

HGS Bulletin

Volume 57, Number 10

Houston Geological Society

June 2015

AWARDS ISSUE

**HGS GUEST NIGHT
EXPLORE THE ULTRA-DEEP OCEAN
SEAFLOORS OF THE WORLD**

PAGE 8

**PRE-SALT PLAY ELEMENTS, PLAY
POTENTIAL AND CONTINENTAL
MARGIN TYPE: SOUTH ATLANTIC**

PAGE 17



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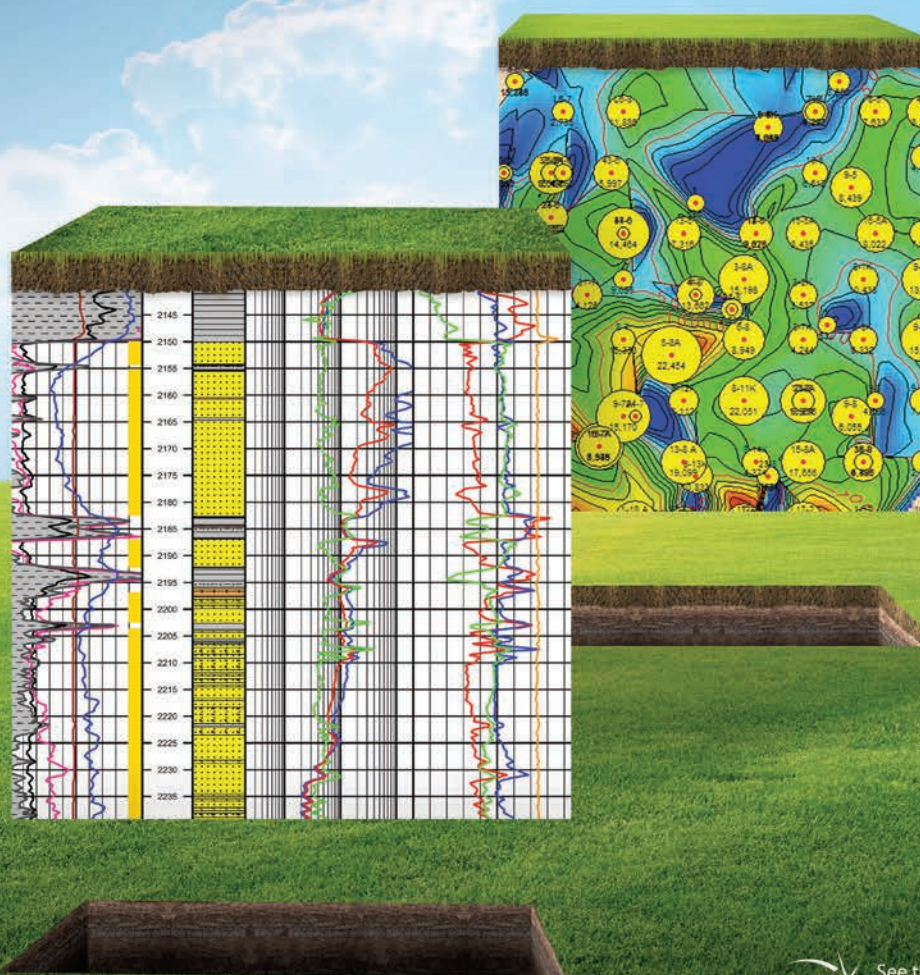
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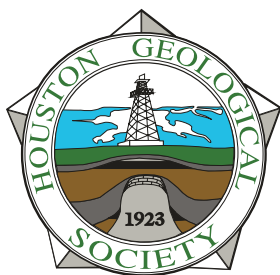
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The Bulletin

Houston Geological Society

Volume 57, Number 10

June 2015

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Houston Geological Society

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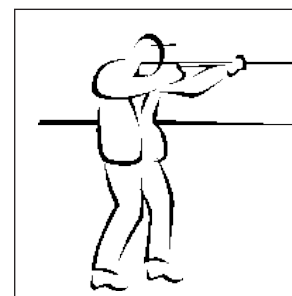
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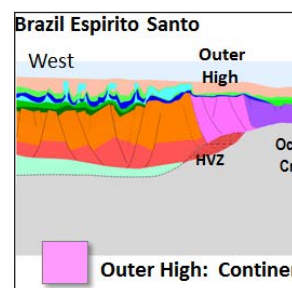
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About the Cover: from the new book *Discovering the Deep: A Photographic Atlas of the Seafloor and Ocean Crust* (Cambridge University Press 2015). by J. A. Karson, D. S. Kelley, J. J. Fornari, M. R. Perfit and T. M. Shank. Undersea photo credit to D. S. Kelley and M. Elend, UW, URI, ROV Hercules; NOAA Ocean Exploration.

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HGS Guest Night

Saturday, June 6, 2015

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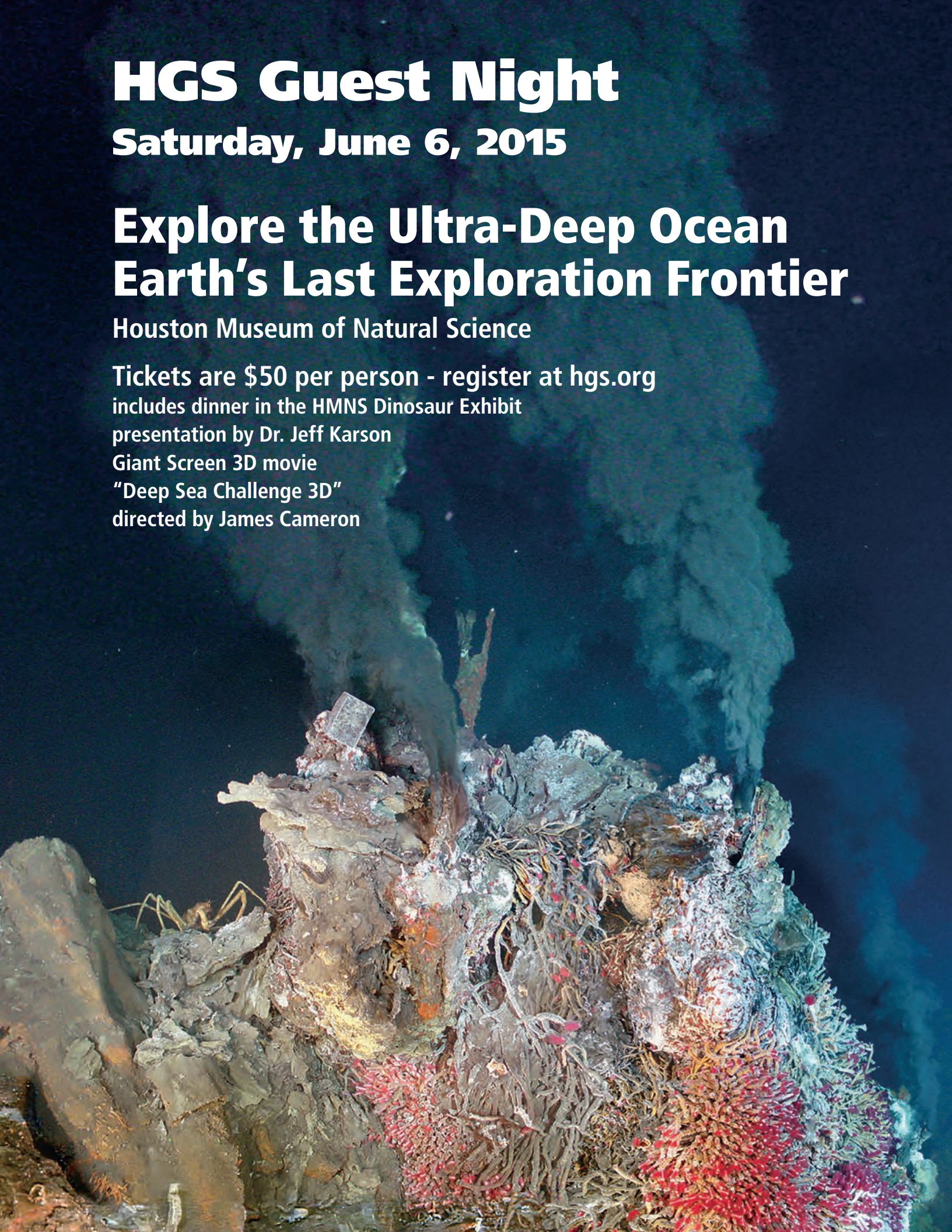
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presentation by Dr. Jeff Karson

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directed by James Cameron





Ken Nemeth
ken.prez.hgs@gmail.com

Presidential Ponderings

It's my last chance to ponder. And it is a unique opportunity to wonder and express thanks.

At this stage of my tenure, one might ask why I would wonder. Well, I am an empathetic person. I have gone through my share of downturns and commiserate with those early in their careers who have lost their jobs. I was laid off shortly after my daughter was born and spent several years getting back to that "good" job. I still stayed employed, but it wasn't always what I hoped it might be. As I was rejected by "friends" when I attempted to call, I moved on to the next option or opportunity. When those "friends" later called me, I did not turn them away.

This is not an easy time (I write this in April) with the uncertainty that surrounds us and the shock that has struck many people with six or fewer years' experience in the industry. I can only reiterate what has been in the pages of the *Bulletin* throughout this year:

- Make HGS an integral part of your professional development.
- Participate on a committee; our educational outreach groups definitely need members.
- Fill a niche; bring your talents to HGS.

It is always hard to write for the future knowing that what is put to paper will be in the past when it is published. However, I want to mention a few items and ask for some feedback.

By the time that this is read, HGS will have had its Continuing Education Seminar "The Resume Doctor is In" at the Schlumberger facility on South Dairy Ashford. Perhaps not everyone could attend. Pride and ego when one is let go can be obstacles that prevent one from participating in outreach support programs. If you missed that event, perhaps you might find the following link of value: <http://www.nbcnews.com/feature/maria-shriver/life-ed-how-build-better-resume-n138381>. The author offers some tips for resumes which I will repeat here:

- Show Fit
- Be Thoughtful About Page Length.
- Create a Strategy for Addressing Obstacles.
- Put Yourself in the Hiring Manager's Shoes.
- Add Keywords.

- Lead with a Summary.
- Include Accomplishments.

You have to go to the just mentioned link to get the additional advice. Do you know that active participation in a professional society can be a great training ground to provide experience to address some of these points?

HGS will continue to look into options to assist not only its members, but also the greater Houston geological community. This is where the Society needs your feedback. Back in 1991, HGS hosted a seminar for its unemployed members. The article I wrote for a 1992 issue of the *Bulletin* resulted from that seminar. Would such a seminar, or a round table be of benefit? Should this be held at one location or several? Would you participate, and at what cost?

What do you think HGS should do to help its un- or underemployed? Would you be willing to run for office or serve on a committee? Let me know.

It's too bad we don't have a Shrimp Peel Committee — this would be a great summer networking opportunity. One wonder I encountered this year was that many NeoGeos did not know what a "shrimp peel" was. That is definitely something lacking in their oilfield education! This probably ranks right up there with the crawfish boils, which I never mastered.

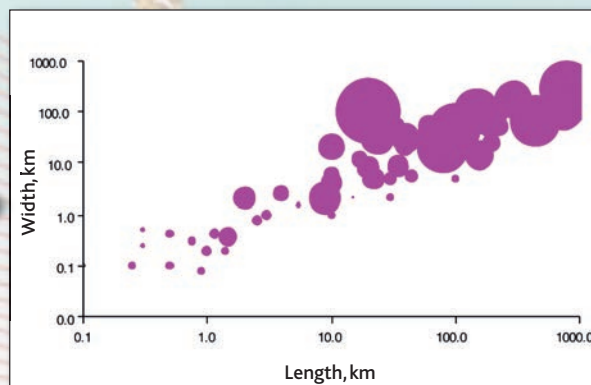
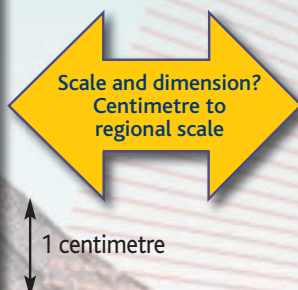
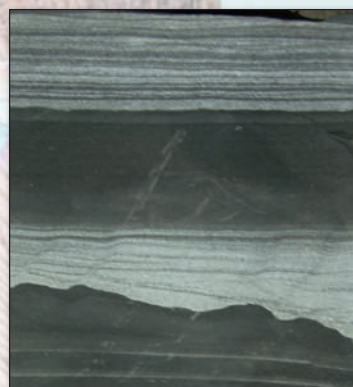
By now our elections have finished and we know our delegates for the AAPG House of Delegates and the incoming Board. For those who have won, I congratulate you. For those who did not get elected, don't consider it a loss, but rather a learning experience that now qualifies you to offer yourself as a candidate for next year! I can tell you that as Nominations Committee Chairman for 2015-16 I am already looking for willing candidates. Remember, you can't build a legacy if you don't start one.

HGS has had a successful year. Financially, HGS has benefitted from several events including the final reconciliation of the 2014 AAPG Convention. The markets have been good and our rainy day funds have allowed us to support many worthy endeavors.

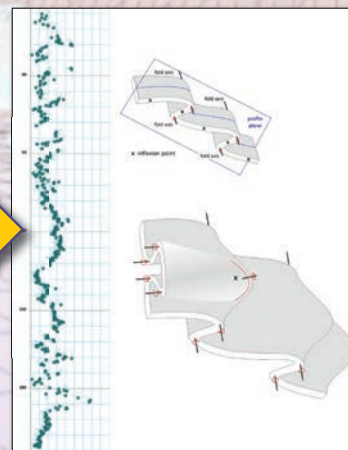
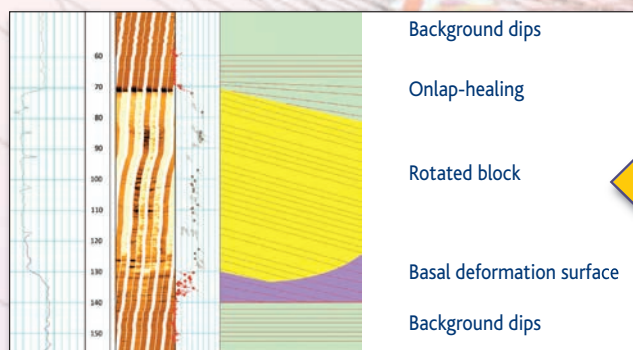
From the President continued on page 9

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Dave Miller
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Goodbye and Thank You!

The time for the column that I was looking forward to writing in July of last year has finally arrived. For some reason, I am not as excited to be writing it as I thought I would be. I have enjoyed my term as Editor and, with the exception of writing the monthly Editor's Column, am sad to see it end.

The successful assembly, publishing and delivery of the *Bulletin* depends on several things working well together. I'd like to thank all of the regular contributors for their efforts to provide materials in a timely fashion. I know all of us have other things to do and it is not always easy or convenient to respond to the recurrent harassment of the editor to submit materials by the deadline. While there is no material award for accurate, dependable and timely submittals, if there was one it would definitely go to **Scott Thornton**, who would win "first submitter" nearly every month. As a matter of fact, his material for the June *Bulletin* was sent over two months in advance!

The Editorial Advisory team of **Charles Revilla**, **Ed Marks**, **Richard Li**, **Fang Lin** (at the beginning of the year) and **Jon Blickwede** has been amazing. Each person focuses on something different when editing. Ed and Charlie have made my job so much easier, to say nothing of more enjoyable. Jon has agreed to assume the role of "final editor", checking the pdf versions of the *Bulletin* to catch the mistakes the rest of us have overlooked. Thanks to him we have managed to avoid any major errors of proofing/editing. I wish him well in his role as Editor next year and am sure that he will continue the tradition of providing a *Bulletin* the HGS can be proud of.

The role of **Lisa Krueger** in the assembly of the *Bulletin* is incredibly important. I appreciate her ability to take the various and scattered things I send her and assemble them into a professional and high-quality product. She has an uncanny ability to assemble the jigsaw puzzle without the photo on the

cover of the box. Thanks to her, I have also had the opportunity to meet the folks who print the *Bulletin*, PrimeSource, and bind it, Marathon Bindery. I appreciate the time the staff at each company took to show me around and explain how they do what they do.

The HGS office staff – **Andrea**, **Jill** and **Brittany** – has been instrumental in getting the information from the *Bulletin* to the HGS membership, making sure we have advertisers to help pay the *Bulletin's* bills and taking care of the administrative tasks necessary for us to continue to function.

