

HGS Bulletin

Volume 57, Number 1

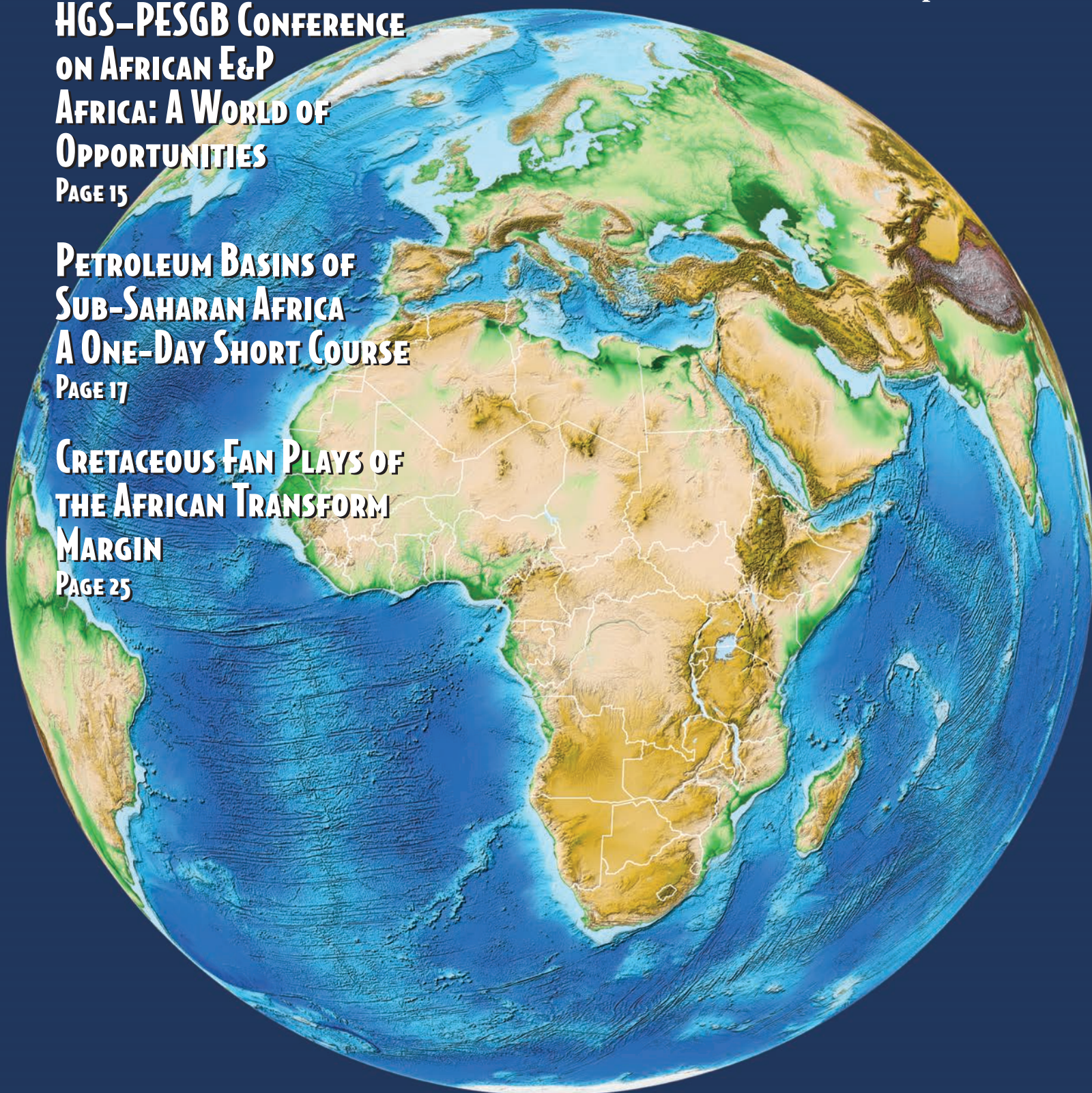
Houston Geological Society

September 2014

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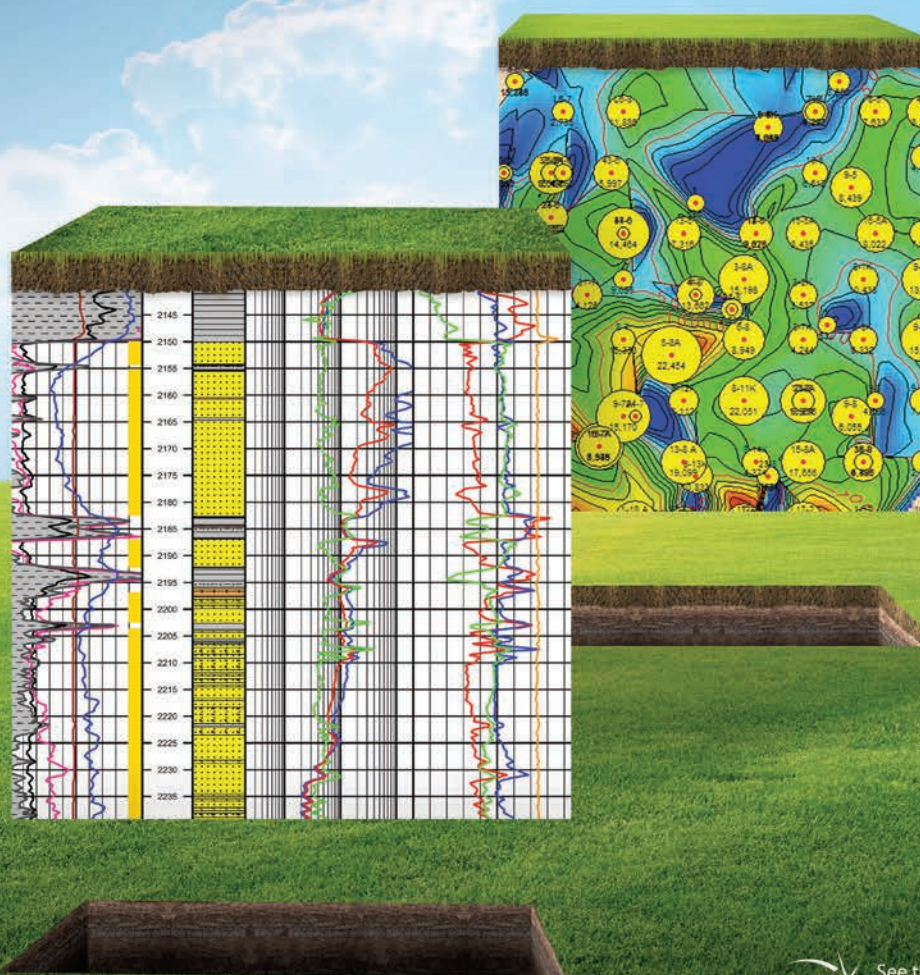
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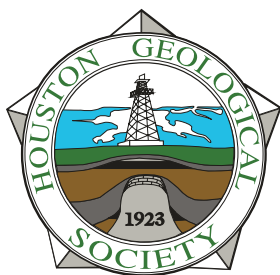
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The Bulletin

Houston Geological Society

Volume 57, Number 1

September 2014

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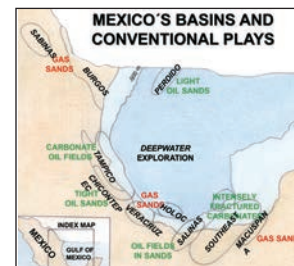
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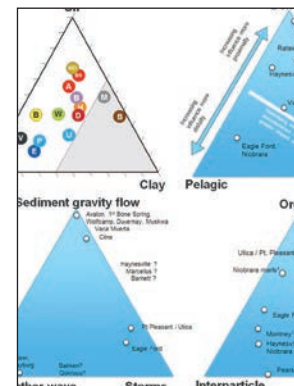
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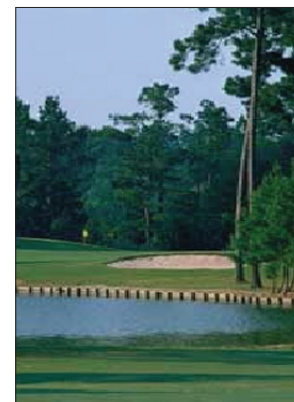
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About the Cover: A color shaded-relief image of Earth focused on Africa is derived from ETOPO1 Ice Surface, created by the National Geophysical Data Center (NGDC). It can be downloaded as a geo-referenced TIFF or KMZ file. The image was created with Generic Mapping Tools (GMT) using three color palettes: blues for ocean depths and above sea-level lakes; greens and browns for dry land areas; and shades of white for large ice sheets and glaciers. Image authors are J. Varner and E. Lim, of the Cooperative Institute for Research in environmental Sciences (CIRES), University of Colorado at Boulder.

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Ken Nemeth

ken.prez.hgs@gmail.com

Presidential Ponderings

It's not yet July and I have to write something that will be read in September, wow! I was told that the most onerous task the HGS President takes on is the writing of monthly "letters" to the members that highlight leadership philosophy, society events and issues, and/or responses to membership concerns. What I hope to do this year is just that. Before I get to that task though, I think that members deserve to know why someone is interested in leading their society. When I ran for office, one piece of information that I provided did not get published, my statement or why I agreed to run...

I am rephrasing and including it as part of my first letter to you, because I think that such statements allow a writer to set out goals, are valuable pieces of our history, might encourage others to run for office in the future, and help complete the historical record. So what you missed in April 2013 is reprinted here with revisions and paraphrasing to make it current.

When the question of being a candidate for HGS President was first asked of me, I was startled and humbled. I was startled because I never expected to be asked to run for President of this organization. I was humbled because it really is an honor to be asked to run for President and be deemed capable of handling the responsibility attached to leading the world's largest local professional geological society. I will strive to be worthy of the confidence and trust you have placed in me.

The success of HGS has resulted from the active participation of its members. This party of individuals willing to give their time with their employers' approval has been instrumental in the growth of HGS.

As President of HGS one of my goals is to encourage employers to let their young professionals step up and be more active in our society. Because AAPG and GCAGS conventions held in Houston require much involvement by HGS members, the same people

cannot organize every convention. Houston is an important venue for both the AAPG and the GCAGS. AAPG met in Houston in 2014 and will meet in Houston in 2017 (100th anniversary of the creation of AAPG!); GCAGS will meet in Houston in 2015 and possibly 2019. This schedule required HGS to have two separate convention committees operating at the same time! The active participation and commitment of our young professionals is a must, if our future conventions are to succeed, and we are to meet our vision and respond to our mission.

My other goal is to encourage and increase our members' participation in community outreach, especially education. The

The success of HGS has resulted from the active participation of its members. This party of individuals willing to give their time with their employers' approval has been instrumental in the growth of HGS.

Houston metropolitan area has many school districts. The Houston Energy Council organizes the annual Science and Engineering Fair. Many wonderful results are achieved by students of all ages. The teachers that guide, nurture, and encourage these students should be recognized. I will strive to promote that recognition through HGS and GCAGS. Monetary support is available to the teachers recognized by both organizations. There should be no obstacle preventing HGS from promoting one of the Houston area's teachers for the GCAGS Owen R. Hopkins Outstanding Earth Science Teacher Award. It is truly

mind boggling to see the projects that these young scientists have put together. The teachers that have encouraged this exploration should be honored.

Lastly, I would like to say that an organization's success is often determined by the passionate leaders that its members choose to guide them. I believe that this year's Board has that passion. I want to thank Board members **Joe Lynch, David Miller, Jim Beck, and Allen Mattis** for their continued service. I want to welcome back to the Board: **Deborah Sacrey, John Jordan, and Jim Grubb** who have served, and been recognized by, HGS in the past. I welcome new members: **Larry Quandt, Penny Patterson, Ashley Garcia, and Jon Blickwede**. I expect that their fresh ideas

From The President continued on page 13



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End of the Apprenticeship

“What color do you want for the banner?” This question, posed to me a few weeks ago during an editorial team dinner, suddenly made my upcoming editorship of the *Bulletin* very real. I have to admit, I had a moment of panic. In some respects it was reminiscent of being informed that my request to go on expatriation had been granted. My wife and I had talked for a long time about living and working overseas and had finally agreed that this is what we wanted to do. When we were informed that I was being offered a position overseas (significantly farther south than we had expected) we immediately looked at each other and thought “What have we done?”

As with many things in life, sometimes the idea of something is much more attractive than the reality of having it. Anyway, a relatively long expatriation, followed by a few others, turned out well. I am confident that editing the *Bulletin* will be a good experience, particularly as there is an incredible support team already in place. With the help of the office staff, editor-elect, guest editors, design editor and others, this promises to be a good year.

For the past two years I have had the opportunity to help two excellent editors, **Patricia Santogrossi** and **Michael Forlenza**, prepare and publish a monthly *Bulletin* that we can all be proud of. Michael had several very interesting articles during the past year and was a major content contributor to the *Bulletin*. With luck, maybe I can convince him to contribute a few articles to continue his Vintage Geology series. I, on the other hand, am not a prolific writer nor is it something that I particularly enjoy. The prospect of writing ten monthly Editor’s Columns is, in itself, a bit intimidating.

One of the other topics of discussion at the editorial team dinner was how to get additional *Bulletin* content from the membership. Some of the ideas tossed around were:

- A section on members’ moves, job changes, etc. For those of you familiar with the Rocky Mountain Association of Geologists, you may remember a section of their publication titled “Revisions, Moves and Gyration”. If there is interest in having something like this in our *Bulletin*, please let

me know and feel free to suggest a catchy title. The AAPG *Explorer* has a similar section.

- A series of articles on who inspired you either in your decision to pursue a career in the Geosciences or had a significant impact on your career.
- A series of articles on forgettable moments in your careers. I will kick this off in a later column and share some moments that were, at best, embarrassing at the time. I think that one of the traits that we all share is the ability to laugh at ourselves. Hopefully, once you have laughed at me, you will be willing to share some of your own experiences.

*For the past two years I
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Michael Forlenza, prepare
and publish a monthly
Bulletin that we can all be
proud of.*

Members willing to contribute to the *Bulletin* should be aware that we have a few deadlines. The most important of these is that material for the *Bulletin* must be received by the editor approximately 6 weeks before publication. In other words, material for the September 2014 *Bulletin* must be received by July 15, and so on for the rest of the year. This deadline is important as it allows us to edit, compile, print, bind and mail the *Bulletins*, ensuring that members receive them early in the month. As someone mentioned to

me when I agreed to become editor, “no one particularly cares if there are grammar or spelling errors, but if the *Bulletin* arrives one day late prepare yourself for the fallout.” Our goal, as an editorial team, is to deliver the *Bulletin* on time and with as few grammatical and spelling errors as possible.

The apprenticeship is now over and it is my turn to try to maintain the high standards that Patricia and Michael have set. I look forward to the coming year and hope that we see increased member contributions to the *Bulletin*.

By the way, Michael made my first editorial decision easy by mentioning that past editors have often chosen their school colors for the banner. This year the banner will be Badger Red, brought to you by the University of Wisconsin-Madison.

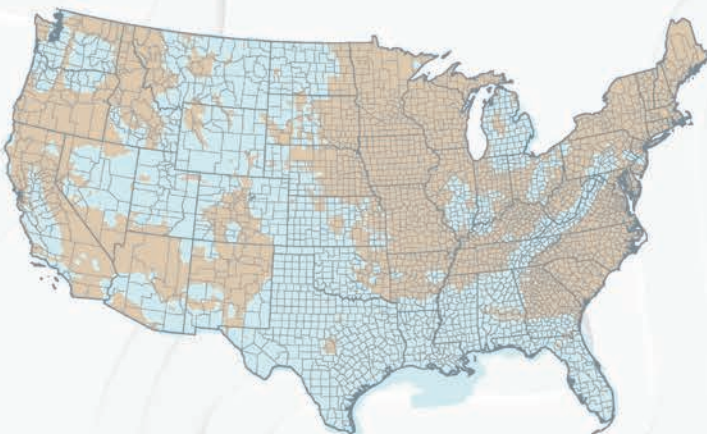
Take care and see you next month. ■



getech

Onshore US gravity and magnetic data

Gravity Data *Getech data (light blue), Public infill data (tan)*

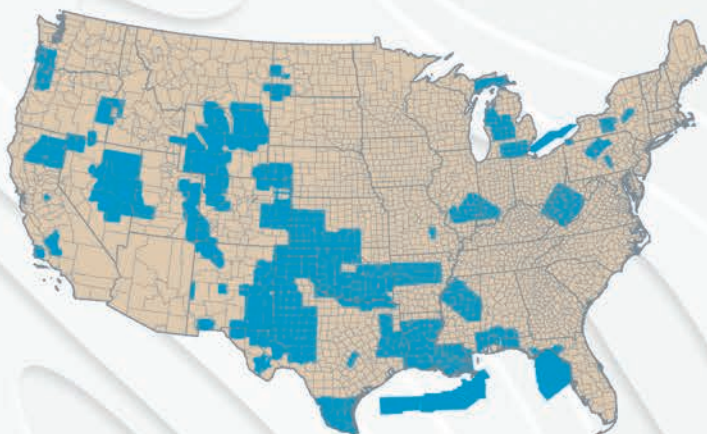


Cost effective evaluation
of prospective targets

Identify new exploration
opportunities

Add value to your
prospects

Magnetic Data *Getech data (dark blue), Reprocessed public data (tan)*



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basement architecture

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Why Isn't HGS Having General Lunch Meetings and Why Have Prices Increased?

by John Jordan (John.Jordan@andarko.com), Vice President

Last year, previous HGS president Barry Katz and his Board of Directors voted to discontinue the General Lunch Meeting in 2014-15 as a cost cutting measure. What you may not know is that, in conjunction with ExxonMobil moving to Spring, TX, the Petroleum Club is also moving from the Exxon Bell St. Tower to the Total Tower at the corner of Dallas St. and Louisiana St. This move is scheduled to take place in January 2015. The HGS Board decided to take this opportunity to reevaluate the General Lunch meeting and its location.

The last fiscal year was the first time in many years that HGS raised meeting prices for the General Dinner and Lunch and the Northsider's Lunch to better reflect the increased costs at the venues. The increase was not sufficient to cover the actual expense incurred at those meetings. Each HGS Board of Directors desires to keep meeting costs as low as possible. This year's Board is no different from past boards. One of every Vice President's tasks is to negotiate the hotel contracts for our primary venues. These include the Westchase Hilton, the Greens Point Hyatt and the Petroleum Club. The venues do not directly charge HGS to rent the space used for its monthly meetings. The venues recoup their cost for using their facility through meal cost, AV charges, cashier, bartender and a hotel service charge that ranges from 22% to 23% of the total invoice. In addition to all of these costs there is also the 8.25% sales tax. This year the cost increases to HGS are nearly flat with last year's because only one venue increased its meal cost by two dollars. The 2014-2015 pricing schedule was calculated based on a per head cost at the minimum contract guarantee of forty people per event after the final contracts were received. It was eye-opening to discover that the total costs to HGS ranged from \$39.29 to \$40.95 per person and that HGS had only been charging \$30.00 per person at our meetings. The increased income from walkups did not compensate for the increased costs incurred from subsidizing Emeritus, Honorary Life Members, and students nor did it make up for the income/expense differential. This made it clear why HGS was having such a difficult time staying in the black or breaking even on the annual technical meeting budgets. (These old and new prices do not have any office overhead included in them.) It is for this reason that I recommended to the HGS Board of Directors in July that HGS raise its meeting prices significantly. This recommendation has been hotly debated by the

HGS Board. Ultimately the Board concluded that meeting prices had to increase in order to be more in line with the true out-of-pocket expenses required to put these meetings together. The new hotel-venue pricing structure is as follows:

- \$45.00 for all preregistered Members
- \$50.00 for all walkups and nonmembers
- \$40.00 for all Emeritus and Honorary Members
- Students will continue to attend at a reduced charge of \$10.00 provided that they:
 - Show a valid Student Id
 - Corporate sponsor underwriter is available
 - The students do not take advantage of HGS's generosity. Students are required to remain for the technical presentation in return for their meal.

