



# spwla today



NEWSLETTER

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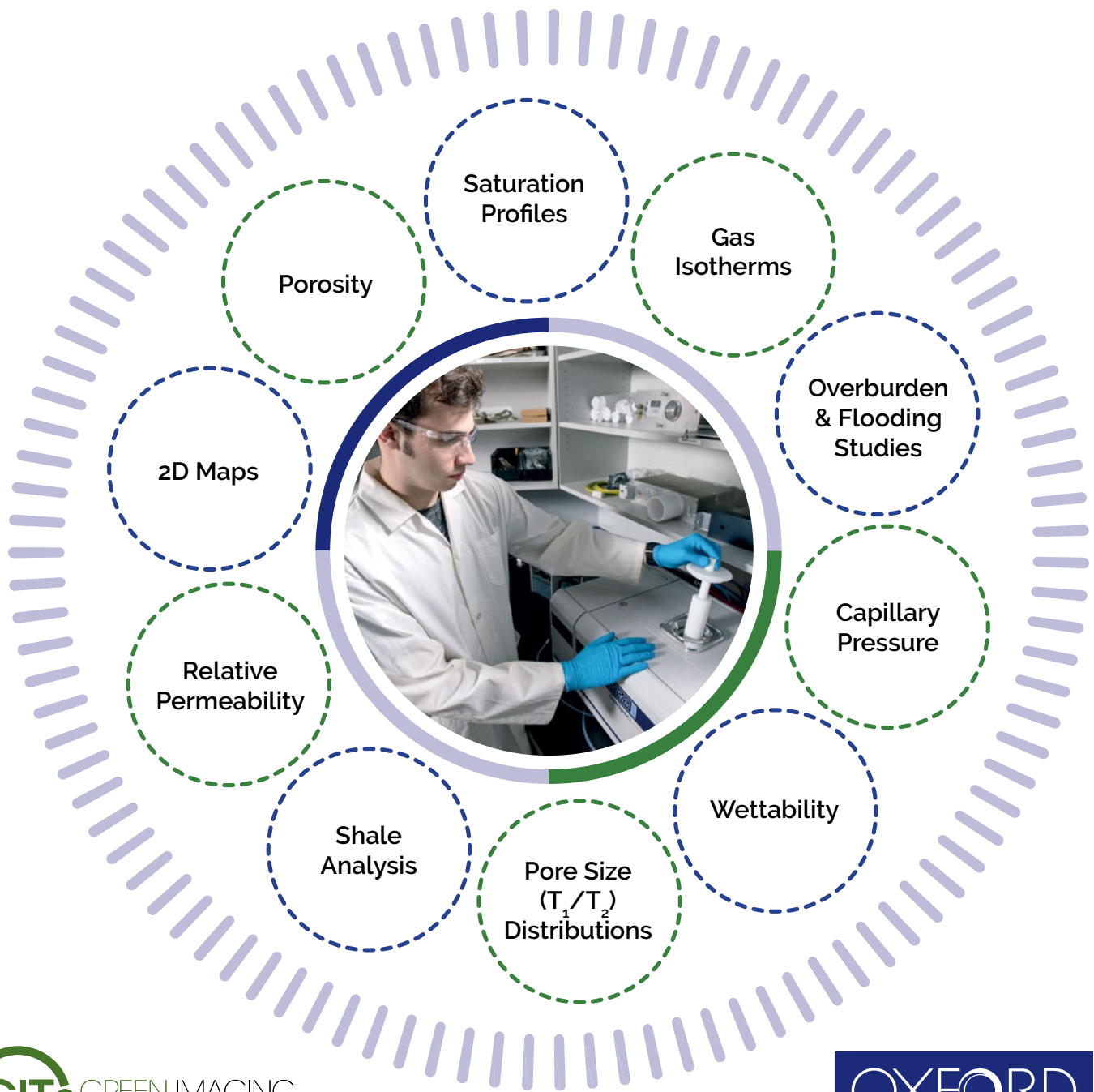
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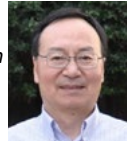
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**CALENDAR OF EVENTS**

**September 14–16, 2021**

NMR Fundamentals Class  
Instructor – Brian Stambaugh  
NMR Petrophysics  
[www.spwla.org](http://www.spwla.org)

**September 22–23, 2021**

Petrophysical Multimineral Analysis Training Series  
Instructor – Patricia E. Rodrigues  
SeisPetro Geoconsulting  
[www.spwla.org](http://www.spwla.org)

**September 30–October 1, 7, 8, 2021**

The 26th JFES Formation Evaluation Symposium  
Virtual Event  
Special Session: Integrated Evaluation  
<http://jfes-spwla.org>

**October 21–22 2021**

SPWLA Topical Conference  
Topic – Unconventional Petrophysics  
Online  
[www.spwla.org](http://www.spwla.org)

**November 10–11, 2021**

Petrophysical Multimineral Analysis Training Series  
Instructor – Patricia E. Rodrigues  
SeisPetro Geoconsulting  
[www.spwla.org](http://www.spwla.org)

**June 10–15, 2022**

SPWLA 63rd Annual Symposium  
Stavanger, Norway  
[www.spwla.org](http://www.spwla.org)

**About the Cover**

As we continue the countdown to the 63rd Annual Logging Symposium, pictured on this month's cover is Vågen, the harbor that is the heart of Stavanger, Norway. In addition to boat watching, the Vågen area is a great place to walk, eat, and shop.

**Notice: 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.**

## From the President



**Katerina Yared**  
2021-2022  
SPWLA President

Dear Petrophysics Friends and Colleagues,

Summer is almost over, but unfortunately, the COVID threat is not. For those who can, please get your vaccine because meeting people in person is so much more rewarding and fulfilling. I was fortunate enough to attend URTeC in Houston in person this July and made a point to organize an SPWLA Happy Hour with the help of the Houston SPWLA Chapter (thank you!). It was a nice change after the virtual meeting fatigue we all have been experiencing and must still do so because of the COVID delta variant.

At URTeC, I was the moderator of an esteemed ESG-focused panel from which I learned a lot. I was also the proud session chair of our Best of SPWLA session, highlighting some of our best unconventional reservoir-focused SPWLA 2021 symposium papers.



As SPWLA President, I moderated an ESG-focused panel at URTeC 2021.



## From the President



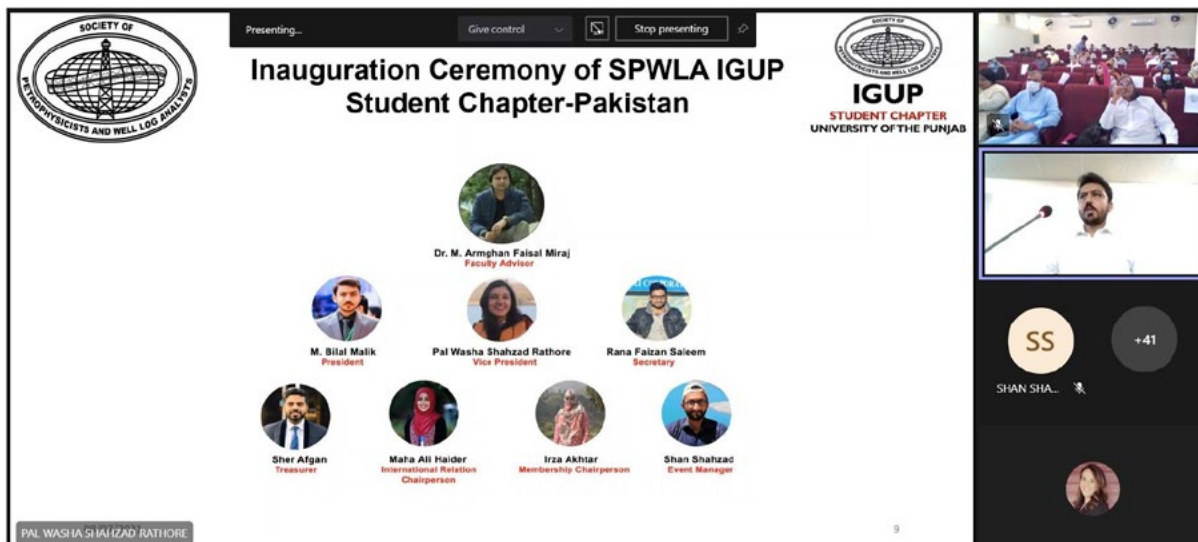
Best of SPWLA speakers and session chair.



The three presidents or the three banditos? Hahaha! Jesus Salazar, myself, and Luis Quintero.

## From the President

I was grateful to partake in a beautiful inaugural ceremony of our Pakistani Student Chapter IGUP! We had wonderful speakers and insights from Pakistani professionals all over the world who contributed a little bit of their wisdom to provide a great start to this dynamic chapter.



Starting in September, we will resume our online class activity with our NMR class and many more (future topics include rock physics, geomechanics, and our famous multiminerals analysis)! We hope you get a chance to participate. We offer many other opportunities to develop your knowledge skills in petrophysics further. That is why we are here. Check out our webpage and our social media channels to stay up to date.

As a reminder, the SPWLA this year will be an endorsing society for the American Rock Mechanics Association (ARMA), Dhahran Geoscience Society (DGS), and Society of Exploration Geophysicists (SEG) 2nd International Geomechanics Symposium taking place on 1–3 November 2021 in Al Khobar, Saudi Arabia. They have seen a record number of submissions—that is what synergy brings.

As always, feel free to email me your ideas and thoughts to [president@spwla.org](mailto:president@spwla.org). I look forward to hearing from you!

Please stay safe and get vaccinated so that we can see each other again in Stavanger for our 63rd Annual Logging Symposium!

Respectfully Yours,

SPWLA President 2021–2022  
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**Songhua Chen**  
2021–2022  
Vice President Publications

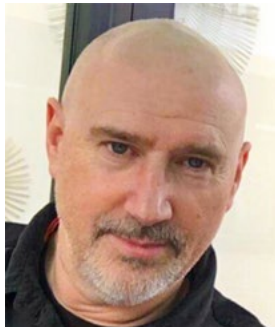
Greetings and welcome to the September 2021 issue of *SPWLA Today*.

I hope you had some leisure time this summer and/or a memorable vacation. As the travel restrictions eased around the world, this summer offered much more than the last year. We all know that the pandemic is far from over; the Delta variant is still causing many uncertainties and, unfortunately, increased new cases. However, just like the Tokyo Olympic Games, we all learned that life couldn't wait for the pandemic to end to push the restart button. Several SPWLA events this fall 2021 have plans to offer physical in-person gatherings after more than one year of online-only events! These include the Fall Topical Conference on Unconventional Petrophysics and the NMR SIG Meeting—both in Houston, Texas, USA, and the 12th UPC International Symposium in Qingdao, China. I have spoken with several organizers and potential attendees of the two Houston events. They are very excited that we will finally have the opportunity to meet colleagues in person. We hope that the strong desire to socialize may make these events well attended. Of course, safety and health are always the highest priority. There is also a Plan B to convert it to an online event if the pandemic situation turns much worse, but let's hope for the best!

It is time to consider writing and submitting an abstract to next year's SPWLA Symposium. The 63rd Symposium is particularly exciting because it will be an in-person event after 2 years of holding the symposiums online and also because it will be held in the astonishingly beautiful city of Stavanger. In my personal experience, Stavanger has its unique charm. The first time I visited Stavanger dates back to 1994 during my post-doc years at Texas A&M University. We went to Stavanger to collaborate with a Norwegian operating company research team. I enjoyed leisurely strolling the city streets and parks on a Sunday afternoon, a day trip to the fjord, and, of course, the freshest salmon fish I ever tasted. I can't wait to do it again next year. I hope you'll plan to attend the symposium! Writing an abstract can be the first step in that plan!

Also, I would like to use this opportunity to gently remind everyone that the abstract submission deadline for the special issue on NMR for the *Petrophysics* journal is October 1. Almost 30 years have passed since the first commercialized NMR logging tool was put in service. We have witnessed NMR logging gradually gain acceptance from a specialty logging service to a more routine operation in many formation types, such as carbonate and unconventional reservoir pore typing. The last time an SPWLA publication specifically focused on NMR was in *Log Analysts* published in 1996—the time NMR wireline logging had just taken off, and LWD NMR was an unheard-of concept. Twenty-five years later, the technology has undoubtedly advanced. Many SPWLA members have contributed and/or witnessed this NMR logging technology evolution. Please consider sharing your knowledge, experience, and success with all of us by contributing to this special issue.

Best,  
Songhua Chen  
Vice President Publications  
VP-Publications@spwla.org



**Tegwyn Perkins**  
2021-2022 President Elect

Hello and welcome to my second column as President Elect for the *SPWLA Today* newsletter.

Let's start this article by tying up some loose ends from the symposium.

Winner of the Best Paper Presentation at the 62nd SPWLA Online Symposium went to: SPWLA-2021-0013 **THE IMPACT OF OVERBALANCED DRILLING FROM EXPLORATION/APPRaisal WELLS TO FIELD DEVELOPMENT PLAN**; written by *Mohammadhossein Mohammadlou, Matthew Guy Reppert, Roxane Del Negro, and George Jones, Neptune Energy Norway* and presented by Matthew Guy Reppert.

First Runner-Up of the Best Paper Presentation at the 62nd SPWLA Online Symposium went to: SPWLA-2021-0069 **ENHANCED MINERAL QUANTIFICATION AND UNCERTAINTY ANALYSIS FROM DOWNHOLE SPECTROSCOPY LOGS USING VARIATIONAL AUTOENCODERS**; written by *Paul Craddock, Prakhar Srivastava, Schlumberger-Doll Research Center; Harish Datir, David Rose, Tong Zhou, Laurent Mosse, and Lalitha Venkataramanan, Schlumberger* and presented by Paul Craddock. For the first time in SPWLA Symposium history, we held a "**Paper of the Day contest**" where all attendees could vote for their favorite papers. The overall winner from all 4 days was:

SPWLA-2021-0007 **WELLBORE IMAGES DIGITAL FUSION: BEYOND SINGLE-SENSOR PHYSICAL CONSTRAINTS**; *Simone Di Santo, Nadege Bize-Forest, and Isabelle Le Nir, Schlumberger; Carlos Maeso, Retired* and presented by Simone Di Santo.

My recommendations (while under the guise of VP Technology 2020-21) for the *Petrophysics* journal "Best of SPWLA 2021" were submitted to the VP Publications, as were my recommendations for Distinguished Speakers to the VP Education. The full list of nominations will be documented when they have been confirmed.

I have spent much of the past couple of months in conversation with the SPWLA Special Interest Groups (SIGs). We currently have nine SIGs: Education, Nuclear, Resistivity, HAZ, Acoustics, Formation Testing, NMR, PDDA, and Reserves. The last one is new. It doesn't have a web presence yet, but that is something on which I will be working.

The SIGs are an excellent technical resource. Unfortunately, in-person meetings have typically been held in the USA (and, more accurately, Houston). However, many of them are now planning online events for this fall/autumn. I encourage all of you to register for these meetings. They are a unique source of education for formation evaluation and petrophysics. More details can be found on [spwla.org's](http://spwla.org) Events listing and SIG pages.

**Calling all SPWLA Chapters!!** Please start sending me your solicitations for the SPWLA 2023 Symposium proposals. Traditionally, odd years are held in the US; however, we are not living in traditional times, so I am interested in all proposals.

**"A fo ben, bid bont"** – If you want to be a leader, be a bridge.

Kind regards  
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President Elect 2021-2022  
[President-Elect@spwla.org](mailto:President-Elect@spwla.org)



**Carlos Torres-Verdín**  
2021-2022 Vice President  
Technology

### ONE SPWLA in Stavanger: Let's Get Ready for an Extraordinary Annual Symposium!

The wheels have been set in motion for the exciting road leading toward the 2022 SPWLA Annual Symposium in Stavanger, Norway. Let's all get vaccinated so that we don't experience yet another wave of an unexpected variant of COVID-19 next summer. **We deserve an excellent in-person symposium to celebrate the very special fabric of the SPWLA!**

Start by jotting down what your presentation will be and what topics you want to cover, convey, and discuss that are relevant to *Formation Evaluation*. Surely you have seen the *Call for Proposals for Organized Sessions* that we issued last month (reproduced for your reference in this issue of *SPWLA Today*). Let's shake the trees and motivate our colleagues to submit proposals. We are very keen about organized sessions on new and relevant trends in formation evaluation, such as (a) geothermal resources, (b) carbon capture, utilization, and storage, (d) geohydrology, (e) the energy transition, and many others. Don't underestimate the power of change in our unique technical discipline!

And I would like to share with you some of the immediate tasks that we have on our to-do list as part of the organization of the SPWLA 2022 Annual Symposium:

- (1) Select the final Organized Sessions
- (2) Prepare and release a short video on *How to prepare a successful SPWLA Symposium abstract*
- (3) Release the official Call for Abstracts for the 2022 SPWLA Symposium
- (4) Complete the selection of the 2021–2022 SPWLA Technology Committee members (please let me know if you have the time and motivation to serve on this important committee!)
- (5) Nominate and select keynote speakers
- (6) Begin planning the technical workshops that will precede the symposium

Needless to say, a lot goes on behind the scenes during the organization of a successful annual SPWLA Symposium. But the heart and soul of the symposium are members like you, who are willing to share their technical work and experience with large audiences who, in turn, are avid to hear and learn from you. It is this constructive cycle that makes the event so unique, rewarding, and relevant. And the possibilities for networking and meeting up with old and new friends and colleagues will be amplified by the various events being planned in conjunction with the technical sessions.

For those of you who have not been to Stavanger, I would also like to mention the added incentive of multiple nature walks and hikes in and around the city, a prolific culinary landscape, and plenty of locales for mingling around coffee and libations.



Photograph by the author from Dalsnuten, Sandnes, Norway, looking toward Stavanger.

## Tech Today

As always, don't hesitate to make suggestions for improvement. All ideas are appreciated and will be given our utmost consideration. We are striving to celebrate an inclusive event where all SPWLA members feel welcomed and valued, regardless of gender, age, race, nationality, or technical specialty.

Sincerely,

Carlos Torres-Verdín, PhD, Professor

Brian James Jennings Memorial Endowed Chair in Petroleum and Geosystems Engineering

Hildebrand Department of Petroleum and Geosystems Engineering

The University of Texas at Austin

[cverdin@mail.utexas.edu](mailto:cverdin@mail.utexas.edu)





**Fransiska Goenawan**  
**2020-2022**  
**Vice President Education**

**Hello SPWLA Friends,**

I hope everyone is healthy and safe!

The Distinguished Speaker and Global Distinguished Speaker List for 2021–2022 is now available on the SPWLA website. I personally would like to take this moment to congratulate all the Distinguished Speakers and Global Distinguished Speakers who were selected to participate in this program. Thank you for sharing your knowledge and experience with SPWLA members.

To all Chapter and SIG officers, please kindly contact me if you need a webinar platform to conduct your meeting as we are here to serve you. At this moment, SPWLA International offers two platforms: GoToWebinar and ZOOMWebinar. Please email [vp-education@spwla.org](mailto:vp-education@spwla.org) with the information below, preferably 1 month prior to the meeting:

1. **Event Title**
2. **Event Date/Time (time zone)**
3. **Moderator's (Host and Co-host) Name and Email**
4. **Panelist's Name/Email/Abstract/Photo**

I encourage anyone willing to share his/her knowledge using the Nuggets of Wisdom platform to let me know. Please kindly email [VP-Education@spwla.org](mailto:VP-Education@spwla.org) if you would like to participate. You may access the past Nuggets of Wisdom on the SPWLA YouTube Channel.

SPWLA short courses coming up include:

1. NMR Fundamental Class by Brian Stambaugh (September 14–16)
2. Petrophysical Multimineral Analysis by Patricia E. Rodrigues (September 22–23)

Please visit the SPWLA website or follow SPWLA social media for more detailed information.

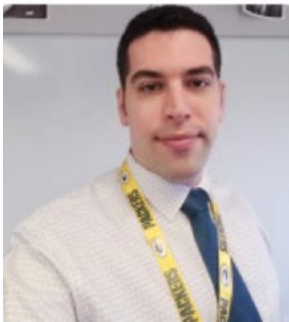
The SPWLA 2021 Fall Topical Conference on “Unconventional Petrophysics” is just around the corner. Since cases of the new delta variant of COVID-19 are rising, we had to make the tough decision for this Fall Topical Conference to go virtual. Please save the date (October 20–21), and we really hope you can join us.

For SPWLA students, we are planning to have a webinar tailored just for you. More information will be coming soon!

Another big thank you goes out to Haryanto Adiguna, Tianmin Jiang, and Maira da Costa for their continued support via the VP of Education Team.

Thank you very much for visiting my column in this issue, and please reach out to me with any feedback.

Kind regards,  
Fransiska Goenawan  
[VP-Education@spwla.org](mailto:VP-Education@spwla.org)



**Adam Haecker**  
2021-2022 VP Finance,  
Secretary, and Administration

Hello SPWLA Colleagues,

We have had a busy couple of months since the online symposium. The first thing I am happy to announce is we finalized the budget for 2021–2022. Here are the high points:

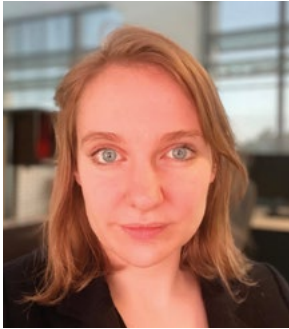
- Reduced expenses in publications by 14%
- Increased revenue from *Petrophysics* by about 40%, but changes may take about 15 months to really take effect since the papers already in the pipeline were not changed
- The operating budget of the society is ~\$900k, including symposium costs
- Expected revenue for the society is ~\$1.1 million
- If all goes to plan and the delta variant doesn't mess things up, we should be in the black for the first time in 3 years

I really wanted to bring a very sound budget with strong follow up to this position, and I think we did that. Now, we just have to execute the plan and hope for a good conference in Stavanger.

Further, all the VPs and directors are doing a great job of staying under budget in many cases.

Additionally, we are looking at new ways to add sponsors and seeking funding for student memberships. We recently sent out a call for sponsorship to some major service companies and operators to fund a certain number of student memberships. It is becoming increasingly hard to attract young people to formation evaluation given all the negative ESG-related press. Helping them join professional societies is in the best interest of every segment of the business. If you think your company might be interested in sponsoring some student memberships, please contact the business office. We are happy to promote all our sponsors at student events and the Stavanger symposium.

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**Mathilde Luycx**  
2021-2023 VP Social Media

Since our last update in July, a lot has happened in SPWLA international and local chapters' social media, and we would like to share a few highlights below!

**URTeC 2021**

The SPWLA is an endorsing organization of the Unconventional Resources Technology Conference and was an active participant of the #URTeC2021 edition, both online and in person!

The SPWLA VP Technology Carlos Torres-Verdin and SPWLA 2020–2021 President James Hemingway both hosted **topical presentations on formation evaluation for unconventional resources.**



The **“Best of SPWLA” special session** featured top presentations from the 2021 SPWLA Symposium by Yong-Hua Chen, Kai Cheng, Sabyasachi Dash, and Harry Xie!

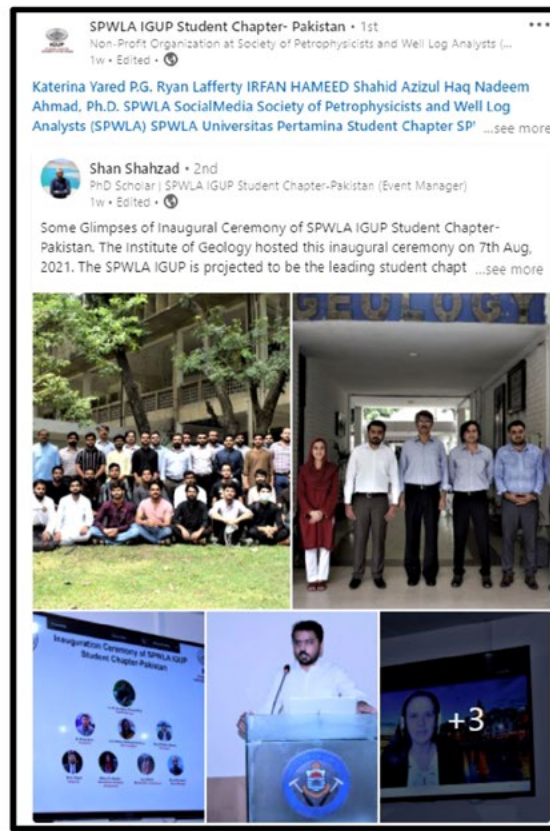
A **Special-URTeC SPWLA Happy Hour** was hosted by SPWLA International and the SPWLA Houston Chapter at The Rustic in downtown Houston. Many FE enthusiasts attended the happy hour to reconnect with friends and colleagues after a year with limited networking opportunities.





Local Chapter Highlight

The FE community welcomed a new student chapter, the [IGUP Student Chapter - Pakistan](#). The students hosted an inauguration ceremony with guest speakers Katerina Yared (SPWLA President), Ryan Lafferty (Regional Director of SPWLA Asia-Pacific Region), Irfan Hameed (chief petrophysicist at OGDCL), and many other renowned guests. Their drive to promote formation evaluation at their university and bridge the gap between academia and oil and gas professionals is truly inspiring!



The SPWLA SoMed Committee wants to help local chapters share their news and events with the greater FE community. With so many events being held online, petrophysicists and geoscientists all over the world can now participate in local chapters' events. **If your local chapter wants to connect with the greater SPWLA community, reach out to us via email or tag #spwlaSocialMedia in your post, and we will help you spread the word!**

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## Regional Understandings—North America 1 and 2



**Robin Slocombe**  
2020-2022 North America 1  
Regional Director



**Matt Blyth**  
2021-2023 North America 2  
Regional Director

At this time, most of the chapters within North America are on their summer breaks and in the process of installing new boards for the 2021–2022 season. It is clear that the changes in the industry over the last few years, along with the accelerated effects of the pandemic, have had a big impact on our smaller chapters. Chapters such as Bakersfield, Appalachia, Tulsa, and New Orleans are all struggling with declining attendance at events and participation in running the chapters, as operators and service companies reduce their operations and personnel in these areas. Add to this over a year of virtual-only events, and you can see why these smaller chapters are concerned about their long-term viability. We are working with these chapters to look at combining technical events, providing financial support from both the SPWLA main organization and some of the larger chapters within the US, and other avenues to help them through these rough times. If you are a member of one of the smaller chapters worldwide, we strongly encourage you to support the chapter by attending events, offering to present, or even helping to run the chapter boards. We are a volunteer-run organization, and our success relies upon people who are willing to dedicate the time and effort to helping the society. We are also in early-stage discussions with US city chapters, including the Houston Chapter, regarding potential 2023 symposium applications. With the ongoing challenges, we remain conscious of the possible need for a low-cost symposium to maximize attendance, recover networking opportunities, and address society budget deficits.

