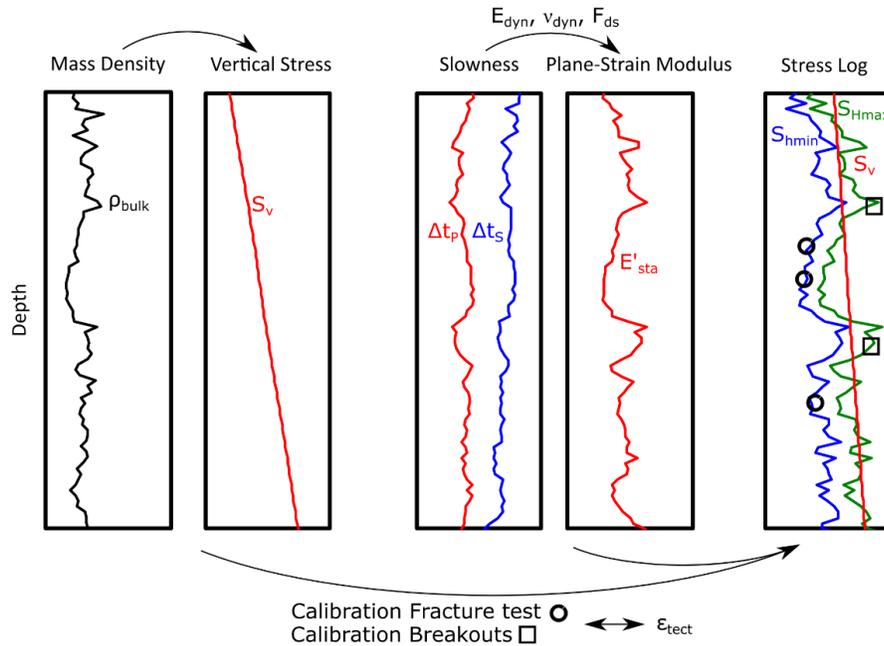


Fig. 4—Simplified workflow to calculate a stress log from wellbore logging data, field tests, and laboratory tests. The stress log permits identifying variation of horizontal stresses with depth and potential hydraulic fracture barriers.

Finally, we would like to end this article with a list of skills we believe petrophysicists should aim to acquire to become proficient in understanding and manipulating rock mechanical properties and geomechanics:

- Geomechanics core sample selection, planning, and interpretation of laboratory tests
- Interpretation of rock geomechanical properties from log measurements
- Estimation of pore pressure and understanding of disequilibrium compaction processes
- Fracture mapping from wellbore images and estimation of reservoir permeability in fractured formations from stress-based methods
- Fundamentals of stress profile prediction
- Fundamentals of wellbore stability to interpret fractures, breakouts, and washouts in borehole image logs and caliper measurements.

Nomenclature

E	= Young's modulus	ϵ	= strain
E_{dyn}	= dynamic Young's modulus	ϵ_{Tect}	= tectonic strain
E_{static}	= static Young's modulus	F_{ds}	= static to dynamic correlation parameter
E_h	= horizontal Young's modulus	σ	= stress
E_v	= vertical Young's modulus	Sh_{Min}	= minimum horizontal stress
ν	= Poisson's ratio	Sh_{Max}	= maximum horizontal stress
ν_{dyn}	= dynamic Poisson's ratio	S_v	= vertical stress
ν_{static}	= static Poisson's ratio	Δt_p	= compressional slowness
ν_h	= horizontal Poisson's ratio	Δt_s	= shear slowness
ν_v	= vertical Poisson's ratio	ρ_b	= bulk density
F_{ds}	= static to dynamic correlation parameter		

Crowd-Sourced Article: How Do You Explain What You Do for a Living as a Petrophysicist?

Compiled by Sid Misra

Your parents, your spouse, your partner, your kids, and/or your friends must have asked you about your workday and about what you do when you go to your office or the field, travel, or work from home these days. How challenging or funny was it when you explained your profession to people who don't know much about the oil and gas industry?

Please share your stories on this google form available at <https://tinyurl.com/4j2n3oo6>.

It should not take you more than five minutes. Don't forget to click "submit" once you have completed the form.

We asked a few past SPWLA Board of Directors to share some interesting and funny incidents related to when they had to explain what they do as a petrophysicist, well-log analyst, field engineer, or formation evaluation specialist. Here are some of their experiences:

David Kennedy, QED-Petrophysics: Formation Evaluation Education and Training

I tell them imagine you are flying in an airliner; you have a window seat. The plane is at 20,000 ft. You look out the window. Below you on the ground is a dinner plate, 8 in. in diameter, only you can't see it because of clouds between you and the ground. Imagine the dinner plate is in an opaque tube. From instruments on the plate and in the tube, including radioactive sources, sound waves, and electromagnetic waves, you have to guess from their responses what is outside the tube. That is what we do, Mom!

Jesus M. Salazar, Marathon Oil

I always tell my friends or family unfamiliar with the topic that what I do is like being a heart doctor without performing surgery. We get to see wiggles from an EKG (the logs) and make an interpretation. The cardiologist says if the heart is healthy or has an arrhythmia, and the petrophysicist says if the well has water, oil, or gas. It's not challenging at all. There's plenty of daily life examples that I use to make analogies, which I enjoy. For instance, capillarity can be easily explained with a straw and juice or density differences with water and oil.

Kelly Skuce, SPWLA Regional Director 2019–2021, Consultant Petrophysicist and "Squiggle-looker"

The "Squiggle-looker." One day, years ago, working from home (when this was rare!), I had my laptop open on the table, and one of my boys looked at the screen and asked, "Dad, what are all these squiggles?" I, of course, was excited to educate my young son on what I do. After trying to talk about rocks, drilling, logging tools, and physics of measurement, etc., he interrupted me and said, "So you look at squiggles. You're a squiggle-looker." And it stuck. Both my boys are now adults, and they still use this term.

Zach Liu

Whatever answer I give to my kids, they always follow up, asking, “And you are good at that?” It is hilarious.

Adam Haecker, Continental Resources

My two-year-old says, “Daddy goes to the office and draws lines.” Generally, when I go to a party, and inevitably someone asks, “What do you do?” I say I am a petrophysicist, and that is a fancy title for someone who finds oil. Then, they either are too intimidated to ask a follow-up question, or they say, “Wow, that seems like an interesting job.”

One day, my three-year-old son asked my wife what I do at work. Before I could interject, she responded I draw lines with my mouse all day and yell at people on the phone about how important my made-up lines are. Surprisingly accurate.

James Hemingway, 37 years with Schlumberger, Senior Scientific Advisor, current President of SPWLA

Usually, people look confused after the first sentence or two. Generally, I explain that after drilling a well, all you have is a hole in the ground. The job of the petrophysicist is to determine if it’s an oil well, gas well, water well, or dry hole. Beyond that, I could write a book about things that would probably only be interesting to a petrophysicist or geologist.

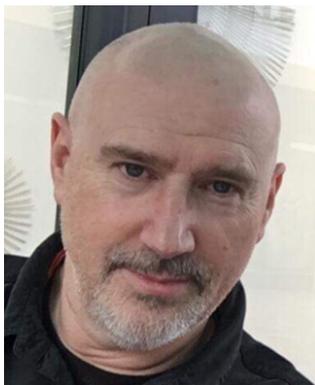
Anonymous

Do you remember Bruce Willis at the start of *Armageddon*? No further explanation required

Anonymous

My parents thought I was a physicist working in labs. I had to explain to them on multiple occasions that I am a petrophysicist, which means I study the interaction of oil and water with the rocks below the ground, like astrophysicists study the stars and planets up in the sky. My parents asked, “So, how do you study things in the subsurface? Do you drill a big well and go down to study like miners?” I then explained to them how we send sensors through small holes drilled in the ground, like doctors doing endoscopy. I don’t need a lab or an office. All I need is at least four squiggly lines, a log interpretation book, and a laptop. Hearing all this, my wife mentioned, “You all should learn something from companies that drill water wells. They don’t need a hydrophysicist to get the water to the ground.”

It is not easy to explain the complexity and challenges of our job.



Tegwyn Perkins
VP Technology
2020–2021

I just wanted to give a Big Thank You to the ladies and gentlemen of the Technology Committee for all the time and effort they have invested in SPWLA, not just this year but over the years. It is not a full-time job, but at certain times of the year, namely November for abstract ranking and May/June for paper ranking, it probably feels like it is.

I'd also like to thank Stephanie Turner for keeping me on point.

If you are interested in becoming a Technology Committee member, please register on spwla.org by visiting the Volunteer Opportunities page. Selection for the Technology Committee is solely at the discretion of the VP Technology for that year and is based on several factors, including experience and relevant subject matter expertise. You must be a member of SPWLA to join the Technology Committee.

Finally, I'd like to say a few words about how the abstracts submitted to the symposium are ranked. Every VP Technology can use their own method. However, for the past few years, we have all used the same one. I feel that this technique ensures that the ranking method is completely anonymous and unbiased. Only Stephanie and I are aware of the author names and affiliations until after the ranking is complete, so there is no room for bias towards an organization or person.

This year's Technology Committee consisted of 38 petrophysics and formation evaluation professionals with an average of 22 years of experience. Each committee member received 100 abstracts with only the title, the abstract number, and the abstract content visible. I also ensured that no reviewer received any abstracts written by anyone from their own company. The abstracts were ranked from 100 (best in their opinion) down to 1 (worst in their opinion). Every abstract received at least 14 reviews. We then combined these results to give a straight mean and a weighted mean by throwing out the highest and lowest marks received and comparing the two. At the Technology Committee review meeting, this year's acceptance criterium was determined to be a weighted mean over 50.

Just like every year, all abstracts accepted for the symposium are listed on the website from the start of February. This [link](#) points to SPWLA 2021's successful abstracts.

This table shows the percentage of abstracts accepted vs. submitted broken down by Topic.

Topic	Accepted	Submitted	% Accepted
Formation Evaluation of Conventional Reservoirs	28	56	50.91
Formation Evaluation of Unconventional Reservoirs	23	49	52.27
New Borehole Logging Technology	23	39	60.53
Advances in Machine Learning	21	43	50.00
Case Studies	14	25	56.00
Completion Petrophysics and Reservoir Surveillance	6	11	54.55
Deepwater Reservoir Analysis	5	8	62.50
Petrophysics in Brownfields	5	10	50.00
Formation Evaluation Behind Casing	4	10	40.00
Totals	129	251	

SPWLA 62nd Annual Logging Symposium

Boston ONLINE, May 17–20, 2021

Technical Program Abstracts

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 Online. Photography and video/audio recording of any kind is strictly prohibited in all platforms, including technical sessions, workshops, and exhibition hall.

ADVANCES IN MACHINE LEARNING

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

A Novel Data-Driven Petrophysical UR Characterization Workflow Adds Efficiency and Consistency to Vaca Muerta Formation Evaluation

Edwin Ortega, ConocoPhillips

An AI-Based Approach to Enhanced Fracture Resolution in Image Logs

James Howard, Joe Tracey and Shawn Zhang, DigiM

Automated Selection of Inputs for Log Prediction Models Using Experienced Eye

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

Automated Workflow to Indicate Reservoir Connectivity Through Asphaltene Equilibrium

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

Automatic Logging-While-Drilling Dipole Sonic Shear Processing Enabled by Physics-Driven Machine Learning

Lin Liang, Ting Lei and Matthew Blyth, Schlumberger

Auto-Navigation on Pressure and Sampling Location in Wireline and LWD: Big Data Challenges and Solutions

Mehdi Alipour Kallehbasti, Bin Dai, Jimmy Price, Christopher Michael Jones, Darren Gascooke, Anthony VanZuilekom, Hoda Tahani and Fahad Ahmed, Halliburton

Core Face Recognition: The Powerful Use of Core Fluorescence Photos and Machine Learning to Unlock the Presence of Pay in Challenging Low-Contrast, Low-Resistivity Sands

Angelica Castro and Valentina Tejada, Universidad de America

Data Quality Considerations for Petrophysical Machine-Learning Models

Andrew McDonald, Lloyd's Register

Deep-Learning-Based Automated Sedimentary Geometry Characterization From Borehole Images

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

Doppler vs. Spinner PLT Sensing for Hydrocarbon Velocity Estimate by Deep-Learning Approach

Klemens Katterbauer and Alberto Marsala, Saudi Aramco; Virginie Schoepf and Eric Donzier, Openfield Technology

Efficient Petrophysical Uncertainty Propagation via Data-Driven Analytics

Carlo Cristiano Stabile and Marco Pirrone, ENI S.p.A.

Enhanced Mineral Quantification and Uncertainty Analysis From Downhole Spectroscopy Logs Using Variational Autoencoders

Paul Craddock, David Rose, Tong Zhou, Harish Datir, Laurent Mosse and Lalitha Venkataramanan, Schlumberger

Facies Classification of a Complex Reservoir Using Machine Learning: A Case Study From Volcanic Formation, the Yurihara Oil Field, Japan

Yuki Maehara, Schlumberger; Takeaki Ohtani and Tetsuya Yamamoto, Japan Petroleum Exploration Co., Ltd.

Machine Learning for Productivity Prediction in Heterogeneous Carbonate Gas Reservoirs, Central Sichuan Basin, China

Zuoan Zhao, PetroChina SWOGC; and Dali Wang, Schlumberger

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

Petrophysics to Borehole Acoustic Transforms Using Machine Learning for Unconventional Reservoirs

Romain Prioul, Aakash Bhatia, Edgar Ignacio Velez Arteaga, Robert Laronga, Hiren Maniar, Aria Abubakar and Bhuvaneshwari Sankaranarayanan, Schlumberger

Prediction and Analysis of Geomechanical Properties of Jimusaer Shale Using a Machine-Learning Approach

Liu Zhonghua*, Li Chaoliu and Ning Congqian, Petro China Co. Limited; Qiong Zhang*, Yanru Zhang, Yan Wang, Yating Hu, Yan Zhuang and Wei Tang, University of Electronic Science and Technology of China (*Liu Zhonghua and Qiong Zhang are co-first authors)

Real-Time 2.5D Inversion of LWD Resistivity Measurements Using Deep Learning for Geosteering Applications in Fractured Media

Kyubo Noh, The University of Texas at Austin; David Pardo, University of the Basque Country, BCAM, and Ikerbasque; and Carlos Torres-Verdín, The University of Texas at Austin

The Application of Pattern Recognition and Machine Learning to Determine Cement Channeling and Bond Quality From Azimuthal Cement Bond Logs

Andrew Imrie, Halliburton

Theoretical Method and Experimental Research on High-Precision Four-Detector Density Logging

Shanqing Cai, Juntao Liu, Zhuodai Li, Wei Liao, Chang Zong, Xiangping Qian and Zhiyi Liu, Lanzhou University

CASE STUDIES

3D Petrophysics for Hawe: Case Studies

Alexander Kolomytsev, GazpromNeft; and Yulia Pronyaeva, Schlumberger

A Skill Set Guideline Document for Future Petrophysicist

Zach Liu, Kinder Morgan; and Mark Ma, Saudi Aramco

Acquisition, Analysis, and Integration of Wellbore Logs to Characterize a Fractured Geothermal Reservoir: The Case of Rittershoffen, France

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

An Integrated Petrophysical Characterization of Siliciclastic Tight Gas Reservoirs in Neuquén Basin

Nicolas Carrizo Paez and Emiliano Santiago, YPF; Pablo Saldungaray, Schlumberger

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 Russo, Geolog International

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, Mohammad Iffwad, Ivan Zhia Ming Wu and Sarvagya Parashar, Halliburton; Amirul Afiq B Yaakob, William Amelio Tolioe, Adib Akmal Che Sidid, Nadhirah Bt. Ahmad, M. Hilman B Roslan, So Seng Hui, Shahul Hameed B Sheikh and Azlan Shah B Johari, Petronas Carigali

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

Multiscale LWD Data Integration Unveiled Complex Geological Scenario While Geosteering

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

Rapid Crossplot Discrimination of Commercial Potash Mineralization—Case Histories

Donald G. Hill, Consulting Petrophysicist; Emeritus Adjunct Professor of Petrophysics, The University of Southern California, and E.R. Crain, Consultant and Mentor

Stress Measurement Campaigns in Scientific Deep Boreholes

Jean Desroches, GPCI; Emilie Peyret, Adriaan Gisolf, Ailsa Wilcox, Mauro Di Giovanni and Aernout Schram de Jong, Schlumberger; Siavash Sepehri, Independent; Rodney Garrard and Benoit Garitte, NAGRA

Successful Sand Production Management Through Advanced Analysis of Well Integrity Logs in Casabe Field, Colombia

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

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

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

X-ray Diffraction, X-ray Fluorescence, and Neutron-Induced Spectroscopy-Based Correction to an Ivar Aasen Geomodel: An Oil Field From the Norwegian North Sea

Egil Romsås Fjeldberg, Yngve Bolstad Johansen, Geir Frode Kvilaas, Lodve Hugo Olsborg and Tor-Ole Jøssund, Aker BP; Harish Datir, Schlumberger

COMPLETION PETROPHYSICS AND RESERVOIR SURVEILLANCE

An Advanced Petrophysical-Oriented Numerical Method for Reliable Assessment of Mechanical Properties in Anisotropic and Heterogeneous Carbonates at the Pore-Scale Domain

Mehdi Teymouri and Zoya Heidari, The University of Texas at Austin

Case Studies on Multistring Isolation Evaluation in P&A Operations

Jun Zhang, Probe; Dan T. Mueller, ConocoPhillips; David Bryce, Probe; Tom A. Brockway, ConocoPhillips; and Fady Iskander, Probe

Field-Wide Dynamic Pressure Surveillance While Drilling via Study of Interference Pattern From Offset Wells

Yon Blanco, Schlumberger; Ben Fletcher and Robert Webber, CNOOC; Velerian Sanjao Lopes and Alistair Maguire, Schlumberger

Latest Pulsed-Neutron Technology Evaluation: Advantages and Lessons Learned

Yahia Eltaher, Shouxiang (Mark) Ma and Mohammed Muslem, Saudi Aramco; Marie Van Steene, Schlumberger

Lessons Learned From Cross-Validation of Fiber Optics and Microsensor Production Logging Measurements in Unconventional Wells

Yegor Se, Chevron; Michael Sullivan, Chevron retired; Michael Lazorek and Vahid Tohidi, Chevron

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 Ltd.