A nice meal with friends and colleagues paired with an interesting technical talk still makes an HGS meeting an excellent value. Thank you for your continued support.

The "General Lunch" has been a long standing tradition in the HGS meeting line up and many HGS members would like to see that tradition continue/return, including me. I like the Petroleum Club venue not only because it is a neat place but it turns out that it would also be our least expensive venue.

By now HGS members should have received a "Survey Monkey" that asked if members are interested in a General Lunch meeting and would consider attending such if a talk that they found interesting was being presented. The survey also asked if members would be more likely to attend a General Lunch meeting if the venue was downtown or located on the west side of Houston. Upon review of the "Survey Monkey" results HGS may restart the "General Lunch Meeting" in February 2015 if there is sufficient member interest to have these talks.

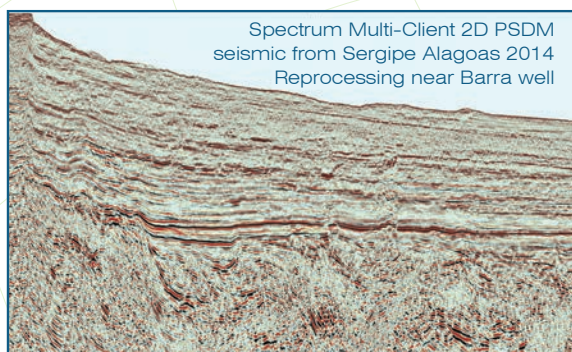
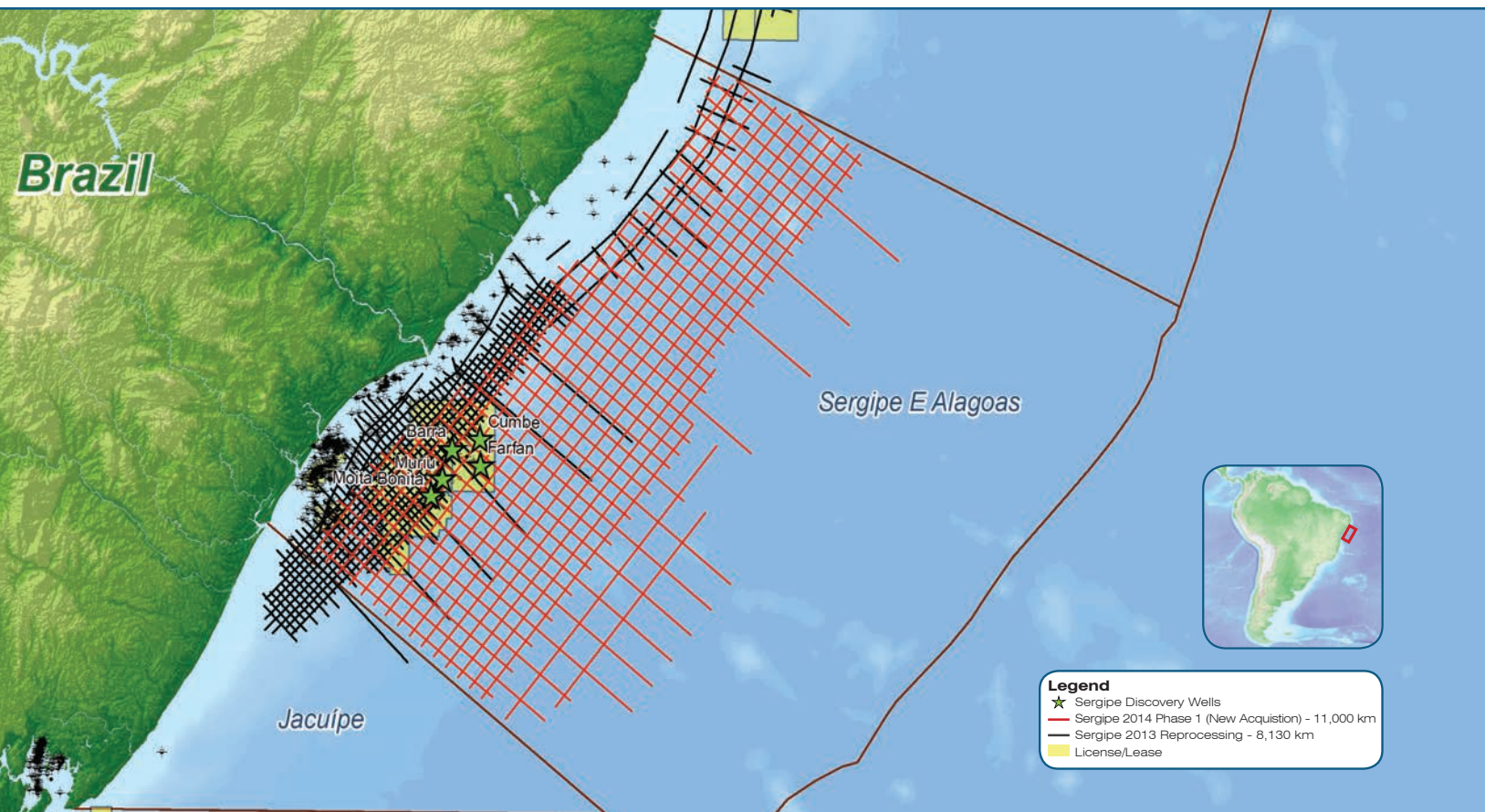
I believe that HGS should allow Emeritus and Honorary Members to attend the meeting at or near the HGS average cost of approximately \$40.00 per person.

A nice meal with friends and colleagues paired with an interesting technical talk still makes an HGS meeting an excellent value. Thank you for your continued support. ■



Brazil: Sergipe Alagoas

New 2D Multi-Client Seismic Data Available



Spectrum has commenced a 11,000 km Multi-Client 2D seismic survey offshore Brazil in the Sergipe and Alagoas Basins along the Eastern Margin of Brazil. The new acquisition program will tie key wells in the Basins, including the recent Barra, Muriu, and Farfan discoveries. PreSTM and PreSDM data will be available in Q4 2014.

To supplement the new acquisition in this active exploration area, Spectrum has completed the reprocessing of 8,130 km of data through both PreSTM and PreSDM and is offering this data to industry in order to get a head start on the expected upcoming round in 2015.

Outstanding Student Awards

Each year, the Houston Geological Society recognizes outstanding students from area universities. Students are selected for recognition based on nomination by their faculty. HGS awards each outstanding student with a \$500 prize, publication of their biographical sketch in the HGS Bulletin, and a plaque all to be presented at the October HGS General Dinner Meeting. This year, the following students have been selected by faculty and HGS for outstanding academic achievements and contributions to geology



Ms. Shuo (Echo) Ding
Rice University

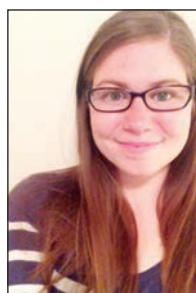
The Rice University Earth Science Department is pleased to congratulate Ms. Shuo (Echo) Ding as a recipient of an HGS Outstanding Student Award.

Ms. Ding received both of her undergraduate degrees at the China University of Geoscience – one of the best earth science research centers in China. While there she was selected for the intensive undergraduate program and, based on her GPA, she won an institutional scholarship each year from PetroChina. Ms. Ding started the Rice program in June of 2011 as a doctoral student, working under the direction of Professor Rajdeep Dasgupta.

At Rice, Echo's first focus is in igneous petrology and geochemistry. After she took her first course on planetary science at Rice, she became fascinated by the deep sulfur cycle on Mars. Her current research focuses measuring and analyzing the sulfur content of Martian meteorites. She and her advisor are currently preparing to publish the results of this work. She is also performing experiments to test the partial melting processes of igneous rocks on Mars.

Echo, who has one of the highest GPAs in the Rice Earth Science Department, says that she remains fascinated by Earth Science. She likes going outside to do fieldwork and is an enthusiastic rock climber and mountaineer. After she completes her degree she hopes to stay in academia both to continue her research and to teach. She says that she has benefitted tremendously from good teaching and hopes to continue in the profession, both to train new students and to her own learning as she progresses in her career.

Echo is also very enthusiastic about Rice. She loves the campus and all of the trees. Mostly, she enjoys the dedication of all of the people in the Department. "They are devoted to their work", she says, "no matter what they plan to do after they graduate, whether it is in industry or academia. The environment here drives me to do my best and I feel that I am at home."



Meagan DePugh
Sam Houston State University

Meagan is a senior geology student at Sam Houston State University who plans on graduating in August of 2015 with majors in both geology and mathematics. She is currently a member of the Sam Houston Association of Geology Students and an officer in Sam Houston's AAPG student chapter. She works as a teaching assistant for two of the freshman level geology courses. As well as teaching, Meagan has assisted in research under Dr. Patrick Harris and Dr. Jon Sumrall. She has received a place on Sam Houston's Dean's List for two of the three semesters that she has attended Sam Houston State University.



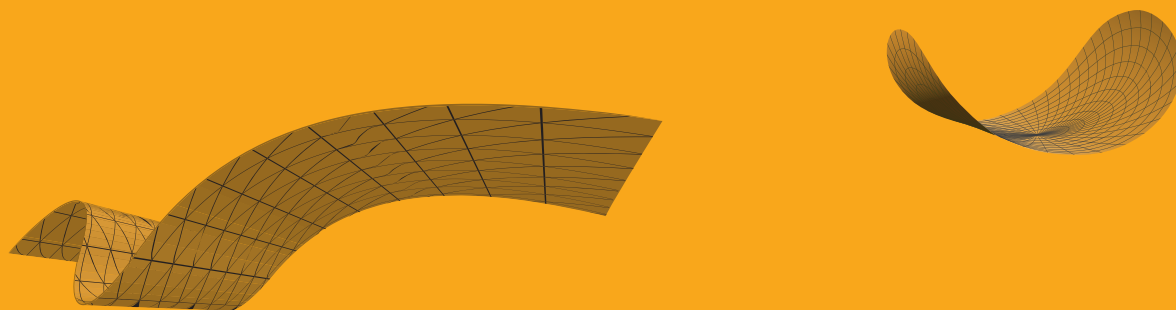
Wesley Turner
Stephen F. Austin State University

Wesley Turner is a graduate student at Stephen F. Austin State University and is pursuing a MSc degree in Geology with a thesis focusing on the mineralogical controls on hydrocarbon production in unconventional shales, utilizing x-ray diffraction. He completed his BS in Geology in May, 2013, graduating Summa Cum Laude. Wesley is an active member of the student chapters of AAPG and Sigma Gamma Epsilon and has made significant contributions to the development of the East Texas Core Repository. He was an integral member of the Imperial Barrel Award team that represented Stephen F. Austin State University in 2014. In his free time, he enjoys outdoor activities and working towards solutions for complex mathematical modeling of geologic phenomena.

Elizabeth Colmenares
Texas A&M University

Elizabeth's early education was interrupted at the age of 11 when her parents moved to Mexico and she did not have the chance to continue school. As an adult, she came back to the United States and worked hard to make up for the large gap she had

Outstanding Student Awards continued on page 13



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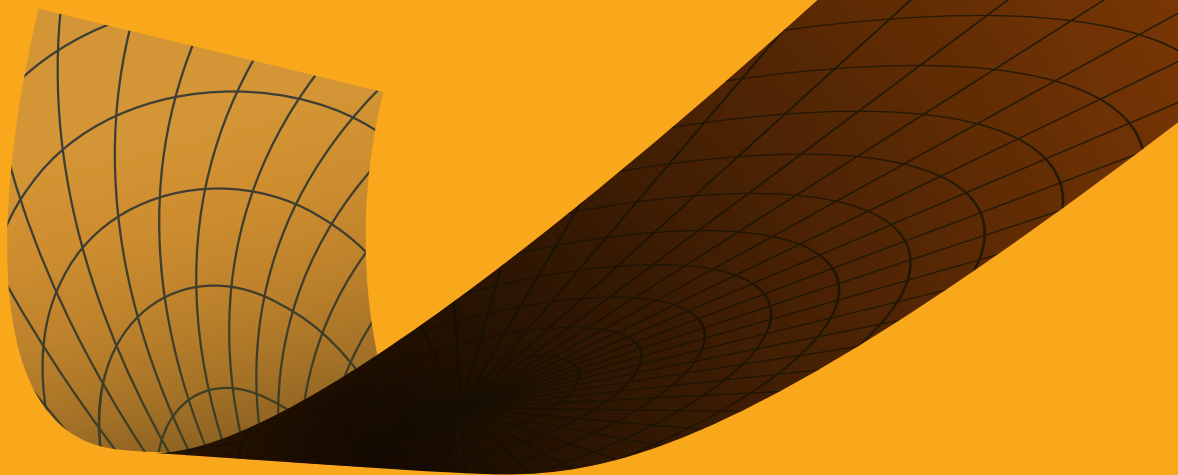
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and a motivational speaker for high schools or community colleges.

Marie G. De los Santos

University of Houston

Marie is a senior at the University of Houston where she is pursuing her B.S. in Geology. She earned her B.B.A. in Marketing from The University of Texas at Austin in 2009. After two years of working, she decided to go back to school to pursue her passion

in her education, eventually enrolling at Texas A&M University for her geology degree. There, she has been active in student leadership positions and has supported her husband through two cancer diagnoses, all while maintaining one of the strongest academic records of her class. She ultimately intends to go to graduate school in Geology. Upon graduating, Elizabeth would like to become a geology professor



where she is investigating the effects of salt diapirs on Texas rivers. She has presented her senior thesis research in several meetings, including an oral presentation at the 2013 GSA Annual Meeting in Denver, CO, the 2013 Robert E. Sheriff Lecture Series where she won the Tier 1 student poster competition, and the 2014 GCSSEPM Bob F. Perkins Conference where she earned an honorable mention in the student poster competition. She plans to attend graduate school as a Ph.D candidate starting in the Fall of 2014.

for geology. She is currently working on her Senior Honors Thesis with her advisor Dr. Peter Copeland on the Lobo Formation of southern New Mexico which involves magnetostratigraphy, paleoaltimetry, and Laramide tectonics. She also works as an undergraduate research assistant for the Caribbean Basins, Tectonics, and Hydrocarbons (CBTH) research consortium headed by Dr. Paul Mann

From the President continued from page 5

and passion will greatly assist me as the Board guides the society in 2014-2015.

I wrote at the start that it was an honor to be asked to run for HGS President. It is now an honor to have been elected by you and will be my honor to serve and represent you – the HGS membership – as your President.

Some things to note this month and next:

- Yes, dues have gone up (\$28.00 now).
- There are no monthly General Lunch meetings scheduled for the start of the year. Increased costs and attendance drops associated with our technical program resulted in the 2013-2014 Board making this decision. Other meeting groups are being asked to review more closely their operation.
- And yes, due to increased charges by the venues, we have had to increase our prices. Please see Vice President **John**

Jordan's comments elsewhere in the *Bulletin*. It is very important that all members preregister and prepay. Walk-ups and registrants expecting to pay at the door will be charged the walk-up cost. This walk-up charge will apply

to emeritus, Honorary Life Members and students as well, so preregister for the meeting of your choice!

•I hope that you visited the HGS website and viewed the information for the HGS-PESGB African Conference that will take place on September 9 and 10 at the Westin Hotel, Memorial City.

•October should bring several opportunities for educational outreach; see your HGS web site event calendar. I hope to see you there!

In closing, I'd like to write that, for HGS to achieve its vision, young professionals need to be encouraged

to become active members of HGS. I urge you to invite a NeoGeo or young professional to one of our technical meetings; after all, it's part of our mission. ■

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serving earth science professionals
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Our Mission:
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A local geosciences society
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5:20PM

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The 13th HGS-PESGB Conference on African E&P Returns to Houston September 9 and 10, 2014 with Special Events September 8th

This year the HGS-PESGB hosts its annual Africa Conference and added events in Houston. Related activities will fill three days of meeting and greeting, talks and receptions, meals and exhibitions, poster sessions and oral presentations, all about African exploration and production.

All events will be held at the Westin Houston Memorial City Hotel, 945 Gessner Road, Houston, TX 77024 except for a special gathering for Conference registrants after Tuesday night's reception.

The first event is a one day short course on Monday September 8, 2014 entitled "Petroleum Basins of Sub-Saharan Africa" presented by Duncan Macgregor. This course has been developed over some years and was given to 70 registrants last year. The course has since been presented on a proprietary basis for a number of companies including some in the US. This presentation is the first, and possibly only, time it will be available publically in Houston.

The course provides a full manual containing over 200 detailed diagrams such as play cross-sections, palaeotectonic and palaeogeographic maps and chronostratigraphic charts. The day will focus particularly on the control that Africa's complex tectonic, climatic, drainage, and topographical history has exerted on its petroleum systems, outlines the key factors that control success and failure in play types across the continent, and reviews recent activity and drilling results.

The course starts at 8:00am and ends at 5:00pm. Lunch is provided. Registration for this separate offering is \$300 for the day. An extended abstract with figures can be found elsewhere in this issue of the *Bulletin*. Sign up early at the HGS website (<https://www.hgs.org>) as there is room for 35 people with table

seating or up to 54 with theatre seating. Any proceeds will benefit the HGS Scholarship funds.

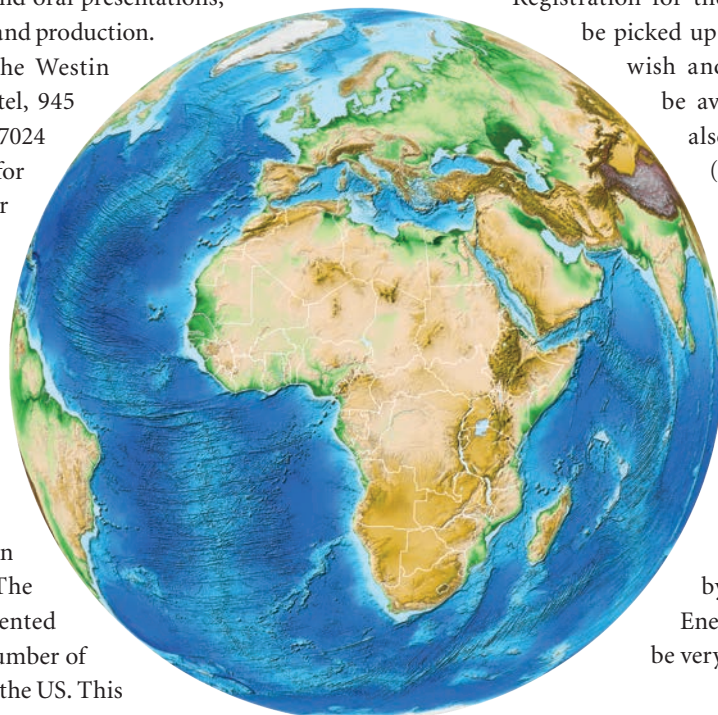
Registration for the Africa Conference itself can be picked up at the hotel on Monday if you wish and onsite registration will also be available. Online registration is also available on the HGS website (<https://www.hgs.org>).

