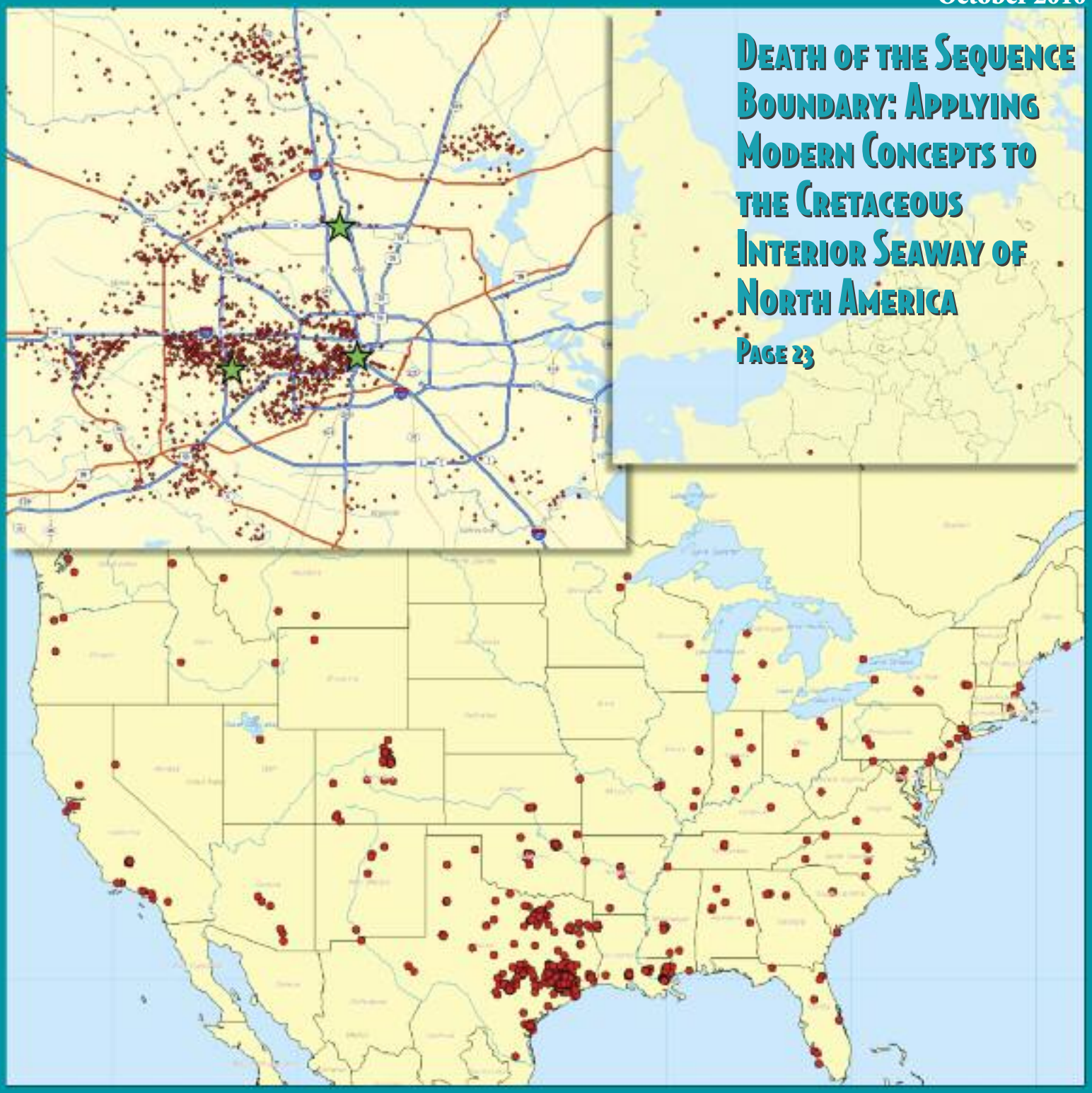
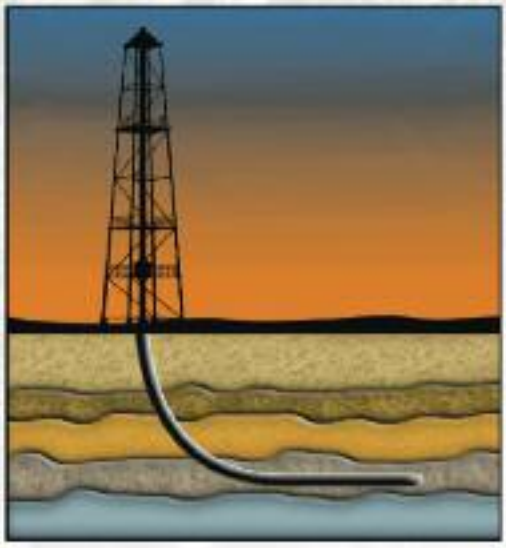
HGS Bulletin
Houston Geological Society
Volume 53 Number 2
October 2010



Death of the Sequence Boundary: Applying Modern Concepts to the Cretaceous Interior Seaway of North America

Page 23

Looking for Accurate Directional Data?



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The Bulletin
Houston Geological Society

Volume 53, Number 2 October 2010

In Every Issue

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Technical Meetings

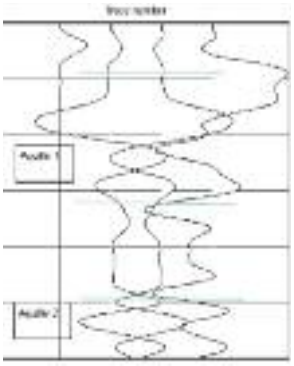
Other Features

About the Cover: Location map of HGS members and HGS lunch and dinner meetings. *Illustration by Greg Murrie.*

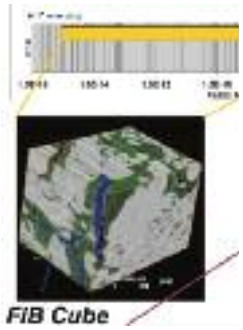
TIME TO RENEW YOUR MEMBERSHIP

page 4

page 6



page 18



page 21

page 35

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Your membership expired June 30, 2010

Annual dues are only $24.00
Emeritus members pay $12.00, Full-time students free

Check your email for a reminder notice and renew online at *www.hgs.org*

Alternately, you may fill out this form and return with your remittance—include your CURRENT EMAIL (important)

Name: _____

Member No.: _____ Type: Active__ Associate__ Emeritus__ Full-time Student__

Current Email: _____

Preferred Address for HGS mail and *Bulletin*:

_____

City: _____ State: _____ Zip Code: _____

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This is my home address _____ business address _____

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Send check and form to: HGS Office, HGS Membership Renewal, 14811 St. Mary's Lane, Suite 250, Houston, Texas 77079
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John Tubb, Jr.
jbtjr@sbcglobal.net

Where We Live

Did you notice the cover of this month's *Bulletin*? It shows a mosaic of where our members live around the world, especially in the Houston area. This was based on 3810 members from the 2008 HGS-GSH Directory. Over 2000 members reside in the Greater Houston area. Can you find your home? I could.

The green stars show the location of most of our technical sessions: General Luncheon downtown, General Meeting at the Westchase Hilton on Westheimer, and the Northsiders luncheon in the Greenspoint area. The Petroleum Club and the Westchase Hilton locations match up very well with the heaviest membership population centers. The Northsiders meeting is a luncheon held in the Greenspoiint area where several large petroleum companies have offices. As far as I know, no meeting has been tried for the Kingwood area or the area northeast of Highway 290. The Northsider group tried an evening meeting in the Woodlands area several years ago with very little attendance. It was believed that when the Woodlands area members arrived home from downtown, it was too late to go to HGS meetings.

I can do ideas, and I can do data, but I cannot do graphics. Thanks go to **Greg Murrie** with **Inexs** for doing the graphic's magic for me.

Technofest has been scheduled for July 21, 2011 at the Westin Oaks Hotel in the Galleria.

In other news, the Technofest held this past July was a great success. We had geoscientists attend from Midland, San Antonio, and Dallas. Next year, Technofest has been scheduled for July 21, 2011 at the Westin Oaks Hotel in the Galleria. Plan to attend. Congratulations to **Deborah Sacrey**, **Bonnie Milne**, **Jim Grubb**, and **Rene Mott** for putting on this great program.

Thanks go to **Rosemary Laidecker** for volunteering to be the Chairman of the Continuing Education Committee. We did not have a Chairman last year, although **Thom Tucker** did yeoman's duty as acting Chair. This committee plans and runs conferences and short courses throughout the year. If you have any ideas for an event, please contact Rosemary at rmlgeo@gmail.com.

Our first social event — the Golf Tournament — takes place at the Kingwood Country Club the 25th of this month. This event is chaired by **Mark Dennis** and is always well attended, so get your reservations in soon! ■

Laissez les bon temps rouler

HGS Welcomes New Members

New Members Effective August 3, 2010

ACTIVE MEMBERS

Olatokundo Adereti
Roberto Brunel
Nicola Capuzzo
Kimberly Hall
Donald (Ned) Lacombe
Lisa Majzlik
Joe McShane
Geoffrey Pang
Justin Polasek
James Schuelke
Karl Schwab
Rick Whitehead

ASSOCIATE MEMBERS

Nicola Coronis

EMERITUS MEMBERS

Carl Goldwater
Larry Jones

STUDENT MEMBERS

Daryl Alvarez
Eric Faul
Elizabeth Hardy
Laura Hoge
David Wearden

Welcome New Members

HGS Golf Tournament

Monday – October 25, 2010
Kingwood Country Club

Due To The Overwhelming Positive Feedback About The Earlier Start Time Last Year, We're sticking with a 10:00AM start.

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 (4 holes per course) and long drive (3 holes per course) as well as many great door prizes and raffle prizes for participants.

The entry fee is $125.00 per person or $500.00 per team on entries received before October 15th and $150.00 per person or $600.00 per team on entries received after October 15th. 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 (office@hgs.org), fax or mail with your entry fee (payable to HGS Entertainment Fund) to:
HGS Office
14811 St Mary's Lane, Suite 250 • Houston, TX 77079
713-463-9476 (office), 281-679-5504 (fax)

SCHEDULE OF EVENTS

8:00 – 9:45 a.m.	Registration and free use of driving range (Breakfast will be available at KCC)
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 Name**	**Phone Number/Email**	**Hdcp/Avg. Score**
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Barry Katz
BJKatz.HGS@gmail.com

TEKS, Taxes, and Earth Science Education

The extractive industries (oil, gas, and mining) are among the most important parts of the economy of the state of Texas. These industries account for about 11% of the state's gross domestic product. They also account for at least 6% of the state's tax revenue. Oil and gas provide for the employment of more than 350,000 Texas residents, whether born in the state or having migrated from elsewhere. When trickle down effects are accounted for, more than 700,000 people are employed as a result of the oil and gas industry in Texas. The oil and gas industries remain one of the reasons that Texas' unemployment rate remains below the national average.

Clearly a gap exists between the importance of earth science to the state's economy and the education program. How may we work to close this gap?

Clearly these industries are important to the state's fiscal health. One would, however, be hard pressed to determine this through an examination of the state's kindergarten through grade 12 science curriculum. You need to look very hard to find the earth science component. It is much easier to find biology, chemistry, and physics. Yes, the state does have among the strongest earth science programs at the university level, but without a strong K through 12 pipeline which feeds into these programs, why would someone decide to major in geology or geophysics? It almost appears that the school system is attempting to drive-out the inherent interest present in most students in fossils, rocks, and minerals, and the forces that change the face of this planet, such as glaciers, moving water, volcanoes, and earthquakes.

It may be argued that the extractive industries represent Texas' past and present, and that the education of our children and grandchildren should focus on preparing them for the future. A look, however, at future energy source profiles indicates that hydrocarbons will remain important, accounting for more than 25% of the energy used.

With that as a foundation, let's take a quick look at the earth science curriculum as a function of grade as represented by the Texas Essential Knowledge and Skills (TEKS).

- Kindergarten – identification, description and observation of rocks, soil and water as resources.
- 1st grade – concepts of recycling of water, rocks, and soils
- 2nd grade – hydrologic cycle and natural resources
- 3rd grade – observation, measurement, and recording of forces that cause changes in objects. This includes changes on Earth caused by weathering, subsidence, and earthquakes.
- 4th grade – the effect of past events on the present and future of the Earth using fossils, and changes in growth, erosion, dissolution, weathering and flow. Testing soil properties to learn the effects of the oceans on land.
- 5th grade – examination of the formation of landforms through constructive and destructive processes and the formation of the Earth's renewable, non-renewable, and inexhaustible resources
- 6th grade – the rock and hydrologic cycles as integrated systems and forces on Earth including, volcanic activity, tectonic uplift, and the flow of water.
- 7th grade – the alteration of Earth systems by natural and human activity.
- 8th grade – The sequence of events in the rock cycle, the role of oceans in climatic changes, and the impact of modifying the water, carbon, and nitrogen cycles. Prediction of land features resulting from mountain building, beach erosion, land subsidence, and continental drift.

Letter from the Editor *continued on page 9*

Gulf Coast Association of Geological Societies and the Gulf Coast Section of SEPM

Forming and Filling the Gulf of Mexico Basin– A Symposium

During the 60th Annual Convention

October 10-12, 2010

San Antonio, Texas

Hosted by the South Texas Geological Society

Welcome back to San Antonio! Our theme this year is "**Weathering the Cycles**" — a challenge that resource geologists have faced and overcome in the past. How do we weather the economic cycles? We…

- ✓ Network with our community
- ✓ Experience the latest technology in the technical exhibition
- ✓ Take a course or a trip and grow new and diverse skills
- ✓ Listen to special presentations on strategies to endure and prosper during an economic downtime and prepare for the inevitable rebound.

By celebrating our successes, facing our challenges, and learning from the research results of our peers, we are paid back many fold by sharing ideas and experiences among our professional community. So come and share your experiences!

PROPOSED SYMPOSIUM TALKS INCLUDE…

Rifting and Opening of the GOM Basin

Models for Gulf of Mexico Basin Opening and Sedimentation

Petroleum systems of the GOM Basin

Jurassic Depositional Systems, Facies and Reservoirs of the Northern Gulf of Mexico

Cretaceous Stratigraphy and Plays

Salt Tectonics and Petroleum Systems

The Opening of the GOM-Source Rocks and Petroleum Plays

Jurassic and Cretaceous in south Texas: Rifting and Foredeeps

Mesozoic Basins in Eastern Mexico

Mesozoic Source Rocks and Petroleum Systems, Offshore GOM Basin

Mesozoic Source Rocks and Petroleum Systems, Onshore GOM Basin

Future Potential of the GOM Basin Mesozoic.

Letter from the Editor continued from page 7

Beyond the eighth grade there are no earth science requirements. There has been a geology, meteorology, oceanography (GMO) offering, which is being replaced by an earth and space science class. In the GMO class, topics are taught such as plate tectonics, origin and composition of rocks and minerals, the rock cycle, processes and products of weathering, natural energy resources, interactions in the watershed, characteristics of oceans and the atmosphere, and global climate. Although a complete curriculum is present, very few students enroll in the class as a result of the limited time available for electives and the graduation requirements in biology, chemistry, and physics, which will have end of course (EOC) exams. Compare the 4688 students that completed GMO statewide in 2006-07 to the 337,443 that completed biology, 252,977 that completed chemistry, 93,363 students that completed physics, and the 258,234 students that completed integrated physics and chemistry (IPC).

Although the expectations for some of the grades appear reasonable with respect to course content, the actual time allocated to the material is quite limited. For example, it is my understanding that in the fifth grade only two weeks are allocated to earth sciences, with generally only an hour dedicated to science each day. Even smaller amounts of time per day are typically set aside for science in the lower grades. Furthermore, very often the teachers are ill prepared to present the material themselves, as only a few have been exposed to earth science while in school. This limited exposure and the lack of formal training in the earth sciences may explain why fifth grade students tested statewide in the sciences between 2006 and 2009 received the lowest grade in earth science. Nearly a quarter of the students were unable to establish a sequence of events or identify and describe the importance of earth materials as renewable, non-renewable, or inexhaustible resources. Eighth grade test results were even more disappointing, with only slightly more than half of the students being able to analyze the regional effects of erosion and weathering as well as how natural and/or human events may contribute to the extinction of species. These results explain the recommendations made at the Texas Education Agency 2009 Science Update Conference by Heydrick *et al.* to focus attention on earth and space science.

