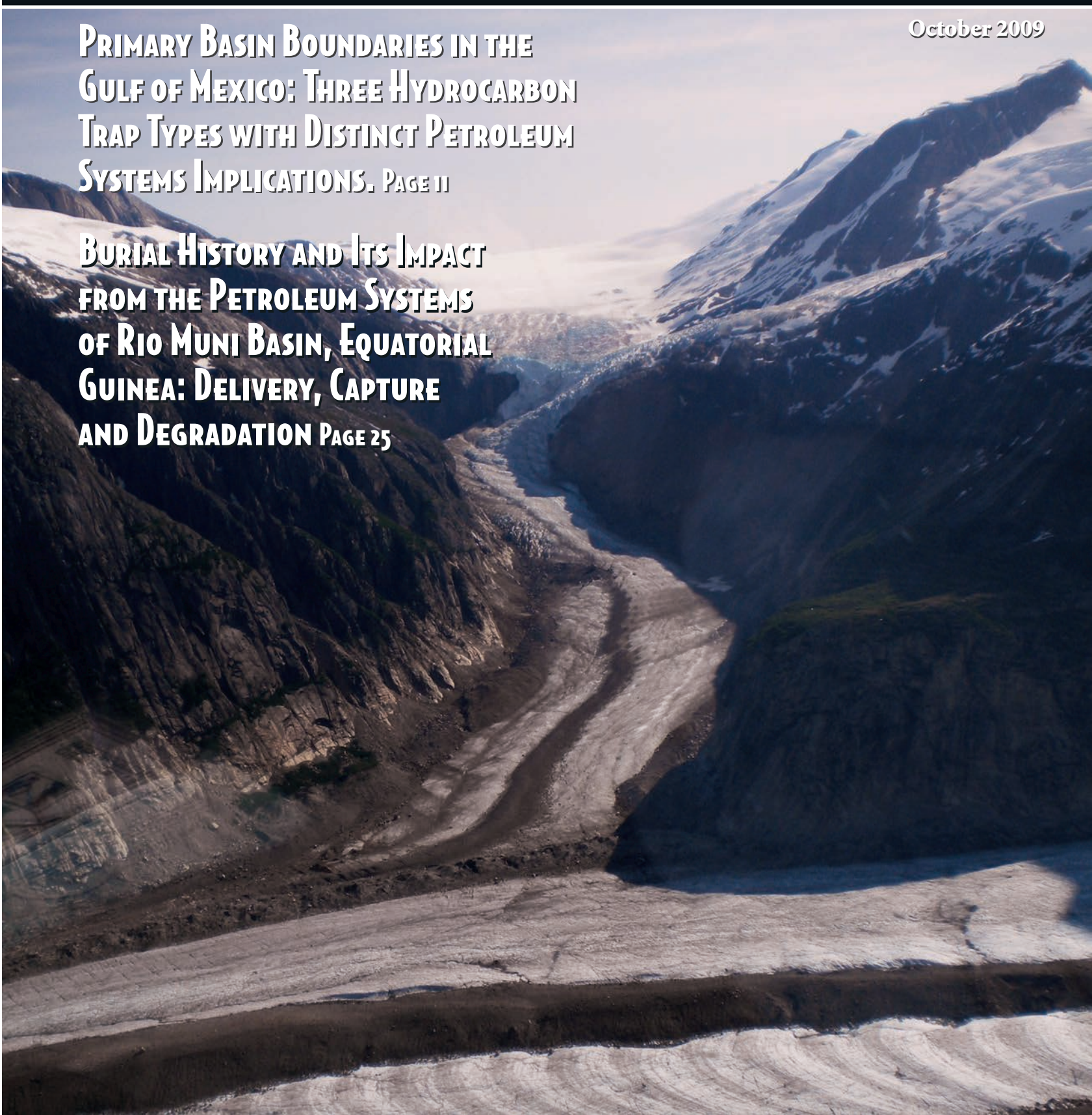
HGS Bulletin
Houston Geological Society
Volume 52 Number 2
October 2009



Primary Basin Boundaries in the Gulf of Mexico: Three Hydrocarbon Trap Types with Distinct Petroleum Systems Implications. Page 11

Burial History and Its Impact from the Petroleum Systems of Rio Muni Basin, Equatorial Guinea: Delivery, Capture and Degradation Page 25

The Bulletin
Houston Geological Society

Volume 52, Number 2 October 2009

In Every Issue

The Houston Geological Society Bulletin (ISSN-018-6686) is published monthly except for July and August by the Houston Geological Society, 14811 St. Mary's Lane, Suite 250, Houston, Texas 77079-2916. Phone: 713-463-9476; fax: 281-679-5504

Editorial correspondence and material submitted for publication should be addressed to the Editor, Houston Geological Society *Bulletin*, 14811 St. Mary's Lane, Suite 250, Houston, Texas 77079-2916 or to BJKatz.hgs@gmail.com

Subscriptions: Subscription to this publication is included in the membership dues ($24.00 annually). Subscription price for non-members within the contiguous U.S. is $30.00 per year. For those outside the contiguous U.S. the subscription price is $46.00 per year. Single-copy price is $3.00. Periodicals postage paid in Houston, Texas.

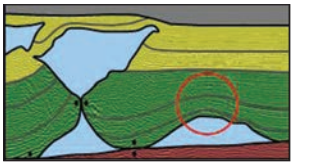
POSTMASTER: Send address changes to Houston Geological Society Bulletin, 14811 St. Mary's Lane, Suite 250, Houston, Texas 77079-2916

Technical Meetings

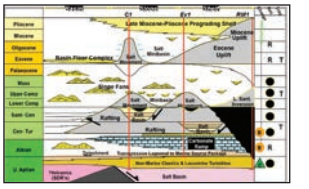
Other Features

page 6

page 8



page 11



page 25

page 39

About the Cover: Tribuatries to the Chilkoot Glacier, northeast of Skagway, Alaska. The photo displays the lateral and medial moraires forming coalescing lateral moraines. *Photo was taken on July 4, 2009 by Jeffrey W. Lund, Corridor & Associates, LLC.*

Board of Directors 2009–10

http://www.hgs.org/about_hgs/leadership.asp

President (P)	Gary Coburn	Murphy Oil	281-782-7021	garycoburn.hgs@gmail.com
President-elect (PE)	John Tubb	INEXS	713-805-5649	jbtjr@sbcglobal.net
Vice President (VP)	Art Donovan	BP	281-850-4312	donovan@bp.com
Secretary (S)	Amy Sullivan	Shell	281-705-8280	amy.e.sullivan@mindspring.com
Treasurer (T)	Matt Boyd	Southwest Energy	281-618-7379	matboyd@gmail.com
Treasurer-elect (TE)	David Meaux	BP	281-366-2847	dpmeaux@bp.com
Editor (E)	Barry Katz	Chevron	832-854-6989	BJKatz.HGS@gmail.com
Director 07-09 (D1)	Ianthe Sarrazin	Petrobras America	713-808-2775	ianthe.hgs@gmail.com
Director 07-09 (D2)	Walter Light	Thunder Exploration	713-823-8288	wthunderx@aol.com
Director 08-10 (D3)	Robert Pledger	Consultant	832-512-0495	rpledger@hotmail.com
Director 08-10 (D4)	Tarek Ghazi	Aramco Services	713-432-4562	tarek_ghazi@yahoo.com

Committee	Chairperson	Phone	Email	Board Rep.
AAPG HOD Foreman	Steve Levine	832-486-6018	steve.d.levine@conocophillips.com	P
Academic Liaison	Brad Hoge		hogeb@uhd.edu	D3
Ad Hoc Constitution & Bylaws	Steve Earle	713-328-1069	steve.hgseditor@gmail.com	P
Advertising	Lilly Hargrave	713-463-9476	lilly@hgs.org	E
Arrangements	Matt Boyd	281-618-7379	matt_boyd@swn.com	TE
Awards	Mike Deming	281-925-7239	michael.deming@deepwater.com	VP
Ballot	Paul Hoffman	713-871-2350	phoffman@jlaev.com	S
Calvert Memorial Scholarship	Carl Norman	713-461-7420	dod895@aol.com	PE
Community Outreach	Walter Light	713-823-8288	wthunderx@aol.com	D1
Continuing Education				D1
Directory	Michael S. Benrud	713-785-8700 x104	mbenrud@sbres.com	EE
Earth Science Week	Martha McRae	713-869-2045	mcrae_1125@comcast.net	D1
	Jennifer Burton		jlbgeo@comcast.net	D1
Engineering Council	Claudia Ludwig	713-723-2511	petra@hal-pc.org	D4
Environmental & Eng Geologists	Matthew Cowan	713-777-0534	wrcowan1@hal-pc.org	VP
Exhibits	Mac Mckinney	281-353-0661	wnmckinney@comcsat.net	D3
Field Trips	Gary Moore	713-466-8960	gmoore@wellhub.com	D4
Finance	Joe Lynch	281-496-9898 x134	jly@sptgroup.com	T
Foundation Fund	John Adamick	713-860-2114	jada@tgsnopec.com	PE
General Meetings	Art Donovan	281-850-4312	donovan@bp.com	VP
Golf Tournament	Mark Dennis	281-494-2522	mdennis@petrolog.com	D1
Government Affairs	Arlin Howles	281-808-8629	tidenv@sbcglobal.net	D4
	Henry Wise	281-242-7190	hmwise@yahoo.com	D4
Guest Night	Bill Osten	281-293-3160	bill.w.osten@conocophillips.com	D2
Houston Energy Council	Sandi Barber	713-935-7830	sbarber@seismicmicro.com	D4
HPAC	Winona Labrant Smith	713-952-2007	wlbrant@hal-pc.org	S
International Explorationists	Justin Vandenbrink	281-448-6188	vandenbrinkj@rpsgroup.com	VP
Ad Hoc Int'l Year of Planet Earth	Sandi Barber	713-935-7830	sbarber@seismicmicro.com	D3
Membership	Shari Sartain	281-382-9855	smsartain1@comcast.net	S
Membership Growth	Linda Sternbach	281-679-7333	linda.sternbach@gmail.com	D2
Museum of Natural Science	Inda Immega	713-661-3494	immega@swbell.net	D3
NeoGeos	Cecelia Baum	713-346-5826	cecelia.baum@maerskoil.com	S
New Publications	Bill Rizer	281-392-0613	rizerwd@gmail.com	D1
Nominations	Kara Bennett	832-452-3747	kcbhgs@gmail.com	P
North American Explorationists	Steve Getz	713-871-2346	sgetz@jlaev.com	VP
Northsiders	Tony D'Agostino	832-237-400	tony.dagostino@weatherfordlabs.com	VP
	David Tonner	713-516-6894	David.Tonner@weatherford.com	VP
Office	Ken Nemeth	713-689-7605	knemeth@houston.oilfieldl.slb.com	PE
Publication Sales	Tom Mather	281-556-9539	geomather@aol.com	D1
Remembrances	Art Berman	713-557-9067	bermanae@gmail.com	EE
Shrimp Peel	Lee Shelton	713-595-5116	lshelton@knowledge-reservoir.com	D1
Skeet Shoot	Tom McCarroll	713-353-4728	tom_mccarroll@yahoo.com	D1
Technofest	Deborah Sacrey	713-468-3260	dsacrey@auburnenergy.com	D1
Tennis Tournament	Ross Davis	713-659-3131	rossdavis@davisbros.com	D1
Vendor's Corner	Paul Babcock	713-859-0316	pebabcock@aol.com	TE
Web Site Manager	Tarek Ghazi	713-432-4562	hgs.webmanager@yahoo.com	D4
Web Master	Lilly Hargrave	713-463-9476	webmaster@hgs.org	PE
HGS Office Manager	Sandra Babcock	713-463-9476	sandra@hgs.org	

It's Time to Renew Your HGS Membership

Your membership expired June 30, 2009

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

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)

Full-time students enrolled in a qualified geology program may be eligible to have their $12.00 membership fee subsidized; details will be available on the HGS website soon.

Name: _____

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

Current Email: _____

Preferred Address for HGS mail and *Bulletin*:

_____

City: _____ State: _____ Zip Code: _____

Phone: _____

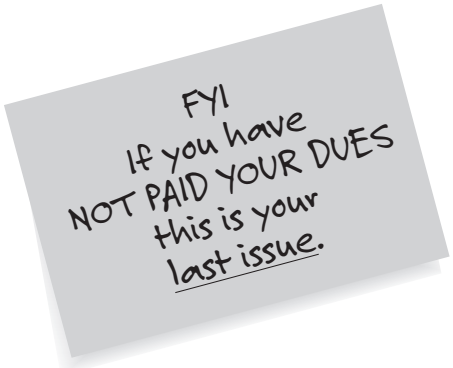
This is my home address _____ business address _____

Annual dues ($24) for the 2009–2010 year: _____

Scholarship Contributions — Calvert: _____

HGS Foundation — Undergraduate: _____

TOTAL REMITTANCE: _____



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

PAYMENT

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: _____

Gary Coburn
garycoburn.hgs@gmail.com

Geologists in Our Schools Make a Difference

One of the items I want to make a priority this year, is our (the HGS membership's) involvement in our local schools. A great many of our members have children in school. Therein lays a golden opportunity to not only enrich the lives of our future generations but actually encourage active participation in earth science. I took the opportunity to make a geologic presentation to the entire third grade (8 classes) at Williams Elementary school in Cinco Ranch, Katy ISD. It was a very rewarding experience which I hope to repeat. Many members have told me that their interest in geology came from encounters with science at an early age. Teachers make such a big difference in our children's lives and perspectives. An enthusiastic earth science teacher can inspire the imagination of our children and perhaps influence the future of geology. That sounds like quite a leap doesn't it? Well, even the great thinkers in geology all had to start somewhere! Someone kindled that spark of idle curiosity into a lifelong quest for solving the earth's mysteries. Having a teacher actually take the time to, not only acknowledge that curiosity but look up and identify a rock for me, changed my life. I like to think for the better! Who knows, I might have ended up as a politician or in jail or a politician in jail, if it weren't for the few minutes it took for that teacher to stimulate a lifelong passion for geology. The cool thing is, it doesn't have to be a full time teacher that influences someone in that manner. All it really takes is someone who cares enough to give of their time to talk about geology. The passion with which they speak is what ignites the curiosity. Taking a few minutes or even a couple hours from one's day is all it takes. The HGS actively supports our earth science teachers in the community. We have, for instance, very nice geologic maps of the US that are available for our members to take to their community schools. There are other resources available as well. The Houston Gem and Mineral Society have mineral and fossil kits they will allow us to take and leave with the school when giving our presentations. I am hoping to have more on that later as I believe it is something in which HGS should become active.

We must capture that natural curiosity kids have and encourage it.

