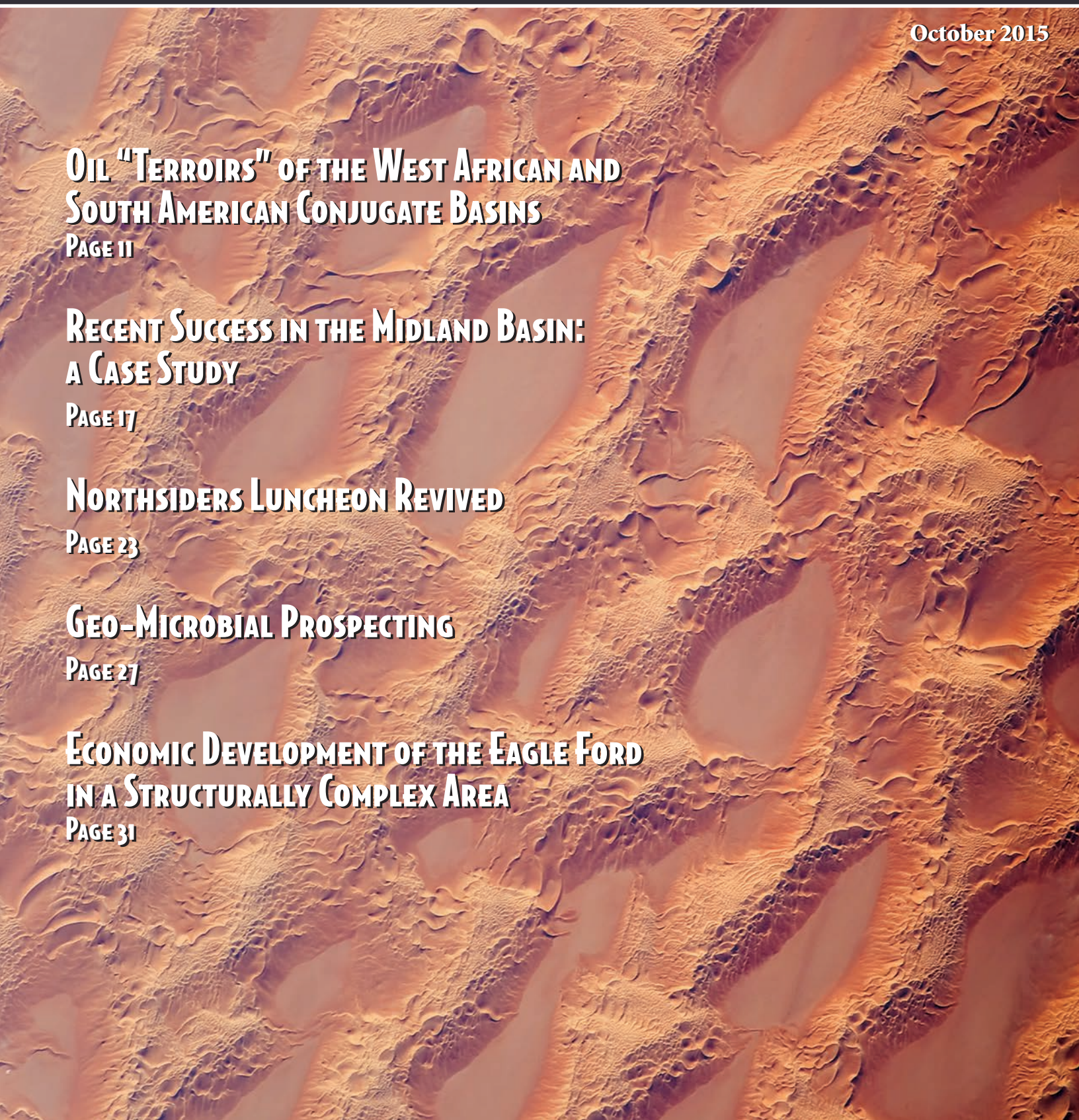
HGS Bulletin
Houston Geological Society
Volume 58, Number 2
October 2015



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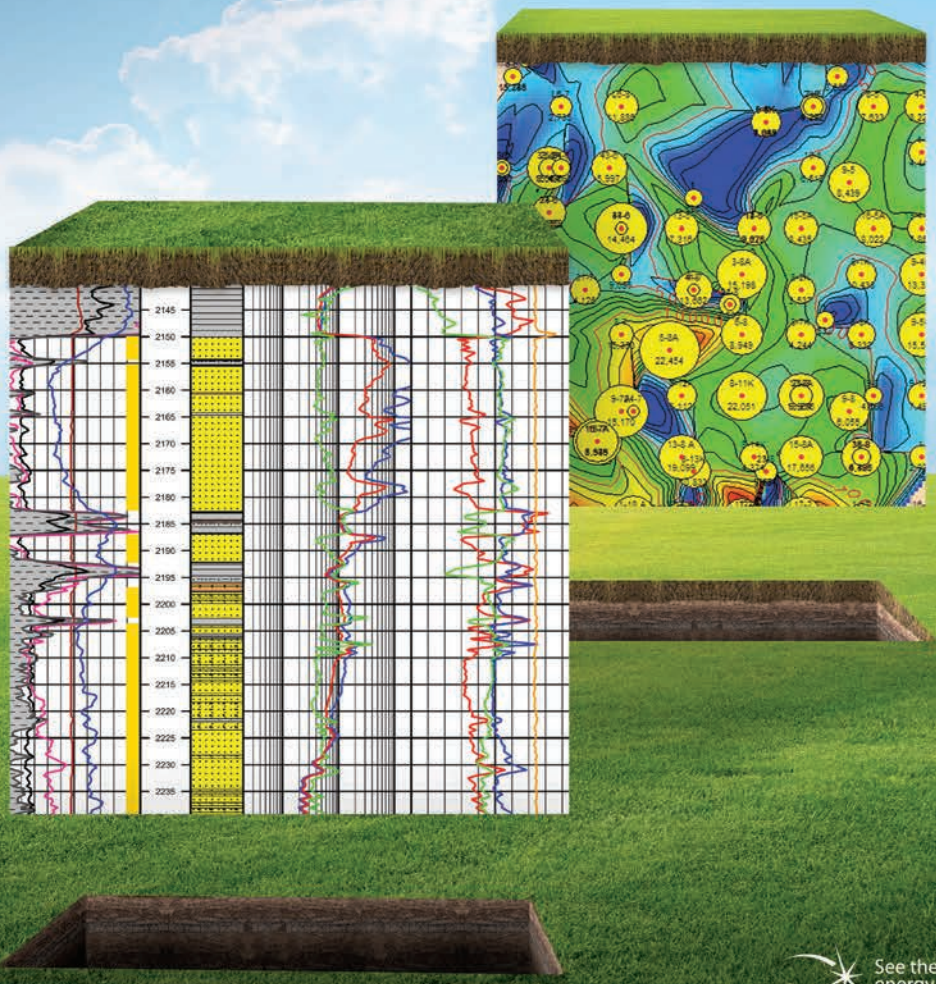

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The Bulletin
Houston Geological Society

Volume 58, Number 2 October 2015

In Every Issue

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Technical Meetings

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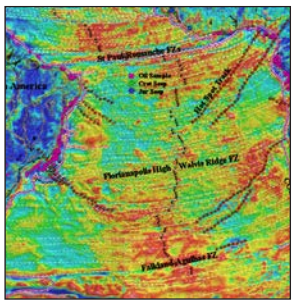

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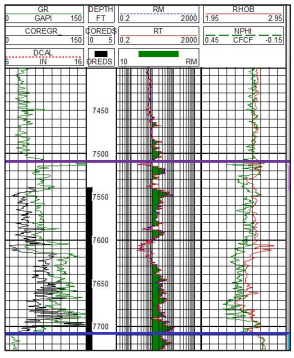

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About the Cover: Draa megadunes with ancillary longitudinal, transverse and star dunes, Murzuq Sand Sea (erg), southwestern Libya. The Murzuq erg, of which the photo shows just a tiny portion, covers some 58,000 square kilometers. Although dunes in this area reach 200m in surface relief, the total thickness of eolian sands can exceed 1200m. Astronaut photo from ISS Expedition 18 (2008), spacecraft altitude 188 nautical miles, courtesy of Image Science & Analysis Laboratory, NASA Johnson Space Center, Houston.

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John.Jordan@anadarko.com

Small Changes—Big Consequences

Change is in the air at the American Association of Petroleum Geologists (AAPG) and your opinion matters!

A movement to change *if and when* new members are vetted is being discussed at AAPG headquarters and around the House of Delegates (HOD). One might ask, "Why should I care? I'm already an Active member of AAPG." The AAPG membership application question is the tip of the iceberg of change to our organization being suggested by the AAPG Executive Committee (EC). Why? There is a belief by many members of past and present AAPG ECs that the AAPG is a dying society. ***I personally do not believe this to be true.*** This notion is pushed by AAPG leadership at nearly every AAPG HOD, Advisory Committee (AC) and EC meeting. To "save" AAPG, we are told, the entire organizational framework (Governance) needs to be updated to a model that looks very much like the AAPG of the early 1960s. Supporters have put their efforts into three areas. First, they want to reduce the minimum criteria to become an Active member of AAPG. Second, they would like to rewrite the AAPG bylaws marginalizing the significance of the HOD in AAPG. Third, they would change how money is shared with AAPG Affiliated Societies which includes the Houston Geological Society (HGS). We have been told that all of these changes are being considered to improve efficiency and therefore grow the AAPG.

Twenty years ago an AAPG Active member needed a degree in geology, five years of work experience and three AAPG sponsors. Today's criteria are one year of work experience and one AAPG sponsor. This is currently less than the requirements for some who join the HGS. Many members of the HOD believe that the ultimate goal is to drop sponsors and possibly the work experience as well. Even the requirement of possessing a geology degree may be at risk, so that anyone with a few minutes and a credit card could potentially become an active member. It is believed that this efficiency will instantly increase AAPG membership. Is this what the majority of current AAPG members really want?

Rewriting the bylaws, marginalizing the significance of the HOD in the name of efficiency is the first step in moving the AAPG towards a small Executive Board. We have been told that a small board is more efficient and therefore a more desirable form of Governance. We must not lose sight that most future leaders of AAPG come from the AAPG HOD. Participating in the HOD is an excellent way to gain an understanding of AAPG and an avenue to learn leadership skills in a non-corporate environment. A small Executive Board was the original model used when AAPG was established and it led to a "good old boy" system which was rejected by a disenfranchised AAPG membership in the 1960's. These members created the current structure to rein in the power of the Executive Board. In 1970 the HOD was created by the membership so that the members of the HOD with a controlling two-thirds vote had a vehicle to make changes to bylaws.

Finally, there is a desire to change how money is shared with AAPG-affiliated societies such as HGS. It is important to recognize that just like in HGS, AAPG membership dues and advertising in the AAPG *Bulletin* and *Explorer* magazine do not generate enough revenue to run the AAPG. Where does the money come from that keeps the AAPG running? The primary source of revenue for AAPG is the (North American) Annual Convention and Exhibition (ACE). Yes, ACE does include Canada. Generally speaking, the affiliated society that hosts ACE shares in the profit from the event held since they supply most of the volunteers that organize the technical program, courses, field trips and a large social event (at their own monetary risk). Without the local society volunteers, AAPG could not hold an ACE of the quality we have come to expect. This periodic influx of money is critical in the day-to-day operations of the HGS. The HGS runs a very tight budget every year until an AAPG convention comes to town and then we receive a percentage of the profit from that event. The HGS anticipates this surplus for our 5-year budgets. This single event every few years provides a small amount of extra income that we use to fund popular, large HGS conferences such as the Mudrocks, Geomechanics and Africa Conferences, among other uses.

The changes being discussed for the AAPG have far reaching consequences for members of both AAPG and HGS. Your elected delegates are here to represent your views, so reach out to them and have your voice heard. You can find a list of the members of the Houston HOD on the HGS web site, or better yet, call HGS Nominations Chair **Ken Nemeth** and volunteer to run for the HOD next spring! ■

The 15th HGS-PESGB Conference on African E&P

September 12-14, 2016 • Houston Texas

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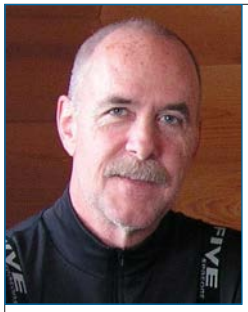


Jon Blickwede
jonblickwede.hgs@gmail.com

Mourning the Cactolith

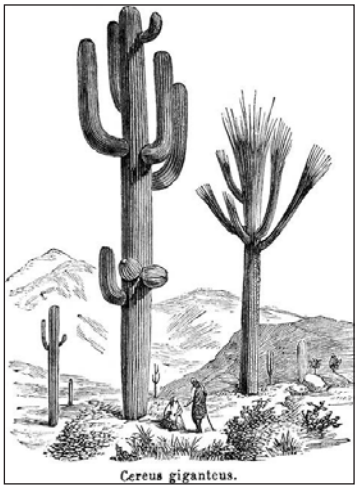
Linguists estimate that there are roughly 3,000 words in the English language that are in common, everyday use. In contrast, my copy of the 1974 edition of the American Geological Institute's (AGI) *Glossary of Geology* has about 33,000 entries, and that number has risen to nearly 40,000 in the latest (2011) edition. Is that too many?

Language is both "a systematic means of communicating by the use of sounds or conventional symbols" and "a system of words used to name things in a particular discipline."[1] The former definition has an intrinsic objective of effective communication, to ensure as much as possible that a particular concept is understood by the audience in precisely the same way as the person trying to convey the concept. The latter definition of language has no such built-in objective, and it is here that we geologists, just as all scientists, have run into the most trouble at times.

A classic example which illustrates the situation where the proposal of new geological words has gone berserk relates to the term "cactolith," coined by Hunt et al. in their 1953 USGS Professional Paper 228 entitled *Geology and Geography of the Henry Mountains Region, Utah:* "The feeder to the Trachyte Mesa laccolith has a distinctive form and some may wish it named. 'Cactolith' might be used, and defined as a quasi-horizontal chonolith composed of anastomosing ductoliths whose distal ends curl like a harpolith, thin like a sphenolith, or bulge discordantly like an akmolith or ethmolith."

For years I thought this was a serious (albeit comic) attempt to add a useful term to the geological lexicon, though I did once hear that Hunt and colleagues wrote this as a mischievous experiment to see if the term would pass the USGS editorial process, which it obviously did. Thus surviving the USGS editors, "cactolith" gained entry into the AGI *Glossary*, and some years later was even cited in the *New Yorker* magazine's "How's That Again?" column.

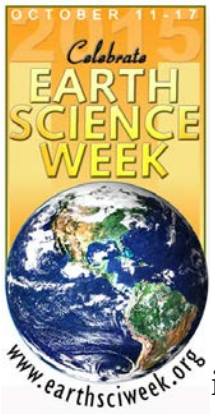
As it turns out, Hunt et al. did indeed intentionally propose the term in order to point out the plethora of geologic gobbledygook, at least in the field of igneous petrology. I recently discovered a 1988 publication by Hunt in which he clarified the origin of the name: "It was intended to call attention satirically to the absurd nomenclature geologists were developing by applying new names to the infinite variety of shapes intrusions can form. The name cactolith and its definition started July 1939 at what may be called elegantly a luncheon seminar on an outcrop of that feeder to the Trachyte Mesa laccolith..."


Cereus giganteus.

I'm sorry to report that the cactolith, which appears in my copy of the 1974 AGI *Glossary*, has apparently been declared dead as it was unceremoniously dropped from the 2011 edition. Perhaps it should be revived, not as a widely-used term for describing the zillions of igneous intrusive bodies around the world that look like a particular kind of cactus – but rather for the message it was meant to convey, about the importance of trying to keep our geological jargon as simple as possible. I suppose it could also be defended as having value as a candidate for crossword puzzles. In any case, the curious can visit Hunt et al.'s type locality about ¾ mile southwest of Trachyte Mesa, Garfield Co., Utah, just off State Route 276 about five or six miles south of the junction with State Route 95. I haven't been there yet, but I'd like to do so someday, to pay my respects (see map on page 9).

