

HGS Bulletin

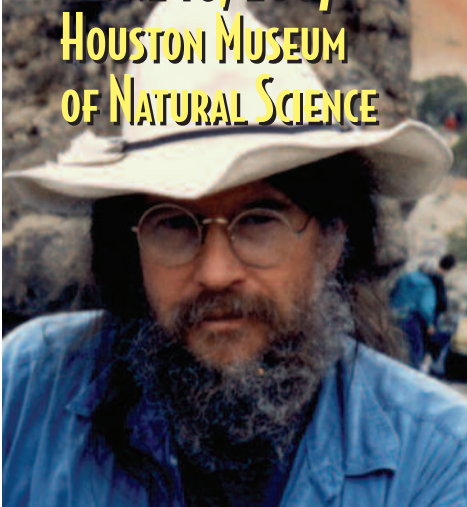
Volume 49 Number 10

Houston Geological Society

June 2007

**AMAZING FOSSILS OF THE PERMIAN
WITH DR. BOB BAKKER
NORTH TEXAS FOSSIL EXPEDITIONS
RENEW EFFORT TO BUILD MUSEUM
COLLECTION AND EDUCATE
SCIENTISTS
PAGE**

**HGS GUEST NIGHT
JUNE 16, 2007
HOUSTON MUSEUM
OF NATURAL SCIENCE**



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KNOW WHAT THEY KNOW.**



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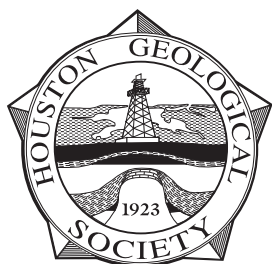
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The Bulletin

Houston Geological Society

Volume 49, Number 10

June 2007

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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 Editor@hgs.org

Subscriptions: Subscription to this publication is included in the membership dues (\$24.00 annually). Subscription price for nonmembers 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

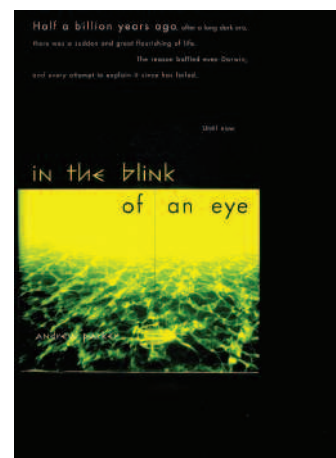
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About the Cover: Detail from "Life Before the Dinosaurs", by William Stout, 1994, one of the William Stout Paleozoic Murals for the Houston Museum of Natural History. Thanks to HMNS for permission to publish. Can be viewed at <http://www.williamstout.com/catalogue/murals/murals.html>

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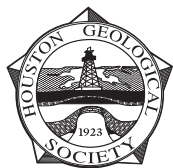
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by Steve Brachman

From the
President

From the President

A Very Good Year

This month marks the end of my term as President of the HGS. I have had the pleasure and honor of serving as your President as well as working with a truly superlative Board of Directors. Next year's President, Linda Sternbach, has done an exceptional job as President-elect, and I know she has many agenda items she will be looking forward to accomplishing. Andrea Reynolds has been outstanding as Vice President, coordinating the technical meetings and lining up speakers. She also has done the extra work to lighten my work load preparing for the General Lunch and Dinner Meetings. Cheryl Desforge has shown tremendous dedication as Treasurer. Her diligence and hard work have paid off in another stellar financial year for the HGS. Jennifer Burton as Secretary has provided the continuity and valuable input to help make the Board Meetings run smoothly. Our *Bulletin* Editor, Bill Rizer, has fought deadlines and recalcitrant authors to again produce a product that is the envy of other local societies. Directors completing their two-year terms, Jim Doyle and Erik Mason, have provided valuable insight and leadership on critical issues facing the society.

I am confident that the HGS is in excellent hands next year with returning Board members; John Jordan, the incoming Treasurer, Steve Earle, the incoming *Bulletin* Editor, and returning Directors Bonnie Milne-Andrews and Bob Merrill. All have worked well together to help steer the HGS through the various challenges that we faced this past year. I am confident they will continue to do so next year.

I am not one to look backward and recount achievements of the past year. I find that a more fitting exercise for politicians looking to brag about accomplishments than for society presidents who

actually hold day jobs. Instead, I try to look toward the future, and on the whole, I am optimistic. There is no doubt that the HGS faces many challenges in the coming years. I believe we are all aware of the recent history of declining membership and the effects changing demographics and a challenging job market have had on our profession. However, for the first time in many years there was a modest growth in our membership. That growth is but an early sign of the oil and gas boom that has benefited our membership as a whole and provided many with a wide variety of employment opportunities. There is even a perception by some of job security! While it is likely that many young professionals and college graduates will be enticed to enter our field, opportunities are increasing for many highly experienced members who are now being coaxed into remaining active in the work force long after they would have otherwise retired. I know that the HGS will continue to provide valuable services and a meaningful societal base for all members, young, old and anywhere in between.

At the beginning of the year, I stated that my mission for the society was, "Doing stuff for the membership." I hope that most of you have attended a technical meeting, ruined a beautiful day's walk by playing golf in our annual tournament or devoured some boiled shrimp at our Peel. Regardless of your preferences, the HGS has something to offer for all geologists. We have been around since 1912, and I believe our future has never looked brighter. Invite your nonmember colleagues to accompany you to your next event, and you will help cement that future.

It has been an honor and a pleasure serving as your President. I wish everyone a great summer. See y'all next year! ■

*Regardless of your preferences,
the HGS has something to offer
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looked brighter.*

Geoscience Day

Mark September 7 on your calendar for the first annual Geoscience Day, an exploration overview event for new professionals in the industry. Contact the HGS or GSH office for more information.



HGS *Bulletin* Instructions to Authors

All materials are due by the 15th of the month, 6 weeks before issue publication. Abstracts should be 500 words or less; extended abstracts up to 1000 words; articles can be any length but brevity is preferred as we have a physical page limit within our current publishing contract. All submissions are subject to editorial review and revision.

Text should be submitted by email as an attached text or Word file or on a clearly labeled diskette in Word format with a hardcopy printout to the Editor.

Figures, maps, diagrams, etc., should be digital files using Adobe Illustrator, Freehand, Canvas or CorelDraw. Files should be saved and submitted in .eps (Adobe Illustrator) format. Send them as separate attachments via email or on a diskette or CD if they are larger than 1 MEG each, accompanied by figure captions that include the file name of the desired image. DO NOT EMBED them into your text document; they must be sent as separate files from the text. DO NOT USE POWERPOINT, CLIP ART or Internet images (72-DPI resolution) as these do not have adequate resolution for the printed page and cannot be accepted. All digital files must have 300-DPI resolution or greater at the approximate size the figure will be printed.

Photographs may be digital or hard copy. Hard copies must be printed on glossy paper with the author's name, photo or figure number and caption on the back. Digital files must be submitted in .jpg or .eps format with 300-DPI or greater resolution at the printing size and be accompanied by figure captions that are linked by the file name of the image. The images should be submitted as individual email attachments (if less than 1 MB) or on CD or zip disk.

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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 Page (Full Color) |
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| No. of Issues | Eighth | Quarter | Half | Full | Full | Full | Full | Half | Quarter |
| 10 | \$762 | \$1284 | \$2304 | \$4383 | \$5260 | \$7250 | \$7000 | \$6350 | \$2500 |
| 9 | \$762 | \$1284 | \$2304 | \$4383 | \$5260 | | | | |
| 8 | \$694 | \$1168 | \$2076 | \$3988 | \$4786 | | | | |
| 7 | \$616 | \$1040 | \$1865 | \$3550 | \$4260 | | | | |
| 6 | \$546 | \$918 | \$1650 | \$3141 | \$3768 | | | | \$1750 |
| 5 | \$460 | \$775 | \$1392 | \$2648 | \$3178 | \$4350 | \$4200 | \$3800 | |
| 4 | \$375 | \$632 | \$1132 | \$2154 | \$2585 | | | | |
| 3 | \$303 | \$510 | \$918 | \$1746 | \$2094 | | | | \$1000 |
| 2 | \$215 | \$363 | \$652 | \$1240 | \$1488 | | | | |
| 1 | \$135 | \$228 | \$410 | \$780 | \$936 | \$1300 | \$1200 | \$1000 | \$750 |
| Business Card \$125 per 10 Issues – Send two cards (\$25 for each additional name on same card) | | | | | Full Page on Back of Calendar Page (FULL COLOR) \$6250 - 10 issues | | TWO-COLOR AD (Black and editor's choice) add 15% to B&W cost | | |

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

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

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

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by **Bill Rizer**
editor@hgs.org

High Points, Some Low Points and Too Little Sleep

This is my final letter as editor of the *HGS Bulletin*. At first I thought that I would try to write some compelling prose that would capture the imagination of the reader and take him or her on a grand journey of discovery. Then I got real and told myself to sit down and write the darn thing, for if I waited any longer the rapidly closing window of opportunity to be on schedule would surely close long before I could generate anything even pretending to be grandiose. But there are some things I want to say to you, the membership.

One of the most important lessons that I learned over the past 10 months of often grueling work, more than occasional criticism, numerous opportunities for error that I could hardly pass up and occasional moments of redemption that were few and far between is that it was all worth it. Ten issues of the *Bulletin* were published, and if not always delivered to everyone on the 1st, they were at least delivered sometime in the appropriate month. If I was not able to move mountains with the power of my pen (keyboard just does not sound right), then at least nobody threatened me with bodily harm.

There are high points and low points in any worthwhile endeavor. Because my nature is to avoid remembering the low points, it may be meaningful to look at some of the good things that have happened these past months. Several original technical papers were published in the *Bulletin*, including those by John Lorenz (2006)

and Martha Withjack et al. (2007). Both papers were written simply, yet their messages were profound. John Lorenz's paper on residual stress raised a very important issue mostly neglected or ignored by those who measure stress—residual stress is a component of what is measured as the in situ stress field. Residual stresses can be very important—John believes that the current in situ stress field in the Piceance Basin, northwestern Colorado, is actually residual.

...civility is alive and well in the Houston Geological Society

The paper by Withjack et al. (2007) raised two important issues related to how we use scale models and to scaling in general. Firstly, proper use of scaled models to predict fault distributions in nature requires some prior knowledge of the ductility of the system; i.e., how deformation is localized or distributed. The second issue is more theoretical and involves the question, why do two

different model materials, scaled properly and deformed under the same boundary conditions, produce such different distributions of faulting. Within that question are even more involved issues that underscore our lack of understanding of the faulting process and of failure in rock sequences.

Among most enjoyable aspects of the editor position were the various interactions with other board members and with the membership in general. Many of you took the time (and in some cases, my bait) to write letters to the editor or simply email messages to me. In so doing you

From the Editor continued on page 9

In the News

by **Bill Rizer**

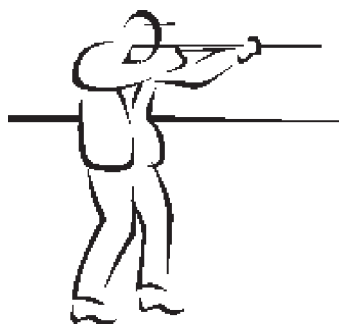
Large Igneous Provinces Eruptions

Most of us remember Mount Saint Helens and the explosive eruption that occurred there in 1980 with catastrophic results still visible in part today. Most of us have heard of the eruption at Krakatau in 1883 that was audible thousands of miles away. Those eruptions hurled tremendous amounts of dust into the atmosphere that cooled the planet by about a degree for about a year (Kerr, 2007). In terms of lasting impact, however, those events pale in comparison to the Large Igneous Provinces (LIP) eruptions comprising thousands of events in which individual events can

release more than 100 times the volume of material released by Mount Saint Helens or any other event in historical times.

Scientists (Storey et al., 2007) have noted that the onset of the most recent of these LIP eruptions is coeval with the Paleocene-Eocene thermal maximum (PETM) some 56 million years ago. The beginning of the LIP event marked the beginning of the opening of the North Atlantic between Greenland and Europe. Massive amounts of basaltic lava and sill intrusions interacted with the carbon-rich sediments

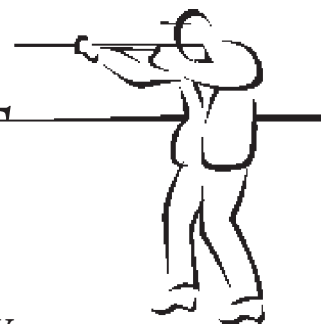
In the News continued on page 9



24th Annual HGS SKEET SHOOT

Saturday, June 16, 2007

Greater Houston Gun Club
6702 McHard Road, Missouri City



This tournament is a 50 target event. Shells are provided, however **you must bring eye and ear protection.** Greater Houston Gun Club and National Skeet Shooting Association safety rules will be in effect. Winning shooters will be determined by the Lewis class system. Door prizes will be awarded by blind drawing after the conclusion of shooting. All competitors are automatically entered into the door prize drawing, but you must be present at the time of the drawing to win.

BBQ lunch will be provided from 11:30 a.m. until 1:30 p.m.
Refreshments will be available throughout the day.

IMPORTANT!!

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became involved and that is a wonderful thing. The real lesson I learned as editor is that becoming involved makes life so much more interesting, so much fuller and so much better. It is true that I gave up some sleep time, quite a lot in fact. In return I got so much more. I got to interact with many of you who saw fit to share your point of view with me and with the rest of the membership. I learned a lot through those interactions and got to know several of you, if only through the internet. It amazed me to discover how well intelligent men and women can communicate when they argue and contest in a civilized manner, no matter how different their individual points of view or how passionately they regard the subject. In the end we influence every person with whom we come in contact. Whether or not we convince them of our point of view is completely irrelevant. What is important is that we discuss our differences in a civilized manner, because

when we do that we are sure to discover our points of commonality. We see far too little of that these days. And I am very pleased to say to all of you that civility is alive and well in the Houston Geological Society. Thank you all for showing me that and for everything else you taught this humble, sometimes stumbling geologist. It was fun! ■

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In the News

continued from page 7

of the basin, causing the release of large amounts of CO₂ and/or CH₄. Storey et al. (2007) used precise dating techniques to link the LIP and PETM events temporally and to infer that the greenhouse gases released triggered the climactic changes that resulted in a rise of sea surface temperature of 5°C in the tropics and 6°C in the Arctic, a more acidic ocean and extinction of up to half the benthic foraminiferal species. The warming event lasted as long as 220,000 years.

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Storey, Michael, Robert A. Duncan and Carl C. Swisher, III, 2007: Paleocene-Eocene Thermal Maximum and the Opening of the Northeast Atlantic, *Science* 27 April 2007: Vol. 316. no. 5824, pp. 587 – 589, DOI: 10.1126/science.1135274

The 2006 Hurricane Season

After the 2005 hurricane season that saw 12 tropical storms and 15 hurricanes, 5 of which made landfall, most of us approached the 2006 season with a degree of trepidation. After all, the National Hurricane Center (NHC) had forecasted a replay of the year before. As June approached, sea surface temperatures (SSTs) were above normal, vertical wind shear was low over the Atlantic and sea-level pressure was reduced over the tropical Atlantic—conditions most forecasters believed foreshadowed another very active hurricane season (Lau and Kim, 2007).

There was a run on home electrical generators and many people kept an eye on the weather, expecting the worse. But nothing

happened—June turned to July and August—still nothing happened. By August, the NHC finally admitted defeat and changed its forecast. What happened?

For hurricanes to form, the SST must be at or above a threshold value of 28°C (82°F). Throughout the latter half of the 2006 season SSTs were at or above threshold over much of the western Atlantic, Caribbean and Gulf. SSTs were extremely warm for much of the hurricane season in 2005, meeting a major requirement for the intense weather. The hurricanes of the 2005 season were of two distinct groups, depending on where and when they formed. Group I hurricanes formed early (June, July) in the eastern Atlantic and proceeded on a clockwise northwesterly track, missing the east coast. Group II storms (including Katrina and Rita) formed later over the warmer western Atlantic and developed rapidly as they moved westward toward land. Katrina formed in the warm waters of the western Atlantic and intensified rapidly as it entered the Gulf, where it created havoc in the central Gulf Coast. In 2006, however, the waters of the western Atlantic, Gulf and Caribbean cooled considerably relative to 2005. The largest change in SST from 2005 to 2006 occurred over the western Atlantic and Caribbean, where the Type II storms had formed in 2005. No storms developed over the western Atlantic and no storms hit land.

Now Lau and Kim (2007) think they know why. They noted that storms over the Sahara kicked up large amounts of dust over two time intervals in 2006; beginning in late February to early March and lasting until late May and in the month of June. The dust covered the tropical and subtropical Atlantic and western Africa. The beginning of each dust event was followed by a pronounced cooling of SSTs about 2–3 weeks later. **In the News** continued on page 15

7th ANNUAL GSH/HGS SALTWATER FISHING TOURNAMENT

Saturday, June 16, 2007

April Fool Point Marina San • Leon, Texas

Galveston Bay Complex and Offshore

This year's Saltwater Fishing Tournament will include an Offshore Division to be held on Saturday, June 16 at the April Fool Point Marina, San Leon, Texas. We are looking forward to a big event this summer and we encourage full family participation.

Galveston Bay Complex Division

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

Galveston Offshore Division

Trophies will be awarded for the heaviest individual Red Snapper, King Mackerel, and Dolphin.

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The Geophysical Society of Houston and the Houston Geological Society are non-profit organizations serving the Geoscience Community. Corporate and individual contributions are appreciated and will be acknowledged on several sponsor boards and banners at the Weigh-In Station and Marina. All contributors will be recognized in the GSH newsletter and HGS *Bulletin* following the tournament. This is a great way to entertain friends, family, business associates and clients. So spread the word!

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Signature: _____ Date _____

Bill,

I commend you for including the AGU position on climate change along with the AAPG position statement. I am not the only AAPG Member discouraged by the anti-scientific position taken by my association. Just because some colleagues do not like the message, or the messengers, or think that the documentation of atmospheric carbon increases points fingers in our direction, we should not dilute our influence and effectiveness with the public by selecting only the science we like.

Thanks for including a variety of perspectives.

Jim Tucker
Dhahran KSA

Dear Houston Geological Society Leadership,
The Texas Board of Professional Geoscientists Must be Dissolved In his HGS April 20 statement, (<http://www.hgs.org/en/art/?1152>) Henry M. Wise is misleading the membership and misrepresenting the professional geoscience community including HGS members, AAPG members and the active, hard working geologists, geophysicists and geoscientists in Texas and elsewhere. I am upset that the HGS allows Mr. Wise's one-sided views on geoscience licensing to be displayed on HGS resources. In the same fashion, Peter Rose performed the same disservice to HGS members when he intimidated many to grandfather into the state licensing system. Shame on you. Shame on Dr. Rose. Shame on biased, one-sided comments.

Government agencies and licensing boards do not lobby legislatures; they service them; they serve the public. The members of the Texas Geoscience Board are serving themselves. It is true as Mr. Wise states, that the Texas Geoscience

Board is 'preparing a response' to justify its existence; but that is not their job.

There is no need to license geologists and geoscientists, other than to satisfy the egos and special interests of certain consultants, like Wise alludes to in his remarks. I have heard the case/arguments before, about a geologist getting mad that an engineer had to sign off on his geologic report. That is the way it should be. That same geologist cringed when I asked to see his professional liability insurance certificate. He had none; his firm had none. He asked how he could be held liable for his opinion. Well, duh.

