

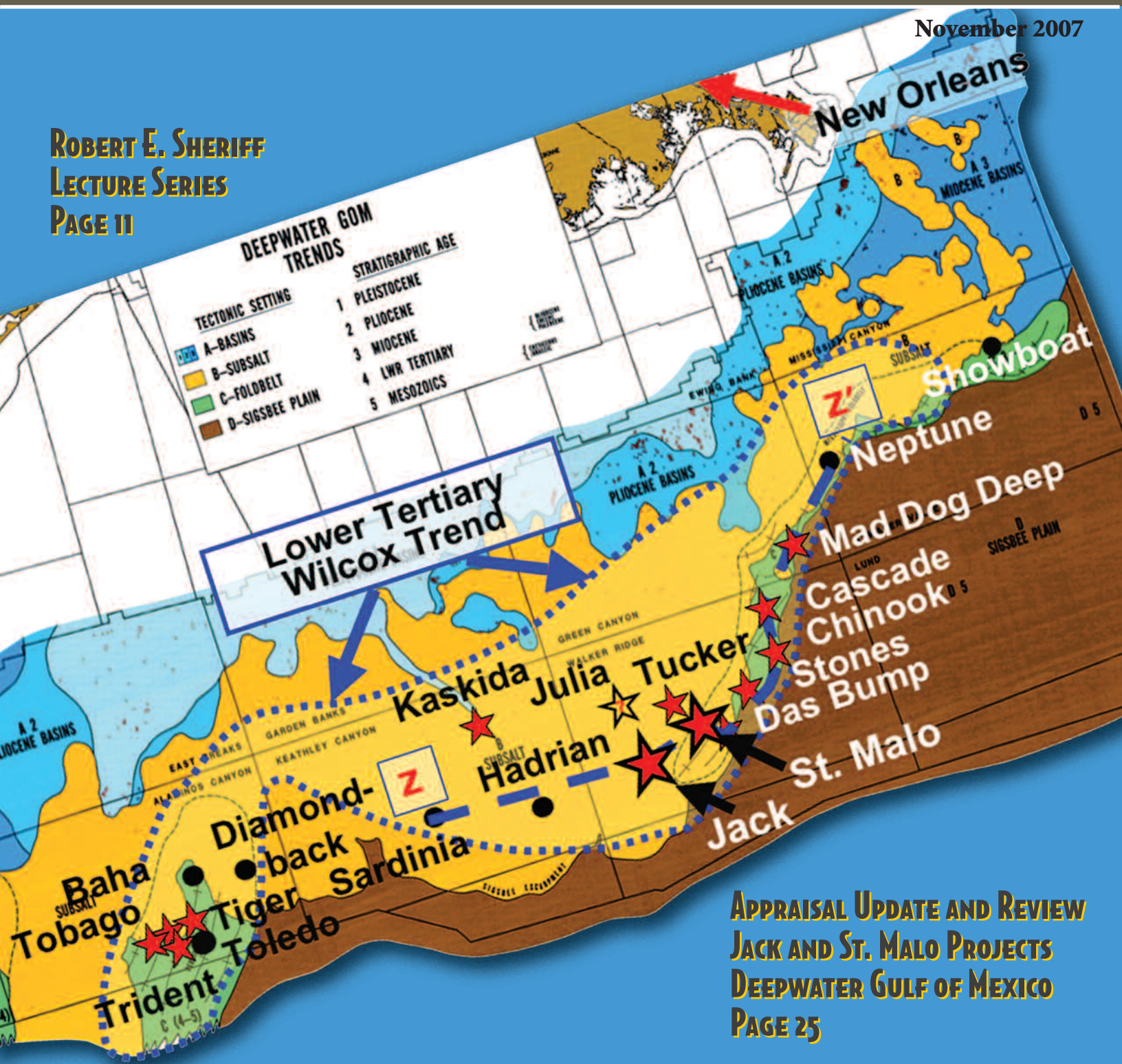
HGS Bulletin

Volume 50 Number 3

Houston Geological Society

November 2007

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APPRAISAL UPDATE AND REVIEW
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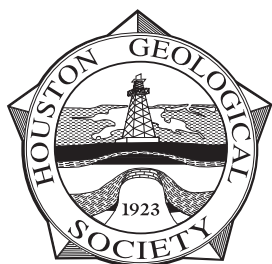
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The Bulletin

Houston Geological Society

Volume 50, Number 3

November 2007

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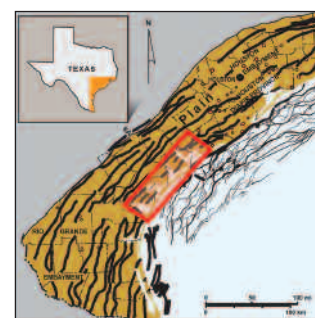
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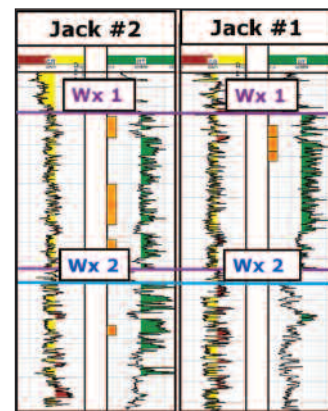
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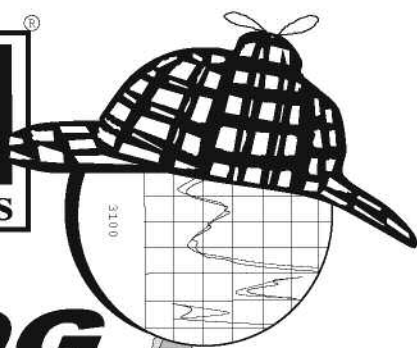
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by Linda Sternbach

Young Professionals Taking Charge of Key HGS Committees

The HGS recognizes the importance of young geoscience professionals in the petroleum and environmental geological community. I am happy to report that two important HGS committees, the NeoGeos and the North American Explorationists, are chaired by young geoscientists whose ideas are contributing to the revitalization of HGS's programs. In this column, I want to recognize the young leaders of the NeoGeos, Tim Gibbons and Dianna Phu, and the chairman of the North American Explorationists' Group, Mike Jones, for their ideas and contributions. I recently overheard the phrase, "The Great Crew Change," which I think aptly describes a hopeful feeling that the energy business is finally able to increase the number of professionals between 25 and 35 years old by offering attractive employment opportunities in this boom time of high oil prices. The new "Crew" has a lot to offer!

The HGS NeoGeos group was started as an HGS committee in 2000, seven years ago. The founding members are now "Eo-Geos," which I guess means an older NeoGeo. The



Timothy Gibbons

original founding NeoGeos have 7–10 years of industry experience under their belts. Denise Stone (former Secretary, VP and Past President of HGS) told me she fondly remembers organizing the first NeoGeos Happy Hour by email invitation in 2000, and being excited when young people actually showed up and were willing to staff the new committee! The goals of the young professional group are still the same seven years later: the NeoGeos are a social and networking group of Houston-based geoscientists

(energy, environmental, hydrogeology) who meet regularly (post-work happy hours) and organize programs of interest to young professionals with 0–5 years industry experience.

Timothy Gibbons took on the NeoGeos chairmanship (2007–2008) from past chairman Dianna Phu, who handled the committee for several years previously. Before going on I need to acknowledge other past NeoGeo organizers, including Natalie Uschner, Matt Boyd, Nigel Hicks, Kelly Latter and Andrea Reynolds, who today wear "Eo-Geo" monikers because they are well beyond being new hires in the industry.

Present chairman Tim Gibbons graduated from the University of Texas at Austin with an MS in geology in 2006, then went to work at El Paso Exploration and Production Company and joined HGS the same year. I asked Tim what he thinks attracts people to join NeoGeos. He thought maybe two seconds, and told me it was the networking and social aspects that are the main attraction.

He and Dianna Phu are using an expanding email list (currently about 300 people) and an Internet bulletin board to contact NeoGeo members and potential members and are very creative in using cost-effective ways to get messages out using email. Under Tim's guidance, the NeoGeos have been approved for increased funds from HGS to start including more programs and field trips in addition to the "Thirsty Thursday Happy Hour" each month, which has a group of 10–30 people getting together at a restaurant. Tim says he wants to especially thank Vivian Rohrbach, Amanda Beardsley and Lauren Petty as members of the NeoGeos committee for their organizational efforts. If you want to get on the NeoGeos email list, send an email to neogeos_houston@yahoo.com and check out www.neogeos.org.

I recently overheard the phrase, "The Great Crew Change," which I think aptly describes a hopeful feeling that the energy business is finally able to increase the number of young professionals between 25 and 35 years old

From the President continued on page 9

vrrooom!!.....

HGS Road Rally

A team or individual is given a packet with clues directing you to travel by car to secret cultural, historical, and geological sites in and around Houston. The team that answers the most questions based on the sites/clues and does it in the least mileage wins a trophy.

Coffee and donuts are included. The course takes 3 to 4 hours to complete and ends in a social event where trophies are awarded (meal/drinks not included).

WHEN and WHERE??

Saturday November 10, 2007 at 9:00 AM
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HOW??

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If you prefer to register by mail, please send the completed form along with a check made payable to the HGS Field Trip Committee, Road Rally Registration, 14811 St. Marys Lane, Suite 250, Houston, TX 77079

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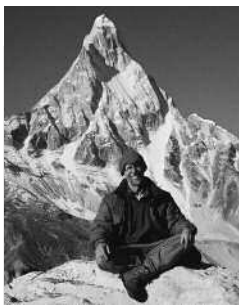
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..... *vrrooom!!*



by **Steve Earle**
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From the
Editor

From the
Editor

Random Thoughts on U.S. Energy Policy

November is a time for reflection. As we head toward the holidays, we can be thankful for another year of strong revenues and demand. Yet each boom seems to carry with it the seeds of the next bust. My thoughts are partly spurred by an interesting survey question, which asked where energy prices would be in 20 years: up, down or flat. I applaud the forward-looking approach, but I just had to laugh. I don't think there has ever been a 20-year period in which prices generally trended just one direction. A more appropriate question might be, "How many market corrections will we experience in the next 20 years?" Of course, you can substitute your own euphemism for "corrections."

This and other items in the news got me to thinking about U.S. energy policy. Energy "policy" as practiced here seems to bump and lurch along from one crisis to the next. The current high costs of energy have led to the predictable calls for taxing the "excess" profits, eliminating tax breaks or punishing the "price gougers." What is poorly understood is that, while we are talking about huge amounts of money, when measured against financial standards like return on capital employed, the oil and gas industry is a bit of a laggard compared with many sectors of the economy. The truth is that a healthy energy sector needs to continue attracting capital for its exploration and development work. Punitive measures do more harm to the overall economy than to the oil and gas companies, but somehow folks just feel better.

A sound energy policy should do two rather simple things in my view: first, it should improve economic efficiency; second, it should encourage a steady supply of energy and petrochemical feedstock here in the U.S. Of course, simple principles do not necessarily mean that the steps to carry these goals out will be easy or simple.

Efficiency can be found in many places. Conservation is one obvious example. Enhanced recovery projects that capture more

*A sound energy policy
should do two rather
simple things...it should
improve economic
efficiency (and)
encourage a steady
supply of energy*

of the oil or gas in place are another. Lower pollution and greenhouse gas emissions will also improve the overall U.S. economy in the long run. What is perhaps a bit less intuitive is the damage done by the incessant boom and bust cycles. Some rather specialized skill sets are employed in the oil and gas industry; however, when we allow the work force to be demolished in a downturn, then the

ability to ramp up again is severely compromised. We use lots of expensive equipment, but it requires properly trained and experienced people. The number of well-paid energy jobs lost in the mid-80s was an order of magnitude more than in other industries, so why was government falling all over itself trying to mitigate the pain in other sectors while turning a blind eye to us? These cycles are not only inefficient, they also work against a goal of steady supply.

Some economists have argued that less expensive foreign resources are more efficient and this is certainly true in the short term.

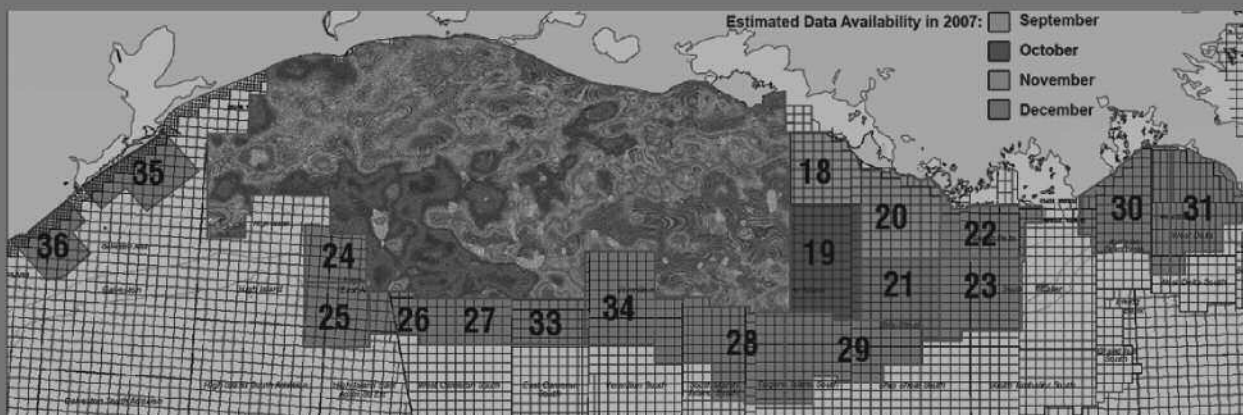
However, over the long haul, one needs to factor in the costs of reliance on foreign sources of oil. Those costs may include increased military expenditures and costs of a deteriorating global security situation. It seems to me that a steady supply here is still a worthwhile goal. Again, the economic cycles work against this.

The energy business is all about risk, but the successful companies are the ones who best mitigate those risks. We understand exploration risk, but financial risk can be even bigger. Whatever you might think about the futures market, its purpose is an attempt to mitigate against unfavorable price swings; the money made and lost there is substantial. Financial risk can be affected by government policies, so again, a good energy policy is one that helps the industry manage those risks while letting us differentiate ourselves in areas such as exploration where we have the expertise.