Clearly a gap exists between the importance of earth science to the state's economy and the education program. How may we work to close this gap? There are a number of possible solutions. Pick an elementary or middle school and donate a few hours to help present the earth science content. Who better than a real geologist or geophysicist to present this information to a class to get them excited about science that continues to challenge and excite each one of us? If you need presentation material let the HGS know, we will share resources. Bring along your rock, mineral, or fossil collection and have the kids describe what they are seeing and then you can explain the significance of their observations. Request a geologic map of the US from HGS. Discuss it with the students and then present it the school. Review and discuss the earth science curriculum, with teachers, administrators, and local and state officials. Make sure that the relevant concepts are being presented and that sufficient time is made available to master these concepts. Ensure that all involve understand that earth science is much more than "rocks for jocks". Inform the teachers you know of the HGS Earth Science Week (October 9-16) activities, which are described elsewhere in this month's *Bulletin* and take advantage of the activities yourself. Remember that if we don't become involved we don't have the right to complain. ■

Until next month…

Some additional material for Earth Science Week

If you are planning on visiting a classroom during Earth Science week there are some resources available at the USGS website education website (http://education.usgs.gov/) that you might want to review. There are also some information sheets available from the Geological Society (London) describing how geoscientists serve and protect the public at http://www.geolsoc.org.uk/gsl/education/resources/page2673.html. For those with access to a plotter there are also a number of posters that you can print and bring along.

- This Dynamic Planet - World Map of Volcanoes, Earthquakes, Impact Craters, and Plate Tectonics (http://pubs.usgs.gov/imap/2800/TDPfront.pdf)
- Minerals in Our Environment (http://geopubs.wr.usgs.gov/open-file/of00-144/of00-144.pdf)
- Mineral Resources - Out of the Ground Into Our Daily Lives (http://geopubs.wr.usgs.gov/open-file/of01-360/of01-360.pdf)
- Geologic Hazards at Volcanoes (http://pubs.usgs.gov/gip/64/gip64.pdf)

If you have access to the web while in the classroom you might want to check-out http://www.geolsoc.org.uk/gsl/education/resources/rockcycle, which includes a number of animations. ■

Monday, October 11, 2010

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

Cost: $28 Preregistered members; $35 non-members & walk-ups

To guarantee a seat, you must pre-register on the HGS website and pre-pay with a credit card.
Pre-registration without payment will not be accepted.
You may still walk up and pay at the door, if extra seats are available.

HGS General Dinner Meeting

Michael G. Moore
BHP Billiton Petroleum (Americas) Inc.
Houston, TX

Exploration, Appraisal, and Development of Turbidite Reservoirs in the Western Atwater Foldbelt, Deep Water Gulf of Mexico

The Western Atwater Foldbelt (WAFB) (Figure 1) in the deep water Gulf of Mexico has yielded several large oil fields that have a total resource potential of more than two billion barrels. Oil has accumulated in Middle and Lower Miocene age submarine fan reservoirs draped over large, salt-cored, faulted compressional anticlines and 3-way closures against salt /welds. The WAFB produces from six fields at the rate of about 400,000 BOPD with a cumulative production of more than 300 million barrels of oil. It has developed into an important oil-producing province that contributed about a quarter of the total oil produced in the Gulf of Mexico during 2009 (Figure 2).

Early exploration in the WAFB focused on large compressional structures partially visible beneath the southern edge of shallow salt. BHP Billiton and BP formed a partnership leading to the trend-opening discovery on the Neptune structure in 1995 and major discoveries at Atlantis and Mad Dog in 1998. Subsequent discoveries have been made at K2 (1999), Shenzi (2002), Tahiti (2002), Puma (2003), Knotty Head (2005), Pony (2006), Friesian (2006) and Heidelberg (2009). As seismic imaging has continued to improve, exploration has focused on deeper subsalt targets. The WAFB is still actively being explored with four recent exploratory wells and continued leasing activity in the 2010 GOM lease sale. The exploration success rate in the WAFB has been about 60%.

Exploration success in the WAFB has led to an extensive appraisal program to confirm the presence of economic resources. This has proved challenging due to the effect of shallow salt on seismic

HGS General Dinner *continued on page 13*

HGS General Dinner continued from page 11

imaging leading to uncertainties with regard to fault location and density. As a result, multiple appraisal penetrations are required for each structure, with an average of ten per producing field. Operators have had to drill additional appraisal wells after the start of production in most WAFB fields. Appraisal drilling has added significant resources on the north side of Atlantis and the west and south sides of Mad Dog.

Initial production from the WAFB began at the Mad Dog Field in January 2005. Other fields that have come on production include K2 (May 2005), Atlantis (October 2007), Neptune (July 2008), Shenzi (March 2009), and Tahiti (May 2009). Early production data suggest the following:

1) Good initial production rates with about half of the development wells flowing at a rate of more than 15,000 BOPD.
2) It will be a challenge to maintain production rates due to structural complexity, reservoir energy issues, and stratigraphic complexity in some areas.
3) Areas of poor subsalt seismic imaging result in increases in the difficulty of predicting well results. As a result, some production wells have been sidetracked, but fewer than planned.

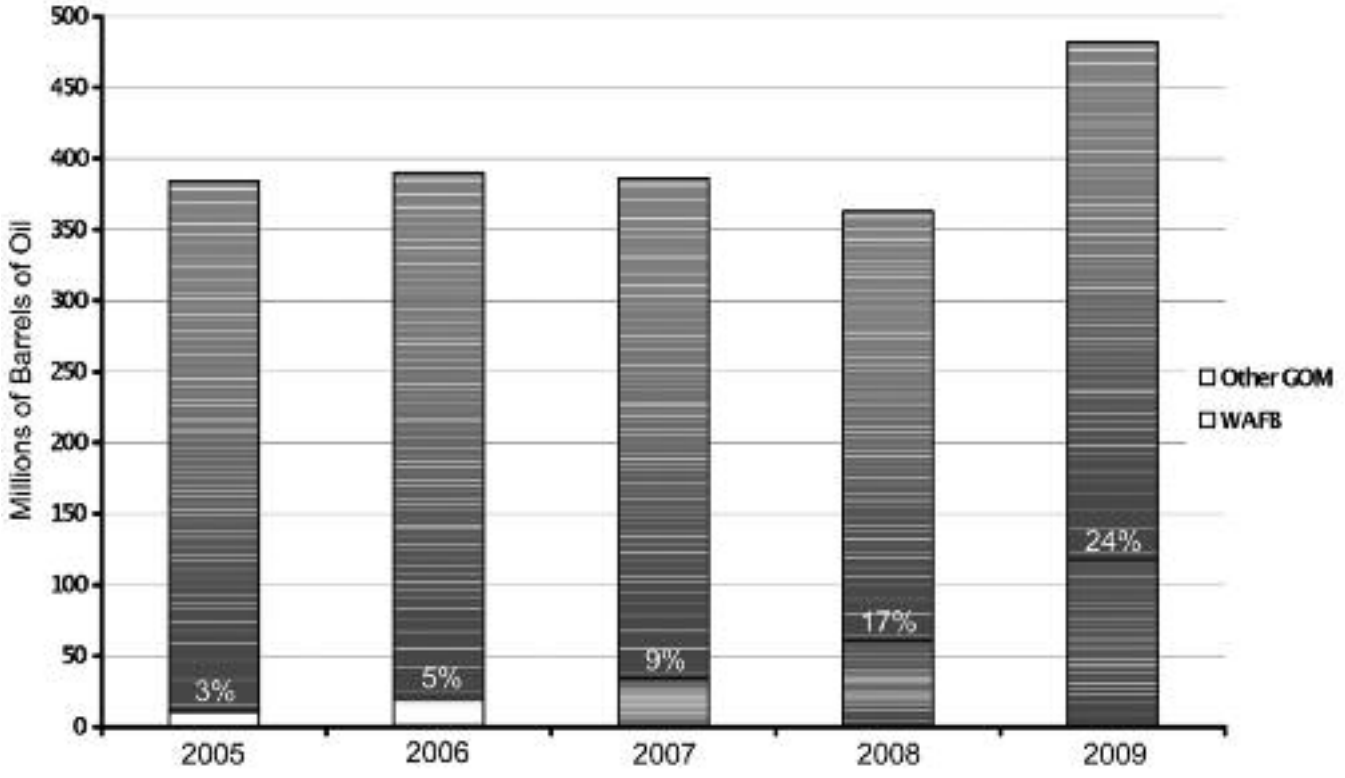
Development wells are very expensive in the WAFB, so it is important to use lessons learned from early production to optimally locate future wells in order to efficiently drain the remaining resources in each field. ■

Biographical Sketch

Mike Moore has worked as a geologist in the Gulf of Mexico region for more than 30 years. He has a strong background in exploration, appraisal, and development of deep water turbidite reservoirs.

Mr. Moore is from New Hampshire, where he developed an interest in geology by cracking open rocks left behind by retreating Pleistocene glaciers. He graduated from the University of New Hampshire in 1976 with a B.S. degree in geology and went on to attend the University of Alaska at Fairbanks, where he mapped Carboniferous limestone turbidites along the Yukon River in east-central Alaska for his thesis. He graduated in 1979 with a M.S. degree in Geology and went to work for Exxon in New Orleans holding several exploration and development positions, mainly working the Gulf of Mexico.

Mr. Moore joined BHP Billiton in 1993 and in 1995 became a member of a team exploring the Western Atwater Foldbelt and participated in discoveries at Neptune, Atlantis, Mad Dog, and Shenzi. He was a member of the initial appraisal team for Atlantis and Mad Dog fields. He is currently doing regional mapping in the Western Atwater Foldbelt area of the deep water Gulf of Mexico.



The Gulf Coast Association of Geological Societies

CALL FOR PAPERS

61th Annual Convention
October 16-18, 2011
Veracruz, Mexico

Hosted by the Asociación Mexicana de Geólogos Petroleros

The Asociación Mexicana de Geólogos Petroleros (AMGP) is proud to host the 2011 GCAGS Annual Convention to be held in Veracruz, Mexico. The meeting will be running from October 16th-18th and will gather geoscientists from more than 15 geological societies from around the Gulf of Mexico.

Our theme, **"Sharing knowledge to add value"**, highlights the importance of sharing knowledge to maximize the value of the resources lying in the subsurface. GCAGS Transactions derived from annual conventions have long been recognized for gathering the best geoscience from the Gulf Coast. We invite geoscientists from all around the Gulf of Mexico to submit their contributions to the technical program as oral or poster presentations. This will be a great opportunity to exchange ideas. Veracruz and AMGP are looking forward to have you in an unforgettable Convention.

PROPOSED TECHNICAL SESSIONS INCLUDE

- ✓ Remaining potential in circum-Gulf of Mexico Petroleum Provinces
- ✓ Cenozoic sequence stratigraphic framework of the deep Gulf of Mexico and adjacent areas
- ✓ Climate change, environmental challenges and sustainable development
- ✓ Learning and teaching in the geosciences to meet new challenges
- ✓ New perspectives in fractured reservoirs
- ✓ New concepts and methods in biostratigraphy
- ✓ The Gulf of Mexico deepwater setting – Geology, economics, and technology
- ✓ Interaction between salt tectonics and sedimentation
- ✓ Seismic imaging and interpretation of geologically complex areas
- ✓ Petroleum systems and oil quality controls in the Gulf of Mexico
- ✓ New approaches in sandstone reservoirs characterization and diagenetic modeling
- ✓ New insights into the geodynamic evolution of the Gulf of Mexico

SYMPOSIUM

Jurassic Reservoirs of the Gulf Region: Stratigraphy, sedimentology, diagenesis and modeling

HOW TO SUBMIT:

Abstracts (not more than 250 words) should be submitted for review online or via e-mail to the technical program chair. Papers should have application to Gulf Coast and Gulf of Mexico geology. Include your full mailing address, telephone and FAX numbers, e-mail address, and whether you are submitting for oral, poster or either (preferred).

Submit abstracts by February 4, 2011 as instructed on the website www.gcags2011.com

Notification of acceptance by March 4, 2011. All presenters , both oral or poster, must submit either a paper (10 to 12 pages) or an extended abstract with key figures for review by April 22, 2011 for inclusion in the Transactions. Full instructions for authors will be posted at www.gcags2011.com.

ABSTRACT DEADLINE: FEBRUARY 4, 2011

Questions or ideas for the technical program should be directed to:

Antonio Cuevas Leree
Technical Program chair
juan.antonio.cuevas@pemex.com, Tel. +52(993) 3164588

Tuesday, October 18, 2010

Joint HGS International and North American Dinner Meeting

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

Cost: $28 Preregistered members; $35 non-members & walk-ups

To guarantee a seat, you must pre-register on the HGS website and pre-pay with a credit card.
Pre-registration without payment will not be accepted.
You may still walk up and pay at the door, if extra seats are available.

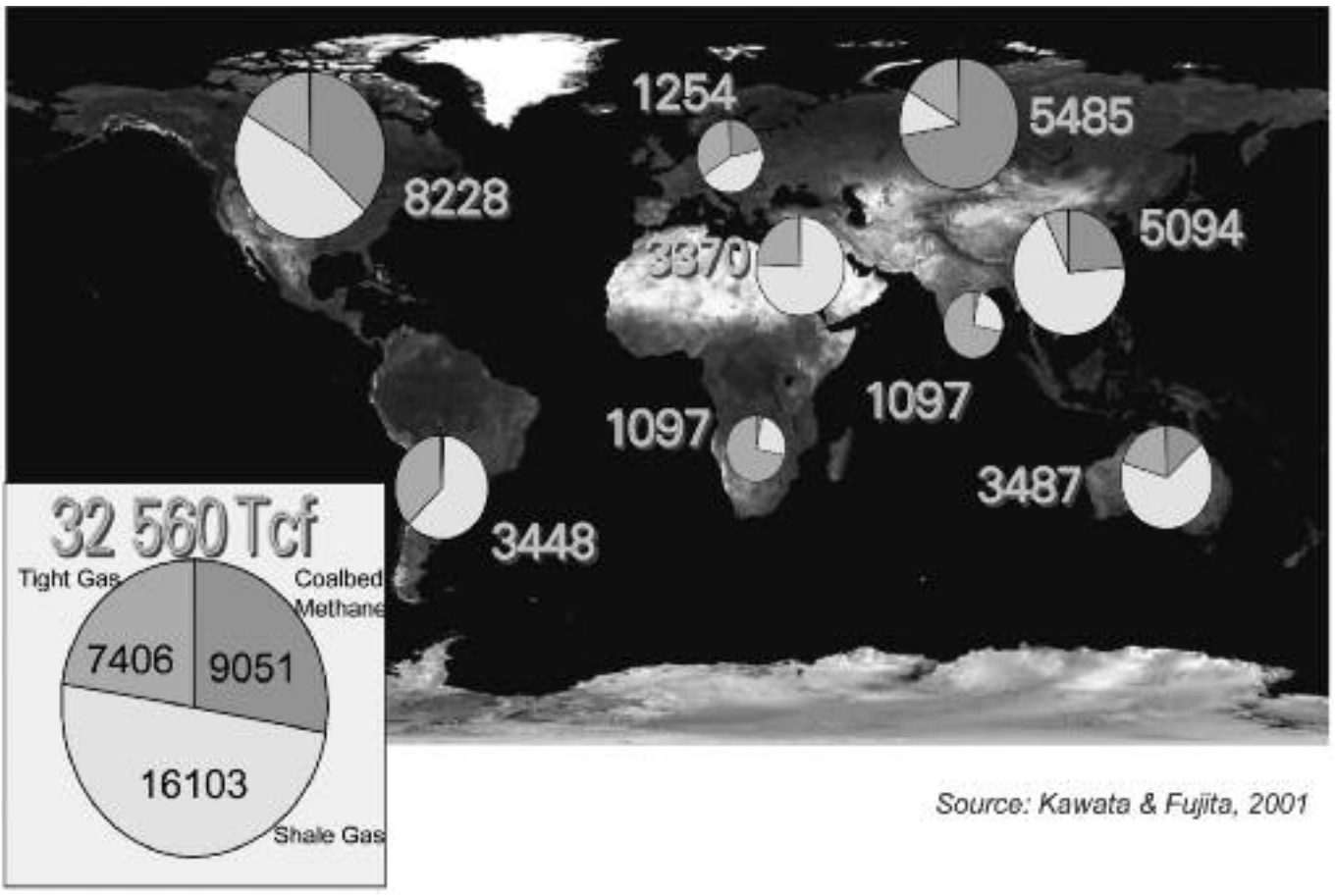
Glenn McMaster
Global Unconventional Gas Team
ConocoPhillips

The Spillover Effect: "The Quest for Coal Bed Methane and Shale Gas Outside North America"

The boom in unconventional exploration in North America, mainly in shale gas and coal bed methane is spilling over internationally with Europe, Asia, the Far East, and Australia all claiming huge values for resource potential, many in excess of 400 TCFG. This quest for unconventional gas outside North America is persuading major companies (ExxonMobil, Shell, ConocoPhillips, Statoil, etc.) that they need the expertise acquired by US independents (Chesapeake, XTO, Anadarko, Burlington, etc.) to apply the knowledge they have acquired from the San Juan and Powder River basins and the Barnett, Marcellus, Haynesville, etc. plays and the expertise they have developed in drilling and well completion to unleash the potential of international basins and plays. But this stampede across the pond comes with some challenges both in

quest for unconventional gas outside North America is persuading major companies that they need the expertise acquired by US independents

Joint HGS International and North American Dinner *continued on page 17*



Global Resource Estimates. Courtesy of ConocoPhillips

Joint HGS International and North American Dinner continued from page 15

terms of the subsurface and surface. No two basins are the same and the US analogs are unlikely to match the geology of Europe and Asia. At the end of the day, the geology will determine whether the rest of the world can experience the unconventional gas explosion that the US is seeing. ■

Biographical Sketch

Glenn McMaster has worked in the petroleum industry for 33 years. He started his career as a geologist with Amoco Canada in Calgary and worked on most of the plays in the Western Canadian Sedimentary Basin, including 8 years working tight gas prior to transferring to Houston in 1989.

