

BULLETIN

HOUSTON GEOLOGICAL SOCIETY



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	Lauren Robinson	317-402-6482	lseidman5.robinson@gmail.com	D4
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ON THE COVER: Deer Creek Trail in Grand Canyon
passing through the Tapeats Formation Photo provided
by Mike Erpenbeck.

THE HOUSTON GEOLOGICAL SOCIETY'S ANNUAL

SCHOLARSHIP NIGHT

"New Hires -- Future Hires; Passing the Baton"
featuring speakers from Chevron, Shell, Hilcorp,
& ExxonMobil

Come meet the student scholars and help support the
HGS Foundation Scholarship and the Calvert Memorial Fund!

SPONSORSHIPS AVAILABLE!

February 7, 2022 | 5:30PM- 9:00PM
Norris Conference Center, Houston, TX



Register at www.hgs.org

HGS Annual Scholarship Night 2022

BY LINDA STERNBACH, CHARLES STERNBACH, JEFF LUND, FANG LIN

Panelists



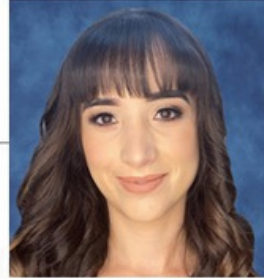
Claire Bailey



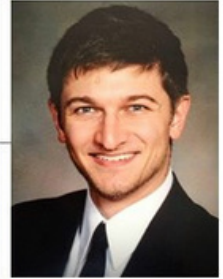
Libby Storer



Eric Peavy



Luciana Tinker



Nathan Tinker

Register at www.hgs.org on the event calendar

HGS returns to in-person dinner meetings on February 7, with an incredible Scholarship Night program at the Norris Conference Center, Beltway 8 and I-10. Register as soon as you can to be part of "New Hires- Future Hires- Passing the Baton," a program recognizing award-winning undergraduate and graduate students from many different universities. The night features a panel of five impressive early-career geoscientists (1-5 years' experience in the oil and gas industry) who will share 5-10 minutes of their experiences on how to get and keep a job and take questions from the student awardees. This talented group of young people will entertain, engage, and inspire us all with their talent and passion for making a difference. Moderating the program will be Fang Lin and Charles Sternbach, co-chairs of Scholarship Night. Mike Erpenbeck, HGS President, will update us on HGS 2022 plans. Please plan on joining HGS and the students in this return to in-person meetings, after a year of zoom virtual meetings. A recording will be made available later on the HGS YouTube channel [HGSGeoEducation](https://www.youtube.com/channel/UCGSGeoEducation).

Panelists include Dr. Claire Bailey (ExxonMobil). She is currently on an operations and development team in the Permian Basin. She graduated the University of Texas-El Paso in 2019. Also, meet Libby Storer (Shell) who has experience at several major oil companies and currently works as a geophysicist in the deepwater Gulf of Mexico. She graduated the University of Houston in 2017. Eric Peavey has recently started at Chevron and completed his Ph.D. at Texas A&M in 2022. Nathan Tinker (Hilcorp) has been working since 2016 on several US plays. He graduated from the University of Texas at Austin. Luciana Tinker (ExxonMobil) has experience as a geoscientist in the deepwater Gulf of Mexico and Brazil Salt Basins. She is married to Nathan Tinker and graduated from Texas A&M in 2017.

Scholarship Night is meant to be a forum for outstanding geoscience students (including both oil and gas and environmental geoscientists) to gather at a dinner, meet each other and accept award recognition from the HGS Scholarship funds along with financial support for their tuition requirements. One source of financial assistance is the Calvert Memorial Scholarship chaired by Jeff Lund, which awards money to graduate students. The second fund is the Foundation Trustees, chaired by Joe Lynch, which awards cash to undergraduate students.

Please plan on joining HGS and the students in this return to in-person meetings, after a year of zoom virtual meetings. A recording will be made available later on the HGS YouTube channel [HGSGeoEducation](https://www.youtube.com/channel/UCGSGeoEducation). Sponsorship is available in at different levels starting at \$100. The upper levels include complimentary tickets and drink tickets. To register and sponsor go to the HGS website calendar <https://www.hgs.org/civicrm/event/info?id=2304>, or contact office@hgs.org.

MIKE ERPENBECK



Within the Houston Geological Society the members deal with a split time frame. We all would like to join all the annual musings about the year just past and the one that we have crossed into. With the HGS fiscal year running from July through the following June, the practice of breathing a sigh of relief to have survived something and

proclaiming it's now "in the books" holds little relevance. Aside from all this, I would indeed like to wish all Members a Happy New Year!

The time frame of our future as it pertains to the Board is nominally six months, as we try to give a good accounting to the membership of our tour of duty. The real issue, though, is what HGS will look like far beyond next June, in the face of changing practices and preferences in professional society, industry and political trends, and unrelenting technological advances.

As we celebrate our 100th anniversary next year, the festivities at HGS will certainly include historical look-backs throughout the year at the changing "look" of HGS over the past century. Charles and Linda Sternbach and others have been working and planning for quite some time to make 2023 a year to remember at Houston Geological Society. As well, you can bet the leadership of HGS during that year will be looking at the HGS-of-the-past for clues to its future.

