HGS Bulletin
Houston Geological Society
Volume 49 Number 1
September 2006

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The Bulletin
Houston Geological Society

Volume 49, Number 1 September 2006

In Every Issue

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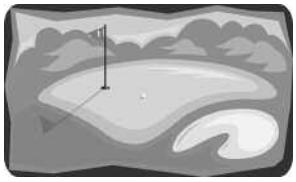
Technical Meetings

Other Features



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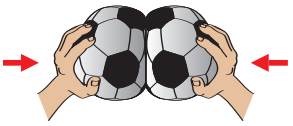

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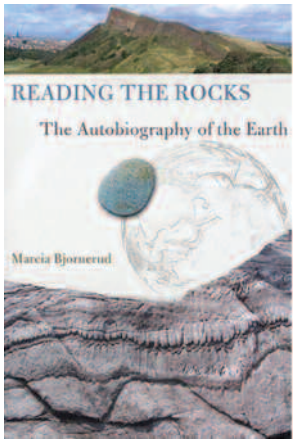

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About the Cover: The Uinta and Piceance basins, located in northeastern Utah and northwestern Colorado, respectively, occupy the northern third of the Colorado Plateau. In his article on page __ Lorenz explains how the current in situ stress field in the Piceance Basin is residual, and not related to plate driving forces active today.
Image courtesy of Earth Sciences and Image Analysis Laboratory, NASA Johnson Space Center, adapted from the image FourCorners.A2001162.1815.1km.jpg , from the Web site http://eol.jsc.nasa.

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

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HGS Golf Tournament

Monday - September 18, 2006

Place: Kingwood Country Club
Format: Four-man scramble
Featuring: Closest to the pin, Refreshment stands, Longest drive contest, Bar-B-Q dinner, Trophies, awards and prizes, Betting holes

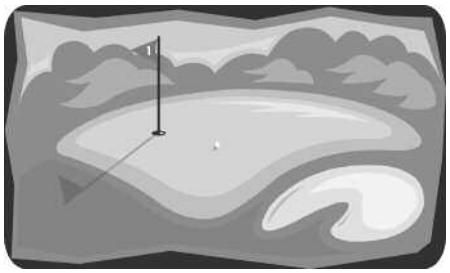
This year's tournament will be a four-man scramble. A shotgun start at 11:45 a.m. will be followed by an informal buffet dinner with a presentation of awards at the Kingwood Country Club. Players may select their own course and foursome or be placed in a foursome by the tournament committee. The field will be flighted after play based on score. Entries will be limited and will be accepted on a first-in basis.

The entry fee will be $125.00 per person, or $500.00 per team. Entry fee includes green fees, golf carts, refreshments, driving range use with practice balls and a buffet award dinner with door prizes.
So get your group together and come out and enjoy the competition, food, friends and fun.

Companies or individuals interested in sponsoring the event should contact Allan Filipov at 281-275-7649 or by fax at 281-275-7550.

To enter, fill out the entry form at the bottom of this page and mail with your entry fee (payable to HGS Entertainment Fund) to:

HGS attn: Joan Henshaw
10575 Katy Freeway, Suite 290 • Houston, TX 77024
713-463-9476



SCHEDULE OF EVENTS

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

Name _____ Amount Enclosed _____

Company _____ Phone _____

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

Foursome Captain's e-mail _____

If you wish, please circle your course preference: Island Lake Marsh

From the **President**

by ***Steve Brachman***

An Exciting Year for the Houston Geological Society

On August 8th, the Houston Geological Society will celebrate its 83rd Anniversary. Taking over from the legacy of the first President John Suman has been made much easier for me by the outstanding job of last year's Board, and especially past-President Dave Rensink. Paul Britt put forward his usual Herculean effort, this time as *Bulletin* Editor, and Ken Nemeth helped put the Society on a strong financial footing as Treasurer. Linda Sternbach's talents in coordinating the technical program as Vice President will be put to good use this year as the new President-Elect. Secretary Susan Black, and Directors Bill Dupre and Elizabeth Fisher also were instrumental in making last year a resounding success for the HGS.

I hope you take advantage of the prodigious amount of educational, social and networking opportunities that will be offered to you as members of the HGS in the upcoming year.