I'll finish up this month's column with a general comment/opinion and some recommendations about technical writing. In today's world, where documentation of our technical work is more likely to be done via PowerPoint presentations than traditional written reports, some might say that the importance of the written word has diminished. But I hope that even in PowerPoint presentations, or for that matter email, or social media, the economy of words and precision of written communication will always be important. Furthermore, I believe that geologic writing, when carefully crafted, can even contain an element of inspirational beauty; in this regard, the publications of W.R. Dickinson (e.g. 1974) come to mind, among others.

From The Editor *continued on page 9*



Earth Science Activities for the Whole Family Coming in October!

Earth Science Week, 2015

October 10 – 18

HGS in partnership with the American Geosciences Institute (AGI) is pleased to announce the theme of Earth Science Week 2015

"Visualizing Earth Systems"

This year's event explores what it means to see our planet through eyes informed by the geosciences.

In celebration of Earth Science Week Houston, HGS will be hosting the following exciting events:

Saturday, October 10 (11:00am – 3:00pm)

Earth Science Celebration at the Houston Museum of Natural Science
Our popular passport program guides students through hands-on activities and interactive science demonstrations.

Special pricing for the event: **$3.50 K – 12 students**
$3.50 College Students/Teachers/Professors with valid school/college ID

Teachers: 2015 ESW Toolkits free with valid school ID.

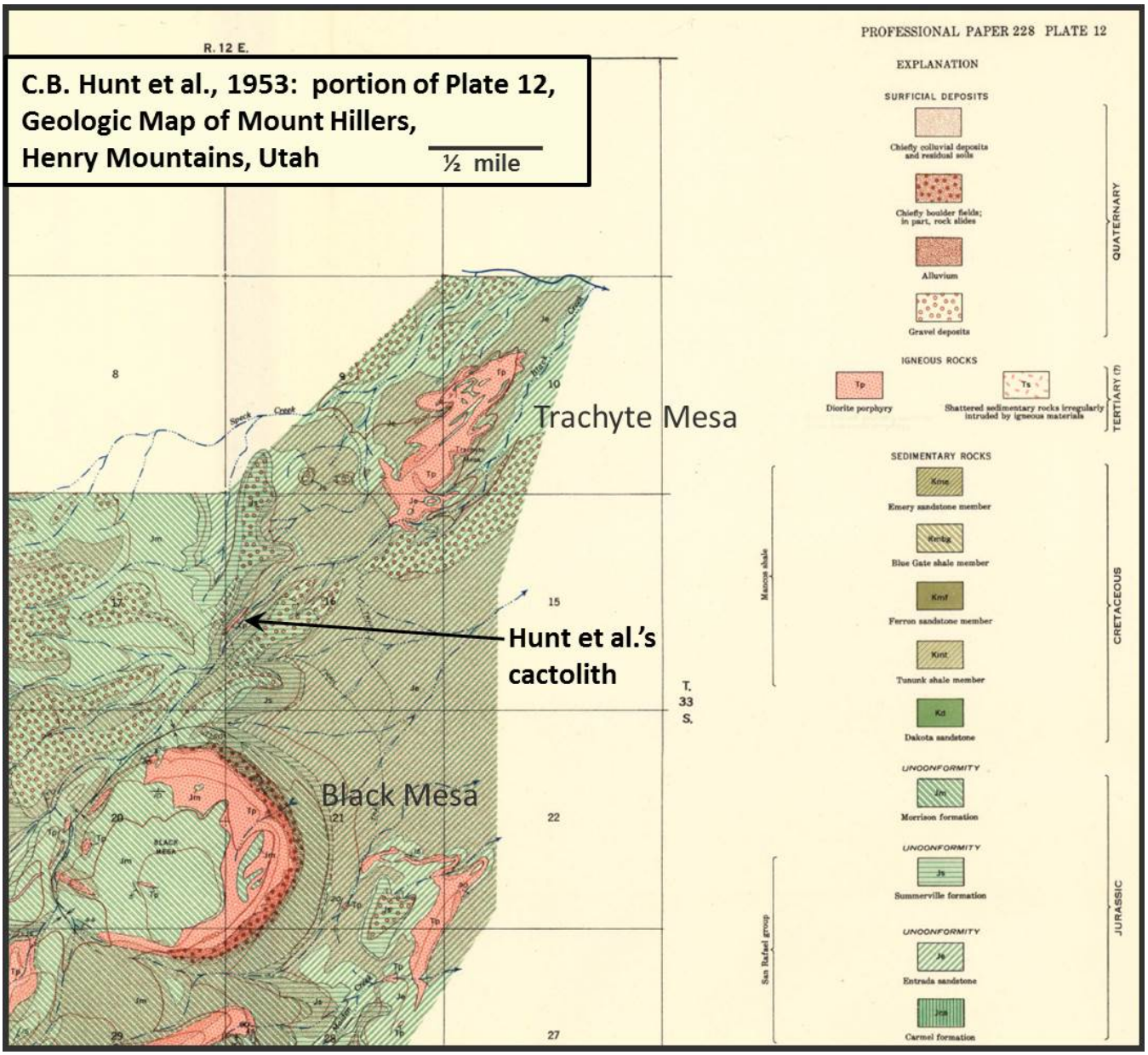
Sunday, October 18

A free family-friendly outdoor geology fieldtrip to High Island, Texas.
Come explore McFaddin Beach with us! Learn about salt domes, beach processes, Pleistocene fossils, modern shells and birds.

For more information, please contact Sharon Choens, (713) 320-1792, sharon.choens@sjcd.edu

Teachers: please visit *http://www.earthsciweek.org/materials* to order your 2015 Earth Science Week ToolKit.

From the Editor continued from page 7



A couple of resources I'd recommend for helping to simplify and sharpen, if not beautify, our communications are Hansen (1991), and AAPG's e-symposium *Technical Writing Triage* (aapg.org/career/training/online/e-symposia) which also incorporates useful tips for assembling effective oral presentations, and even resumes/CV's. ■

[1]definitions from *Terminology* app, version 2.21, ©2012 Agile Tortoise Inc.

Dickinson, W.R., 1974, Plate Tectonics and Sedimentation: SEPM Special Publication No. 22, p. 1-27

Hansen, W.R., 1991, Suggestions to Authors of the Reports of the United States Geological Survey: U.S. Government Printing Office, Washington, http://www.nwrc.usgs.gov/lib/lib_sta.htm

Hunt, C.B., et al., 1953, Geology and geography of the Henry Mountains Region, Utah: USGS Professional Paper 228, U.S. Government Printing Office, Washington

Hunt, C.B., 1988, Geology of the Henry Mountains, as recorded in the notebooks of G.K. Gilbert, 1875-76: Geological Society of America Memoir 167

Monday, October 5, 2015

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

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card. Pre-registration without payment will not be accepted. Walk-ups may pay at the door if extra seats are available.

HGS International Explorationists Dinner Meeting

***William Dickson**, Dickson International Geosciences (DIGS), Houston*
***Craig Schiefelbein**, Geochemical Solutions International (GSI), Houston*
***Jim Brooks**, TDI-Brooks, College Station, TX*
***John Zumberge**, GeoMark Research, Houston*

Oil *Terroirs* of the West African and South American Conjugate Basins

Just as agricultural products, most notably wines, are identified with their *terroir* (a set of special characteristics deriving from the geography, geology and climate of a certain place), oils are a product of the same (paleo) influences. Continuing the analogy, as European vineyards were saved from the *phylloxera* blight by grafting stock from the Americas, our understanding of oil provenance and distribution has grown from combining data from conjugate basins on both sides of the Atlantic. In so doing, we gain a clearer picture of likely source rock extents and effectiveness for all the studied basins.

We present results-in-progress from a growing set of South Atlantic oil samples (1467 and counting!). Roughly two-thirds are from South America and the remainder are from West Africa (Figure 1). Repeated iterations at regional and basin levels unraveled effects of post- **HGS International Dinner** *continued on page 13*

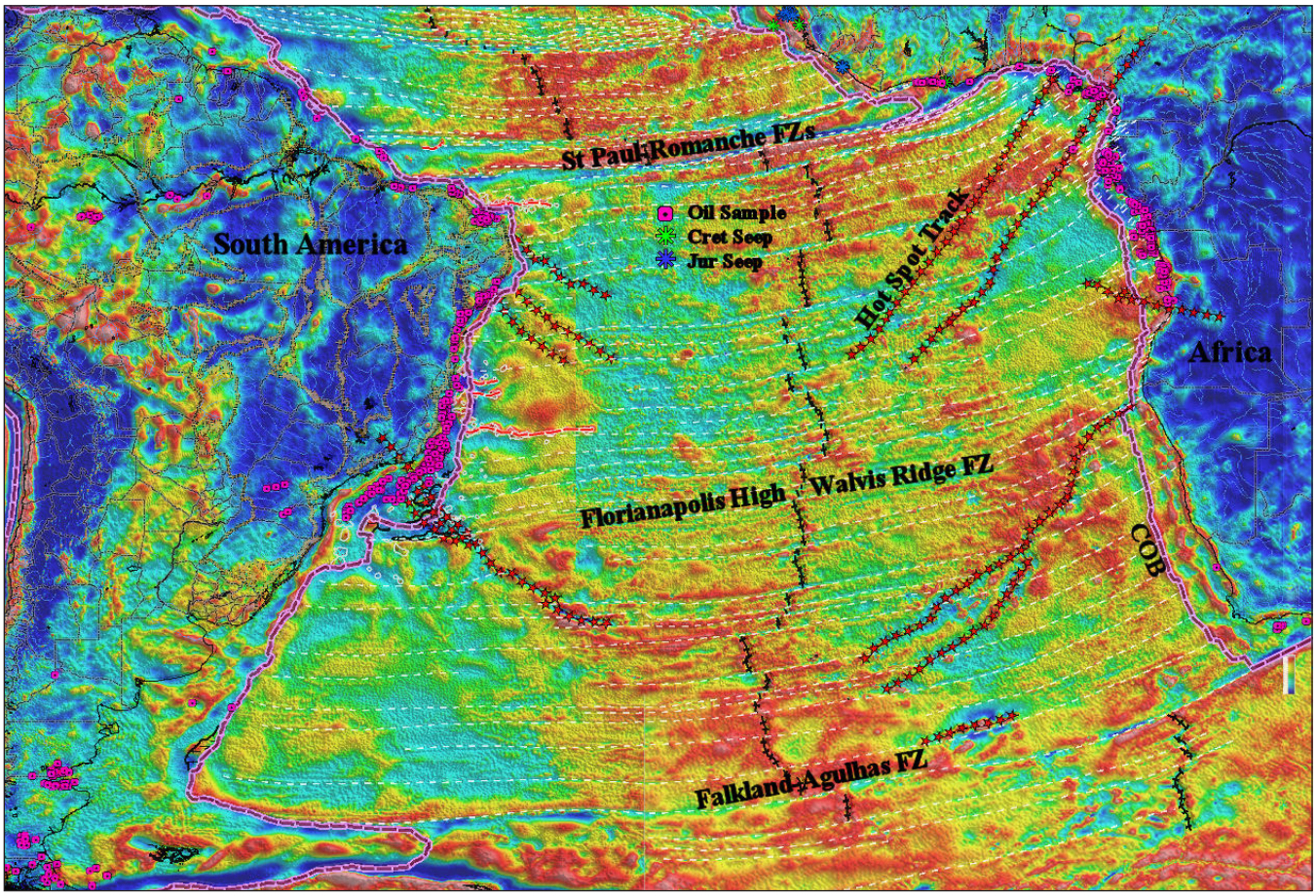


Figure 1

HGS International Dinner continued from page 11

generative alteration processes and mixing. Oils were grouped by their geochemical characteristics relating to source, maturity and paleo history; and by spatial controls defined by the geologic architecture and paleo-history of their containers as follows:

- Oils can be broadly divided into five major families: Tertiary deltaic; Cretaceous marine; Cretaceous transitional; Barremian lacustrine saline (syn-rift II/sag) and Neocomian lacustrine fresh (syn-rift I).
- Family and sub-family distributions relate to sediment thickness (burial) and basin structural compartments (source facies variations and migration barriers).

HGS International Dinner *continued on page 15*

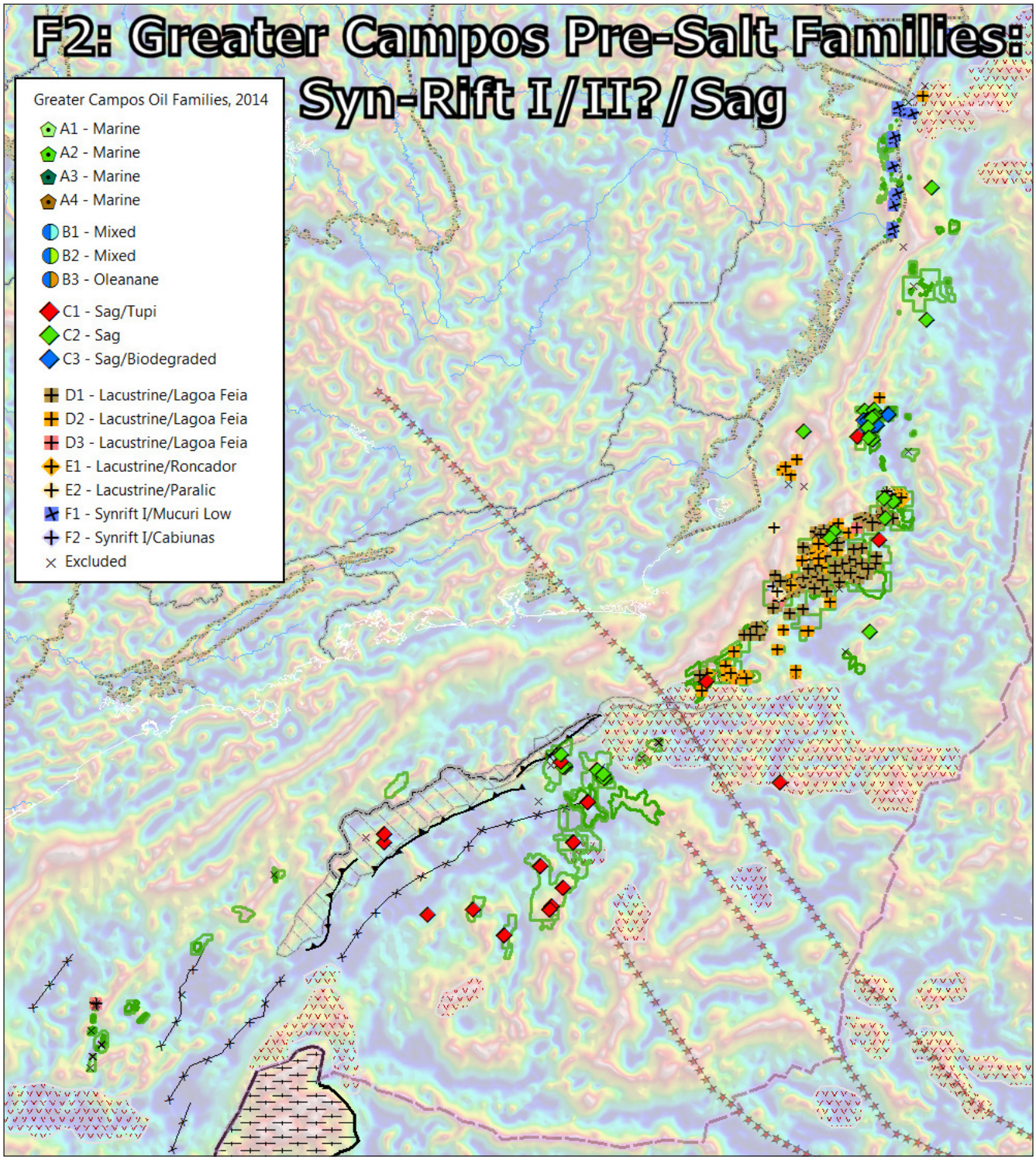


Figure 2

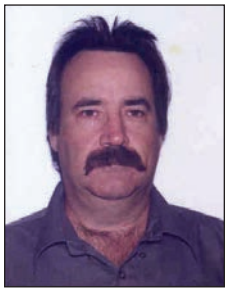
HGS International Dinner continued from page 13

- Lacustrine oils show strong correlations of age and location between conjugate salt basins (syn-rift I & II).
- Marine oils demonstrate age correlations related to global ocean anoxic events (Albian and Cenomanian-Turonian).
- Transitional oils demonstrate gradation in source environments as fresh-water lakes became saline and eventually open marine.
- Many basins exhibit mixing of hydrocarbons generated either from mixed facies or from distinct facies with shared migration pathways.