A major focus of the board as we envisage the future HGS is its financial health. Financial concerns exist not just at HGS but all geological, other scientific, and even O&G industry societies. The existential threat to HGS is not as dire as it is to other non-profit organizations because we are fortunate to have built an investment portfolio whose annual growth has given us breathing room during the rough years.

There is a reason for suspecting that this not a case of surviving a couple rough years though. There has been a trend for at least a half dozen years now of declining membership and specifically the participation in the large scientific annual conventions. This is a trend that predates the current pandemic effect, and it seems to be unrelated to boom and bust phases in our industry. HGS has met with considerable success in hosting its small local conferences, as evidenced by its Mudrocks and Geomechanics Conventions. But revenues from our local conferences paled by comparison with large cash infusions we received every three or four years from AAPG and GCAGS (those years that Houston hosted those annual conventions). The fund transfers amounted to \$300,000-500,000. These infusions have now completely disappeared, as these conventions are losing money every year and there is nothing to "trickle down" to HGS. I have briefly mentioned these trends in previous Prez letters as probably cultural-related, and plan to offer full Bulletin articles in the next several months on this topic.

The HGS board has approved an operational budget that sets the goal of a loss of \$101 thousand on revenues of \$213 thousand and expenses of \$314 thousand. Though this is expected to be largely offset by gains in our (conservatively-managed) investment portfolio, we cannot expect that gains in future years will be as lucrative as the last several. A further explanation of how the HGS evolved from net profits to net losses over the past seven years is beyond the scope of a single monthly letter, but suffice it to say that the board recognizes that incurring annual losses is no way to run a business, and is working hard at cutting costs and finding ways to increase revenue.

There seems to be general assumption that membership dues collected somehow cover expenses. I doubt that has ever been the case at HGS. Currently the dues we collect are in the \$45,000 range (on revenue of approx \$210 thousand). To raise the member annual dues of \$30 to a breakeven point would mean tripling them to the \$100 level, an option we will not, and from a policy standpoint, cannot consider. The board has voted to increase dues 20% to the \$36 level starting next year. It remains at the lowest price of all similar organizations at about a dime-a-day.

In other news:

Save the date-Feb 7 HGS Scholarship Night: New Hires-Future Hires; Passing the Baton. Scholarship Night is an HGS tradition over many years of introducing our scholarship winners and offering great speakers. Our speakers this year consist of an inspiring five member panel who all have entered the oil and gas industry in the last 0 - 5 years. They will share their experiences in getting and keeping a job, insights, stories, and advice, while also fielding audience questions. Come also to meet and encourage the student scholarship winners and help support the HGS Foundation and Calvert Memorial Fund. This is a popular event, so register early. We look forward to seeing you there!

Mike Erpenbeck
President, HGS

"...What will HGS will look like far beyond next June, in the face of changing practices and preferences in professional society, industry and political trends, and unrelenting technological advances..."



COVID-19 Policy Statement

Updated January 1, 2022

The Houston Geological Society continues to maintain a cautious approach to indoor social and educational gatherings. Please check the HGS website on a regular basis for all HGS online event opportunities.

The HGS Board will continue to monitor the situation and governmental directives to determine the pace of opening up the holding of HGS in-person events or whether the situation calls for reversing the trend in some measure.

Please monitor hgs.org and your email for further communication concerning HGS events.

For more information about how you can help to prevent the spread of the virus, visit the CDC website: <https://www.cdc.gov/>.

2021-2022 HGS Board

FROM THE EDITOR

SCOTT SECHRIST



Happy New Year!

As 2022 begins, we wish for all HGS Members, their families, our industries and the entire planet in our care to have a much safer, healthier and more prosperous year. Be Safe and Have Fun!

As we "Turn the page" to HGS' 99th year of Service to our Members and the Community, we are in preparation for HGS' centenary in 2023. The Houston Geological Society continues to 'serve the science' in 2022 with new speakers, articles and events coming to you and our community.

We begin the year with a returning speaker and author, Dr. Marc Helsing. He takes us back to our applied science roots, calling for a renewed application of Sequence Stratigraphy to enhance the Probability of Success and Risk Reduction. We are looking forward to at least two more related articles by Dr. Helsing this spring.

HGS Technical Meetings for January 2022 will begin with a Joint HGS-GSH January Virtual Evening Meeting on Monday the 10th, from 6:00 PM through 7:00 PM. Our speaker will be Dr. James Knapp, presenting "Reflection Seismology: Born in Oklahoma, 100 Year Centennial". Register early, this presentation is now expected to be a sellout! Dr. Knapp is an OSU Professor and Boone Pickens Distinguished Chair of Geoscience at the Boone Pickens School of Geology, in the Noble Research Center of Oklahoma State University in Stillwater, OK. His specialties are structural geology, tectonics, geophysics, and petroleum geology. Dr. Knapp notes that the Seismic Reflection Centennial will be celebrated from 17-19 May 2022 (delayed by a year by COVID), jointly organized by the University of Oklahoma, Oklahoma State University, University of Tulsa, and sponsored by the Society of Exploration Geophysicists.