On a positive note, our student chapters continue to remain active, and we would like to recognize the OU Student Chapter for their active communication and search for technical speakers, and also congratulate the newly elected officers of the SPWLA Student Chapter at the University of Louisiana at Lafayette for the 2021–2022 academic year. Elected to office were:

**President:** Cristina M. Ruse, *PhD student in Systems Eng. with a concentration in Petroleum Eng.*

**Vice President:** Philip B. Wortman, *PhD student in Systems Eng. with a concentration in Petroleum Eng.*

**Secretary:** Aderibigbe Adeyemo, *MSc student in Petroleum Eng.*

**Treasurer:** Maksym Chuprin, *PhD student in Systems Eng. with a concentration in Petroleum Eng.*

**Social Media Chair:** Darren A. Osei, *MSc student in Petroleum Eng.*

**Event Coordinator:** Traelyn B. Brasseaux, *Junior student in Computer Eng.*

Matt & Robin, NA Regional Directors

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## Regional Understandings–Latin America



**Bruno Menchio Faria**  
2020-2022 Latin America  
Regional Director

Hello Petrophysical Community,

I was dealing with some family issues and had to be away for a certain period of time from my normal routine. Everything is now under control, and I have returned to my daily professional activities.

The professional chapters in Latin America continue with many activities, and I would like to emphasize that the process for opening a student chapter in Argentina has been started. Additionally, Brazil is organizing a Brazilian Petrophysics Meeting on Mature Fields in November 2021. This event is not to be missed!

At the end of August, I taught an introductory course on logging and petrophysics for the GIECAR (Exploratory Interpretation and Reservoir Characterization Group) at the Universidade Federal Fluminense. The event was a benefit, and all proceeds were donated to a social project. Interactions with universities are always important, and being able to combine this with a social project is a heart-warming task.

The UFRJ, UIS, and UNI Student Chapters continue to do a beautiful job with many activities and campaigns to promote volunteering for university students. This is a good opportunity to learn and interact with the industry.

Yours sincerely,

Bruno Menchio Faria

Latin America Regional Director

<https://www.linkedin.com/in/bruno-menchio/>

Director-LA@SPWLA.org

## Regional Understandings–Asia Pacific/Australia



**Ryan Lafferty**  
**2021-2023 Asia Pacific/Australia**  
**Regional Director**

A busy three months have passed, and I hope each of our members and their families are keeping safe during these difficult times. Many of our chapters are continuing with virtual monthly technical meetings, so I thank you for your continued efforts in providing this valuable service to our members. First of all, I must apologize that I haven't yet had the opportunity to organize a meeting with the chapter presidents. This is still on my to-do list, and I hope to get this arranged in the coming weeks. Bear with me.

On August 7, I was honored to present at the inauguration ceremony for our newest chapter, the SPWLA IGUP Student Chapter Pakistan. Join me in welcoming the passionate and motivated students from Pakistan to the SPWLA fold.

Finally, I want to thank those who were nominated for the 2021–2022 Global Distinguished Speaker Program and make a special mention to those who were selected as Distinguished Speakers. Join me in congratulating Thanapala Singam Murugesu (Petronas), "A Critical Review of Rock Typing Approaches in Clastic Reservoirs," Kazuhiko Tezuka (Japex), "First Field Test of the Dual Core-Bit Tool for Drilling Stress Record Cores at Kamioka Mine, Japan," and Yuki Maehara (Schlumberger), "Well Log Analysis for Methane Hydrate Saturation Evaluation: High-Resolution and Rock Physics."

I look forward to hearing your presentations in due course and hope that other members from around the globe do the same.

Keep safe.

Regards,  
Ryan  
Ryan Lafferty  
Asia Pacific/Australia Director  
Director-Asiapacific@spwla.org

## Regional Understandings–Europe



**Eva Gerick**  
**2021-2023 Europe**  
**Regional Director**

Dear SPWLA Community,

I hope you all managed to have some quality time off during the summer break and are back at your desks refreshed and full of energy and ideas!

I'm back at work after two weeks of "staycation" and am pleased to tell you that our SPWLA Event Calendar has also had some extra TLC over the last couple of weeks. If you go to the Events tab on the SPWLA.org website, you'll be able to see now a calendar of global events/courses and a selection of regional events that are accessible online. During my conversations with the Europe chapters, I understood that in 2020–2021 many of you dialed into sessions outside your own chapters or even time zones as everything had gone online. This new "globalization" of talks/seminars was certainly a silver lining for many and definitely something we want to encourage going forward in the form of "hybrid" events (physical + virtual) where possible. From now on, all online/hybrid Europe events will be displayed in the main SPWLA Event Calendar, so you can keep track of what's coming up more easily, even beyond your own chapter activities.

Please also don't forget to send us your proposals for "Special Sessions" for next year's SPWLA Annual Symposium in Stavanger by September 1. The goal of Special Sessions is to provide a forum for focused discussions on new technical topics or innovative applications of established methods and field procedures. Details for Special Session submissions can be found here:

[https://www.spwla.org/Documents/Symposium/SPWLA\\_Call\\_For\\_Proposal\\_2022.pdf](https://www.spwla.org/Documents/Symposium/SPWLA_Call_For_Proposal_2022.pdf)

Keep well and healthy!

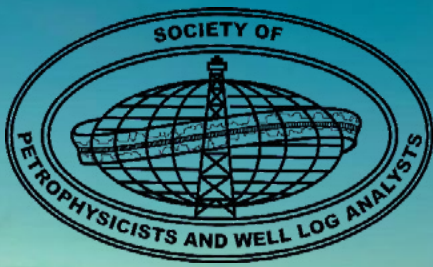
All the best,

Eva

Europe Regional Director

[Director-Europe@spwla.org](mailto:Director-Europe@spwla.org)





SPWLA  
Annual  
Logging  
Symposium  
2022

Call for  
Proposals of  
Special  
Sessions

NFES is hosting the 63<sup>rd</sup> SPWLA Annual Logging Symposium in Stavanger, Norway



The **SPWLA ANNUAL LOGGING SYMPOSIUM** is the world-leading event on petrophysics, formation evaluation, borehole geophysics, well logging and core analysis. During 2022, the symposium will be held in the beautiful city of Stavanger, Norway. The SPWLA Technical Committee is, for the first time, adopting the format of organized Special Sessions to be featured during the annual symposium.

The goal of special sessions is to provide a forum for focused discussions on new technical topics or innovative applications of established methods and field procedures. A special session could address a particular theme or consist of work done in some particular project. It is expected that Special Session champions engage with their technical community to promote their special session and thus secure an appropriate number of quality submissions to ensure sufficient coverage of the Special Session topic in the symposium. Alternatively, abstracts/papers associated with a special session may be placed in the regular program if the special session does not meet the minimum requirement of papers. Special session abstract submissions will be reviewed via the same vetting process as submissions to the regular program, and papers are expected to meet the same quality standards.

### **Example of Special Sessions**

The following are examples of organized special sessions:

- (1) The role of formation evaluation in the energy transition
- (2) Formation evaluation of geothermal production systems
- (3) Advanced formation evaluation of subsurface hydrology resources
- (4) Petrophysics of carbon capture, utilization, and storage
- (5) Fiber optics implementations for borehole production monitoring
- (6) Petrophysics of the Integrated reservoir modelling and unitization
- (7) Digital core analysis
- (8) Advances in deep-sensing borehole geophysical systems
- (9) Ultimate formation evaluation for unconventional rocks
- (10) Recent advances and the road ahead in borehole geomechanics
- (11) Your choice!

Each organized session should have a maximum of 5 papers that will be subject to the regular vetting/acceptance process. Session champions will coordinate with the SPWLA Technical Committee to motivate authors to submit abstracts. Each special session is limited to no more than 2 champions and the session champions can designate a chair and a co-chair for the session.





Only registered participants can be designated as a session chair to avoid no-show onsite. The allocated presentation time for each paper is the same as regular submitted/accepted abstracts.

There is no financial help provided for session champions, session chairs, and invitees. All SPWLA Annual Symposium participants, including session champions, chairs, invitees, and keynote speakers are required to register and pay the registration fee.

## Selection of Invited Speakers

1. Each special session will consist of a maximum of 5 papers, including invited papers and contribution papers related to the topic. All abstracts/papers will be subject to the regular vetting, ranking, and acceptance process as regular abstracts/papers.
2. Special sessions can also feature keynote speakers who have their abstracts/papers vetted and accepted by the SPWLA Technology Committee.

Proposals (in pdf, not exceeding 2 pages) and inquiries should be sent via e-mail to the Special Sessions Chairs: Carlos Torres-Verdín ([cverdin@mail.utexas.edu](mailto:cverdin@mail.utexas.edu)) and Iulian Hulea ([Iulian.Hulea@shell.com](mailto:Iulian.Hulea@shell.com)).

Special Session proposals should clearly outline the technical domain of the special session, highlighting its importance, impact, and relevance to the Annual Symposium and SPWLA community at large. As a minimum, proposals should include the special session title, a concise and accessible session description (this will be published on the Symposium website for accepted proposals), and a short biography of the champions. The Annual Symposium places a strong emphasis on diversity, and we encourage special session proposals from diverse teams.

Session Proposals should include:

- Special Session title
- A short description (2-3 lines) and covered topics
- Session organizer(s) and chair(s)
- Potential list of speakers (when available)
- Potential keynote speakers (if any)







## Important Steps

- (1) Motivate high-valued technical contributions by directly contacting colleagues working in the proposed theme/field.
- (2) Remind your invitees to submit their abstracts/papers directly to your session using the online SPWLA submission process.
- (3) Session champions will be requested to supervise the review of papers in their session.
- (4) Session champions are responsible for reminding the author(s) to pre-register the abstracts/papers in their session before they arrange the final paper/presentation sequence.

## Important Dates and Deadlines

Special session proposals are due on **September 1, 2021**

Notification of approval of special sessions: **September 15, 2021**

Abstract submission deadline: the same as for regular submitted abstracts.

Notification for acceptance of papers: the same as for regular submitted abstracts.

Final approval of accepted special sessions: immediately after all submitted abstracts are approved by the SPWLA Technology Committee and the session includes a maximum of 5 accepted abstracts.





## A Brief History of Schlumberger, Part 3

By Mark Mau

**ABSTRACT:** Founded by the two brothers Conrad and Marcel Schlumberger in Paris in 1926, Schlumberger started its life as an electrical prospecting and well logging company. It gradually spread its activities on the oil field and today stands as the world's leading provider of upstream technology to the oil and gas industry. In 2015, it had a 12% market share among the top 400 service companies, and it is the most important developer of new technologies with no other company matching the research and development expenditures of Schlumberger.

Explaining company milestones and key periods of Schlumberger's history, this article portrays its leaders and shows their impact on the evolution of the company. It argues that the company culture embodied by the values of people, technology, and profit has been and still is crucial for the company's growth and success.

**DISCLAIMER:** The views expressed in this article are those of the author and do not necessarily reflect the views of Schlumberger management.

"A Brief History of Schlumberger" initially appeared in the 2016 *Oil-Industry History*, Volume 17, pages 111–140. It is reprinted with permission from the Petroleum History Institute, publisher of *Oil-Industry History*.

This is the third installment of a six-part series.

### FROM FAMILY ENTERPRISE TO MODERN COMPANY

Early in 1953, Marcel Schlumberger was 68 years old and was interviewed by the French writer and journalist Merry Bromberger who asked him about the secret of success. Marcel said, "Put work above everything, comfort, cravings, need for rest. The person who sacrifices all satisfactions that require time and money to his job, to his company is guaranteed to succeed. He is putting luck and time on his side."<sup>32</sup>

During the summer, Marcel's health deteriorated. He was aware that he had little time to live, but he did not inform anybody. Marcel confided to his wife: "My motor is stalling." On August 20th, 1953, in the late morning, he retired to his room without a complaint. He died as he had lived: standing up.<sup>33</sup>

The new leader of Schlumberger was Marcel's only son Pierre who brought in management experience from his presidency of Schlumberger Well Surveying Corporation (Fig. 8).

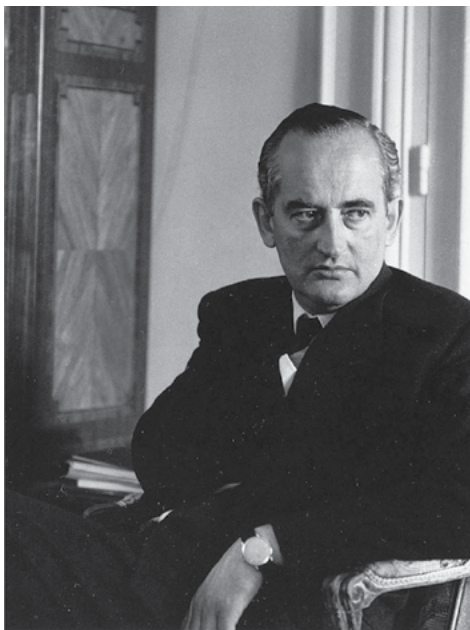


Fig. 8—Pierre Schlumberger (1914–1986), Marcel's son and President of Schlumberger Limited from 1956 to 1965 (courtesy of Schlumberger).

## A Brief History of Schlumberger, Part 3

He strongly favored incorporating the company and selling stock to raise capital needed to take advantage of the booming postwar economy. Other family members resisted the idea, fearing a loss of both control and quality, but in 1956, Schlumberger Limited, a holding company was formed in Curaçao in the Southern Caribbean Sea. Pierre Schlumberger became president, and Henri-Georges Doll was named chairman. Schlumberger Limited encompassed all previously created business entities: Société de Prospection Électrique, covering operations in Europe and Africa; Schlumberger Well Surveying Corporation for the North American markets; and Schlumberger Sureenco and Schlumberger Overseas, both established in 1942, covering Latin America and Middle and Far East, respectively.<sup>34</sup>

The spreading of Schlumberger around the world could not continue if French remained the working language as it had been since the 1920s. It was a great and sometimes difficult cultural achievement of a French family enterprise to adopt English as the working language. In the early years, most of the engineers were French and had little knowledge of the English language. The first sign of a change towards English came in 1953 when Intercom was launched, an English-language internal magazine for better liaison between field engineers and management of Schlumberger Overseas, Schlumberger Sureenco, and their subsidiaries. Four years later, the first annual report of Schlumberger Limited's activities was written in English as well.<sup>35</sup>

Activities were now moving beyond logging, as Schlumberger in 1956 undertook its first full acquisition, Johnston Testers, a well testing company. Four years later, the first joint venture followed, with Dow Chemical, which specialized in well completion services for the oil industry, forming Dowell Schlumberger.<sup>36</sup>

But as oil drilling in the US gradually fell from its 1957 peak, Pierre Schlumberger and his advisers thought it prudent to diversify into the electronics field. The idea was that Schlumberger should become a producer and not only a user of electronics, taking advantage of the growing company knowledge about applied electronics for their downhole tools. Sometimes, engineers would have trouble finding the right electronic component for their tools on the market, and an in-house production would solve that problem. Although the diversification strategy would bring a separate stream of income, independent from the ups and downs of the oil industry, it was also a departure from Conrad and Marcel's business ideal of "never sell equipment, sell services." They knew that margins were higher in service sales than in equipment sales, and services were more difficult to copy.<sup>37</sup>

Schlumberger made a major acquisition in 1962 when it swapped stock worth US\$ 39 million with Daystrom, a manufacturer of electronics primarily for military use—Schlumberger was mostly interested in Daystrom's production of electronic valves, which would be built into Schlumberger's downhole tools. With US\$ 87 million in sales in 1961, Daystrom was more than half the size of Schlumberger (US\$ 142 million).<sup>38</sup>

Pierre Schlumberger's essential contribution to Schlumberger's evolution was financial control and management. He introduced a system of external auditors, a novelty as no business organization in France was audited by outside auditors at the time. Pierre realized that the growing company required improved access to funding, prompting the listing of Schlumberger Limited on the New York Stock Exchange (NYSE) in 1962, with the majority of the shares still being held by Schlumberger family members. At the same time, he declared that family members would no longer receive preference within the company for promotion. The management of human resources was Pierre's second main contribution. He understood that there was nothing more important in an organization than the selection and promotion of people and introduced a merit rating of employees and the rule to have at least three candidates if there is a vacancy.<sup>39</sup>

Schlumberger had a difficult start as a publicly traded company as both structural problems and market conditions impacted negatively on the firm. Schlumberger was now loaded with newly acquired electronic companies: it owned 11 French companies and several in England and the United States. The share of the electronic division would grow to 42% of Schlumberger's sales until the mid-1960s, but most of the newcomers, incl. Daystrom, required years of work before paying dividends. US drilling activities continued to decline by 5–10% a year, limiting the demand for well logging. As a result, net income in 1963 shrank by 2%, the profit margin fell to 7.1%, the lowest till then, and the following year the operating revenues dropped slightly.<sup>40</sup>

Pierre Schlumberger found himself in a challenging business environment. On top of this, he struggled with private problems. The unexpected death of his first wife in 1959 had badly shaken him, and though he soon remarried, he became increasingly reclusive. "Pierre was very fragile and lost his balance," recalled his cousin Anne, Conrad's daughter. It became apparent to the family and the board that Pierre was no longer able to operate the corporate enterprise he had put together. In 1965, the Schlumberger board of directors decided that Pierre should step down as president. Even though his departure was premature—he was 51 years old—and overshadowed by his personal problems, Pierre Schlumberger has to be credited with beginning the conversion of Schlumberger from a European-style family business to a modern enterprise.<sup>41</sup>

~To be continued~

## A Brief History of Schlumberger, Part 3

<sup>32</sup> BROMBERGER, Merry, 1954, *Comment ils ont fait fortune*, p. 27; and THEYS, Philippe, 2013, Marcel Schlumberger, p. 274

<sup>33</sup> AULETTA, Ken, 1984, *The Art of Corporate Success: The story of Schlumberger*, p. 48; and THEYS, Philippe, 2013, Marcel Schlumberger, p. 274

<sup>34</sup> MARTIN, Jonathan, and SALAMIE, David E., 2004, "Schlumberger Limited," *International Directory of Company Histories*, v. 59, pp. 366-371, here p. 367; "Officers of the Corporation," *Sonde Off*, v. 3, no. 3 (December 1949), pp. 12-15, here p. 12; [www.slb.com/about/history/1940s.aspx](http://www.slb.com/about/history/1940s.aspx); and [www.slb.com/about/history/1950s.aspx](http://www.slb.com/about/history/1950s.aspx)

<sup>35</sup> *Intercom*, no. 1 (June 1953); and SCHLUMBERGER, ed., 1958, *Annual Report 1957*: Houston, Schlumberger Limited

<sup>36</sup> [www.slb.com/about/history/1950s.aspx](http://www.slb.com/about/history/1950s.aspx); and [www.slb.com/about/history/1960s.aspx](http://www.slb.com/about/history/1960s.aspx)

<sup>37</sup> "Oil industry problems profit Schlumberger," *Investor's Reader*, May 1973, pp. 30-33; and MARTIN, Jonathan, and SALAMIE, David E., 2004, "Schlumberger Limited", p. 368

<sup>38</sup> SCHLUMBERGER, ed., 1961, *Annual Report 1960*: New York, Schlumberger Limited; SCHLUMBERGER, ed., 1963, *Annual Report 1962*: New York, Schlumberger Limited; and [www.slb.com/about/history/1960s.aspx](http://www.slb.com/about/history/1960s.aspx)

<sup>39</sup> AULETTA, Ken, 1984, *The Art of Corporate Success: The story of Schlumberger*, p. 51; and "Comments by Paul Lepercq on Pierre Schlumberger" February 26, 1986, in Schlumberger Limited Paris archives, SLP-04C09 Pierre Schlumberger, case 5

<sup>40</sup> "A singular and mysterious giant," *Forbes*, October 30, 1978, pp. 157-160; MARTIN, Jonathan, and SALAMIE, David E., 2004, "Schlumberger Limited", p. 368; SCHLUMBERGER, ed., 1964, *Annual Report 1963*: Houston, Schlumberger Limited; and SCHLUMBERGER, ed., 1965, *Annual Report 1964*: Houston, Schlumberger Limited

<sup>41</sup> "It's 'Slumber-Jay' and it's a money gusher," *Fortune*, September 1973, pp. 199-263; AULETTA, Ken, 1984, *The Art of Corporate Success: The story of Schlumberger*, p. 51; and MARTIN, Jonathan, and SALAMIE, David E., 2004, "Schlumberger Limited", p. 368



Richard Bateman

*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.*

### **Job Description**

Many members of our illustrious society and readers of this prestigious column will, at one time or another, have found themselves in a social gathering with substantially normal folks and been asked the dreaded question, "And what do you do for a living?"

Your answer: "I am a petrophysicist" is usually met with a puzzled look, and the braver questioners may actually continue the interrogation and add the follow-up question, "Just what does a petrophysicist *do*?"

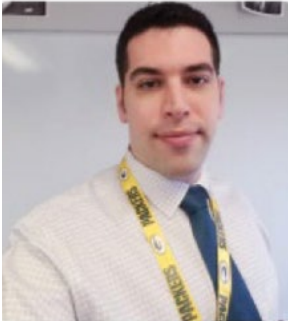
At this point, matters get complicated, and since there is little common language between the parties involved, either you go into incomprehensible detail, or the questioner says, "Oh, so you are a geologist," which leads you to say, "Well, sort of but not quite... why don't we get another drink?"

You should not think that your experience in the matter of job description is unique to members of the SPWLA. A very good friend of mine told me his version of much the same thing when he first chanced across the oil patch and took a job as an engineer with one of the well-known multinational E&P companies. He was plunged into a six-month program that, by way of introduction, had him visiting with, and working in, all the major divisions of his new employer, including exploration, drilling, production, transportation, accounting, and, of course, safety and environmental matters. Shortly after completing this training, he had an opportunity to take a few days off and visit with his parents back home.

The first night he was back with the family, his mother, at the dinner table in all innocence, asked him what his new job was like. Happy to be given the chance, he explained in detail to his parents all the things that went on in the oil patch. After dinner, when his mother was in the kitchen doing the dishes, his father leaned over confidentially and whispered to his son, "Listen, I don't care if you are the doorman at the cathouse, but please don't tell your mother such a pack of lies and don't try our patience by telling us that you get *paid* for doing things like that."

Next time you are asked what you do for a living, my advice is to just say that you answer emails and do stuff on computers. Even your parents can relate to *that*.





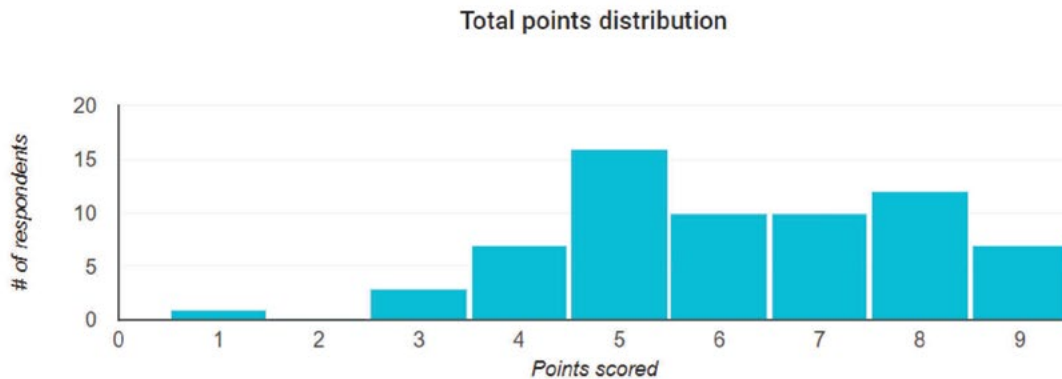
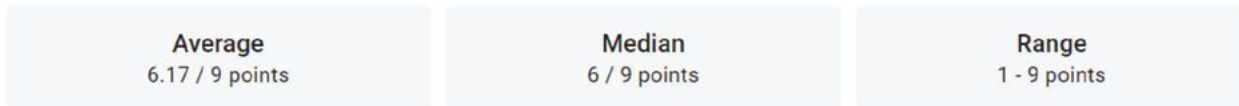
Hello SPWLA Quiz Takers:

We had a fun quiz with some topics that don't come up in classical petrophysics literature but are becoming more and more prevalent in the literature, like Shapley values. If you are still struggling with what those are, check out this helpful [link](#). The mean of the last quiz was 6.17/9 pts, which seems in line with the desired difficulty of the quiz. The aforementioned Shapley values question only had a 50% success rate, so maybe I did not explain it well, or perhaps people are not very familiar with it. Another question that had a lot of consternation was about the anatomy of a logging truck. I think I may have used regional jargon or a "West Texas Slang" for the answer about what part of the truck measures depth and directs wireline movement. I apologize for that. It was surprisingly difficult to find a good reference on what that part of the truck is called. I did get a good response on it from a few former Schlumberger

logging engineers from the Middle East, though. I further thought the spectral gamma ray question would trip up a few more people. You folks are too smart to fall for such things, though.

Anyway, here are the results. Happy Quizzing, and as always, if you have any good questions or suggestions, please feel free to drop me a line.

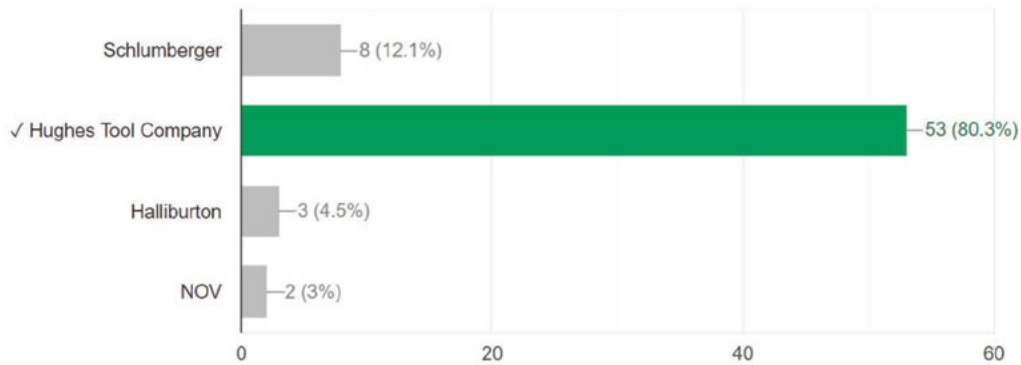
Excelsior,  
Adam Haecker



History Question, what tool company was founded by the father of a famous Aviator, Movie Producer, Philanthropist, later Las Vegas recluse and germophobe?