Monday evening at 5:30 pm at the hotel is the HGS International Dinner meeting. Its registration is also separate from the Convention; pre-registration at the HGS website is recommended. The topic is "Cretaceous Fan Plays of the African Transform Margin" by Tracey Henderson of Kosmos Energy, Dallas, Texas. It also should be very popular so register early!

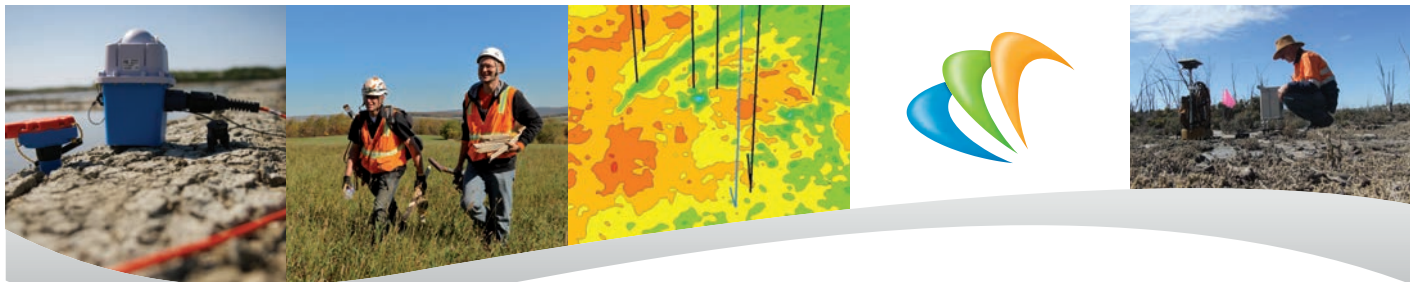
Tuesday morning we have onsite registration and coffee at 8:00am. Oral presentations begin at 9:00am. Below is the detailed program of oral presentations for both days of the Conference. During coffee breaks and the lunch hour registrants can visit the booths of 40+ exhibitors and some 25 poster presenters.

Tuesday evening there will be a reception in the hotel to be followed by a gathering for registrants at the home of Gene Van Dyke, a well-known successful oil company owner who has long been active in exploration around Africa. Transportation will be provided.

Wednesday continues the second day of the Conference's oral presentations. The general schedule is the same as Tuesday's with further opportunities to visit with Exhibitors and to view and discuss poster presentations during the breaks. ■

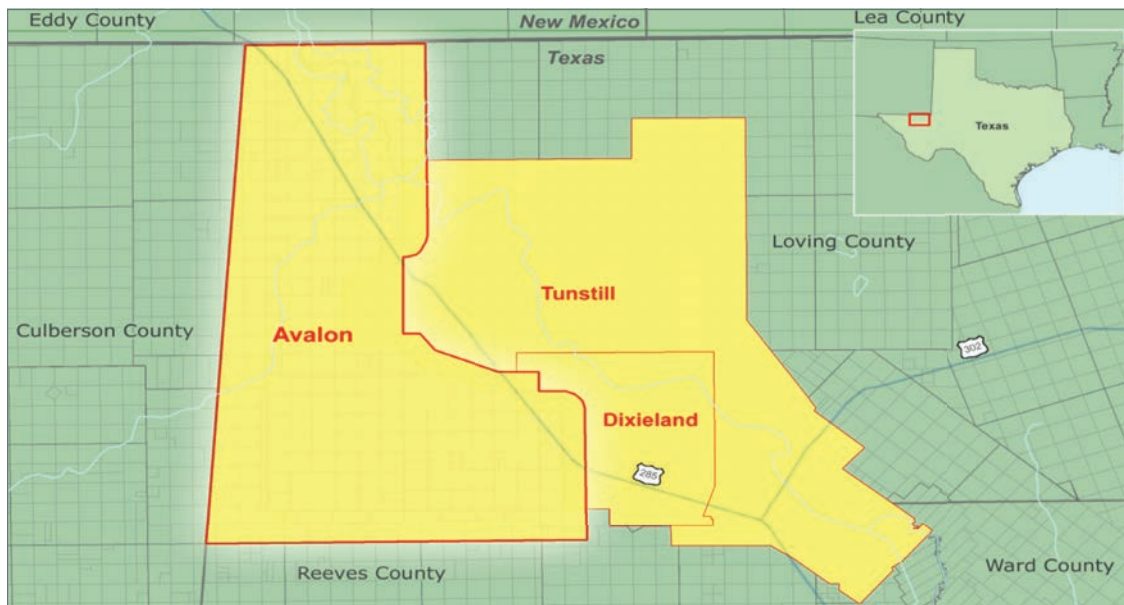


But there will NOT be too much stress on paradigms. Recent discoveries demonstrate that "the rules" do get broken in often unpredictable ways.



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Petroleum Basins of Sub-Saharan Africa

A One-Day Short Course Presented by Duncan Macgregor, Ph.D.

In conjunction with the HGS/PESGB 13th Conference on African E&P

Monday, September 8, 2014 8 am – 5 pm

The Westin Houston, Memorial City, 945 Gessner Rd., Houston, Texas

Registration: \$300 includes Lunch, seats available: 54

Register for this course at: <https://www.hgs.org/civicrm/event/info?reset=1&id=1452>

Register for the 13th Conference on African E&P Sept 9-10, 2014 in Houston at: <https://www.hgs.org>

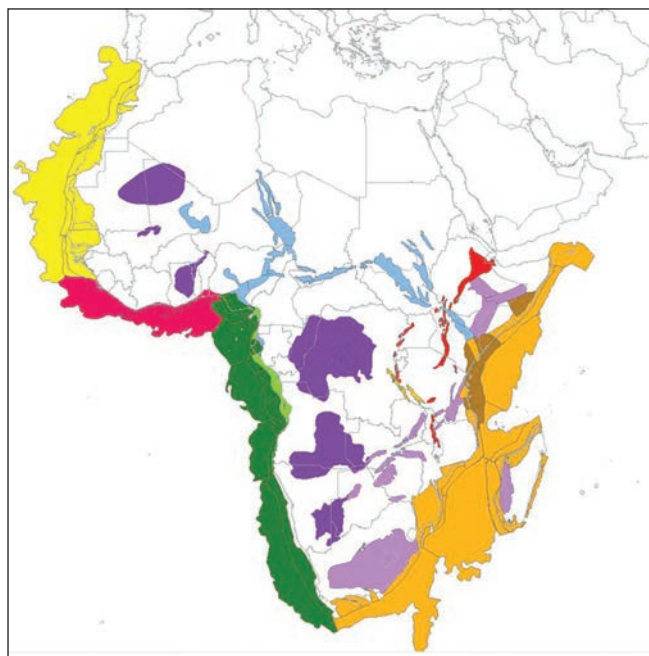
This course has been developed over some years, and it sold-out to capacity for the public presentation at the Wembley Stadium last year, in conjunction with the 12th Africa Conference in London. It has since been presented a number of times on a proprietary basis, including for US companies, but this is the first (and possibly only) time it will be presented on a public basis in Houston.

This one day course will focus on the control that Africa's complex tectonic, climatic, drainage and topographical history has exerted on its petroleum systems; outline the key factors controlling success and failure in play types across the continent; and present a review of recent activity and drilling results. It demonstrates how the 'big picture' of this central segment of Gondwanaland always needs to be considered in prospectivity evaluations. For each basin type, a checklist of key regional risks is reviewed and a guide is given as to how to assess these – basically a new ventures dataroom 'checklist'. The course is packed full of key charts and maps, including a full set of palaeotectonic, palaeogeographic and palaeoclimatic maps, multi-basin 'chronostrats' (Wheeler Diagrams) and play cross-sections. The course includes a manual with nearly 200 of these diagrams; four examples are included here.

The agenda of the course is :

- Overview – The Big Picture
 - Tectonics, Palaeogeography and Climate
 - Petroleum Systems
 - Reserves and Play Evolution
- Basin Types, Critical Factors and Case Studies
 - Pre-Cambrian to Palaeozoic Basins
 - Permian (Karoo) Rifts
 - Jurassic-Cretaceous Rifts (Interior)
 - Atlantic Rifts (Pre-Salt)
 - SW Africa Margin and Deltas
 - Equatorial (Transform) Margin
 - NW African Margin
 - East African Margin and Deltas
 - Tertiary Rifts
 - Exercise

The course works at a basinal and supra-basinal scale, so do not expect to see individual licences or the oft presented 'postage



Example 1 of 4: Basin Classes by Age and Type

stamp' evaluation discussed. It looks at onshore to offshore relationships and demonstrates how neither region should be considered in isolation. Particular emphasis is given to the importance of an ever-changing palaeotopography, palaeoclimate and palaeodrainage — the present is NOT the key to the past in Africa!

The key source rock levels will be reviewed, with a strong stress on the importance of timing of generation and possible destructive processes. In general, YOUNG is good and what happens to a basin in the Neogene is always critical.

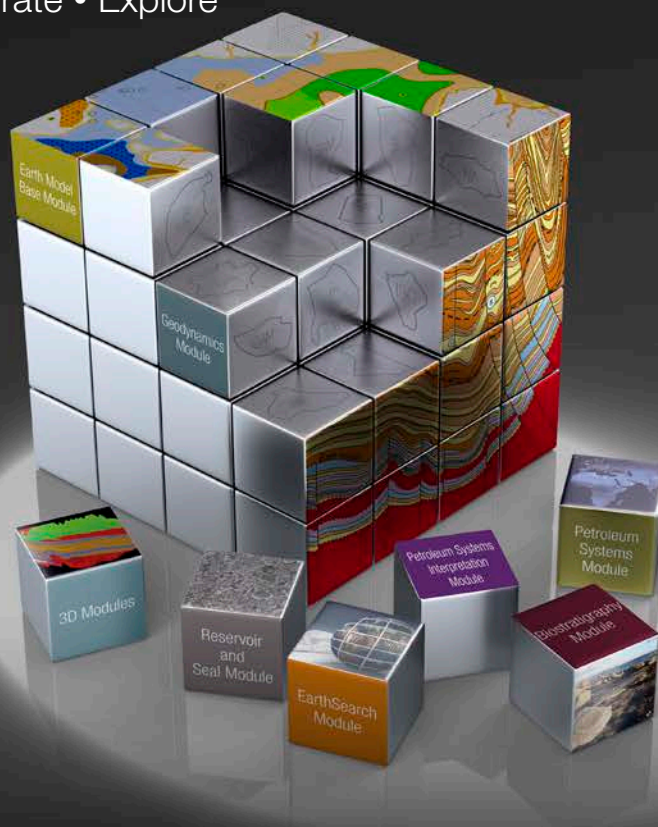
But there will NOT be too much stress on paradigms. Recent discoveries demonstrate that 'the rules' do get broken in often unpredictable ways. For example: Rovuma Basin reservoir extent; EARS fault plane seals; and reservoir quality pre-salt lacustrine carbonate reservoirs. Expect the unexpected!

Africa still has much potential but new ventures need to be looked at more systematically than in the past. A sobering review of recent exploration results, presented in the course, demonstrates

A One-Day Short Course continued on page 19

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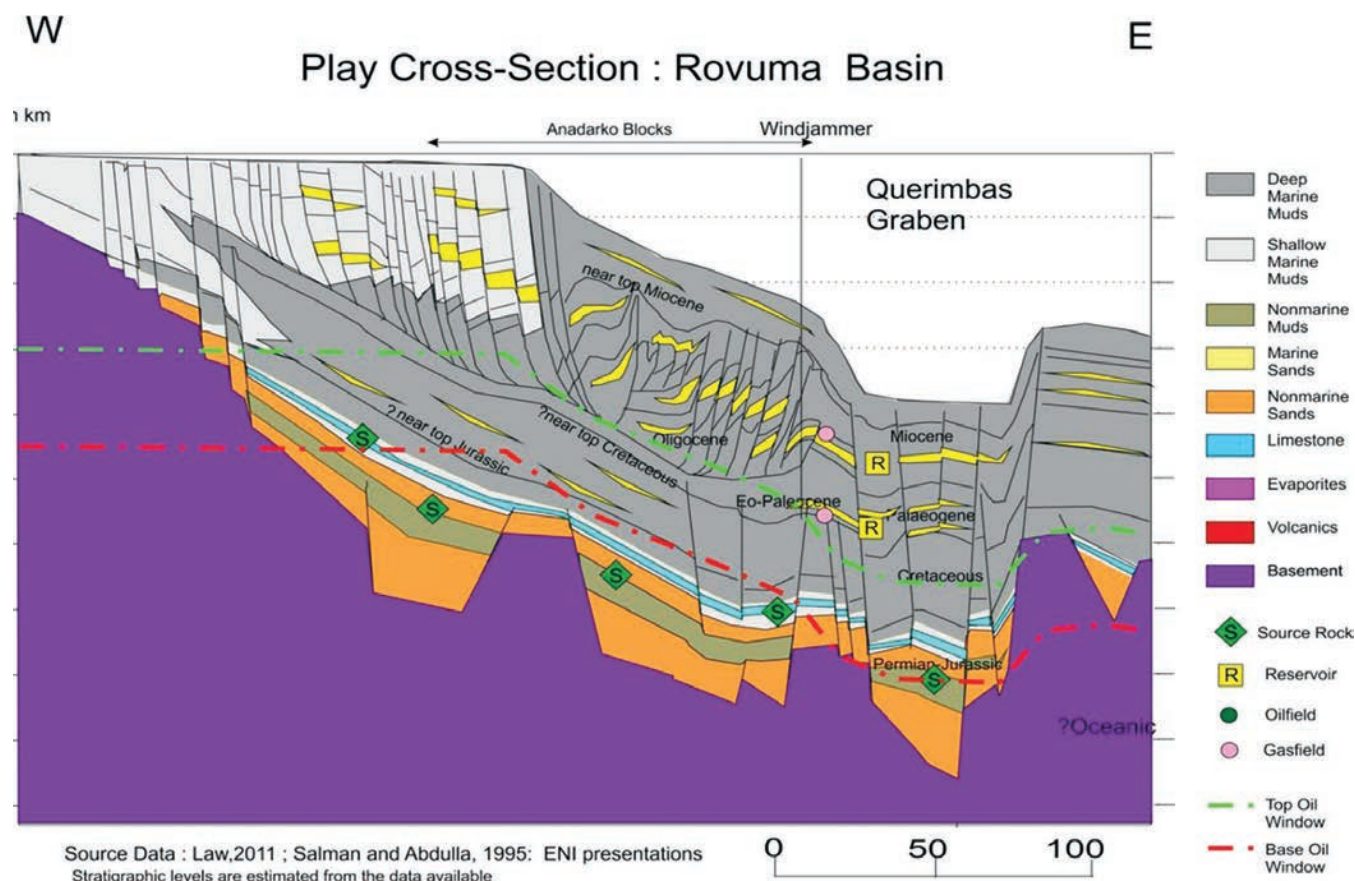


that frontier exploration success rates are running at below 10%, and this is in the most successfully explored continent in the world in recent years! The course concludes that:

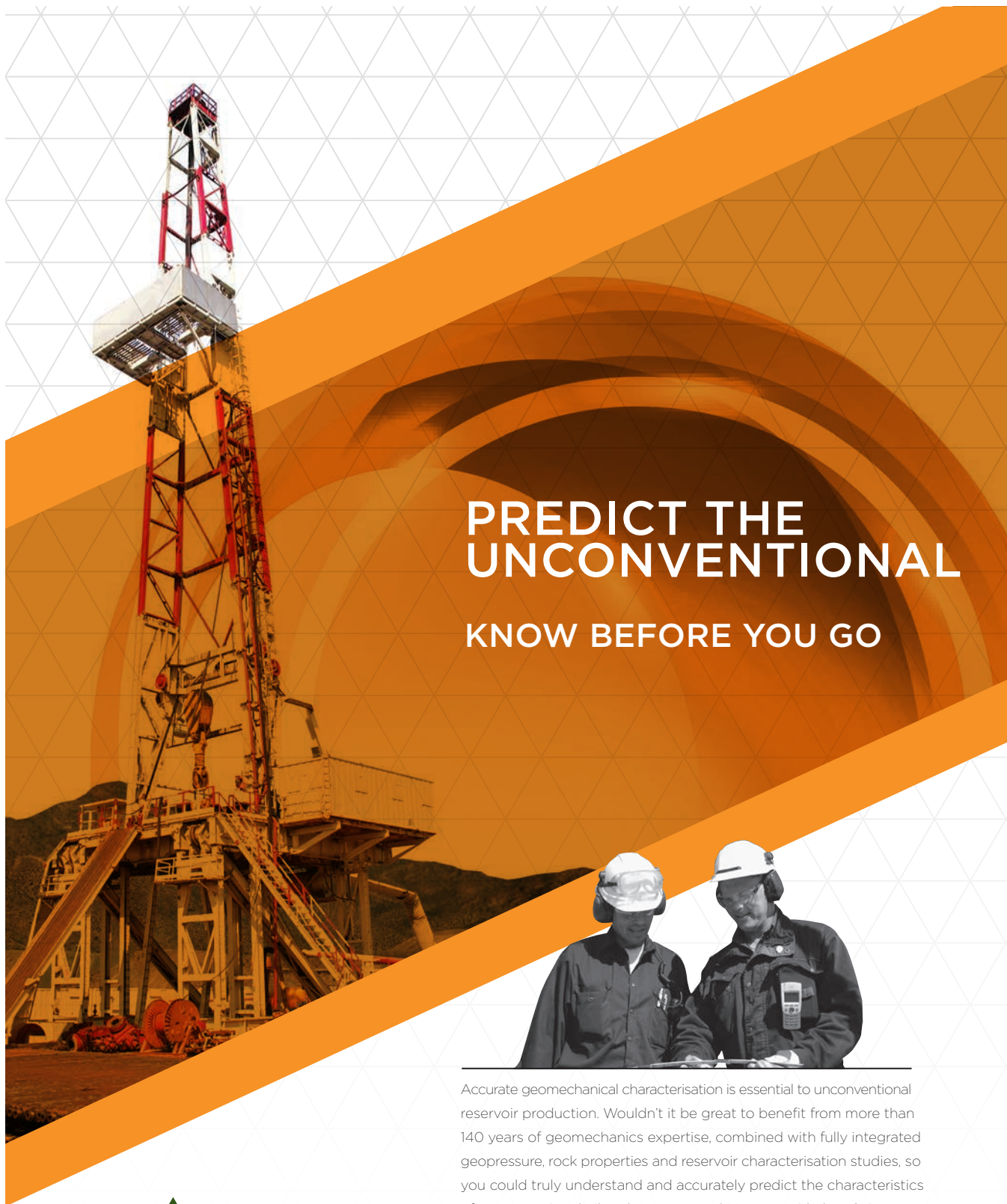
- Africa is still performing well relative to other parts of the world, but some established plays may be creaming, particularly for oil. We are in need of new ideas, technologies and approaches, particularly in West Africa.
- The DHI 'fish in a barrel' days are over: we need further geophysical breakthroughs and a return to solid regional geology. Success rates cannot be expected to be as high as in the DHI years.
- Slope channel and deepwater fan strat-traps remain key, but we need more solid work on sediment provenance, and controls on bypass zones/sand detachment, in order to

predict effective reservoirs and traps.