DEEPWATER RESERVOIR ANALYSIS

A Practical Guide to Effective Deepwater Fluid Sampling While Drilling

Steve Smith, Baker Hughes; Matt Wandstrat and Jerry Simms, LLOG; Femi Adegbola and Vincent Liaw, Baker Hughes

Deep Transient Testing Digital Products Create Novel Real-Time Reservoir Insight

Lorenzo Villalobos, Teresa Polo Naranjo, Karl Perez, Alejandro Martin Vicente, Jansen Oliveira and Ricard Fernandez Torrent, REPSOL; Francois Xavier Dubost, Luis Manuel Lavin, Adriaan Gisolf, Richard R. Jackson, Simon Edmundson, Hadrien Dumont, Hugo Hernandez Espinosa and Javier Espinosa, Schlumberger

Digital Fluid Sampling in Deepwater 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 Slotnick, Wilson Pineda and Sol Moreno, BP America; Oliver C. Mullins, Scotty Paul, Jesus Cañas and Alok Kulkarni, Schlumberger

Enhancing the Understanding of Asphaltene Precipitation: A Novel Approach Under In-Situ Conditions

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

Taming the Thunder Horse With Axes and Vectors

Bernd Ruehlicke, Andras Uhrin and Zbynek Veselovsky, Eriksfiord

FORMATION EVALUATION BEHIND CASING

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

A Novel Through-Casing Correction Algorithm for a Four-Detector Gamma Density Tool

Jin Ya* and Shang Jie, China Oilfield Services Limited; Chen ZengHai, CNOOC China Limited Pengbo Operating Company; Qiong Zhang*, Yulian Li, Yating Hu, Qinzhong Zhang, Lvlin Lin and Wei Tang, University of Electronic Science and Technology of China (Jin Ya* and Qiong Zhang* are co-first authors)

Determining Density of Multiple Layers Using Gamma Spectroscopy

Mayir Mamtimin and Jeffrey Crawford, Halliburton

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 Tom Neville, Asia-Pacific Formation Evaluation Services

FORMATION EVALUATION OF CONVENTIONAL RESERVOIRS

A Geochemistry-Oriented Method for Wettability Assessment at Reservoir Condition Using Molecular Dynamics Simulation

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

A Multiscale Data Integration Approach for Simultaneously Identifying Rock Types and Estimating Permeability

Ali Garrouch, Kuwait University; and Sherif Aly, Weatherford

A New Look at the Dual Depth of Investigation Phenomenon of LWD Propagation Resistivity Logging

Gong Li Wang, Dean Homan and David Allen, Schlumberger

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

Addressing Reservoir Heterogeneity by Integration of Geochemistry and Petrophysical Logs in Carbonate Prospects

Kemal Hekimoglu, Alessandro Pozzi and Antonio Bonetti, Geolog International

Analytical Uncertainty Propagation in Facies Classification With Uncertain Log Data

Fabio Ciabbarri, Marco Pirrone and Cristiano Tarchiani, Eni SpA

Anisotropy Quantification Using High-Resolution Whole-Core 3D CT-Scan Images

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

Application of LWD Acoustic Dispersive Data Processing for High-Quality Shear Slowness Logs in Slow Formations

Ruijia Wang, Jiajun Zhao and Taher Kortam, Halliburton

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, Dario Reolon, Nicola Raimondi Cominesi and Marco Pirrone, ENI SpA

Compressive Sensing-Based Optical Spectrometer for Downhole Fluid Analysis

Bin Dai, Christopher Jones, Jimmy Price, Darren Gascooke and Tony van Zuilekom, Halliburton

Deciphering Low-Resistivity Pay to De-Risk a Commercial Prospect: A Case Study From the Norwegian Sea

Mohammad Ibrahim Khan, Equinor Norway ASA; Harish Datir, Schlumberger Norway AS and Bjarne Rafaelsen, Equinor Norway ASA

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

Enhancing the Reservoir Performance by Accessing the Hydrocarbon Sweet Spots Guided by Far-Field Sonic Imaging: An Integrated Case Study From the Norwegian North Sea

Harish B. Datir, Schlumberger; Knut Arne Birkedal and Nils Andre Aarseth, Aker BP ASA

Exploiting Well Test Logging to Endeavor Mapping the Cretaceous Carbonates Permeability, Offshore Abu Dhabi

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

Formation Pressure Estimation in Ultralow Permeability Reservoirs Employing Formation Rate Analysis (FRA) and Artificial Intelligence-Controlled Tools

Yamal Askoul and Gavin J Sibbald, Baker Hughes; Art Hooker and John Banks, TOTAL

From Plug Measurements to Dynamic Simulations: Upscaling Effects on Modeled Hydrocarbon Volumes

IN Hulea, Shell Projects and Technology

Gamma Ray Index–Shale Volume Transforms

David Kennedy, QED Petrophysics LLC

Interpretation of Multifrequency 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

Learnings from Spectral GR Measurements From LWD and Cuttings in High- and Low-Angle Wells

Mohamed Azizi Ibrahim and Faisal N Enezi, Saudi Aramco; Marie Van Steene and Alan Fernandes, Schlumberger

Model-Based Correction for Dip and Shoulder Bed Effects on LWD Propagation Dielectric Constant Logs

Gong Li Wang, Dean Homan, Ping Zhang and Wael Abdallah, Schlumberger; Shouxiang Mark Ma, Saudi Aramco

NMR Drill Cutting Analysis: Challenges and Potential Applications for Formation Evaluation

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

Reliable Quantification of Pore Geometry in Carbonate Rocks Using NMR and Electrical Resistivity Measurements for Enhanced Assessment of Directional Permeability and Capillary Pressure

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

Rock Typing and Novel Approach for Fluid-Saturation Distribution in Tilted Water/Oil Contact Reservoirs

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

Saturation Exponent as a Function of Reservoir Heterogeneity and Wettability in the Tambaredjo Oil Field, Suriname

Elias Acosta, Dunia Technology Solutions; Bhagwanpersad Nandlal, Staatsolie; and Ryan Harripersad, Former Staatsolie Petrophysics trainee

The Impact of Fractures on Producibility and Completions in the Wafra Maastrichtian Reservoir

Sunday Adole, Ting Li, Bambang Gumilar, Peter Wilkinson, Joshua Azobu, Andrew Ranson and Yegor Se, Chevron

Uncertainty Quantification by Monte Carlo Simulation of Lab-Derived Saturation Data from Sponge Cores

Mohammed Alghazal and Dimitrios Krinis, Saudi Aramco

Unraveling the Production Mysteries of the Wafra Maastrichtian Carbonates Through Advanced Borehole Measurements and Analysis

Ting Li, Sunday Adole, Peter Wilkinson, Bambang Gumilar, Andrew Ranson and Joshua O. Azobu, Chevron

Using High-Fidelity Continuous Core Data for a Fast and Objective Estimation of Net Reservoir

Izral Izarruddin Marzuki and Thanapala Singam Murugesu Petronas; Luc Perneder, Tanguy Lhomme and Christophe Germary, Epslog

FORMATION EVALUATION OF UNCONVENTIONAL RESERVOIRS

A Coupled Petrophysical and Geomechanical Workflow to Interpret Dipole Sonic Velocities for In-Situ Stress

Tom Bratton, Tom Bratton LLC

A Study of Graphite-Water Mixtures and Their Direct Current Conductivity as a Function of Frequency and Petrophysical Properties

John Rasmus, Consultant; Dean Homan and Gong Li Wang, Schlumberger

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 Perry and Pat Lasswell, Geomark Research Ltd

Advanced Integration of Petrophysics, Rock Mechanics, and Rock Classification for Reliable Assessments of Fracture Propagation in the Permian Basin

Mehdi Teymouri and Zoya Heidari, The University of Texas at Austin

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

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

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.

Determining Organic Kerogen Maturity, Wettability, and Producibility from Induction Dielectric, Resistivity, and Spectroscopy Measurements

John Rasmus, Consultant, Dean Homan and Gong Li Wang, Schlumberger

Enhanced Assessment of Fluid Saturation in the Wolfcamp Formation of the Permian Basin

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

Evaluation of Relative Permeability of a Tight Oil Formation in Daqing Oil Field

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

Impacts and Lessons Learned From an Applied Case Study in the Williston, Uinta, and DJ Basins Utilizing Open vs. Closed Retort Quantification

Stephanie E. Perry, J. Alex Zumberge and Kai Cheng, GeoMark Research

Improving Reservoir Testing and Sampling in H₂S-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

Integrating a Novel Chlorine Measurement with Resistivity, Dielectric Dispersion, and 2D NMR to Resolve Salinity Ambiguity: Case Studies in Organic Shale Formations

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

Inversion-Based Measurement Interpretation of a New Ultraslim Photorealistic Borehole Imager for OBM

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

Measuring Kerogen, Solid Organics, and Oil Production Potentials of Unconventional Source Rocks Using Solid-Type 20-MHz NMR Techniques

Harry Xie, Thomas Gentzis and Humberto Carvajal-Ortiz, Core Lab

Movable 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 Yang, Scott J. Seltzer, Boqin Sun and Marcus O. Wigand, Chevron

NMR Wettability Index Measurements and Methods Compared on a Variety of Unconventional Samples

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

Quantifying the Impact of Interfacial Interactions of Kerogen, Water, and Hydrocarbon at Different Thermal Maturity Levels on Fluid Mobility in Kerogen Pores

Archana Jagadisan and Zoya Heidari, The University of Texas at Austin

Real-Time Ensemble-Based Well-Log Interpretation for Geosteering

Nazanin Jahani, NORCE Norwegian Research Centre As; Joaquín Ambía Garrido, The University of Texas at Austin; Kristian Fossum, Sergey Alyaev and Erich Suter, NORCE Norwegian Research Centre

Reservoir-Scale Chemostratigraphy and Facies Modeling Using High Sample Rate Geophysical Scans of Whole Core

John Degenhardt, W. D. Von Gonten Laboratories; Safdar Ali, W. D. Von Gonten & Co.; Mansoor Ali and Brian Chin, W. D. Von Gonten Laboratories; W. D. Von Gonten, W. D. Von Gonten & Co.; and Eric Peavey, Texas A&M University

Revising the Interpretation of Complex Carbonate Reservoirs With the Use of Novel Advanced Logs Integration Techniques

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

R_w/R_t Anisotropy in Unconventional Formations: Resolving The Riddle of Resistivity

Andrew Barry and Adam Haecker, Continental Resources

Ultrasonic Angle 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

NEW BOREHOLE LOGGING TECHNOLOGY

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

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

An Enhanced Method for Crack Evaluation Using Neutron Gamma Tracer Imaging Logging Technology in a 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 Juntong Fan, China University of Petroleum (East China)

Assessment of New High-Definition Borehole Imaging-While-Drilling Technology: Learnings From Presalt Carbonates of Brazil

Nicolas Orban, Shashank Garg, Mikhail Shaldaev, Cormac Parsons and Julien Couchard, TOTAL; Chandramani Shrivastava, Guillermo Cuadros, Victor Martinez, Vera Wibowo and Adrian A, Schlumberger

Can a New Double Particle Detector-CLYC (Cs₂LiYCl₆: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)

Characterizing Cement Bond Quality Using Slip-Interface Theory and Coupling Stiffness

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

Application of Electromagnetic Technology for Corrosion Monitoring in Wells With Dual Completions

Junwen Dai and Ahmed Fouda, Halliburton Energy Services, Inc.

Deciphering the Capabilities of Look-Ahead Methods in LWD

Jun Zhu, Yong Die and Yuanshi Tian, China Petroleum Logging Co.; and John Zhou, Maxwell Dynamics Inc

Detection of Offset Wells Ahead of and Around an LWD Ultradeep Electromagnetic Tool

Nigel Clegg, Alban Duriez, Vladimir Kiselev and Supriya Sinha, Halliburton; Fredrik Grastveit Jakobsen and Erik Jakobsen, Aker BP; David Marchant and Christoph Schwarzbach, Computational Geosciences Inc.

Enhancing Wellbore Leak Localization With Continuous Logging Data From a Sonic Sensor Array

Yao Ge, Ruijia Wang, Xiang Wu and Freeman Hill, Halliburton

Evaluation of LWD High-Resolution Ultrasonic Imaging Technology and Applications in Slimhole Size

Mohamed Hashem, Saudi Aramco; Mohamed Fouda, Ahmed Taher and Rehab Alkhalifah, Halliburton

Field Testing an Ultrathin High-Definition Electrical Borehole Imager for Oil-Based Mud

Richard Bloemenkamp, Elia Haddad, Peter Schlicht, Nadege Bize-Forest, and Laetitia Comparon, Schlumberger

Introducing Sonic Imaging on Through-The-Bit Platform

Adam Donald, Schlumberger; Olusegun Akinyose, Saudi Aramco; Rajeev Kumar, Firas Al Shaikh, Nicholas Bennett, Nobuyasu Hirabayashi, Sherif Ghadiry, Toshihiro Kinoshita and Edgar Velez, Schlumberger

NanoTags for Improved Cutting Depth Determination

Martin Poitzsch, S. Sherry Zhu and Marta Antoniv, Aramco Americas: Aramco Research Center-Boston; Nouf M. Jabri and Alberto F. Marsala, EXPEC ARC, Saudi Aramco

Pioneering Application of Emerging Technologies to the Challenge of Sampling Near-Saturated Fluids in Tight Reservoirs

German Garcia, Schlumberger; Brett Wendt and Adam Lewis, ConocoPhillips; and Hadrien Dumont, Schlumberger

Real-Time 3D Imaging of Complex Turbiditic Reservoir Architecture

Supriya Sinha, Karol Riofrio Rodriguez, Arthur Walmsley and Nigel Clegg, Halliburton; Stig Sviland-Østre, Constantijn Dejongh and Nicolas Gueze, Aker BP

Robust Sonic-Log Tracking Using a Multiresolution Approach

Ting Lei, Michiko Hamada, Adam Donald and Takeshi Endo, Schlumberger

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

Toward Three-Dimensional Reservoir Mapping—A New Approach for Mapping Reservoirs with Advanced Ultradeep Azimuthal Resistivity Measurements

Haifeng Wang, Michael Thiel, Diogo Salim, Soazig Leveque, Jean-Michel Denichou and Vera Krissetiawati Wibowo, Schlumberger; Chris Woods and Darren Baker, Woodside Energy Ltd.

