HGS Bulletin

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Houston Geological Society

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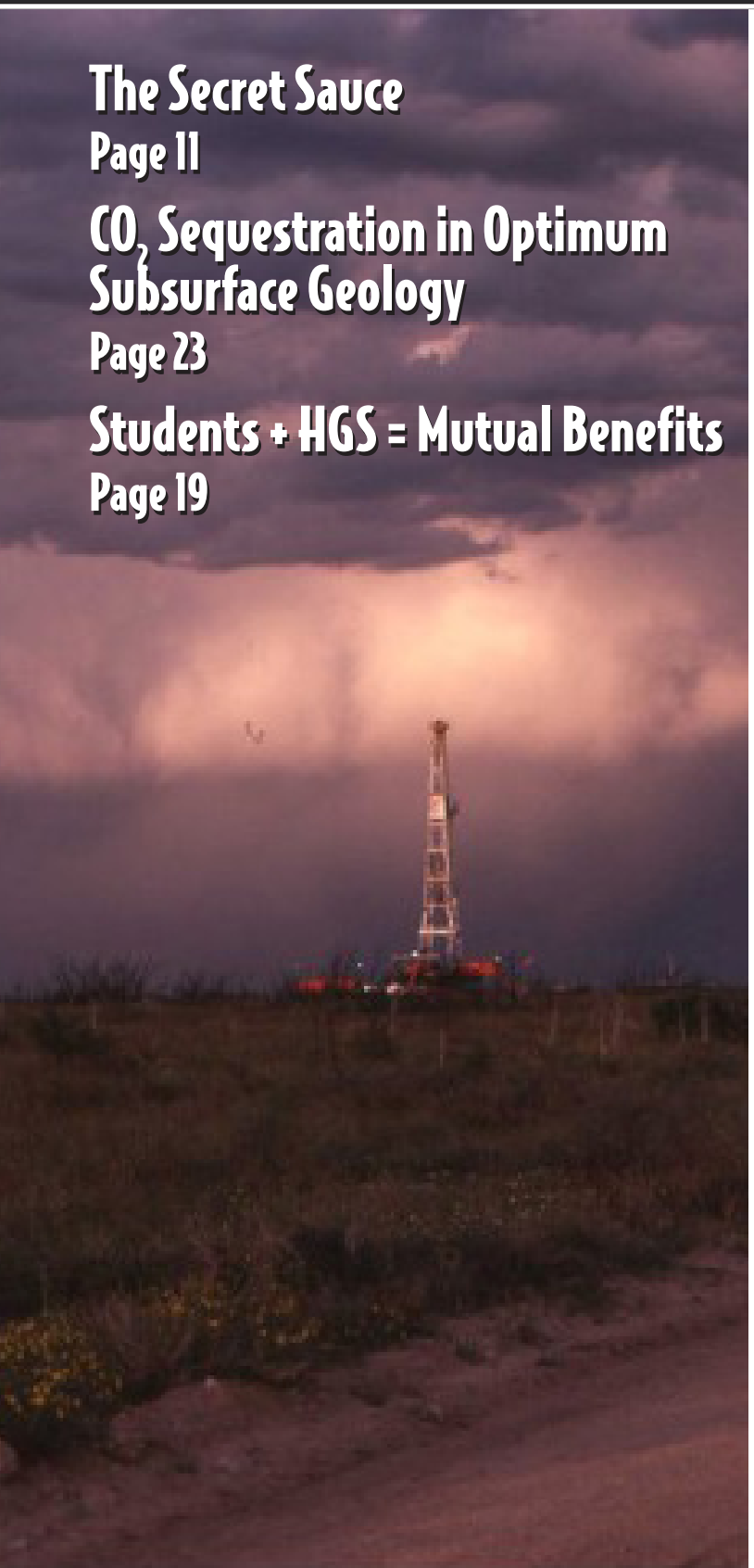

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In Every Issue

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About the Cover: HGS Art Contest Winner:"Behind Every Dark Cloud" by Dan Moss: These two photos were taken by on slide film in 1982 after an afternoon thunderstorm when I was working as a young Petroleum Engineer in the Permian Basin. Located in the Means S. Wolfcamp Field, Andrews County, TX.

Technical Meetings

Features

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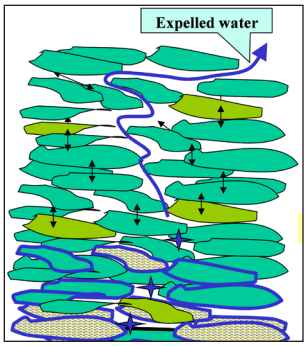

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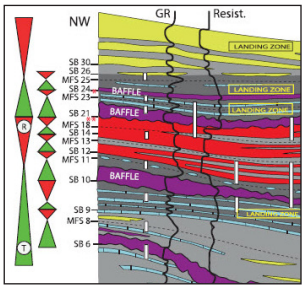

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Paul Britt
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The Power of the Pen

It seems like only two weeks since I had to write the last President's Letter for the Bulletin. The policy manual actually suggests that the President's Letters all be prepared the year before as President-Elect. Writing your column a year ahead of time is not practical for this age of instant information and dynamic events worthy of discussion. With that said, I have consistently pressed the deadline each month as issues come up, often literally at the last minute of the last day. This month is no different. I would like to thank our Editor, Caroline Wachtman, for her patience in that regard and for the fine job with the *Bulletin* each month. Having been Editor, I can say that the Editor's job is a most time-consuming job that comes with both accolades and criticism. In an organization composed of very diverse technical expertise such as ours, some will be pleased with the content while others may not be.

"If you have not yet voted, please put down this column right now and vote!"

The publishing world is undergoing rapid changes, as can be attested by other geological societies as well as other non-professional societies. The *Bulletin* format is under review by a select committee to see if it is in keeping with the times and technology. Format, frequency, and content are all being looked at, and this review will likely stretch into the next fiscal year. Many of you have said to me that they miss the printed Bulletin in their mailbox each month. But in the 1990's the *Bulletin* brought in over $100,000 each year in advertising, largely offsetting the cost of printing and postage at the time. Since then, advertising revenue has come down, production costs have risen, and postage has entered orbit. We are working on increasing advertising, but do not foresee making the *Bulletin* a break-even venture for an in-print version for general distribution. So, the question is; what, if anything, would members pay to receive a printed Bulletin again? Watch the email newsletter for more on this, I would like to hear your opinion.

GEOGULF24 AND HGS

I had the pleasure of manning the HGS booth at this year's GeoGulf in San Antonio. I have never worked the booth for a full show. It really was fun, and many of you who attended came by the booth. I had several members renew their dues and signed up several new members. Mainly though, the value was in presenting the HGS brand, and supporting the GCAGS who helped support our 100th anniversary year. There were about 200 attendees, three technical sessions, short courses, field trips and social events. Next year's GeoGulf25 is under way to be held in Nacogdoches and promises to be an exemplary event. The year after is in planning, and then it will likely circle back to Houston as early as 2027.

Supporting local HGS events is increasingly critical to us as AAPG is encroaching on the HGS market with symposiums, continuing education classes and even talk about monthly meetings and social events in their Reimagine campaign. As many of you know, I am an AAPG Past President and support them, but Houston, while the largest city in the geological world, is still a small geology market and HGS' survival is equally important to all of us.

ELECTION DRAWS TO CLOSE

Everyone should have seen the ballot for next year's Board by now, and I hope all who did have voted. The Ballot closes on May 10th, so if you have not yet voted, please put down this column right now and vote! I am hoping for a record turnout.

CALL FOR AWARDS

This is the time of year to award the companies, sponsors and volunteers for their support of HGS through awards recognition. If you know of a member that you think deserves an award for their work and support of HGS, please email me with their name and reason for nominating them. The Board looks forward to your involvement and help.

UPCOMING EVENTS

Next year under President Patterson's purview, several events are already underway. The Student Expo was a tremendous event last year and this year promises to be even larger this September. The HGS-GESGB Africa Conference in September and the Grand Canyon Raft Trip are locked and loaded in their every-other-year rotation. Watch the calendar and email newsletters for other events.

As always, I look forward to seeing all of you at the May HGS meetings and events. Be there or be square. ■

Caroline Wachtman
editor@hgs.org

Pay it Forward While Giving Back: Why the HGS Needs a Mentoring Chair

Did you know that HGS members are invested in mentoring students? This month, I was privileged to speak with two students, Alexandra Price and Allison Barbato (Duxbury), who shared their experiences of receiving multi-year mentorship from HGS members. I was surprised (shocked!) to hear about the strong support HGS members provide. HGS mentorship is not well-publicized, and I suspect there are many members unaware of current mentorship opportunities. However, mentorship has significant future reciprocal benefits for HGS; we need students and early career professionals to maintain membership numbers and invigorate the organization. Discussions this month led me to this question: what can the HGS do to steward ourselves on mentorship and thereby grow value for the organization?

mentoring is a critical component of developing the next generation of geologists

MENTORSHIP IS ESSENTIAL TO DEVELOPING STRONG GEOLOGISTS

Nearly 20 years ago, I made my first structure-time map based on seismic interpretation. It wasn't good. The team used a color bar convention where warmer colors indicated shallower structure; but I had reversed the color bar, so synclines looked like anticlines to the casual observer. Luckily, I reviewed the map with a mentor. He caught the mistake before I thoroughly embarrassed myself to the rest of the team and my management.

I was fortunate to have mentorship throughout my early career because it helped me quickly learn how to apply geology skills. Some geology practices require experiential learning that comes with solving real-world problems. Mentors can play a critical role in guiding problem-solving, and in helping to grow skills. Now in my 19th year of professional experience, I still engage with mentors on a regular basis.

HGS MENTORS ARE ACTIVE

I was surprised to hear from Barbato and Price about the continued mentorship support they have received. I wasn't aware that many of the professionals involved in the HGS Scholarship Fund and Calvert Fund also contributed their time and talents to mentoring students. Allison Barbato (Duxbury) recounted the significant impact on her career trajectory made by HGS member Jeff Lund, who encouraged her to learn about the business of geology while learning about the science. Barbato described how conversations with Bill DeMis, focused her views on value of the Oil and Gas industry. Another student I interviewed, Alexandra Price, described how mentoring conversations with HGS members led her to apply and receive the Calvert Scholarship funding.

Mentorship has a cascading effect. Barbato describes in her *Bulletin* article, "The Secret Sauce", how she mentored her university peers and contributed to an increase in the number of internship and job offers to Louisiana State University students in 2023. Barbato explains that by giving back to her peers, she is paying it forward to the next generation of geologists.

CALL TO ACTION: SPOTLIGHT AND STEWARD MENTORSHIP

While HGS has dedicated committees to focus on education of students and professionals, community outreach and more, we don't have a formal mentoring committee. Mentorship deserves attention. The HGS should steward and report on mentoring activities, because mentoring is a critical component of developing the next generation of geologists and it results in reciprocal value to the HGS by growing volunteers. HGS should put a spotlight on the valuable work on our mentors and steward ourselves to expand mentorship offerings. The first step in this process is to name a "Mentoring Chair" to set goals and record progress. Let's all pay it forward by giving back.

See more articles related to mentoring in this edition of the *Bulletin*:

- Read about students benefiting from HGS mentorship and scholarships in "Students + HGS = Mutual Benefits"
- Learn about the transformation of the AAPG student chapter at LSU in "The Secret Sauce", written by Allison Barbato (Duxbury)
- Deborah Sacrey shares mentoring advice for consulting geologists in "A Conversation with Deborah Sacrey"

Other stories featured in this month's *Bulletin*:

- Learn about reservoirs that might be good candidates for CCUS projects in the technical contribution by Selim Shaker.
- See photos that recap recent events like the Annual Shrimp Peel and GeoGulf 2024. ■

Letter to the Editor
Benefits of Networking

By John Tubb

When I graduated in 1959 with a BS in Geology, the petroleum industry was in the second year of a downturn. So I went to graduate school. Four years later when I received my PhD degree, the industry was just emerging from the downturn. In my 55 year career as a Petroleum Geologist, I have lived through many ups and downs, the worst two being 1986 and the one we are just emerging from. Ups and downs are part of the game. I moved to Houston from Lafayette, LA in 1975. While living in Lafayette, I was active in the Lafayette Geological Society. Upon moving to Houston, I found that almost no one at my company went to HGS meetings. I went anyway. As a result, it took a long time before I could go to meetings and see people that I knew.

Networking is not quick or easy, but it is very necessary. During my career as a geologist, I have been an employee at six different oil companies and a consultant for 11 companies. For the first job, I was recruited out of graduate school. The second job was found through resumes. The remaining four jobs as an employee were obtained through people I knew or from recommendations from these geologists. Of the 11 consulting jobs, only ONE came from resumes, the remaining 10 were from people that I knew in the industry. My scorecard shows that I received three jobs through resumes and 14 through networking. In my case, mailing out resumes was simply a waste of trees.

As a result of the downturns during my career, I was without a job several times. Unfortunately, chances are that many of you will meet a similar fate. That's when networking becomes a critical factor in your overall career strategy. HGS has a multitude of opportunities to network: meetings, Continuing Education, social events, etc. I hope to see you soon at one of our events soon. ■

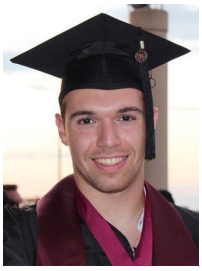
Laissez les bon temps rouler.

Note: *Tubb previously received the Gerald A. Cooley Award, was HGS President in 2010-2011, and was HGS Treasurer in 2008-2009. He has been a member of HGS since 1975.*

Vote for the 2024-2025 HGS Board of Directors

Review candidates' qualifications on pages 36-43

We Are The HGS



Wassim Daghri, HGS member since November 2023

"Going outside to grab samples in negative 30°F weather is not fun!" laughs Wassim Daghri, who spent much of the past year working in North Dakota and Wyoming as a wellsite geologist and geo-steerer. Despite the downside of cold weather, Daghri says he likes the flexible schedule and opportunities to travel that come with being a rotational geologist. Acknowledging that this type of work may not be his long-term path, Daghri says he joined HGS to grow his professional network of operations and development geologists in Houston.

Daghri started his academic training for engineering at Texas A&M. "I like math, but I needed something more interesting," he says. Daghri pivoted to the Geology and Geophysics department, where found that "geology comes naturally to me, and I enjoy it." While at A&M, Daghri devoted his free time to participating in the swim team and working as a swimming instructor. After earning his bachelor's degree in Geology in 2022, Daghri joined Terra Guidance and has spent much of the past year sitting wells.

Daghri joined HGS to grow his network of operations and development geologists

"I was really interested in hearing Bill Armstrong's story," says Daghri. This type of technical content is what incentivized Daghri to join the HGS. Going forward, he hopes to expand his technical knowledge and grow his network through participation in HGS events. ■

Chris Seibel, HGS member since December 2023

A long-time member and one-time committee lead for the Canadian Society of Petroleum Geologists (CSPG) now the Canadian Energy Geoscience Association (CESA), Chris Seibel is looking to build his network in Houston. Seibel recently joined the HGS and says he is interested in attending dinner and lunch talks to learn and network. While attending CSPG events in downtown Calgary was an easy walk during lunch, Seibel believes the networking opportunities at HGS meetings will be worth the drive.

Seibel hopes HGS will offer networking potential like he found in Calgary

Seibel started his geology career in 2001 working for Nexen and spent about 10 years working on their oil sands assets. When CNOOC later acquired Nexen, Seibel got involved with unconventional assets in the Eagle Ford and Powder River Basin. "I did my Masters work on source rock, so I was excited to come work on these rocks and exceptional resources," he says. Now as a senior manager, Seibel leads a development and production team managing CNOOC's non-operated positions. He says that his team conducts their own mapping and reserve estimation to form a technical basis for building development plans, making elections on wells and influencing operators.

Seibel served for 10 years on the CSPG technical luncheon committee, helping to organize talks by AAPG distinguished lecturers, society members and others. "I got to know the consultants in Calgary, so I knew who to call for contractor work," says Seibel. After being in Houston for the past eight years, he says that he has not yet developed a similarly close-knit community. Seibel hopes that HGS will offer networking potential like he found in Calgary.

"Be ready to take on new challenges," says Seibel. After more than 20 years in the Oil and Gas industry, Seibel says that he has learned to embrace challenges and make the most of them. He also says he values the cultural diversity and different perspectives of working for an international company. Seibel enjoys learning from others in his company and is looking forward to learning from members of the HGS. ■

WORD BRECCIA – A GEOLOGY WORD JUMBLE

Unscramble the words below and rearrange the circled letters to find the answer to the clue.

KIDE	_ _ ○○
GAMMA	_ _ ○ _ ○
DRICEN	○○_ _ _ _
COOLVAN	○ _ _ _ _ _ _
LABAST	○ _ _ _ _ _

To help someone move forward, it may require you to _ _ _ _ _ _ _ _

We Are The HGS is a series that highlights the careers and contributions of HGS members with the intention of building community. Would you like to be featured in We Are The HGS? Send a note to editor@hgs.org.