- Reservoir quality has become a key underestimated issue on many of the trends.
- The power of analogue is overrated on many of the trends (e.g. pre-salt carbonates, EARS); avoid thinking of multi-basin plays
- We can probably expect an average of one new petroleum basin per year in Africa. Future candidates are discussed.
- Throughout the course there is a strong message to 'understand the marginal legacy wells', e.g., Baleia in pre-salt carbonates, Loperot in the Kenya rift, Mnazi Bay in the Rovuma Delta. These turned out to be forerunners of multibillion barrel provinces, but this was not realised for decades.



Example 2 of 4: Play Cross-Section



PREDICT THE UNCONVENTIONAL

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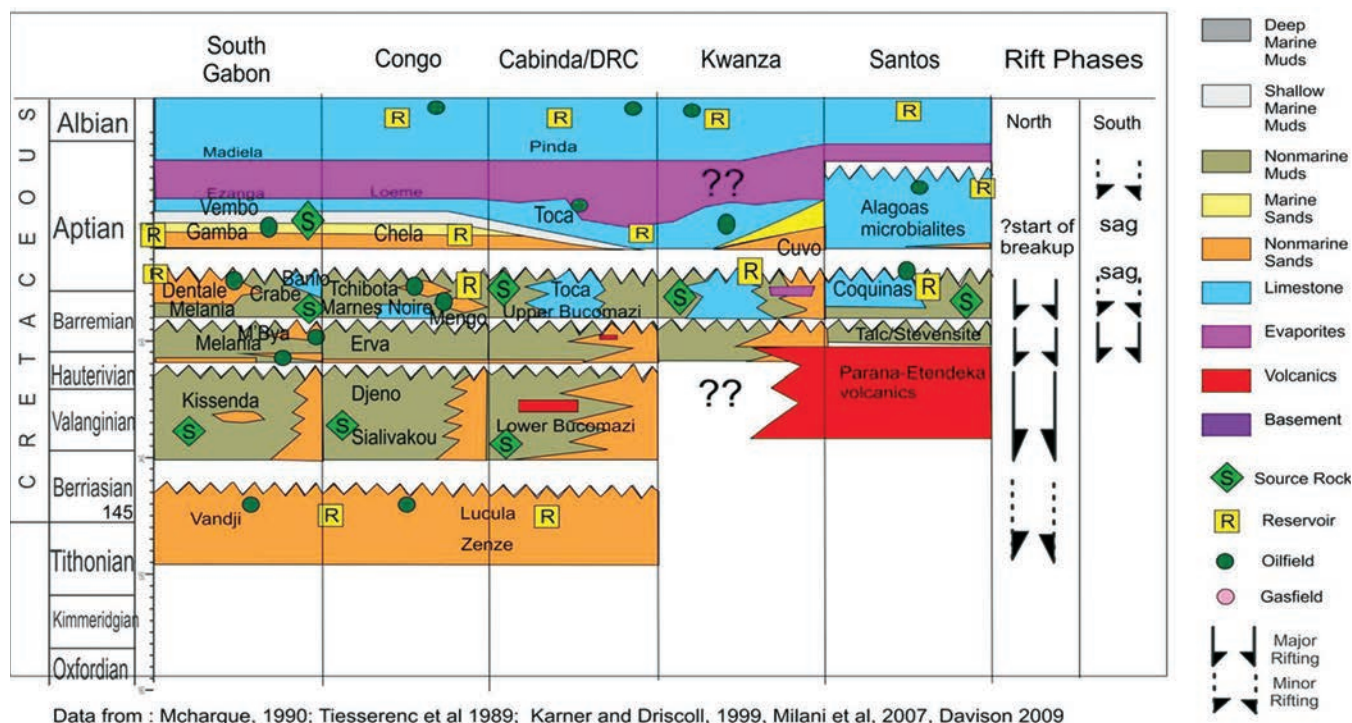


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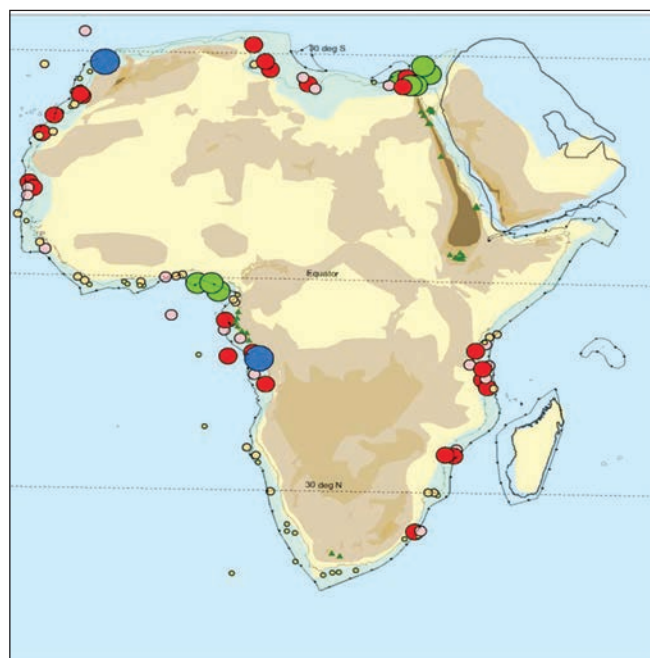
The Present And Future Of GeoPrediction



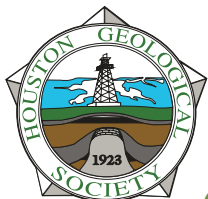
Example 3 of 4: Chronostratigraphic Chart

Biographical Sketch

DR. DUNCAN MACGREGOR is a well-known author and presenter on African petroleum geology, with a knowledge built up in over 20 years working nearly exclusively on the continent. Following a 20-year career with BP, working largely in the Far East, he worked and consulted for a number of independent companies and consultancies on new ventures and play fairway scale studies on the African Plate, his most recent part-time roles being with Surestream Petroleum and Neflex Petroleum Consultants. Duncan has also maintained extensive research interests on the evolution of the African continent, with most of his 25 papers targeted at unravelling the continent's mysteries. He has two African book editorships to his name and has been the technical chair of the London PES-GB/HGS African conference for 10 years. He now spends 10% of his time teaching, largely at Masters and Young Professional level, is a Visiting Lecturer at Royal Holloway University of London and has also served as Director of Education of the PESGB, responsible for courses and field trips. He provides regional briefings and short term consultancy on Africa opportunities, and claims to have worked on all African countries at some time – with the exceptions of Lesotho and Burkina Faso!



Example 4 of 4: Palaeogeographical Map with Sedimentation Rates ~8 Ma



HGS - PESGB

13th International Conference

Africa: A World of Opportunities

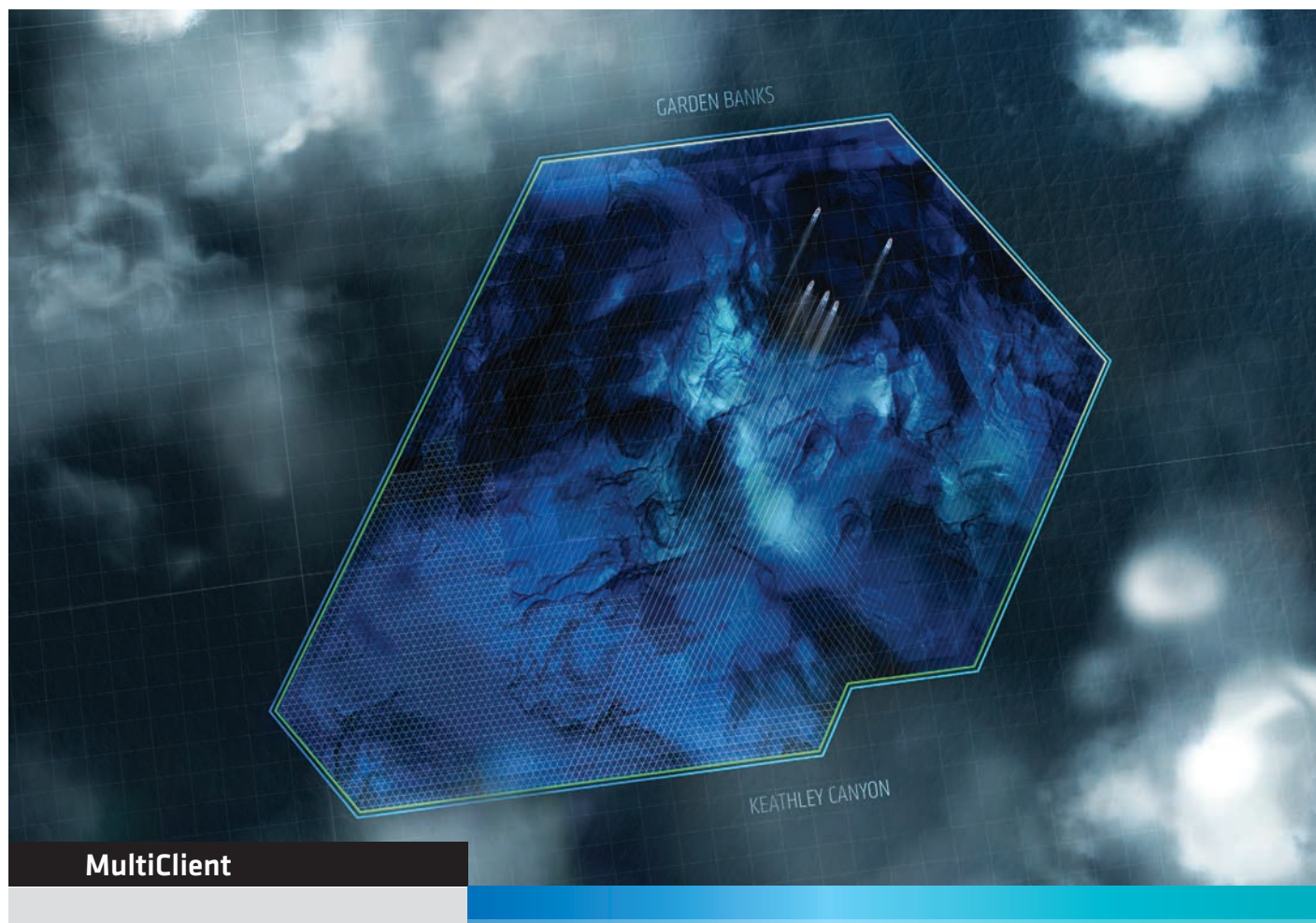
Oral Presentations – Tuesday, September 9, 2014



8:00	Registration & Coffee	
9:00 (10)	Welcome and Opening Remarks	Ken Nemeth, <i>HGS</i>
	Session 1: Regional and Overview, Martin Cassidy and Ian Poyntz	
9:10 (25)	Africa — Are We Done?	Bob Fryklund , <i>IHS</i>
9:35 (25)	Conflict and Contracts in Africa	Chris Moyes , R.K Moore, D. Patterson, <i>Moyes & Co.</i>
10:00 (25)	Unlocking Potential: An Overview of E & P Activity in Africa 2014	Caron Howard , <i>Deloitte</i>
10:25 (25)	Corporate Social Responsibility: Working with Communities	Martin Cassidy , <i>Univ. of Houston</i>
10:50 (20)	Coffee, Poster & Exhibitor Presentations	
11:10 (5)	Session 2: North and Northwest Africa, Kyle Reuber and Dallas Dunlap	
11:15 (25)	Hydrocarbon Potential of the NW Africa Margin	Ian Davison, <i>Earthmoves</i>
11:40 (25)	Early Cretaceous Deposition along the Moroccan Atlantic Margin: implications of outcrop studies on the prediction and characterization of potential offshore petroleum systems	Jonathon Redfern, et al. , <i>University of Manchester, TU Delft</i>
12:05 (25)	Late Cretaceous Plays of the Northwest African Margin: Risking reservoir extent and quality	Jo Wyton , <i>Neftex</i>
12:30 (60)	Lunch, Poster & Exhibitor Presentations	
13:30 (5)	Session 3: East Africa, David Schwartz and Steve Getz	
13:35 (25)	Regional Setting and Prospectivity of the Offshore Morondava Basin, Madagascar: Seen in the newly acquired MAD13 2D data set	Matt Tyrrell , <i>TGS, X. Jielai, BGP</i>
14:00 (25)	The Discovery of New Exploration Basins in the Horn of Africa	Catherine Hill , B. Franklin, S. Cheyney, D. Tierney, <i>Getech</i>
14:25 (25)	The Value of Detailed Integration of Reprocessed Regional Seismic Data and Re-interpreted, Historic Stratigraphic Information in the Search for Exploration Play Opportunities – examples from the northeast margin of Africa	David Spofforth , A. Sinclair, P.R. Marshall, J. Afzal, A.M. Pardon, and S. Williams, <i>CGG GGR</i>
14:50 (25)	Basin Development and Prospectivity of Lake Tanganyika	Duncan MacGregor , <i>Surestream Petroleum</i>
15:15 (20)	Coffee, Poster & Exhibitor Presentations	
15:35	Session 3: Continued	
15:35 (25)	Airborne Gravity Gradiometer Surveying of Petroleum Systems under Lake Tanganyika	Doug Roberts, <i>Beach Energy</i> , P. R. Chowdhury, S.J. Lowe, A.N.Christensen, presented by Dave Schwartz , <i>CGG</i>
16:00 (25)	Geomorphology of Deepwater Depositional Systems of Northern Tanzania	Krista Davies , <i>Ophir</i>
16:25 (25)	Illuminating the Mozambique Basin: New 2D seismic data increases understanding of hydrocarbon potential	Marjosbet Uzcategui et al. , <i>Schlumberger</i>
16:50	End of session	
17:00	Evening Reception	
18:30	Party hosted by Gene van Dyke at his home	

Oral Presentations – Wednesday, September 10, 2014

8:00	Registration & Coffee	
9:00 (5)	Session 4: Rift Basins and Pre Salt, Scott Thornton and Ian Davison	
9:05 (25)	The Distribution of Syn-Rift and Transition Stage Source Rocks in Time and Space	Peter Gibbs , Gene Brush, Carl Fiduk, <i>Schlumberger</i>
9:30 (25)	Influence of Transfer Fault Zones on Rift Traps and Hydrocarbon Migration: Equatorial Guinea and North Gabon	Scott Thornton , H. Castillo, I. Davison, G. Kidd, <i>Pan Atlantic, Earthmoves</i>
9:55 (25)	Rifting along the South Atlantic Margins and Some General Principles for Exploration in Rifts on Continental Margins	Ian Davison , <i>Earthmoves</i> , Scott Thornton, <i>Pan Atlantic</i>
10:20 (25)	New Insights into the Pre- and Post-Salt Prospectivity of the North Gabon Basin	Helen Doran, et al. , <i>Ophir, Petrobras</i>
10:45 (20)	Coffee, Poster & Exhibitor Presentations	
11:05 (5)	Session 5: West Africa, Ken Nibbelink and Everitt Rutherford	
11:10 (25)	The Campanian Quartz Claystone Conundrum of the African Transform Margin	S. Birkhead, Allen Brown , D. McLean, P. Towle, H. White, Y. Wu, <i>Anadarko</i>
11:35 (25)	Improved Understanding of Prospectivity in Harper Basin Revealed by 3D PSDM and AVO	Peter Conn , J. Halliday, R. Mansfield, S. Musa, F. Winter, <i>TGS</i>
11:50 (25)	The Ogo Field: An Extension of the Cretaceous Transform Margin Play into the Dahomey Basin of Western Nigeria	William Dean , Sarah Davis, Afren, Olagoke Aremu, <i>OPD</i> , Samuel Olotu, <i>Lekoil</i>
12:30 (60)	Lunch, Poster & Exhibitor Presentations	
13:15 (25)	Oligocene Deepwater System – a new deep water play offshore Niger Delta	Obinna Chudi , Helen Lewis, Dorrik Stow, and Anthony Avu, <i>Herriot Watt Univ., Schlumberger</i>
13:40 (25)	A Regional Perspective on the Hydrocarbon Potential, Offshore Republic of Congo	Simon Baer, Patrick Coole , <i>PGS et al., SNPC, MHRC</i>
14:05 (25)	Play Potential in Namibe Basin, Angola	Deepak Rathee, et al. , <i>Schlumberger, Sonangol</i>
14:30 (15)	Coffee, Poster & Exhibitor Presentations	
14:45 (5)	Session 6: South Atlantic Conjugate Margins, Al Danforth and Madeleine Raven	
14:50 (25)	Birth and Development of Continental Margin Basins: Analogies from the South Atlantic, North Atlantic, and the Red Sea	Webster Mohriak , <i>UERJ</i>
15:15 (25)	Rift, Sag, Salt: The tectonic evolution of the Central South Atlantic oil province	D. Quirk, Brianne Alleyne, M. Howe, E. Willerslev, M. Hertle, J. Kiely , A. Madsen, J. Kofoed, M. Raven, J. Karlo, N. Schødt; <i>Maersk</i>
15:40 (25)	Stratigraphic Comparison of the Pre-salt Successions of the Campos and Southern Kwanza Basins: How alike are they really?	Madeleine Raven , Manon Van Goethem, Dave Quirk, Matt Howe, <i>Maersk Oil</i> ; Ray Bate, <i>Global Expl. Services</i>
16:05 (25)	Oil Terroirs of West Africa and the South American Conjugate Basins	Craig Schiefelbein , <i>Geochem</i> , W. Dickson, <i>DIGs</i> , J. Brooks, <i>TDI Brooks</i> , J. Zumberge, <i>Geomark</i>
16:30 (25)	When Can Conjugate Margin Seismic Reconstructions Yield New Exploration Ideas?	Neil Hodgson, Karyna Rodriguez , <i>Spectrum</i>
16:55 (25)	South Atlantic Transform Margins: A comparison of West African and Brazilian reservoir rocks	Anne McAfee , Marius Popa, <i>Core Lab</i>
17:20 (5)	Closing Remarks and 14th Conference, London, September 2015	



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HGS International Dinner Meeting

Tracey Henderson

Kosmos Energy

Dallas, TX

thenderson@kosmosenergy.com

HGS International Dinner Meeting

Cretaceous Fan Plays of the African Transform Margin

The tectonic evolution of the West African transform margin has resulted in rapidly varying subsidence, thermal and basin fill histories for each sub-basin, causing considerable variations in how the hydrocarbon play elements stack. The discovery of the Jubilee Field in 2007 opened up the Late Cretaceous play and was followed by a large increase in exploration drilling activity throughout the margin. Since the Jubilee discovery, 39 exploration wells have been drilled along the margin resulting in 21 discoveries, but to date there is only one additional sanctioned development, which is also located in the Tano Basin. A significant number of these exploration wells have encountered

live hydrocarbons, indicating the presence of an extensive working petroleum system throughout large parts of the transform margin; however limited commercial success to date beyond the Tano Basin appears to be associated with a combination of reservoir and trap/seal issues. The success of the play in the Tano Basin may be associated with its structural configuration which is strongly associated with a suite of NW-trending extensional faults connecting the St. Paul and Romanche FZ's and with

NE-oriented transpressional highs associated with movement on the transforms. This structural fabric creates intra-slope highs and lows and may help reduce bypass of the reservoir systems to the ultimate basin floor, as appears to have happened in many of the other transform basins. Trapping of the sands further up systems tract has helped to juxtapose good reservoir fairways with the part of the basin most likely to yield combination and pinch-out traps. ■

Biographical Sketch

As an exploration geophysicist TRACEY K. HENDERSON has participated in exploration projects in a variety of basins around the world. She joined Kosmos in 2004 from Nexen Petroleum USA where she was responsible for evaluating exploration opportunities in the deep water Gulf of Mexico. Prior to joining Nexen, she served as project geophysicist



in the exploration of Triton Energy's Blocks F and G in Equatorial

Guinea that included the Ceiba, Okume and Oveng fields. Earlier with Triton she was involved in the evaluation of licenses in China, Greece, Italy, Madagascar and Oman.