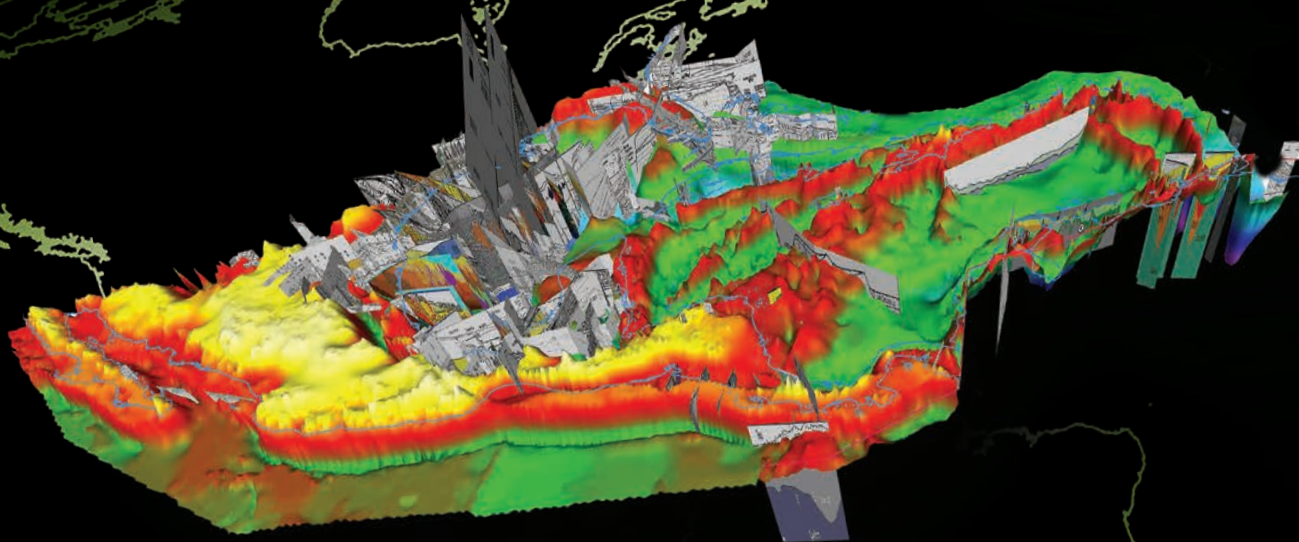
I would like to thank the HGS Board for their support and encouragement. **John Jordan** deserves a special "thank you" for working with the various groups to get speakers for their meetings and to get their materials to me in a timely manner. In my opinion, **Ken Nemeth** has done a masterful job in his role as President. He has been great at managing the monthly board meetings, while at the same time ensuring a very pleasant and collegial atmosphere.

Last, but far from least, I would like to thank my wife Susan for allowing me to interrupt most of our vacations and weekends over the past year to spend a bit of time editing the *Bulletin*. She has been very encouraging and intolerant of my occasional whining, reminding me to "act like an adult". My son, Brian, has been the ghost editor for all of my columns. He has done a great job. He has nearly succeeded in seriously reducing the use of "that" in my writing.

Thanks to all of you for giving me the opportunity to serve as Editor. It has been a fun and rewarding experience. ■

Until later, good bye and take care.

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HGS has funded the foundations by supplementing what they each have raised with matching funds up to \$10,000. HGS has fulfilled its commitment to support the Engineering and Science Fair of Houston by providing \$50,000 to the Fair's foundation, established at the University of Houston. HGS recognized Ilena Krupala from Bellville as its Teacher of the Year. She was nominated for and has been recognized as the GCAGS 2015 recipient of the Owen R. Hopkins Outstanding Earth Science Teacher Award. She will also be the 2016 GCAGS nominee for the AAPG Foundation's Teacher of the Year. HGS continues to support students by providing three Houston Museum of Natural Science internships and recognizing Outstanding Students from six area universities. Yet there is still more that can be done. HGS needs interested people to fill its Academic Outreach Committee positions. I urge you to look into building your legacy by reaching out to our profession's future.

An HGS year is only as successful as the people who participate and make it so. There are so many people that should be thanked that I am sure to miss someone if I start mentioning names. So that I am not remiss in acknowledging our committees and all of their members I want to thank them all. I may have erred in some committee dealings, but they all succeeded despite my advice!

The office staff keeps HGS running, whether the tires are flat or the tank is out of gas. This year has been especially rewarding as HGS had a significant makeover in its personnel. I encourage you to stop by the HGS office and visit with **Andrea Peoples**, **Jill Kimble**, and **Brittany Davis-Morris**.

I want to thank the 2014-15 Board. **John Jordan** did a masterful job with the contracts throughout the year. **Joe Lynch** assured the Board that HGS income met HGS expense requirements and that HGS rainy day funds have been invested to the Society's best advantage. **Larry Quandt** got a first-hand learning experience with the Board Policy Manual updates. He will be a go-to resource for the Board when policy issues arise in the future. **Ashley**

Garcia did a wonderful job with the minutes, especially when she had to decipher the notes taken by a couple of the officers when she was unable to attend a Board meeting. **Dave Miller** and **Jon Blickwede** have been responsible for the continued success of the HGS *Bulletin*. The HGS Directors have made sure that the Board crossed its i's and dotted its t's. Outgoing members **Jim Beck** and **Allen Mattis** did not have an easy year, having to find committee chairpersons while making sure many important committees still functioned. They did a great job. Continuing Directors **Penny Patterson** and **Jim Grubb** are applauded for their efforts. Jim has overseen the media committees for this year and the growth in that direction is something truly remarkable. I hope that those committees can teach us multi-media-challenged oldsters some things next year. Penny oversaw our Academic-related committees and was deeply involved in the HGS Teacher of the Year process. HGS might not have had a Teacher of the Year without her efforts. I leave office knowing that HGS will be well led by **Deborah Sacrey**. Those who know Deborah know of her dedication to the societies that she has served, her willingness to do extra, and her total commitment to the task that she is given. The HGS Board meetings got off to a slow start, but became a well-oiled operation when I implemented some of her suggestions after the first meeting so long ago. Thanks, Deborah.


Lastly I'd like to recognize my daughter Samantha who gave me grammar and punctuation lessons since last September.

So as I hobble into the sunset I leave you with these thoughts:

- Change can take us out of our comfort zone.
- Change can be good because it can lead to opportunity.
- Opportunities come to those who recognize them.
- Those who take advantage of those opportunities succeed.

Active participation in HGS can be an opportunity maker, so don't miss out!

I wish you well. It has been an honor to serve you and HGS as your President. ■



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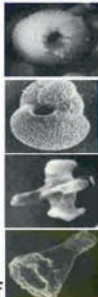
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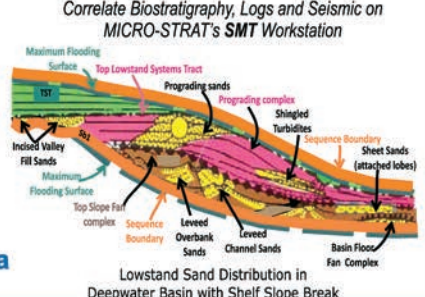
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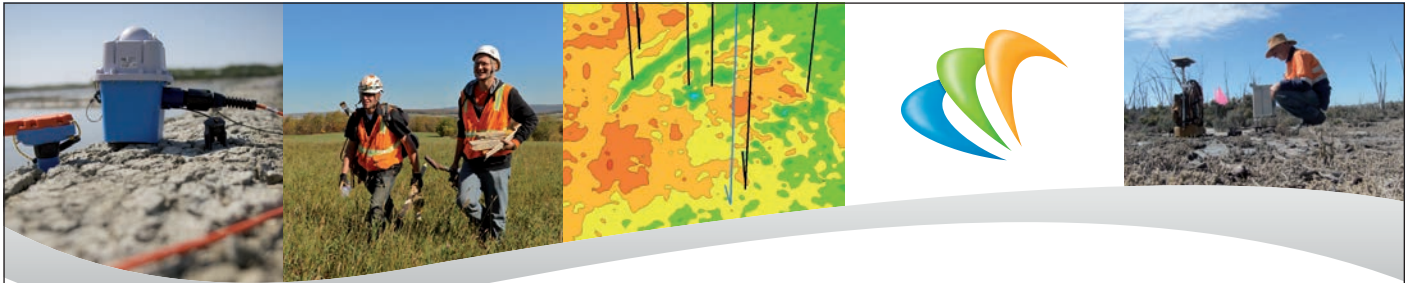
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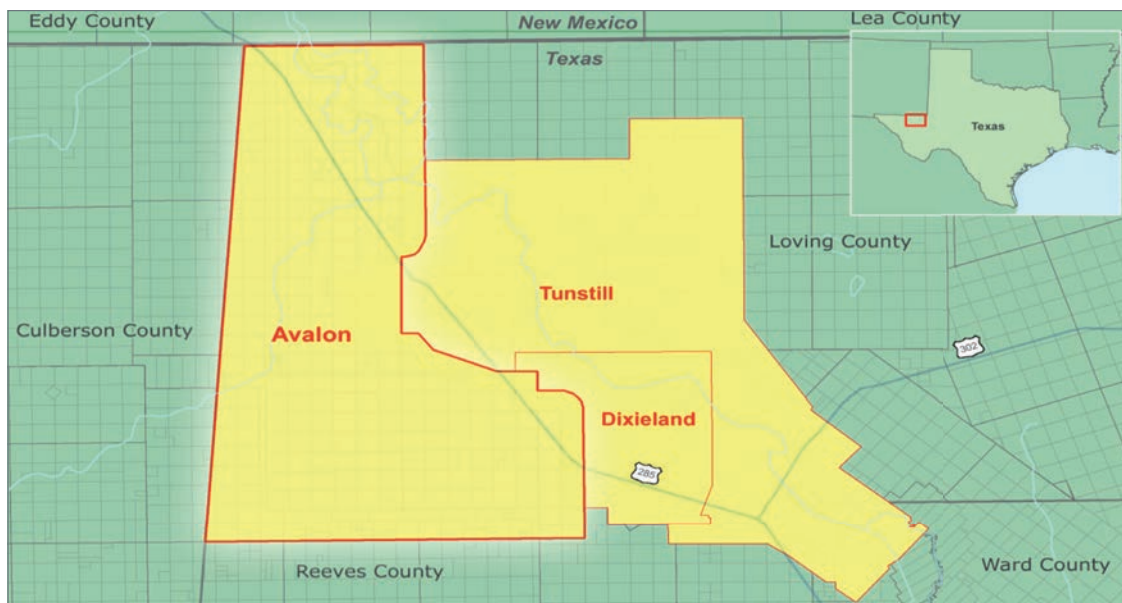
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Explore the Ultra-Deep Ocean Seafloors of the World

Guest Night – June 6, 2015

by Linda Sternbach and Dave Reynolds



What do you know about the Earth's last unexplored frontier? Some scientists say that we know more about nearby planets in the solar system than we know about the ultra-deep world under Earth's oceans. This year's Guest Night will be enlightening, as we learn about deep sea rifts, hydrothermal vents, and unusual rock formations only recently seen by undersea roving vehicles. The HGS welcomes Dr. Jeffrey A. Karson, Earth Science Professor at Syracuse University, as the Guest Night speaker at the Houston Museum of Natural Science, June 6.

Dr. Karson is the lead author of a new book *Discovering the Deep: An Photographic Atlas of the Seafloor and Ocean Crust* just published by Cambridge University Press in May 2015. Jeff Karson has been Chief Scientist and Co-Chief Scientist on multiple deep sea ALVIN DSV-2 missions from 1990-2005. The "ALVIN" is a three person operated deep-ocean research submersible operated by Woods Hole Institute that is accompanied by smaller remote operated vehicles (ROV) which conduct photography and sampling at ocean depths below 10,000 ft. Dr. Karson has been involved with deep ocean research since he was a professor at Duke University 1996-2006, continuing to Syracuse University in New York State, where he was recently Chair of the Earth Sciences Department, until last year.

In March 1999, Jeff Karson took a ride inside ALVIN to 10,800 ft. to investigate oceanic crust exposed in the walls of a Pacific rift called "Hess Deep." In an interview he said, "Hess Deep is especially valuable to science because it slices through a slowly-

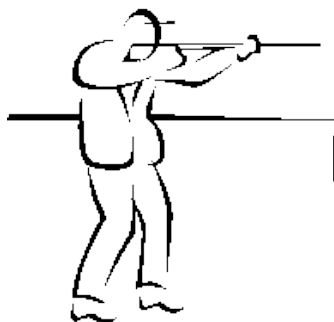
moving treadmill of recently created crust produced at one of the planet's fastest-spreading mid ocean ridges, the East Pacific Rise. The rift exposes spots where lava up welled only in the last million years, a mere heartbeat on the geological time scale."

An important part of Dr. Karson's research since 2000 has been on the deep water Mid-Atlantic Ridge. While on the submarine Alvin, he took ROV pictures and samples of what scientists have named the "Lost City," in thousands of feet of water. The "Lost City" has towers of calcium carbonate and underwater vents yielding black "smoke" from hot lava extruding into the Mid Atlantic Rift. The vents have yielded evidence of microbial life forms created in the dark depths of the ocean, demonstrating that life can exist in and evolve from chemosynthetic systems, not just photosynthetic ones. These springs host organisms that live under some of the most extreme conditions on Earth.

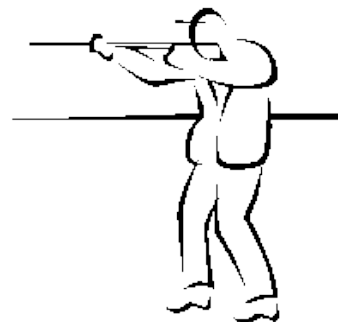
Black smokers, as the springs came to be called, have now been found throughout the mid-ocean ridge spreading system. Since their discovery, the billowing 360°C jets of metal sulfide- and gas-laden fluids were believed to typify submarine hot spring systems. At extreme depths, tubeworms, giant clams, and spider crabs depend on volcanic gases such as carbon dioxide (CO₂) for survival.

Don't miss HGS Guest Night on June 6! It's incredible opportunity see stunning photos of the deep ocean rifts and imagine what it would be like to visit 10,000 feet under the sea. Guest Night will include a dinner buffet in the Morian Hall of Paleontology. What a Night at the Museum! ■





HGS SKEET SHOOT



Saturday, June 27, 2015
Greater Houston Gun Club
6702 McHard Road, Missouri City

This tournament is a 50 target event. Shells are provided, however **you must bring eye and ear protection**. Greater Houston Gun Club and National Skeet Shooting Association safety rules will be in effect. Trophy winning shooters will be determined by the Lewis class system. Door prizes will be awarded by blind drawing after the conclusion of shooting. All competitors are automatically entered into the door prize drawing, but you must be present at the time of the drawing to win. BBQ lunch will be provided from 11:30 until 1:30. Refreshments will be available throughout the day.

IMPORTANT!!

WE ARE LIMITED TO 160 SHOOTERS IN FOUR ROTATIONS. ENTRY FEE IS \$80 PER SHOOTER FOR REGISTRATIONS RECEIVED BY FRIDAY, JUNE 19. AFTER JUNE 19, REGISTRATION WILL BE STRICTLY ON A "SPACE AVAILABLE" BASIS AND THE ENTRY FEE WILL BE \$95 PER SHOOTER. REGISTER EARLY!!

For more information, contact: Tom McCarroll at (713) 419-9414 or tom_mccarroll@yahoo.com.

For directions to the club, visit www.greaterhoustongunclub.com.

ONLINE REGISTRATION INFORMATION AT: <http://www.hgs.org/eventskeetshoot>

If you prefer to pay by credit card, please call the HGS office, (713) 463-9476.

If you prefer to pay by check, mail this form with a check made out to HGS to:

Houston Geological Society, 14811 St. Mary's Lane, Ste. 250, Houston, TX 77079

Name: _____ Company: _____

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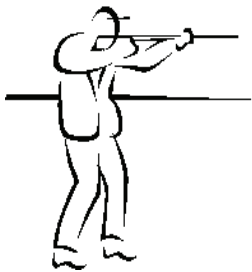
Preferred time: (circle one) 9:00 10:00 11:00 12:00 Ammo: (circle one) 12 gauge 20 gauge

Registration Fee: \$ _____ + Sponsor Contribution: \$ _____ = Total: \$ _____

If you wish to register as a squad, please return forms for all squad members together.

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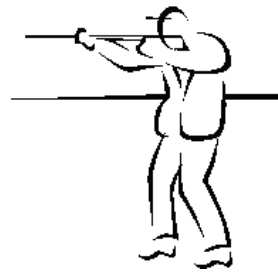
**ALL SHOOTERS WILL BE REQUIRED TO SIGN A DISCLAIMER OF RESPONSIBILITY
BEFORE THEY WILL BE ALLOWED TO SHOOT!**



ANNUAL HGS SKEET SHOOT

Saturday, June 27, 2015

Greater Houston Gun Club
6702 McHard Road, Missouri City



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Cap Sponsor - SOLD

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To sponsor, please indicate your sponsorship level _____ with payment (payable to HGS) to:
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Accounting Contact Name _____ Contact Email Address _____

Special Billing Codes _____

Approved by _____ Date _____

Please email your company logo to office@hgs.org. Note: Company logos (300+ dpi) must be received no later than May 1, 2015.

If there are any questions, please contact Tom McCarroll—713-419-9414 or tom_mccarroll@yahoo.com.

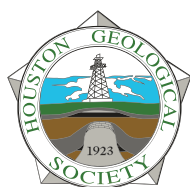
To register online, please go to <http://www.hgs.org/eventskeetshoot>

Business Design Centre, Islington

3-4 September 2015

PESGB

Conference on African E&P
Always Something New Coming Out of Africa



This annual conference, alternating between London and Houston, has established itself as the primary technical E & P conference on Africa, with attendances in recent years reaching over 600, including operators, consultants, governments and academia.

The main conference committee for the 2015 London event will include Ray Bate (Chairman), Duncan Macgregor, Richard Dixon, Kevin Dale, Sean Akinwale and Ian Poyntz.