From 1989-2006 he was involved in Risk Assessment and Portfolio Management and the development of Amoco's and BP's Risk Programs and Geotechnical Assurance Teams, reviewing all exploration opportunities in both Amoco's and BP's global portfolio. In 2007 he became the Senior Consulting Geologist in BP's Global Unconventional Gas Group responsible for screening, ranking, and accessing opportunities globally. He retired from BP in November 2008 and joined ConocoPhillips as a Senior Geologic Fellow in its Global New Ventures Unconventional Resources Team, focusing on China and the Far East.

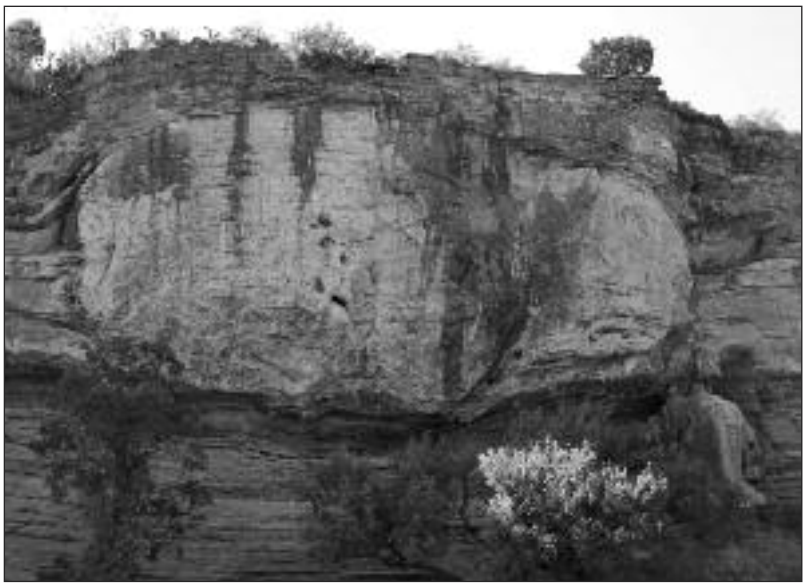
Mr. McMaster has made numerous presentations at AAPG Conferences, the 13th Egyptian Petroleum Conference, the Repsol Foundation, the Petrobras Risk Workshop, the Bath Risk and Reward Conference, SPE Risk and Uncertainty Meeting in Galveston, and CSPG and APPG annual meetings. He was a Society of Petroleum Engineers Distinguished Lecturer in 2004, speaking on Risk and Portfolio Management in 17 countries worldwide. Recently he has made several presentations on Unconventional Gas Exploration to CNPC, Sinopec, and CUCBM and at OGIF in 2009 in China.

Houston Geological Society Field Trip

Microbial Carbonates in the Upper Cambrian of Central Texas

October 15 – 17, 2010

Trip Leaders: Wayne Ahr and Andre Droxler



Registration

Send a check for $250, payable to the Houston Geological Society at 14811 St. Mary's Lane, Suite 250, Houston, Texas 77079-2916, or pay on-line on the HGS website by credit card. The registration fee covers van transportation, hotel accommodations in Mason for two nights, kayak rentals, and lunch on Saturday (all other meals are the responsibility of the participants). Vans will depart Houston at 12:00 P.M. Friday afternoon, October 15th, and return to Houston Sunday afternoon, October 17th. For more information, call Gary Moore at 713-466-8960 or Richard Howe at 281-788-8340.

This field trip is limited to a maximum of 24 participants. ■

Tuesday, October 19, 2010

Black Lab Pub, Churchill Room • 4100 Montrose Blvd.

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

Cost: $25 Preregistered members; $30 non-members & walk-ups

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 (include your name, e-mail address, meeting you are attending, phone number and membership ID#).

Chi Dong
Seismo Electronics LLC

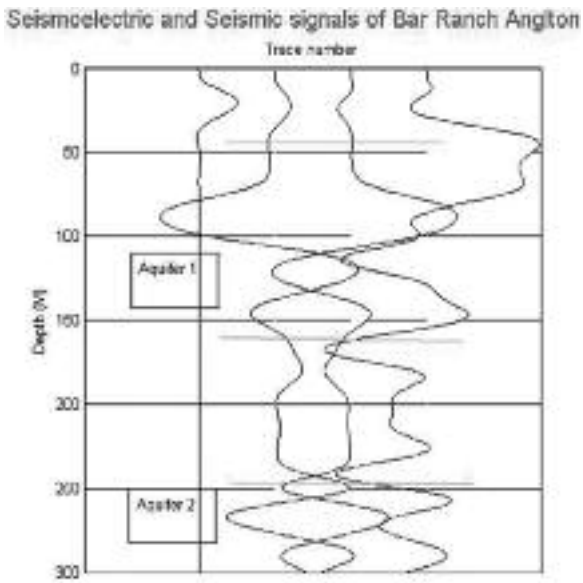
The DC-4500 Seismoelectric Groundwater Locator

A new concept for locating groundwater with exceptional accuracy, low cost, and simple operating procedure: the seismoelectric survey is the only geophysical survey method that can measure groundwater conductivity directly. This method is different from seismic or electric surveys, which register only seismic velocity or resistivity data for the aquifer. The seismoelectric theory, assumes that a seismoelectric signal is produced by seismic waves traveling through a water-saturated formation. The signal travels with seismic wave velocity and frequency and is related to permeability of the aquifer.

The seismoelectric survey is the only geophysical survey method that can measure groundwater conductivity directly.

The seismoelectric signal is an indicator of groundwater. Where there is a seismoelectric signal, there must be groundwater. If there is no seismoelectric signal, there will be no groundwater.

The DC-4500 Seismoelectronic Groundwater Locator is designed to receive both seismic and seismoelectric signals from the same seismic source in a signal instrument. It can provide the depth and thickness of an aquifer and estimate groundwater conductivity directly. It also records the 2-D seismic refraction or reflection data in order to obtain geological information around aquifers.



DC-4500 water locator can also be used in civil engineering for determining the depth, thickness, and conductivity of underground aquifer.

The DC-4500 is patented in US and China.
• US Patent (US 6,476,608 http://www.patentstorm.us/patents/6476608.html)
• International Patent (CN 1392420A) ■

Biographical Sketch

Chi Dong, founder and owner of Seismo Electronics LLC earned a B.S. degree from China Petroleum University in 1982 and an M.S. at Colorado School of Mines in 1990.

He started his professional career in 1970 as an reservoir technician at Jilin oil field in China. He then worked as a geophysicist in civil engineering in Beijing. After moving to the US, he worked as a geophysicist in mining, environment, and oil exploration, including numerous foreign assignments.

Chi Dong started doing seismoelectric research in 1988 at Colorado School of Mines under the aegis of Dr. J. E White, Dr. George Keller, and Dr. Skokan. He completed his master's thesis, "Seismoelectric Effect" in 1990. He continued seismoelectric research in a Ph.D. program in CSM until 2000. Most of the theory and practice supporting his invention of the DC-4500 seismoelectronic groundwater locator are based his unpublished Ph.D. thesis *Using Finite Difference Numerical Models of Visco-Elastic Seismic Wave Forms to Model Seismoelectrics Signals.*

He is working for Seismo Electronics LLC. to develop business and research on the groundwater locators.

Tuesday, October 19, 2010

Crowne Plaza Hotel - Greenspoint (former Sofitel)
425 North Sam Houston Pkwy E

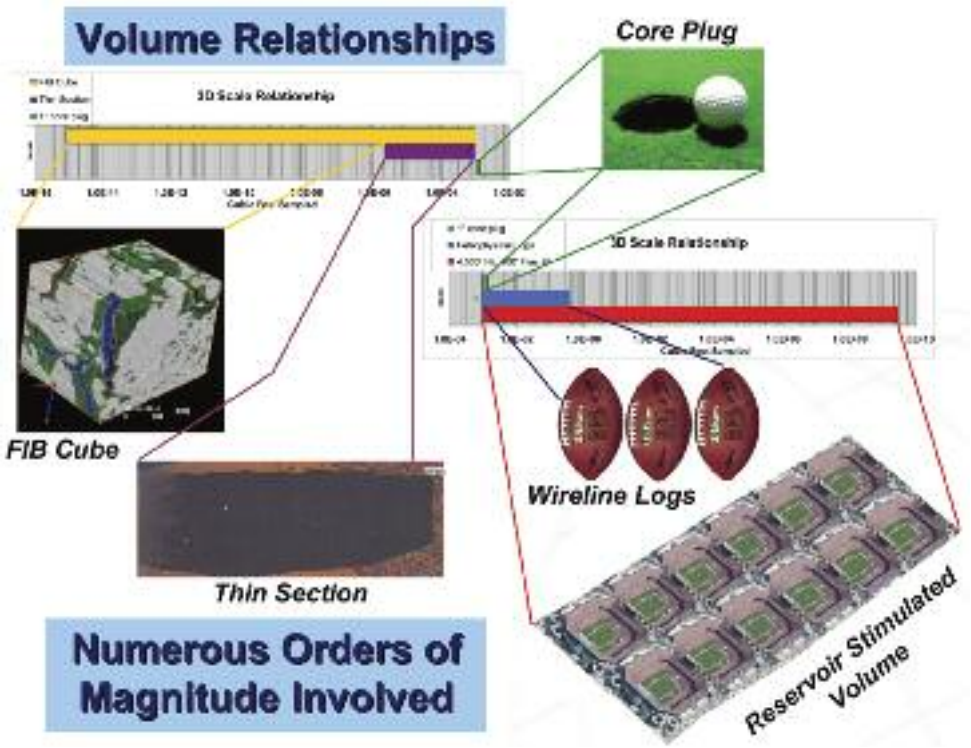
Social 11:15 AM, Luncheon 11:30 AM

Cost: $31 pre-registered members; $35 for non-members & walk-ups.

To guarantee a seat, you must pre-register on the HGS website and pre-pay with a credit card.
Pre-registration without payment will not be accepted.
You may still walk up and pay at the door, if extra seats are available.

Jeffrey E. Nunneley
Marathon Oil Company
Houston, TX

It's All Black Shale: Relating Physical Scales and Measured Values to Organic-rich Mudrocks



Organic-rich mudrocks are commonly described as black shales. They contain mixtures of various alternating microfabrics and compositions. Their sedimentary textures, structures, and mineral compositions can vary on a microscopic scale. Production variations from mudrock reservoirs occur on a much larger scale. Because of the multiple physical scales involved, it is a difficult task to relate the core analysis values of these mudrocks to petrophysical log and production values.

Many mudrock microfabrics are observed to be only a few millimeters thick. The laboratory analysis from a single 1-inch core plug can sample several individual microlithologies. Petrophysical logs generally represent rock properties from a scale 20 times greater than from a single core plug. Production volumes from a mudrock reservoir in a single well involve sampling from a scale several orders of magnitude greater than from petrophysical logs.

It is important to make meaningful relationships in measured rock properties across multiple physical scales. Laboratory improvements could include utilization of higher sampling frequencies. Petrophysical enhancements could include the utilization of tools with higher-frequency resolution. Bulk sampling of mudrocks might be advantageous when working with hydrocarbon composition data. The distribution of the critical data of importance will influence the sampling methodology which can best characterize the rock. ■

Biographical Sketch

Jeffrey Nunneley is Chief Geologist of North America Onshore for Marathon Oil Company in Houston. He is responsible for influencing and supporting the quality of technical work being generated by Marathon's onshore geologists in the exploration and production groups of North America. Mr. Nunnely began his career in Dallas with Enserch Exploration and has also worked for El Paso Production Company. He has more than 30 years of experience in trend evaluation and prospect generation in both conventional and unconventional resources across the southern United States and offshore Gulf of Mexico. He has a B.S. in geology from Texas A&M University and an M.B.A. from the University of Dallas. He is an AAPG Certified Petroleum Geologist and a licensed Professional Geoscientist in the State of Texas.

Wednesday, October 27, 2010

Petroleum Club • 800 Bell (downtown)
Social 11:15 AM, Luncheon 11:30 AM

Cost: $30 pre-registered members; $35 for non-members & walk-ups; Emeritus/Life/Honorary: $15; Students: FREE

To guarantee a seat, you must pre-register on the HGS website (www.hgs.org) and pre-pay with a credit card.
Pre-registration without payment will not be accepted.
You may still walk up and pay at the door, if extra seats are available.

Janok P. Bhattacharya
Robert Sheriff Professor of Sequence Stratigraphy
Department of Earth and Atmospheric Sciences
University of Houston
Houston, TX

Death of the Sequence Boundary: Applying Modern Concepts to the Cretaceous Interior Seaway of North America

The use of arbitrary boundaries in defining lithostratigraphic units in the 1950s resulted in a confusing proliferation of different names for lithofacies of the same age. Early versions of sequence stratigraphy also failed, because of insistence on definitions using arbitrary vertical cutoffs. Seismic stratigraphy fundamentally transformed the science of stratigraphy by providing vastly superior images that allowed correlation of genetically related chronostratigraphically significant units. Reflection seismic data thus provided the key technological breakthrough that provided continuous cross-sectional views of stratigraphic basin fills and fundamentally revitalized the science of stratigraphy.

Seismic stratigraphy fundamentally transformed the science of stratigraphy

Sequence stratigraphy solved the basic problem that was genetically related, but different lithofacies were routinely assigned to different lithostratigraphic units defined by arbitrary vertical and horizontal cutoffs. Sequence stratigraphically important lapout relationships can be observed in seismic data and can be documented in continuous outcrops, such as in the deserts of the Western Interior of North America and in closely-spaced well log data sets. Finding good isochronous stratigraphic datums, such as bentonites or condensed sections, is key. Not all surfaces defined by lapout boundaries are readily identifiable in 1D sections, and in well logs lapout relationships must be interpolated. This introduces uncertainty in correlation and designation of sequences and systems tracts and their associated surfaces.