Using Proxy Simulator for Reservoir Zone Selection and Reducing the Formation Tester Cleanup Operational Time

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

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, Igor Kuvaev and Igor Uvarov, ROGII Inc.

Wellbore Images Digital Fusion: Behind Single Sensors Physical Constrains

Simone Di Santo, Nadege Bize-Forest, Carlos Maeso and Isabelle Lenir, Schlumberger

Wellsite Full-Waveform Sonic Interpretation

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

PETROPHYSICS IN BROWNFIELDS

Deriving Synthetic Bulk Density Using Fast Neutron Cross Section in a Log-Integrated Approach From Slim Pulsed Neutron in a Casedhole Environment

Khaled Saleh, Chiara Cavalleri and Aly Morad, Schlumberger

Determination of Residual Oil Saturation in a Waterflooded and Gasflooded Giant Oil Reservoir Using Core, Conventional, and Pulsed-Neutron Logs

Mike Davenport, BP; Kasim Sadikoglu, Former BP; Adrian Zett and Pavel Gramin, BP

Intrinsic Carbon-Oxygen Logging for Enhanced Consistency of Reservoir Saturation Monitoring

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

Side Fault Mapping Enabled by 2D Transverse Inversion on New Ultradeep Azimuthal Resistivity Measurements

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

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, Hassan Zakaria and Olivier P. Pippi, ADNOC Offshore; Adam Donald, Amro Abdel-Halim and Israa A. Salim, Schlumberger

SPWLA Board of Director Minutes

SPWLA FIFTH BOARD OF DIRECTORS MEETING

REMOTE (DUE TO COVID IN PERSON CANCELLATION)

DECEMBER 15, 2020

President James “Jim” Hemingway called the meeting to order at 8:04 am. In attendance, President-Elect, Katerina Yared, Vice President Finance, Secretary, and Admin, Doug Patterson, Vice President Technology, Tegwyn Perkins, Vice President Education, Fransiska Goenawan, Vice President Information Technology, Lin Liang, Vice President Publications, Mayank Malik, Regional Director N. America 1, Robin Slocombe, Regional Director Asia/Australia, Jennifer Market, Regional Director Middle East/Africa, Nelson Suarez, Regional Director N. America 2, Kelly Skuce, Regional Director Latin America, Bruno Menchio Faria, Regional Director Europe, Craig Lindsay, and Executive Director, Sharon Johnson.

Visitor: 2021 Annual Symposium Chairman, Paul Craddock, gave an update to the Board on the PheedLoop virtual platform that will host the online program in May.

A motion made by Jennifer Market to offer \$6 annual dues to Students who reside in countries within the UN metrics pay scale was seconded by Tegwyn Perkins. All approved, and the motion passed.

Meeting adjourned 11:46 am.

Respectively Submitted by
Sharon Johnson
Executive Director

Next BOD meeting: February 16, 2021, SPWLA Business Office Houston

SPWLA SIXTH BOARD OF DIRECTORS MEETING

REMOTE (DUE TO COVID IN PERSON CANCELLATION)

FEBRUARY 16, 2021

President James “Jim” Hemingway called the meeting to order at 8:00 am. In attendance, President-Elect, Katerina Yared, Vice President Finance, Secretary, and Admin, Doug Patterson, Vice President Technology, Tegwyn Perkins, Vice President Education, Fransiska Goenawan, Vice President Information Technology, Lin Liang, Regional Director N. America 1, Robin Slocombe, Regional Director Asia/Australia, Jennifer Market, Regional Director Middle East/Africa, Nelson Suarez, Regional Director N. America 2, Kelly Skuce, Regional Director Latin America, Bruno Menchio Faria, and Executive Director, Sharon Johnson. Absent: Vice President Publications, Mayank Malik, and Regional Director Europe, Craig Lindsay.

Visitors in the meeting, Chapter Presidents to give a 2022 Annual Symposium Host Bid Presentation

1) South East China Chapter, Dr. Hua Wang

2) NFES (Stavanger Chapter), Mathias Horstmann

Action items: Before a selection of location from the BOD, both chapters will provide additional information to support their presentations.

Meeting adjourned 1:20 pm.

Respectively Submitted by
Sharon Johnson
Executive Director

Next BOD meeting: April 20, 2021, SPWLA Business Office Houston

2020 Bylaw and Article Proposed Change, Membership Vote Results

(Jan 2021)

Bylaws ARTICLE I

Officers and Duties, Section 1

CURRENT: The officers of Society of Petrophysicists and Well Log Analysts, Inc. (the “Corporation” or “SPWLA”) shall be: President, President-Elect, Vice President Technology, Vice President Information Technology, Vice President Publications, Vice President Education, and Vice President Finance, Secretary, and Administration.

PROPOSED: The officers of Society of Petrophysicists and Well Log Analysts, Inc. (the “Corporation” or “SPWLA”) shall be: President, President-Elect, Vice President Technology, Vice President Information Technology, Vice President Publications, Vice President Education, Vice President Finance, Secretary, and Administration, and Vice President Social Media.

YES=94% NO=4% SKIP=2%

Officers and Duties, Section 12

NEW: The Vice President Social Media shall coordinate all interactions with Social Media for the Corporation. The Vice President Social Media shall be knowledgeable and active on social media channels. Promote SPWLA Parent events, push feed news on SPWLA multiple social media channels from but limited to email from the SPWLA business office. Accept new followers on the various social media platforms. Keep track of communications from followers on the various social media platforms. Distribute news from all chapters by reposting and commenting on chapters’ social media channels.

YES=95% NO= 3% SKIP=2%

Bylaws ARTICLE II

Board of Directors, Section 1

CURRENT: The Board of Directors shall be comprised of the seven officers and six regional directors.

PROPOSED: The Board of Directors shall be comprised of the eight officers and six regional directors.

YES=94% NO=4% SKIP=25

Bylaws ARTICLE VIII

Standing Committees, Section 7

CURRENT: Social Media Committee: The Vice President Education shall chair the Social Media Committee. The Social Media Committee shall be composed of the chair and at least four other members, two of whom must be presidents of chapters, including student chapters. The Social Media Committee shall have the following responsibilities:

- Distribute updates from the SPWLA that usually get distributed via email from the SPWLA office, in multiple social media channels.
- Distribute news from all chapters by reposting and commenting on chapters’ social media channels.
- Accept new followers on the various social media platforms.
- Keep track of communications from followers on the various social media platforms.

- Promote SPWLA events and feed news during SPWLA Events like the Annual Symposium.

PROPOSED: Social Media Committee: The Vice President Social Media shall chair the Social Media Committee. The Social Media Committee shall be composed of the chair and at least four other members, two of whom must be presidents of chapters, including student chapters. The Social Media Committee shall have the following responsibilities:

- Distribute updates from the SPWLA that usually get distributed via email from the SPWLA office, in multiple social media channels.
- Distribute news from all chapters by reposting and commenting on chapters' social media channels.
- Accept new followers on the various social media platforms.
- Keep track of communications from followers on the various social media platforms.
- Promote SPWLA events and feed news during SPWLA Events like the Annual Symposium.

YES=95% NO=3% SKIP= 2%

Articles of Incorporation

ARTICLE VI by Paragraph

CURRENT: The Board of Directors shall consist of the officers defined as President, President-Elect, Vice President Technology, Vice President Publications, Vice President Information Technology, Vice President Education, and Vice President Finance, Secretary, and Administration, and six Regional Directors. Not more than two representatives of any one company may serve on the Board of Directors during a given term. Directors shall not be officers of Chapters or Chapters-at-large but may serve as officers of Special Interest Groups. The Board of Directors shall transact all business of the corporation, except as otherwise specified in these Articles of Incorporation. It shall approve all memberships in the corporation, shall authorize all expenditures, shall direct investment of the corporation funds, shall appoint the Nominating Committee, and shall approve and recommend all proposals for assessments against members. A majority affirmation vote of the Board of Directors shall be required for Board action, except on matters otherwise specified.

PROPOSED: The Board of Directors shall consist of the officers defined as President, President-Elect, Vice President Technology, Vice President Publications, Vice President Information Technology, Vice President Education, Vice President Finance, Secretary, and Administration, Vice President Social Media, and six Regional Directors. Not more than two representatives of any one company may serve as Officers on the Board of Directors during a given term. Regional Directors are excluded from this limitation. If two or more Regional Directors from the same company are serving terms that will carry over to the following year, there shall be no more nominations for Regional Director from that company made by the nominating company. Directors shall not be officers of Chapters or Chapters-at-large but may serve as officers of Special Interest Groups. The Board of Directors shall transact all business of the corporation except as otherwise specified in these Articles of Incorporation. It shall approve all memberships in the corporation, shall authorize all expenditures, shall direct investment of the corporation funds, shall appoint the Nominating Committee, and shall approve and recommend all proposals for assessments against members. A majority affirmation vote of the Board of Directors shall be required for Board action, except on matters otherwise specified.

YES=92% NO=7% SKIP=1%

ARTICLE VI by Paragraph

CURRENT: Additional nominations may be made by submitting a petition signed by at least ten voting members, to the Nominating Committee within three weeks following the publication of the Nominating Committee's slate of candidates. No single company shall have more than three candidates in the final slate.

PROPOSED: Additional nominations may be made by submitting a petition signed by at least ten voting members to the Nominating Committee within three weeks following the publication of the Nominating Committee's slate of candidates. No single company shall have more than three candidates in the final slate of officers, excluding Regional Directors.

YES=91% NO=7% SKIP=2%

ARTICLE VI by Paragraph

CURRENT: Nominees for Vice President Technology shall have previous experience in a technical committee of SPWLA or sister organizations and a minimum of two papers published in international conferences.

PROPOSED: Nominees for Vice President Technology shall have previous experience in a technical committee of SPWLA or sister organizations and a minimum of two papers published in international conferences. In addition, the Vice President Technology must have served for at least two years on the Technology Committee

YES=92% NO=7% SKIP=1%

ARTICLE VI by Paragraph

CURRENT: Properly executed ballots must be available to the Executive Director by April 1. Where more than two candidates for an office appear on the ballot, election shall be by simple plurality. Where there are only two candidates for an office, a simple majority of votes will control. Installation of the elected individuals shall be in the order of the officer listing in Article 1, Section 1 of the corporation Bylaws. In each case where the election results cause a single company to be represented by more than two elected individuals, the elected individuals to the two highest offices shall be installed; each other office of the case shall be filled by the highest runner-up from a company not already represented.

PROPOSED: Properly executed ballots must be available to the Executive Director by April 1. Where more than two candidates for an office appear on the ballot, election shall be by simple plurality. Where there are only two candidates for an office, a simple majority of votes will control. Installation of the elected individuals shall be in the order of the officer listing in Article 1, Section 1 of the corporation Bylaws. In each case where the election results for officers, excluding Regional Directors, cause a single company to be represented by more than two elected individuals, the elected individuals to the two highest offices shall be installed; each other office of the case shall be filled by the highest runner-up from a company not already represented.

Hierarchy for Officers are:

1. President-Elect
2. VP of Tech
3. VP of Finance, Secretary, and Admin
4. VP of Education
5. VP of Publication
6. VP of IT
7. VP of Social Media

YES=93% NO=6% SKIP=1%

Chapter News

ABERDEEN FORMATION EVALUATION SOCIETY

General News

Recent Evening Talks

13 January—[Technical Talk: Paul Craddock, SLB \(SPWLA Distinguished Speaker\)](#) on “Thermal Maturity-Adjusted Log Interpretation (TMALI) in Organic Shales.” Paul delivered a great talk live from Massachusetts, USA, which was well attended via webinar.

10 February—Technical Talk: Ross Brackenridge, LR, spoke about “Petrophysical Curve Prediction using Domain Transfer Analysis (DTA).” This was another well-attended, web-based talk with some good discussion afterward.

Note that all recent talks have been web-based. This has offered significant advantages over real events as it enables a much broader audience to attend. Additionally, sourcing speakers is also much easier due to the lack of any geographical constraints. However, obviously, the downside to this is the lack of any face-to-face interaction and that all-important networking. Currently, our hands are, of course, tied, but we do hope to resume to some format of web and physical technical talks as we move forwards.

Upcoming Events

AFES is looking forwards to 2021 when hopefully we'll be able to resume somewhat normally with physical events. We have a lot to catch up on, such as field trips, social gatherings, workshop tours, plus the Christmas Pub Quiz. In the meantime, AFES's calendar is filling up with quality Technical Talks. Let's hope this year brings something approaching normal.

Our additional offerings for 2021 are:

10 March—Technical Talk: Alberto Ortiz, YPF S.A. Argentina (SPWLA Distinguished Speaker), will present “What Have We Learned From Petrophysical Evaluation Of The Vaca Muerta Formation During The Last 7 Years Of Unconventional Shale Play Exploration And Development?” AFES looks forwards to hosting Alberto via webinar from Argentina.

14 April—Technical Talk: SLB will present their next-generation formation sampling tool, “Ora.”

Please check our website (www.afes.org.uk) or contact Greg Blower @ President@afes.org.uk for details. We are also available on Facebook and LinkedIn.

Seminar—AFES plans to hold a full-day seminar in April 2021. The exact layout of the seminar is still to be decided (web-based or part-physical, part-web-based?), but the call for abstracts is out. The theme of Porosity/Permeability is purposefully broad, aimed at capturing talks from across the various disciplines. Please contact Stephen Morris (seminars@afes.org.uk) for abstracts submission and more details.



AFES 2021 Seminar
Call for Papers:
Porosity & Permeability
Wednesday 21st April 2021
 Crowne Plaza Hotel, Aberdeen Airport

Devex 2021: Devex is a two-day conference focusing on UKCS exploration and production, produced jointly by SPE, PESGB, and AFES. The deadline for the Devex 2021 call for abstracts was February 19. More details on the seminar are available at www.devex-conference.org.

DEVEX 2021
 8-9 JUNE 2021
**TRANSITIONING TO A LOW CARBON INDUSTRY –
 MAXIMISING ECONOMIC RECOVERY, INFRASTRUCTURE VALUE
 & SKILLS DEVELOPMENT**

Finally, AFES would like to extend thanks to our sustaining annual sponsors:



ABU DHABI CHAPTER

General News

We hope everyone is staying safe and healthy. Due to the current COVID-19 pandemic, the chapter is hosting virtual technical events via Microsoft Teams.

The Abu Dhabi Chapter encourages all petrophysicists interested to join and become active members. Get in touch if you want to be added to our email list: abudhabi@spwla.org. Follow us on LinkedIn-SPWLA Abu Dhabi Local Chapter. We would love to hear from you!!

Recent Events

13 January 2021—Jeffrey Miles and Laurent Mossé (Schlumberger) gave a virtual talk on the subject of “Formation Chlorine Measurement From Spectroscopy Enables Water Salinity Interpretation.”

ARGENTINA CHAPTER

General News

The **Technology/Innovation Team** will have the responsibility of promoting and keeping our community informed of new technological advances and innovation. These high-level senior professionals work daily in this area. For this reason, they will contribute novel themes and ideas to be developed and disseminated through the different proposed activities.

Our **regional delegates** will be responsible for improving the visibility of our chapter in the different bases of the interior of the country and for achieving a close relationship with the educational communities and universities. They will receive and transmit the concerns, uncertainties, ideas, and proposals of these professionals from all over the country, and we will work on addressing the findings.

The importance of the **support team**, including the secretary, events agent, and web page and diffusion agents, is immense. They will be responsible for all the activities and technical events that arise in the chapter and make sure that they are organized successfully.