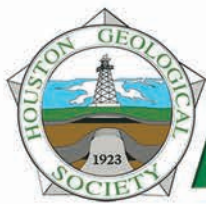
She was a key member of the technical team that built the initial Kosmos portfolio which included licenses in Ghana, Benin, Cameroon, and Nigeria, and ultimately resulted in the Ghana Jubilee Field discovery. In her current role as VP Exploration, Geophysics, she

is responsible for managing integrated functional technical teams for existing assets and new ventures.

Henderson holds a master's degree in geophysics and a bachelor of science degree in geology from the University of Texas at Dallas.

The discovery of the Jubilee Field in 2007 opened up the Late Cretaceous play and was followed by a large increase in exploration drilling activity throughout the margin.

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FEBRUARY 16-17, 2015

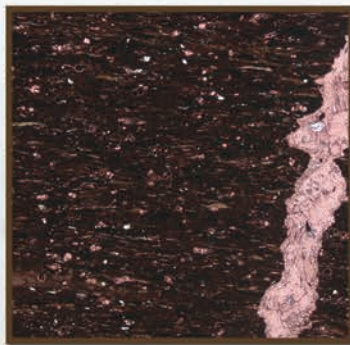


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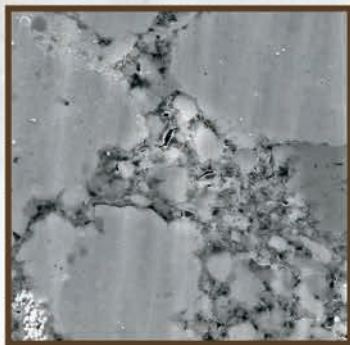
Day 1:

- Integrative Reservoir Characterization Focusing on Macro to Micro to Nano-scale Components
- Natural Fracture Systems & Producibility
- Reservoir Characterization of Lacustrine Mudrock Systems
- Hybrid Unconventional Systems - Tight Targets



Day 2:

- Geologically-driven Completion Techniques in Unconventional Reservoirs
- Mudrock Systems Characterization - Advanced Geophysical Insights
- What's Going on Down There? Clues from Produced Fluids and Proppant
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Wednesday, September 10, 2014

Black Lab Pub, Churchill Room • 4100 Montrose Blvd.

Social 5:30 p.m., Dinner 6:30 p.m.

Cost: \$30 Preregistered members; \$35 non-members/walk-ups

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HGS Environmental & Engineering Dinner Meeting

Matthew Cowan

mrcowan1@hal-pc.org

Troy Meinen

Troy.meinen@erm.com

Environmental & Engineering Geology Committee

The Environmental & Engineering Geology Committee provides educational opportunities for the HGS and the public by promoting better understanding of the environmental and engineering geology industry. We hold our monthly meetings at the Black Labrador (4100 Montrose Blvd.) on the second Wednesday of the month from September through May.

Walk ups are welcomed. We have the ability to order nearly any entrée that they have on the menu and they have a great selection of beers to choose from. Each year we hold 8 to 9 presentations. These presentations count towards continuing education requirements for both the P.G. and P.E. license. One of our presentations each year is on the topic of ethics, which also fulfills the requirements for continuing education.

Our presentations are on a variety of subjects. Over the past few years our presentations have been from government agencies, university faculty, and members of the private sector. Topics that were presented ranged from issues with hydraulic fracturing, techniques in remediation, geotechnical studies, hydrologic settings for water-well drilling in third world countries, to oil and gas topics, and new techniques and instrumentation. Because

many of our attendees are licensed professionals, updates on legislation that may affect the environmental and engineering geology community are presented when the Texas Legislature is in session.

This year we will be taking a look at the upcoming 2015 Legislative session and are hoping to have a presentation on induced seismicity, potential environmental issues with hydraulic fracturing, and the role of geology in regards to subsidence. Other topics that are in the works are more light-hearted but informative as well. Topics that are under consideration are the influence of geology on water, the portrayal of geologists in the movies and music, characteristics of beer, and early geologists of Texas.

For more information on upcoming meetings, check the Houston Geological Society's website regularly (www.hgs.org). We will be having a September meeting and as soon as the details are received they will be posted. If you have a topic you wish to present or a speaker that you would like to hear, please feel free to contact us with the information and we will see what we can do! ■

This year we will be taking a look at the upcoming 2015 Legislative session and are hoping to have a presentation on induced seismicity, potential environmental issues with hydraulic fracturing, and the role of geology in regards to subsidence.



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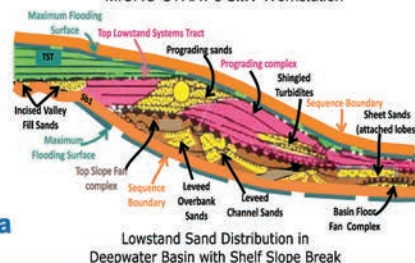
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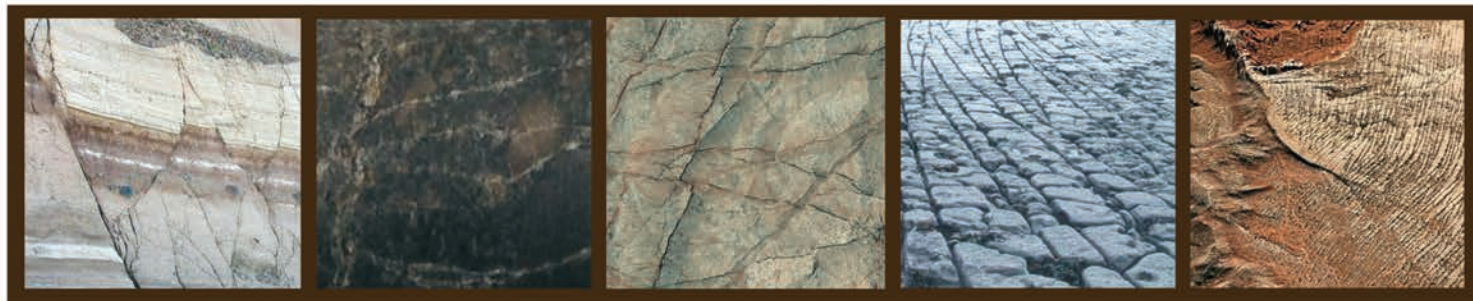
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Monday, September 15, 2014

Westchase Hilton • 9999 Westheimer
Social Hour 5:30–6:30 p.m.
Dinner 6:30–7:30 p.m.

Cost: \$45 Preregistered members; \$50 non-members/walk-ups

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HGS General Dinner Meeting

Colin Stabler

colinstabler@yahoo.com.mx

HGS General Dinner Meeting

Mexico's Challenge to Explorationists

112 years after the first discovery, Mexico is a mature country for conventional hydrocarbons. Increased exploration drilling has only managed to stabilize the 30-year decline in reserves, and increased investment in the fields has only managed to flatten the 10-year decline in production. So now that Mexico is opening up to foreign oil companies, how can you as geologists and geophysicists hope to make a significant contribution to your companies' evaluation of the remaining conventional potential?

Well, you cannot expect to follow the US trends far across the Mexican border. Only the Perdido, Eagle Ford and Rio Grande Embayment plays extend into Mexico, and then only for about a hundred kilometers south. For one thing the Paleozoic basins are non-productive. For another, a vast area onshore and offshore in deep-water is devoid of salt in Mexico, with all the ramifications that implies. Finally the Tertiary clastic reservoirs are of significantly poorer quality than in the US Gulf of Mexico.

On the other hand, Mexico has plays that do not work in the US Gulf Coast. The very prolific thrust-faulted, thick Mesozoic carbonates that have been intensely fractured have few if any analogs elsewhere in the world. Other plays, such as pre-salt, sub-thrust, and Lower Jurassic have been discovered but have not yet turned out to be very prolific or economic.

Why these differences and changes? As you might expect, the root cause is plate tectonics. I will outline the Jurassic to Cenozoic plate tectonic history of Mexico with which to explain the different petroleum systems. I hope this will help prepare you for the challenge of exploring for new targets. ■



Map of Basins and Conventional Plays, Mexico

Biographical Sketch

COLIN STABLER is a consulting petroleum geologist retired from Shell in Mexico City. He has worked Mexican subsurface geology since 1966, first as part of a British consulting group and more recently as Shell's E&P representative. Presently he is involved in evaluating exploration opportunities in Mexico and is a member of HGS, AAPG and the Mexican Society of Petroleum Geologists.





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AAPG Imperial
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All event profits benefit the HGS Scholarship and Calvert Memorial Funds.

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The Less Conventional Side of Carbonates

Carbonates are significant components of many unconventional hydrocarbon accumulations—a diverse group of continuous and tight reservoirs. Though they differ in trapping mechanisms, these reservoir types share a diverse grain assemblage, complex pore systems, and a need for stimulation. As such, gross depositional environments, platform-basin architecture, and facies heterogeneity play important roles

through their impacts on play configuration, mechanical behavior, and reservoir properties. Here, we present a survey and classification of unconventional carbonate reservoirs, using case studies to illustrate common characteristics. Classes of unconventional reservoirs are tied to configurations of source and reservoir, patterns in the timing, distribution, and dominant processes of carbonate sedimentation, settings for organic-rich accumulations, and dominant

pore types (Figures 1 and 2).

Platform Top accumulations typically constitute tight reservoirs decoupled from source rocks or possibly continuous reservoirs ‘coupled’ to adjacent source rocks. Platform Top reservoirs may have low permeability due to low porosity, cemented grain-rich facies or microporous, mud-rich facies. Facies belts are typically broad, with stacking of m-scale cycles influencing the mechanical stratigraphy (e.g., Figure 3).

Platform Margin and (steep) Slope accumulations typically constitute conventional reservoirs with decoupled source-reservoir configurations. Where primary porosity is cemented and matrix permeability low, such deposits are prone to natural fractures, allowing for production without stimulation. Aggrading and prograding margins typically lead to thick mechanical units with high lateral heterogeneity.

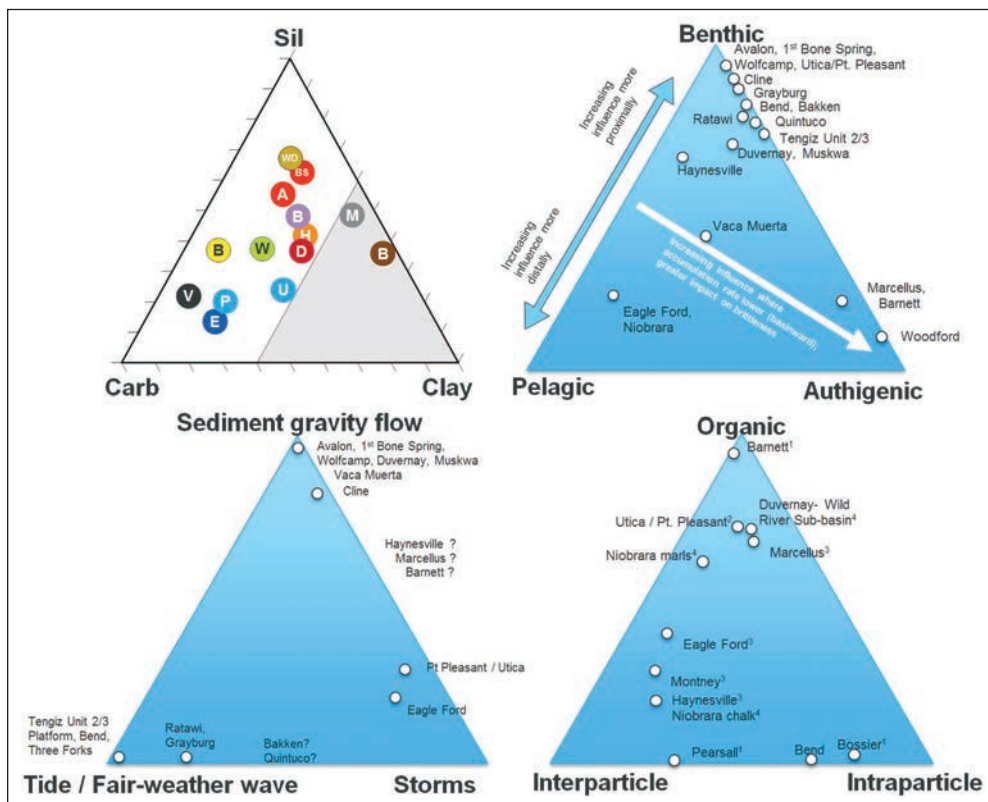
HGS North American Dinner*continued on page 33*

Figure 1: Comparison of various unconventional reservoirs. (A) Mean lithology from qXRD data. Lithologies vary significantly within and between working plays. Data sources: V = Vaca Muerta (Bachle & Tepper, 2013), yellow B = Bakken (Alexandre et al., 2012), M = Marcellus (Milliken et al., 2013), U = Utica (Harrington et al., 2012), P = Pt. Pleasant (Murphy et al., 2013), D = Duvernay from Wild River Sub-basin (Dunn et al., 2012), WD = Woodford (O'Brien & Slatt, 1990), H = Haynesville, brown B = Bossier (estimated from Buller & Dix, 2009), purple B = Barnett (Loucks & Ruppel, 2007), and E = Eagle Ford, W = proximal Wolfcamp, A = Avalon, BS = Bone Spring (single well averages, Chevron data). (B) Dominant carbonate factories vary from benthic to pelagic to authigenic. The dominant source of carbonate minerals exerts a first-order control on its spatial and stratigraphic distribution. (C) Dominant sedimentation processes vary significantly among different unconventional carbonate accumulations, from those dominated by sediment gravity flows, to those dominated by storm waves and currents, to those dominated by tides and fair weather waves. (D) Pore systems vary significantly among different plays. Data sources: (1) Loucks et al., 2012; (2) Murphy et al., 2010; (3) Anderson, 2013; (4) Dunn et al., 2012.

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Exploration and Development Bogota, Colombia

Practical Salt Tectonics **Dec. 8-11, 2014**
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FIELD SEMINARS

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Lacustrine Basin Exploration **Sept. 14-21, 2014**
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Complex Carbonate Reservoirs **Sept. 20-26, 2014**
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Field Trip Colorado
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E-SYMPOSIA

Fluid Migration and Accumulation **Sept. 9, 2014**
within the Mississippian: Why 2% Oil 2:00 pm, CDT
Cut Here, 15% One Mile Away

Concepts of Scale: Horizontal **Oct. 2, 2014**
Development of Wolfcamp Shale 2:00 pm, CDT
Oil of the Southern Midland Basin

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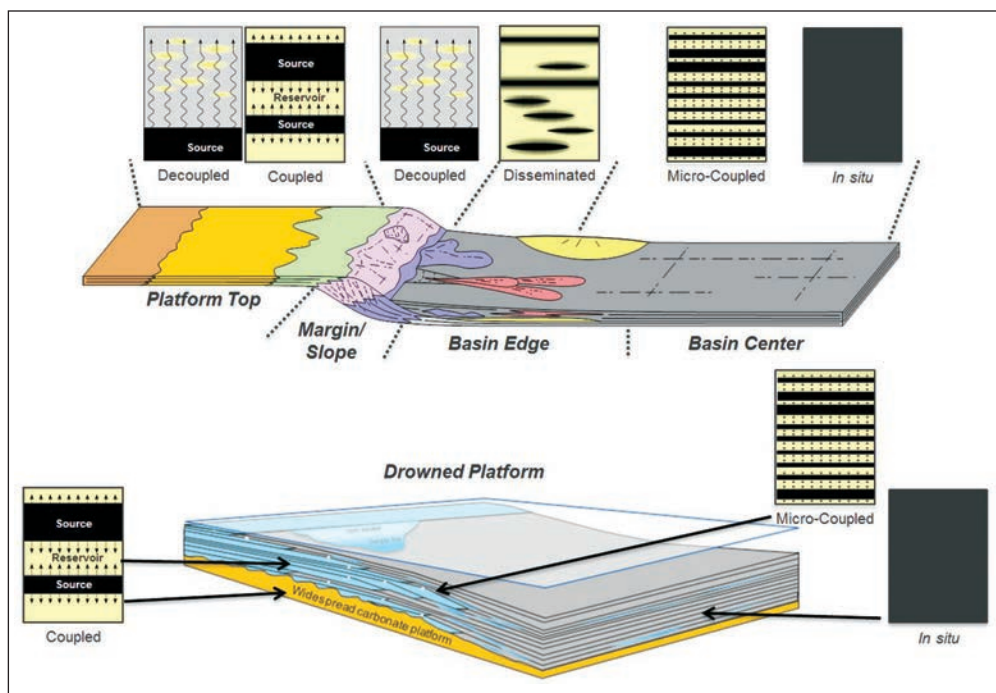


Figure 2: Two architectural models for unconventional carbonates, with classes of unconventional carbonate reservoirs (**bold italic**). The upper model includes Platform Top reservoirs, with Platform Margin and (steep) Slope, adjacent to relatively deep (commonly 200-500 m) Basin Edge and Basin Center deposits. The lower model illustrates a drowned platform, with proximal carbonate rich facies (blue) interfingering with more clastic rich distal facies (gray). Play configurations of source (black) and brittle reservoir (yellow) facies vary predictably in these profiles.

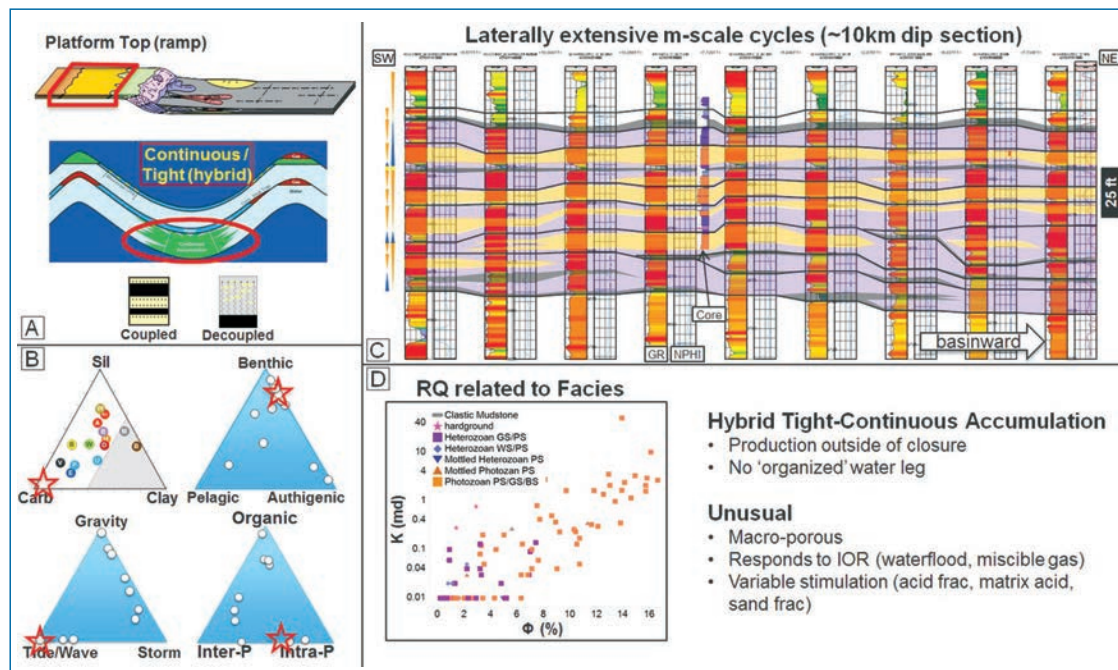


Figure 3: An example of a platform top unconventional reservoir: the Bend Formation in the greater Bryant G area of the Midland Basin. (A) A platform top hybrid tight/continuous reservoir, with a decoupled to potentially coupled configuration. (B) The Bend (red star) is 98% carbonate, dominated by benthic carbonate, reworked by tides and fair weather waves, with dominantly intra-particle porosity. (C) A southwest to northeast well log dip section (basin to right). Facies interpretations are calibrated to core (4th well from southwest), demonstrating high-frequency cyclicity and the partitioning of photozoan (orange), heterozoan (purple) and clastic (gray) facies into different systems tracts. (D) Reservoir quality is tied closely to depositional facies, with photozoan facies having significantly higher porosity (Φ) and permeability (k).