Call for Papers Extended

May 31, 2024

HGS-GESGB Africa Conference

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Submit you Abstract to
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The Secret Sauce: How LSU's AAPG Student Chapter Grew Four-fold During COVID-19 (2019-2023)

By Allison Barbato (Duxbury)

I was president of the AAPG Student Chapter at Louisiana State University (LSU) in Baton Rouge, LA from 2019 - 2023. During that time, I increased the AAPG student chapter four-fold despite the COVID-related industry downturn and unfavorable messages about oil and gas. AAPG leadership and I accomplished this by: (1) hosting a virtual professional development series, (2) holding resume and interview workshops (3) launching an active social media campaign, (4) hosting consistent, community-building social events and (4) building the LSU AAPG brand through merchandise and our digital community. This essay describes how we did it, the obstacles we had to overcome, and how we positioned the group for success after myself and other members of the AAPG leadership team graduate. I had key help from Jeff Lund and the Houston Geological Society (HGS). Thanks also to Chevron for their very generous financial support to the LSU AAPG chapter.

"I wanted to help students build up their confidence just as many others had helped me grow my confidence."

BACKGROUND

My father and both of my brothers are petroleum engineers. I was born in Lafayette, Louisiana but grew up entirely overseas; my father's work as a petroleum engineer took us many places. We lived in Borneo, Java, Brazil, the Netherlands, and Egypt, where I graduated high school in 2013. I give this background because of one key point: I truly grew up immersed in the petroleum industry.

When I started interviewing and preparing for my career in the oil and gas industry as an undergraduate I realized just how much knowledge I had already absorbed about the industry compared to many of my peers. For many of them, it was their first time hearing the words "operator" and "service company." Knowing those words didn't necessarily make me any more qualified for a job, but it certainly made me more comfortable networking and attending industry conferences or events.

When I joined HGS as an undergraduate, Jeff Lund encouraged me to volunteer for events to grow my network, and to apply for the Calvert Memorial scholarship. These interactions built my confidence and helped me network with many hundreds of incredible industry geologists before starting graduate school.

PRESIDENT OF LSU AAPG AND THE OLD FORMULA

In 2019, when I started my second year of my PhD at LSU, I became President of the LSU AAPG Student chapter. It had 10 members. I became President because I felt like I could help students successfully break into the oil and gas industry. I could see how discouraging it was for students to feel overwhelmed, or intimidated, by the industry. I wanted to help students build up their confidence just as many others had helped me grow my confidence.

I assumed I would follow the same formula that past LSU AAPG student chapter Presidents had done before: encourage IBA, put on a few social events, and hope to grow the chapter. The "formula" to help students get into the industry was simple. Encourage them to pursue a research-based graduate degree, be a decent communicator, complete IBA, be involved in professional societies, and keep up their grades. If they did these things, they would be very likely to land interviews that would lead to internships or jobs in the industry.

This "formula" is strong because it has been proven over many years, and students were always interested in the O&G industry. But I wondered, "How much work would I, as President of the group, really need to do?"

COVID-19 CHANGES PLANS

But life is always full of surprises. In 2020, the COVID-19 pandemic brought some of the most financially challenging years in the history of our industry. Also from a personal standpoint, many people lost their loved ones, or their jobs, or were forced to retire early. It was devastating for many, and everyone was impacted differently.

After COVID-19, students saw the market become flooded with petroleum geologists who had 5, 10, 15 or 20+ years of experience getting laid-off from their jobs. Students couldn't help but wonder "why would an oil and gas company be interested in me? I just can't compete." From a student's perspective, the tried and true "formula" was not even close to a guaranteed opportunity in the industry anymore. Around this time, students stopped registering for IBA at many universities, including LSU.

CHANGES CONTINUE: ENERGY TRANSITION AND NEGATIVE MESSAGES ABOUT THE OIL AND GAS INDUSTRY

The COVID-19 pandemic was almost immediately followed up by the Energy Transition. While I truly feel fortunate, and proud, that I can work as a petroleum geologist during a time when oil and gas companies are especially conscientious about their effects on the environment, I've **The Secret Sauce** *continued on page 12*

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observed a somewhat negative effect that the Energy Transition conversation has had on recruiting students. Students do not think these changes are negative, but these and other changes are not communicated in a way that students can easily understand. It seems that almost overnight, the Energy Transition conversation has dramatically shifted the purpose of the oil and gas industry and it has dominated many conversations related to the future of the industry.

Large operators, small operators, and service companies have adopted phrasing related to the Energy Transition topic. Should the "formula" now include taking courses in CCUS? Should students get environmental geology minors to be competitive instead of petroleum engineering minors? What does the ideal petroleum geology student candidate look like now? On top of COVID-19 and the Energy Transition, there were tensions in eastern Europe with Russia and Ukraine, which left a resource void in international oil and gas markets as Russian petroleum was no longer widely traded.

To make matters worse, social media is constantly bombarding students with negative messages about the oil and gas industry. By the time most students start as undergraduate majors, and especially by graduate school, they are exposed to a plethora of negative oil and gas information from social media. Some of it true; some of it not true. How can students tell which is which? How can we expect them to be able to sift out the accurate information from the inaccurate, and then confidently step into interviews or apply for jobs?

Lastly, students find entering the O&G industry difficult if their academic advisor does not support, or is personally against, the energy industry. As President, I needed to equip students with the confidence to navigate these situations.

LSU AAPG Officers for the 2022-2023 year, from left to right: Colby Knight (now at Murphy Oil), Jeffrey Duxbury (will begin at Chevron in 2025), Vivian Grom (Current LSU AAPG president and PhD student), Allison Barbato (will begin at Chevron summer of 2024), Tiffany Nordstrom (now at Murphy Oil), and Ashley Thrower (now at Chevron).

IMPACT OF MESSAGES ON STUDENTS

COVID-19, the Energy Transition and geopolitical tensions affected student interest in the oil and gas industry. This is because the rate at which these changes occurred was breathtaking, and all students could comprehend the past few years was "why is everyone getting let go?" (COVID-19) to "the oil and gas industry is no longer interested in oil and gas?" (Energy Transition) to "why is everyone hiring again?" (Geopolitical tensions increase the global need for petroleum).

As someone who can comfortably tap into a strong network of geologists at any time, these events, and their effects on industry, are still very difficult to understand. Unless a student had already built up a strong network of petroleum professionals, the effects of these events on recruiting were not communicated in a way that students could easily understand. When there is that much change, and pressure from advisors not to enter the O&G industry, why would students try to enter the industry at all?

So, it goes without saying, it's an interesting time to be a student trying to find their way in the energy industry right now. More importantly, since 2020, it's been a difficult time to inspire confidence in the industry.

STUDENTS FOLLOW OBVIOUS CAREER PATHS – OIL AND GAS WAS NOT ONE

What I have observed in the past few years at LSU is that when students arrive for their first semester (typically in the Fall), they have no clue that the very competitive oil and gas recruiting season is about to be in full swing. They then very quickly realize that in the next month they need their resume in perfect shape, a presentable LinkedIn profile, an elevator pitch, interview attire, an understanding of answering questions using the STAR method, the ability to confidently speak about your research, enough money to travel to recruiting events, and some basic knowledge of every company with whom they hope to interview. From what I have seen, most students simply don't realize they need to have all this ready, and they opt to ignore the interview season all together their first year, even if they are interested in applying.

Since students are only in graduate school for a few, short years, they then choose to apply for jobs where the interviewing and recruiting process is not as rigorous, and where their career paths are more obvious (which has not been the case for oil and gas the past few years). For jobs outside the energy industry, applications typically open in their second semester (after they get their feet on the ground at their new graduate school).

When I became LSU AAPG President during COVID-19, I realized very quickly that despite **The Secret Sauce** continued on page 13

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all the knowledge I had to offer, and despite all the contacts I had accumulated while being a member of HGS, it didn't seem to matter as much as it had before because the face of the industry had dramatically changed in the blink of an eye. I also realized that, in general, I needed to help students understand the expectations of the oil and gas interview/recruiting process.

A NEW FORMULA

I realized that a petroleum geology chapter wasn't going to survive the COVID-19 pandemic, or the other challenges, with the typical "formula" for student societies. I knew that if I tried to hang onto the old "formula" and the old way of doing things, our group was going to perish. We needed a very clear path forward.

CULTIVATING LEADERSHIP: SETTING THE TONE AND CHALLENGES WITH PEER-TO-PEER LEADERSHIP

I needed LSU AAPG officers that would not only execute the tasks I would assign them, but also critically think and improve on ideas. I knew that if I had dedicated people alongside me, it would allow the group to operate more smoothly and allow me to continuously seek out new opportunities or efficiently improve on old ideas. Sure, I was the President of the group, but that didn't mean I was the only one leading. I wanted them to feel empowered to help lead others as well. Sometimes when working with friends in unpaid volunteer positions, it can be hard to ask your friends to carve out time and give attention to something that doesn't pay them (especially if their faith is already lacking in the industry). To cultivate and nurture leadership between peers, I would do two things at the beginning of every first officer-only meeting of the year.

First, I handed out descriptions of each of the officer's expected duties. I asked each person to review the description and sign their name at the bottom of the page and return it to me. I asked them to get back to me with anything they wanted to change, remove, or add to their position.

The purpose of the first action was to make sure there were no surprises from what I would ask of my peers. I expected them to work, but I also wanted to make sure it was work that they would enjoy doing as a break from research. I didn't want to set them up for failure if they couldn't balance the workload of school alongside the workload of AAPG. It was also to help them see that their position meant something, and that I understood 100% if they wanted to walk away. If we all honored our agreements, it would save a lot of potentially awkward disagreements between friends. With that being said, I encouraged honest communication and asked if you had a tough week of school ahead, let the officers know so we could divide the duties. This worked very well as it helped build trust between all of us.

Second, during that same first meeting, I went over all the events I had planned for the next year and outlined the times of the year I would lean on their help the most, so they knew what to expect and when. I also asked them to brainstorm new ideas early. The purpose of the second action was to set the tone for being proactive instead of reactive.

Members of LSU AAPG who received internships and job offers for 2023 and their respective companies. This group represents the highest number of LSU G&G students to receive internships and job offers in the last 10 years of the departments history.

This group encompasses graduate students, undergraduate students, geologists and one petroleum engineer.

It wasn't just a club where everyone did whatever they wanted. We all had a part to play, and their part was as important as my part. I was counting on them, members in AAPG were counting on them, and they knew it from day one.

NEW PLAN: COMMUNITY, COMMUNICATION AND CONFIDENCE

I created a plan that would help our chapter thrive. Instead of trying to address multiple diverse issues all at once, I recognized that we needed to address a few key points very intentionally, and repeatedly improve on those points over the course of a few years. I also tried my best to lead with empathy because students were trying to find their place in a rapidly changing, competitive industry. I thought to myself "If we can make it through COVID-19 and find a way to thrive, this group has a future." I focused our "new formula" on these topics: community, communication, and confidence.

DIGITAL AND IN-PERSON COMMUNITY

I had to vigorously improve both our digital and in-person community, because the pandemic made it very difficult to feel a sense of community at all. Even without the pandemic, it was already difficult for new graduate **The Secret Sauce** continued on page 14

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students to feel like part of a community because most students come in from various undergraduate schools and don't have many friends at their new schools.

To bolster up our digital community, I created the LSU AAPG LinkedIn and Instagram pages in 2019. It was critical to have both pages. It cannot be understated how important it was that we met students where they spent most of their time (and received most of their information) - which was on Instagram. Most geologists know that LinkedIn is a fantastic place to meet new people and get a pulse on the news, trends, and forces in the industry. However, most students also get their information from Instagram, and more recently, TikTok.

Students needed to see the LSU AAPG chapter posting on a platform that was easily accessible. This made LSU AAPG seem more approachable because students could see all our good work and fun events. Also, I knew that Instagram would lead to a larger following on our more professional LinkedIn page.

I created the "Social Media Chair" position at LSU AAPG to increase our digital footprint. They would create inviting, well-designed, engaging interactive content for students on Instagram and LinkedIn. I used Instagram to engage and recruit undergraduate students (geology and petroleum engineering students), and our LinkedIn to connect students with the larger geologic community. We were very intentional about communicating with students through these digital platforms.

I measured our success by the number of followers, and by the rate at which we observed students interacting with our content (likes, comments, and shares). Over three years, we now have hundreds of followers across our Instagram and LinkedIn platforms, and that number grows more every month. Our content gets weekly engagement by students. The more students engage with our digital content, the more likely other students are to see our digital content, and it has kept our chapter relevant and inviting to the next generation of students.

We also used the GroupMe App weekly to communicate meetings, events, or anything else pertinent about the group to our members. Students were more likely to check an app on their phone for updates than read their email. Our AAPG GroupMe was our own community chat group that made communication between AAPG officers and AAPG members easy.

SHORT COURSE SERIES: AAPG – ALL ABOUT PETROLEUM GEOLOGY

During my first year as LSU AAPG President in 2019-2020, I created a virtual short course series called "AAPG: All About Petroleum Geology." I invited speakers to sequentially discuss small-scale petroleum geology (biostratigraphy and source rock characterization) to large-scale petroleum geology (exploration) over a year. That way, I could help students grow their network and their technical vocabularies, despite not being able to traditionally communicate and network with professional geo's because of COVID.

I began this series by inviting speakers to virtually discuss the history of the industry (to understand and accept the cyclic nature of the industry), along with discussing resume and networking techniques. I tried my best to ensure that all our members 1) had a LinkedIn profile, and 2) that they connected with our virtual speakers after every virtual AAPG event that we had.

CAREER SERVICES – RESUMES AND MOCK INTERVIEWS

We also helped students with their resumes. We scheduled one-on-one, virtual resume reviews with Dr. Eric Scott, a petroleum geologist who is an adjunct professor with Rice University and LSU G&G alum. During each student's 20-minute slot, Dr. Scott helped with formatting, phrasing, clarity, and resume purpose. We followed-up Dr. Scott's talk with a resume and LinkedIn review with Dr. Amanda Rico with Rico Editorial Services. From Dr. Rico, students learned about the importance of correctly formatting their resume so that online Application Tracking Systems could properly review their resume and get it to recruiters. Dr. Rico also emphasized the importance of having a professional, well-curated LinkedIn profile. So, by the end of our first year, nearly all AAPG members had decently well-curated LinkedIn profiles.

We added mock-interviews to our professional development series in 2022, and we've had undergraduate and graduate students in petroleum engineering and geology attend all our professional development events. Our professional development events were only open to LSU AAPG members, but even non-geoscience students heard about this service and joined. So, this helped grow our membership across the board.

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Gunner Boler (now at Chevron) and Tiffany Nordstrom (now at Murphy oil) working the LSU AAPG merchandise table during the LSU AAPG-Geoclub annual crawfish boil hosted at Tin Roof, a local Baton Rouge Brewery. Our merchandise featured polos, T-shirts, koozies and stickers

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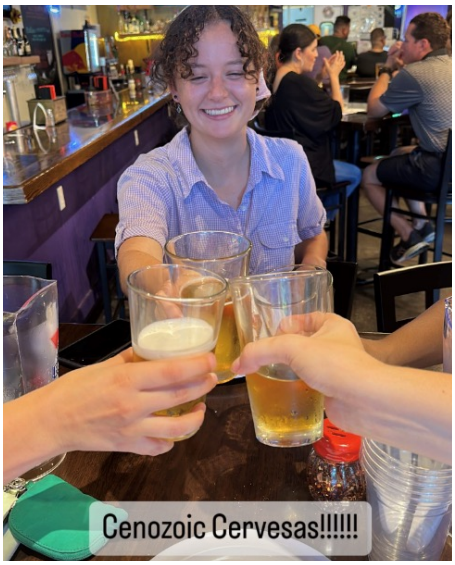
Members of LSU AAPG, and friends of the department, enjoying the all-you-can-eat crawfish at the LSU AAPG - GeoClub Annual Crawfish Boil at Tin Roof Brewing.



Faith Walton (current LSU masters student and now LSU AAPG treasurer) and friends celebrating the end of the week at "Cenozoic Cervesas", which LSU AAPG hosted at a local Baton Rouge pizza restaurant every week.

LSU AAPG MERCHANDISE

Around this time, I also started developing LSU AAPG merchandise for the community we were building, which began with t-shirts. While everyone was sitting at home on zoom, I had a feeling they would enjoy a cozy t-shirt.

SOCIAL EVENTS – CRAWFISH AND PIZZA

In 2020, I created the first-ever LSU AAPG Annual Crawfish Boil which we hosted at a local brewery. I invited the LSU undergraduate geology group, GeoClub, to collaborate with us on the event. I encouraged this collaboration for four reasons. First, I wanted to befriend the lower classman so that they might join LSU AAPG. Second, I wanted them to feel less intimidated by graduate students. Third, many of them wanted to attend grad school one day, so I wanted to encourage communication between the two groups. Fourth, I knew that GeoClub was not as well-funded as LSU AAPG and therefore struggled to host large events to recruit new students into their club. So, I thought, why not host an event that can benefit both groups?