Both politicians and industry pay plenty of lip service to serving long-term goals, but more often than not, annual and quarterly targets drive most decisions.

From the Editor continued on page 9

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Dianna Phu has contributed to HGS as chair of NeoGeos, as advisor to our HGS website committee and as an organizer of student outreach efforts for AAPG, HGS, OTC and other geoclubs. Dianna works at Geoscience Earth and Marine Services (GEMS) here in Houston as a geologist and seismic interpreter. She graduated from the University of Houston with a BS in geology in 2000. Under Dianna's leadership, the NeoGeos creatively expanded their use of free Internet resources including creating a Yahoo user group and an HGS Bulletin Board for Internet postings. They use college alumni organizations at San Jacinto College, U of H and UT to forward the NeoGeos newsletter into the student community. Dianna told me one of her favorite NeoGeos experiences was a field trip last year to central Texas led by NeoGeo alumnus, Professor Tom Miskelly, and attended by 30 people with different geoscience backgrounds and their families. She believes NeoGeos events should be open to professionals from all geoscience backgrounds to keep the group's demographics broad and not narrowed to just geologists. Dianna can always think of better ways to get things done (which is why HGS gave

her the "Rising Star" award in 2007). She recently helped the HGS membership committee by recommending a low-cost printing company to help us create 10,000 HGS membership brochures.

Mike Jones is the chairman of the North American dinner meeting group, taking over from past chairman Steve Earle two years ago when Steve was elected HGS



Mike Jones

Bulletin editor-elect. Mike completed his BS in geology from Texas A&M in 2001 and his MS in geology from Texas Tech in 2003. He worked as an intern geologist for EOG Resources in the summer of 2001 and for Mewbourne Oil Co. in the summer of 2002. After graduation he became an independent geologist on retainer with Scout Petroleum, L.L.C., generating Gulf Coast oil and gas prospects. Scout Petroleum is a family business headed by Mike Jones' father, Thomas L. Jones, Jr., who became an oil and gas independent in 1979. Mike married a fellow geologist, Kelly Jones, who works at Amerada Hess, and they have a young family. In four years of actual industry experience, Mike has accumulated the equivalent of 10 years because of the intensive work experience of a small family business.

The North American group has plans to get more active beyond the dinner meetings every other month. Mike is very interested in adding members to the committee and possibly putting on a one- or two-day applied geoscience conference next year. Interested HGS members should contact Mike at mike@scoutpetroleum.com. The North American Group has been a resource of leadership talent for the HGS since it was formed in 1992. Past chairmen Steve Levine and Charles Sternbach have gone on to be presidents of HGS, and still have fond memories of leading the group's dinner meetings because the group focuses on onshore Gulf plays and midcontinent trends of interest to many HGS members. Mike Jones received the HGS "Rising Star" award in 2005.

In closing, I wanted to make one more comment on "The Great Crew Change." The young professionals' greatest asset is that they entered the business at a time when digital communication is both taken for granted and evolving really fast into all aspects of life. I think the HGS needs to rethink and retool the many ways we try to deliver Society benefits to our members and I hope the "New Crew" can offer help on our webpage and in our publications. ■

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From the Editor

continued from page 7

The same is true for government programs, which simply must show a return every two years (on the election cycle). Yet long-term issues are the real drivers to a sound energy policy.

I wish I had a comprehensive policy to offer, but it is all I can do to explore for and develop the oil and gas that we so desperately need. Perhaps you have some good ideas about what should be in a good energy policy? If you would like to share them with us, please write. My e-mail address is hgs_editor@earthlink.net. ■



HGS Shrimp Peel



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Geological Survey of Canada

Salty Tales: Numerical Investigations of Continental Margin Salt Tectonics

The study of continental margin salt tectonics has a long and illustrious history. Major advances in our understanding have come from the direct interpretation of data supported by analogue laboratory models. Numerical modeling of salt tectonics has to some degree lagged behind. We will show applications in which 2D finite element numerical modeling of salt tectonics, driven by gravitational spreading and gliding, can test mechanisms proposed from data interpretation and provide insight beyond that of analogue models. The models are not designed to simulate or mimic particular geological examples. Instead we are using simplified examples to under-

*The models also act as
“intuition enhancers” and
can help explorationists
visualize just how dynamic
salt tectonic systems can be.*

stand the underlying mechanical controls. Armed with this understanding we can predict the styles of salt tectonics that will develop under differing sedimentation regimes and explain the variations among natural salt tectonic provinces. The models also act as “intuition enhancers” and can help explorationists visualize just how dynamic salt tectonic systems can be.

Starting from the basic problem of the large-scale failure of frictional-plastic overburden above viscous salt and the seaward translation of the failed margin sediments, we investigate the requirements

Joint General and International Dinner continued on page 13

The Robert E. Sheriff Lecture Series and Dinner Meeting

The lecture series is sponsored by the University of Houston Department of Geosciences and UH Geoscience Alumni Association in association with the Houston Geological Society International Group.

University of Houston Geoscience Alumni Association (UHGAA) will MC the meeting. Dr. John F. Casey, Department of Geosciences Chairman, will present an overview of current activities at UH. There will be posters and presentations on current thesis and dissertation research of UH graduate students. Volunteers from the professional geoscience community will judge student posters. A list of posters is on page 15.

Come and meet the next generation of geoscientists from UH!

The Robert E. Sheriff Lecture Series was initiated in 1999 by the UHGAA. For the past several years it has been co-sponsored by the International Explorationists Group of the Houston Geological Society.

This series honors Dr. Sheriff as an educator, scholar and proponent of the geosciences. Its mission is to:

1. Bring some of the best known geologists and geophysicists in the world to the Houston community in order to share highly relevant ideas to exploration geology and geophysics, and
2. Showcase geoscience activity at the University of Houston.

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for failure, the ensuing flow velocity and the way in which structural components of this system evolve. We will consider a set of archetypal problems:

- 1) A dynamic model for initiation and early evolution of mini-basins (when the basin sediments are less dense than the salt);
- 2) An explanation of the basic styles of salt tectonics of the Scotian Basin, eastern Canada; and
- 3) The conditions required for the development of toe-of-salt fold belts, such as the Perdido Fold Belt of the Gulf of Mexico, by gravitational spreading.

We use the finite element models to calculate the large-scale deformation of the system during progradation and aggradation of frictional sediments above salt. Additional factors included in the models are the syn-rift geometry of a rifted continental margin with the associated thermal subsidence and tilting, the loading of the margin by seawater, and finally the isostatic response to the water and sediment loads which then modifies the margin geometry. Within the sediments the effects of pore-fluid pressure, which reduces their strength, and compaction, which modifies density and accommodation, are also shown to be important.

The lecture addresses the critical controlling factors for each of the problems listed above and includes some neat animations of the models. ■

Biographical Sketch

DR. CHRIS BEAUMONT is the Canada Research Chair in Geodynamics at Dalhousie University. His research interests include deformation of the lithosphere in orogens (e.g., Himalayas-Tibet), the mechanisms of burial and exhumation involved in ultra-high-pressure metamorphism, rifting of continents and the evolution of continental margins, subduction zones and back-arc basins, and salt and shale tectonics. A theme in his research has been the interplay between surface processes and tectonics, including the response of orogens and their foreland fold-and-thrust belts to erosion and sedimentation, and recently how sedimentation drives salt tectonics.



He has a BSc from the University of Sussex and PhD from Dalhousie University. Following a position as Cecil and Ida Green Fellow at the Institute for Planetary Physics UC San Diego, he joined the Earth Physics Branch in Ottawa and then Dalhousie University. He is a member of the Earth System Evolution program of the Canadian Institute for Advanced Research.

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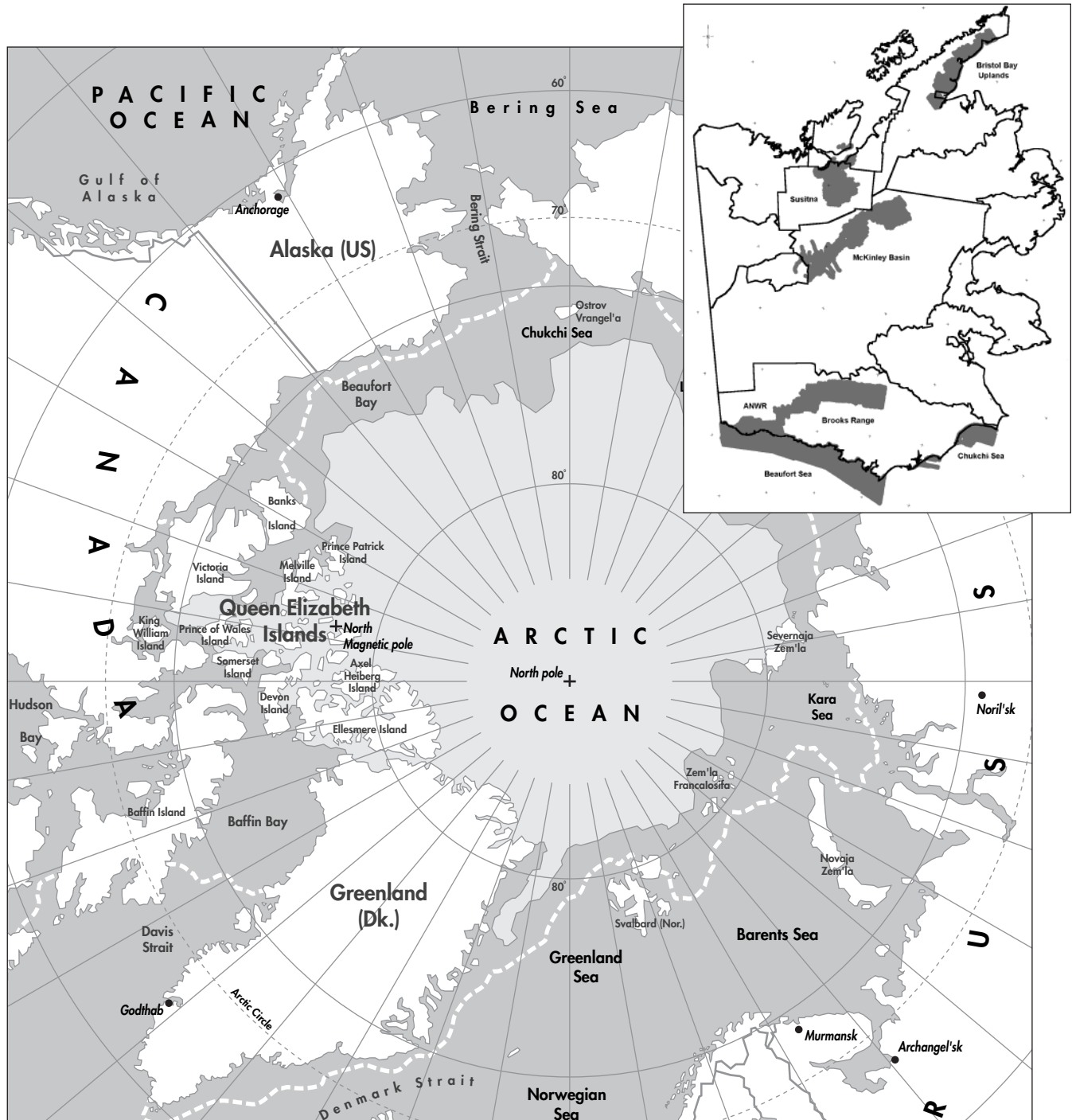
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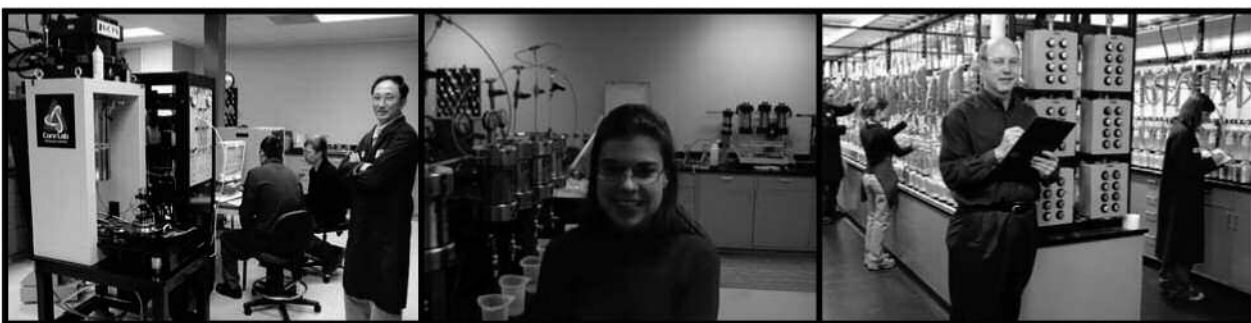
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Student Posters—R.E. Sheriff Lecture