There are many reasons we should take the time to visit a school at least once a year even if you do not have children currently enrolled. One is to help battle the junk science that is prevalent in our society. Our schools have not escaped this epidemic. There are a growing number of reports based on real documentable science contradicting the mass media view of the world. The mass media will report any "study" by any "scientist" confirming that global warming/ climate change or any other popular notion is not only real but caused by humans. What you will not hear about is the growing number of real scientists basing their conclusions on real data who are opposing those views. For example, how many of you heard of the NASA report released last fall which states that "most of the changes seen in the upper Arctic Ocean are in fact the result of natural ocean circulation patterns and not trends in global warming"(1). What???? Heresy I say!! Heresy!! Oh it gets better! "In April, The Scientific Committee on Antarctic Research revealed that ice is actually expanding in much of Antarctica, not shrinking as originally thought, noting that the South Pole had shown significant cooling in recent decades"(1). Oh my!! What can those researchers be thinking? Didn't they see "An Inconvenient Truth"? Those scientists are just looking at monitoring station data and satellite data (tampered with by aliens no doubt) and reaching horribly wrong conclusions! Why, Al Gore just needs to explain to them the error of their ways! I am, of course, being a bit facetious here. The science behind those reports is very real as are the conclusions. The point I am trying to make is that people in the US and people in general, are accepting junk science and popular, trendy statements (i.e. Save the planet) as scientific "fact" even when those "facts" are obviously and blatantly wrong. I am enough of a skeptic to believe that much of the cries of alarm and doom emanating from academia in recent years has been fed by an ever increasing need for grant money. Nothing like a little "the sky is falling", "the ice caps are melting", alarm to get a research project funded. The fact is that most geologists shake their heads in wonder when people predict what will happen to the earth from 60 years worth of data. We must think a tad more long term don't you think? Perhaps getting real geologists and paleo-climatologists appointed to some of the politicians climate warming committees would help? Of course, that would involve hard science which might have detrimental effects on the conclusions of the warm and fuzzies crowd not to mention re-election campaigns.

From the President *continued on page 9*

HGS Golf Tournament

Monday – October 26, 2009
Kingwood Country Club

CHECK OUT OUR NEW DATE!

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 16th and $150.00 per person or $600.00 per team on entries received after October 16th. 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 (mobile) or by email at mdennis@petrolog.com

To enter, fill out the entry form at the bottom of this page and mail or fax 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

9:30 – 11:30 a.m.	Registration and free use of driving range
10:30 – 11:30 a.m.	Optional lunch
11:45 a.m.	Shotgun start
4:45 p.m.	Cash bar, open buffet
5:30 p.m.	Dinner with awards presentation

Name _____ Phone _____ Amount Enclosed _____

Company _____

Billing Address _____

Credit card # _____

Exp. Date _____ Code# _____

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

Foursome Captain's e-mail _____

Barry Katz
BJKatz.HGS@gmail.com

Should We Ever Stop Learning?

Graduation is considered by many to be the end of one's formal training. The degree received is a statement that an individual has been exposed to the necessary tools to function as a professional, with the thesis or dissertation being confirmation that one can solve a problem and document and communicate the results.

For most, graduation is actually the start of a more practical education, where problems are posed and solutions have financial implications. Sometimes the problems require a specialist while other times someone with a broader skill set is needed. Very often the questions posed require some bit of knowledge or skill not learned in school. In addition, over time the nature of the problems change as do the tools available and our collective understanding of processes. Therefore, in order to effectively survive one needs to keep skills current as well as broaden the number of areas that we may effectively operate in. It is also important to remember that we are professionals, and as professionals we owe it to ourselves, our community, our employer, or investors to stay technically current, whether required for maintaining a license or not. After all you wouldn't want your doctor or dentist to treat you the same way they would 10, 20, or 30 years ago. So why should we excuse ourselves simply because we are for the most part not required to accumulate continuing education credits to practice our profession. You may argue that we don't maintain the status quo after all, we have shifted from paper records and colored pencils to workstations. My response to that is simple. Yes, we all have new tools but we don't necessarily use them any differently.

…learning is not a passive activity.

As geologists, how can we approach these needs? First there needs to be a realization that learning is not a passive activity. Sometimes we are lucky and hear a comment or see a note that brings new insight and may change how we think about or approach a problem. But in reality learning is an active process.

There are a number of activities that we can consider to achieve this. There is reading. A quick review of library shelves reveals that there are over 500 journals and newsletters published in various languages dealing with different aspects of geology and geophysics. In addition, numerous special publications and monographs are published on an annual basis. Much more than an individual can hope to consume. Some may use abstracting services to gain a broad perspective while others may simply focus on a few journals in their areas of primary interest. This vast amount of literature published each year may be overwhelming but it truly provides an opportunity to learn what's new in our own area of expertise as well as to broaden our technical scope. For example, a number of us have been looking at what is developing in the field of carbon sequestration because of its potential implications on how the world will operate in the future. Who would have thought that just ten years ago?

Beyond books and journals, there are short courses, webinars, and a number of professional conferences and meetings each year that provide learning opportunities. In fact, one could spend the full year on the road just attending geoscience meetings. Included in this long list of meetings are those offered by the Houston Geological Society. These meetings provide multiple opportunities for learning. The technical presentations, whether they are made as oral or as poster presentations, provide an introduction on new topics as well as guidance on where the science is heading. They also provide an opportunity for interaction with individuals actively engaged in your area of specialization or one in which you are just interested in learning more about. In addition, these meetings provide an opportunity to network and learn what your colleagues are thinking and where they are working. This, too, is part of the practical learning process.

The HGS provides its membership opportunities for continued learning through short courses, general meetings, luncheons, and international meetings. The HGS board and its committees do their best to build and develop a relevant and timely program. I strongly recommend that you consider making these short courses and meetings part of your training and development program. They have multiple advantages including their local nature and cost. I also suggest that if you don't see what you need in the long list of offerings be proactive and contact the board and let them know your needs so that HGS can help fill those gaps or expand your scope.

Whoever said that your education ends with graduation? Graduation is a stepping stone to a lifelong commitment to learning. ■

Until next time…

Geosphere, Hydrosphere, Atmosphere and Biosphere all come together in Understanding Climate

Earth Science Week, 2009

October 10 - 18

Celebrate with us by participating in these great activities:

Annual Family Earth Science Festival

Houston Museum of Natural Science

Saturday October 10, 2009, 11:30pm- 4:00pm

We kick off the week with our annual Family Earth Science Festival at the Houston Museum of Natural Science's Weiss Energy Hall. The festival will feature a passport program that takes you through hands-on demonstrations, special presentations, Boy Scout badge activities, and other great programs that broaden awareness of earth science. This is a great opportunity to share your love of science with family and friends.

This event always needs many volunteers. Please contact the ESW committee if you would like to help. Martha McRae at mcrae_1125@comcast.net or Jennifer Burton at jlbgeo@comcast.net.

Please visit the museum's website at www.hgms.org for more information on the event or contact Inda Immega at immega@swbell.net

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 the American Geological Institute's annual Art, Essay, and Photography contests. Each contest has a topic related to the national Earth Science Theme "Understanding Climate". 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. Details are posted on the AGI's Earth Science Week website http://www.earthsciweek.org/index.html

Students participating in the contest can bring their entries to the Family Earth Science Festival on October 10th and will receive FREE admission to the Museum courtesy of HMNS and HGS. The HGS will display all entries at the Museum on October 10th and then pay the postage to submit them to the AGI national contest. Winners in each category will receive $300 from AGI and have their names published on the AGI's website.

Bolivar Peninsula Fieldtrip

October 17, 2009

Meeting place and time to be announced

Hurricane Ike left an unforgettable mark on our local climate and community. The ESW committee is finalizing details on a fieldtrip to discuss how the coastal environment of our area has changed as a result of this powerful storm. Please check the HGS website for updates. Volunteers will be needed and appreciated.

Please direct questions to Jennifer Burton at jlbgeo@comcast.net

From the President continued from page 5

We have to get people to question things. Our involvement in schools may help in that regard. No, I don't mean by going into schools and trying to brainwash kids. I mean by encouraging kids to question what they hear. We must capture that natural curiosity kids have and encourage it. We have to inspire them to "look it up for yourself". This generation has unparalleled access to information. We have to encourage them to use it. We have to teach them how to sort it out, to separate fact from fiction from conspiracy theory. They may look up things just to try and prove us wrong. Great! Science welcomes challenges. We are all about knowledge, not ideology. If we can get our children to think for themselves, we will have succeeded. If we can get them to understand there is a difference in a report based on real data with the research carefully compiled and openly cited verses those put out by agenda driven socio-environ-political organizations, we will have succeeded. If we can get students researching things instead of simply repeating what the horribly uninformed mass media is telling them, we will have succeeded. The next generation will have succeeded. ■

1. Leeke, Helen: "In defense of the oil and gas industry part 3: Elephant in the room" *E & P Magazine* Online: August 6, 2009 http://www.epmag.com/WebOnly2009/item43433.php

Front row (L to R): Kara Bennett, Tony Reso, Johh Amoruso, Orville Lundstrum, Jeff Morris, Denise Stone, Linda Sternbach, Chester Baird

Back row (L to R): Current President Gary Coburn, Charles Sternbach, Craig Moore, Fred Schall, Dean Grafton, Jim Ragsdale, Craig Dingler, Sabin Marshall, Dan Smith, Mac McKinney, Pat Gordon, Clint Moore, Ron Harlan, Dave Rensink, Dick Bishop, Steve Levine, Jeff Lund.
Present but not pictured: Sandi Barber, Steve Brachman, Paul Britt

Past HGS Presidents Gather

Twenty-seven past presidents of the HGS gathered at the Petroleum Club on August 21, 2009 for the annual Past Presidents' Luncheon. Hosted by last year's president Kara Bennett, the event celebrated the many years of service that the presidents have rendered to their profession.

Current president Gary Coburn spoke briefly about the state of HGS and his plans for 2009-10. Kara Bennett presented the Honorary LIfe Membership Award to Mac McKinney for his many years of service to the society. Mac was unable to make it to the President's Night awards dinner in June because he was returning from the AAPG Annual Meeting, where he orchestrated and manned the HGS booth at the Exhibit Hall.

At the end of the meeting, the past presidents brought each other up to date with their current activities and continued the tradition of telling amusing anecdotes (along with some truly awful puns). The meeting closed with a sitting for the year's photograph. ■

Monday, October 5, 2009

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.

Robin Pilcher, James Trude, Bill Kilsdonk, Michael Quinn, and Rod Graham
Hess Corporation

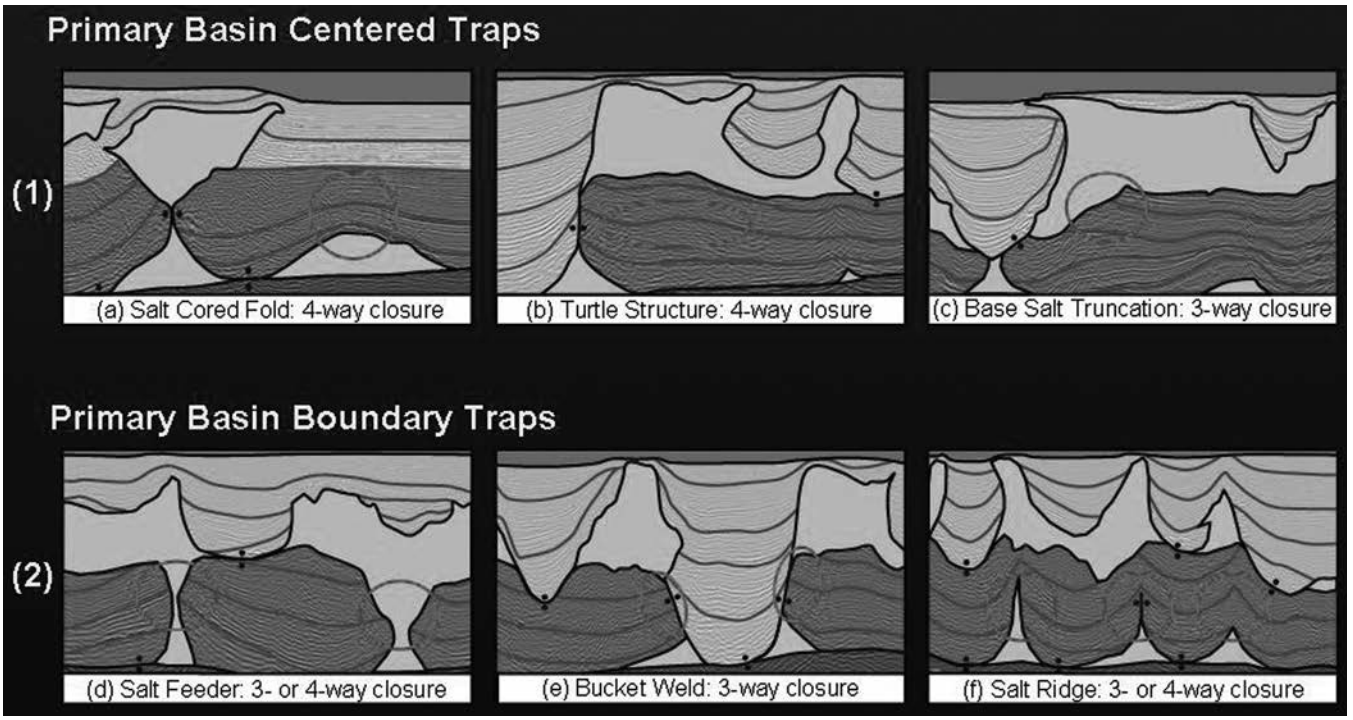
Primary Basin Boundaries in the Gulf of Mexico: Three Hydrocarbon Trap Types with Distinct Petroleum Systems Implications

The primary basins of the Gulf of Mexico form stratigraphically continuous successions on autochthonous salt and therefore contain all the elements of the petroleum system (i.e. source rocks, reservoir intervals, traps, seals). In most of the deepwater northern Gulf the autochthonous salt was deformed during primary basin deposition, initially upward in stocks and walls, and later extruded laterally in a widespread allochthonous salt canopy. As a result, most primary basins are encased either entirely in salt or in some combination of salt and welds. Deepwater Gulf of Mexico exploration is currently focused on targets within primary basins and increasingly on targets at their lateral boundaries. However, because primary basin targets are commonly deep and sub-salt, their boundaries are usually poorly imaged with current seismic technology. Robust structural models are critical to interpreting the structural geometry and evolution of primary basins and to understanding petroleum system implications at their boundaries.

Deepwater Gulf of Mexico exploration is currently focused on targets within primary basins, and increasingly on targets at their lateral boundaries.

Using modern pre-stack depth-migrated 3-D seismic data, three

HGS North American Dinner *continued on page 13*



7TH ANNUAL

WINTER EDUCATION CONFERENCE

HOUSTON, TX • FEBRUARY 22-26, 2010

Five Great Days of the Finest Geoscience Training for One Low Price

Tentative List of Courses:

- Principles of Reservoir Characterization
- Getting Started in Sequence Stratigraphy
- Seismic Stratigraphy & Seismic Geomorphology
- Tight Gas Sands
- Appraising and Developing Coalbed Methane Reservoirs
- Risk and Uncertainty Analysis for Unconventional Resource Plays
- "Old" (Pre-1958) E-Logs: A Quick Review
- Regional Stress and Reservoir Geomechanics
- Image Log Interpretation
- Formation Evaluation of Thinly-Bedded Reservoirs
- Quick Guide to Carbonate Well Log Analysis

(Four concurrent sessions each day - mix and match according to your interests and training needs. Lunch buffet and refreshments included each day.)

Hosted by the Norris Conference Center:

803 Town & Country Lane
Houston, TX 77024
Phone: 713-590-0950
Fax: 713-590-0961
Special AAPG group rates at nearby hotels.