Thursday 3 September

8.30	Registration & Coffee	
9.20	Welcome and Introduction	H. Wilson, PESGB President
Session 1: New Exploration Hotspots, Discoveries and Prospects Session Chairs : Harry Davis (Delonex), Raymond Komori (Sasol)		
9.30	Keynote : Exploration in Africa in a Low Oil Price Environment – Does it make sense?	J. Austin, OMV
9.55	Keynote : Frontier Exploration in Africa – title tba	A. Milne, Shell
10.20	Keynote : East Africa Rift Exploration: What worked; What didn't and Future Challenges	I. Cloke, Tullow Oil
10.45	Coffee & Poster Presentations	
11.15	Keynote : Major new discoveries off Senegal: the opening of an unexplored deepwater margin and the discovery of two new play types	J. Clayburn et al, Cairn Energy
11.40	Exploration History of the Kwanza Basin	N. Adams, BP
12.05	The Aptian Potential of the South Atlantic Margins	P. Birch et al, Impact Oil and Gas
12.30	Lunch & Poster Presentations	
Session 2: New Kitchens : Geodynamics and Heat Flow Modelling Session Chairs : Helen Doran (Ophir), Julian Moore (BP)		
13.45	Keynote : Seismic Imaging of African Crust and Mantle and the Driving Forces for Basins and Plateau Topography : Results from Africa Array	A. Nyblade, PennState University
14.10	Thermal History and hydrocarbon charge in the East African Rift System: the South Lokichar Basin, Kenya	G. Kuper, Tullow Oil
14.35	New Constraints on the Early Evolution of the South Atlantic Basin As Revealed By Recently Acquired Magnetic, Gravity and Seismic Reflection Data	P. Towle et al., Anadarko
15.00	Coffee & Poster Presentations	
15.30	Keynote : Key factors controlling the thermal history of transform margins	M. Nemcok et al, EGI
15.55	3D seismic stratigraphic analysis of sedimentation and fluid flow on the Nigeria Transform Margin	O. Olobayo et al, Univ. of Manchester
16.20	New Gravity Data Helps Define the Indian Ocean Spreading Ridge and Crustal Boundaries Offshore East Africa	I. Davison et al, Geo International
16.45	Kenya Ultra Deep Water : COB definition with an inverse modelling methodology	M. Biancone et al, ENI
17.10	Insight into the East Coast of Africa from a new tectonic model of the Indian Ocean	C. Reeves et al, Earthworks
17.40	Evening Reception	

Image courtesy of © Sasol

For sponsorship opportunities, visit the website or email events@pesgb.org.uk



Wednesday 2 September

The conference will be preceded by a day course led by D. Macgregor, MacGeology entitled Petroleum Basins of Sub-Saharan Africa (separate registration).

The PESGB Evening Lecture, open to all members and registrants, will be given by K. Myers, Richmond Energy Partners on the subject of 'A review of frontier exploration in Africa since the discovery of the Jubilee Field' from 18.30.

Interactive Session: Seismic Workshop

Session Chair : Patrick Coole (PGS)

In collaboration with PGS, PESGB is offering seismic service companies the opportunity to present on a geological topic of their choice, and the ability to run through the dataset afterwards. Presentations and data shows can run for a total of 50 minutes with a short break for setting up in between. Participants are asked to bring a laptop to display their data, projection facilities will be provided on the day.

Poster Programme

There will also be around 30 technical posters on display throughout the conference. The listing of these will be in the next issue of this magazine. New posters are now being accepted only for student presenters.

Preliminary Oral Programme

Friday 4 September

8.30 Registration & Coffee

Session 3: New Insights on Trap Types and Reservoir Geometries

Session Chairs; Jerry Jarvis (Tullow), Vincent Mashasha (Sasol)

9.00	Understanding the Pressure Regimes along the West Africa Margin and their Implications for Prospectivity	S. O'Connor, Ikon Geopressure
9.25	The importance of inherited structural fabrics on the evolution of the MSGBC Basin and its implications for an underachieving petroleum province.	R. Cowan, Tullow Oil
9.50	Reservoir Consequences of Deposition Near a Large Igneous Province: A comparison of the Senegal-Guinea Bissau Margin with Volcanically-Influenced Equatorial and South Atlantic Basins	A McAfee, Core Labs
10.15	Ntomme Field, offshore Ghana-unravelling puzzling geometries	C McFerran, Tullow Oil

10.40 Coffee & Poster Presentations

11.10	The Pande Gas Fields Complex in the South Mozambique Basin, a history	K. Dale et al., Sasol
11.35	Mzia: A Different Kettle of Fish - Finding, Appraising and Developing a Shy Giant	N. Pike et al, BG Group
12.00	The Meleiha concession in the Western Desert - from Emry Deep oil discovery to innovative exploration concepts	G. Serafini et al., ENI

12.25 Lunch & Poster Presentations

Session 4: New Reservoirs: African Carbonates in Time and Space

Session Chairs : Fabio Lottaroli, ENI, Ian Poyntz

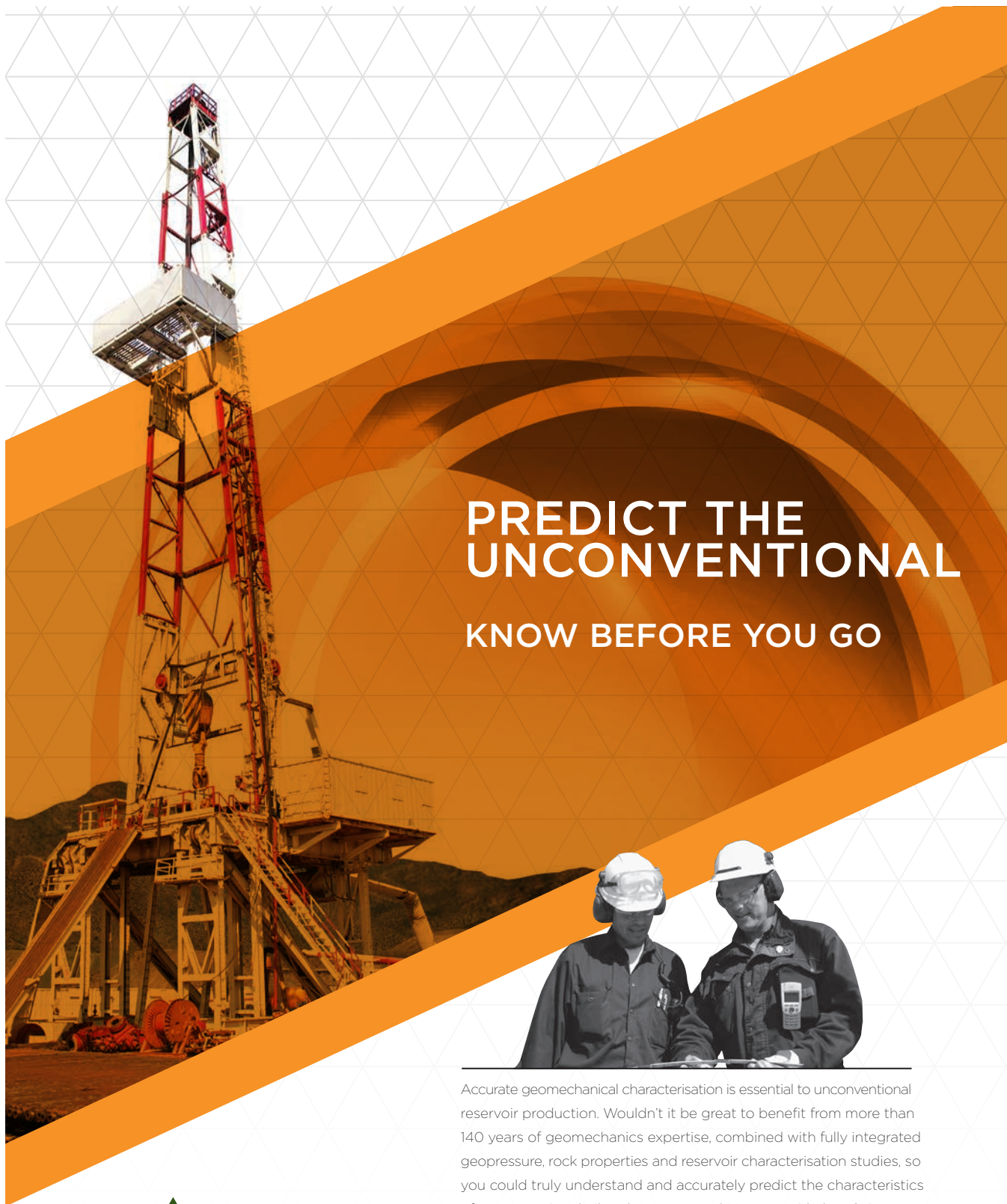
13.45	Keynote : Depositional geometry and facies variability of non-marine carbonates in rift basins	G. Della Porta, University of Milan
14.10	Pre and Post Salt Tectono-stratigraphic evolution of the onshore Namibe-Benguela-Kwanza basins, Angola	I. Sharp, Statoil
14.35	Depositional Models & Reservoir Quality Variation in Cretaceous Travertines, Onshore Namibe Basin, Angola	R. Dixon et al, BP

15.00 Coffee & Poster Presentations

15.30	The evolution of the South Atlantic lacustrine deposits in response to Early Cretaceous rifting, subsidence and lake hydrology	T. Sabato Ceraldi et al, BP
15.55	Neocomian Carbonates in Mauritania : Play opening potential and regional implications	A. Jamil et al, Tullow Oil
16.20	Kenya Carbonate Study	tbc
16.45	Awards Ceremony	
17.00	Closing Address and Invitation to Houston, 2016	I. Poyntz, HGS

Early Bird Registration now open at www.pesgb.org.uk
Member £300 Non Member £355

There will be a limited number of discounted places for those who have been made unemployed. Please contact events@pesgb.org.uk to apply.



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Pre-Salt Play Elements, Play Potential and Continental Margin Type: South Atlantic

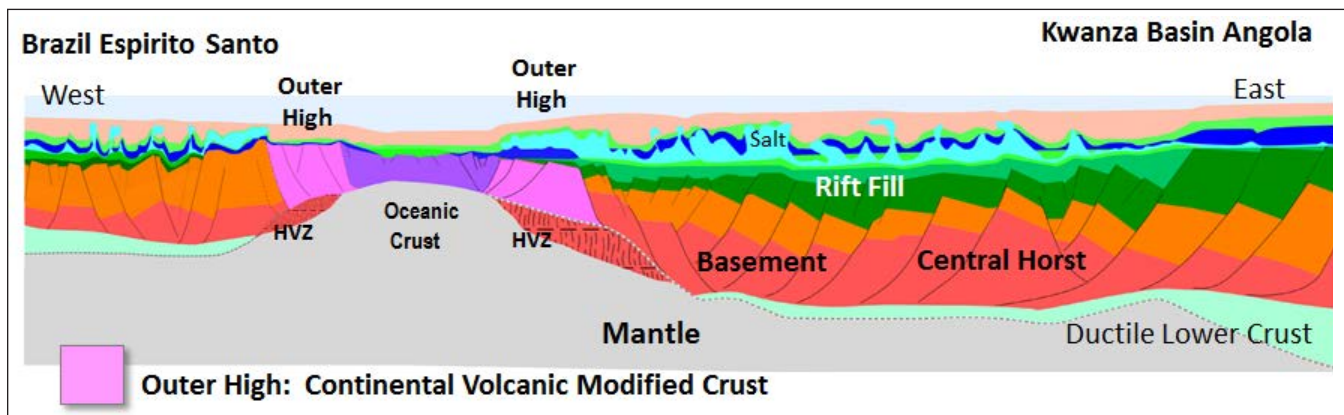


Figure 1. Conjugate geoseismic section Brazilian Espirito Santo to Angolan Kwanza Basin. HVZ is a high velocity zone associated with magmatic underplating which contributed to an isostatically outer continental high, shown in pink. This outer high sequestered the rift basins from marine influence and promoted the deposition of non-marine source rocks and non-marine carbonate reservoirs.

The central South Atlantic Brazilian pre-salt is a globally significant new play type, which has focused worldwide attention on pre-salt exploration potential and its play analogs. Santos Basin pre-salt has large resources; estimates vary between 40-120 BBOE. The recent Brazil Pre-Salt License Round underscores the play's significance, with a bid exceeding \$ 6.5 Billion for the Lara discovery, an unappraised Santos Basin field. The extent to which Santos type discoveries can be repeated is not yet evident; similar pre-salt discoveries in the Brazilian Campos, Espirito Santo, and Angolan Kwanza basins share similar stratigraphy and rift geometries, but are in early stages of appraisal and development.

The Santos and Campos Kwanza conjugate basins provide a geologic template which can be used to recognize similar pre-salt exploration opportunities. Specific rifted margin types are associated with the pre-salt play. These rift basins develop where there is an outer margin continental high which sequestered the basin from marine influence. The presence of an outer continental high is recognized by the absence of both significant SDR's and exhumed mantle. The presence of SDR's is associated with volcanic margins, narrow shallow rift geometries, and a limited or absent sag phase. Non-volcanic continental margins with exhumed mantle similar to the Iberian margin fail to

sequester the rift basin from marine influence and lack the critical non-marine source rocks which characterize the pre-salt play. **Figure 1**, illustrates the characteristic pre-salt rift geometry found in the Kwanza and Espirito Santo basins.

The rifts form broad continental margins with a late thermal sag phase. Sag phase deposition is characterized by high TOC lacustrine source rocks and subsequent non-marine hypersaline/hyper-alkaline microbial carbonate deposition. The paired deposition of lacustrine source rocks and microbial carbonate reservoir are primary elements of the pre-salt petroleum system. The microbial carbonate reservoir is overlain by a rift basin salt sequence in places several kilometers in thickness. Post-salt structural inversion of the rift fabric produces base salt closures with the salt acting as the ultimate top seal. The stratigraphic sequence of lacustrine source rock, microbial carbonate and salt form a simple stratigraphic template for exploration as shown in **Figure 2**.

South Atlantic pre-salt rift geometries and the characteristic stratigraphic sequence can be used as a template to identify prospective pre-salt basins. Many explorers believe the Gulf of Mexico may have similar potential, but there are some key

HGS International Dinner continued on page 19

How did Marubeni gain a leadership position in the deepwater GOM so quickly? It's all a matter of interpretation.

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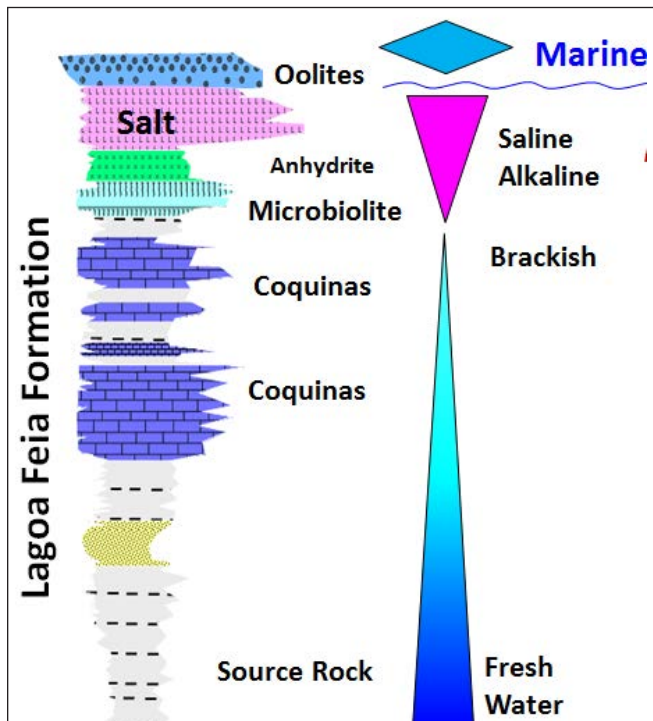


Figure 2. Characteristic pre-salt stratigraphic sequence, Campos Basin Brazil. The sequence changes from freshwater to brackish then hypersaline/hyperalkaline with progressive rift fill. The sequence culminates with evaporite deposition followed by a post-salt marine transgression.

differences that can be seen between the Brazilian basins and the Gulf of Mexico salt basin. Gulf of Mexico pre-salt may be a variation on the Brazilian play. ■

Biographical Sketch

Currently, FRANK LOVE is the Team Leader, Ecopetrol New Ventures. He is an exploration geoscientist with 35 years in the oil and gas industry. His specialties include exploration of rift margins, new ventures, business development, opportunity assessment and portfolio play prospect risking. Prior to joining Ecopetrol, Mr. Love was the BHP New Ventures Lead, Chief Geologist Shell Deepwater Nigeria, and Shell Santos Basin Team Leader. His most recent areas of focus have been in the South Atlantic pre-salt play. Mr. Love has worked worldwide in 30 countries and over 50 basins. His results include discoveries in Alaska, the Gulf of Mexico, and Brazil. He has published on geophysics, seismic interpretation, structural geology, salt tectonics, deepwater depositional systems, plate tectonics, sequence stratigraphy, and carbonates. In addition he has a patent for Fractured Reservoir Analysis. Mr. Love has a passion for geology, geophysical interpretation and mentoring.



Petroleum Systems in "Rift" Basins

34th Annual GCSSEPM Foundation Bob F. Perkins Research Conference

Date: December 13–16, 2015

Location: The Omni Westside
Houston, TX

Conference registration information available in June 2015

@ http://www.gcssepm.org/conference/2015_conference.htm



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Houston Geological Society Awards

2014-2015 Gerald A. Cooley Award

The Gerald A. Cooley Award honors the memory of the man we remember as the personification of dedication, service and leadership continuing long after official office terms expire. It recognizes true dedication to the profession of petroleum geology in general, and to the Houston Geological Society in particular. The award honors those who have continued to serve the society well above and beyond the call of duty over many years. A candidate must have received both the Distinguished Service and Honorary Life Membership Awards to be eligible for consideration. It is the Society's highest award.

The HGS Board is very proud to recognize LINDA R. STERNBACH with the Gerald A. Cooley award, the highest award presented by the HGS, for her efforts to improve how HGS communicates its monthly events and meetings to Society members, and for her continuous volunteer service to HGS since 1985. Through it all, her goal has been to make HGS more rewarding to its members. Linda has received all the other awards granted by HGS: Rising Star, Distinguished Service, President's Award (twice), and Honorary Life Membership (2011). Her Honorary citation chronicles many contributions to HGS. Linda's elected offices include: HGS President 2007/2008, Vice President 2005/2006, Editor and Editor-Elect 1996/1998.