STUDENT NAME	POSTER TITLE
Okechukwu Ileka	Wave Propagation in Porous Medium
Scott Falconer	Interpreter-driven Suppression of Acquisition Footprint
Sivaramakrishnan Nagarajan	Parallel Simulation of 3D Elastic Waves in Geologic Media
Erik Blankenship	Sedimentology and Structure of Gravitationally Collapsed Flood-dominated Mouth-bars in the Cretaceous “Notom Delta”, Ferron Sandstone Member, Utah
Lize Chen	Study of Strike-slip Faults in Sub-Himalayan Thrust Belt Using Remote Sensing and Seismic Data
Aziz Ozyavas	Application of Radar Altimetry and Multi-temporal Satellite Imagery to Confirm Climatic Changes Affecting Water Level of the Caspian Sea
Cecilia Ramirez	Ifsar and Lidar Studies to Estimate the Rate of Displacement for Active Faults In Houston, Texas, USA
Felipe Lozano	Shelf-margin Visualization Using Seismic Attributes
Haitao Ren	Spectra Crossplot
Hernán M. Reijenstein	Seismic Geomorphology and the Interplay between Structure and Fluvial Deposition from Shallow 3D Seismic Data, Gulf of Thailand
Weigo Li	Incised Valley Systems and Sequence Stratigraphy of the Notom Delta, Henry Mountains Region, Utah
Shenghong Tai	Using Attenuation Factors (Amplitude and Frequency) as a DHI
Yingqian Xiong	GIS in the Study of Bela Ophiolite
Damayanti Mukherjee	Dielectric and Ground-penetrating Radar Characterization of Shallow Reservoir Analogs in Central Texas Carbonates
Ana Petrovic	Remote Detection and Geochemical Studies for Finding Hydrocarbon-Induced Alterations in Lisbon Valley, Utah, and Garza Field, Texas.
Sergio E. Sarmiento	Tectonics of Mantle Exposure at Godzilla Mullion, Western Pacific
Sergio E. Sarmiento	Boron in Mid-Ocean Ridge Mantle Rocks
Ran Zhang	Deformation History of the Ayishan, Western Tibet
Sushanta Bose	Microbial Mat-induced Sedimentary Structures: An Indicator of Depositional Setting
Jian Huang	Whole-rock Trace Element Geochemistry of Metabasites and Basalts from the Bay of Islands Ophiolite in Western Newfoundland: Petrogenetic Indicator of the Origin of Obducted Lithosphere
Barry Shaulis	LA-ICPMS Analysis of Detrital Zircons in the Ouachita Orogenic Belt
Yijie Zhu	Sequence Stratigraphy of the Cretaceous Ferron Notom Delta, Utah
Hongmei Cao	Integration of Deformable Layer Tomography and Shot Gather Modeling for Pre-stack Velocity and Q Analysis
Rui Zhang	Moduli as Functions of Pressures
Heather S. Berglund	Infiltration Metasomatism in Stillwater Anorthosite
Heather S. Berglund	Mantle Rocks form the World's Largest Oceanic Core Complex, Godzilla Mullion
Carmen Barzoi	Trace Element Study of MORB Glasses from 14-16 North Mid-Atlantic Ridge by LA-ICP-MS
Kellen Springer	Relation between Elevation and Stable Isotope Composition of Snow in the Northern Wasatch and Bear River Mountain Ranges, Utah
Zhengyun Zhou	Fluid Factors from Three Types of Dataset: Well-logs, Angle-stacked Seismic Data, Impedances from Inversion
Ugo Odumah	Depositional Environment of the Catahoula Formation, Walker County, East Texas
Jie Zhou	The Biogenic Characteristics of Late Quaternary Caliches in Texas: The Role of Organisms and the Climatic Effect
Xuan Guo	Tufa Mounds in Searles Lake, California

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by Ursula Hammes, Hongliu Zeng, Robert Loucks and Frank Brown, Jr.

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All Fill—No Spill: Slope-Fan Sand Bodies in Growth-Faulted Sub-basins: Oligocene Frio Formation, South Texas Gulf Coast

Growth-faulted sub-basins in the Oligocene Frio Formation are major exploration targets along the South Texas Gulf Coast (Fig. 1). Historically, exploration has targeted on-shelf highstand and transgressive systems tracts and lowstand prograding-wedge systems tracts with great success. Companies have recently become interested in exploring for slope-fan sandstone reservoirs in lowstand growth-faulted sub-basins. However, the distribution, thickness and pathways of these gravity-transported slope-fan sandstones are not well understood and are more com-

plex than highstand transgressive systems tracts or lowstand prograding-wedge systems tracts (Hammes et al., 2005, 2007a).

*Correlating “first sands”
likely leads to an
erroneous interpretation.*

Slope fans are prolific reservoirs in the deep waters of the Gulf of Mexico and other types of continental margin settings (e.g., Mitchum et al., 1993; Straccia and Prather, 2000). The typical slope and basin-floor-fan

models in Pliocene and Pleistocene deepwater Gulf of Mexico basins are interpreted to exhibit a fill-and-spill sequence within one 3rd/4th-order minibasin (e.g., Pirmez et al., 2000; Hooper et al., 2002).

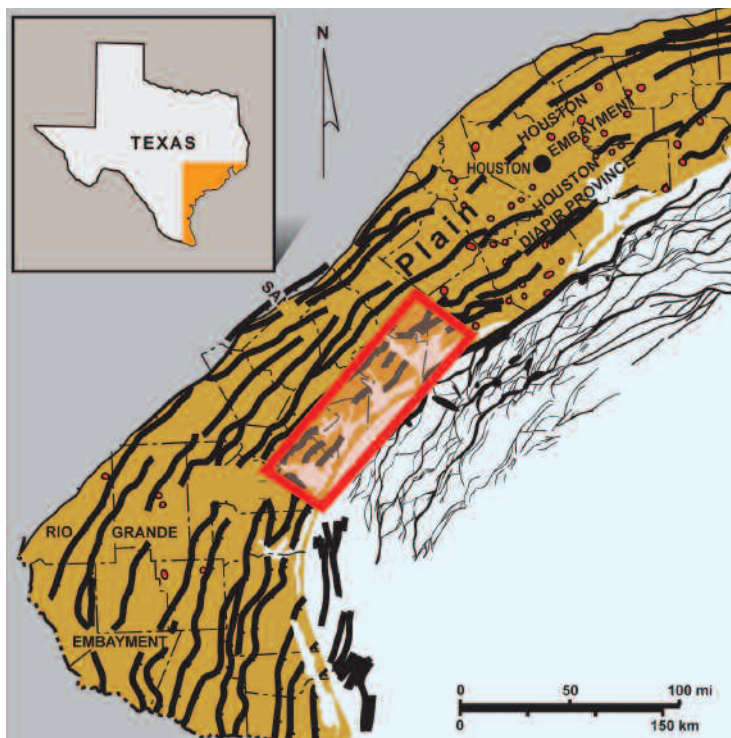


Figure 1. South Texas regional tectonic map and study area. Displayed are the growth faults that parallel the coastline. Note the absence of salt domes in the study area (indicated by the box). This area is dominated by mobile shale. The study is based on data from South Texas Bay areas. (Modified from Ewing, 1991)

In contrast, Frio slope fans in growth-faulted sub-basins fill the present accommodation space but rarely spill into the next sub-basin within a 3rd-order sequence because of an evolving sediment ridge. The growth-faulted Frio Formation sub-basins resulted from early slope-fan sediments overloading a ductile substrate (basinal shale or salt) above a detachment surface (Brown et al., 2004; Hammes et al., 2005, 2007a). This led to mobilization and fold development of a sediment ridge during one 3rd-order lowstand of sea level (Fig. 2). Slope-fan systems with amalgamated channels and levees formed along the slope and terminated as lobe-shaped fan deposits. This produced downslope sediment ridges which ponded slope-fan sediments and kept them from spilling farther downslope onto the deeper basin floor (Fig. 3). Consequently, after a sediment ridge formed, all gravity-flow sedimentation was contained within its attendant sub-basin.

Overall, slope fans have limited lateral continuity because of avulsion of lobes in the slope-fan system (Brown et al., 2004). When correlating more proximal sub-basin slope-fan bodies to more distal slope-fan bodies, time stratigraphic rather than lithostratigraphic correlations

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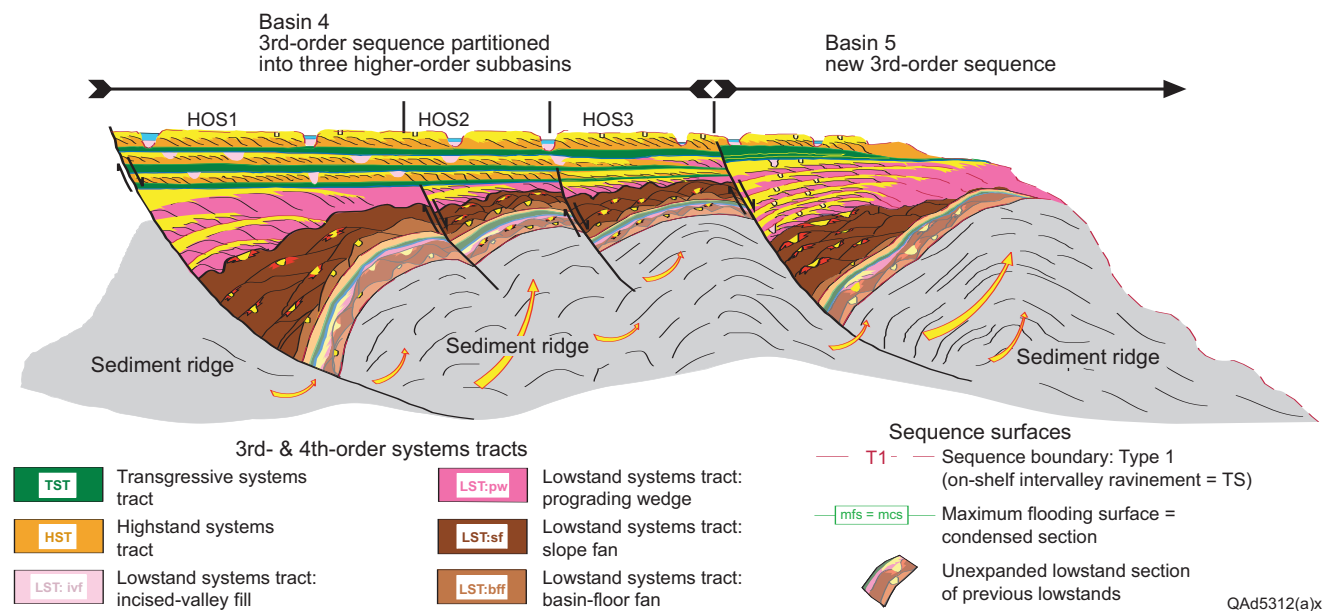


Figure 2. Conceptual model of slope-fan deposition in growth-faulted sub-basins (from Hammes et al., 2007b). Lowstand systems tract commences with basin-floor-fan deposition onto fine-grained basinal sediments. Slope failure along incipient growth fault creates a depression that serves as ponding basin for subsequent lowstand deposits. Slope fans are being deposited into the sub-basin, mobilizing the unconsolidated shaley basinal sediments. Growth fault initiates movement and slope fans develop growth and rollover into fault. Depositional systems prograde over the slope-fans, establishing a prograding wedge. Sediment ridge and growth-fault movement cease. Transgressive and highstand systems tracts complete sub-basin depositional sequence until a new sea-level lowstand occurs.

must be performed (Brown et al., 2004, their Fig. 9). Correlating “first sands” likely leads to an erroneous interpretation. As the prograding-wedge system prograded over these slope fans later during the lowstand, sediment-ridge and growth-fault movement ceased. Transgressive and highstand systems tracts completed the sub-basin depositional sequence. A new sequence will then begin with the next sea-level lowstand.

Production from slope fans in the south Texas Gulf Coast has been uncommon except in a few wells. Cumulative production ranges between 132 MMCF and 3.3 BCF and 5-130 thousand barrels of condensate. Porosities are typically between 10 and 25%, permeabilities range from <0.001 to 10 mD, and resistivities of productive intervals are generally between 2 and 3 and up to 10 ohms. Individual sands are 1 to 30 feet thick. The best production is associated with the absence of a water leg in association with a structural trap and located more proximally to the growth fault. ■

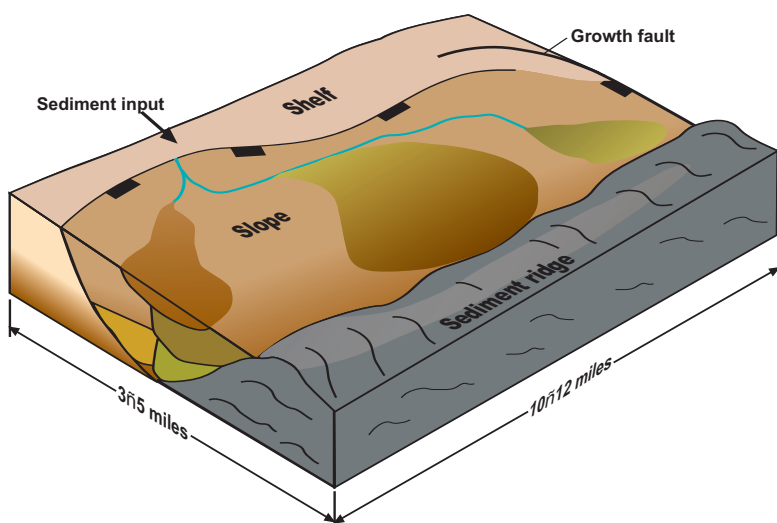


Figure 3. Frio growth-faulted sub-basin model showing slope-fans being trapped behind sediment ridge and slope channels aligning parallel to slope (from Hammes et al., 2007a). Slope-fans pond behind the sediment ridge that rose owing to loading of coarser-grained sediment onto fine-grained, muddy sediments. Note that no spill occurs beyond the sediment ridge into a subsequent sub-basin.

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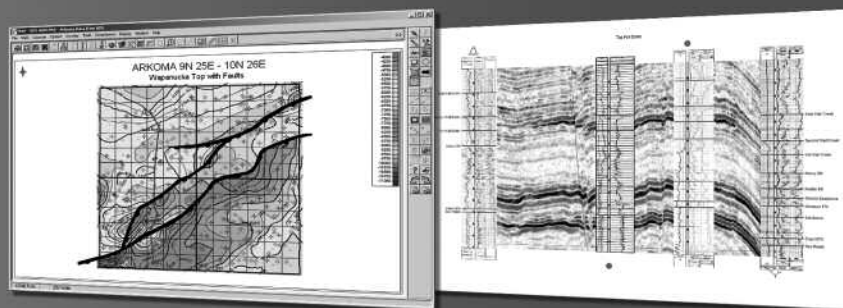
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All fill—no spill: slope-fan sand bodies in growth-faulted subbasins, Frio Formation, South Texas Gulf Coast: AAPG Annual Convention, v. 16, p. 59-60.