Registration and information:

Toll-free (U.S. and Canada)
888-338-3387, or 918-560-2650
Fax: 918-560-2678
E-mail: educate@aapg.org
Download a registration form at:
www.aapg.org/education/wec.cfm

Tuition for the week:

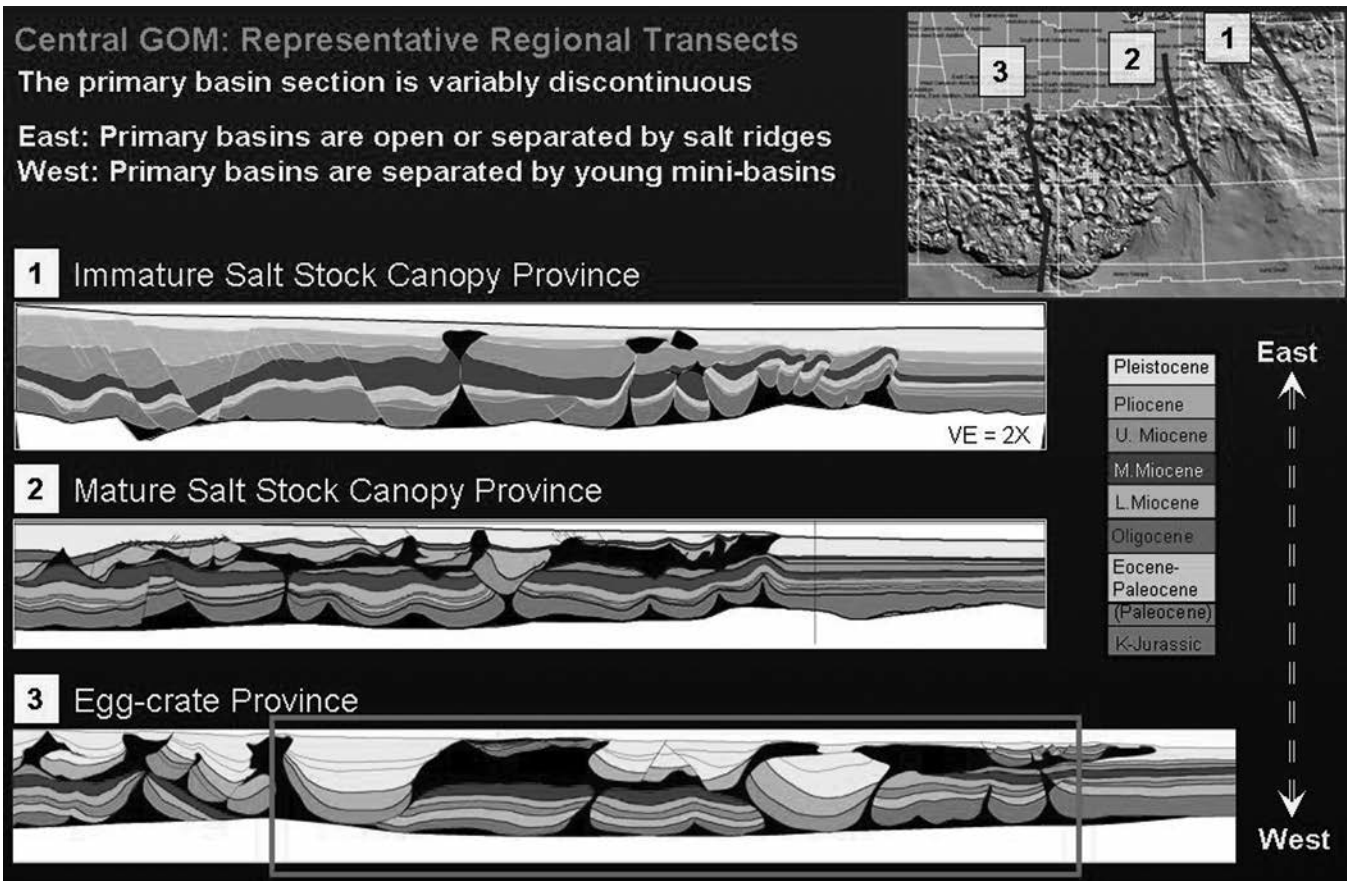
	Price through 1/25/2010	Price increase after1/25/2010
AAPG Members	$1595	$1695
Non Members	$1695	$1795
Individual Courses	$400/day	$450/day

(Your five-day badge can be transferred to a friend or colleague if you can't come all five days.)

MARK YOUR CALENDARS NOW!

SAVE $200 BY BECOMING AN AAPG MEMBER AND REGISTERING BEFORE JAN. 25TH

continued from page 11



major tectono-stratigraphic provinces that characterize primary basin depocenters have been defined: (1) an immature salt stock canopy province in Mississippi Canyon; (2) a mature salt stock canopy province in northern Atwater Valley, southeastern Green Canyon, Walker Ridge, and southern Keathley Canyon; and (3) an "egg-crate" province comprising a polygonal network of primary basins and deep secondary basins, located in western Green Canyon, Garden Banks, and northern Keathley Canyon.

Six classes of trapping geometry in the primary basins are also recognized: (1) autochthonous salt-cored folds; (2) turtle structures; (3) base-of-salt truncations; (4) salt feeders; (5) salt ridges; and (6) bucket welds. Most primary basin exploration to date has targeted traps in one of the first three styles. Future primary basin exploration will increasingly focus on the traps formed by feeders, bucket welds, and ridges. Each of these features implies a specific, contrasting evolutionary scenario. This in turn has implications for reservoir continuity, charge access, and trap configuration. Of the three primary basin-boundary trap types, salt feeders have the lowest petroleum system risk, followed by bucket welds, and lastly salt ridges with the highest risk. ■

Biographical Sketch

Robin Pilcher received a B.Sc. in Geology from Durham University (1992) and a M.Sc. in Applied Structural Geology from Imperial College, London (1993). He went on to complete a Ph.D. at Birkbeck and University College, London (1997) on the structural and tectonic evolution of the Huqf Uplift in Central Oman. Mr. Pilcher is currently working with Hess Corporation in Houston as Senior Geological Advisor for the Gulf of Mexico exploration team. Prior to this assignment, Robin worked in a wide variety of regional to prospect-scale exploration roles in the Gulf of Mexico, Brazil, West Africa, and the North Sea. His expertise is in structural geology with particular interest in salt tectonics. He teaches Hess's internal structural geology courses in Colorado-Utah and the southern Alps. Robin's current research interests include salt-sediment interaction, extensional and strike-slip tectonics, and sea-bed fluid escape features.

Sponsored by Association of Earth Science Editors and Houston Geological Society

Galveston Island Field Trip: One Year After Hurricane Ike

November 1, 2009

A little over one year has passed since Hurricane Ike visited the Texas coast. Join us on a field trip to Galveston with Dr. John Anderson, the Maurice Ewing Professor of Oceanography at Rice University. We'll examine the effects of the hurricane and whether Galveston Island can sustain the unbridled development that was occurring prior to Ike.

Departure is at 8 a.m. from the DoubleTree Guest Suites by the Galleria, 5353 Westheimer Road, 77056. Return is at 6 p.m.

The registration fee of $70 per participant includes round-trip bus transportation, box lunch, and guidebook: *The Formation and Future of the Upper Texas Coast*, published by the Texas A&M University Press.

For more information, contact Elsa Kapitan-White at 281-355-1645 or kwhite1@sugar-land.oilfield.slb.com.

Galveston Island Field Trip Registration Form

Name: _____

Company: _____

Additional participants' names: _____

_____

Address: _____

Telephone: (H) _____ (W) _____

(C) _____

E-mail: _____

Return this form and a check payable to the Association of Earth Science Editors for $70 per field trip participant to: Houston Geological Society, Galveston Field Trip, 14811 Saint Mary's Lane, Suite 250, Houston, TX 77079.

Monday, October 12, 2009

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

John Anderson
Maurice Ewing Professor of Oceanography
Rice University

Past, Present, and Future Sea Level and Subsidence Record for Texas: Predicting the Future of Our Coast

A newly constructed sea-level curve for the northern Gulf of Mexico is used to examine past coastal response to different rates of rise. This information is in turn used to help predict the future of the Texas coast.

The rate of eustatic rise for the past 4,000 years has been 0.4 to 0.6 millimeters per year. The average rate was 1.4 mm/yr between 4,000 and 7,000 years ago and was 4.2 mm/yr between 7,000 and 10,000 years ago. Comparison of the geological record of sea-level rise to satellite altimetry and tide gauge records indicates that the rate of rise has nearly doubled this century and there is growing consensus within the scientific community that the rate of eustatic rise will reach 5.0 mm/yr by the end of this century. The current rate of relative rise varies widely along the coast due to variable subsidence. This is largely due to changes in the depth of the Pleistocene surface and the thickness

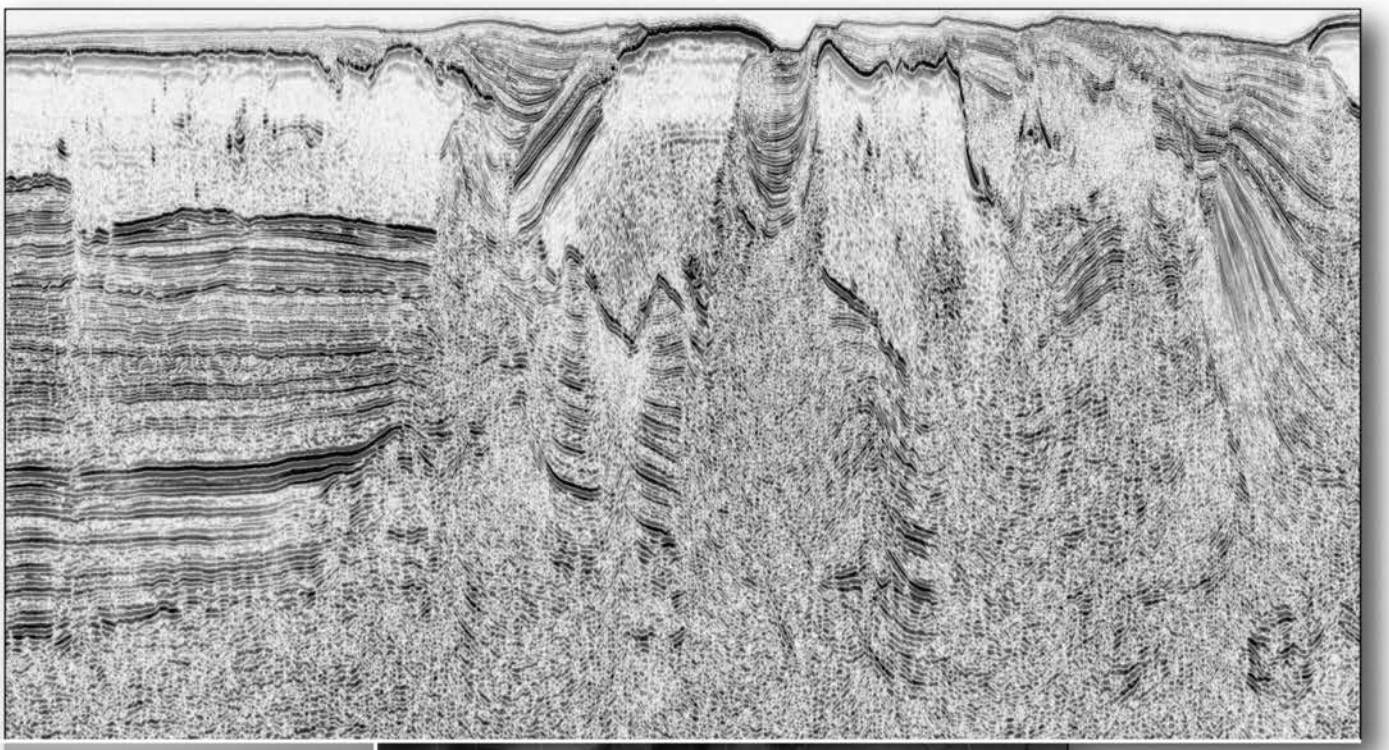
Texas is a 'State of Denial', having done little to prepare for the changes that will occur along our coasts.

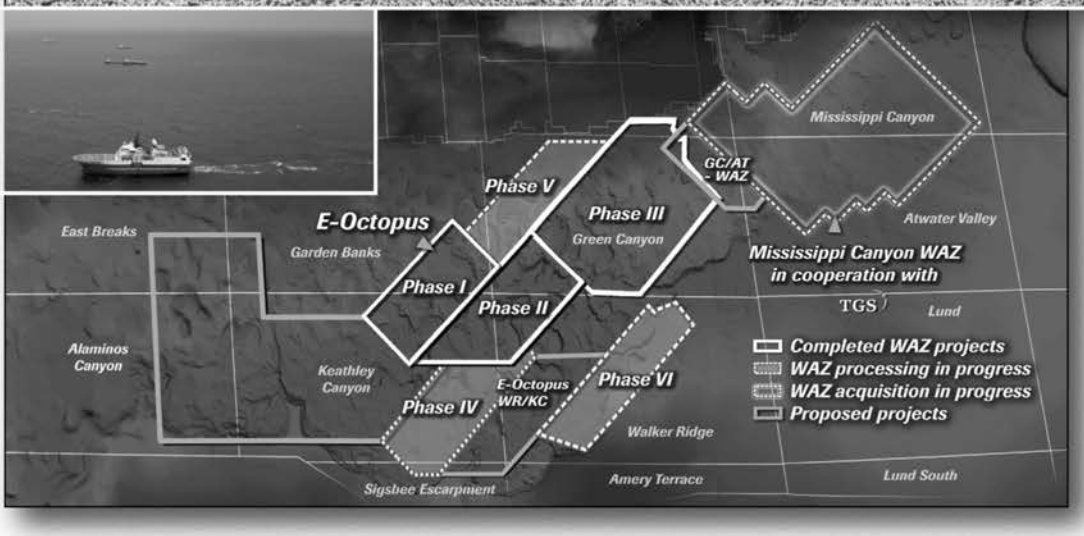
HGS North American Dinner *continued on page 17*

Deepwater Wide-Azimuth

New products now available

Multiclient[E]





WesternGeco E-Octopus wide-azimuth surveys, and our wide-azimuth cooperation with TGS in the Mississippi Canyon area, utilize industry-leading Q-Marine* technology, survey design, and advanced processing, to provide greatly improved confidence in imaging beneath complex salt formations.

E-Octopus IV - Salt Body 1 available now.

E-Octopus V - Sediment flood available now.

E-Octopus VI - Fast-track volume available now.

To learn more about wide-azimuth and our new acquisition projects, call +1 713 689 1000.

www.multiclient.westerngeco.com/gom

Multiclient to the power of E

WesternGeco

HGS General Dinner continued from page 15

of overlying sediments, which control subsidence due to compaction. A comparison of a new composite curve to Caribbean sea-level curves (areas where subsidence is minimal) suggests that coastal subsidence in Texas over the past several thousand years has also been minimal.