Linda R. Sternbach

What has Linda been doing since receiving HGS Honorary Membership in 2011? She has created videos of HGS technical meetings. Linda chairs the HGS Video Committee (2011 to present). More than 50 technical presentations exist on the HGS website because of her dedicated service as a video camera person and producer along with committee member Mike Allison and Thom Tucker. HGS has room to expand on web presence, and to improve this outreach to members and potential members. This work achieves the fundamental objectives of the HGS, which are: to stimulate interest and promote advancement in geology; to disseminate and facilitate discussion of geological information among geologists and others; and to encourage academic training in the science of geology. More importantly, the videos are fun and educational! The top-viewed HGS videos of the 50+ currently available are: Art Berman, Oct 2013 – 6016 views; Macondo Gulf Oil Blowout July 2012 – 2326 views; Bob Shoup – Climate change March 2013 – 2113 views.

Linda credits fellow video committee member Mike Allison for showing her how to use the Camtasia software program required to crank out technical videos in the YouTube-ready MPEG-4

format. Linda logs into the HGS social media sites, with the help of Dianna Phu, to share and post links to HGS meeting talks. As of March 2015, the public has viewed the HGS YouTube channel 28,600 times. Currently there are 200+ subscribers, and 50+ videos online. There is also a second YouTube channel for GeoLegends videos, which are populated with older recordings dating back to 2000, and this includes the latest GeoLegends videos from 2015, which are quite popular! Go to YouTube and type in HGSGeoEducation and HGSGeoLegends in the search bar to find the videos.

HGS hosted a very successful AAPG ACE 2014 convention. Linda organized the AAPG Tuesday "Night at the Museum" with famed dinosaur finder, paleontologist and author Dr. Robert T. Bakker. Linda's outstanding work at the HMNS includes service as the Guest Night Chair (2003-2007) with 5 sell-out events. What is Linda doing next? HGS is the host organization for the 2015 GCAGS Annual Convention (September 20-22, 2015) planned for the George R. Brown Convention Center. Linda is hard at work as GCAGS 2015 Technical Program chair for what promises to be an outstanding meeting!

Linda earned a BS in Geology from Syracuse University and an MS from Rensselaer Polytechnic Institute. Before she majored in geology, she had an early interest in photography and journalism, dating back to being assistant editor in her high school newspaper in the suburbs of Philadelphia, PA. As a teenager, she made 8 mm film movies during 70s-era summer breaks. In many ways, she has continued her use of these talents in creating the HGS videos. Linda continues working on her goal to improve HGS media, and to organize outstanding geoscience events. ■

Charles Sternbach and Jeff Lund

2014-2015 Honorary Life Membership

Honorary Life Membership honors members who have distinguished themselves in the science of geology or have contributed outstanding service to the success and welfare of this organization. The honoree must have received the HGS Distinguished Service Award.

For more than 38 years PAUL BABCOCK has been a very active member of HGS, serving as a director, officer, committee chair, AAPG delegate, Chairman of the AAPG Houston House of Delegates Committee, and GCAGS representative to the AAPG Advisory Council from the Houston Geological Society.

Paul joined HGS as an active member in the late 1970's. He previously served as chairman of the Membership Committee (1997-2000) and is the current chair for the Vendors' Corner Committee (2005-2015) and the AAPG Houston House of Delegates Committee. Paul has participated in several HGS community service projects and has served on the Technofest Committee. In between that committee service he served as an HGS Director (2000-2002) and Vice President (2002-2003). Paul was elected as the GCAGS representative from the Houston Geological Society to the AAPG Advisory Council in 2005 and served through 2008. Paul



Paul Babcock

has continued to represent HGS as an AAPG delegate for more than 15 years.

Paul remains active not only with the Vendors' Corner Committee, but also as a member of the Mudrocks Committee and as the ongoing editor of the very popular Name Change Directory (2002-2014).

The GCAGS "Transactions" Volume 58 was dedicated to Paul in 2008.

HGS recognized Paul for his contributions with the HGS Distinguished Service Award in 2006 and President's Awards in 2000 and 2013. Paul has been underappreciated for his long-time service and contributions to HGS,

but is no longer. HGS is proud to present Paul Babcock with its Honorary Life Membership Award. ■

Ken Nemeth

2014-2015 Honorary Life Membership

Honorary Life Membership honors members who have distinguished themselves in the science of geology or have contributed outstanding service to the success and welfare of this organization. The honoree must have received the HGS Distinguished Service Award.

STEVE BRACHMAN has been a very active member of HGS for many years, serving as an officer, committee chair, AAPG delegate, and participating on multiple convention committees for both GCAGS and AAPG on behalf of the Houston Geological Society.

Steve joined HGS as an active member in 1987. He served as chairman of the Personnel Placement Committee (1988-1991) and the Finance Committee (1997-2001). In between those periods of committee work, he served as the HGS Treasurer-Elect (1991-1992), Treasurer (1992-1993) and Secretary (1993-1994). He also served on two convention committees, heading up the 1990 GCAGS Personnel Placement Committee and the 1995 AAPG Convention Volunteer Committee. He chaired the GCAGS Convention Academic Liaison Committee in 2000.

Steve has represented HGS as an AAPG delegate since 2000. In this time he has also served on the AAPG – DPA Advisory Board as a Gulf Coast representative (in 2001-2004) and for the three-year



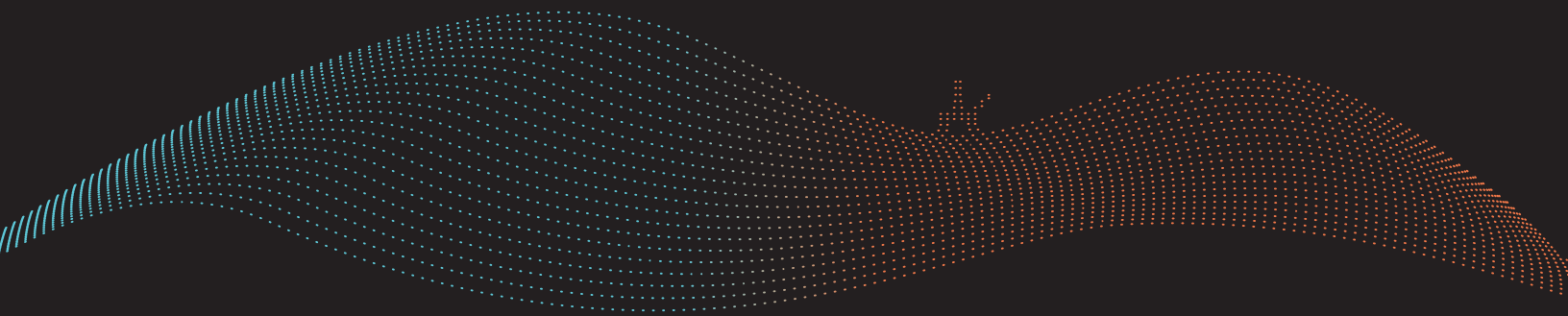
Steve Brachman

term through the HGS President's offices (Elect 2005-2006; President 2006-2007; Past 2007-2008). He chaired the Nominating Committee in 2007-2008. While President of HGS Steve was very instrumental in negotiating a "rewarding" profit interest in the 2008 GCAGS-GSA-Tri-Societies annual convention held in September 2008 (which was the first major event held at the George R. Brown Convention Center after Hurricane Ike).

Steve continues to represent HGS at AAPG. He was the General Chairman of the 2014 ACE in Houston. He is the current AAPG Vice-President of Sections.

HGS previously recognized Steve for his contributions with the Distinguished Service Award in 2001. HGS is proud to recognize his outstanding service with this Honorary Life Membership. ■

Ken Nemeth



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2014-2015 Distinguished Service Award

HGS Distinguished Service Award honors members who have given long-term valuable service to the Society.

The HGS is proud to recognize **DENISE M. STONE** with its Distinguished Service Award, a much-deserved honor in light of what she has accomplished while serving the Society over the past 15-20 years and for her representation of HGS and the Gulf Coast Section to the national AAPG program.

Denise's rise in the leadership of HGS started in 1991, when she was elected Treasurer. In 1999, she joined the HGS Board as Secretary. During that term she championed the formation of a new committee that she proposed would address networking and meeting programs for young professionals with less than 10 years industry experience. She came up with the name "NeoGeos" for the committee.

The name NeoGeos and the early networking programs went on to be much copied by other geo-societies because it filled a growing membership need to bring young people into the HGS, serve their professional needs and mentor them to move into leadership positions.

After being HGS Secretary, Denise then was elected HGS Vice President in 2000, HGS President Elect in 2001 and HGS President in 2002. She inspired many other professional women geologists to get involved with the Society. Her career spanned major oil companies from 1981 till 2003. She was promoted up the technical ladder at Superior Oil, which merged with Mobil. She joined Amoco Production Company in 1985 which later merged with British Petroleum (BP). Denise has expertise in log analysis, geological mapping, exploration planning, basin evaluation, reservoir evaluation and risk analysis. After parting with BP, Denise achieved professional recognition with a series of independent companies including BHP Billiton, Benchmark Oil and Gas, and Rose and Associates. As an independent consultant she has worked international projects, the United States Lower 48 and Alaska. She most recently served as both the



Denise Stone

editor and a co-author of AAPG *Memoir 104, Oil and Gas Fields of the Cook Inlet Basin, Alaska*.

One of Denise's many talents is that when she takes on an idea, or agrees to organize a volunteer event, she displays a willingness to do whatever is necessary to contribute to its success. After being HGS President, Denise served as Past President, recruiting candidates to run for HGS office, for AAPG awards and for the Houston House of Delegates. Her post-presidential energy turned to serving HGS by taking leadership roles in several AAPG Gulf Coast Section positions, including Chair of the Houston House of Delegates, and three years as AAPG Gulf Coast Advisory Council member.

When HGS hosted the AAPG Houston annual meeting in 2011, Denise served as Short Course Chair coordinating many moving parts, and serving as an example of professional competence and positive energy.

Another one of Denise's' outstanding talents is her ability to give well thought-out and well stated comments at the podium with admirable diction, style and enthusiasm. This is the studied result of the amount of time she has spent doing public speaking, both in her work and as an advocate for geologic education programs at HGS and AAPG.

Denise started contributing to HGS as an early leader and chair of the International Explorationists' Group when it formed in the 1980's, and has returned to this popular committee in that last few years, as group Treasurer, also helping the group recruit speakers for the International monthly meeting. The HGS is fortunate to have had Denise M. Stone as a long term leader for the Society and wishes to recognize her innovation and achievements. ■

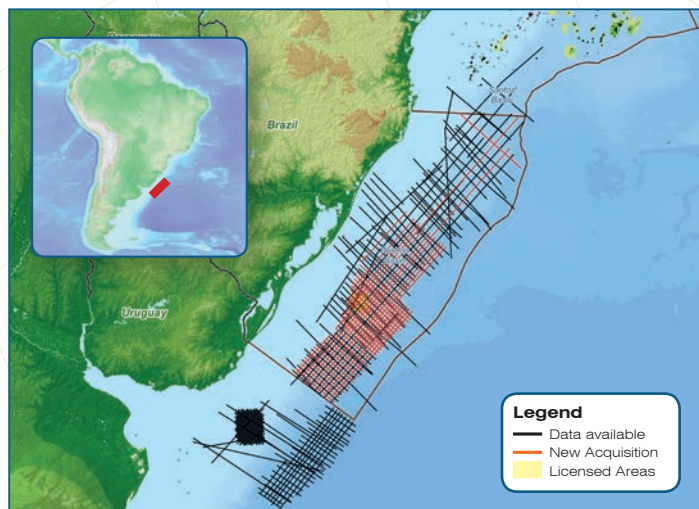
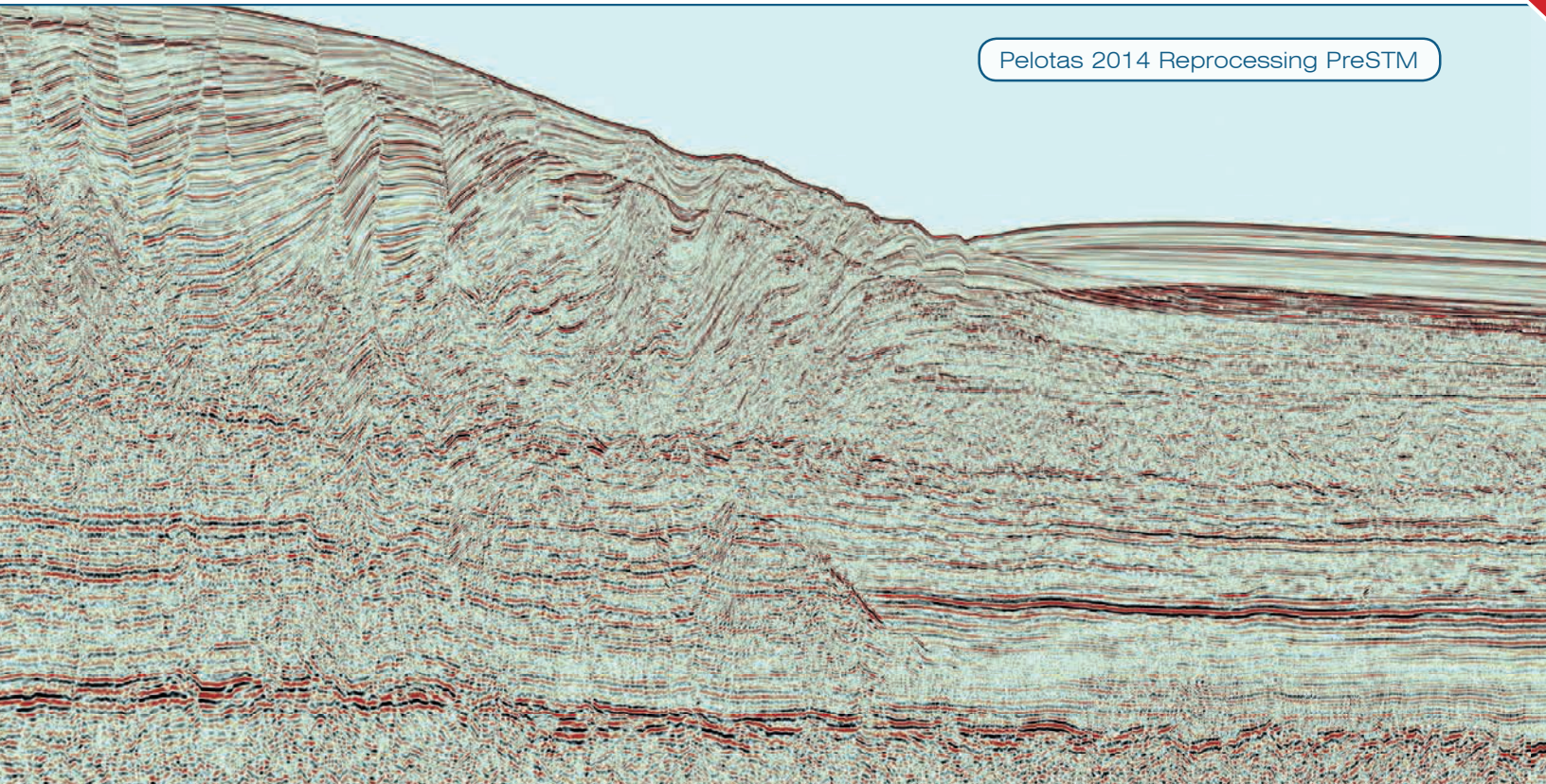
Linda and Charles Sternbach

Brazil & Uruguay: Pelotas Basin

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Pelotas 2014 Reprocessing PreSTM



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Across the Brazilian Pelotas Basin, the library includes an additional 19,500 km of 2D data, 7,500 km of which is newly acquired with the remainder being recently reprocessed.

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2014-2015 President's Award

President's Award honors members whose extraordinary efforts or unique contributions in a fiscal year or over a short period of time deserve special recognition.

The HGS Board is very proud to present MIKE ERPENBECK with its President's Award.

Mike has been very active in the HGS since 2010 when he took the demanding role of Office Committee Chair. During his time as Office Chair he worked out the economics of a potential office space move for the Board and negotiated new lease terms and conditions for the new space with the building management firm. Concurrently he was instrumental in working out financial and operational details of terminating the HGS/GSH sharing arrangement that had become problematic. In dealing with staff changes he tightened up the Office HR hiring procedures, employment contracts, and compensation structures to conform to State and Federal regulations. He was also instrumental in increasing computer efficiency by updating office computers and bandwidth from the internet service provider.

After his election as Treasurer-Elect in 2012, Mike assumed the duties of both Treasurer and Treasurer-Elect as the Treasurer for that term was assigned overseas. In his two years as Treasurer he designed a real-time tracking of monthly progress toward the year-end cumulative budget and incorporated it into the monthly Treasurer's report. He reviewed and updated several large office contracts and auditing procedures.



Mike Erpenbeck

Mike was instrumental in overhauling the procedure for nominating HGS service award recipients. Working with Ken Nemeth, he undertook the tedious task of sifting through reams of HGS *Bulletins* back to 1998 and devised a system for ranking potential awardees. This gave the new HGS Board better data to identify and recognize the most deserving service award recipients.

Mike is Treasurer of the Mudrocks committee in 2014 and 2015 and has performed similar duties for the Africa Conference and Geomechanics committees. He has served as an HGS representative to judge the Houston Regional Science Fair the last three years and has agreed to take the reins of the newly formed Science Fair Committee. Mike is also serving on the Executive Committee for the 2015 GCAGS Convention as Treasurer for the event.