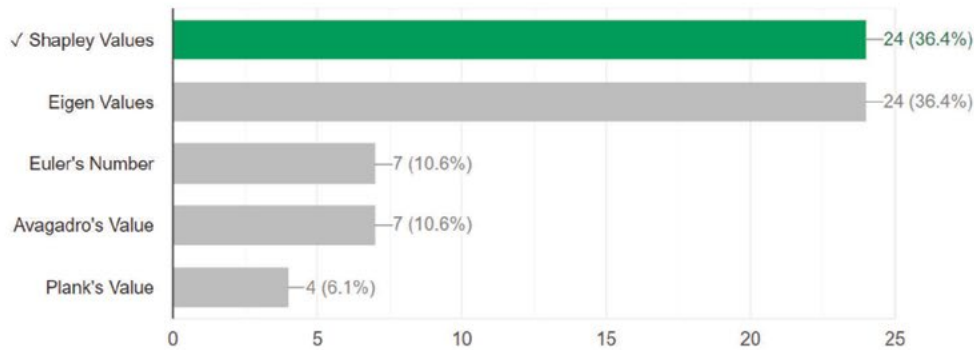
53 / 66 correct responses



In machine learning, created in 1953 and named after it's creator, what values represent a game theory technique that treats variables as a "player" in a game where the prediction is the "payout"? This value is used to determine feature importance to the positive or negative outcome of a result.



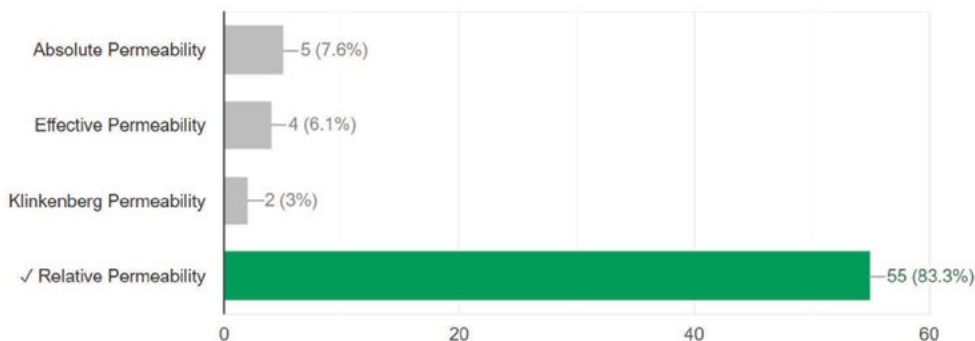
24 / 66 correct responses



What type of permeability is referenced from 0 to 100% and is the dimensionless permeability of that phase?



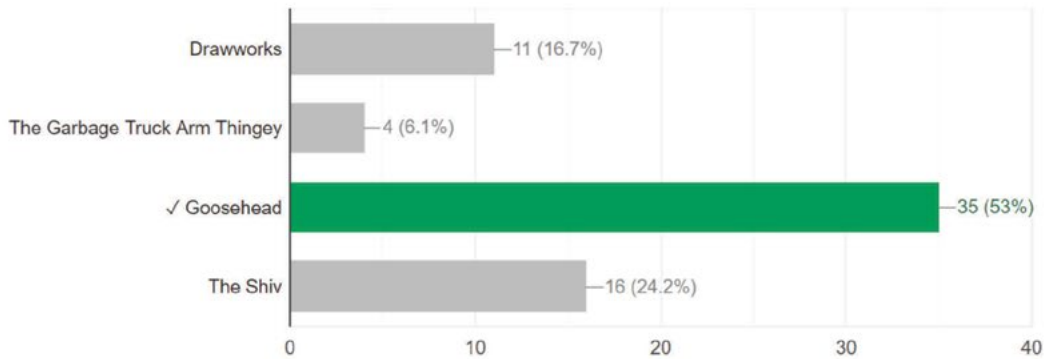
55 / 66 correct responses



In the picture below, what is the mechanical arm whose purpose it is to direct the movement of the wireline referred to as?



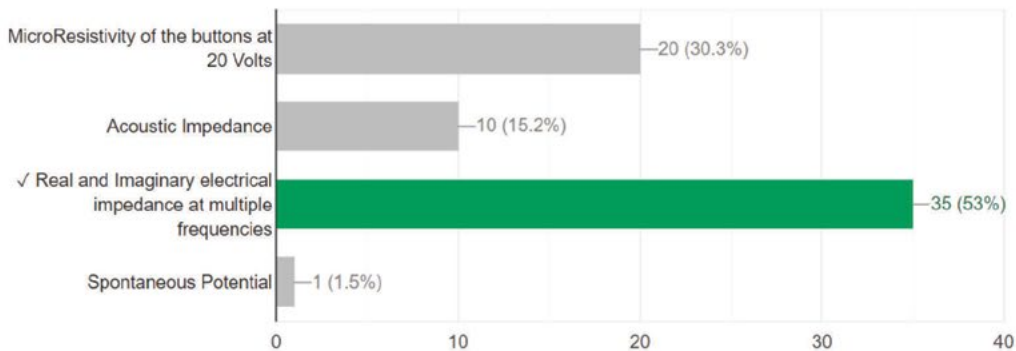
35 / 66 correct responses



In current generation oil based imagers, which of the following properties is used to create a high resolution image from relatively large buttons? Examples of such tools are Schlumberger's Quanta Geo, Halliburton's StrataXaminer and Baker Hughes Earth Imager



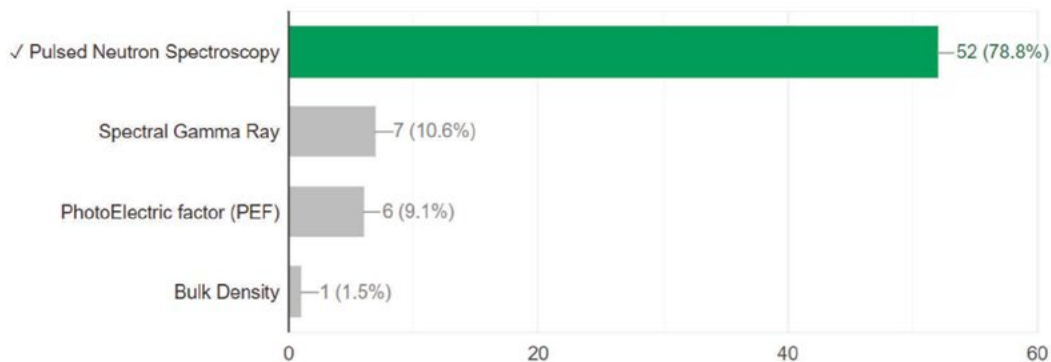
35 / 66 correct responses



Which of the following tools measures Induced gamma ray spectroscopy in both the inelastic and capture spectrum?



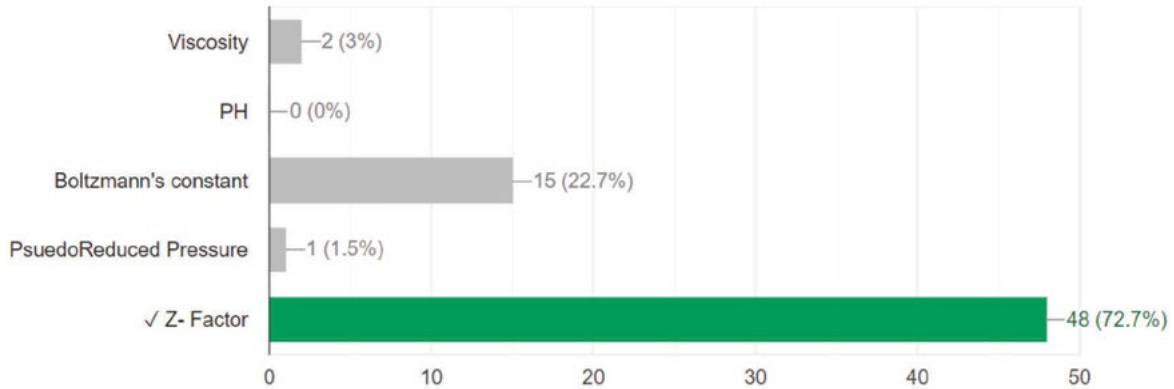
52 / 66 correct responses



What property of gas, widely used in Bg (gas formation factor) calculations, is a correction factor which describes the deviation of a real gas from ideal gas behavior? It is simply defined as the ratio of the molar volume of a gas to the molar volume of an ideal gas at the same temperature and pressure.



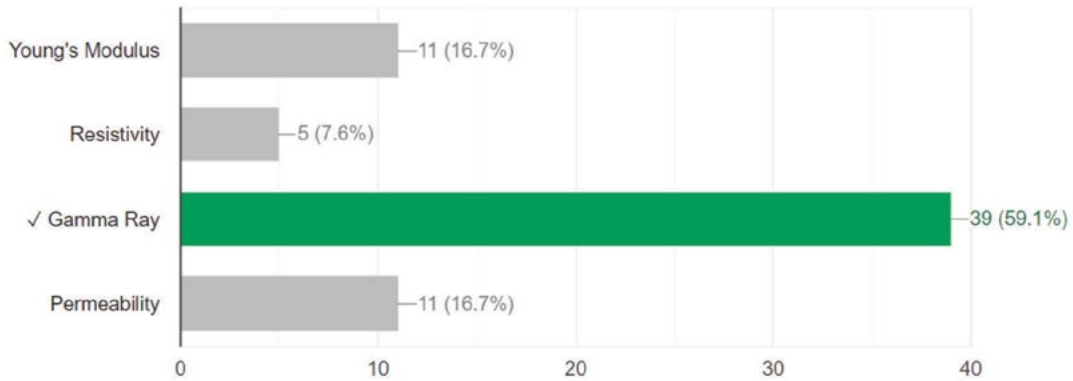
48 / 66 correct responses



Which of the following measurement is not a Tensor property?



39 / 66 correct responses

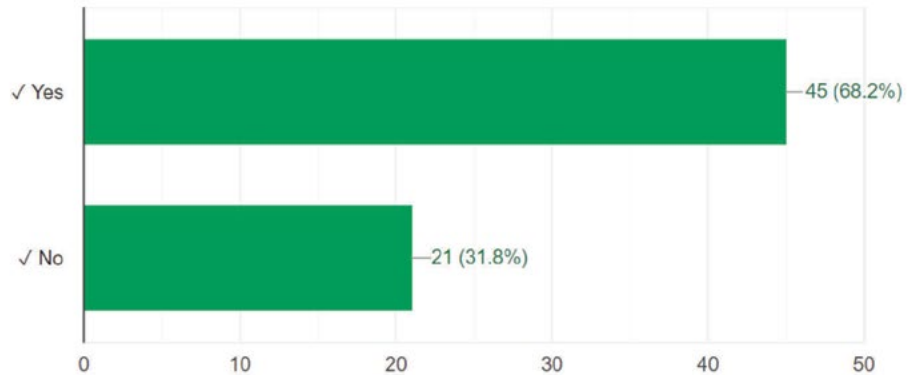




In February 1985, the SPWLA advertised custom belt buckles for sale. Should the SPWLA commission more belt buckles and take orders?



66 / 66 correct responses



This is a picture of the belt buckle, by the way. Apparently, we made these for \$15 in 1985. I suspect it would cost us quite a bit more these days, but you guys seem interested in it. I will ask Sharon. Orion Martinez found the last one on eBay! Send photos if you still have one and have ever worn it.

## Throwback Thursday #TBT Series by Sonia Marino



Sonia Marino

Attention, everyone! Eight months after our first post in the SPWLA mobile app, Throwback Thursday #TBT is moving to Instagram! Some background information first... While the #TBT trend has its origin outside of social media, it really gained popularity with major channels like Instagram, where it has been used over 500 million times since 2010. This is also a great place to reach a wider audience. From now on, follow us on Instagram @spwlaorg, and more importantly, keep sending us your fun memories and pictures.

In June, we asked for your best video conferencing memories. We chose to publish the following photo taken minutes before the start of the very first SPWLA webinar back in 2016. If you have missed it, read the full story on the right.

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### July 15th, 2021

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Thank you Mayank Malik and Zach Liu for sharing this picture of the first SPWLA presentation ever broadcasted as a webinar from Reykjavik, Iceland in the evening of June 27<sup>th</sup>, 2016. Sitting around the table are Zach Liu (2016 SPWLA VP-IT), Alberto Mezzatesta (Baker Hughes, presenter), Sharon Johnson (SPWLA Office Director), Stephanie Turner (SPWLA Administrator), Brett Wendt (2016 SPWLA VP-Technology), Robert Askew (Halliburton, presenter), and Denise Freed (Schlumberger, presenter).

It's worth mentioning that on the same evening, also for the first time, Iceland qualified for the quarter-finals against England in the 2016 edition of the Euro Soccer Competition.

Very festive atmosphere for this very first SPWLA webinar!



Below is a collection of other content published in Throwback Thursday during the last two months. Enjoy, and as always, don't hesitate to share some feedback with us.



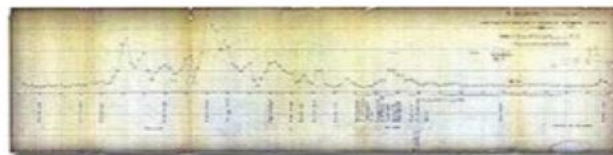
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## June 24th, 2021

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Awards banquet during the 16<sup>th</sup> Annual Logging Symposium at the Marriott Hotel in New Orleans, Louisiana in June 1975. 46 years ago! Anyone you know in the picture?

*From the SPWLA Collection.*



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## July 1st, 2021

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Welcome to the 26<sup>th</sup> #TBT post! We are celebrating 6 months of Throwback Thursday with the first log of hand-plotted electrical measurements performed on September 5<sup>th</sup>, 1927 by the Schlumberger brothers in the Diefenbach drill hole #7 at Pechelbronn in Alsace, France.

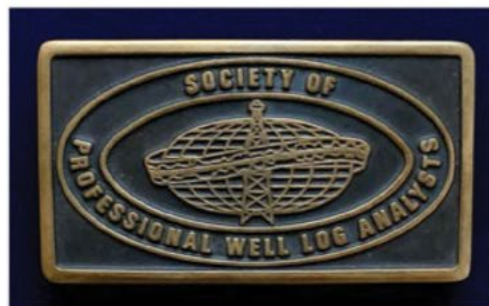
*From Schlumberger – The First Years published by Schlumberger.*

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## July 8th, 2021

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This ad was published in The Log Analyst journal in 1985. How many of you ordered the SPWLA belt buckle back then? Let us know and send us a photo!

*Picture shared by Ryan Hillier.*

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## July 22nd, 2021

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Do you remember the SPWLA belt buckle ad posted in #TBT 2 weeks ago? We found it at a collector's house in Perkins, Oklahoma!

*Picture shared by Orion Martinez.*





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June 17th, 2021

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Hey Doc, still looking for Plutonium to go back to the future?  
When Marty McFly got into logging in the eighties, I suppose!

*Picture shared by Wade Samec.*



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July 29th, 2021

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First SPWLA Happy Hour in a long time!  
At The Rustic in Houston, Texas on July 27<sup>th</sup> for URTeC with Jesus Salazar, Katerina Yared, and Luis Quintero (from left to right).

*Picture shared by Mathilde Luycx.*



# The 26th Formation Evaluation Symposium of Japan Virtual Meeting

30<sup>th</sup> September, 1<sup>st</sup> & 7<sup>th</sup> October

13:00-17:00 Japan Standard Time (GMT+9:00) Each Day

Pre-recorded video presentation and Live Q & A

## Special Session: "Integrated Evaluation"

### Keynote Speech:

*Ms. Katerina Yared (SPWLA President elect/SM Energy)*

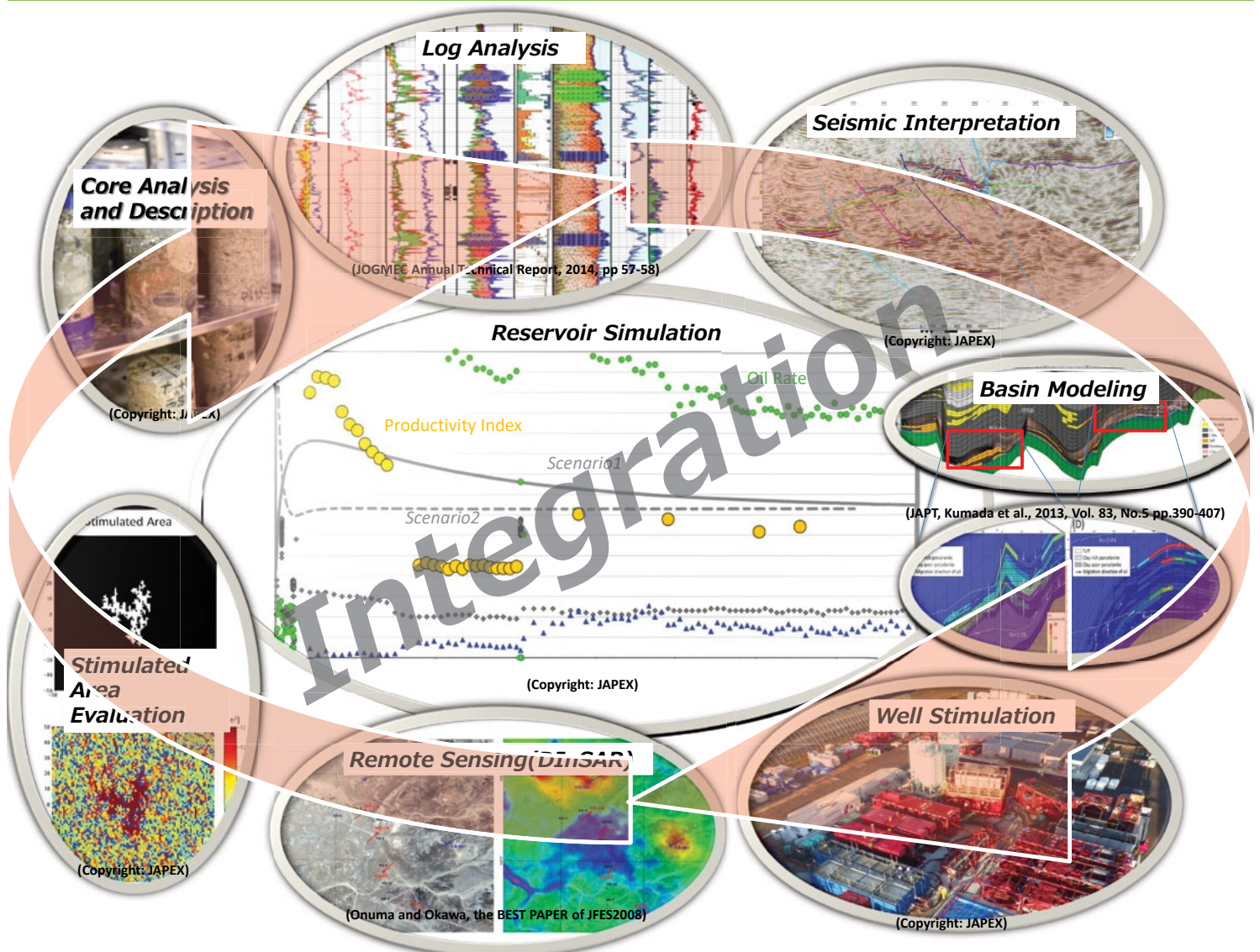
### Invited Talk:

1. *Dr. Machiko Tamaki (Japan Oil Engineering)*

*Core, log and seismic data integration for 3D modelling of a methane hydrate project*

2. *Mr. Ryuichi Uchimura (JX Nippon Oil & Gas Exploration)*

*Key elements in the full iteration process with multi-discipline team for the successful subsurface evaluation*



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JFES - A Chapter of SPWLA

# Japan Formation Evaluation Society (JFES) 26th Formation Evaluation Symposium of Japan Virtual, September 1 & October 1 and 7, 2021 Abstracts

NOTE: Tentative Program. The 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.

## Integrated Fluid Characterization of Near-Critical Fluid to Understand Reservoir Fluid Distribution and Geological Structure

Bei Gao<sup>1</sup>, Lu Fawei<sup>2</sup>, and Zhang Zhiqiang<sup>3</sup>

<sup>1</sup>Schlumberger

<sup>2</sup>CNOOC

<sup>3</sup>Cosl

To minimize the formation damage that drilling has induced, since 2019, CNOOC has launched an oil-based mud (OBM) drilling program in Xihu Sag in the East China Sea to create a more user-friendly environment for better and higher quality of formation evaluation. Fine fluid characterization under such context background becomes very crucial to be understood geologically due to the nature of reservoirs: (1) Hydrocarbon from multiple source rocks was charged into the system, condensate and volatile oil distribution undergo uncertainty across the whole reservoir; (2) Both faults and lithology are interacted to control reservoir trap, which makes the fluid-charging history complex; (3) Though oil-based mud system can protect the formation from damage much better compared with water-based mud, its contamination to reservoir fluid presents a strong challenge to fluid properties, fluid phase envelope, and geochemical characterization. This paper presents a comprehensive case study of six wells in this block and an approach developed for identifying fluid type by interpreting mudlogging and quantifying OBM contamination in real time. It also integrates PVT analysis from lab data to finally understand the fluid distribution in this faulted geological structure and confirm the reservoir compartmentalization.

Based on this multiwell study of fluid characterization in Field A, Xihu Sag, the conclusions have been delivered as below:

1. Formation mobility below 1 md/cp and above 10 md/cp has a relatively shallow invasion of OBM; the reservoir fluid breakthrough during pumping was fast. The mobility from 1 to 10 md/cp experienced deep invasion; therefore, longer pumping is needed to have representative samples.
2. DFA results have a very good estimation of the fluid properties, such as GOR, density, contamination, etc., and they are matched with PVT lab data very well.
3. After fluid characterization of six wells, including the decontamination process, the fluid distribution in the vertical and horizontal scales is clearly understood. The deeper the formation goes, the lighter the formation fluid is, and the faults across the reservoir showed disconnection and separate the reservoir from oil and condensate.

## Continuous Mineralogical Formation Evaluation Using Geochemical Spectroscopy Well Logs in Mantle-Crust Transition Zone: Case Study From the Scientific Oman Drilling Project

Yuki Maehara<sup>1</sup> and Kyaw Moe<sup>2</sup>

<sup>1</sup>Schlumberger

<sup>2</sup>JAMSTEC

The understanding of formation property in the mantle is a relatively frontier subject in geosciences research. To achieve mantle drilling in the near future, the operational design must be optimized, prioritizing drilling rather than the full coring tradition. In this direction, the sample of core would be limited; therefore, the integrated core and log formation evaluation will be a key solution to understand continuous formation properties. For the feasibility study of the formation evaluation in an ultramafic igneous rocks environment, such as mantle, the Oman Drilling Project was carried out as a part of the International Continental Scientific Drilling Program (ICDP) from 2017 to 2018. In this project, both drilling and full coring operations were conducted at the former mantle-crust boundary (now exposed). A full suite of wireline log data was acquired with good quality in the drilling well, and excellent quality core samples were continuously taken in the coring borehole nearby. In this paper, we demonstrate the continuous formation evaluation focusing on mineral composition integrating log and core data in the mantle-crust transition zone.

Formation mineral compositions are measured at best through X-ray diffraction (XRD) analysis of core samples or cuttings. The continuous mineral composition logs are quantified upon well log data and can be validated by the core measurements. The conventional well logs, however, allow interpreting only simple mineral composition because of less sensitivity to distinguish minerals comprehensively. Thus, it is an insufficient solution to understand fully real formation property, especially for complex mineralogical rock, such as Oman ophiolites. To overcome that challenge, advanced pulsed-neutron spectroscopy well logging, which is sensitive to the concentration of formation elements, was conducted for the first time in this scientific drilling project.

In this study, a closure model, specific to igneous rocks, was applied to the elemental relative yields processed by spectra analysis of the two measured neutron-inelastic and -capture gamma ray spectra. The results of the dry weight elements were well comparable to and quantitatively validated with X-ray fluorescence (XRF) measurements of the core samples. Magnesium, silicon, and iron were the major elements in the Dunitic and the Harzburgite intervals (the mantle section), whereas calcium and aluminum were increased in the Gabbro interval (the crust section). That observed log response was consistent with other conventional logs, such as formation resistivity, density, and sonic slowness. Then, a quantitative mineralogical interpretation was carried out with the dry weight fraction of formation elements, and the results agreed

with the core lithological description. This study confirmed that pulsed-neutron spectroscopic measurements were a key alternative for continuous mineralogical quantification in igneous rocks, even without core samples, suggesting a key geochemical measurement for future mantle drilling.

### Machine Learning to Predict Large Pores and Permeability in Carbonate Reservoirs Using Standard Logs

Ibrahim Milad<sup>1</sup> and Russell Farmer

<sup>1</sup>BP

A study was conducted on more than 1,000 wells across the Mishrif carbonate reservoir in the Rumaila Field, located in southeast Iraq, one of the giant reservoirs in the world. While Rumaila has been producing for more than 50 years, there are billions of barrels yet to be recovered, and Mishrif is anticipated to play a significant role in supporting field production for decades. Reservoir pressure has dropped due to historical production, and large-scale water injection is being implemented to support and enhance future production rates and oil recovery.

One of the key subsurface challenges is understanding and characterizing reservoir complexity and heterogeneity, with permeability being one of the key factors in understanding sweep behavior and predicting production and injection rates. Rumaila has extensive surveillance programs, and production and saturation logs are used to refine static and dynamic models and better characterize individual well performance. With more than 1,000 well penetrations to date, efficient management of wells is key to optimizing production.

In 2020, a workflow was introduced (Milad et al., 2020) that used NMR logs, NMR core analysis, and FZI techniques to predict large pores and permeability. The approach distinguished different pore types by estimating the relative proportion of large pores (Large Pores Index (LPI)) from NMR data and using this as an input to the prediction of FZI rock types and subsequently prediction of permeability. Results showed a significant improvement compared to more traditional approaches but could only be applied in modern wells with NMR data.

The work presented in this paper extends this study to wells with no NMR by using machine-learning techniques, linear regression, and Python coding to predict changes in pore sizes and estimate the relative proportion of large pores in wells without NMR. The resulting Large Pores Index from Machine Learning (LPI\_ML) was applied on more than 1,000 wells to generate rock types and permeability estimates that demonstrate a significant improvement when compared with core data.