We illustrate source distribution and family assignments with a grand tour of West Africa from Gibraltar to Cape Town plus the South American conjugate basins. Brief tangents will consider outliers, because they typically propel us to new understandings, plus the Tertiary deltaic system of the Niger Delta. Our focus, however, will be the Cretaceous lacustrine to marine source systems and their relationship to basement structural settings that control sediment inputs and distribution. Of particular interest is our set of pre-salt oils from the Brazilian margin (Figure 2). These oils derive from an early syn-rift lacustrine source and a later sag setting, possibly with multiple pulses of increasing salinity. Both family groups can be mapped across the Santos-Campos-Espírito Santo basins of Brazil and correlated with siblings along the West African margin. Based on learnings from our much larger Brazilian sample set, we conclude with a speculative extrapolation of these siblings in the less-explored deepwater areas of Gabon and Angola. ■

Biographical Sketches

William Dickson began his career working the frontier basins of Canada's margins. A continued thread of international new venture work on six continents connects his time with major and independent oil companies through the 1998 founding of his consultancy DIGs (Dickson International Geosciences). He has authored and contributed to numerous papers on aspects of South Atlantic and Southeast Asian geology. He continues to develop multi-disciplinary E&P evaluations with contributions from a range of associated companies specializing in geochemistry, structural geology, potential fields, remote sensing and seismic interpretation.



Craig Schiefelbein trained as a geochemist with Cities Service and Conoco and a series of geochemical service companies, gaining familiarity with more than 7500 oil samples from around the globe. Co-founder of Geochemical Solutions International (GSI) in 1998, he has developed a range of basin studies based on oils and related geochemical data points from the entire Brazilian margin. GSI provides interpretation QC, proprietary interpretation services, laboratory and acquisition oversight, and contributes to non-exclusive studies by related service companies.

austin geological society

AGS 50th Anniversary Field Symposium

October 17-18, 2015

The Austin Chalk: Stratigraphic, Geophysical, Hydrogeological and Petroleum Exploration/Production Characteristics

Austin Group chalk and limestone interleaved with volcaniclastic claystone in Onion Creek, Travis Co., Texas. (Photo courtesy of Alan Cherepon)

Saturday, October 17

Leader: Julia Gale, structural geologist, the Bureau of Economic Geology (Austin)

Core viewing and poster session (concurrent) at BEG core repository.

Sunday, October 18

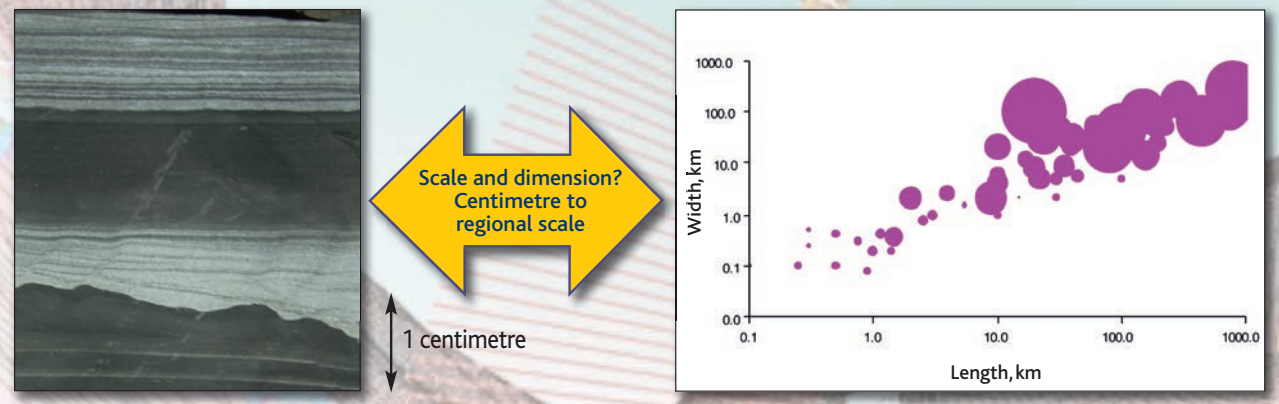
Leaders: Jason Lundquist, consulting bio- and lithostratigrapher (Houston)
Mustafa Saribudak, geophysicist, Environmental Geophysics Associates (Austin)
Robert Mace, hydrogeologist, Texas Water Development Board (Austin)

Field excursion by bus in Austin area and informal wrap-up session.

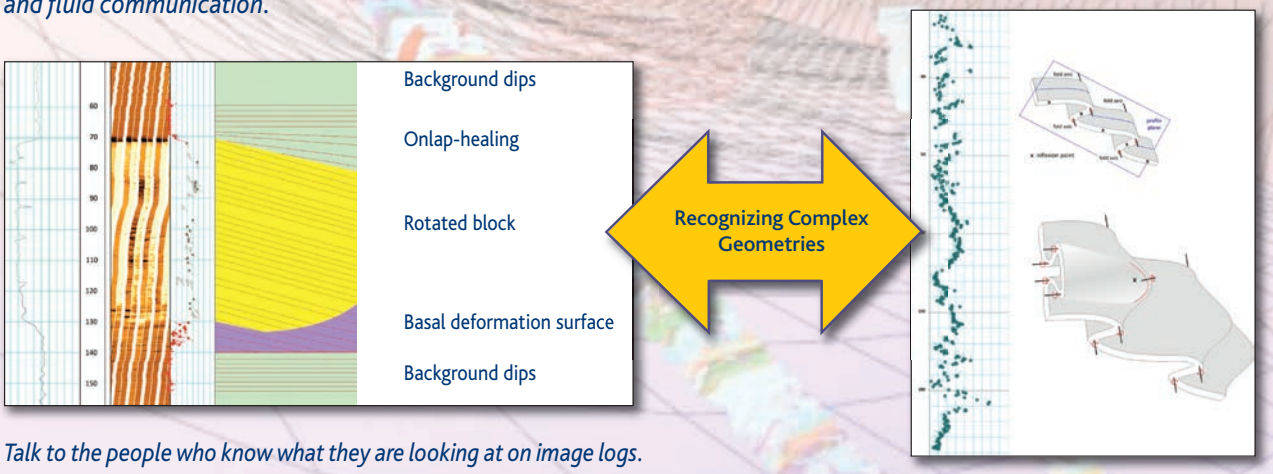
Cost for 2-day event: $135 per person
Includes transportation, symposium volume, welcoming reception (with continental breakfast), 2 lunches, field trip water/soft drinks.
Registration Limit: 52 participants. No partial (one-day only) registration.
To Register: contact Charlotte Sullivan, (512) 809-0656

Getting into **Deep Water**

RECOGNISING MASS TRANSPORT COMPLEXES (MTC) are part and parcel of any exploration or development in continental margin, abrupt margin and submarine canyon plays. Based on hundreds of kilometres of image and cores studies, **TASK FRONTERRA** has determined that at least 12% of deep marine deposits are deformed by creep, failure or rotational slumping. We have conducted numerous studies in the Gulf of Mexico, West Africa, Brazil, West of Shetlands, Nile Delta, Australia: North West Shelf and Malaysia.



Whether you are looking to sequester CO_2 in compartmentalized sediments, or looking at field development strategies – you want to be using the people who can measure and characterize these sediments in terms of geometry, scale, contacts and fluid communication.



Talk to the people who know what they are looking at on image logs.
Talk to the people who have worked on MTC compartmentalization in fields across the globe.

A GLOBAL FOOTPRINT – OFFICES IN TEN LOCATIONS ACROSS EUROPE, NORTH AND SOUTH AMERICA, THE MIDDLE EAST AND ASIA PACIFIC. COMPLIMENTARY EXPERTISE TO ASSIST CLIENTS IN THEIR UNDERSTANDING OF MATURE RESERVOIRS, CARBONATES, DEEP-WATER FIELDS AND UNCONVENTIONAL HYDROCARBONS, ESPECIALLY SHALE GAS WITH OUR INTEGRATED SHALE GAS WORKFLOW.

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www.taskfronterra.com

Monday, October 12, 2015

Westchase Hilton • 9999 Westheimer

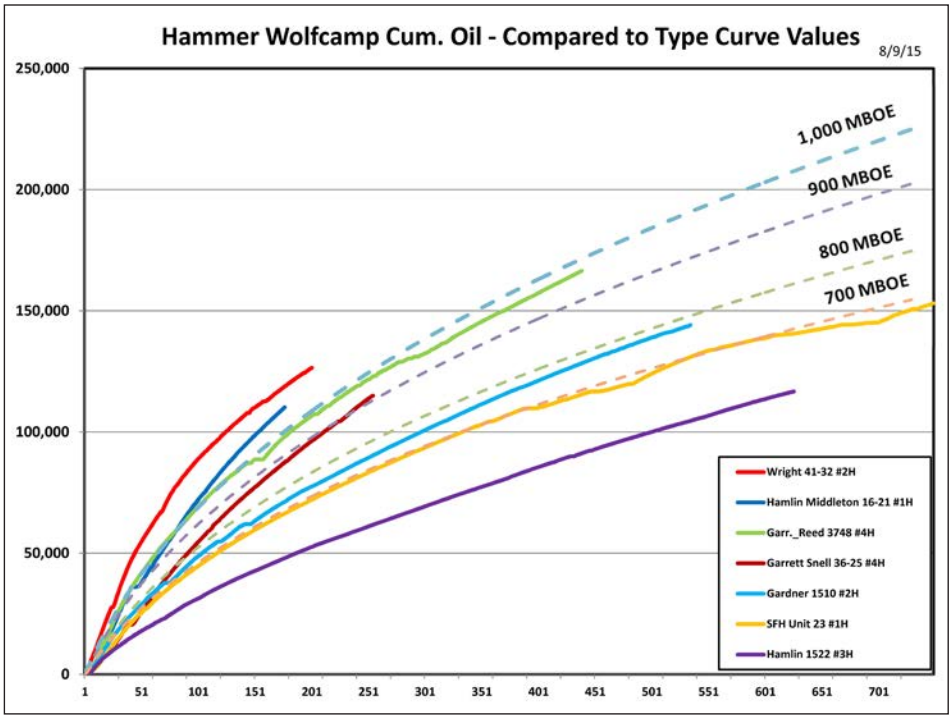
Social Hour 5:30–6:30 p.m.
Dinner 6:30–7:30 p.m.

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

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card.
Pre-registration without payment will not be accepted.
Walk-ups may pay at the door if extra seats are available.

Keith Skaar
Vice President Exploration/Sr. Petroleum Geologist
Element Petroleum, LP
Midland, TX

Applying Fundamentals of Unconventional Shale Production to the Exploration and Development of the Wolfcamp "A", Wolfcamp "B", and Lower Spraberry Shale – A Case Study from the Midland Basin, West Texas



In 1997, Mitchell Energy kicked off modern "unconventional" resource plays by applying a slick water hydraulic fracturing technique to the Barnett Shale. In the subsequent 18 years, unconventional resource plays have been expanded to the Eagle Ford, Marcellus, Utica, Woodford, and Bossier, just to name a few. As the industry tests the productivity of other organic basinal shales and continues on the path developing long term commercialization of unconventional plays, understanding the fundamentals of hydrocarbon production from unconventional reservoirs is crucial – for example, how does a shale produce without the presence of any conventional permeability? This talk will suggest that brittle, hydrocarbon saturated shales produce via hydrocarbon expulsion across the micro-fracture face in response to ΔP. Three fundamental factors necessary for commercial production in unconventional reservoirs will be addressed: mature hydrocarbons, brittle homogenous rock mechanics, and the presence of commercial OOIP/OGIP volumes. While reviewing each of these topics, this talk will also describe the identification of favorable unconventional reservoir facies using basinal depositional geomorphologic models, and diagenetic maturity development. All of these factors were applied to make a successful "step out" of over 45 miles in the Midland Basin to test the Wolfcamp and Lower Spraberry Shales in a 20,000 acre block developing over 400 MMBOE of proven reserves. ■

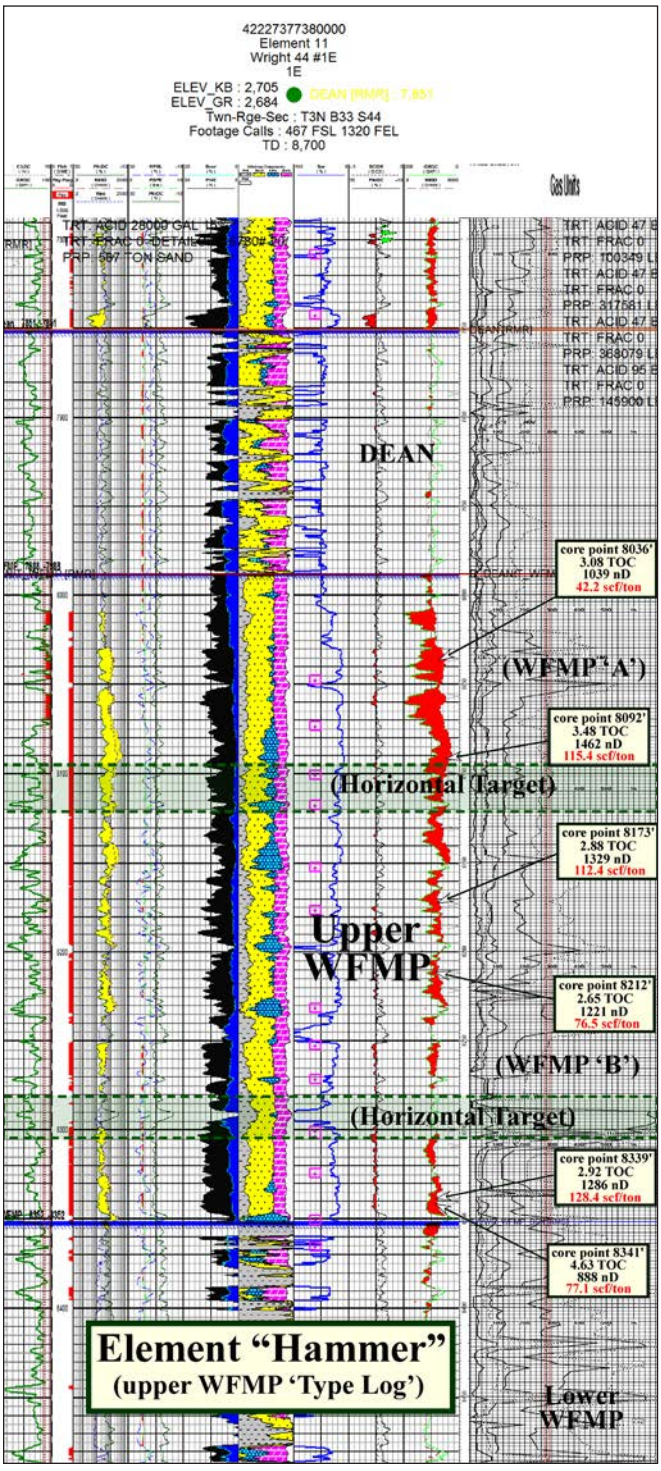
Biographical Sketch

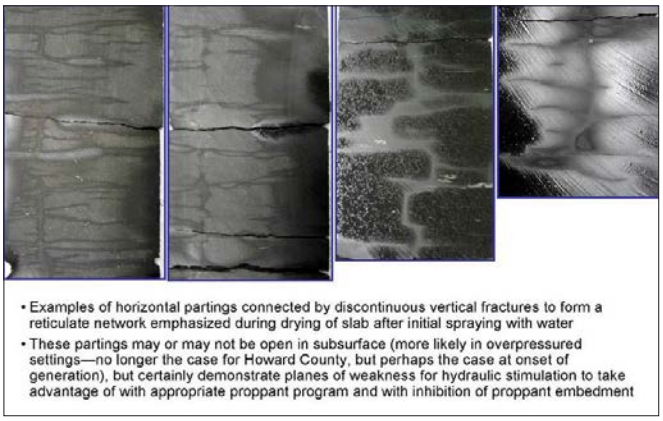
Keith Skaar began working the 'Wolfberry' play in November 2006, contracting with various companies to acquire over 140,000 acres extending the development of the 'Wolfberry' play to the eastern side of the Midland Basin. In 2009, Keith agreed to lead the geologic effort for Element Petroleum's 'Wolfberry' project, resulting in over $1.1 billion dollars in net production and property sales over the past five years. After graduating