Licensing of professionals does not recognize professionals. It does provide power to a few men who enjoy political and government control and those that feel the need that a license gives them power and recognition.

In Colorado, a state much more sensitive to water rights and clean air than Texas, the state government very simply made it illegal to practice (hold out) as a professional geologist if one is not qualified to do so; and then they, as a part of the law, spelled out the requirements to be considered a professional. That places the consequences where they end up anyhow, in state and Federal courts, a rarity by the way.

Below is my letter to Dan Patrick of the Texas Senate:

Dan Patrick
Texas Senator

I have been a responsible geologist, geophysicist and engineer for over 36 years. The Texas Board of Professional Geoscientists performs no service to the public and no service to its members. I have testified on many matters in Texas and Federal courts. There is history in this technical area by other states and the practice of geoscience even for environmental or public health purposes cannot be regulated by a state board; there are

no consequences for malpractice because earth science deals with matters that are often very complex and seldom have simple analytical solutions. Two geoscientists will seldom agree completely on the details of a geoscience matter, because there is almost always a degree of uncertainty.

I, like 6000 other Texans, was intimidated into licensing by grandfathering into the system. It costs us over \$2,000,000 collectively; and many of us paid the state instead of professional organizations that provide real services. There are at least three (3) qualified and recognized certification by peer review organizations that do a much better job than any state agency: AIPG, SIPES and the DPA of the AAPG. I would gladly pass along information about these recognized professional, accepted, long standing groups.

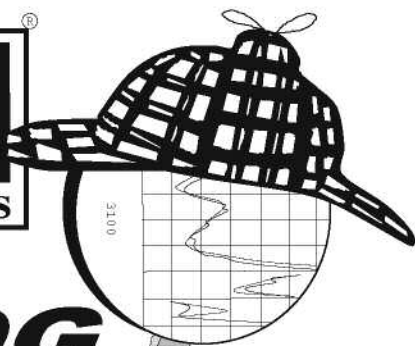
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Texas Businessman
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1784 W Sam Houston Pkwy N
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(713) 461-1784

The HGS should be commended for adopting online voting as an option along with mail-in ballots. As a Member, and later Chair of the Ballot Committee during the early 1980s, it was always a little discouraging that the ballots returned represented only 20-25% of the total HGS membership. Some Members even mailed ballots in from as far away as Arizona, but clearly less than half the membership selected the Society leadership.

Hopefully the ease of online voting will encourage more members to participate in the annual election.

Jim Tucker
Dhahran, KSA

Letters to the Editor continued on page 13



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Letter to the Editor:

HGS Bulletin

May 11, 2007

“Soft” Skills for Hard Decisions

The March 2007 issue of the Bulletin contains two very different articles that nonetheless sparked a common theme. One was the President’s column by Steve Brachman in which he emphasized the camaraderie and support the HGS provides its members in difficult times as a key benefit or even the purpose of the organization. So despite the focus of continuing education on purely technical upgrades, the true benefit of the HGS is in mutual support and fellowship during transitional, turbulent times. While I agree that mutual support is an important part of any human organization, I believe that HGS is uniquely positioned to play a more critical role in the lives of its members...the critical integration of soft and hard skills that foster not only the technology but the ability for people to overcome uncertainty, to develop laser-like focus on their careers and to build powerful personal networks that are the basis for power, influence, creativity and career stability through the ability to gain access to information.

The second article that caught my attention was by Arthur Berman on New Ideas and the Diffusion Model. He said “E&P companies must reestablish new ideas and the people who conceive them as the core capability of their organizations.” He also said that they “must encourage and embrace inventiveness, along with the risk it brings.” Mr. Berman certainly got it right. One question is how to do it. Another question is where do new ideas come from.

Mr. Berman also got it right when he said that committees make better decisions than individuals if and only if “members have unique knowledge or information to bring to the group; group members represent diversity of experience, background

and thinking styles; and when individual decision-making is relatively independent and decentralized.”

Where do unique knowledge, diversity and independence come from?

I would suggest that uniqueness and diversity of knowledge and thinking come from open-minded people who have unique and diverse exposure to ideas, people, and experiences. It comes from people who have multiplied their personal experience by voraciously tapping into the experiences of others. It comes from people who are connected. This connectivity is at the root of inventiveness and creativity. One very useful definition of creativity is “the invention of the new and the rearrangement of the old in new ways.” The more we have to “rearrange” as individuals or as groups the more likely we are to experience new and unobvious connections—novel ideas.

Past research has demonstrated that new ideas typically enter organizations through a very few number of people, people who have a natural penchant for connectivity. But the fact is that this penchant for creativity is a learnable, accessible skill for anyone.

Imagine a technical decision-making team in which every individual brought not only their own expertise to the table but a thousand “lifelines” connected to people with unique knowledge that they could access quickly and efficiently. But how does this come about? Can you teach people how to do this?

There is new knowledge today about some familiar topics, self-discovery, networking and anticipation of the future. This information can help people answer some critical questions: “What drives me?...”, the basic question that deals with personal focus in the midst of transition and uncertainty; “Who know me?”, a more important question than “Who do I

know?” in a time when connectivity and your personal network of contacts is the most important information gathering tool you have and the source of stability in the midst of chaos; and “What is my Plan B?”, the lesson from Katrina to New Orleans that is just as important to you in your career planning.

Since 1950 a renewed interest in an obscure branch of mathematics called Graph Theory, the study of nodes and links, has provided new understanding about the formation and the dynamics of networks with profound implications for us all. We know that networks grow geometrically and preferentially. We know that clusters and hubs are natural and inevitable products of network growth. We know that 80% of the links in a network are attracted to 20% of the nodes. We know that networks are stable and portable. If you want to establish your own measure of performance, this would suggest that you examine your network. Bigger is better. How large is your network? Have you identified the “hubs” in your field? Are you linked closely to them? Have you set a goal to become a hub, a center of information flow? How attractive are you as a hub of information flow? What can you do to improve your position? Powerful networks are the source of influence and independence in the workforce today.

The field of futurism has made great strides in the past several decades. The skill of scenario planning offers everyone the opportunity to examine their future with discipline and reason. By articulating your uncertainties and the driving forces in your career, you have the basic “stuff” to craft alternative narratives, scenarios, of your future. This process does not predict anything but it helps you overcome uncertainty while you discover plausible options and the decisions you may need to make to influence future outcomes.

Letters to the Editor continued on page 15

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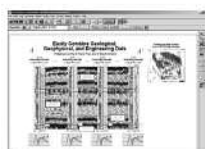
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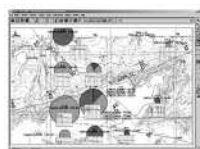
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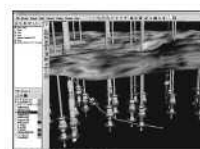
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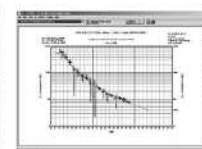
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More significantly, the loading of the atmosphere with dust particles was greatest in areas of the largest cooling of the SST. Hurricanes simply never had a chance to form.

This coming hurricane season once again promises to be an active one. So, do not sell those generators just yet. There is no reason to expect to be saved by dust from the Sahara this year. Then again, perhaps nature has another surprise in store for us.

Reference

Lau, K-M, and K-M Kim (2007), How Nature Foiled the 2006 Hurricane Forecasts. EOS Trans. AGU, Vol. 88, No. 9, 27 February 2007

How Well Have Climate Predictions Performed?

The way that the scientific method works is to develop a hypothesis or model from theoretical data based on first principles and then test those hypotheses against observation of experimental or natural data. The measure of the validity of a scientific model is how well the predictions match the observed data. Contrary to what some critics may claim, the climate models laid out in the report of the Third Intergovernmental Panel on Climate Change (IPCC) in 2001 are based solidly in physics and not just in statistical analyses of empirical data. In an article in *Science*, Rahmstorf et al. (2007) compare the predictions of the IPCC 2001 report

with observations available over the period since 1990. Most of the data for this period were not available at the time the report was issued, so the predictions were in effect blind. Results indicate good agreement; if anything the IPCC predictions were conservative and underestimated the changes that occurred. They also underestimated the rate of sea level rise, an actual 3.3 mm/yr vs the predicted <2.0 mm/yr. The authors of the IPCC 2001 report intentionally chose conservative values for properties such as CO₂ forcing, the temperature increase (3°C) caused by a doubling of CO₂, to avoid exaggerating any of their predictions. So far, the limited data seem to confirm their predictions and underscore the concerns that climate scientists have for serious changes currently taking place on our planet. ■

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IPCC, Climate Change 2001 (Cambridge University Press, Cambridge, UK, 2001).

Rahmstorf, Stefan, Anny Cazenave, John A. Church, James E. Hansen, Ralph F. Keeling, David E. Parker and Richard C. J. Somerville, 2007: Recent Climate Observations Compared to Projections. Originally published in *Science Express* on 1 February 2007, *Science* 4 May 2007: Vol. 316, no. 5825, p. 709, DOI: 10.1126/science.1136843.

Letters to the Editor

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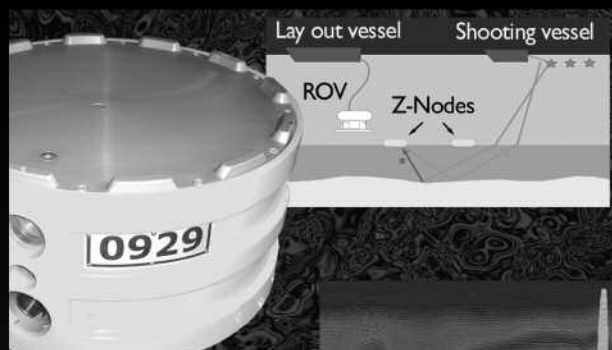
I would suggest that in addition to solace, fellowship and support, the purpose of the HGS is also to provide the training and guidance everyone needs to cope with a work world characterized by continual transition. If any part of the HGS purpose is to help members overcome uncertainty and obstacles in this environment, some "soft" training could complement the camaraderie and become a welcome addition to their technical toolbox. By taking the lead, HGS could break new ground and insure its position as the home for geoscientists in a changed world.

Inventiveness in organizations would certainly benefit from an overhaul of the E&P bureaucracy as suggested by Mr. Berman. It would also benefit from some skill building in purposeful

creativity. Most of us are powerless, however, to influence anything but our own behavior and our own choices. But, in that knowledge there is liberation, freedom to develop out total range of skills to be more powerful, independent and creative. It is ours for the taking and the HGS is an organization that can create the environment that empowers us to take it.

Kenneth F. "Frank" Wantland, PhD
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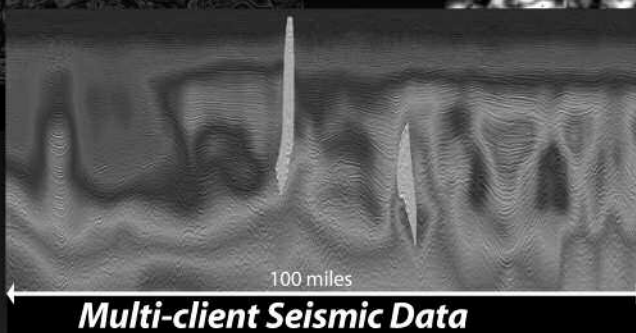
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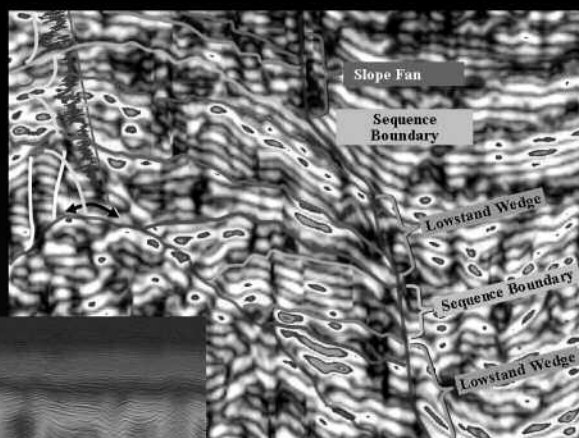
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The Future of the Global Oil Industry: Resources, Challenges and the Geoscience Workforce

Petroleum powers the world's economies, but is there enough oil and natural gas to meet surging demand as developing nations enter the consumer age? Current global oil consumption stands at 85 million barrels per day and is expected to rise to over 100 million BOPD within 10 years. Oil prices have soared to a sustainable level of \$60–\$75 per barrel. Will prices go higher or collapse? As production in the mature sedimentary basins of North America, Europe and Southeast Asia declines, the United States, with less than 5% of the world's population, consumes 25% of the world's oil and natural gas. Can this continue? Global peak hydrocarbon production is most likely to occur between 2025 and 2040. Then what?

The world has significant remaining conventional and unconventional oil and gas resources with some estimates exceeding 4 trillion barrels, which is many times more crude oil than has been consumed to date. Where are these resources located, and who controls them? Unconventional hydrocarbon resources are adding significant new reserves. Improved recovery technologies and conservation will extend the life of known reserves in mature

conventional oil and gas fields. Despite the current North American focus on continuous reservoir resource plays, there are still significant new exploratory plays, as demonstrated by the multi-billion barrel ultra-deep Lower Tertiary play in the deep water Gulf of Mexico. Internationally, deep water delta systems and the Arctic margins offer significant exploration potential.

*...estimates are that by 2100
alternate energy sources will
be required to supply fully
40% of global energy demand.*

A vibrant future global economy will require access to petroleum resources and major capital investment in exploration, development and infrastructure. There are many technical, geopolitical, infrastruc-

ture, economic, environmental, capital and workforce challenges to meeting near-term and future global oil demand. How can we deal with these? Where will capital be deployed? Graduates entering the petroleum workforce must have appropriate geoscience and business skills—What are they? Where will the industry find its future geotechnical employees? The public must have a better understanding of energy and the geosciences so realistic energy policies can be implemented. Finally, a serious commitment to developing affordable alternate energy technologies is essential—estimates are that by 2100 alternate energy sources will be required to supply fully 40% of global energy demand. ■

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Biographical Sketch

G. WARFIELD "SKIP" HOBBS is Managing Partner of Ammonite Resources Company, an international petroleum geotechnical and business consulting firm that Hobbs founded in 1982 in New Canaan, Connecticut. Hobbs is a past national officer of the American Association of Petroleum Geologists, and currently serves on the Executive Committee of the American Geological Institute. He writes and speaks frequently on energy economics and policy matters.



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by Ray Thomasson

Global Climate Change—A Geologic Perspective What Does The Data Tell Us?

There has been an exponential increase in research into global climate change and in particular “global warming” since the early 1980s. Two basic types of research are being conducted. One is being conducted by physicists, astrophysicists, thermodynamicists, geologists, chemists, climatologists and allied scientists in an attempt to understand fundamental scientific principles and is based on global climate history recorded in the geologic record. The second, and by far the most abundantly funded research, is being conducted by a significant body of scientists assisted by computer modelers using global circulation models. These models are based on data and assumptions of how temperature relates to various past, present and future parameters. The latter research is focused on CO₂ as a climate driver. This talk is designed to discuss the first data based body of research in some detail and the second model based body of research in summary.

We will discuss the makeup of the atmosphere, the global climate system and how the carbon cycle works. The history of the earth’s atmosphere and temperature through geologic time is an important context in which to describe the most recent CO₂–temperature relationship. Significant conclusions are possible with the use of isotopic data derived from extensive ice cores and the results from deep-sea cores acquired in the recent past.

Fundamental data on thermodynamics suggests limits to the effect CO₂ can have on temperature. Much research has now been done on solar irradiance, earth-sun variations, sunspots and solar flares relative to temperature variations. Variations in cosmic ray intensity can be shown to be directly related to historical temperature changes. In addition, “greenhouse gases” play an important role in temperature control. A review of all these data helps explain the causes for both temperature and CO₂ rises in

both the past and present. We will also discuss some related climate elements such as hurricanes, etc.

Out of the facts it is possible to state more clearly what is known from science and what is speculation. ■

Variations in cosmic ray intensity can be shown to be directly related to historical temperature changes. In addition, greenhouse gases play an important role in temperature control.

Biographical Sketch

DR. THOMASSON received a BS and an MS from Missouri University and a PhD in geology from the University of Wisconsin. Ray Thomasson previously was with Shell Oil Company for seventeen years where he worked as both a geologist and a geophysicist. Positions during that time included senior geologist, staff geophysicist, Manager of Geologic Research for Shell Development Company, Manager of the Texas, Louisiana and Atlantic Offshore Division, Manager (for Shell Oil USA) of

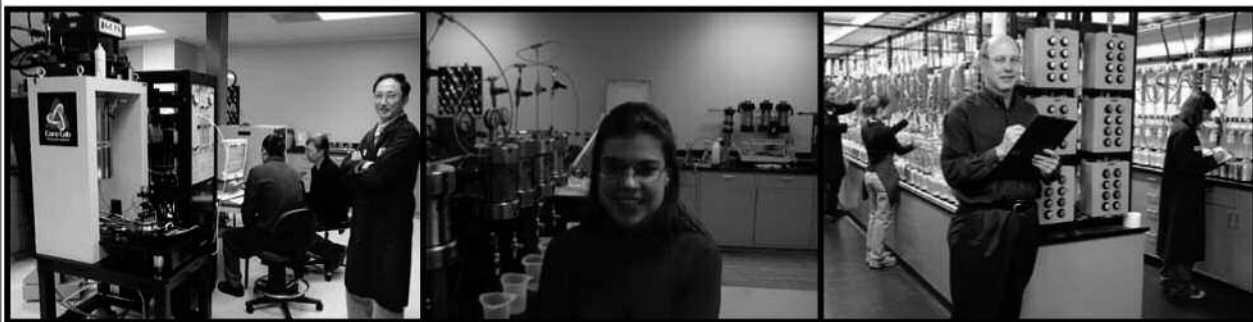
Forecasting, Planning and Economics, and Head, Strategic Planning for Shell International Petroleum Corporation, London, England. His last position with Shell was as Chief Geologist for Shell Oil USA where he was responsible for the technical quality of Shell’s geological exploration.

Other positions included Vice President of Exploration for McCormick Oil and Gas, Inc., President of Spectrum Oil and Gas, Inc., President of Pend Oreille Oil and Gas, Inc. and President of his current company, which he founded in 1991, Thomasson Partner Associates, Inc. TPA has activity and projects in seventeen states from New York to Alabama to Nevada to Idaho. Its raison d’être is to create and promote to industry large potential exploration projects.



Joint HGS/SIPES Meeting continued on page 21

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Ray Thomasson is on the Board of Trustees and is a past Chairman of the Board of Trustees of the American Geological Institute Foundation, gives lectures yearly at various universities in the United States and was a 1987–1988 distinguished lecturer on stratigraphic geophysics in carbonates for the American Association of Petroleum Geologists. In 1995 he received the distinguished service award from AAPG and in 2003 received

Honorary Membership in AAPG. He has received the Distinguished Alumnae Award from the University of Missouri and the Distinguished Alumnae Award from the Geology and Geophysics Department of the University of Wisconsin. He is past president of both AAPG and the American Geological Institute.

HGS Directory of Oil Company Name Changes New Edition

The updated 18th Edition (April 2007) of the *HGS Directory of Oil Company Name Changes* is now available.