The Wednesday, January 12, 2022 HGS Engineering and Environmental Group speaker and topic is Chemical Element Formation by Patrick Moore. See the HGS Bulletin, the HGS Website and the HGS Calendar for additional meeting information.

On Monday January 24th, 2022 the HGS North American Meeting will be a Socially Distanced In-Person event! Four exceptional speakers will address "The State of Private Equity in Oil & Gas". Register early, as we expect a sellout crowd! The event location will be Greentown Labs, 4200 San Jacinto Street, Houston, TX 77004. The schedule includes a Social Hour, Dinner and Presentations from 4:00 PM- 7:30 PM. Speakers will include: Justin T. Stolte, Partner in the Houston office of Latham & Watkins and serves as Global Chair of the firm's Energy & Infrastructure Industry Group. Deborah Byers, Ernst & Young LLP Americas' Industry Leader, responsible for market-leading integrated solutions. She is also a part of the firm's Energy Center of Excellence based in Houston. Josh Sherman, Partner in charge of the Complex Financial Reporting group of Opportune LLP He has 20 years of experience in energy technical research, capital markets and SEC reporting assistance.

Richard Ball is Director of Geology at Detring Energy Advisors. He worked at Chevron for 10 years, served as Treasurer and Secretary on the AAPG Executive Committee and is now Councilor for the AAPG Division of Professional Affairs.

Later that week, on Wednesday January 26th, we have another virtual event scheduled for the HGS General Luncheon - Guyana: From Exploration to First Production. Our speaker will be Linda Price, from ExxonMobil Integrated Solutions.

As we remember our field camps and field trips of yore, rest assured that the HGS is busy working on providing our members another World-Class Grand Canyon field trip in 2022. See this month's Cover photo for HGS President Mike Erpenbeck on a past trip. Grand Canyon field trips were organized by HGS in 2009, 2011 and 2012. The most recent HGS Grand Canyon Field Trip was from June 2 to June 10, 2021. Cost last year was \$3700 per person; working to hold the line on cost for our 2022 trip. HGS has reserved with the tour group operator, Hatch River Expeditions. The group traditionally meets in Las Vegas Nevada and travels by bus through Zion National Park to the headwaters of the Grand Canyon, entering and spending the first overnight at Marble Canyon in double occupancy rooms at Cliff Dwellers Lodge, adjoining the Vermilion Cliffs National Monument. Cliff Dwellers Restaurant was voted one of the "10 Best" 2013 by Arizona Highways Magazine. The raft trip begins the following day, with a 15-minute ride from the lodge to Lees Ferry, the put-in for all the Grand Canyon rafting trips and a world famous trout fishing destination. The rafts float down the Colorado River, taking in the majestic, stunning Canyon views, in their most impressive perspective, looking up from the river at the towering bluffs and formations above. The trip includes double occupancy room at Cliff Dwellers Lodge, 8-days/7-nights on the river including a sleep kit and all meals on the river, drinks on the river, and transportation back to either Las Vegas or Marble Canyon (if you prefer to drive yourself to and from Marble Canyon). Not included is transportation to and from Las Vegas, meals at Marble Canyon (dinner and breakfast), tips for the river guides, or any souvenirs. We anticipate Steve Earle will again be HGS trip leader. Please contact the HGS office to sign up or if you have questions.

Following the return of the Grand Canyon Field Trip, the HGS is planning the return of Guest Night in mid-June of 2022. Special guest speakers, IMAX 70 mm films, Planetarium presentations and a catered 'Dinner among the Dinosaurs' at the Houston Museum of Natural Science are being arranged, so stay tuned!

We truly appreciate and thank ALL our HGS Members, Volunteers and HGS educational outreach teams!

Wishing Everyone the best of health and great success for a Happy New Year in 2022!

HGS Editor 2021-2022
Scott C. Sechrist
Editor@HGS.org

HGS VIRTUAL GENERAL DINNER MEETING

MONDAY, JANUARY 10, 2022 | 6:00 - 7:00PM

ZOOM WEBINAR

HGS/GSH MEMBERS & NON-MEMBERS \$15 STUDENTS \$10

[HTTPS://WWW.HGS.ORG/CIVICRM/EVENT/INFO?ID=2316](https://www.hgs.org/civicism/event/info?id=2316)

EVENT CONTACT: PATTY WALKER | PATTYWALKER1@ICLOUD.COM

Joint HGS-GSH Virtual General Meeting "Reflection Seismology: Born in Oklahoma"

Seismic methods have revolutionized our understanding of the Earth, and fundamentally transformed resource exploration and hazard assessment over the past 100 years.

Building on his experience with acoustics during World War I, John Clarence Karcher and a team of OU faculty in 1921 first pioneered the technology of using sound energy to record reflections from the subsurface with a series of experiments in Belle Isle and Vines Brach, OK. These pioneering efforts quickly were applied to exploration for oil and gas in Oklahoma and surrounding regions, and subsequently were employed in basic research to advance our understanding of the oceans, continents, and the theory of plate tectonics.

To honor these pioneering efforts, we will celebrate the Seismic Reflection Centennial from 17-19 May 2022 (delayed by a year by COVID), jointly organized by the University of Oklahoma, Oklahoma State University, University of Tulsa, and sponsored by the Society of Exploration Geophysicists.