LSU AAPG paid to reserve the space, provided the crawfish and refreshments, while GeoClub provided snacks, sodas and a variety of vegetarian appetizers. At the Boil, LSU AAPG had all-you-can-eat crawfish (at a discounted price for members) and raffles with lower tier and upper tier prizes. The North Sea Core group in Aberdeen provided core samples for the raffle. We also offered discounted membership renewals that would apply to the following year. Nearly all our members would use the Annual LSU AAPG crawfish boil as a chance to renew their annual memberships with us.

At this event we sold our merchandise (at discounted prices for members). It brought in decent revenue and built up our brand on campus. We would have students, faculty, alumni, and professional geologists attend. And a key point here, the social media chair heavily publicized this event before, during, and after the crawfish boil. People need constant reminders.

We encouraged the GeoClub to create their own merchandise and sell it because it is a great way to raise funds for the group. In 2023, GeoClub created merchandise and began selling it at the annual crawfish boil (This was very rewarding for me to see them take the initiative.)

To recap the success of this collaborative event, in 2019 we had just under 30 people attend the crawfish boil. In 2023, we had almost 60 people. This has been a wonderfully fun collaborative event that both groups look forward to every year.

CENOZOIC CERVESAS

I created another event in 2021 called "Cenozoic Cervesas." Every Friday, after the departmental seminar, we had an agreement with a local pizza shop to buy a handful of pizzas, beer and non-alcoholic beverages to relax with colleagues after a long week. This event was open to everyone who was interested in hanging out and chatting with friends - they did not need to be an LSU AAPG member. We did this almost every Friday without fail. Over time, this event became very popular with students, faculty and alumni. We also used it as an opportunity to recruit new students. We always had our LSU AAPG Venmo QR code printed out so students could easily Venmo us the $30 annual membership fee. This popular event has continued into 2024.

TAILGATE PARTIES

Lastly, since LSU football is legendary, every two weeks during the fall season for since 2021, we had LSU AAPG Student Chapter tailgates. At these tailgates, we would provide food (vegetarian, halal, and meat eater options available), sell LSU AAPG merchandise, stream the game on a big screen with plenty of chairs for people to relax, and provide music and refreshments (both alcoholic and non-alcoholic). Since you did not have to be an LSU AAPG member to attend, we would always use these events as an opportunity to recruit new student members.

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The LSU AAPG Polos. Not all students know what to wear at professional events, or do not have the means to buy professional looking clothes. These polos were designed to be cost friendly to college students, but professional and versatile enough for students to wear at professional networking events.

Our tailgates parties also grew our membership. By 2023, our merchandise included three different styles of t-shirts, a Hawaiian shirt, stickers, and koozies, all of which had our LSU AAPG logo on them. This popular event not only built-up the LSU AAPG community and brand, but it has also continued to be very successful into 2023.

POLOS WITH LSU AAPG LOGO

In 2021, I realized that our merchandise could support student professional development. Business clothes are notoriously expensive, and sometimes students feel out of place at networking events because they aren't sure what to wear, and they can't afford what they want to wear. Because of this, I asked our group VP to design professional looking polos that had our LSU AAPG logo on them. This way, a student could always have a professional, affordable clothing option for any business professional event they attended. They wouldn't feel out of place.

BUSINESS CARDS

I followed this up with business cards. Our social media chair designed an LSU AAPG business card template, all students needed to do was to email us a headshot, their title, and the name of the lab they worked in. Then we would upload their information and print their business cards for them. Again, this added to their professional development and confidence.

CONFERENCE REIMBURSEMENT

We also offered conference reimbursements. If students were presenting at a conference, LSU AAPG would reimburse them up to $300. If students just wanted to attend a conference, we would still support their desire to network and reimburse them $150. This initiative was (and remains) very popular with undergraduate and graduate students alike. This has been a very powerful recruiting tool for us because students need to be a LSU AAPG member to access this perk.

OIL AND GAS NEWS – STUDENTS INFORMED ABOUT INDUSTRY

Lastly, to help students feel up to date on current O&G news, I began every LSU AAPG meeting with an "Industry Update," where (to the best of my abilities) I described what was going on in the industry. We also utilized the GroupMe App to send out articles about O&G news. We discussed on the app the latest changes in the industry. I tried my best to empower students with this knowledge of the industry so that they would not feel overwhelmed or intimidated by it. If they went to a professional event, they were armed with a bit of the latest O&G news, delivered to them either in-person or via social media apps.

SETTING UP THE FUTURE OF LSU AAPG– THE LSU AAPG CAUGHEY-ZIMMERMANN ENERGY LIBRARY

In 2021, the AAPG Publication Pipeline announced that due to COVID-19, they no longer had the ability to store their enormous collection of petro-technical books. While they were in the process of liquidating their collection, I asked one of the team leaders, Chuck Caughey, if a portion of the collection could be donated to LSU so that we could create an Energy Library inside of the LSU Geology and Geophysics Department. The idea was to digitally catalog all the books so that they could be easily accessible and preserve the history of all the fantastic work done by the Publication Pipeline. Chuck spoke with the Publication Pipeline and they graciously agreed.

I was intentional with the books we selected, because I wanted this library to contain information on traditional, fundamental topics in the oil and gas industry (sedimentology, geophysics, geochemistry, exploration, etc.), but I also wanted topics that could apply to the Clean Energy/ the Energy Transition as well (e.g., CCUS and geothermal). I also included fundamental, general geology books (physical geology, historical geology, etc.). The idea was that anyone in the LSU Geology and Geophysics department or academia could benefit from **The Secret Sauce** *continued on page 17*

The opening of the LSU AAPG Caughey-Zimmermann Energy Library (2023), where the chapter unveiled the multipurpose, communal library space that added over $50,000 of value to the LSU G&G Department from books donated from the Publication Pipeline and personal donations.

From left to right, Dr. Darrell Henry (LSU G&G Department Chair), Eric Zimmermann (COO of LLOG Exploration), Leora Wilson (LSU AAPG undergraduate intern), Allison Barbato (former LSU AAPG President), and Chuck Caughey (Publication Pipeline representative and HGS member).

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this project, not just those interested in the energy industry.

During the summer of 2023, I reached out to Eric Zimmermann, the COO of LLOG Exploration with a proposal to fund an undergraduate student intern, who I would mentor, to help the library vision come to life. Eric graciously agreed, and the first LSU AAPG Student Chapter Internship was born.

The library came together beautifully, and it currently contains over 1000 books, all organized in an inviting conference room that the current LSU IBA team is utilizing. This project added over $50,000 worth of value to the LSU G&G Department and was a collaborative effort that would not have been possible without Chevron, AAPG, the Houston Geological Society, the New Orleans Geological Society (NOGS), the support of the LSU Geology and Geophysics department, and many others.

While the obvious purpose of the library is to be a space for students to enjoy and find resources and to build community, the deeper purpose of the library is the following: the LSU AAPG Caughey-Zimmermann Energy Library can now forever act as a venue for continuous engagement between LSU AAPG, students, faculty, alumni, organizations and companies. Because it permanently embraces the fundamental aspects of the O&G industry, and the new directions of the Energy Transition, it sends a message that the LSU AAPG Student Chapter is aware of where the industry came from, and we're embracing where it's going. The library can be used as a tool for future AAPG Student Chapters to facilitate community, confidence, and communication.

RESULTS

By the end of 2022, our chapter had reached over 40 active members. And in 2023, we maintained around 40 active members. Additionally, in May of 2023, our department saw the largest number of students go into O&G internships and receive the most job offers in the last 10 years of the department's history. Most of those students were members of LSU AAPG.

While I always had a vision and a plan to creatively move forward, I could not have done any of this without the fantastic support of every LSU AAPG officer: Jeff Duxbury, Tiffany Nordstrom, Colby Knight, Ashley Thrower, Vivian Grom, Joses Omojola, Nick Schuler, Nick Prehis, Joe Honings, and Zach Coutee. They trusted me, they questioned me, they pushed me, and they made me a stronger leader. I am a better person, both personally and professionally, because I worked alongside so many talented friends in LSU AAPG. I thank Chevron for their financial support.

It's been an honor and such a privilege to help so many students build up their confidence to step into the energy industry over the years. ■

Geaux tigers. -A

Deborah Sacrey: Reflections on Independent Consulting

By Caroline Wachtman

"Being a consultant is like getting up each morning, looking over a cliff, and deciding whether to jump," says Deborah Sacrey, owner of Auburn Energy, an independent consulting company focused on oil and gas prospecting. Sacrey says, "The job is never boring," and it gives her an opportunity to learn about world-wide geology. "I'm currently working on a project in Hungary, one in Germany and one in South Texas," she says.

Sacrey's path to becoming an independent geologist started in the early 1970s. "I'm an accidental geologist," she laughs. "I was on a full scholarship to study physics at University of Oklahoma when I took a geology class and fell in love," she says. Sacrey switched her major to geology and earned a Bachelor's degree in Geology in 1976. She began her professional career at Gulf Oil, but soon realized that she didn't enjoy corporate life. After two years, Sacrey moved on to work for smaller companies before opening her own consulting business, Auburn Energy, in 1990.

Now, in the 48th year of her career, Sacrey says that she is still learning new things. Emphasis on continuous learning, including learning new interpretation techniques, is one of the lessons she shared during the recent GeoGulf 2024 Conference. In addition, Sacrey emphasizes that purposeful networking is essential to being a successful independent consultant.

"NEVER QUIT LEARNING"

"The easy oil has all been found," says Sacrey. She says it's imperative to learn new tools, such as those integrating machine learning to find the next generation of prospects. "Never quit learning, and never think you understand it all," she says. Sacrey encourages others to learn about new technologies at conferences and notes that most vendors offer low cost or free training.

In addition, Sacrey encourages geologists, especially those who have been laid off, to invest in a workstation. "Build it and they will come," laughs Sacrey. She emphasizes the importance of developing and maintaining skills to build credibility. "Be excellent at what you do," she says.

Sacrey describes that she has developed creative ways to enhance technical skills and build her consulting business. For example, she proactively reaches out to ranches who have mineral leases and offers her interpretation services. She helps the ranches to evaluate existing prospects, identify new leads, and market opportunities.

NETWORKING IS ESSENTIAL

Sacrey hears from many experienced geologists who want to become independents, but who have not developed networks outside their own companies. To build networks and technical credibility, she strongly encourages geologists to give technical presentations to professional societies like HGS. Furthermore, she recommends that geologists be active in their profession by attending dinners, lunches and conferences.

Sacrey encourages people to take on volunteer roles to build networks. "Even volunteering at low levels, you are getting to meet people and build a good network," she says. Sacrey has taken on many volunteer roles, including President of SIPES (also the first female president). She is a Past President of HGS, and she is currently President-Elect of AAPG.

Once a network is established, it's important to maintain credibility in the network. "It's a small world, so keep your nose clean," advises Sacrey. She also recommends leveraging the network for mentoring. "People will bend over backwards to help, if you ask," says Sacrey.

SHAPING NETWORKS AND PROFESSIONAL SOCIETIES

Poised to become President of AAPG, Sacrey says that rectifying the financial situation of the organization is her first priority. Like many professional societies, AAPG has experienced financial shortfalls over the past decade due to reduction in corporate sponsorships and declining membership. Sacrey believes the way to restore financial health is to "get back to the science and not be waylaid by wind or solar." She says, "People forget what the American oil industry has done for the world; we don't beat our chest enough."

In addition, Sacrey is resistant to calls for AAPG to focus on diversity, equity, and inclusion (DEI). In particular, she says, "Honors and awards should go to people who are qualified, not to groups who have been denied in the past." Despite receiving un-equitable and discriminatory treatment early in her career, Sacrey says, "Since the mid-1990s, I've seen a turnaround in how women are treated."

Once AAPG's finances are stabilized, Sacrey says that then she can move on to tackling other challenges, including the rift between members who want AAPG to be organized more like SPE v. those who want to maintain the current organizational structure.

TAKING THE LEAP

Sacrey says that she is still having fun in her role as an independent consultant. When faced with particularly tough problems, she clears her mind by weeding her garden on her farm between Houston and San Antonio. Although she misses the flexibility of being in Houston, Sacrey says that she is still actively engaged in the geology community here. For the near term, she says she will continue to wake each morning, look over the cliff, and take the leap. ■

Students + HGS = Mutual Benefits

By Caroline Wachtman

HGS provides significant support to students, although this population represents a small percentage, approximately 10%, of HGS members. For example, the HGS supports graduate geology students through the Warren L. and Florence Calvert Memorial Scholarship, and undergraduate geology majors through the Undergraduate Foundation. Together, these foundations have distributed scholarships totaling more than $1.3 million to geology students across the United States since inception in 1978 (Calvert Fund) and 1984 (Undergraduate Fund).

In addition to scholarships, HGS members are actively engaged in supporting students through mentoring and networking. Some students who become actively engaged with HGS during their academic programs remain connected as they move into the workforce. Two of those active HGS members and student scholarship recipients are Alexandra Price and Allison Barbato (Duxbury). Both of these students are scholarship recipients, and both have been actively engaged with the HGS; they exemplify mutual benefits of student-HGS engagement.

In addition to scholarships, HGS members are actively engaged in supporting students through mentoring and networking.

ALEXANDRA PRICE

"I fell in love with geology at 18 years old," says Alexandra Price, a PhD student at the University of Houston and Business Developer at CGG. Price says that she initially wanted to be a volcanologist after leaving her home state of Colorado and exploring volcanoes in Costa Rica and Nicaragua. As a young, single mother, Price says that she was also acutely aware of the need to support her child. She pivoted from Volcanology and earned an undergraduate degree in Geology from Colorado Mesa University in Grand Junction, Colorado.

After roles in GIS, soil sampling, and wellsite geology, Price moved to Midland, Texas to study at the University of Texas Permian Basin (UTPB). Price worked as an adjunct professor at UTPB following her master's degree in 2021. During this time, Price demonstrated an entrepreneurial mindset by creating an online introductory physical geology course kit complete with lectures, activities, and rock samples. She successfully worked with a publisher to make the content available to students at UTPB and elsewhere.

In 2022, she moved to Houston to commence a PhD program at University of Houston under the mentorship of Shuhab Khan. Price began research projects focused on using hyperspectral imaging to determine the concentration of critical minerals such as lithium and rare earth elements contained in pegmatites. "Hyperspectral imaging can identify minerals more precisely than our eyes; and the spectrum is directly related to the geochemical makeup [in the rock]," says Price. Price plans to compliment imaging techniques with geochemical analyses. If imaging techniques are proven to be accurate predictors of elemental composition in the lab, then the technology can be scaled-up to identifying critical minerals at field-scale. Price aims to complete her PhD in 2026.

SUPPORTING AND BEING SUPPORTED BY HGS

"If you are a geologist, why wouldn't you be in the HGS?" Price questions. She says that she learned about the HGS shortly after moving to Houston and taking on a full-time instructional role at Wharton County Community College. "I got involved with HGS because I thought it would propel my future and I could make great contacts," says Price.

Price added HGS volunteering to her list of work, family, and school demands. "I helped out where I could at HGS events," she says. During 2023, Price learned about the Calvert Fund scholarship, and was honored as a 2023 award recipient.

"The HGS does a lot to support students," says Price. In her view, students have the responsibility to take advantage of the opportunities that HGS provides, including the opportunities to make industry connections and receive mentoring. "It's on the students to make the effort," she says.

Price says that she successfully leveraged a HGS networking opportunity to recently secure a job in industry. She volunteered to manage the HGS booth at the 2023 IMAGE conference, which offered an opportunity to interact with other vendors and potential employers. "HGS is the reason I have a job at CGG," asserts Price. In her new role, Price is leveraging her PhD work in critical minerals to support global business development in minerals and mining.

Price describes that networking is a critical skill for students to learn. "I walked into the [2022] Christmas party not knowing anyone; but everyone was welcoming and kind," she says. While it may be awkward to walk into a room where you don't know anyone, Price says she has always been welcomed by the HGS. "If you put yourself out there, people will see you are engaged and they will support you," she

Students + HGS *continued on page 20*

Students + HGS = Mutual Benefits continued from page 19

says. To those who feel daunted by engaging senior HGS members, Price encourages students and young professionals to "pick the brains of folks who have been doing geology for 50 years."

ADVICE FOR STUDENTS AND YOUNG PROFESSIONALS

Price acknowledges that simultaneously working, going to school, and being a mom to three young children is tough. Price says that she has lacked a family support system and has made tough choices to meet work demands but believes that the sacrifices are worth the cost. She describes that she is demonstrating the value of education and hard work for her children. "There are times you want to give up or that you don't believe in yourself," says Price. "But it has been the people at HGS, CGG, professors and mentors who have re-ignited the spark inside me and reminded me of my value," she says. "For that I am grateful".