This publication is a cross-referenced list of oil and gas exploration and production companies that have merged, been acquired, bought or sold major assets, or otherwise changed their names. The purpose of this publication is to assist geoscientists in their pursuit of logs, paleo, production histories, well files and other data whose location may be obscured by company name changes.

The *HGS Directory Of Oil Company Name Changes* is available for \$13.50 plus shipping and handling and 8.25% Texas sales tax if shipped to a Texas address. Prepayment is required, preferably by credit card.

The *Directory of Oil Company Name Changes* can be obtained from the Bureau of Economic Geology in Austin. The Bureau's Web site is located at www.beg.utexas.edu, the email address is pubsales@beg.utexas.edu, or you can contact them by phone at 1-888-839-4365 (USA only) or 512-471-7144. Orders may be faxed to the Bureau at 1-888-839-6277 or 512-471-0140. ■

Remembrance

Laura Nymberg Ullrich

LAURA NYMBERG ULLRICH passed away April 11, 2007 in Houston, TX, after a long battle against cancer. Laura was born on October 31, 1954 in Detroit, MI, to Raymond and Mary Nymberg. After graduating first in her class from La Salle High School in South Bend Indiana in 1973, she attended the University of Notre Dame, where she was a part of the first freshmen class that admitted women. She graduated with a Bachelor of Science degree in geology in 1977. She continued her education to receive a Master's degree in geophysics from the University of Michigan in 1979. It was at Notre Dame that she met and married her husband Mark. Mark and Laura moved to Texas for her job in the oil industry where they remained except for a 4-year assignment overseas in London. After returning from England, they moved to The Woodlands, where she became active in the church choir at St. Anthony of Padua and with The Woodlands Symphony Chorus. She also enjoyed facilitating scientific research as a Judge at the local Science Fair and chaperoning several of her children's high school trips. She is survived by her father, Raymond Nymberg Jr.; her four sisters, Marie Broyles, Vicki Richey, Patricia Sisk and Paula Hughel; her brother Raymond Nymberg II, her husband of 30 years Mark, and her two sons, Paul and Jeffrey. Visitation was held on Tuesday, April 17, 2007, at the Forest Park Funeral Home in The Woodlands, Texas. The funeral mass was held at on Wednesday, April 18, at St. Anthony of Padua Catholic Church, The Woodlands, Texas. ■

6th PESGB/HGS International Conference on African E & P *Africa's Petroleum Systems: From Outcrop to Deepwater*

The conference is sponsored/co-organised by PetroSA and supported by the Petroleum Agency of South Africa and Geological Society of South Africa.

Two days of talks and poster sessions will include ground breaking presentations on all aspects of exploration and production geoscience in onshore and offshore Africa. The conference is complemented by two field trips and full screening of Seb Lüning's film on "Petroleum Geology of Southern Libya."

Brief overview of conference:

Tuesday 11 September:

Opening Address – PetroSA Director

AM oral session – Overview and African Tectonics & Sediments Systems I

PM oral session – African Tectonics & Sediments Systems II and Activity around Africa I

Posters and core workshop

Evening – Dinner at Moyo Restaurant

Located in the gardens of the Spier Wine Estate, in the heart of the Stellenbosch Winelands, Moyo is an unparalleled dining experience. The tree-lined garden is filled with Bedouin tents and gazebos made from wrought iron, with beautiful hand-crafted copper water features, it is an African experience not to be missed!

Wednesday 12 September:

AM oral session – Activity around Africa II

PM oral session – Activity around Africa III

Posters and core workshop

Thursday 13 September:

AM - full screening (~2 ? hours) of Seb Lüning's film on 'Petroleum Geology of Southern Libya'

Field Trips:

Wednesday 12 (PM) to Saturday 14 Sept – Tanqua Karoo Deepwater Facies led by De Ville Wickens (staying in Inverdoon game park) (returning for evening flights at Cape Town airport on Saturday)

Thursday 13 Sept – Cape Peninsular led by J. Compton (suitable for both geologists and non-geologists)

REGISTRATION

Registration and Hotel Booking on- line at PESGB Website

www.pesgb.org.uk (Look under "Diary" / Conferences / Africa Conference)

| | Before 31st July 2007 | | From 31st July - 7th September 2007 | |
|-----------------------|-----------------------|------|-------------------------------------|------|
| Advanced Registration | Member | £250 | Member | £325 |
| | Non Member: | £300 | Non Member: | £375 |

NB: South African resident: Less 25%

Payment will be accepted in SA Rand by cash, credit card or bacs transfer.

Members include: PESGB/HGS/SPE/Geol Soc

Registration fee includes all refreshments, lunch, evening dinner 11th Sept., abstract volume & CD

One day registration rate will be available onsite.

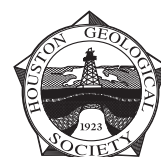
For details of sponsorship opportunities and associated exhibition space for this highly popular event please contact Jennie Beck at jennie@pesgb.org.uk



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6th PESGB/HGS International Conference on African E & P Africa's Petroleum Systems: From Outcrop to Deepwater

11 – 13 September 2007
Cape Town International Convention Centre, South Africa

Timetable - Oral Presentations

Tuesday 11 September

| | | |
|-------|--|--|
| 8.30 | <i>Registration & Coffee</i> | |
| | Session 1: Overview Papers | |
| 9.30 | Welcome and Opening Address | Senior Executive - PetroSA |
| 9.50 | African Oil Resources – Three Pillars for Growth | A. Hayman & R. Fryklund - IHS |
| 10.15 | Sub-Saharan African Onshore Exploration – are we getting it right? | A. Beach - Consultant & S. Lawrence - RPS Energy |
| 10.40 | <i>Coffee & Poster Presentations</i> | |
| | Session 2: African Tectonics and Sediment Systems I | |
| 11.20 | Circum-Africa Tectonics Project | C. Scotese - Palaeomap Project , Texas & A. Danforth - Consultant |
| 11.45 | The Santonian Event: New Insights from North and South Africa | W. Bosworth - Apache & K. Burke - Univ. of Houston |
| 12.10 | The evolution of the African landscape during the Mesozoic and Cenozoic: integrating high resolution paleogeography, drainage analysis and landscape dynamics | P. Markwick, C. Raddadi, R. Hoult, K. Wilson, D. Fairhead - GETECH |
| 12.35 | <i>Lunch & Poster Presentations</i> | |
| | Session 3: African Tectonics and Sediment Systems II | |
| 14.00 | The Turbiditic Systems: records of the Uplift History of Africa during the Meso-Cenozoic | F. Guillocheau, N. Rolland, J. Colin, D. Rouby, C. Helm, O. Dauteuil, J. Tiercelin - Geosciences Rennes |
| 14.10 | Climate and tectonics: Interactive controls on Africa's Cenozoic sedimentary history | K. Burke - Univ. of Houston & D. Macgregor - Neflex |
| 14.25 | Regional and Local Controls on the Architecture of Cenozoic Turbidite Systems of the Lower Congo Fan | O. Broucke, D. Rouby, C. Robin, F. Guillocheau, T. Nalpas - Geosciences Rennes & F. Temple - TOTAL |
| 15.00 | <i>Coffee and Poster Presentations</i> | |
| | Session 4: Activity around Africa I | |
| 15.30 | Stratigraphic Architecture and Detailed Reservoir Geometry of Late Ordovician Glacial Sequences, Illizi Basin / Tassili N'Ager, Algeria. Integration of Remote Sensing, Fieldwork & Subsurface Data. | R. Dixon, T. Patton, B. Taylor, P. Hirst – BP, J. Diggins - Infoterra & A. Hutchinson - In Anemas JV |
| 15.55 | 3D View of Structure at a Plate Scale ; Significance for Understanding the Palaeozoic Petroleum Systems of North Africa and Arabia | A. Finn, D. Macgregor & S. Williams - Neflex |
| 16.20 | Hydrocarbon Systems of Egypt | R. Bignell - Fairway Exploration |
| 16.45 | The Hydrocarbon Prospectivity of the Egyptian North Red Sea | D. Griffin - Hess |
| 17.10 | Petroleum Systems and Structural Architecture Revealed by New Regional Seismic in Kenya and Tanzania, Offshore East Africa | A. Danforth – Consultant, B. Radovitch, Halfani B Halfani - TPDC, D. Riarioh - Ministry of Energy (Kenya), W. St John, P. Wakeling & S. Venkatraman - GX |
| 18.00 | Depart for Moyo Evening Event Located in the gardens of the Spier Wine Estate | |



6th PESGB/HGS International Conference on African E & P Africa's Petroleum Systems: From Outcrop to Deepwater

11 – 13 September 2007
Cape Town International Convention Centre, South Africa

Timetable - Oral Presentations

Wednesday 11 September

| | | |
|-------|--|--|
| 8.30 | Registration & Coffee | |
| | Session 5: Activity around Africa II | |
| 9.10 | National Oil Company/Invited Paper- East Africa | Tbc |
| 9.35 | Fluvial and Lacustrine Deltaic Reservoirs charged by Lacustrine Source Rocks; The Albert Rift, West Uganda | P. Burden - Tullow |
| 10.00 | Mesozoic Rift Basins in Onshore Tanzania; Stratigraphic and Structural Development and Petroleum Potential | J. Quinton & P. Copesake - Dominion Petroleum |
| 10.25 | Coffee & Poster Presentations | |
| 10.55 | Exploration Potential of Offshore Madagascar Based on Regional-scale Seismic Imaging | G. Tari - AllyGabor, A. Danforth, E. Razaka - OMNIS, B. Radovitch, W. St John & P. Wakeling - GX |
| 11.20 | Madagascar. (title tbc) | E. Blunt -Sterling Energy |
| 11.45 | Exploration and Development of the Temane / Pande / Inhassoro complex, Mozambique | S. Quam, R. Durkan, A. Jonker, S. Mitchev - Sasol |
| 12.10 | National Oil Company Presentation | Tbc |
| 12.35 | Lunch & Poster Presentations | |
| | Session 6: Activity around Africa III | |
| 13.50 | Lessons learned from development drilling - Barremian to Aptian deepwater channel reservoirs of the Bredasdorp basin, South Africa | PetroSA |
| 14.15 | Evidence of a Petroleum System in the Deep Water Orange Basin, South Africa | J. Aldrich & C. Davies - PetroSA |
| 14.40 | Marine XIV, Congo Brazzaville : New Prospectivity in a "mature" Post-Salt and immature Pre-Salt Play | P. Mikkelsen - Simco & E. Øyvann - PA Resources AB |
| 15.05 | Coffee | |
| 15.30 | Challenges of Exploring for New Opportunities in "Maturing" Deepwater Basins: Contrasting the Deepwater Gulf of Mexico and the Niger Delta | R. A. Eisenberg, M. Roberts & S. Muhuri - Chevron |
| 15.55 | New Plays and Structural Styles Revealed by Long-Offset, PSDM Data: Linked Structure and Stratigraphy in Offshore Nigeria | B. Radovich - Silver Grass Enterprises, C. D. Connors – Washington Lee Univ, A. Danforth & S. Venkatraman - GX |
| 16.20 | Okoro Field, Niger Delta – a case study of appraisal uncertainty | J. Robbins & N. Johnson - Afren plc |
| 16.45 | New Insights into the Hydrocarbon Potential of the Joint Development Zone of Nigeria and São Tomé and Príncipe | D. Pratt - PGS |
| 17.10 | Closing Address | |



6th PESGB/HGS International Conference on African E & P Africa's Petroleum Systems: From Outcrop to Deepwater

11 – 13 September 2007
Cape Town International Convention Centre, South Africa

Posters

Below is the *preliminary* program for posters. Further poster submissions are welcome; please contact duncan.macgregor@neftex.com as soon as possible.

Tuesday and Wednesday

| | |
|--|--|
| 3D View of Structure at a Plate Scale: Significance for Understanding the Palaeozoic Petroleum Systems of North Africa | A. Finn, D. Macgregor & S. Williams - Neftex |
| Play Mapping Based on Present Day and Pre-Oligocene (29 mya) Active Oil Windows, West Africa | S. Henry - Innovative Exploration Services, A. Danforth & S. Venkatraman - GX |
| Petrophysical Analysis of Facha Member Reservoir, Fidaa Field – Sirte Basin | El-Bakush Sadeg, Ghawar Bahiya, El Adebti Gihan - Al Fateh Univ, Minas Haithem - Al Marqab Univ |
| Geohistory Analysis Of Sabratah Basin Through Maastrichtian-Early Miocene Period, Northwestern Offshore, Libya | Haithem Minas - Al Mergib Univ, Eblaou A.S. - Higher Institute of Industry, Al-Bakush, S - Al Fateh Univ |
| Stratigraphic Study, NW of Concession 6, Sirt Basin, Libya | Senusi Harsha – Al Fateh Univ |
| Plio-Pleistocene Stratigraphic Architecture of the Eastern Niger Delta; Regional Evolution and Controlling Factors | P. Jermannaud, T. Nalpas, F. Guillocheau, C. Robin, S. Rouby - Geosciences Rennes, S. Raillard - TOTAL |
| Petroleum Systems of the Aptian Salt Basin | R. Bignell - Fairway Exploration |
| A lacustrine petroleum system in the synrift of the Orange Basin, offshore South Africa | D. v.d. Spuy - Petroleum Agency SA |
| Exploration opportunities within the Western Bredasdorp Basin | J. Roux – Petroleum Agency SA |

Core Exhibit

South African Cores, displayed by Petroleum Agency SA (Location TBA)

Film

Thursday 13 September: Location TBA, but will NOT take place at the Convention Centre

| | | |
|---------------------------|---|---|
| 0900-1200 (with interval) | The Petroleum Geology of Southern Libya (movie) | S. Lüning, D. le Heron - CASP, N. Fello - Repsol, J. Craig - AGIP, S. Schulz, G. Dyke - Occidental, S. Lubeseder - Manchester Univ., A. Dunford - Vienna Univ, Y. Abutarruma - ESSL |
|---------------------------|---|---|

Field Trips

| | | |
|---|---|--|
| Wednesday 12 September (pm) – Saturday 15 September | Turbidites of the Southwestern Karoo Basin: Depositional Elements, Facies Architecture and Reservoir Applications | Leader: Dr De Ville Wickens (returning for evening flights at Cape Town airport on Saturday) |
| Thursday 13 September | Cape Peninsular | Leader: Dr John Compton (suitable for both geologists and non-geologists) |

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EOR and the Expanding Field of Carbon Dioxide Flooding • September 16, 2007 \$50. Held in Lexington, Kentucky, with AAPG Eastern Section Meeting.

Seismic Stratigraphy and Seismic Geomorphology into the 21st Century • September 22-23, 2007 \$650 for AAPG members, \$750 for non-members (\$100 more after 8/24/07). Held in San Antonio, Texas, in conjunction with SEG Annual Meeting

Practical Salt Tectonics • November 16-17, 2007 \$850 (\$100 more after 10/4/07). Held in Athens, Greece with the AAPG European Region meeting.

Fractures, Folds, and Faults in Thrusted Terrains: Sawtooth Range, Montana • September 10-15, 2007 \$2,600 (\$100 more after 8/13/07). Begins and ends in Great Falls, Montana

Sedimentology and Sequence Stratigraphic Response of Paralic Deposits to Changes in Accommodation: Predicting Reservoir Architecture, Book Cliffs • September 20-27, 2007 \$2,100. (\$200 more after 8/9/07). Begins and ends in Grand Junction, Colorado.

Modern Terrigenous Clastic Depositional Systems • September 22-29, 2007 \$2,500 (\$100 more after 8/24/07). Begins in Columbia and ends in Charleston, South Carolina

For more info or to enroll call +1 918 560-2650
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Remembrance

Robert "Pav" Pavlovic, November 6, 1914–April 24, 2007

by *Charles Sternbach*



Pav and his wife Frances made Texas their home beginning in the late 1940s, living in Kerrville, San Antonio, Midland and Houston. He was born in Cleveland, Ohio, to Mary Yamek Pavlovic and James Pavlovic, Czechoslovakian immigrants. His reminiscences included riding the train to visit his grandmother in Cleveland; helping with the vegetable garden; his school teachers in Dillonvale, Ohio; and his love of the environment, languages, education and hunting for wild mushrooms and game. Following his 1932 graduation from Dillonvale High School he worked co-op jobs at the Crossley radio assembly line and in the galvanizing department of a refrigeration company. For two years he worked with his Dad in the Piney Fork, Glen Robbins, Hanna Coal, and Y & O coal mines while the school principal, B.E. Gardner of Bristol, Virginia, continually encouraged him to go to

college—giving him credit for solid geometry in a crash course on two Saturdays that helped Robert meet the entrance requirements for the University of Cincinnati. Pursuing an electrical engineering degree, he almost flunked, but was saved by studying in an empty physics classroom and writing lessons on the blackboard. Obtaining his education "by halves," Robert held odd jobs—drafting, picking apples, winding electric motors and sometimes hitchhiking cross-country to find work during the Depression years, but principally as a loader in various eastern Ohio coal mines. He loved telling stories and how he once trapped a mink in the hills of Ohio and sold the pelt to Sears, Roebuck for \$10.

Babysitting for the department chairman's son introduced him to the Geology Department at the University of Cincinnati—he had found his calling. A college project surveying Ohio's Serpent Mound is still used at the State Park's interpretive center. Hired by Tennessee Valley Authority as geologist for the Fontana Dam near Bryson City, North Carolina, Robert met Martha Frances Roberts of Birmingham, Alabama, who gave him the nickname "Pav." They married September 24, 1944. He joined Magnolia Oil Corporation, which later became Mobil, retiring in 1979 after 36 years as a petroleum geologist, specializing in West and Central Texas. His years with Magnolia and then Mobil took the family from Mississippi to Texas. He instilled in his children an appreciation for the outdoors and the environment. For nearly 20 years following the 1985 deaths of his sister Anna Johnstone and her husband Robert T. Johnstone, the couple divided their time between homes in Texas and Ohio.



Survivors include his wife of 63 years, Frances; children Teri Stephens and husband Robert of Seattle, Washington; Marcia Roberts of Canton, Ohio; Norma Rossel and husband Greg of Troy, Maine; Jason Pavlovic and wife Lucy, of Broomfield, Colorado; and Emily Chiles and husband Jerry of Houston; as well as grandchildren Russell Nolen of Illinois; Andrew

Nolen and wife Julie Kimmel of Alaska; Sebastian Turullols and wife Erin Kan of California; James Fagan of Maine; Anne Pavlovic, Katherine Pavlovic Taylor and husband Cody, Margaret Pavlovic Ross and husband Joel all of Colorado and great grandchildren Arielle Turullols, Andreas Turullols and Genevieve Taylor.

A Note about PAV and the HGS:

Pav joined HGS in 1972 when he and his family moved to Houston. During his 35 years of HGS membership, Pav regularly attended HGS talks. He was a frequent attendee at meetings well into his nineties. He truly loved geology, and all the meeting topics seemed to interest him. The last meeting he attended was on his 92nd birthday (he had requested that the family adjust their birthday plans for him so he wouldn't have to miss an HGS talk!). ■



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Book Review by George O. Chandlee

Parker, Andrew, 2005, *In the Blink of an Eye*. Westview Press, Perseus Books Group, 237 pp., \$26.00.

Geoscientists learn in introductory historical geology that transitional forms in evolutionary lines are rare in the fossil record. Transition is manifested as morphological and behavioral change. Extracting transitional behaviors from the fossil record is a nearly impossible task, many times more difficult than identifying transitional morphologies because behavior is for the most part inferred only by analogy. Also problematic are extremely specialized anatomical structures, organs construed to be of “minor” importance, and organs without a clear functional significance. Given this range, and its complexity, identifying a reasonable means of transition and understanding the mechanism requires an interdisciplinary and integrative approach.