Due to the global pandemic, we are developing different formats for our activities. We must be creative and take this situation as a great opportunity for professional and personal growth.

<https://www.linkedin.com/in/spwla-cap%C3%ADtulo-argentina-1994211bb/>

Recent Events

18 December 2020—We met for a 2020 Balance Meeting to show and evaluate the progress and activities achieved during this period. We began mapping out our goals for 2021 and gave our best “virtual wishes” of MERRY CHRISTMAS AND HAPPY NEW YEAR! As a summary, we show the following:

2020 Activities Summary

Open Talks Cycle



- ▶ Thermal maturity-adjusted log interpretation (TMALI) in organic shales
Paul Craddock (Schlumberger) - 24 Jun



- ▶ How to build a petrophysical model from pore to profile
Claudio Naidés (Pampa Energía) - 02 Sept



- ▶ Cased-hole formation evaluation: An alternative to optimize data acquisition and reduce costs in mature fields. *Pablo Saldungaray (Schlumberger) - 04 Nov*



- ▶ Direct Well Logs Interpretation Techniques: Quick Look Evaluation *Jorge Barboza (Emerson E&P Software) - 09 Dec*

2020 Chapter activities summary.

2020 Activities Summary

Other aspects

- ▶ SPWLA Distinguished speaker program 2020-2021

Pablo Saldungaray (new candidate, accepted)
Alberto Ortiz (renewed application)



- ▶ Membership campaign to the Argentina Chapter- Recovering members!!

Up to Dec 2020, we got 72 Chapter members

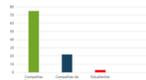


- ▶ Remembering our colleagues

Carolina Budic (YPF-Petrophysicist)
and Prof. Marco Vivas

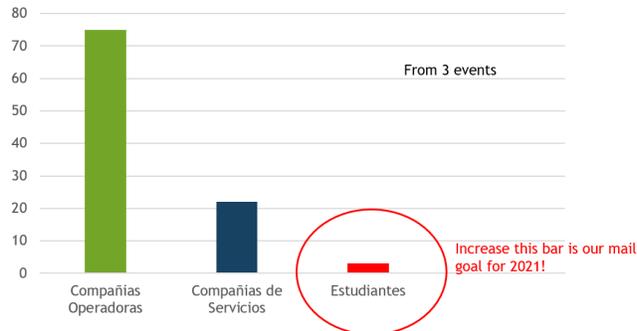


- ▶ Analysis of our audience



Summary of other aspects.

Analysis of our audience



The last presentation registered a record of attendees (160) from Argentina, Brazil, Colombia, Mexico, Venezuela, USA, UK and Belarus

We continue in the search to capture the interest of students ...

Analysis of our audience.

Objectives and future activities 2021

- ▶ Student Chapter SPWLA- Argentina creation
- ▶ Development of Soft-Skills (Ex.. Oratory, effocience in presentations, etc)
- ▶ Enphasys in the importance of membership and the link to the Argentina Chapter

https://www.spwla.org/SPWLA/WEB/Membership/Join_Now/Create_Affiliate_Chapter_Member.aspx

- ▶ Open to iniciatives: pleas contact us spwlacapituloargentina@gmail.com

- ▶ In the Web: <https://www.linkedin.com/in/spwla-cap%C3%ADtulo-argentina-1994211bb/>

New tasks for 2021.



Capitulo Argentina

Merry Christmas & and happy new 2021

President: Marta D´Angiola

Past-Presidente: Angel López

Secretary: M. Lorena Cavigilia

Tecnology: P. Bedini, C. Naidés, P. Pateti, P. Sandulgaray

Events: Luz Rodriguez

C. Rivadavia delegate: Eduardo Breda

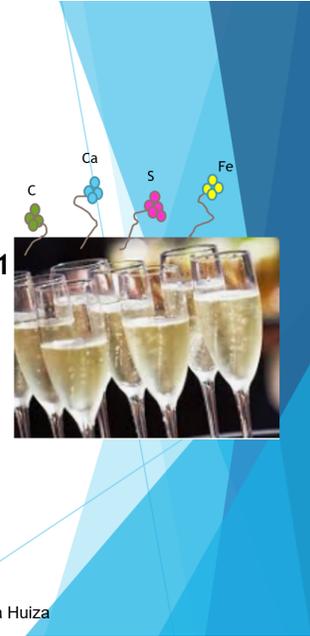
Neuquén delegate: Nicolas Carrizo

Mendoza delegate: Ariel Buchini

BA Delegate: Guillermo López Pérez

Web Page: Pablo Uzzo

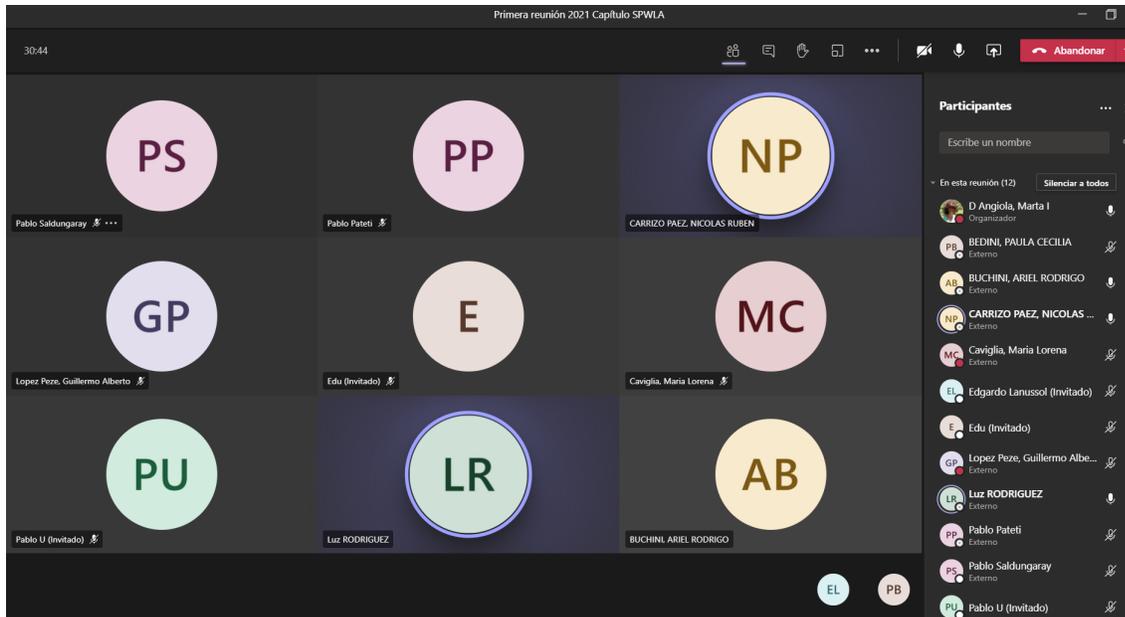
Students: Gianna Huiza



Greetings and board list.

After summer vacations, we met in February 2021, and we are planning several activities for the near future.

8 Feb 2021—First meeting of the chapter, after summer holidays.



The online first meeting of our chapter after the summer holidays.

Upcoming Events

In this context of open talks, we are preparing a couple of presentations:

March 2021—Alberto Ortiz, DS, will talk about “What Have We Learned From Petrophysical Evaluation of the Vaca Muerta Formation During the Last 5 Years of Unconventional Shale Play Exploration and Development.”

April 2021—Jorge Barboza (Emerson) will talk about “Synthetic Curves.”

May 2021—Patricia E. Rodrigues (Whiting Petroleum Corporation and presenting in Spanish), Reinaldo J. Michelena and Kevin S. Godbey (SeisPetro Geosoftware, LLC), and Mike J. Uland (iReservoir.com, Inc.) will present “Advanced Multi-Mineral Solution—Using Genetic Algorithm to Accelerate and Improve Multi-Mineral Petrophysical Analysis.”

Other Activities Related to Soft Skills Acquisition

We propose the organization of formative and informative activities for students in the last steps of their career, which may also be of interest to the general audience. Topics include:

- Oratory and Effective and Efficient Presentations
- How to Build an Effective Resume
- Tips for a Successful Job Interview

Some Useful Statistics and Membership Campaign for the Argentina Chapter

We started a campaign in order to normalize Argentina Chapter memberships. We encourage professionals who are interested in our activities to enroll in one of the categories SPWLA offers. The results were amazing, and today, we have 74 members in the Argentina Chapter Affiliates YTD.

One of our main objectives this year is to be present in the student agenda of the universities. We are designing activities and strategies to capture the interest of seniors in college and help them through the complex transition to work life.

We will go on “recovering” members!

AUSTRALIAN CHAPTER (Formation Evaluation Society of Australia, FESAus)

General News

FESAus, the Australian Chapter of SPWLA, combines the formation evaluation societies from around Australia, predominantly Western Australia, as well as FESQ, New South Wales, Victoria, and South Australia. With the great work done by Australians to date in managing the COVID-19 outbreak, we have resumed in-person chapter meetings in July and are continuing the webinar series hosted by Halliburton for our out-of-state members. The new format has been received enthusiastically by our membership and offers the opportunity for some to further polish their webinar presenting skills. Webcasts of the presentations are also available soon after for members to review as they wish. Our meetings are held on the second Tuesday of each month, and we welcome new members to visit www.fesaus.org for meeting information.

Our committee meetings are now held via Zoom as we all work in our various home offices. Martin Kennedy has stepped up to the Vice President role, and we are still looking for positions for Company Secretary and Sponsorship Coordinator.

Recent Events

Unfortunately, our event in February was canceled following a five-day lockdown of Perth due to a single COVID positive community test, but we are now back on track for in-person meetings in 2021.

Upcoming Events

9 March 2021—Technical Presentation and Webinar from CoreDNA titled

“Combining the Analysis of Ultrahigh Resolution Images With Continuous Direct Measurements to Identify Rock Types” by Dr. Thomas Richard, a geomechanical engineer from Paris with an MSc, PhD in rock cutting and drilling mechanics from the University of Minnesota, Epslog director, and lecturer at Curtin University.

CoreDNA solution combines a selection of transdisciplinary, high-resolution, nondestructive measurements on whole cores that enable an early yet objective and comprehensive description of cores and the rapid estimation of properties of formations days after opening core barrels. Whole cores, which may still be in their half-open liners, are mounted to the test bench and submitted to a battery of tests, all sharing the same depth reference and compatible resolution ranges. Technologies including ultrahigh-resolution pictures, pXRF elemental composition, grain-size analysis, but also the direct measurement of geomechanical properties, such as strength and acoustic velocities, are all deployed along the entire core on the same 3-cm-wide mini-slab surface. Ultrahigh-resolution panoramic pictures (1.8 $\mu\text{m}/\text{px}$) are processed to extract textural and color features and also continuous grain-size distribution from wavelet analysis. The grain-size distribution profile calculated from the images is backed up by analysis of 3D topographical images accurately measured with a laser scan. Results of these fast tests (3 ft per hour) are analyzed in real time and turned into high-resolution continuous profiles of properties (petrophysical, geomechanical, and geochemistry) fed into (unsupervised) machine-learning algorithms for the automated identification of lithofacies. It enables a more detailed understanding of reservoir architecture and the design of tailored plug selections, and the programming of subsequent steps in core analysis programs, even remotely. Such a detailed and comprehensive knowledge of the distributions of core properties under one unique format for all disciplines eases interdisciplinary core analysis work, from the QCing of standard core testing to the upscaling of core data and the calibration of robust predictive models from well logs.



Dr Thomas Richard

2021 Committee Members

Wesley Emery	President
Martin Kennedy	Vice President
Vacant	Company Secretary
Jean-Baptiste Peynaud	Treasurer/Monthly Meeting Coordinator
Vacant	Assistant Treasurer
Diego Vasquez	Website Coordinator/Data Standards Focal Point
Vacant	Secretary/Social Coordinator/Special Events and Awards
Siobhan Lemmey	Membership Coordinator
Vacant	New Technology Forum Coordinator
Vacant	New Technology Forum Coordinator
Vacant	Education Group Leader
Nigel Deeks	Audio Visual Coordinator
Vacant	Sponsorship Coordinator
Yang Xingwang	Audio Visual Coordinator
Bronwyn Djefel	Newsletter Coordinator/Inter-Society Liaison
Sally Edwards	Queensland Representative
Ashish Datey	Victoria Representative
Harris Khan	NSW Representative
Matthew Pfahl	South Australian Representative

SJWLS BAKERSFIELD CHAPTER

General News

Elyse Goin (Best Core Services) has joined the board as a Co-VP. Eva Lopez (Core Laboratories) is stepping down from her position as Treasurer. The chapter thanks Eva for her commitment to the society.

Recent Events

January meeting—"Petrophysics Career Advancement Opportunities" was used to highlight additional training opportunities for petrophysicists. Christine Mejas-Johnson (California Resources Corporation) discussed her journey as a PE, and Jonathon Goodell (California Resources Corporation) discussed his journey as a PG. Nathan Jones (California Resources Corporation) discussed his journey from geologist to data scientist.

February meeting—Ben Banack (Halliburton) presented "DTS as a Tool for Conformance and Efficiency Improvement in Steamflood." Ben focused on low-cost fiber solutions and presented four case studies—(1) conformance in vertical stacked pay—DTS combined with water injection, (2) conformance in HZ producer—DTS combined with water injection, (3) mobility with DTS logs on infill wells, and (4) VIT validation for SOR Reduction.

BANGKOK CHAPTER

General News

Thailand is now returning to live meetings.

2021 Chapter Committee Members

President	Andrew Cox
Technical Coord	Numan Phettongkam
Treasurer	Sirinya Maykho
Web Coordinator	Alexander Beviss
Secretary	Ronald Ford
Sponsorship	Ryan Lafferty
Student Liaison	Kruawun Jankaew
Member at Large	Greg Heath

Please visit https://www.spwla.org/SPWLA/Chapters_SIGs/Chapters/Asia/Bangkok/Bangkok.aspx for meeting information. Email: bangkok.chapter@spwla.org.

Recent Events

January 2021—No meeting was held. Bangkok experienced a surge in COVID-19 cases, and the live meeting was canceled in the interest of health and safety.

February 2021—WEBINAR: Li Ting, senior petrophysicist (Chevron and SPWLA Distinguished Speaker), presented "[Formation Evaluation With NMR, Resistivity and Pressure Data – a Case Study of a Carbonate Oilfield Offshore West Africa.](#)" Li Ting presented a very interesting case study of an interpretation workflow where neutron-density data is not available and outlined the advantages of the analysis.



Ting Li, senior petrophysicist (Chevron and SPWLA Distinguished Speaker)

Upcoming Events

March 2021—Venue TBD—We are hoping live meetings will be started again.

Please check the local website for information on local events and activities for the Bangkok Chapter:
https://www.spwla.org/SPWLA/Chapters_SIGs/Chapters/Asia/Bangkok/Bangkok.aspx.

BOSTON CHAPTER

General News

We continue to prepare for the 62nd SPWLA Annual Symposium to be hosted by Boston in an online format in May 2021. The Boston Chapter and the symposium organizing committees are in frequent contact, despite the disruptions from the COVID-19 pandemic, and we are laying the groundwork for the big event. All the details, including the technical program and registration, can be found at <https://www.spwlaworld.org/welcome-to-boston2021/>.



Recent Events

15 January 2021—The Boston Chapter hosted **Iulian Hulea** (Shell) for an online presentation of his Distinguished Speaker lecture, “From Homogeneous to Heterogeneous Rocks—Understanding Fundamental Controls of Hydrocarbon Saturation: Perching Effects.” The talk was engaging, well attended, and provoked many questions.



Iulian Hulea (Shell), left, and Paul Craddock (Boston Chapter President), right, at Iulian’s lecture webinar for the Boston Chapter on January 15, 2021.

Several members of the Boston Chapter are in the midst of Distinguished Speaker tours, with recent presentations by **Paul Craddock**, **Julie Kowan**, and **Jeffrey Miles** to various chapters across the international SPWLA community.