This year's Board of Directors has some veterans stepping forward, such as Andrea Reynolds – Vice President, Cheryl Desforge – Treasurer, and Bill Rizer – Editor. Returning Directors Jim Doyle and Erik Mason are joined by new Board members Jennifer Burton – Secretary, John Jordan – Treasurer-Elect, Steve Earle – Editor-Elect, and new Directors Bonnie Milne-Andrews and Bob Merrill.

A list of Committee Chairs is included near the front of the *Bulletin*. Remembering that many committees have multiple members, there are literally hundreds of volunteers who devote their time to the HGS. I always wondered where these folks find the time to devote so much effort as volunteers. Now as President I know the truth, they don't have the time, but they do it anyway. So next time you see an HGS volunteer, either at work, at a meeting, or in the grocery store, thank them for giving the time they really didn't have to give, to keep your Society running smoothly.

September always is an active month for the HGS. At the top of the dance card is the PESGB/HGS sponsored 5th Annual African Conference, "Elephants of the Future", to be held September 12-13 in the QE2 Conference Centre, London, England. The GCAGS Annual Convention, "Visualize the Possibilities", will be held in Lafayette, LA, Monday, September 25 to Wednesday, September 27, in conjunction with LIOGA's Gulf Coast Prospect Expo. Closer to home, the HGS Golf Tournament will be held September 18th at the Kingwood Country Club. Al Filipov with Fairfield will be coordinating his last tournament as he is leaving for an international assignment, so wish him well and thank him for a tremendous effort these past several years. Finally, in addition to our regular meetings, the NeoGeos are sponsoring a Career Development Workshop on September 21 at the Petroskills Training Center.

There will be a prodigious amount of educational, social and networking opportunities offered to you as members of the HGS in the upcoming year. I hope you take advantage of them. ■

Member News and Announcements

HGS Directory of Oil Company Name Changes

The 17th edition (April, 2006) 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 for this publication is to assist geoscientists in their pursuit of logs, paleo, well test or production histories, well files and other data that may be obscured by company name changes. The cost of this directory is $13.50 plus shipping and handling.

The ***Directory of Oil Company Name Changes*** can be obtained from the Bureau of Economic Geology in Austin. The Bureau's website is located at www.beg.utexas.edu, or e-mail at pubsales @beg.utexas.edu, or contact them by phone at 888-839-4365 (USA only) or 512-471-7144.

Houston Gem and Mineral Society Annual Exhibition

Houston Gem and Mineral Society Annual Exhibition is September 22-24 at the Humble Civic Center. HGS will have an exhibit and is looking for volunteers to help out on Friday, school field trip day. ■

HGS *Bulletin* Instructions to Authors

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

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

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

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

Advertising

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

Random Inside (Black & White)					Page 2 (B&W)	Inside Front Cover (Full Color)	Inside Back Cover (Full Color)	Outside Back Cover (Full Color)	Calendar Page (Full Color)
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

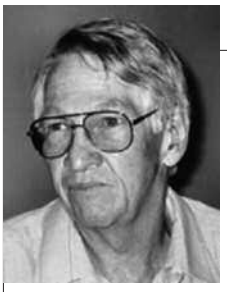
HGS Website Advertising Rates

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

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

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

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



From the **Editor**

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

A Call to the Membership

First of all, let me extend a big hello to all old members and welcome to all new members of the Houston Geological Society (HGS). The society, with a membership of some 4300 geologists, is one of the largest local geoscience organizations in the world.

This day has come far sooner than I ever imagined and much too soon for this geologist, who finds himself desperately attempting to write his first column as Editor and get out the first issue of the *Bulletin*. As the deadline approaches to send the as yet unfinished September issue to the printer, I now know what a monumental task I have fallen into. Nothing can be done now but tell you what was on in my mind that day over a year ago when I decided to accept this responsibility.

As earth scientists of various expertise and specializations we should have a lot to say about the many earth related issues and challenges that now face our immediate community, Houston, our country and our world.

As geologists, we receive excellent compensation for our work, that is when we have work. Then again, work might not be the appropriate term for what we do because many of us would be doing the same or similar things whether or not we were paid. As scientists we also enjoy a special status in this society. For those and other reasons I believe we have a responsibility to the community that treats us so well. As earth scientists of various expertise and specializations we should have a lot to say about the many earth-related issues and challenges that now face our immediate community, Houston, our country and our world. Global warming, subsidence and sea-level rise are just a few of the issues that come to mind. I am certain that you, the membership, can think of many others.