HGS General Dinner *continued on page 18*

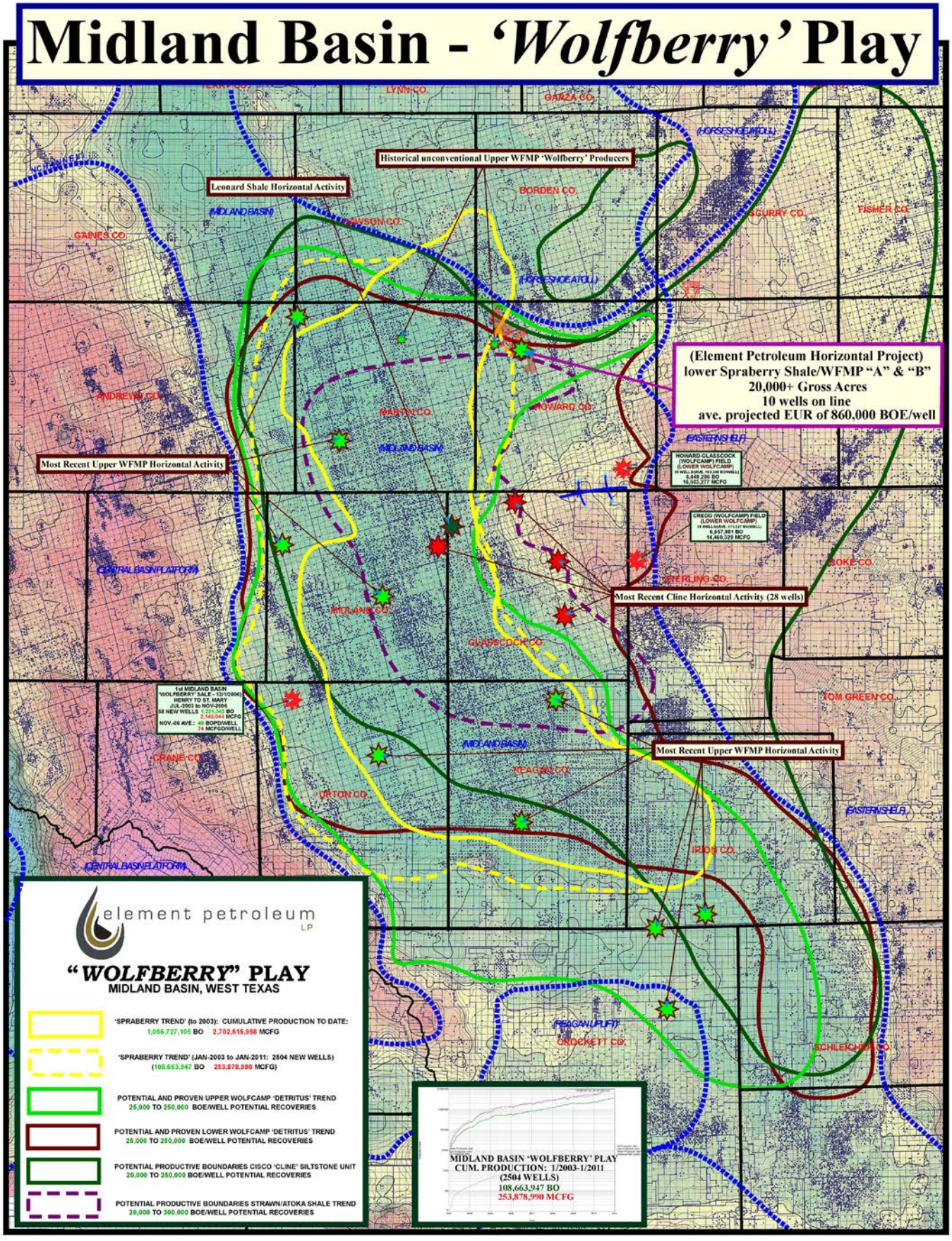
HGS General Dinner continued from page 17

from Baylor University with a B.S. in Petroleum Geology in 1984, Keith worked for numerous independents developing prospects in various basins across the U.S. In 1992, he began a career as an exploration geologist working the Permian Basin for independent petroleum firms, establishing commercial discoveries and production throughout the Permian Basin. Element's most recent major achievements were commercially extending the upper Wolfcamp horizontal play in 2013 with the SFH Unit 23 # 1 (7300' upper WFMP lateral – 800 BOE/EUR) by over 45 miles into north central Howard County, and in 2014 extending the lower Spraberry Shale Play by 32 miles into northwest Howard County, adding a minimum of 20 billion barrels of oil recoverable from these unconventional plays to the Midland Basin.





Cobra/(Manhattan) Guitar 1 # 3b – Cline pay slabbed core photo


Midland Basin - 'Wolfberry' Play
Historical unconventional Upper WFMP 'Wolfberry' Producers
Leonard Shale Horizontal Activity
(Element Petroleum Horizontal Project)
lower Spraberry Shale/WFMP "A" & "B"
20,000+ Gross Acres
10 wells on line
ave. projected EUR of 860,000 BOE/well
Most Recent Upper WFMP Horizontal Activity
Most Recent Cline Horizontal Activity (28 wells)
Most Recent Upper WFMP Horizontal Activity
LYNN CO.
GARZA CO.
BORDEN CO.
DAWSON CO.
GAINES CO.
SCURRY CO.
FISHER CO.
ANDREWS CO.
MARTIN CO.
HOWARD CO.
MIDLAND CO.
GLASSCOCK CO.
STERLING CO.
COKE CO.
TOM GREEN CO.
CRANE CO.
UPTON CO.
REAGAN CO.
IRION CO.
CROCKETT CO.
SCHLEICHER CO.
(MIDLAND BASIN)
(EASTERN SHELF)
(CENTRAL BASIN PLATFORM)
(REAGAN UPLIFT)
element petroleum LP
"WOLFBERRY" PLAY
MIDLAND BASIN, WEST TEXAS
'SPRABERRY TREND' (to 2003): CUMULATIVE PRODUCTION TO DATE:
1,056,727,105 BO 2,702,515,958 MCFG
'SPRABERRY TREND' (JAN-2003 to JAN-2011: 2504 NEW WELLS)
(108,663,947 BO 253,878,990 MCFG)
POTENTIAL AND PROVEN UPPER WOLFCAMP 'DETRITUS' TREND
25,000 TO 250,000 BOE/WELL POTENTIAL RECOVERIES
POTENTIAL AND PROVEN LOWER WOLFCAMP 'DETRITUS' TREND
25,000 TO 250,000 BOE/WELL POTENTIAL RECOVERIES
POTENTIAL PRODUCTIVE BOUNDARIES CISCO 'CLINE' SILTSTONE UNIT
20,000 TO 250,000 BOE/WELL POTENTIAL RECOVERIES
POTENTIAL PRODUCTIVE BOUNDARIES STRAWN/ATOKA SHALE TREND
20,000 TO 300,000 BOE/WELL POTENTIAL RECOVERIES
MIDLAND BASIN 'WOLFBERRY' PLAY
CUM. PRODUCTION: 1/2003-1/2011
(2504 WELLS)
108,663,947 BO
253,878,990 MCFG

Wednesday, October 14, 2015

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

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card.
Pre-registration without payment will not be accepted.
Walk-ups may pay at the door if extra seats are available.

Christopher C. Mathewson, PhD, PE, PG
Senior Training Specialist, TEEX
Regents Professor Emeritus, TAMU
Member, Texas Board of Professional Geoscientists

Professional Ethics for Engineering and Environmental Geologists

Ethics and ethical practice have been respectively defined as "moral behavior" and "the standards of professional practice and morals of a particular profession or organization." Because a code of ethics is specific to a unique organization, one often finds two professionals acting in what appears to be conflicting situations. Take, for example, an attorney and a Professional Geologist expert witness both involved in the same case and on the same team. The fundamental ethical requirement of the attorney is to be a zealous advocate for the client, while that of the geologist is to be a zealous advocate for the scientific truth.

Ethics, however, are changing: as ethical violations make the news, new laws are enacted to "prevent" the prior ethical violation. With laws replacing ethics, why do we need ethics? We have traditionally not been concerned about "political correctness" in technical presentations; after all, we are discussing a technical subject that relates to the interests of the group we are talking to. In contaminant transport and movement in the groundwater system we might discuss "retardation" and "the contamination is retarded." Or perhaps in a discussion of magmatic processes and the formation of intrusive igneous rocks we discuss "segregation of minerals" as the magma cools. Someone in the audience may be offended, and files a complaint against the speaker for being offensive, often without being specific as to why or what was offensive. It is critical that we professionals respond to the complaint carefully and completely to ensure our professional reputation and standing in the community. In many of my public presentations and short-courses I now include a warning statement that some of the "technical terms used in this presentation may be offensive if taken out of context and I have no intent to offend anyone but to provide education." ■

Biographical Sketch

Dr. Christopher Mathewson received a Bachelor of Science degree in Civil Engineering from Case Institute of Technology in Cleveland, Ohio in 1963 and Master of Science and Doctoral degrees in Geological Engineering from the University of Arizona in 1965 and 1971. Dr. Mathewson served as a commissioned officer in the National Ocean Survey from 1965 to 1970, working on ocean charting and marine geophysical surveys in the Pacific and on coastal hazards in Hawaii. Following service in NOAA, he has carried out and completed studies of surficial geological processes that impact public health, safety and well-being and studies of professional ethics. He has presented over 500 papers, published over 90 technical papers, edited 4 technical volumes and is the author of a textbook in Engineering Geology. In addition, he is active in the profession, having served as President of the American Geological Institute, President of the Association of Environmental and Engineering Geologists, Chair of the Engineering Geology Division, Geological Society of America, and many other professional society positions. He currently serves on the Council of Examiners of the National Association of State Boards of Geology, where he assists in the writing and review of the national Geologist Licensure Examination. Governor Rick Perry appointed Dr. Mathewson to the Texas Board of Professional Geoscientists in May 2012. He has received many awards, including the Faculty Distinguished Achievement Award in Teaching and the Robert C. Runnels Excellence in Advising Award from Texas A&M University (TAMU), the Claire P. Holdredge Award, the Floyd T. Johnston Service Award and the Karl and Ruth Terzaghi Outstanding Mentor Award from the Association of Environmental and Engineering Geologists, and the Meritorious Service Award from the Engineering Geology Division of the Geological Society of America. He was inducted as a Fellow of the Society of American Military Engineers in 2006. The Texas A&M University System Board of Regents named Dr. Mathewson as a Regents Professor in 2006. Dr. Mathewson retired from teaching at TAMU in May 2011 but continues to remain active in the profession.

Directions from the North

SWN Southwestern Energy | 10000 Energy Drive | Spring, TX 77389-4954 | 832 - 796 - 1000

FROM THE WOODLANDS

1. Head South on **I-45** towards Downtown.
2. Take exit **72 A** toward **Spring Crossing Dr.**
3. Merge onto the I-45 Service Road, stay on feeder in middle lane.*
4. As you approach the traffic light at **Springwoods Village Parkway,** get into the right lane.
5. Turn right at the traffic light onto Springwoods Village parkway. Yield to oncoming traffic.
6. You will need to get into the far left lane at this intersection to turn left onto **Energy Drive.**
7. At the second intersection, turn left into the SWN drive way.
8. Follow signs for Visitor Parking. The parking garage is one way.

If you are in the right hand lane and take the split street down, it will loop you back to the northbound Rayford/Sawdust exit.

Directions from the South

FROM DOWNTOWN

1. Head North on I-45 towards The Woodlands.
2. Take exit **70B** toward **Spring Stuebner Road-WEST** and detour signs toward **Spring Crossing Blvd/Hardy Toll Road.**
3. Merge onto the I-45 Service Road, stay to the left on the feeder. Take the first exit off of the feeder to the intersection at Springwoods Village Pkwy.*
4. Turn left onto **Springwoods Village Parkway.** Cross over I-45.
5. Turn left onto **Energy Drive.** This is a protected arrow.
6. At the second intersection, turn left into the SWN drive way.
7. Follow signs for Visitor Parking. The parking garage is one way.

If you miss the turn onto Spring Stuebner, make a U turn at Rayford/Sawdust and follow the From the Woodlands instructions provided.

Directions from the West

SWN Southwestern Energy | 10000 Energy Drive | Spring, TX 77389-4954 | 832 - 796 - 1000

FROM SPRING STUBENER

1. From **Spring Stuebner,** turn onto **Holzwarth Rd,** heading North.
2. Cautiously cross over the **Grand Parkway.** *There are a lot of construction cones in this area.*
3. At the Holzwarth and Mossy Oaks intersection, turn right onto **E. Mossy Oaks Rd.**
4. Take the round about to the North.
5. Turn right into the first drive way to enter the **Visitor Parking** entrance. The Parking Garage is one way.

Directions from the East

FROM THE HARDY TOLL ROAD

1. When heading north on the Hardy Toll Road, exit at **Northgate Crossing Blvd.**
2. Go through the first stop sign.
3. At the second stop sign, turn left onto **Springwoods Village Parkway.**
4. Crossover **I-45.**
5. Go through the **street lights** on each side of **I-45.** After passing over **I-45,** stay in the left lane.
6. At the third light, turn left onto **Energy Drive.**
7. Turn left onto **Energy Drive.**
8. At the second intersection, turn left into the SWN drive way.
9. Follow signs for **Visitor Parking.** The Parking Garage is one way.

Monday, October 19, 2015

Southwestern Energy Conference Center, 10000 Energy Drive, Spring, TX 77389
Social 11:15 a.m., Luncheon 11:30 a.m.

Cost: Active/Associate Members - $30, Emeritus/Life/Honorary - $25
Students who are members of HGS - $10, Non-members - $40

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card.
Pre-registration without payment will not be accepted.
Walk-ups may pay at the door if extra seats are available.

HGS Northsiders Luncheon Meeting

Richard S. Bishop, Wayne L. Kelley
RSK [UK] Limited, Houston
www.rskuklimited.com

Northsiders' Luncheon Meeting Revived and Moves to a More Convenient Location

Do you have a difficult time attending HGS meetings because you live or work north of town in Spring, The Woodlands or Humble? Now there's no need to miss out on some of the most informative presentations and the great networking opportunities that HGS meetings provide. To better serve our members in the north, the Northsiders' Group, now led by Sydney Weitkunat and Ian McGlynn, has moved their luncheon meetings further north from the Greenspoint area to the Southwestern Energy Conference Center in Spring (see directions on previous page). Featured speakers will sometimes give encore presentations from the in-town HGS meetings, or vice versa. Dick Bishop has kindly agreed to be our first encore speaker, and on October 19 he will be giving the Northsiders an opportunity to hear a reprise of his and Wayne Kelley's September General Dinner meeting presentation, "World Oil Supply in Transition." We hope to see you there!

A big thanks to Southwestern Energy for hosting the new Northsiders' event!

swn Southwestern Energy®

World Oil Supply in Transition

The world is not running out of oil, but there is concern about long term supply rate.