A new approach is to study the evolution of the Texas coast and bays at times when the rate of sea-level rise was at or near that predicted for this century (3.0 to 5.0 mm/yr). The result of this analysis indicates that in coming decades the coast will experience more dramatic change than is occurring today. Texas bays will be most severely impacted. Diminished sediment supply and human intervention will only exacerbate the problem. However, predictions are limited by the lack of a detailed sediment budget for the Texas coast and by uncertainties about the frequency and magnitude of tropical storm activity. Ongoing research is also aimed at establishing a detailed sediment budget and a record of past storm frequency and impact for the Texas coast. When it comes to facing the challenge of coastal sustainability this century, Texas is a "State of Denial", having done little to prepare for the changes that will occur along our coasts.

Biographical Sketch

John Anderson is the Maurice Ewing Professor of Oceanography at Rice University. He has participated in 24 scientific expeditions to Antarctica. Currently his two main research interests are in the recent retreat history of the West Antarctic Ice Sheet and the regulating factors thereof; and the evolution of the US Gulf Coast and response of coastal environments to global change. He has authored and co-authored over 185 refereed publications, edited four volumes, and published two books, *Antarctic Marine Geology* (Cambridge University Press) and *Formation and Destiny of the Upper Texas Coast* (Texas A&M Press). John has received numerous awards, including the 2007 Shepard Medal of the Society for Sedimentary Research.

Monday, October 19, 2009

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

Cost: $28 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.

HGS International Explorationists Dinner Meeting

Martin M. Cassidy, Kevin Burke
Department of Earth and Atmospheric Sciences
University of Houston, Houston, Texas

Sub-aerial Basins Below Sea Level Provide Unexpected Reservoirs

Throughout geologic history there have been large sub-aerial basins below sea level. There are two times in the plate tectonic cycle when such basins are likely to form: during the rifting of cratons and when old basins are sealed off during collisions. Examples of the former include the Afar at 410 feet below mean sea level, the southern North Sea at 750 ft bmsl, and the South Atlantic basins. Examples of the latter include the Mediterranean during Messinian time at 10,000 ft bmsl, the Black Sea at 550 ft bmsl, and the Gulf of Mexico during deposition of the Jurassic Norphlet sands and perhaps the Paleocene Wilcox sands at ~6,000 ft bmsl (in shallow water to sub-aerial).

The presence of sub-aerial sediments does not necessarily mean basin uplift!

Basins that were below sea level but sub-aerial influenced sedimentation and should influence the interpretation of their tectonic histories. The presence of sub-aerial sediments does not necessarily mean basin uplift!

A desiccated sub-aerial basin below sea level may have been the site of extensive desert deposits. Winds pouring across the lip and

HGS International Dinner *continued on page 21*

HGS International Dinner *continued from page*

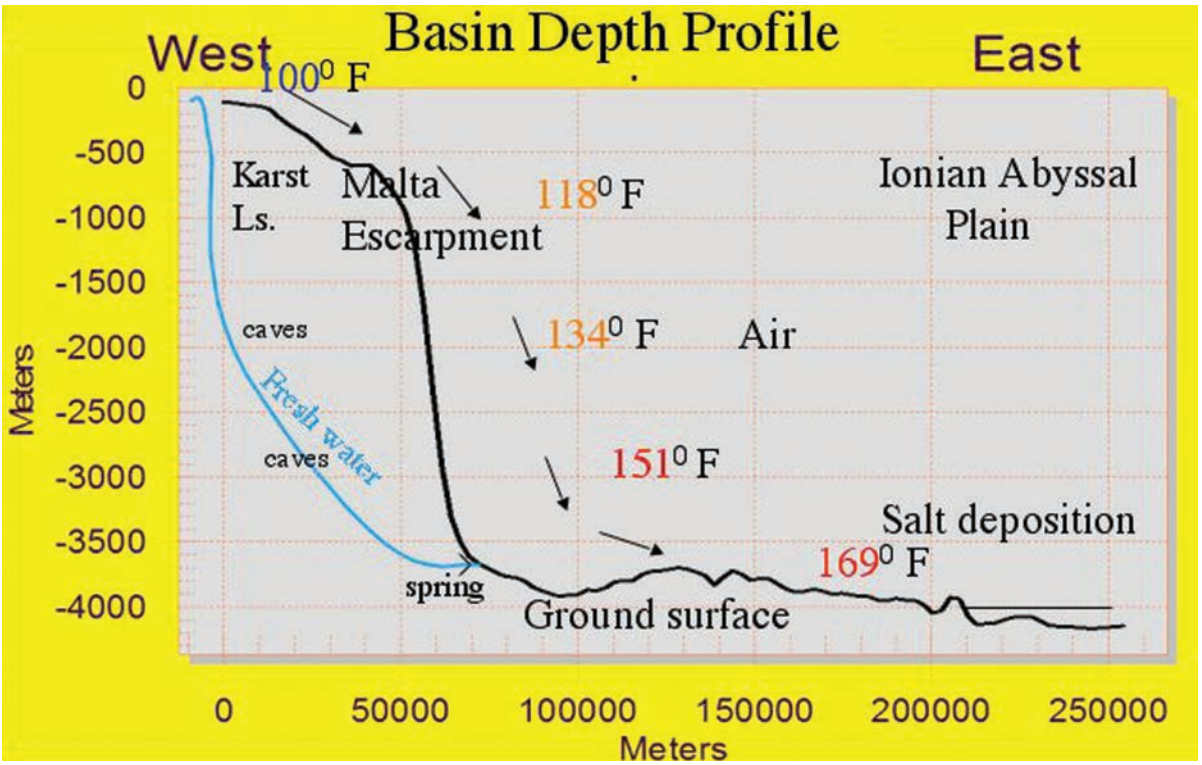
Image from Google Earth, data from Hsu, 1983. DSDP leg 13, Sonnenfeld 1985.

Salt basin C Canyon ▮ Site 125 —— Cross Section

The Mediterranean Sea dried up and only salt lakes remain.

HGS International Dinner *continued on page*

HGS International Dinner continued from page 18



Air descending is compressed at a temperature lapse rate of 9.8° C per 1000 m (about 18° F per 1000 m).

down into a sub-aerial basin below sea level are heated by compression as they descend. This leads to extreme desiccation, the evaporation of brines, and even the deposition of potassium salts. The same winds can move sand dunes into the deepest portions of the basin. These potential reservoirs are not influenced by distance from shore, as are marine sands.

The most significant event in a sub-aerial sub-sea basin is the sudden flooding upon entry of the sea. Unlike a marine transgression that reworks sediments on gradually submerged land, the sea rises to fill the empty basin in a geological instant. There is little disturbance of the covered terrain. Sand dunes are drowned, preserving their shapes and cross bedding, as in the Permian Rotliegend of the southern North Sea. Porosity of sandstone may be preserved due to desert conditions leading to chlorite overgrowths on quartz, as is true of the Norphlet sandstones of the Gulf of Mexico.

Canyons cut to grade with the basin floor are distinctive of former sub-aerial sub-sea basins. They bring coarse clastics to the basin floor. Such buried canyons are found all around the Mediterranean and western Gulf of Mexico.

After the flood, mainly fine clay, carbonates, and organic matter settle out of the anoxic water. Rising H_2S from rotting vegetation of the suddenly drowned landscape precipitates metals from the ocean water and may cause metal-rich fine sediments such as the Kupferschiefer that overlies the sand dunes of the Rotliegend. The fines drape over the pre-existing dunes like a blanket of snow, following the curves of the former landscape.

A basin containing a drowned desert environment may have reservoirs that would not be expected if a uniformly marine basin model was used in interpretation and exploration. Realization that one may be dealing with desert sedimentation can result in interpretations that extend successful oil and gas plays and predict locations of new ones. ■

Biographical Sketch

Martin Cassidy worked for Amoco for 32 years around the world in assignments in production geology, new ventures, and operations. After his retirement from Amoco, he earned a PhD in geology from the University of Houston. (His undergraduate degree in geology was from Harvard University; he also has an MS in geology from the University of Oklahoma.)

Since receiving his PhD, Mr. Cassidy has continued as a research scientist at the University of Houston and also continues writing and consulting about petroleum exploration, basin analysis, and subsurface gases (both hydrocarbon and non-hydrocarbon). He gives special emphasis to CO_2, particularly its relevance to exploration for oil and gas.

Tuesday, October 20, 2009

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.

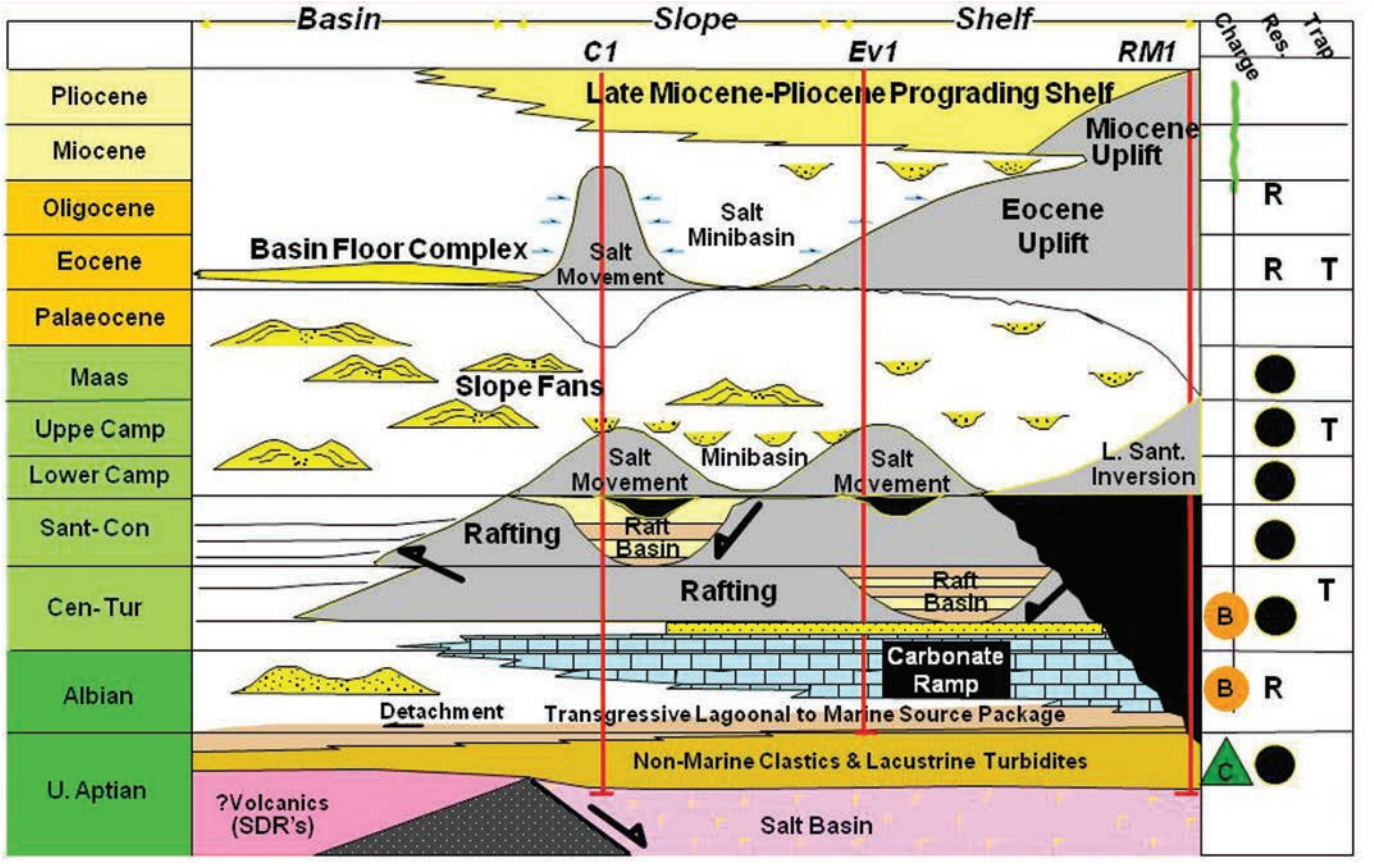
Andrew Pepper
Hess Corporation
Houston, TX

Burial History and Its Impact from the Petroleum Systems of Rio Muni Basin, Equatorial Guinea: Delivery, Capture and Degradation [1]

The Rio Muni Basin, offshore Equatorial Guinea, is a volumetrically significant petroleum system sourced primarily from Lower Cretaceous source rocks and reservoired primarily in Senonian deep marine clastics. The thermal evolution of the source intervals, including the impact of Miocene uplift, erosion and re-burial, effected the timing of expulsion of oil and gas volumes into the system. Differences in source, reservoir and trap histories relating to uplift in-board, vs. little to no uplift out-board, lead to differing fluid properties. These are exemplified in the Elon and Ceiba pool, respectively.

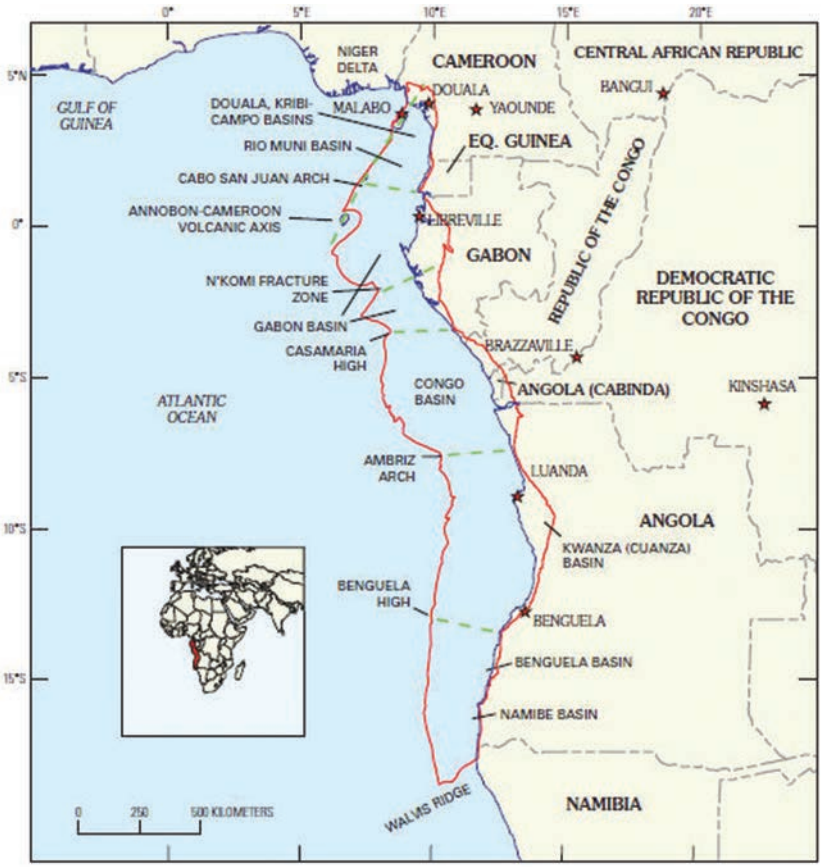
The primary controls on the timing and volume of hydrocarbons expelled are present day crust type and thickness, and overburden thickness at time of maximum burial. Much of the outboard area lies on oceanic crust, while the inboard area contains a structurally complex and variable continental crust. Crustal thickness derived from 3-D gravity inversion, temperature data, and a series of 1-D basin models to map and predict lateral variation in heat flow were all used to determine the thermal evolution of the basin. The eroded section was restored beneath the Miocene unconformity using e-logs and biomarker thermal stress indicators. Uplift and erosion was quantified using both maximum thermal stress indicators with 1D models, and geophysical log responses. From

HGS Northsiders Luncheon *continued on page 27*



Rio Muni Basin – Stratigraphic Architecture

HGS Northsiders Luncheon *continued from page 25*



The eroded section was restored beneath the Miocene unconformity using e-logs and biomarker thermal stress indicators.

the resulting points, a map of net erosion was created and used in two and a half dimension map-based thermal history modeling.