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Biographical Sketch

URSULA HAMMES obtained her diploma in geology from the University of Erlangen in Germany in 1987 and her PhD from the University of Colorado at Boulder in 1992. She spent 10 years working as consultant, performing postdoctoral research at the Bureau of Economic Geology and as an exploration geologist in industry. Dr. Hammes joined the Bureau of Economic Geology in 2001 as a Research Associate. Her main research focus is clastic and carbonate sequence stratigraphy, depositional systems, and carbonate and clastic diagenesis.



June 2009 Grand Canyon Geology Field Trip

Reservations are now being taken for a potential June, 2009 Grand Canyon Geology Field Trip rafting the Colorado River and studying the geology. Trip will be nine days including travel and the estimated cost is \$2600. A \$300 deposit to Hatch River Expeditions will be due in January, 2008. Trip begins and ends in Las Vegas.

Those interested please contact Dave Lazor at jdlazoroilngas@aol.com or call 360-829-2634.

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SIPES Luncheon Meeting

by **Tim Brown**
Sierra Resources

Time is Fact and Depth is an Opinion But We Drill Wells in Depth

Most of us sooner or later will have to deal with seismic data that is presented mostly in depth. Most of us also have available computer workstations to aid us. To repeat what an early supervisor explained to me years ago: "Tim, I don't know how others might do it but we drill our wells in depth, not time. Go back and bring me a depth map." That started a long quest to derive accurate depth maps from seismic.

Depth conversion can be simple or it can be complex. Mostly we need to make a judgment call on what our purpose is in converting to depth and what resources are available to us. This talk is one person's review of the different routes that are available to us and a judgment of their efficacy, as achieved through using one given workstation system. Although this presentation is geared to one software system, much of the same approach should be applicable on other systems. I will present two cases as examples of why this is not a trivial process.


One is a South Texas example where the objective is to convert time horizons from a merged multi-survey 3D data set that ties hundreds of wells with a demonstrated velocity range of over 1000 feet per second from the high wells to the low wells. Due to the volume of data this is not something that you would want to do by hand.

The second example is also from South Texas. Here the problem is a large "horse tailing" up-to-the-coast fault which is dying laterally combined with a large gas field with multiple stacked pays and apparent gas-saturated shales causing a local velocity slowdown. ■

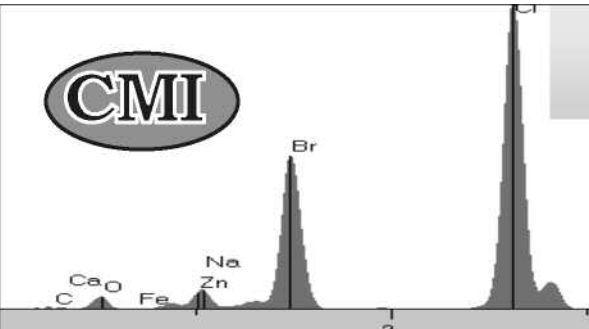
Biographical Sketch

TIM BROWN received a BA in geology from Duke University in 1965 and a Master of Science in geology from the University of South Carolina in 1967. Mr. Brown has over 38 years' experience in the oil and gas business. He has worked in most of the major basins in the United States along with international areas including the North Sea, Europe, the Mediterranean, South America, Indonesia, China and Australia. His past employers include Pan American Petroleum Corporation (Amoco), R. Brewer & Co. (international consulting firm, Executive V.P.), the successful oil and gas exploration firm TSB Exco Inc. and the highly respected oil and gas technology consulting firm Caex Services Inc, with the latter two both founded by Mr. Brown. Currently, he is Geophysical Manager for Sierra Resources LLC, Houston, Texas.





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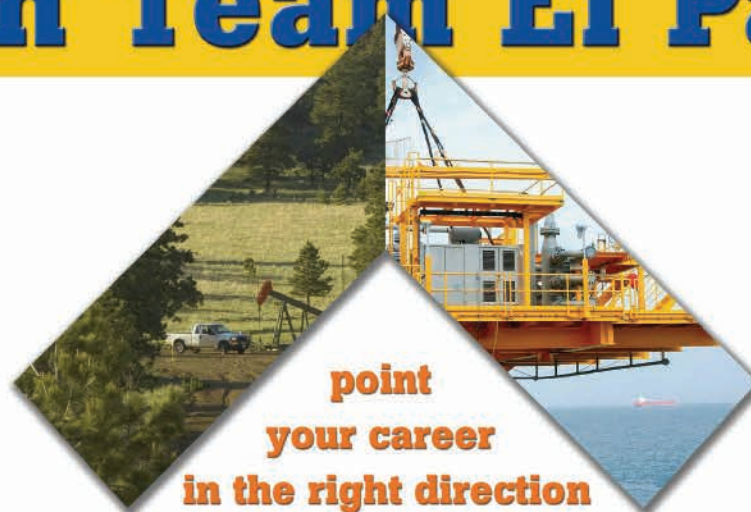
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by **Alison Steele Mandadi**
Steele Environmental Services, LLC

Ethics and Copyright: Challenges and Resources for the Professional Geoscientist

Under what circumstances is the reproduction of information allowable without first obtaining explicit permission from its owner? When is it a violation of the law? When we log onto the homepage of the Texas Commission on Environmental Quality (TCEQ) and see a copyright symbol at the bottom of it, how does that restrict our use of the content presented on that site? What about other websites where no copyright statement is provided? How should we evaluate our professional conduct in light of our vague perception that copyright abuse seems to be widespread in our society? What recourse can we pursue when we need to make a definite determination as to whether a specific professional decision might constitute copyright infringement? What do we do if we discover that we've accidentally appropriated or distributed protected content without authorization?

The complexity and interpretive latitude of copyright law can elevate daily professional choices from simple decisions based on "the law" into complicated ethical evaluations. We all photocopy professional materials and download information off the Internet. We all build upon the work of our predecessors. Most of

us work in the for-profit business sector. As licensed professionals, we must maintain high standards in our daily affairs; the common excuse "everybody does it" (e.g., makes and distributes photocopies) is not appropriate. This "awareness-level" presentation explores these issues and was developed in response to the Texas Professional Geoscientist (P.G.) annual continuing education requirement pertaining to professional ethics and conduct (22 TAC §851.32(d)). ■

*the common excuse
"everybody does it"
is not appropriate.*

Biographical Sketch

ALISON STEELE MANDADI, P.G. received a Bachelor of Science with Honors in geology from Acadia University in Nova Scotia, and a Master's degree in earth & planetary sciences from Washington University in St. Louis. She has 15 years of environmental consulting experience and is currently a Principal with Steele Environmental Services, LLC.



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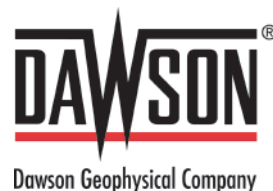
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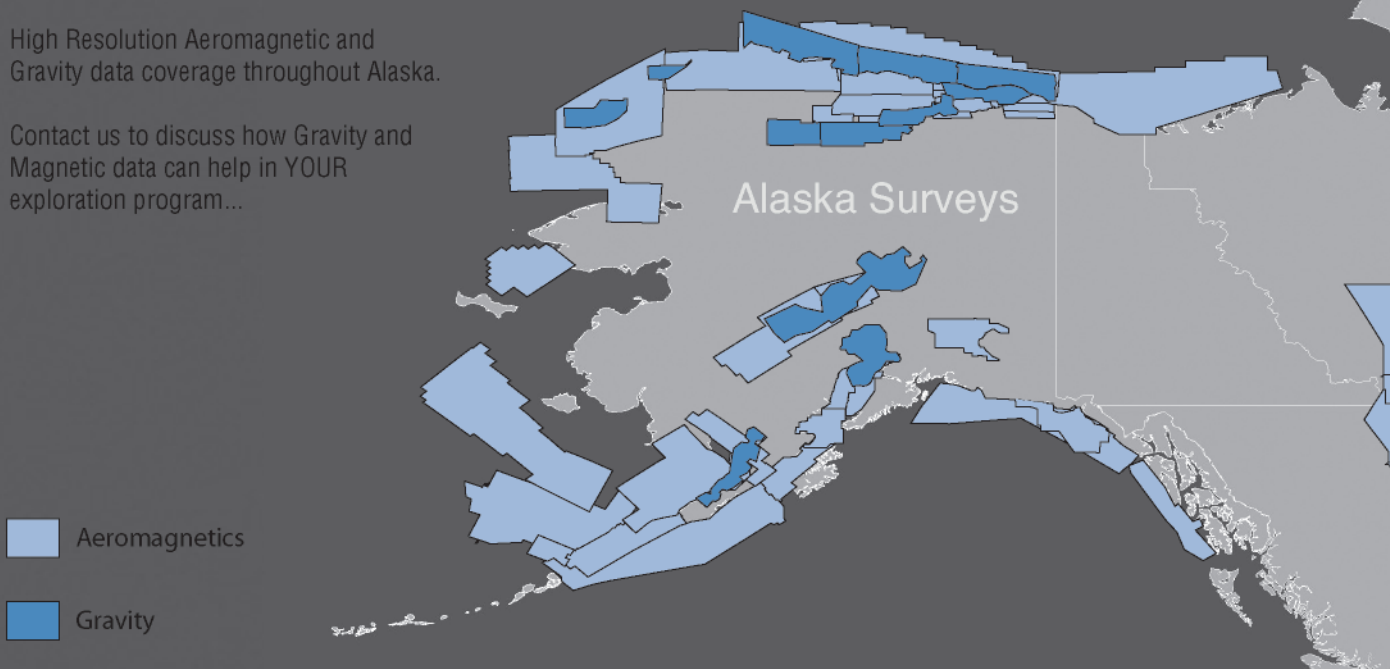


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Appraisal Update and Review, Jack and St. Malo Projects, Deepwater Gulf of Mexico

The Jack and St. Malo projects are part of an emerging Wilcox-equivalent Eocene/Paleocene Deepwater Gulf of Mexico play. Located in Walker Ridge 758, 759 and 678, approximately 250 miles southwest of New Orleans, the discoveries are four-way closures near the edge of the advancing Sigsbee Salt Canopy. The subsalt projects, each with two wells to date, are in ~7,000 feet of water and are separated by approximately 25 miles.

Jack and St. Malo reservoirs have several characteristics in common, including gross pay sections greater than 1000 feet, low-permeability reservoirs, large closures and significant volumes of oil in place. They also share common uncertainties, the most critical being reservoir quality and distribution. To

address reservoir uncertainty an extended well test was performed on the Wilcox 1 Reservoir in the Jack #2 well during the summer of 2006. The first flow test of the Deepwater Wilcox play to date, it flowed at a maximum rate of 6,000 BOPD with ~40% of the total pay section contributing.

They also share common uncertainties, the most critical being reservoir quality and distribution

Although the well test at Jack showed economic production rates can be attained from these reservoirs, the variability in permeability between wells is poorly understood. Permeability distribution across the structure remains the primary uncertainty for both projects, as well as the trend. The team is assessing the relative effect on permeability variation that resulted

General Luncheon Meeting illustrations on page 28, text continues on page 33

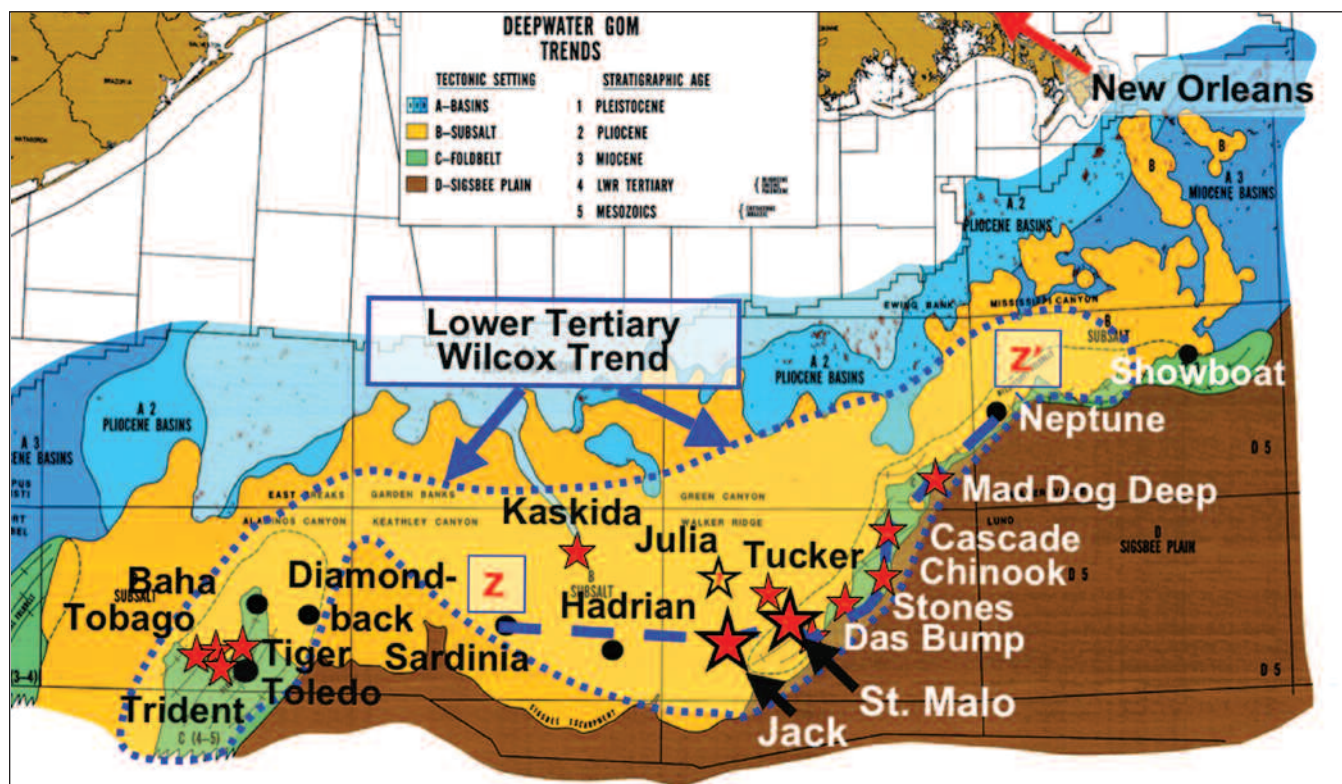


Figure 1: Gulf of Mexico regional map showing deepwater Wilcox Trend and a number of significant deepwater discoveries.