Historically, estimates of global oil supply have been based on a combination of resource volume and forecasted demand. The price was driven largely by the giant and super-giant conventional fields and reflected a rough parity of cost between the cheapest and most expensive producer. Today, the relatively low cost oil coming from the biggest conventional fields is no longer sufficient to meet global demand. Consequently, forecasting supply and price has been complicated by the wide range of costs, technological improvements and changes in the market. In an open market scenario the price of oil is determined by the sale of the most expensive oil needed to make up the total supply. However, traders are divided between those that perceive the market being determined by supply and those that see it as being a derivative of the macro-economy. Today, we see an uneasy equilibrium between these two determinants of price, with a probability of increasing price volatility as the character of supply moves from a more homogenous past of rough parity of costs to a lumpier one with disparate project economics. The combination of technology and increased price has added large volumes to the reserve base but much of these additions are high cost oil which is at the highest risk in the event of price declines.

Forecasting oil price is not yet a "settled science," but our look at the transition includes consideration of:

- *Shut-in capacity:* excess production capacity has shrunk from 15 million bopd in the 1980's, to around 4 to 6 million bopd in the last decade, to perhaps as low as 2 to 3 million bopd today. This means that global oil supply is evolving from one with flexibility to one characterized by "just in time." The impact on price driven by demand instead of low cost will become more significant as excess supply shrinks and low cost production cannot be expanded.
- *Reserve addition/ increasing production:* The cost to add new production ranges from approximately USD $25 billion per million bopd to over USD $50 billion per million bopd. We estimate that the giant and super-giant fields (i.e., the low cost producers) are approximately 50 percent depleted and significant expansion of their production rate is unlikely. Furthermore, even though global reserve volumes have grown, the time and cost to add production has increased significantly.
- *Logistics:* Industry has limitations as to how fast new production can be added, particularly from complex new resources. In addition, high cost oil resources require significant changes in transportation and refining infrastructure.

HGS Northsiders Luncheon *continued on page 25*

HGS Northsiders Luncheon continued from page 23

- *Capital:* the increased cost obviously means one is investing in the higher cost asset, not the lowest. Furthermore, there is increasing risk of political intervention in all areas of production.
- *Politics:* unstable States, sanctity of contract and access to resources are increasingly significant concerns and limitations.
- *Macro-economics:* Exporters of low cost oil are the primary beneficiaries of increased price. An unseen side effect of the transfer of wealth from importers to exporters has been to increase the fragility of the global financial system. The EIA estimates that over USD $500 billion per year is flowing into the Persian/Arabian Gulf region which, especially when leveraged, can impact the global financial stability. This transfer will continue due to the unabated increase in the demand for work performed by oil and the value of the US dollar.
- *Optimizing oil price:* exporters will seek to maximize their profits but may also cause global economic restrictions thus reducing demand and increasing price volatility.

These changes have become more significant within the last decade and the consequences are beginning to emerge. The most visible is the tightening of excess supply and its vulnerability to interruption. This tightening is not likely to ease, due to the high cost of adding new supply, limitations of low cost production, and lack of incentive for low cost producers to increase production. Nonetheless we have much lower prices today apparently due to increased sensitivity of price to multiple conditions and not just supply and demand. The implication of these trends is a long term upward pressure on the cost of oil supply which can only be supported with appropriate price. ■

Biographical Sketches

Richard S. Bishop, Ph.D. (r.bishop@rskuklimited.com) is a geologist who has worked the spectrum of research, exploration and production for Unocal (2 years), ExxonMobil (29 years), and as a consultant/ independent (10 years including RSK). During this time he has seen the world, both as an explorationist and as a synthesizer of global exploration opportunities. He has published on mechanics of piercement diapirism, abnormal pressures, mass balance of prospect assessment, giant fields, implications of overcharge to prospect assessment, US production potential from shales, and world oil supply in transition. In addition, he has numerous proprietary reports on assessment methods, guidelines and results for both plays and prospect assessment.

Dick is Past President of the American Association of Petroleum Geologists, the Houston Geological Society and a past chair of SIPES Houston Chapter. He has been recognized with the AAPG Sproule Award, is a Distinguished Alumnus of the University of Missouri, and an Honorary Member of both the AAPG and HGS. He was also recently named a Legend of the HGS.

Dick earned his Ph.D. from Stanford University, his M.A. from University of Missouri, and B.S. from Texas Christian University. He is currently Executive Director and Chief Geologist of RSK.

Wayne L. Kelley (w.kelley@rskuklimited.com) is the Managing Director and Chief Executive Officer of RSK [UK] Limited. Prior to co-founding RSK in 2003, he started his career in 1974 with Pennzoil and since that time has worked in E&P in Alaska, Brazil, Canada, Mexico, North Sea and much of Africa. Kelley attended Trinity University and the Colorado School of Mines.

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But size isn't everything...

With access to this vast collection of seismic, Spectrum's team of Geoscientists are examining the data to identify exciting reprocessing projects and developing new seismic acquisition opportunities to further enhance our library.

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Monday, October 26, 2015

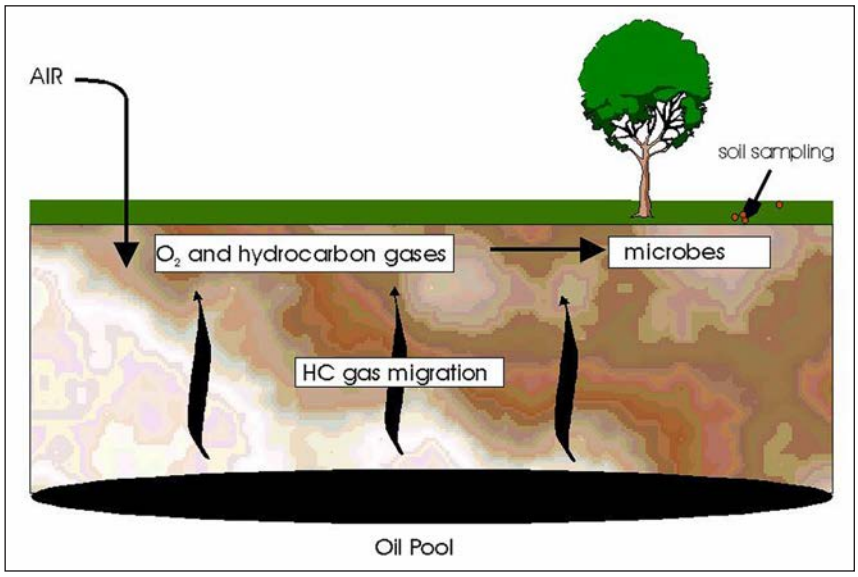
Westchase Hilton • 9999 Westheimer
Social Hour 5:30–6:30 p.m.
Dinner 6:30–7:30 p.m.

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

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card.
Pre-registration without payment will not be accepted.
Walk-ups may pay at the door if extra seats are available.

Jeff Munnecke
Environmental BioTechnologies Inc. (EBT)
Lodi, CA

Geo-Microbial Prospecting: a Near Surface Hydrocarbon Exploration Technique that Enhances Petroleum Exploration and Development Success



Historically, in the early 1900s many oil wells were located based on hydrocarbon seepage prospecting. Once these easy-to-identify locations had been exploited, explorers were left in a quandary. How would they identify new locations that did not have surface seepage? The answer they discovered was a mixed discipline approach: from geophysics, geochemical, geo-microbial, petroleum systems, geology that supports accumulation, gravity studies, and magnetic studies, among other techniques. By 1945 remote sensing, both geophysical and geochemical, was developing rapidly as the viability of the technology and equipment progressed (Horvitz, 1945). Based upon the success of these remote sensing technologies, another technology (Microbial Exploration Technology Process, or MET for short) was developed in the 1950s. In 1959, a successful method for geo-microbial hydrocarbon exploration was developed by Phillips Petroleum (Hitzman, 1959) and was patented. This was the beginning of geo-microbial prospecting. Since then a limited number of companies became providers of this exploration technology worldwide, and most companies are experiencing similar success rates, averaging 90% accuracy in dry hole prediction and 80% accuracy in recommending successful well locations (Schumacher, 2012, and Rasheed et al., 2013).

The basic principles are:

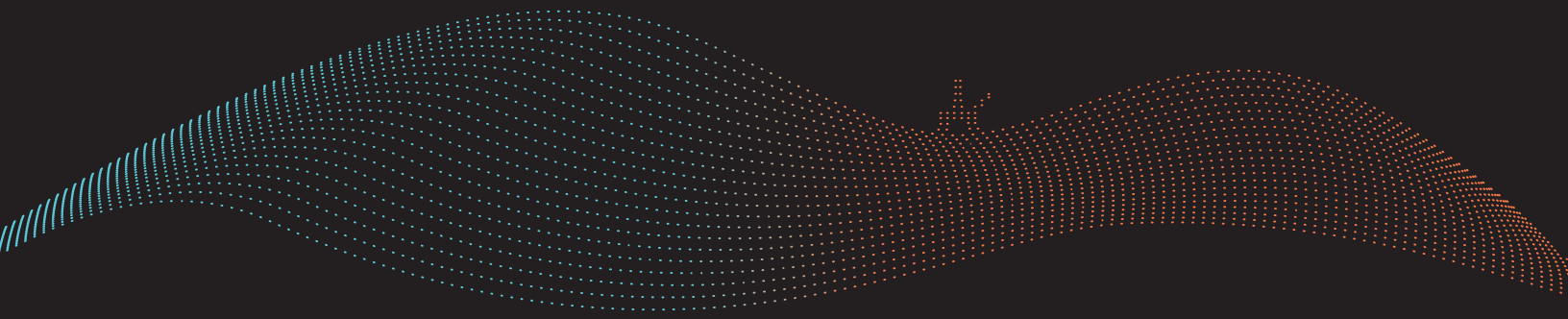
- Oil and gas accumulations leak hydrocarbons.
- Leakage (or microseepage) has a vertical migration to surface through the overburden (5% horizontal dispersion rate).
- Quantifying the level of microbes in a soil sample taken at 20 cm depth can give an average indirect measurement of the amount of hydrocarbon gases seeping to the surface.
- This is a very accurate method. One gram of hydrocarbon gas is sufficient to produce 1 x 10^12 bacterial cells. In the MET process, only 100 cells per sample are needed to obtain a detectable response. One gram of hydrocarbon gas per acre is enough to support microbial activity.
- Identifying and measuring the bacterial population and activity levels can identify subsurface hydrocarbon accumulations.

The microbial prospecting method for hydrocarbons is a surface exploration method based on the premise that the light gaseous hydrocarbons, namely methane (C1), ethane (C2), propane (C3) and butane (C4) migrate upward from subsurface petroleum accumulations by diffusion and effusion (Horvitz, 1939) and are utilized by a variety of microorganisms present in the sub-soil ecosystem. The methane, ethane, propane, and butane-oxidizing bacteria exclusively use these gases as a carbon source for their metabolic activities and growth. These bacteria are mostly found enriched in the shallow soils/sediments above hydrocarbon-bearing structures and can differentiate between hydrocarbon prospective and non-prospective areas (Tucker and Hitzman, 1994).

This talk will focus on the scientific principles that underlie the surface geo-microbial detection of hydrocarbons and present case

HGS North American Dinner *continued on page 29*

blueback reservoir
GeoScience Solutions Partner



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Blueback Reservoir is a renowned Geoscience Solutions Partner and Cegal a leading provider of customized IT solutions to the oil and gas industry. Together we will fill the gap between E&P and IT.

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HGS North American Dinner continued from page 27

studies using Environmental BioTechnologies Inc.'s proprietary MET geo-microbial exploration method. One case study in Canada involved over 80,000 soil samples that were analyzed for soil bacteria and the role of diverse environmental factors such as soil moisture, soil PH, soil salinity, depth of oxygen penetration into soil column, depth that soil gas begins to release to the atmosphere, and different soil types. ■

References

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Biographical Sketch

Jeff Munnecke, currently COO of Environmental BioTechnologies, Inc. (EBT) began working with EBT in 2010 as Laboratory Manager. He began his college education at Cabrillo College (Aptos, CA) and continued it at CSU-Sacramento with a focus on Environmental Studies and Business Administration. He began working with EBT as an independent contractor for Laboratory Technician positions, then became Laboratory Manager. After 4 successful years with EBT, where he has helped to reinvigorate the company with a new drive and purpose, he was promoted to COO in April of 2014.

Wednesday, October 28, 2015

Petroleum Club of Houston • 1201 Louisiana (Total Building)
Social Hour 11:15 a.m.
Luncheon 11:45 a.m.

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

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card.
Pre-registration without payment will not be accepted.
Walk-ups may pay at the door if extra seats are available.

Lee Billingsley
Abraxas Petroleum Corporation
San Antonio, TX
lbillingsley@abraxaspetroleum.com

Geoscience Applications to Economic Development of a Relatively Shallow, Low Gravity, Structurally Complex Eagle Ford Oil Development, Atascosa County, Texas

Development of the Eagle Ford oil accumulation in South Texas may generally be divided into two gradational trends, black oil and volatile oil. The black oil trend is characterized by shallower depth, thinner Eagle Ford interval, lower gravity oil (<35° API), lower GOR (<1000), and generally poorer economic returns than the volatile oil trend. Many areas of Eagle Ford development are also structurally simple with only regional basinal dip. However, Abraxas Petroleum Corporation is developing an area in the black oil trend that is structurally complex due to graben faulting and resultant folding. Because of the faulting during Eagle Ford deposition, the Eagle Ford interval expands from about 100 ft thick outside the graben to about 180 ft within the graben. The expanded interval provides opportunity, but economic development in this part of the trend requires extreme attention to detail and high coordination between geology, geophysics, drilling and completion.

HGS General Luncheon *continued on page 33*

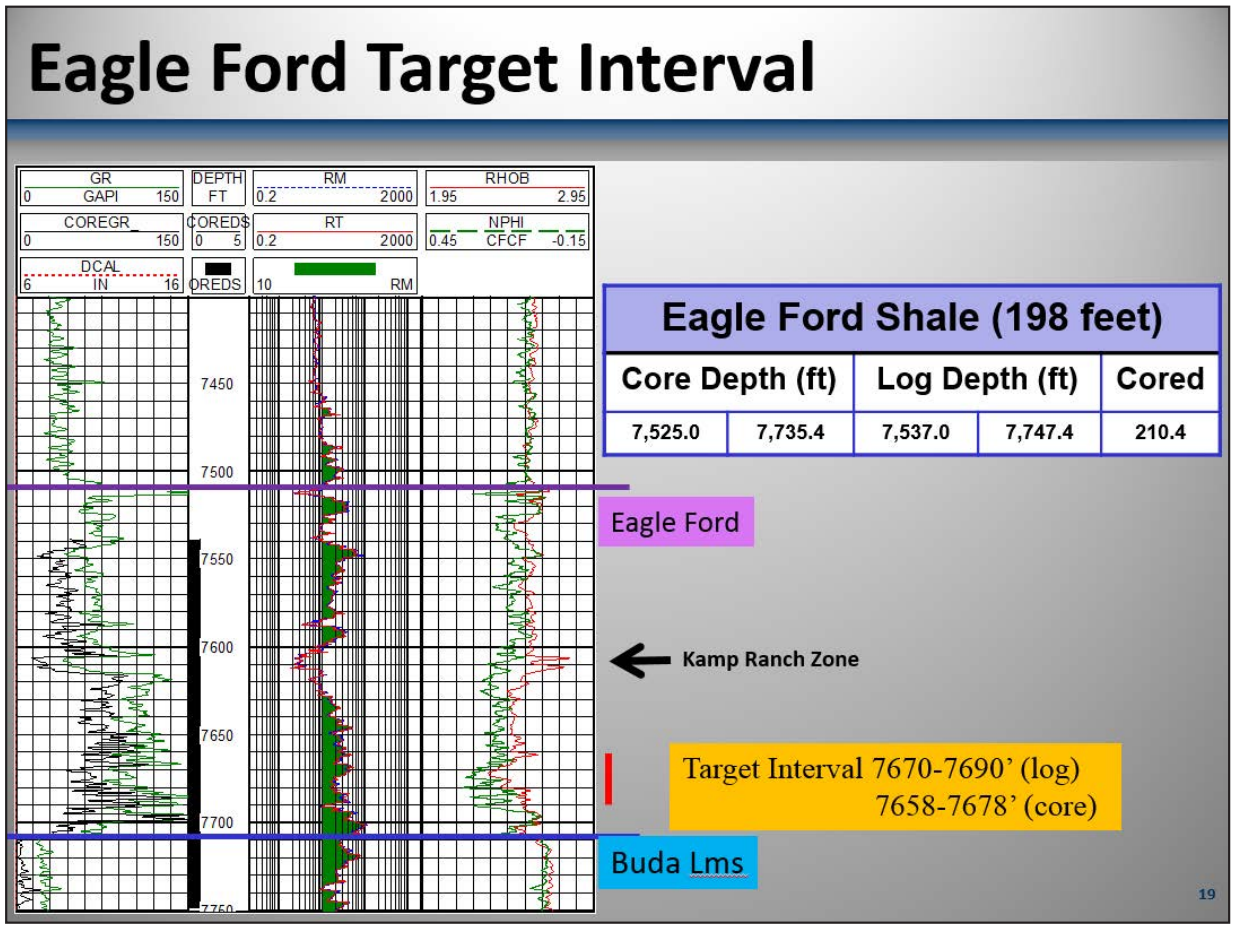


Figure 1. *Open hole log over Eagle Ford interval in Jourdanton area, Atascosa County, Texas depicting target interval, as determined by both log and core analysis.*

HGS General Luncheon continued from page 31

Interpretation of the 3D seismic data set over the field area requires drastic geologic assumptions in order to convert accurately to depth. Velocity values based on the drilling and geosteering of nine, widely spaced, horizontal wells indicate that velocity is faster near the downthrown side of growth faults. Improved interpretation of the 3D seismic data has resulted in improved geosteering of the horizontal wells.