The uncertainty in dating of fluvial terrace deposits is shown by use of detailed facies architectural studies, combined with Wheeler analysis, as well as recent modeling and Quaternary studies. These studies call into question the assumed chronostratigraphic significance of many so-called sequence boundaries identified in the rocks of the Cretaceous Interior Seaway of North America, such as the boundary between the Blackhawk-Castlegate formations in Utah, and suggest that they may have far higher diachroneity than has previously been assumed. Although a glacio-eustatic origin for Cretaceous sequences is still highly debated, modern glacio-eustatic falls of sea-level are commonly prolonged and irregular, whereas rises are typically very short lived. Sequence boundaries formed during such prolonged falls may be less chronostratigraphically significant than the transgressive surfaces formed during rapid rises. As a consequence, flooding surfaces are both theoretically more significant and also have greater utility as allostratigraphic boundaries.

Tectonic unconformities are also common in the Cretaceous Western Interior. Tectonics produces differential lithospheric deformation, which results in angular unconformities. In the Cretaceous Interior Seaway of North America, such unconformities may be expressed by marine erosion in basin distal settings. Regional isochronous bentonite beds provide useful regional marker beds that clearly illustrate angular discordance. In the fluvial realm, such tectonic discontinuities are indicated by changes in paleocurrent orientations as well as by provenance changes.

Although sequence stratigraphy provides a powerful methodology and theoretical framework for correlating and understanding the evolution of stratigraphic successions in the context of changing accommodation, allostratigraphy remains the only accepted scheme for formal naming of stratigraphic units based on bounding discontinuities. However, whatever type of sequence stratigraphy or allostratigraphy one prefers, it is key in all cases to recognize that sequence stratigraphy, at its heart, is the re-ordering, correlation, and sometimes renaming of stratigraphic units on the basis of bounding discontinuities and their correlative surfaces, as opposed to the arbitrary lithofacies–oriented approach using broad facies "shazams" or arbitrary cutoffs, such as is used in traditional lithostratigraphy. ■ **HGS General Luncheon** *continued from page 25*

HGS General Luncheon continued from page 23

Biographical Sketch

Dr. Janok P. Bhattacharya is the Robert E. Sheriff Professor of Sequence Stratigraphy at the University of Houston. His research interests include deltaic sedimentology and sequence stratigraphy, the local control of structure on stratigraphy and reservoir architecture of clastic depositional systems.

He received his B.Sc. in 1981 from Memorial University of Newfoundland, Canada. Following his Bachelors degree, he worked at ESSO Resources Calgary, before completing his Ph.D. in 1989 from McMaster University, Hamilton, Ontario, Canada. Following a Natural Sciences and Engineering Research Council post-doc at the Alberta Geological Survey in Edmonton, Dr. Bhattacharya worked for the Bureau of Economic Geology at Austin, ARCO Research in Plano, Texas, and the University of Texas at Dallas before joining the University of Houston in the fall of 2005.

He is an American Association of Petroleum Geologists (AAPG) Grover Murray Distinguished Educator, AAPG Distinguished Lecturer, and AAPG SW Section Distinguished Educator. He was the 2008 Gulf Coast Section of the Society of Sedimentary Geology (GCSSEPM) President, and has served on various AAPG Convention committees. He is also co-chair of the AAPG Education Committee. He has been awarded the 2004 AAPG Certificate of Merit, the 2004 Dallas Geological Society Professional Service Award, the 2004 Canadian Society of Petroleum Geologist (CSPG) Best Oral Presentation Award, the 2002 Frank Kottlowski Memorial Presentation Award, the 2002 Houston Geological Society Best Oral Paper Award, and the 2001 AAPG "Al" Cox Award for best poster at an AAPG SW section meeting.

He is an associate editor for the *Journal of Sedimentary Research* and has also served as associate editor for the *AAPG Bulletin*. He has authored or co-authored more than 100 abstracts and over 50 technical papers. He also co-edited SEPM Special Publication 83 *"River Deltas: Concepts, Models and Examples"*. He is an active member of AAPG, Society for Sedimentary Geology (SEPM), Geological Society of America (GSA) and International Association of Sedimentologists (IAS).

SIPES October Luncheon Meeting
"Unconventional" Discovery Thinking in Resource Plays: Haynesville/Bossier Trend, North Louisiana

Marvin D. Brittenham, *Team Lead New Ventures USA, Encana Oil & Gas (USA) Inc.*

EnCana's strategy for US growth became focused on the Gulf Coast Jurassic trend. The first steps of this strategy culminated in the acquisition of Tom Brown Inc. in 2004, leading to the formation of the Mid-Continent Business Unit in Dallas. This unit's East Texas team devised a strategy to explore the Jurassic sequence off the East Texas west shelf productive trend into an expanded shelf slope-to basin sequence. This play has since evolved to the "Deep Bossier" Sandstone Play and has resulted in the discovery and development of the John Amoruso Field. EnCana's discoveries within the Haynesville/ Bossier gas shale and Deep Bossier sandstone resource plays in the Gulf Coast Jurassic Trend are now a focus of intense development in Texas and North Louisiana.

the Haynesville play already has shifted gas shale paradigms for depth, pressure, well production rates, and recoverable resource size

Almost concurrently, armed with experiences over decades and multiple successful cycles of exploration in the west shelf area, Legends Exploration, a partnership of John Amoruso with Larry Bartell and Denny Bartell, had convinced investors in Leor Energy of a very similar concept. Leor acquired much of the core lands in the discovery which was eventually named after Amoruso. EnCana first farmed into and subsequently acquired all of the interests of Leor.

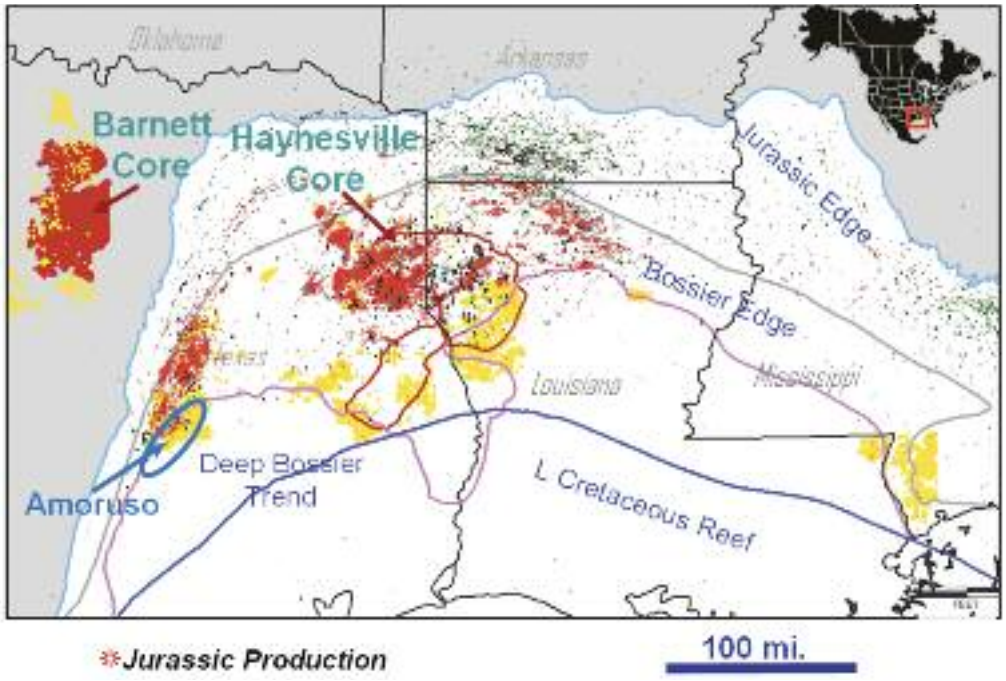


Figure 1. Gulf Coast Jurassic Trend location map.

John Amoruso Field provides a new measure for discoveries with its highly productive reservoirs capable of producing up to 62 MMcf/d per well. It also illustrates the evolution of thought required beyond discovery, leading to quick production growth and successful enhanced development of the field.

Using similar unconventional thinking and entry strategies on a broader scale, EnCana acquired significant additional positions in the Jurassic trend. Closely following the Amoruso success, in late 2005 and early 2006 EnCana drilled the discovery wells in Red River Parish, Louisiana for the Haynesville gas shale play. Notably, EnCana also recognized significant Bossier shale pay in that area. Although not widely known to industry prior to 2008, the Haynesville play already has shifted gas shale paradigms for depth (up to 14,000 feet), pressure (up to 12,500 PSI), well production rates (20-30 MMcfg/d), and recoverable resource size (250 Tcfg).

For three decades, industry, academic, and governmental views for natural gas production decline provided doom and gloom scenarios for US supply. It now appears that a new trend, the Haynesville, is potentially the largest continuous gas deposit in North America. In addition, with John Amoruso Field, a new play has been established with world-class productive wells. Both required unconventional discovery thinking and considerable evolution of thought beyond discovery.

SIPES Luncheon Meeting *continued on page 29*

Marcellus Shale

Pennsylvania

CGGVeritas has commenced a large multi-client library program consisting of five 3D surveys in the heart of the Marcellus fairway. The programs will be acquired over the next few years targeting the Marcellus Shale.

Contact:
Dennis Langlois
+1 832 351 1052
dennis.langlois@cggveritas.com

CGGVERITAS

cggveritas.com

SIPES Luncheon Meeting continued from page 27

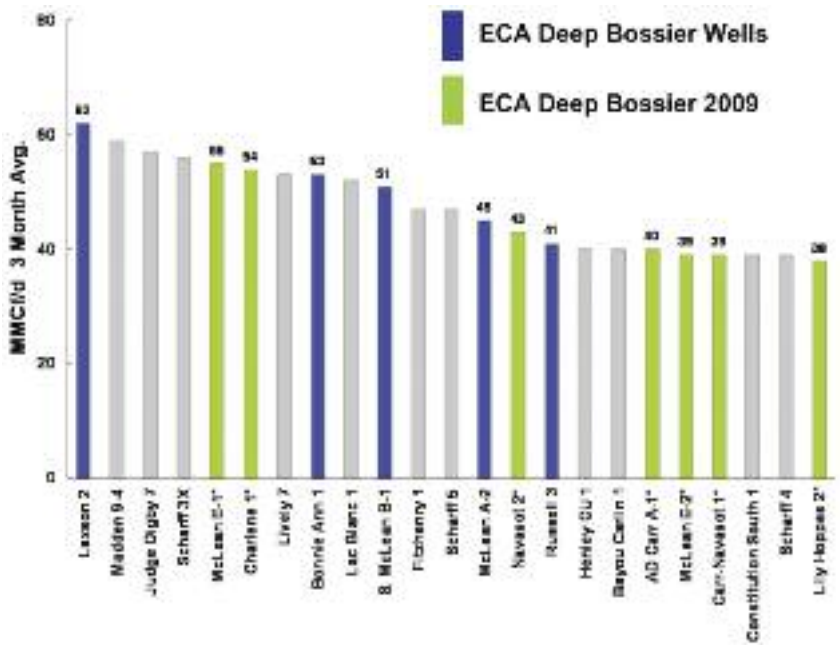


Figure 2. Wells with highest average three month gross gas production (2005-2009) in onshore North America

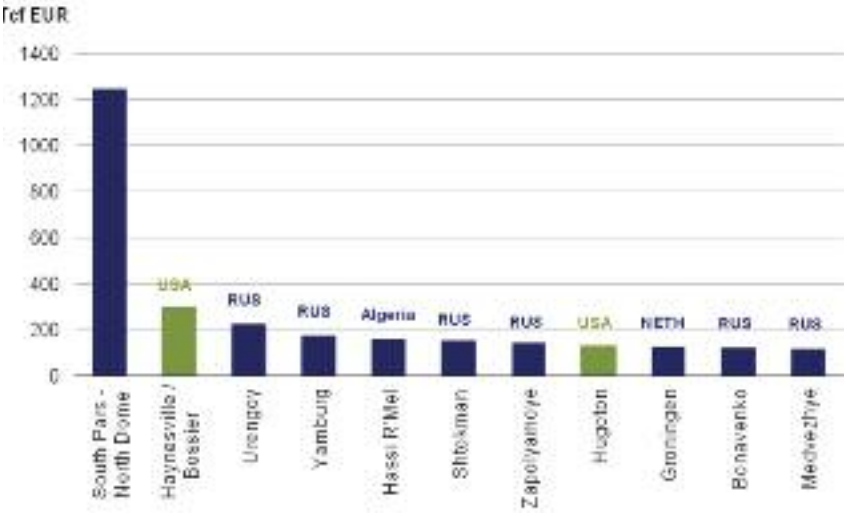


Figure 3. World's largest gas fields with prospective recoveries for recent shale mega plays for perspective.

Discovery thinking for resource plays requires a global view of the petroleum system. All of the primary lithologies of the Jurassic sequence are potential reservoirs – even the shale/source. Deep basin over-pressured mature gas cells provide the primary setting for Jurassic gas resource trends. Economics are very robust where there is sufficient scale, repeatability, and low geologic risk for gas manufacturing processes. ■

Biographical Sketch

Currently with Encana Oil & Gas (USA) Inc., **Marv Brittenham** is responsible for creating growth through new key resource plays within the lower 48 onshore. Mr. Brittenham has devoted much of his career to the exploitation of tight gas reservoirs throughout the onshore USA. Current focus includes the large US gas and oil shale plays, including the Haynesville/Bossier gas shale and Deep Bossier sandstone resource plays of the Gulf Coast Jurassic trend and recently shale gas opportunities in the Michigan basin and the Rocky Mountain region.

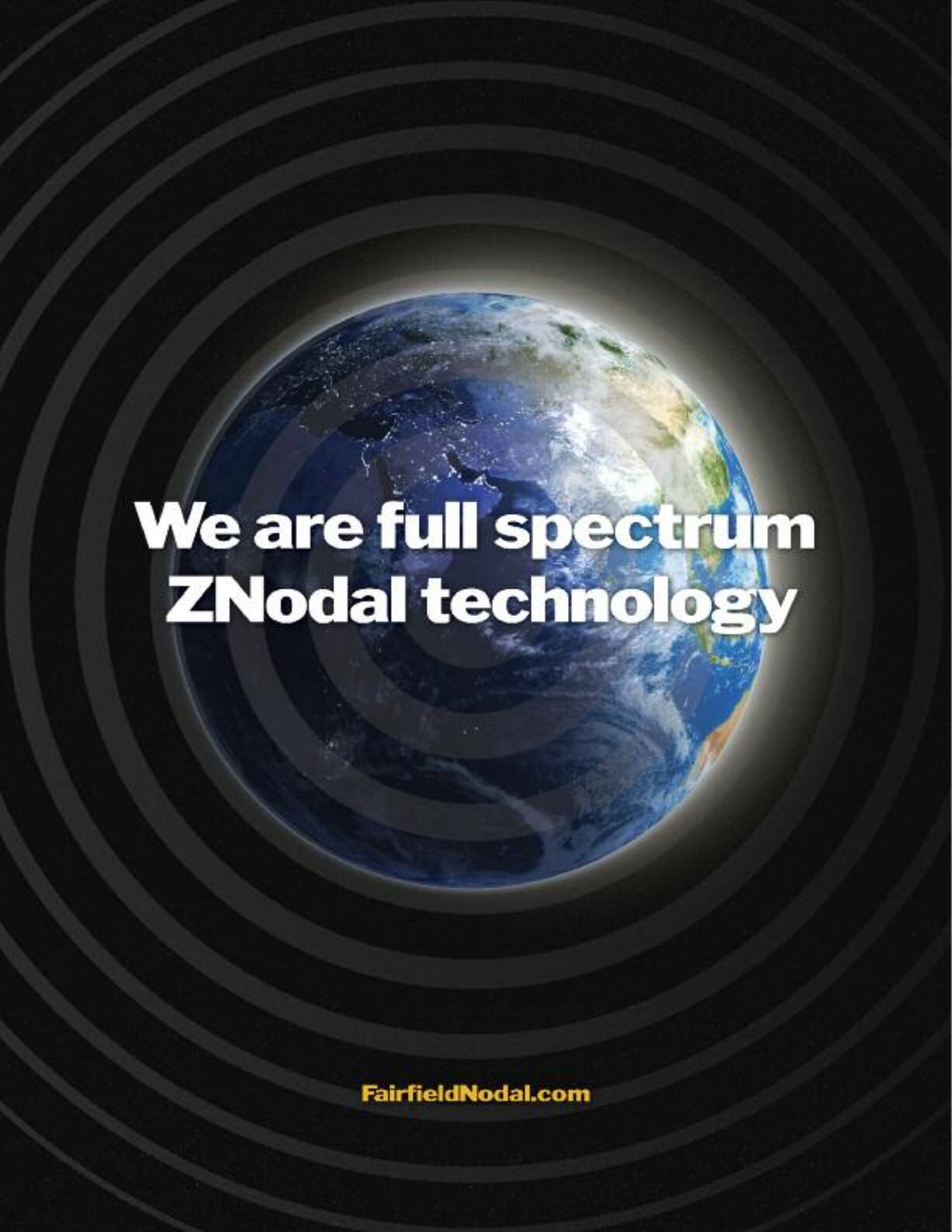
The American Association of Petroleum Geologists has recently elected him to a two-year term as Vice President–Sections.