The resultant quantitative forward model of expelled fluid volumes from the source rocks, linked with the burial and thermal history of the reservoirs, explains differences in fluid properties. This model explains the presence of biodegraded residues in oils reservoired presently at high temperatures in the Ceiba field, and the non-biodegraded oil in the presently cool reservoir of the Elon pool. ■

HGS Northsiders Luncheon *continued on page 28*

HGS Northsiders Luncheon continued from page 27

Biographical Sketch

After receiving a First Class Batchelor's degree in Geological Sciences at Leeds University in 1981, **Andy Pepper** joined the oil industry as a geologist with British Petroleum, on assignments to Pakistan, China, Scotland, and Indonesia. From 1985-1989 he took the opportunity to work at BP's Sunbury Research Center, applying the then-emerging technologies of geochemistry and basin modeling to global exploration problems. He went on to research and develop geochemical tools such as the models of petroleum generation and expulsion [2,3,4,5] that are used in a number of commercial basin modeling packages today.

In 1994 Andy came to Houston to work in the exploration team to develop the subsalt play in the GoM [6] and in 2000 founded and became the Leader of BP's Global Petroleum Systems Technical Network.

Andy joined Hess in 2003 to build a petroleum systems capability and was subsequently appointed Manager of Global Geology on the Exploration Leadership Team in 2004. From 2006-2007 he was transferred to Hess' New York office as advisor to the President of Exploration and Production. He now manages Global Basin and Play Analysis in Hess' Global Basins and Unconventional Resources business in Houston.

References:

[1] Niall J. McCormack, Michelle Thomas Stanley, and Andrew Pepper (2008)
Burial History and Its Impact on the Petroleum Systems of Rio Muni Basin, Equatorial Guinea: Delivery, Capture and Degradation. *AAPG International Conference and Exhibition, Cape Town, South Africa 2008*. AAPG Search and Discovery.

[2] Andrew S. Pepper (1991) Estimating the Expulsion Behaviour of Source Rocks: A Novel Quantitative Approach. *Petroleum Migration, Geol Soc. London. Spec.* Pub.

[3] Andrew S. Pepper and Peter J. Corvi (1995a) Simple Models of Petroleum Formation, Part I: Generation of Oil and Gas from Kerogen. *Marine and Petroleum Geology*.

[4] Andrew S. Pepper and Timothy A. Dodd (1995) Simple Models of Petroleum Formation, Part II: Oil to Gas Cracking. *Marine and Petroleum Geology*.

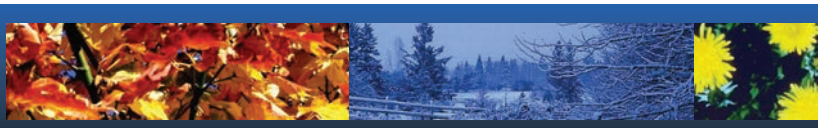
[5] Andrew S. Pepper and Peter J. Corvi (1995b) Simple Models of Petroleum Formation, Part III: Modeling an Open System. *Marine and Petroleum Geology*.

[6] Andrew S. Pepper and Alan Yu (1994) *GCAGS 1994 Meeting "Salt, Sediment and Hydrocarbons"*.

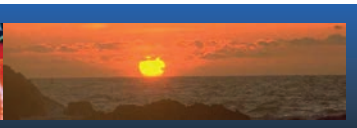
October 10-18, 2009 is Earth Science Week (see page 8 for HGS activities) and many of us will be spending a few hours in a classroom. As Gary Coburn has noted HGS and the Houston Gem and Mineral Society have resources available. There are some additional resources available at the USGS website education website (http://education.usgs.gov/) that you might want to review. 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/of00144.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)

October 2009



Sunday	Monday	Tuesday	Wednesday
	Reservations: The HGS prefers that you make your reservations on-line through the HGS website at www.hgs.org. If you have no Internet access, you can e-mail reservations@hgs.org, or call the office at 713-463-9476. **Reservations for HGS meetings must be made or cancelled by the date shown on the HGS Website calendar, normally that is 24 hours before hand or on the last business day before the event.** If you make your reservation on the Website or by email, an email confirmation will be sent to you. If you do not receive a confirmation, check with the Webmaster@hgs.org. Once the meals are ordered and name tags and lists are prepared, no more reservations can be added even if they are sent. **No shows will be billed.**		**Members Pre-registered Prices:** General Dinner Meeting . . . . . .$28 Nonmembers walk-ups. . . . . $35 Env. & Eng. . . . . .$25 Luncheon Meeting . . . . . .$30 Nonmembers walk-ups. . . . . $35 International Explorationists . . . . .$28 North American Expl. . . . . .$28 Emerging Technology $25
4	5 **HGS North American Explorationists Dinner Meeting** *"Primary Basin Boundaries in the Gulf of Mexico: Three Hydrocarbon Trap Types with Distinct Petroleum Systems Implications" Robin Pilcher, Westchase Hilton* Page 11	6	7
11 **AAPG Mid-Continent Section Meeting** *Tulsa, Oklahoma*	12 **HGS General Dinner Meeting** *"Past, Present, and Future Sea Level and Subsidence Record for Texas: Predicting the Future of Our Coast" John Anderson, Westchase Hilton* Page 15	13	14
18 **GSA Annual Meeting** *Portland, Oregon*	19 **HGS International Explorationists Dinner Meeting** *"Sub-aerial Basins Below Sea Level Provide Unexpected Reservoirs" Martin M. Cassidy, Westchase Hilton* Page 18	20 **HGS Northsiders Luncheon Meeting** *"Burial History and Its Impact from the Petroleum Systems of Rio Muni Basin, Equatorial Guinea: Delivery, Capture and Degradation " Andrew Pepper Crowne Plaza Hotel* Page 25	21
25 **SEG International Exposition & 79th Annual Meeting** *Houston, Texas* **SPWLA Fall Topical Conference Petrophysical Determination of Bulk Volumes** *Austin, Texas*	26	27	28 **HGS General Luncheon Meeting** *"The Haynesville and Hawkville Fields: Richard K. Stoneburner, Petroleum Club* Page 33

GeoEvents

Thursday	Friday	Saturday
1	2	3
8	9	10 *Understanding Climate* Earth Science Week October 10-18 Annual Family Earth Science Festival *Houston Museum of Natural Science 10:30pm–4:00pm*
15 Deadline for Submission to the November *Bulletin*	16	17
22	23	24
29	30	31 NOW you can make your reservations on-line at www.hgs.org

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

Upcoming GeoEvents

Monday November 9th
General Dinner

November 2
HGS Continuing Ed Course
Risk Analysis of Geological Plays, Page 46

November 15-18
AAPG International Conference & Exhibition *Rio de Janeiro, Brazil, Page 48*

Monday November 16th
International Group Dinner

Tuesday November 17th
Northsiders Luncheon

Wednesday November 18th
General Luncheon

December 6-9
Unconventional Energy Resources: Making the Unconventional Conventional *Bob F. Perkins Research Conference, Houston, Texas, Page 50*

Monday December 14th
General Dinner

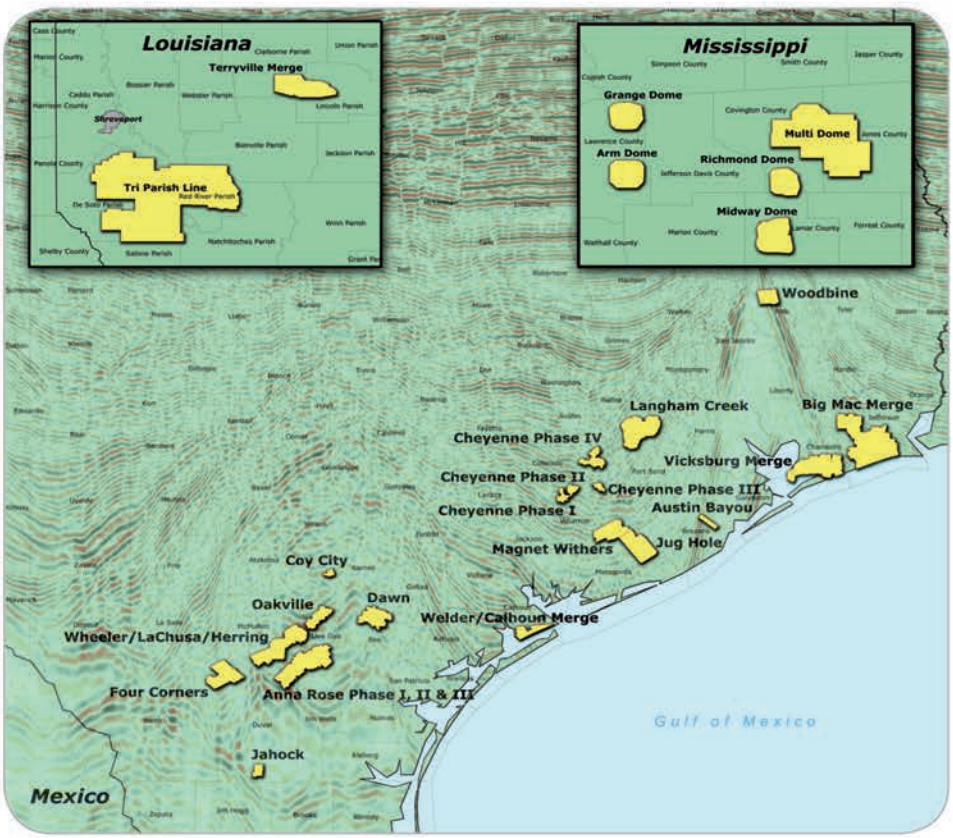
Tuesday December 15th
Northsiders Luncheon

March 2-4, 2010
APPEX 2010 *London, England*

April 11-14, 2010
AAPG Annual Convention & Exhibition *New Orleans, Louisiana*

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

Explore the Promise of the Gulf Coast



CGGVeritas develops and maintains an extensive library of 3D multi-client seismic data shot in the most promising regions of the United States and Canada. The US key areas include: Gulf Coast, West Texas, Mid-Continent, and Western US. Let CGGVeritas give you the edge you need to make informed drilling decisions.

DATA LIBRARY WITH A DIFFERENCE

Gulf Coast
Scott Tinley
+1 832 351 8544
scott.tinley@cggveritas.com

Cheryl Oxsheer
+1 832 351 8463
cheryl.oxsheer@cggveritas.com

Western US
Rick Trevino
+1 832 351 1051
rick.trevino@cggveritas.com

Mid-Continent
Dennis Langlois
+1 832 351 1052
dennis.langlois@cggveritas.com

Contact:
Houston +1 832 351 8300

CGGVERITAS

cggveritas.com/landlibrary

Wednesday, October 28, 2009

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.

HGS General Luncheon Meeting

Richard K. Stoneburner
Executive Vice President-Chief Operating Officer
Petrohawk Energy Corporation

The Haynesville and Hawkville Fields: Two World-Class Gas Shale Plays

Over the past 18 months Petrohawk Energy Corporation has acquired over 500,000 net acres of leasehold and completed over 60 wells in the Haynesville and Eagle Ford shale trends. These are two of the most prolific gas shale reservoirs in the United States, if not the world. With initial production rates ranging consistently from just under 10 Mmcfe/d to over 20 Mmcfe/d, the results from Petrohawk operations in the two fields has resulted in production growth of more than 70 percent year over year.

The Haynesville and Eagle Ford shales have a number of very similar attributes, thus enabling Petrohawk to rapidly develop the drilling and completion technologies necessary to maximize profitability from both plays. While there are many similarities, particularly from a geologic and completion standpoint, there are also many aspects that are quite different, primarily from a drilling standpoint. The one thing that stands out in both plays is the excellent economic return being generated, even in this period of volatile commodity prices. ■

While there are many similarities…there are also many aspects that are quite different…

Biographical Sketch

Mr. Stoneburner is currently responsible for all phases of upstream operations for the company. Prior to his current role he served as Executive Vice President-Exploration. Previous positions include Vice President—Exploration of 3TEC Energy Corporation from 1999 until its merger with Plains Exploration & Production Company in 2003. Prior to joining 3TEC, Mr. Stoneburner worked as a geologist for a number of exploration and production companies including Hugoton Energy Corporation, Stoneburner Exploration, and Texas Oil and Gas. Mr. Stoneburner has over 30 years of experience in the energy business. He has a Bachelor of Science degree in Geological Sciences from The University of Texas at Austin and a Masters of Science degree in Geology from Wichita State University.

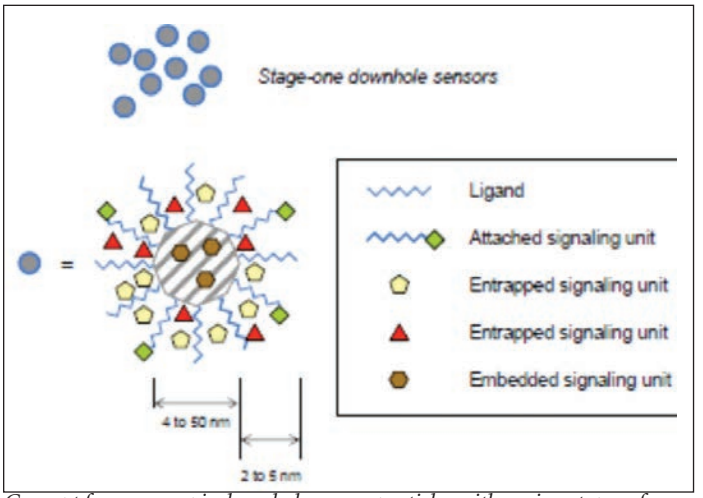
Member News

Michael D. Campbell, P.G., P. H., was elected President-Elect of the Energy Minerals Division (EMD) of AAPG and has been appointed to the Advisory Board of the Gulf Coast Section of the Division of Environmental Geosciences of AAPG. He continues to serve as Chair of the Uranium Committee of EMD.

The HGS Board established an undergraduate scholoraship in the name of Robert Lincoln Maby, Jr., who remembered the society in his estate.