ALLISON BARBATO (DUXBURY)

Allison Barbato, who recently defended her PhD in Geology at Louisiana State University (LSU), says that she grew up in an expatriate Oil and Gas Industry family, and developed a passion for nature and geology while roaming jungles of Indonesia and deserts of Egypt. "My dad is a petroleum engineer, but he is a geologist at heart," says Barbato. She recalls family hikes where her father pointed out geologic features. "He would say, 'this is erosion, kids,'" she laughs.

Despite the early exposure to geology, Barbato says that she never considered geology to be a viable career path until her sophomore year at LSU. Then, she took an introductory geology course and met HGS member Jeff Lund. "Jeff was really influential," says Barbato, who recalls her surprise that Lund was in the Oil and Gas industry, but also interested in planetary geology. Barbato declared Geology as her major and completed a bachelor's degree in studying the geochemistry of Martian sediments in 2018.

Barbato says that she was interested in pursuing a PhD, but wanted to find the right project that would offer a multidisciplinary course of study and provide transferable skills. After taking a year away from school, Barbato returned in 2019 to pursue a PhD studying the hydrocarbon potential of Eocene source rocks in Oregon. Barbato describes that HGS supported her PhD with mentorship and with financial support, including being awarded the Calvert Memorial Scholarship for the past five years.

RECEIVING HGS SUPPORT AND PAYING IT FORWARD

"What I really like about the HGS is that it is such a welcoming community," says Barbato. She continues, "I was fortunate to grow up in an Oil and Gas family, but for many people the industry can be intimidating. HGS has done a fabulous job of creating a space where anyone can get mentorship."

Barbato says that Lund continued to be an influential mentor throughout her academic career, encouraging her to develop business skills. "Developing a business mindset made me think differently and prepared me for leadership roles," says Barbato. Other HGS members have been influential for Barbato, too. She recalls a conversation with Bill DeMis about the costs of 'green' energy and says that HGS members offered her an opportunity to have industry-relevant conversations that weren't happening in academic classes. Barbato also highlights that she was offered an opportunity to participate on a panel at the 2023 IMAGE conference as a result of the nomination of HGS member Judy Schulenberg.

Barbato is paying forward the mentorship she received from HGS, by supporting other LSU students. "I have a ton of passion for helping students break into the industry," she says. Barbato worked to achieve her vision by becoming President of the AAPG student chapter at LSU. She took on the leadership role in 2020, just as COVID and record low oil prices were sparking mass layoffs of Oil and Gas workers. "Students lost faith in the industry; COVID took the wind out of the sails," she says. However, Barbato also saw an opportunity to invigorate the student chapter. She launched a social media campaign, began a virtual lecture series, and started financially supporting conference attendance for students. "I want to make people feel comfortable and invest in students the way I was helped," she says.

ADVICE FOR STUDENTS AND YOUNG PROFESSIONALS

Barbato advises students to approach conversations with mentors, recruiters and other industry professionals by being curious, asking questions, and being themselves. She encourages students to avoid the mindset of "this person will give me a job," and instead focus on building relationships first.

In April 2024, Barbato successfully defended her dissertation, and she is preparing to join Chevron in the summer. She aims to leverage her technical and business skills to "think and work globally." Barbato says the same advice she gives to students she gives to herself. "Show up, learn, be curious and it can't go wrong," she smiles. ■

Vote for the 2024-2025 HGS Board of Directors
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GeoGulf2024 San Antonio Celebrates Geology and Rock and Roll

By Linda Sternbach

GeoGulf2024 General Chair John Casiano of the South Texas Geological Society

Past GCAGS President Mike Erpenbeck (right) congratulates GeoGulf2024 General Chair John Casiano (left).

The 73rd annual GeoGulf conference of the Gulf Coast Association of Geological Societies (GCAGS) was held in San Antonio, April 10-12. GeoGulf is the premier event of the GCAGS and AAPG Gulf Coast Sections. The event improves yearly and continues to attract high attendance. The GeoGulf2023 set the bar with 450 attendees, and the latest conference, GeoGulf2024, attracted 400 attendees.

The GeoGulf2024 General Chair was John Casiano. Kelly Hattori (BEG), Julie Bloxson (Stephen F Austin University), and Toti Larson (BEG) were conference organizers. Dallas Dunlap and Tom Ewing served as Technical Co-Chairs. The Technical Committee created a two-day program around four primary themes: Energy, Environmental, Transitional Energy, and Industrial Productivity.

The GeoGulf2024 theme was "School of Rock, Expert Geology with a Soundtrack," an idea created by the team led by Casiano and GCAGS President David Clay. Casiano told the audience, "The rock soundtrack theme is a bold idea to remind us that our work has a serious impact, but like a classic band or song, it can also be fun and gratifying for years to come. We are all here to learn the latest and greatest in geological-based technology and to meet the geologists leaning over the forward edge of academia and innovation."

Casiano continued, "This event links our affiliated societies and Gulf Coast sections (GCAGS and GCSSEPM) with the AAPG/SEPM global community. Our ideas occur in the same way one of the original ROCKstars, Nicolaus Steno, could identify the original laws of geology. New ideas are on top of older ones, our knowledge and breakthroughs spread over regions and around the world, most new geological ideas occur horizontally, but new truly innovative game changers crosscut the years of work our steadfast predecessors laid down for us."

CONFERENCE HIGHLIGHTS

One of the programs that stood out as being especially innovative was the quirkily-named all-day session 'Wildcattin Ain't Dead' led by Jon Rotzien and Laura Pommer that featured panelists Rich Sears and Cindy Yeilding. Panelist Rich Sears noted that high oil prices don't necessarily lead to the discovery of additional oil fields. Sears said, "High oil prices don't make the rock more porous or close off contours. High-quality technical work and data are still the best way to find oil."

Rotzien also hosted an in-depth interview with Yeilding that featured her motivational career advice, and her optimistic thoughts on the future of energy. **GeoGulf2024***continued on page 22*

Cindy Yeilding, Rich Sears, and Jon Rotzien were in the Wildcattin Ain't Dead session.

GeoGulf2024 San Antonio continued from page 21

Yeilding talked about how socializing new ideas requires persistence and 'The Seven Times Rule' that describes how a group has to hear an idea seven times before deciding to accept the new idea. Repeating ideas that seem futuristic allows the progressive adoption of new ideas and prospective exploration.

Rob Pascoe was a featured speaker. He identified new areas on the US offshore GOM shelf and slope as promising for further oil and gas exploration. He challenged the audience to be 'intrapreneurs' (or intra company wildcatters) within their companies and to look for opportunities in the gap between active plays and future plays.

Another popular speaker panel was "Funding Oil and Gas Ventures: Using Your GeoLogic," organized by Lee Billingsley and Michael Mazzella. HGS Members Barry Rava, Bill Fairhurst, and Deborah Sacrey were on the panel. Other forward-looking GeoGulf session topics include Carbon Storage, Geothermal Investigations, Machine Learning, and AI.

The All-Convention Luncheon speaker, Dr. Jon Olsen, professor of Petroleum and Geosystems Engineering at the University of Texas at Austin, gave a new spin on enrollment of students in petroleum engineering and geoscience. His talk was titled "Priming the Workforce Pipeline for Energy Careers through High School Outreach and Innovative University Education Programs." Olsen reported increased interest in STEM energy subjects and increased student recognition that the oil, gas, and alternative energy businesses will likely grow in the next twenty years.

HGS MEMBERS RECEIVE SERVICE AWARDS

HGS members received GCAGS service awards, including Charles Sternbach (Don Boyd Award), Cheryl Desforges, Sandy Rushworth and David Risch, Bryan Guzman, David Tett, and James Hawkins. In addition, Dorene West was also honored for her contributions.

PLANNING FOR GEOGULF2025

The GeoGulf 2025 team are firming up plans for the next GCAGS conference which will be held April 6-9, 2025, on the Stephen F. Austin University campus in Nacogdoches, Texas. The East Texas Geological Society (Hunter Carr, President) and the Shreveport Geological Society (Kurt Ley) will cohost the conference with General Chair, Dr Julie Bloxson. The two Societies offer experts who will be organizing sessions about East Texas Eagle Ford plays, and the Louisiana Haynesville play!

Casiano closed the conference with these thoughts: "The future is here. We are in the world of AI, supercomputers, electric cars, SpaceX, virtual reality, nanomedical technology, etc. Young people have a good many careers to choose from. However, we need more young people to be interested in geology. Without people learning to explore and produce from our subsurface, we would have none of the things listed." ■

Charles Sternbach with the 2024 Don Boyd Award, GCAGS Highest Honor. Charles proudly wears his AAPG Foundation tie and the HGS 100th Anniversary commemorative lapel pin. His comments addressed how geoscience, service, and exploration unite us.

GeoGulf2024 and 2025 organizing committees: Tom Ewing, John Casiano, Julie Bloxson, David Clay, Hunter Carr, and Kurt Ley with GeoGulf2023 organizers Mike Erpenbeck, and Charles Sternbach.

CO_2 Sequestration in Optimum Subsurface Geology

By Selim S. Shaker

INTRODUCTION

Sequestration of CO_2 in the subsurface is the last phase in a long process of gathering, storing, liquifying, transporting, and finally injecting it in a permanent, safe subsurface container. To select a competent subsurface container (host reservoir), a methodical and cautious study should be done based on the characteristics of the subsurface pressure compartmentalization. It is crucial to understand the hydrodynamics of the host formation. Moreover, the differential pressure between the containment fluids and the injected CO_2 should be known. In a nutshell, the presence of a competent seal and static reservoir conditions are the backbone of optimum safe CO_2 sequestration.

Subsurface pressure compartments and their hydrodynamics are the product of sediment load (overburden), compaction rate, lithological sequences (permeability), and the structural setting, especially faults. Fracture pressure of the sealing unit is a key element for estimating the maximum injection rate and volume of CO_2 that can be stored in the sequestration zone without breaching to the surface or into another lesser pressured compartment.

The geological setting has a significant impact on the subsurface fluid hydrodynamics. On the continental US, surface and groundwater flow are controlled by the differential pressure between the catchment areas and the discharge zones. Most of the fluids are dynamic and pressure is driven by gravity fluid flow.

In the Texas Upper Gulf Coast, groundwater generally flows from the outcrop areas in the West towards the Gulf of Mexico in the East. The large pumping stations for domestic usage alter this trend locally (Chowdhury and Mace, 2006). These shallow, dynamically active zones are not appropriate for CO_2 containment. In addition, Environmental Protection Agency Underground Injection Control (EPA UIC) rules prevent CO_2 injection into these zones because they are Underground Sources of Drinking Water (USDW) (See Class VI - Wells used for Geologic Sequestration of Carbon Dioxide | US EPA).

On the other hand, from the Lower Coastal Belt to the deepwater Gulf of Mexico, compaction plays the main role in subsurface fluid hydrodynamics. The Mississippi and its ancestors have been the primary sediment sources input to the Gulf of Mexico since the Eocene. Compaction due to the continuous sedimentation load led to pressure build up in the shallow depths. Therefore, where sedimentation processes are active, the hydrodynamics are controlled by compaction equilibrium and disequilibrium. The rate of sedimentation and compaction are in control of the fluid flow within the entire subsurface section (**Figures 1** and **2**).

CO_2 Sequestration *continued on page 24*

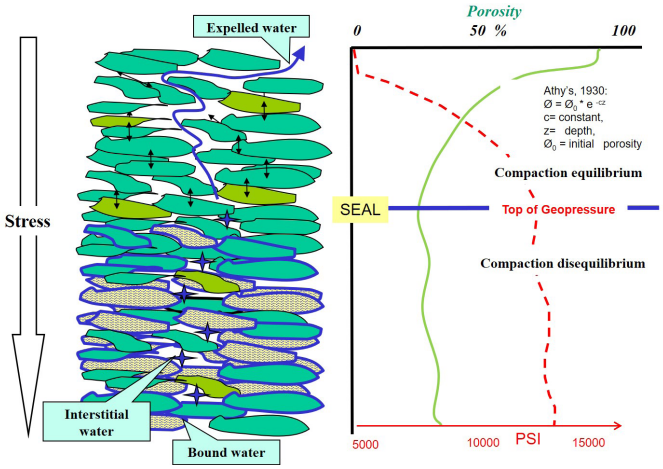

Figure 1. *A depositional model shows the fine clastic (shale and clay) sediment compaction process and the consequence formation water response. Porosity decreases and pressure increases exponentially during compaction and expelling the formation water. After Shaker 2019.*

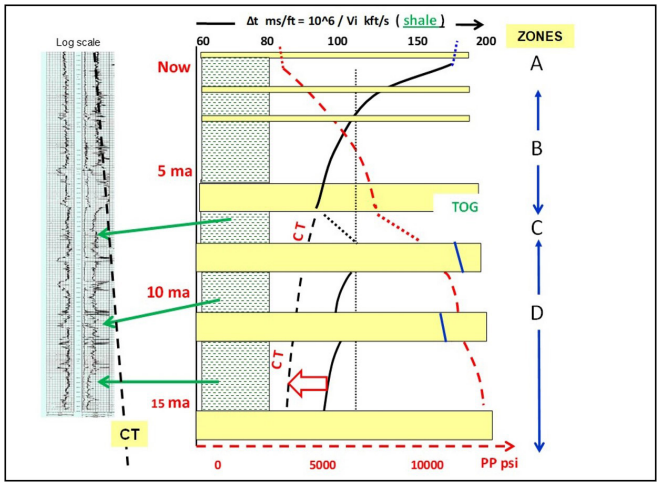

Figure 2. *A geological model represents the development of subsurface pressure compartments with different lithologies due increase age and load stress. Note on the right is the four pressure zones and they are: A) normal hydrostatic, B) hydrodynamic where fluid expels to the surface with increasing compaction. C) Top of Geopressure (TOG), D) Compartmentalized Geopressure section. CT is the compaction trend in exponential form and linear form on the log to the left. Note, most of the long-term producing HC zones reside in the geopressure system. Red arrow represents Δto-Δtc that is used for PP prediction effective stress methods. After Shaker 2019.*

CHOICE OF SEQUESTRATION

The priority for choosing a CO_2 sequestration project may be given to depleted fields. However, mature, abandoned or near the end-of-life oil field / pool of wells where much of the technical information is available are other choices as well. This data can include the initial and final reservoir pressures,

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volume of produced fluids (oil, condensate and gas) and all other petrophysical properties (rock type, permeability, porosity, etc.). This is in addition to the actual depth to the top and bottom of a potential reservoir (containment) and most importantly the sealing capacity of the low permeable beds (shale, clay, limestone, evaporites etc.).

Many large hydrocarbon (HC) fields along the lower coastal belt of Texas and Louisiana are located in close proximity to chemical refineries that provide sources of CO_2.

OPTIONS FOR SAFE, LONG-TERM CO_2 STORAGE ARE

A) Depleted Oil/Gas Reservoirs (near hydrostatic pressure) There is already available space to inject CO_2 where the produced oil and gas resided. Producing HC from the reservoir leads to gradually reducing the excess pressure (EP), until reaching the reservoir hydrostatic pressure envelope (without hydrocarbon presence) of the depleted compartment. This will allow the injection of CO_2 to replace the produced HC from the depleted reservoir. In the case of a depleted oil reservoir, the admissible injected CO_2 volume exceeds the depleted reservoir volume (**Figure 3** and **4**). The estimated injected volume is contingent on the different density (pressure gradient) between the depleted and the injected fluids (CO_2).

There are two factors involved in the presence of excess pressure (exceeding the hydrostatic at depth) in hydrocarbon reservoirs. In the transgressive system where the subsurface pressure profile follows a cascade pattern, excess pressure (EP) increases with depth due to sediments load stress (Dahlberg 1994, Shaker 2015). Moreover, the pressure gradient (PG) difference between the formation water and the hydrocarbon increases the excess pressure and enhances the hydraulic head that leads to the natural HC flow (**Figure 5**) at the initial phase. The pressure of the CO_2 volume allowable in the reservoir should not exceed the safety limits assigned by the state or the federal regulators. These safety limits are usually established during the exploration drilling phase and are referred to as "kick tolerance." It is usually ± 0.5 pound per gallon below the formation fracture pressure (FP), for safety purposes. On average, this safety limit ranges about 90% of the drilling window (Facture P – Pore P). Moreover, the integrity of the existing casing, well head, and the downhole equipment should be functioning normally before the CO_2 injection process takes place.

In the case of abandoned depleted reservoirs, the HC type (oil, condensate or gas) is not an issue. CO_2 can replace whatever HC reserves that were filling up the trap to the breaching limit (fracture pressure, fault critical pressure, spill point, etc.).

B) Enhanced Oil Recovery (EOR) It is a double edge sword to increase HC productivity and at the same time try to reduce CO_2 in the atmosphere. However, it is killing two birds with one stone.