This improvement is reflected in better predictions of production and injection indexes, improved understanding of sweep behavior, and timing for water breakthrough across the field, leading to more optimal management of reservoir performance. Moreover, at a well level, the new permeability model has resulted in enhanced completion decisions for well-work operations (additional perforation and reperforation campaigns) on existing producers and injectors, generating significant value for the stakeholders and Iraq.

### Mineralogy and Fluid Identification for Tight Gas Reservoir in East Ordos Basin With Advanced Multifunction Pulsed-Neutron Measurement

Liang Cai<sup>1</sup>, Jin Long Wu<sup>1</sup>, and Hou Yu Ting<sup>2</sup>

<sup>1</sup>Schlumberger

<sup>2</sup>PetroChina

Workscope:

The mineralogy component of a tight gas reservoir in the east Ordos Basin is varied, and the lithology is quite complicated. Meanwhile, the reservoir is characterized by pore structure heterogeneity and low contrast of resistivity response. Thus, with only conventional logs, it is hard to evaluate the reservoir accurately. Borehole rugosity and complexity are also sometimes a challenge to acquire enough logging data in an open hole; thus, casedhole measurements are mandatory for reservoir characterization.

Workflow:

Multifunction pulsed-neutron measurement has been introduced to this area, which suits both openhole and casedhole environments as it has a small diameter of 1.72 in. With the measurement from inelastic and capture spectroscopy together with TOC measurements, solutions for mineral and lithology are provided. Fast neutron cross section is derived from total gamma ray counts originating from inelastic interactions and is sensitive to the formation's ability to attenuate high-energy neutrons. This measurement is effective for differentiating gas from rock matrix and fluids, such as oil and water. Its response is different from that of neutron porosity in that it does not correlate to the hydrogen index. Neutron porosity and fast neutron cross-section combination analysis is thus a good indicator for a gas-bearing zone. For the casedhole environment, self-compensated neutron porosity is a complement if no openhole porosity logging data are available.

Result:

The workflow was used in tight gas reservoir evaluation in the east Ordos Basin in both openhole and casedhole environments and achieved a big success.

First, minerals were solved using spectroscopy measurements; TOC was estimated through total carbon measurements minus inorganic carbon weight from spectroscopy carbonate dry weight. In the casedhole environment, minerals have also been acquired that minimized the effect from casing and cement by applying offset for the measurements from the near and far detector. Cases have been shown for clastics with complex minerals, including clay, quartz, calcite, dolomite, coal, pyrite, etc., and for a carbonate reservoir with minerals including calcite, dolomite, and anhydrites. Elements and minerals are acquired and match well with core data. A back-to-back comparison with the previous tool was also made in the same well, allowing a direct comparison of the measurements from the new and existing technology in the same conditions.

Neutron porosity measured in the casedhole environment is compatible with openhole hydrogen index (HI) measurements, which helps to provide a formation porosity measurement for the casedhole environment. Fast neutron cross section is independent of HI and highly sensitive to gas-filled porosity. This paper details this workflow and successfully differentiates gas from the low-porosity

water zones by a combination of NMR measurements. A quantitative definition of bound water, movable water, and gas volume has been delivered and matches the reservoir test result.

Novel:

The successful application in a casedhole environment is excellent for wells without enough openhole logging data. The reliable measurement offered an integrated solution for tight gas reservoir evaluation in both open and cased holes.

### **Individualized Multiscale Reservoir Mapping Services as Challenge-Oriented Solutions to Efficiently Develop Thick Laminated Reservoir With Bottomwater**

Botao Chang<sup>1</sup> and Xiang Tian<sup>2</sup>

<sup>1</sup>Schlumberger

<sup>2</sup>CNOOC-Shenzhen

In offshore south China, a virgin reservoir is in the tilted fault-anticline structure. The complex delta-front and coastal depositional system causes severe heterogeneity in this 40- to 50-m-thick reservoir, which includes two sublayers separated by the primary shaly interbed. Furthermore, multiple irregular shaly and calcareous interbeds with 1 to 4 m thickness inside sublayers complicate the reservoir model. In this bottomwater reservoir with two appraisal wells, horizontal wells at the crest were proposed to be distributed proportionally within two target sublayers, with wells on the slope close to the reservoir top only. The development efficiency using these specific well patterns is greatly affected by challenges from structural and stratigraphic uncertainties in the seismic-scale reservoir model.

Landing results with up to 10-m TVD structural difference illustrated the great uncertainty from the large-scale seismic visualization. Orienting the abovementioned challenges, individualized reservoir mapping services with different scales were involved to cost-effectively achieve the specific development objectives by remotely revealing multiscale reservoir profiles, including multiple key boundaries, formation property, and possible fluid characterization. With a high depth of investigation (DOI) of more than 30 m and resolution up to ~1 m, ultradeep reservoir mapping service (UDRMS) while drilling can provide reservoir-scale resistivity inversion to help develop both sublayers at the crest, while high-definition reservoir detection service (HDRDS) works for wells on the slope just close to target top with its inversion DOI ~5 m and resolution ~1 m.

During the development process at the crest, UDRMS could describe up to six boundaries and seven layers simultaneously within the 48-m TVD range. From this reservoir-scale mapping service, this laminated thick reservoir's details were revealed, including multiple sand sublayers and interbeds. No water was detected within deep DOI to validate the edge-water property. The early detection results helped to proactively adjust and proportionally distribute actual smooth trajectory within two main sublayers as per prognosis, effectively controlling the subsequent casing risk and meeting production objectives. On the slope, HDRDS could reveal a reservoir profile with up to three boundaries in 3- to 5-m DOI. This specific service helped to control trajectory close to detected target top for productive drilling objectives while keeping maximum standoff

above the potential oil-water contact in appraisal wells. The real-time logging data also validated the accuracy of UDRMS and HDRDS results. With this development optimization, the initial production from 10 wells exceeded the prognosis by 15 to 20%.

From resolution-DOI balance to cost-efficient development, multiscale UDRMS and HDRDS could individually constrain 3D seismic and sequence stratigraphic interpretation to refine the reservoir details.

### **Improvement of Accuracy for Estimating Permeability Distribution Using Deep Learning**

Yuri Kanai<sup>1</sup>, Masanori Kurihara<sup>1</sup>, and Yutaro Takayangi<sup>2</sup>

<sup>1</sup>Waseda University

<sup>2</sup>salesforce.com

In the petroleum industry, the characterization of reservoir properties is essential for designing optimal development plans. Although geostatistical modeling is effective for estimating distributions of reservoir properties, it becomes difficult to estimate them accurately if the well data (hard data) is sparsely distributed. To solve this problem, we focused on deep learning, expecting to improve the accuracy for estimating reservoir properties even when the traditional geostatistical techniques cannot construct an elaborated geological model.

The objective of this study is to investigate the usefulness of soft data created by deep learning in reservoir characterization. To accomplish this objective, we developed two programs (Programs-1 and -2) that create the soft data for estimating permeability distributions using deep-learning techniques. Program-1 was constructed using a convolutional neural network (CNN), which is useful in image recognition. It has a function to learn well data (permeability data at wells) that have been prepared for four groups of different sedimentary environments in advance and to classify the well data taken from a target field into the appropriate sedimentary environment group. Program-2 adopts the template matching and selects the permeability distribution, which is the most similar to the well data, from the data set stored in the group specified by Program-1. The permeability distribution data thus selected by Program-1 is then used as soft data in subsequent geostatistical modeling.

We then tried to estimate the permeability distribution of a hypothetical reservoir. The permeability distributions were estimated by sequential Gaussian simulation (SGS) only with the well data and by kriging with external drift (KED) and co-kriging (CK) using the soft data selected by Programs-1 and -2. In this study, the permeability distributions estimated by KED and CK with both hard and soft data were much more similar to the reality than that estimated by SGS only with hard data, which revealed the effectiveness of deep learning in estimating reservoir characteristics.

The above method can be successfully applied when the permeability distribution data similar to the true one are included as one of the soft data in the selected data set, which may not be always expected. Therefore, we are now modifying Program-2 so that it can draw the multiple images of facies distribution constrained by well data for the sedimentary group selected by Program-1, using the AI algorithm called generative adversarial network (GAN), which may



be more effectively utilized as soft data for estimating permeability distributions.

### **Subsurface Visualization and Quantitative Mapping Service to Manage Production Steering and Reserve Assessment of Dynamic Remaining Oil**

Botao Chang<sup>1</sup>, Liu Chenglin<sup>2</sup>, Ren Yang<sup>2</sup>, and Wang Chao<sup>2</sup>

<sup>1</sup>Schlumberger

<sup>2</sup>CNOOC-Shenzhen

In the LF oil field of offshore south China, homogeneous Reservoir E was deeply developed with 97.2% water cut and 67.2% oil recovery. Current horizontal infill wells are mainly aimed at marginal regions with predicted high remaining oil reserves, for which accurate prediction is critical for optimal production steering and further well pattern design. However, current modeling technology only simulated uncertain remaining reserves due to uncertainties of oil trap profile, oil saturation distribution, and dynamic oil-water contact (OWC). Furthermore, conventional near-borehole measurements could not effectively address the above uncertainties, causing current inefficient production steering and performance in this puzzling reservoir.

The remaining oil production management can be enhanced through a game-changing remote mapping service. Without any artificial assumption, this high-definition deep mapping (HDDM) inversion service fully automatically analyzes hundreds of formation models using the Metropolis-coupled Markov-chain Monte-Carlo method to identify subsurface layers' numbers, resistivity and anisotropy distribution, thickness, and dip. The subsurface reservoir profile could be quantitatively delineated up to 5 m from the borehole, including reservoir top, dynamic OWC, and intrinsic layering of contrasting resistivity, which corresponds to different oil saturation. These visualization and quantitative products could instruct productive drilling away from delineated dynamic OWC and optimize corresponding water-controlled completion configurations. Furthermore, updated trap profile and oil saturation distribution could reassess the remaining oil reserves for further well pattern optimization.

Along the anticline at the eastern margin, Well A's 550-m plan horizontal section targeted the 21-m remaining oil column with 20% simulated saturation. The HDDM service revealed only 3-m remaining oil column with actual reservoir top at 7.5 m and dynamic OWC 25.5 m shallower. Anticline dipping-down wing was identified earlier to reduce actual oil trap volume, causing an actual trajectory close to the reservoir top until 1m above OWC for a total 120-m sweet interval. Even with a shorter production interval and less oil column, water-controlled completion technology, including continuous packer and autonomous inflow control device (AICD), optimized well performance approaching prognosis with a stable 460 BOPD and 83% water cut. Actual oil saturation was calculated 60 to 80% above OWC. Then, remaining oil reserves around this area were reassessed ~83% lower than predicted. At the western margin, expansion of the structural crest was mapped to double Well B horizontal section. Drilling close to the top and AICD completion induced the efficient production steering for stable 880 BOPD and 88% water cut, better than prognosis. Furthermore, increasing the oil trap column and oil saturation induced the remaining oil reserves

~43.3% higher than predicted. Consequently, the infill campaign was directed to the western margin.

The HDDM service demonstrated its unique visualization capability to remotely reveal reservoir quantitative details, which could effectively manage the production steering efficiency, dynamic remaining oil reserve assessment, and further well pattern design. Accordingly, exploiting the potentialities of dynamic remaining oil could be gradually pushed to the limit.

### **Development of Compositional Simulator Capable of Calculating Both Flow and Geomechanical Behavior for Predicting Seismicity Induced by CCS**

Reon Suzuki<sup>1</sup>, Shimon Nagao<sup>2</sup>, and Masanori Kurihara<sup>1</sup>

<sup>1</sup>Waseda University

<sup>2</sup>JERA CO., Inc.

Recently, global warming has been progressing all over the world, which has caused serious damages to the earth, such as seawater temperature rise and climate changes. The growth of carbon dioxide (CO<sub>2</sub>) concentration in the atmosphere is considered to be one of the causes of global warming. Carbon dioxide capture and storage (CCS) is expected to be one of the most effective ways to reduce CO<sub>2</sub> in the atmosphere.

CCS is a technology that captures CO<sub>2</sub> directly from the emission sources such as power plants and factories and sequesters it underground. This method has the advantage that it is highly and rapidly effective as a technology to prevent global warming. However, there are many challenges in its implementation. For instance, there are not only uncertainties in the underground fluid behavior but also risks of leakage of injected fluid out of the target formations and induced seismicity. Especially in Japan, there is concern about induced seismicity because there are many active faults and earthquakes in Japan.

In this study, we developed a 3D numerical simulator that can simultaneously calculate the compositional fluid flow behavior and the geomechanical behavior around the CO<sub>2</sub> injection reservoir in order to accurately predict CCS performances, including those of induced seismicity. In this simulator, the functions to simulate the phase behavior/equilibrium and fluid flow in a multicomponent system were formulated using the equation of state (EOS), which were verified by comparing the simulation results with analytical solutions and with the calculation results by WinProp and GEM of Computer Modelling Group Ltd. (CMG). On the other hand, the functions to simulate geomechanical behavior were coded assuming the elastic deformation and were validated with 1D and 2D analytical solutions.

Since faults play a key role in induced seismicity, we also incorporated the functions to deal with various types of faults into the above simulator. That is, the three types of fluid flow can be considered depending on the features of faults: (1) fluid flow along a fault, (2) fluid flow across a fault with non-neighboring connection, and (3) no flow along/across a fault due to a sealing capability of a fault.

Finally, we constructed the simple 3D model of a hypothetical CCS site with a fault having the above features. We then conducted case studies with various parameters and clarified the conditions that caused the induced seismicity by injecting CO<sub>2</sub> into the underground.

### Development of 3D Compositional Thermal-Flow Simulator for Predicting Heavy Oil Recovery Performances by Solvent-Assisted Steam Injection

Seiya Inagaki<sup>1</sup>, Daiki Kanno<sup>2</sup>, and Masanori Kurihara<sup>1</sup>

<sup>1</sup>Department of Earth Sciences, Resources and Environmental Engineering, Graduate School of Creative Science and Engineering, Waseda University

<sup>2</sup>JX Nippon Oil and Gas Exploration

For the last few decades, the development of heavy oil has kept the attention of petroleum companies around the world. However, in spite of its enormity in place, the development of heavy oil has not been conducted actively. There are some reasons for it—the biggest one is its high viscosity.

To solve this problem, various steam injection methods have been applied to increase reservoir temperature, decrease oil viscosity, and hence recover heavy oil. However, the generation of steam is expensive and involves the emission of large amounts of carbon dioxide. Therefore, to reduce the consumption of steam in heavy oil recovery, co-injection of solvent with steam, which is called solvent-assisted steam injection, has been recently proposed. Expanding solvent-steam assisted gravity drainage (ES-SAGD) is one such example. In ES-SAGD, high-temperature steam containing a solvent is injected from an upper horizontal well to reduce the viscosity of heavy oil. This less viscous oil flows downward and is produced from a lower horizontal well. In this research, we have developed a 3D equation of state (EOS)-based multicomponent, thermal flow simulator, expecting that this simulator could predict heavy oil reservoir performances, especially solvent-assisted steam injection performances, more accurately than existing thermal simulators adopting a pseudo-multicomponent system.

For developing this simulator, a total of nine flow equations and EOS-based phase equilibrium equations were derived as governing equations. These equations were then discretized to be reduced to the system of nine nonlinear equations. This simulator solves this equation system for nine primary unknowns of pressure, temperature, global composition, and equilibrium constants of each component by the Newton-Raphson method in each time step. After developing this simulator, the results calculated by this simulator were compared with those simulated by STARS, a commercial thermal simulator of Computer Modeling Group Ltd. (CMG). As a result, it was revealed that the calculation results by this simulator were more accurate than those by STARS in terms of phase equilibrium/behavior.

Then, the sensitivity studies were conducted to examine which reservoir properties and operation conditions affected the heavy oil production, steam oil ratio (SOR), and energy efficiency in SAGD and ES-SAGD. Finally, the pros and cons of SAGD and cyclic steam stimulation (CSS), as well as the effectiveness of solvent co-injection in these methods, were discussed through case studies.

### Flow-Induced Microfracturing of Granite in Conventional and Superhot Geothermal Environments

Ryota Goto<sup>1</sup>, Eko Pramudyo<sup>1</sup>, Noriaki Watanabe<sup>1</sup>, Kiyotoshi Sakaguchi<sup>1</sup>, Youqing Chen<sup>2</sup>, and Takeshi Komai<sup>1</sup>

<sup>1</sup>Tohoku University

<sup>2</sup>Kyoto University

The enhanced geothermal system (EGS) has a great potential to generate electric power from a rock mass with a relatively low initial permeability in both conventional and superhot/supercritical (> ca. 400°C) geothermal environments. Creating a permeable fracture network is critical for the efficient exploitation of geothermal energy from the initially low-permeability rock mass. Our previous works of laboratory-scale hydraulic fracturing experiments on granite at supercritical temperatures of water have demonstrated the formation of a dense network of permeable fracture distributed throughout the entire rock body, the so-called cloud-fracture network. It has been suggested that this fracture network occurs as a result of continuous infiltration of low-viscosity water into pre-existing microfractures, followed by the creation and merger of the subsequent fractures. However, the occurrence of flow-induced microfracturing and its plausible criterion have not been clarified so far. We have therefore conducted hydraulic fracturing experiments on granite at superhot geothermal conditions, together with acoustic emission measurements, to address these points. Moreover, we have conducted fracturing experiments using CO<sub>2</sub>, instead of water, on granite in both conventional and superhot geothermal conditions because it has been suggested that the formation of the cloud-fracture network attributes are primary to injection of the low-viscosity fluid. The results in both fracturing experiments using water and CO<sub>2</sub> have indicated the occurrence of flow-induced microfracturing and have clarified that the well-known Griffith failure criterion largely predicts the fluid pressure required to initiate this fracturing. The present findings will contribute to creating permeable fracture networks in granite for both conventional and superhot EGS.

### Examination on Practical Coupling Methods of Flow Simulator and Geomechanical Simulator for Predicting Methane Hydrate Dissociation and Production Behavior

Takafumi Kawanami<sup>1</sup>, Shigeki Iwata<sup>2</sup>, Masaru Sawata<sup>3</sup>, Masanori Kurihara<sup>1</sup>, Norio Temma<sup>4</sup>, Koya Akamine<sup>5</sup>, and Akira Takiguchi<sup>6</sup>

<sup>1</sup>Department of Earth Sciences, Resources and Environmental Engineering, Graduate School of Creative Science and Engineering, Waseda University

<sup>2</sup>Iwata Zouendoboku Co., Ltd.

<sup>3</sup>INPEX CORPORATION

<sup>4</sup>National Institute of Advanced Industrial Science and Technology

<sup>5</sup>Japan Oil Engineering Co., Ltd.

<sup>6</sup>West Japan Engineering Consultants, Inc.

Methane hydrate is one of the unconventional natural gas resources, which typically exists in unconsolidated reservoirs. Hence, to predict the methane hydrate reservoir performances rigorously, it is necessary to consider not only flow behavior but also geomechanical behavior such as compaction and deformation of a reservoir. In the past study (Iwata, 2019), the program that

couples the methane hydrate flow simulator (MH21-HYDRES) and geomechanical simulator (COTHMAs) was developed incorporating several coupling methods such as iterative coupling method, explicit coupling method, and spatial hybrid coupling method. However, this program has never been tested with field-scale models, which have a huge number of grids and complexity. The objective of this study is to examine new coupling methods and expand the program so that they can be applied to field-scale simulations.

First, we investigated the applicability of the existing coupling program to field-scale problems. In this examination, the coupling program was executed using the reservoir model constructed for one of the methane hydrate reservoirs located in the eastern Nankai trough. This reservoir model has more than 20,000 grids and a high degree of heterogeneity in the vertical direction. As a result, this coupling program could predict the methane hydrate reservoir performances but took an enormous amount of computational time, especially in the calculation by the geomechanical simulator.

Second, to shorten the computational time, the new coupling methods, temporal hybrid coupling method, and timestep integration coupling method were formulated and incorporated into the above coupling program. The temporal hybrid coupling method enables selecting the coupling methods (that with high-calculation accuracy and low-calculation speed and that with low-calculation accuracy and high-calculation speed) at each timestep. On the other hand, the timestep integration coupling method attempts to reduce the calculation time spent for the geomechanical simulation by integrating multiple timesteps spent for the calculation only by the flow simulator into one timestep for the calculation by the geomechanical simulator. We then confirmed that these methods could provide the solutions satisfying both the calculation accuracy and speed by appropriately specifying timesteps.

Finally, the expanded coupling program was applied to the field-scale simulation using five methods: coupling methods of iterative, explicit, spatial hybrid, temporal hybrid, and timestep integration. It was revealed that the coupling methods of spatial hybrid, temporal hybrid, and timestep integration could provide solutions similar to the solutions by the iterative coupling method with a much shorter computational time.

### Permeability Enhancement by Selective Mineral Dissolution of Rocks in Geothermal Environments

Luis Salalá<sup>1</sup>, Ryota Takahashi<sup>1</sup>, Noriaki Watanabe<sup>1</sup>, Kengo Nakamura<sup>1</sup>, Noriyoshi Tsuchiya<sup>1</sup>, and Takeshi Komai<sup>1</sup>

<sup>1</sup>Tohoku University

Enhanced geothermal system (EGS) technologies have been investigated and developed to generate electric power using high-temperature rocks, which have, however, relatively low initial permeabilities. One of the important technologies in EGS is, therefore, well stimulation to enhance the rock permeability, where the traditional methods are hydraulic and chemical stimulations. However, hydraulic stimulation gives rise to a concern of induced seismicity because it may induce seismic shear slip of a sizable natural fracture. On the other hand, chemical stimulation, which uses strong mineral acids, such as hydrochloric acid, has challenges regarding achieving mineral dissolution over long distances and highly variable fluid chemistry. Therefore, we have proposed and investigated a

new chemical stimulation method to enhance the rock permeability using a chelating agent that dramatically enhances the dissolution rates of specific minerals to create voids that are sustained under crustal stress without the challenges in the traditional methods. In the present study, we have conducted chelating agent flooding experiments on various types of rocks, such as granite and andesite, at 200°C under confining stress using aqueous solutions of environmentally friendly chelating agents (GLDA and HEDTA) at pH 4. As a result, it has been observed that the rock permeability increases quickly and significantly, and the expected selective mineral dissolution creates voids within the rock. The present study has demonstrated the possibility of the new chemical stimulation using environmentally friendly chelating agents.

### Integrated Mineral Quantification Technique for Volcanic Reservoirs

Takeshi Otani<sup>1</sup>, Tetsuya Yamamoto<sup>2</sup>, Shogo Kawasumi<sup>2</sup>, and Tatsuya Hattori<sup>3</sup>

<sup>1</sup>JAPEX Research Center

<sup>2</sup>Japan Petroleum Exploration Co, Ltd. (JAPEx)

<sup>3</sup>Japan Oil, Gas and Metals National Corporation (JOGMEC)

Accurate mineral quantification is critical for reservoir characterization if reservoir properties are closely related to mineral assemblage and distribution of a reservoir, or selective mineral dissolution is expected in acid stimulation of a reservoir. However, it is not easy to estimate the accurate mineralogy of natural rocks by a single analysis. Although X-ray diffraction (XRD) analysis is the most popular method for identifying mineralogy, it has limitations in quantifying it in principle. Furthermore, there is no single prevailing method for quantification, especially in the case of volcanic reservoirs.

This study established the mineral quantification workflow for volcanic reservoirs by integrated multiple analyses (XRD, XRF, Rock-Eval pyrolysis, thin section, and SEM+EDS with mineral mapping system). This method mainly involves the traditional stoichiometric concept—calculation of mineralogy from bulk rock chemical composition. In addition, our innovative workflow consists of the following two steps. First, the accuracy of the stoichiometric calculation, which has been difficult by now, is validated by comparing areal minerals from the SEM-EDS mineral mapping system to volumetric minerals calculated from the chemical composition of the same area. Second, we calculate the mineral composition of the rock samples of interest using the validated stoichiometric model. XRF provides the chemical composition, which is essential for stoichiometric calculation, while XRD constrains the mineral assemblage of the rock and Rock-Eval pyrolysis constrains the fraction of carbonate minerals to optimize the stoichiometric calculation.

We applied this method to the basaltic reservoir and the rhyolitic reservoir of domestic oil and gas fields in Tohoku, Japan. Both reservoir rocks are known as “Green Tuff,” which erupted underwater around the Sea of Japan. Their reservoir qualities were improved by the hydrothermal or high-temperature alteration after the eruption. Simultaneously, the alteration resulted in complex mineral assemblages, and therefore, accurately understanding the mineralogy is essential for reservoir characterization but challenging. However, we successfully quantified the mineral composition for

each rock by using this quantifying method. The mineralogical data contribute to estimating more reliable reservoir properties when used as calibration points for well-log mineral analysis. Moreover, it also provides us with important information for the detailed evaluation of the potential acidizing stimulation of the field.

### Fit-for-Purpose Geosteering Solutions Help Unlock Tight Reservoir Potential, Case Studies From JM Project, West China

Kai Wu<sup>1</sup> and Fei Wang<sup>1</sup>

<sup>1</sup>Schlumberger

The JM project is a tight oil drilling campaign started in 2010, aiming to develop the LCG Formation, a typically tight reservoir featured by low porosity and extremely low permeability. After 13 horizontal wells were developed and put into production during Stage 1, extreme variation of the single-well production rate existed, which was highly positively related to the net-to-gross (NTG) ratio. Therefore, for Stage 2, it is the most crucial task to maximize the wellbore's exposure within the target reservoir. This paper mainly describes how the distinct geosteering solutions have been applied in Stage 2 to solve the different geosteering challenges, respectively, and help improve the NTG ultimately.

The LCG Formation is divided into two categories—up-sweet-spots and low-sweet-spots. The lithology of the up-sweet-spots is mainly siltstone and fine sandstone, characterized by low or medium resistivity and high gamma ray on the logging curve. The cap and base rock are dolomite with high resistivity. The target layer is 3 to 5 m thick with high structure uncertainty. However, different from the up-sweet-spots, the low-sweet-spots are dolomitic siltstone with high heterogeneity. And, within the range of 2 m thickness of the target layer, it can be subdivided into four to five sublayers with different logging responses, leading to the range of resistivity in the target varying from 2 to 2,000  $\Omega$ -m, bringing a huge challenge to the lateral geosteering.