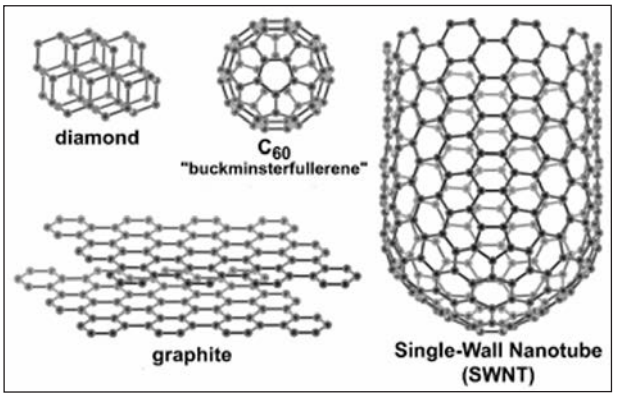
SIPES September Luncheon Meeting
Nanotechnology in the Oil Patch

Dr. Wade Adams, *Director of the Richard E. Smalley Institute for Nanoscale Science and Technology at Rice University*



Concept for nanoscopic downhole sensor particles with various types of signaling units incorporated for tailorable sensing and reporting functions. (Courtesy of Jim Tour, Rice University)

Nanotechnology is a discipline in its third decade, but application of nanotech to the oil and gas industry has only recently begun. The first Society of Petroleum Engineers workshop focusing on nanotech was in February of 2008 in Dubai. There are two more scheduled for 2010. The Advanced Energy Consortium, funded by ten major oil and gas companies, began operations in January of 2008. It now has more than ten basic research projects underway. They concentrate on nanotech downhole, looking at fundamental interactions of nanoparticles in rock formations and at possible ways to interrogate formations and to report on physical and chemical conditions away from the borehole.

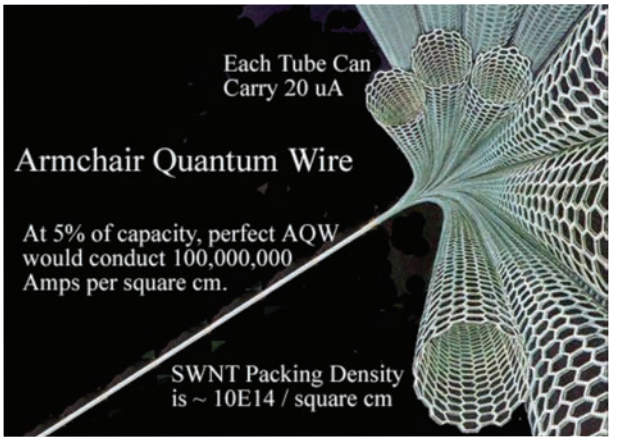


Diamond and graphite were the common forms of carbon until the discovery of the buckyball (C60) molecule in 1985, followed by the carbon nanotube in 1991.

Those who missed the talk last month may find this 'a little' interesting.

There are many other areas of potential impact of nanotech on the energy industry, including light-weight applications of nanocomposites, durable and corrosion-resistant coatings, catalysts, membrane filters, insulation materials, electrical conductors, batteries, sensors, fluid additives, elastomers, etc. Nanotech will likely offer incremental and revolutionary changes to most technologies in upstream and downstream business. The energy industry lags behind the aerospace, medical, electronics and transportation industries in exploring the breadth and depth of nano applications. Energy companies can adopt and adapt nanotech innovations from these other industries, provided that they employ or train nano-knowledgeable scientists and engineers.

Nanotechnology at Rice University has been huge since the discovery of the "buckyball" in 1985 and the Nobel Prize that followed in 1996 to Rick Smalley and Bob Curl at Rice. The Richard E. Smalley Institute, following the death of Smalley in 2005, now advocates and supports research and education in nanotech with over 140 faculty members in sixteen different departments. Major areas of emphasis include nanomaterials, nanobiology, nanophotonics, nanoelectronics, nanoenvironmental research, nanotech in energy, and outreach to the public. Research in all these areas is important and all receive substantial funding. However, research in energy was considered by Rick Smalley to be both the single **SIPES Luncheon** *continued on page37*



Concept of an ordered and oriented fiber of single wall carbon nanotubes, which can conduct very large amounts of electrical current. This would enable a much more powerful grid, and smaller electrical motors and generators.

The material for the September SIPES Luncheon Meeting was received too late for inclusion in the September issue of the HGS Bulletin. A decision was made to publish it after the fact for informational purposes.

SIPES Luncheon continued from page 35

most important problem facing humanity today and a magnificent scientific and technical opportunity. Rick's vision of a long-term future energy system transporting energy around the world as electrons on a smart, high-capacity world-wide grid system can only be realized by a revolution in nanotech. Solving the world's energy and climate challenges will demand revolutionary breakthroughs in the physical sciences and engineering. Nanotechnology offers unprecedented opportunities for new physical and chemical properties to meet those challenges. ■

Biographical Sketch

Dr. Wade Adams is the Director of the Richard E. Smalley Institute for Nanoscale Science and Technology at Rice University. The Smalley Institute is devoted to the development of new innovations on the nanometer scale by coordinating and supporting nanoscience and nanoengineering research of over 150 faculty members. Some current thrusts include research in conventional and renewable energy, carbon nanotubes, nanoporous membranes, molecular electronics and computing, and diagnostic and therapeutic medical applications of buckyballs and nanoshells. The Smalley Institute is part of a major initiative at Rice to expand research activities in nano, bio, info and energy and environmental science and engineering.

Dr. Adams retired from the US Air Force senior executive ranks in January 2002, as the Chief Scientist of the Materials and Manufacturing Directorate, Air Force Research Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Dr. Adams was educated at the U.S. Air Force Academy, Vanderbilt University, and the University of Massachusetts.

For the past 40 years he has conducted research in polymer physics, concentrating on structure-property relations in high-performance organic materials. He is internationally known for his research in high-performance rigid-rod polymer fibers, X-ray scattering studies of fibers and liquid crystalline films, polymer-dispersed liquid crystals, and theoretical studies of ultimate polymer properties. He has written more than 200 publications on these topics, including several review articles and two edited books, has four patents (one licensed), and has given over 700 technical presentations. He is a Fellow of the American Physical Society and the Air Force Research Laboratory. Dr. Adams also retired from the Air Force Reserve in the rank of Colonel in 1998.

HGS 2009 Technofest Showcases Technology Software for Oil and Gas

This was another successful year for HGS Technofest! Over 350 people attended the exhibition on August 13 at the Westin Galleria Hotel, thanks to the efforts of Deborah Sacrey and her committee. Helping Deborah were HGS members Bonnie Milne-Andrews, Jim Grubb, Robert Pledger, and Jennifer Burton, who were assisted by local geoscience university students.

The HGS thanks the vendors who participated and the Platinum, Gold, Silver and Bronze sponsors: SMT, Vanco, Swift Energy, SeisWare, IDML, Dan Smith, RCL Systems, GeoComputing, Slawson, Corridor, Halliburton, Landmark, SeismicVentures, CoreLab, Resolve Geosciences, Saudi Aramco, Steve Brachman, Star Creek Energy, NuTech, and Swift Oil and Gas. ■

Technofest Chairperson Deborah Sacrey (HGS Honorary Member) of Auburn Energy organized the program. She has expanded Technofest over the last 2 years.

Technofest key committee members Bonnie-Milne Andrews (front), Jim Grubb, Robert Pledger (new HGS Director, far right).

The Technofest committee was on hand to check in people at the Thursday afternoon event. This photos shows Hubard Otoubsin (student), Deborah Sacrey, and Lauren Becker (student).

Sponsors of Technofest 2009 include SMT, Vanco, Swift Energy, SeisWare, IDML, Dan Smith, RCL Systems, GeoComputing, Slawson, Corridor, Halliburton, Landmark, SeismicVentures, CoreLab, Resolve Geosciences, Saudi Aramco, Steve Brachman, Star Creek Energy, NuTech, and Swift Oil and Gas.

HGS booth hosted by John Tubb (shown, President Elect), Linda Sternbach (past President), Charles Sternbach, and Donna Davis.

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 comes out as needed but not more often than once a week, offering the most up-to-date information that may be of interest to Texas geologists.*

AGI Government Affairs Monthly Review (May 2009)

National Climate Service Program Proposed

A National Climate Service, housed within the National Oceanic and Atmospheric Administration (NOAA), is proposed to be the primary portal for climate information. The climate service would supply usable climate data to federal agencies, state and local governments, researchers, and private citizens. Under this bill, NOAA would improve the coverage and resolution of its climate data and modeling to provide the best monitoring capabilities. The bill also mandates an advisory board to give input on how to best serve the users. Some argue that creating a separate office within NOAA will just duplicate the work of the National Weather Service, while others predict this will be the most user-friendly way to integrate local, national, and international data to meet the growing demand for climate services.

The "National Climate Service Act of 2009" (H.R. 2407) was proposed by the House Science and Technology Chairman Bart Gordon (D-TN) and was unanimously approved by the Energy and Environment Subcommittee on May 13, 2009. Now H.R. 2407 awaits full committee approval and is anticipated to be marked-up the first week of June. The committee is trying to keep pace with the Waxman-Markey climate and energy legislation (H.R. 2454), which also proposes a National Climate Service. The Waxman-Markey bill was approved by the House Energy and Natural Resources Committee before the Memorial Day recess and now awaits a vote by the full House.

The full text of H.R. 2407 is available from Thomas: http://thomas.loc.gov/cgi-bin/bdquery/z?d111:HR2407:/
The full text of H.R. 2454 is available from Thomas: http://thomas.loc.gov/cgi-bin/bdquery/z?d111:h.r.02454:

Weather Mitigation Research Bill Approved

On May 20, 2009, the Senate Commerce, Science and Transportation Committee approved the Weather Mitigation Research and Development Policy Authorization Act of 2009 (S. 601). The bill, sponsored by **Government Update** *continued on page 43*

Government Update continued from page 41

Senator Kay Bailey Hutchison (R-TX) would establish a weather mitigation research program within the National Science Foundation (NSF), establish a working group composed of representatives from state and academic institutions and establish a weather mitigation grant program to fund research at state agencies, academic institutions and non-profit organizations. The bill would authorize $25 million per year over five years for these programs.

The bill is based on recommendations of a 2003 National Academies report entitled "Critical Issues in Weather Modification Research". The report is available at: http://www.nap.edu/catalog.php?record_id=10829
The full text of the bill is available from Thomas at: http://thomas.loc.gov/cgi-bin/bdquery/z?d111:s.00601

House And Senate Introduce Ocean Energy Legislation
At the very end of April, the House and Senate introduced legislation that will promote ocean energy research. The aim is to bring ocean energy technology up to par with other clean energy sources like wind, solar, geothermal, and biomass. The Marine Renewable Energy Promotion Act of 2009 (H.R. 2148 and S. 923) was introduced in the House by Jay Inslee (D-WA) with companion legislation introduced by Senator Lisa Murkowski (R-AK).

The legislation would authorize up to $250 million a year for ocean research, something that the Obama Administration is also promoting. The legislation increases research and development work at the Department of Energy to improve the reliability, efficiency, and cost of marine devices. The funding will also go towards new technologies and integration into the national grid. Marine renewable energy is defined as energy generated by ocean thermal energy conversion, or water motion in oceans, estuaries, rivers, lakes, man made channels and tidal areas. The Electric Power Research Institute estimates that the U.S. oceans could generate 6.5 percent of the nation's electricity if ocean energy is funded at the same levels as other forms of renewable energy.

The full text of H.R. 2148 is available from Thomas: http://www.thomas.gov/cgi-bin/bdquery/z?d111:H.R.2148:
The full text of S. 923 is available from Thomas: http://www.thomas.gov/cgi-bin/bdquery/z?d111:S.923:

Arizona Passes Religious Liberties Bill

On May 6, 2009 the Arizona House of Representatives passed a bill designed to protect students from discrimination based on religious beliefs or expressions, in the teaching of earth science and biology classes at public schools. The bill states, "if an assignment requires a student's viewpoint to be expressed in coursework, artwork or other written or oral assignments, a public education institution shall not penalize or reward a student on the basis of religious content or a religious viewpoint. In such an assignment, a student's academic work that expresses a religious viewpoint shall be evaluated based on ordinary academic standards of substance and relevance to the course curriculum or requirements of the coursework or assignment." The bill passed with the influence of the conservative non-profit organization Center for Arizona Policy. The bill has now moved on to the Arizona Senate for consideration.

AGI Government Affairs Monthly Review (June 2009)

Administration Issues A Mountaintop Mining Memorandum
The Obama administration issued a memorandum on June 11, 2009 calling for an end to streamlined mountaintop coal mining permits and increased protection of waterways. The memorandum does not prohibit mountaintop mining. It aims to improve oversight, modify the "nationwide permits" to protect waterways in Appalachia, and curb the most environmentally damaging techniques through a collaborative effort by the Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (USACE) and Department of the Interior.

This follows an announcement in March 2009 that the EPA would begin reviewing pending permits from the USACE. A week later the U.S. District Court in West Virginia found the USACE erroneously allowed companies to dump mining waste into rivers and streams. The USACE permits were issued under a "nationwide permit" allowed for projects believed to have little environmental impact. The court ruled, though, that the USACE did not conduct proper environmental impact assessments. In May the EPA concluded that of the 48 permits it reviewed, 42 are allowed to proceed and 6 are put on hold.

On June 22, 2009, in a separate case, the Supreme Court ruled that mine waste site permitting rights are given to the USACE, not the EPA, under the Clean Water Act. This case involved an Alaskan gold mine dumping tailings into a nearby lake, and it is unclear how this will affect the mountaintop coal mining debate.

Republicans Introduce Oil Shale Development Bill
On June 1, 2009, the Ranking Member of the House Natural Resources Committee Subcommittee on Energy and Mineral Resources Doug Lamborn (R-CO) introduced a bill to expand the development of oil shale. The bill is called the PIONEER Act (The Protecting Investment in Oil shale the Next Generation of Environment, Energy, and Resource Security). Natural Resources and Energy Committee Ranking Member Doc Hastings (R-WA), a co-sponsor of the bill, stated that developing oil shale is not only a way to relieve the United States' dependence on foreign oil but will also boost the economy and create new American jobs.

The PIONEER Act would reinstate the Research, Development & Demonstration (RD&D) **Government Update** continued on page 45

Government Update continued from page 43

leasing that Secretary of the Interior Ken Salazar removed in February. In January, the former administration had proposed a second round of RD&D leasing, by which federally owned land is leased to private companies for oil shale production. Under the PIONEER Act, the Secretary of the Interior would be allowed to temporarily reduce royalties, fees, rentals, bonus or other payments for these leases. Lamborn believes that oil shale development cannot be accomplished without the incentives for private companies to engage in oil shale production. The bill would also establish the guidelines published by the Bureau of Land Management (BLM) as rules for the investment and development of commercial oil shale production on federally owned lands. While the technology needed for commercial extraction of the oil shale is several years away, the BLM regulation will provide for the development of technologies to efficiently extract the oil in an environmentally safe way.

The full text of the PIONEER Act (H.R. 2540) can be found on Thomas at: http://thomas.loc.gov/cgi-bin/bdquery/z?d111:h.r.2540:

Oil Spill Recovery Bill Introduced In House

Representative Lynn Woolsey (D-CA) introduced The Federal Oil Spill Research Program Act of 2009 (H.R. 2693) on June 3, 2009 to amend the Oil Recovery Act of 1990. She introduced this bill in light of the low percentage of recovery in oil spills and the need for better technology in clean up efforts. The bill would coordinate federal research and development of oil spill prevention, detection, recovery and mitigation. H.R. 2963 would expand the direction of the oil spill recovery program set by the Oil Recovery Act of 1990 to cover emerging challenges and make the interagency structure more efficient. In addition, the bill would provide grants to universities and research centers to develop new technologies to prevent, combat and clean up oil spills.