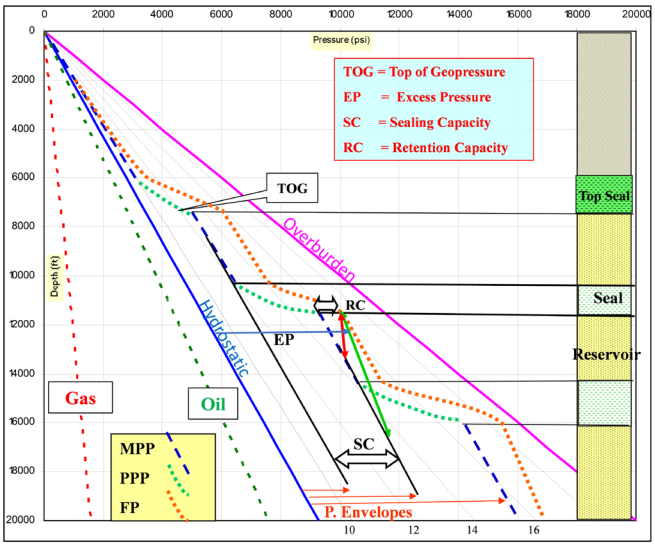

Figure 3. *The development of subsurface compartmentalization with the increase of the overburden and different lithologies. Note the linear PG of the reservoir vs. the exponential PG in the shale (seal). MPP, PPP, FP are Measured, Predicted and Fracture pressures respectively. It shows the Excess pressure (EP) in successive compartments (P. Envelopes) and the difference between the sealing and retention capacities. After Shaker 2001.*

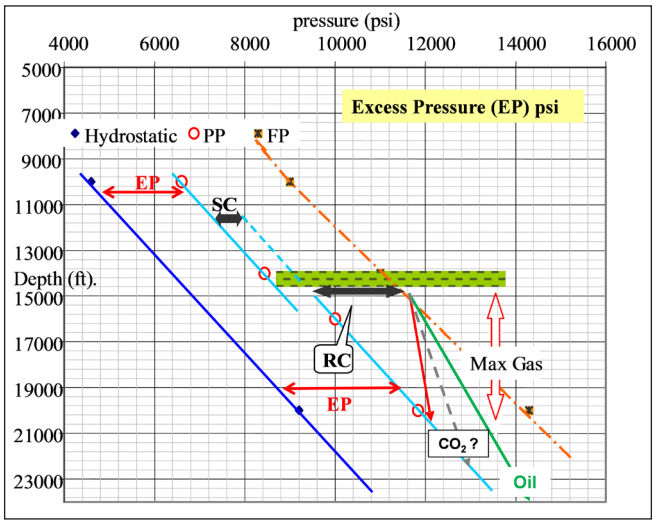

Figure 4. *Case history of a reservoir - seal interface and the estimated oil, gas and possible CO_2 trapped columns based on the measured Pore (PP), Leak off test (FP) pressures and the pressure gradient of each fluid. Note the difference of the fluid's height (oil, gas and CO_2) based on the assumption of a four- way closure trap.*

Enhanced recovery utilizing CO_2 primarily works better with oil traps rather than gas ones. The same principle applies, that injection of CO_2 will increase the EP and facilitate moving and enhancing the flow rate and hydraulic head of the oil column and reservoir output (**Figure 5**).

EOR requires typically drilling new injection wells. Drilling offset wells for injection requires minimum new prognosis if the original well data were kept updated. **CO_2 Sequestration** continued on page 25

CO_2 Sequestration continued from page 24

The EOR methodology of injecting CO_2 has been known for over 50 years. In one of the large Canadian EOR projects study, Zhao concluded in his 2024 paper, "The CO_2- enhanced oil recovery could extend the pool's lifespan to 39 or even 84 more years." He forecasted that by 2055 the pool can still produce 4 million barrels annually with the addition 9.2 TCF of CO_2 permanently stored in the pool.

C) Geopressured Compartments The formation fluid dynamics of the host reservoir needs to be a prerequisite of any CO_2 sequestration study and proposal. The hydrodynamics of the geopressured subsurface commands the trapping position of the lighter fluids (oil, condensate, natural gas and CO_2) in the structural closure. For permanent and safe CO_2 sequestration, injection should be done in a closed, sealed compartment, i.e., static. This will keep the CO_2 stored in the subsurface container without breaching to the surface or to another offset reservoir rock with lesser pressure (**Figures 6** and **7**).

The normal hydrostatic pressure gradient is the dominant gradient in the shallow sedimentary section (**Figures 1** and **2**). Stresses resulting from the successive sedimentation lead to the subsurface compaction process. Fluid expulsion during compaction follows Darcy's Law (hydrodynamic). Compaction stops when an adequate stress, such as the regional top seal (top of geopressure) prevents fluids from breaching to a shallower depth. This process leads to creating the over-pressured, compartmentalized (geo-pressure) deeper section. Therefore, the subsurface pressure profile evolves from normal hydrodynamic to static over-pressured segments (Shaker 2015 and 2019). The duration of this process is contingent on the sediment input and the basin accommodation for deposit's inflow (**Figure 2**).

Most of the hydrodynamically-pressured reservoirs are high-risk CO_2 storage zones. This is due to their possible communications with the surface or lesser pressured zones during compaction. The optimal compartments for storing CO_2 in the coastal belt of Texas and Louisiana and the Gulf of Mexico shallow water (Shelf) are depleted geopressured compartments. The dynamic of fluid in this deeper system is static and attains a constant gradient (**Figures 3**, **4** and **6**). Most of the long-term producing and depleted oil and gas reservoirs reside in the geopressured system, e.g., Bigenerina humblei prolific exploration trend in Texas shelf area (**Figure 2**). This is because of the static EP that is generated by the compaction disequilibrium in the reservoir and the presence of a competent seal that capped the trap and retained hydrocarbons for over 20 million years. Therefore, the presence of a continuous, impermeable seal is a must for trapping the HC and the store CO_2 thereafter.

CO_2 Sequestration *continued on page 26*

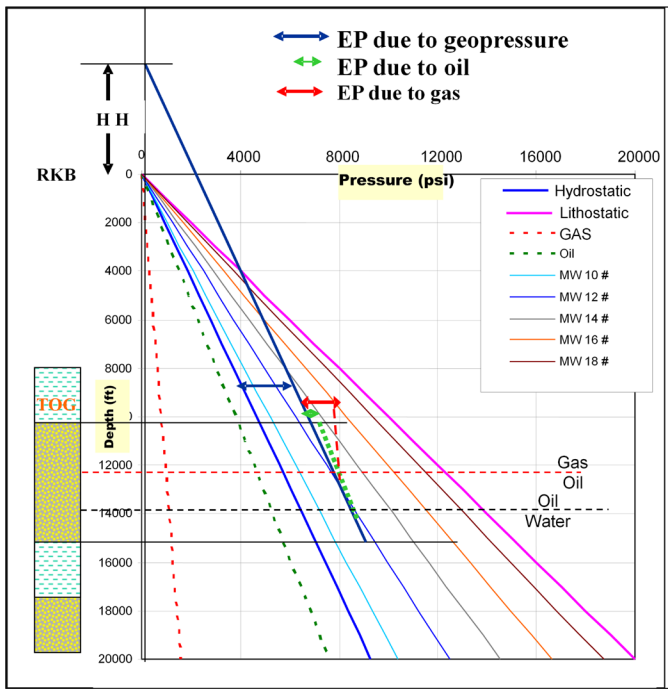

Figure 5. *Pressure - depth plot explains the effect of over pressure (geopressured compartment) on a reservoir's hydraulic head (HH) and the cause of the excess pressure (EP) due to compartmentalization. The presence of oil and gas in any reservoir type rock is responsible for additional EP. Note the mud fan lines that represent the mud weight (MW) designed to combat the combined excess pressure from causing hard kicks and blowouts during drilling.*

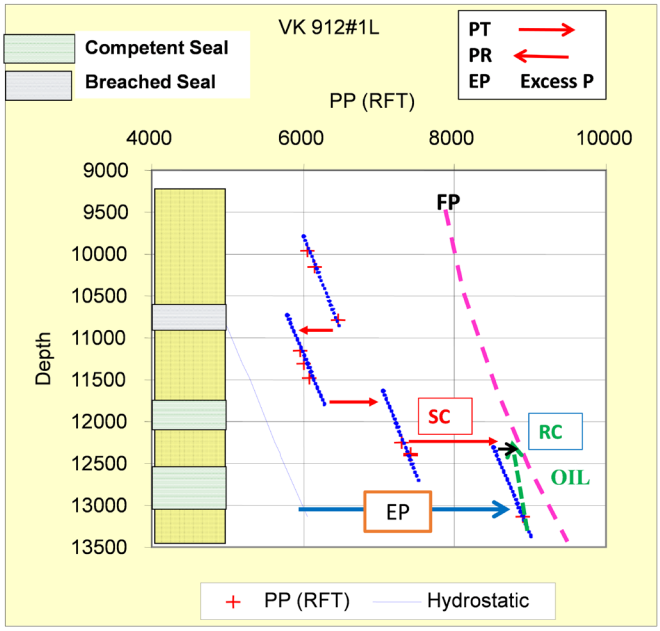

Figure 6. *Measured PP (RFT) in geopressured compartments shows pressure transgressive (PT) and regressive (PR) systems in Louisiana shelf area. Note, static fluid (hydrostatic) in both systems with the same hydrostatic gradient. The seal competency dictates the sealing capacity (SC) of the capping shale. On the other hand, fracture pressure (FP) impacts the retention capacity (RC).*

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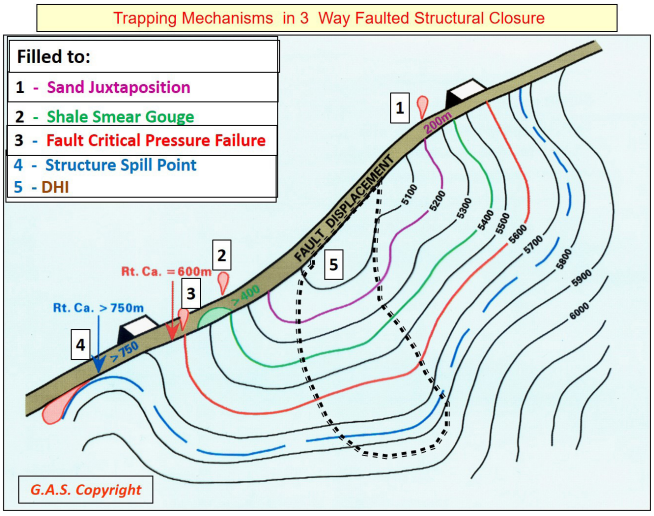

Figure 7. *A three-way trap configuration that controls the hydrocarbon volume entrapment. This sheds light on the allowable CO_2 storage volume to replace depleted reservoirs. The numbers near the fault (1,2,3, 4 and 5) are reference to the trapping mechanism (upper left insert).*

The geopressured system can be divided into different transgressive and regressive compartments as well. This is contingent on the subsurface structural setting of the trap closure (Shaker 2002). The transgressive type of compartments is a low-risk CO_2 container relative to the regressive ones (**Figure 6**).

The presence of seals in these geopressured compartments is a must. However, the retention capacity (Shaker 2001) is contingent on the fracture pressure window of the seal's formation (shale, clay, evaporites etc.). The retention capacity dictates the height of HC/CO_2 column and consequently, the allowable CO_2 volume to be injected into the depleted or EOR project.

Noteworthy, the HC trap/CO_2 storage is also controlled by the configuration of the structural setting (the trap). Four-way closure breach is contingent on the fracture pressure window and the position of the spill point. In addition to that, three-way closure breach also is conditional on the fault critical pressure to be activated as a leakage valve (**Figure 7**).

SUMMARY

In a nutshell, depleted reservoirs are a great choice because of their large displacement volume and lower pressure that enhance the capability of CO_2 containments. Optimum mutual benefits can be attained if CO_2 sequestration is used as an EOR agent in mature fields. Abandoned, near end-of-life fields also, can be candidates for CO_2 sequestration, as well. The subsurface host compartment should be sealed, and the CO_2 injection rate and volume should not exceed the retention capacity and the trap delineations factors (e.g., spill-point, fault critical pressure, etc.). Geopressured compartments are the optimum storage vessel rather than hydrodynamic ones. ■

BIOGRAPHICAL SKETCH

Dr. Selim Shaker has over 35 years in the oil industry with worldwide exploration experience in North America (in particular the Gulf of Mexico), South America, Egypt, NW Australia, Algeria, Libya, North Sea and China. After retiring from Phillips Petroleum in 2000, he established Geopressure Analysis Services (G.A.S.). His recent work has been focused on geopressure prediction and prospects risk assessment based on compartmentalization and geopressure modeling on the shelf and in deep water in the Gulf of Mexico. He is an active member of AAPG, SEG, SPE, AADE, CSEG, HGS, GSH, and is a frequent speaker and presenter at conventions and meetings.

Shaker has published over 50 papers and articles regarding pore pressure predictions and the impact of geological settings on subsurface geopressure profiles.
www.geopressureanalysis.com

Note: The author is greatly indebted to C. Wachtman for her technical advice and the thorough reviewing of this article.

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Wednesday May 8, 2024

HGS E&E
Dinner Meeting

Social 5:30 p.m., Dinner 6:30 p.m., Presentation 7:30- 9:00 p.m.

Pre-registered HGS Members $35
Non-Members & ALL Walkups $40
To guarantee a seat, pre-register on the HGS website and pay with a credit card. You may walk up and pay at the door if extra seats are available. Please cancel by phone or email within 24 hours before the event for a refund. Online & pre-registration closes Wednesday, at 5:00 a.m.
Los Tios • 9527 Westheimer Rd • Houston, TX 77063
https://www.hgs.org/civicrm/event/info?id=2541
Event Contact: Matthew Cowan • mrcowan1@hal-pc.org

Ashley Greuter,
Director of Research and Water Conservation for the Harris-Galveston Subsidence District

How to Minimize Subsidence in the Greater Houston Region Through Regulatory Planning

Ashley Greuter, Director of Research and Water Conservation for the Harris-Galveston Subsidence District, will discuss subsidence in the greater Houston region from the original discovery to current status including aquifer and land surface data. She will also explore the science and research programs and award-winning water conservation programs. Learn how the Harris-Galveston Subsidence District effectively minimizes subsidence through continuous monitoring, strategic collaboration, modernized education, and impactful conservation. ■

BIOGRAPHICAL SKETCH

Ashley Greuter is the Director of Research and Water Conversation for the Harris-Galveston Subsidence District where she manages several programs to ensure the District has the best available subsidence research and water conservation programs in the Gulf Coast region. She has a Bachelor of Arts in Classical Studies and Bachelor of Science, summa cum laude, in Geology from the University of Florida, a Master of Science in Geological Sciences from the University of Massachusetts (Amherst), and is a licensed Professional Geoscientist (P.G.) in Texas. Prior to joining the District, she performed subsurface modeling of offshore oil and gas fields as well as conducted environmental permitting, compliance, and groundwater monitoring in southeast Texas. Currently, she administers the Science and Research Program focused on evaluating high-quality, relevant data to support the advancement of subsidence and groundwater research and monitoring. She also oversees the award-winning Water Conservation Programs and manages the Enterprise Geographic Information System (GIS) for the District.