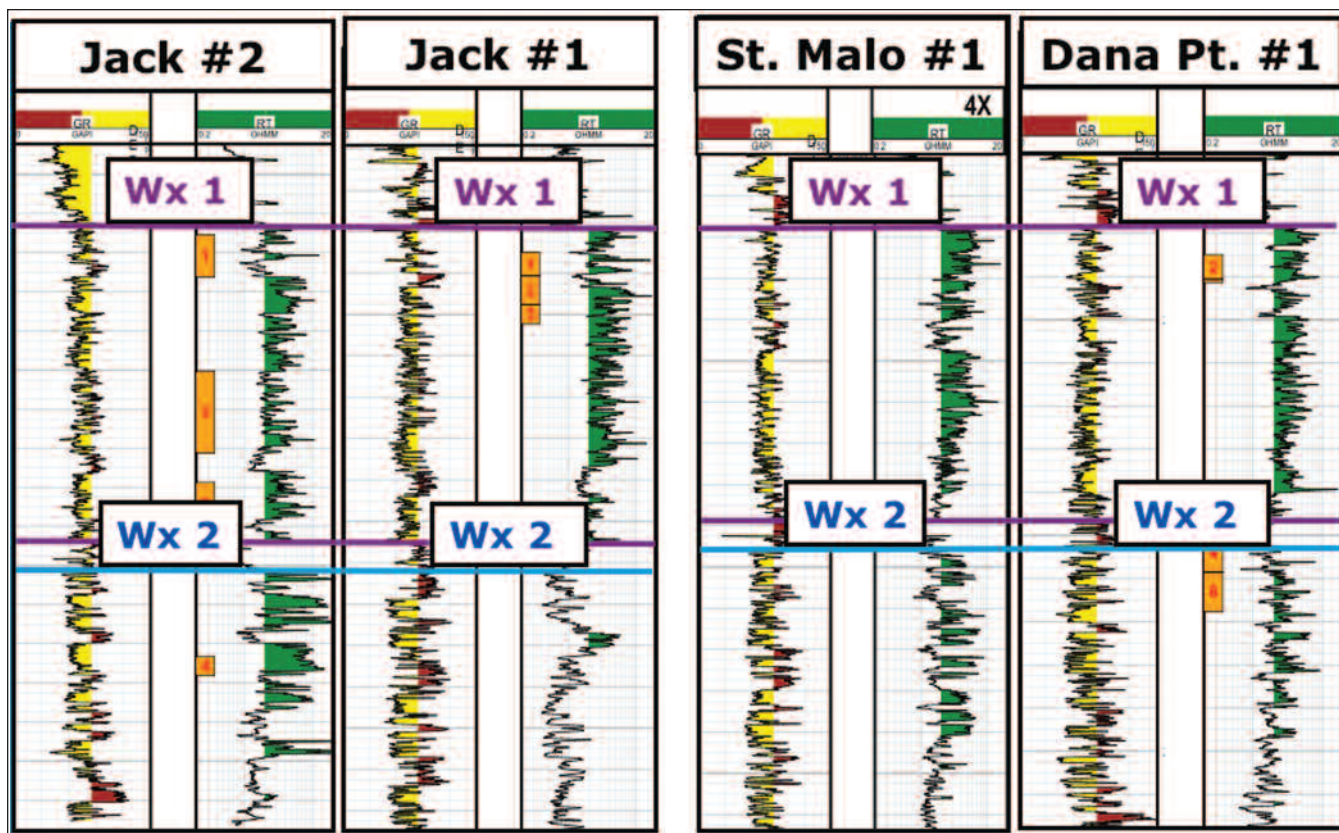


Figure 2: Stratigraphic cross-section through wells at Jack and St. Malo discoveries showing Wilcox 1 and Wilcox 2 pay sands.

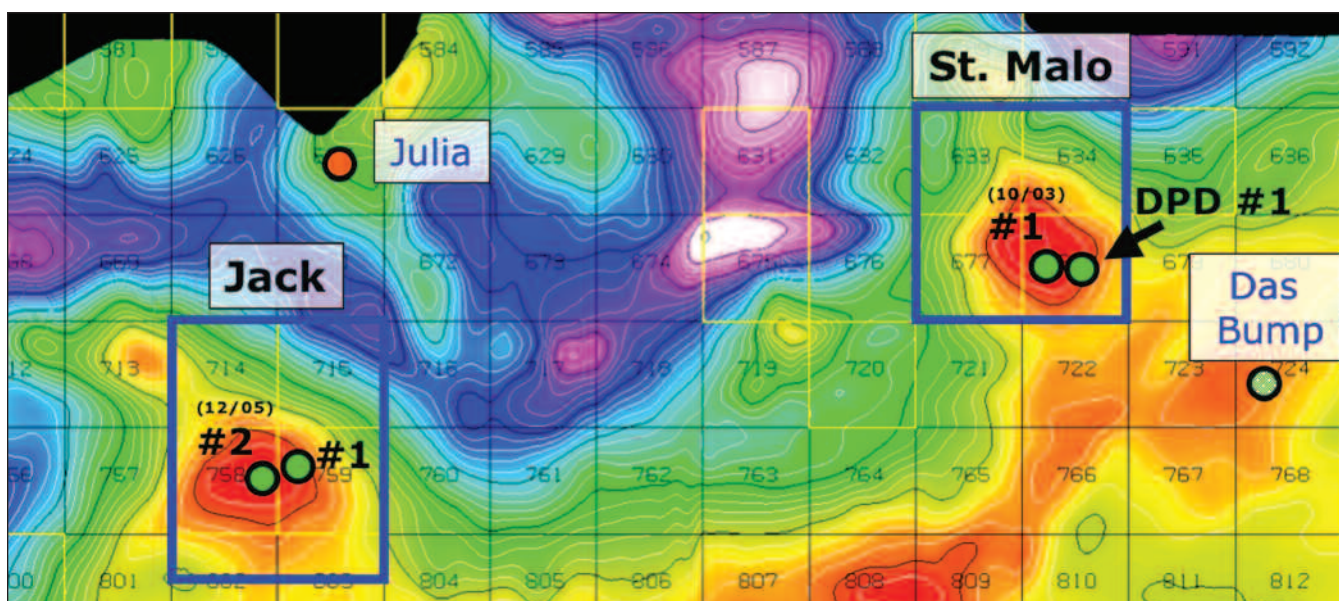


Figure 3: Wilcox Structure map showing relationship of Jack and St. Malo features in sub-regional trend.

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November 2007

Sunday

Monday

Tuesday

Wednesday



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4	5	6	7
11	12 Sheriff Lecture: Joint HGS International & General Dinner by Chris Beaumont, "Salty Tales: Numerical Investigations of Continental Margin Salt Tectonics" Page 11	13 HGS Northsiders Luncheon by Ursula Hammes "All Fill—No Spill: Slope-Fan Sand Bodies in Growth-Faulted Sub-basins: Oligocene Frio Formation, South Texas Gulf Coast" Page 17	14
18	19	20 HGS Environmental & Engineering Dinner by Alison Steele Mandadi "Ethics and Copyright: Challenges and Resources for the Professional Geoscientist" Page 25	21
25	26	27	28 HGS General Luncheon by Eric Stromboe "Appraisal Update and Review, Jack and St. Malo Projects, Deepwater Gulf of Mexico" Page 27

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GEOEVENTS

Thursday

Friday

Saturday

1	2 NOW you can make your reservations on-line at www.hgs.org	3
8	9	10 HGS Road Rally Page 6
15 SIPES Luncheon Meeting by Tim Brown "Time is Fact and Depth is an Opinion But We Drill Wells in Depth" Page 22	16	17
22 <i>Happy Thanksgiving</i> HGS office closed Thursday and Friday	23	24
29	30	 HGS Shrimp Peel Page 10



Upcoming GeoEvents

Saturday, December 1

HGS Shrimp Peel

page 10

December 2-5

GCSSEPM Bob Perkins Research
Conference

page 48

Monday, December 10

HGS General & North American
Joint Dinner

"Recognizing Reservoir
Compartments on Geologic and
Production Time-Scales through the
Integration of Stratigraphy, Structure
and Fluid Data in Deepwater
Reservoirs: An Example from Genesis
Field, Gulf of Mexico"
by Michael L. Sweet, ExxonMobil

Monday, December 17

HGS International Explorationists
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Tuesday, December 18

HGS Environmental & Engineering
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Speaker TBA

Monday, January 14

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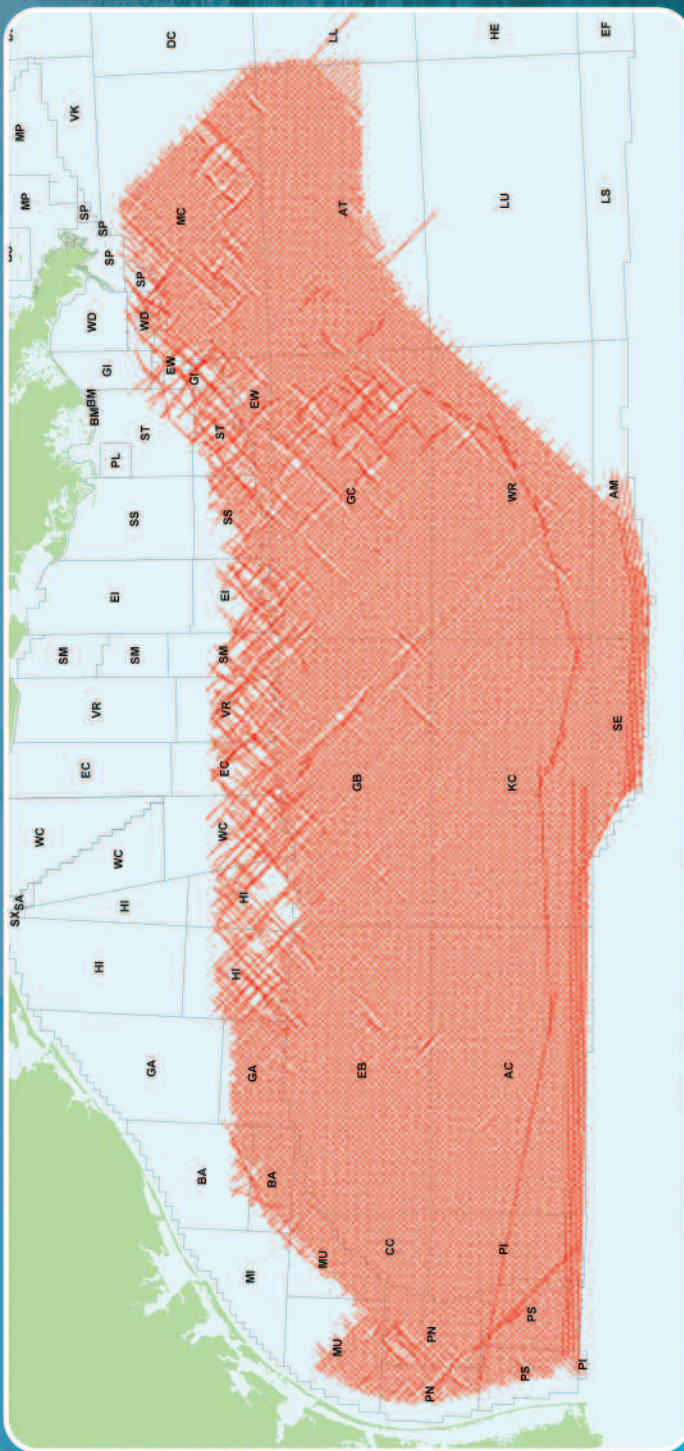
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from compaction and diagenetic histories, facies controls and structural movement. Petrologic studies, basin analyses and stress field analyses are currently under way at Jack and St. Malo to address the issue.

Additional subsurface uncertainties affecting Jack and St. Malo reserve calculations are structural closure, fault compartmentalization and fluid properties. Poor seismic imaging below rugose salt bodies makes the interpretation of closure and fault patterns difficult. In these large, gently dipping structures, slight interpretational differences result in significant reserve adjustments, and compartmentalization due to faulting can reduce recovery by limiting a well's drainage area and access to reservoir energy. Efforts to acquire better seismic images early in the appraisal and development process are ongoing. Acquisition of a wide-angle towed streamer (WATS) seismic survey over Jack is underway and a newly acquired 3D survey over St. Malo is in the final stages of processing.

Additional appraisal wells are planned for each project, with wells scheduled to be drilled in late 2007 and into 2008. ■

Biographical Sketch

ERIC STROMBOE is a geologist with Chevron Deepwater Appraisal in Houston, where he serves as Project Geologist for the Jack Discovery in Walker Ridge. A native of New Orleans, Eric received a BS in geology from Louisiana State University in 1986, and a MS in geology from the University of New Orleans in 1990. That same year, Eric joined Texaco where he worked South Texas for ten years, with a focus on exploring and developing the Wilcox Formation. After a brief period of time working the Gulf of Mexico Shelf, Eric moved to Deepwater where he spent five years developing the Petronius Field and exploring the Viosca Knoll Area. Eric joined the Jack/St. Malo Appraisal Team in May 2005.