Stratigraphically, the Eagle Ford was divided into 13 parasequences in an attempt to determine if certain intervals had different characteristics during hydraulic fracturing (frac) treatments and resulting productivity. Frac gradient plots indicate that areas near faults have subnormal gradients, but position within the Eagle Ford does not exhibit a consistent trend. However, well performance relative to Eagle Ford completion interval does show a correlation. ■

Biographical Sketch

Lee Billingsley has overseen the geoscience and exploration team at Abraxas for 17 years. He currently serves as Vice-President of Exploration. During that span, Abraxas has focused on horizontal drilling and completion in both conventional and unconventional reservoirs in the Rockies, Midcontinent and the Texas Gulf Coast. Current activities include drilling and completion of horizontal Bakken/Three Forks, Eagle Ford and Permian Basin wells and utilizing 3D seismic to better understand reservoirs. Prior to joining Abraxas, he worked 15 years as an independent operator.

Lee is also currently teaching graduate courses in advanced stratigraphy and petroleum geology part-time at The University of Texas at San Antonio. His degrees are from Texas A&M University (B.S. and PhD.) and Colorado School of Mines (M.S.), all in Geology.

Lee is also a Past-President of AAPG (2006-2007).

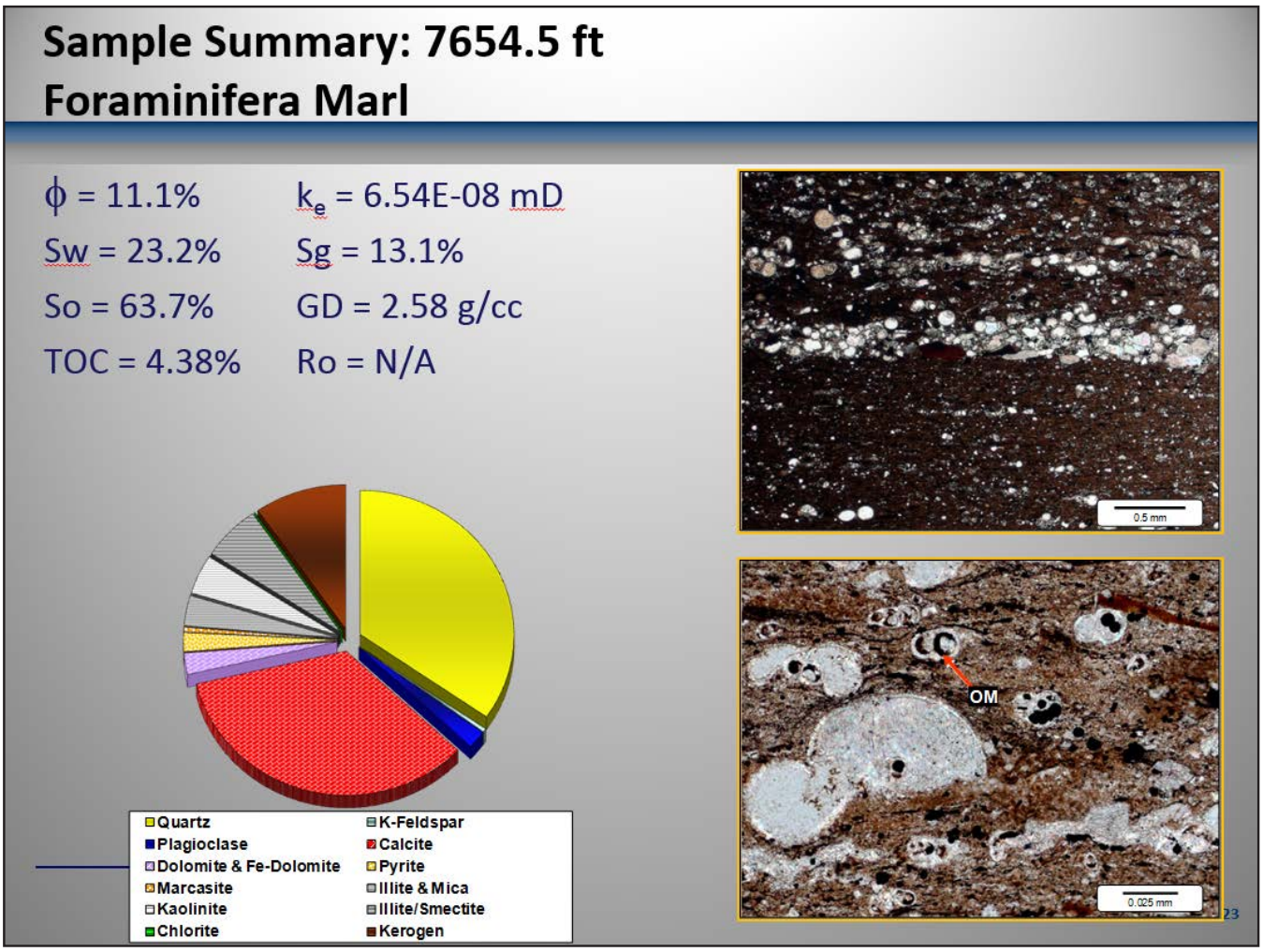
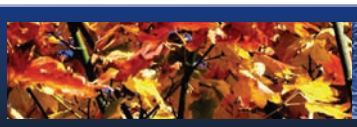
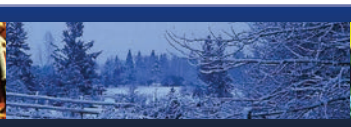


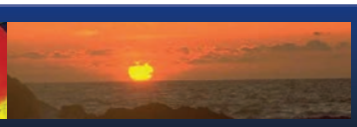
Figure 2. *Mineralogy and analysis of lower Eagle Ford target zone for horizontal wells.*

October 2015





Sunday	Monday	Tuesday	Wednesday
	Reservations: The HGS prefers that you make your reservations on-line through the HGS website at www.hgs.org. If you have no Internet access, you can e-mail reservations@hgs.org, or call the office at 713-463-9476. **Reservations for HGS meetings must be made or cancelled by the date shown on the HGS Website calendar, normally that is 24 hours before hand or on the last business day before the event.** If you make your reservation on the Website or by email, an email confirmation will be sent to you. If you do not receive a confirmation, check with the Webmaster@hgs.org. Once the meals are ordered and name tags and lists are prepared, no more reservations can be added even if they are sent. **No-shows will be billed.**		**Members Pre-registered Prices:** Dinner Meetings members..... $45 Emeritus/Honorary members..... $40 Student members..... $10 Nonmembers & walk-ups..... $50 Except - Env. & Eng. ..... $30 Nonmembers & walk-ups..... $35 Emeritus/Honorary members..... $15
4	5 **HGS International Dinner Meeting** *"Oil* **Terroirs** *of the West African and South American Conjugate Basins ," William Dickson, Craig Schiefelbein, Jim Brooks, John Zumberge* *Page 11*	6 **HGS Board Meeting** *6 p.m.*	7
11	12 **HGS General Dinner Meeting** *"Applying Fundamentals of Unconventional Shale Production to the Exploration and Development of the Wolfcamp "A", Wolfcamp "B", and Lower Spraberry Shale – A Case Study," Keith Skaar, Page 17*	13	14 **HGS Environmental & Engineering Dinner Meeting** *"Professional Ethics for Engineering and Environmental Geologists," Christopher C. Mathewson, Page 21*
18 **Earth Science Week: Family-Friendly Geology Field Trip to High Island** *Page 8*	19 **HGS Northsiders Luncheon Meeting** *"World Oil Supply in Transition," Richard S. Bishop, Wayne L. Kelley* *Page 23* **HGS Golf Tournament** *Page 36*	20	21
25	26 **HGS North American Dinner Meeting** *"Geo-Microbial Prospecting: a Near Surface Hydrocarbon Exploration Technique that Enhances Petroleum Exploration and Development Success," Jeff Munnecke, Page 27*	27	28 **HGS General Luncheon Meeting** *"Geoscience Applications to Economic Development of a Relatively Shallow, Low Gravity, Structurally Complex Eagle Ford Oil Development, Atascosa County, Texas," Lee Billingsley, Page 31*



GeoEvents

Thursday Friday Saturday

1	2 **Don't wait, make your reservations online at ww.hgs.org**	3
8 **Geoscience Day 2015** *Global Geophysical Services Missouri City, TX Page 29*	9 **GSH/HGS 15th Annual Saltwater Tournament** *Topwater Grill Marina San Leon, TX Page 54*	10 **Earth Science Week: Celebration at the Museum of Natural Science** *Page 8*
15	16	17
22	23	24
29	30	31

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

October 19, 2015
HGS Golf Tournament
Kingwood Country Club

December 13-16, 2015
GCSSEPM Perkins Conference
Omni Houston Hotel, Westside

January 25, 2016
HGS Legends Night

March 8-9, 2016
HGS Mudrocks Conference
The Woodlands, TX

April 3-6, 2016
AAPG/SEG ICE
Barcelona, Spain

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

June 19-22, 2016
AAPG ACE
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HGS Golf Tournament

Monday – October 19, 2015
Kingwood Country Club

Dust Off The Clubs, Polish The Shoes, And Pad The Handicaps, It's Time For Golf!

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

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

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

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

Petro Log International, Inc.
One Sugar Creek Center Blvd., Suite 945
Sugar Land, TX 77478
Office: 281-494-2522 Fax: 281-494-2526
Email: mdennis@petrolog.com & mlange@petrolog.com

SCHEDULE OF EVENTS

8:00 – 9:45 a.m.	Registration and free use of driving range (Breakfast will be provided by **Petro Log International, Inc.**)
10:00 a.m.	Shotgun start
3:00 p.m.	Cash bar, open buffet
3:30 p.m.	Door prizes and awards presentation

Team Captain _____ Phone _____ Amount Enclosed _____

Company _____ Email _____

Billing Address _____

Credit card # _____ Exp. Date _____ Code# _____

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

Foursome Members *(Please Print)*	**Company**	**Phone Number/Email**	**Hdcp/ Avg. Score**
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

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

HGS Golf Tournament

Monday – October 19, 2015
Kingwood Country Club

Sponsorship Application

Trevino Sponsorship $500.00

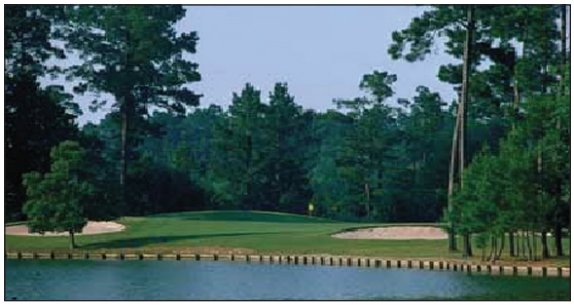
- Hole signs on all three courses.
- **Company name** displayed on sponsor recognition board at registration and awards banquet.

Hogan Sponsorship $750.00

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

Nicklaus Sponsorship $1,000.00

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



Title Sponsorship $2,000.00

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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.
- **Company logo** displayed on beverage carts.
- **Sponsorship includes tournament entry for one team (4 people).**

To sponsor, please indicate your sponsorship level _____
and mail, fax or email sponsor application form along with payment (payable to HGS Entertainment Fund) to:
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281-494-2526 (fax), 281-494-2522 (office), Email: mdennis@petrolog.com

Name _____ Phone _____ Amount Enclosed _____

Company _____ Email _____

Billing Address _____

Credit card # _____

Exp. Date _____ Security Code# _____

Please email your company logo to Mark Dennis at mdennis@petrolog.com.
Note: Company logos (high resolution file) must be received no later than October 9th.
If there are any questions, I can be reached at 281-705-4346 (cell) or 281-494-2522 (office).

Applied Geoscience Conference

March 8 - 9, 2016

Integrated Approaches of Unconventional Reservoir Assessment and Optimization

Please join us for the Houston Geological Society's premier technical conference, offering the latest breakthroughs, technical perspectives and integrated approaches to unconventional reservoir assessment.

Day 1

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- Petroleum System Attribute Integration
- Petrophysical Integration to Optimize Completions
- Hybrid Unconventional Opportunities

Day 2

- Unconventional Technology for Tight Reservoirs
- Geophysical Advances for Reservoir Characterization
- Recompletions and Refracturing
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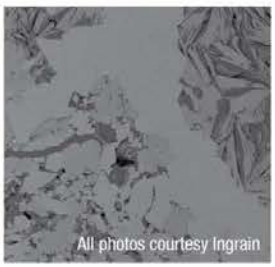

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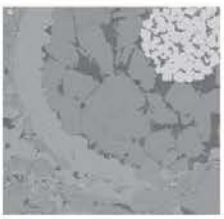

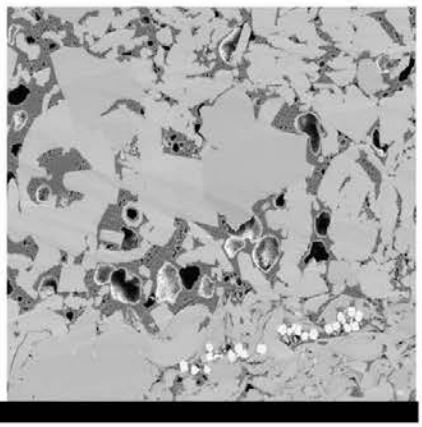

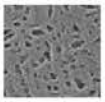

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91% Rated the talks as applicable to their every day work

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HOUSTON GEOLOGICAL SOCIETY presents

Legends Night 2016

Geophysicists Who Have Impacted Geologists

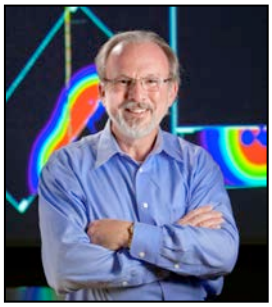
REGISTER NOW!

Monday, January 25, 2016

HGS invites you to join us for the next Legends Night dinner event honoring three geophysicists who have made significant contributions to the field of geology.

Alistair Brown
Author of 'Interpretation of Three-Dimensional Seismic Data'

Tom Smith
Founder and former president of Seismic Micro-Technology (SMT)



Peter Duncan
Founder and Co-Chairman of MicroSeismic, Inc.

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HGS LEGENDS NIGHT 2016

JANUARY 25, 2016

Geophysicists Who Have Impacted Geologists

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- Dedicated table with company logo
- 10 complimentary dinner registrations
- Icebreaker reception with scholarship recipients
- Formal recognition at event
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Corporate Gold Sponsor - $5,000

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Please submit company logo along with form and payment. Payment by credit card or check. Please make checks payable to *Houston Geological Society*. Email form to andrea@hgs.org or fax to 281-679-5504.