Biographical Sketch



Dr. James H. Knapp is a Professor and the Boone Pickens Distinguished Chair of Geoscience in the Boone Pickens School of Geology at Oklahoma State University, where he specializes in the areas of structural geology, tectonics, geophysics, and petroleum geology.

He received a B.S. degree with distinction in geology from Stanford University, and a Ph.D. in structural geology and tectonics from M.I.T. He joined the faculty at OSU in 2018 after a 20-year career on the faculty at the University of South Carolina, where he now holds the title Distinguished Professor Emeritus.

Before arriving at UofSC as an Associate Professor in 1998, Dr. Knapp spent several years working in the petroleum industry with Shell Oil, both as a research and an exploration geologist, and as a member of the research faculty at Cornell University.

During his academic career, Dr. Knapp and his research team have carried out both fundamental and applied research in the design, acquisition, processing, and interpretation of seismic surveys, both onshore and offshore.

Dr. Knapp has served as a Congressional witness and made numerous public appearances concerning offshore seismic acquisition and energy development. During his tenure at UofSC, Dr. Knapp served in various administrative or faculty leadership functions, including Chair of the UofSC Columbia Faculty Senate.

Dr. Knapp is married to Dr. Camelia Knapp, Head of the Boone Pickens School of Geology at Oklahoma State University, and they have two daughters.

HGS VIRTUAL ENVIRONMENTAL & ENGINEERING MEETING

WEDNESDAY, JANUARY 12, 2022 | 7:00 - 9:00PM

ZOOM WEBINAR

HGS MEMBERS \$15 NON-MEMBERS \$30 STUDENTS \$10

[HTTPS://WWW.HGS.ORG/CIVICISM/EVENT/INFO?ID=2320](https://www.hgs.org/civicism/event/info?id=2320)

EVENT CONTACT: MATTHEW COWAN | MRCOWAN1@HAL-PC.ORG

Chemical Element Formation

The formation of the 118 known Chemical Elements can be understood as deriving from four sources: The Big Bang, Stars, Supernovas, and Man-Made Elements. Each source produces a sequential sub-set of the 118-element total.

Combined elements form gasses, like the air we breathe, liquids, like the beverages we drink or the gasoline for our automobiles, and solids, like plastics, rocks and minerals. Elements also exist in pure form such as Helium, Mercury, and Gold.

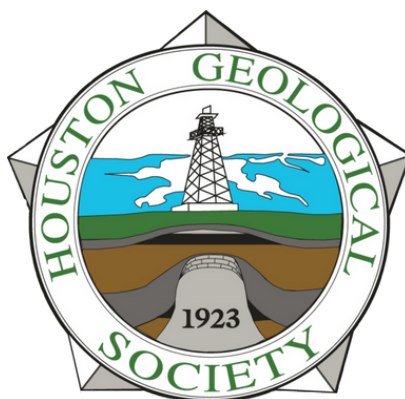
How each source produces the elements as well as their distribution will be discussed.

Biographical Sketch



Patrick Moore holds a Bachelor of Chemical Engineering, University of Delaware, and a Master of Science, Chemistry, University of Houston. Previous employer – Thermo Fisher Scientific, Environmental & Process Monitoring Division.

Various roles including Sales, Management, Engineering, and Product Development.



HGS NORTH AMERICAN DINNER MEETING

MONDAY, JANUARY 24, 2022

GREENTOWN LABS, HOUSTON, TX

4:00 - 7:30PM

HGS MEMBERS \$40 NON-MEMBERS \$45 STUDENTS \$15

[HTTPS://WWW.HGS.ORG/CIVICRM/EVENT/INFO?ID=2325](https://www.hgs.org/civicism/event/info?id=2325)

EVENT CONTACT: MARK HAMZAT O. EROGBOGBO | MARK@PROSPEROOG.COM

The State of Private Equity in Oil & Gas

The dynamics between sources & uses of Private Equity Funds have become vital & relevant in benchmarking returns and value add in portfolio assets.

The value chain that drives the production of hydrocarbons from pore to pump allows integration of new techniques & technologies in helping de-risk the opportunities.

Private Equity & other capital resources are challenged to deploy creative solutions for debt and equity strategies. The covenants & thesis for allocating the investment capital plays a role in shaping the performance of these portfolio assets.

The event will bring together stakeholders in the sources & uses of the Oil & Gas Private Equity ecosystem as the state of the dynamics is explored with a view to driving sustainable value in the industry.



Greentown Labs is a community of climate action pioneers working to design a more sustainable world. As the largest climatetech startup incubator in North America, Greentown Labs brings together startups, corporates, investors, policymakers, and many others with a focus on scaling climate solutions.

Driven by the mission of providing startups the resources, knowledge, connections, and equipment they need to thrive, Greentown Labs offers lab space, shared office space, a machine shop, an electronics lab, software and business resources, and a large network of corporate customers, investors, and more.

With its headquarters in Somerville, Mass. and a recently opened incubator in Houston, TX, Greentown Labs is home to more than 180 startups and has supported more than 400 startups since the incubator's founding in 2011. These startups have collectively created more than 8,400 jobs and have raised more than \$2.2 billion in funding.