Thursday, October 21, 2010

Houston Petroleum Club in the Discovery Room, 800 Bell St. (downtown Houston). Social 11:15 AM, Luncheon 11:45 AM

Reservations Required: *Make reservations by telephone (713-651-1639), fax (713-951-9659), website (www.sipes-houston.org), or e-mail bkspee@aol.com to B. K. Starbuck-Buongiorno by 12:00 noon on Tuesday preceding the meeting. You can now sign up for the meeting online at www.sipes-houston.org, but payment is still required by regular mail or at the door.*

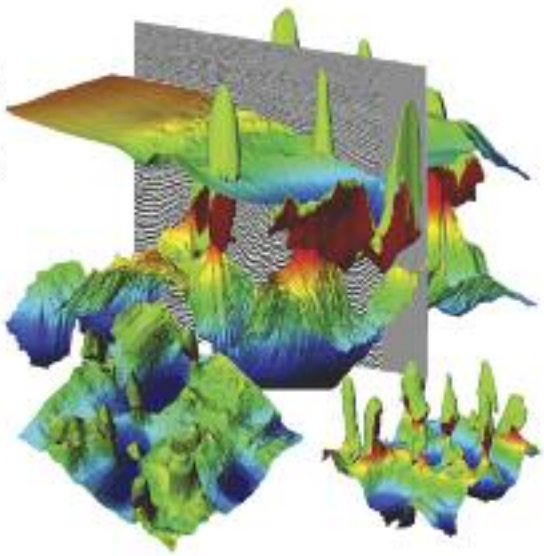
Cost: *$30 for SIPES Members and Chapter Affiliates who register by 12:00 Noon Tuesday; $35 for new registrations at the door. The price for guests, non-members and walk-ins is $35. No-shows will be billed.*


We are full spectrum
ZNodal technology
FairfieldNodal.com

From ZSYSTEMS to ZIMAGING

OK, we admit it. We get really excited about nodal data. All kinds of nodal data. From land data acquired in dense urban areas or pristine wilderness to marine data from the shallowest to the deepest regions of the ocean floor. All from our ZNodal Systems. We love to collect it, license it, process it and image it with specialized software we've designed to optimize the unique advantages of nodal data.

And we are good at it. We've been at this seismic data collection business for over 30 years. In fact, much of our spec data has been shot with cableless nodal systems that we developed right here at FairfieldNodal.



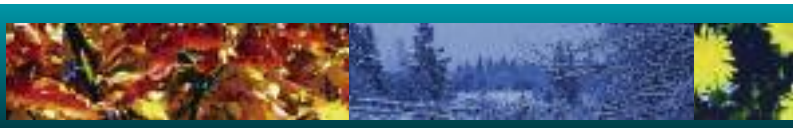
Our ZNodal Systems are cost effective, reliable and available now for your next project anywhere in the world. And, we can assist you with the full spectrum of seismic data services from systems and acquisition through imaging.

We are not the biggest, slickest outfit in the business. We don't wear designer suits or drink chocolate martinis. But you can depend on FairfieldNodal for the highest quality nodal data systems and information anywhere. It's what we're all about.

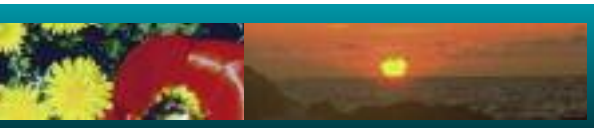
fairfieldnodal

SYSTEMS ACQUISITION LICENSING PROCESSING IMAGING

October 2010



Sunday	Monday	Tuesday	Wednesday
	Members Pre-registered Prices: General Dinner Meeting..... $28 Nonmembers & walk-ups ..... $35 Env. & Eng. ..... $25 Luncheon Meeting ..... $30 Nonmembers & walk-ups ..... $35 International Explorationists ..... $28 North American Explorationists $28	**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.**	
3	4 **AAPG 5th Annual Fall Education Conference** *Focusing on Unconventional Resources, Norris Conference Center, Houston, TX*	5 **HGS Board Meeting** *6 p.m. HGS Office*	6
10 **GCAGS/GCSEPM 2010 60th Annual Convention** *San Antonio, TX* Page 8, 42	11 **HGS General Dinner Meeting** *"Exploration, Appraisal, and Development of Turbidite Reservoirs in the Western Atwater Foldbelt, Deep Water Gulf of Mexico", Michael G. Moore, Westchase Hilton* Page 11	12	13
17	18 **Joint HGS International and North American Dinner Meeting** *"The Spillover Effect: The Quest for Coal Bed Methane and Shale Gas Outside North America", Glenn McMaster, Westchase Hilton* Page 15	19 **HGS Northsiders Luncheon Meeting** *"It's All Black Shale: Relating Physical Scales and Measured Values to Organic-rich Mudrocks", Crowne Plaza Hotel,* Page 21 **HGS Environmental & Engineering Dinner Meeting** *"The DC-4500 Seismoelectric Groundwater Locator", Black Lab Pub,* Page 18	20
24 31	25 **HGS Golf Tournament** *Kingwood Country Club* Page 6	26	27 **HGS General Luncheon Meeting** *"Death of the Sequence Boundary: Applying Modern Concepts to the Cretaceous Interior Seaway of North America", Janok P. Bhattacharya, Petroleum Club* Page 23



GeoEvents

Thursday Friday Saturday

	1	2
7		9 Earth Science Week Family Energy Festival *Page 39*
14	15 *December Bulletin Submission Deadline*	16 Earth Science Week Family Energy Festival *Page 39*
21 **SIPES Luncheon Meeting** *"Unconventional" Discovery Thinking in Resource Plays: Haynesville/Bossier Trend, North Louisiana", Marvin D. Brittenham, Petroleum Club* Page 27	22	23
38	29 **NOW you can make your reservations on-line at www.hgs.org**	30

FYI
If you have NOT PAID YOUR DUES this is your last issue.

Upcoming GeoEvents

November 4-5, 2010
Advances in Carbonate Exploration and Reservoir Analysis
Geological Society
London, England

November 14-19, 2010
Deepwater Offshore West Africa Conference & Exhibition
Abuja, Nigeria

February 7-8, 2011
Applied Geoscience Mudstones Conference
Houston, Texas

February 23-25, 2011
New and Emerging Plays in the Eastern Mediterranean
Geological Society
London, England

March 27-29, 2011
South-Central Section Geological Society of America
New Orleans, Louisiana

April 10-13, 2011
AAPG Annual Convention & Exhibition
Houston, Texas

July 21, 2011
TechnoFest
Houston, Texas

October 9-12, 2011
Geological Society of America Annual Meeting
Minneapolis, Minnesota

October 16-18, 2011
61st Annual Convention - Gulf Coast Association of Geological Societies
Veracruz, México

October 23-26, 2011
AAPG International Conference & Exhibition
Milan, Italy

Hockley Growth Fault Update — Mother Nature Is at Work!

by Mustafa Saribudak, *Environmental Geophysics Associates*

Figure 1. Site map showing approximate extension of the Hockley Fault Zone defined by the geophysical and surface deformation in the vicinity of Houston Premium Outlet Shopping Mall.

In a study of the Hockley Fault in the northwest part of Houston (Saribudak, 2010), the results of geophysical studies (resistivity and GPR) located the main fault plane where it crosses the Highway 290 West frontage road and Fairfield Falls Way and mapped a zone of distributed deformation extending about 400 feet across the fault. Since those measurements were taken, a shopping mall was built in the vicinity of the fault in 2005 and 2006 (Figure 1) and Highway 290 was rebuilt and extended, covering the evidence for the fault. Since 2006, I have had the opportunity to observe continuing evidence for activity on the fault. In this note, I document observations made in April, 2010 and August, 2010 (Figure 2, A and B) that show how small cracks in pavement over the main fault trace photographed in April 2010 extended and widened significantly by August, 2010. Note that the cracks in Figure 2B have been filled with asphalt. In my 2010 paper I pointed out correlation of several small faults with the cracks observed on the Highway 290 frontage roads. Figure 3 explains more on this point: Picture C shows two cracks being developed to the west of the main Hockley Fault plane. Partly stone and partly brick walls in the background display unique fault deformation in Picture D. The brick wall appears to be separated from the stone wall due to the combination of horizontal and vertical offsets expected from this type of growth fault (Saribudak, M., 2010, see page 1 and Figure 1). The original cement holding both the brick and stone walls is no longer visible at this location due to the detachment. This type of deformation could also have caused by local slumping or erosion of fill materials beneath the brick wall.

Figure 2. Recent pictures of Hockley Fault at Hwy. 290 Frontage and Fairfield Falls Way roads: A) taken in April 2010; B) taken in August 2010. Note the development of the tiny cracks in picture B into significant ones in picture B.

The Hockley Fault continues across Highway 290, deforming both the east and west bound lanes

The Hockley Fault continues across Highway 290, deforming both the east and west bound lanes (Figure 4). An alert driver can feel a jerk when crossing the fault. This observation supports the interpretation that the land in Houston is changing and that we are in an area where active faulting is occurring. The USGS has published many papers on the subject since the late 1970s. Verbeek

Tech Note *continued on page 37*

Tech Note continued from page 35

Figure 3. Pictures (A and B) of road and wall deformation to the immediate west of the Hockley Fault, respectively. The picture was taken in August 2010.

Figure 4. A recent picture (August 2010) showing revived cracks (main Hockley Fault) on the west bound of Highway 290. The fault deforms the newly built highway 290 and the feeder roads. The picture was taken facing south.

and Clanton (1981) pointed out that there were 150 faults (now estimated at more than 300) in the Houston area. These faults damage road pavements, pipelines, bridges, railroad, tunnels, and refineries, as well as private homes. In recent years, a public school in the Tomball area, northwest of Houston, was abandoned because of an active fault. Thus the fault hazard is a real threat which needs to be mitigated by avoidance and the application of good engineering design and land use practices.

ACKNOWLEDGMENT

I am thankful to Bill Rizer for his instructive and critical editing of the note and his encouragement to publish it. This research project was funded by Environmental Geophysics Associates.

REFERENCES

Saribudak, M., 2010. Geophysical mapping of Hockley Growth Fault in NW Houston, TX: A few surprising results, Houston Geological Society, May issue.

Verbeek, R.E., and Clanton, S.U., 1981, Historically active faults in the Houston metropolitan area, Texas; *Houston Area Environmental Geology: Surface Faulting, Ground Subsidence, Hazard Liability*, Houston Geological Society, 1981, p. 28-69.

The HOUSTON GEOLOGICAL SOCIETY celebrates

EXPLORING ENERGY

Earth Science Week, 2010

October 9-16

Celebrate with us by participating in these great activities:

Annual Family Earth Science Festival

Houston Museum of Natural Science

Saturday October 9, 2010, 11:30pm- 4:00pm

We kick off the week with our annual Family Energy Festival at the Houston Museum of Natural Science's Paleontology Hall and Wiess Energy Hall.

NEW! This year's festival will feature the same great passport program as in previous years and will coincide with the launch of HMNS's new Energy Conservation Club (ECC). In addition to our great demonstrations by area geosciences organizations, the museum has a special celebration sponsored by Marathon Oil Corporation and the Wiess Energy Hall Partners that will include the "Billy B" show (www. billybproductions.com) and numerous interactive demonstrations about renewable energy. As in past years, Houston area Cub Scouts and Webelos are encouraged to come and work on their Geology Belt Loops and Activity Pins. This year is the first ever "energy" themed Earth Science Week. This is a great opportunity to share your knowledge and love of science with family and friends.

HMNS and HGS need you to make this event a success. If you have interest in volunteering, please contact the ESW committee: Martha McRae at mcrae_1125@comcast.net or Jennifer Burton at jlbgeo@comcast.net. Please visit the museum's website at www.hmns.org for additional information on ECC.

Classroom Connections
AGI Art, Essay, and Photography Contest

Help us take geology to the classroom! Encourage your kids and their schools to participate with us in our second annual Art, Essay, and Photography contests. Each contest has a topic related to the national Earth Science Week theme "Exploring Energy". The art contest is open to grades K-5 and the essay contest is open to grades 6-9. Persons of any age can participate in the Photography Contest. Please check the HGS website for details or contact Jennifer Burton at jlbgeo@comcast.net. We will have a special on-stage ceremony and award presentation to honor winners in all categories during the Family Energy Festival on October 9th.

Ocean Star Offshore Drilling Rig and Museum Public Fieldtrip

Ocean Star Museum, Galveston, TX

Saturday, October 16, 2010, 12:00pm – 4:00pm

Visitors board the retired jackup drilling rig and view a video about the offshore energy industry. The museum features three floors of models and interactive displays illustrating the story of offshore oil and gas from seismic technology to exploration and production. Scale models of production platforms, actual drill bits and remotely-operated vehicles (ROVs) as well as videos and exhibits explain drilling, geology, seismic, well servicing and production.

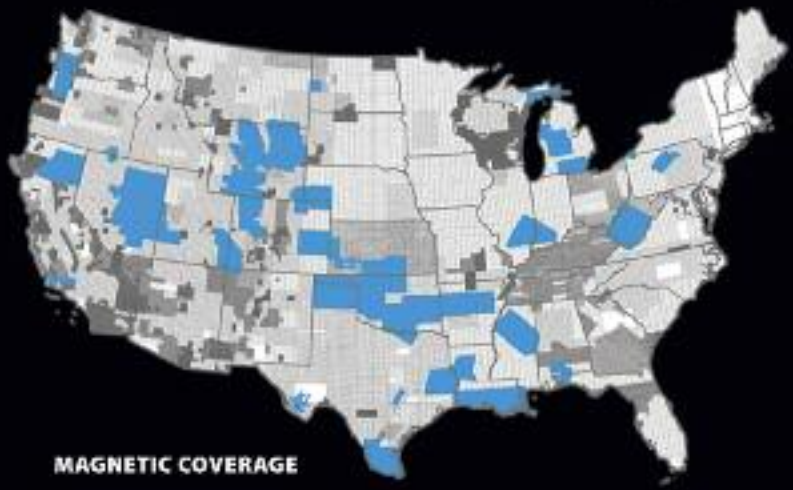
Entrance fees will be covered by the HGS for the first 300 participants. Please register using the link provided on the HGS website. Direct questions to Jennifer Burton at jlbgeo@comcast.net

Please visit www.hgs.org and click on the Science Education/Earth Science Week tab for updates or changes to the events listed.