The author of *In The Blink of an Eye*, Andrew Parker, addresses the issue of a critically important gap in the fossil record. Parker has impressive credentials. As a Royal Society Research Fellow at Oxford University's Department of Zoology, he has been named one of three most important young scientists in the world for his work in investigating and explaining the Cambrian explosion. He has authored numerous peer-reviewed academic papers and several popular science articles and brings impressive authority to his writing. Topics in the book are interdisciplinary, incorporating modern concepts in geoscience, biology, chemistry, optics, physics and physiology.

The book centers on a proposed explanation for the Cambrian explosion, best exemplified by the Burgess Shale fauna discovered by Charles Walcott in 1909 in the Canadian Rockies. The spectacular fossils of the Burgess Shale are due to the preservation of soft tissue anatomy in a highly diverse array of invertebrates. Among the invertebrates occurring in the Burgess Shale is an organism formally called *Naraoia*, representing a sister group to trilobites that had soft bodies but were predators. Other forms such as *Marella* had long spines and an exoskeleton. So, eyes, predatory limbs and hard exoskeletons were all concomitant appearances and nearly simultaneous. The cause of the sudden appearance of major life forms 540 million years ago, known as the “Cambrian explosion,” has been a mystery in paleobiology and, to the general public, is second only to the disappearance of the dinosaurs as the most interesting event in earth history.

Parker's central argument deserves attention because it offers a new solution to an unresolved geological question: What biological or physical factor triggered the dramatic explosive radiation of complex invertebrate organisms 540 million years ago? The key element in Parker's argument is that the development of the eye is the motivat-

ing factor. A variety of explanations have been advanced previously but none has obtained general agreement. Parker proposes that the dramatic diversification occurred due to the evolution of complex eyes. This in turn enabled predators to become more effective and prey species had to evolve physical and behavioral adaptive defenses. The rapid diversification of life forms defines the boundary between the pre-Cambrian and Cambrian eras. The Cambrian explosion was the

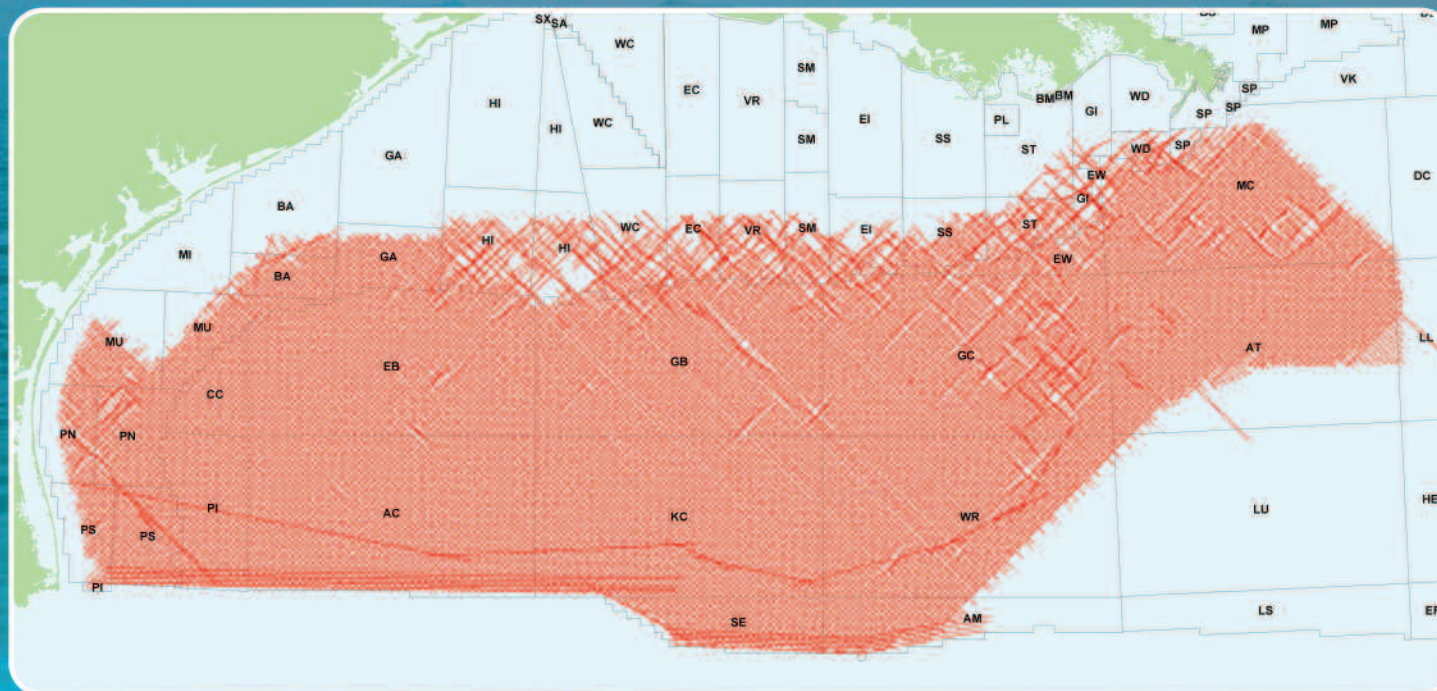
result of the evolution of vision. In this, known as the “Light Switch” theory, active predation became possible with the advent of vision. Prey species were under extreme pressure to adapt so that they were less likely to be detected. New habitats opened as organisms were able to see their environment for the first time, and rapid specialization occurred as species differentiated.

If this theory is correct, the development of the eye must be explained. Parker discusses this question briefly at the end of his book. One possibility is an increase in solar radiation resulting in more light, or perhaps there was an increase in the transparency of the sea. Of course, the role of chance cannot be ruled out.

What is not clear is a proposed calibration for the transformation. Calibration is the means by which a measurement is adjusted to a known standard. In other words, the proposed mechanism of the transition is not inarguably compared to a known standard of anatomical change and adaptation, so that, as readers, we cannot assess the reasonableness of the time frame for the proposed transition.

Because the major conclusion of the book is based on a mixture of observations and inferences from a variety of scientific disciplines, it is not grasped easily. The author does, however, provide sufficient background and explanation to lead the reader through the necessary background discussion to be of interest. A committed and earnest tone drives the ideas in this book, and the concepts and conclusions are presented with conviction. Some readers may be convinced whereas others may find acceptance of the arguments difficult. It is worth reading because of the broad ideas presented and because of new perspectives on an old problem. The precursors, causes and motivating factors impelling the Cambrian explosion have acquired renewed interest, and this book provides an engaging eye-opening examination of these factors. ■





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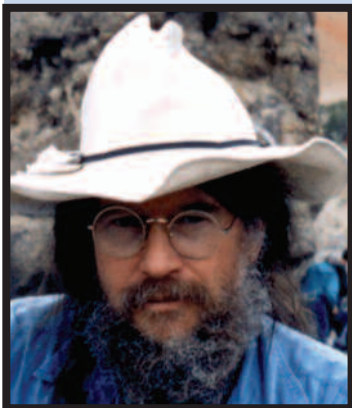
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HGS GUEST NIGHT — SATURDAY, JUNE 16, 2007
HOUSTON MUSEUM OF NATURAL SCIENCE 6:30 P.M. – 10:30 P.M.

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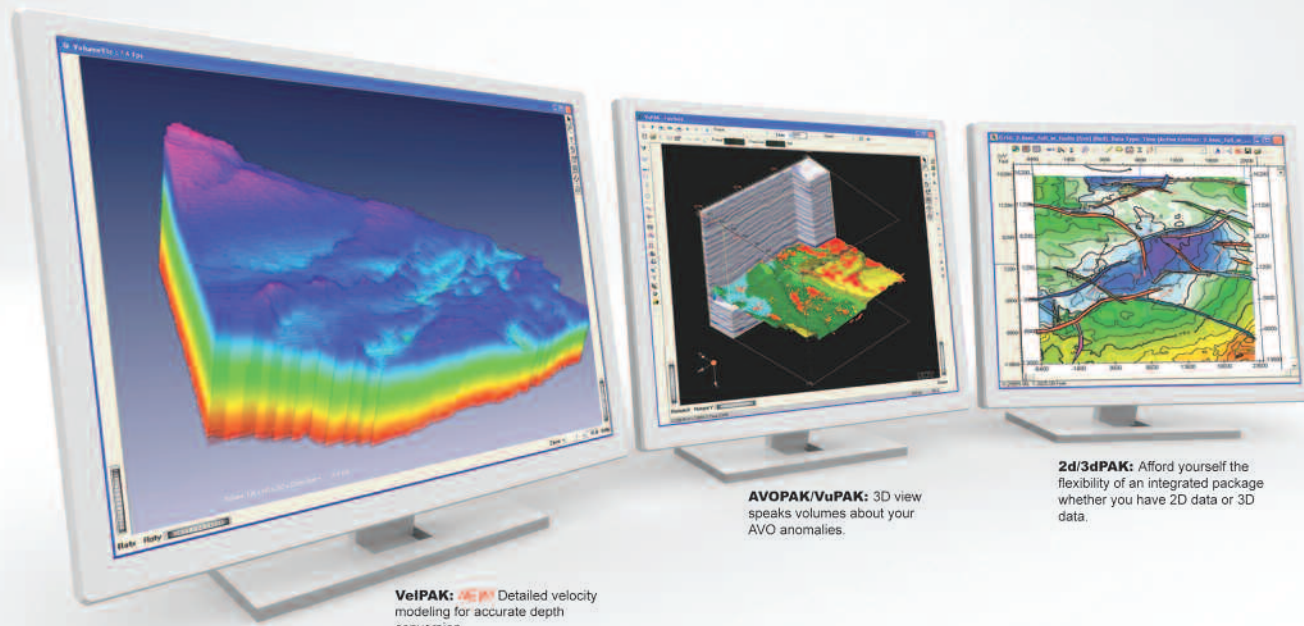
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HGS Guest Night—June 16, 2007

Amazing Fossils of the Permian with Dr. Bob Bakker: North Texas Fossil Expeditions Renew Effort to Build Museum Collection and Educate Scientists

article by *Linda Sternbach, Neal Immega and Bill Osten*

Following Bob Bakker's presentation there will be a special previewing of *Dinosaurs Alive*, a 3-D IMAX movie scheduled for release later this year.

Don't miss this year's Guest Night on Saturday, June 16, at the Houston Museum of Natural Science (HMNS)! HGS is fortunate to have Dr. Bob Bakker, dinosaur expert and author of the book *Dinosaur Heresies* as the keynote speaker. His presentation will be in the IMAX theatre during the Guest Night program. Bob will discuss his new role as Visiting Curator of Paleontology for the HMNS, a position that has him traveling between fossil dig sites in North Texas and Wyoming and designing a world-class paleontology exhibit to be installed here in Houston. Dr. Bakker and members of the HMNS are engaged in field expeditions to Permian fossil dig sites in north Texas to collect Permian fossils for this new exhibit. These new finds will be welcome additions to the existing collection that includes the large vertebrate dinosaurs in the main hall. The old and new fossil collections will eventually be housed in a new paleontology hall scheduled to be built adjacent to the current Hermann Park HMNS facility.

The 2007 Guest Night will start at 6:30 p.m. at the museum. As is traditional, the HGS has the first and second floors of the museum

Dr. Bakker and members of the HMNS are engaged in field expeditions to Permian fossil dig sites in north Texas to collect Permian fossils for this new exhibit.

reserved for the evening. After arriving and checking in, HGS members and guests will have from 6:30 to 8:00 p.m. to look at the fossils, minerals and the oil and gas exhibits and to enjoy a Texas-sized buffet dinner, beverages and dessert inside the museum's main hall. Dr. Bakker's presentation will be from 8:00 to 9:00 p.m. in the IMAX theatre. To top off the night, lucky attendees will be awarded door prizes including beautiful mineral samples, fossils and dinosaur-themed souvenirs.

The 2007 HGS Guest Night program is limited to 400 people due to the seating capacity at the IMAX theatre. Prepayment is required, and there will NOT be tickets available for walk-ins. Sign up early using the HGS webpage and pay online, or by mailing a check and signup form published in the May and June *Bulletins* to the HGS office. Members can also pay by faxing credit card payment information to the HGS office along with the *Bulletin* signup form.

HGS Volunteers Involved in North Texas Dig Team

North Texas, near Wichita Falls, has Permian-age "Red Beds" that have been famous since the early 1900s as collection sites for fossil hunters. There are two well-known fossil sites that are being revisited by dig teams: the Craddock Ranch and the W.T. Waggoner Ranch, both near Seymour, Texas (Figure 1).

The HMNS, with Dr. Bakker, has permission from the land owner to look for fossils in Craddock Ranch, near Lake Kemp. Dr. Bakker (Figure 2) has led field trips for a small team of volunteers that include HMNS managers and employees and HGS members to historically important "bone beds" once thought to be completely excavated 70 years ago.

Several new pieces of skeletons of Permian amphibians and reptiles have been found recently, and are being stored for a future fossil collection at **HGS Guest Night** continued on page 35

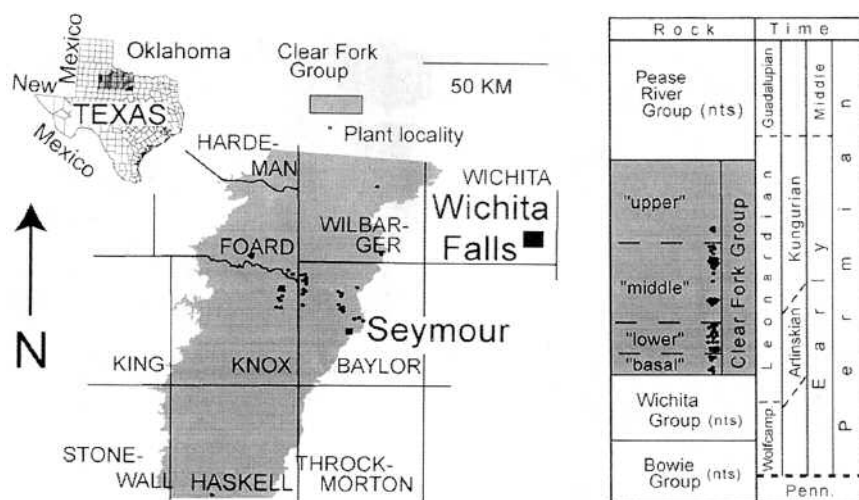


Figure 1: Location map of Permian outcrops in North Texas near Wichita Falls and Seymour. Illustration from 2007 AAPG Southwest Conference Field Trip Guidebook. Fossils occur in "Red Beds" in sections of the Permian.

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the HMNS. At the nearby W.T. Waggoner Ranch, the Smithsonian Institute Department of Paleobiology is also organizing an Early Permian plant fossil collection to aid research into how plants adapted to climate change during the Paleozoic. The AAPG Southwest Section Meeting in Wichita Falls hosted a Saturday field trip (Figure 3) to the Waggoner Ranch on April 21, led by Smithsonian scientists Don Chaney and Bill DiMichele.



Figure 2: Dr. Robert T. (Bob) Bakker, Visiting Curator at the Houston Museum of Natural Science. He is on the hunt for new fossil reptiles for the HMNS collection. Dr Bakker is the featured speaker at HGS Guest Night, June 16.



Figure 3: Early Permian conifer tree fossil found on the W.T. Waggoner Ranch during the 2007 AAPG Southwest Section field trip. The trip was led by Smithsonian Institute scientists who are studying paleobotany.

The W.T. Waggoner Ranch is a large private land owner. Fossil collecting is done only with permission and guidance from the land owners. We need to emphasize that neither dig site is open to the public.

HMNS has a dig team that worked last year to open up new areas near old excavations in the Craddock Ranch. The current owner of the Craddock Ranch lends his ranch staff to help and participates personally in the HMNS digs led by Bob Bakker and David Temple. Temple was volunteer coordinator for the HMNS, but now is a full-time fossil curator. Neal Immega (Figure 4) and Inda Immega are HMNS “master docents” who volunteer to teach at the science museum on weekends and have traveled with Bakker and Temple to North Texas to scope out future excavations. Both Neal and Inda are retired from Shell and are HGS members who have been active on the HGS Field Trip Committee and Computer Applications Committee.

The Craddock Ranch became famous for Permian reptile and amphibian fossils in 1882 when an amateur fossil hunter named Charles Sternberg (Figure 5) found several rich layers of fossils (“bone beds”) that yielded nearly complete skeletons of the sail back reptile Dimetrodon. These were given to museums and sent to Professor D.L. Cope at Harvard University between 1900 and the 1930s. Neal Immega says that there about 500 skeletons of Dimetrodon in the world and half of those originated in these fossil localities near the Craddock ranch.

The dig team (Figure 6) originally approached the dig site trying to get into the fossiliferous beds discovered by Sternberg in 1882 and heavily mined in the 1920s. They found very few remaining bones, and realized the original excavated beds formed a very thin layer. The HMNS team expanded the search to layers above and below the beds. About 100 ft away from the excavation site, the dig team found a less-mined **HGS Guest Night** continued on page 36



Figure 4: HGS member and HMNS master docent Neal Immega shows museum visitors a painting that depicts life in the Permian.

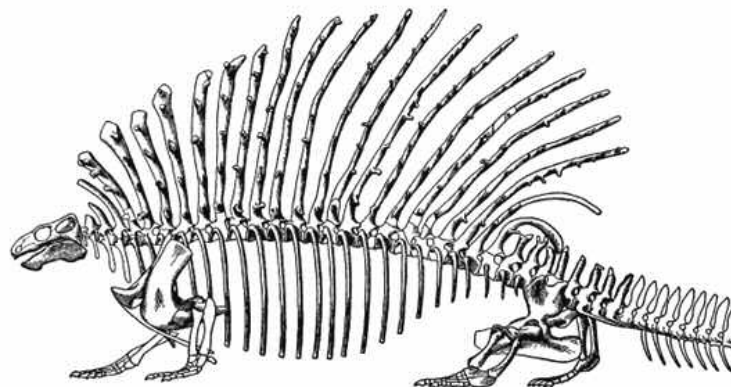
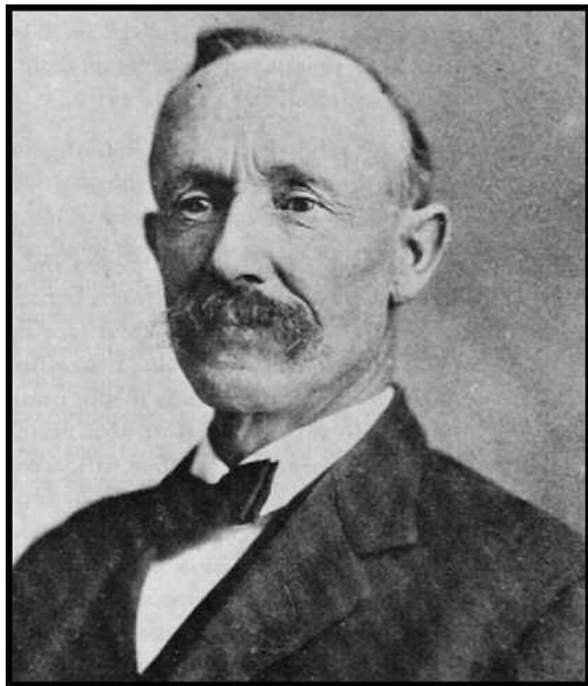


Figure 5: Legendary amateur fossil hunter Charles Sternberg, who discovered rich layers of *Dimetrodon* (right) fossils in Craddock Ranch and sent many complete skeletons to museums starting in the early 1900s. HMNS is entering the old "bone beds" mined by Sternberg and finding more Permian amphibian and reptile remains.