For more information, please visit www.greentownlabs.com

Biographical Sketches



Mark Jones has industry experience in the following:

Acquisitions and Dispositions in Energy, Oilfield Service, Water and Waste Industries

- Lead counsel in the acquisition of assets from a private equity portfolio company for \$300 million in the Permian basin.
- Lead counsel in the acquisition of assets from a private equity portfolio company for \$525 million in the Permian basin.
- Lead counsel in the acquisition of assets from a private equity portfolio company for \$75 million in the Permian basin.
- Lead counsel in the acquisition of assets from a private equity portfolio company for \$275 million in the Permian basin.
- Lead counsel in the acquisition of assets from a private equity portfolio company for \$17 million in the Permian basin.
- Lead counsel in the acquisition of large independent with assets in Canada, Australia, Guatemala and Argentina and its related petroleum products businesses for a purchase price of approximately \$3.6 billion
- Lead counsel for an energy service company and its shareholders in connection with the sale of the company for \$40 million to investors in the Middle East.
- Lead counsel in connection with the acquisitions of concessions for water and wastewater facilities throughout the United States.
- Lead counsel in acquiring over 20 landfills and other treatment, storage and disposal facilities throughout the United States.
- Lead counsel in acquiring water rights and infrastructure to be used in connection with fracking operations in South Texas and Permian shale plays.
- Lead due diligence counsel in the acquisition of numerous affiliated companies and assets in the Gulf of Mexico, Texas and Oklahoma for a purchase price of \$1.3 billion.

[Read More about Mark](#)



Deborah Byers is the EY Americas Industry Leader responsible for infusing a sector focus into all we do and activating market-leading integrated solutions. She also helps multinational energy companies navigate volatile markets and complex business issues to drive

shareholder value.

She has been with Ernst & Young LLP for 32 years. With more than 30 years of transactions and industry experience, her proficiency includes structuring and financing corporate expansions and joint ventures, integrating assets and working with cross-border transactions.

Deborah previously served as the US Oil & Gas Leader, Houston Office Managing Partner, Transactions Leader and Managing Partner for the EY Strategy and Transactions group in the Ernst & Young LLP Southwest Region. She is also a part of the firm's Energy Center of Excellence based in Houston.

She frequently authors reports on timely energy issues; works with leading industry organizations; and speaks at conferences on matters relevant to the energy industry and women in business, as well as transactions for tax professionals.

Deborah holds a bachelor's degree in Business Administration from Baylor University.

How Deborah is building a better working world:

"As a leading female voice in the Energy sector, I strive to bring diversity of views and inspire young women to feel they belong and can succeed in a field traditionally dominated by men. I bring a passion and focus to help solve our most complex problems as we face the global energy transition."



Richard Ball is a Certified Petroleum Geologist who worked both conventional and unconventional reservoirs with Chevron for 10 years, including onshore US, Gulf of Mexico Shelf/Deep Water, and West Africa Shelf. He has served as Treasurer and Secretary on the AAPG

Executive Committee and continues to serve as Councilor for the AAPG Division of Professional Affairs.

Mr. Ball is a proud graduate of Stephen F. Austin State University and the University of Louisiana at Lafayette, where he earned his B.S. (2005) and M.S. (2007), respectively.

Richard joined Detring Energy Advisors at the end of 2016. Since then, he has assisted the company in completing over \$2.8B of transactions and launching Petro Divest Advisors, a small-cap advisory firm.



Josh Sherman is the Partner in charge of the Complex Financial Reporting(link is external) group of Opportune LLP, including oversight of the firm's Denver and Tulsa offices. Josh has 20 years of experience in providing clients across the energy spectrum with technical research,

capital markets and SEC reporting assistance. Josh and his team of over 30 professionals have led all financial statement and disclosure aspects of the Capital Markets process for dozens of IPOs, reverse mergers (de-SPAC transactions), and debt and equity private placements within the upstream, midstream, oilfield services and power sectors. In addition, he assists over 100 clients across many industries annually with researching, concluding, and reporting for the most complex transactions affecting their businesses.

Prior to joining Opportune, Josh worked in the audit and global energy markets department with Deloitte & Touche, where he managed the audits of regulated gas and electric utilities, independent power producers, and energy trading entities.

Josh currently serves as an Independent Director of U.S. Energy Development Corporation, a private direct investment upstream operating company located in Arlington, Texas.

Josh previously served on the board of directors as Audit Committee Chairman of JP Energy (MLP), Trans Energy, and Voyager Oil & Gas. Specifically, as the Lead Independent Director of Trans Energy, Josh initiated and led the company's successful restructuring and ultimate sale to EQT – a transaction recognized by the M&A Advisor as a winner for the 2017 M&A Deal of the Year (\$100MM-\$200MM).

Outside of Opportune, Josh has been involved in several community and school activities. Josh currently serves on his alma mater's Executive Committee of the McCombs Energy Initiative at the University of Texas at Austin, the Executive Leadership Team (former Co-Chair) of the American Heart Association's Paul "Bear" Bryant Award honoring college football's Coach of the Year, and the Advisory Committee of the AICPA/PDI Oil & Gas Conference. Josh is also a past Board Member and Audit Chair of the Literacy Council of Fort Bend County.