The Subcommittee on Energy and Environment of the House Science and Technology Committee held a hearing on the legislation and oil spill prevention and clean ups. There was consensus from witnesses and members that more needed to be done to increase the amount that is recovered in spills. Subcommittee Chairman Brian Baird (D-WA) recognized the need for more research and development to increase the level of mitigation when oil spills occur. The bill was forwarded to the full committee on June 16, 2009.

The full text of H.R. 2693 can be found on Thomas at: http://www.thomas.gov/cgi-bin/bdquery/z?d111:h.r.02693:

House Introduces Deep Seabed Mineral Resources Bill

On June 11, 2009, Delegate Faleomavaega (D-American Samoa) introduced a deep seabed mineral resources bill (H.R. 2834). The bill would direct the National Oceanic and Atmospheric Administration (NOAA) to "conduct a technological capability assessment, survey and economic feasibility study regarding recovery of minerals other than oil and natural gas from the shallow and deep seabed of the United States" and submit a report on their findings within two years of enactment. The seabed is defined as the areas within 200 miles of territorial seas. The bill does not authorize any specific appropriations for this work. The measure puts NOAA in charge of the survey but calls for NOAA to consult with other appropriate Federal agencies.

The full text of H.R. 2834 can be found on Thomas at: http://www.thomas.gov/cgi-bin/bdquery/z?d111:h.r.2834:

Coal Reserves Overestimated According To USGS Study

In 2007 the Energy Information Administration (EIA) predicted a 240-year supply of U.S. coal reserves, based on their estimate of nearly 500 billion tons of recoverable U.S. coal reserves. However, a new study released by the U.S. Geological Survey found that only 6 percent of the coal in the nation's largest coalfield is economically recoverable, even if current market price were to increase. The study, started in 2004 to better understand the immense Gillette coalfield in the Powder Basin of Wyoming, reveals that the U.S. only has a 120-year supply. This discrepancy prompted the EIA to release a statement saying they will reassess their estimates using the new USGS data.

Full report available from the USGS: http://pubs.usgs.gov/of/2008/1202/

USGS Arctic Oil And Gas Assessment Published In Science

The U.S. Geological Survey (USGS) recently completed a geologically-based assessment of the Arctic, titled the Circum-Arctic Resource Appraisal (CARA), to determine the potential for oil and gas resources stored in the area north of the Arctic Circle. The Arctic continental shelves provide a unique location, under 500 m of water, for these resources, which could be utilized given concern over future energy supplies. The CARA only considered areas with recoverable hydrocarbon volumes larger than 50 million barrels of oil or 300 billion cubic feet of gas, excluding smaller accumulations and nonconventional resources like oil shales and gas hydrates. The assessment also used mapping and assessing units (AUs) based on the sedimentary makeup of the Arctic.

The average assessment found the Arctic contains double the original estimate. The study concluded that undiscovered oil in the Arctic may account for almost four percent of the world's remaining conventionally recoverable oil resources. In addition, they concluded that the Arctic may hold three times as much undiscovered gas as oil. The report was included in the May 29, 2009 issue of *Science Magazine*.

Government Update continued on page 47

The Houston Geological Society Continuing Education Committee Presents

Risk Analysis of Geological Plays

Sponsored by Hamilton Engineering, Inc.
Monday 2-Nov-09 9:00 AM to 4:00 PM CST
Speaker: Gary P. Citron, PhD, Managing Partner, Rose & Associates, LLP

This course serves as a companion and natural follow-up to R&A's successful course ***Risk Analysis, Prospect Evaluation and Exploration Economics***. While **The Prospect** is the economic unit of exploration, **The Play** is the operational unit. Accordingly, this course addresses what many authorities believe to be the most difficult and critical task in Petroleum Exploration: **the selection of plays and concessions in which to explore (to best help your company achieve its strategy)**.

Designed primarily for geologists, geophysicists, economists, planners and managers, this course teaches participants a play risk analysis methodology to consistently and systematically value a play based upon chance of success (play chance and prospect success rate), play resources, and costs associated with an operational plan.

Course Outline

- Introduction
- Review of Fundamental Principles of Prospect Risk Analysis
- Petroleum System Ingredients and Geologic Tools for Play Analysis
- Play Delineation
- Field Size Distributions A Key Tool
- Treatment of Chance Plays vs. Prospects
- The Process: Risk Analysis for Plays
- Lease Acquisition Strategy
- Play Analysis Lessons Learned and Conclusions

Pricing

	Before 23-Oct-09	Before 30-Oct-09	After 30-Oct-09
Member:	$85.00	$100.00	$110.00
Non-Member:	$100.00	$110.00	$120.00
Student:	$10.00	$20.00	$25.00
GSH Member:	$85.00	$100.00	$110.00

Speaker Gary P. Citron, PhD (BS, Geology, State University of New York at Buffalo; MS & PhD in Geology, Cornell University). After a twenty year career as a geoscientist, manager, and internal consultant for Amoco exploration business, Gary joined Pete Rose's consulting firm in February 1999, which focuses on the field of prospect and play risk analysis. Gary became Pete's first Partner in Rose & Associates, LLP in 2001 and assumed the role of Managing Partner in 2003.

In his last assignment at Amoco, he worked with exploration teams worldwide for four years, helping them assess prospect component ranges and associated chance factors. Dr. Citron has developed expertise in consensus building in risk assessments and performance tracking. He also coordinated the yearly post appraisal of the drilling program which helped institutionalize learning throughout the exploration business. In 1999 he was selected by the AAPG to serve in their Visiting Geologist Program. While at Amoco, Dr. Citron actively mentored younger geoscientists on prospect measurement.

In 2001, he received the best paper award from the AAPG's Division of Professional Affairs, and again in 2007 he was honored for delivering a 'Top Ten Oral Presentation' at the AAPG annual convention in Long Beach. Gary remains active in the AAPG House of Delegates, and continues to serve on committees for the AAPG and the SPE. He is a Texas State certified and licensed Geologist who has authored or co-authored more than a dozen publications, and has been an invited and honored speaker for the SIPES, Geological Society of London, AAPG, SPE and SEG.Register Now! Registration deadline is Friday 23-Oct-09 9:00 AM

Date: Monday, November 2, 2009

Time: 9:00am – 4:00pm

Location: Houston Research Center • 11611 West Little York Road • Houston Texas 77041 USA

Please make your reservations on-line through the Houston Geological Society website at www.hgs.org

For more information about this event, contact HGS Office • 713-463-9476 • office @hgs.org
Event coordinator Ken Schwartz • (281) 690-0995 • kenschwartz@mail.com

Government Update continued from page 45

Change Research Program Releases New Report

A new report released on June 16, 2009, Global Climate Change Impacts in the United States, documents the impacts of climate change on various regions and sectors in the U.S. and discusses actions society can take, or is already taking, in response. The key findings are that human-induced emissions arguably are the primary cause of the changes; agriculture will be challenged, threats to human health will increase, and the changes are projected to intensify impacts already affecting energy, water, ecosystems, coastlines, transportation and society.

The report is a product of the U.S. Global Change Research Program (USGCRP), a 13 member interagency government program established by Congress in 1990 to help understand, assess, predict and respond to global change. The congressional mandate stated that the USGCRP must release a global change impact assessment every four years and an annual report to Congress. The first national assessment was released in 2000, followed by a series of 21 Synthesis and Assessment Products.

This newest report is a comprehensive look at climate change impacts, drawing from the past USGCRP assessments, the Intergovernmental Panel on Climate Change and other research. The report clearly and simplistically shows dramatic changes taking place and how they will affect people and industry. It shows widespread changes that are happening now, making the point that global change is a current concern for everyone. There are examples of adaption measures taken by various communities in order to give the audience ideas of ways to mitigate the negative impacts. The report does not make policy recommendations. Instead it emphasizes the importance and consequence of choices made today on the severity of the changes in the future as a method of informing decision making.

The full report, factsheets, and summaries are available for downloading from the USGCRP website: http://globalchange.gov/publications/reports/scientific-assessments/us-impacts

Earthtrek Encourages Public Participation In Science

The Geological Society of America (GSA) and other national and international partners have developed EarthTrek, a new tool that will allow concerned citizens to contribute data to scientists around the world. Scientists will set protocols for various environmental projects that benefit from community involvement in data gathering. Participants log their data online and can monitor the progress of their project. In addition, they can be rewarded with certificates and other incentives. EarthTrek aims to raise scientific literacy by involving communities in science and to provide experiences for kids to encourage them to pursue science as a career path. EarthTrek enrollment is open now, and the first science projects will begin on July 1, 2009. Learn more at http://www.goearthtrek.com/.

Gender Discrepancies In Faculty Examined By NAS Study

After a study of 6 science, engineering and mathematics disciplines, the National Academies of Sciences (NAS) concluded that women are still underrepresented in the applicant pool but are hired at rates equal to or higher than those of men. The new study, Gender Differences at Critical Transitions in the Careers of Science, Engineering and Mathematics Faculty, collected original survey data from biology, chemistry, physics, mathematics, civil engineering and electrical engineering. A total of 417 departments responded from the top 89 large research institutions. The data was collected from 2004-2005, so providing a snapshot over a short period rather than tracking longer trends.

In 1999, a study of women faculty at MIT raised awareness of the disparity between the genders and led to a series of congressional hearings in 2002. The hearings, convened by Senator Ron Wyden (D-OR), led to the congressional mandate for a NAS study of the issue. The study concludes that there is a smaller female applicant pool, so work needs to be done to mentor tenure track female faculty. However, once women apply for faculty positions or come up for tenure review, they are at least as likely as their male counterparts to receive the position. Women also receive equal access to resources, having similar lab space and time commitments to teaching, research and service.

The full report is available from the NAS website: http://www.nap.edu/catalog.php?record_id=12062 ■

HGS Welcomes New Members

Effective September 2009

ACTIVE MEMBERS

Harry Aasmyr
Greer Barriault
Adrian Berry
Brittney Blake
Richard Bozanich
Michael Cameron
James Cearley
James Claughton
Kellam Colquitt
John Conlon
Sara Delclos
Jennifer DeLoge
Janell Edman
Christopher Franks
Joseph Goodin
Brett Gray
Jon Gross
Mark Harmon
David Hlebichuk
Ashley Holmes
Michael Hsieh
Edward Jansen
Laura Johnson
Kelly Kaleta
Kim Koepke
Jenny Kowall
Steve May
Curtis Mayo
Dan McConnell
Cleavy McKnight
Carl Merkt
Zach Oliver
Olaniyi Oyebode
Maria Pacheco
Kari Parson
Leon Patterson
David Jeremy Prosser
David Prouty
Hugh Reid
Jeff Rubio
Michael Schilly
Angela Schwartz
Sarah Shaw
Cody Simmang
William Stiles
David Tieman
Linda Tollefson
Edward Townend
Ichiro Tsukamoto
Michael Turco
Jesse Tuttle
Debra Vader
Jay Vogt
Sarah Warneke
Eric Weiss
Chandler Wilhelm
Mark Wonkovich
Jamie Yowell
Lucas Zamora

ASSOCIATE MEMBERS

Helen Daglas
Jody Ehler
Debora Galmiche
Ronald Riley
Yvonne Roe
Christopher Roy
Jason Wright
Amir Zaman

STUDENT MEMBERS

Jeremy Krimmel
Maria Paz Menacho
Xavier Refunjol

Welcome New Members

Renew

Your HGS Membership

Your membership expired June 30, 2009

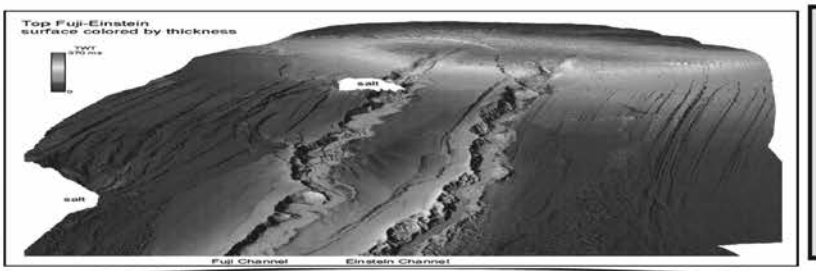
Renew online www.hgs.org

Countdown to AAPG

Many of us have just completed the submission of an abstract for the 2010 Annual AAPG Convention in New Orleans. Others have just registered for the 2009 AAPG International Conference and Exhibition in Rio de Janeiro. Not too many of us are thinking about the 2011 AAPG Convention to be held in Houston, with the Houston Geological Society as the host organization. That is not true of the Houston Meeting's General Convention Chairman, Steve Levine (Steve.D.Levine@conocophillips.com). With 18 months to go before the Convention, Steve is now in the process of building the committees that will support this event and will need your help and ideas. As the local host for the meeting much of the work load will fall on the HGS membership. Volunteers willing to roll-up their sleeves and assist with all of the activities that go into a successful convention are needed. The convention will also need your ideas for technical session themes, short courses, and field trips, as well as those ever important social and spousal activities.

Our plans are to use the HGS *Bulletin* to keep you regularly informed of the Convention related activities and progress. ■

SEPM Research Conference
Application of Seismic Geomorphology Principals to Continental Slope & Base-of-Slope Systems

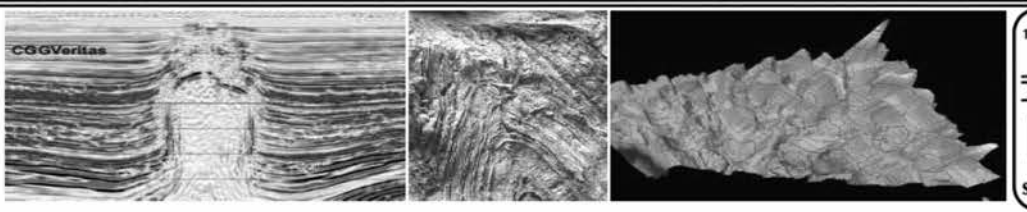


2009
Nov 12-14
Hilton
Westchase
Houston, TX

This Conference is a must attend
for anyone working in this exploration-development arena
or researching in these techniques.

For further information about this conference visit—www.sepm.org
REGISTRATION IS NOW OPEN

GSL-SEPM International Research Conference
Salt Tectonics, Sediments and Prospectivity



This international conference brings together academic and industrial geoscientists to discuss recent advances in understanding halokinetic processes and to explore the links between salt tectonics, sediments and hydrocarbons.

Key Note Speakers include:

Ian Davison (GEO International Ltd); **Kate Giles** (New Mexico State University, USA); **Mike Hudec** (Bureau of Economic Geology, University of Texas, USA); **Hemin Koyi** (Uppsala University, Sweden); **Ben Kneller** (University of Aberdeen, UK); **Webster Mohriak** (Petrobras); **Brad Prather** (Shell); **Mark Rowan** (Rowan Consulting, Colorado, USA); **Simon Stewart** (Heriot-Watt University, UK); **Bruce Trudgill** (Colorado School of Mines, USA); **Bruno Vendeville** (University of Lille, France)

January 20-21, 2010
Burlington House,
London, UK

For further information about this conference, please contact:
Steve Whalley, Event Co-ordinator +44 (0)20 7432 0980 or email: steve.whalley@geolsoc.org.uk

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 diskette 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 .eps (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 .jpg or .eps format with 300-DPI or greater resolution at the printing size and be accompanied by figure captions that are linked by the file name of the image. The images should be submitted as individual email attachments (if less than 1 MB) or on CD or zip disk.