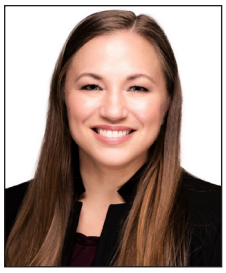
Tuesday, May 14, 2024

Social 11:15 AM, Luncheon 11:30 AM- 1:00 PM
Cost: $40 pre-registered members
$45 for non-members/ALL walk-ups
$40 for Emeritus/Life/Honorary
Students: $30 if pre-registered
Greenway 5 Conference Center, Houston, TX 77046
https://www.hgs.org/civicrm/event/info?id=2561
Event Contact: Bryan Guzman | bryan.guzman85@gmail.com

Danny Kingham, PG
Senior Associate Hydrogeologist with GSI Environmental Inc

Key Class VI Permit Challenges and Strategies

The Underground Injection Control (UIC) Class VI permitting journey can be long and arduous; filled with many "roadblocks" along the way. A well-designed permit application strategy will expedite the permit application submittal and regulatory review process. Key challenges faced by many applicants include complex site conditions (e.g., abundant natural and artificial penetrations), seismicity risk, site-specific data gaps, modeling constraints, complex and sometimes disparate monitoring requirements, surficial or pore space access restrictions, elevated costs, public opposition, and environmental justice concerns. This presentation will review recommended strategies to navigate and address these challenges to streamline the permitting process and achieve maximum flexibility for future developments. ■



BIOGRAPHICAL SKETCH

Ms. Danny Kingham is a Senior Hydrogeologist and the Corporate Health and Safety Administrator at GSI Environmental Inc. Ms. Kingham is an Appointed Member to TBPG and a registered PG in Texas, Louisiana, and New York, with over 18 years of professional experience. Ms. Kingham is actively involved in environmental issues related to carbon capture and sequestration, including the development of USEPA UIC Class VI permit applications and the application of federal and state guidelines on environmental monitoring and verification programs. She has managed large litigation projects regarding environmental impacts related to oil and gas operations, emerging contaminants, chemical and manufacturing facilities, landfills, pipelines, and air emissions throughout the US and abroad. Ms. Kingham is an expert in site investigations at residential and commercial/industrial properties, including chemical manufacturing plants and oil and gas facilities, under various state and federal regulatory programs. To learn more details about her career, visit her LinkedIn Profile: https://www.linkedin.com/in/isabelle-pelletier-28334215/

Monday, Monday, May 20, 2024

Social Hour 5:30–6:30 pm

Dinner 6:30–7:30 pm, Presentation 7:30-8:30 pm

HGS Members/Emeritus/Honorary Life $65
Students $65 • Non-Members & Walkups $75
Norris Conference Center, Citycentre
816 Town and Country Blvd #210 • Houston, TX 77024
https://www.hgs.org/civicrm/event/info?id=2485
Event Contact: Linda Sternbach • linda.sternbach@gmail.com

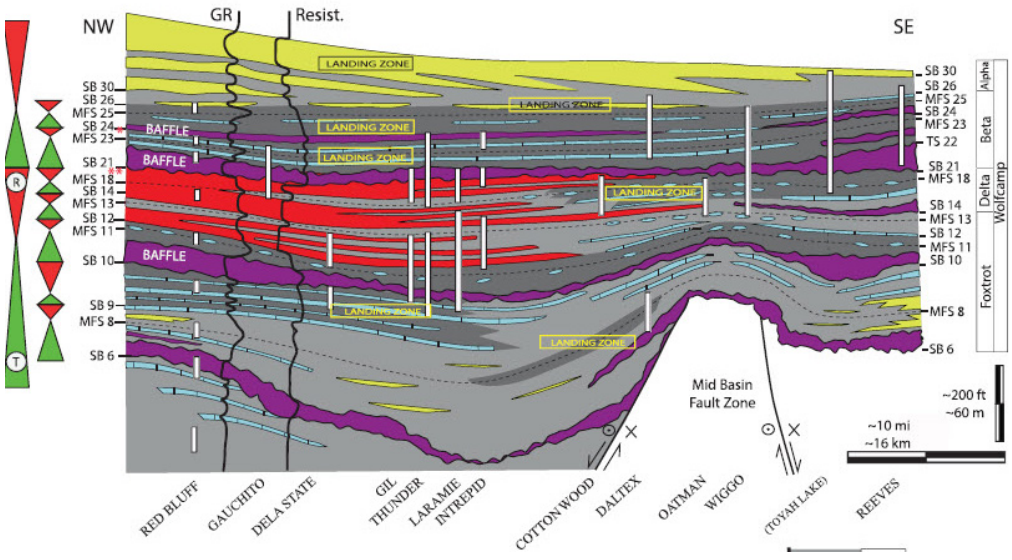
Daniel Minisini
ExxonMobil

The Importance of Stratigraphy and Cores in Unconventional Plays, Deepwater Facies of the Wolfcamp, Delaware Basin (West Texas)

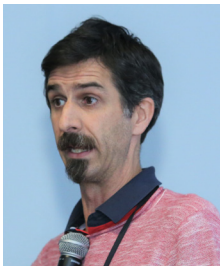
This talk is based on the main conclusions of Minisini and Desjardins (published recently in the AAPG Bulletin, Vol 108 no.1, January, 2024). This research presents a workflow that highlights the importance of stratigraphy in unconventional plays, even when they are in harvest mode.

The study is based on a rich core and sample dataset covering the deep-water sector of the Wolfcamp Formation in the Delaware Basin (NW Texas). We created a sequence stratigraphic framework that allows for the prediction of rock types and reservoir quality within specific sequences. The framework serves as a common starting point for new subsurface projects.

The analyses are displayed as maps incorporating seismic data and wells at basin scale (9300 km^2 [35,900 mi^2]). We described twenty-nine cores, and integrated eleven lithofacies and fifteen petrofacies. We conducted core analyses: gamma ray, x-ray diffraction, total organic carbon, water saturation, porosity, permeability, Young's Modulus, Poisson's Ratio, compressional wave/shear wave. Then, we calibrated well log signatures to cores (gamma ray, density, neutron, resistivity), and assigned geological significance to log signatures (electrofacies). Interpretation included determining timelines and correlating wells with and without core. The results of this study demonstrate how geologists can create a simplified electrofacies model to identify the four main rock types of the basin. ■



BIOGRAPHICAL SKETCH



Dr. Daniel Minisini works at ExxonMobil, Spring, Texas. Minisini is also an adjunct professor at Rice University, and the producer of miniGeology.com. He earned a PhD in marine geology (University di Bologna). He has held positions as a geophysicist at Eni (Milan, Italy) and sedimentologist-stratigrapher at Shell (Houston, Texas).

Minisini's goal is to investigate the foundations of reservoirs and source rocks and apply them to exploration and development through the integration of seismic data, outcrops, modern analogs, and laboratory experiments. He has published 56 articles and edited AAPG Memoir 121.

Minisini was the keynote luncheon speaker at GeoGulf23 in Houston Texas, inspiring the audience with stories about his interviews with famous and important geologists. Dr. Minisini's contact emails are daniel.minisini@exxonmobil.com or daniel.minisini@gmail.com.

Wednesday, May 22, 2024

11:45 a.m. – 12:50 p.m.
HGS Members $20 • Students $20 • Non-Members $25
Register using the HGS website calendar.
Zoom link will be emailed to registrants.
https://www.hgs.org/civicrm/event/info?id=2556
Event Contact: Linda Sternbach • linda.sternbach@gmail.com

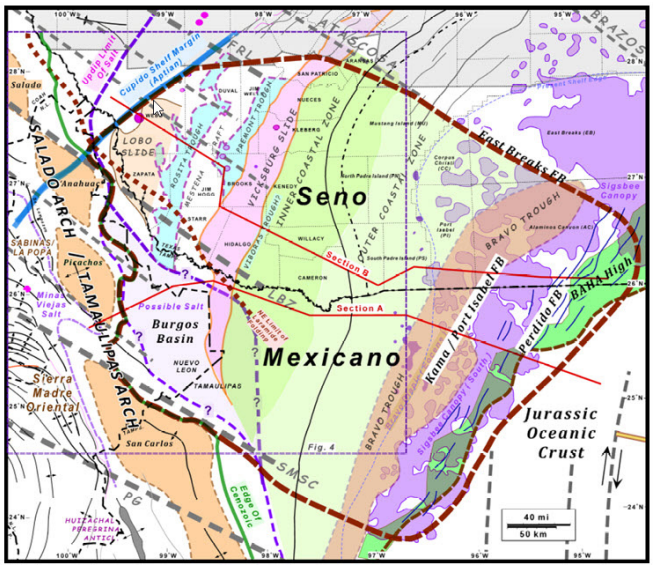
Tom Ewing
Frontera Exploration Consultants

Tectonic Setting and Petroleum Systems of the Seno Mexicano (South Texas and Northeastern Mexico): An Initial Synthesis

Seno Mexicano (South Texas and the Burgos Basin of Mexico) is a prolific Cenozoic gas-rich hydrocarbon province, as shown by a fresh compilation and estimation of production. The Texas part of the basin (RRC-4) produced an estimated 107 trillion cubic feet of gas (Tcfg) and 3,604 million barrels of oil (MMbo) between 1920 and 2000; 76% of the gas and 76% of the oil was produced from major fields greater than 50 Bcfg or 10 MMbo (casinghead gas and condensate not included). The Mexican part (Burgos Basin) has produced 16 Tcfg (12.3 Tcfg in major fields), about 15% of total production.

The 183,000 km^2 Seno Mexicano basin (99,000 km2 onshore) overlies poorly known, highly extended continental crust related to the Jurassic formation of the Gulf of Mexico. Salt was likely deposited across much of the basin, but few onshore salt diapirs are known. The area lay East of the Jurassic and Cretaceous shelf margins, accumulating 1500-3000 m of limestone, clay, and organic deposits in deep-water environments.

Regional eastward tilting began by the Paleocene, forming the Lobo gravity slide and rafting Mesozoic sediments eastward above Jurassic salt; it formed the deep Rosita and Premont troughs and intervening Mesteña raft. Compensatory compression (fold or thrust belt) must occur downdip in the Coastal Zone near the present shoreline, perhaps pushing salt into the Bravo salt diapir. Laramide folding on northwest-southeast axes affected the southern part of the basin in the Middle Eocene.



Subsequent Oligocene to Miocene tilting induced the Vicksburg slide (Early Oligocene), progradation of major deltaic units, and the consequent deflation of the long, broad Bravo diapir, extrusion of the Sigsbee canopy and compression in the Perdido and Port Isabel foldbelts (Late Oligocene-Early Miocene). Continued Neogene tilting onshore created a pronounced sub-Goliad unconformity (Late Miocene) and uplifted the Bordas Escarpment (post-Miocene to Recent).

Production from major fields occurs in four major Cenozoic gas trends and three oil trends: the Lobo trend (Paleocene, 12.3 Tcfg, dry gas); the Wilcox Fault Zone (FZ) trend (Lower-Middle Eocene, 13.7 Tcfg, dry gas); the Vicksburg FZ trend (Oligocene, 27.4 Tcfg with condensate; plus oil rims for 861 MMbo); the Frio FZ trend (Upper Oligocene, 24.0 Tcfg with slight condensate); the Duval oil trend reservoirs (Upper Eocene, 516 MMbo); the Nueces oil area (Oligocene, 1062 MMbo); and the deep-water Perdido oil trend (Eocene, 317 MMbo through 2019). Within each trend, plays may be defined by stratigraphic intervals and trap styles.

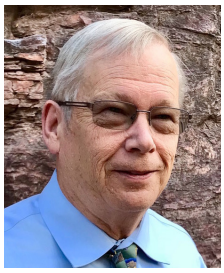
The Seno Mexicano contains two world-class Mesozoic oil and gas source rock intervals (Upper Jurassic and mid-Cretaceous); source rocks also are likely to occur in the Paleocene-Eocene slope/basin sediments. The Mesozoic source rocks have been deeply buried and are overmature at present. The nearly dry gas in the Lobo and Wilcox trends was probably sourced from the Eagle Ford as it passed through the gas window, perhaps enhanced by gas from the thick Eocene fill of the Rosita Trough. Gas-condensate of the Vicksburg and Frio reservoirs (Vicksburg FZ and Frio FZ trends) and oil in the Nueces area, however, must have been primarily sourced from Paleogene (probably Eocene) strata of the inner Coastal Zone. Oils in the Duval trend are gas-poor and degraded,

HGS General Virtual Zoom Luncheon *continued on page 31*

HGS Zoom Luncheon *continued from page 30*

but indicate a downdip marine Eocene source in or just below the oil window. The lack of major Miocene production suggests absence of source rock in the outer Coastal Zone and the Bravo trough, where Eocene rocks are probably not present. ■

BIOGRAPHICAL SKETCH



Dr. Thomas Ewing is a geoscientist with over forty-three years of experience in hydrocarbon exploration and research. Tom received a BA in Geology from Colorado College (1975), and a MS in Geochemistry from New Mexico Institute of Mining and Technology (1977). Ewing earned a PhD in Geological Sciences from the University of British Columbia in 1981.

Dr. Ewing was a research geologist for four years at the Texas Bureau of Economic Geology in Austin, where he served as a co-author of the Atlas of Texas Oil Reservoirs and compiled the Tectonic Map of Texas. Since 1985 he has been an owner of Frontera Exploration Consultants, Inc., a San Antonio-based geoscience consulting company. He worked with Venus Oil and Venus Exploration from 1985 to 2005 as a staff consultant and Senior Explorationist, playing a main role in its successful exploration in the Yegua Trend of the Gulf Coast Basin and elsewhere in Texas.

Ewing has served in many offices in AAPG and its Divisions. He served as Vice-President for Sections of AAPG (2012-14). He received Honorary Membership in the South Texas Geological Society in 2009, Honorary Membership in the GCAGS in 2010, AAPG Distinguished Service Award, and BEG Alumnus of the Year in 2011. Most recently he has completed service as President of the GCAGS (2016-2017). In 2018, he was awarded the "Don Boyd Medal for Excellence in Gulf Coast Geology" from the GCAGS (Gulf Coast Association of Geological Societies), their highest award. In 2021 he received Honorary Membership in AAPG. In 2023, he received the Berg Research Award from AAPG and also received the Monroe Cheney Science Award from the Southwest Section of AAPG. The 2024 GeoGulf Transactions was dedicated to him.

Tom Ewing has spoken extensively at local, regional, and national geological meetings and published over 100 papers and abstracts. He has written articles on Gulf Coast geology and hydrocarbons, the geology and tectonics of Texas, and history and urban geology of the San Antonio area. He wrote the popular guidebook *Landscapes, Water and Man: Geology and Man in the San Antonio Area* published by the South Texas Geological Society in 2008. In 2016, Dr. Ewing completed *Texas Through Time*, an illustrated book and website on the geologic history and earth resources of Texas published by the Bureau of Economic Geology. Subsequently, he has authored chapters on the tectonic evolution of the Permian Basin (Ruppel volume; BEG) and on the geological development of the Gulf of Mexico Basin (Miall volume, with W.E. Galloway; Elsevier).

Ewing is a Registered Professional Geoscientist in the State of Texas (#1320) and the State of Louisiana (#468), an AAPG/DPA Certified Petroleum Geologist (#4538), and he holds certification #1610 from SIPES. In his spare time, he directs a 30-voice German men's chorus, the San Antonio Liederkranz, and a 20-voice women's' chorus, the Beethoven Damenchor. Ewing can be contacted at tewing@fronteraexploration.com.

WELCOME TO NEW MEMBERS, EFFECTIVE MARCH – APRIL 2024

Isabel Arbelaez
Muhammad Asif
Mitchell Atwood
Jake Brewer
James Brooks
Deng Daihai
Chris Dauterive
Sarath Devarajan
Andrew Esiri
Douglas Flamm
John Fox
Edgar Galvan Aguilar
Laurel Gander
Jake Guynes
Lupe Hernandez
Brad Jones
Karlien Karr
Bryan Ladner
John Mackie
Zachary Metz
James Mika
Daniel Minisini
Islam Mitwally
Adeyinka Ojelabi
Steven Pagan
Jie Qi
Keith Reeves
Casey Ruplinger
Phylicia Saner
Mustafa Saribudak
Mark Shann
Nabil Shayya
Brittany Sonnier
Joseph Stone
Ruan Swanepoel
Gabriel Villasenor
Austin Warren
Jennifer Welborn
Patrick Whalen
Melissa Wood
Burch Wylie
Ethan Young

May 2024

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1	2	3	4
5	6 **Offshore Technology Conference** *https://www.hgs.org/civicrm/event/info?id=2470*	7	8 **HGS E&E Dinner Meeting** *How to Minimize Subsidence in the Greater Houston Region Through Regulatory Planning* *Page 26* *https://www.hgs.org/civicrm/event/info?id=2541*	9	10 **Last Day to Vote in HGS Board of Directors Election** *Page 36* *https://www.hgs.org/civicrm/event/info?id=2559*	11
12	13	14 **HGS CCS Luncheon Meeting** *Class VI Permit Challenges and Strategies* *Page 28* *https://www.hgs.org/civicrm/event/info?id=2561*	15	16	17	18
19	20 **HGS General Dinner Meeting** *The Importance of Stratigraphy and Cores in Unconventional Plays* *Page 29* *https://www.hgs.org/civicrm/event/info?id=2485*	21 **AAPG SPE Petroleum Reserves and Resources Forum** *https://www.hgs.org/civicrm/event/info?id=2558*	22 **HGS General Zoom Luncheon Meeting** *Tectonics of South Texas and Mexico* *Page 30* *https://www.hgs.org/civicrm/event/info?id=2556*	23 **HGS NeoGeos Happy Hour** *https://www.hgs.org/civicrm/event/info?id=2535*	24	25
26	27	28	29	30	31	

RESERVATIONS The HGS prefers that you make your reservations online through the HGS website at WWW.HGS.ORG. If you have no internet access, you can e-mail OFFICE@HGS.ORG, or call the office at 713-463-9476. **Reservations for HGS meetings must be made or cancelled by the date shown on the HGS website calendar, normally that is 24 hours before hand or on the last business day before the event**. If you make your reservation on the website or by email, an email confirmation will be sent to you. If you do not receive a confirmation, contact the HGS office at OFFICE@HGS.ORG. Once the meals are ordered and name tags and lists are prepared, no more reservations can be added even if they are sent. **No-shows will be billed.**

Make your reservations online at hgs.org

INSTRUCTIONS TO AUTHORS

Materials are due by the first of the month for consideration to appear in the next month's publication. Submissions should be emailed to editor@hgs.org. The Editor reserves the right to reject submissions or defer submissions for future editions.