HGS Guest Night continued on page 41

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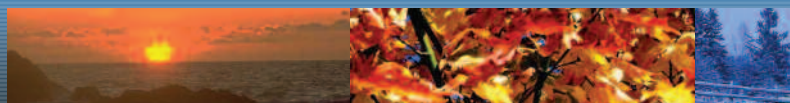
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| 21 <div> SIPES Luncheon Meeting <i>by Skip Hobbs, "The Future of Global Oil Industry: Resources, Challenges and the Geoscience Workforce"</i> Page 17 </div> | 22 | 23 |
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Tour 18 Golf Club, Humble, page 70
- Thursday, July 19**
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Warming Controversy, page 19*
- July 24 – 27**
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Basic Well Log Analysis
- August 16**
SIPES luncheon
*Jan Chafin, Business Ethics: How to
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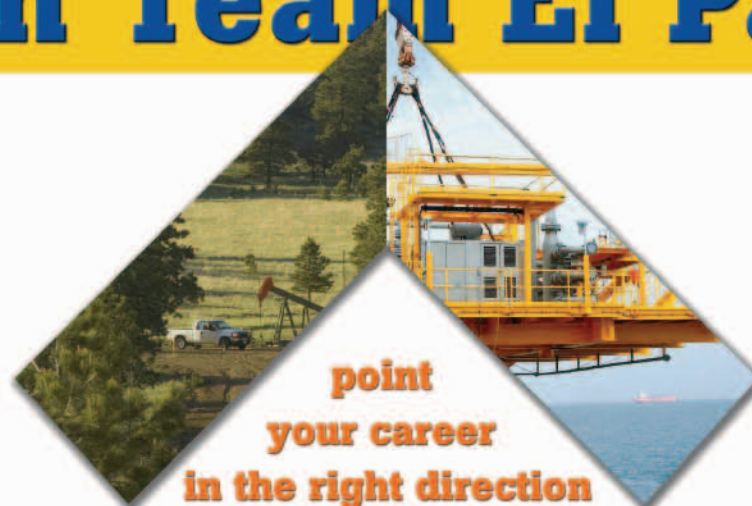
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Figure 6: the Houston Museum of Natural Science dig team on location in Craddock Ranch, near Lake Kemp, Texas, in 2006. A fossil *Dimetrodon* spine is being wrapped in plaster for transport to the HMNS fossil collection. Expedition headed by David Temple (center).

HGS Guest Night *continued on page 43*

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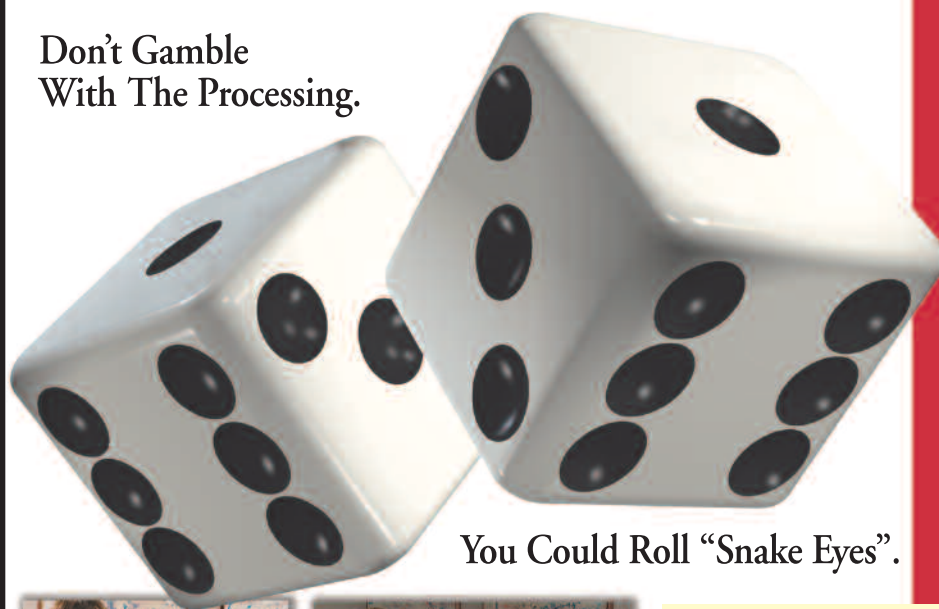
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Figure 7. Fossil bone of Permian reptile recently found at Craddock Ranch.

cut ledge in the quarry. This yielded a 4-ft-long *Dimetrodon* spine (see May 2007 *Bulletin* article) and leg bone (Figure 7) .

Fossils are preserved in a plaster jacket for removal and transport to the HMNS. To fully recover fossils at the Craddock Ranch site, Neal Immega personally volunteered to sieve hundreds of pounds of red dirt to get small fossils (Figure 8). Usually the soil is reduced to 10% of original volume by sieving. The next step consists of using vinegar to remove caliche from the bones. Immega jokes that he is building a *Dimetrodon* skeleton from thousands of tiny parts as a backyard project.



Figure 8: Neal Immega does hard duty sieving the red soil from Permian “Red Beds” looking for small teeth and bones from Permian reptiles and amphibians. Typically 10 times the volume of red soil needs to be sieved to collect valuable bones. The field trip team hopes to collect enough fossils from digs and sieving to assemble new skeletons for the HMNS.

Critical Questions about the Permian

A number of interesting questions and issues are addressed by fossil research including a deeper understanding of evolution, explaining mass extinctions in the geologic past and reconstructing the paleoenvironment of the Permian. The fossils recovered in North Texas are too old to be dinosaurs; they are actually reptiles, amphibians and boney fishes that lived at the end of the

Paleozoic, 280 million years ago when the continent of Pangea was just beginning to break up. Paleontologists still debate the role of reptiles in the evolution of dinosaurs and mammals, because some reptiles have bone characteristics later found in mammals. The extinction of Permian reptiles such as *Dimetrodon* is fascinating because they were part of the mass species extinction that was most likely caused by rapid climate and environmental change at the end of the Permian.

Bakker is particularly interested in the interaction of reptiles, amphibians and fishes in the dry climate of the geologic past. He calls *Dimetrodon* the “shark slayer” and has new theories on “who-ate-who” in the Permian.

Government climate scientists are eager to study anything related to global climate change. Smithsonian scientists are studying plant fossils of the Permian looking for clues for paleoadaptation to climate change that could be used in modern research. For more information on this, contact D.S. Chaney and W.A. DiMichele at Department of Paleobiology, National Museum of Natural History, Smithsonian Institution, Washington DC, 20560. Email addresses are chaneyd@si.edu and dimichel@si.edu, respectively. The Website is at <http://paleobiology.si.edu/>.

For information on HMNS fossils, contact David Temple at dtemple@hmns.org. Volunteer information is at http://www.hmns.org/get_involved/volunteer.asp?r=1. See also the new HMNS Woodland Exploration Station at <http://www.hmns.org/education/woodlands/woodlands.asp?r=1/>

Signup today to reserve your place at the HGS Guest Night on Saturday, June 16. The HGS website is taking reservations at <http://www.hgs.org/en/cev/?689> for \$30 per member or guest and \$25 per student. Guest Night usually sells out a week before the event and the seating is limited to 400 people. There are no at-the-door ticket sales the night of the event! ■

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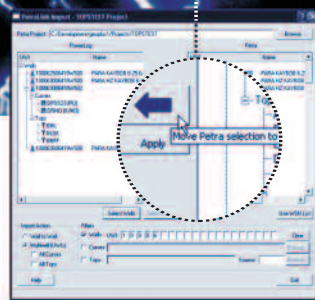
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Steve Levine

Steve was an HGS Board member from 2001 to 2005, serving as an editor-elect, *Bulletin* editor, president-elect and president. As editor, Steve withstood many challenges in the first few months— inaugurating a new *Bulletin* printing provider and a new graphics artist. His comment was “I can’t tell you how anxious those first few months were.” He added the People Profile column to the *Bulletin*. He served as co-chair of the North American Explorationist Group in the early 1990s with Charles Sternbach and later as chair of that committee. He helped coordinate the Fracture Symposium in 1995, and organized the Thrust Fault Symposium in 1997. He has been a member of the AAPG House of Delegates since 2002, and has participated in many AAPG committees since 1986.

As HGS President in 2004–2005, Steve introduced the Scholarship Charity Dance, implemented a network for displaced Hurricane Katrina geoscientists for free housing and office space and involved HGS in community service projects such as the post-Katrina Houston Food Bank assistance program and Project Respect. Project Respect is a research and restoration organization for America’s African-American, Hispanic American and Native American abandoned and/or neglected cemeteries. HGS members have logged many hours assisting the organization with technical guidance and clean-up for Project

Respect’s efforts to catalogue, restore and gain official recognition for the Evergreen Negro Cemetery.

Currently, Steve is a member of the HGS Nominations Committee and chair of the HGS Awards Committee. Steve is also a member of the AAPG, SEPM, GSH and SEG.

Steve Levine grew up in oil towns—Maracaibo and Quiriquire, Venezuela, and Hobbs, New Mexico before moving to Corpus Christi, Texas. Steve attended Texas A&M University where he received a BS and MS in geology under the tutelage of dedicated professors Tom Tieh and the late Robert Berg. His father Jake Levine, a petroleum engineer, had encouraged him to go into geology citing that the creative component of the business would be the most exciting.

After college, Steve worked for Tenneco Oil Company from 1982 to 1988, and since has worked for ConocoPhillips as a Staff Geophysicist, working on many international and domestic assignments.

Steve is a consummate community volunteer and within the past year and along with his son Cole has worked on the reconstruction of a 1906 barn at the Kleb Woods Nature Park, the Houston

Steve Levine continued on page 57

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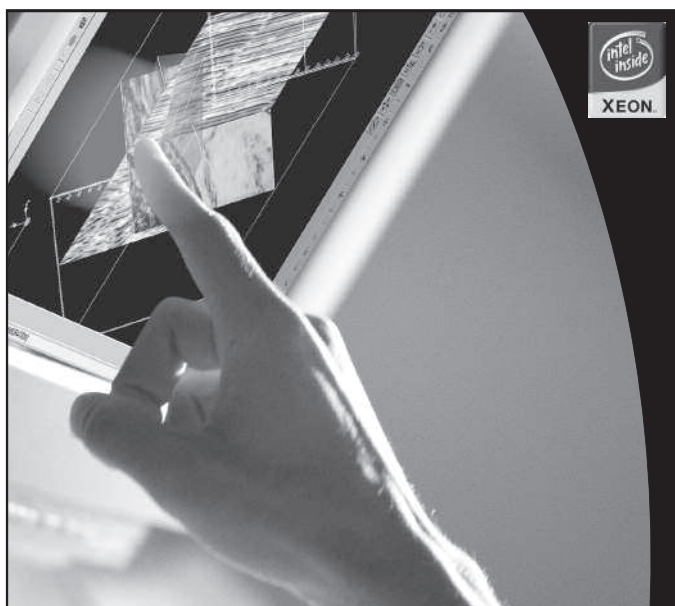
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2006–2007 Honorary Life Membership

Honorary Life Membership is bestowed upon persons who have distinguished themselves in the science of geology or have contributed outstanding service to the success and welfare of this organization.

Honorary Life Membership Award



David G. Rensink

The Houston Geological Society has elected to bestow Honorary Life Membership on David G. Rensink. Dave is one of those special individuals whose contributions to the profession can be measured in decades, not years. Dave has served as President and Treasurer of HGS. In those roles, he provided leadership in steering the society towards fiscal responsibility. Much of the society's current success and ability to serve the membership is do, in no small part, to Dave's contributions. He also has been active in committee leadership roles within the AAPG and AIPG. Dave was a strong force in directing and shepherding the State Registration effort. He is past Texas Section President for AIPG, as well as having served on the State Registration Taskforce for nine years, with five as chairman. Not one to retire gracefully from volunteer duties, Dave recently shouldered the tremendous responsibilities of General Chairman for the 2008 GCAGS Convention that will be held in Houston next year.

Dave also holds an HGS President's Award. He has also received a GCAGS Distinguished Service Award, an AAPG Public Service Award, an AIPG National President's Award and a Texas Section Distinguished Service Award. Dave has served his profession well.

Dave began his career with Shell Oil Company in 1970, after earning a BS from the Universities of Minnesota and an MS in geology from Oklahoma. He then took a position as a geologist with ODECO, beginning a long and illustrious career that included managing and directing exploration efforts in the Gulf Coast, especially the offshore GOM. Dave subsequently joined C&K Petroleum as Offshore Exploration Manager and then moved on to become Vice President and Gulf Coast General Manager for Fluor Oil and Gas. The 1980s saw Dave managing offshore exploration programs as Vice President with Texas Gas/CSX and Total Minetome. By 1991, Dave had moved on to Pacific Enterprises, before doing a consulting stint in 1992. In 1994, Dave joined the Apache Corporation where he still uses his extensive knowledge base to make significant contributions to their offshore GOM efforts as Sr. Geological Advisor.

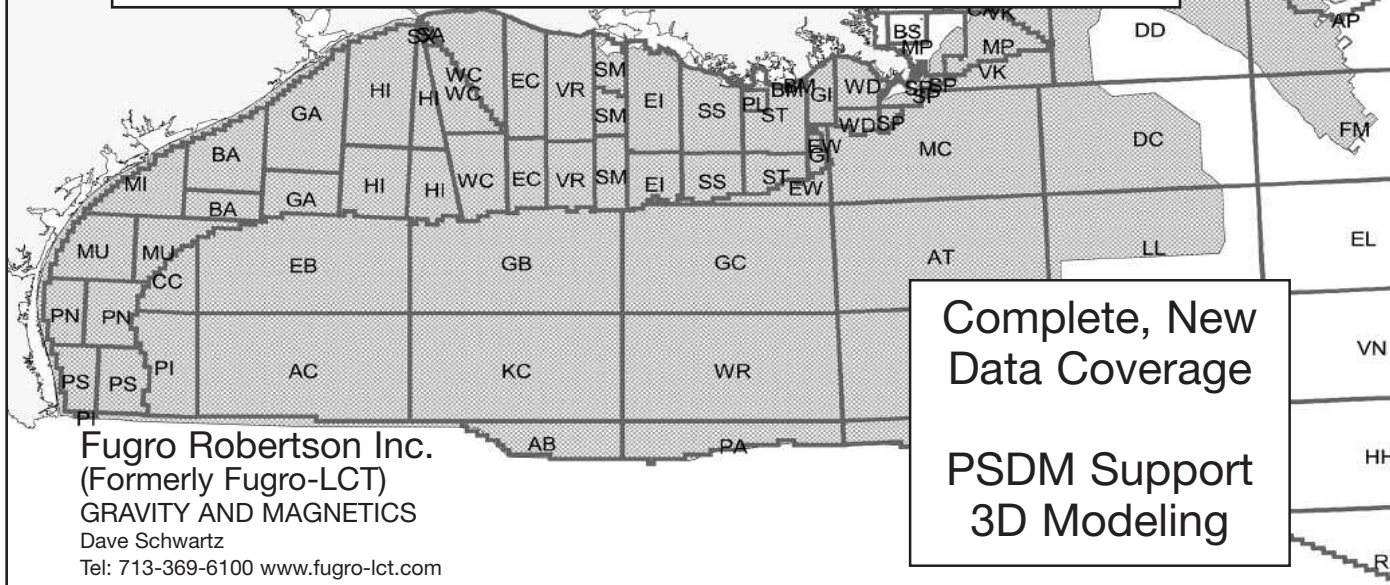
Dave Rensink has served the HGS and his profession well, as a volunteer and as a leader. For his many contributions and decades of dedication to the oil industry, the Houston Geological Society is honored to bestow Honorary Life Membership on David G. Rensink. ■

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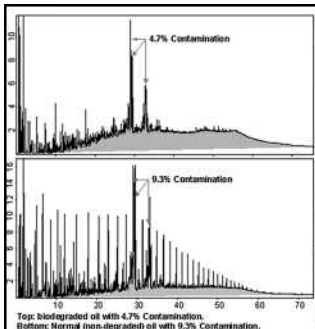
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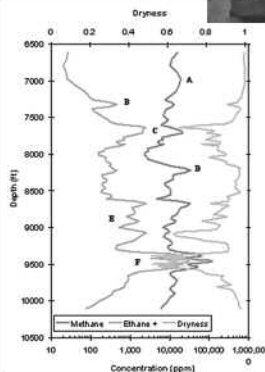
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2006–2007 Distinguished Service Awards

This award was created to honor members who have rendered long-term valuable service to the Society.

Distinguished Service



Glenn R. Lowenstein

Glenn Lowenstein joined the Houston Geological Society in 1986 and became an active member in the HGS Environmental and Engineering Committee, now known as the Environmental and Engineering Group (EEG). Glenn served a seven-year term as Chairman of EEG, where he supervised the submission of environmental articles to the HGS *Bulletin*, helped revive the HGS Geological Road Rally, coordinated representation of HGS in public forums during Earth Science Week, made presentations at schools for career days and gathered speakers on a diverse range of environmental and geological topics. In addition to his extensive work for EEG, he also served as an assistant editor to the HGS *Bulletin*.

In 2005, he was appointed by Governor Perry to serve as one of nine members on the Texas Board of Professional Geoscientists.

He is currently on the Board's Compliance and Enforcement Committee, Applications Committee, and Legal Committee. Additionally, he serves as an outreach spokesman to college and governmental bodies to inform and educate them about the Texas Geosciences Practice Act.

Glenn received a BS in geology (1983) from Queens College in New York and an MS in geology (1986) from Texas A&M University in College Station. He is a Registered Professional Geologist in Texas (# 28) and a licensed Corrective Action Project Manager (#116) through the Texas Commission on Environmental Quality (TCEQ). He is president of Terrain Solutions, Inc., a geological and environmental services firm in Houston, Texas. ■

2006–2007 Distinguished Service Awards

This award was created to honor members who have rendered long-term valuable service to the Society.

Distinguished Service



Kenneth E. Nemeth

Kenneth E. Nemeth is one of those rare individuals who takes the time to handle the tough challenges. This year, Ken volunteered to step into the demanding Office Committee Chairman role during the office move and Office Manager search. He is also the Vice-President of GCAGS and will assume the duties of President next year when the annual convention is in Houston. This comes as no surprise for those of us who know Ken—this is simply his standard mode of operation. For his long service and dedication to volunteering with the Houston Geological Society, as well as for always answering the call to help others when needed, the HGS is pleased to present Ken Nemeth with the Distinguished Service Award.

Ken has a long history of volunteering and has served in numerous capacities for the HGS, beginning as a member of the Shrimp Peel Committee in 1981 and culminating with a position on the Board of Directors last year as Treasurer. Ken's tenure as Treasurer brought critical oversight to the society's finances. The countless hours Ken spent upgrading the accounting process bore fruit this year in the society's present strong fiscal condition. For his dedi-

cation, he previously has been awarded the Rising Star and President's Awards.

While in Dallas in the 1990s, Ken served in nearly every elected position for the Dallas Geological Society, including President. He has also been active in AAPG on both the national and local levels.