Mike holds BS and MS degrees in geology from San Diego State and Texas Tech University, respectively, and an MBA from University of Houston. He has held various exploration, financial, and management positions at Texas Oil and Gas, Pilgrim Exploration, Hemus Oil and Gas, Vantage Pipeline, UMC Petroleum and Ziff Energy Group. ■

Joe Lynch

2014-2015 President's Award

President's Award honors members whose extraordinary efforts or unique contributions in a fiscal year or over a short period of time deserve special recognition.

The HGS Board is proud to present **CHRISTINA HIGGINBOTHAM** with its President's Award. Christina has been actively involved with the Houston Geological Society for over 10 years. She began her volunteer work with the Environmental and Engineering Committee by searching out and coordinating speakers for their monthly meetings.

Her intelligence, responsibility and excellent inter-personal skills were on full display while doing committee work. She established that she was a person that "could get things done" and was approached to run for an HGS Board position. In 2010 she was elected to the critically important position of Treasurer-Elect and then Treasurer. Her energy and valued advice helped guide the HGS Board for two years.

At the conclusion of her 2-year term Christina indicated she would like to continue to serve HGS and became Chair of the Office Management Committee. The timing could not have been better for HGS because the Society was entering a period of rapid and significant change. Christina's knowledge of HGS operational procedures from her Board service was invaluable in assisting the newly hired Office Director to understand and execute her new duties. At the same time, HGS was transitioning



Christina Higginbotham

from a third-party operated website to a self-operated site. Christina was asked to help evaluate and select a new webmaster for the website. Her operational background and honest evaluation of candidates helped the selection committee hire a quality individual.

Change has been the operative word within HGS for the past 3 years. From 2012 through 2015 two Office Directors and one Webmaster have left for personal reasons. Fortunately for HGS, Christina Higginbotham has been a steady and critical influence, volunteering her time and her expertise in helping us not only to navigate change but to benefit from it. Christina is employed full time as a geoscience professional. She is a wife and a mother, juggling the time required by her profession with her commitments of an active family life. Yet, she still gives her time and expertise generously to HGS, and we are better for it.

Christina's contributions to HGS have been many and they have been significant. We are deeply appreciative of those contributions, and pleased to recognize her with a President's Award. ■

John Dombrowski

2014-2015 President's Award

President's Award honors members whose extraordinary efforts or unique contributions in a fiscal year or over a short period of time deserve special recognition.

This award is a small token of the President's esteem and appreciation for the extraordinary and unique efforts that John went to in order to negotiate contracts with a major venue on behalf of the Houston Geological Society. Through his efforts, HGS is in a better position to weather attendance and cost issues in the 2016 Africa Conference. Without his negotiating on



John Jordan

behalf of the Applied Geoscience Conference – Geomechanics, the event might have been canceled. HGS appreciates what John's efforts have meant to the organization in 2015 and recognizes them with its President's Award. ■

Ken Nemeth

2014-2015 President's Award

President's Award honors members whose extraordinary efforts or unique contributions in a fiscal year or over a short period of time deserve special recognition.

This award is a small token of the President's esteem and appreciation for the extraordinary efforts made by **SUE PRITCHETT** on behalf of the Houston Geological Society. Sue has represented HGS on the Engineering and Science Council of Houston and served as an ECH officer since 2012. She has served two terms as President and agreed to continue in that position for yet another term!

Sue has been an influential and guiding force in the Science and Engineering Fair of Houston transition from the University of Houston Downtown (not a part of the U of H system) to the STEM Center on the University of Houston's main campus. She has served as Vice-President of the Science and Engineering Fair of Houston for the last two years (a duty of the ECH President). Sue has led the formation of judging teams at SEFH for the HGS-sponsored Houston Museum of Natural Science Interns (HGS provides three interns) and the HGS Divisional



Sue Pritchett

Awards. In her spare time Sue has prepared the "goodie" bags presented at Guest Night to the SEFH Award winners.

Sue's tireless support for the promotion of science in the Houston area school systems, and especially the SEFH, have made a difference that has improved the Fair's operations. Under Sue's ECH presidency, and inspired by HGS Past-President Barry Katz, the SEFH now has an endowment fund that will make the Fair self-funding in the long term and sponsor the participation of more students at the state and national science competitions. The HGS appreciates Sue's efforts on behalf of the Society and the students of the greater Houston area, and so

recognizes her with its President's Award. ■

Ken Nemeth/Claudia Ludwig

2014-2015 President's Award

President's Award honors members whose extraordinary efforts or unique contributions in a fiscal year or over a short period of time deserve special recognition.

The HGS Board is proud to present DAVE REYNOLDS with its President's Award.

Everybody who has attended and enjoyed the HGS annual Guest Night over the last 10 years remembers the fun at the Museum of Natural Science, the crowded IMAX Theatre and the fantastic speaker programs that seem to arrive perfectly prepared each year. Credit for this smooth operation goes to Dave Reynolds, who chairs the Guest Night Committee. Dave has been involved with Guest Night ever since being "recruited" by Janet Combs to "monitor" the 2008 speaker, who was a UT-Dallas graduate school buddy (and NASA Astronaut) named James F. Reilly. Dave was able to get in contact with Jim Reilly using a personal phone contact and found out Reilly was actually retiring from NASA after his last shuttle mission. The 2008 Guest Night was a success, and many more successful programs followed. HGS recognizes Dave Reynolds for his intensive committee efforts over many years and continuing up to this year. As Guest Night Chair he wears multiple hats: raising funds, planning the event with the HMNS, coordinating student awardees and big name speakers, and keeping the event on budget.

The amazing thing about Guest Night is that the standard keeps getting set higher each year, and the biggest challenge is faced in the increase in catering and museum costs at HMNS since the opening of the Paleontology Hall featuring the dinosaurs. The part of Guest Night that Dave has enjoyed most has been meeting and getting to know the various interesting speakers we have hosted. They range from deep ocean explorers to Mars geomorphologists, Nile rafters to Big Bend tectonic experts.



Dave Reynolds

Here is a list of the Guest Night programs under Dave's involvement: 2008 – James F Reilly, astronaut; 2009 – Michael Waters, Geo-Archeology (held at the downtown Aquarium); 2010 – Patricia Wood Dickerson, Big Bend Geology; 2011 – Derek Main, Arlington Archeosaur; 2012 – Susan Eaton, Antarctic Exploration; 2013 – Dawn Sumner, The Mars Rover Curiosity; 2014 – Pasquale Scaturro, Rafting the Nile. The next chapter is Guest Night 2015 with Jeff Karson talking about the ultra-deep ocean floor.

One of Dave's favorite memories of Guest Night was the presentation by Dr. Derek Main, who described the paleo-environment of the Arlington dinosaur dig site where he worked.

Derek showed great slides and painted word pictures of what the setting of this Cretaceous estuary looked like. He highlighted all the new discoveries he and his co-workers have made, including predator alligators, turtles and proto-hadrosaurs that were in a setting much like Galveston. When Derek opened the floor to questions, the first question came from a 10 year old girl in the audience who totally understood the presentation. That is what Guest Night should do – inspire our youth to explore the geosciences, and share some top-notch speakers with our friends who never took a formal class in geology. Dave's academic background in geology permits him to carry on intelligent conversations with all speakers. He actually gets more excited on Guest Night than most of the attendees in the audience. A big thanks to Dave Reynolds for the many successful years of the popular Guest Night program. ■

Linda Sternbach

2014-2015 Rising Star Award

Rising Star Award honors individuals who are relatively new to the HGS and have made significant and promising contributions to the enhancement and success of the society.

The HGS Board is pleased to award its Rising Star Award to **BRYAN GUZMAN** in recognition of his continued service as the HGS Exhibits Committee Chairman. We are truly grateful for his multiple years of dedication to HGS functions.

Bryan joined the HGS back in 2008 when he first moved to Houston after graduating from the University of Texas at San Antonio with a B.S. in Geology. While at UTSA, Bryan was the Student Geological Society (SGS) President (2007-2008) and regularly attended dinner meetings organized by the South Texas Geological Society (STGS). By devoting time to both the UTSA SGS and STGS, he quickly learned the value of both student and professional societies.

Upon joining HGS, Bryan became involved in the HGS Exhibits



Bryan Guzman

Committee and ultimately became its chairman in 2012. With his participation in the HGS Exhibits Committee, Bryan offered his skills in conference booth management by coordinating booth location, design, and the presentation of the various HGS functions throughout the year, to increase HGS awareness and boost membership. Most recently, Bryan has coordinated the design of a new tradeshow booth and more robust booth giveaways.

Again, the HGS thanks Bryan for his personal contributions. HGS members can look forward to his continual support and are encouraged to drop by the HGS exhibits booth during a conference to say hello. ■

Ashley Garcia

2014-2015 Rising Star Award

Rising Star Award honors individuals who are relatively new to the HGS and have made significant and promising contributions to the enhancement and success of the society.

The HGS Board is proud to present its Rising Star Award to CASEE LEMONS in recognition of her outstanding efforts in contributing to the full support committee of the 2015 HGS Applied Geoscience Conference: Mudrock Reservoir Characterization.

As a young professional she has aggressively and continually offered to provide the committee with constructive and positive support recommendations as well as her personal support while serving multiple roles on the committee. These contributions also included responsibility as: 1) Speaker Awards Chair, 2) Technical Editor of the Technical Brochure, including that of 22 oral speakers, and 18 University Poster presenters, and 3) At-event volunteer, including speaker support and audience support (including microphone assist to the full event).



Casee Lemons

Her ability to “roll up her sleeves” and assist the greater Houston Geological Society membership in developing a premiere technical conference event is greatly appreciated. Her passion in the field of geosciences, along with her demonstrated incisive scientific inquiry of the speakers at these technical events, demonstrates her forward and future capabilities within these important fields.

The Houston Geological Society is especially fortunate to have Casee Lemons as an important HGS volunteer who has such a capacity to contribute to the greater benefit of its membership. ■

Frank Walles



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2014-2015 Chairman's Award

Chairman's Award honors members whose extraordinary efforts or unique contributions to their committee deserve special recognition.

The HGS Board is proud to present SUSAN BLACK with its Chairman's Award in recognition of her longstanding and valuable service to the HGS Foundation. Susan has served as a trustee of the Foundation continuously since 1986, and has been a key factor in the Foundation's growth and success during that time. She has served in a variety of roles within the Foundation, including Secretary and Treasurer, and has reviewed literally hundreds of scholarship applications during that time. She is passionate about the Foundation's mission to provide scholarships to deserving undergraduate geoscience students, and has donated both her time and money to help the Foundation succeed.



Susan Black

In addition to her work with the Foundation, Susan has been an active member of the HGS and AAPG for years. She also was elected to the HGS Board in 2004 and served as Secretary.

Susan holds Bachelor of Science and Master of Science degrees in geology from Texas A&M and Texas Tech University, respectively. She has worked in the oil and gas industry throughout her career and has worked for Superior Oil Company, Energy Development Corporation, Contour Energy and Newfield Exploration. She has also worked as a consulting geologist for a number of companies. Presently, she is employed as a senior staff geologist for Memorial Resource Development. Susan is a Certified Petroleum Geologist and a member of the Texas Board of Professional Geoscientists.

It is rare in this day and age to find someone who will donate so much for such a long period of time to any one cause, and we are honored to have her on the committee. Thank you, Susan. ■

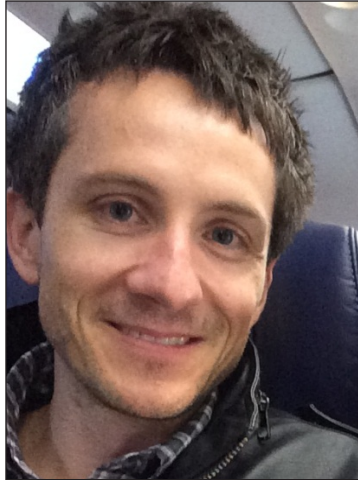
John Adamick

2014-2015 Chairman's Award

Chairman's Award honors members whose extraordinary efforts or unique contributions to their committee deserve special recognition.

The HGS Board is proud to award TREVOR BROOKS its Chairman's Award for his outstanding efforts in contributing to the full support committee of the 2015 HGS Applied Geoscience Conference: Mudrock Reservoir Characterization.

As a young professional, he has aggressively offered his efforts within the monthly committee meetings to provide the committee with constructive and positive support recommendations, as well as contributing his personal support within the University Graduate Students Poster sub-committee. These personal contributions included the joint responsibility to contact, within the committee team, more than 75 university professors. In addition, follow-up efforts were required in the contact and development of technical brochure materials and personal follow-through to, initially, twenty PhD and MS



Trevor Brooks

graduate students. These efforts were required for the development of an HGS- and an industry-supported program for the Houston Geological Society Applied Geoscience event. His and the sub-committee's efforts, led by Steven Macalello, resulted in the successful enlistment of 18 University Poster presenters at the full event of February 16-18, 2015.

Trevor's efforts to assist the greater Houston Geological Society membership in developing a premiere technical conference event are greatly appreciated. His passion in the field of geosciences demonstrates his forward and future capabilities within the field of mudrock reservoir characterization. ■

Frank Walles

2014-2015 Chairman's Award

Chairman's Award honors members whose extraordinary efforts or unique contributions to their committee deserve special recognition.

The HGS Board is proud to present **MATTHEW COWAN** with its Chairman's Award. For many years Matthew has been attending Texas Board of Professional Geoscientist meetings and reporting back to the Committee Chairman on any significant developments. He's also helped the Committee with following significant bills through the State of Texas



Matthew Cowan

Legislature so we that can accurately report to the HGS their significance to geologists and make recommendations, as needed. Without Matthew's help the Government Affairs Committee would have found its job to be much more difficult. ■

Henry Wise

2014-2015 Chairman's Award

Chairman's Award honors members whose extraordinary efforts or unique contributions to their committee deserve special recognition.

The HGS Board is proud to present **MIKE EFFLER** with its Chairman's Award in recognition of his outstanding efforts in contributing to the full support committee of the 2015 HGS Applied Geoscience Conference: Mudrock Reservoir Characterization.

As a retired but very active professional, he has aggressively offered his efforts within the monthly committee meetings to provide constructive and positive support recommendations, as well as contributing his personal support in University Graduate Students Poster sub-committee. These personal contributions included the joint responsibility to contact, within the committee team, more than 75 university professors. In addition, he participated in the follow-up efforts required by the initial contact and development of technical brochure materials and personal follow-through to twenty PhD and MS graduate students. Mike also provided valuable mentorship within his Poster Program sub-committee. His extensive industry experience, contacts and university involvement were important components to his support.

These efforts were especially required for the development of



Mike Effler

an HGS and industry-supported program for the Houston Geological Society Applied Geoscience event. His and the sub-committee's efforts, led by Steven Macalello, resulted in the successful enlistment of 18 University Poster presenters at the full event of February 16-18, 2015.

Mike graduated from the University of Cincinnati with a BS degree in geology in 1973 and an MS degree in geology in 1976. He began his career with Mobil in 1977 and retired from ExxonMobil in 2012. He has been a member of HGS since 2000 and AAPG since 1981.

Mike's efforts to assist the greater Houston Geological Society membership in developing a premiere technical conference event are greatly appreciated. His passion in the support of the Houston Geological Society, even during his retirement, is fantastic.

The Houston Geological Society is especially fortunate to have Mike Effler, who has such a capacity to contribute to the greater benefit of its membership, as an important volunteer. ■

Frank Walles

2014-2015 Chairman's Award

Chairman's Award honors members whose extraordinary efforts or unique contributions to their committee deserve special recognition.

The HGS Board is proud to present **TAREK GHAZI** with its Chairman's Award. Tarek has been involved with the HGS and HGS website for many years. As the Website Manager in 2009-10, Tarek was responsible for two essential HGS communication engines, the website and the email blast. At that time, being web manager meant coordinating the content through the firm Schipule, who maintained and hosted our site. It also meant writing and sending out the weekly email blasts. In other words, Tarek was responsible for keeping the HGS information flowing digitally.

Tarek began his service to the HGS much earlier, working on the International Explorationist Group Committee, chairing that group from 2007 to 2008. Overlapping his service as HGS Website Manager,



Tarek Ghazi

Tarek also served as Director on the HGS Board (2009-2011) and as the AAPG Houston delegation Foreman (2011-2012).

In early 2012, Tarek assisted with testing the new HGS website. After the new site became active in the Fall, Tarek became active again on the Web Management Committee, providing valuable insight and assistance, as we have stabilized the site and worked towards improvements in design and functionality. Tarek has been the committee vice-chair, sharing leadership and responsibilities in directing and managing committee activities. His insight and support have been highly instrumental to our success these past three years. ■

Sandi Barber

2014-2015 Chairman's Award

Chairman's Award honors members whose extraordinary efforts or unique contributions to their committee deserve special recognition.

The HGS Board is proud to present **DR. NEAL IMMEGA** with its Chairman's Award. Neal received his Bachelor's Degree in geology from Texas A&M University and his PhD in Geochemistry from the University of Indiana. He worked in geochemistry for Shell Oil E&P Technology Co. for 30 years, mostly hiding out at the Bellaire Research Center. Upon his retirement in 1999 Neal became a super volunteer not only for the Houston Geological Society but also for the many city libraries, Houston Museum of Natural Science, and the Houston Gem and Mineral Society. As a popular docent at the Houston Museum of Natural Science, Neal can be found leading and lecturing attendees in the Wiess Energy Hall, Cullen Hall of Gems and Minerals, Morian Hall of Paleontology, and several others of the Museum's special exhibits. Neal is active in the outreach programs of both the Science Museum and the Gem and Mineral Society, giving programs on earth science (and getting credit from both groups for a single program!) to schools, nursing homes, and groups



Neal Immega

like the Rotary Club and churches. Neal is currently president of the paleontology section and shop supervisor at the Gem and Mineral Society. His free downtown walking tour of Houston building stones is quite popular with schools and colleges. He also runs occasional free local field trips when an organization requests one.