HGS North American Dinner *continued on page 35*

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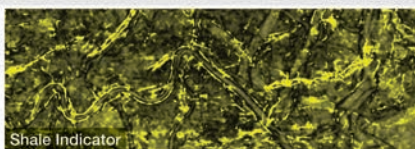
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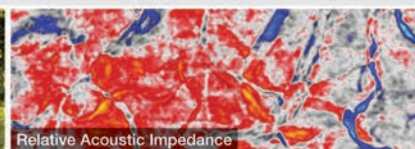
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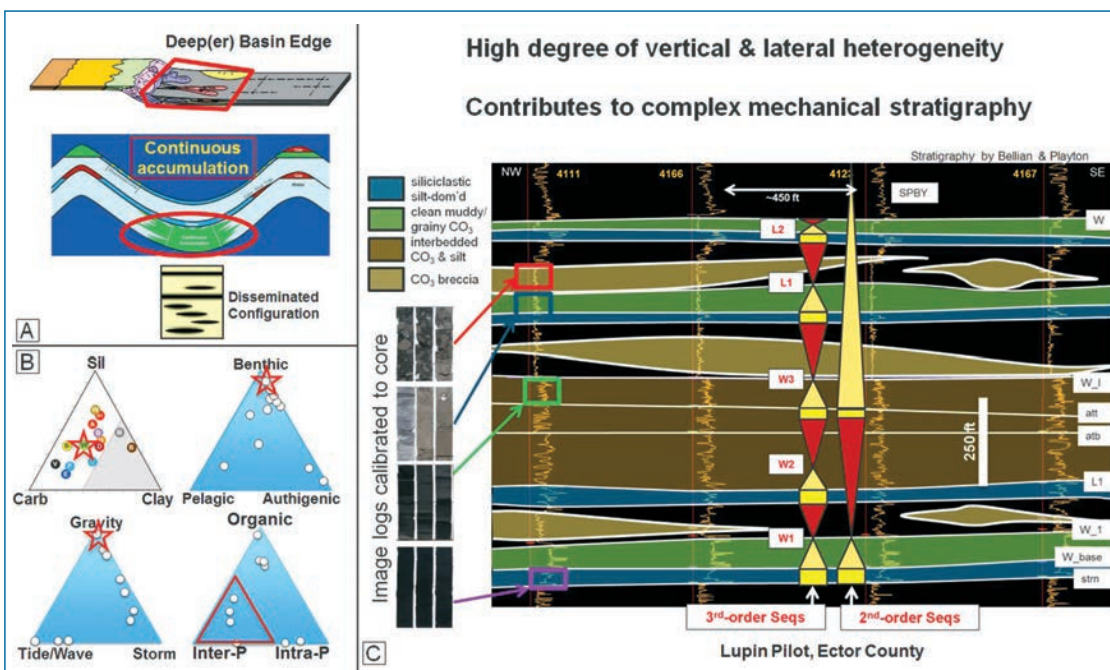


Figure 4: An example of a Basin Edge unconventional reservoir: the Wolfcamp from the western edge of the Midland Basin: (A) A continuous accumulation with a disseminated play configuration. (B) Moderately carbonate rich in proximal settings, the Wolfcamp is dominated by benthic carbonate delivered by sediment gravity flows to the basin edge, with abundant interparticle porosity. (C) Cross-section through 4 closely spaced wells in the Lupin Pilot, where core was used to calibrate image logs to build a high-resolution facies model tied to regional sequence stratigraphy. Pilot demonstrates high degree of lateral and vertical heterogeneity within the Wolfcamp, contributing to a complex mechanical stratigraphy.

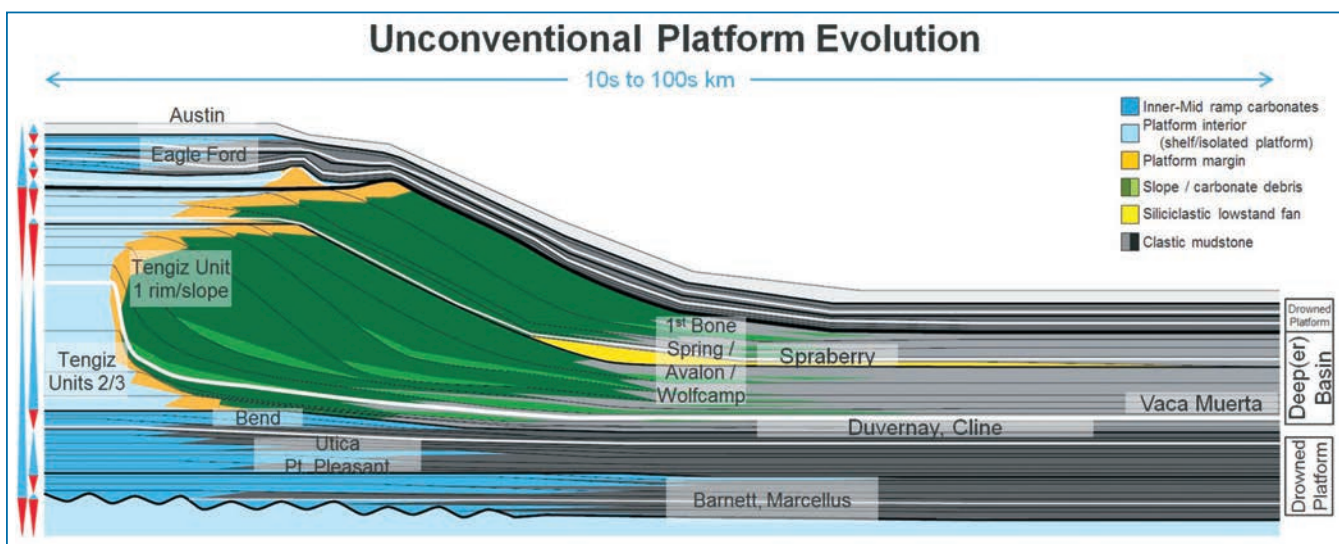


Figure 5: Unconventional reservoirs can occur throughout the evolution of a platform, from ramp to rimmed shelf. Shown schematically here are the relative positions of various plays, including carbonate-rich and carbonate-poor endmembers.



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Unconventional carbonates in 'deep' basin settings (commonly 150-500 m water depth) generally constitute continuous accumulations, with character dependent largely on the type and proximity of platform margins. Such deep basin reservoirs are dominated by sediment gravity flow and/or hemipelagic deposition. Basin Edge deposits form adjacent to syndepositionally cemented margins with steep slopes. They include channelized and debris-rich facies that generate significant lateral heterogeneity. Source and brittle reservoir facies are commonly disseminated amongst one another (e.g., **Figure 4**). In contrast, more distal Basin Center deposits include mud-dominated facies that form laterally continuous blankets and micro-coupled (interbedded source and reservoir facies) to in situ play configurations. Basin Center deposits also dominate adjacent to ramps or margins with weak synsedimentary cementation.


A final common setting for unconventional reservoirs is on **Drowned Platforms**, whose facies typically form continuous reservoirs. These facies are deposited when a widespread carbonate platform is drowned during a major flooding event, associated with regional to global shallow-water anoxic events. Carbonate platforms commonly backstep and subsequently interfinger with basinal facies during regressions. Such deposits are typically influenced by storm waves and currents and have micro-coupled to in situ play configurations.

Unconventional accumulations can occur throughout 2nd order sequence development and the evolution of a carbonate system—for example, the classic ramp to rimmed shelf evolution shown in **Figure 5**. Platform-basin architecture exerts a first order control on play configuration, reservoir properties, lateral and vertical heterogeneity, and mechanical stratigraphy, and is the basis for our coarse classification system. This classification scheme provides a framework within which to view exploration, appraisal, and development of unconventional carbonate reservoirs. ■

Biographical Sketch

JAMES BISHOP (james.bishop@chevron.com) is in the Carbonate Stratigraphy Research and Development team at Chevron Energy Technology Company where he specializes in carbonate sedimentology, stratigraphy, geochemistry, and diagenesis. He joined Chevron in 2008 and has also worked in new ventures and exploration for the Middle East and the deep water Gulf of Mexico. James earned Ph. D. and M. S. degrees in sedimentology and stratigraphy from UC Davis and a B.A. in geology from Carleton College.






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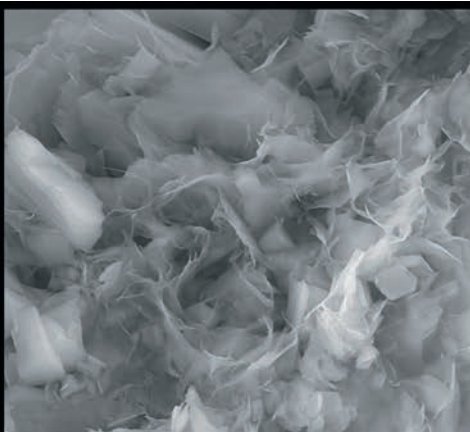
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	1	2	3
		HGS Board Meeting 6 p.m.	
7	8 A One-Day Short Course <i>"Petroleum Basins of Sub-Saharan Africa," Duncan Macgregor, Ph.D. Page 17</i> HGS International Dinner Meeting <i>"Cretaceous Fan Plays of the African Transform Margin," Tracey Henderson Page 25</i>	9 HGS-PESGB 13th Conference on African E&P Africa: A World of Opportunities <i>The Westin Houston, Memorial City Page 15, 22</i>	10 HGS Environmental & Engineering Dinner Meeting <i>"Environmental & Engineering Geology Committee," Matthew Cowan and Troy Meinen Page 27</i>
14	15 HGS General Dinner Meeting <i>"Mexico's Challenge to Explorationists," Colin Stabler Page 29</i>	16	17
21	22	23	24
28	29 HGS North American Dinner Meeting <i>"The Less Conventional Side of Carbonates," James Bishop Page 31</i>	30	

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GEOEVENTS

Thursday

Friday

Saturday

4	5 Don't wait, make your reservations online at www.hgs.org	6
11	12	13
18	19	20
25	26	27
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		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.



October 5-7, 2014
GCAGS Convention
Lafayette, LA

October 10, 2014
GSH/HGS Fishing Tournament
San Leon, TX

October 16, 2014
GSH Geoscience Day
Houston, TX

October 20, 2014
HGS Golf Tournament
Kingwood Country Club

November 10-13 2014
AAPG Fall Education Conference
Houston TX

January 19, 2015
HGS Legend's Night
Houston, TX

February 16-17, 2015
Applied Geoscience Conference –
Integrated Approaches of
Unconventional Reservoirs
Assessment and Optimization
Houston, TX

May 18-19, 2015
Applied Geoscience Conference –
Interdisciplinary Micro to
Macro-Scale Geomechanics
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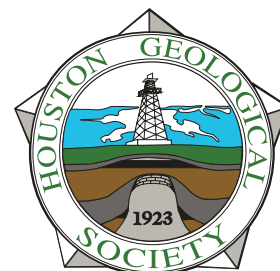
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HGS GOLF TOURNAMENT

Monday – October 20, 2014

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 10th. Entries will be accepted after October 10th, 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 20, 2014

Kingwood Country Club

SPONSORSHIP APPLICATION



TREVINO SPONSORSHIP \$500.00

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- **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

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Exp. Date _____ Security Code# _____

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Note: Company logos (high resolution file) must be received no later than October 11th.

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

14th ANNUAL SALTWATER TOURNAMENT

Friday, October 10, 2014

TopWater Grill Marina

815 Avenue O, San Leon, TX
Galveston Bay Complex and Offshore

This year's Saltwater Fishing Tournament will include an Offshore Division to be held on Friday, October 10th, 2014 at TopWater Grill Marina, San Leon. We are looking forward to a big event this fall and we encourage full family participation.

Galveston Bay Complex Division

Trophies will be awarded for the heaviest individual Redfish (Non-Tagged), Speckled Trout, and Flounder. Trophies will also be awarded for the heaviest individual Stringer - 1 Redfish, 3 Speckled Trout, and 1 Flounder.

Galveston Offshore Division

Trophies will be awarded for the heaviest individual Ling, King Mackerel, and Mahi-mahi

Registration fee includes: Launch Fee, GSH Fishing Cap, and Fish Fry Meal after weigh-in, Refreshments, Trophies, and DOOR PRIZES. For more information, please contact:

Bobby Perez (GSH)

281-240-1234 ext. 3233	Office
281-240-4997	Fax
281-787-2106	Cell
281-495-8695	Home

E-mail addresses: rdphtx@aol.com or r_perez@seismicventures.com

The Geophysical Society of Houston and the Houston Geological Society are non-profit organization serving the Geosciences Community. Corporate and individual contributions are appreciated and will be acknowledged on several sponsor boards and banners at the Weigh-In Station and Marina. All contributors will be recognized in the GSH Journal following the tournament. Contributions will be used to offset event expenses and overage will be used for Scholarships, Student Memberships, Outreach Programs and other activities of the Society. This is a great way to entertain friends, family, business associates, and clients. So spread the word!

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Or return this form with your Name: _____, Company: _____,
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GSH SALTWATER TOURNAMENT and Mail to:

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Call the office at: 281-741-1624 with Credit Card information

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

DISCLAIMER:

I acknowledge that the Geophysical Society of Houston will not be held responsible for injuries or accidents during this event.
PRACTICE SAFETY!!!!

Signature: _____

Award Citations for John Dombrowski and Michael Forlenza

By Barry Katz, Past President

One of the privileges of serving as President of HGS is to have the opportunity to honor those who have contributed to the society. In June, the President's Dinner was held and a number of our members were honored. Most of their names and contributions were included in the June issue of the *Bulletin*. Two awardees were not included in the June issue because I chose to surprise them at the event. These two honorees are **John Dombrowski** and **Michael Forlenza**.

John received his BS in Geology from Grand Valley State College and his MS in geology from Washington State University. His professional career has spanned just under forty years and has included technical, supervisory, and management positions. In addition to his service on the HGS Board and the AAPG House of Delegates John served as a member of the HGS International Committee, Africa Conference.

Michael received his BA in Geology from Columbia University and his MS in Geology from the University of Massachusetts. He has been a professional geologist for more than three decades. He has served the Society as editor-elect and for two terms as editor.



John Dombrowski was cited for being an "Outstanding Board Member". John has served as a Director for two years and also as Chair of the Houston Delegation to the AAPG House of Delegates. During his tenure on the Board, John was a strong advocate for the members, always willing to contribute and take on problems others would have preferred to defer. John

would often look to reach consensus among the Board, a group with strong personalities. This often resulted in better decisions and greater harmony. John also had oversight responsibilities for a number of committees, including the all-important website

committee, the primary interface between the membership and the Society. The upgrading of the website and obtaining membership acceptance were no small accomplishments. Much of the site's success can be attributed to John and his steady hand and guidance. Also during the past year, although not directly a Board activity, John served as the chair of the Houston Delegation to the AAPG House of Delegates. This required the skills of a diplomat with a split delegation as member sponsorship was debated. For his willingness to contribute above and beyond what was expected of a member of the Board, John was awarded the first "Outstanding Board Member Award".



Michael Forlenza was awarded a "President's Award". Michael served as Editor of the HGS *Bulletin* last year. There have been many who have served in this role without receiving any special recognition, but there was a true need to recognize Michael. Two years ago the position of Editor-Elect was vacated during the year and the position went unfilled. The Editor's

roles and responsibilities are not simple. Essentially the editor is a publisher, dealing not only with content, but contributors, layout, deadlines, and advertising. The "business" is learned during the year as Editor-Elect. The lack of an Editor-Elect resulted in two problems: no Editor for last year and if one could be found there would be a lack of experience and an understanding of the process. Michael was asked to reprise his role as Editor and he agreed to fill the void. Having served in the role as Editor myself I know the kind of sacrifice one is asked to make and being willing to step back into the role is a reflection of Michael's character and dedication to the Society. It must be emphasized that when Michael stepped in he did not step into the role as caretaker but continued to upgrade our *Bulletin*. For his contribution as Editor ensuring that the membership was aware of Society activities Michael was awarded a "President's Award". ■

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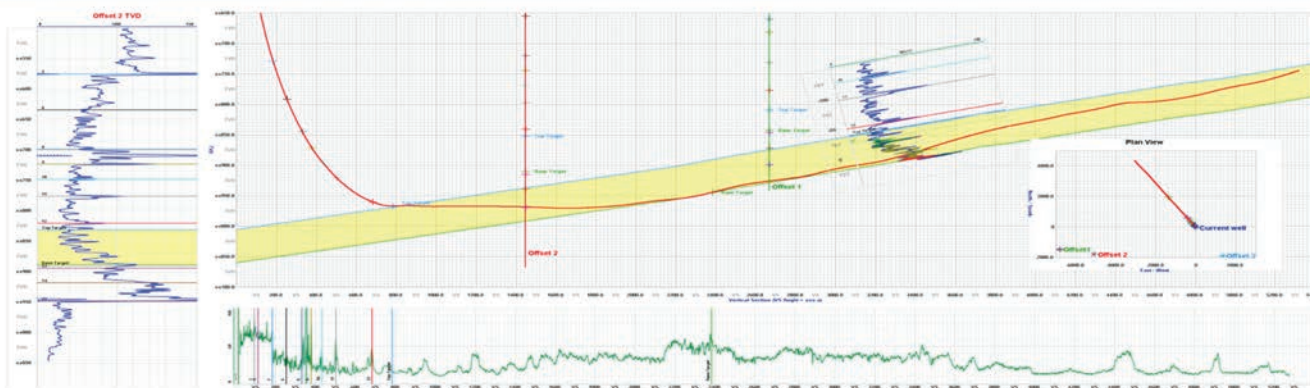
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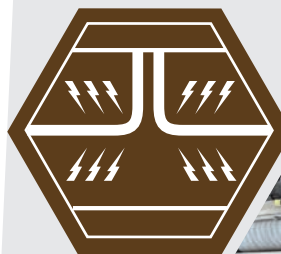
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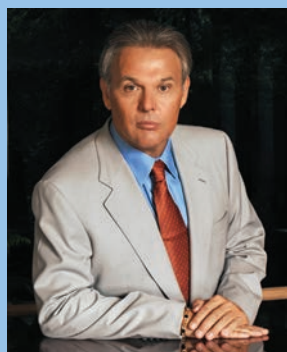
2013-2014 President's Night

JUNE 21, 2014

2013-2014 President's Night



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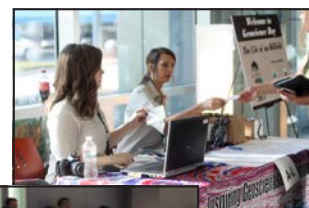
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Mystery of the Nile Thrills Guest Night Sellout Audience

By Linda Sternbach and Dave Reynolds



Adventurer-geologist Pasquale Scaturro enthralled the 400-person HGS Guest Night audience with his slideshow and his IMAX movie called *Mystery of the Nile*. Guest Night was held June 7, 2014 at the Houston Museum of Natural Science and featured dinner among the fossils and dinosaurs in the Morian Hall of Paleontology, followed by Pasquale Scaturro's talk in the IMAX theatre. Scaturro and partner Gordon Brown made the first continuous descent of the Blue Nile River from Ethiopia to Egypt and the Mediterranean in 2004. The Blue Nile rapids in Ethiopia are incredibly

dangerous, and remote from support and civilization. Scaturro and his partners narrowly survived fast waters, Nile crocodiles, and bandits, yet they were able to record 30 minutes of IMAX large format movie footage of the Nile rapids. This was the inside story about the making of the movie.