Fit-for-purpose geosteering solutions have been applied to address the challenges mentioned above. The boundary mapping service based on electromagnetic propagation logging while drilling is deployed, in view of the case of the up-sweet-spots where the resistivity difference between the target and cap or base rock is evident, and the target layer is homogeneous internally. This solution can depict the reservoir boundary clearly within 3 to 5 m TVD and adjust the trajectory accordingly in advance, consequently avoiding drilling out of the target effectively. At the same time, aiming at identifying and tracing the multiple sublayers within the low-sweet-spots, the high-definition lateral resistivity imaging service is applied. In the case of low-sweet-spots, it can not only help adjust the trajectory to match with the structure change relying on the formation dip derived from the resistivity image, but also it can measure the formation resistivity more accurately compared to propagation tool, which made the logging response more complex.

As of October 2019, 27 horizontal wells have been geosteered by using this integrated approach. As a result, the average reservoir net-to-gross ratio reached 97%, which increased by 29% than Stage 1. The authors believe that the fit-for-purpose geosteering solutions could be expanded to other similar projects by showcasing the distinctive case studies in this paper.

### Sandface Measurement of Asphaltene Precipitation to Determine Its Onset

Gibran Hashmi<sup>1</sup>, Rohin Naveena-Chandran<sup>1</sup>, Farrukh Hamza<sup>1</sup>, Jason Rogers<sup>1</sup>, John Meyer<sup>2</sup>, and Sara Chapman<sup>2</sup>

<sup>1</sup>Halliburton

<sup>2</sup>Kosmos Energy

Asphaltene precipitation has long been a challenge for the oil and gas industry during crude oil production and processing. The problem forms a significant part of the larger overarching issue of flow assurance that affects the viability of any asset in the oil production scenario. Asphaltenes can be precipitated when the oil experiences changes in pressure, temperature, and composition. Of these, the most common are pressure and temperature changes that are unavoidable when oil is brought up through wellbores and flowed in pipelines. Therefore, a proper understanding of asphaltene precipitation leading to deposition is crucial in completions planning and effective management of a production system. It ultimately governs the production life of the reservoir.

This understanding is traditionally achieved through the laboratory study of pressurized fluid samples that are collected during the formation testing phase. Significant developments over the years have greatly improved this process, along with the introduction of downhole fluid analysis. However, variations in different laboratory methods and surface challenges of restoration to reservoir conditions and maintenance of equilibrium have often deterred good quality results when determining an accurate and representative measurement of asphaltene onset pressure (AOP). Since the post-acquisition handling of fluid samples often induces inadvertent changes to the fluid properties, the most optimum place to determine this critical parameter then becomes the sandface. In this regard, wireline formation testers can aid in providing a reliable downhole analysis.

This study presents a novel method to estimate AOP at reservoir conditions. The approach combines the two laboratory techniques of gravimetric and light scattering analyses. An isolated sample of fluid is isothermally depressurized from initial reservoir pressure. At the same time, the downhole fluid analysis monitors the fluid composition through depressurization via the light scattering technique. The process does not interfere with the collected fluid samples and presents a downhole measurement of upper asphaltene onset pressure (UAOP) together with other critical onsets in the asphaltene phase envelope. The procedure also allows for studying the kinetics of the precipitation process that further enhances the understanding of the asphaltenes present in the oil for future production.

The metrics obtained from this methodology have significant economic implications with regard to reservoir management. The analysis performed on the downhole data can serve to augment the PVT tests carried out in the laboratory to facilitate a better understanding of the fluid. The knowledge also allows for effective production planning in order to avoid costly mitigation procedures.



### **Thru-Tubing Integrity Assurance in CO<sub>2</sub>-Injection Well Using Electromagnetic Corrosion Logging Tool: A Case Study in Far East Test Field, Japan**

Aditya Arie Wijaya<sup>1</sup>, Akira Endo<sup>1</sup>, Sarvagya Parashar<sup>1</sup>, and M.S. Iyer<sup>1</sup>  
<sup>1</sup>Halliburton

Despite the establishment of the Paris agreement to reduce CO<sub>2</sub> emissions in 2015, the energy demand continues to grow and is expected to be around 33% in 2035. Aside from the use of low-carbon footprint energy such as natural gas, technologies like carbon capture storage (CCS) and sequestration are keys to maintain the amount of CO<sub>2</sub> emission in the atmosphere. CCS project needs to securely contain the CO<sub>2</sub> injected into the formation by assuring the well integrity via corrosion monitoring. Although the well's life expectancy can be up to 50 years, frequent cycling of pressure injection may lead to pipe corrosion and reduce its lifespan. Well integrity assurance and monitoring are critical to ensure the maximum life expectancy and mitigate any risk to the environment from unwanted gas leaks to the nearby aquifer. A thru-tubing electromagnetic (EM) corrosion logging tool is deployed to evaluate the pipe condition of the well after CO<sub>2</sub> injection. The EM tool measures high-definition electromagnetic arrays from multiple receivers in the frequency domain. It uses the acquired frequency and magnitude of the transmitted EM signal and enables inversion modeling. The inversion modeling will then give an estimated metal thickness on each tubular, allowing further analysis of the metal loss calculation for pipe integrity. This study highlights the current tubing and casings condition in this CO<sub>2</sub> injection well, which gives a reliable assessment of the corrosion status on the tubing and casing without retrieving the pipe. The result can be used to evaluate the well's life expectancy, mitigate any remedial action, and serve as the baseline data for future well integrity monitoring.

### **A Robust Examination of CBL Waveform Data Through Multiple Casing With Novel Methodology of Peak Amplitude Cement Analysis (PACE): A Case Study in Far East Test Field**

Laura Martel<sup>1</sup>, M.S. Iyer<sup>1</sup>, and Sarvagya Parashar<sup>1</sup>  
<sup>1</sup>Halliburton

This study aims to exhibit a novel technique of analyzing the conventional sonic waveform acquired through conventional cement bond logging (CBL) tools. The present study also exhibits its utility in CO<sub>2</sub> injection wells to evaluate the condition of cement in multiple strings that undergo several years of injection. CBL tools conventionally transmit a pulse via a piezoelectric crystal to produce an omnidirectional acoustic signal that travels to a set of receivers along various paths through the borehole fluid, pipe, cement, and formation. Conventional evaluation reviews the bond to pipe and the bond to formation using the information gathered as amplitude from the 3-ft receiver and microseismogram via the 5-ft receiver. Additionally, the quality check is performed using the transit time obtained from the 3-ft receiver to indicate a properly centralized tool. The use of the CBL waveform, commonly named VDL (variable density display log), or MSG helps determine the presence or lack thereof of cement between the casing and the formation. This novel method examines the CBL waveform in robust technique, known

as peak amplitude analysis cement evaluation (PACE), to help determine the cement placement in the annular space of multiple tubulars. In the current case, CBL was run through a 2.375-in. tubing to evaluate the cement behind the 5.5-in. and 9.625-in. casing, respectively. The present procedure will assist in cement evaluation not only near the casing wall but also in areas away from the casing wall, which historically has not been attempted. The innovative technique consists of separating the sonic waveform into four sections that range from the first arrival that represents the wall of the first casing or tubing to the formation arrival. With this, it is possible to obtain normalized amplitudes for each region, which allows evaluating in more detail the cement quality by rings at different investigation diameters. The transformation of the CBL waveform using PACE allows representing multiple casings regions for evaluation of four calibrated amplitude readings, which helps to standardize the analysis of the waveform.

Expanding this technique to use multiple circumferential waveforms enables the evaluation of the cement sheath in the annular space. The study showcases the ability to evaluate multiple casings behind the acquisition of sonic waveform through tubing. This process brings a paradigm shift in how the waveform is analyzed.

# The 26th Formation Evaluation Symposium of Japan

Special Session  
“Integrated Evaluation”

## PROGRAM

Virtual Symposium  
September 30, October 1 & 7, 2021



Sponsored by Japan Formation Evaluation Society – A Chapter of SPWLA  
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## Sponsors

(To be announced)

## Program

### Thursday, September 30

Opening  
Invited Talk  
Special Session: Integrated Evaluation  
*Break*  
Machine learning  
Technical Session

### Friday, October 1

Invited Talk  
Reservoir Characterization  
*Break*  
General Meeting  
(Continue) Reservoir Characterization  
Geothermal  
Technical Session

### Thursday, October 7

Keynote Address  
Reservoir Mapping  
*Break*  
Formation Evaluation  
Well Integrity Assessment  
Technical Session  
Closing

## Technical Session: Thursday, September 30

### Opening

Chairperson: Aiko Takada (JAPEX)

- 13:00**      **Opening Address**  
Professor Masanori Kurihara (President of JFES; Waseda University)

### Invited Talk: Integrated Team-based Approach

Chairperson: Takeo Aoyama (JX)

- 13:10**      **Invited Talk:**  
**KEY ELEMENTS IN THE FULL ITERATION PROCESS WITH MULTI-DISCIPLINE TEAM FOR THE SUCCESSFUL SUBSURFACE EVALUATION**  
Mr. Ryuichi Uchimura (JX Nippon Oil & Gas Exploration)

### Special Session: Integrated Evaluation

Chairperson: Masaaki Okita (JX)

- 13:40**      **INTEGRATED FLUID CHARACTERIZATION OF NEAR CRITICAL FLUID TO UNDERSTAND RESERVOIR FLUID DISTRIBUTION AND GEOLOGICAL STRUCTURE:**  
Bei Gao (Schlumberger), Lu Fawei (CNOOC), Zhang Zhiqiang (COSL)
- 14:00**      **CONTINUOUS MINERALOGICAL FORMATION EVALUATION USING GEOCHEMICAL SPECTROSCOPY WELL LOGS IN MANTLE-CRUST TRANSITION ZONE: CASE STUDY FROM THE SCIENTIFIC OMAN DRILLING PROJECT:**  
Yuki Maehara (Schlumberger), Kyaw Moe, Yasuhiro Yamada (JAMSTEC)
- 14:20**      **INTEGRATED MINERAL QUANTIFICATION TECHNIQUE FOR VOLCANIC RESERVOIRS:**  
Takeaki Otani, Tetsuya Yamamoto, Shogo Kawasumi (JAPEX), Tatsuya Hattori (JOGMEC)
- 14:40-14:50**      **Break**

### Machine learning

Chairperson: Takahiro Hasegawa (CTC)

- 14:50**      **IMPROVEMENT OF ACCURACY FOR ESTIMATING PERMEABILITY DISTRIBUTION USING DEEP LEARNING:**  
Yuri Kanai, Masanori Kurihara (Waseda University), Yutaro Takayanagi (Salesforce.com)
- 15:10**      **MACHINE LEARNING TO PREDICT LARGE PORES AND PERMEABILITY IN CARBONATE RESERVOIRS USING STANDARD LOGS**  
Ibrahim Milad, Russell Farmer (BP)



## Technical Session

*Chairperson: Takuya Ishibashi (AIST)*

**15:30-15:45 Presentation by Sponsor**  
(To be announced)

**15:45-16:00 Presentation by Sponsor**  
(To be announced)

## Technical Session: Friday, October 1

### Invited Talk: Integrated Technical Analysis

*Chairperson: Tetsuzo Fukunari (JOGMEC)*

**13:00 Invited Talk:**  
**CORE, LOG AND SEISMIC DATA INTEGRATION FOR 3D MODELLING OF A METHANE HYDRATE PROJECT**  
Dr. Machiko Tamaki (Japan Oil Engineering)

### Reservoir Characterization

*Chairperson: Yuki Maehara (Schlumberger)*

**13:30 EXAMINATION ON PRACTICAL COUPLING METHODS OF FLOW SIMULATOR AND GEOMECHANICAL SIMULATOR FOR PREDICTING METHANE HYDRATE DISSOCIATION AND PRODUCTION BEHAVIOR:**

Takafumi Kawanami (Waseda University), Shigeki Iwata (Iwata Zouendoboku), Masaru Sawata (INPEX), Masanori Kurihara (Waseda University), Norio Temma (AIST), Koya Akamine (JOE), Akira Takiguchi (West Japan Engineering Consultants)

**13:50 DEVELOPMENT OF COMPOSITIONAL SIMULATOR CAPABLE OF CALCULATING BOTH FLOW AND GEOMECHANICAL BEHAVIOR FOR PREDICTING SEISMICITY INDUCED BY CCS:**

Reon Suzuki (Waseda University), Shimon Nagao (JERA), Masanori Kurihara (Waseda University)

**14:10 DEVELOPMENT OF THREE-DIMENSIONAL-COMPOSITIONAL-THERMAL-FLOW SIMULATOR FOR PREDICTING HEAVY OIL RECOVERY PERFORMANCES BY SOLVENT ASSISTED STEAM INJECTION:**

Seiya Inagaki (Waseda University), Daiki Kanno (JX Nippon Oil & Gas Exploration), Masanori Kurihara (Waseda University)

**14:30-14:35 Break**

**14:35-15:00 General Meeting**

**15:00 SANDFACE MEASUREMENT OF ASPHALTENE PRECIPITATION TO DETERMINE ITS ONSET:**

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

## Geothermal

*Chairperson: Tatsuya Sato (GERD)*

- 15:20 PERMEABILITY ENHANCEMENT BY SELECTIVE MINERAL DISSOLUTION OF ROCKS IN GEOTHERMAL ENVIRONMENTS:**  
Luis Salalá, Ryota Takahashi, Noriaki Watanabe, Kengo Nakamura, Noriyoshi Tsuchiya, Takeshi Komai (Tohoku University)
- 15:40 FLOW-INDUCED MICROFRACTURING OF GRANITE IN CONVENTIONAL AND SUPERHOT GEOTHERMAL ENVIRONMENTS:**  
Ryota Goto, Eko Pramudyo, Noriaki Watanabe, Kiyotoshi Sakaguchi (Tohoku University), Youqing Chen (Kyoto University), Takeshi Komai (Tohoku University)

## Technical Session

*Chairperson: Masatoshi Nishi (INPEX)*

- 16:00-16:15 Presentation by Sponsor**  
(To be announced)

## Technical Session: Thursday, October 7

### Keynote

*Chairperson: Aiko Takada (JAPEX)*

- 13:00 Keynote Address (Title to be announced)**  
Ms. Katerina Yared (President-elect of SPWLA; SM Energy)

### Reservoir Mapping

*Chairperson: Tetsuya Yamamoto (JAPEX)*

- 13:30 INDIVIDUALIZED MULTI-SCALE RESERVOIR MAPPING SERVICES AS CHALLENGE-ORIENTED SOLUTIONS TO EFFICIENTLY DEVELOP THICK LAMINATED RESERVOIR WITH BOTTOM WATER:**  
Botao Chang (Schlumberger), Xiang Tian (CNOOC-Shenzhen)
- 13:50 SUBSURFACE VISUALIZATION AND QUANTITATIVE MAPPING SERVICE TO MANAGE PRODUCTION STEERING AND RESERVE ASSESSMENT OF DYNAMIC REMAINING OIL:**  
Botao Chang (Schlumberger), Liu Chenglin, Ren Yang, Wang Chao (CNOOC-Shenzhen)
- 14:10 FIT-FOR-PURPOSE GEOSTEERING SOLUTIONS HELPING UNLOCK TIGHT RESERVOIR POTENTIAL, CASE STUDIES FROM JM PROJECT, WEST CHINA:**  
Kai Wu (Schlumberger), Fei Wang

**14:30-14:40 Break**

## Formation Evaluation

*Chairperson: Satoru Hada (GSC)*

- 14:40 MINERALOGY AND FLUID IDENTIFICATION FOR TIGHT GAS RESERVOIR IN EAST ORDOS BASIN WITH ADVANCED MULTI-FUNCTION PULSED NEUTRON MEASUREMENT:**  
Liang Cai, Jin Long Wu, Hou Yu Ting (Schlumberger)

## Well Integrity Assessment

*Chairperson: Satoru Hada (GSC)*

- 15:00 A ROBUST EXAMINATION OF CBL WAVEFORM DATA THROUGH MULTIPLE CASING WITH NOVEL METHODOLOGY OF PEAK AMPLITUDE CEMENT ANALYSIS (PACE): A CASE STUDY IN FAR EAST TEST FIELD:**  
Laura Martel, M. S. Iyer, Sarvagya Parashar (Halliburton)
- 15:20 THRU-TUBING INTEGRITY ASSURANCE IN CO<sub>2</sub>-INJECTION WELL USING ELECTROMAGNETIC CORROSION LOGGING TOOL: A CASE STUDY IN FAR EAST TEST FIELD, JAPAN:**  
Aditya Arie Wijaya (Halliburton)

## Technical Session

*Chairperson: Tadahiro Nagano (Schlumberger)*

- 15:40-15:55 Presentation by Sponsor**  
(To be announced)

- 15:55-16:10 Closing**

## Symposium Committee 2021

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*In this edition:*

*An Interview with  
Shuvajit Bhattacharya:  
Past SPWLA  
Scholarship Recipient*

*An Interview with  
Kurt Livo: Past SPWLA  
Scholarship Recipient*

## An Interview with Shuvajit Bhattacharya: Past SPWLA Scholarship Recipient



Shuvajit Bhattacharya is a researcher at the Bureau of Economic Geology (BEG) at the University of Texas at Austin. Prior to joining BEG, he was a regular faculty of applied geophysics and petrophysics at the University of Alaska Anchorage (2017–2020). He has 10 years of academic and industry experience in petrophysics and quantitative seismic interpretation. Shuvajit finished his PhD at West Virginia University and his MSc degree at the Indian Institute of Technology Mumbai.

**When did you receive your SPWLA scholarship, how did you learn about it, how was the process applying for it, and how did that help you or influence your career?**

I received the SPWLA Foundation scholarship twice, in 2013 and 2015. I also received a scholarship from the SPWLA Unconventional Resources Special Interest Group in 2014. I came to know about these opportunities from my advisor, Dr. Tim Carr, and peer, Dr. Matt Boyce. The process of application was very straightforward. I filled out the online application and emailed it. Yes, the scholarships were helpful to my research. I used them to do lab-based studies, such as XRF that was not possible without additional funds. The integration of XRF to my petrophysical models revealed a lot about fundamental processes in mudstone systems. I also used it for conference travels. Applying for these scholarships and grants also helped me develop a bit of grantsmanship, which I use a lot these days.

By the way, one of my graduate students received a scholarship from the SPWLA Foundation this year, and he is using it for his study and travel. So, it continues. Thanks to the committee for your support.

**What do you think was the main reason SPWLA approved your scholarship?**

Well, I think it was both technical and the career goal that I expressed in my application. One of the technical reasons may be related to my idea on quantitative classification and 3D modeling of mudstone facies in the upper and lower Bakken shale members at the basin scale using machine learning when many others were focusing on the middle Bakken reservoir. It was relatively new at that time.

**Did the SPWLA scholarship have some influence on the path you took during your professional life and being a member?**

Absolutely, I could do more research using that money, publish papers, and present them. I think that was instrumental in getting a job after my PhD. I'm also a member of SPWLA.

## An Interview with Shuvajit Bhattacharya: Past SPWLA Scholarship Recipient

### **What do you remember from those times as a student and SPWLA scholarship recipient?**

I was very excited about learning more about petrophysics since I was pursuing my MSc degree, especially the signal processing part of it and gleaned rock and fluid properties from signals. In the universities, I took three semester-long courses in log analysis and petrophysics from three professors with very different backgrounds, including geology, geophysics, and petroleum engineering. Each one of them taught it from a different perspective, including the tools, physics of measurement, log processing, log motifs, lab measurements, and quantitative analysis. I learned more about logging tools when I spent time on onshore and offshore rigs during coring and logging jobs. Had I not worked there, I would not have understood and appreciated this discipline much.

### **Was there an SPWLA professional or student chapter in your school? Were you a regular at SPWLA events, if any?**

No. We did have other student chapters, though, such as AAPG and SEG. I was a vice president of the SEG student chapter. There were other professional societies, which were very active, such as the Pittsburgh Association of Petroleum Geologists and Geophysical Society of Pittsburgh. They used to bring petrophysicists and geophysicists frequently to give talks. I used to attend those meetings religiously. I have heard there is a new SPWLA Appalachia Chapter in Pittsburgh now.

### **What was your biggest challenge during graduate school, and how did you overcome it?**

Well, I think networking with the operators in the Williston Basin was a big challenge when I needed the Bakken core data during my PhD at West Virginia University. Therefore, I started attending and presenting my work at the AAPG and SPWLA annual meetings, which helped me grow my professional connections. I could eventually receive data and valuable feedback about my work from at least four oil companies. I also received internship offers due to my networking at the conferences.

### **Is there a mistake you made in school that you want to share with others to avoid?**

Because I did work in the industry for a short while before starting my PhD, I had gained a bit of teamwork experience that was very helpful in graduate school. Collaboration with people matters. These days, I collaborate with people, primarily based on two things: 1. They complement my skills, and 2. I have respect and appreciation for them as a person and for their work. This goes both ways. It's so critical to building a meaningful collaboration either in academia or industry. Academia is a little different than the industry in this regard. As a researcher in academia, I can choose whom I want to work with to produce value-added research and keep my research life happy. So, find the right people for collaboration at the beginning.

### **Who was your role model at school, and when you started your career? You can name more than one.**

I have had several role models working in academia and industry. Some of them are geologists, geophysicists, and petroleum engineers; many of them are stalwarts in their own field. Dr. Shahab Mohaghegh, Dr. Kurt Marfurt, Satinder Chopra, Dr. Tim Carr (my advisor), and Fred Jenson, to name a few. I have also read numerous articles and listened to several talks by many other experts, whom I deeply respect. I have learned so much from them.

### **How did you start your career in petrophysics and formation evaluation?**

In 2009, I worked on a project with a professor on designing an instrument to measure resistivity and water saturation of core samples. That's how I started my work in petrophysics.

### **How do you convey the importance of petrophysics/formation evaluation to your colleagues from other disciplines when collaborating on a project?**

Petrophysics is fundamental, just like facies in geology. I explain to my colleagues the need for a deep understanding and quantification of critical rock and fluid properties. We do not have ubiquitous core samples. Moreover, subsurface data come with uncertainties. By integrating and fusing multiscale data, we can develop a better picture of the subsurface with reduced uncertainties.

## An Interview with Shuvajit Bhattacharya: Past SPWLA Scholarship Recipient

### Where do you see yourself in five years?

Learning new things and doing quality research in diverse areas, including oil and gas, geothermal resources, carbon sequestration, hydrogen storage, etc. I am already working on many of these aspects now. I am more interested in the “science” or “processes” of the subsurface than a specific software-based solution or a technique.

### What do you recommend to current students in petroleum engineering and geosciences, especially with work/research in the field of petrophysics/formation evaluation?

Explore and find your own path and do what you like, making sure that it positively impacts the community. Try to gather more knowledge about the discipline itself. Look for opportunities to work on small projects. Get involved in professional societies, such as SPWLA, AAPG, SEG, and SPE. Network with people. I would also recommend getting a job (regardless of the industry) either after your BS or MS degree before embarking on the next academic degree, MS or PhD, whichever it might be. It's beneficial to you and the program.

### How do you see the future of SPWLA, and what do you think we need to do to keep our society current?

I think it's brighter. As I said, petrophysics is based on a solid foundation of science and engineering. As long as we care about the fundamentals and their diverse applications, not just about a specific resource or industry, and convey that message effectively, it should be fine.

### Anything else you want to add?

Chase your dream. Put your head down and do the work. There is so much distraction in the world these days.

## An Interview with Kurt Livo: Past SPWLA Scholarship Recipient



Kurt Livo is currently a PhD candidate in the Petroleum Engineering Department at the Colorado School of Mines. He is a research assistant working on low-field nuclear magnetic resonance (NMR) and micro-computer automated tomography ( $\mu$ CT) properties of fluids and porous media at the Center for Rock and Fluid Multiphysics. Kurt's research interests include pressure-dependent NMR response for fluid relaxation and mineralogical controls on NMR-derived properties in both unconventional and conventional reservoir rocks.

### **When did you receive your SPWLA scholarship, how did you learn about it, how was the process applying for it, and how did that help you or influence your career?**

I received the SPWLA scholarship during the academic years 2019 and 2020. I was first informed of the scholarship through my involvement with the Denver Well Logging Society (DWLS), where opportunities for students are usually discussed during luncheon meetings. I decided to apply and found the application process to be straightforward through the SPWLA online website, with all required materials clearly laid out. Having the opportunity to receive this scholarship has proven invaluable in providing the financial assistance to help me finish my degree, especially during COVID and the oil downturn where internship and job opportunities are extremely limited for students. This has helped me focus on my research without some of the financial strain of being a student and has pushed me to help set up an SPWLA chapter at the Colorado School of Mines.

### **What do you think was the main reason SPWLA approved your scholarship?**

I feel that my scholarship was approved due to my research on NMR and the focus on experimental petrophysics and geophysics that our research group performs under my advisor Manika Prasad. If I hadn't had the opportunity to work on this research, I don't think I would have been qualified for this scholarship.

### **Did the SPWLA scholarship have some influence on the path you took during your professional life and being a member?**

Absolutely, I feel that this scholarship has been an incredible blessing, especially during COVID, when a lot of families are struggling. I hope to continue being a member after finishing my PhD and give this same opportunity to other students who may be struggling. I feel like this is an organization that is really committed and is giving back to advancing this science. I am glad to be part of that, and I hope to emulate this in my career.

### **What can you share about these times as a student and SPWLA scholarship recipient?**

I can tell you that this scholarship does help with the limited stipends and research budgets that many students face. This has been a huge relief in a time where excess money is not something that we students have. Having this opportunity has allowed me to meet more people in the petrophysics community through outlets such as the DWLS, and I feel that the SPWLA is a community that is welcoming the next generation of petrophysicists.

### **Was there an SPWLA professional or student chapter in your school? Were you a regular at SPWLA events, if any?**

Historically, there has not been an SPWLA chapter at CSM, but with some members of my research group, we have helped establish an SPWLA student chapter and are getting more students interested in this field.



## An Interview with Kurt Livo: Past SPWLA Scholarship Recipient

### **What was your biggest challenge during graduate school, and how did you overcome it?**

The biggest challenge during graduate school has been all the publications needed to graduate. I have not overcome this yet, but I am taking it a step at a time and trying to write at least a little each day.

### **Is there a mistake you made in school that you want to share with others to avoid?**

One of the mistakes that I have faced is to not be drawn in by every project and opportunity that comes your way. It is better to focus on some of the less glamorous things and take that to completion rather than be driven in multiple directions by more interesting projects that are out of your control.

### **Who was your role model at school, and when you started your career? You can name more than one.**

One of my greatest role models was my late grandmother. She taught me to take things a step at a time and never settle with mediocrity. My other great role model is my advisor, Manika Prasad, who has always pushed all her students to think bigger and focus on the details of scientific work. Both women have pushed me to look at the world and my situation in a very critical way and defend my position with facts and logic.