Additionally, the latest issue of *Petrophysics* journal has papers by several Boston members:

Julie Kowan, Luke Schanken, and Robert Jacobi, Conclusive Proof of Weak Bedding Planes in the Marcellus Shale and Proposed Mitigation Strategies, *PETROPHYSICS*, **62**(1), (Feb 2021).

Ravinath Kausik, Augustin Prado, **Vasileios-Marios Gkortsas**, **Lalitha Venkataramanan**, Harish Datir, and Yngve Bolstad Johansen, Dual Neural Network Architecture for Determining Permeability and Associated Uncertainty, *PETROPHYSICS*, **62**(1), (Feb 2021).

Upcoming Events

5 March 2021—Erik Wielemaker (Schlumberger) will present his lecture, “Delineating the Geothermal Structure and Flow Properties in a Sub-Horizontal Well With the Use of NMR With Sonic and Image Logs in Multiphysics Approach.” Registration for the event can be found at <https://register.gotowebinar.com/register/3826873723098866956>.

SPWLA general members and Boston-affiliate members are invited to browse our chapter website <http://boston.spwla.org> for up-to-date information on our mission and events, including event details and registration.

BRAZIL CHAPTER

General News

Since August 2021, our monthly meetings have been held online every third Tuesday of the month, at 4 pm (Brasilia Time). In a change from previous years, in 2021, it was decided that there wouldn’t be a break in the schedule of meetings during January and February (typically vacations) due to COVID-19. Anyone wishing to participate was welcomed. We also post chapter updates and meeting links on our Facebook page (<fb.me/SPWLABrazil>) and on our LinkedIn page (SPWLA Brazil Chapter). Check us out. For further

information about the chapter, please contact our secretary, Jesus Salazar (Jesus.Salazar3@bakerhughes.com).

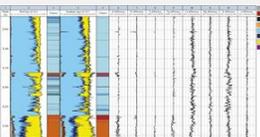
Recent Events

19 January 2021—Lucas Abreu Blanes de Oliveira, senior petrophysicist (Petrobras) and current Students and Young Professionals director of our chapter, presented the work “Synthetic Geochemical Well Logs Generation Using Ensemble Machine-Learning Techniques for the Brazilian Presalt Reservoirs,” which has been reported in a recent paper (DOI 10.1016/j.petrol.2020.108080).



180ª Reunião Mensal
Terça-feira, 19 de janeiro, 16h – Teams Meeting

Synthetic geochemical well logs generation using ensemble machine learning techniques for the Brazilian pre-salt reservoirs



Lucas Abreu Blanes de Oliveira
Petrofísico Sênior - Petrobras

Invitation to January monthly meeting of SPWLA Brazil Chapter.

23 February 2021—In February, the third Tuesday of the month was a holiday, so our event was postponed. Denis Klemin, senior rock analysis engineer and digital rock expert (Schlumberger Reservoir Laboratories in Houston (USA)), spoke about “Digital Rock Technology Accelerates Carbonate Rock Laboratory Analysis,” based on the paper SPE-198610-MS.

	<p>181ª Reunião Mensal - SPWLA Seção Brasil</p> <p>Título: Digital Rock Technology Accelerates Carbonate Rock Laboratory Analysis</p> <p>Palestrante: Denis Klemin, Analista de Rochas Senior, Schlumberger.</p> <p>Data/Hora: Terça-feira, 23 de fevereiro, 16:00 h</p> <p>A reunião é via Teams, no link SPWLA Seção Brasil</p>
---	---

Invitation to February monthly meeting of SPWLA Brazil Chapter.

Upcoming Events

16 March 2021—We expect to host a presenter from Baker Hughes, which has not yet been confirmed. We expect to post the details of the meeting at the beginning of March on our Facebook and LinkedIn pages.

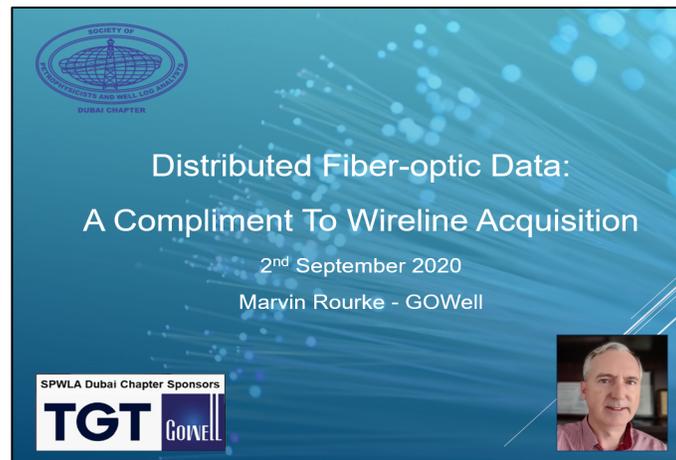
DUBAI CHAPTER

General News

Due to the pandemic situation, the Dubai Chapter has held online technical meetings since last year (once a month), and this year 2021, the online meetings will be held every two months. Our online technical events are usually held on the first Wednesday of each month. Anyone interested is welcome to visit our profile on LinkedIn SPWLA Dubai Chapter or email (dubai@spwla.org) to join the online events and ask any questions regarding the regional chapter.

Recent Events

2 September 2020—Marvin Rourke shared his work on “Distributed Fiber-Optic Data: A Complement to Wireline Acquisition.” An informative presentation, the diverse audience found the work very useful and interesting. Questions were answered at the end of the presentation.



Technical Presentation by Marvin Rourke on September 2.

7 October 2020—Dr. Zubair Kalam presented his work “Novel Applications of Digital Rocks Physics.” This was a great technical presentation that effectively captivated the audience. The material was presented in a very organized way, and all the questions were very clearly answered.



Technical Presentation by Zubair Kalam on October 7, 2021.

20 January 2021—Our first technical presentation of the year, “Utility of Image Logs in Understanding Flow Profile Patterns: Case Study from Onshore Field, UAE,” was presented by Sajith Girinathan. This was a concise and precise presentation with multiple questions at the end where the presenter explained away all the doubts of attendees.

The slide features the SPWLA logo in the top left corner, which includes the text "SOCIETY OF PETROPHYSICISTS AND WELL LOG ANALYSTS" and "DUBAI CHAPTER". The main title is "SPWLA Dubai Chapter - Virtual Event Technical Presentation (via Webinar)". The presentation title is "Utility of Image Logs in Understanding Flow Profile Patterns: Case Study from Onshore Field, UAE" with the speaker listed as "Speaker: Sajith Girinathan". A central box contains the event details: "Please join us for this SPWLA Microsoft Teams-Webinar", "Date : Wednesday, 20th January 2021", "Time : 5:00pm - 6:00pm Dubai-UAE Time", and "Registration for the technical session event in the link below: [Webinar Registration](#)". At the bottom left, it lists "SPWLA Dubai Chapter Sponsors" as "TGT" and "GOWELL". A small portrait of Sajith Girinathan is in the bottom right corner.

Technical Presentation by Sajith Girinathan on January 20, 2021.

Upcoming Events

17 March 2021—Pablo Saldungaray will present “Casedhole Formation: An Alternative to Optimize Data Acquisition and Reduce Overall Costs in Mature Fields.”

The slide features the SPWLA logo in the top left corner, which includes the text "SOCIETY OF PETROPHYSICISTS AND WELL LOG ANALYSTS" and "DUBAI CHAPTER". The main title is "SPWLA Dubai Chapter - Virtual Event Technical Presentation (via Webinar)". The presentation title is "CASED HOLE FORMATION: AN ALTERNATIVE TO OPTIMIZE DATA ACQUISITION AND REDUCE OVERALL COSTS IN MATURE FIELDS" with the speaker listed as "Speaker: Pablo Saldungaray". A central box contains the event details: "Please join us for this SPWLA Microsoft Teams-Webinar", "Date : Wednesday, 17th March 2021", "Time : 4:30pm - 5:30pm Dubai-UAE Time", and "Registration for the technical session event in the link below: [Webinar Registration](#)". At the bottom left, it lists "SPWLA Dubai Chapter Sponsor" as "GOWELL". A small portrait of Pablo Saldungaray is in the bottom right corner.

The Dubai SPWLA Chapter would like to thank TGT and GoWell for their generous sponsorship.



EAST CHINA CHAPTER

General News

The China-Russia Logging While Drilling Technology Conference was held by SPWLA-ECC

17 December 2020—The SPWLA branch of the China University of Petroleum (ECC-SPWLA) has combined with Perm State University, China University of Petroleum, and oil companies from Russian to discuss the equipment and technology progress of LWD nuclear well logging via Tencent video conference software. The number of participants from universities and oil companies exceeded 100. A Russian petroleum equipment R&D company gave a report titled “Progress of Neutron-While-Drilling Porosity-Gamma Density Logging Technology and Introduction of Self-Developed Nuclear-While-Drilling Logging Equipment.” Three professors (Professor Zhang, Professor Shao, and Assistant Professor Yu) from China University of Petroleum made three reports, and the titles were:

- “Research on Azimuthal Gamma and Density Imaging Logging With Drilling”
- “Determination of Formation Attitude Using Azimuthal Logging While Drilling”
- “LWD Non-Chemical Source Neutron Porosity and Neutron Gamma Density Logging”

First, a Russian oil logging company introduced the LWD neutron porosity and gamma density logging equipment with software and interpretation methods they developed together with Perm State University, which can measure the porosity and density at the same time. Meanwhile, they also put forward requirements for the interpretation and method of nuclear logging technology and some challenges faced by nuclear logging in the actual application process. Assistant Professor Yu Huawei introduced the development history of neutron gamma density logging and the current research progress of using controlled neutron sources to replace chemical sources for formation density. He mentioned that the use of controllable neutron sources instead of chemical sources for density measurement is the development trend of density logging in the future. Professor Zhang reported on the research progress of LWD gamma density and LWD azimuthal gamma imaging technology. From the perspective of numerical simulation, he gave the response law of azimuth gamma and azimuth density together under different measurement environments. In addition, data processing methods and technology about LWD density and gamma were shared. Professor Shao mainly talked about the research of geosteering using the actual azimuth gamma logging data. At the end of the conference, the audience raised many questions. These experts and students from Perm State University in Russia and China University of Petroleum (East China) had a lively discussion on neutron porosity while drilling and density logging. Hundreds of well-log analysts and geologists from ECC-SPWLA, colleges, oil companies, and service companies attended the meeting, and some logging experts had a warm discussion with the presenters about logging theory, interpretation, and formation evaluation. Under the current situation, regular online meetings of this kind play an important role in discussing professional issues, publishing the latest and cutting-edge professional opinions, and sharing the latest scientific research results. It is also a good way to promote development well-logging theory and application.



A partial list of participants.



Participating professors from the Department of Geophysics, Perm State University.

Example 2: Wireline log data processing

Techlog result

Our method

Well E
井号: E-20000 层位: 3-12 测井日期:

Take 8 resistivity from electrical FMI imaging data

- the resistivity imaging results are accurate
- The boundary of strata is consistent with raw data
- The dip angle and azimuth is consistent with that in Techlog

Professor Shao's report.

DENVER WELL LOGGING SOCIETY

General News

Lunch meetings are continuing to be virtual for the time being at no cost to attend; however, you must register prior to attending. Typically, the lunches are every third Tuesday of the month; however, please check the calendar at <http://dwls.spwla.org>. We are working on adding the webinar reservation link to our website. Please continue to check the website for registration and upcoming talks. In the meantime, the DWLS monthly newsletters will include the webinar reservation link. If you are currently not receiving the monthly newsletter, please email vp_membership@dwls.spwla.org to get added to the monthly newsletter email distribution.

Recent Events

19 January 2021—January Talk: SPWLA Distinguished Speaker Nikita Seleznev (Schlumberger) presented “Determining Water-Filled Porosity of Tight Oil Reservoirs with a New Interpretation Method for Dielectric Dispersion Measurements.” The talk was well attended.



Nikita Seleznev (Schlumberger)

16 February 2021—February Talk: SPWLA Distinguished Speaker Luis Quintero (Halliburton) presented “Reservoir Pressure in Tight Gas Formations from a Pressurized Core System.” The talk was well attended.

Upcoming Events

16 March 2021—March Talk: Greg Salter (Core Laboratories) will present “Pressure-Dependent Permeability of Shale Reservoirs and the Implications for Estimated Ultimate Recovery.” In order to attend the talk, you must register prior, which you can do at the link: <https://attendee.gotowebinar.com/register/545638553356562448>. The DWLS monthly newsletter also includes the webinar reservation link. If you are not currently receiving the monthly newsletter, please email vp_membership@dwls.spwla.org to get added to the monthly newsletter email distribution. We are working on adding the webinar reservation link to our website. Please continue to check the website for registration and upcoming talks: <http://dwls.spwla.org>.

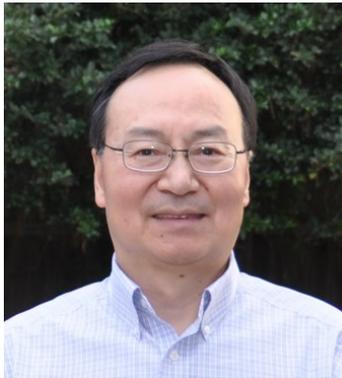
20 April 2021—April Talk: SPWLA Distinguished Speaker Luis Stinco (Olempetra) will present “Formation Evaluation Applying Deductive and Inductive Methodologies: Which One to Use When Characterizing Reservoirs.” In order to attend the talk, you must register prior, which you can do at the link: <https://attendee.gotowebinar.com/register/891529518292350480>. The DWLS monthly newsletter also includes the webinar reservation link. If you are not currently receiving the monthly newsletter, please email vp_membership@dwls.spwla.org to get added to the monthly newsletter email distribution. We are working on adding the webinar reservation link to our website. Please continue to check the website for registration and upcoming talks: <http://dwls.spwla.org>.



Luis Stinco (Olempetra)

29 April 2021—The DWLS Spring Workshop will be held online from 9 am to 4 pm (Mountain Standard). We are recycling our last year’s topic that was canceled due to the pandemic: “Horizontal Petrophysics: Applications and Interpretation Techniques in Reservoir Characterization” and have nine expert speakers with original research, including three SPWLA Distinguished Speakers. Registration is now open, and you can register for the event at <https://attendee.gotowebinar.com/register/3903816446859566349>. There is a cost to attend the workshop; however, please note DWLS members and students will get a discount code to use when registering. If you are a DWLS member in good standing, watch your inbox for a separate email with your code. If you are not a member and want to join, now is a great time!

25 May 2021—Harry Xie (Core Laboratories) will present “Characterization of Kerogen and Solid Organics of Unconventional Source Rocks Using Solid-Type 20MHz NMR Techniques.” In order to attend the talk, you must register prior, which you can do at the link: <https://attendee.gotowebinar.com/register/7515645073893961742>. The DWLS monthly newsletter also includes the webinar reservation link. If you are not currently receiving the monthly newsletter, please email vp_membership@dwls.spwla.org to get added to the monthly newsletter email distribution. We are working on adding the webinar reservation link to our website. Please continue to check the website for registration and upcoming talks: <http://dwls.spwla.org>.



Harry Xie (Core Laboratories)

HOUSTON CHAPTER

General News

First, we would like to announce that our website has been completely revamped. It went live in January 2021. Among the main changes, we included new features that will allow us to have a better interaction with our members and manage the chapter. We’d also like to invite you to check out some of the webinars available in our video gallery. Please register on our new website, and you will receive notifications of upcoming events and chapter news. There are also several interesting sponsorship opportunities. Please contact us in case you are interested. We are open to new speakers in our seminars. We like to bring other

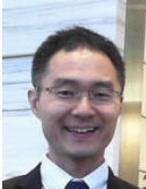
guest speakers in addition to our SPWLA DS guests, especially if the topic is of interest to our audience. Contact any board member in case you have a presentation you want to share.