Advertising

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

Random Inside (Black & White)					Page 2 (B&W)	Inside Front Cover (Full Color)	Inside Back Cover (Full Color)	Outside Back Cover (Full Color)	Calendar Back (Full Color)	Calendar Page (Full Color)
No. of Issues	Random* Eighth	Random* Quarter	Random* Half	Random* Full	Full	Full	Full	Half	Full	Quarter
10	$823	$1,387	$2,488	$4,734	$5,680	$7,830	$7,560	$6,858	$6,750	$2,700
9	$823	$1,387	$2,488	$4,734	$5,680					
8	$750	$1,260	$2,242	$4,307	$5,169					
7	$665	$1,123	$2,014	$3,834	$4,600					
6	$590	$990	$1,782	$3,392	$4,069					$1,890
5	$497	$837	$1,503	$2,860	$3,432	$4,698	$4,536	$4,104		
4	$405	$683	$1,223	$2,326	$2,792					
3	$327	$550	$990	$1,886	$2,262					$1,080
2	$232	$392	$704	$1,339	$1,607					
1	$146	$246	$443	$842	$1,010	$1,404	$1,296	$1,080		$810

FULL COLOR AD
* add 30% to B&W charge for full (4) color ad

BUSINESS CARD
$135 per 10 Issues – Send two cards
($30 for each additional name on same card)

Be a web page Sponsor

Effective June 1, 2009 you can now have your company logo picture posted on the Website. To have an ad posted, you must provide us with the graphic and give us the URL it should link to when clicked.

All ads appear in the "Our Sponsors" box in the upper left of the page. Each ad is displayed for a short time and replaced by the next ad in the list. Each ad will be randomly displayed on each page.

Example Sponsor Logo
Size in Pixels:
120wx90h

	Logo Strip	Calendar Logo *Only 2 Available*	Website Business Card (Members only)	Personal Resumes Posting	GeoJobBank
One year	$1400.00	$2500.00	Free	Free	
6 months	$750.00	$1500.00	Free	Free	
1 month	NA	NA	Free	Free	$100.00

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; full-time students and emeritus members pay $12.00.

Mail this application and payment to:
Houston Geological Society
14811 St. Mary's Lane, Suite 250 • Houston, TX 77079-2916
Telephone: 713-463-9476 Fax: 281-679-5504

Payment method:

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

Card # _____

Expiration Date: _____ Card I.D. _____

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

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

Name: _____

Address: _____

_____

Home Phone: _____ *Spouse's Name:* _____

Email: _____

Job Title: _____

Company: _____

Company Address: _____

_____

Work Phone: _____ *Fax Number:* _____

Circle Preferred Mailing Address: Home Office

Professional Affiliations: _____

❑ AAPG member No.: _____

Professional Interest:

❑ Environmental Geology ❑ 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* _____

rev.08/11/2008

Houston Petroleum Auxiliary Council News

Winona LaBrant Smith, HGS Liaison

What an incredible beginning that Edie Bishop, First Vice President and Social Chairman of HPAC, had for all the ladies who attended the first 2009-2010 function. This was a Friday luncheon on September 18 at Braeburn Country Club. The event featured Sylvia Thompson presenting "Reminiscences". Sylvia has a fascinating way of recreating the heritage of Texas and making it come alive from the diaries, journals, and letters of famous Texans and ordinary citizens. Sylvia Thompson recreated a vision from the writings of William Barrett Travis of Alamo fame, Rachel Plummer on her captivity with the Comanche, young Julie Harris'account of her family's flight from the Mexican army, the heartbreak of Mathilda Gruen Wagner after her father gave both his daughters away, and the love letters of George Armstrong and Libbie Custer. This was better than your favorite mystery novel!

Co-Chairs, Karen Mermis and Phyllis Carter, along with their committee comprised of Louise Anderson, Nancy Lefler, Janet Steinmetz, Barbara Burnside, Carol Ann Gold and Maxine Hillman, entertained us in such a manner that we are anxious to participate in the next event hosted by HPAC. This luncheon will be held on Friday, December 4, 2009, with entertainment by the King's Men Chorus at Lakeside Country Club. Invite a friend and offer transportation to an HPAC member who doesn't have a ride. No member is going to want to miss a single event.

Lois Matuszak, President of Geo-Wives, reports that they are looking forward to a wonderful year and are proud to support HPAC. Their First Vice-President, Jackie Smith, is working diligently on programs to fill in the months when HPAC is not meeting. The first program of Geo-Wives in October will take them to the HBU Campus where the Southern Museum is now located. It is in the Cultural Arts Building known as the Joella and Stewart Morris Cultural Center. Located next door is the Decorative Arts Museum with an outstanding doll collection. Also close by is the HBU Bible Museum. After their tour they will have lunch at Pappa's BBQ.

Geologists, please encourage your spouses to visit and join HPAC, where they will have the opportunity to meet other wives whose husbands are Geologists, Geophysicists, Engineers and/or Landmen. They will participate in stimulating programs, and enjoy delicious lunches and friendly fellowship.

For your convenience, an HPAC membership form is included below. If you have any questions, please contact Winona LaBrant Smith at 713-952-2007.

You are invited to become a member of

HPAC

2009–2010 dues are $20.00

Mail dues payment along with the completed yearbook information to Carol Gafford, 13323 Misty Hills Drive, Cypress, TX 77429

YEARBOOK INFORMATION

Last Name	First Name	Name Tag
Spouse Name	Name Tag	HGS Member's Company
Home Phone	Business Phone	Business Fax
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	

Professional **Directory**

STEVE PRIMOFF
Sales Manager

Continental Laboratories

Mudlogging Specialists Since 1954

6600 Fairbanks N. Houston (713) 460-0780
Houston, Texas 77040 Fax (713) 460-0788
steveprimoff@continentallabs.com

---

energyprofessionalsearch
Technical and Executive Recruiting

SOFIA CAMPBELL

713-668-5406
www.energyprosearch.com
sofia.campbell@comcast.net

Consulting Biostratigraphy

Domestic and International

Foraminifera, Calpionelids, Thin Sections

RASHEL N. ROSEN

2719 S. Southern Oaks Dr., Houston, TX 77068-2610
(281) 893-6646 fax: (281) 586-0833
cell phone: 832-721-0767
email: rashel-rosen@comcast.net

T. Daniel (Dan) Greer
President

PRECISION well logging inc.

924 Wakefield
Houston, Texas 77018
Call Day or Night
(713) 681-3435

E-mail: info@precisionwelllogging.com • Web-site: www.precisionwelllogging.com

---

Kara C. Bennett
Consulting Geoscientist

14119 E. Cypress Forest Dr.
Houston, TX 77070
832-452-3747
kcbhgs@gmail.com

Prospect Generation
Integrated Basin, Play and
Prospect Analysis
2D and 3D Interpretation

PADGETT EXPLORATION

Carl M. Padgett *Dianne B. Padgett*
Consulting Geophysicists

800 Wilcrest Drive, Suite 225 Office(713)781-8139
Houston, Texas 77042 Res.(713)784-1827

THUNDER EXPLORATION, INC.

WALTER S. LIGHT, JR.
PRESIDENT
PETROLEUM GEOLOGIST

P.O. BOX 541674 CELLULAR: 713.823.8288
HOUSTON, TEXAS 77254-1674 EMAIL: wthunderx@aol.com

PSi
Petrophysical Solutions, Inc.

William G. Price
President

11767 Katy Freeway
Suite 380
Houston, TX 77079

o (281) 558-6066
m (713) 206-2008
f (281) 558-5783

wgp@petrophysicalsolutions.com
www.petrophysicalsolutions.com

VERSFELT & ASSOCIATES

Worldwide Exploration & Exploitation Consultants

PORTER VERSFELT
International
Scout Group Representatives
New Ventures Evaluations

Tel: (281) 537-8779
Certified Petroleum Geologist
A.A.P.G. No. 448

Email: geoport2@comcast.net
5807 Green Springs Drive
Houston, TX 77066-2331 U.S.A.

GDS

Carole Moreno
Marketing and Sales Manager

Geotech & Design Services
Data digitizing, drafting & computer graphics

7171 HWY 6 NORTH # 202
Houston, TX 77095
carole@geotechmap.net

Tel : (281) 858-7100
Fax : (281) 500-8534
www.geotechmap.net

SMT GEOTECH HOUSTON

Dottie Green, President
281-222-3717

dgreen@smtgeotechhouston.com

Geology and Geophysics Tech Services
Saving money in the exploration budget!
http://www.smtgeotechhouston.com/

SeaBird Exploration

Matthew J. Padon
Sales Manager

SeaBird Exploration Americas
1155 N. Dairy Ashford, Ste. 206
Houston, TX 77079 USA
www.sbexp.com

Telephone: +1-281-556-1666
Mobile: +1-281-686-4374
Fax: +1-281-556-5315
Matthew.Padon@sbexp.com

FUGRO

FUGRO GEOSCIENCE DIVISION

Fugro Multi Client Services
6100 Hillcroft (77081), P.O.Box 740010
Houston, Texas 77274, U.S.A.
Direct: +1 713 369 5859
Fax: +1 713 369 5860
Main: +1 713 369 5800
Email: kmohn@fugro.com
or: geoteam@fugro.no

KENNETH MOHN
Exploration Vice President

VERINOVA "VALUE VIA KNOWLEDGE"

HELPING YOU FIND OIL & GAS; G&G CONSULTING; PROSPECTS; SEISMIC INTERPRETATION; RPFS

CONTACT: **HANS SHELINE**
Managing Director - MS, MBA, CPGeol, LPGeophys, SIPES

Phone: 281-565-5305
FAX: 866-584-6404
Email: Sheline@VeriNova.com
Webpage: www.VeriNova.com

PO Box 16161
Sugar Land, TX
77496-6161

JIM THORPE
PCI PALEO CONTROL, INC.

MICROPALEONTOLOGY PALEOECOLOGY

P.O. BOX 41751
HOUSTON, TEXAS 77241-1751
OFFICE 713-849-0044 RESIDENCE 713-466-7922

BIG 6 DRILLING COMPANY

BIG "6" DRILLING COMPANY
7500 San Felipe, Suite 250
Houston, Texas 77063

CHESTER B. BENGE, JR.
PRESIDENT

OFFICE: 713-783-2300
FAX: 713-783-4463
RES: 713-439-0903

CERT. PETR. GEOL. #4014 CERT. PETR. GPHY. #02 SIPES #1271

DEBORAH KING SACREY
PRESIDENT

AUBURN ENERGY

8588 Katy Freeway
Suite 260
Houston, Texas 77024

Office: 713-468-3260
Fax: 713-468-3210
Mobil: 713-816-1817

E-mail: dsacrey@auburnenergy.com

Nomad Geosciences

Al Taylor - President & Chief Scientist
www.NomadGeosciences.com
11429 Purple Beech Drive
Reston, VA 20191-1325

Prospect Generation, Exploration and Development, Acreage Evaluation, Reservoir Characterization and Consulting

Voice/Fax: 703-390-1147 Cellular: 703-489-8787
Email:Al@NomadGeosciences.com or NomadGeo@aol.com
Certified Petroleum Geologist # 5783 SIPES # 2946
Registered Professional Geologist: # 1002 (AR) # 3581(TN)

GEORGE N. MAY & ASSOCIATES

Consulting Geologists and Paleontologists

WILLIAM S. GRUBB

201 HEYMANN BLVD.
P. O. BOX 51858
LAFAYETTE, LA 70505

OFFICE (337) 234-3379
FAX (337) 234-3389
HOME (337) 235-1923

E.H. STORK, JR.
E.H. Stork, Jr. & Assoc.'s, Inc.
Consulting Geologists & Paleontologists
Specializing In
Biostratigraphy - Paleoecology - Geologic Interpretation

207 Pecore St.
Suite #2
Houston, Texas 77009

Office (713) 802-9731
Fax (713) 802-9732
Home (713) 466-9064

DAWSON

Scott Wallace
Data Processing Services

DAWSON GEOPHYSICAL COMPANY
10200 Richmond, Suite 120
Houston, Texas 77042
Office 713/917-6772
Fax 713/917-6773
Cell 713/775-9338
e-mail: wallace@dawson3d.com

Consultants for your Upstream Needs

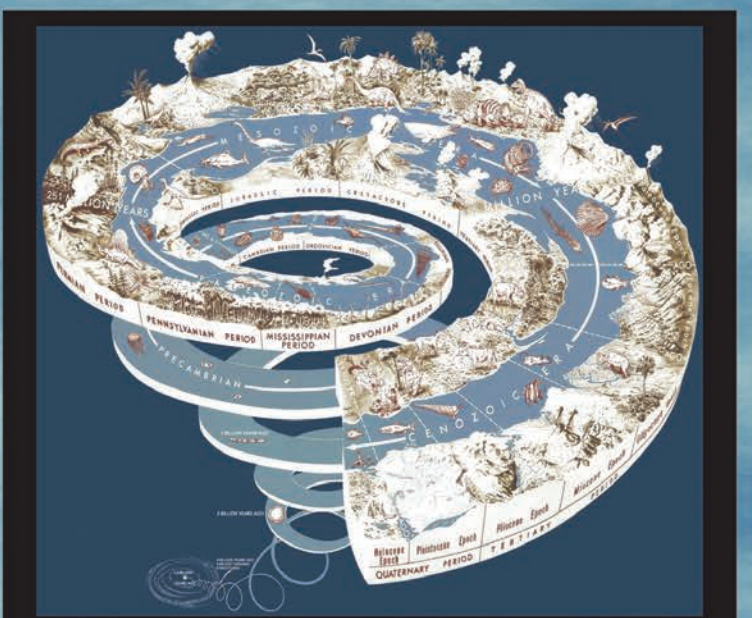
Geologists - Geophysicists - Engineers

Opportunity Analysis Team

Multi-disciplined team experienced in performing technical/commercial evaluations of:

- **Data Rooms**
- **Exploration prospects**
- **Farm-in/farm-out opportunities**
- **Oil and gas producing properties**
- **Lease or license positions in preparation for lease sales, acquisitions, and investor offering's**

Excellence That Runs Deep



Graphic of the Earth's geological time scale courtesy of the U.S. Geological Survey

20 Years of Excellence!

Visit our website for full details of our services: www.scacompanies.com

Projects & Studies Consultancy

Our professionals can conduct global projects in your office, at locations around the world, or in our state-of-the-art facilities.

- **Regional and Basin Studies**
- **Exploration Prospect Generation**
- **Field Development Studies**
- **Structural and Stratigraphic Analysis**
- **Seismic / Sequence Stratigraphic Projects**
- **Post-drilling Evaluations**
- **Reserves and Resources Studies**
- **Integrated, Multi-disciplinary Projects**

10255 Richmond Avenue, Suite 300W, Houston, Texas 77042
Phone: +1.713.789.2444 Fax: +1.713.789.4449
General Inquiries: info@scacompanies.com, Training Course Registration & Info: training@scacompanies.com
Consultants & Direct Hire Recruitment Services: consulting@scacompanies.com

HOUSTON
GEOLOGICAL SOCIETY
14811 St. Mary's Lane, Suite 250 • Houston, TX 77079

Periodicals
U.S. Postage
PAID
Houston, Texas

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