Ken received a BS in geology from Albion College in Michigan, and an MS in geology from the University of Texas. His long career in the oil industry has included working for Shell, LL&E, Blue Sky Oil and Gas, Adobe Oil & Gas and Browning Oil in Dallas. He currently works as a Senior Geoscientist in On Site Client Services for Schlumberger Information Solutions. Ken's outstanding reputation at Schlumberger is in no small part due to his uncanny ability to do two things very well—solve problems and help others. Because of his ability and desire to continually volunteer his time to serve his profession, the Houston Geological Society is pleased to honor Ken Nemeth as a worthy recipient of the Distinguished Service Award. ■

2006–2007 President's Awards

This award has been established to honor members whose extraordinary efforts or unique contributions deserve special recognition.

President's Award



Ross Meyer Davis

The Houston Geological Society is pleased to present the President's Award to Ross Meyer Davis, a man whose name is synonymous with the HGS Tennis Tournament. For ten years, Ross has devoted his time, and the resources of his company, Davis Bros., to overseeing and directing this wonderful event. He has obtained significant sponsorship through his many industry connections and has secured a marvelous venue, the Houston Racquet Club, to host the event. The Tennis Tournament is an immensely popular and enjoyable afternoon of fellowship, lunch and tennis for about 50 players. Proceeds from the tournament help underwrite many educational and technical opportunities that the HGS provides for its membership.

Besides playing championship-level tennis, Ross has found time to serve in leadership positions with the Society of Professional Earth Scientists (SIPES). Outside of the profession, Ross also has devoted a great deal of energy in serving with the Holocaust Museum Houston as one of its Directors.

Ross received a BS in geology and an MBA from the University of Texas. He joined Davis Bros. in 1982 and directs their exploration efforts. While Ross can be proud of his long-time association with the HGS, SIPES, and the Holocaust Museum, many in the industry are proud of Ross and Davis Bros. for their discovery of Lucky Leon Field in Hardin County. We wish Davis Bros. the best of luck in their recent extension of the field's deeper pay zones.

Ross Davis has chaired and directed the HGS Tennis Tournament since 1997. Few in the society have devoted so much of their time year in and year out to provide continuity of leadership in this important event. Because of his dedication and effort, the Houston Geological Society is pleased to present Ross with President's Award.

President's Award



Elsa Kapitan-White

For the past twelve years, Elsa Kapitan-White has been one of the Advisory Editors for the HGS *Bulletin*. A Technical Editor for Schlumberger Oilfield Communications, Elsa's professional attention to detail, grammatical expertise and ability to highlight key parts of each article have contributed greatly to the publication's high quality. The HGS is fortunate to have the dedication of this outstanding volunteer.

Elsa received a BS in geology from Centenary College in Shreveport, Louisiana and an MS in geology from Texas A&M. While at A&M, she began editing for the Ocean Drilling Program and has gone on to work as an editor for numerous journals and books. Elsa joined the *Bulletin* staff in 1995 at the invitation of then editor Gail Bergan.

Former *Bulletin* editor Paul Britt wrote that Elsa was one of the "unsung heroes" responsible for the *Bulletin's* continued success. We are pleased to now sing her praise with this President's Award for a demanding job well done. Thank you, Elsa.

2006–2007 President's Awards

This award has been established to honor members whose extraordinary efforts or unique contributions deserve special recognition.

President's Award



Charles E. Revilla

Charles Revilla is the second Advisory Editor to be honored with a President's Award this year and deservedly so. Charles joined the editorial staff in 1994. His mastery of grammar and writing style has been a wonderful asset all these years. This year Charles went beyond mere editing to provide a welcome diversion with his "On the Lighter Side" columns.

After a stint in the Navy, Charles earned a BA and an MS in geology from the University of Virginia and took a job in Peru with a subsidiary of Esso. He then joined Pan American Petroleum, which later became Amoco, where he worked all over the world as an operations geologist. Since retiring, Charles does Spanish translations in addition to his volunteer work for the HGS.

The HGS *Bulletin* is an outstanding publication due in no small part to 13 years of this fine gentleman's efforts. Congratulations to Charles for an award that is richly deserved. ■

President's Award



Leta Smith

Leta is receiving the President's Award for her leadership and hard work on the Continuing Education Committee (CEC). She first became active in the HGS through the CEC, and took over the chairmanship of that committee in 2005. Under her leadership the CEC has continued to offer low-cost continuing education courses for the HGS membership, an essential service for the membership.

Currently, Leta is a principal consultant and Houston team lead for the Consulting Division of IHS. She has been an HGS member since 1999 when she first came to Houston to work for IHS in its International Division, doing research for products and services related to Latin America. Leta's primary responsibilities in her current role at IHS include project planning and implementation on topics related to reserves analysis, forecasting and service industry market studies. Prior to joining IHS, Leta worked as a geologist at the Institute for Energy Research in Wyoming and for Amoco Production Research in Oklahoma.

Leta has been involved in industry associations wherever she has lived. She was on the organizing committee for the Wyoming Geological Association Annual Field Conference in 1991 and 1993. While in Tulsa, she was the Secretary of the Mid-Continent Section of the SEPM. Leta holds a PhD in geology from the University of Wyoming. She also received a BS in geology from San Francisco State University, graduating magna cum laude. She is a licensed professional geologist in the states of Texas and Wyoming. ■

2006–2007 President's Awards

This award has been established to honor members whose extraordinary efforts or unique contributions deserve special recognition.

President's Award



Frank Walles

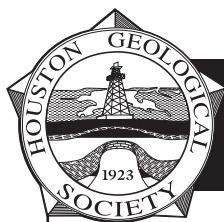
Frank Walles is the recipient of the 2007 President's Award for his many contributions to the HGS. Frank was a founding member of the Northsiders group, and he has provided continuous input into the success of this important group throughout its 4-year history. He has a passion for working with colleagues on the outstanding Northsiders committee to develop technical talks appropriate for the HGS members that live and work on the north side of Houston. Frank and fellow co-chair Gary Coburn coordinate the logistics associated with the monthly luncheon meetings.

Frank's expertise in hydrocarbon producibility model development was tapped for the creation of the fine paper "A New Method to Help Identify Unconventional Targets for Exploration

and Development Through Integrative Analysis of Clastic Rock Property Fields," which was written exclusively for the HGS *Bulletin* in October 2004.

During 2005–2006, Frank also served as the Technical Chair for the Energy Minerals Division (EMD) Technical Program at the 2006 AAPG convention. He organized an excellent program that included eight EMD technical sessions by using his network of friends and colleagues.

Frank holds an MS in geology from Michigan State University. His industry experience includes work as an independent petroleum systems consultant as well as a geologist for many large independents including Tenneco, **Frank Walles** continued on page 57



HGS Welcomes New Members

Effective May 1, 2007

ACTIVE MEMBERS

Trevor Aitken
Brian Bayliss
Ricardo Bedregal
Arvo Buck
Tim Brown
Deborah Carr
Sylvia Chamberlain
Sarah Collier
Erin Duerichen
William Edmund
Tom Fauria
Emilio Garciacaro

Richard George
Allen Greene
Larry Greenwood
James Henderson
Cecil Jones
Erika Josson
Stuart Lake
Rebecca Latson
John Love
Merrick Mainster
Michael Martin
Kerry Moreland
Cory Osaze

Dorothy Payne
David Perez
James Robinson
Stephen Ruhl
Phil Schearer
Theresa Smith
Jerry Spetseris
Dave Taber
Joe Termina
Jeff Ware
Gary Warren
Scott Wegner
Paul Weimer

Murry Wilkinson
Hu Yan Zhang
Alan Zick
Daniel Ziegler

ASSOCIATE MEMBERS

Andy Bliss
Rhonda Duey

STUDENT MEMBERS

Louis Gutierrez, II
Aaron King

Welcome New Members

2006–2007 *Rising Star Awards*

This Award has been established to honor individuals who are relative newcomers to the Houston Geological Society who have made significant and promising contributions to the enhancement and success of the HGS.

Rising Star



Matthew Cowan

Matthew Cowan, PG joined the HGS in 2003. He has been an active member of the Environmental Engineering Group (EEG) and the Continuing Education Committee (CEC). The EEG arranges technical presentations relating to the environmental and engineering aspects of geology. Matt has been active in advising the group for the past 4 years. Currently he is the treasurer and helps organize and run the monthly meetings. His active participation in the CEC is focused on providing input for activities of interest to the environmental and engineering community within the HGS. He also participated in the steering committee, which organized the 2005 Coastal Subsidence, Sea Level and the Future of the Gulf Coast Conference hosted by the HGS and others.

While being very active in a number of specific HGS activities, Matt has found the time to serve the extended geological community as an officer with the Texas Association of Professional Geoscientists (TAPG) for the past 3 years. TAPG is an organization dedicated to representing the interests of professional geoscientists before state and local officials, agencies and boards. Matt has served as treasurer and is currently serving as president. As president, he has been working with the Texas Board of Professional Geoscientists on issues pertinent to professional licensure. Matt has been an advocate for increased membership and corporate sponsorship of TAPG to position the organization as a leader in lobbying efforts to produce legislation that positively impacts the practice of geosciences in the public domain.

Mathew earned a BS in geology at Texas A&I University in 1993 and an MS in geology, Texas A&M University—Kingsville in 2000. His primary field of practice is in environmental geology and is currently a consultant for Lone Star Environmental. He is also a Certified Public School Teacher and at times works as a substitute teacher for the Fort Bend Independent School District. ■

Rising Star



Dianna Phu

Dianna Phu is awarded the HGS Rising Star for the boundless energy and enthusiasm she endows her volunteering efforts with the HGS. Dianna is a very active person, perhaps best known for her dynamic role as the chairperson of the NeoGeos. Dianna has kept the NeoGeos vibrant, planning exciting technical and social events for the group since the fall of 2005. She also serves as the administrator of the HGS/NeoGeos message board. She coordinated a weekend field trip to Central Texas and the very successful HGS/NeoGeos Etiquette Dinner in March, as well as the April HGS group outing to the performance of Aida.

Dianna is involved in and takes an active role in many other HGS committees. She serves on the Web site and Continuing Education committees and has volunteered at the Houston Museum of Natural Science during Earth Science week. Dianna also proactively serves on the OTC Next Wave Planning Committee and the GSH/HGS Geoscience Day Planning Committee. She is both the University of Houston AAPG Student Chapter Liaison and the Energy Council of Houston Young Professional Liaison.

Dianna receives the Rising Star award for her passion in organizing Houston's young geoscience professionals and for maintaining and growing the mission and spirit of the NeoGeos group.

Dianna earned a BS in geology/geophysics from the University of Houston in 2000. Since graduation, she has been working for Geoscience Earth & Marine Services (GEMS). Dianna is a Texas Professional Geologist, and a member of HGS, AAPG, SEG, SEPM, GCAGS and GSA. ■

2006–2007 Corporate Star Awards

The Houston Geological Society honors companies that make special contributions of their staff or financial resources to help the Society.

Corporate Star Award



Swift Energy

Swift Energy is awarded a Corporate Star Award for graciously providing the funding to sponsor twenty students and faculty to attend the Robert E. Sheriff Lecture in November, 2006. Additionally, Swift Energy sponsored up to four students each month to attend the HGS International Explorationists Group dinner meetings. Because of Swift Energy's generosity, a significant number of students and faculty were able to attend HGS events, gaining valuable exposure to both the industry and the society. Congratulations to Swift Energy, Corporate Star for 2006–2007.

Corporate Star Award



TGS-NOPEC

The Houston Geological Society is pleased to bestow the Corporate Star Award on TGS-NOPEC for their contributions to Guest Night and the Undergraduate Scholarship Fund. Guest Night is one of the most important events of the year for the society. The Undergraduate Scholarship Fund provides much-needed funds for aspiring geoscientists enrolled in undergraduate programs. Without the support of companies such as our 2006–2007 Corporate Star TGS Nopec, HGS could not hold events such as Guest Night or provide funding to deserving undergraduates through the Scholarship Fund. Thanks for your generosity.

Washington's Changing Climate

by Bill Rizer

In a brief report in *GSA Today* Craig Cooper (2007), the 2006–2007 GSA-USGS Congressional Science Fellow, presented a concise assessment of the state of climate change discourse in Washington, D.C., and in so doing provided some key insight into the political mind that should be interesting to members whatever their take on the issue.

The results of the 2006 elections brought a “major tectonic event” to the political landscape and an emerging new view of many of the critical issues of the day including climate change. Whereas the Senate Environmental and Public Works Committee hearings of the last Congress had Michael Crichton as the key witness, hearings for the new congress featured Al Gore, former World Bank chief economist and executive vice president Sir Nicholas Stern and Arnold Schwarzenegger, Republican governor of California. Nicholas Stern was the chief architect of the Stern Report—The Economics of Climate Change, that used formal economics methods of analysis to predict that, left unabated, climate change would cost between 5% and 20% of the world

GDP every year compared to the 1% required to mitigate the effects, provided we started to make this investment within the next 10–20 years.

According to Cooper the new view in Washington toward climate change is due to more than just the 2006 elections. The change in the “political landscape” of climate change is due also to “...the Stern Review; the recent Intergovernmental Panel on Climate Change (IPCC) report; the film *An Inconvenient Truth*; California's commitment to reduce its overall greenhouse gas emissions to 1990 levels by 2020; the coalition of northeastern states' adoption of the Regional Greenhouse Gas Initiative (RGGI), in which they agreed to work together to reduce greenhouse gas emissions from electric utilities; and the U.S. Climate Action Partnership (USCAP), through which major corporations recently announced support for mandatory climate change legislation.”

Washington's Changing Climate continued on page 59

2006–2007 HGS/Houston Geological Auxiliary Distinguished Service Award

HGA Distinguished Service Award



Edie Bishop

Edie Bishop had been selected unanimously by the HGA Board to receive the HGS-HGA Distinguished Service Award for 2006–2007. In truth, Edie has earned this recognition time and time again and the award is long overdue. The HGA is extremely fortunate to have someone of such accomplishment among our members and is extremely proud to make this recognition. Edie Bishop, the HGA salutes you!

Edie was attracted to the HGA because she understood that the Auxiliary was created to assist the HGS in whatever manner needed and has dedicated her efforts in the HGA to this end. She does not need instruction in order to assist because she has that special talent for “caring about people.” Edie always enjoys seeing old friends and meeting new ones at the geological gatherings.

Edie has given not only her support to HGS, but also her leadership and has been an invaluable member of HGA, as the following will show. She served as President (1987–88), 1st VP and 3rd VP (twice). Her favorite position in HGA is 3rd Vice President because it fulfills the objective stated in the Auxiliary Bylaws “to assist the Houston Geological Society in any manner they shall request.” Examples of how she did this are numerous and significant. It began by organizing the old drillers’ logs for the downtown library at the request of HGS Library Committee Chairman, Evelyn Moody, during the presidency of Mary Harle—the hours volunteered by the auxiliary were equivalent to one full-time staff person. Another example was the origination of the HGA column in the *Bulletin* which focused on making HGS members aware of the many in the HGA who were assisting the HGS. Perhaps one of her most fun jobs was co-chairing the

spouses’ activities for the 2000 AAPG convention with Marti Lund and Gwinn Lewis. Another big job was the organization of the Auxiliary volunteers to assist with the registration of NAPE last year during the presidency of Norma Jean Jones. And just to stay busy, Edie has helped with ticket taking at the HGS shrimp peel, assisted the HGS office with the processing of their dues and was the first to volunteer for the interim staffing of the HGS office after Joan Henshaw, manager, retired and a search was underway for her replacement.

Her knowledge, boundless energy, leadership ability and quite frankly her drive for perfection have never been more appropriately applied—or more needed—than this year as the four auxiliaries (Land, Engineering, Geophysics and Geology) move to integrate their common interests and still maintain their independence and uniqueness. Edie’s patience, listening skills and total imperturbability and leadership have contributed to the creation of the embryonic HPAC (Houston Petroleum Auxiliary Council). As co-chairs, Edie and I are developing a vision of the future and working to make it happen.

Edie’s commitment to Dick, her husband, (whom she met in New Orleans when she was in the Marine Division of Shell and he was with UNOCAL) is the driving force in her efforts for HGA. Their professional activities are central for both Dick and Edie; and what is important to one is important to the other. Just like her commitment to Dick is her commitment to their two wonderful sons, Ryan and Tim. This is a family that is dedicated to each other. Congratulations, Edie! ■

Winona LaBrant Smith

continued from page 45

Steve Levine — Honorary Life Membership Award

Food Bank, the Grand Prix of Houston, Science Olympiad, the Greater Houston Science Fair and the Elves and More Christmas Bike distribution. Project Respect remains his favorite service project due to the continued involvement of many HGS members and the leadership of the organization. ■

ASSOCIATION FOR WOMEN GEOSCIENTISTS HOUSTON, TX ANNOUNCEMENT OF SCHOLARSHIP

The Association for Women Geoscientists (AWG) Lone Star Rising Scholarship provides professional development funding for women in the geoscience profession who wish to resume their geoscience careers after having been out of the work force for at least 2 years.

The awards are intended to cover professional development costs, up to \$500, such as enrollment in geoscience training courses or workshops, fees for certifications & licensing, conference fee & expenses, professional membership fees, or any other justifiable costs to help candidates reenter the workforce. The application due date is June 1st, 2007 and AWG membership is not required. More information can be found on our website <http://awglone.startx.blogspot.com>.

AWG Mission



The Association for Women Geoscientists is an international organization devoted to enhancing the quality and level of participation of women in the geosciences and to introducing girls and young women to geoscience careers. Membership is open to all who support AWG's goals. The Lone Star Chapter was re-established in 2002. The chapter holds monthly networking dinners in and around Houston and supports the "Lone Star Rising Scholarship." ■

continued from page 53

Frank Walles — President's Award

British Gas, UPR, APC and KMG. Frank currently contributes as a Senior Geological Advisor for the Corporate Unconventional Resources Group of Devon Energy Corporation. This role affords him the opportunity to develop unconventional reservoir characterization techniques and to assist in technology transfer between Devon's corporate divisions. ■



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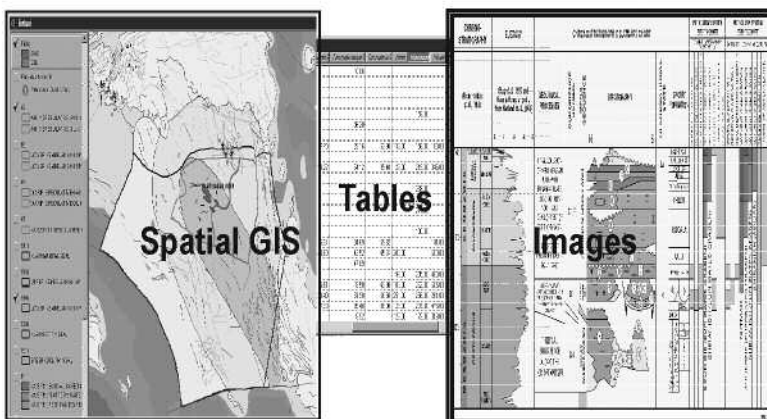
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All these factors have “fundamentally altered the structure of the climate change debate. Aside from a small minority of hardcore skeptics, officials in Washington are no longer debating whether climate change is real or whether human activities are the primary cause. The debate has shifted to the question of what we can do that is effective, pragmatic, and economically sustainable in the context of a changing climate.”