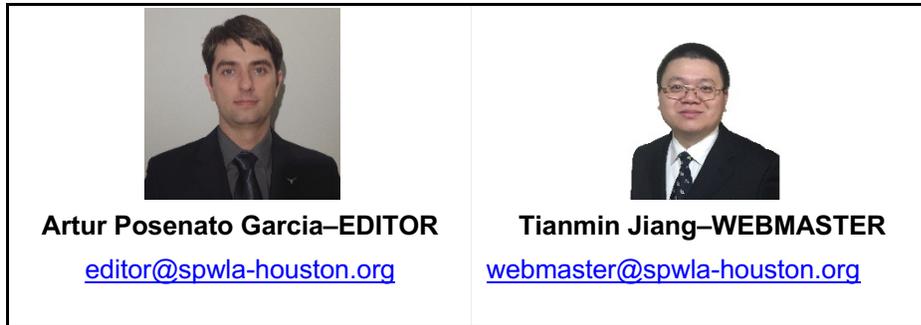
Our SPWLA Houston Chapter board is pleased to share that we are supporting the 8th Semi-Annual Upstream Oil and Gas Professionals Hiring Event in collaboration with SPE. The event details have already been posted on our website. These types of events add great value to our members, especially during these times, and we should not only support them but also support each other as professional societies to get the most value out of them for our membership.

Finally, we would like to invite you to attend our virtual seminar on March 10, 2021. We are hosting the SPWLA Distinguished Speaker 2020–2021 Nikita Seleznev, who will be discussing the interpretation of the dielectric dispersion measurements in tight oil formations

Please stay tuned and check us out for upcoming news! As always, feel free to contact any of the board members if you have any questions or comments using our contact information included below.

SPWLA Houston Chapter Board for 2020–2021

 Javier Miranda–PRESIDENT president@spwla-houston.org	 Jeff Crawford–VICE PRESIDENT NORTH SIDE vpnorthside@spwla-houston.org
 Hyungjoo Lee–VICE PRESIDENT DOWNTOWN vpdowntown@spwla-houston.org	 Bernd Ruehlicke–VICE PRESIDENT WESTSIDE vpwestside@spwla-houston.org
 Ronke Olutola–TREASURER treasurer@spwla-houston.org	 Hans Wong–SECRETARY secretary@spwla-houston.org



Artur Posenato Garcia—EDITOR

editor@spwla-houston.org

Tianmin Jiang—WEBMASTER

webmaster@spwla-houston.org

Upcoming Events

10 March 2021—Virtual Seminar: “Determining Water-Filled Porosity of Tight Oil Reservoirs with a New Interpretation Method for Dielectric Dispersion Measurements” by Nikita Seleznev.

7 April 2021—The SPWLA Houston Chapter is supporting the 8th Semi-Annual Upstream Oil and Gas Professionals Hiring Event for professionals of energy and upstream oil and gas disciplines, which is organized by the SPE-GCS. Consequently, SPWLA Houston Chapter’s current professional members are entitled to participate as job seekers. **The Hiring Event will be held online and will take place on April 7, 2021.** The Hiring Event is one of the most remarkable happenings that bring together experienced and talented professionals with employers and recruiters from various sectors “virtually under one roof,” thereby serving as a platform for open and vast-ranging employment opportunities. The organizing committee will be partnering with Texas Workforce Solutions and over 30 other professional organizations to make this event inclusive and representative of the industry segment. Registration is currently open for employers, sponsors, and government agencies. **For the first time ever, the Hiring Event will be free for both employers and job seekers.** For more information about the event, location, time, registration, and participants, visit our website: <https://www.spwla-houston.org/>.

**SPE-GCS SPRING 2021
HIRING EVENT**

April 7, 2021
<https://www.spegcs.org/hiring-event/>

[SPE International](https://www.spe.org)
Gulf Coast Section

[Workforce Solutions](https://www.wrksolutions.com/)
<https://www.wrksolutions.com/>

[@spehiringevent](https://www.instagram.com/spehiringevent) [@spe-gcs hiring event](https://www.linkedin.com/company/spe-gcs-hiring-event) [@SPEHiringEvent](https://twitter.com/SPEHiringEvent)

A virtual event for Energy Professionals in partnership with Texas Workforce Solutions

**Energy Professionals FREE Virtual
Hiring Event**

Event, candidates must:

- . Be an active member of either SPE or any of the collaborating professional organizations
- . Have previous full-time position in support of an energy and/or upstream discipline

The New Face of the SPWLA Houston Chapter

[Home](#)
[International SPWLA](#)
[Newsletter](#)
[Login](#)
[Register](#)

HOUSTON CHAPTER
Society of Petrophysicists and Well Log Analysis

[Lunch Seminars](#)
[Upcoming Seminars](#)
[All Events](#)
[Membership](#)
[Who We Are](#)
[Become a Sponsor](#)

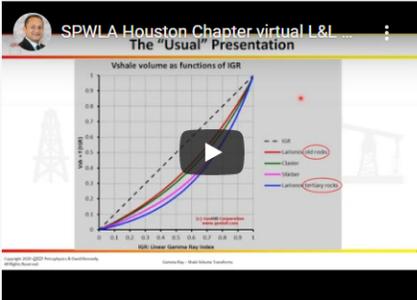
Advancing The Science
Of Formation Evaluation

Important Announcement : [Subscribe to SPWLA Houston Newsletter](#)
READ MORE

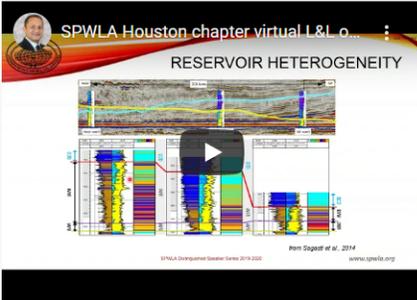
<https://www.spwla-houston.org/>

We hope you like our new website that went live in January 2021. The website has been completely revamped to facilitate interaction with and among chapter members. Furthermore, we would also like to invite you to check out some of the webinars available in our video gallery.

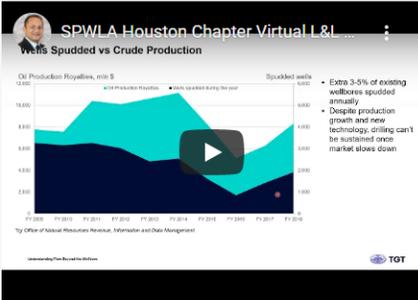
VIDEO GALLERY



THE SKEPTICAL PETROPHYSICIST WEBINAR



SPWLA HOUSTON CHAPTER VIRTUAL L&L ON
JUNE 17TH WITH ALBERTO ORTIZ



SPWLA HOUSTON CHAPTER VIRTUAL L&L OCT/20:
RESERVOIR INTEGRITY-UNDERSTANDING FLOW
BEYOND THE WELLBORE

We invite you to register on our website to receive notifications of our events and chapter news. There are also several interesting sponsorship opportunities, such as web banners, single meeting sponsorship, and email promotion opportunities, among others. Please contact us in case you are interested.

MALAYSIA CHAPTER Formation Evaluation Society of Malaysia (FESM)

General News

FESM, a local chapter of Formation Evaluation Society of Malaysia, is based in Kuala Lumpur. Technical meetings are held on the fourth week of each month. For meeting information, please visit our chapter website at www.fesmkl.com.

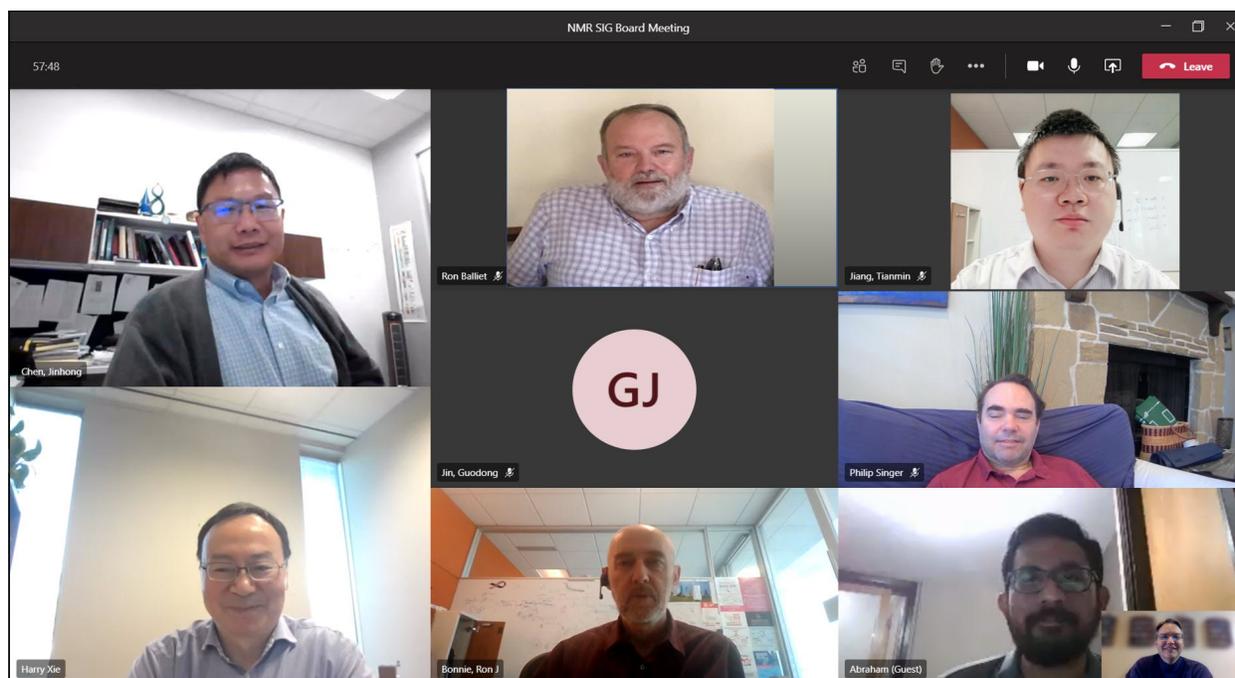
Recent Events

16 December 2020—Zarool Hassan (Vestigo Petroleum) delivered a virtual technical talk with the topic of “How Saturation Height Functions and Log Signatures Help Identify Different Sand Bodies.” The talk covered the free-water levels from saturation height functions that accompany a log’s signature of basic logging tools to identify different sand bodies. Hence, sand connectivity could be identified. A case study example with four horizontal wells (each of the wells was drilled a few hundred meters apart) was shown to ascertain sands connectivity.

NMR SIG

General News

The newly formed NMR SIG Executive Committee had a virtual meeting on February 3, 2021, and decided to resume the efforts to promote NMR education in the industry, to publish a special volume of *Petrophysics* dedicated to NMR technology, and to work on the NMR industrial standard. Sub-committees will be established with the leads from the board members. We are anticipating more NMR activities in the months to come.



The Executive Committee of the NMR SIG:

President	Harry Xie (Core Lab)
Vice President	Ron Bonnie (ConocoPhillips)
Secretary	Jinhong Chen (Aramco)
Treasurer	Tianmin Jiang (ConocoPhillips)
Sub-committee Lead (NMR Industrial Standard)	Ron Balliet (Halliburton)
Sub-committee Lead (Education)	Nate Backman (Schlumberger)
Sub-committee Lead (Publication)	Philip Singer (Rice University)
At Large Members:	Abraham Simanjuntak (Pertamina EP)
	Guodong Jin (Baker Hughes)

NUCLEAR LOGGING SIG

Nuclear SIG Survey Results

A survey of Nuclear SIG members whose number had grown to nearly 500 in 2019 was conducted during October–November 2020 to better understand members' technical interests and allow the SIG Executive Committee to develop programs to match those interests. On the technology front, interest remains high in a topic the SIG has been discussing for nearly 20 years, namely, replacing radioactive source-based logging tools with generator-based alternatives. There was also considerable interest in several futuristic nuclear techniques that can improve the performance of nuclear tools and potentially allow for the determination of additional petrophysical parameters. On programs of interest, the availability of nuclear SMEs to mentor members had the highest interest to the respondents. On the mode of delivery of content, webinars were preferred by an overwhelming majority of respondents, while in-person meetings drew meager support. A report on the survey can be found on the Nuclear SIG Webpage: https://www.spwla.org/SPWLA/Chapters_SIGs/SIGs/Nuclear_/Nuclear.aspx

Two Petroleum Industry-Related IAEA Safety Guides

After an almost eight-years-long review process by its 153 member countries, the International Atomic Energy Agency (IAEA) has published the following petroleum industry-related Specific Safety Guides:

- **IAEA Safety Standard on Radiation Safety in Well Logging: Specific Safety Guide-SSG-57**, July 2020: https://www-pub.iaea.org/MTCD/Publications/PDF/P1879_web.pdf
- **IAEA Safety Standard on Radiation Safety in the Use of Nuclear Gauges: Specific Safety Guide-SSG 58**, December 2020: <https://www.iaea.org/publications/13468/radiation-safety-in-the-use-of-nuclear-gauges>

These were first drafted in 2012 by the IAEA with the help of consultants drawn from regulators and technical industry experts from five IAEA Member countries: Azerbaijan, France, Russia, the UK, and the US.

New US National Academies of Science Committee on Radioactive Source Replacement

The US National Academies of Sciences (NAS) has undertaken a project to prepare a report on *Radioactive Sources: Applications and Alternatives* to follow up on their 2008 report to US Congress on the same topic. The previous study was done at the request of the US Congress. The new NAS study is being sponsored by Sandia National Laboratories. In both cases, nuclear logging sources are a key item. At the Committee's invitation, Ahmed Badruzzaman attended their Open Session Public Meetings held online during 2020. In addition, several oil industry experts were invited to make presentations on logging source use and alternatives. Ahmed Badruzzaman and Kenny Jordan, executive director of the Association of Energy Service Companies, availed of the opportunity. In addition, Pierre Legoux, head of programmes of the Vienna-based World Institute of Nuclear Security (WINS), in his presentation to the Committee, included comments on their work on well-logging source security. The Committee is expected to publish its report later this year. Like its predecessor, the new NAS Committee report is likely to drive policies and technologies on radioactive source replacement in the US for the next decade. The Nuclear SIG will keep members informed of its publication.

PERMIAN BASIN CHAPTER

General News

PB-SPWLA will continue our luncheon meetings in 2021 on the fourth Tuesday of each month at 11:50 am through a virtual platform.

Upcoming Events

23 March 2021—The Permian Basin March Luncheon will be held on our GoToMeeting virtual platform. Our speaker will be Ali Tinni, an SPWLA Distinguished Lecturer, with his talk on “Electrical Properties of Shales.” Please check out our website or LinkedIn page, Permian Basin Chapter of SPWLA, to learn more about our speakers and obtain access to our link to watch. Our luncheon series is free for all to watch and participate.

QATAR CHAPTER

General News

We are based in Doha and welcome all professionals and students interested in well logging and formation evaluation. The SPWLA Qatar Chapter promotes technical talks in close partnership with our sister and well-established Qatar SPE Section (QSPE). All our events are emailed to members, and if you want to be added to the mailing list, please contact us at SPWLA.QATAR@gmail.com or talk to any of the committee members! SPWLA Qatar Chapter is in on LinkedIn! Follow us to stay updated about what is going on in the petrophysics community in Qatar and to hear about our chapter activities!

Our 2021 SPWLA Qatar chapter committee members:

President	Sharon Finlay (NOC)
Vice-President	Ashok Srivastava (QP)
Secretary	Jose Oliveira Neto (Qatar Shell)
Social Media Coordinator	Hussein Jichi (BHGE)
IT Coordinator	Faisal Abdulrahman Al-Mutawa (Qatargas)
Active Board Members	Ali Zwali (Halliburton), Enrique Diaz (BHGE), Mauro Viandante (SLB), Khaled Sassi (SLB), Mohamed Fadlelmula (TAMUQ)

A Look Back at 2020

As we now embark on what looks like to be another challenging virtual year, the SPWLA Qatar Chapter would like to step back and acknowledge all the support received from several industry speakers who dedicated their precious time:

Date	Presenter	Talk
14-Sep-2020	Chris Smart, Independent Consultant	Data-Driven, A Resistivity-Free Evaluation Method for Non-Archie Micritic Carbonate Formations.
28-Sep-2020	Khaled Sassi, SCHLUMBERGER	NMR Evolution for Fluid Typing Solution in Complex Carbonates
12-Oct-2020	Fang Yongjun, BAKER HUGHES	The Petrophysics of Production Enhancement: A Bypass Pay
26-Oct-2020	Gareth Taylor & Erik Engelcke – QUANTICO Energy Solutions	Machine Learning for Formation Evaluation Log Simulation and Optimized Perforating for Stimulation
09-Nov-2020	Iulian N. Hulea, SHELL	Understanding Fundamental Controls of Hydrocarbon Saturation: From Stress Corrections to Perched Water Contacts
23-Nov-2020	Helene Berntsen Auflem, STRAUM	Relative Permeability Best Practice for Steady-State Method

SPWLA Qatar Website

We are pleased to inform you that after a great deal of hard work from our IT Coordinator (Faisal Abdulrahman Al-Mutawa), we have received permission to share all the talks/presentations on our website. You may find them here: <https://www.spwla-qatar.com/references>.