FOCUS....

on domestic exploration

GRAVITY COVERAGE

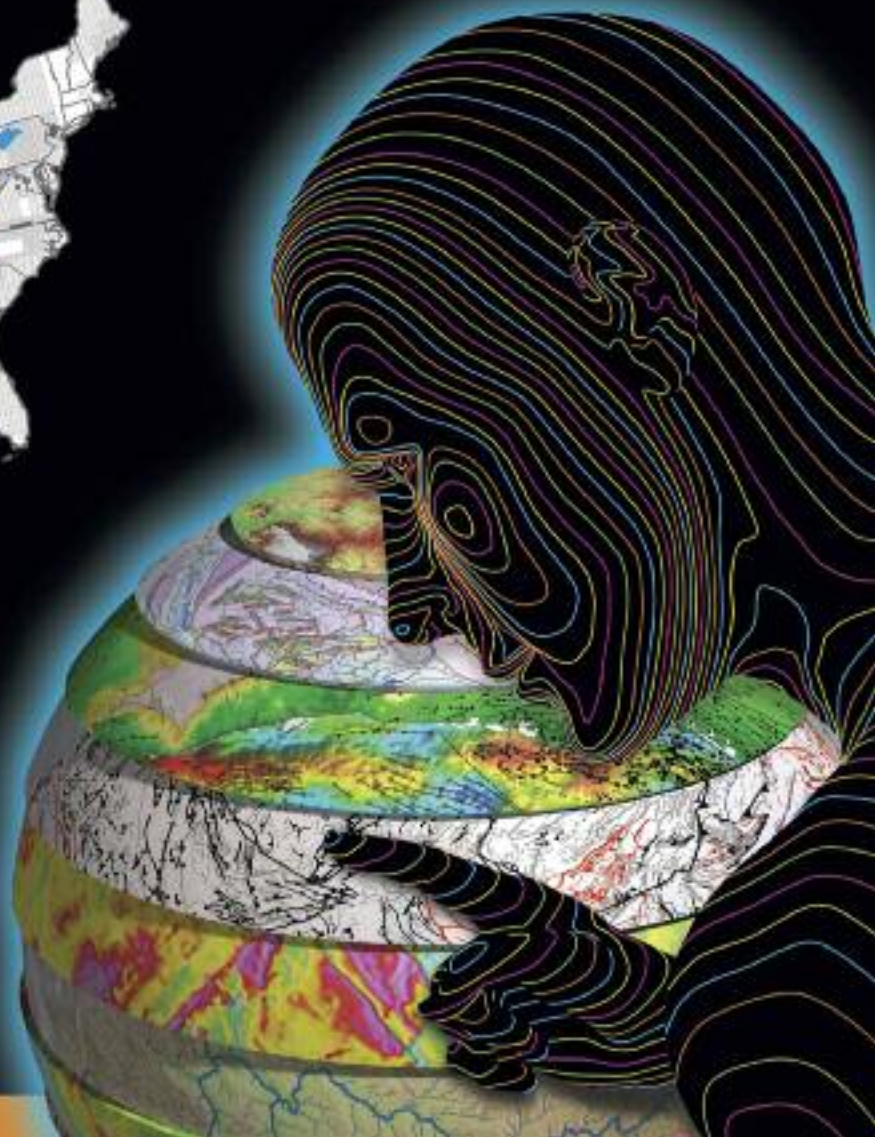


MAGNETIC COVERAGE

OVER 3 MILLION GRAVITY STATIONS FOR ONSHORE US

EXTENSIVE AEROMAGNETIC SURVEY COVERAGE

INTEGRATED INTERPRETATIONS AND CONSULTATION SERVICES



For more information, please contact:
DENVER OFFICE 303 592 4373
Gary Thompson gary.thompson@getech.com

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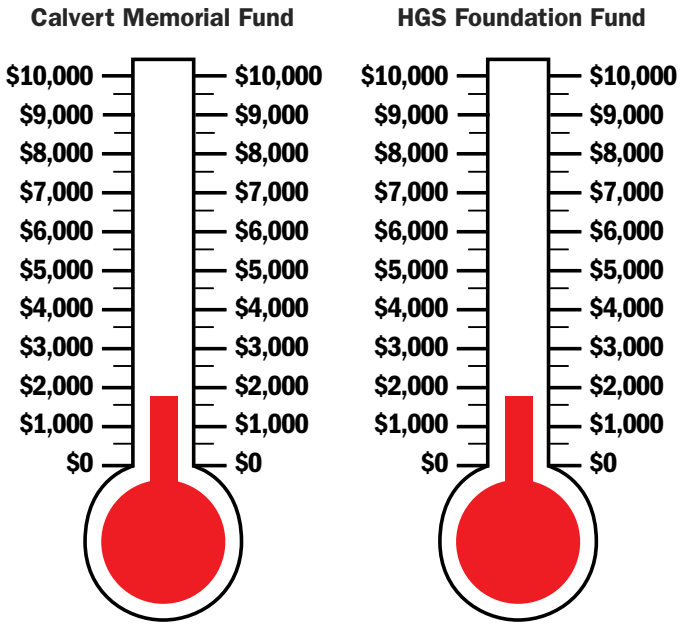
GCAGS and HGS Matching Scholarships Fund

In April, the GCAGS announced a program to match, dollar for dollar, any donations received for scholarship programs of member societies. The program runs from January 1, 2010 through June 30, 2011 and is subject to a cap of $10,000. The HGS received two $10,000 matching scholarship donations. The HGS Board voted in May to also match this program for funds raised for the Calvert Memorial Fund (scholarships to graduate students) and the HGS Foundation Fund (scholarships to undergraduate students). This means that for every $1 received in direct donations during the program, our local scholarship funds will receive $3. What a deal! Please consider making a donation to help our scholarship funds take maximum advantage of the match program. Just fill out the form below and mail to HGS along with your check. Or you can go to the HGS Webpage, clicking on *Donate to the HGS Scholarship Funds* and follow directions to donate. ■

Send check and form to: HGS Office, HGS Matching Scholarship Fund, 14811 St. Mary's Lane, Suite 250, Houston, Texas 77079
or fax this form with credit card number to 281-679-5504



The Thermometer Chart above shows the relative amount of money (in $1,000 increments) that each Fund has raised toward the GCAGS and HGS matching grants.

Donor Name: _____

Member No.: _____

Scholarship Contributions:

Calvert: _____

HGS Foundation — Undergraduate: _____

TOTAL REMITTANCE: _____

(Optional) In Memory of: _____

Check # _____

Credit Card number and type: _____

Expiration Date (required): _____CVV code (req'd):_____

Name on Credit Card: _____

Daytime Phone number of Card Holder: _____

Billing Address for Card: _____

City, State and Zip: _____

60th Annual GCAGS/GCSSEPM Convention

Presents

The Stricklin Symposium: Forming and Filling of the Gulf of Mexico Basin: Triassic, Jurassic, and Cretaceous Tectonics, Source Rocks, and Petroleum Systems

Tuesday, October 12, 2010 • 8:20 am – 4:10 pm, San Antonio, Texas

Symposium Conveners:

T. E. Ewing, Frontera Exploration Consultants, San Antonio, Texas
E. A. Mancini, Texas A&M University, College Station, Texas

8:20 **Thomas Ewing:** Introduction to the Stricklin Symposium

8:30 **James Pindell:** History of Tectonic Modeling and Implications for Depositional Architecture in the Gulf of Mexico (GOM): Where we Should Go from Here

9:00 **Jim Harris, Rob Crossley, Nick Stronach, Paul Valdes, and Roger Proctor:** The Plate Tectonic, Paleogeographic, and Paleoclimatic Context for the Development of the Mesozoic Gulf of Mexico

9:30 **Steve Creaney:** A View of the Genetic Development of Gulf of Mexico Petroleum Systems

10:00 **Break**

10:30 **Ernest Mancini and Wayne Ahr:** Jurassic Depositional Systems, Facies, and Reservoirs of the Northern Gulf of Mexico

11:00 **Thomas Lovell and Amy Weislogel:** Detrital Zircon U-Pb Age Constraints on the Provenance of the Late Jurassic Norphlet Formation, Eastern Gulf of Mexico: Implications for Paleogeography

11:30 – 1:00 ***GCSSEPM and Stricklin Symposium Luncheon (ticketed event):*** **Roger Sassen:** Preservation of Methane in Deep, Hot Reservoir Rocks

1:10 **Robert Scott:** Cretaceous Stratigraphy, Depositional Systems, and Reservoir Facies of the Northern Gulf of Mexico

1:40 **Thomas Ewing:** Pre-Pearsall Geology and Exploration Plays in South Texas

2:10 **Marco Flores Flores, Jorge Lavín, Noemí Aguilera, Marco Peña:** The Kimmeridgian Oolitic Banks and their Exploration Potential in the Marina de Campeche Zone, Southeastern Mexico: Biostratigraphical and Sedimentological Implications

2:40 **Roger Sassen:** Laminated Lime Mudstone of the Upper Jurassic Smackover Formation: Source of High-Sulfur Oil and Gas

3:10 **Andrew Petty:** Stratigraphy and Petroleum Exploration History of the Smackover Formation (Oxfordian), Northeastern Gulf of Mexico

3:40 **Russell Dubiel, Peter Warwick, Lauri Burke, James Coleman, Kristin Dennen, Colin Doolan, Catherine Enomoto, Paul Hackley, Alexander Karlsen, Matthew Merrill, Krystal Pearson, Ofori Pearson, Janet Pitman, Richard Pollastro, Elisabeth Rowan, Sharon Swanson, and Brett Valentine:** Geology and Assessment of Undiscovered Oil and Gas Resources in Mesozoic (Jurassic and Cretaceous) Rocks of the Onshore and State Waters of the U.S. Gulf of Mexico Region

To register or exhibit for the GCAGS2010 Convention, please go to www.gcags2010.com

Image courtesy of Ron Blakely, Ronald.Blakey@nau.ed

Technofest and TechnoConference

by Deborah Sacrey, *Chairman – Technofest/TechnoConference*

July 21st, 2011 is the date of the next Houston Geological Society Technofest and TechnoConference will be held, once again, at the Westin Galleria Hotel.

This year's Technofest and TechnoConference was a huge success. This was the first year for TechnoConference, which drew an audience of 140 people. **Rene Mott** was the Technical Program Chairman for the event, which garnered rave reviews. Attendees will have access to download the PowerPoint presentations from that event in the next few weeks.

This was the first year for TechnoConference, which drew an audience of 140 people.

Technofest attracted 37 great vendors showing many of the new technologies focused upon in the Conference. Over 270 people attended Technofest this year, overcoming inclement weather and conflicting events with other geoscience organizations. Many thanks go out to **Bonnie Milne** and **Jim Grubb** for their efforts in working on sponsorships and volunteers for both events.

The HGS is going to pull out all stops for next year's event. President **John Tubb** has indicated that this is to be a premier event for the Society. Already the team is working on putting together a world-class slate of presentations for the Conference, and paperwork for vendor and sponsorship opportunities will be available shortly after the first of the year.

The Committee wishes to thank all the sponsors and vendors for their valued participation in making this year a success, and to remind everyone that July 21, 2011 will be here before we know it! ■

Vendors' Corner at HGS Dinner Meetings

by Paul Babcock, *Chairman – Vendor Corner*

Have you ever considered advertising or demonstrating your wares to an engaged, "captive" Geoscience audience? The HGS dinner meetings normally attract 50-150+ attendees depending on the nature of the dinner meeting talk. Many of those registrants are attending the meeting based on the topic of the evening presentation.

Vendors' Corner provides a great focal point for the attendees to gather around.

If a dinner meeting presentation relates at all to your company's product, wares, or studies, this would be an ideal time to participate in Vendors' Corner. Vendors display their wares during the social period as folks are gathering and registering for the meeting. Vendors' Corner provides a great focal point for the attendees to gather around. For an example, on Monday night, Oct. 11, the tentative HGS schedule has Mike Moore (BHP) presenting "Exploration, Appraisal, and Development of Turbidite Reservoirs in the Western Atwater Foldbelt, Deep Water, Gulf of Mexico". If your company performs biostratigraphic studies, acquires, sells, processes seismic data or gravity/magnetics in this area, or has deep-water studies for sale, there seems to be a natural link between geoscientists interested in the presentation topic and your company's services or products.

Representatives of the vendor companies are recognized during the meeting announcements and can have their company logo, link, and a 3-4 sentence blurb about the company posted on the HGS website located near the meeting announcement.

The $250 fee that the vendors pay is donated to the HGS Scholarship Fund (undergraduate geosciences students) and the HGS Student Membership Initiative. During the 2009-2010 HGS calendar year, $6000 was generated through Vendors' Corner that went to the direct benefit of Geoscience students.

If you would like more information or are interested in hosting a Vendor Corner during the upcoming 2010-2011 HGS year, please contact **Paul Babcock** at 832-242-9650 or paul.babcock@nfrenergy.com ■

ChairFest

ChairFest is an annual event where the various committee chairs and the HGS Board of Directors meet to share ideas, thoughts, and plans for the coming year. It is an opportunity to explore synergies among the different HGS committees and informally discuss ways that HGS can better serve its membership.

Remembrance

ERIK P. MASON
(1954–2010)

ERIK P. MASON, longtime HGS, AAPG, and industry leader, author, husband, father, and friend died on July 31, 2010 after a short illness in Leiden, The Netherlands. Erik was born May 19, 1954 in Quincy, Illinois and was raised in Minnesota. He received a B.A. in geology from Principia College in 1976 and an M.S. in geology from Oklahoma State University in 1982. Between the completion of his undergraduate and graduate degrees, he worked for EXLOG supporting mud-logging operations in Texas, Oklahoma, Mexico, and Brazil.

In 1982 Erik joined Phillips Petroleum Company in Houston, initially employed as a geologist conducting integrated studies in support of the re-development of fields along the Gulf Coast. Later he moved to exploration, conducting regional evaluation studies in the Indus Basin and having his first taste of the exciting world of global exploration. It was during these years at Phillips that he met his wife Charlotte (Niki) while attending a training session sponsored by the Houston Geological Society. They were married in 1987.

In 1988, Erik left Phillips to join Shell in New Orleans with responsibility to support the redevelopment of several key shelf fields as part of a joint exploitation team. For nearly a decade, he spearheaded the evaluation of these old giants utilizing integrated field studies coupled with novel horizontal drilling practices. He wrote several important papers on the benefits of horizontal drilling and served as co-editor of AAPG's Methods in Exploration No. 14 (Horizontal Wells: Focus on the Reservoir), which was published in 2003.

In 1996, Erik moved back to exploration, first working the Texas Shelf and later as a key interpreter evaluating the Mesozoic section in preparation for the now famous re-opening of the Eastern Gulf of Mexico. Over a decade later, the number of producing fields and ongoing developments lend testimony to the foundational efforts that he initiated while working this important area of the Gulf.

The early 2000s marked a shift in responsibilities as he undertook various managerial roles in Shell, first as area exploration manager for the Western Shelf (Texas) and later as exploration manager for the Western Gulf of Mexico Deepwater. During this latter period, Erik was responsible for expanding Shell's presence in the Deepwater Paleogene play, including important discoveries at Stones and Tobago. He also held assignments as the Exploration Portfolio and Planning Manager and later as New Ventures Manager for the Western Gulf of Mexico.

In 2008, Erik moved to the Netherlands to work as Shell's Regional Exploration Consultant for both Sub-Saharan Africa and Europe, being responsible for technical review and assurance of all exploration projects in these regions.

Erik's involvement in various professional societies and his contribution in support of the development of young geoscientists across the globe was far-reaching. Within Shell, Erik established a senior explorer's network and contributed to the company's training curriculum. Outside Shell, he served in many professional societies, having been elected to Director positions for both the New Orleans Geological Society and the Houston Geological Society. Erik's association with AAPG since becoming a member in 1981 was equally impressive. His positions and areas of responsibility with AAPG included chairman of the Reservoir Development Committee, long-time member of the House of Delegates and the Technical Program Committee, member and chairman of the Convention Coordinating Committee, Hedberg Conference co-convener ["Horizontal Wells—Focus on the Reservoir"] 1999, and member of the Budget Review and Finance committees. He served as general chairman of the AAPG Annual Meeting in New Orleans in 2000 and was AAPG Vice President in 2003–2004. His latest duty was as chairman of the Geoscience Events Oversight Committee. For these efforts, Erik was recognized three times with AAPG's Certificate of Merit and in 2007 received the AAPG's Distinguished Service Award.

Remembrance *continued on page 49*

Remembrance continued from page 47

Beyond his specific technical contributions Erik was known for his can-do attitude and generous spirit. He was a valued colleague who exemplified patience, humility, compassion, and wisdom. His insights and innate ability to share his thoughts and ideas in a gentle yet firm manner and his persistence to excellence enhanced the respect others had for him. He worked tirelessly and selflessly, both within Shell and in the greater profession, to help others, especially beginning professionals, develop their careers.