Guest Night also featured HGS President **Barry Katz**, who awarded recognition plaques to students from local high schools to acknowledge their 2014 Science and Engineering Fair poster sessions. Taylor Cabbage had a poster called "Fossils in our Backyard." Jay Hobsterrer, Junior Division,



won with a poster called "Frack that Shale." Ashley Wright, 9th grade division, made a study called "Earthquake-Proof Building Foundations." HGS supports the Science and Engineering Fair each year, encouraging young school students to study the STEM disciplines (Science, Technology, Engineering and Math).

Guest Night was made possible by support from BHP Billiton, TGS Nopec, Schlumberger, BP and Fairfield Nodal. Their financial support helps keep ticket prices low and supports the student award programs.

The Guest Night committee is headed by **Dave Reynolds** and he thanks his committee of **Charles Sternbach, Linda Sternbach, Mike Deming, Sandra Babcock, Jill Kimble, Troy Fearnow, Sue Pritchett, Rebecca Harkins, Mike Allison, Bea Licea and Suzie Reynolds**. A video recording of the Guest Night talk is on the HGS YouTube channel HGSGeoEducation, and you may go to <http://youtu.be/SoNGr4XRptQ> to see the slides and audio of Pasquale Scaturro's wonderful talk. ■

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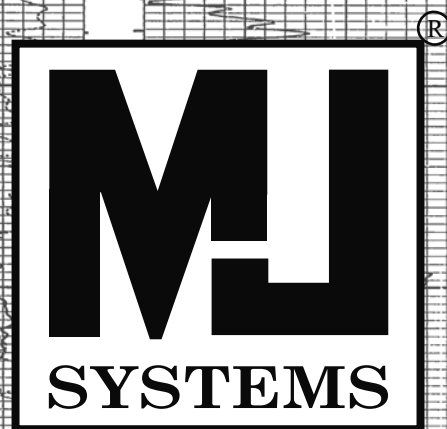
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Vendor Corner Recognition and Thanks

The Houston Geological Society would like to recognize and thank its many vendors who demonstrated their financial support of the HGS by providing "Vendor Corners" for our 2013-2014 evening technical meetings. These are the companies who present poster displays of their products, studies or services during the social/gathering period prior to the dinner meetings. The Vendor Corner fees that they pay are donated 100% to the HGS Scholarship Funds for geoscience students.

If your company would be interested in hosting a Vendor Corner at an upcoming evening technical meeting, please contact Paul Babcock at pbabcock@sabineoil.com or (832) 242-9650.

The HGS would like to thank the following:

C&C Reservoirs – Tarek Ghazi

***Chemostrat** – Milly Wright

FEI – Lucy Plant

Fugro GeoConsulting – Tina McGrew

Geochemical Solutions International (GSI) – Craig Scheifelbein, Nelda Adkins

Geophysical Insights – Hal Green

***Ikon Science** – Julianne O'Brien

Ingrain Inc. – Nora Villarreal

Lynx IS – Gareth Williams

MCG (MultiClient Geophysical) – Kenneth Mohn

MicroSeismic Inc – Mindy Manning

Petrophysical Solutions – Bill Price

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Saudi Aramco – Sarah Trainer, Tracie Esparza, Meredith Zundel

Weatherford – Crystal Alavarces

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Lower Tuscaloosa Trend: Request for Information

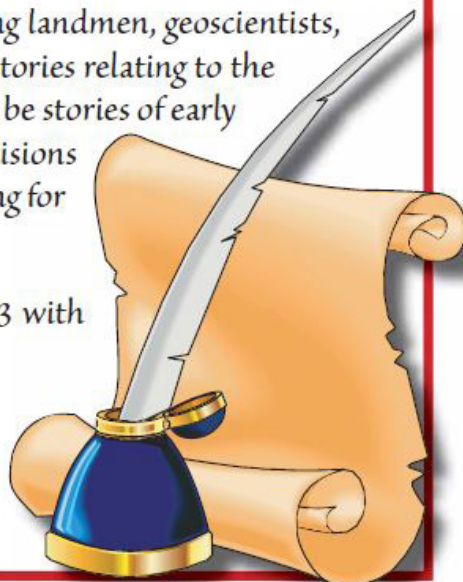
I am the Historian for the Gulf Coast Association of Geological Societies (GCAGS). My current history project is a 40th anniversary paper, or possibly a more ambitious publication, on the Lower Tuscaloosa Trend of South Louisiana.

This project will not be a technical paper, but instead a collection of "recollections" of those who worked the trend in the early days. I am contacting landmen, geoscientists, engineers, and others, soliciting a few paragraphs or pages of stories relating to the early exploration and discoveries within the trend. These can be stories of early well-sitting, key events, seismic activity, leasing, important decisions at meetings, technological breakthroughs, etc. I am also looking for photographs and newspaper articles.

Please contact me at spencerj320@gmail.com or 281-731-5823 with any questions or if you can help with this endeavor.

All the best,

Jeff Spencer



A Look Back in Time

By Ken Nemeth, President

As I continue to “mine” the online bulletins and old directories for information I have found a few errors in what I have written in the previous articles. So before going on to something new I will make note of some of my mistakes.

- The Distinguished Service Award was first presented in 1978; right recipient (James O. Lewis) but I reported the wrong year (1979). This award was announced in the June, 1978 HGS *Bulletin*.
- This also means that award recognition occurred earlier. As I was chasing down Honorary Life Members, I found pictures for four awardees in the May, 1960 *Bulletin*. However, there were no citations. In the *Rockhounds of Houston* (1947, Copyright Houston Geological Society) there are six pages devoted to the Society’s first three Honorary Life Members: Wallace Pratt, Alexander Deussen, and Elias Sellards. The author, Alva Ellisor, became the fourth Honorary Life Member in 1948.
- The 2013-2014 Board established the Committee Chairman’s Award. Gretchen Gillis became the first recipient of this award.
- President Barry Katz recognized John Dombrowski as the first recipient of the HGS Outstanding Board Member in 2014.
- I haven’t been able to “nail down” when John Suman received his Honorary Life Member recognition. He is listed as such in the 1958 (1957-58 officers) HGS Directory, but not the 1956 (1955 officers) directory. From the histories in the two directories I am thinking that it was most likely 1956 when John was recognized.
- We have a date of 1961 for Clarence Moody on the Honorary Life Members’ plaque, but he too is listed as an Honorary Life Member in the 1958 directory and one of 11 such members in the April 1960 HGS *Bulletin*. I’d be willing to bet that he received his recognition in 1956 also. The HGS office does not have a 1957 directory available to verify this.
- It turns out that the George Kronman currently at HESS is not the George E. Kronman given the President’s Award in 1988 and the Distinguished Service Award in 1991. George E is deceased (2010), his remembrance was published in the January 2011 *Bulletin* as reported by Allen Mattis.
- And yes, the 1924 AAPG convention was the Society’s 9th convention. The *Encyclopedia of Oklahoma History and*

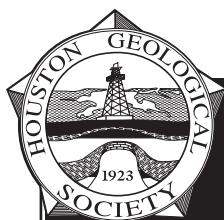
Culture (<http://digital.library.okstate.edu/encyclopedia/entries/A/AM019.html>) notes that the American Association of Petroleum Geologists “...began early in 1915 when Charles H. Taylor, head of the geology department at the University of Oklahoma, and Everette L. DeGolyer organized a small group of geologists at Norman and Oklahoma City. On October 7, 1915, J. Elmer Thomas and other geologists formed a similar group in Tulsa. On January 7-8, 1916, a joint session of the two organizations, comprising some forty individuals, held a conference in Norman, where thirteen professional papers were delivered. A union of the two groups was proposed at that conference and resulted in the formation of the Southwestern Association of Petroleum Geologists (SAPG). The SAPG met in 1917 and promptly changed its name to the American Association of Petroleum Geologists (AAPG) to better represent the organization’s national scope.” Karen Piquen at the AAPG Foundation Library provided a listing of past AAPG conventions. The first two took place in 1916 and 1917. Houston has hosted 13 AAPG annual conventions, typically eight to nine years apart. The last four were on much shorter schedules, three to five years. This shorter rotation highlights the importance to AAPG of Houston as a professional society venue, as well as AAPG’s desire to have its convention recognizing its 100th anniversary as an organization (102nd convention) in Houston in 2017.

- The HGS history shown in the early photo directories indicates that Houston hosted a regional AAPG convention in 1948. The annual convention was in Denver that year. Prior to the start of the ICE events AAPG has held its conventions in Calgary, Toronto, Atlanta, New York, Los Angeles, Chicago, St. Louis, Washington, San Francisco, and that hot bed of wildcatters luck, Atlantic City (1960).

I want to thank Bill Grubb of George N. May and Associates in Lafayette, LA for making his copy of *The Rockhounds of Houston* available to HGS. Look for it on the HGS website or stop by the HGS Office to run through it.

You might want to read about the first three AAPG conventions in Ms. Ellisor’s book. They assessed the membership \$1000 in 1924 for the first convention and raised another \$4000 from “various oil companies and individuals.” How’s that for fundraising! Another note: “Every member in the society was put to work.” Contact Larry Bartell if you are willing to work on the 2015 GCAGS convention and Dave Rensink if you are willing to work on the 2017 AAPG Convention Committee.

Until next month and another look back in time. ■



HGS Welcomes New Members

New Members Effective May 2014

ACTIVE MEMBERS

Cesar Abeigner
Jennifer Alpern
Nicholas Bearb
Christiaan Bon
Sandy Cannon
Drew Carlock
John Casiano
Lisa Casteleyn
Eric Climer
Cameron Cross
Lousi Dakessian
Scott Davies
Hector Del Castillo
Ben Dotson
Mary Ellison
Binian Estifanos
Dan Fernandez
Drew Fetterman
James Fisher
Gary Ford
Jonathan Fry
Justin Funk
Emily Gallagher
Patrick Geesaman
Adam Goss
Amanda Haddad
Keith Hart
Katrina Hoffman
Robert Hunter
Eric Hutton
Christina Jan
Suzanne John
Danielle Keathley
Shuhab Khan

Steve Ladner
Jing Ling
Xiaobing Liu
David MacConnell
Bryce McKee
Gabriel McLemore
Syed Mehdi
Zachary Mester
Joe Miller
Rocio Montejano
Christian Noll
Justin O'Shay
Promod Kumar Paihuly
Mary Parke
Tim Piwowar
Kelly Poret
Jonathan Preston
Blaine Rabel
Greg Raskin
Peter Robertson
Alicia Rosales
Anthony Salem
Diane Schlotter
Paul Schwering
Ajay Singh
Rebecca Stokes
Thomas Story
Emily Tackett
Josh Talbert
Aislyn Trendell
Kathryn Washburn
Britt Williams
Catherine Yuill

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Jay Hine

EMERITUS MEMBERS

Jim Corken

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Jensen Angelloz
Ryan Avera
Chris Baker
Yanhua Dai
Andrea Dearing
William Garnes
Tithi Ghosh
Paul Hagan
Tammy Huynh
Chase Jennings
Garrett Lowry
Jonathan Mocko-Strand
Bao Nguyen
Soty Odoh
Christopher Pate
Xuan Qin
Michelle Rimmel
Milton Sasser
Ed Schirm
Margaret Smoot
Derek Sullivan
Michael Thibodaux
Katherine Tighman
Travis Tillman
Andrew Trenchard
Matthew Worrell

Welcome New Members

GCAGS

By Larry Bartell (ldbartell@legendsexpl.com)

Being an HGS being a member has many benefits, such as the informative talks at the luncheons and dinners, field trips, short courses, social events, etc. However, there is another benefit that many of you may not be aware of and that is, by being a member of HGS, you are also a member of the Gulf Coast Association of Geological Societies, GCAGS. This is an association of thirteen local societies along the Gulf Coast stretching from Florida up to Shreveport, LA and down to Mexico. The GCAGS is also the recognized by the AAPG as being their Gulf Coast Section.

Just as the HGS offers numerous benefits so does the GCAGS. One of the benefits is the newly published GCAGS Journal Series composed of peer reviewed articles that go into greater detail than the papers submitted for the Transactions. Another benefit is that each year one of the local societies hosts the yearly convention in partnership with the GCSSEPM. These conventions, along with the talks, produce the Transaction publication centering on the geology of the Gulf Coast and the emerging trends, fields, technology, etc. that the Gulf Coast geologist can benefit from.

This year the convention is in Lafayette, Louisiana from October 5th thru the 7th. Its theme is "Survivor: The Gulf Coast". There will be more than 80 talks with emphasis on deep water deposition, emerging shelf trends, conventional, and resource plays, along with 6 short courses and 3 field trips. Go to the GCAGS website www.GCAGS2014.com for more information and to register. The benefits are numerous not only from the technical offerings but also with the social networking and opportunity to reconnect with old friends. Hope to see you there!

In September of 2015 the HGS will have the honor of hosting the annual GCAGS convention. It will also be the 65th Anniversary

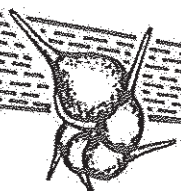
of this fine association which has continued to provide forums to educate and communicate about the geology of the Gulf Coast. Our theme is "Discovery, Leadership, Technology and Education." We choose this because we all are striving for the next DISCOVERY, and in order to achieve this we must have the LEADERSHIP to see the new ideas through all phases, from becoming a prospect to it being tested by taking advantage of TECHNOLOGY that exists today, be it software, drilling or new geological thinking that is part of the never ending EDUCATION to make the Gulf Coast Geologist successful.

These meetings don't run by themselves, but by the efforts of the great base of volunteers HGS is fortunate to have. However this does not mean we're not looking for new volunteers – we are. So if you have the inclination to participate in such an endeavor I encourage you to contact me, Larry Bartell the 2015 General Chairman at my email ldbartell@legendsexpl.com, so that we may discuss what committee you may like to help in. This is a great opportunity for the YPs to get involved in leadership positions within the HGS and/or the GCAGS.

Just as we are looking for new volunteers, we are also looking for technical papers that can be presented at our meeting. So if you have a paper, or know someone who has a paper on any aspects of the Gulf Coast geoscience please encourage them to submit an abstract to Linda Sternbach, our Technical program chair, at linda.sternbach@gmail.com. Our "Call for Papers" is going out soon. For further info on submittals or any other aspect of the technical program I encourage you to contact Linda or visit our website www.GCAGS.org and scroll down to our link.

I hope that you want to get involved and participate in the 2015 convention. See you in Lafayette. ■

However, there is another benefit that many of you may not be aware of and that is, by being a member of HGS, you are also a member of the Gulf Coast Association of Geological Societies, GCAGS.

Loyd Tuttle loydtuttle@comcast.net	Bob Liska liska.bob@gmail.com	Jim Thorpe thorpejim@comcast.net	Paleo Control, Inc. Houston, Tx 713-849-0044 www.paleocontrol.com
Paleo Consultants Drilling Wells - Advisors - Coordinators - Evaluators - Paleo Studies - Data Bases Lower Miocene - Frio - Vicksburg - Yegua - Cook Mountain - Weches through Wilcox			

Directory of Oil Company Name Changes

24th Edition (April 2014)

New Edition

A new 24th edition, of the HGS publication, "Directory of Oil Company Name Changes," is now available through the Bureau of Economic Geology. This publication is a cross-referenced list of domestic oil and gas, exploration and production companies that have sold major assets or have changed their names due to a merger, acquisition or reorganization. The purpose of this directory is to provide an oil company road map that may assist geologists in tracking down logs, samples, test information, cores, paleo, drilling reports, production histories and other well data that may be obscured by these numerous name changes.

The cost of the directory is \$20.00 and it can be obtained from the BEG.

The contact information is as follows:

Bureau of Economic Geology

University of Texas in Austin

Attn: Publication Sales

University Station, Box X

Austin, Texas 78713-8924

Phone: (888) 839-4365 • www.beg.utexas.edu

Unconventionals Update GTW

Nov. 4-5, 2014 – Austin, Texas

Join us to learn the latest technologies being successfully applied in the main unconventional plays, and how the knowledge can be applied to other plays. Geochemical methods, integrated 3D seismic, fracture characterization, and more are used to identify sweet spots. Participants will also learn about the latest infill drilling, increased density (and issues of fracture interference), stacked pay development, proppant and fluid selection (avoiding formation damage), reservoir characterization while drilling, workflows and decision-making. This two-day geosciences technology workshop focuses on the application of new understanding, technology, and techniques to optimize exploration, drilling, completions, and stimulation.



AAPG

Geosciences Technology
Workshops 2014

Bakken / Three Forks / plus Emerging Plays GTW

Nov. 17-19, 2014 – Golden, Colorado

Participants will learn how to be successful in utilizing the Three Forks in a stacked-pay, pad-drilling strategy when producing various Bakken members.

Attendees will learn how to apply 3D seismic and seismic attributes, use geochemistry and geochemical information to map sweet spots and to predict fracture behavior (including fluid behavior in the fractures, including fracture interference when infill drilling).

Sessions will also include new findings in emerging plays such as the Mancos.

www.aapg.org/career/training/in-person/workshops

2014 HGS Skeet Shoot

by Tom McCarroll, Skeet Shoot Chairman

The 2014 HGS Skeet Shoot was held on June 28 at the Greater Houston Gun Club in Missouri City. 131 shooters came out for friendly competition, fellowship, prizes, beverages and Halliburton's excellent barbecue. It was hot, but the weather gods co-operated and held back the rain until the last squads were finished shooting. Thanks to the generosity of our sponsors we were able to raffle off over \$4,000 worth of door prizes, including a shooting lesson from world champion skeet shooter Tom Fiori and a huge stack of gift cards from Academy, Bass Pros and Gander Mountain. This year's sponsors included Halliburton, who once again sent out their cooking team with its trailer and served a great BBQ lunch to all the shooters, visitors and gun club staff. Merrick Mainster, Pearl Oil Energy Services and PetroLog supplied cold keg beer, much appreciated after shooting in the hot sun. Core Lab, Fairfield Nodal and Bennu Oil & Gas were this year's cap sponsors; Baker Hughes sponsored a skeet field as well as the two-person flurry event. Geokinetics also sponsored a field. ION Geophysical, Belvedere Consulting, CLF Resources and Schlumberger were this year's ammo sponsors, INEXS sponsored the popular cigar booth, ALS-Empirics donated gift cards and can koozies and HGS members John Walker, Amy and Jim Vanderhill and Al Pigott all made sponsorship contributions as well. ■

The trophy belt buckle winners were:

High Over All: (49/50) Sterling Sammons

HOA Runnerup: (49) Chuck Ward

AA Champ: (47) Tom McCarroll

AA Runnerup: (47) Rachel Storniolo

A Champ: (38) Jeff Boettiger

A Runnerup: (38) Gary Martens

B Champ: (31) Wes Hubert

B Runnerup: (31) Ronnie Christian

C Champ: (23) Afif Hariz

C Runnerup: (23) Ash Shepherd

Ladies Champ: (47) Rachel Storniolo

Ladies Runnerup: (40) Amy Vanderhill

Two-Person Flurry: (28/30) Mike Kasecky and Tim McGinty

Thank you to our sponsors!