This year Neal has volunteered to create Petrified Wood Speakers' Awards from his collection of Eocene Yegua Formation and Miocene Fleming Formation woods. Using lapidary equipment at the Houston Gem and Mineral Society, Neal has cut pieces to create rock awards that were given to speakers at the various HGS technical meetings throughout the year. Houston is honored to have such a tremendous, knowledgeable volunteer as Dr. Neal Immega. ■

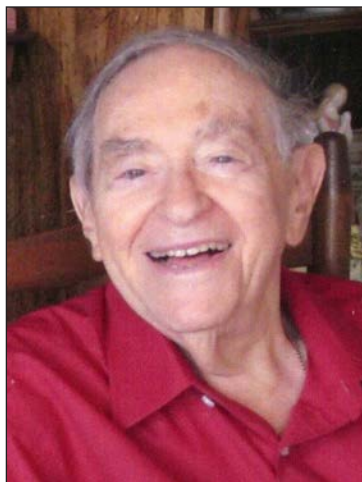
Mike Deming

2014-2015 Chairman's Award

Chairman's Award honors members whose extraordinary efforts or unique contributions to their committee deserve special recognition.

The HGS Board is proud to present ED MARKS with its Chairman's Award. Ed originally became an HGS member in 1959, and remained a member until 1974, when he transferred to Indonesia. Upon his return to Houston in 2006, he rejoined the HGS. Ed has served as a member of the Editorial Advisory Board for the HGS *Bulletin* since 2012.

Ed is part of an editorial team that is composed of complementary parts. Each member focuses on different aspects, resulting in a very good end product. His editorial skills and dedication to



Ed Marks

thoroughly reviewing each written submittal sent to him are very much appreciated. He has the additional skill of sensing when the editor needs some words of encouragement or a good laugh. Ed not only corrects the grammar, spelling and punctuation, but also asks important questions regarding content which help to improve, or at least clarify, the articles. HGS is very fortunate to have volunteers like Ed. ■

Dave Miller

2014-2015 Chairman's Award

Chairman's Award honors members whose extraordinary efforts or unique contributions to their committee deserve special recognition.

The HGS Board is proud to present **CHARLES REVILLA** with its Chairman's Award. Charles has been a member of the HGS since 1978. He has served on the Editorial Advisory Board for the HGS *Bulletin* since 1995 and has contributed articles and cover photos for the *Bulletin* since 1990. Charlie successfully ran for Editor Elect in 1999, but was unable to complete his term.

Charlie's careful editing skills have been instrumental in maintaining the high standards of the *Bulletin* for the past 2 decades.



Charles Revilla

The time that he spends behind the scenes on each issue of the *Bulletin* is significant and his edits are "spot-on". He is able to improve the quality of the written submittals to the *Bulletin* and has an amazing eye for detail. His encouragement, enthusiasm, knowledge and good humor are appreciated by everyone who has been fortunate to work with him. ■

Dave Miller

2014-2015 Chairman's Award

Chairman's Award honors members whose extraordinary efforts or unique contributions to their committee deserve special recognition.

The HGS Board is proud to present **SHARIE SARTAIN** with its Chairman's Award. Sharie has been an Active Member of HGS since 1983, and has been a long-time volunteer for the Society. She served as a Director on the HGS Executive Board from 1999-2001, and as Secretary during 2001-2002. During that time, she also acted as the Society's Volunteer Coordinator. After leaving the Executive Board, she chaired the Awards Committee for 3 years. In 2009 Sharie became the Chairman of the Membership Committee and still volunteers in this capacity. The Membership Committee is charged with reviewing all new HGS Membership applications and Emeritus status requests, then makes recommendations for approvals to the Executive Board on a monthly basis. Sharie previously received a Houston Geological Society President's Award in 2010.



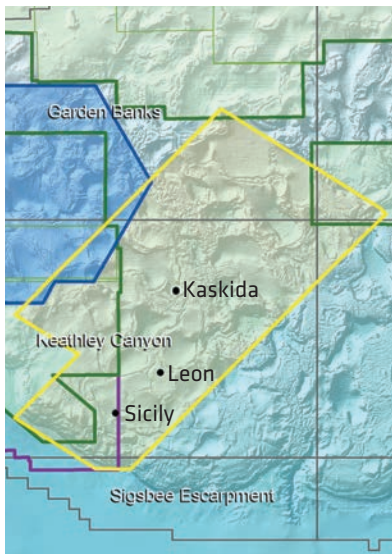
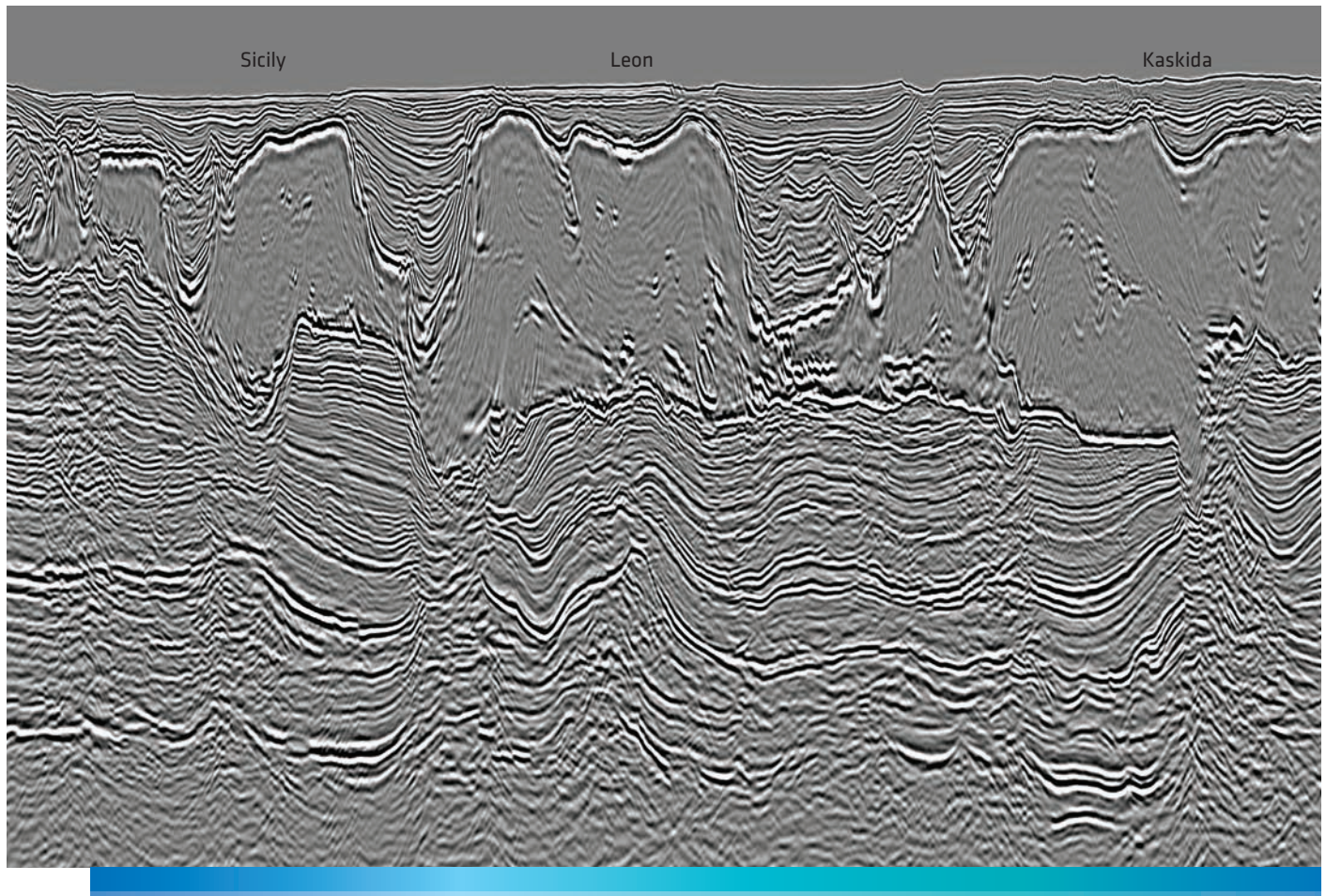
Sharie Sartain

She has been representing the HGS as a Delegate to the AAPG House of Delegates (HoD) since 1997, and has served in volunteer positions in that body as well. During 2008-2009 she was the

elected Foreman for the Houston area AAPG HoD delegation. Sharie has served on standing and ad hoc committees for the HoD when requested, and is currently a member of the HoD Resolutions Committee.

Sharie received a Bachelor of Science degree in Geology from the University of Akron and a Master of Science degree in Geology from Kent State University. She began her career with Phillips Petroleum in Houston in 1981, where she worked on regional studies, Gulf of Mexico Shelf, Gulf of Mexico Deepwater and Permian Basin projects. In 2002 she became a Consultant for Knowledge Reservoir, completing exploration and development projects in numerous domestic and international basins. Since 2014 she has been working as a consultant for Focus Exploration, developing prospects in the Gulf of Mexico Shelf and Deepwater areas. ■

Ashley Garcia



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HGS Teacher of the Year

This award has been established to honor individuals whose extraordinary efforts or unique contributions are in earth science education.

How many parents write letters about how their younger child can't wait to grow older so that he or she can have the same science class teacher that their older sibling had? There probably aren't many teachers who inspire this, but the HGS 2015 Teacher of the Year is one. ILENA KRUPALA has taught Fifth Grade Science in the Bellville School District for fourteen years. She is a hands-on teacher, packing her classroom with rocks and fossils that she uses during the earth science and energy resources portion of the Fifth Grade science curriculum. Many of her family vacations include side trips for mineral or fossil collecting with those finds joining her classroom collection. Parents have written that the students love her and learn effortlessly.



Ilena Krupala

Ms. Krupala was trained as an art teacher and uses that training in creative ways to present science topics to the class and to bring the students unique experiences that enhance the learning process. She has been creative in overcoming reduced budgets for classroom material, fieldtrips, and other extra programs. She has sought out and brought into the school excellent earth science related programs at little to no cost to the school. She was responsible for bringing the Modular Offshore Learning Units (MOLU) hands-on museum from the Ocean Star Museum in Galveston to her classroom. She has borrowed the Ocean Star's, "Playing with Petroleum" kit and uses the kit's videos, models, and labs in her teaching. She works with the school's PTO to bring the Discovery Dome sponsored by the Museum of Natural Science to her school. She found a corporate sponsor for field trips to the Houston Museum of Natural Science when budget cuts ended the Fifth Grade's annual fieldtrip to that museum.

Mrs. Krupala's supporters tout her passion and enthusiasm for teaching science and for the pure joy that she displays in the subject. Her passion for teaching science is carried on through her students as they continue to explore and investigate the physical world beyond her Fifth Grade classroom. She is described as a teacher who loves learning herself and keeps up with her education in order to serve her students better. She especially loves geology and space. She teaches from the heart, from experience and knowledge, by demonstrating and by allowing the students to have as many hands-on experiences as possible! When students are asked about Ms. Krupala they respond enthusiastically with a loud "She's awesome!"

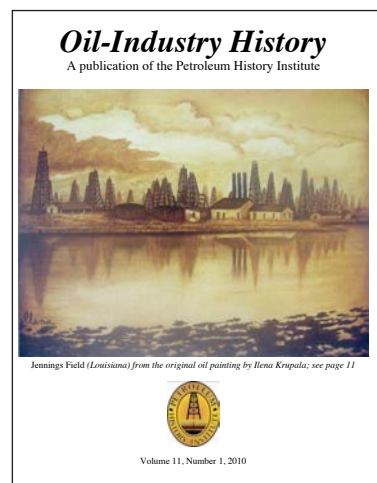
She has encouraged her students to participate in Earth Science Week activities and in 2014 two of her students received 1st place awards and one received a 2nd place award for their art entries. She remains a talented artist and her designs can be found on Bellville Science Fair t-shirts and other school projects. She was commissioned by the Petroleum History Institute to paint oil field views for their 2010 and 2012 Oil History Symposia. Signed numbered prints of her paintings were used as speaker gifts and the original paintings were auctioned off during the symposia fundraiser. Her 2010 painting was also selected for the cover of the Oil-Industry History, v. 11 journal. (<http://petroleumhistory.org/oil-industry-history/volume-11/>)

Ilena Krupala has been recognized by the Bellville School District as its 2006 Teacher of the Year and received the district's Superintendent's Award for 2013. She will be the recipient of the Gulf Coast Association of Geological Society's (GCAGS) 2015 Owen R. Hopkins Outstanding Earth Science Teacher Award. This award will be presented at the GCAGS convention in September.

The Houston Geological Society recognizes Ilena Krupala as its Teacher of the Year for her dedication to her students, her energetic approach to the teaching of earth sciences, and her encouragement of her students to look at science as an adventure, not just something to be endured in a classroom.

This teacher is one of a kind — and if you get the chance to meet her, you'll see what I mean. ■

Ken Nemeth



2014-2015 Corporate Stars

The Corporate Star Award honors companies who have made significant contributions to the Houston Geological Society. These contributions can be monetary (cash) or in kind (donation of services, materials, or an individual's time).

Gold Level – \$10,000 to \$24,999



2014-2015 Corporate Stars

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Energy Careers	SM Energy
Fairfield Nodal	Southwestern Energy
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June 2015



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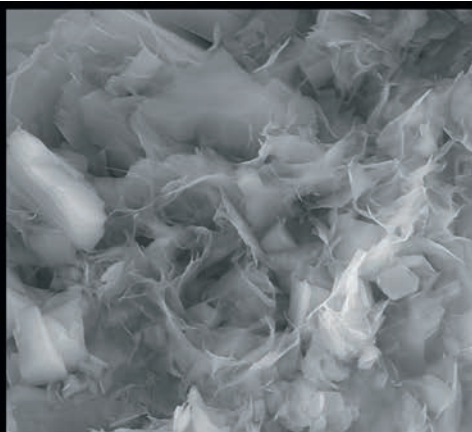
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T u e s d a y

W e d n e s d a y

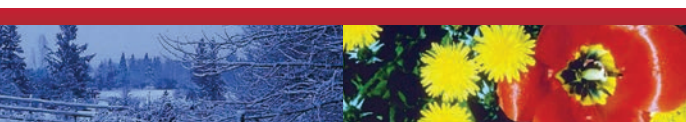
	1	2	3
7	8	9 HGS Board Meeting 6 p.m.	10
14	15 HGS International Dinner Meeting <i>"Pre-Salt Play Elements, Play Potential and Continental Margin Type: South Atlantic," Frank Love, Page 17</i>	16	17
21	22	23	24
28	29	30	

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GEOEVENTS

Thursday

Friday

Saturday



4	5 Don't wait, make your reservations online at www.hgs.org	6 HGS Guest Night <i>Explore the Ultra-Deep Ocean Seafloors of the World Houston Museum of Natural Science Pages 8, 11</i>
11 The Energy Entrepreneurs Social <i>Sambuca Houston, TX Page 34</i>	12	13
18	19	20
25	26	27 HGS Skeet Shoot <i>Greater Houston Gun Club Page 12</i>
Reservations: The HGS prefers that you make your reservations on-line through the HGS website at www.hgs.org. If you have no Internet access, you can e-mail reservations@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, check with the Webmaster@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.		Members Pre-registered Prices: Dinner Meetings members..... \$45 Emeritus/Honorary members..... \$40 Student members \$10 Nonmembers & walk-ups \$50 Except - Env. & Eng. \$30 Nonmembers & walk-ups \$35 Emeritus/Honorary members..... \$15

July 20-22, 2015
URTeC 2015
San Antonio Texas

September 3-4, 2015
PESGB/HGS Africa Conference
London, England

September 13-16, 2015
AAPG/SEG International
Conference and Exhibition
Melbourne Australia

September 20-22, 2015
GCAGS Annual Convention
Houston, TX

October 9, 2015
GSH/HGS 15th Annual Saltwater
Tournament
Topwater Grill Marina
San Leon, TX

October 19, 2015
HGS Golf Tournament
Kingwood Country Club

May 8-16, 2016
HGS Grand Canyon Field Trip
Grand Canyon



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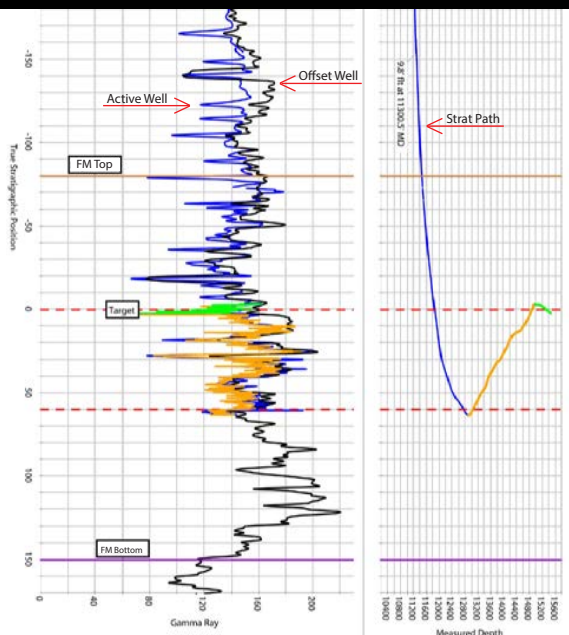


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65th GCAGS Convention

September 20-22, 2015

Even though we are all very busy with our activities and summer plans, now is the time to begin thinking about our fall activities. I hope that you have the Gulf Coast Association of Geological Societies (GCAGS) convention on your calendar. The HGS has the honor of hosting the 65th GCAGS Convention on September 20-22, 2015. Just as in the past when Houston has hosted the convention, we have had wonderful volunteers of the HGS step up to provide you with an outstanding convention. There is an exciting technical program consisting of short courses, field trips, poster presentations, and oral technical sessions. We hope you will find something that appeals to you, and that you plan on attending these fine events. We also have an exciting Monday evening event planned at the St. Arnold's Brewery and activities in the hospitality room are planned to complement the convention experience.