The title of this column is "A Call to the Membership." With this column I extend an invitation to each and every one of you to get involved. Get involved in the society and help the HGS become even more involved than we are now with our community. Send in your letters to the Editor, your technical articles, your ideas and your comments. Come to the meetings and go to the Web page. Get active. Who knows, you (we) might even be able to make a difference. ■

Bulletin Publication—Key Dates

September *Bulletin*
July 17 is the submission deadline for the September *Bulletin;* it goes to the printer by August 9 and is mailed by August 28.

October *Bulletin*
August 15 is the submission deadline for the October *Bulletin;* it goes to the printer by September 8 and is mailed by September 25.

November *Bulletin*
September 15 is the submission deadline for the November *Bulletin;* it goes to the printer by October 9 and is mailed by October 26.

December *Bulletin*
October 16 is the submission deadline for the December *Bulletin;* it goes to the printer by November 9 and is mailed by November 24.

January *Bulletin*
November 15 is the submission deadline for the January *Bulletin;* it goes to the printer by December 8 and is mailed by December 27.

February *Bulletin*
December 15 is the submission deadline for the February *Bulletin;* it goes to the printer by January 9 and is mailed by January 26.

March *Bulletin*
January 15 is the submission deadline for the March *Bulletin;* it goes to the printer by February 9 and is mailed by February 24.

April *Bulletin*
February 15 is the submission deadline for the April *Bulletin;* it goes to the printer by March 9 and is mailed by March 26.

May *Bulletin*
March 15 is the submission deadline for the May *Bulletin;* it goes to the printer by April 9 and is mailed by April 26.

June *Bulletin*
April 16 is the submission deadline for the June *Bulletin;* it goes to the printer by May 9 and is mailed by May 25.

Mark your Calendars Now!

4th Annual AAPG WINTER EDUCATION CONFERENCE

Houston, TX
February 12-16, 2007

Courses will include:

- Essentials of Subsurface Mapping
- Introduction to Computer Mapping
- Practical Mapping of Surfaces, Properties and Volumes for Reservoir Characterization
- Rock Properties of Tight Gas Sandstones
- Introduction to Coalbed Methane
- Risk and Economic Evaluation & Development of Unconventional Resource Plays
- Seismic Amplitude Interpretation—Lithology and Pore Fluid Estimation
- Seismic Geomorphology & Seismic Stratigraphy
- Basic Openhole Log Interpretation
- Advancements in Petrophysics
- Introduction to DST's for Geologists

AAPG EDUCATION CONFERENCE

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SPECIAL AAPG GROUP RATES!

**Tuition for the week is only $1295 for AAPG Members,
$1395 for non-members*
or $325/day for individual courses**

***(price increases to $1395/$1495 after 1/15/07)**

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

Monday, September 11, 2006

Westchase Hilton • 9999 Westheimer
Social 5:30 p.m., Dinner 6:30 p.m.

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

The HGS prefers that you make your reservations on-line through the HGS website at www.hgs.org. If you have no Internet access, you can e-mail reservations@hgs.org, or call the office at 713-463-9476 (include your name, e-mail address, meeting you are attending, phone number and membership ID#).

Winning with Strategy: Anadarko's History and Future Outlook for the Gulf of Mexico

by ***Bob Daniels***
Anadarko

In 2004, Anadarko embarked on a new corporate strategy that involves using competitive advantages such as strong acreage positions to leverage exploration in key high-potential basins of the world. Central to this strategy is continued growth in the US Gulf of Mexico (GOM). With a historical presence in the since 1970, Anadarko has steadily grown its position, presently holding the rights to explore on 267 blocks equaling 1.5 million gross acres across the region. Today, 11% of the company's proved reserves are located in discoveries from the Central foldbelt to the Eastern. The company owes this growth to the combination of talented staff, technology and a strategic approach to leasing, infrastructure and partnering.

Anadarko embarked on a new corporate strategy that involves using competitive advantages such as strong acreage positions to leverage exploration in key high potential basins of the world.