Recent Events

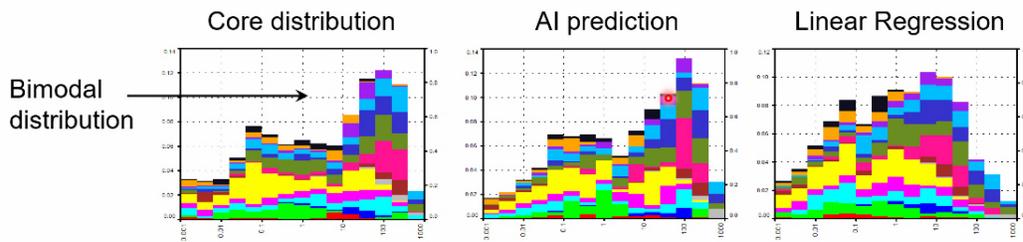
22 February 2021—SPWLA Qatar Chapter resumed its Virtual Technical Talks. Our first talk of 2021 was presented by Dr. Christophe Germy, managing director (EPSLOG), titled “CoreDNA Solution—Core Logging DISRUPTING Your Core Analysis Workflow.”

SAUDI ARABIA CHAPTER

Recent Events

3 February 2021—SPWLA Saudi Chapter conducted its monthly technical event virtually on the subject of “Artificial Intelligence in Petrophysics—Field Applications and Lessons Learned,” by Steve Cuddy, a senior principle petrophysicist (Baker Hughes). In this talk, Steve described AI and its applications in petrophysics and reservoir modeling. Topics covered include AI as a method of learning from data, identifying patterns, and making predictions with minimal human interventions. He concluded that AI, as it is now, makes petrophysical evaluations easier, aiding rather than replacing the roles of petrophysicists. The danger of runaway AI was also briefly discussed. With more than 130 participants, this event was such an attraction that an additional 30 minutes of Q&A followed.

Comparison between Permeability Distributions



- Permeability frequency plots (mD - log scale)
 - Colour shows data from 15 cored wells
- AI predicted permeability matches core distribution
 - High permeabilities are the reservoir's conduits to flow
 - Low permeability are barriers to flow
- Regression permeability techniques give poor predictions
 - These will be incorrect when upscaled to the geocellular reservoir model



At the Saudi Arabia Chapter (SAC) Feb 2021 virtual meeting, Steve Cuddy discusses Artificial Intelligence in Petrophysics—Field Applications and Lessons Learned.

Upcoming Events

TBD—Virtual Workshop Series on Coring and Core Analysis.

TULSA CHAPTER

General News

Tulsa Chapter continues to hold virtual meetings during the pandemic on the regular monthly schedule.

Recent Events

20 January 2021—Dr. Ali Tinni (University of Oklahoma) gave an online presentation on “Electrical Properties of Shales.” His talk was based on a series of laboratory measurements of electrical and other petrophysical properties of samples from the Woodford and Wolfcamp shales in an effort to gain a better understanding of models to estimate water saturation from logs. His work emphasized the importance of the choice of log-based porosity in any saturation model, along with values for the cementation exponent. The relationship between this exponent and organic carbon content and its maturity was demonstrated in this laboratory data set.

10 February 2021—Adam Haecker (Continental Resources) presented his work on “Comparing Petrophysical Properties to Horizontal Well: It’s Harder Than It Seems.” Adam’s talk focused on the use of AI-enhanced petrophysical characterization of reservoirs to improve predictions of production performance in horizontal wells. The talk compared traditional methods for predicting production with AI-based data analysis that revolved around supervised machine-learning methods that emphasized the importance of data preparation through normalization and removal of outliers before training.

Upcoming Events

11 March 2021—Nikita Seleznev will present his 2020–2021 Distinguished Lecture on “Determining Water-Filled Porosity of Tight Oil Reservoirs With a New Interpretation Method for Dielectric Dispersion

Measurements.” This talk continues the Tulsa Chapter’s year-long interest in the petrophysics of tight oil reservoirs that dominate current activity in the mid-Continent.

8 April 2021—Julie Kowan (Baker Hughes) will reprise her 2020–2021 Distinguished Lecture on “Weak Bedding Planes in the Marcellus Shale.” Her work on the characterization of bedding planes and how to work around their challenges is of interest to the unconventional reservoir community in the mid-Continent, especially in how the lessons learned in the Marcellus translate to the less argillaceous reservoirs here.

SPWLA UIS STUDENT CHAPTER

Board of Directors

President	Dana Marcela Ramirez	danamarcelaramirez@gmail.com
Vice President	Luis Alberto Chinomes	luisalberto191296@gmail.com
Fiscal	Angela Stefany Tarazona	angelstefany196@gmail.com
Secretary	Diego Alberto Rangel Niño	diegorangeln97@gmail.com
Treasurer	Tanya Mercedes Garavito Luque	tanyagal0197@gmail.com
Memberships	Cristian Ferney Aceros Florez	crisfer970319@gmail.com

SPWLA UIS Student Chapter:

presidencia.spwlaui@gmail.com - spwlauichapter@gmail.com



SPWLA UIS STUDENT CHAPTER



COLOMBIA

Social Networks:

@SPWLAUIS
Instagram / YouTube / LinkedIn / Facebook



Recent Events

“SPWLA TALKS” live transmissions on the SPWLA UIS YouTube channel at:

<https://www.youtube.com/c/SPWLAUIS>

20 January 2021—SPWLA TALKS Conference: “What We Have Learned From Petrophysical Evaluation of the Vaca Muerta Formation During the Last 7 Years of Unconventional Shale Play Exploration and Development?” by petrophysicist Alberto Ortiz, Global Distinguished Speaker and technical director (Net Zero Carbon Solutions).

GLOBAL DISTINGUISHED SPEAKER

Social
Networks:
@SPWLAUIS

January 2021



Alberto Ortiz
Principal Petrophysicist
YPF S.A. - South America

TITLE: WHAT WE HAVE LEARNED FROM THE PETROPHYSICAL EVALUATION OF THE VACA MUERTA FORMATION DURING THE PAST 7 YEARS OF UNCONVENTIONAL SHALE PLAY EXPLORATION AND DEVELOPMENT?

An event with Advanced Petrophysicist Alberto Ortiz who has 22 years in the oil industry, 20 working as a Petrophysicist, 7 in the Vaca Muerta shale play project and who has experience in Unconventional Reservoirs (Shale Oil /Shale Gas), evaluation of Advanced Carbonate formations, evaluation of Heavy Oil formations by NMR measurements. Complex lithology formation evaluation ECS, Tight gas formation evaluation formation evaluation in volcanoclastics and fracture rocks. Highly deviated and Horizontal well formation evaluation from LWD data Low resistivity pay – Laminated Sand Analysis and Resistivity anisotropy.

organized by:



Innovate the investigation, Investigate the experience, Experience SPWLA

27–29 January 2021—SWPLA UIS hosted an online event using the Zoom platform with the petroleum student chapters (SPE, ACIPET, and ACEIP) and the School of Petroleum Engineering named “PETROWEEK–2021, Innovation in One Place.” The main topics were energy transition, enhanced oil recovery, unconventional reservoirs, and offshore.

“La innovación en un solo lugar”

CONCURSO DE POSTERS

ENERO 27-28-29

PETROWEEK UIS2021

Transición Energética Recobro Mejorado
No convencionales Offshore

Organiza :

Acipet

National and international distinguished speakers were presented during the three days. Initially, the principal gave an opening speech, Dr. Miguel Lotero (vice minister of Mines and Energy) gave an introduction, Pedro Manrique (commercial and marketing vice president of the ECOPETROL Company) talked about the long-term perspectives of the oil sector in Colombia, and Rafael Guzman (president of the HOCOL Company) talked about the competitiveness of the Colombian oil industry. After that, the talks on the aforementioned topics were given the following two days, and the third day ended with the presentation of the research groups of the School of Petroleum Engineering and a poster contest.

PETROWEEK UIS 2021

AGENDA TÉCNICA TRANSICIÓN ENERGÉTICA 27 ENERO

- 08:05-08:25 AM **PALABRAS DE APERTURA**
ING. HERNÁN PORRAS- RECTOR UIS
DRA. SANDRA GARCÍA VERGARA- DECANA FACULTAD DE FÍSICOQUÍMICAS
MSC.FERNANDO CALVETE- DIRECTOR ESCUELA INGENIERÍA DE PETRÓLEOS
- 08:25-08:45 AM **PERSPECTIVAS A LARGO PLAZO DEL SECTOR PETROLERO EN COLOMBIA**
FELIPE BAYÓN PARDO-PRESIDENTE ECOPETROL
- 08:45-09:15 AM **PALABRAS VICEMINISTRO DE MINAS Y ENERGÍA**
MIGUEL LOTERO
- 09:15-09:45 AM **COMPETITIVIDAD DEL SECTOR PETROLERO COLOMBIANO**
RAFAEL GUZMÁN-PRESIDENTE HOCOL

PETROWEEK UIS 2021

AGENDA TÉCNICA OFFSHORE 27 ENERO

- 02:05-02:55 PM **SOBREPRESIONES: METODOLOGÍAS Y HALLAZGOS**
DARWIN MATEUS TARAZONA - ECOPETROL
- 03:00-03:55 PM **EL ROL DE LAS GEOCIENCIAS EN LOS DESARROLLOS OFFSHORE**
DANIEL ANDRÉS RINCÓN - ECOPETROL
- 04:00-04:55 PM **PRODUCTION FACILITIES IN OFFSHORE PLATFORMS**
CASANDRA DEWAN-UNIVERSIDAD FEDERAL DE RIO DE JANEIRO
- 5:00-5:55 PM **PERFORACIÓN OFFSHORE**
LUIS JAVIER GÓMEZ-ECOPETROL

PETROWEEK UIS 2021

AGENDA TÉCNICA YNC 28 ENERO

- 08:05-08:55 AM **ELECTRO-FACIES Y ROCK TYPING USANDO REDES NEURONALES Y FLUJOS DE TRABAJO DE APRENDIZAJE AUTOMÁTICO** ING. GERARDO MONSEGU-BEICIP FRANLAB ASIA
- 09:00-09:55 AM **INTRODUCCIÓN AL ANÁLISIS DE ROCAS NO CONVENCIONALES: CALIDAD DE ROCA GENERADORA Y ROCA RESERVORIO** MARÍA SEGOVIA-GEÓLOGA / PETROFÍSICA-GERENCIA YNC ECOPETROL
- 10:00-10:55 AM **INTEGRACIÓN ROCA-PERFIL PARA ESTIMAR LA PERMEABILIDAD EN RESERVORIOS CARBONATADOS EN LA CUENCA CAMPOS** BRUNO MENCHIO - SPWLA
- 11:00-11:55 AM **THE ROLE OF PETROPHYSICISTS INTERNATIONALLY** DR. JESÚS H. SALAZAR-MARATHON OIL TEXAS

PETROWEEK UIS 2021

AGENDA TÉCNICA EOR 28 ENERO

- 02:05-02:55 PM **NUEVAS TECNOLOGÍAS EN RECUBRO MEJORADO PARA LOS RETOS PARTICULARES DE LOS ACTIVOS COLOMBIANOS** MSC.HUGO GARCÍA - ECOPETROL
- 03:00-03:55 PM **RETOS Y ENFOQUE ESTRATÉGICO EN EL DESARROLLO DE PROYECTOS INTEGRALES DE RECUPERACIÓN TÉRMICA DE HIDROCARBUROS PARA EL INCREMENTO DE PRODUCCIÓN EN CAMPOS DE CRUDO PESADO** ING. JESÚS RODRIGUEZ - NAKASAWA MINING AND ENERGY
- 04:05-05:00 PM **THE USE OF CHEMICAL IN GAS DISPERSIONS FOR WELL PRODUCTIVITY AND RECOVERY ENHANCEMENT** MSC. KELLY DÍEZ - GASTIM TECHNOLOGIES
- 5:00-5:55 PM **PANORAMA ACTUAL DE LA NANOTECNOLOGÍA APLICADA AL RECUBRO MEJORADO EN COLOMBIA** PH.D. CAMILO FRANCO ARIZA-UNIVERSIDAD NACIONAL DE COLOMBIA

There was a forum on “Challenges and Opportunities of the Energy Transition” presented by Dr. Armando Zamora (president of the National Hydrocarbons Agency), Dr. Christian Jaramillo (director of the Mining and Energy Planning Unit), Dr. Andrés Mantilla (director of the Colombian Petroleum Institute, Ecopetrol), Dr. Roderick Pérez (president, ScientiaGroup), and Dr. Nelson Castañeda (executive president of Campetrol).

PETROWEEK UIS 2021

AGENDA TÉCNICA TRANSICIÓN ENERGÉTICA 27 ENERO

10:00-11:50 AM FORO: RETOS Y OPORTUNIDADES DE LA TRANSICIÓN ENERGÉTICA EN COLOMBIA

MODERADOR: ERIK MONTES- ESPECIALISTA, MAGISTER Y DOCENTE UIS



ANDRÉS MANTILLA
DIRECTOR ICP



ARMANDO ZAMORA
PRESIDENTE ANH



CHRISTIAN JARAMILLO
DIRECTOR UPME



NELSON CASTAÑEDA
PRESIDENTE EJECUTIVO CAMPETROL



RODERICK PÉREZ
PRESIDENTE SCIENTIA GROUP

Organiza:








SPWLA UIS hosted four webinars focused on unconventional reservoirs with the presence of distinguished professionals:

Webinar: “Electrofacies Using Neural Networks and Machine-Learning Workflows in Rock Typing” by Gerardo Monsegui (engineer and petrophysicist from BEICIP-FRANLAB in Kuala Lumpur, Asia).



The slide features a circular portrait of Gerardo Monsegui, a man with glasses and a beard, wearing a suit and tie. To the right of the portrait is the logo for PETROWEEK UIS2021, which includes a stylized flame and gear icon. Below the portrait is the BeicipFranlab logo. A green rounded rectangle contains the title of the webinar in Spanish. Below this is the speaker's name and a detailed biography. At the bottom, there are several logos for partner organizations: Universidad Nacional de Ingeniería (UNION) with the text 'VIGILADA MINEDUCACION', Escuela de Ingeniería de Petróleos, SPE (Society of Petroleum Engineers) with 'SPE Student Chapter', SPWLA UIS STUDENT CHAPTER, and Acipet.

**PETROWEEK
UIS2021**

BeicipFranlab

Electro-facies y Rock Typing usando redes neuronales y flujos de trabajo de aprendizaje automático

Ing. Gerardo Monsegui

Principal Petrophysicist en Beicip-Franlab Kuala Lumpur, Malasia, Asia. Más de 35 años realizando proyectos en estudios integrados y caracterización de yacimientos. Trabajó para Schlumberger en varios países del continente africano, por los últimos 7 años se ha dedicado a realizar estudios de las cuencas del Sur Este chino en Yacimientos de Gas y Petróleo, tanto en Arena como en Carbonatos. Ha colaborado en varias ocasiones con los estudiantes participantes del Imperial Barrel Award.