There are many benefits to attending this year's GCAGS Convention, and the first is the technical program that Linda Sternbach and her outstanding team of volunteers have put together. The technical program consists of 94 talks, 86 posters and two forums. We have over 94 technical papers that will be presented over the two days and the sessions will cover such subjects as offshore fields, salt tectonics, 3-D seismic studies, Mexico exploration and opportunities, onshore fields, environmental, and others. The two forums will be offered. One is on Education and Leadership, and the other is on Geologists as Leaders in Finance, Banking and A & D.

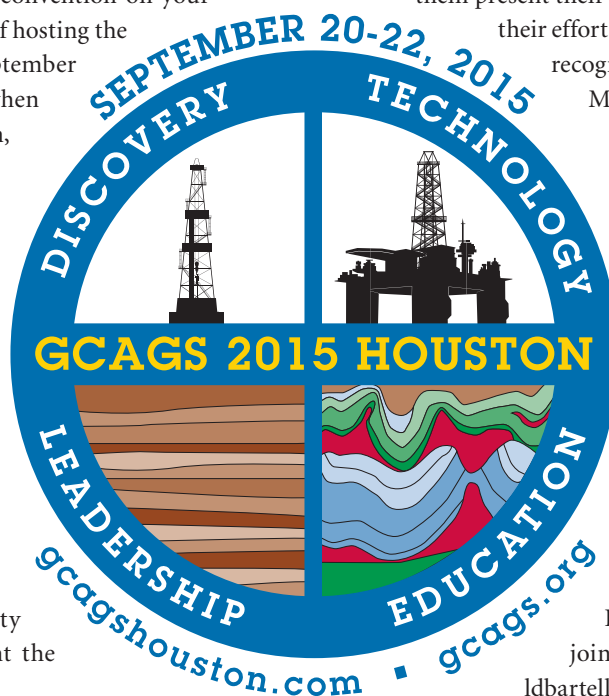
One of the highlights of the upcoming convention is the opportunity of having the AAPG-SEG Student Expo overlap with our meeting and having the soon-to-be graduates participating in our activities. There will be approximately 800 BS, MS, and PhD's seeking employment opportunities. This should be exciting for them as this may very well be their first exposure to the GCAGS,

and provide a great opportunity for them to see the benefits of attending such meetings and making new acquaintances. One way in which we are getting the students involved is by having them present their research in the posters program. For their efforts we are going to be judging them and recognizing the top three presenters at the Monday evening President's reception in the exhibit hall.

As with the other GCAGS Conventions we will be having luncheons, nine short courses, and seven field trips to further your experience. Information on these and other activities will be forthcoming in the mail shortly in our convention announcement or you can find it on our websites at www.gcagshouston.com or www.gcags.org.

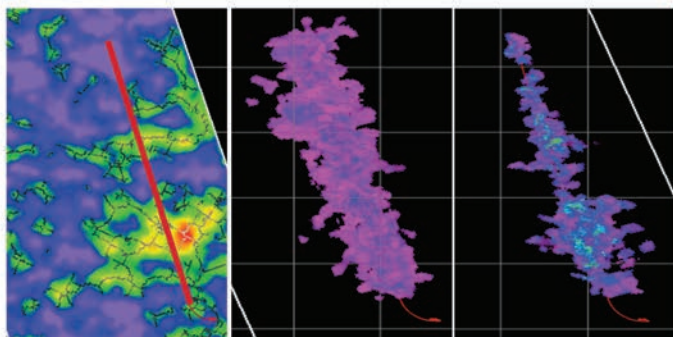
If you would like to volunteer and join the team you can contact me at ldbartell@legendsexpl.com. We will certainly find a place for you as volunteers are always what makes these meetings work so well. If you are unable to volunteer, then perhaps you or your company could help with sponsorship. If this is something you can assist us with, I urge you to contact Jeff Lund, our sponsorship chair, at jeff.lund@corridoroilandgas.com to discuss possible opportunities. There are many ways you or your company can support the GCAGS actively, and become recognized for your support.

During the downturn we are experiencing here in 2015, we realize that we have experienced these before and that we have become a stronger industry because of it. A big part of that is due to the opportunities that the GCAGS has provided to us by networking, renewing old acquaintances, or making new friends, whether it be in the technical sessions, luncheons, or in the exhibit hall. So I hope you mark down on your calendar **GCAGS Convention September 20-22, 2015**. Our profession is always evolving and I hope you come and join us and others in exploring the latest trends and technologies that have been developed. ■



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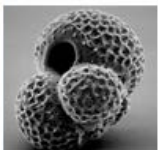
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Student Volunteers Needed for GCAGS Annual Convention

Half-day student volunteers are needed, beginning Thursday September 17th through Tuesday September 22nd. Volunteers will earn full-paid student registration for students or new grads that have not yet accepted employment offers. Assignment preferences will be weighed on volunteer date, and registration fees will be refunded on site upon completion of a half-day's work. Possible responsibilities include serving as short course assistants or technical session "runners," ticket-taking, helping check in field trip participants, manning registration, pre-convention packet preparation and judge's room.

Preliminary work schedule for the convention:

Thursday September 17		1:00 p.m.
Friday September 18		3:00 p.m.
Saturday September 19	7:00 a.m.	1:00 p.m.
Sunday September 20	7:00 a.m.	1:00 p.m.
Monday September 21	7:00 a.m.	1:00 p.m.
Tuesday September 22	7:00 a.m.	1:00 p.m.



For more information, contact Jim Grubb, Volunteers Chair, at jamesmgrubb@yahoo.com, or go online to <http://www.gcagshouston.com/be-a-volunteer/>



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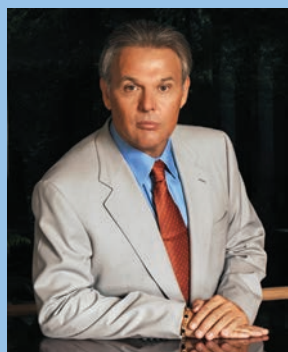


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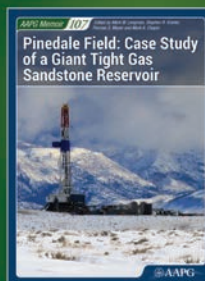
Have you been cheated, mistreated or somehow deprived of your share of a deal, working interest or royalty? If so, give me a call. I have twenty five years experience as a working interest and royalty owner in the oil and gas business to go along with thirty five years of court room experience. You do not pay anything unless I win.

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HGS Grand Canyon Field Trip 2016

May 8 - 16, 2016

Please join us on a special “Journey through Time” as once again the HGS offers its Grand Canyon field trip. We will float down the Colorado River on motorized rafts, which will provide us the opportunity to see and discuss all the classic geology so beautifully portrayed here, from Precambrian strata to modern processes which continue to shape the canyon. Geological concepts are introduced and magnificently illustrated in the Canyon in such a way that the geology comes alive for everyone. We will run rapids, take several short hikes, play in some exciting side creeks, eat like royalty and sleep under the stars. Your river guides and gear are supplied by Hatch River Expeditions, the most experienced outfitter serving the Grand Canyon. Past participants have stated this was the best geological field trip they ever took and many have brought one or more of their family along to share this incredible experience.

While this is not an overly strenuous trip, participants must be in good enough physical condition to climb in and out of the rafts. We will have some hiking each day, the longest being six miles, and several hikes require some scrambling. All of the hikes are optional, but I encourage you to take as many as you can to experience fully this extraordinary trip.

The trip begins in Las Vegas on May 8. We provide transportation from there to Marble Canyon and the first night in Cliff Dwellers Lodge, food and drink for 8 days/7 nights on the river, a helicopter ride to Bar 9 Ranch the last day and the flight from there back to Las Vegas. Costs not covered include round-trip airfare to Las Vegas, first night's dinner in Marble Canyon, tips for our river guides, any souvenirs purchased at Phantom Ranch or Bar 9 Ranch, and anything you might spend in Vegas if you fly in early or stay on. Optionally, you may join us in Marble Canyon, and Hatch will arrange a return flight to there at the end.

Cost: \$3320/person, reserve your spot now with a \$300 deposit; balance is due by December 15, 2015.

Trip Leader, Steve Earle, is a Past-President of HGS and also served as Editor. He received his BS in Geoscience from the University of Arizona. While there, he spent as much of his free time as possible hiking the trails of the Grand Canyon. Steve is passionate about the Canyon and loves sharing that with anyone. After a 40-year career as an oil and gas explorationist, he is now retired. ■

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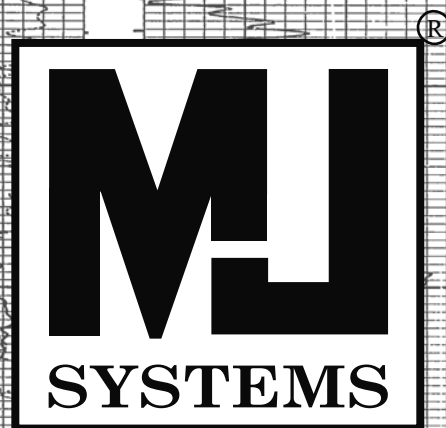
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Government Update

by Henry M. Wise, P.G. and Arlin Howles, P.G.

If you'd like the most up-to-date Texas rules, regulations, and governmental meeting information we direct you to the HGS website to review The Wise Report. This report, which comes out as needed but not more often than once a week, offers the most up-to-date information that may be of interest to Texas geologists.

AGI Geoscience Policy Monthly Review (March 2015) **Senate Commerce, Science, Transportation Subcommittee Holds Hearing on NASA's Budget**

On March 12, 2015 the Senate Commerce, Science, and Transportation Subcommittee on Science, Space, and Competitiveness held a hearing to review the President's fiscal year (FY) 2016 budget request for NASA. The Honorable Charles Bolden, Administrator of NASA, answered senators' questions about the current and future focus of NASA and its missions.

Senator Cruz expressed a desire for NASA to focus on space exploration. Senator Cory Gardner (R-CO) echoed his sentiment. Bolden replied that NASA's missions are synergistic and multiple facets play into space exploration, including ground-based infrastructure and earth and solar sciences that would inform when and how space exploratory missions are launched. He explained that federal agencies rely on NASA for satellites and instrumentation and stated that NASA does not give opinions or make decisions but provides data.

Subcommittee Ranking Member Gary Peters (D-MI) and Senator Bill Nelson (D-FL) spoke on the importance of balanced funding in NASA's budget. Senator Peters highlighted the importance of financing the Aeronautics Directorate and Senator Nelson stated his support for increasing funding for both Earth science and space exploration.

Bolden stated that under the current FY 2016 proposal, NASA would still be on track to extend the International Space Station (ISS) until 2024, and the U.S. would no longer be reliant on transportation to the ISS on the Russian Soyuz by 2017.

House Appropriations Commerce, Justice, Science, and Related Agencies Subcommittee Held Hearing on Proposed NOAA FY 2016 Budget

On March 18, 2015 the House Appropriations Commerce, Justice, Science, and Related Agencies Subcommittee met to discuss the President's proposed fiscal year (FY) 2016 budget for the National Oceanic and Atmospheric Administration (NOAA). The Honorable Dr. Kathryn Sullivan, Administrator of NOAA, answered representatives' questions about NOAA satellite projects, coastal resilience, and hurricane research.

Subcommittee Chairman John Culberson (R-TX) and Ranking Member Chaka Fattah (D-PA) raised concerns over the potential

weather satellite coverage gap prior to the launch and calibration of the Joint Polar Satellite System (JPSS). Dr. Sullivan testified that NOAA has done its utmost to mitigate the potential gap, and JPSS is on track to launch in January 2017. NOAA anticipates a gap of between 12 and 42 months where satellite weather data may not be available. Dr. Sullivan highlighted the need for funding for the Polar Follow On program, investing in the future of the JPSS series in order to ensure data continuity and prevent future gaps in data.

Dr. Sullivan addressed the need for funding for NOAA's fleet of research vessels and described its vital work maintaining operation of NOAA's Deep-ocean Assessment and Reporting of Tsunamis buoys (DART). NOAA will have to retire half of its current fleet by 2020 due to aging vessels.

Senate Energy and Natural Resources Committee Holds Arctic Opportunities Hearing

On March 5, 2015 the Senate Committee on Energy and Natural Resources held a hearing to evaluate opportunities for the United States to build on its status as an Arctic nation. Witnesses from the Alaskan State Legislature, the U.S. Navy, the academic community, and the commercial shipping industry gave testimony.

Admiral Robert Papp, Special Representative to the Arctic, highlighted the balance between security and environmental concerns struck by the U.S.'s proposed program for their Arctic Council chairmanship, which will take place from 2015 to 2017. Admiral Papp stated a need for investment in Arctic infrastructure, specifically icebreakers, ships specifically designed to operate in polar, icy conditions. Senators Maria Cantwell (D-WA), Angus King (I-ME), and Lisa Murkowski (D-AK) all agreed that icebreakers are vital to support U.S. leadership in the Arctic. Senator Murkowski pointed out that Russia has 29 icebreakers and India is building one while the U.S. has only two. Senator Murkowski stated that she will present a bill that supports better charting, ice forecasting, and creates weather stations and buoys for weather and ice tracking.

Senators Mazie Hirono (D-HI), Cantwell, and King voiced support for U.S. ratification of the Law of the Sea treaty, an international agreement through the United Nations that establishes conventions governing the oceans including a process to recognize the extent of territorial waters and national claims to the continental shelf.

Government Update continued on page 59

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- ▶ The Petroleum System: An Investigative Method to Explore for Conventional and Unconventional Hydrocarbons
- ▶ Fundamentals of Siliciclastic Sequence Stratigraphy
- ▶ Rock/Fluid Interactions and Natural Fracture Development and Alteration
- ▶ RQ Toolkit: Using Rock Data for Reservoir Quality Assessment
- ▶ Reservoir Engineering for Petroleum Geologists
- ▶ Practical Geomechanics
- ▶ Quick Guide to Carbonate Well Log Analysis
- ▶ Clay Minerals in Reservoir Evaluation
- ▶ Risk Reduction for Plays & Prospects Using Quantitative Show

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Conference 2015

November 9-13, 2015 - Houston, Texas

Upcoming Education Courses

2015 Courses:

LAST CHANCE

Deep-Water Siliciclastic Reservoirs Field Seminar (immediately following AAPG Annual Mtg.)	June 5-10, 2015 California
Carbonate Reservoir Analogues: Play Concepts & Controls on Porosity Field Seminar	June 8-13, 2015 Almeria, Spain
Utica, Marcellus and Black Shales in the Northern Appalachian Basin Field Seminar	June 15-19, 2015 New York
The Lodgepole-Bakken-Three Forks Petroleum System Field Seminar	June 24-26, 2015 Montana

Early-bird Rates Expire Soon:

Basic Well Log Analysis	July 13-17, 2015 Golden, CO
Fractures, Folds and Faults in Thrusted Terrains Field Seminar	July 13-18, 2015 Montana
Seismic Interpretation in Fold- and Thrust- Belts Field Seminar	July 19-25, 2015 Canada
Assessment, Forecasting, and Decision-Making In Unconventional Resource Plays (with URTeC)	July 18-19, 2015 San Antonio, TX
Geomechanics for Completion Optimization (with URTeC)	July 18, 2015 San Antonio, TX
Introductory Geochemistry for Condensate-Rich Shales and Tight Oil (with URTeC)	July 19, 2015 San Antonio, TX
Geology in Montana along the Missouri River: Canoeing with Lewis & Clark Field Seminar	August 17-21, 2015 Montana
Devonian Reef Facies Models, Hydrothermal Dolomitization, and Tight-Carbonate Reservoir Analogues Field Seminar	Aug. 31-Sept. 4, 2015 Canada

SHORT COURSES

Fractured Reservoirs: From Geologic Concepts to Reservoir Models - course plus field trip	August 24-28, 2015 Casper, WY
Geochemistry & Modeling of Unconventional Petroleum System (with AAPG ICE)	September 13, 2015 Melbourne, Australia
Practical Salt Tectonics	December 1-4, 2015 Houston, TX

FIELD SEMINARS

Modern Terrigenous Clastic Depositional Systems	September 8-15, 2015 S. Carolina
Complex Geology of the Spanish Pyrenees: Folding, Thrusting & Syntectonic Sedimentation	September 14-18, 2015 Barcelona, Spain
Lacustrine Basin Exploration	September 20-27, 2015 Utah
Sedimentology & Sequence Stratigraphic Response of Paralic Deposits	September 23-30, 2015 Colorado/Utah
Complex Carbonate Reservoirs	Sept. 26-Oct. 2, 2015 Italy
Sequence Stratigraphy, Facies Architecture & Reservoir Characterization of Fluvial, Deltaic and Strand-Plain Deposits	October 2-9, 2015 Utah

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AAPG

Education

Alaskan representatives expressed concern regarding lack of fossil fuel energy development leading to an under-capacity of the Alaskan Pipeline. Senators Al Franken (D-MN) and Bernie Sanders (I-VT) both called out the irony of developing resources exposed by climate change that would only increase climate change and its damages.