Decades after its first success in the shelf, a discovery at Matagorda Island Block 263, Anadarko was among the first to venture into sub-salt, with discoveries at Hickory and Tanzanite in the late 90s. The knowledge acquired in these difficult plays helped to develop expertise and to establish Anadarko's commitment to exploration and technology application in the basin. Anadarko experienced its first deepwater discovery at Marco Polo in 2000 with subsequent discoveries at K2 and K2 North. These discoveries are in the delineation phase and are expected to add substantial production over the next two years. Building on this momentum, 2005 was an active drilling year for Anadarko and its partners, yielding three discoveries in the Miocene foldbelt: Genghis Khan, Knotty Head and Big Foot.

Outside the deepwater, Anadarko has been successful in establishing a preeminent position in the eastern Gulf, holding 177K acres. From 2003 to 2005, Anadarko has drilled seven discoveries in the region and entered into a cost-effective third-party ownership agreement for the production facility. As part of a producer group, Anadarko and partners authorized the construction of the first Eastern export pipeline, the Independence Hub, which will have a 1 Bcf/day capacity and is due to be installed later this year. Anadarko's strategy for sustained success has four prongs:

- Early, disciplined play identification—Anadarko Petroleum Corporation (APC) has used an approach focused tightly on material opportunities in a few selected plays. This proactive approach has been important in being able to focus valuable resources on the best projects and avoiding distraction by second-tier opportunities.
- Strategic leasing and partnering—Starting from a small lease position, APC used strategic farm-ins and partnerships to build its current strength. The goal is to be the partner of choice by leveraging expertise and project development skills.
- Application of the best technology—Anadarko believes that opportunities emerge when existing technologies can be applied in new ways. The company is active in applying the best tools available and in drilling and producing from new areas and depths. Succeeding in these endeavors requires careful risk management, a willingness to learn and creativity.
- Creative service and infrastructure solutions—Recognizing that access to drilling infrastructure was critical to execution and could help capture opportunities. Anadarko has signed long-term contracts for scarce deepwater rigs. In addition, our infrastructure development model has been to build strategic hubs (centralized production platforms), then bring in a third party to finance, build and operate the infrastructure. This approach benefits us by ensuring that we have access to infrastructure while freeing funds to do what we do best?exploring and developing oil and gas fields.

The future is even more exciting, given the pending acquisition of Kerr-McGee. This deal will **HGS General Dinner** *continued on page 11*

HGS General Dinner continued from page 9

further enhance our position by uniting two of the strongest independent players in the region, with combined acreage totaling 768 Blocks (2.6 million net acres), making Anadarko the third largest acreage holder in the behind Shell and BP. The strategy will continue to evolve as we move forward to bring the 's resources to the marketplace. ■

Biographical Sketch

Robert (Bob) P. Daniels has served as Senior Vice President, Exploration and Production for Anadarko Petroleum Corporation since 2004. He has responsibility for the company's international exploration and worldwide deepwater exploration activities. Bob joined Anadarko in 1985 and has held several key positions within the company including Manager of Geology for Algeria Exploration, Manager of U.S. Onshore Exploration and Vice President for Canada. Bob holds an MS in Petroleum Geology from the Colorado School of Mines, an MA in Economics from The Colorado College, and recently completed executive studies at Harvard Business School.

Monday, September 18, 2006

Westchase Hilton • 9999 Westheimer
Social 5:30 p.m., Dinner 6:30 p.m.

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

The HGS prefers that you make your reservations on-line through the HGS website at www.hgs.org. If you have no Internet access, you can e-mail reservations@hgs.org, or call the office at 713-463-9476. (include your name, e-mail address, meeting you are attending, phone number and membership ID#).

International Explorationists Dinner Meeting

by ***C. L. Farmer, R. J. Marksteiner, R. A. Clark, and R. L. Hedberg***
BP Venezuela Holdings Ltd.

Modeling a Structurally Complex Reservoir — Boquerón Field – Eastern Venezuelan Thrust Belt

Summary

A structural and reservoir model was constructed for Boquerón Field in order to plan locations for development and injection wells. Four wells were drilled which tested the validity of assumptions used for the model. The deterministic approach for building the model was satisfactory in terms of predicting the geometry and distribution of the reservoir in areas close to well control. However, in flank areas the structural geometry was not accurately modeled. Depth conversion of the seismic did not originally incorporate complex velocity variations in the imbricated Carapita shale above the reservoir. The structural model was corrected by creating a time-depth cube that accounted for these velocity variations.