HGS VIRTUAL GENERAL LUNCH

WEDNESDAY, JANUARY 26, 2022 | 12:00 - 1:00PM

ZOOM WEBINAR

HGS MEMBERS \$15 NON-MEMBERS \$30 STUDENTS \$10

[HTTPS://WWW.HGS.ORG/CIVICRM/EVENT/INFO?ID=2346](https://www.hgs.org/civicism/event/info?id=2346)

EVENT CONTACT: PATTY WALKER | PATTYWALKER1@ICLOUD.COM

Liza Field, Guyana: The Finding of a Stratigraphic Giant, from Early Exploration to Production

In 2015, ExxonMobil and partners, Hess Guyana Exploration Limited and CNOOC Nexen Petroleum Guyana Limited (now CNOOC Petroleum Guyana Limited), drilled the Liza-1 wildcat well on the Stabroek Block, located offshore Guyana, in approximately 1750 m (5700 ft) of water depth and encountered more than 90 m (300 ft) of high-quality, oil-bearing sandstone reservoirs.

Perhaps most notably, this discovery was in a basin that previously had greater than 40 dry holes testing at least four different play types. After the Liza-1 discovery, field development plans were fast-tracked and first oil was delivered in late 2019, ahead of the original schedule.

Furthermore, as of October 2021 and after 20 additional discoveries, ExxonMobil estimates the discovered recoverable resource for the offshore Guyana Stabroek Block to be approximately 10 billion oil-equivalent barrels.

Biographical Sketch



Linda Price is an executive-level senior principal with ExxonMobil and a passionate, life-long earth scientist. Hired as a geoscientist in 1997, her career is difficult to classify as anything other than diverse; she has worked projects across business stages, from reservoir

management to frontier play exploration, and across a wide variety of geologic configurations and data types.

Furthermore, these broad project experiences, combined with her sometimes-obsessive curiosity, drove her to centralize her technical expertise in subsurface mapping methods that would accurately integrate information across scales, data types, and knowledge domains for business value assessments. Correspondingly, her pragmatic leadership style helps navigate diverse perspectives to optimize solutions. Her holistic approach to solving complex problems collaboratively has a proven track record in multiple proprietary ExxonMobil studies, most recently along South American and Caribbean margins with notable success in leading pre-Liza Field discovery regional support for the Guyana Stabroek Block.

Currently, Linda's professional goals are focused on enabling the next generation of subsurface scientists to solve problems by levelling up enterprise-level critical thinking and integration skills. As our discipline rapidly evolves, she believes that our long-established, human-driven framing approaches to complex subsurface problems can help bridge the current experience gap. Linda's vision is that future subsurface scientists will utilize systems thinking, data science, engineering, and design methods seamlessly with more traditional geoscience mapping and integration methods to drive impactful and sustainable changes in our profession.

Many (many) years ago, Linda received a BSc. degree from the University of Wisconsin - Oshkosh and a MSc. from the University of Iowa with a heavy focus in classical field mapping. However, her interest in geology started at a young age while hiking with family in the Smokey Mountains. Growing up as a navy brat, Linda had the opportunity to live in and visit many beautiful places around the world, which only fueled her curiosity about earth systems and historical geology further. Although now, she has lived half her life in Houston, she regularly tortures her teenagers with geoscience trips disguised as family vacations. In addition, ExxonMobil takes advantage of her crazy passion by letting her head-up their long-standing Exploration training in Wyoming.

Reducing Risk with 3-D Seismic Stratigraphic Visualization

BY MARC H. HELSINGER, PH.D. PRESIDENT, DYNAMIC GEOVENTURES, LLC.



South Africa Journal of Geology (2017) Skoorsteenberg Formation, Karoo Super Group (Permian). Regarded as one of the world's best examples of a Basin Floor to Slope Fan Complex with associated fluvial dominated delta system. Seismic Stratigraphic Visualization allows identification of these systems in the subsurface.

Capitalization for onshore conventional Gulf Coast projects has been drastically reduced since the advent of horizontal drilling technology and government ESG policy. Independents need to change the paradigm and take a proactive role in presenting a high technology risk reduction business model for onshore Gulf Coast projects to available capital providers.

Seismic Stratigraphy combined with Multivariate attribute analysis plays a critical role in the complete integration and evaluation of exploration and development projects. Seismic stratigraphic analysis, a major risk reducer, is not sufficiently utilized by the independent sector. If the independent sector desires to raise capitalization for their projects they will need to show capital providers that they are substantially reducing risk. 3-D seismic stratigraphy with multivariable attribute integration analysis leads to enhanced hydrocarbon indicators, delineation of hydrocarbon bearing depositional environments, enhanced reservoir geometry, and highlighting porosity trends. There is enormous reserve potential onshore Texas Louisiana Gulf Coast that is unrecognized as a result of a lack of a completely integrated analysis. Large reserve potential (100-200 BCF or greater) exists in stratigraphic slope fan environments. In addition, mature fields that have produced significant hydrocarbons have the potential to produce much more with an integrated 3-D seismic stratigraphic technology approach.