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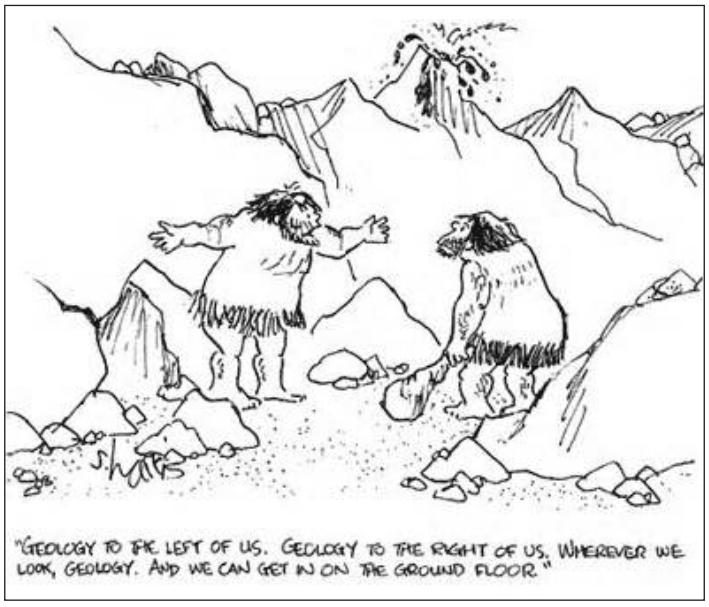
Come Rock with Us!
HGS Needs You!

The HGS Nominations Committee is looking for candidates to fill as many as 30 AAPG House of Delegate positions. Candidates must be Active AAPG members, current with their dues. The term for these candidates will run from July 1, 2016 through June 30, 2019. The AAPG Annual conventions during this period will be in Houston (2017), Salt Lake City (2018), and San Antonio (2019). The Houston delegation meets monthly (September through June) to discuss candidates for AAPG membership and to make their recommendations for such to AAPG.

The Nominations Committee also seeks HGS members interested in the governing and running of the Houston Geological Society. It is seeking candidates for President-Elect, Vice President, Treasurer-Elect, Secretary, Editor-Elect, and two Director positions. The elect and director positions are two-year terms. The terms coincide with HGS fiscal years, 1 July 2016 - 30 June 2017 and 1 July 2017 - 30 June 2018. Candidates must be current with their HGS dues and be an Active member of the Society.

If interested, contact **Ken Nemeth**, Nominations Committee Chairman, at knemeth@slb.com. ■



(Courtesy of horton.ednet.ns.ca)

Remembrance

Charles "Tom" Austin

Tom Austin was charismatic, energetic and dynamic; not only a leader and well-respected among his peers in the oil and gas industry, but a devoted husband, father, and friend. His enthusiasm for his passion – his work – was infectious. I didn't have the pleasure of meeting Tom, but upon meeting his family, it is without a doubt that he was someone special.

Tom passed away on Sunday morning, May 24, 2015, after wrapping up a glorious Easter weekend with his wife, Pat, at their beautiful lake house on Lake Conroe.

Tom was born just outside of Mill Creek, Oklahoma to Thelma and Joe Austin, in 1932. He had two younger sisters, Jane and Judy. Tom graduated in 1950 at the top of his class from Mill Creek High school where he played basketball.

Tom attended college at East Central State, where he met the love of his life, Pat Mark. He majored in math (with a physics minor) with hopes of becoming a math teacher. However, the oil companies came looking for math majors and in 1954, Tom graduated and accepted a position with Texaco.

Tom's energy and enthusiasm was evident pretty early on, as he graduated on a Thursday, married Pat on a Friday and ran his rural mail route on the following Saturday to insure he and Pat had enough money to move to Houston. They moved to Houston on Sunday so he could start his job with Texaco that very next Monday morning.

Tom's First Day of Work at Texaco (1954)

While at Texaco, Tom was trained as a geophysicist with a focus on gravity and magnetics, and found his passion. After the birth of his first child Becky, Tom's work took him back to Oklahoma, where he and his family lived in various places around the Mid-Continent oil patch. During this time, he and Pat were blessed with two more children, Joe and Sheri.

In Tulsa, Tom managed to complete his Master's degree in geology, geophysics, and seismology attending night school along with working to support his growing family. At Texaco, he was a supervisor for land gravity and aeromagnetic crews while doing successful interpretations (he found many oilfields!) He left Texaco in 1967 and went to work for a company called GMX, a magnetics contractor that later merged with Geophysical Associates International (GAI), a gravity services company, to form GAI-GMX. Tom made some of his closest friends during this time: Melvin Hopkins and Homer Selman (whose son, Dean, later married Tom's eldest daughter Becky). Later, he joined Petty-Ray Geophysical as Manager for Potential Methods and Navigation.

In 1976, he founded Austin Exploration Inc., a leader in land and marine gravity & magnetics acquisition and continued to improve and enhance the field of geophysics through exploration and innovation. The company has grown to be one of the top in its field and after several years of negotiation, has merged with Bridgeport to form AustinBridgeport, non-seismic specialists in marine, land, and airborne data acquisition, QC, processing, interpretation, project management and software development.

Charles "Tom" Austin *continued on page 46*

Charles "Tom" Austin continued from page 45

Tom never became the math teacher he originally envisioned himself to be – but he went on to teach in other ways. Tom was eager to share his geophysics passion with anyone who would listen – he would turn casual dinner conversations into teachable geophysical moments by writing and drawing on napkins. He became a staple at the SEG – for many years he would talk at the conventions as one of their honored Living Legends.

However, Tom's legacy mostly continues on through his family – which is closely intertwined with his work. His daughter, Becky Selman, worked closely with her dad for 35 years and is VP for Austin Exploration. Dean Selman, his son-in-law, worked with Tom for 21 years. And Pat, his adoring and loving wife, who in just a brief, one-hour conversation, expressed through stories and anecdotes just how amazing this man was and made it easy to understand why they stayed married for 61 years.

Tom, you will be missed by all: those who knew and loved you well while you were here, and those who wished they had known you – even for a day. *Tami Shannon*

Should you hear of a fellow HGS member's or contributor's passing, please send information to the Editor-Elect at tami.shannon.biz@gmail.com.

Remembrance

Alison Henning

Alison Teagan Henning, an active member of the Houston Geological Society, passed away peacefully from complications related to breast cancer on August 12, 2015. She was 42 years young.

Alison was born July 28, 1973 in Plymouth, MA, to Robert and Linda Teagan and had a brother, Edward Teagan. She graduated from Plymouth South High School and later, the University of Texas at Austin. She married her high school sweetheart Tod Henning in Austin, Texas, in 1996 and they were married for 19 wonderful years. They were blessed with two beautiful sons, Mark and Jack. Her family enjoyed traveling, sports (particularly Longhorn baseball), and unbounded love and friendship.

Alison went on to receive a Ph.D. in Geophysics from Rice University and enjoyed an exciting career as a geophysicist in the oil industry as well as within academia. Most recently she was working for BP working on deepwater development projects in the Gulf of Mexico with specialization in 2D and 3D seismic data processing, analysis and interpretation.

Alison was also extremely involved in educational activities. She was a Lecturer at Rice University, teaching Seismic Data Interpretation and coordinated the Professional Master's program within the Subsurface Geoscience track. She enjoyed teaching geology to teachers at Rice as part of the teachers' continuing education endeavor; she was proactive in getting her teachers to experience geology first-hand by arranging field trips to rigs, companies, and museums and took it beyond simple tours by borrowing specimens and coordinating fossil and rock & mineral labs.

She served as the Education and Outreach Coordinator of the GeoPRISMS office, an National Science Foundation-sponsored program to study continental margins. For HGS, she served most recently as the Secretary of the Calvert Scholarship Committee for graduate student scholarships, however, she was also active in numerous HGS educational outreach programs:

- She was a co-chair in the start-up years of Earth Science Week activities and was awarded a HGS Rising Star award in 2001.
- She helped organize and lead HGS activities at several CAST (Conference for the Advancement of Science Teaching) meetings.
- In 2008-2009, she was a HGS representative on the Texas Board of Education to develop the earth science high school curriculum and fought valiantly to keep valid earth science in our schools.

Alison Henning *continued on page 49*

10TH ANNUAL

Fundamentals Education Conference

HOUSTON, TEXAS
NOVEMBER 9-13, 2015

Courses Include:

- Subsurface Contouring: The Secrets to Optimizing Your Maps for Oil & Gas Exploration
- Concepts, Models and Case Studies of Dolomitization, with Applications to Hydrocarbon Exploration and Development
- The Petroleum System: An Investigative Method to Explore for Conventional and Unconventional Hydrocarbons
- Fundamentals of Siliciclastic Sequence Stratigraphy
- Rock/Fluid Interactions and Natural Fracture Development and Alteration
- RQ Toolkit: Using Rock Data for Reservoir Quality Assessment
- Reservoir Engineering for Petroleum Geologists
- Practical Geomechanics
- Quick Guide to Carbonate Well Log Analysis
- Clay Minerals in Reservoir Evaluation
- Risk Reduction for Plays & Prospects Using Quantitative Show

Hosted by:

Norris Conference Center- Westchase
9990 Richmond Ave., Suite 102 Phone: 713-780-9300
Houston, TX 77042 Fax: 713-780-9490

Registration and Information
Call AAPG toll free in the U.S. and
Canada at 888.338.3387 or 918.560.2650
F: 918.560.2678 • E: educate@aapg.org
W: www.aapg.org/career/training/in-person/education-conference

AAPG Fundamentals Education Conference 2015
November 9-13, 2015 - Houston, Texas

Upcoming Education Courses

2015 Courses:

LAST CHANCE

Sequence Stratigraphy, Facies Architecture & Reservoir Characterization of Fluvial, Deltaic and Strand-Plain Deposits Field Seminar — **October 2-9, 2015** Utah

Early-bird Rates Expire Soon:

Fundamentals Education Conference — **November 9-13, 2015** Houston, TX

SHORT COURSES

Practical Salt Tectonics — **December 1-4, 2015** Houston, TX

HEDBERG CONFERENCE

The Future of Basin and Petroleum Systems Modeling — **April 3-8, 2016** Santa Barbara, CA

Call for Abstracts now open! Deadline: **December 1, 2015**

ONLINE COURSES

Giant Oil and Gas Fields — **Online**
Self-paced, 4-week Certificate course

Introduction to Shale Gas — **Online**
Self-paced, 4-week Certificate course

Unconventional Resources — **Online**
Self-paced, 4-week Certificate course

Leadership and Strategic Thinking in the Oil & Gas Industry — **Online**
Self-paced, 4-week Traditional online course

Strategic Decision-Making: Current Issues in the Oil Industry — **Online**
Self-paced, 4-week Traditional online course

2016 Courses:

SHORT COURSES

World-Class Education Conference — **February 29-March 4, 2016** Houston, TX

Basic Well Log Analysis — **April 25-29, 2016** Austin, TX

Exploring for Bypassed Pay in Old Wells — **April 26-28, 2016** Austin, TX

Basic Well Log Analysis — **July 11-15, 2016** Golden, CO

FIELD SEMINARS

Modern Terrigenous Clastic Depositional Systems — **April 2-9; September 11-18, 2016** South Carolina

Deep-Water Siliciclastic Reservoirs — **June 13-18, 2016** California

Interpretation of Thrust Belts and Foreland Basins — **September 5-9, 2016** Spain

Fractures, Folds and Faults in Thrusted Terrains — **September 12-17, 2016** Montana

www.aapg.org/career/training/

AAPG Education

Alison Henning continued from page 45

- As Director on the HGS Board in 2007-2009, she coordinated the Maps in Schools project and assisted in the selection of Teacher of the Year.
- Alison was instrumental in the HGS community outreach project, Evergreen Cemetery, in 2007.
- She volunteered at the HGS booth during the school field trips at the Houston Gem and Mineral Society shows.

Alison obviously did not let cancer define or control her. She amazingly persevered for almost 8 years, fighting the good fight, while still pursuing and living her greatest passions and inspiring others. HGS remembers Alison fondly and sends our deepest sympathies to her family, but also honors Alison for her great courage and selflessness to others. ■ *Tami Shannon*

If you wish to read more about Alison's story, you may do so at CaringBridge: http://www.caringbridge.org/visit/alisonhenning

Should you hear of a fellow HGS member's or contributor's passing, please send information to the Editor-Elect at tami.shannon.biz@gmail.com.

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.

Beginning January 1, 2016, the TCEQ Remediation Division will require the use of United States Environmental Protection Agency (USEPA) SW846 Method 5035A, Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples, as amended, for the collection and preparation of solid samples for volatile organic compound (VOC) analysis using purge-and-trap technology. After December 31, 2015, the TCEQ Remediation Division will reject VOC data reported for solid samples, such as soil samples, collected and prepared using another method when the data are intended to demonstrate compliance with the rules in 30 Texas Administrative Code Chapters 334 (Underground Storage Tanks), 335 (Industrial Solid Waste and Municipal Hazardous Waste), or 350 (Texas Risk Reduction Program).

Samples collected for VOC analysis must undergo preparation prior to analysis. The purge-and-trap procedure is the most common preparatory method for VOC analysis, e.g., analysis using SW846 methods 8260, 8021 and 8011. Method 5035A describes the procedures for collecting solid samples and preparing the samples for VOC analysis using purge-and-trap technology. Prior to 1997, preparation by purge-and-trap for both soil and water samples was outlined in Method 5030. In 1997, the USEPA revised SW846 to remove the soil component from Method 5030 and to introduce the new Method 5035 for solids. With that revision to SW846, the USEPA limited purge-and-trap preparation of solid samples to Method 5035, later revised to Method 5035A, and the purge-and-trap preparation of aqueous samples and sample extracts to Method 5030. Beginning on January 1, 2016, solid samples for VOC analysis must be collected and prepared using the Method 5035A procedures.

The TCEQ Remediation Division guidance on Method 5035 has been updated and is available. Please direct questions regarding Method 5035 or the guidance to the Technical Program Support Team at 512-239-2200 or by e-mail at TechSup@tceq.texas.gov.

AGI Geoscience Policy Monthly Review (June 2015)

Senate Energy and Natural Resources Committee Holds Series of Hearings on Massive Energy Legislation Package

On June 9, 2015 the Senate Energy and Natural Resources Committee completed its series of four hearings related to a new energy bill spearheaded by Chairwoman Lisa Murkowski (R-AK). Legislators on both sides of the aisle have proposed 114 bills spanning energy efficiency, infrastructure, supply, and accountability and reform to be considered as a part of Murkowski's larger energy legislation package, which she hopes to have completed before the end of the summer.

Since the last energy package passed into law in 2007, advancements in hydraulic fracturing and the Administration's push towards renewables have created the need for new legislation, said Murkowski. The committee first addressed energy efficiency, working parallel to a similar bill in the House Energy and Commerce Committee. The hearing on efficiency, held in April, examined smart grid technologies for making energy sources more reliable, especially in a time of transition as old power sources are retired in place of advanced technology.

The second hearing dealt with energy infrastructure, focusing on oil and natural gas pipelines, electric transmission lines, and energy storage. The third hearing discussed bills addressing energy supply from offshore drilling of oil and natural gas, hydropower, geothermal, biomass, and coal. The series of hearings concluded on government accountability, addressing concerns over the effectiveness of government regulations and how they affect public rates, grid reliability, and the economy.

Maryland Imposes 2-year Moratorium on Hydraulic Fracturing – May 30, 2015

With the passage of a new bill, the state of Maryland will not allow hydraulic fracturing until October 1, 2017. The bill passed the House of Delegates with a veto-proof 76 percent majority and the Senate with a 96 percent majority, bypassing the need for Governor Larry Hogan to sign it into law. Hogan, the first-term Republican Governor of the heavily Democratic state, voiced support for hydraulic fracturing during last year's campaign.