Introduction

Boquerón Field is located in the Eastern Venezuela Basin along the El Furrial Trend approximately 20km north east of El Furrial Field (Figure 1). The field, discovered in 1989, has cumulative production of about 44 million barrels (12/2004). Current daily production averages between 8,000 and 10,000 barrels of 28-33 API high asphaltene oil. The depth of the reservoir ranges between 15800 and 17200 ft. TVDSS. ■

The structural model was corrected by creating a time-depth cube that accounted for complex velocity variations in the imbricated Carapita shale above the reservoir.

Location map Eastern Venezuela

Biographical Sketch

CATHY FARMER is currently a senior exploration geologist for BP's Gulf of Mexico deep gas exploration team. Prior to that, she was the lead geologist for all of BP's production and exploration business in Venezuela. She has twenty-eight years of experience in the oil and gas industry. Most of her career has been focused on worldwide exploration for oil and gas in locations such as Venezuela, Trinidad, Norway, West Africa, and the Middle East. In 2000 she was the project geologist responsible for BP's Red Mango gas discovery. Before Trinidad, she spent six years as an expatriate in Stavanger, Norway where she coordinated a project to revise the reservoir model for Amoco's Valhall Field and explored in the Norwegian sector of the North Sea. In the late 1980's, she was assigned to Amoco's Africa and Middle East Division where she generated exploration prospects in the Congo, Jordan and the United States.

She has spoken at technical conferences sponsored by the American Association of Petroleum Geologists, the Geological Society of London, the Society of Exploration Geophysicists, and the European Association of Geoscientists and Engineers. Her talk on Boqueron Field was invited for the "Best Case Histories" session at the SEG (Houston, 2005), and was presented to the London Geological Society in February 2006 for their conference on modelling structurally complex reservoirs.

Farmer studied geology and geological engineering at the Colorado School of Mines where she received her Master of Science degree in geology in 1981, and her Bachelor of Science degree in geological engineering in 1979. She received numerous scholarships and awards from Colorado School of Mines the most notable being "Most Outstanding Geology Graduate, 1979".

Tuesday, September 19, 2006 Joint HGS Northsiders and NA Explorationists **Luncheon Meeting**

The Sofitel Hotel • 425 Sam Houston Pkwy. North
Social 11:15 a.m., Luncheon 11:30 a.m.

Cost: $31 Preregistered members; $35 non-members & walk-ups

The HGS prefers that you make your reservations on-line through the HGS website at www.hgs.org. If you have no Internet access, you can e-mail reservations@hgs.org, or call the office at 713-463-9476 (include your name, e-mail address, meeting you are attending, phone number and membership ID#).

by ***Peter Bartok***

New Insights into the Geologic Development of Reforma, Southern Mexico

The Reforma region of México is unique to the Gulf of Mexico. The well-documented Gulf of Mexico Mesozoic salt and carbonate sequences persist into the Reforma region. However, in Reforma the typical Gulf passive margin facies were overprinted by Pacific plate-induced transform faults and compressional systems during the Paleogene and Neogene. The region is further complicated by the emplacement of an allochthonous terrain (Chiapas Massif) during the Mesozoic and uplift of the terrain during the Tertiary. This makes the basin structurally complex yet allows for the development and preservation of giant fields. The study will review the general sedimentation patterns and review the structural development of the region.

The emplacement of an allochthonous terrain… during the Mesozoic and uplift of that terrain during the Tertiary…makes the basin structurally complex yet allows for the development and preservation of giant fields.

The Triassic to Lower Jurassic rifting does not play as significant a role as previously considered. Paralic to marine carbonate and evaporite deposition prevailed from the Bajocian/Bathonian to the Cretaceous. Classic salt province subdivisions can be established. Of interest is the onshore region of Salina del Istmo (located west of Reforma). Salt in this region is dominantly allocthonous with significant salt tongues. Progressively, to the southeast, the salt provinces change to diapiric and eventually to salt rollers. The Tertiary is dominated by siliciclastics.