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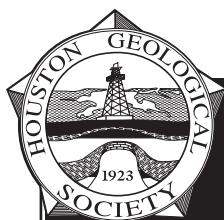
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Nataleigh Vann
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Wanli Pu

EMERITUS MEMBERS

Donald Rusk

STUDENT MEMBERS

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Jendayi Alleyne
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Aline Barros
William Bogardus
Ryan Holland
Qi Huang
Janet Kong
Sabrina Martinez
Brenda Ray-Okoye
Zhenghua Wang
Fang Yuan

New Members Effective July 2014

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Kristoffer Rimaila
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Elizabeth Wilson
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Igor Effimoff
James Grubb
Jonathan Hagmaier
James Hallin
John (Jack) Howard
Fred Marshall

Edward McClintock
Robert McReynolds
Josh Rosenfeld
Sandro Serra
Johnnie Wanger

STUDENT MEMBERS

Kaitlyn Andreas
Elizabeth Colmenares
Marc Ramirez
Erin Schwartz
Wyatt Travis
Arthur Ward
Jonathan Ward

Welcome New Members



Kevin J. McMichael

First City Tower
1001 Fannin, Suite 777
Houston, TX 77002
713-655-9700
Fax 713-655-9709
kcmichael@claymoreexpl.com

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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.

Louisiana Board of Professional Geoscientists Update

The Louisiana Board of Professional Geoscientists (LBPG) has extended their grandfathering period to the end of this year. It seems the Louisiana Legislature can only make laws effective for the year they were approved. This resulted in the need for the LBPG to request an extension for this year, which is what they originally wanted. The LBPG has also updated their website, www.lbopg.org/home. You can submit and track your application there.

AGI Geoscience Policy Monthly Review (April 2014)

House Passes Bill to Improve Weather Forecasting at NOAA

On April 1, 2014 the House passed legislation authorizing increased funding for weather research at the National Oceanic and Atmospheric Administration (NOAA). The Weather Forecasting Improvement Act of 2014 (H.R. 2413) would allocate \$360 million to NOAA over a two-year period for "investment [in] near-term, affordable and attainable advances in observational, computing and modeling capabilities." Improved modeling systems should improve NOAA and the National Weather Service's ability to predict and track severe storms such as hurricanes and tornadoes.

American forecast modeling has fallen behind European capabilities in recent years. For example, the European model was able to provide more lead time for Superstorm Sandy than the U.S. counterpart, the Global Forecast System. Advanced weather forecasting capabilities are crucial for saving lives during severe weather events. Representative Jim Bridenstine (R-OK), the bill's sponsor, suggested that investments in improving NOAA's forecasting capabilities could increase lead time for tornadoes from 15 minutes to an hour, providing critical time for the public to seek shelter.

The bill gained bipartisan support after changing language that reallocated funds from climate change research to fund weather research, a move that Democrats strongly opposed. The revised language supplies funding for weather research without altering current climate funding.

Senator Bennet Named Chair of Finance Subcommittee on Energy, Natural Resources, and Infrastructure

On April 3, 2014 Senator Michael Bennet (D-CO) was named Chairman of the Senate Finance Subcommittee on Energy, Natural Resources, and Infrastructure. Bennet, a second term

senator from Colorado, favors an "all of the above" approach to energy and has a history of working across the aisle on legislation. The senator's legislative priorities include renewable energy, efficiency, and energy tax policy. The subcommittee examines issues of taxation and other revenue measures relating to energy, natural resources, and infrastructure.

Senator Bennet will work to advance these priorities in his new role as subcommittee chairman.

Kornze Confirmed as Director of BLM

The Senate confirmed Neil Kornze as the 18th Director of the Bureau of Land Management (BLM) on April 8, 2014 by a vote of 71-28. Kornze, a native Nevadan and experienced public lands staffer, joined BLM in 2011 where he served as principal deputy director. He has led BLM in an acting capacity for over a year. As director, he will oversee oil and gas drilling, mining, renewable energy development, grazing and wildlife and recreation on 250 million acres of land. Kornze faces difficult decisions on issues including hydraulic fracturing regulations, methane emissions reductions, sage grouse protection, and solvency for wild horse and burro programs.

Since joining BLM, Kornze has worked closely on crafting guidelines for fracking on public lands, promoting initiatives to develop solar power in the Southwest, and leading reforms of BLM's oil and gas program to decrease industry wait time for permits.

NRC Under Pressure to Require Safety Upgrades in Earthquake-Prone Nuclear Facilities

Nuclear reactors in the U.S. may not be as safe from earthquakes as previously thought. Revised estimates of earthquake risk have led at least two dozen nuclear reactor facilities to inform the Nuclear Regulatory Commission (NRC) that their facilities may not withstand the most severe earthquake they could possibly face. As a result, these reactors must undergo costly new safety assessments that may cost up to \$5 million per reactor.

The NRC required companies to reassess earthquake risk following the 2011 Japanese Tohoku earthquake and subsequent triple meltdown of reactors at Fukushima Daiichi.

So far the NRC has assumed that reactors built to previous specifications do not pose an immediate threat. An NRC spokesperson indicated that **Government Update** continued on page 58

reactors that experience earthquakes stronger than they were designed to withstand will not necessarily sustain serious damage. Senator Edward Markey (D-MA) encouraged the NRC to take immediate action to secure at-risk reactors instead of recommending more studies.

Study finds global REE supplies sufficient for U.S. defense needs. A recent Department of Defense (DOD) report finds that for the foreseeable future, the global supply of rare earth elements (REEs) should be sufficient to meet U.S. defense needs. Despite concerns about availability and price of REEs, DOD finds an 11.8 percent decline in global REE demand from 2010 to 2013. During that period, REE demand and prices declined while available supplies increased.

Global REE prices soared in 2010 in the wake of new Chinese export controls, prompting decision makers and companies to examine alternatives, including mining REEs outside of China and exploring substitute materials. Rare earth advocates point out the potential negative impacts of relying on foreign nations to provide critical defense supplies. They suggest promoting domestic production of REEs where possible and developing methods of recycling and remediating REEs. DOD responded that recycling has proved infeasible due to financial, regulatory, and technical challenges. However, the Administration will continue pursuing a strategy of diversifying supply, exploring substitutes, and recycling waste.

AGI Geoscience Policy Monthly Review (May 2014)

Senate Confirms Schneider as Interior Assistant Secretary for Land and Minerals Management

On May 1, 2014 the Senate approved Janice Schneider as Assistant Secretary for Land and Minerals Management (ASLM) in the Department of the Interior (DOI) by a vote of 64-32. Schneider will guide management and use of oil and gas, coal, and renewable energy resources on public lands and waters. Her jurisdiction includes the Bureau of Land Management, Bureau of Ocean Energy Management, Bureau of Safety and Environmental Enforcement, and the Office of Surface Mining Reclamation and Enforcement. According to DOI, public lands and offshore areas produced energy that contributed \$230 billion to the national economy and supported 1.2 million jobs in fiscal year (FY) 2012.

Schneider is an environmental lawyer in Washington, D.C., who served as an Interior official in the Clinton administration. Secretary of the Interior Sally Jewell praised Schneider saying, "With experience in both the public and private sectors, she will be an advocate for a balanced approach and a science-based decision-making process that both advances the President's key energy initiatives and promotes the conservation of our federal lands and natural resources."

Schneider replaces Tommy Beaudreau, who has served as Assistant Secretary since January 2013. He will return to his position as Director of the Bureau of Ocean Energy Management, which he has led since 2011.

USGS Nominee Testifies Before Senate Committee on Energy and Natural Resources

On May 13, 2014 the Senate Committee on Energy and Natural Resources held a hearing to consider the nomination of Dr. Suzette Kimball to serve as Director of the U.S. Geological Survey (USGS). Dr. Kimball, who holds a doctorate in environmental sciences, previously worked for the National Park Service and the U.S. Army Corps of Engineers. She has served as Acting Director of USGS since 2013.

Senator Lisa Murkowski (R-AK) expressed concern that USGS has lost sight of its core mission, noting that there has been a decrease in internal funding for programs that serve to detect and prevent natural disasters such as earthquakes, volcanic eruptions, and floods. Senator Maria Cantwell (D-WA) also signaled concern that USGS has not focused enough resources on landslide research. Senator Joe Manchin (D-WV) inquired about critical minerals research and the growing demand for rare earth elements and their use in civilian and defense technologies.

Dr. Kimball stressed the importance of USGS addressing issues related to improving methods of coping with natural disasters such as earthquake early warning, as well as examining the impacts of mining rare earth elements. Dr. Kimball also voiced support for comprehensive Light Detection and Ranging (LiDAR) surveys to aid in the understanding of landslides and to develop a map of landslide prone areas.

Dr. Kimball's nomination still needs to pass the Committee before it is sent to the Senate floor for further consideration by the full Senate.

House Science, Space, and Technology Committee Examines IPCC Report Process

The House Committee on Science, Space, and Technology held a hearing on the process used to compile the most recent United Nations Intergovernmental Panel on Climate Change (IPCC) report. The hearing focused on the IPCC Working Group II report, a subset of the 2014 report, which addresses the impacts of climate change.

Witnesses discussed possible bias in the process used to choose scientists to review the report and potential lack of rigor in the review process. Richard Tol, Professor of Economics at the University of Sussex, believes that scientists who disagreed with parts of the report were marginalized. He also believes that the

IPCC Summary for Policymakers contains inaccuracies, and expressed doubt that the summary was indeed policy neutral and faithful to the science. Michael Oppenheimer, Professor of Geosciences and International Affairs at Princeton University disagreed, arguing that two rounds of peer editing ensured the document's accuracy and relevance.

Both witnesses agreed, however, that the IPCC report would benefit from more transparency and a change in format to shorter documents released more frequently. Dr. Oppenheimer recommended publishing a record of divergent viewpoints along with the IPCC report.

Witnesses and members of Congress discussed whether there is a scientific consensus regarding climate change. Ranking member Eddie Bernice Johnson (D-TX) remarked that clear consensus exists that humans impact climate change, a view echoed by Dr. Oppenheimer and Dr. Tol. Representative Paul Broun (R-GA) and others took issue with the concept of "settled science," saying that rigorous science requires healthy debate. Witness Daniel Botkin, Professor Emeritus in the Department of Ecology, Evolution, and Marine Biology at the University of California Santa Barbara, argued warming is neither unusual nor irreversible and Roger Pielke Sr., Professor Emeritus of Atmospheric Science at Colorado State University, warned that the models being used to predict regional weather events and form policy are unreliable.

DOE Report: U.S. Has Potential to Double Hydropower Capacity

The Department of Energy (DOE) released a report in early May concluding that the U.S. has the potential to almost double its current hydropower generation capacity. The assessment details how the U.S. can diversify its energy supply by generating up to 65 additional gigawatts of hydropower through harnessing the potential of 3 million rivers and streams in all 50 states. Hydropower currently provides the largest source of renewable energy in the U.S., contributing 7 percent of the total electricity generated.

DOE emphasized responsible development in its report. Although the report does not examine the economic feasibility or financial considerations associated with new hydropower generation sites, it identifies "high-energy intensity stream-reaches and [classifies] new potential areas for hydropower development using a range of technical, socio-economic, and environmental characteristics." The new hydropower facilities suggested in the report would be smaller operations that would use low-impact designs and consider local wildlife habitats, protected lands, and fishing access areas.

Secretary of Energy Ernest Moniz praised the report's conclusions, saying "The United States has tremendous untapped clean energy

resources and responsible development will help pave the way to a cleaner, more sustainable and diverse energy portfolio."

NIOSH to Assess Workplace Hazards Associated with Hydraulic Fracturing

The National Institute for Occupational Safety and Health (NIOSH) has called on the oil and gas industry to help assess the workplace hazards associated with hydraulic fracturing in response to four worker deaths since 2010.

The deaths occurred in the Williston Basin in North Dakota and Montana; NIOSH says the fatalities may have been due to "acute chemical exposures during flowback operations." Flowback refers to drilling fluids that return to the surface after the hydraulic fracturing process is complete. The workers gauging, collecting, and transferring these fluids may be exposed to volatile hydrocarbons they contain. NIOSH states that high concentrations of the chemicals found in volatile hydrocarbons are extremely toxic and can damage the eyes, respiratory and nervous systems, and lead to abnormal heart rhythms.

NIOSH researchers have developed several recommendations to reduce workplace exposures. These include developing alternative tank-gauging procedures, providing hazard awareness training, monitoring workers, ensuring that workers do not work alone, using appropriate respiratory protection, and establishing better emergency procedures.

These recommendations mark NIOSH's ongoing effort to assess and mitigate health risks associated with hydraulic fracturing.

Obama Announces Pick for NOAA Chief Scientist

This May, the White House nominated Rick Spinrad to serve as Chief Scientist for the National Oceanic and Atmospheric Administration (NOAA). His nomination is part of an ongoing effort to re-establish NOAA leadership following a number of high-level vacancies in the past year. As Chief Scientist, he will "drive policy and program direction for science and technology priorities," according to the memo.

Spinrad spent much of his career in the Navy before serving as Assistant Administrator for Oceanic Services and Coastal Zone Management at NOAA, and more recently as Assistant Administrator for Research at NOAA. He is currently the Vice President for Research at Oregon State University.

NOAA's Chief Scientist position has been vacant since 2011 when Senate Republicans blocked Scott Doney's nomination over demands for testimony regarding the Department of the Interior's decision to halt drilling in the Gulf of Mexico after the Deepwater Horizon spill. ■

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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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HGS has multiple website advertising opportunities for your company! We've expanded our offerings to include a 275 x 800 pixel, rotating banner ad on the front page of the website. We have kept the popular Event Calendar and Geo-Job Postings advertisement locations!

	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

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

14811 St. Mary's Lane, Suite 250 • Houston, TX 77079-2916

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

Payment method:

☐ Check, ☐ VISA, ☐ MasterCard, ☐ American Express, ☐ Discover

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Expiration Date: _____ Card I.D. _____

(Card I.D. – 3 or 4 digit number on front or back of card)

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.

Name: _____

Address: _____

Home Phone: _____ Spouse's Name: _____

Email: _____

Job Title: _____

Company: _____

Company Address: _____

Work Phone: _____ Fax Number: _____

Circle Preferred Mailing Address: Home Office

Professional Affiliations: _____

☐ AAPG member No.: _____

Professional Interest:

☐ Environmental Geology ☐ North American E&P (other than Gulf Coast)

☐ International E&P ☐ Gulf Coast E&P (onshore & offshore)

School _____

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 _____

Houston Petroleum Auxiliary Council News

Sally Blackhall, Guest Liaison, 281-370-7807 or sblackhall1@gmail.com

Our May luncheon and installation of officers occurred on May 20, 2014 at the Houston Racquet Club. Our wonderful luncheon and style show were organized by **Sara Nan Grubb**. Our members modeled fashions and jewelry from Bags and More and many items were made available for purchase.

The luncheon was followed by our annual Installation of officers for 2014-2015. The officers for the 2014-2015 Executive Board are as follows:

President	Sally Blackhall
First Vice President	Norma Jean Jones
Second Vice President	Susan Bell
Secretary	Vicky Pickering
Treasurer	Kathi Hilterman
Editor	Millie Tonn
Parliamentarian	Barbara Peck

Our Liaisons, who keep us in touch with other organizations, are as follows:

HAPL	Sheri McQuinn
HGS	Sally Blackhall (until a new one is found)
GSH	Donna Parrish
SPE	Phyllis Carter

Our newly installed board has been busy getting ready for the upcoming year. First Vice President **Norma Jean Jones** has scheduled some really interesting and exciting programs. Please save the following dates and put them on your calendar:

September 16, 2014 @ Lakeside Country Club: Norma Jean Jones has booked Dr. Haresh Yalamanchili, Belage Center, as our speaker. He is a plastic surgeon and will tell us about the new techniques available to improve our looks and self images. All women want to look their best, so Dr. Yalamanchili's talk should be quite interesting.

December 15, 2014 @ Junior League: You will not want to miss this Christmas program. Watch for more details later.

March 17, 2015: Annual Game Day, Braeburn Country Club

May 14, 2015: Maggiano's Little Italy, Annual Style Show and Installation of our Officers for 2015-2016. The retail business furnishing the fashions will be named later.

We will also have the GCAGS Convention here in Houston in the spring. Watch for details as we receive them.

HPAC has many special interest groups:

A **Book Club** which meets the first Mondays at 10:30 a.m. in August, November, February and May. The ladies meet at different members' houses.

Contact: Mickey Murrell at 281-469-2272.

HPAC also has two **Bridge Clubs**:

Cinco Mas Bridge Group – Meets Second Thursdays at Westchase Marriott.

Contact: Audrey Tompkins at 713-686-0005

Petroleum Club Bridge Group – Meets at the Petroleum Club – Third Wednesdays (Except December)

Cost: \$30 (includes valet parking & lunch)

Contact: Daisy Wood at 832-581-3231 or daisymallia@comcast.net

HPAC is fortunate to have **Hpac Exploring Houston**. Martha Lou Broussard and Linnie Edwards do a marvelous job planning trips to learn about special places in Houston and there is an annual historical trip to learn about different cities in the great state of Texas. Watch for details for upcoming events. Contact: Martha Lou Broussard at 713-665-4428 and Linnie Edwards at 713-785-7115.

Anyone reading our column can see HPAC has a lot going on. So, geologists in the Oil Patch, please tell your spouses about us. They will meet other spouses of geologists, geophysicists, engineers and landmen. An HPAC application-for-membership form is included on the next page. ■



You are invited to become a member of

HPAC

2014–2015 dues are \$20.00 Mail dues payment along with the completed information

to **Susan Bell** • 11431 Legend Manor • Houston, Texas 77082

YEARBOOK INFORMATION















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Please choose a committee assignment if you are interested.

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| <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 | |

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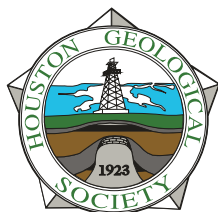
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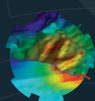
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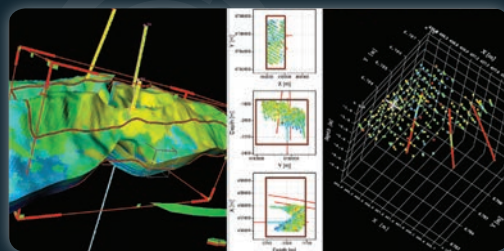
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