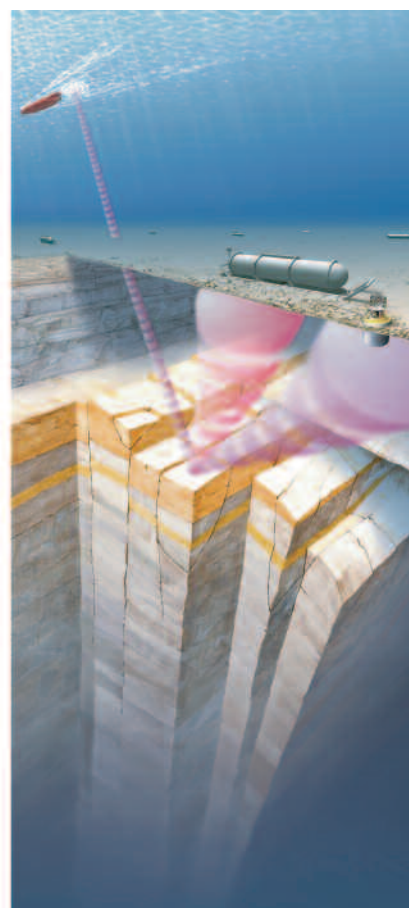


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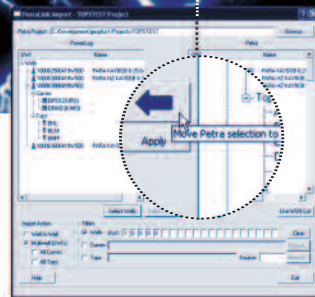
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Oil in a Basaltic Reservoir? West Rozel Field, Box Elder County, Utah

by **Beverly Blakeney DeJarnett**, University of Texas at Austin, Bureau of Economic Geology, Houston Research Center

The West Rozel Oil Field, Box Elder County, Utah, was discovered in the late 1970s by Amoco Production Company. West Rozel is a unique hydrocarbon accumulation in many ways. First, the reservoir consists of several stacked, fractured and vesicular Pliocene basalts. Second, the oil is only 4–9 degree API and contains 12.5% sulfur. The source of the oil has been identified as Miocene–Pliocene organic-rich lacustrine units that interfinger with the basalts (Milligan, 2005). If these factors aren't interesting enough, add to them the fact that the field lies beneath the northern margin of the Great Salt Lake.

West Rozel is a seismically defined faulted anticline with approximately 2,000 to 2,300 ft of closure and approximately 300 ft of oil column (<http://www.petrohunter.com/utah.php>). Three test wells originally drilled by Amoco encountered oil pay. Two of the three wells were put on hydraulic pump and produced more than 30,000 barrels of oil over a two-month period. Amoco ultimately chose not to develop the field due to the high water cut and costs associated with “offshore” development (Allison and Chidsey, 1993).

Amoco took three cores through the basalt reservoir in the later 1970s, and these cores are now housed at the Bureau of Economic

*the field lies beneath
the northern margin
of the Great Salt Lake*

Geology's Houston Research Center (HRC). The two core photos that accompany this article are from the Amoco #3 West Rozel and illustrate the vesicular and fractured nature of the basalt. Note that the vesicles (the circular holes in the core that represent gas bubbles present in the original lava flow) can be filled with either heavy oil (black shiny material) or diagenetic mineralization (white pore-filling material) as seen in the core from 2,417 ft. Also note the oil-filled fractures in both photos.

All cores at the HRC are publicly available and the collection is international in scope. Interested geoscientists can search for materials in all three of the Bureau's sample repositories through the online database at <http://begdb1.beg.utexas.edu/Igor/>. ■

References

- Allison, M. L. and Chidsey, T. C., Jr., 1993, Exploration Targets in the Great Basin of Utah. *American Association of Petroleum Geologists Bulletin*, v. 77:8, Rocky Mountain Section meeting of AAPG, Salt Lake City, Utah, p. 1441.
- Milligan, Mark, 2005, <http://geology.utah.gov/surveynotes/geosights/rozelpoint.htm>
- <http://www.petrohunter.com/utah.php> accessed 9-20-07

Rocks continued on page 37



Figure 1: Whole core from the Amoco #3 West Rozel, Utah, taken at 2,354 ft. Note heavy oil staining along fractures.







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The Texas Section of the Association of Environmental and Engineering Geologists is planning an important gala to be held on Saturday, February 9th, 2008.

"Lucy," discovered in Ethiopia by paleoanthropologist Dr. Donald Johanson in 1974, is making her world debut at the Houston Museum of Natural Science this fall. This is a once-in-a-lifetime opportunity to meet Lucy (the 3.2 million year old *Australopithecus afarensis*) presented by Dr. Johansen, her discoverer.

This special event was put together by the Texas Section to endow the new Texas Section Scholarship Fund, in cooperation with both the National Geographic Society and the Houston Museum. More information will be available soon, so mark your calendars for this very special event.

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Figure 2: Whole core from the Amoco #3 West Rozel, Utah, taken at 2,417 ft. Note white mineralization filling vesicles and old fractures appears to have precluded oil staining seen above.

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Recollections: Carbonates and Core Analysis

by Paul E. Babcock

I was fortunate very early in my career (1977) to learn a valuable lesson about cores (coring) as it relates to carbonate rocks. My employer, The Superior Oil Company, had discovered what would ultimately become a significant gas field (over 375 BCFGE to date) from the Edwards Limestone in the North Word Field of Lavaca County, Texas. After the discovery well, the field was being developed by the production department and full-diameter cores were still being taken in many of the early wells.

A minimum productive log pay cut-off for the field in the Edwards Limestone was determined to be a sonic porosity of 6% or better (maximum was 16%).

In one of the early wells drilled, the sonic log indicated that we possibly had a well, but the reservoir characteristics from the core analysis looked terrible, with essentially no reservoir rock. A completion AFE was being circulated with some working-interest participants already non-consenting the proposed completion.

The development geologist, Glen Pankonien, asked me if I wanted to go with him to look at the core at Core Laboratories. We saw that there was actually some very excellent reservoir rock in the core. So good, in fact, that the only place those rotary cores (from which the core analysis was derived) could be cut into the full core was in the tight mudstone facies. A large part of the full core

looked like Swiss cheese, with visible moldic or vuggy porosity that you could stick your pinkie finger into. The sonic log measures the fastest travel time through the rock; in this type of irregular vuggy porosity the fastest travel time was through the low-porosity matrix. This moldic porosity was not seen by the sonic log and the core-plug analysis was not representative of the reservoir.

Completion casing was run, and The Superior Oil Company picked up all the non-consenting interest that it could get. Subsequent to and because of this well, Superior started running whole-diameter core analyses on the critical pay sections.

Key Points –

- Understand what type of core analysis you are reviewing (plug or full core).
- Plug analyses in carbonates may be suspect and misleading.
- Visual inspection and description of any carbonate core is a worthwhile endeavor.
- Sonic logs cannot “see” or measure certain types of porosity.
- Integration of different data is critical to the best solution.

There is probably no surprise or argument as to any of these key points, but here is an actual example where the practical combination of these key points resulted in one company making a lot of money where other companies saw a “dry hole.” ■

*We saw that there was
actually some very
excellent reservoir rock
in the core.*



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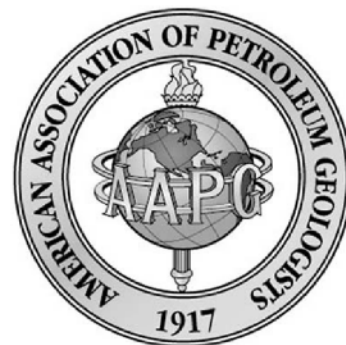
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Government Update

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

TBPG Proposed Amendments

The Texas Board of Professional Geoscientists (TBPG) proposes several amendments which will add language to make reference to the Texas Occupations Code. For more information go to <http://www.sos.state.tx.us/texreg/sos/PROPOSED/22.EXAMINING%20BOARDS.html#112>

TCEQ Proposes Changes to Radiation Control Rules

The Texas Commission on Environmental Quality (TCEQ) has proposed changes to its radiation control rules. The primary purpose of these proposals is to implement Senate Bill (SB) 1604, 80th Legislature, 2007, and its amendments to Texas Health and Safety Code (THSC), Chapter 401 (also known as the Texas Radiation Control Act, or TRCA). The bill transfers responsibilities for the regulation and licensing of source material recovery, by-product disposal, and commercial radioactive substances storage and processing from the Texas Department of State Health Services to the TCEQ. Although the technical requirements remain the same, these new commission programs will be integrated into and administered under the commission's existing radioactive material program requirements for application processing, public notice, public participation, licensing fees, financial assurance and enforcement. The proposed amendments to Chapter 37 establish the financial assurance requirements for licenses for uranium recovery, by-product disposal and radioactive substances storage and processing. SB 1604 also establishes a new state fee for disposal of radioactive substances and amends underground injection control requirements for uranium mining. The TCEQ will address new requirements in separate rulemaking actions. For more information go to <http://www.sos.state.tx.us/texreg/sos/PROPOSED/30.ENVIRONMENTAL%20QUALITY.html#516>

TCEQ Proposes Amendments to Drinking Water Standards

The TCEQ proposes amendments and new rules to implement federal regulations pertaining to the safety of drinking water from groundwater and surface water sources. The amendments will limit the exposure of the public to waterborne disease and enhance the customers' ability to know if there is something harmful in their drinking water. These rules and amendments are proposed in response to the United States Environmental Protection Agency (EPA) rule changes and are necessary for the state to maintain its primacy for regulating public water systems. For more information go to <http://www.sos.state.tx.us/texreg/sos/PROPOSED/30.ENVIRONMENTAL%20QUALITY.html#129>

TWDB Adopts Amendment to Groundwater Management Areas

The Texas Water Development Board (TWDB) has adopted an

amendment in response to a request to change the boundary lines for some previously designated and delineated groundwater management areas. Additionally, a software update results in seven digital files that collectively constitute a data set delineating the corrected groundwater management area boundary lines adopted by reference. A CD-ROM containing the data is located in the offices of the board and is on file with the Secretary of State, *Texas Register*. The updated CD-ROM contains all the geographic information system data used to create the boundaries as well as software and instructions on how to locate a specific area by coordinates or other means on a digital map. The same information can also be found on the TWDB web site at <http://www.twdb.state.tx.us>.

Error in NASA Climate Data Sparks Debate

As reported in *Geotimes* an error in calculations of mean U.S. temperatures has been found and 1934, not 1998 as previously reported, is the hottest year on record in the United States. NASA scientists contend that the error has little effect on overall U.S. temperature trends and no effect on global mean temperatures, with 2005 still the hottest year worldwide by far, followed by 1998. The data corrections have added new fuel to the climate change debate. The complete story is at http://www.geotimes.org/aug07/article.html?id=WebExtra081607_2.html

AGI Government Affairs Monthly Review (August 2007) White House Issues Research Budget Priorities for 2009

On August 14, 2007, the White House Office of Science and Technology Policy issued a memorandum to the heads of executive departments and agencies about budget priorities for fiscal year 2009. While Congress grapples with completing the fiscal year 2008 budget by October 1, 2007, the executive branch is working on next year's budget.

The memorandum emphasizes the President's American Competitiveness Initiative (ACI), whose centerpiece is a doubling of the National Science Foundation (NSF) Department of Energy's Office of Science and the National Institute of Standards and Technology core activities over 10 years. The memorandum calls upon these agencies to submit increases that "meet scheduled, ongoing facilities needs and provide for unique, high-value research opportunities." The memo also indicates that real increases for basic research at the Department of Defense should be a "significant priority."

As in past memos, the Administration favors federal R&D investments that improve the future quality of life; spur technological innovation, economic competitiveness and new job growth; enhance STEM education; maximize the effectiveness of the

Government Update continued on page 43

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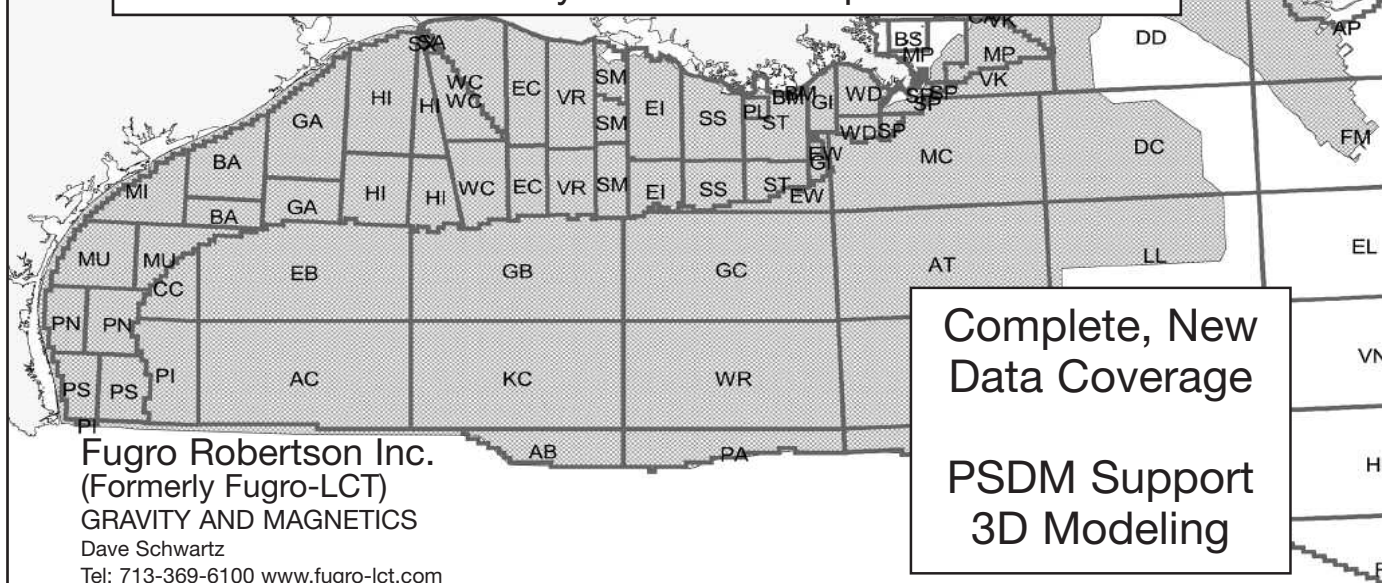
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science and technology enterprise through merit-based peer-review; and encourage interdisciplinary and international partnerships to accelerate scientific progress around the world. The Administration also favors “high-payoff activities that require a Federal presence to attain long-term national goals, especially national security, energy independence, and a next generation air transportation system.”

A new priority on the list this year and one that is of particular interest for the geosciences community is to “improve our ability to understand and respond to climate change and other global environmental issues and natural disasters through better observation, data, analysis, models, and basic and social science research.”