### **How did you start your career in petrophysics and formation evaluation?**

My career in petrophysics started with getting a lower grade in my formation evaluation class than I thought I deserved. I argued with the professor and got a better grade with the contingency that I take their advanced class. From there, I fell in love with petrophysics and eventually got an internship with Schlumberger that cemented this interest.

### **How do you convey the importance of petrophysics/formation evaluation to your colleagues from other disciplines when collaborating on a project?**

I like first to determine the technical issues that they are facing in their own discipline and try and frame a solution to their problems with petrophysics/formation evaluation. By acknowledging limitations to the acquisition of accurate measurement values and providing values backed by the basic physical principles of downhole measurements, I find that a technically feasible and scientifically valid answer can be reached. This usually speaks for itself.

### **Where do you see yourself in five years?**

I see myself continuing to learn and working on new projects in systematic and process-driven ways to get the best scientific answer. I hope to continue to expand my technical horizons to help better meet these objectives.

### **Any personal activities or background you want to share?**

I think it's always important to have something you are learning about for the pure interest of it. I am currently studying for my pilot's license and hope to take lessons after my PhD is done.

### **What do you recommend to current students in petroleum engineering and geosciences, especially with work/research in the field of petrophysics/formation evaluation?**

It is important never to put yourself in a box. I think it is important to at least understand the underlying principles of geology, geophysics, engineering, and petrophysics and never say that a field is outside of what you do. Integration of each of these fields is essential to being a good geoscientist.

## An Interview with Kurt Livo: Past SPWLA Scholarship Recipient

### **How do you see the future of SPWLA, and what do you think we need to do to keep our society current?**

I see the SPWLA as having a lot of knowledge in members that are in the mid to late stages of their careers. To stay current and grow as a society, these individuals need to be willing to mentor those individuals (like me) who are just starting out in their careers. It takes years to gain this knowledge, and most petrophysicists that I speak to say that they started their careers in another discipline and were brought over to petrophysics through some other mentor. This is a niche field, and as such, I think that the older generation has the technical knowledge and historical context of the field to prevent a lot of pitfalls for the next generation. I would also task people who are just starting out to seek these mentors and listen to what they say. Only through collaboration and maintaining the knowledge base we have will we grow as a society.

### **Anything else you want to add?**

I really appreciate this opportunity, and thank you for listening!

## *Petrophysics* NMR Special Issue Call for Papers

Dear NMR petrophysics enthusiasts,

With the help and support from Elizabeth Naggar (Managing Editor of *Petrophysics* Journal) and Songhua Chen (VP Publications for SPWLA), the SPWLA NMR-SIG is targeting the publication of the “NMR Special Issue for *Petrophysics* Journal” in **June 2022**.

We are announcing a call for papers on the following topics in NMR petrophysics and formation evaluation technologies:

1. History
2. Basic principles
3. Instrumentation
4. Data processing
5. Applications
6. Interpretation
7. Reviews
8. Tutorials
9. Reference databases

The following guidelines should help:

1. Previously published conference proceedings and peer-reviewed articles are allowed, either reworked or reprinted.
2. Copyright transfer from the journal must be obtained by the author(s) before submission, except for SPWLA publications where copyright transfer comes from the author(s).
3. Original material is of course allowed, provided approvals for publication are obtained before submission.

Please submit your articles to [Editorial Manager®](#) by the **October 1<sup>st</sup> deadline**, and please make sure to select “NMR Special Issue” for the “Article Type”.

Also, please feel free to forward this message to all interested parties.

Best regards,

Philip Singer

(Guest Editor of *Petrophysics* Journal)

## Chapter News

### ABERDEEN FORMATION EVALUATION SOCIETY

#### Recent Events

7 July 2021—Field Trip: AFES took a field trip to the tranquil and local Ythan Estuary, some 15 miles north of Aberdeen. We looked at depositional environments along the estuary mouth, plus some seal and wildlife spotting! It was a lovely warm evening, with special thanks to AFES VP Seminars Stephen Morris, who, as usual, conveyed his knowledge and passion for geology.



14 July 2021—Technical Talk: Justin Greene (Corex) presented “Scaling Assessment: Inorganic & Organic.” This was an excellent, web-based presentation from Justin Greene on scaling. The session focused upon inorganic scales and discussed organic scale and its importance. The slides and technical links are available on the AFES website in the archives section.

18 August 2021—We hosted Yegor Se (Chevron), who spoke about “Lessons Learned from Cross-Validation of Fiber Optics and Production Logging Cluster Performance Assessment in Unconventional Wells.” As is now normal, this was a web-based event.

#### Upcoming Events

11 September 2021—Martin Leonard (PetroMaxc) will discuss wireline tool deployment in highly deviated wells.

22 September 2021—We are making tentative plans for a Full-Day Seminar, held physically in September. The theme for this seminar will be “Is the Future of Petrophysics on Wireline or on Drillpipe?” The call for papers is still open. More details can be found via the AFES website.




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

#### ABU DHABI CHAPTER

#### General News

The Abu Dhabi SPWLA 2021 Tropical Online Conference Call for Abstracts – Reservoir Fluid Surveillance Today and Beyond is open. Please continue to read for the technical topics. If you are interested in participating, send an email to [abudhabi@spwla.org](mailto:abudhabi@spwla.org) with your abstract. The abstract submission deadline is September 15, 2021.





## SPWLA 2021 Abu Dhabi Topical Conference, 13 & 14 December 2021

Abu Dhabi Chapter

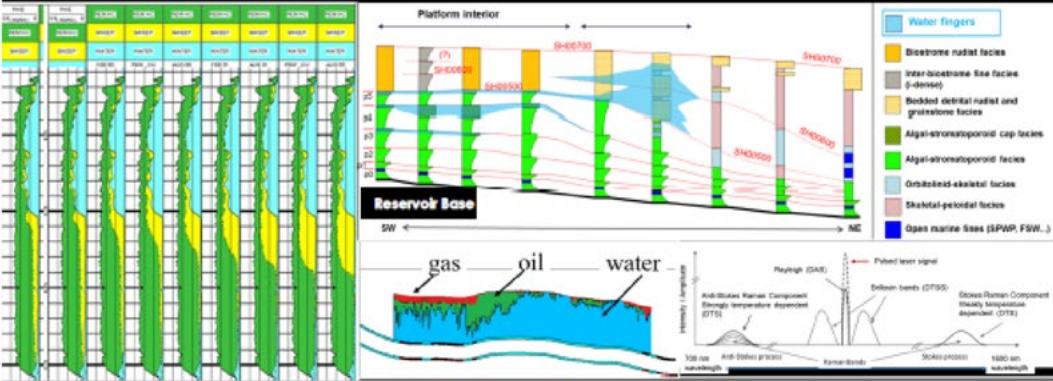
### Reservoir Fluid Surveillance, Today and Beyond

The SPWLA 2021 Abu Dhabi Topical Conference will be a forum for discussing subsurface evaluation of fluid movement.

**Technical Topics:**

- ❖ **Near Field Reservoir Saturation Monitoring**
  - Open Hole Formation Evaluation Surveillance Challenges.
  - Cased hole Pulsed Neutron Surveillance.
- ❖ **Integrated Near / Far Field Fluid Movement Analysis**
  - Deep Resistivity (LWD-Extra Deep  $\Omega$ , X-Well EM).
  - 4D Seismic (DAS & Surface)
  - New Tools (Gravity, EM Transparent Casing, Casing Deep  $\Omega$ ) for Time Lapse
- ❖ **Wellbore Injection/ Production Profiling**
  - Fiber Optics (DAS, DTS, Pressure, FBG)
  - Chemical Tracers
  - Array Sensor PLTs
- ❖ **EOR Monitoring - Case Studies**
  - CO<sub>2</sub> / Polymer / Methane Gas monitoring

**Abstracts Submission Deadline: 15<sup>th</sup> of Sept, 2021. Email: [abudhabi@spwla.org](mailto:abudhabi@spwla.org)**



AN ALL ELECTRONIC CONFERENCE WITH TWO DAYS OF PRESENTATIONS.  
 NO TECHNICAL WRITTEN PAPER REQUIRED.  
 PRESENTERS ARE ENCOURAGED TO DISTRIBUTE THEIR PRESENTATION.

The Abu Dhabi Chapter encourages all interested petrophysicists to join and become active members. Get in touch if you want to be added to our email list: [abudhabi@spwla.org](mailto:abudhabi@spwla.org). Follow us on LinkedIn–SPWLA Abu Dhabi Local Chapter.

We would love to hear from you!!

**Recent Events**

9 August 2021—The chapter hosted an online technical presentation titled “A Simple and Convincing Water Saturation vs. Height Function for Reservoir Modeling.” The guest speaker was Dr. Steve Cuddy, SPWLA Distinguished Lecturer.



## ARGENTINA CHAPTER

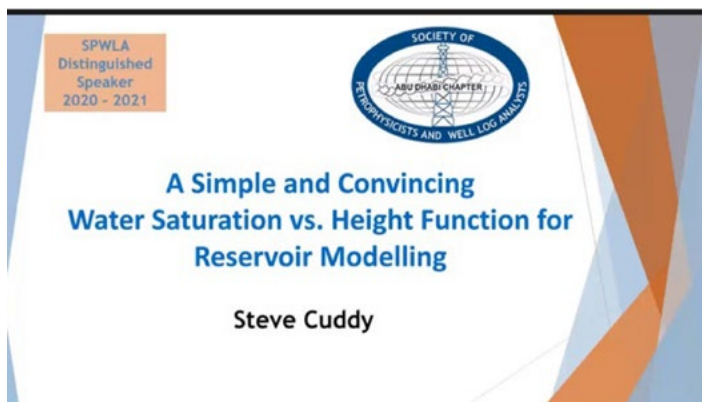


## General News

This committee meets monthly. We have already held two meetings during this second quarter of 2021, and the different activities to be carried out are being outlined. We have some changes to our board:

**Technology/Innovation Team:** They are actively working, trying to cover the topics of greatest interest to satisfy our chapter members. Our regional delegates are contacting university administrations to detect the needs of recent graduates and students. Given that the topics of interest are fundamentally associated with finding a job, the idea is to generate a series of activities to support this segment of our chapter.

To grow the Argentina Chapter memberships, we strongly encouraged professionals who were interested in our activities to enroll in one of the membership categories SPWLA offers. The results have been amazing, and today we **have 130 members** in the Argentina Chapter YTD.



## SPWLA – Argentina Chapter

New Local board members, updated June 30th August 2021

FUNCTION	NAME	COMPANY	EMAIL
President	Marta D'Angiola	Weatherford Arg.	<a href="mailto:marta.dangiola@weatherford.com">marta.dangiola@weatherford.com</a>
Past-President	Angel López	Baker Hughes	<a href="mailto:angel.lopez@bakerhughes.com">angel.lopez@bakerhughes.com</a>
Secretary	M. Lorena Caviglia	Pan American Energy	<a href="mailto:mcaviglia@pan-energy.com">mcaviglia@pan-energy.com</a>
Technology	Paula Bedini/ Diana Masiero Claudio Naidés Pablo Pateti Arturo De Barrio	YPF-Tecnología  Pampa Energía Wintershall DEA LCV S.R.L.	<a href="mailto:paula.c.bedini@ypftecnologia.com">paula.c.bedini@ypftecnologia.com</a> <a href="mailto:diana.m.masiero@ypftecnologia.com">diana.m.masiero@ypftecnologia.com</a> <a href="mailto:claudio.naides@pampaenergia.com">claudio.naides@pampaenergia.com</a> <a href="mailto:pablo.pateti@wintershalldea.com">pablo.pateti@wintershalldea.com</a> <a href="mailto:arturodebarrio@lcvsl.com.ar">arturodebarrio@lcvsl.com.ar</a>
Events	Luz Rodriguez	Total Energy	<a href="mailto:luz.rodriguez@total.com">luz.rodriguez@total.com</a>
C. Rivadavia Delegation	Eduardo Breda	Consultant	<a href="mailto:bredaedu@hotmail.com">bredaedu@hotmail.com</a>
Neuquen Delegation	Nicolas Carrizo	YPF S.A.	<a href="mailto:nicolas.carrizopaez@ypf.com">nicolas.carrizopaez@ypf.com</a>
Mendoza Delegation	Ariel Buchini	YPF S.A.	<a href="mailto:ariel.r.buchini@ypf.com">ariel.r.buchini@ypf.com</a>
Buenos Aires Delegation	Guillermo López Peze	Pan American Energy	<a href="mailto:GLopezPeze@pan-energy.com">GLopezPeze@pan-energy.com</a>
Web page	Pablo Uzzo	GIFlow Consultant	<a href="mailto:uzzito@hotmail.com">uzzito@hotmail.com</a>
Instagram	Matías Cáneva	Consultant	<a href="mailto:matias.caneva44@gmail.com">matias.caneva44@gmail.com</a>

New local board members, August 2021.

Due to the global pandemic, we are designing different formats of activities. We must be creative and take this situation as a great opportunity for professional and personal growth. To learn more about us, visit: <https://www.linkedin.com/in/spwla-capitulo-argentina/> / email: [spwlacapituloargentina@gmail.com](mailto:spwlacapituloargentina@gmail.com)

**Recent Events**

**Open Talks Cycle**

24 June 2021—“Comprehensive Studies at the Plug / Lateral Control Scale. The Right Tool to Solve the Complexity of Unconventional Oil Fields?” Speakers: Ezequiel Gonzalez Pellegrini and Mariano Cipollone (petrophysicist, YPF-TECNOLOGÍA). Moderator: Paula Bedini (Y-CORE Platform’s Leader, senior petrophysicist at YPF TECNOLOGIA; VP Technology, Argentina Chapter). You may view the presentation here: <https://youtu.be/bkhBNg4b3GM>



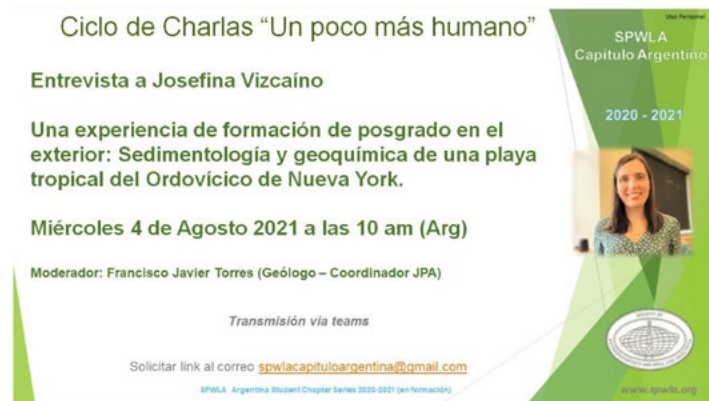
Last event regarding unconventional oil field studies.

5 July 2021—GDS Steve Cuddy presented “The Benefits and Dangers of Using Artificial Intelligence in Petrophysics.” Moderator: Pablo Pateti (senior petrophysicist, Wintershall Dea, VP Technology, Argentina Chapter). The presentation may be viewed here: <https://youtu.be/1FqkDoeCbJU>



SPWLA GDS Steve Cuddy talked to us about Artificial Intelligence.

4 August 2021—“A Little More Human” – The idea of this cycle is to develop a space of humanity where advanced students and young professionals can find topics of interest. In this case, Josefina shared her experience and encouraged young professionals to take on new challenging opportunities. Topic: “An Overseas Post-graduate Training Experience: Sedimentology and Geochemistry of a Tropical New York Ordovician Beach.” Josefina Vizcaino graduated as a geologist at National University of La Plata in 2012. In 2013, she joined Weatherford in a program for young professionals that included rotations in the different product lines in Comodoro Rivadavia and Neuquén. At the end of the program, she began her career as an interpreter of pressure-production profiles in Neuquén, which later opened doors to the world of petrophysics, both in cased hole and open hole. In 2018, already with some years of experience in the industry and looking to take her next step in his academic career, she applied for the Fulbright scholarship and, in August 2019, began her master’s studies at Binghamton University, New York, United States. There, she not only had the opportunity to return to the classroom and write an original post-graduate thesis, but she was also able to be part of very enriching cultural exchanges, build new friendships, and travel in the United States. Today, back in Argentina, she has plans to return to the oil industry and apply everything she learned from both Weatherford and her master’s degree. As the moderator, we invited geologist Francisco Javier Torres, who works as coordinator of the group of Young Argentine Professionals (JPA), which brings together more than 4,000 professionals throughout the country.



Josefina Vizcaino and the second event of this cycle, “A Little More Human.” An interview regarding her master’s degree experience at a foreign university.

The videos are on our local YT Channel. You may view the presentation here: <https://youtu.be/APgHNce1-PY>

**Upcoming Events**

8 September 2021—Jorge Barboza (Emerson) will present “Methodology and Application of Synthetic Curves.”

**Generación de Registro Sintéticos**

*Una revisión desde las técnicas tradicionales a los Nuevos Métodos usando Machine Learning y Regresiones Múltiples*

Presenta Msc. Ing. Jorge Barboza  
Consultor Técnico FE – Emerson E&P Software

Moderadores: Marta D'Angiola y Pablo Uzzo

8 de Septiembre 2021 (10:00 -> 11:30 Arg.)

Transmisión via teams

Organizado por: SPWLA Capítulo Argentino ([spwlaargentina@gmail.com](mailto:spwlaargentina@gmail.com))

SPWLA Distinguished Speaker Series 2020-2021



The next event for our Argentina Chapter.

Proposed topics after September 1, 2021:

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 be of interest to the general audience. Cycle “A Little More Human”:

- SPWLA: “The World of Formation Evaluation” – Petrophysics in the area of hydrocarbon exploration and development could build a map of activities/specialties within the organization and the location where different petrophysicists could work, describing the importance and possibility of professional growth and development.
- What Opportunities Do Oil Companies and Service Companies Offer? Our team will find out what plans the main oil companies have for internships and other opportunities.

## BANGKOK CHAPTER

### General News

SPWLA Thailand Chapter remains active through webinars. While local travel restrictions remain firmly in place, the local chapter is working behind the scenes to bring interesting presentations to our members.

### 2021 Chapter Committee Members

- |                   |                    |
|-------------------|--------------------|
| • President       | Andrew Cox         |
| • Technical Coord | Numan Phetthongkam |
| • Treasurer       | Sirinya Maykho     |
| • Web Coordinator | Alexander Beviss   |
| • Secretary       | Ronald Ford        |
| • Sponsorship     | Open Post          |
| • Student Liaison | Kruawun Jankaew    |
| • Member at Large | Greg Heath         |

Please visit <https://www.spwla.org/SPWLA/Chapters/SIGs/Chapters/Asia/Bangkok/Bangkok.aspx> for information on upcoming meetings.

Email: [bangkok.chapter@spwla.org](mailto:bangkok.chapter@spwla.org)

### Recent Events

July 2021—No meeting held.

August 2021—Webinar: “Resolving Wellbore Stability Issues Offshore West Madura: Pre- and Post-Drill Analysis Results” was presented by Dr. Frans Mulder (Lloyd’s Register). This was a very interesting case study into stress-related borehole enlargements, with recommendations on how to minimize risks.

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>



Dr. Frans Mulders (geomechanics software product champion, Lloyd’s Register) in Kuala Lumpur.

## BOSTON CHAPTER

### General News

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. Follow us on LinkedIn at <https://www.linkedin.com/in/spwla-boston/>.

### Recent Events

The Boston Chapter is pleased to introduce our newly elected Chapter Officers for the 2021–2023 term:

- |                  |                        |
|------------------|------------------------|
| • Saad Omar      | President              |
| • Kamilla Fellah | Vice President         |
| • MaryEllen Loan | VP of IT and Outreach  |
| • Jeffrey Miles  | Secretary (continuing) |
| • Sherry Zhu     | Treasurer (continuing) |

We thank our outgoing officers for their extremely successful tenure over the past two years, including the organization and hosting of the 62nd SPWLA Annual Symposium in May. The new officers met to discuss plans for the coming year. The chapter has a newly created LinkedIn page. Check us out at <https://www.linkedin.com/in/spwla-boston/>.



Several members of the Boston Chapter were nominated to serve as Distinguished Speakers for 2021–2022, based on their recent Symposium presentations. Paul Craddock, past president of the chapter, was honored by the 2021 SPWLA Technology Committee as “Runner Up for Best Paper Presentation” from the recent 62nd SPWLA Online Symposium for his paper “Enhanced Mineral Quantification and Uncertainty Analysis from Downhole Spectroscopy Logs Using Variational Autoencoders.”

**Upcoming Events**

Stay tuned for upcoming announcements of events on LinkedIn and our chapter webpage: <http://boston.spwla.org> and <https://www.linkedin.com/in/spwla-boston/>.

**BRAZIL CHAPTER**

**General News**

Since August 2020, our monthly meetings are held online every third Tuesday of the month, at 4 pm (Brasilia Time). Anyone wishing to participate is welcomed. We also post chapter updates and meeting links on our LinkedIn page (SPWLA Brazil Chapter). Check us out. We decided to discontinue our Facebook page. For further information about the chapter, please contact our secretary, Jesus Salazar ([Jesus.Salazar3@bakerhughes.com](mailto:Jesus.Salazar3@bakerhughes.com)). Membership to our chapter is free and can be claimed by filling out the form available at <https://lnkd.in/g4KQjYf>. Meetings are held in Portuguese or English, depending on the preference of the speaker. Even if it is held in Portuguese, questions in English are welcomed!

**Recent Events**

20 July 2021—We had our colleague and SPWLA Brazil Chapter member, Ronaldo Herlinger, Jr., who was nominated as an SPWLA Distinguished Speaker (2020–2021), present the work “Implicações Petrológicas e Petrofísicas das Argilas Magnesianas no pré-Sal” (Petrological and Petrophysical Implications of Magnesian Clays in Brazilian Presalt Deposits), based on the homonymous paper presented at 2020 SPWLA Annual Meeting.

17 August 2021—We hosted Ulises Bustos (formation evaluation and new technology advisor, Schlumberger), who is a geologist/petrophysicist with 26 years of experience in the oil and gas industry. He spoke about “The Value of Formation Evaluation in Casedhole Condition.” The talk will discuss recent challenges and solutions achieved in the field, particularly with advanced nuclear, spectroscopy, and sonic technologies.



186ª Reunião Mensal  
Terça-feira, 20 de julho, 16h - Teams meeting

**Petrological and Petrophysical Implications of Magnesian Clays in Brazilian Pre-Salt Deposits**

Ronaldo Herlinger Jr.  
Petrofísico Sênior  
Petrobras



Invitation to July monthly meeting of the SPWLA Brazil Chapter.



187ª Reunião Mensal  
Terça-feira, 17 de agosto, 16h - Teams meeting

**The Value of Formation Evaluation in Cased Hole condition**

Ulises Bustos  
Formation Evaluation and New Technology Advisor  
Schlumberger



Invitation to August monthly meeting of the SPWLA Brazil Chapter.

## CHINA UNIVERSITY OF PETROLEUM (BEIJING) STUDENT CHAPTER

### General News

The SPWLA Student Chapter of China University of Petroleum (Beijing) conducted general elections. A new chairman and ministers of the Student Chapter were selected.

### Recent Events

15 June 2021—The SPWLA Student Chapter of China University of Petroleum (Beijing) held a general election. The former chairman Zhao Jian recommended Wang Xiaozhuang as the new chairman and elected four new ministers of the association. Zhao Jian emphasized that the new members of the association should make the SPWLA Student Chapter of China University of Petroleum (Beijing) better so that more teachers and students will join in and increase the influence of the association. The new chairman Wang Xiaozhuang is the former head of the office of the association. He actively organizes and undertakes a number of SPWLA credit club activities and participated in the 6th National College Student Logging Skills Competition. He won the special prize for the post-graduate group. Wang Xiaozhuang also emphasized that as the chairman, he will be more responsible, constantly enriching the content of the association, enhancing academic exchanges, and constantly increasing the influence of the society.

### Upcoming Events

Next, we will carry out the new recruitment activities for the chapter so that more students will join, make more contributions to SPWLA, and make the chapter better.



The 6th National College Student Logging Skills Competition. Wang Xiaozhuang (second from right).



## COLOMBIA–SPWLA UIS STUDENT CHAPTER

### Board of Directors

- Luis Alberto Chinomes G. President  
[presidencia.spwlaui@gmail.com](mailto:presidencia.spwlaui@gmail.com)
- Carlos José Medina L. Vice President  
[vicepresidencia.spwlaui@gmail.com](mailto:vicepresidencia.spwlaui@gmail.com)
- Karen Ivonne Triana P. Fiscal  
[fiscal.spwlaui@gmail.com](mailto:fiscal.spwlaui@gmail.com)
- Maria Andrea Herrera P. Secretary  
[secretaria.spwlaui@gmail.com](mailto:secretaria.spwlaui@gmail.com)
- Tanya Mercedes Garavito L. Treasurer  
[contador.spwlaui@gmail.com](mailto:contador.spwlaui@gmail.com)

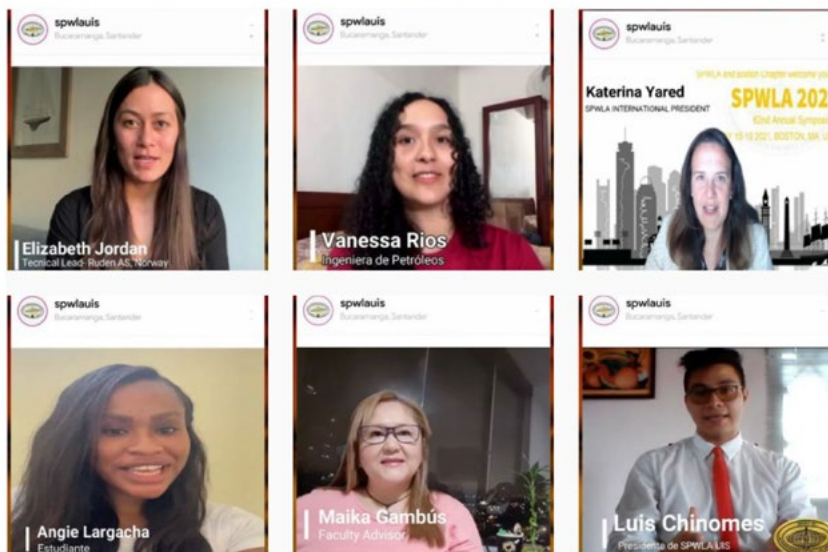
### Recent Events

Call for New SPWLA UIS Student Chapter Members—The Colombian Student Chapter SPWLA UIS announced a call for geology and petroleum engineering students from the Universidad Industrial de Santander to join the SPWLA UIS team and launched a marketing campaign to promote international memberships in Colombia.