House Passes Two EPA Reform Bills

On March 18, 2015 the House passed Representative (R-TX) Lamar Smith's Secret Science Reform Act of 2015 (H.R. 1030). The bill would require all science used in Environmental Protection Agency (EPA) rulemaking to be "publicly available online in a manner that is sufficient for independent analysis and substantial reproduction of research results." Democrats expressed concern over releasing scientific data pertaining to personal health information. They proposed an amendment to the bill to protect the privacy of public health study participants during the House Science, Space, and Technology Committee mark up; however, the amendment did not pass. While the bill is quite similar to H.R. 1422 passed by the House last year, the 2015 version includes an additional clause restricting the EPA to \$1 million or less per year to carry out the requirements. A Congressional Budget Office (CBO) estimate found the legislation would cost \$250 million a year for the EPA to implement, an average of \$10,000-\$30,000 per

study used in the regulatory process. The bill would result in a 50 percent cut to EPA studies, though CBO said costs would likely lessen after the first few years. Democratic members of the House stated the bill would set EPA up for failure and called the bill an attack on the EPA's ability to use science in forming regulations.

On March 17, 2015 the House passed another related bill, Representatives (R-OK) Frank Lucas and Collin Peterson's (D-MN) EPA Science Advisory Board Reform Act (H.R. 1029). This bill adds peer-review requirements for the EPA's Science Advisory Board (SAB) and creates a quota for state and local officials on the panel, as well as allowing corporate interests to serve on the panel after disclosing their financial conflicts of interest. The bill also requires disclosure of the origin of grant money for academics on the SAB.

The White House has threatened to veto the bills, saying H.R. 1029 would be burdensome to the advisory board and H.R. 1030 imposes unnecessary and expensive requirements on the EPA. Two companion bills have been introduced in the Senate, Senator (R-WY) John Barrasso's Secret Science Reform Act of 2015 (S. 544) and Senators John Boozman (R-AR) and Joe Manchin's (D-WV) EPA Science Advisory Board Reform Act of 2015 (S. 543).

Government Update continued on page 61

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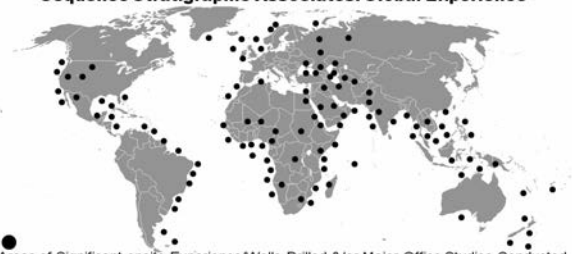
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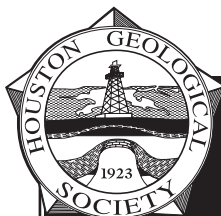
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HGS Welcomes New Members

New Members Effective April 2015

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Fanchen Kong
Ashley Machek
Jennifer Masy
Mark Matranga
Cizoba Nwobodo
Lauren Robinson

Kathryn Ross

Jessica Thompson

EMERITUS MEMBER

Charles Jackson

STUDENT MEMBERS

Douglas Adams
Spencer Fuston
Meri McCulley

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Both bills are currently under review in the Environment and Public Works Committee.

BLM Introduces Hydraulic Fracturing Regulations

On March 11, 2015 the Obama Administration and Bureau of Land Management (BLM) introduced new regulations on hydraulic fracturing on federally-managed land. The new rules would tighten requirements on 750 million acres of federal and Indian lands where BLM oversees the subsurface mineral estate. The regulations require disclosure of chemicals used in the hydraulic fracturing process through FracFocus.org, an industry-financed website, and ban pits at well sites, requiring wastewater to be stored in covered tanks. To address concerns about “frac hits” or “downhole communication,” where fluids from hydraulic fracturing travel to nearby wells and potentially result in surface spills or aquifer contamination, the rules require that casing and cementing follow best practices, and require reporting the trajectory of the well bore, the pressure of the hydraulic fracturing fluid, and the depth of the well being hydraulically fractured, as well as locational data of all well bores within a 0.5 mile radius.

The BLM rules would only apply to 11 percent of hydraulic fracturing operations currently operating in the U.S., and state regulations that are stricter than the new rules will take precedence. Currently only 13 of the 32 states where hydraulic fracturing occurs on BLM land have regulations. The Western Energy Alliance and Independent Petroleum Association of America have filed a lawsuit in Wyoming District Court to block the new regulations. Senator Jim Inhofe (R-OK) introduced a bill to “clarify that a State has the sole authority to regulate hydraulic fracturing on Federal land within the boundaries of the State” (S.828). Democrats criticized the rules as being a “lowest common denominator” approach, and environmentalists have disparaged the new regulations for being too lax, citing stricter requirements needed after “downhole communication” surface spill events in neighboring Alberta, Canada.

Senator Murkowski Introduces Mineral Security Bill

On March 26, 2015 Senator Lisa Murkowski (R-AK) introduced The American Mineral Security Act of 2015 (S.883), which would support the development of domestic supplies of critical minerals, as well as the infrastructure to support research and education. Critical minerals are important in use but their supply is vulnerable to disruption. A press release from the Energy and Natural Resources Committee cites a U.S. Geological Survey (USGS) statistic that the U.S. is “more than 50 percent dependent on foreign nations for at least 43 separate mineral commodities.” The bill would update determinations for critical minerals based on a methodology to be developed by the U.S. Geological Survey and would support resource assessment studies, improve statistical analysis and forecasting of domestic production and consumption of critical minerals, and support recycling, efficient use, and the development of alternatives to critical minerals in the U.S. The bill would expedite the development of domestic resources by updating permitting for mines to shorten the length of the permitting process. USGS would take the lead on implementing most of the bill’s requirements. The bill has been referred to the Energy and Natural Resources Committee, which is chaired by Senator Murkowski.

President Obama and NOAA Expand Marine Sanctuaries

On March 12, 2015 the National Oceanic and Atmospheric Administration (NOAA) announced the expansion of the Gulf of the Farallones and the Cordell Bank National Marine Sanctuaries, off the coast of California, in a final rule that adds 2,770 square miles to the pre-existing protected marine areas. The rule prohibits oil, gas, and mineral extraction and development, but does allow boating. NOAA has currently instated a 6-month stay on discharge regulations, which typically prevent dumping of oil or treated sewage into marine sanctuary waters, while they review Coast Guard concerns about the discharge regulations. The revised designations will take effect after a review period of 45-days of continuous session of Congress beginning March 12, 2015. ■

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Friday, October 9, 2015

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Galveston Bay Complex and Offshore

HGS GOLF TOURNAMENT

Monday – October 19, 2015

Kingwood Country Club



DUST OFF THE CLUBS, POLISH THE SHOES, AND PAD THE HANDICAPS, IT'S TIME FOR GOLF!

Come out and join us for golf, food, friends and fun at the annual HGS Golf Tournament at Kingwood Country Club. This year's format will be a four man scramble, with three flights determined by handicap. First, second, and third place awards (blind draw for 3rd place) will be awarded for each flight. There will be prizes awarded for closest to the pin and long drive as well as many great door prizes and raffle prizes for participants.

The entry fee is \$150.00 per person or \$600.00 per team on entries received on or before October 9th. Entries will be accepted after October 9th, but a \$25.00 late fee will be applied per golfer. Individual entries will be grouped with other individual golfers to make a foursome. Entries are limited and will be accepted on a first-in basis.

Companies or individuals interested in sponsoring the event should contact Mark Dennis at 281-494-2522 (office), 281-705-4346 (cell) or by email at mdennis@petrolog.com.

To enter, please fill out the entry form and email, fax or mail along with your entry fee (payable to HGS Entertainment Fund) to:

Petro Log International, Inc.

One Sugar Creek Center Blvd., Suite 945

Sugar Land, TX 77478

Office: 281-494-2522 Fax: 281-494-2526

Email: mdennis@petrolog.com & mlange@petrolog.com

SCHEDULE OF EVENTS

8:00 – 9:45 a.m. Registration and free use of driving range
(Breakfast will be provided by **Petro Log International, Inc.**)

10:00 a.m. Shotgun start

3:00 p.m. Cash bar, open buffet

3:30 p.m. Door prizes and awards presentation



Team Captain _____ Phone _____ Amount Enclosed _____

Company _____ Email _____

Billing Address _____

Credit card # _____ Exp. Date _____ Code# _____

Please Provide Email Addresses For All Team Members. All Communications Will Be Done Via Email.

Foursome Members
(Please Print)

Company

Phone Number/Email

**Hdcp/
Avg. Score**

1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

*Please provide email addresses for **all** team members. All communications will be done via email.*

HGS GOLF TOURNAMENT

Monday – October 19, 2015
Kingwood Country Club



SPONSORSHIP APPLICATION

TREVINO SPONSORSHIP \$500.00

- Hole signs on all three courses.
- **Company name** displayed on sponsor recognition board at registration and awards banquet.

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- Hole signs on all three courses.
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- Hole signs on all three courses.
- **Company logo prominently** displayed on sponsor recognition board at registration and awards banquet.
- **Company logo** displayed on driving range and practice putting green.



TITLE SPONSORSHIP \$2,000.00

- Hole signs on all three courses.
- **Company logo prominently** displayed on sponsor recognition board at registration and awards banquet.
- **Company logo** displayed on driving range and practice putting green.
- **Company logo** displayed on beverage carts.
- **Sponsorship includes tournament entry for one team (4 people).**

To sponsor, please indicate your sponsorship level _____
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Name _____ Phone _____ Amount Enclosed _____

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Please email your company logo to Mark Dennis at mdennis@petrolog.com.

Note: Company logos (high resolution file) must be received no later than October 9th.

If there are any questions, I can be reached at 281-705-4346 (cell) or 281-494-2522 (office).



HGS *Bulletin* Instructions to Authors

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 hardcopy 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 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.

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 jill@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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8	\$750	\$1,260	\$2,242	\$4,307						
7	\$665	\$1,123	\$2,014	\$3,834						
6	\$590	\$990	\$1,782	\$3,392						\$1,890
5	\$497	\$837	\$1,503	\$2,860	\$4,698	\$4,536	\$4,466	\$4,104		
4	\$405	\$683	\$1,223	\$2,326						
3	\$327	\$550	\$990	\$1,886						\$1,080
2	\$232	\$392	\$704	\$1,339						
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	Home page Banner	Home Page (200 x 400 pixels)	Event Calendar (200 x 400 pixels)	Geo-Jobs (120 x 90 pixels)	Website Business Card (Members Only)	Personal Resumes (Members Only)
One year	\$3,000.00	\$2,800.00	\$2,500.00	\$1,400.00	Free	Free
6 months	\$2,000.00	\$1,800.00	\$1,500.00	\$750.00	Free	Free
3 months	\$1,500.00	\$1,300.00	\$1,000.00	\$450.00	Free	Free
Monthly	\$700.00	\$500.00	\$400.00	\$200.00	Free	Free

We still offer Geo-Jobs - where your company can post job openings for 14 days at \$50.00 or 30 days at \$100.00.

For more information regarding website advertising visit HGS.org or email jill@hgs.org.



Application to Become a Member of the Houston Geological Society

June 2015

Qualifications for Active Membership

- 1) Have a degree in geology or an allied geoscience from an accredited college or university; or
- 2) 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 five (5) years.

Qualifications for Associate Membership (including students)

- 1) Be involved in the application of the earth or allied sciences.
- 2) Be a full-time student enrolled in geology or in the related sciences.

Apply online at www.hgs.org and click on Join HGS

**Annual Dues Expire Each June 30. (Late renewals – \$5 re-instatement fee)
Annual dues are \$28.00; emeritus members pay \$14.00; students are free.**

Mail this application and payment to:

Houston Geological Society

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Telephone: 713-463-9476 Fax: 281-679-5504

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To the Executive Board: I hereby apply for ☐ Active or ☐ Associate membership in the Houston Geological Society and pledge to abide by its Constitution and Bylaws. ☐ Check here if a full-time student.

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Degree _____ Major _____ Year _____

School _____

Degree _____ Major _____ Year _____

Earth Science Work Experience _____

Applicant's Signature _____ Date _____

Endorsement by HGS member (not required if active AAPG member)

Name: _____

Signature _____ Date _____

Membership Chairman _____ HGS Secretary _____

revised 7/30/14

Houston Petroleum Auxiliary Council News

Sally Blackhall, HPAC President

ATTENTION ALL HGS MEMBERS! Please share this article with your spouse. Spouses of geologists, geophysicists, landmen and engineers are invited to join HPAC, an organization designed especially for you.

It has been my pleasure to serve as the 2014-2015 HPAC president. The year began with our fall luncheon at the Lakeside Country Club with an informative presentation by Dr. Haresh Yalamanchili on facial plastic surgery. Our committee co-chairs, **Mickey Murrell**, **Wanda Shaw** and **Sheri McQuinn** provided beautiful table displays. Our Christmas luncheon at Junior League, with a special performance by Vince King, award-winning "Elvis" impersonator, was unforgettable. Vince had all of our feet moving to the beat of Elvis tunes mixed with wonderful Christmas songs. **Shirley Gordon**, **Judy Johnson** and **Janet Steinmetz** provided beautiful Christmas table centerpieces for this standing room only crowd. Our annual game day celebrated St. Patrick's Day at Braeburn Country Club. **Daisy Wood** and her wonderful committee always do a wonderful job with the good food, decorations and the fun of the game tables. I think a good time was had by all.

Our annual Installation of Officers Luncheon took place at Houston Racquet Club, 10709 Memorial Drive on Thursday, May 14, 2015. A style show with beautiful fashions provided by *It's All About You* enhanced the day. Models were members of HPAC. Chairs were **Mickey Murrell** and **Wanda Shaw**. These two had already been chairs of the Fall Luncheon, but helped out where needed. They and their committee provided a wonderful luncheon.

A special thank-you was extended to my wonderful board that made this year successful. **Norma Jean Jones**, 1st Vice-president; **Susan Bell**, 2nd Vice-president; **Vicky Pickering**, Secretary;

Kathi Hilterman, Treasurer; **Barbara Peck**, Parliamentarian and **Millie Tonn**, Editor were the Executive Board. I had wonderful ladies who chaired the committees: **Dianna Gettelman**, Notification; **Mary Harle** and **Nan Pye**, Hospitality; **Wanda Shaw**, Yearbook; **Mickey Murrell** and **Wanda Shaw**, Technology and **Mickey Murrell** and **Anita Weiner**, Book Club. I extended a special thanks to our liaisons: **Sheri McQuinn**, HAPL; **Janet Steinmetz**, HGS and **Donna Parrish**, GSH. These ladies kept our activities well known by their written articles in the various bulletins.

Our Nominating Committee: **Barbara Peck**, Chairman, **Sally Blackhall**, **Mickey Murrell**, **Phyllis Carter** and **Hellen Hutchison** presented the following slate of officers for election to the Executive Board 2015-2016:

President – Norma Jean Jones
1st Vice-President – Bernadette Billard
2nd Vice-President – Wanda Shaw
Secretary – Sara Nan Grubb
Treasurer – Kathi Hilterman
Parliamentarian – Sally Blackhall
Editor – Janet Steinmetz

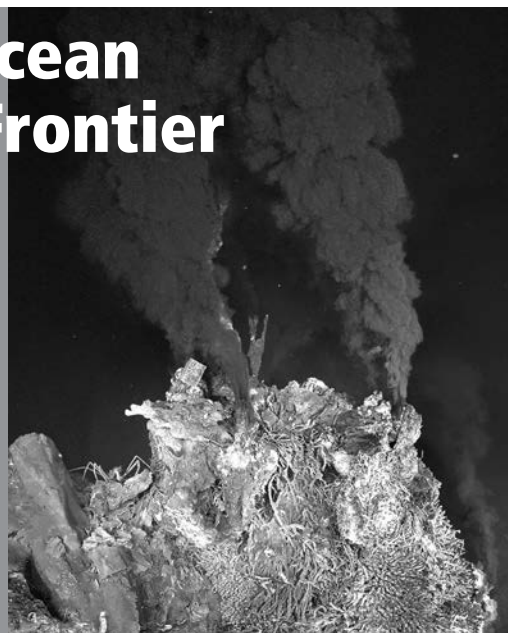
HPAC will be in good hands. Call **Wanda Shaw** about membership: 281-467-5999. If you wish to become a member of HPAC, a membership form is on the next page. The mail-to-person will now be **Wanda Shaw**, 1506 Haven Lock Drive, Houston, TX 77077. ■

Explore the Ultra-Deep Ocean Earth's Last Exploration Frontier

HGS Guest Night Saturday, June 6, 2015

Houston Museum of Natural Science

Tickets are \$50 per person – register at HGS.org
includes dinner in the HMNS Dinosaur Exhibit
presentation by Dr. Jeff Karson
Giant Screen 3D movie
"Deep Sea Challenge 3D"
directed by James Cameron



You are invited to become a member of

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2015–2016 dues are \$20.00 Mail dues payment along with the completed information

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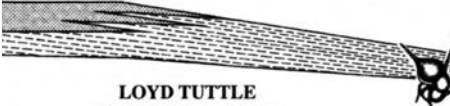





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Please choose a committee assignment if you are interested.

- | | | | |
|--|--|---------------------------------------|-------------------------------------|
| <input type="checkbox"/> Fall Event | <input type="checkbox"/> Yearbook | <input type="checkbox"/> Bridge | <input type="checkbox"/> Membership |
| <input type="checkbox"/> Christmas Event | <input type="checkbox"/> Spring Event | <input type="checkbox"/> Notification | <input type="checkbox"/> Book Club |
| | <input type="checkbox"/> Exploring Houston | <input type="checkbox"/> Courtesy | |

Professional Directory

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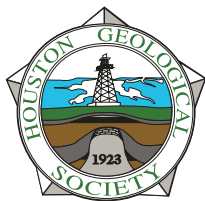
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