In a section titled “Energy and Climate Change Technology,” federal R&D should focus on energy security and greenhouse gas emissions reduction. Agencies should align their R&D portfolios to achieve two specific presidential goals: “1) to reduce U.S. gasoline consumption by 20 percent over the next ten years, compared to projections; and 2) to continue to advance the development of advanced energy technologies that effectively reduce greenhouse gas emissions, especially basic research targeting scientific and technical breakthroughs in such areas as zero carbon emissions coal and carbon sequestration processes, nuclear energy, energy storage, solar energy, and hydrogen fuel cell technologies.”

In a section titled “Environment” the Administration’s focus is on climate change, ocean science, water availability and Earth observations. All of these issues require strong support for geosciences research and development and geoscientific expertise. Agencies are directed to align their R&D budgets based on the following government reports related to these four issues:

- 2003 Strategic Plan for the U.S. Climate Change Science Program (<http://www.climatechange.gov/Library/stratplan2003/default.htm>)
- 2007 Charting the Course for Ocean Science in the United States: An Ocean Research Priorities Plan and Implementation Strategy (<http://ocean.ceq.gov/about/docs/orppfinal.pdf>)
- 2005 A Strategy for Federal Science and Technology to Support U.S. Water Availability and Quality
- 2005 U.S. Strategic Plan for an Integrated Earth Observations System (http://usgeo.gov/docs/EOCStrategic_Plan.pdf)
- 2007 Development of the U.S. Integrated Earth Observation System: Progress and Recommendations for the Way Forward (<http://usgeo.gov/docs/USGEO%20Progress%20Report%202007-0321.pdf>)

The full memorandum is available as a PDF file from the White House at <http://www.whitehouse.gov/omb/memoranda/fy2007/m07-22.pdf>

President Bush Issues Executive Order on Hunting

On August 16, 2007, President Bush signed an executive order calling for “Federal agencies that have programs and activities that have a measurable effect on public land management, outdoor recreation, and wildlife management, including the Department of the Interior and the Department of Agriculture, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.” Geoscientists involved with public land management will need to consider a list of actions in this executive order and geoscientists conducting field work on public lands will need to be alert to hunting activities that are being initiated or enhanced.

The full text of the executive order is available from the White House press office at <http://www.whitehouse.gov/news/releases/2007/08/20070817.html>

Judge Upholds Nevada’s Water Rights, Stalls Yucca Mountain Repository

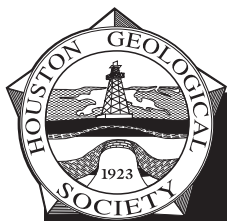
On August 31, 2007, a federal judge blocked the Department of Energy (DOE) from using water from nearby wells for cooling of drilling equipment or for gathering soil samples at the Yucca Mountain waste repository site. Judge Roger Hunt of the U.S. District Court for the District of Nevada denied an emergency motion by Justice Department attorneys to block Nevada state engineer Tracy Taylor’s cease-and-desist order asking scientists to stop taking water from the wells. Nevada has complained about the federal government’s increasing need for water, which has risen from about 15 to 80 bore holes and from 300,000 gallons to 3.5 million gallons of water.

The judge wrote, “there has been no act by Congress which pre-empts Nevada’s state water laws...The only public interest issue is whether state officials can be precluded from exercising their lawfully mandated duties, or whether a federal agency can run roughshod over a state’s rights or interests without specific authority and mandate to do the precise activities it wishes to do.”

The judge’s decision will delay or stop the DOE from collecting the necessary data for completing its license application to the Nuclear Regulatory Commission for constructing the repository as 77,000 tons of radioactive waste remain in temporary storage at nuclear reactors in 39 states and the nuclear energy industry lies latent with no solution to current or new nuclear waste disposal.

The judge did not decide the merits of the case which has yet to be resolved; instead he only blocked the Justice Department’s motion. While the action underscores the importance of state water rights, it does not resolve the primary problem leaving a

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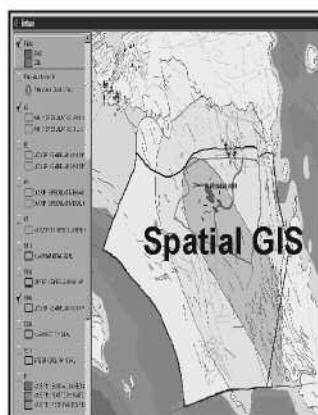
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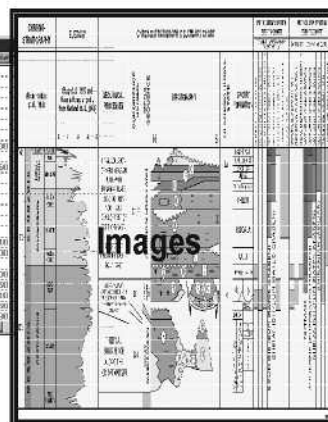


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quandary for DOE and Nevada, with the scientists and engineers caught in the middle. The Yucca Mountain water battle will continue in the courts and portends the likelihood of future water battles at the local, state and national level for a host of reasons beyond this massive waste repository.

Mining Rule Revised and Open for Comment

The Office of Surface Mining released a revised stream buffer zone rule in the August 24, 2007, edition of the federal register. The original 1983 rule forbid mining within 100 feet of a stream or a river and the revision will allow mountaintop and underground mining near streams and rivers and in particular allow the disposal of mine waste into river and stream valleys. Since the introduction of the 1983 rule, many states have used rather liberal interpretations and allowed mining close to streams and rivers, particularly in West Virginia, Virginia and Kentucky. An environmental impact statement that accompanies the new rule indicates that between 1985 and 2001, about 724 miles of streams were buried under mining waste and a similar length is expected to be lost by 2018. The liberal interpretations and continued mining have led to significant court action by environmental groups and others to stop the practice with limited success.

Now the government is stepping in to revise the rule to remove ambiguity, reduce litigation and essentially allow unrestricted mining in coal-rich regions, particularly in Appalachia where the process has been allowed for decades and other solutions for the disposal of mine waste are limited by the topography.

The revised rule will be open for public comment for 60 days and more information about the rule is available from the federal register at <http://a257.g.akamaitech.net/7/257/2422/01jan20071800/edocket.access.gpo.gov/2007/E7-16629.htm>

Safe Drinking Water Web Site Debuts

The U.S. National Academy of Sciences and the Global Health and Education Foundation are joining more than 125 science, engineering and medical academies around the world to take action on the global drinking water crisis by launching the Web site "Safe Drinking Water Is Essential," www.drinking-water.org.

The web resource will provide international decision makers with peer-reviewed scientific and technical information about drinking water distribution and treatment options. Unsafe drinking water and poor sanitation causes nearly 80 percent of illnesses in developing countries.

Member Societies Request Comments on Position Statements

Many of AGI's 44 Member Societies have position statements on a variety of issues. A full list is available from the Government Affairs web page at <http://www.agiweb.org/gap/resources/positionstatements.html>

As member societies develop new statements or revise old statements they solicit the comments and suggestions of their members. Below are two member society announcements requesting comments on position statements.

The American Geophysical Union is in the midst of updating and revising three of its position statements: teaching Earth science and evolution in the classroom, human impacts on climate, and understanding natural hazards and associated risks. The current statements can be found at http://www.agu.org/sci_soc/policy/ under the heading "Position Statements." Comments and suggestions regarding the three statements can be submitted to the EOS discussion page at <http://www.agu.org/fora/eos/>

The Geological Society of America's Panel on Energy and Mineral Resources, operating under the auspices of the Geology and Public Policy Committee, requests comments and suggestions from GSA members, sections, associated and allied societies and other interested parties on a draft GSA Position Statement on Government's Role in Energy and Mineral Resources. Please send your comments and suggestions to Jon Price at jprice@unr.edu, preferably by 25 October 2007. The full text of the draft position statement is available as a link on the GSA main page at <http://www.geosociety.org/>

Key Federal Register Notices

EPA Reviews Wetlands Mapping Standards

The Environmental Protection Agency (EPA) Office of Water is now undergoing a 90-day review and comment period for the Draft Federal Geographic Data Committee's Wetland Mapping Standard. This document provides wetland managers and others with information on what data to collect when mapping wetlands that will be uploaded to the National Wetland Inventory (NWI). To make a comment on the standard by November 9, 2007, please cite Docket ID No. EPA-HQ-OW-2007-0697 and send to oei-docket@epa.gov or visit <http://www.regulations.gov> and follow on-screen instructions. [*Federal Register*: August 7, 2007 (Volume 72, Number 151)] ■

EDITORS NOTE: A more complete version of this report will be posted on the HGS website.



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Book Review *by George O. Chandlee*

McPhee, J., *Irons in the Fire*, Published by Farrar, Straus & Giroux, Hardcover: 0-374-17726-0; \$22.00US, Paperback: 0-374-52545-5; \$12.00US

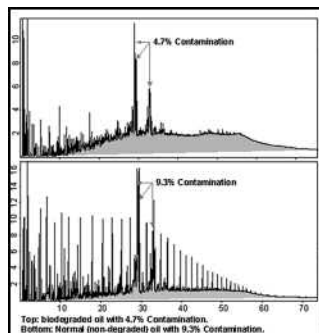
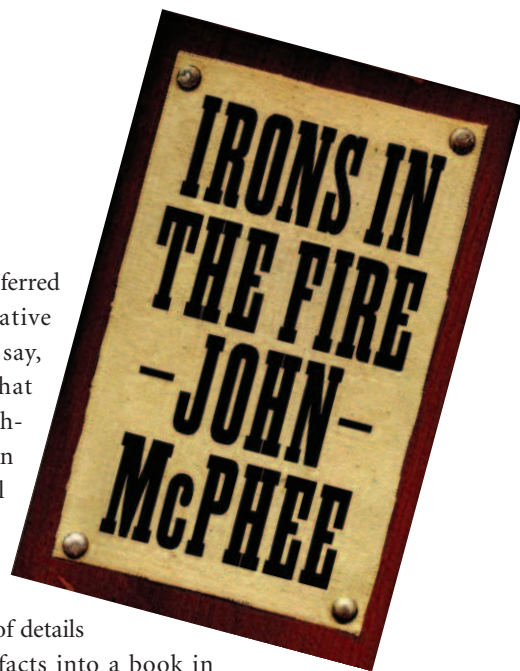
From time to time, information pertaining to geology crops out in unexpected locations. Seemingly unrelated material, such as in a compilation of essays or short stories, may contain information of more than passing interest to geologists. This review found its beginning in such a situation—that is, among a compilation of essays written by John McPhee and now published collectively in *Irons in the Fire*. This book review is about two essays from that collection of seven, all of which were published previously in *The New Yorker* magazine. (It may be that the far-ranging scope of the essays is reflected in the book's title, meaning “pursuing multiple opportunities simultaneously.”) These two essays deserve attention from geoscientists because of the way in which they detail real-world applications and results.

By way of introduction, John McPhee has been a staff writer for *The New Yorker* since 1965. Among other awards, he received the 1999 Pulitzer Prize (for general nonfiction) for *Annals of the Earth*. AAPG has twice (1982 and 1987) honored him with its Geosciences in the Media Award. McPhee's work has dealt with wide-ranging topics over several decades and has found a loyal

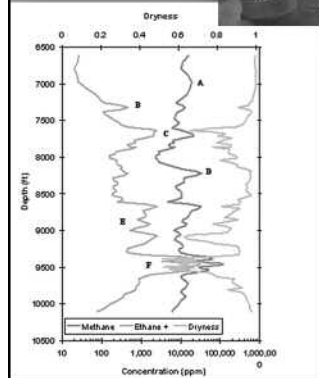
audience. He has been referred to as a pioneer of “creative nonfiction.” That is to say, works of nonfiction that incorporate literary techniques normally used in works of fiction. The final written product has similarities, such as detailed character description, articulation of details and the assemblage of facts into a book in which a reader readily becomes immersed, even with arcane or exotic topics. *Irons in the Fire* exemplifies this style.

The two essays reviewed here are “The Gravel Page” and “Travels of the Rock.” A general theme emerges from these essays that is of interest to geoscientists, and even to all natural scientists: keen, emphatic, unwavering dedication to observation and detailed, deliberate recording of observations. In reading the book, the

Book Review continued on page 49



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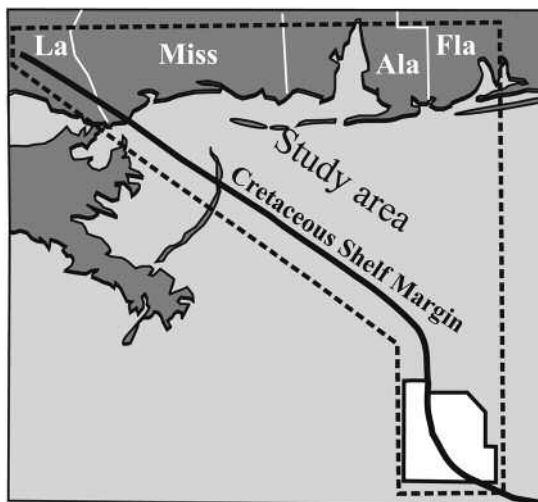
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reader senses this on two planes: a series of engaging stories, infused with detail and fact, as well as stories demonstrating the connection between facts and how they lead to an effective application of scientific observation and experience.

"The Gravel Page" is the longest essay in the collection. It discusses the role of forensic geology in solving intricate, seemingly intractable questions. McPhee provides several examples. One is the account of intercontinental balloons used by the Japanese during World War II. These balloons were launched into the atmosphere and carried by the jet stream, from Japan across the Pacific, to the West Coast of the United States. The designer, organizer and planner of this program was a general who orchestrated the launch of more than 9,000 bomb-laden paper balloons into the upper atmosphere aimed at western North America. Physical evidence of some 300 of these balloons has been found in North America. In fact, five American civilian deaths resulted from one of the balloons.