Erik's enthusiasm for geology and his profession were only exceeded by his love for his family and friends. He is survived by his wife, Charlotte; his son William; his mother, Patricia J. Goddard, and her husband John, two brothers, and numerous nieces and nephews. The oil industry will miss Erik as a leader in our profession. He was a stimulating mentor to many geoscientists, and will remain an inspiration for all who were affected by his presence. A memorial fund has been established in his name to support the education of young, promising geologists at Oklahoma State University. Contributions may be directed to the OSU Foundation, P.O. Box 1749, Stillwater, OK 74076. Please indicate "Erik Mason Memorial Fund in Geology".

By Mike Mahaffie, Allan Scardina, and numerous Shell Colleagues across the globe.

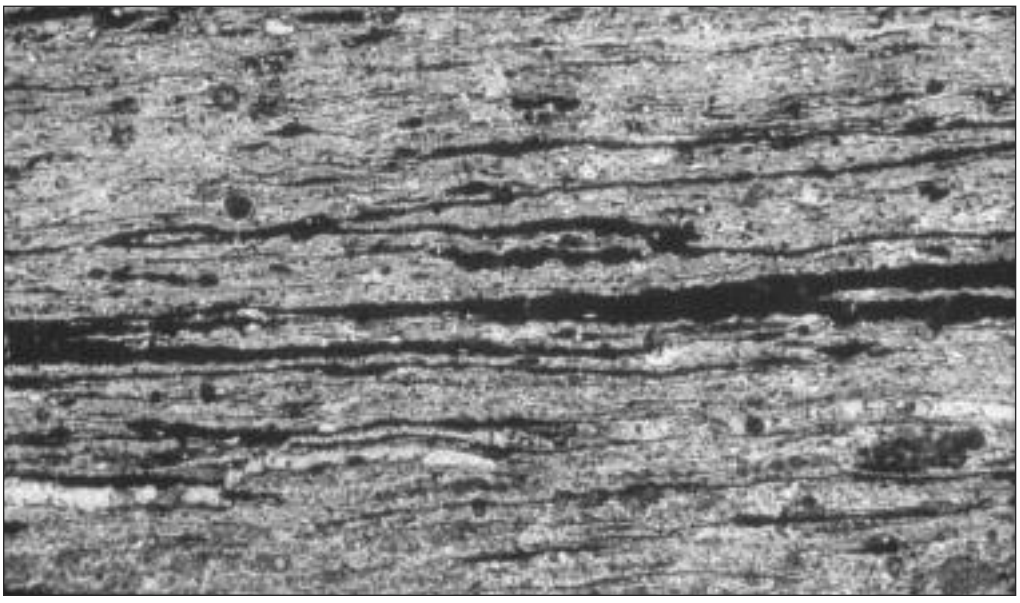
If you are interested in presenting at one of the upcoming HGS meetings or have a suggestion for a meeting topic please contact Amy Sullivan (Vice President) at amy.e.sullivan@mindspring.com.

NOW AVAILABLE *Directory of Oil Company Name Changes* 20th Edition (May 2010)

A new edition (20th), of the HGS publication, *Directory of Oil Company Name Changes*, is now available through the Bureau of Economic Geology. This publication is a cross-referenced list of domestic oil and gas, exploration and production companies that have sold major assets or have changed their names due to a merger, acquisition or reorganization. The purpose of this directory is to provide an oil company road map that may assist geologists in tracking down logs, samples, cores, paleo, drilling reports, production histories and other well data that may be obscured by these numerous name changes.

The cost of the directory is $15.00 and it can be obtained from the BEG. The contact information is as follows:
Bureau of Economic Geology · University of Texas in Austin · Attn: Publication Sales
University Station, Box X · Austin, Texas 78713-8924
Phone: (888) 839-4365 · www.beg.utexas.edu

OR: Purchase one during the GCAGS in San Antonio at the BEG exhibit (save shipping costs).



Photomicrograph of the Green River Formation. The dark laminations are kerogen-rich. The light laminations are carbonate-rich. The laminations represent seasonal changes in productivity.

Government Update

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.*

Texas Files Lawsuit on the Gulf of Mexico Drilling Moratorium

On August 12, 2010, Texas Attorney General Greg Abbott filed a legal challenge to the Obama administration's six-month deep-water-drilling moratorium, saying the federal government violated a law that requires consultation of affected states before imposing the ban. He also stated that the decision failed to consider the economic consequences of the ban, which he said will cost the Texas economy "millions of dollars." Under federal law, affected states are guaranteed the right to participate in offshore drilling-related policy decisions, but the Obama administration did not bother to communicate, coordinate or cooperate with Texas," Mr. Abbott said.

AGI Government Affairs Monthly Review (July 2010)

House Science Committee Marks Up Two Oil Spill Bills

On July 14, 2010 the House Committee on Science and Technology held a markup for the Federal Oil Spill Research Program Act (H.R. 2693) and the Safer Oil and Natural Gas Drilling Technology Research and Development Act (H.R. 5716).

H.R. 2693 directs the administration to create the Federal Oil Spill Research Committee, tasked with developing a comprehensive program for oil spill research. The bill asks for the National Oceanic and Atmospheric Administration (NOAA) to award competitive grants to research institutions for developing prevention and mitigation technologies, and asks that the National Academies evaluate the status of the oil spill research program. The committee amended the language in H.R. 2693 to clarify the meaning of the bill. Some amendments broaden the focus of the bill, such as including research for oil spills from transportation vessels and vehicles, while others clarify communication between the interagency committee and Congress. Human error and the effect of spills on communities are also addressed in the bill's amendments. The committee voted to report the amended bill favorably by a voice vote.

H.R. 5716 amends Section 999 of the Energy Policy Act of 2005 to redirect the focus of ultra-deep water drilling research towards safety and spill prevention research. The approved amendments ensure that research and technology are focused on environmental protection and worker safety. Two amendments concern the Research Partnership to Secure Energy for America (RPSEA). One asks that RPSEA give out awards for safety, and the other mandates that RPSEA includes prevention efforts in its annual report.

House Natural Resources Committee Passes Offshore Drilling Bill

The House Natural Resources Committee passed the Consolidated Land, Energy, and Aquatic Resources (CLEAR) Act (H.R. 3534) by a vote of 27 to 21. The legislation would abolish the Minerals Management Service and divide it into three separate agencies: The Bureau of Energy and Resource Management - to manage leasing and permitting and to conduct environmental studies; the Bureau of Safety and Environmental Enforcement - to conduct all inspections and investigations related to health, safety and environmental regulations; and the Office of Natural Resource Revenue - to collect all offshore and onshore oil and gas and renewable energy-related revenues.

The CLEAR Act would provide full funding, beginning in 2011, for the Land and Water Conservation Fund, the Historic Preservation Fund, and the Oceans Resources Conservation and Assistance Fund. It contains provisions to overhaul onshore oil and gas regulation, create a solar and wind leasing program and boost conservation funding. The committee also unanimously agreed to create a commission to investigate the Deepwater Horizon disaster and ban BP from obtaining new offshore oil leases.

At the markup, the committee rejected an amendment introduced by Bill Cassidy (R-LA) that would have required revenue sharing with states for offshore drilling and another amendment to end the Obama administration's temporary moratorium on exploratory deepwater drilling. The committee defeated Republican measures that would have removed several provisions in the bill, including onshore oil and gas reforms, full funding for the Land and Water Conservation Fund, and a requirement for companies to disclose to the public the chemicals they use in hydraulic fracturing.

Some Congressional Members Oppose Yucca Mountain Termination

Despite the Obama Administration's determination to shut down the proposed high-level nuclear waste repository at Yucca Mountain, Nevada, many members of Congress oppose the termination. On June 29, 2010 the Nuclear Regulatory Commission's Atomic Safety and Licensing Board ruled that the Department of Energy (DOE) cannot withdraw its Yucca Mountain construction authorization application, a move that would have halted the project forever.

Government Update *continued on page 53*

Countdown to **AAPG**

Countdown to AAPG

AAPG 2011 Convention Brings Changes in Poster Format

The Houston 2011 AAPG Convention will be rolling out a new poster presentation format. For many years AAPG has noted that both presenters and attendees report they would like the poster sessions to be available for the entire day. Poster presentations have typically been available for viewing in either the morning or the afternoon. This has caused some attendees to miss viewing posters due to schedule conflicts.

AAPG Poster Chair Tom Bulling (bullintp@bp.com) has a new plan. There will be 138 posters available to view each day of the convention, but on Monday and Tuesday the posters will be on display all day. On Wednesday, posters will be available only in morning. In addition, there will be ten "e-poster" stations in the exhibit hall that will include 50 inch TV screens, a set of chairs, and audio. The e-poster format has been used in other societies, but this is new for an AAPG convention. The e-posters will be arranged by theme and will show digital PowerPoint slideshows of accepted paper posters on a 10 minute schedule with audio.

Government Update continued from page 51

In response to this ruling, 91 senators and representatives wrote a letter to Energy Secretary Steven Chu asking DOE to halt actions to reprogram funds and terminate contracts to dismantle the Yucca Mountain project. The letter, which was signed by 14 Democrats, calls the ruling "a clear statement that the [Energy] Department does not have the authority under the Nuclear Waste Policy Act to unilaterally terminate Yucca Mountain." Conversely, Senate Majority Leader Harry Reid (D-NV), a staunch opponent of the Yucca Mountain repository, reiterated his opposition and his commitment to work with President Obama and DOE "to ensure Nevada never becomes the nation's nuclear dumping ground."

Murkowski Introduces Hydropower Bills in Senate

Senator Lisa Murkowski (R-AK) introduced two bills in the Senate to increase support of hydropower in the United States. The Hydropower Improvement Act of 2010 (S. 3570) asks the Department of Energy (DOE) to spend $50 million in competitive grant programs to improve existing hydropower facilities and construct new ones at dams that do not currently provide power. Additionally, the bill requires DOE to create a plan to expand hydropower by 2015. The second bill, named the Hydropower Renewable Energy Development Act of 2010 (S. 3571) defines hydropower as a renewable resource—including small hydropower (under 50 megawatts) lake taps, and pumped storage projects—and qualifies it for tax credit as a renewable energy resource. The National Hydropower Association states that the bills could lead to 1.4 million jobs across the country over the next fifteen years.

Carbon Capture and Sequestration Bill Introduced

Senators Jay Rockefeller (D-WV) and Pete Voinovich (R-OH) introduced the Carbon Capture and Storage (CCS) Deployment Act of 2010 (S. 3589). The bill would promote research and create incentives to develop and deploy full scale CCS technologies by funding the creation of a cooperative industry-government research and development program. The program would work in cooperation with the Office of Fossil Energy's CCS research and development program. The cost of development projects would be shared with the industry participant (20%) and the Department of Energy (80%). The measure authorizes $100 million for 2011-15, $50 million for 2016-20, and $20 million for 2021-25. The bill would likely be included in any climate or energy legislation that the Senate might consider, though it looks unlikely that the chamber will consider any comprehensive measure this summer.

Congressional Budget Office Estimates Cost of Climate Bill

According to the Congressional Budget Office (CBO), the American Power Act, the bill introduced by Senators John Kerry (D-MA) and Joe Lieberman (I-CT) to reduce greenhouse gases (GHG) by 17 percent by 2020 and 83 percent by 2050, will cut the federal deficit by $19 billion over the next 10 years. The CBO report estimates that the act would increase federal revenues by about $751 billion from 2011 to 2020. It would increase spending by about $232 billion over that same time frame.

Following the release of the CBO report, Kerry and Lieberman issued a joint statement asking senators to pass their legislation, stating that the benefit of reducing the deficit left "no more room for excuses" and that climate and energy legislation needs to be passed this year. However, industry argues that the CBO's assessments involve uncertainties, since many numbers—including emission rates, availability of new technology and other factors—are projected and cannot be one hundred percent accurate. It is expected that a compromise will be necessary to pass comprehensive energy and climate legislation. Kerry and Lieberman have indicated they will support a less stringent bill that includes a price on carbon.

DOE's Nuclear Energy University Program Announces Awards

The U.S. Department of Energy's Nuclear Energy University Program announced $18.2 million in awards to educate the next generation of nuclear scientists and strengthen nuclear research capabilities at U.S. universities. The awards consist of $5 million in undergraduate scholarships and graduate fellowships, and $13.2 million in grants for universities to purchase new equipment or to upgrade their research reactors. Energy Secretary Steven Chu applauded the awards, stating, "To ensure American leadership in the global nuclear energy industry, we need a skilled workforce for years to come. This investment will give our students the support and resources they need to advance nuclear energy and keep America at the forefront of the nuclear industry." A full list of awardees and more information can be found at: http://www.ne.doe.gov/newsroom/2010PRs/nePR070810.html.

USGS Announces New Assessment Method for Carbon Sequestration

The U.S. Geological Survey (USGS) recently announced a new methodology which is able to assess the mass of CO_2 that can potentially be injected into underground rock units. This new method will allow the USGS to perform a national assessment of CO_2 storage potential.

The methodology was developed in accordance with the Energy Independence and Security Act of 2007, which authorized the USGS to develop the methods necessary to conduct a nationwide assessment. The methodology allows for assessments at scales ranging from regional to sub-basinal. While many reports have previously calculated subsurface pore volume for potential CO_2 storage (i.e. Bachu et al., 2007, and van der Meer and Egberts, 2008), this is the first methodology to use fully probabilistic methods to incorporate geologic uncertainty in calculations of

Government Update *continued on page 55*

Government Update continued from page 53

storage potential. For more information, visit the carbon sequestration page of the USGS Energy Resource Program (http://energy.er.usgs.gov/health_environment/co2_sequestration/).

Report Estimates Much Higher U.S. Plutonium Waste

A new report, *Plutonium Wastes from the U.S. Nuclear Weapons Complex*, suggests that the amount of plutonium buried at the Hanford Nuclear Reservation in south-central Washington is nearly three times what the federal government estimated in a 1996 audit. Robert Alvarez, a former U.S. Energy Department official, arrived at this figure by reanalyzing studies conducted by the department over the last 15 years. Inés R. Triay, the Assistant Secretary of Energy for environmental management, did not dispute Alvarez's figures.

Plutonium has a half life of 24,000 years and is harmful to humans even at low doses, making contamination of drinking water and the natural environment a key concern. Alvarez's study focused on the amount of plutonium that has leaked from storage tanks, was intentionally dumped in the dirt or was pumped into the ground, a figure which remains unknown, though Alvarez determined that it is higher than previously thought. The fear is that in a few hundred years this plutonium could reach the saturated zone and enter the Columbia River. While cleanup of the site began in the 1990's, it is still in its early stages. The findings of Alvarez's study suggest that cleanup will be more complex than previously thought and will require technologies that do not yet exist to extract plutonium from the ground.