Text should be submitted as a Word file. Figures or photos may be embedded in the document or submitted separately. The following image formats are accepted: tif, .jpg, .png, .psd, .pdf.

Feature submissions, e.g., Rock Record, should be approximately 600 words. Technical papers should be approximately 2000 words or less (excluding references).

NeoGeos March Happy Hour

Shrimp Peel and Crawfish Boil

By Mike Salazar

The HGS annual Shrimp Peel and Crawfish Boil was held on Friday, April 19 at Bear Creek Park. Nearly 170 attendees joined the festivities. They feasted on 400 pounds of crawfish and 100 pounds of shrimp, all of which was consumed by the end of the day. DJ Chris kept the party going with tunes. The event also featured games like corn hole and tug-of-war, and a photo booth. Special thanks to Mike Salazar and his team of more than a dozen volunteers who planned and executed the event. ■

THE SHRIMP PEEL AND CRAWFISH BOIL WAS MADE POSSIBLE BY THE GENEROUS SPONSORSHIP FROM THE FOLLOWING COMPANIES:

Food and Beverage Sponsors: Thunder Exploration, ExLog, and 11 Below Brewing

Platinum Sponsors: Intertek, EDGE Systems, and Tri-Star Group

Gold Sponsors: Core Geologic and Stratnum Reservoir

Silver Sponsors: US Coring, GVERSE GeoGraphix, ROGII Inc, DataLog & GeoVision, and BHL

Bronze Sponsors: Precision Well Logging, Canamera Coring, Pangea Geoscience, Diversified Well Logging, Premier Corex, GeoMark, and APT

Shrimp Peel and Crawfish Boil volunteer team

Volunteers Megan Wall and Kristen Jones

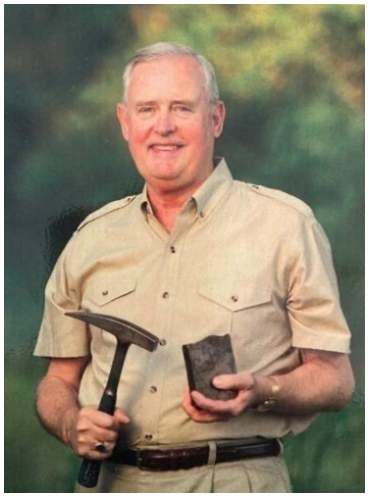
Dorene West and other attendees enjoy the day

Paul Britt, Walter Light, and Sharma Dronamraju

Remembrance

Frederick W. Kelly Jr.

11/05/1931 - 04/07/2024



Fred Kelly, age 92, peacefully passed away on April 7, 2024. Kelly was very proud of his family, friends, church and his long, 38-year career with Marathon Oil Company exploring for oil all over the world. He was born on November 5, 1931 in a suburb of St. Louis, MO, to Fred W. Kelly, Sr. and Dana Ruth (Milleson) Kelly.

Kelly graduated from Clayton High School, St. Louis, MO, and earned a Bachelor of Geology Degree from the Engineering School of the University of Tulsa, OK in 1954, where he was a member of Alpha Tau Omega social fraternity. Pursuing his boyhood ambitions, he then spent 22 years exploring for oil overseas for Ohio Oil Company (later Marathon Oil Company). In the late 1950s and early 1960s he worked for the Oasis Oil Consortium and mapped surficial geology while living in tents in the Sahara Desert of Libya and sat the first Oasis well in Libya when it struck oil. He then became an exploitation geologist for Oasis. During the 1960s, Kelly carried out regional oil exploration studies in Europe and Africa from his office in London, England; was resident manager for a well drilled in Northern Ireland; and was a Fellow of the Geological Society (London). In 1964, while on home leave, he married Marcia Grace Mehl of Findlay, OH, and their happy, adventuresome marriage lasted for 43 years until Marcia's sudden death in 2009. They had three children: Frederick III and Heather born in London, England, and Christine born in Karachi, Pakistan.

Kelly and his family moved to Karachi, Pakistan in 1972 where he was regional manager in charge of a large exploration venture on the Makran Coast of Pakistan. Kelly and his family moved to Houston in 1979, where he was an international oil contract negotiator and then became Marathon's first manager for international governmental affairs until his retirement in 1992.

Following his retirement, Kelly was very active with several archaeological societies in Houston, especially The Friends of Archaeology and Houston Archeological Society, was an active elder with Pines Presbyterian Church, and enjoyed playing tennis. In 2006 Kelly wrote and self-published an autobiography of his worldly adventures exploring for oil entitled, "Global Oil Finder – Autobiography of a Petroleum Geologist." He was a member of the American Association of Petroleum Geologists and the Houston Geological Society.

Kelly was preceded in death by his parents and his brother, John Kelly. He is survived by his son, Frederick Kelly III, and grandson, Brent Kelly; his daughter, Heather Ross, and her husband, Gil; granddaughter, Chelsea Jijawi, and her husband, Stan; and his daughter, Christine Kelly-Weaver, and her husband, Jason. ■

After the *Houston Chronicle* April 21, 2024

Candidates for the 2024–2025 Executive Board

Houston Geological Society Officer Election

THE CANDIDATES PUT FORTH BY THE NOMINATIONS COMMITTEE ARE:

President-Elect: Patricia (Patty) Walker, Bob Wiener

Vice President: Catherine (Catie) Donohue, Jonathan Rotzien

Secretary: Sophie Broun,Geraldine Tijerina

Treasurer-Elect: Angela Hammond, Barry Rava

Editor-Elect: Lucia Torrado

Directors (2 positions):
Bryan Bottoms, Matthew R. Cowan, Lauren Seidman Robinson, Catherine Cox Strong

HGS ELECTION VOTING INSTRUCTIONS

HGS Members will be able to vote online via the HGS website. You must be logged into your account to cast your vote. Ballots will be online only - no mailed ballots! Please check the HGS website in the coming weeks for updates and announcements.
PLEASE VOTE

THE VOTING PERIOD OPENS APRIL 10, 2024 AND CONTINUES TO MAY 10, 2024.

President-Elect (two candidates)

Patricia (Patty) Walker

As a geoscience student I was introduced to the professional societies by an alumnus of my alma mater, Oklahoma State University. Herb Davis was very active in the Oklahoma City Geological Society and frequently sponsored students to attend the luncheons and technical talks. He emphasized the importance of building networks within your geoscience community outside of your current employer, alumni, and circle of friends. He also led by example the concept of paying it forward to the next generation. This was a valuable lesson.

In this rapidly changing work environment for geoscientists, the need to maintain these networks has never been greater. From work-from-home/flexible schedules, constant mergers and acquisitions, and new business lines that will require geoscience skills, the need to have a viable society that can provide networking opportunities, mentoring and technical training has never been greater.

Many of the geoscience societies have been under immense financial pressure over the last 10 years as corporate sponsorships have waned and memberships have declined. HGS has been working very hard over the past few years to balance financial health with continuing to offer programs, training and networking opportunities that benefit the members and encourage new membership. I am running for president-elect because I want to continue to be part of that positive direction and see HGS thrive as a professional society.

Patricia (Patty) Walker *continued on page 42*

Bob Wiener

It is an honor and privilege to be nominated to run for the very important office of President-elect of the Houston Geological Society. I enjoyed my 2016-2017 year as HGS Vice President, and I believe I can make a further contribution as HGS President-elect and then President. I grew up and went to school in Rhode Island. My family traveled extensively across the USA and Europe. These trips gave me the desire to study geology. The 1973 Arab oil embargo got me a job in the science, technology, and business of oil and gas exploration and production. As mentioned above I am not a corporate person and when you work outside the corporate world professional societies become much more important. They are a source of continuing education, professional contacts, and friends who can help guide you through the technical, business, and human relationships that go into oil, gas, and other energy deals. With regards to working with groups, in the town where I live, I have been a member of the Planning and Zoning Commission and City Council. So, I am familiar with budgets, strategic planning, and consensus building, which are important aspects of the President-elect and President positions.

Education

BS Geology from University of Rhode Island (1973)
Senior year spent at Middle East Technical University, Ankara, Turkey

Bob Wiener *continued on page 43*

Candidates for the 2024–2025 Executive Board *(continued)*

Vice President (two candidates)

Catherine (Catie) Donohue

I am honored to be nominated for the position of HGS Vice President for the 2024-2025 term. An important responsibility of the position is to organize the monthly dinner and luncheon speakers; I view this as a vital contribution to our membership. Our science and community benefits from active dialogue and the exchange of ideas, and these meetings serve as the most accessible way to engage our extensive local geoscience community. If elected, I will seek out speakers with compelling technical content that will challenge and connect our audience and ensure that HGS remains a successful place to grow. I will actively solicit feedback from our membership to ensure that our topics reflect the needs and interests of our organization. Through this effort, involvement in HGS will continue the healthy upward growth trend of recent years. HGS has been a meaningful part of my own career, since starting as an explorationist in the Gulf of Mexico and attending meetings with mentors and colleagues. My current positions at GeoMark Research and as a Rice University instructor, as well as my previous experience working for oil and gas operators and environmental consulting firms, allows me to see many facets of a geoscience career. I am well suited and committed to creating a compelling speaker program for HGS meetings next year and appreciate your support for HGS Vice President.

Education

MS Rice University
BS University of Michigan

Professional Experience

2018 – present	Vice President of Geoscience Applications, GeoMark Research, Houston, Texas
2020 – present	Course Instructor, Rice University
2013 – 2018	Senior Geologist, Marathon Oil Corp.
2011 – 2013	Senior Geologist/Geochemist, Apache Corp.
2004 – 2011	Senior Geoscientist, BHP Billiton
2000 – 2002	Environmental Consultant

HGS Service

Currently serving on the HGS/GESGB Africa Conference Committee
Served as a session chair for 2021 HGS/EAGE Latin America Conference

Catherine (Catie) Donohue *continued on page 43*

Jonathan Rotzien

Thank you to Walter S. Light, Jr. for this nomination. It is an honor to be recognized by my mentor I hold in the highest esteem. He is an incredible explorer, leader and one heck of an oil finder. It is humbling and a privilege to be associated with this sharp group of candidates for the upcoming election, including Catie Donohue, who would perform superbly in this role. I appreciate the opportunity to run for VP, and I'd be delighted to deliver an excellent speaker program for HGS. As a VP, I'd enjoy sharing the success we've had with Houston Explorers Club, GCSSEPM, British Sedimentological Research Group, IMAGE, GeoGulf (formerly GCAGS) and many other JIPs and societies with HGS. Thank you for your consideration. HGS has a bright future, and I look forward to contributing to the growth and prosperity of HGS and its members.

Education

2013: PhD, Geological and Environmental Sciences, Stanford University; NSF Graduate Research Fellow; Siemon W. Muller Graduate Fellow; Stanford Project on Deepwater Depositional Systems (SPODDS) Research Group
2007: BA, Geology, The Colorado College, cum laude

Professional Experience

2015 – Present President, Basin Dynamics, LLC
2013 – 2015 Geologist, BP
For additional employment info, please see company website, LinkedIn, ResearchGate, AAPG, HOT Energy Group, Subsurface Consultants & Associates, LLC profiles. For a CV, please see University of Houston website.

Other Professional Affiliations

West Texas Geological Society
Abilene Geological Society
Oklahoma City Geological Society
Shreveport Geological Society

Rotzien has served on several evaluation, advisory, investment, editorial and technical conference boards for institutions including the Houston Explorers Club, Stanford University, Colorado College, Bulletin of Canadian Petroleum Geology, Gulf Coast Association of Geological Societies, GeoGulf, Gulf Coast Section of SEPM and the American Association of Petroleum Geologists.

Candidates for the 2024–2025 Executive Board *(continued)*

Secretary (two candidates)

Sophie Broun

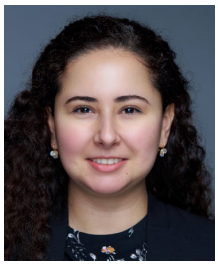
I joined HGS late last year to connect with Houston-based Geologists and to learn more about the local industry. Houston is one of the best places in the world to be a Geoscientist with an abundance of opportunities and world class geology. Since joining HGS, I've been so impressed by the quality of technical presentations, social events and mostly by how welcoming the members of the HGS have been.

If elected to Secretary, I hope to bring fresh ideas for ways to make the Society even better and help out wherever I can with event planning, membership recruitment, board co-ordination and strong governance. I'm particularly passionate about promoting Geology as a career path and helping early career Geoscientists.

I look forward to meeting as many HGS members as I can and being an active part of the community.

Education
MBA The Wharton School University of Pennsylvania
MS Petroleum Geoscience Royal Holloway University of London
BEng (Mechanical) / BS (Applied Mathematics, Physics)
University of Western Australia

Professional Experience
Joint Venture Advisor, Chevron
Operations Geoscientist, Chevron, Gulf of Mexico
Exploration Geophysicist, Chevron, Exmouth Exploration
Operations Geoscientist, Chevron, Greater Gorgon & Exmouth
Drill Site Manager, Chevron, Offshore Australia
Field Drilling Engineer, Chevron, Offshore Australia



Geraldine Tijerina

Throughout her journey, Geraldine has been privileged to connect with inspiring mentors and members within the Houston Geological Society, deeply valuing the strong community established by our predecessors. The HGS's dedication to ongoing success and advocacy of its members is critical in Houston, the energy capital of the world. If elected as Secretary, Geraldine is committed to actively aiding in the needs of our community and ensuring the voice of Houston is heard and represented.

Education
Geraldine Tijerina earned her BS in Geoscience, specializing in Petroleum Geology, the University of Houston – Downtown (2019) and her MS in Geology (2021) the University of Houston.

Professional Experience
Tijerina is a development and exploration geoscientist with five years in the upstream oil & gas industry specializing in reservoir field development and planning studies, prospect development, and subsurface evaluations. Her career began at Whitney Oil & Gas, starting as a Geotechnical Intern, advancing to Geoscience Technician, and eventually Geologist, primarily focusing on South Louisiana assets and Gulf Coast subsurface geology.

HGS Service and Other Professional Affiliations
Tijerina is an active NeoGeo, SPE, AAPG and HGS member. Geraldine's passion for geosciences drives her to volunteer for events hosted by the HGS and AAPG, focusing her efforts to inspire future generations of geologists through educational outreach events, engineering science fairs, and student expos; this will be her second-year volunteering at OTC.

During her college career, Geraldine served as the UHD-AAPG student chapter president and treasurer (2018 – 2019), advocating for the enrichment of the students by facilitating interactions with industry professionals, sponsoring HGS short courses, and organizing professional educational talks.

Candidates for the 2024–2025 Executive Board *(continued)*

Treasurer-Elect (two candidates)

Angela Hammond

I am honored to have been asked to run for the HGS Treasurer-Elect as I would love to continue giving back to the HGS and as the current treasurer of the HGS Undergraduate Fund feel that this is the right office for me to accomplish this. I have been a member of the HGS for 22 years, the same amount of time I have resided in Houston and worked for Shell. Through this organization I have met many amazing individuals, many who have become friends and have seen the good that the HGS has done and can continue to do for not only students, but all who are students of the Earth. I am an enthusiastic, high-energy individual that has excellent organizational skills that have served me well as the both the treasurer of the HGS Undergraduate Student Fund, my daughter's Girl Scout Troop and the social committee in my neighborhood. I look forward to being a future HGS officer and helping to grow this great organization's finances so that we can continue to support continuing education, networking, and outreach to students; to cultivate our next generation of HGS leaders. ■

Education and Licensure
MS Geological Engineering, Michigan Technological University
BS Geological Engineering, Michigan Technological University
APM Chartered Project Professional

Professional Experience
Hammond is a Front End Development Manager – Perdido Corridor (U.S. and Mexico) for Shell, USA. Hammond has worked for Shell since 2002, mostly in Production Geology.

HGS Service
Angela Hammond has been a committee chair of the HGS Undergraduate Fund for the past 11 years and the acting Treasurer for the past 3 years.

Other Professional Affiliations
Hammond is also a current member of AAPG, SEG, and a past co-editor of the GCAGS.

Barry Rava

I am humbled to be up for Treasurer. Volunteering in the geological community is a great way to give back to the community from which I have learned so much and which has provided my bread and butter for a life time. I will endeavor to uphold the standards and ethics of the HGS and monitor society funds to keep the HGS financially viable as it moves into the future. ■

Education
MS in Geology and Planetary Science, University of Pittsburgh
BS in Geology, Hofstra University

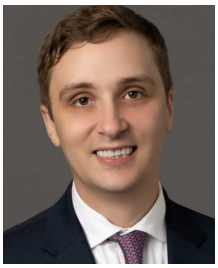
Professional Experience

1996	President, Icarus Oil and Gas Inc
1981 – 1991	Conoco
1991 – 1993	Pennzoil
1993 – 1996	EOG Resources

Other Professional Affiliations
Barry Rava is a long-time member of HGS and SIPES in Houston. He is Past President and Chairman of SIPES Houston and the National and SIPES Foundation. Rava is Past Continuing Education Chair of SIPES Houston and GCAGS. He is a Board Member and Past President of the Gulf Coast Geological Library, and Past Treasurer of GSH and Corpus Christi Geological Library.