Geologists, in a special military unit associated with the intelligence community, were assigned the task of locating the balloon launch site, the goal being to plan a bombing strategy and cripple the production and launching of the devices. The balloon design included a cast-aluminum four-spoke wheel

festooned with sandbags as ballast. The sandbags were programmed for sequential release to control the "flight" of the balloons. By the time a balloon arrived and crashed in North America, most of the sandbags were destroyed, but a scattered few were found.

Deductive methods were used to establish the most likely launch location for the balloons. USGS geologists analyzed the sand recovered from the ballast. They identified the sand by using the microscopic remains of foraminifera and diatoms in it. Geologic maps and comparative mineral analysis were also used. In this way, the launching site was narrowed to three possible locations.

In another example, a United States Drug Enforcement Agency agent was murdered in Mexico in the 1980s. The case was widely publicized. As part of a cover-up planned by Mexican police officers, the agent's remains were exhumed and buried at a second location. When the body was recovered, rock fragments different from the native rock at the location of the second burial were found. These anomalous rock fragments came from the original burial site. Intensive research that combined petrographic examination and a detailed literature search of Mexican geological reports found the original burial location. The attempted cover-up was thereby revealed.

Book Review *continued on page 51*



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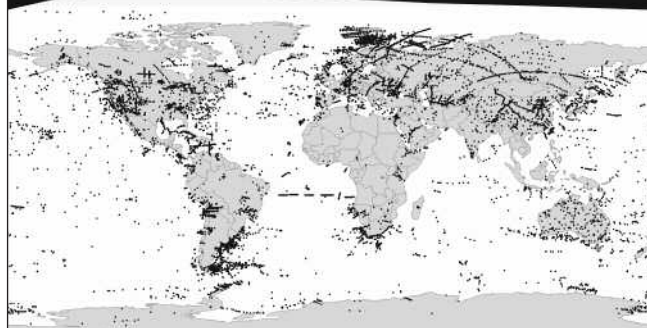
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The science of forensic geology deals with the application of scientific knowledge to legal problems. Its modern incarnation is codified in the textbook *Forensic Geology* (R.C. Murray and C.F. Tedrow, then professors at Rutgers University, published in 1975). This textbook demonstrates the direct application of geologic principles, practices and procedures to an array of forensic problems and legal issues. In "The Gravel Page" McPhee specifically looks at the applications and implications of forensic geology, and describes several crimes which geology was instrumental in solving.

The second essay of geoscientific interest is "Travels of the Rock." The writing creates an amalgam of topics encompassing the origin, composition and history of Plymouth Rock, the putative New World landing site for the Pilgrims in 1607. The story describes attempts to repair the rock, all in the context of the paleogeography of northeastern North America, the breakup of Pangaea, radiometric dating, geochemistry, mineralogy and a description of the strategies of a mason contracted to repair weather-induced cracks. Plymouth Rock is a glacial erratic. The rock has split several times and past attempts at repairs with mortar did not hold. Due to exposure to the elements, continued

cracking and splitting occurred until it was deemed necessary to have the rock repaired again. What is interesting about this story is the detective-like manner in which McPhee studies the composition and explores the possible origin of the rock and, as the title implies, how it got to its present location.

Notwithstanding the somewhat technical character of these essays, nearly any reader would find them interesting, first, because of the detail associated with the accounts, and second, because of the far-ranging scope of the topics. Those new to John McPhee's writing style will find the book engaging, geoscientists will learn about new (and perhaps unexpected) applications of geoscience and general readers will find these essays a fresh diversion.

To what end does this lead? Experience is gained from direct participation in events. These events form the basis of our personal knowledge. Direct experience is not always possible, given practical limitations; however, we can gain experience because others inform and communicate it to us. And so our universe of possibilities enlarges as these essays lead us toward broader horizons. ■



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- Round trip train fare from Houston or San Antonio to Alpine, van transportation to Study Butte from Alpine train station and back
- Breakfast on Friday and Saturday morning
- Lunch on Friday
- 2 cocktail hours and dinners
- Field trip guidebook

Registration Deadline: January 15, 2008
Must pay \$200 deposit by January 15th.
Balance due March 1, 2008.

Fill out Registration Form and mail (with deposit check) to:

If leaving from San Antonio:

Gary Henry
1812 Hanover Drive
Richardson, TX 75081
(make check payable to AEG)

If leaving from Houston:

Richard Howe
Terrain Solutions, Inc.
1778 W. Sam Houston Parkway N.
Houston, Texas 77043
(make check payable to HGS)

Don't miss this opportunity to experience an expertly guided field trip through Big Bend National Park!



Big Bend Geology Field Trip



Sponsored by:

**The Association of Environmental and Engineering Geologists,
Texas Section and Houston Geological Society**

REGISTRATION FORM

April 24-26, 2008

NAME _____

ORGANIZATION _____

ADDRESS _____

EMAIL ADDRESS _____

PHONE NUMBER (Please include home and mobile, if available.) _____

WILL BOARD TRAIN IN (circle one): **HOUSTON - \$495** **SAN ANTONIO - \$470**

PREFERENCE ON ROOM MATE AT HOTEL _____

(If no preference, you will be assigned a roommate of same gender.)

GENDER (circle one) **M** **F**

ANY SPECIAL NEEDS (dietary or other)? _____

WOULD YOU LIKE YOUR COMPANY ADVERTISED IN THE FIELD TRIP GUIDEBOOK?

(Cost - \$50.00 for a 2 x 3 company logo) **YES** **NO**

DEPOSIT OF \$200 DUE BY JANUARY 15, 2008

BALANCE DUE BY MARCH 1, 2008

Member of AEG? _____

Member of HGS? _____

AMOUNT PAID: _____

MAIL CHECKS TO:

If leaving from San Antonio:

(make check payable to AEG)

Gary Henry

1812 Hanover Drive

Richardson, TX 75081

If leaving from Houston

(make check payable to HGS)

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Terrain Solutions, Inc.

1778 W. Sam Houston Parkway N.

Houston, Texas 77043



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 diskette in Word format with a hardcopy printout to the Editor.

Figures, maps, diagrams, etc., should be digital files using Adobe Illustrator, Freehand, Canvas or CorelDraw. Files should be saved and submitted in .eps (Adobe Illustrator) format. Send them as separate attachments via email or on a diskette or CD if they are larger than 1 MEG 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 .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 1 MB) or on CD or zip disk.

Advertising

The *Bulletin* is printed digitally using QuarkXPress. We no longer use negatives or camera-ready advertising material. Call the HGS office for availability of ad space and for digital guidelines and necessary forms or email to ads@hgs.org. Advertising is accepted on a space-available basis. **Deadline for submitting material is 6 weeks prior to the first of the month in which the ad appears.**

Random Inside (Black & White)					Page 2 (B&W)	Inside Front Cover (Full Color)	Inside Back Cover (Full Color)	Outside Back Cover (Full Color)	Calendar Back (Full Color)	Calendar Page (Full Color)
No. of Issues	Random* Eighth	Random* Quarter	Random* Half	Random* Full	Full	Full	Full	Half	Full	Quarter
10	\$823	\$1,387	\$2,488	\$4,734	\$5,680	\$7,830	\$7,560	\$6,858	\$6,750	\$2,700
9	\$823	\$1,387	\$2,488	\$4,734	\$5,680					
8	\$750	\$1,260	\$2,242	\$4,307	\$5,169					
7	\$665	\$1,123	\$2,014	\$3,834	\$4,600					
6	\$590	\$990	\$1,782	\$3,392	\$4,069					\$1,890
5	\$497	\$837	\$1,503	\$2,860	\$3,432	\$4,698	\$4,536	\$4,104		
4	\$405	\$683	\$1,223	\$2,326	\$2,792					
3	\$327	\$550	\$990	\$1,886	\$2,262					\$1,080
2	\$232	\$392	\$704	\$1,339	\$1,607					
1	\$146	\$246	\$443	\$842	\$1,010	\$1,404	\$1,296	\$1,080		\$810
TWO-COLOR AD * add 15% to B&W charge for 2 color ad						BUSINESS CARD \$135 per 10 Issues – Send two cards (\$30 for each additional name on same card)				

HGS Website Advertising Rates

The HGS Website is seen by many people each day. In recent months, we averaged about 47,000 visitors per month. You have a variety of options for advertising your company, your job openings, or your services on the Website. There are two sizes of ads on the home page, a 165x55 pixel logo along the right-hand border and a new 460x55 Banner ad across the top.

We also offer a Banner ad across the top of our monthly Newsletters sent to registered users of the Website. Job postings are available for \$100 for 30 days on the Website but they must be geoscience jobs of interest to our members. Current HGS members may post their resumes at no charge. If you have a product or service available at no charge, you can post it in the Business Directory at no charge. Geo-related Business Cards and job openings may be posted directly by any registered user and members may post their own resumes. They will be activated as soon as practical.

To place a logo or banner ad or to get more information, send an email to our Webmaster (webmaster@hgs.org) or go to the Website at <http://www.hgs.org/ads/>

	Home Page Logo 165x55	Banner 460x55	Website Business Card (with link)	Web and Bulletin Business Card	Newsletter Sponsor Banner Ad (with link)	Personal Resumes (Members only)	GeoJobBank Posting
One year	\$750.00		\$60.00	\$150.00	\$2,000.00	Free	
6 months	\$385.00		NA	See note below*	\$1,150.00	Free	
3 months	\$200.00		NA		\$600.00	Free	
1 month	NA	\$250.00	NA		\$250.00	Free	\$100.00



Application to Become a Member of the Houston Geological Society

November 2007

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.

Annual Dues Expire Each June 30. (Late renewals – \$5 re-instatement fee)
Annual dues are \$24.00; full-time students and emeritus members pay \$12.00.

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

Card # _____

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)

Applicant's Signature _____ Date _____

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

Name: _____

Signature _____ Date _____

Membership Chairman _____ HGS Secretary _____

HGA and GeoWives News

What a pleasure to see so many members attending our event at Lakeside Country Club on October 12, 2007—but wait a minute! They were not just HGA members. This was one of our events shared with the other auxiliaries. As already announced, we are in the process of merging the Geological, Geophysical, Land and Engineering Auxiliaries under the umbrella HPAC (Houston Petroleum Auxiliary Council), but we still retain our HGA identity.

As usual, our event at the Lakeside Country Club was a success. Compliments for a superb job go to Chair Nancy Giffhorn (SPE) and her committee, formed by Winona Smith (HGA), Cathi Hilterman (GAH), Sherry McQueen (HAPL) and Pulette Williams (SPE). The fashion show by "Bags and More" was very appealing and practical. Our HGA models were Sally Blackhall, Suzanne Howell and Paige Moore. It was a very rewarding day with a special feeling of camaraderie!

GeoWives

Wow! The GeoWives launched their 2007–2008 season on Tuesday, September 18, with a sumptuous party at the beautiful home of Sholeh Huber, GeoWives President. To complete the day, James Parr, Director of Exploration and Business Development at Cabot Oil and Gas Corp., presented the latest trends in the oil industry. All members present enjoyed the informative and exciting news about our industry! We were most fortunate to have someone like James spend time with us and explain aspects of new technologies that are impacting and helping the discovery and extraction of oil and gas. James also covered the current business outlook and some interesting forward-looking scenarios that continue to make the oil patch such a dynamic business.

The GeoWives invite you to "Bring a Guest Night" at Magic Island, 2215 Southwest Freeway, on Saturday, November 3, 2007. Social starts at 6:30 p.m. and a candlelight gourmet seated dinner at 7:00 p.m. At 8:00 p.m. we will enjoy the magic and comedy show in the Palace of Tutankhamum in the main theatre. This Las Vegas-style stage production features master illusions with a touch of comedy by some of the world's greatest magicians. Wrap

up your evening with the wonderful sleight-of-hand tricks performed by strolling magicians in the Den of Osiris Lounge, try your hand at the fun blackjack table or have your fortune told by one of their famous psychics. Afterward, stay and dance to a variety of music played by Dee-Jay in the Temple of Isis.

Cost: \$46.00 - Cash Bar; Valet parking \$6.00

RSVP by October 26, 2007, to Sara Parr, 281-242-4415, or

Daisy Wood, 713-977-7319.

As a HGA member you are invited to join

GeoWives

2006–2007 dues are \$7.50

make check payable to GeoWives and mail to:

Daisy Wood

8800 Woodway Drive, #7 • Houston, Tx. 77063

Please provide the following

Name: _____

Street Address: _____

City/State/Zip: _____

Telephone: _____

email: _____

I will help plan a GeoWives activity ☐

I will serve on a committee ☐

Notification / Phone Committee ☐

Courtesy / Hostess ☐

My home is available for a meeting ☐

Cheated, Mistreated, Pushed Around?



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

Robert A. Chaffin

CHAFFIN & STILES

4265 San Felipe, Suite 1020 • Houston, Texas 77027

(713) 528-1000 • robert@chaffinlawfirm.com

You are invited to become a member of
Houston Geological Auxiliary
 2007–2008 dues are \$20.00 • Due by July 15th 2007

Mail dues payment along with the completed yearbook information to **Sara Parr**, 46 Dupont Circle, Sugarland, Tx. 77479

YEARBOOK INFORMATION



Last Name	First Name	Name Tag
Spouse Name	Name Tag	HGS Members Company
Home Phone	Business Phone	Business Fax
Street Address	City	Zip
Email Address	Home Fax	

Please choose a Committee Assignment










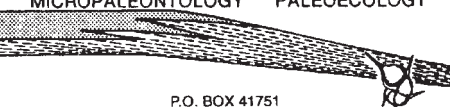



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|--|---------------------------------------|---------------------------------------|-------------------------------------|
| <input type="checkbox"/> Fall Event | <input type="checkbox"/> Yearbook | <input type="checkbox"/> SOS | <input type="checkbox"/> Membership |
| <input type="checkbox"/> Christmas Event | <input type="checkbox"/> Spring Event | <input type="checkbox"/> Notification | <input type="checkbox"/> Game Day |
| | <input type="checkbox"/> May Luncheon | <input type="checkbox"/> Courtesy | |

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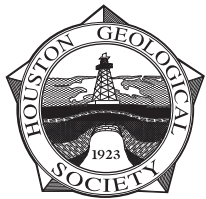
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