Independent oil companies need to promote this competitive advantage over horizontal drilling shale plays. 3-D Seismic Stratigraphic evaluation delineates 3-D volumes of the objective reservoir and lowers the risk of prospective targets by delineating optimum drilling locations. Attribute analysis integrated with a 3-D stratigraphic volume substantially lowers risk. The use of seismic stratigraphic analysis is also a rapid data mining tool to find numerous unrecognized new plays and prospects. Excellent economics, better risk reduction, and less entry capital are advantages in Gulf Coast exploitation and exploration. The author has delineated numerous plays throughout the Gulf Coast using these established techniques.

Biographical Sketch



Marc Helsinger has 45 years of experience in management and senior technical positions with BP (Amoco), LL&E, Burlington Resources, Focus Exploration and OFS Capital. He is a recognized expert in the risk reduction techniques of enhanced 3-D seismic visualization methods coordinated with specialized attribute analysis providing a critical competitive advantage. Dr. Helsinger has presented technical seminars to corporations and major geological societies regarding these enhanced risk reducing techniques. He holds a Ph.D. and M.S. in Stratigraphy with specialization in depositional systems from Rensselaer Polytechnic Institute and a B.S. in Geological Oceanography from City College of New York. Marc formed Dynamic GeoVentures LLC to develop new trends and plays in the Texas/Louisiana Gulf Coast.

January 2022

<i>Sunday</i>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>
2	3	4	5
9	10 HGS-GSH Virtual General Meeting "Reflection Seismology: Born in Oklahoma" Page 7	11 HGS Board Meeting 5 p.m.	12 HGS Virtual E&E Meeting "Chemical Element Formation" Page 8
16	17	18	19
23	24 HGS North American Meeting "The State of Private Equity in Oil & Gas" Page 9	25	26 HGS Virtual General Lunch "Liza Field, Guyana: The Finding of a Stratigraphic Giant, from Early Exploration to Production" Page 11
30	31		

Cheated, Mistreated, Pushed Around?

Have you been cheated, mistreated or somehow deprived of your share of a deal, working interest or royalty? If so, give me a call. I have thirty years experience as a working interest and royalty owner in the oil and gas business to go along with forty years of court room experience. A trusted team of professionals together with the necessary resources is available to work on your case. You do not pay anything unless we win.

Proven Results





- \$6,000,000 Future payout projected for settlement to widow with ORRI recovered under husband's consulting contract after company contended no payments due after death.
- \$5,800,000 Combined cash settlement for UPRC East Texas and Central Louisiana royalty owner class action cases for underpaid royalties. Court approved fee of 1/3.
- \$4,700,000 Jury verdict, oil company violates geologist non-compete contract. Settled later on confidential terms.
- \$2,000,000 Settlement for downhole failure of casing results in loss of well bore, net to client \$1,372,411.79.
- \$1,175,000 Settlement for geologist and family where oil company drilled too close to geologist property. Case filed 18 years after well drilled. Net to client \$664,822.51.
- \$986,000 Cash settlement, net to clients \$657,207.60, plus future mineral interest valued at \$500,000.00. Dispute over mineral interest ownership from thirty year old contract.

Robert A. Chaffin

THE CHAFFIN LAW FIRM

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January 2022

<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>	
		1 	<p>Reservations</p> <p>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 email office@hgs.org or call the office at 713-463-9476.</p> <p>Reservations for HGS meetings must be made or cancelled by the date shown on the HGS website calendar, which is normally 24 hours before hand or on the last business day before the event.</p> <p>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, please contact the Webmaster at webmaster@hg.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 still be billed.</p> <p>Pricing</p> <p>In-Person Meetings HGS Members \$35 Non-Members/Walk-Ups \$40 Emeritus/Honorary Life \$15 Students \$5</p> <p>Virtual Meetings HGS Members \$15 Non-Members \$30 Students \$10</p>
6 	7	8	
13	14	15	
20	21	22	
27	28	29	

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Science and Engineering Fair of Houston

Make a difference in 2022!

Are you enthusiastic about geology? Do you enjoy listening to students talk about geology? If so, share your love of geology by joining the HGS Special Awards Agency team of volunteer judges at the annual Science and Engineering Fair of Houston (SEFH), which will be held in-person on **February 26, 2022 at the George R. Brown Convention Center**.

The HGS team reviews Earth science related projects in the Junior and Senior Divisions at the SEFH. A top project is picked for each division, and summer internships to the Houston Museum of Natural Sciences are awarded to the top 3 seniors. The winners are invited to an Engineering Science and Technology Council of Houston awards banquet (or Zoom meeting), where the students showcase their projects.

If you would like to volunteer to be an HGS Special Awards judge, and can commit to spending a half day reviewing the presentations at GRB, please email Dorene West (dbwesthou@earthlink.net; please put **'SEFH Special Awards judging'** in the subject line).

For more information about the science fair, please go to <https://sefhouston.org>

Join us in making a difference in 2022!

Science and Engineering Fair Committee
Dorene West, Chair

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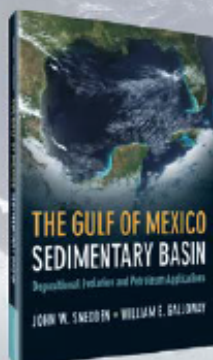
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All materials are due by the 15th of the month, 6 weeks before issue publication. Abstracts should be 500 words or less; extended abstracts up to 1000 words; articles can be any length but brevity is preferred as we have a physical page limit within our current publishing contract. All submissions are subject to editorial review and revision.