Martin O'Malley, Hogan's Democratic predecessor, had also voiced cautious support for hydraulic fracturing as long as the state imposed strict regulations. In January 2015, Maryland's Department of the Environment released a proposal detailing regulations for any oil and gas extraction that occurs within the state.

The Marcellus shale, which has been tapped extensively for natural gas in neighboring Pennsylvania, extends into Maryland's two westernmost counties. Proponents of hydraulic fracturing cite its potential for spurring economic growth in these largely rural areas, but opponents argue that it will damage western Maryland's tourism industry.

Government Update *continued on page 53*

HGS Welcomes New Members

New Members Effective August 2015

ACTIVE MEMBERS

Craig Slawson

Meagan Wall

EMERITUS MEMBERS

Dale Reitz

Carolyn Ross

Jerry Robertson

STUDENT MEMBERS

Sameer Baral

Lanre Dawodu

Monserrat Gomez

Erik Heider

Lauren Mercado

Will Middlebrook

Victoria Pettersen

Welcome New Members

Government Update continued from page 51

Oklahoma Passes Law Prohibiting Outright Bans on Hydraulic Fracturing – June 1, 2015

On May 29, 2015 Oklahoma Governor Mary Fallin signed a bill into law restricting municipalities from regulating oil and gas activities in their jurisdictions. Under the new regulation, municipalities are able to regulate the byproducts of oil and gas activity, such as noise, air, and water pollution, but are unable to place an outright ban on oil and gas activities.

This bill follows a similar law passed recently in Texas, restricting local regulation of oil and gas extraction. Both bills give state level commissions responsibility for regulating oil and gas industries to make a more transparent permitting and extraction process. In Oklahoma, Governor Fallin justified the new law by citing recent earthquake activity and arguing that it is best regulated by state-level commissions.

House Natural Resources Subcommittee Holds Hearing on Proposed Arctic Drilling Regulations – June 16, 2015

The House Natural Resources Subcommittee on Energy and Mineral Resources held an oversight hearing on "Arctic Resources and American Competitiveness" to discuss exploratory oil and gas drilling on the Arctic Outer Continental Shelf (OCS). The hearing covered the Department of the Interior's (DOI) proposed regulations for drilling on the OCS, which were released on February 20, 2015. Testimony and questioning focused on whether drilling is prudent in such an inaccessible location and whether current technology and best practices can prevent an environmental disaster.

Richard Glenn of the Arctic Slope Regional Group noted that oil and gas extraction provides a substantial number of jobs to residents of northern Alaska and receives support from many locals. Critics of the DOI regulations questioned the need to place a second rig on site to drill same-season relief wells in the event of a blowout and challenged the proposal to shorten the Arctic drilling season to allow time to shut down defective wells. Christine Resler of Schlumberger pointed out that once new technologies are tested and used in the Arctic, these technologies will improve.

Brian Salerno of the DOI testified that despite its shallow-water setting, the Arctic OCS is too dangerous and remote to accommodate unproven technologies, or even some technologies that are robust in temperate climates. Michael LeVine of Oceana said that "there is no proven way to respond to spilled oil in Arctic conditions," and warned that traditional methods of oil spill mitigation would be hampered by sea ice and lack of infrastructure.

Senate Committee Assesses Drought Conditions in 11 Western States

The Senate Energy and Natural Resources Committee held a hearing on June 2, 2015 to assess drought conditions and water challenges in the western United States. Due to record low snowfalls and rapid population growth across the West, the hearing stressed the need for flexibility, collaboration, and innovation.

Decisions about water resource allocations are notoriously controversial. For example, current water use policy for the Colorado River mandates that in times of drought Arizona and Nevada must reduce their water consumption before California. Thomas Buschatzke, Director of the Water Planning Commission within the Arizona Department of Natural Resources, stressed the need for such policies to be reevaluated.

Senator Steve Daines (R-MT) raised concerns about the effects the present and future droughts will have on wildfires in the West. Buschatzke cited the impacts of runoff from forest fires on water treatment costs and storage capacity in reservoirs.

James Ogsbury of the Western Governors' Association argued that greater dissemination of water resource data from federally funded sources such as the National Oceanic and Atmospheric Administration and the U.S. Geological Survey is critical to drought response for Western states.

House Bill Would Fund Research into Raw Materials that Fuel Energy Innovation

Representative Eric Swalwell (D-CA) introduced The Securing Energy Critical Elements and American Jobs Act of 2015 (H.R. 2687) on June 8, 2015 to support research on Energy Critical Elements (ECEs). The ECEs are a broad group of elements, including lithium, germanium, cobalt, and a dozen rare earth elements, that are increasingly important components of energy technologies such as thin-film solar cells, high-strength magnets for wind turbines and electric cars, and fluorescent lighting. However, limited supplies of ECEs and volatile global markets inhibit the financial viability of many of these emerging technologies.

Government Update continued on page 55

GSH / HGS 15th ANNUAL SALTWATER TOURNAMENT

Friday, October 9, 2015

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. 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 OPTIONS

- **Registration** fee of $75 includes: Launch Fee, GSH Fishing Cap, Seafood Dinner after weigh-in, Refreshments, Trophies, and Door Prizes.
- **Registration on a Guided Boat** for 4 hours in the morning or mid-day is $200. Bait & tackle is included. Check with the GSH Office, 281-741-1624, for times and availability.
- Non-fishing friends and family enjoy a **Seafood Dinner** for $20

For more information, please contact:

Bobby Perez (GSH)	832-554-4301	Office	281-787-2106	Cell
	832-554-4315	Direct	281-495-8695	Home

E-mail addresses: rdphtx@gmail.com or rperez@seimaxtech.com

The Geophysical Society of Houston and the Houston Geological Society are non-profit and not-for-profit organizations 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. This is a great way to entertain friends, family, business associates, and clients. So spread the word!

GSH / HGS SALTWATER TOURNAMENT

NAME: _____ COMPANY: _____

ADDRESS: _____

PHONES: (H) _____ (B) _____ (C) _____

E-MAIL ADDRESS: _____

Upon receipt of the Registration form, each participant will be provided with a copy of the specific tournament itinerary and rules sheet by e-mail. Please register **EARLY**

Please return this form with your check payable to **GSH SALTWATER TOURNAMENT** and Mail to:

Geophysical Society of Houston (GSH), 14811 Saint Mary's Lane, Suite 204 • Houston, Texas 77079

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

OR call the GSH office with Credit Card payment at: 281-741-16924

DISCLAIMER:

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

PRACTICE SAFETY!!!!! Signature: _____

Government Update continued from page 53

The bill would authorize $25 million per year through 2020 for ECE research and would authorize the creation of a Critical Materials Energy Innovation Hub within the Department of Energy. Research would focus on extracting, processing, and recycling ores, improving the engineered systems that use ECEs, and developing alternative materials for these systems.

Most ECEs are not naturally concentrated within the earth's crust, which makes them difficult and costly to mine. Many must therefore be refined as byproducts of more abundant ores. The U.S. imports the bulk of its ECEs from China, which is currently the world's top producer by a wide margin.

As of June 8, 2015 the bill had been referred to the House Committee on Science, Space, and Technology.

House Natural Resources Subcommittee Holds Hearing on National Critical Minerals Bill

The House Natural Resources Subcommittee on Energy and Minerals heard testimony mostly in favor of H.R. 1937, the National Critical Minerals Act (NCMA), on June 25, 2015. During the hearing, the bill's sponsor, Representative Mark Amodei (R-NV), cited the need to speed up the permitting approval process for mining in order for America to remain economically competitive. Mark Fellows of SNL Financial and Luke Russell of Hecla Mining Company, both testifying as mining industry representatives, echoed Amodei's statements. Jeffery Green, a national security expert, testified that the United States should further develop domestic mines to remain independent of negative geopolitical influence.

According to the testimony, new mining permits take 20 years on average to be approved by state and federal governments and this makes planning difficult for mining companies. The NCMA would standardize the amount of time for the permitting process, directing agencies to conduct environmental impact assessments in parallel instead of sequentially. Russell noted that Canada and Australia have similar environmental standards and are able to approve mine permits in three years.

This fast tracking of mine permits would apply to critical minerals as defined by the new legislation, which differs from the Department of Energy and USGS definitions. Under the broader new definition, any hard rock that is mined could be classified as critical and thus eligible for regulatory fast tracking. Sam Kalen, a law professor at the University of Wyoming, and Representative Alan Lowenthal (D-CA) expressed concern about the redefinition because they viewed it as circumventing preexisting regulation, thus creating potential environmental risk.

NOAA Reports Potential Coverage Risk for U.S. Weather Data

According to a report from the Department of Commerce's Inspector General, the National Oceanic and Atmospheric Administration's (NOAA) weather satellites could be vulnerable for the next 29 months due to construction delays.

The Geostationary Operational Environmental Satellite-R (GOES-R) was scheduled to replace the GOES 15 satellite in October 2016, but late delivery of components during construction pushed back the launch date to March 2016. Once the satellite has launched, NOAA requires it to orbit for twelve months before becoming operational to ensure all instrumentation works correctly. In the interim, the GOES program will have only aging satellites to function as backups in case something goes wrong. NOAA's current fleet of weather satellites consists of two weather-monitoring satellites and two backup satellites. In 2012 backup satellites were used to ensure continuity of data when one of the primary satellites malfunctioned.

The report criticizes the cost of the GOES program, saying that not including experienced engineers on the project resulted in increased costs and delays.

House Bill Addresses Water Infrastructure and Drought Mitigation in California and the West

On June 25, 2015 Representative David Valadao (R-CA) introduced H.R. 2898, entitled the "Western Water and American Food Security Act," in an effort to mitigate the impacts of the drought in California and other Western states. The bill would work on improving water infrastructure in California as well as streamlining the permitting process for water projects across the West.

In California, the bill would focus on increasing water storage in reservoirs in Southern California and ensures that water transfers from the northern half of the state are sufficient for Los Angeles and the agricultural communities of the Central Valley. The bill would also amend the formulas used to calculate water needs for endangered fish populations to allow more water usage for humans, a measure Democrats oppose due to its environmental impact.

Across the West, the bill would make the review and permitting process for water projects more efficient, and one measure would allow irrigators to prepay any debts incurred from the Bureau of Land Management (BLM), generating $650 million for a broader BLM water package for the West.

A similar bill proposed by Valadao failed to pass Congress last year due to Democratic opposition to its impact on the environment, but Valadao's office stated this bill was specifically designed to receive support from both sides of the aisle, citing support from Senator Diane Feinstein (D-CA) in the upper house. ■

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.**

Random Inside Ad Placement Black & White Prices Shown Color add 30% to prices shown below					Specific Page Color Ad Placement					
No. of Issues	Random Eighth Page	Random Quarter Page	Random Half Page	Random Full Page	Inside Front Cover Full Page	Inside Back Cover Full Page	Page 2 Full Page	Outside Back Cover Half Page	Back of Calendar Full Page	Calendar Quarter Page
10	$823	$1,387	$2,488	$4,734	$7,830	$7,560	$7,384	$6,858	$6,750	$2,700
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8	$750	$1,260	$2,242	$4,307						
7	$665	$1,123	$2,014	$3,834						
6	$590	$990	$1,782	$3,392						$1,890
5	$497	$837	$1,503	$2,860	$4,698	$4,536	$4,466	$4,104		
4	$405	$683	$1,223	$2,326						
3	$327	$550	$990	$1,886						$1,080
2	$232	$392	$704	$1,339						
1	$146	$246	$443	$842	$1,404	$1,296	$1,313	$1,080	$1,296	$810
Professional Directory Section Business Card Ad 10 Issues – $160 ($30 for each additional name on same card)										

Website Advertising Opportunities

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
❑ International E&P
❑ North American E&P (other than Gulf Coast)
❑ 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* _____

revised 7/30/14

Houston Petroleum Auxiliary Council News

Shirley Gordon, HPAC-HGS Liaison

Attention all spouses of Houston Geological Society members! (HGS members, please ask your spouse to have a quick read). All spouses of geologists, geophysicists, engineers, and landmen who belong to their respective professional organizations are eligible to join HPAC. HPAC is an organization designed to further friendships and common interests between spouses of HAPL, GSH, SPE and HGS.

On September 16th, HPAC was treated to a delightful program presented by the Brookwood Handbell Choir. The Brookwood Community in Brookshire was the ideal location. For those of you who missed this event, you missed a real treat. The facilities are beautiful. The chapel alone, in which the choir performed, is worth the drive. But let's not forget the food, nursery and gift shop. **Barbara Peck** and her committee consisting of **Jean Grogan** and **Gale Vilyus** did a fantastic job of planning a lovely day.

Our First Vice-President this year is **Bernadine Billard**, a native Texan with the majority of her life spent overseas. She is third-generation oil field and began her travels as a child. Her grandfather owned and operated his own oilfield business, and her father worked for Mobil. Bernadine worked as a traffic and shipping manager prior to her marriage to Alan Billard in 1982. In 1983 they transferred to Cairo, Egypt with Amoco, where they lived with their two daughters for 7½ years. She has also lived in Poland, Azerbaijan, England, and Brazil since then. Bernadine now devotes her time to Special Olympics, working with intellectually disabled athletes and their families as the representative for the State Sport Management Team of Texas. She is also an active member of several other committees, which keep her on the go traveling across country and abroad.

In a previous edition of the HGS *Bulletin*, you probably read of whom the executive board consists. They are the "spine" of our organization, but the other "bones" are the committees. To refresh your memory, our HPAC "spine" is currently made up of President **Norma Jean Jones**, First Vice-President **Bernadine Billard**, Second Vice-President **Wanda Shaw**, Secretary **Sara Nan Grubb**, Treasurer **Kathi Hilterman**, Editor **Janet Steinmetz** and Parliamentarian **Sally Blackhall**. The "bones" are **Mary Harle** and **Margery Ambrose**, Courtesy Committee; **Dianne Gittleman**, Notification Committee; **Wanda Shaw**, Yearbook Committee; and **Wanda** and **Mickey Murrell** comprise the HPAC Website Committee. Liaisons to the respective professional societies are **Sheri McQuinn** for HAPL, **Donna Parish** for GSH, and **Shirley Gordon** for HGS. At this time, we do not have a liaison for SPE. Clearly, it requires a lot of cooperation to have a successful organization like HPAC.

On August 3rd, the Book Club enjoyed a discussion led by **Edie Bishop** on **The Invention of Wings** by Sue Monk Kidd. Hostesses were **Wanda Shaw** and **Mickey Murrell**. The book for the November 2nd Book Club meeting is *Lost in Shangri-La: A True Story of Survival, Adventure and the Most Incredible Rescue Mission in World War II* by Mitchell Zuckoff. The discussion leader will be **Anita Weiner** and the hostess will be **Marge Shea**.

The two bridge groups are going strong. Please consider joining them for a lively game, all levels are welcome. One meets at the Petroleum Club on the third Wednesday of each month with **Daisy Wood** as chairman. You can reach Daisy at 832-581-3132 or 713-825-7952 (mobile). The other group *Cinco Mas*, chaired by **Audrey Tompkins**, meets the second Thursday of each month. Her number is 713-686-0005. Good cards help one to be a good bridge player, and some luck never hurts.

Our next HPAC meeting will be December 15th at the Racquet Club. Entertainment for this event will be the Uptown Dance Centre with "Highlights of the Nutcracker Ballet." Please call **Phyllis Carter** at 281-397-9888 for more information. ■

The Jones Girls, Margaret and Norma Jean

Lois Matzuk and Daisy Wood

Sally Blackhall & Wanda Shaw

You are invited to become a member of

HPAC

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

to **Wanda Shaw** • 1506 Haven Lock Drive • Houston, Texas 77077

YEARBOOK INFORMATION

Last Name	First Name	Name Tag
Spouse Name	Company	
Street Address	City State	Zip
Email Address	Home Fax	
Home Phone	Cell Phone (Optional)	Home Email Address

Please choose a committee assignment if you are interested.

☐ Fall Event ☐ Yearbook ☐ Bridge ☐ Membership

☐ Christmas Event ☐ Spring Event ☐ Notification ☐ Book Club

☐ Exploring Houston ☐ Courtesy

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