July 2021 until now—Training and Coaching for New Members: The new team members are preparing for the development of new activities with the best quality in the events, innovating in the area of logistics, publicity, and marketing to make SPWLA's message even better known.

11 August 2021—SPWLA Talks: The Colombian Student Chapter SPWLA UIS and National & International Colombian Association of Hydrogeologists (ACH-UIS) organized a virtual event for the Zoom platform entitled "Proposal for the Development of a Conceptual Hydrogeological Model in the Sector Mesa de Los Santos, Santander" by MSc Maria Alejandra Cetina (geologist, Universidad Industrial de Santander). In this talk, the model for calculating the water stored in Mesa de Los Santos was explained.





- 20 August 2021—The team hosted a data science event with the PRO WELL PLAN program by Juan Gonzalez, who has a master’s degree in petroleum engineering in Norway.
- 27 August 2021—The SPWLA UIS team presented a new project for student and professional audiences.
- 31 August 2021—The SPWLA UIS team held an event on exploratory petrophysics by Maria Gomez, a geological engineer in Venezuela.

**Upcoming Events**

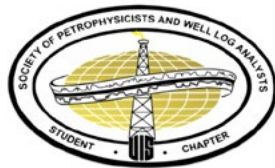
- September 2021—The team will do a course on nonconventional reservoirs and basic-advanced petrophysics by María Florencia Segovia (senior petrophysicist, Ecopetrol – Colombia).
- September 2021—The team will do a webinar on petrophysics applied to mature fields in Brazil by Bruno Menchio (senior petrophysicist and SPWLA Latin America Regional Director).
- September 2021—At the end of the month, the SPWLA UIS team will present a new project for student and professional audiences.

**PROPUESTA PARA EL DESARROLLO DE UN MODELO HIDROGEOLOGICO CONCEPTUAL EN EL SECTOR MESA DE LOS SANTOS, SANTANDER.**

*A cargo de:*  
 Mag. Maria Alejandra Cetina  
 Geóloga - UIS  
 Magister en Ingeniería Civil  
 Cursante Ph.D en Ingeniería Química  
 Con el apoyo de:  
 Grupo de Investigación en Recursos Hídricos y Saneamiento Ambiental-GPH

**Miércoles 11 de Agosto  
 12:00 m vía Zoom**





### SPWLA UIS/ Social Networks

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

**Instagram:** <https://www.instagram.com/spwlauis/?hl=es-la>

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

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

## DENVER WELL LOGGING SOCIETY

### General News

We hope everyone is enjoying their summer break. We will start back up in September with a new lineup of speakers, events, and a new look—the DWLS website is getting an update! Sign up for the newsletter by emailing [VP\\_Membership@dwls.spwla.org](mailto:VP_Membership@dwls.spwla.org) so you don't miss anything. Your feedback is important. What topics or speakers would you like to hear more from next year? Please send your thoughts and suggestions to [VP\\_Technology@dwls.spwla.org](mailto:VP_Technology@dwls.spwla.org).

### Recent Events

No new recent events. We will resume in September. We hope everyone has a wonderful summer!

### Upcoming Events

No new upcoming events. We will resume in September. We hope everyone has a wonderful summer!

## DUBAI CHAPTER

### General News

Dubai Chapter continues with online meetings, being held every two months. Anyone interested is welcome to visit our profile on LinkedIn SPWLA Dubai Chapter or email ([email: dubai@spwla.org](mailto:dubai@spwla.org)) to join the online events and ask any questions regarding the regional chapter.

### Recent Events

5 August 2021—Some members of the Dubai Chapter gathered for a first reunion since the pandemic started. The reunion was arranged as a farewell for Nelson Suarez Arcano (Regional Director SPWLA Middle East/Africa),

who is leaving UAE. It was a great reunion and a time to share some professional experiences and thoughts of the pandemic and the industry.

10 August 2021—Christophe Germy presented an interesting topic on core analysis workflow, with a great discussion at the end of the presentation. He gave us his insights into the future of his technology in the oil and gas industry.

### Upcoming Events

October 2021—The next presentation will be scheduled for October, which is yet to be confirmed. It will be posted on the SPWLA Dubai Chapter LinkedIn Profile.

Dubai SPWLA Chapter would like to thank GOWell for its generous sponsorship.



## FORMATION TESTING SIG

### Recent Events

12 July 2021—The FT SIG Steering Committee recognized the importance of keeping our formation testing and sampling community connected. We are planning to have our annual technical meeting on October 19, 2021. It will be in Houston, Texas, with the opportunity for people to connect virtually. Please stay on the lookout for news about the event.

12 July 2021—We want to welcome Irina Baca Espinoza ([Irina Baca Espinoza | LinkedIn](#)) from Weatherford to the FT SIG Steering Committee. Irina brings a wealth of experience

on reservoir engineering and petrophysics to the team. For several years, Irina has been an active committee member of the technical oil and gas conference (ADIPEC). Irina will allow the FT SIG to better reach out to people located in the Middle East.



**Steering Committee**

Chairman	Wilson Pineda, BP
Vice-Chair Technology	Chengli Dong, Shell
Secretary	Anup Hunnur, Baker Hughes
Treasurer	Soraya Betancourt, Schlumberger
Facilitators	Yan Dong, Repsol W. Wade Samec, Halliburton Carlos Torres-Verdin, The University of Texas at Austin Mark Proett, Independent Consultant Camilo Gelvez, The University of Texas at Austin David DiGloria, ExxonMobil Irina Baca Espinoza, Weatherford

**HOUSTON CHAPTER**

**General News**

Our SPWLA Houston Chapter recently organized a special happy hour event during the Unconventional Resources Technology Conference (URTeC) held in Houston, Texas, in July. This was the first in-person conference in more than a year after the COVID pandemic restricted such gatherings. The event was co-sponsored by SPWLA International and SPWLA Houston Chapter, with great attendance from local members as well as those visiting Houston for the conference. With vaccinations now fully available for everyone in the United States, we are once again promoting in-person events so that everyone can engage in fruitful interactions with fellow professionals in our industry, in addition to our online seminars. Of course, it is always recommended to follow CDC’s

guidelines and pay attention to trends and any announcement that might restrict such activities.

As we resume our in-person events, our fall season will open with a lunch seminar on September 15. We are hosting Stephanie Perry (chief petrophysical advisor, GeoMark Research), who will share her expertise on reservoir characterization using an integrated rock and fluid approach. We would also like to invite you for a lunch seminar in October about the history of oil in the Middle East and the geology of the Arab basin. This will be presented by Ken Henry on October 13. Furthermore, we would like to express our gratitude to Faye Liu for presenting her work during our June seminar to close the 2020–2021 season on a high note, providing valuable insights on geochemical applications in reservoir characterization. The pandemic proved to be challenging, and it continues to be present in some countries more than others. Nonetheless, it also gave us the opportunity to reach members out of our chapter who have been regularly attending our webinars during 2020 and in the first half of 2021.

If you would like to receive notifications of upcoming events and chapter news, please register on the new SPWLA Houston Chapter website. Additionally, there are multiple interesting sponsorship opportunities and job postings announced there. Please reach out to us if you are interested or would like to receive additional information. As always, we are open to new speakers in our seminars, and we are looking forward to bringing other guests, in addition to our SPWLA DS, if the topic is of interest to the petrophysics audience. Contact any board members if you have a presentation you would like to share.

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

**Recent Events**

July 2021—SPWLA Special URTeC Happy Hour: Members of the SPWLA community in Houston and other chapters visiting Houston for the URTeC gathered during this event to celebrate the first in-person geosciences conference and restart face-to-face social activities after a hiatus of more than a year during the COVID pandemic. Several members visiting Houston or also gathered in the George R. Brown Convention Center attended this social activity. The event was organized by SPWLA International and SPWLA Houston Chapter. Members were motivated to network, meet new colleagues, reconnect with known ones, or talk in a relaxed atmosphere with other members after a day of presentations at the conference. Attendees also had the opportunity to meet and talk with SPWLA



International and Houston Chapter board members after a challenging year. A significant group of members gathered to enjoy a beautiful evening with drinks and food onboard in a well-known and conveniently located venue across from the conference center. Members of all ages, backgrounds, and experiences had the opportunity to socialize while talking about technical or anecdotal events related to petrophysics and the ongoing URTeC. Attendees enjoyed it a lot and recommended to continue organizing this type of activity. SPWLA International President and two VPs were in attendance, in addition to two former SPWLA Presidents and some speakers from the URTeC. The Houston Chapter President also attended this event. Food and drinks were sponsored by SPWLA International and SPWLA Houston Chapter, represented by Katerina Yared and Javier Miranda, Presidents of these organizations, respectively.



**Upcoming Events**

15 September 2021—A Lunch Seminar will be hosted from 11:30 am to 1 pm, featuring “Integrated Rock and Fluid Characterization Workflow” by Stephanie Perry (GeoMark). Join us at Sage Plaza Lobby Conference Room, 5151 San Felipe Street, Suite 950, Houston, Texas 77056.

**Don’t miss our next event!**

16 September 2021—Join us for our next event during the beginning of the fall season with our third 2021 SPWLA Networking Happy Hour at King’s BierHaus from 6 to 9 pm. The entire SPWLA community is invited. No need to RSVP. Come at your leisure. No payment is required. Come and mingle with fellow petrophysics enthusiasts! Please follow CDC recommendations regarding social events. This will be an outdoor activity, so be prepared for Houston’s September weather (unpredictable!!!).

**Everybody is welcome!**

**When:** 6–9 pm Thursday, September 16, 2021

**Where:** King’s BierHaus, 2044 E T C Jester Blvd, Houston, TX 77008



13 October 2021—A Lunch Seminar will be hosted from 11:30 am to 1 pm covering “The History of Oil in the Middle East” by Ken Henry (independent consultant). Location TBD. More details will be available soon on the Houston Chapter’s website: <https://www.spwla-houston.org/>.

**Supporting Student Chapters of SPWLA**

The Houston Chapter is proud to continuously provide financial support to regional student chapters of SPWLA. The student chapters are an important component of our society as they organize a significant number of technical events to highlight and disseminate petrophysics and formation evaluation knowledge among students, academics, and local professionals. We recently provided financial help to support another chapter in Texas with its student paper contests, monthly seminars, and other activities.

The latest recipient is the chapter at:



Attendees of the SPWLA Special URTeC happy hour at The Rustic in downtown Houston. Among them were current SPWLA International President Katerina Yared, VPs of Education and Social Media Siska Goenawan and Mathilde Luycx, respectively, former SPWLA Presidents Jesus Salazar (2019–2020) and Luis Quintero (2016–2017), and SPWLA Houston Chapter President Javier Miranda (July 2021).





SPWLA International and SPWLA Houston Chapter recently held a special happy hour during the Unconventional Resources Technology Conference (URTeC) in Houston, Texas. Several international and local SPWLA officers joined Katerina Yared, SPWLA President 2021–2022, to organize and host this event. Several past SPWLA International Presidents were also in attendance, as well as student members.



SPWLA student members from the University of Houston, as well as other chapters visiting Houston, joined us for this networking event.



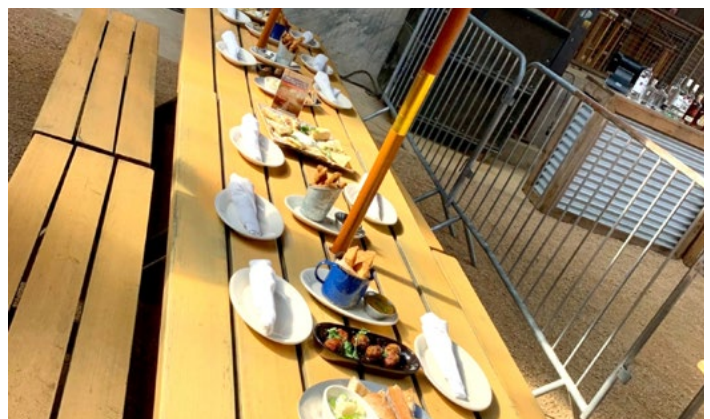
SPWLA Houston Chapter networking event organized as part of URTeC 2021 (July 2021).



SPWLA Past President Jesus Salazar (2019–2020) and former University of Houston Student Chapter President Charles Adams enjoyed a great networking event in a relaxed atmosphere with several members, including other current and past international and local officers of the SPWLA board in attendance.



SPWLA International President Katerina Yared and SPWLA Houston Chapter President Javier Miranda (first from the right, next to Katerina) hosted this URTeC special happy hour in downtown Houston.



A sunny evening with food and drinks co-sponsored by SPWLA International and Houston Chapter in a convenient location across from the George R. Brown Convention Center was perfect for members to enjoy a great networking event.



SPWLA Houston Chapter Board for 2020–2022



**Javier Miranda**

**PRESIDENT**

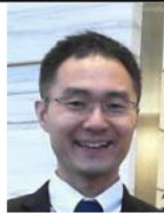
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**VICE-PRESIDENT DOWNTOWN**

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**Bernd Ruehlicke**

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**Tianmin Jiang**

**WEBMASTER**

[webmaster@spwla-houston.org](mailto:webmaster@spwla-houston.org)

## INDIA CHAPTER

## Recent Events

29 May 2021—A Virtual Technical Session was held wherein the speakers gave two technical presentations. The session was attended by 100+ participants online across locations. Chapter President Mr. M.K. Tewari welcomed the gathering. The first lecture on “Carbonate Petrophysics With Applications to Western Offshore Basin, India” was delivered by Mr. K. Vasudevan (former executive director, basin manager, Western Offshore Basin, ONGC). The presentation showed that carbonate reservoirs exhibit great heterogeneity in nano to seismic scales and hence present many challenges in petrophysical evaluation. Integration of high-resolution image logs and NMR logs, supported by advanced core analysis, are highly recommended in the characterization of the carbonate reservoir system. The presentation was followed by lively discussions on the topic. This was followed by another technical presentation on “IriSphere Look-Ahead-While-Drilling Service” by Mr. Chandan Majumdar (petrophysics and geosteering expert, Schlumberger). The presentation and the following discussions explained how the IriSphere service provides deep directional measurements to accurately detect formation features ahead of the bit and land wells while managing drilling risks, optimizing casing placement, and coring location.



**Mr. K. Vasudevan** is the former executive director – basin manager, Western Offshore Basin, ONGC Mumbai. He has authored/coauthored 37 technical papers published and presented in various national and international forums. He has specializations in Basin Analysis, High-Resolution Sequence Stratigraphy, Structure and Tectonics in Fold Belts and Passive Margin Basins, Carbonate Reservoir Characterization, and Petroleum Economics.



**Mr. Chandan Majumdar** is a geosteering and petrophysics specialist (M/s Schlumberger) with over 15 years of work experience in the oil and gas sector. He has Versatile exposure and hands-on experience spanning different execution stages of logging (from data acquisition to interpretation), drilling (mudlogging, directional drilling, geosteering), and projects appraisal. He has authored/coauthored 39 technical papers published and presented in various national and international forums.

## LONDON PETROPHYSICAL SOCIETY (LPS)

## General News

Earlier this year, the LPS held two days of online seminars related to the energy transition. Both seminars covered a diverse range of topics relating to technologies that will define the future of energy. It was great to have feedback from members appreciating them and commenting on how they found them informative and useful.

## Recent Events

13 July 2021—The members enjoyed the July evening lecture presented by Craig Lindsay (Core Specialist Services Limited). He covered technologies that are bringing about the transition of the discipline of core analysis and explained how these would take it beyond hydrocarbon extraction to allow much wider applications and benefits.

## Upcoming Events

16 September 2021—The next seminar will cover “AI & ML in Petrophysics: Friend or Foe?”

## MALAYSIA CHAPTER

## Formation Evaluation Society of Malaysia (FESM)

## General News

FESM, a local chapter of the 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](http://www.fesmkl.com).

## Recent Events

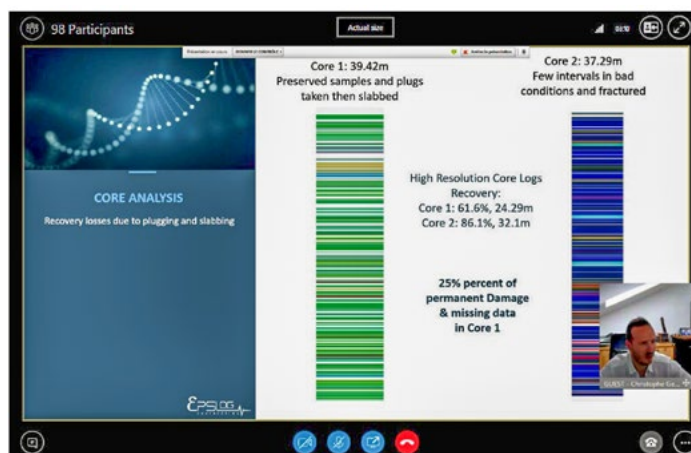
15 July 2021—FESM hosted the third Virtual Series Technical meeting for 2021 with the topic of “New Generation of Pulsed-Neutron Multidetector Comparison in a Challenging Multistack Clastic Reservoir: A Case Study in a Brown Field, Malaysia” by Dzulfadly Johare, principal petrophysicist with 15 years of experience, Petronas Carigali Sdn. Bhd.). In the presentation, Dzulfadly explained that running pulsed-neutron logs in Malaysia have previously been plagued by high uncertainties, especially in brownfields with complex multistacked clastic reservoirs. With a wide range of porosities and permeabilities, the acquired logs often tended to yield inconclusive results. In addition, the relatively fresh aquifer water (where salinity varies from 5,000 to 40,000 ppm) makes reservoir fluid typing and distinguishing between oil and water even more challenging. As a

result, the inconsistencies and uncertainties of the results tend to leave more questions than answers. Confidence in using pulsed-neutron logging, especially to validate fluid contacts for updating static and dynamic reservoir models, deteriorated within the various study teams. Due to this fact, the petrophysics team took the initiative to conduct a log off of three tools in one of their wells to make a detailed comparison of three pulsed-neutron tools in Malaysia's market today. The main criteria selected for comparisons were the consistency of the data, repeatability, and statistical variations. The presentation illustrated the steps taken by PETRONAS Carigali Sdn Bhd (PCSB) to compare the raw data and interpreted results from the three pulsed-neutron tools. Consequently, a comparison from all the tools was made to the current understanding of the reservoir assessed.

that combines a selection of multidisciplinary, high-resolution, nondestructive core registers to enable an early comprehensive description of cores and a rapid estimation of the properties of the configurations shortly after the cores are opened. Several case studies were presented to demonstrate the values of this innovative workflow. The presentation was well attended virtually with great contributions from the 100+ participants in the audience. The majority of the participants remained for the post-session in-depth discussion for topics such as laser particle-size measurement and rock surface roughness vs. that of pore surfaces.

### Upcoming Events

19 August 2021—FESM will host the fourth Virtual Series Technical meeting for 2021 with the topic of “Machine Learning: Is it Magic or Hard Work?” by Dr. Ridvan Akkurt (petrophysics advisor, Schlumberger Artificial and Analytics Group). This talk aims to identify the requirements and the critical components that are needed to build robust ML systems and illustrate their impact and effectiveness by sharing examples from real-life projects.



SPWLA SAC Technical Seminar – a technical talk by Dr. Chris Germay on June 17, 2021.

## OKLAHOMA CITY CHAPTER

### General News

The Oklahoma City Chapter looks forward to returning to in-person meetings on the second Tuesday of each month starting in September.

### Upcoming Events

14 September 2021—Son Dang (Stratum Reservoir) will present “Measurement of Effective Tortuosity in Unconventional Tight Rock Using Nuclear Magnetic Resonance.”

11 August 2021—“A Simple and Convincing Water Saturation Height Function for Reservoir Modeling” by Steve Cuddy was presented.

### Upcoming Events

September and October 2021—The SPWLA SAC 10th topical workshop on “Data-Driven Petrophysics – Challenges and Best Practices” is in the planning stages. Please stay tuned to our chapter website for details ([spwla-saudi.org](http://spwla-saudi.org)), and event announcements will be sent as usual.

## SAUDI ARABIA CHAPTER

### Recent Events

17 June 2021—SPWLA Saudi Arabia Chapter (SAC) conducted its monthly virtual technical seminar with a talk on “A Paradigm Shift in the Core Analysis workflow” by Dr. Christopher Germay (director of Epslog). In his talk, Chris went through his so-called CoreDNA solution

## SPWLA IGUP STUDENT CHAPTER-PAKISTAN

### General News

The SPWLA IGUP Student Chapter-Pakistan is projected to be the leading student chapter of the University of the Punjab, contributing to the students’ training, along with their process of becoming an integral professional of the petroleum industry. The sole objective of the student chapter



is to communicate and remove the gap between students and professionals in the industry to address the challenges and innovative ideas. Eight members were elected to run the student chapter for the year 2021–2022. The detailed description of the elected team members are as follows: Dr. Muhammad Armaghan Faisal Miraj (Faculty Advisor), Muhammad Bilal Malik (President), Pal Washa Shahzad Rathore (Vice President), Rana Faizan Saleem (Secretary), Sher Afgan (Treasurer), Maha Ali Haider (International Relations Chairperson), Irza Akhtar (Membership Chairperson), and Shan Shahzad (Event Manager).

**SPWLA IGUP STUDENT CHAPTER-PAKISTAN**

**TEAM MEMBERS**

- Dr. M. Armaghan Faisal Miraj**  
Faculty Advisor
- M. Bilal Malik**  
President
- Pal Washa Shahzad Rathore**  
Vice President
- Rana Faizan Saleem**  
Secretary
- Sher Afgan**  
Treasurer
- Maha Ali Haider**  
International Relation Chairperson
- Irza Akhtar**  
Membership Chairperson
- Shan Shahzad**  
Event Manager

Elected team members of the SPWLA IGUP Student Chapter-Pakistan for 2021–2022.

Elected members meet four times a month. We have already held two meetings during the first half of August 2021, and the different activities to be carried out are being outlined. The meeting schedule of the student chapter until after the inaugural ceremony is as follows:

Sr. No.	Date	Agenda
1	09-08-2021	Registration criteria for SPWLA IGUP Student Chapter-Pakistan Fee for local membership Management of budgeting and finance of student chapter Fee for international membership Criteria for free international membership Topics for webinars
2	13-08-2021	Finalization of the topics for webinars Social Media Marketing of the student chapter Registration of members Finalization of webinar series date for September 2021

**Recent Events**

7 August 2021—Recently, the SPWLA IGUP Student Chapter-Pakistan has been inaugurated in Pakistan. The Institute of Geology hosted this inaugural ceremony from 10 am to 12:30 pm (PKT). The SPWLA IGUP Student Chapter-Pakistan was honored to have speakers like Katerina Yared (SPWLA President), Ryan Lafferty (Regional Director of SPWLA, Asia-Pacific Region), Irfan Hameed (chief petrophysicist, OGDCL), and guests like Dr. M. Saeed Khan Jadoon (CEO, HDIP), Iftikhar Rizvi (GM, RMD, OGDCL), Shahid Azizul Haq (reservoir domain head, Schlumberger USA), Dr. Nadeem Ahmad (senior advisor exploration, UEP), Muhammad Safdar (principal petrophysicist, Schlumberger), Umar Manzoor (manager geoscience, LMKR), and Ahsan Javed Deo (senior petrophysicist, OGDCL).

**INAUGURATION CEREMONY OF SPWLA IGUP STUDENT CHAPTER-PAKISTAN**

**Objective**  
SPWLA Petrophysics is internationally recognized as a leading publication for original contributions on theoretical and applied aspects of formation evaluation, including both open hole and cased hole well logging, core analysis and formation testing. The prime objective of SPWLA IGUP STUDENT CHAPTER-PAKISTAN is to address the current economic challenges of petroleum sector in Pakistan. The student chapter will provide a platform for students to interact with the distinguished industry professionals to seek the innovative ideas and the technology to resolve these issues. This will be accomplished by organizing workshops, meetings, seminars, webinars, and conferences.

**INSTITUTE OF GEOLOGY, UNIVERSITY OF THE PUNJAB, QUAID-E-AZAM CAMPUS, LAHORE 54590, PAKISTAN**

**KEY SPEAKERS**

- KATERINA YARED**  
Petrophysicist  
SPWLA President
- RYAN LAFFERTY**  
Senior Petrophysicist  
Regional Director for SPWLA  
Asia-Pacific region
- IRFAN HAMEED**  
Chief Petrophysicist  
OGDCL Islamabad

**CHIEF GUESTS**

- DR. M. SAEED KHAN JADOON** CEO, HDIP
- IFTIKHAR RIZVI** GM, RMD, OGDCL
- SHAHID AZIZUL HAQ** RESERVOIR DOMAIN HEAD, SCHLUMBERGER USA
- DR NADEEM AHMAD** SR. ADVISOR EXPLORATION, UEP
- MUHAMMAD SAFDAR** PRINCIPLE PETROPHYSICIST, SCHLUMBERGER
- UMAR MANZOOR** MANAGER GEOSCIENCE, LMKR
- AHSAN JAVED DEO** SENIOR PETROPHYSICIST, OGDCL

**REGISTER HERE**  
<https://bit.ly/37jexzQ>

**SPWLA BENEFITS**

- Research Grants
- Scholarships
- Geological Field Trips
- Student Paper Contest
- Webinars/Seminars

**Saturday August 7, 2021 (ONLINE)**  
10:00 am to 12:30 pm

**CONTACT**  
Prof. Dr. Naveed Ahsan (Director)  
Email: [director.geo@pu.edu.pk](mailto:director.geo@pu.edu.pk)  
Website: [www.geology.edu.pk](http://www.geology.edu.pk)  
Phone: +92 3334242056, +92 3335954449

Flyer of the inaugural ceremony of the SPWLA IGUP Student Chapter-Pakistan.



Key speakers and guests of the inaugural ceremony of SPWLA IGUP Student Chapter-Pakistan. (Top row, from left to right) Mr. Shahid Azizul Haq (reservoir domain head, Schlumberger USA), Mr. Kashif Shaukat (account manager, Emerson), audience members, (bottom row, from left to right) Iftikhar Rizvi (GM, RMD, OGDCL), Dr. Nadeem Ahmad (senior advisor exploration, UEP), Irfan Hameed (chief petrophysicist OGDCL, Islamabad).



Group photo of the team members of SPWLA IGUP Student Chapter-Pakistan, with the director of the Institute of Geology, University of the Punjab, Lahore, Pakistan after the inaugural ceremony at the Institute of Geology, University of the Punjab, Lahore, Pakistan. (From left to right) Sher Afgan (Treasurer), Maha Ali Haider (International Relations Chairperson), Pal Washa Shahzad Rathore (Vice President), M Bilal Malik (President), Prof. Dr. Naveed Ahsan (director, Institute of Geology), Dr. M. Armaghan Faisal Miraj (Faculty Advisor), Dr. Abid Ali (assistant professor, Institute of Geology), Shan Shahzad (Event Manager), Rana Faizan Saleem (Secretary).