UNION VIGILADA MINEDUCACION | Escuela de Ingeniería de Petróleos | SPE Student Chapter | SPWLA UIS STUDENT CHAPTER | Acipet

Webinar: “Introduction to the Analysis of Unconventional Rocks: Quality of Source Rock and Reservoir Rock” by Maria Segovia (geologist/petrophysicist for the management of unconventional reservoirs for ECOPETROL).



The slide features a circular portrait of Maria Florencia Segovia, a woman with glasses and long hair. To the right of the portrait is the logo for PETROWEEK UIS2021. Below the portrait is the ecopetrol logo. A green rounded rectangle contains the title of the webinar in Spanish. Below this is the speaker's name and a detailed biography. At the bottom, there are several logos for partner organizations: Universidad Nacional de Ingeniería (UNION) with the text 'VIGILADA MINEDUCACION', Escuela de Ingeniería de Petróleos, SPE (Society of Petroleum Engineers) with 'SPE Student Chapter', SPWLA UIS STUDENT CHAPTER, and Acipet.

**PETROWEEK
UIS2021**

ecopetrol

Introducción al análisis de rocas no convencionales: Calidad de roca generadora y roca reservorio

Maria Florencia Segovia

Petrofísica en Gerencia de Yacimientos No Convencionales en Ecopetrol. Más de 12 años en la industria del Oil & Gas, en desarrollo de proyectos, y auditorías de reservas, en yacimientos convencionales y no convencionales ubicados en gran parte de América Latina (Argentina, Chile, Bolivia, Brasil, Perú, Ecuador y Colombia); y para empresas como Schlumberger, YPF SA, Gaffney, Cline & Associates (Baker Hughes) y Ecopetrol.

UNION VIGILADA MINEDUCACION | Escuela de Ingeniería de Petróleos | SPE Student Chapter | SPWLA UIS STUDENT CHAPTER | Acipet

Webinar: “Rock-Profile Integration to Estimate the Permeability in Carbonate Reservoirs in the Campos Basin” by Bruno Menchio (geologist/petrophysicist for ENEVA company in Brazil and Regional Director for the SPWLA).

**PETROWEEK
UIS2021**

Integración Roca-Perfil para estimar la permeabilidad en reservorios carbonatados en la cuenca de campos

Bruno Menchio Faria

Geólogo Petrofísico en UFF Brasil/ Director Regional en SPWLA Latino América.
Geólogo de la Universidad Federal de Rio de Janeiro, y magister en la Universidad Federal Fluminense en el campo de la petrofísica de carbonatos. Experiencia: más de 18 años en la industria del Oil & Gas. Trabajó como mudlogger, geólogo wellsite y petrofísico en empresas servicios y operadores.

VIGILADA MINEDUCACIÓN | Escuela de Ingeniería de Petróleos | SPWLA UIS STUDENT CHAPTER | Acipet

Webinar: “Evolution and Future Perspective of Petrophysics, International Panorama, Research Areas. Role of the Petrophysicist” by (senior petrophysicist, MARATHON OIL CORPORATION in Houston and former President of SPWLA International 2020) Dr. Jesús Salazar.

**PETROWEEK
UIS2021**

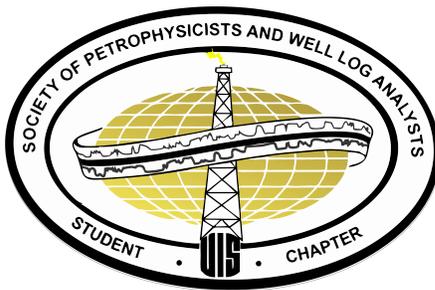
The Role of Petrophysicists Internationally

Dr. Jesús M. Salazar

Advanced Senior Petrophysicist para Marathon Oil en Houston
Trabajó 11 años con ConocoPhillips en Houston, Australia y Canadá en asignaciones de tecnología y exploración, desarrollando nuevos flujos de trabajo para proyectos de caracterización de yacimientos. Anteriormente se desempeñó como investigador en el Centro de Ingeniería Petrolera de la Universidad de Texas, Petrofísico en PDVSA y recientemente fue presidente del SPWLA para el periodo 2019-2020.

VIGILADA MINEDUCACIÓN | Escuela de Ingeniería de Petróleos | SPWLA UIS STUDENT CHAPTER | Acipet

February—Research Program for Undergraduate Students. This is the first research program developed at SPWLA UIS.



SPWLA UIS/ Social Networks

LinkedIn:

<https://www.linkedin.com/company/spwla-uis-student-chapter/>

Instagram:

<https://www.instagram.com/spwlauiis/?hl=es-la>

YouTube:

<https://www.youtube.com/c/SPWLAUIS>

Facebook:

<https://es-la.facebook.com/SPWLAUIS/>

UNIVERSITY OF TEXAS AT AUSTIN STUDENT CHAPTER

General News

The Student Chapter of SPWLA at UT Austin hopes everyone in our community stays safe and healthy during these challenging times. It has been three weeks since we officially started the 2021 spring semester. We have hosted one technical seminar this semester so far. We are observing similar attendance throughout the entire 2020–2021 academic year. We have implemented after-seminar polls to see where we can improve. Despite the challenges, we continue planning events for the academic year 2020–2021. So far, we have confirmed three speakers for the spring semester, and we plan to add at least one more.

Recent Events

28 February 2021—We hosted our third technical seminar of the 2020–2021 academic year by Iulian Hulea (2020–2021 SPWLA Global Distinguished Speaker from Shell) entitled “From Homogeneous to Heterogeneous Rocks Understanding Fundamental Controls of Hydrocarbon Saturation: Perching Effects.” We would like to thank Iulian and Shell for his presentation.

Upcoming Events

We plan to hold a minimum of three more seminars for the 2021 spring semester. Our next technical seminar entitled “Determining Water-Filled Porosity of Tight Oil Reservoirs With a New Interpretation Method for Dielectric Dispersion Measurements” will be presented by 2020–2021 SPWLA Distinguished Speaker Nikita Seleznev. We are looking forward to his presentation.



Daria Olszewska

Iulian Hulea

SPWLA
GLOBAL
DISTINGUISHED
SPEAKER

2020 – 2021*

UNDERSTANDING FUNDAMENTAL CONTROLS OF HYDROCARBON SATURATION: FROM STRESS CORRECTIONS TO PERCHED WATER CONTACTS**

IULIAN N HULEA
SHELL

**Petrophysics 60 (03), 438-449 (2019).
Petrophysics 59 (03), 397-406 (2018).

SPWLA Distinguished Speaker Series 2020-2021

www.spwla.org





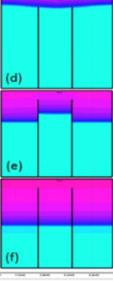
Iulian Hulea

SPWLA DISTINGUISHED SPEAKER SERIES

Predictability and rock quality



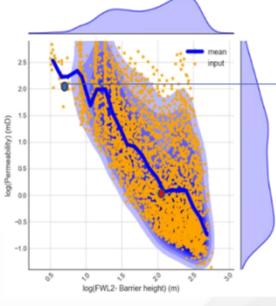
1 mD



(d)

(e)

(f)



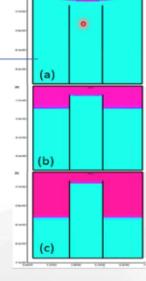
log₁₀(permeability) (mD)

log₁₀(FWL2 - Barrier height) (m)

mean

input

100 mD



(a)

(b)

(c)

© 2016 SPWLA. All rights reserved.

FUNDAMENTAL CONTROLS OF HC SATURATION • I. N. Hulea

www.spwla.org

102

UNIVERSITY OF LOUISIANA AT LAFAYETTE STUDENT CHAPTER

General News

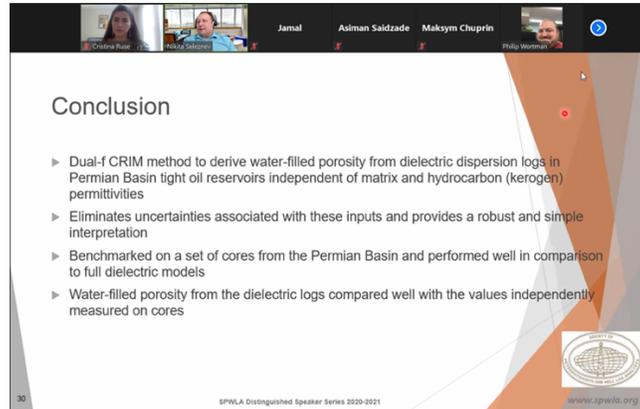
To comply with the social distancing guidelines at the University of Louisiana at Lafayette, all Spring 2021 events will be held online via Zoom. A Distinguished Lectures Series is organized by the student chapter and allows students to interact with experts from industry and academia, as well as improve their domain knowledge and technical skills.

The persons listed below currently serve as officers of the UL Lafayette Student Chapter:

President	Cristina M. Ruse
Vice President	Philip B. Wortman
Secretary	Traelyn B. Brasseaux
Treasurer	Asiman Saidzade

Recent Events

12 February 2021—The SPWLA Student Chapter at the University of Louisiana at Lafayette held its first meeting of the semester. During the meeting, Dr. Nikita Seleznev, SPWLA Distinguished Speaker, shared his experience on “Determining Water-filled Porosity of Tight Oil Reservoirs With a New Interpretation Method for Dielectric Dispersion Measurements.”



Dr. Nikita Seleznev, SPWLA Distinguished Speaker, addressing students' questions.

5 March 2021—Our second meeting of the spring semester was an SPWLA–SPE joint event, and Ms. Laura-Ioana Precupanu, SPE Regional Director for Europe, gave a non-technical talk on “Professional Pride—Why Does Trust and Passion Matter?” to both SPWLA and SPE members at our university.



Announcement flyer prepared for Ms. Laura-Ioana Precupanu's talk.

Upcoming Events

19 March 2021—Students will be able to showcase their research during the annual SPWLA Internal Student Chapter Paper Contest. The students selected to participate in the internal competition will have to hold a 15-minute PowerPoint presentation on the day of the contest. The winners from each degree category will receive cash prizes (\$200 for each first place, \$100 for each second place, and \$50 for each third place), and their abstracts will be sent for assessment to the SPWLA International Student Paper Contest Evaluation Committee.

CALL FOR ABSTRACTS
2021 SPWLA Internal Student Chapter Paper Contest

We invite **Undergraduate, M.Sc., and Ph.D.** students to submit abstracts for the **SPWLA Internal Student Chapter Paper Contest**. Research topics should be related to **formation evaluation, petrophysics, well log analysis or machine learning**.

Send a 250 - 500 word abstract, your name and year of study to ullspwla2020@gmail.com by **March 5**

If your abstract is accepted, get ready to give a 15-min PPT presentation
When? March 19 @ 9 am
Where? In Zoom

Winners get cash prizes \$\$\$ and could be chosen to participate in the **International SPWLA Student Paper Contest**

For any **Questions** please free to contact Cristina Ruse at cristina.ruse1@louisiana.edu or Philip Wortman at philip.wortman1@louisiana.edu.

Call for Abstracts announced for the 2021 SPWLA Internal Student Chapter Paper Contest.

UFRJ STUDENT CHAPTER

General News

Our chapter started 2021 reorganizing some roles. We created a “coordinator” position for the Marketing and Logistics teams aimed at improving the communication and proactivity necessary to achieve our goals. Unfortunately, one of our members had to leave the chapter. Basically, UFRJ SPWLA Student Chapter has 13 active members organized below:

Board Members

President	Rodrigo Gentil Azambuja (rodrigo.gentil.azambuja@gmail.com)
Vice President	Amanda Mendes Bezerra (mendesamanda@ufrj.br)
Treasurer	Sofia D’Orsi (sgdorsi@gmail.com)
Secretary	Maria Eduarda Verbicario (duda.verbicario@gmail.com)

Treasurer Assistants

Bruno Valle (bruno@geologia.ufrj.br)
Teresa Mourão (teresamouraoo@gmail.com)

Marketing Members

Caio Guedes (caiobittencourt@gmail.com) (coordinator)
Gabriel Ferraz (gabrieferraz036@gmail.com)
Shirlene Barros (shirlenebarros1@hotmail.com)
Iago da Costa (iago.cjaques@gmail.com)

Logistics Members

Vinicius Jorge (vinicius.tj@gmail.com) (coordinator)
Sarah Aleixo (sarahaleixo@gmail.com)
Isabelle Freitas (belleafreitas@gmail.com)

Recent news

This year, members of the chapter have already had three meetings to bring new ideas for the rest of 2021. Some bimonthly goals were set for the Logistics and Marketing teams, including increasing the number of webinars, internal training courses, and informative posts on social media. We also had a meeting with another three different chapters from the Federal University of Rio de Janeiro to organize an online event

together that could encompass each one of our main topics. To finish, the Marketing team remained active in social media, posting some information and concepts of petrophysics and well logging.

Upcoming Events

Our next plan is to continue with our remote activities, bringing knowledge in petrophysics and well logging to the academic public and chapter members. To achieve this, we are organizing some webinars, online courses, and informative posts about these topics to be posted on Instagram, LinkedIn, and Facebook. In March, our chapter intends to provide a webinar with Lucas Abreu Blanes de Oliveira, Student and Young Professionals Director of SPWLA Brazil. Also, we are finally getting our ideas off the drawing board about the online event together with the other three UFRJ chapters. The aim of this event is to emphasize the importance of taking care of the environment in an exploratory context.

Welcome New Members: December 14, 2020–February 21, 2021

Ahmed, Wael, GPES, Cairo, Egypt
Barragan, Mario, LITHoil Ltd, Chia, Cundinamarca, Colombia
Bouchakour, Imene, University of North Dakota, Grand Forks, ND, United States
Castillo Manrique, Andrea, University of Oklahoma, NORMAN, OK, United States
Cathey, William, Texas A & M Kingsville, Kingsville, TX, United States
Ceglar, Nathan, Woodside Energy Ltd, Applecross, WA, Australia
Chandra, Sudip, Stratum Reservoir India LLP, Navi Mumbai, India
Daniels, Jeffrey, University of Houston, Houston, TX, United States
Deger, Evgeniya, Schlumberger, Richmond, TX, United States
Di Tommaso, Davide, Weatherford, Pescara, Italy
Flores, Brian, University of Houston, Houston, TX, United States
Hasnan, Hijaz Kamal, University of Malaya, Wangsa Maju, Kuala Lumpur, Malaysia
Hattori, Tadataka, INPEX Corporation, Tokyo, Japan,
Hinson, Jonathan, Chesapeake Energy, Oklahoma City, OK, United States
Hodenfield, Brooke, Midland, TX, United States
Ikande, Princewill, Weatherford, Ahmadi, Kuwait
Islamgulov, Ildus, Ridge, Bergen, Vestland, Norway
Lange Detraz, Amanda, University of Louisiana Lafayette, Abbeville, LA, United States
Luaces-Heider, Viviane, BW Energy, Houston, TX, United States
Maju, Jones, University of Houston, Bakersfield, CA, United States
Mallma Estrada, Yimy, Universidad Nacional De Ingeniería, Surco, Lima, Peru
Oduwole, Similoluwa, Colorado School of Mines, Golden, CO, United States
Padiav, Pouya, Crescent Petroleum, Sharjah, United Arab Emirates
Quevedo Bermeo, Jair, Universidad Nacional De Ingeniería, Lima, Peru
Quiroz Llengle, Marco, Universidad Nacional De Ingeniería, Lima, Peru
Ridzuan, Muhammad, Mohamed Bin Zayed University of Artificial Intelligence (MBZUAI), Al Raha Gardens, Abu Dhabi, United Arab Emirates
Rybowiak, Chris, SM Energy, Houston, TX, United States
Shin, Gregory, Bureau of Ocean Energy Management, Metairie, LA, United States
Soto, Christian Joel, Universidad Nacional De Ingeniería, Lima, Peru
Vidal, Alyne, Rio De Janeiro Federal University, Rio De Janeiro, Brazil
Vidal, Irenka, Universidad Nacional De Ingeniería, Lima, Peru
Wang, Haifeng, Schlumberger, Mount Claremont, WA, Australia
Yuce, Ugur, Turkish Petroleum, Ankara, Turkey