Text should be submitted by email as an attached text or Word file or on a clearly labeled CD in Word format with a hard copy printout to the Editor.

Figures, maps, diagrams, etc., should be digital files using Adobe Illustrator or Adobe Photoshop. Files should be saved and submitted in .ai, .eps, .tif or .jpg format. Send them as separate attachments via email or CD if they are larger than 5 MEGs each, accompanied by figure captions that include the file name of the desired image. DO NOT EMBED them into your text document; they must be sent as separate files from the text. DO NOT USE POWERPOINT, CLIP ART or Internet images (72-DPI resolution) as these do not have adequate resolution for the printed page and cannot be accepted. All digital files must have 300-DPI resolution or greater at the approximate size the figure will be printed.

Photographs may be digital or hard copy. Hard copies must be printed on glossy paper with the author's name, photo or figure number and caption on the back. Digital files must be submitted in .tif, .jpg, or .eps format with 300-DPI or greater resolution at the printing size and can be accompanied by figure captions that are linked by the file name of the image. The images should be submitted as individual email attachments (if less than 5 MB) or on CD or DVD.

HGS Bulletin Advertising

The *Bulletin* is printed digitally using InDesign. Call the HGS office for availability of ad space and for digital guidelines and necessary forms or email ads@hgs.org. Advertising is accepted on a space-available basis. **Deadline for submitting material is 6 weeks prior to the first of the month in which the ad appears.**

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No. of Issues	Random Eighth Page	Random Quarter Page	Random Half Page	Random Full Page	Inside Front Cover Full Page	Inside Back Cover Full Page	Page 2 Full Page	Outside Back Cover Half Page	Back of Calendar Full Page	Calendar Quarter Page
10	\$950	\$1,350	\$2,550	\$4,750	\$8,000	\$7,500	\$7,050	\$6,850	\$6,650	\$3,000
9	\$800	\$1,300	\$2,500	\$4,700						
8	\$750	\$1,250	\$2,250	\$4,300						
7	\$600	\$1,100	\$2,200	\$3,850						
6	\$550	\$950	\$1,800	\$3,500						\$2,000
5	\$500	\$800	\$1,600	\$3,000	\$4,700	\$4,500	\$4,350	\$4,000		
4	\$450	\$650	\$1,300	\$2,500						
3	\$300	\$550	\$950	\$2,000						\$1,000
2	\$250	\$400	\$700	\$1,500						
1	\$150	\$250	\$450	\$1,000	\$1,500	\$1,400	\$1,250	\$1,000	\$1,250	\$850
Professional Directory Section Business Card Ad: 10 Issues – \$160 (\$30 for each additional name on same card)										

Website Advertising Opportunities

There are currently 5 opportunities to help spread the word about your business or event and generate traffic to your website or campaign. Please submit all ad materials five (5) days prior to the go-live date for testing.

Placement	Rate	Specifications/Description
HGS Website Home Page Banner Ad	\$800 – Monthly	275 x 875 pixels; home page top banner ad. All Home Page Banner Ads rotate every 10 seconds.
	\$1800 – 3 Months	
	\$2800 – 6 Months	
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	\$2400 – 6 Months	
	\$3600 – 12 Months	
HGS Website Event Page Ad	\$600 – Monthly	200 x 400 pixels; calendar page left column ad. All Event Page Ads rotate every 10 seconds.
	\$1200 – 3 Months	
	\$1600 – 6 Months	
	\$2600 – 12 Months	
Geo-Jobs	\$50 – 14 days	Posting of job opportunities on HGS website. Click the Geo-Jobs tab to get started. Must be filled out completely and the dates set appropriately.
	\$100 – 30 days	
	\$300 – 3 Months	
	\$600 – 6 Months	
Vendor Corner	\$1200 – 12 Months	Company logo, company website, and company description will be highlighted on HGS Calendar website event. This is an opportunity to display company wares, gain personnel exposure and hand out product information at HGS dinner meetings.
	\$250	
	*4 Pack option with 1 FREE bonus event for \$1000.00 available. Send request to vendorcorner@hgs.org .	
Event/Short Course Calendar Ad	\$100 – Monthly	An event ad posted within the HGS website calendar under the Events tab.
Bundle & Save!	<ul style="list-style-type: none"> • 30% off website ads when combined with print ads in all 10 HGS <i>Bulletin</i> issues. • 20% off website ads when combined with print ads in 5 HGS <i>Bulletin</i> issues. • 10% off website ads when combined with print ads in 3 <i>Bulletin</i> issues. 	



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Qualifications for Active Membership

- 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 or earth science for at least five (5) years.

Qualifications for Associate Membership (including students)

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Apply online at www.hgs.org and click "Join HGS". Annual dues expire each June 30.

Annual dues are \$30; Emeritus members pay \$15; Students are free.

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

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Degree (**required**) _____ Year Graduated _____

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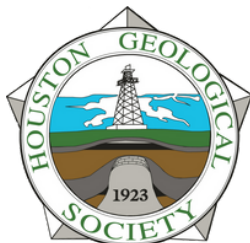
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