Candidates for the 2024–2025 Executive Board *(continued)*

Director – Two-year term *Vote for two candidates*



Bryan Bottoms

I am honored to accept the nomination for the HGS Board of Directors. I have spent the past few years becoming increasingly involved in the HGS by serving as the NeoGeos Committee Chair. As the NeoGeos Committee Chair, I host monthly Happy Hour and Trivia events targeted at increasing member involvement among early career geologists. While serving as Chair, the NeoGeos committee has been revitalized, and once again hosts regular monthly events after languishing during Covid. This year we have increased our sponsorship outreach, and in turn have boosted event turnout and revenue for the Society.

In addition to serving as NeoGeos Chair, I have volunteered at numerous events including educational outreach to teach local elementary school students about rocks and fossils. I served as a poster judge for the annual Sheriff Lecture event and served as a judge at the 2023 Science and Engineering Fair of Houston on behalf of HGS. I am also a regular attendee of the monthly dinner meetings. I'm excited for the opportunity to continue serving this organization in an increased capacity. By serving on the Board of Directors, I hope to set an example among other early career geologists, encouraging them to become more involved with their local geological society. I hope that my potential presence on the Board can bring some fresh perspectives and ideas to the organization that will benefit the Society as we continue to adapt to an ever-changing world.

Education and Licensure

P.G. State of Texas, License # 15091
MS University of Arkansas; 2017
BS University of Arkansas; 2012

Professional Experience

08/2019 – Present	Vice President – Geology, Detring Energy Advisors, Houston, TX
10/2017 – 08/2019	Associate Geologist – Tapstone Energy, Oklahoma City, OK
08/2015 -10/2017	Graduate Student, Teaching Assistant, and Research Assistant, University of Arkansas, Fayetteville, AR
02/2013 - 05/2017	Field Geologist/MWD Engineer – Chesapeake Energy/77 Energy, Oklahoma City, OK

HGS Service

04/2022 - Present	NeoGeos Committee Chair

Matthew R. Cowan

I have been a member of the Houston Geological Society since the Late 1990's as I was finishing up college. In 2005, I got involved volunteering with several committees. Through that time, I got to meet a lot of people who expanded my knowledge of not only my specific field of geology but the greater world of geology. I understood the value of being involved in a Professional Society. I have served on statewide organizations relating to professional licensure, continuing education and involved with hosting conferences for the geological profession. That experience will help me be a Director on the HGS Board. It was a privilege to see the HGS turn 100 this past year. My desire is to serve as Director and to be a steward of this profession to help secure the next 100 years for the HGS. It would be an Honor to have your vote.

Education and Licensure

MS Geology, Texas A&M – Kingsville - 2000
BS Geology with a minor in Mathematics, Texas A&M University – 1993
Texas Professional Geologist – 2003 to Present
Louisiana Professional Geologist - 2013 to Present

Professional Experience

2010 - Present	Chief Geologist Terrain Solutions Inc
1997 - 2010	Chief Geologist Lone Star Environmental
1996 - 1997	Staff Geologist LSI Environmental

HGS Service

2011 - 2012	HGS Secretary
2006 - 2007	HGS Environmental and Engineering Committee – Treasurer
2007 - Present	HGS Environmental and Engineering Committee – Chair

Other Professional Affiliations

2016 - Present	American Institute of Professional Geologists (AIPG) – Board of Director
2021 - 2023	Association of Environmental and Engineering Geologists (AEG) – Secretary
2006 - 2018	Texas Association of Professional Geologists – President

Candidates for the 2024–2025 Executive Board *(continued)*

Director – Two-year term *Vote for two candidates*

Lauren Seidman Robinson

It was not until 2015 while working downtown for EP Energy, that I began being a truly active member of HGS by attending luncheon meetings and continuing education courses. Between HGS and the Society of Independent Professional Earth Scientists (SIPES) meetings (I mention SIPES because there is a substantial overlap between HGS and SIPES members), I have never met an assemblage of more friendly and supportive fellow geologists. The people are what keep me coming back.

I jumped at the opportunity to be a co-chair of the Social Media committee in the fall of 2017. At the time, it was my intention to help the committee for a few months while in their time of need. It is now 2024, and I am still going strong with Social Media. Additionally, I also volunteer on the Continuing Education committee. All in all, I never knew how rewarding it was to volunteer. I find giving back to HGS incredibly rewarding because of the caliber of its members. I have met some really interesting people, and made strong friendships since I joined HGS. That is what I enjoy the most…the people. At a job and in life, the people make it or break it for me.

Education
MS Geology, Baylor University, Waco, TX
BA Geology, Smith College, Northampton, MA
AAPG CPG #6492

Professional Experience
My professional experience spans over sixteen years of full-time employment in the upstream E&P sector.
Current role: Vice President at Miller and Lents in Houston, TX.

HGS Service
Social Media Committee: Co-Chair (2017 – present)
Continuing Education Committee: Volunteer (2021 - present)

Other Professional Affiliations
SIPES, Limited Member
AAPG
SPE
GSA

Catherine Cox Strong

I am interested in serving as a Director for Houston Geological Society, because I have such high regard for this group and its members. In my view, the Society is the best of all the groups affiliated with the American Association of Petroleum Geologists. Houston Geological Society has provided opportunities for knowledge sharing and networking for decades. It seems the best part of being a geoscientist is getting to collaborate with fellow colleagues and having fun when we get together to share ideas. I would like to do my part in making sure this society remains financially strong and stays focused on its core objectives: "1) To stimulate interest and promote advancement in geology for the Houston area. 2) To disseminate and facilitate discussion of geological information, build relationships among geologists in the area, and to aid and encourage academic training in the science of geology."

Education
MS Geology, Texas A&M University
BS Geology, Texas A&M University
Licensed Professional Geoscientist in the State of Texas

Professional Experience
Born in Hondo, Texas, Catherine Strong is a graduate of Texas A&M, where she earned two degrees, Bachelor of Science in geology and Master of Science in geology, before joining the oil and gas industry as a Petroleum Geologist in 1982. Strong began her oil and gas career with the Hunt Family in Dallas, Texas, where she handled geological and team-lead duties for fourteen years at Petro-Hunt and Placid Oil, honing her skills in Gulf of Mexico, Gulf Coast, offshore California, and international assignments.

Strong's years in upstream oil and gas have resulted in technically diverse and geographically broad expertise in domestic, as well as, foreign areas. Most successful endeavors have been in Gulf of Mexico exploration, Gulf Coast exploration; production, and in technology development for Unconventional Resources. Strong also has significant experience in obtaining partner companies and in screening prospect and production opportunities.

In 2015, Strong accepted early retirement from ConocoPhillips after sixteen years with the company. During her tenure at

Catherine Cox Strong *continued on page 43*

Candidates for the 2024–2025 Executive Board *(continued)*

Editor-Elect (one candidate)

Lucia Torrado

I am honored to stand for the position of Editor-Elect. I started volunteering with the HGS while I was a graduate student at the University of Houston, specifically with the Exhibits Committee. I helped out with many tasks like setting up and transporting the booth, tending the HGS booth in several exhibits, but most importantly, I shared with my colleagues and peers the HGS mission and the benefits of joining the Society. I've continued to volunteer since those early days, serving as Secretary in the 2021-2022 term, which allowed me the opportunity to learn more about the many functions of the HGS.

Education

PhD, Geology, University of Houston
MS, Geology, University of Houston
BS, Geology, National University of Colombia

Professional Experience

During her graduate studies, she worked with the Conjugate Basins, Tectonics and Hydrocarbons consortium in conjunction with Spectrum Geo Inc. now TGS (2010-2018). She interned with Shell and Talisman Energy (now Repsol) where she worked in Colombia and Texas, respectively. Her graduate work consisted of an integrated regional-to-detailed basin evaluation in the search of new oil and gas opportunities in the Llanos basin (onshore Colombia), the Caribbean region (Nicaraguan Rise), and the deep-water Foz do Amazonas in the equatorial Atlantic (Brazil).

Torrado's research has been recognized as best poster presentation during the AAPG meetings including: "1st place poster presentation" (2017), "3rd place poster presentation" (2013), "Award of Excellence for Top 10 poster" (2014), and "Top 15 poster presentation" (2016, 2012). Additionally, she was the secretary for the AAPG's graduate chapter at the University of Houston which was awarded "Best Domestic Student Chapter" (2018).

Torrado has worked for PGS in the Cayos Basin (western Caribbean Sea), and the Pacific margin of Colombia, for Hocol in Upper and Middle Magdalena Basin in Colombia and more recently, in the Mexican GOM and North Sea as a geoscience consultant for TGS. Torrado works part-time running her small family business while looking for opportunities in the industry.

HGS Service

2021-2022	HGS Secretary

Other Professional Affiliations

2017-current	SEG Translation Committee Team Leader
2016-current	Journal reviewer
2020-2023	SEG Translation Committee Chair
2019-2023	AAPG Imperial Barrel Award Industry Advisor
2017	AAPG Graduate Student Chapter Secretary
2019, 2021	EAGE Technical Committee Member

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Patricia (Patty) Walker—*Candidate for President-elect*

Education

Patricia (Patty) Walker is originally from Tulsa, Oklahoma but has now lived in the Houston area for the last 38 years. She is an Oklahoma State University alumnus with BS and MS degrees in Geoscience from the Boone Pickens School of Geology. She is a past chair of the Executive Advisory Board for the school, a recipient of The Boone Pickens Entrepreneur Bootstrap Award and in 2022 named a Distinguished Alumni OSU College of Arts and Sciences.

Professional Experience

Walker's career with ExxonMobil began in 1986 and has taken her to six of the seven continents working on diverse energy projects in technical and management roles. In 2013, she was named as a Senior Principal Geoscientist in the Upstream and in 2015, promoted to Chief Geoscientist. In this role, she served as a technical expert and advisor to senior leadership on global ExxonMobil activities. In addition to her work with ExxonMobil, Walker has previously served as a geologic consultant focused on asset evaluations.

HGS Service

Vice President 2022-2023
Finance Committee 2022 - present

Other Professional Affiliations

AAPG, House of Delegates
Walker is very active in her community and is an Alderwoman for the Village of Tiki Island. Walker's husband Lawrence is a career geoscientist (now retired) and they have two adult children, Amanda and Nathan. ■

Candidates for the 2024–2025 Executive Board *(continued)*

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Bob Wiener—*Candidate for President-elect*

Professional Experience

1974	Short stint at Core Labs, Denver, CO
1974	Hired by Cities Service Company, Tulsa, OK as a trainee and worked on US East Coast exploration.
1978	Transferred to Cities International in Houston, TX; worked in Europe, Africa, Middle East Region; joined HGS; subsequently transferred to Region Geophysicist for Texas Offshore area.
1980	Joined Petro Ventures International Inc., a consulting firm.
1983	Joined Conoco and worked in Cairo, Egypt and Stavanger, Norway
1988	Returned to Houston to begin work as an independent geologist/geophysicist (Goh Seismic Interpretation Services and Goh Exploration, Inc.) Turns out I am not a corporate person.
2019	Began to shift focus from oil and gas exploration and development to geothermal development (Geothermal Resources LLC)
2024	Although overrides ran out a while ago, I am still busy consulting, working on projects, and staying active in professional societies. It's too much fun.

HGS Service

Vice President 2016 to 2017

Other Professional Affiliations

American Association of Petroleum Geologists
Geophysical Society of Houston
Society of Exploration Geophysicists
Society of Independent Professional Earth Scientists

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continued continued from page 37

Catherine (Catie) Donohue—*Candidate for Vice President*

Other Professional Affiliations

1999 – present	Member of AAPG since 1999
2020	Chair of Petroleum System Analysis, AAPG ACE
2018 – 2019	URTEC session chair
2023 – present	Association of Earth Science Editors Awards Committee Chair

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continued continued from page 41

Catherine Cox Strong—*Candidate for Director*

ConocoPhillips in Houston, Texas, she served in director, technical advisor, and team-lead capacities for deep-water Gulf of Mexico exploration and in technology development for tight-gas-sand and shale unconventional resource plays. Prior to ConocoPhillips, Strong was a principal geologist with Vastar Resources (an affiliate of ARCO) for three years, where she worked exploration in the deep-water and deep-shelf areas of the Gulf of Mexico.

Strong joined Red Willow Production Co., an affiliate of the Southern Ute Indian Tribe, in 2015 as the lead geologist in the Houston, Texas, office responsible for prospect, lease sale, and project development decisions in the deep-water Gulf of Mexico.

Other professional affiliations

Strong has been active with Texas A&M's Department of Geology & Geophysics Advisory Committee since its inception in 2006, and she is currently serving as the Chair of the Advisory Council. She is a member of the American Association of Petroleum Geologists, where she is a House of Delegates representative.

HGS Membership Application

Houston Geological Society
14811 St Mary's Lane Suite 250 Houston
TX 77079
Phone: (713) 463-9476
Email: office@hgs.org

Active Membership

In order to qualify for Active Membership you must have a degree in geology or an allied geoscience from an accredited college or university or, have a degree in science or engineering from an accredited college or university and have been engaged in the professional study or practice of earth science for at least 5 years. Active Members shall be entitled to vote, stand for election, and serve as an officer in the Society. Active Members pay $36.00 in dues.

Associate Membership

Associate Members do not have a degree in geology or allied geoscience, but are engaged in the application of the earth sciences. Associate Members are not entitled to vote, stand for elections or serve as an officer in the Society. Associate Members pay $36.00 in dues.

Student Membership

Student membership is for full-time students enrolled in geology or an allied geoscience. Student Members are not entitled to vote, stand for elections or serve as an officer in the Society. Student Member dues are currently waived (free) but applications must be filled out to its entirety. Student applicants must provide University Dean or Advisor Name to be approved for membership.

Membership Benefits

Digital HGS Bulletin

The HGS Bulletin is a high-quality journal digitally published monthly by the HGS (with the exception of July and August). The journal provides feature articles, meeting abstracts, and information about upcoming and past events. As a member of the HGS, you'll receive a digital copy of the journal on the HGS website. Membership also comes with access to the online archives,with records dating back to 1958.

Discount prices for meetings and short courses

Throughout the year, the various committees of the HGS organize lunch/dinner meetings centered around technical topics of interest to the diverse membership of the organization. An average of 6 meetings a month is common for the HGS (with the exception of July and August). Short courses on a variety of topics are also planned throughout the year by the Continuing Education Committee. These meetings and courses are fantastic opportunities to keep up with technology, network, and expand your education beyond your own specialty. Prices for these events fluctuate depending on the venue and type of event; however, with membership in the HGS you ensure you will always have the opportunity to get the lowest registration fee available.

Networking

The HGS is a dynamic organization, with a membership diverse in experience, education, and career specialties. As the largest local geological society, the HGS offers unprecedented opportunities to network and grow within the Gulf Coast geological community.

Please fill out this application in its entirety to expedite the approval process to become an Active/Associate member of Houston Geological Society.

Full Name _____ Type *(Choose one)*: Active Associate Student

Current Email *(for digital Bulletin & email newsletter)*_____

Phone _____

Preferred Address for HGS mail_____

This is my home address _____ business address _____

Employer *(required)*_____ Job Title *(required)*_____ Will you volunteer? ____ (Y/N) Committee choice: _____

Annual dues Active & Assoc. for the one year *(July 1st-June 30th)* **$36.00**_____

Student **$0.00**_____

OPTIONAL Scholarship Contributions- Calvert/HGS Foundation-Undergraduate **$5.00**_____

Total remittance_____

Payment:

Check #_____

Credit card: V MC AE Discover

Credit Card#_____

CVV code (req'd): _____ Expiration: _____ (mm/yy)

Signature: _____ Date: _____

To the Executive Board: I hereby apply for membership in the Houston Geological Society and pledge to abide by its Constitution & Bylaws.

Company*(required, mark 'in transition' if unemployed)*_____

Company Address _____

City *(Work)* _____ **State** *(Work)* _____ **Postal Code** *(Work)* _____

School *(required)*_____

Major *(required)*_____ **Degree** *(required)*_____

Year Graduated _____

School *(optional)*_____

Major *(optional)*_____ **Degree** *(optional)*_____

Year Graduated _____

Years Work Experience *(required)*_____

Please submit a brief statement regarding your work experience in the practice or application of earth science or an allied science.

AAPG Member Number _____ OR

HGS Sponsor's Name _____

Signature: _____ **Date:**_____

Professional Directory

Consulting, Evaluate Prospects:
USA and International

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Victor H. Abadie III
Consulting Geologist

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