In this author's opinion it is critical that we in the oil and gas industry recognize the status of the so-called debate over climate change. In truth, the debate is occurring only within our small corner of the world. Most other countries and essentially all other scientific organizations worldwide have accepted climate change and the role of man-made greenhouse gases in causing it as simple truth. The rest of the world has already moved on and is now planning how to position themselves for the changes coming, such as some sort of CO₂ budget which companies would be awarded so many CO₂ credits that could be traded

or sold to other companies. Those companies who are well positioned for the coming changes will do very well. Those that are not ready will do very poorly. Whatever our personal view on this issue, change is imminent.

One of the most important lessons that Cooper learned in Washington is that for politicians, scientific facts are only one ingredient that goes into the equation of what and how to legislate. It may not even be the most important ingredient. Politicians view science as what the scientific community believes. They view policy as resolving differences among what people think. Washington is a very different world indeed, one that scientists need to understand better if we are to communicate effectively with politicians. ■

Reference

Cooper C., 2007: Washington's Changing Climate. *GSA Today*, Vol. 17, No. 4, pp. 51 DOI: 10.1130/1052-5173(2007)

What Determines Earth's Temperature

by Bill Rizer

At a high level, it is not difficult to understand what controls the earth's temperature as described in a brief article by Rebecca Lindsey (2007) of NASA. If you go to the top of the earth's atmosphere (Figure 1), about 100 km above the surface, and measure the amount of incoming radiation and subtract from that the amount of outgoing radiation, what is left, the net radiative flux, is what determines earth's temperature.

That is simple indeed. However, what happens below 100 km is what determines how many photons reach the surface and how many photons radiating back from the surface and atmosphere

actually make it all the way out to space. The Sun's radiation incident on the earth is high energy and short wavelength (Figure 2). The photons that are not reflected back by the molecules and particles in the atmosphere are absorbed by the surface causing the surface to warm. The warming surface, in turn, emits photons but at much shorter wavelengths and lower energy than the visible light of the Sun (Figure 2). That is why molecules and particles that have little effect on incident visible light can block the heat radiating back the surface. We know these molecules as greenhouse gasses, and CO₂ is quite good at turning back heat.



Figure 1. At an altitude of about 100 km the earth's atmosphere is so thin that it essentially does not exist. This is where the net radiative flux (photons in minus photons out) is measured. Astronaut photograph ISS013-E-54329 courtesy NASA, JSC.

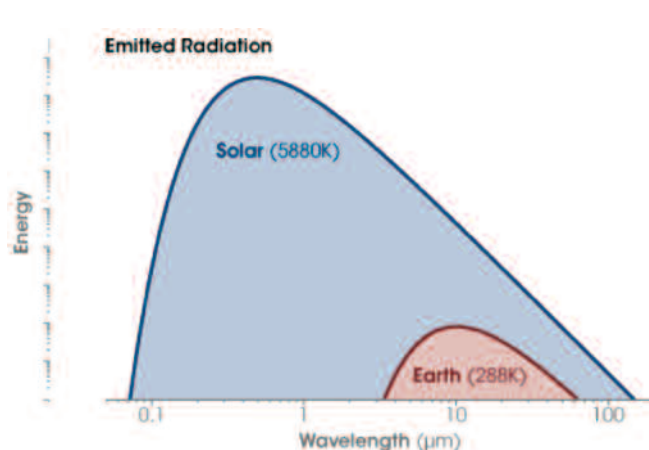


Figure 2. Energy vs. wavelength plots for incident solar radiation and the energy (heat) radiated back from the earth.

What Determines Earth's Temperature continued on page 68



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Government Update

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

Texas Board of Professional Geoscientists

March 30, 2007, Meeting

The Texas Board of Professional Geoscientists (TBPG) met on March 30, 2007. Besides the swearing in of new members, there were two interesting topics discussed that related to the possible requirement for a professional geoscientist to seal reserve reports and compliance.

The TBPG received a request from the US Securities and Exchange Commission (SEC) requesting the TBPG requirements for the sealing of reserve reports. The TBPG recommended that the SEC submit a complaint about non-Professional Geoscientists signing these reports destined to be given to investors and they will ask the Attorney General's office to provide guidance for the appropriate action, if any. The TBPG is aware of the original intent to exclude oil and gas geologists. However, public offerings are currently a gray area and will probably need to be addressed eventually. The TBPG will not address it until they receive a complaint.

The Texas Commission on Environmental Quality (TCEQ) reported the misuse of the initials PG after a person's name to the TBPG. A Colorado geologist submitted a TCEQ report and had PG after his name on the cover, although he did not seal the report. The report was also signed and sealed by a Texas registered Professional Geoscientist. Texas currently has no reciprocity with other states, so, even though he may be registered in Colorado, he can't use the initials PG after his name on a Texas report. The TBPG is currently looking into reciprocity, but until such time, the Colorado geologist was issued a cease and desist letter.

Video of each agenda item discussed at the meeting is downloadable at http://www.texasadmin.com/cgi-bin/agenda.cgi?location=txgeo&savefile=TBPG_BM033007.

Railroad Commission of Texas Unveils Online Filing

With an implementation target date of September 2007, the Railroad Commission of Texas (RRC) will be unveiling the new online system for filing H-10 reports. The new web-based system will be a part of the RRC Online System (<https://webapps.rrc.state.tx.us/security/login.do>). Currently you can use the RRC Online System to electronically file Form W-1 and Form PR.

There will be changes to the H-10 Electronic Data Interchange (EDI) procedures that will expand the filing capabilities and streamline the process. Filing EDI has a new, easier format. For details of the EDI format and online filing requirements, review Electronic Filing Requirements at <http://www.rrc.state.tx.us/H10online/edi32307.pdf>.

You are encouraged to prepare for H10 online reporting changes now by reviewing the RRC Online system FAQs (<http://www.rrc.state.tx.us/formpr/faqs.html>). You may file your Security Administrator Designation (SAD) Form (<http://www.rrc.state.tx.us/formpr/faqs.html#signatures>) with the commission anytime. This will enable you to use the new H-10 electronic filing options when they become available.

New TCEQ Commissioner Confirmed

The Texas Senate has unanimously confirmed the appointment of H.S. Buddy Garcia of Austin to serve as a Commissioner of the TCEQ. Prior to his appointment to the TCEQ, Garcia served as Texas Deputy Secretary of State. His term will expire August 31, 2011.

TCEQ Releases Reports

The TCEQ Groundwater Protection Committee report to the 80th Legislature (SFR-047/06) describing its activities for the two preceding years and recommendations for groundwater protection is now available at: http://www.tceq.state.tx.us/assets/public/comm_exec/pubs/sfr/047_06.pdf.

The TCEQ Report to the 80th Legislature on priority groundwater management areas and groundwater conservation districts (SFR-053/06) is now available. It contains information on activities undertaken during the preceding two years relating to the study and designation of priority groundwater management areas and the creation and operation of groundwater conservation districts. It is located at http://www.tceq.state.tx.us/assets/public/comm_exec/pubs/sfr/053_05.pdf.

The annual update of most of the Tier 1 PCL tables is now available on the TRRP PCL web page at <http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html>.

Download the Excel files by right-clicking on the link, and save the file to your computer before opening it. For instructions on how to use the Tier 1 tables, refer to "Tier 1 PCL Tables" (RG-366/TRRP-23), and for information on their applicability, see "Toxicity Factors and Chemical/Physical Parameters" (RG-366/TRRP-19). Both documents are available on the TRRP Guidance and Forms web page at <http://www.tceq.state.tx.us/remediation/trrp/guidance.html>.

TCEQ Amends TRRP

The Texas Commission on Environmental Quality (TCEQ) had adopted amendments to the Texas Risk Reduction Plan (TRRP). The initial rulemaking of Chapter 350 was originally adopted on September 2, 1999, and

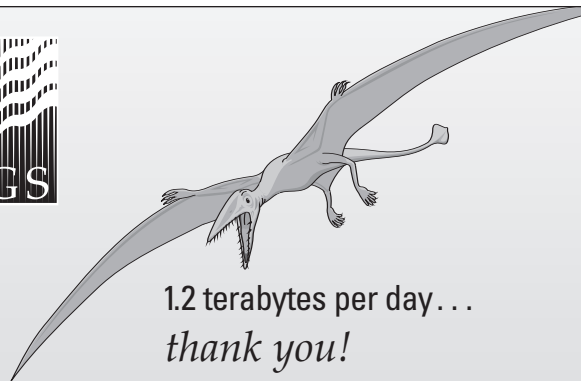
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became effective September 24, 1999. The purpose of the original rulemaking was to create a unified performance-based remediation program that is risk-based, consistent, streamlined and expedites site remediations. Subsequent to the initial adoption, the rulemaking has been readopted under the Quadrennial Review requirements. In August 2003, §350.1 was modified to include a provision to confirm that engineering, geoscience and surveying information submitted to the agency must comply with the applicable professional licensing and registration acts. Other than the August 2003 amendment, the rule has remained unchanged since its original adoption. Throughout this preamble, the TRRP rule in existence prior to these adopted amendments is referred to as the “prior rule” or the “prior TRRP rule.” The TCEQ has gained much experience over the last seven years through intensive implementation of the rule at thousands of contamination sites located throughout Texas. The TCEQ has noticed errors (misspellings, typographical, mathematical) in the rule that needed to be corrected, as well as provisions that either needed clarification or modification to facilitate consistent and effective rule application. Some rule provisions required updating to reflect the latest scientific information. Additionally, the TCEQ has reevaluated some policy positions and has developed new positions and procedures in guidance that were previously not addressed by the rules. Finally, the TCEQ has adopted new rule provisions in support of a new electronic data management system initiative and has expanded use of geographical information system technology to increase agency effectiveness and institutional memory as well as improve the public availability of technical information stored at the agency. For all these reasons, these amendments were adopted. For more information, go to <http://www.sos.state.tx.us/texreg/sos/adopted/30.ENVIRONMENTAL%20QUALITY.html#152>.

Presidential Advisory Board Annual Report to the US CEQ

An independent Presidential advisory board has delivered its latest annual report to the U.S. Council on Environmental Quality (CEQ) on environmental conditions along the U.S.-Mexico border, calling for a variety of approaches to carrying out homeland security work that won't damage the environment.

“Both a healthy environment and strong security are very important in the border region,” says Paul Ganster, Chair of the Good Neighbor Environmental Board. “We believe that a win-win scenario is possible, and our report recommends ways to make that happen.”

The nearly 2,000-mile long U.S.-Mexico border contains vast rural stretches where large numbers of undocumented migrants and drug smugglers attempt to cross. Much of this rural land is owned by the public and home to sensitive ecosystems and

wildlife migration corridors. Recognizing its fragility and value, the board's report recommends several tactics to help protect the rural environment while security work is under way:

- Build stronger partnerships between security agencies and environmental agencies, especially public land management agencies; and
- Employ a mix of technology and personnel to be successful in both types of work. One example is to use vehicle barriers and sensor technology that also keep fragile habitat intact and allow for species migration.

Besides these more remote areas, the U.S.–Mexico border region also contains heavily populated urban areas with multilane border crossings, such as those found around San Diego and El Paso. To provide safety and security at these busy border crossings, as well as environmental protection from risks of hazardous materials shipping through these entry points, the board's report calls for the following:

- Increase the number of hazardous materials inspectors at urban crossings, and establish specific locations and hours during which vehicles carrying hazardous materials are permitted to cross; and
- Remove barriers that prevent emergency responders from being more effective. One example is to resolve insurance issues that prevent them from crossing the border with their equipment to assist each other.

The Good Neighbor Environmental Board advises the President and Congress on protecting the environment along the U.S. border with Mexico. The new report, its tenth, is titled “Environmental Protection and Border Security.”

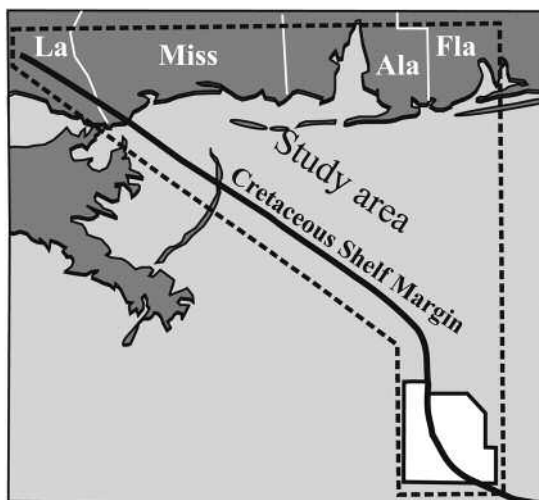
UN Begins Worldwide Geologic Mapping

The United Nations has begun a new worldwide geologic mapping program called One Geology. The target scale is 1:1 million. But the project will be pragmatic and accept a range of scales and the best available data. The geological map data will be made available as a distributed web service, using the latest web feature mapping approach. Geological Surveys will dynamically “serve” the data for their territories to a web portal. The plan is to make it available through Google Earth and other dynamic map browsers. The initiative is truly multilateral and multinational and will be carried out under the umbrella of the following organizations:

- International Year of Planet Earth (IYPE)
- Commission for the Geological Map of the World (CGMW)
- EuroGeoSurveys
- International Consortium of Geological Surveys (ICOGS)

Government Update continued on page 65

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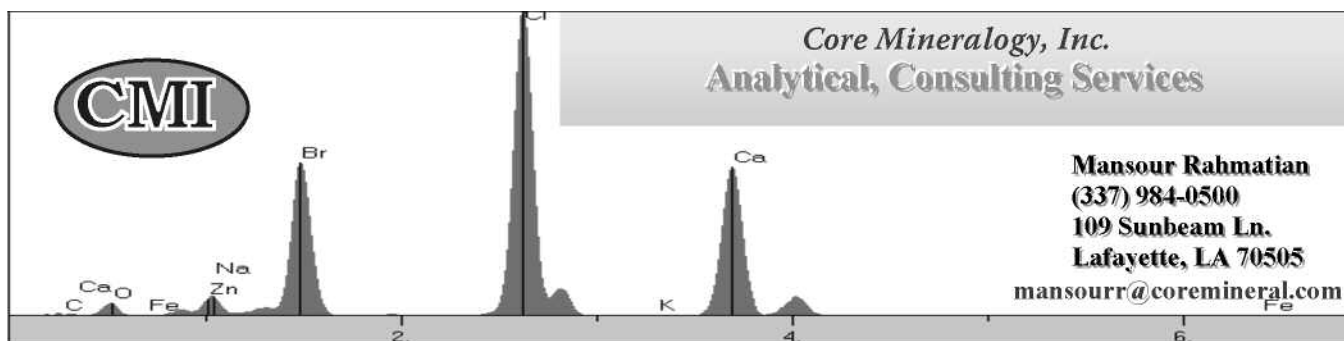
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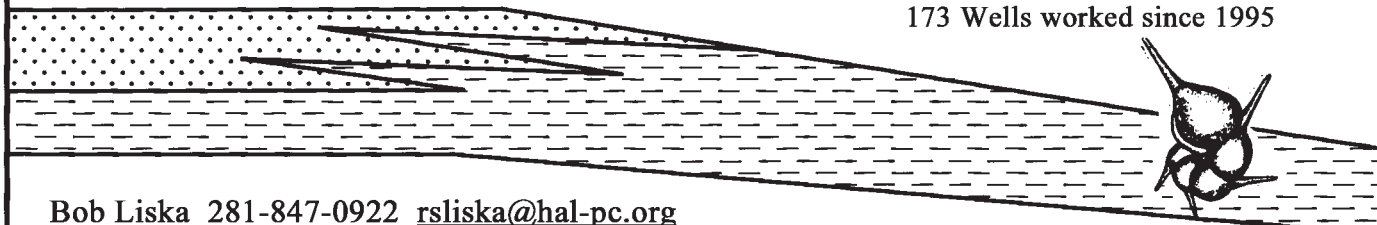
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AGI Government Affairs Monthly Review (March 2007)

Advanced Energy Agency Gains Momentum in Congress

Senator Max Baucus (D-MT) introduced the Energy Research Act of 2007, or S. 696, in late February. The bill establishes an Advanced Research Projects Administration-Energy (ARPA-E) to initiate high risk, innovative energy research to improve the energy security of the United States. Aimed at reducing foreign energy imports and improving the competitiveness of the U.S. economy, the bill promotes revolutionary changes in the critical technologies that would promote energy competitiveness, brings cutting-edge science and engineering to the market and encourages greater innovation in energy efficiency and alternative energy sources.

Senate Proposes Carbon Sequestration Pilot Studies

On March 22, 2007, Senator Jeff Bingaman (D-NM) introduced S. 962, a bill that amends the Energy Policy Act of 2005 to reauthorize and improve the carbon capture and storage research, development and demonstration program of the Department of Energy. The bill tightens the language in the Energy Policy Act of 2005 to make the goals of the carbon capture and storage program more specific. In particular, the bill provides more support for research and calls for greater development and demonstration efforts.

Bill Introduced to Help Teach Scientists to Communicate with Policymakers

Representative Doris Matsui (D-CA) introduced the Scientific Communications Act of 2007 (H.R. 1453) to provide communications skills training for graduate students in the sciences. This legislation, co-sponsored by Congressman Bart Gordon (D-TN), Chairman of the Committee on Science and Technology, provides resources at the National Science Foundation (NSF) to improve the ability of scientists to convey the relevance and importance of scientific research and technical topics to policy makers.

The bill directs the NSF to establish a program to make grants to institutions to provide communications training to graduate students to improve the ability of scientists to interact with policymakers. The bill authorizes the appropriation of \$10 million every year from 2008 to 2012 to the NSF to carry out such a program.

Senate Introduces Bill on Hurricane Research

With scientists predicting a very active hurricane season this year, the introduction of the National Hurricane Research Initiative Act of 2007 (S. 931) is timely. The bill, authored by Senator Mel

Martinez (D-FL) and co-sponsored by Senators Elizabeth Dole (R-NC), Mary Landrieu (D-LA), Thad Cochran (R-MS) and Bill Nelson (D-FL), aims to improve hurricane preparedness, further hurricane research efforts and facilitate cooperation between agencies during research, planning and response efforts. Senate Bill 931 addresses the National Science Board's hurricane warning report recommendations and is a reintroduction of a bill from the 109th Congress.

Senators Wade Into Water Resources Act

The Senate Environment and Public Works Committee passed the Water Resources Development Act without additional amendments and sent the measure to the full Senate, where it awaits a floor vote. The re-authorization of WRDA, which provides funds for about 200 Army Corps of Engineers projects, has been delayed for years. The bill would pay for navigation and ecosystem restoration to the Upper Mississippi and Illinois Waterway, ecosystem and restoration projects in Florida, environmental restoration of the controversial Mississippi River-Gulf Outlet in Louisiana, remediation of abandoned mines, restoration of Chesapeake Bay, an assessment of the national levee system and other projects.

House Passes Marine Mammal Rescue Assistance Legislation

The House passed legislation in late March aimed at making it a bit easier for marine mammals to survive the rigors of being stranded. Representative Don Young (R-AK), the Ranking Republican in the House Natural Resource Committee, authored the "Marine Mammal Rescue Assistance Act Amendments," or H.R.1006. The legislation will extend the John H. Prescott Marine Mammal Rescue Assistance Grant Program, which was first authorized in 2000, to address the funding needs of facilities assisting the National Marine Fisheries Service with the recovery and rehabilitation of stranded marine mammals.