Dutch Environmental Agency Issues Report About IPCC Errors

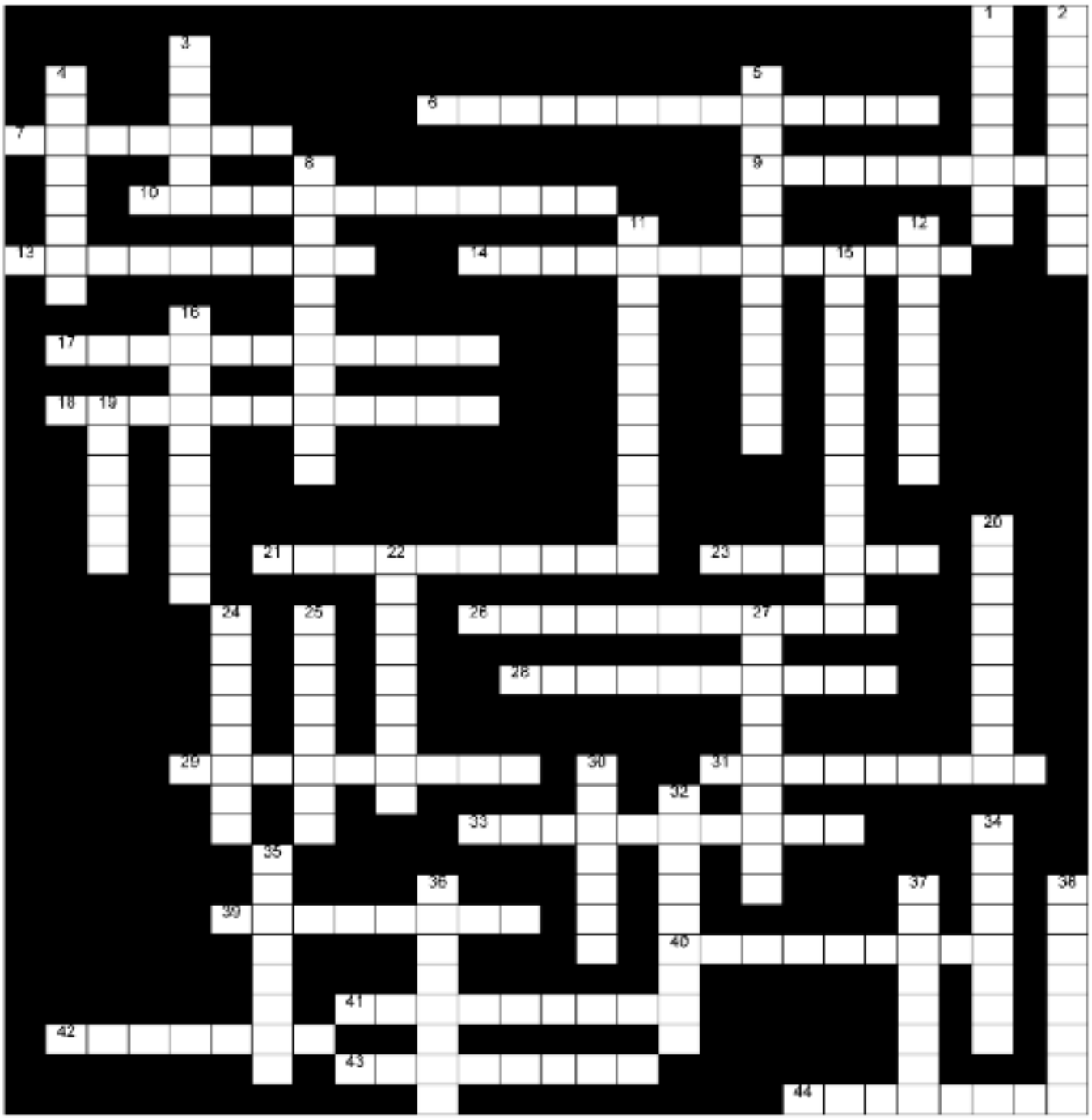
The Netherlands Environmental Assessment Agency issued a review of errors in the Intergovernmental Panel on Climate Change (IPCC) Working Group 1 report, The Physical Science Bias. The Dutch agency concludes that although errors appeared in the IPCC report, the errors did not change the fundamental conclusion of the report—that climate change caused by humans is occurring and having negative effects on society and ecosystems. The mistakes resulted from a consolidation of data and poor editing and proofreading. The report stated that 55 percent of the Netherlands is under sea level, when in fact only 26 percent of the country is. The statement should have indicated that 55 percent of the country is susceptible to flooding. The Dutch agency cautioned the IPCC to tighten its reviewing process to ensure that such errors are caught before reports are released.

British Report Clears Climate Scientists in Email Hacking Case

An inquiry by Muir Russell, chairman of the Judicial Appointments Board of Scotland and a former U.K. civil servant, vindicated the scientists that participated in the emails that were leaked last November, a scandal that was termed "climategate." The investigation into the University of East Anglia's Climatic Research Unit is the third to be conducted. Russell's report, *The Independent Climate Change E-mails Review*, found no indication of corruption or dishonesty in the emails, saying the scientists are only at fault for not fully disclosing all data and findings to critics. Russell's review asserts the scientists did not ignore the peer review process. He found that the graph detailed in the now infamous email exchange referring to "a trick used to hide the decline" in variables tracking global temperatures was not intentionally misleading. The report has completely exonerated Phil Jones, the research center's director who had stepped down during the investigation, and who will return as the director of research in a new position without administrative duties. More information can be found on the Independent Review's web page (http://www.cce-review.org/). ■

A hand dug oil well outside of the city of Baku (Azerbaijan). Such wells were dug in the 1800's in the Kirmaky Valley.

October Crossword of Geologic Ages



ACROSS

6 Named after major coal producing state

7 Less recent

9 Named after a spa town in England

10 Named after a town in northern Italy

13 Name derived from Greek mythology

14 Named after major North American river valley

17 Named after a Belgian city

18 Named after the Swiss town at the shore of Lake Neuchâtel

21 Named after a Welsh tribe

23 Named derived from a French river

26 Recent period of repeated glaciations

28 Lowermost division of Miocene

29 Significant evaporite formation

31 Lower Tertiary

33 Placed at the first appearance of the ammonite species Berriasella jacobi

39 Named after the classical name for Wales

40 Named after the city of Cognac

41 Named after Italian city Piemont region

42 Named after a Russian province

43 Base defined as where the ammonite genus Eodactylites first appears

44 Named after at town some 100 km east of Stuttgart

DOWN

1 Named after county of southwestern England

2 Named after French city in the Saintonge region

3 "Dawn" of modern mammalian fauna

4 Named after three distinct layers found in Germany

5 Age of coal

8 Named after a small town north of Neuchâtel in the Jura Mountains

11 Name derived from a village on the Dorsetcoast

12 Derived from the Latinized name for Kellaways Bridge

15 Takes its name from a hamlet in the community of Zell unter Aichelberg

16 Derived from the Latin for chalk

19 Base at magnetic anomaly M0r

20 Defined as where the ammonite species Brightia thuouxensis first appears

22 Included a global expansion of grasslands

24 Entirely recent

25 Named after mountains between France and Switzerland

27 Name comes from the Latin name of the city of Le Mans

30 Defined as where the ammonite species Daxatina canadensis first appears

32 Immediately followed the mass extinction event

34 Defined by French paleontologist Alcide d'Orbigny in 1842

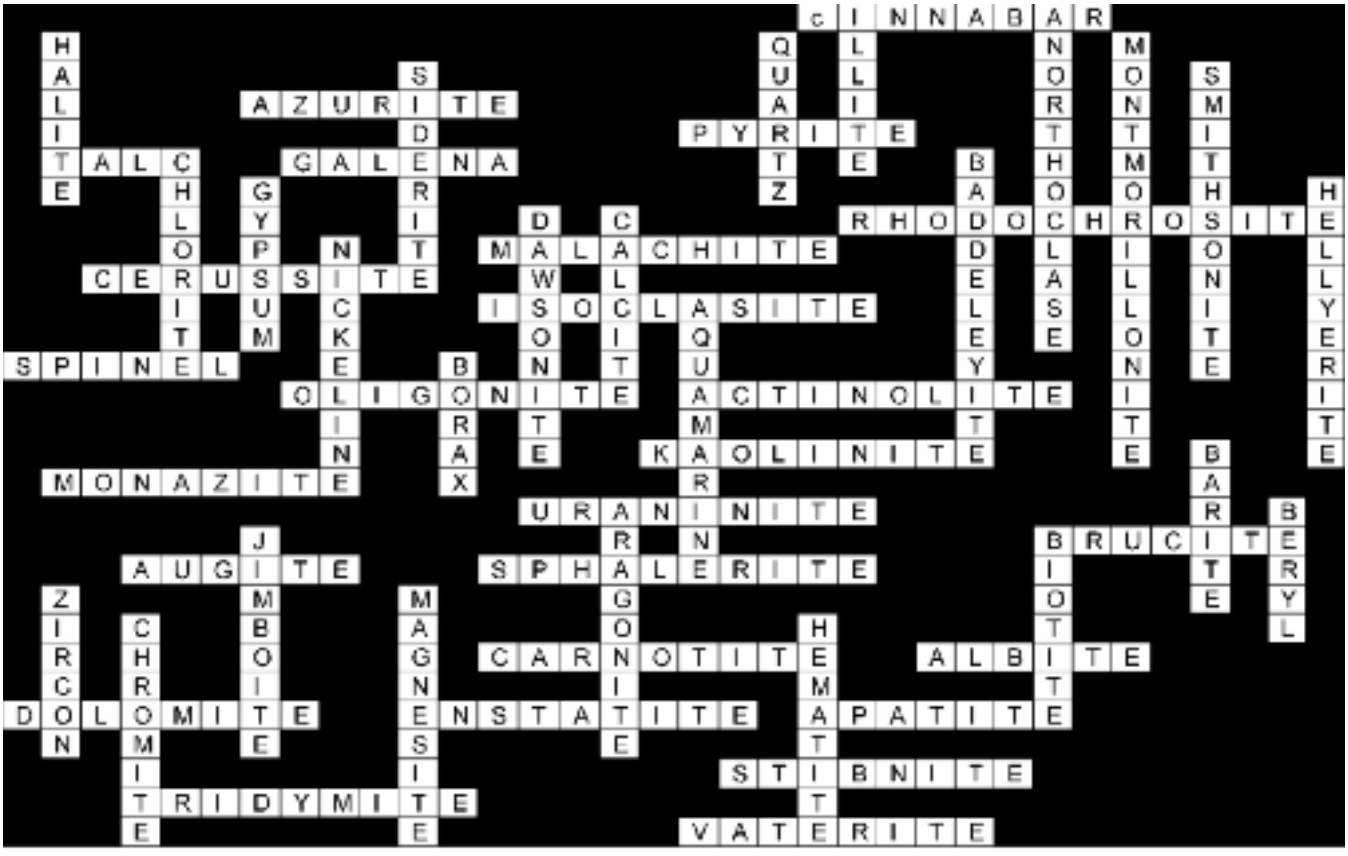
35 Named after a Germanic tribe

36 Named after Celtic tribe

37 Continuation of the recent

38 Named after the Latin name for the city of Paris

September Crossword Puzzle Answers



Full Color Ads Now Available!

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, Canvas or CorelDraw. Files should be saved and submitted in .ai (Adobe Illustrator) format. Send them as separate attachments via email 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 .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 1 MB) or on CD or DVD.

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

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All Sponsor logo images must be 120 W x 90 H pixels and be no more than 8 bits per pixel with a maximum of 256 colors. The format can be either GIF or JPG, preferably interlaced or progressive. It is important to make the image file size as small as possible so that it will transfer to the users' browser quickly.

To arrange to become a web page Sponsor, contact the webmaster@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 $24.00; emeritus members pay $12.00; students are free.

Mail this application and payment to:
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Telephone: 713-463-9476 Fax: 281-679-5504

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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: _____

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Professional Interest:

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

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

School _____

Degree _____ *Major* _____ *Year* _____

_____

School _____

Degree _____ *Major* _____ *Year* _____

_____

Earth Science Work Experience _____

_____

_____

_____

Applicant's Signature _____ *Date* _____

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

Name: _____

Signature _____ *Date* _____

Membership Chairman _____ *HGS Secretary* _____

revised 8/6/10

Houston Petroleum Auxiliary Council News

Winona LaBrant Smith, HGS Liaison

When you think HPAC has achieved its pinnacle, they prove you wrong by executing another more exciting event. The September 14th luncheon was held at Lakeside Country Club with Joe Mannke, owner of Bistro le Cep, as our featured program. Chairs **Susan Graul** and **Georgeanne Massell**, with their committee, **Betty Alfred, Louise Andrews, Virginia Angelos, Sheri McQuinn, Barbara Peck** and **Mrytis Trowbridge**, produced a successful event. Kudos to this committee!

The 2010-11 Committee Chairs for HPAC are:
Courtesy Committee - **Mary Harle** and **Nan Pye**; Membership Committee - **Sally Blackhall**; Notification - **Nancy Giffhorn**; Yearbook - **Sheri McQuinn**; and 501c Ad Hoc - **Phyllis Carter**.

Martha Lou Broussard, Department of Earth Science, Rice University, has developed a new interest group for HPAC, ***HPAC EXPLORING HOUSTON***. Martha Lou asks: "Are there places in Houston and environs that you have wanted to visit like some of the smaller museums, places to tour such as a cheese factory, have a docent-led walk around Glenwood Cemetery with Houston's famous of yesteryear, visit an artist's studio, try some of the many ethnic foods, etc., but just have not?" HPAC is forming a special interest group so you can do these and many more things. We will meet two or three times each year to take advantage of our diverse city. You are invited to join your fellow members to get to know them and your city. The first meeting will be September 28. We plan to watch unleavened bread being baked against the side of a brick oven and then enjoy delicious Persian food before visiting a chocolate factory for a tour ending at the store, of course. Aren't you hungry already? If you would like to become a part of this group email Martha Lou Broussard at mlbrou@rice.edu or phone her at (713) 665-4428. Make your bucket list of Houston places."

The diversity of the HPAC members continues to amaze everyone. The member we are introducing to you this month from our virtual garden of exciting ladies is **Mary Kae Dingler**. Mary Kae was born in St. Paul, Minnesota. She began her professional career working in a gift shop while attending the University of Minnesota. She became a buyer for the store. She moved to Houston, and started her own special events and gifts business. Her neighbor, a young geologist, wanted her to meet a friend (another young geologist). Attending the neighbor's engagement party, she and Craig Dingler met and developed a chemistry that still remains. AND you know the rest of the story.

Craig Dingler is well known in geological circles. He has been a member of HGS since 1983 and has moved through ranks of editor, treasurer, and president of the HGS. What a job he did.

Mary Kae came from a very talented and creative family and shares their talents and creativity. Her brother is a distinguished engineer with Medtronics, has 6 patents, and was a designer for the pacemaker that my husband, Marvin Smith, and former VP Dick Cheney have implanted in their chests. Mary Kae's natural abilities are more creative. As her business grew, Mary Kae began to develop more ingenious ways to showcase her special events. After organizing a huge party at the ranch of a prominent River Oaks family, she decided there had to be a better way to decorate than what was available. After much thought the "Eureka moment" came. She had to do research, develop a prototype, seek a patent, and deal with attorneys. This was a slow and painful process but Mary Kae has tenacity and perseverance. After receiving her patent, she needed to manufacture and sell her product. This process has been an education in itself. She now markets her Balloon Decorating Strip through the five largest balloon distributors to stores all over the world including, Party City and our Arnes's in Houston. It is used to make balloon arches and columns at proms, trade shows, and company events. She has lectured on the development of the Balloon Decorating Strip to a class at the U of H School for Entrepreneurship. What an incredible accomplishment!

Now, in her spare time (?), Mary Kae donates countless hours to Child Advocates. She is a court-appointed special advocate who represents the interests of abused and neglected children in the judicial system. Since 1996 she has helped more than 40 children, most of the time with happy endings. Several of the children have been adopted and Mary Kae is always present for those happy events. Being a child advocate is a rewarding job with a lot of heartbreak, but she has knowledge that this community will be a better place for the efforts of these dedicated people. What a contribution to society.

Mary Kae was a member of HGA and now is active in HPAC. She has served HGA at conventions, Museum Nights, the HGS 75th Anniversary Party and in many other capacities. She and Craig are well traveled — Egypt and China to name only a couple of the places they have toured. She always has time to be a friend to her many acquaintances. Mary Kae, what an asset you are to HPAC!

Remember that HPAC has several Interest Groups: Bridge (contacts: **Audrey Thompkins**, 713-686-0005 or **Daisy Wood**, 713-977-7319), Book Club (contacts: **Martha Lou Broussard**, 713-665-4428 or **Phyllis Carter**, 281-397-9888) and HPAC Exploring Houston (contact: **Martha Lous Broussard**, 713-665-4428).

Geologists, please encourage your spouses to join HPAC. A HPAC membership form is included on the next page. (Contact: **Winona LaBrant Smith** at 713-952-2007)

You are invited to become a member of

HPAC

2010–2011 dues are $20.00 Mail dues payment along with the completed yearbook information to **Sally Blackhall,** 8714 Sterling Gate Circle, Spring, Texas 77379

YEARBOOK INFORMATION

Last Name	First Name	Name Tag
Spouse Name	Name Tag	HGS Member's Company
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Street Address	City	Zip
Email Address	Home Fax	

Please choose a committee assignment if you are interested.

☐ Fall Event	☐ Yearbook	☐ SOS	☐ Membership
☐ Christmas Event	☐ Spring Event	☐ Notification	☐ Game Day
	☐ May Luncheon	☐ Courtesy	

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