## Upcoming Events

SPWLA IGUP Student Chapter-Pakistan plans to organize webinars, hands-on software training for students, and geological field excursions. The detailed tentative plan for the year (2021–2022) is:

Plan	Month/Year
Webinar Series	September 2021
Hands-on Software Training for Students	October 2021
Webinar Series	November 2021
<b>Two-day Geological Field Excursion</b>	December 2021
Webinar Series	January 2022
Hands-on Software Training for Students	February 2022
<b>Local SPWLA Annual Student Competition</b>	March 2022
<b>One-day Geological Field Excursion</b>	April 2022
Webinar Series	May 2022
Webinar Series	June 2022
Webinar Series	July 2022

We are working day and night to communicate with industries to provide academic licenses of their software to the students of different universities in Pakistan to minimize the gap between academia and industry. More details about the upcoming events and updates can be seen on our social pages as:

LinkedIn: <https://www.linkedin.com/in/spwla-igup-student-chapter-pakistan-57b116219/>

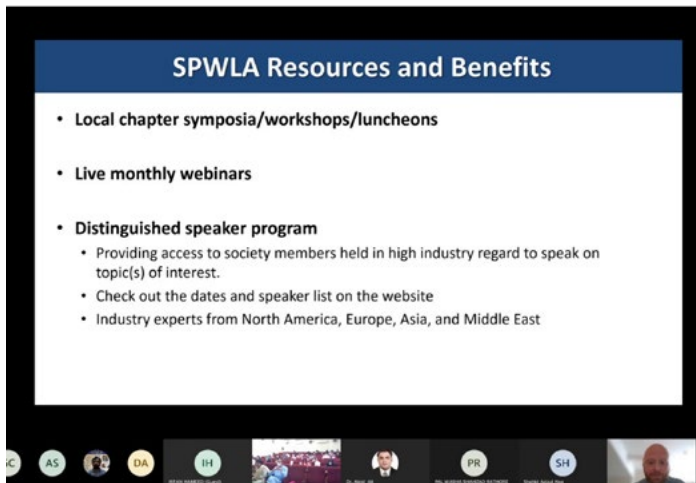
Facebook: <https://www.facebook.com/SPWLA-IGUP-Pakistan-107338908181070>

Contact Details: [spwla.igup.pak@gmail.com](mailto:spwla.igup.pak@gmail.com)



Key speaker: Miss Katerina Yared (SPWLA President) addressing the audience at the inaugural ceremony of the SPWLA IGUP Student Chapter-Pakistan.





Key speaker: Mr. Ryan Lafferty (Regional Director of SPWLA, Asia-Pacific Region) addressing the audience at the inaugural ceremony of the SPWLA IGUP Student Chapter-Pakistan.



Key speaker: Mr. Irfan Hameed (chief petrophysicist, OGDCL, Islamabad) addressing the audience at the inaugural ceremony of the SPWLA IGUP Student Chapter-Pakistan.



Group photo with the Director of the Institute of the Geology, University of the Punjab, Lahore, Pakistan after the inaugural ceremony of the SPWLA IGUP Student Chapter-Pakistan at the Institute of Geology, University of the Punjab, Lahore, Pakistan.

## UFRJ SPWLA STUDENT CHAPTER

### General News

Unfortunately, this month, two of our members decided to leave the chapter. The UFRJ SPWLA has 11 active members organized below:

#### Board members:

President: Rodrigo Gentil Coelho de Azambuja ([rodrigo.gentil.azambuja@gmail.com](mailto:rodrigo.gentil.azambuja@gmail.com))

Vice President: Amanda Mendes Bezerra ([mendesamanda@ufrj.br](mailto:mendesamanda@ufrj.br))

Treasurer: Sofia D’Orsi ([sgdorsi@gmail.com](mailto:sgdorsi@gmail.com))

Secretary: Sarah Aleixo ([sarahaleixo@gmail.com](mailto:sarahaleixo@gmail.com))

#### Executive members:

Bruno Valle: [bruno@geologia.ufrj.br](mailto:bruno@geologia.ufrj.br)

Teresa Mourão: [teresamourao@gmail.com](mailto:teresamourao@gmail.com)

#### Marketing members:

Caio Guedes: [caibittencourt@gmail.com](mailto:caibittencourt@gmail.com) (coordinator)

Gabriel Ferraz: [gabrielferraz036@gmail.com](mailto:gabrielferraz036@gmail.com)

Shirlene Barros: [shirlenebarros1@hotmail.com](mailto:shirlenebarros1@hotmail.com)

Iago da Costa: [iago.cjaques@gmail.com](mailto:iago.cjaques@gmail.com)

#### Logistic members:

Vinicius Jorge: [vinicius.tj@gmail.com](mailto:vinicius.tj@gmail.com)

### Recent News

The UFRJ SPWLA members value principles and knowledge in petrophysics and well logging. Because of that, we are trying to bring to our chapter more experience in this area, so we can manage and create new projects to share with the academic public. In July, we were honored with three days of class to improve our skills. Bruno Vale (UFRJ SPWLA member) works at 3R Petroleum and has a long history with petrophysics and well-logging research. Therefore, we had the opportunity to learn a little more deeply about concepts related to petrophysics, well logging, and the tools used in this process. Thus, very important topics were addressed, such as physical principles of tools, the step-by-step process of drilling a well, the main uses of petrophysical tools, environmental corrections, and a brief interpretation of the profiles. Also, our members get together at least once per month to discuss our marketing methods and organize future events. Then, in our last reunion, we decided to make our team more dynamic to create Instagram posts. We established that we would make one informative post per week for 12 weeks (number of active members), and each one of us will be responsible for creating the content. We think that it will better distribute our tasks at this moment.



A post showing our petrophysics and well-logging training that was posted on Instagram, LinkedIn, and Facebook (language: Portuguese).

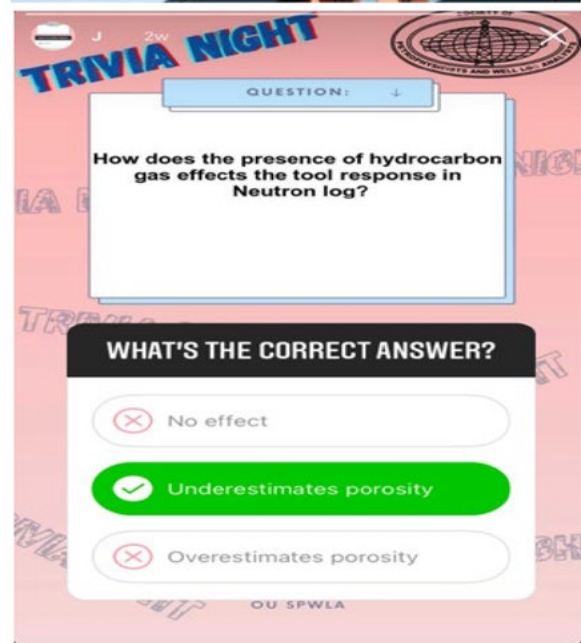
### Upcoming Events

Our team intends to keep organizing some courses with some specialists to teach basic but important concepts in petrophysics and well logging so that both old and new members stay updated on these topics. Our next step is to take some lessons in the Python programming language applied to geosciences. We know the importance of using technology these days and how it tends to grow. Also, we are programming a new course about sequence stratigraphy, and it will be open to the public. Finally, we will keep sharing through our social media posts, trivia, and some concepts about well logging and petrophysics.

## UNIVERSITY OF OKLAHOMA

### General News

As part of our student engagement and membership drive plans, we decided to engage the student body on social media through edutainment, for example, “Fun Fact” and “Trivia Night.” “Fun Fact” will showcase interesting facts about the petroleum industry, especially in Oklahoma, and “Trivia Night” will ask academic/industry questions that will keep students abreast with such knowledge.



(From top to bottom) Fun Fact and Trivia Night posts for social media.

### Recent Events

23–27 August 2021— Membership Drive: With new students arriving to the Mewbourne College of Earth and Energy, University of Oklahoma, we had the agenda to register most of them to be part of SPWLA. Primarily from Monday to Friday, new students were signed up and helped to stay plugged into SPWLA. Giving out new T-shirts and playing fun activities (for instance, dart games) were used to attract students to register with us. We had a good number of people registering with us.





15 September 2021—A workshop will be held from 6 to 8 pm (CT) on “Interactive Petrophysics for Core and Log Analysis of Wells in the Fort Worth Basin.” In this workshop, core and logs data from one of Devon’s key wells in the Fort Worth Basin will be used to characterize the mineralogy, porosity, and saturations in the Barnett Shale interval. The core measurements, including organic content, FTIR mineralogy, and crushed porosity, were completed by the Integrated Core Characterization Center at MPGE, OU several years ago and tied well to the downhole logs using the mineral solver inversion in the Interactive Petrophysics software. The speaker is Joe Comisky (senior technical advisor for petrophysics, Devon Energy, located in Oklahoma City). The workshop will take place at Sarkeys Energy Center, Computer Lab, 3rd Floor (Plaza), Room 360.



Joe Comisky

**Upcoming Events**

2 September 2021—A Technical Presentation will be presented virtually from 6 to 7:30 pm (CT) on “Advanced Formation Evaluation of Organic-Rich Mudrocks, Honoring Rock Fabric and Geochemistry.” This presentation introduces new and unconventional methods to enhance formation evaluation and reservoir characterization in organic-rich mudrocks. The impacts of rock fabric, composition, pore structure, and geochemistry on formation evaluation and rock properties such as wettability and mechanical/electrical properties of organic-rich mudrocks will also be discussed. The speaker is Dr. Zoya Heidari (associate professor, Hildebrand Department of Petroleum and Geosystems Engineering, the University of Texas at Austin).



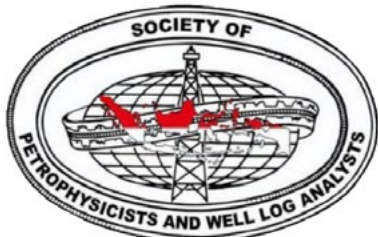
Dr. Zoya Heidari

1 October 2021—Networking Event: Along with other student chapters, we have been planning a novel networking event to connect industry professionals with students. It will be a platform for an exciting interaction between students and industry professionals, facilitating cross learning and new idea exchanges, which will ultimately spur valuable research, open mentoring, and guidance opportunities for students. The end goal is to simply strengthen industry-academia relations for further development of the energy industry. There will be several fun activities and plenty of food and drinks. This event will take place on Friday, October 1, 2021, at the University of Oklahoma Armory from 5 to 8 pm (CT).



21 October 2021—Technical Presentation: The topic for this technical presentation will be “Anisotropy in Unconventional Formations: Resolving the Riddle of Resistivity,” which will be presented by Andrew Berry. The event will be held from 6 to 8 pm (CT) at the Sarkeys Energy Center, 2nd Floor, Room A235.

#### UNIVERSITAS PERTAMINA STUDENT CHAPTER



#### SPWLA INDONESIA CHAPTER UNIVERSITAS PERTAMINA STUDENT CHAPTER

#### General News

SPWLA Pertamina University Student Chapter is one of three student chapters under the umbrella of the Pertamina University Petroleum Engineering Organization. We are also under the umbrella of the SPWLA Indonesian Chapter, which often has discussions with us about our work. In this period, our cabinet is named the Enhancement Cabinet. Our committee consists of undergraduate students from three

majors: Petroleum Engineering, Geological Engineering, and Geophysical Engineering. June 2021 to May 2022 is the running period for our Enhancement Cabinet and will be replaced by a new committee when it ends.

For more details, social media, and contact info, please click here: <https://spwlaup.carrd.co/>

Also, if you want to inform us of something important, please contact us at:

- **SPWLA Pertamina University Student Chapter**  
Email: [spwla.up@gmail.com](mailto:spwla.up@gmail.com)
- **President of SPWLA Pertamina University Student Chapter 2021-2022 (Vaschalis Gessong Sumomba)**  
Email: [vaschal711@gmail.com](mailto:vaschal711@gmail.com)  
WhatsApp: [+62 813-1860-6436](https://wa.me/6281318606436)

Our organization structure is as follows:

#### President

Vaschalis Gessong Sumomba

#### Quality Control

1. Gendro Wisnu Murti
2. Gadis Wahyu Ramadhani
3. Ridho Akbar Szafdarlan

#### Secretary

1. Indah Kurniasari
2. Nur Aisya Arienda Putri

#### Treasurer

1. Salsabila Putri Rahmayani
2. Salma Yumna Zhafira
3. Putri Lia Fadilla

#### External Department

Syailendra Maha Fijar S. P.

#### Public Relation Division

1. Amira Thalia Fairuz Zaen
2. Nadya
3. Achmad Zidan Faluti
4. Andi Muh. Faiz Alfauzi Alam

#### Creative Media Division

1. Hypo Krates
2. Surya Arif Wibowo S.
3. Rizal Affandi
4. Ihsan Mawardi
5. Achmad Ichsannur Ramadhany



**Human Resource Development Department**

1. Hafid Aslam S.
2. Farhan Rizky Gunawan
3. Vania Benita
4. Muhammad Zahlan W. Jasman
5. Savina Cendekia Kusumadewi

**Research & Development Department**

Abdul Halim Assa’abani

**Competition Division**

1. Erwin Adi Setiawan
2. Viko Efrin Julian Tino
3. Nisrina Fatin
4. Muhammad Fadhli Cesar K.
5. Mochamad Adhy Subharkah

**Education & Training Division**

1. Firman Cahya Putra Adistia
2. Yunita Ayu Sandra
3. Rafi Rizki Romadhoni
4. Mercy Cristiani Paat
5. Haniifah Mas’udah Krismatopo

**Professionalism Department**

1. Inggrialianthari R. T.
2. Rakai Aji Bramasta
3. Muhammad Sayyid Anwar
4. Rana Helviana
5. Ryan Fachri

**Recent Events:**

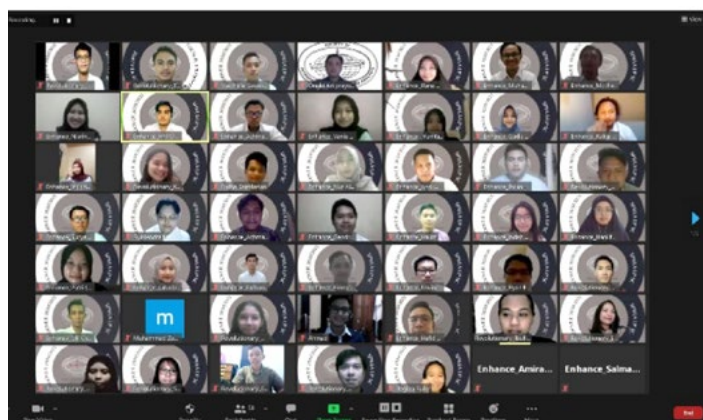
**1. SPWLA UP SC ACCOUNTABILITY REPORT AND HANDOVER**

Due to the end period of SPWLA Universitas Pertamina Student Chapter 2020–2021, the management will continue to the next term, which is SPWLA Universitas Pertamina Student Chapter 2021–2022. SPWLA UP SC ACCOUNTABILITY REPORT AND HANDOVER was held to evaluate the performance of the SPWLA Universitas Pertamina Student Chapter 2020–2021 and then make it into a report. We also handed over the positions of the old management to the new one. This event was held on:

Day, date: Saturday, June 5, 2021  
 Time: 1:00 pm – finish Western Indonesian Time  
 Platform: Zoom Cloud Meeting Application  
 Participants: 58 people (all officers of SPWLA Universitas Pertamina Student Chapter 2020–2021 and 2021–2020)



Hand over from the President of 2020–2021 to the President of 2021–2022.



Documentation Session of SPWLA UP SC ACCOUNTABILITY REPORT AND HANDOVER.

**2. TRIVIA AND GAMMA CHECK**

Trivia is the SPWLA Universitas Pertamina Student Chapter’s regular Instagram content that contains material with the aim of educating the public about knowledge of petrophysics, well logging, and the professional world in between. Trivia is held every first and third week of each period month.



Trivia that has been posted on the SPWLA UP SC Instagram feeds.

Not so different from Trivia, Gamma Check is the SPWLA Universitas Pertamina Student Chapter's regular Instagram content, which contains material about petrophysics and well logging in general. Gamma Check has more than just that material because there will be a mini-quiz at the end after the material is delivered. Gamma Check is held every first week of each period month.



Gamma Check content that was posted as an SPWLA UP SC Instagram story.

**Upcoming Events**

**1. IGNITE COURSE**

A course that discusses the introduction of petrophysics, well logging, and software comprehensively for 1 month under the theme “Maximizing Practical Value of Petrophysical and Well Log Data in the New Decades of Oil and Gas Industry.” This course will be held three times. Course 3 will be separated into two parts. Also, the IGNITE COURSE is open to the public.

**Course 1**

Topic: Basic Petrophysics and Well Logging  
 Speaker: Mr. Andri Setyanto Praptono as senior petrophysicist – Consulting by Halliburton Algeria  
 Day, date: Sunday, September 5, 2021  
 Time: 1:00 – 4:10 pm Western Indonesian Time  
 Platform: Zoom Cloud Meeting Application

**Course 2**

Topic: Well Logging Analysis and Interpretation  
 Speaker: Mr. Taufik Anwar as senior petrophysicist at Pertamina Hulu Kalimantan Timur  
 Day, date: Sunday, September 12, 2021  
 Time: 1:00 – 4:00 pm Western Indonesian Time  
 Platform: Zoom Cloud Meeting Application

**Course 3, Part 1**

Topic: Hands-On of Interactive Petrophysics Software  
 Speaker: Mr. Catur Kristiawan as consultant petrophysicist at LEMIGAS Research and Development Center of Oil and Gas Technology  
 Day, date: Saturday, September 25, 2021  
 Time: 1:00 – 4:00 pm Western Indonesian Time  
 Platform: Zoom Cloud Meeting Application

**Course 3, Part 2**

Topic: Hands-On of Interactive Petrophysics Software  
 Speaker: Mr. Catur Kristiawan as consultant petrophysicist at LEMIGAS Research and Development Center of Oil and Gas Technology  
 Day, date: Sunday, September 26, 2021  
 Time: 1:00 – 4:00 pm Western Indonesian Time  
 Platform: Zoom Cloud Meeting Application

**THE 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. We have spent the summer preplanning the events for the upcoming academic year. We expect to resume in-person technical seminars for the 2021–2022 academic year. However, the latest developments of the delta variant pose a question mark on the development of in-person activities. We will wait for university guidelines to confirm the possibility of in-person seminars.

**Recent Events**

We have not hosted any events during the summer semester.

**Upcoming events**

We will meet after the start of the 2021–2022 academic year to elect new members and define the roles of the chapter officers, plan for the technical seminars (in-person or online), and non-academic events of the upcoming year.

# SPWLA SECOND BOARD OF DIRECTORS MEETING

## REMOTE

### JULY 14, 2021

President Katerina Yared called the meeting to order at 8:02 a.m. In attendance,

President-Elect, Tegwyn Perkins, Vice President Technology, Carlos Torres-Verdin, Vice President Education, Fransiska Goenawan, Vice President Finance, Secretary and Admin, Adam Haecker, Vice President Publications, Songhua Chen, Vice President Information Technology, Harry Xie, Vice President, Mathilde Luycx, Regional Director N. America 1, Robin Slocombe, Regional Director N. America 2, Matthew Blyth, Regional Director Europe, Eva Gerrick, Regional Director Middle East/ Africa, Nelson Suarez, Regional Director Asia Pacific/Australia, Ryan Lafferty, and Executive Director, Sharon Johnson. Absent from the meeting: Director Latin America, Bruno Menchio Faria

**A motion made by** Vice President Finance, Secretary and Admin, Adam Haecker, to increase the Annual Symposium technical program delegate registration from \$850 to \$950 and workshop registration from \$375 to \$500, was seconded by President-Elect, Tegwyn Perkins. This motion passed by majority vote.

**A motion made by** Vice President Technology, Carlos Torres-Verdin to increase the Petrophysics editing/production fees from \$600 Academia, \$1200 Member, \$1800 Non-Member to \$750 Academia, \$1500 Member, \$2000 Non-Member with an added fee of \$1000 for tutorials was seconded by Vice President Finance, Secretary and Admin, Adam Haecker. This motion passed by majority vote.

The standing condition "Authors who have insufficient resources to pay can still request a Special hardship/retired fee" will remain valid.

**Action Item:** Executive Director, Sharon Johnson to share the annual employee medical insurance renewal quotes with the BOD.

**Action Item:** Vice President Information Technology, Harry Xie to research and explore new website options.

2021-2022 IT Committee Members: Vice President Information Technology, Harry Xie, Vice President Finance, Secretary and Admin, Adam Haecker, President-Elect, Tegwyn Perkins, Regional Director Middle East/ Africa, Nelson Suarez, President Katerina Yared.

**Action Item:** Executive Director, Sharon Johnson to research scientific journal prices of Sister Societies for library and corporate subscriptions and report back to the BOD for a possible price increase of Petrophysics print copies.

**Action Item:** Executive Director, Sharon Johnson to explore the possibility of symposium social events companies to include sponsorship funds for a student(s) travel fellowship to the symposium.

**Action Item:** Executive Director, Sharon Johnson to research professional society conference exhibition pricing and compare to our rates.

**Action Item:** Executive Director, Sharon Johnson to locate a suitable book keeping company for training on Quick Books focusing on creating and tracking annual budgets.

**Action Item:** Executive Director, Sharon Johnson to research what options are available for the training center prior to the lease expiration.

**Action Item:** VP Publications, Carlos Torres-Verdin to record a Nugget of Wisdom video on abstract writing to share with the SPWLA membership.

**Action Item:** Regional Directors to seek sponsorship for ISPC/ Student Memberships from NOC or local oil companies

**Meeting adjourned 1:15 p.m.**

Respectively Submitted by  
Sharon Johnson  
Executive Director

**Next BOD meeting:** September 8<sup>th</sup> in person at the SPWLA Business Office Houston or Remote via GoToMeeting.

## Welcome New Members: June 16, 2021 – August 15, 2021

**Abousalehanam, Jehad**, University of Zulia, Coppell, TX, United States  
**Alhammedi, Mohamed**, ADNOC, Abu Dhabi, Emirate, United Arab Emirates  
**Clarke, Daniela**, D Clarke Consulting, Adelaide, SA, Australia  
**De Barrio, Arturo**, Grupo LCV, La Plata, Buenos Aires, Argentina  
**Derenthal, Drew**, GeoSouthern Energy, Spring, TX, United States  
**Ekeke, Davis**, University of Houston, Houston, TX, United States  
**Glaser, Carrie**, Georgia Institute of Technology, Salem, OR, United States  
**Hull, Katherine**, Core Laboratories, Houston, TX, United States  
**Lebre, Mariana**, UFF, Nova Friburgo, Rio de Janeiro, Brazil  
**Martogi, Debora**, Texas A&M University, College Station, TX, United States  
**Mendoza, Luis**, Schlumberger, Paraiso, Tabasco, Mexico  
**Nascimento De Souza, Estevao Frederico**, Energy Abstracts, Tulsa, OK, United States  
**Oliveira, Lucas**, Petrobras, Rio De Janeiro, Brazil  
**Osei, Darren**, University of Louisiana at Lafayette, Lafayette, LA, United States  
**Porter, Edward**, Integral Exploration, Inc., Bandera, TX, United States  
**Shepherd, Cameron**, CLR, Guthrie, OK, United States  
**Terrell, Cory**, Gulfport Energy, Edmond, OK, United States  
**Vaisblat, Noga**, University of Alberta, Edmonton, AB, Canada  
**Worthington, Paul**, Robertson Geologging Ltd, CONWY, Gwynedd, United Kingdom  
**Zeballos Espinoza, Rodrigo**, Agencia Nacional De Hidrocarburos, La Paz, Bolivia





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

### 2021 SPWLA PDDA Machine Learning Contest - Call for Registration

#### SPWLA PDDA SIG is excited to announce its 2021 machine learning contest!

This contest is open to all petrophysics enthusiasts. Top winning teams will be awarded prizes and invited to present at the PDDA SIG annual meeting. Please register with Lei Fu ([pdda\\_sig@spwla.org](mailto:pdda_sig@spwla.org)) by submitting your team information (**names, affiliations, and contacts**), before October 15, 2021. The dataset comes from the Equinor Volve field. A data repository is available at: <https://github.com/pddasig/Machine-Learning-Competition-2021>

**Sponsoring Opportunities:** SPWLA PDDA SIG is accepting sponsorship for this event to award the top winning teams. Please contact Lei Fu ([pdda\\_sig@spwla.org](mailto:pdda_sig@spwla.org)) for details.

**SPWLA PDDA SIG Contest Committee:** Lei Fu, Chicheng Xu, Yanxiang Yu, Michael Ashby, McDonald Andy, Bin Dai

**Task:** Well-log based reservoir property estimation with machine learning

**Background:** Well logs are interpreted/processed to estimate the in-situ reservoir properties (petrophysical, geomechanical, and geochemical), which is essential for reservoir modeling, reserve estimation, and production forecasting. The modeling is often based on multi-mineral physics or empirical formulae. When sufficient amount of training data is available, machine learning solution provides an alternative approach to estimate those reservoir properties based on well log data and is usually with less turn-around time and human involvements.

**Problem Statement:** The goal of this contest is to develop data-driven models to estimate reservoir properties including shale volume, porosity, and fluid saturation, based on a common set of well logs including gamma ray, bulk density, neutron porosity, resistivity, and sonic.

You will be provided with log data from about 10 wells from the same field together with the corresponding reservoir properties estimated by petrophysicists. You need to build a data-driven model using the provided training dataset. Following that, you will deploy the newly developed data-driven models on the test dataset to predict the reservoir properties based on the well log data.

#### Competition Rules:

1. Contestant can be an individual or a group with the maximum size of 4.
2. The contest focuses on data-driven methods, the use of additional data or petrophysical equations is not allowed.
3. Privately sharing code or data outside of teams is not permitted. However, it's okay to share code if made available to all participants on the competition Github repository via submitting issues or pull requests.
4. A contestant will submit the estimated reservoir properties for testing wells as separate .csv files.
5. A contestant will submit the source code and a brief report documenting the accuracy achieved in a few plots.
6. The judges will review the source code.
7. The performance of the model will be quantified in terms of root mean square error (RMSE).
8. A leaderboard will be updating the rank of submissions from each team.
9. The contestant with the best quality source code and the best performance will be declared the winner for this competition.