H.R. 1006 will increase the funding for the Department of Commerce from \$4 million to \$6 million a year to support rehabilitation facilities for stranded marine mammals around the country. The bill also reauthorizes funding for the Marine Mammal Unusual Mortality Event Fund, which allows the National Marine Fisheries Service to respond to mass stranding events and reimburse facilities that have assisted in the response effort. "This is an extremely important step in our effort to expand and improve stranded marine mammal programs and I hope the Senate acts quickly on our legislation," said Young.

New House Select Committee on Global Warming and Energy Independence

Despite a largely Republican outcry, the House has created a special panel to study and offer recommendations on how to deal with global warming.

Government Update continued on page 67

Vendor Corner Recognition and Thanks

The Houston Geological Society would like to recognize and thank the many vendors who provided financial support for the HGS by hosting "vendor corners" during the many technical dinner meetings. These are the folks who provide poster session displays of their company's products, studies or services. The displays served as a great focal point during the social hour for the attendees to the meeting. The cost to the companies participating is not cheap and the fees that they pay are donated to the HGS Scholarship Fund and the Geoscience Technology Training Center of the North Harris Montgomery Community College. Make sure that you visit their booths and thank them when you next see them at our meetings.

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The Select Committee on Energy Independence and Global Warming, advanced by House Speaker Nancy Pelosi (D-CA), was approved by a vote of 269–150. “Global warming may be the greatest challenge of our time, setting at risk our economy, environment and national security,” Pelosi said in a statement. With the new committee, “the House is giving these issues the high visibility they deserve.”

A majority of Republicans voted against the creation of the Select Committee, arguing that the committee is unnecessary and removes funds from the ethics committee budget. Representative Joe Barton (R-TX) said the panel serves “as a platform for some members to grandstand and play to the constituencies that are so insistent that we destroy our economy in the name of political correctness.”

The committee, consisting of nine Democrats and six Republicans, will be chaired by Rep. Edward Markey (D-MA). It will hold hearings and recommend legislation, but, in a concession to existing committees, it will not write legislation and will exist for only two years. The committee will have a two-year budget of \$3.7 million.

Tom Weimer, Interior’s assistant secretary for policy, management and budget, resigned as the Interior’s top budget official to become the minority staff director on the new House Select Committee in late March. It is not clear who will replace Weimer at Interior, however the position is of interest to the geoscience community because the assistant secretary sets budgetary priorities for many geoscience programs within Interior, including the U.S. Geological Survey.

Supreme Court Rules Carbon Dioxide Can Be Regulated

In a close 5 to 4 ruling released on April 2, 2007, the Supreme Court agreed with 11 states and 13 environmental groups that the U.S. Environmental Protection Agency (EPA) should regulate carbon dioxide emissions from vehicles. In *Massachusetts v. EPA*, Justice John Paul Stevens wrote the majority opinion for Justices Breyer, Ginsburg, Kennedy and Souter, while Justices Roberts, Alito, Scalia and Thomas dissented.

Stevens criticized EPA and wrote, “EPA has offered no reasoned explanation for its refusal to decide whether greenhouse gases cause or contribute to climate change,” and he concluded that the EPA’s actions were “arbitrary, capricious ... or otherwise not in accordance with law.” The Supreme Court did not stipulate any specific course of action for the EPA, but rather it ruled that there was no reason that EPA could not regulate greenhouse gas emissions. It will now be up to Congress to clarify what actions should be taken regarding greenhouse gas emissions. The opinions are available from the Supreme Court web site.

The case is docket 05-1120 at <http://www.supremecourtus.gov/opinions/06pdf/05-1120.pdf>.

Energy Department Releases Carbon Sequestration Atlas

The Department of Energy has estimated the amount of potential underground storage for greenhouse gas emissions in North America. The new Carbon Sequestration Atlas of the United States and Canada is posted on the DOE web site. It shows that there is room for more than 3,500 billion tons of carbon dioxide in geologic formations, consistent with similar estimates from an independent study by Battelle. This would mean more than 900 years of emissions could be sequestered, based on the department’s estimate of 3.8 billion tons of carbon dioxide per year from electric utilities and other stationary industrial plants.

Congress has recently introduced measures to estimate the amount of carbon dioxide that can be sequestered and to initiate pilot programs on sequestration. Policy makers note that the DOE study does not cover all of North America, does not estimate the amount of oil and gas that could be recovered, does not use uniform methods and was not peer-reviewed. The House measure would require the U.S. Geological Survey, DOE and EPA to complete a full inventory that addresses these discrepancies and other issues.

The Carbon Sequestration Atlas of the United States and Canada is available online at http://www.netl.doe.gov/publications/carbon_seq/atlas/index.html.

The Midwest Regional Carbon Sequestration Partnership is one of seven Regional Carbon Sequestration Partnerships created by the Energy Department in 2002. The partnership program exists so that each partnership can assess the carbon dioxide sequestration option best suited to its specific region. Currently, the seven regional partnerships include more than 300 organizations within 40 states, three Indian nations and four Canadian provinces. Battelle of Columbus, Ohio, leads the Midwest Regional Carbon Sequestration Partnership, which includes 38 partners in seven states: Indiana, Kentucky, Maryland, Michigan, Ohio, Pennsylvania and West Virginia.

More information about the Midwest Regional Carbon Sequestration Partnership is available at <http://198.87.0.58/>.

Jim Hughes is Acting Director of Interior Department’s Bureau of Land Management Interior Secretary Dirk Kempthorne announced earlier this year that James M. Hughes will serve as the acting director for the Department’s Bureau of Land Management until a new BLM director is nominated by the President and confirmed by the U.S. Senate. Former Director Kathleen Clarke, who has

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What Determines Earth's Temperature continued from page 59

Most of us are aware that the current warming that is occurring globally has decreased the amount of ice and snow on the planet's surface. For example the decline in sea ice since satellites began to observe it has declined dramatically (Figure 3). Most models predicted that the increased temperatures would cause a decrease in sea ice that, in turn would cause a further increase in temperature. This positive feedback is called the ice-albedo feedback and should cause a decrease in the net energy flux measured at the top of the atmosphere. Measurements, however, showed little change.

Now scientists know that the loss of surface ice and therefore the loss in surface reflectivity was compensated by an increase in cloud cover caused by the increase in available moisture due to

melting. Unfortunately, this is likely to be only a temporary fix. The loss of ice will eventually start accelerating because of the ice-albedo feedback. ■

Reference

Lindsey, Rebecca, 2007: Arctic Reflection, Clouds replace snow and ice as solar reflectors, Earth Observatory, NASA, can be viewed online at <http://earthobservatory.nasa.gov/Study/ArcticReflector/printall.php>

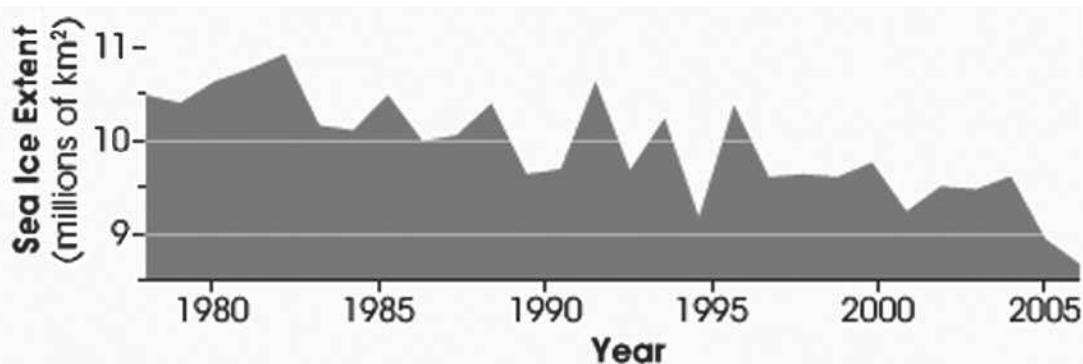


Figure 3. Decline of sea ice since 1978. Graph by Robert Simmon, can be viewed at <http://earthobservatory.nasa.gov/Study/ArcticReflector/printall.php>

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served as BLM's Deputy Director for Programs and Policy since 2002, announced her resignation in December of last year.

Hughes, who earned his Bachelor of Arts degree in journalism from New Mexico State University and did graduate work at the University of Minnesota, has more than 20 years of experience in the management of public lands. As Acting Director of the BLM, Hughes is responsible for the agency's stewardship of about one-eighth of the land in the United States and more than 700 million acres of sub-surface mineral estate across the nation. Secretary Kempthorne welcomed Hughes's experience, saying, "He understands the policy issues we face and can work with the wide variety of BLM stakeholders."

Intergovernmental Panel on Climate Change Releases Impact Report

The Intergovernmental Panel on Climate Change (IPCC) released the second of four reports on April 6, 2007. The Working Group 2 Report is titled "Climate Change 2007: Impacts, Adaptation and Vulnerability" and details the expected impacts of climate change based on scientific observations and modeling. The major impacts were divided into sections on freshwater resources, ecosystems, food and forest products, coastal and low-lying areas, industry, settlement and society, and health. Adaptability and vulnerability were discussed in the context of the impacts.

More details and the full report are available at the IPCC web site at <http://www.ipcc.ch/>.

Global Positioning System Altered by Solar Flares

Global positioning system (GPS) and other communication technologies that use radio waves can be altered or disturbed by large solar flares that generate intense radio bursts according to Cornell and Boston College researchers. A December 6, 2006, solar flare caused a large number of GPS receivers to stop working and affected the Wide Area Augmentation System, which is used for civil air navigation. The Global GPS Network, which provides precise measurements for scientific and real-time applications was also affected. NASA, NOAA, and other scientists and engineers are looking into this problem as the Sun becomes more active.

Key Federal Register Notices

DOI-MMS: The Minerals Management Service proposes to amend the regulations regarding oil and natural gas production. This is a complete rewrite of these regulations, addressing issues such as production rates, burning oil, and venting and flaring natural gas. The proposed rule would eliminate most restrictions on production rates and clarify flaring and venting limits. The proposed rule was written using plain language, so it will be easier

to read and understand. Submit comments by June 4, 2007, electronically at rules.comments@mms.gov. Use RIN 1010-AD12 in the subject line. For more information, contact Amy C. White, Regulations and Standards Branch, 703-787-1665. [*Federal Register*: March 6, 2007 (Volume 72, Number 43)].

DOA, DOI: The U.S. Forest Service and the Bureau of Land Management announced the final revision of the Onshore Oil and Gas Order Number 1 rule, which was published in the October 21, 1983, edition of the *Federal Register*. The Order provides the requirements necessary for the approval of all proposed oil and gas exploratory, development or service wells on all Federal and Indian (other than those of the Osage Tribe) onshore oil and gas leases, including leases where the surface is managed by the U.S. Forest Service. This final rule is effective April 6, 2007. For more information, contact James Burd at (202) 452-5017 or Ian Senio at (202) 452-5049 at the BLM or Barry Burkhardt at (801) 625-5157 at the Forest Service. [*Federal Register*: March 7, 2007 (Volume 72, Number 44)].

DOE: The Office of Fossil Energy (FE) of the Department of Energy (DOE) gives notice of receipt of an application filed jointly on January 10, 2007, by ConocoPhillips Alaska Natural Gas Corporation (CPANGC) and Marathon Oil Company (Marathon), requesting blanket authorization to export on their own behalf or as agents for others on a short-term or spot market basis from existing facilities near Kenai, Alaska, up to 99 trillion British thermal units (TBtu) (approximately 99 billion cubic feet [Bcf]) of liquefied natural gas (LNG) to Japan and/or one or more countries on either side of the Pacific Rim over a two-year period commencing April 1, 2009, and terminating March 31, 2011. For further information, contact Larine Moore or Beverly Howard, Office of Oil and Gas Global Security and Supply, Office of Fossil Energy, U.S. Department of Energy, Forrestal Building, Room 3E-042, FE-34, 1000 Independence Avenue, SW., Washington, DC 20585. (202) 586-9478; (202) 586-9387. [*Federal Register*: March 8, 2007 (Volume 72, Number 45)].

DOI: Minerals Management Service (MMS), in accordance with Federal Regulations that implement the National Environmental Policy Act (NEPA), announces the availability of NEPA-related Site-Specific Environmental Assessments (SEA) and Findings of No Significant Impact (FONSI), prepared by MMS for the oil and gas activities proposed on the Gulf of Mexico OCS. For further information, contact Public Information Unit, Information Services Section at the number below. Minerals Management Service, Gulf of Mexico OCS Region, Attention: Public Information Office (MS 5034), 1201 Elmwood Park Boulevard, Room 114, New Orleans, Louisiana 70123-2394, or by calling 1-800-200-GULF. [*Federal Register*: March 9, 2007 (Volume 72, Number 46)]

THE MISSION...

The purpose of the Desk and Derrick Clubs is "to promote the education and professional development of individuals employed in the petroleum, energy, and allied industries". We fulfill our purpose by raising funds through our annual golf tournament, using the money earned to provide for members' education and professional development, and scholarships to students attending colleges and universities who are pursuing degrees in the energy industry.

You can help us in this endeavor, while having a great time, by joining us at the Tour 18 Houston Golf Club in Humble, Texas for our 17th Annual NHMC Desk and Derrick Golf Tournament.

We "Thank You" in advance for your generous support of this tournament. By signing this entry form, you hereby absolve any member of the Association of Desk and Derrick Clubs or their organization, or Tour 18 Houston Golf Club and its members, or any sponsors of any liability of any nature that may arise from the tournament. Both the Association of Desk and Derrick Clubs and the NHMC Club operate under Internal Revenue Tax Code Section 501(c)6—a Business League designation. While contributions to the organization are not charitable, they may qualify as a trade or business deduction.

North Harris/Montgomery Counties (NHMC) Desk and Derrick Club Golf Committee

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|--------------------------|--|
| Chairman | Val Williams, Noble Energy |
| Secretary | Rae Wertz |
| Registration | Melinda Montgomery, Greystone Oil & Gas |
| Food Vendors | Ashley O'Neill, Dynasty Transportation Harry Harrison, Chevron Texaco (Retired) |
| Luncheon | Melanie LaBree, Newfield Exploration |
| Door Prizes | Maxine Campbell, UPR (Retired) |
| Photography and Contests | Aveina Pendergrast, Newfield Exploration Emily Vaughn, Terralliance |
| Signs | Diana Turner |
| Trophies | Alma Baque, Noble Energy |
| Mulligans | Elaine Krueger, Newfield Exploration |
| Volunteers | Rae Wertz Theresa Viguerie, Baker Hughes INTEQ (Retired) |
| ADDC Booth | Barbara Godejohn, Noble Energy |



North Harris/Montgomery Counties (NHMC) Desk and Derrick Club

Benefiting Scholarships and Educational Programs

17th Annual NHMC Desk and Derrick Golf Tournament



July 16, 2007

Tour 18 Golf Club
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(281) 540-1818

17TH ANNUAL NHMC DESK AND DERRICK GOLF TOURNAMENT

JULY 16, 2007

7:00 am Registration Time
7:30 am Shotgun Start
Four-man Scramble
Hole-in-One Contest \$1,000 cash

After play Open Grill Buffet
Awards Ceremony
Door Prizes

Food provided on the course during tournament play sponsored by:
ACE Transportation
and Dynasty Transportation

SPONSORSHIP LEVELS - please indicate choice below

- ☐ **Hole Sponsor \$250**
Includes company name on sign at hole
- ☐ **Scholarship Sponsor \$350**
Includes company name on sign at pavilion
- ☐ **Beverage Sponsor \$500**
Includes company name on sign
- ☐ **Contest Sponsor \$300**
*Limit of 3—Longest Drive, Closest to the Pin, and Putting.
Call for availability. Includes company name on sign at hole.*
- ☐ **Door Prize Sponsor**
Please specify _____
- ☐ **Cash Donation \$ _____**

*Please print how you would like the company name to appear on all signage:

PAYMENT INFORMATION

Entry Fee \$125 per player \$ _____
Mulligans \$5 each, limit 2 per player \$ _____
Sponsorship Total \$ _____
Total Enclosed \$ _____

☐ **Checks payable to:**
NHMC Desk and Derrick Golf Tournament

Credit Card Payment: (Please check)

- ☐ VISA ☐ Mastercard
- ☐ American Express

Name as it appears on card (please print) _____

Card Number _____

Exp. Date _____ CCV (3-4 digit credit card verification #) _____

Billing Address _____

City _____

Zip _____

Cardholder Signature _____

Registration and Cancellation Deadline:
Friday, June 22, 2007

Forms should be mailed to Melinda Montgomery, NHMC Desk and Derrick Club, 1646 Spring Cypress Rd., Suite 110-259, Spring, TX 77388, or fax to (832) 333-4029. Registration is not final until payment is received.

Questions? Melinda Montgomery (832) 333-4004
or Val Williams (281) 874-6795

REGISTRATION - \$125 per player

Includes green fees, cart, range balls, open grill, drinks, contests, door prizes and awards ceremony.

☐ Yes, please place me on a team.

Team Captain _____

Company _____

Email _____

Address, City, Zip _____

Player 2

Company _____

Email _____

Address, City, Zip _____

Player 3

Company _____

Email _____

Address, City, Zip _____

Player 4

Company _____

Email _____

Address, City, Zip _____

Rain Policy - If nine (9) holes are not completed or the tournament is canceled prior to starting, the next available date will be booked as a makeup date. In case of rain, your donation is appreciated.



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.

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.

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

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(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: _____

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Professional Affiliations:

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Professional Interest:

☐ Environmental Geology

☐ International E&P

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

☐ Gulf Coast E&P (onshore & offshore)

School _____

Degree _____ Major _____ Year _____

School _____

Degree _____ Major _____ Year _____

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 _____

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2007–2008 dues are \$20.00

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Audrey Tompkins, 3007 Stally, Houston, TX 77092

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

Please choose a Committee Assignment

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

The Houston Geological Auxiliary was formed over fifty years ago to assist the Houston Geological Society with conventions (such as AAPG and GCAGS), party decorations, mailings, etc., and also to serve as a social connection for HGS members and their spouses. There are four or five social events held during the year: A fall event, a Christmas Event, Game Day, a Spring Event, and the Annual Meeting/Luncheon in May. HGA members are eligible to join Geo-Wives which has various programs and luncheons, day trips and parties held at members homes, occurring monthly starting in September and ending in May. We look forward to your participation in the coming year of fun and friendship.

Sincerely,

Audrey Tompkins, 713-686-0005

As a HGA member you are invited to join

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| I will help plan a GeoWives activity | <input type="checkbox"/> |
| I will serve on a committee | <input type="checkbox"/> |
| Notification / Phone Committee | <input type="checkbox"/> |
| Courtesy / Hostess | <input type="checkbox"/> |
| My home is available for a meeting | <input type="checkbox"/> |

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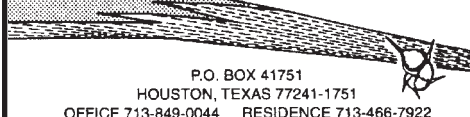
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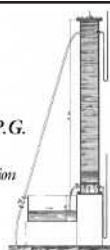
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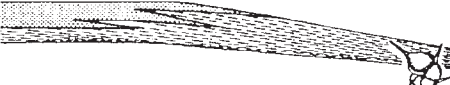














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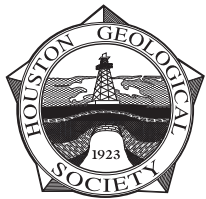
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