The Reforma region corresponds to the Maya tectonic block. Studies have shown that the block has been displaced to the south by approximately 1000 km. The exact timing for juxtaposition of the Chiapas Massif to the Maya Block is subject to discussion. Most studies imply that by Late Jurassic the position of Yucatan was very close to its present location. Therefore, Chiapas was transported during the Middle to Late Jurassic translation. There is no evidence of significant clastic deposition being shed from the Chiapas Massif during the Middle to Late Jurassic. It is therefore suggested that the Massif had a low relief.

The oblique displacement of the Chortis Block (S. Guatemala/Honduras) affected the Reforma region from Late Cretaceous to Early Paleogene, resulting in compressional features that by the Eocene induced major salt diapirism in the basin. Noticeably, the Paleocene and Eocene stages were periods of very low sediment deposition. Carbonate (Macuspana limestone) banks flourished along the southeastern margin of the basin. Significant clastic basin fill persisted through the Neogene to the Recent. By the Late Eocene the Chortis Plate passed southern Chiapas and the subducted Cocos Plate played a dominant role culminating in the Middle Miocene Chiapaneca orogenic event. This Miocene event resulted in basin shortening and much of the thrusting observed in the basin.

Examples from the Jujo-Tecominoacan and Artesa Mundo Nuevo regions will be used to demonstrate the principal facies distributions, structural style, and exploration potential in the region. The study is based on several publications co-authored by Bartok. ■

Biographical Sketch

Peter Bartok is a consulting geologist and an Adjunct Professor of Petroleum Geology at the University of Houston. Most of his career has been spent on exploration in over 40 basins of the world. These basins include most of the petroleum basins of South America, Angola, the North Sea, southeast Asia and the Gulf of Mexico. He has been a consultant for the past 14 years, and has worked for BP (10 yrs), Texaco (5 yrs) and with PDVSA (5 yrs) in Venezuela. He was a senior advisor to Pemex, spending three years studying the Reforma trend.

Bartok has focused his more recent projects on complex structural problems involving thrusting and salt tectonics. Presently he is working on exploration in the North Louisiana Salt Basin and in the Black Warrior Basin (USA).

Peter Bartok has published several papers on the geology of Venezuela, Gulf of Mexico and Mexico's Reforma trend. Bartok received both his MS and BS from the State University of New York at Buffalo.

Houston Geological Society
Continuing Education Committee
PRESENTS

Risk Analysis and Portfolio Concepts for Managers

by

Gary P. Citron, Rose & Associates & John I. Howell, Portfolio Decisions, Inc.

This seminar synthesizes the key concepts of uncertainty and probability in opportunity characterization for a more predictive portfolio. Modern portfolio concepts are introduced leading towards more informed decision making and improved management performance. The morning session deals with the state of risk analysis in the industry, linking probability assessments to the petroleum system. The afternoon session illustrates the role portfolio concepts and project interactions play to outline fundamental approaches to decision making. We conclude with elements of tracking portfolio performance and implementation issues.

Participants in this course will learn:

- Resource and probability estimation
- Coping with & communicating uncertainty
- Play analysis as a planning tool
- Project uncertainty at the Portfolio level
- Defining strategies and allocating resources
- Monitoring strategic performance

Thursday September 28, 2006
8 am – 4 pm (Registration opens at 7:30 am)

Marathon Conference Center
San Felipe at Yorktown
Houston, TX 77056

Registration Form
Risk Analysis and Portfolio Concepts for Managers
Visit www.hgs.org for details and on-line registration. Registration Deadline is September 26, 4pm.
Registration form can be faxed or mailed to the HGS office.

10575 Katy Freeway, Suite 290
Houston, Texas 77024

Fax (713) 463-9160

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Members:	**$95, before the registration deadline**	**$115, thereafter**
Non-Members:	**$125, before the registration deadline**	**$150, thereafter**
Student Members:	**$70, before the registration deadline**	**$85, thereafter**
Non-Members:	**$85, before the registration deadline**	**$105 thereafter**

Price includes continental breakfast, box lunch and afternoon snack

Credit Card type (circle one): VISA MASTERCARD AMERICAN EXPRESS DISCOVER
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Card Number: _____ 3 or 4 digit security code:_____ Exp Date (mm/yy): _____

Signature: _____ Date: _____ Card Holder Phone:_____

* Membership prices are extended to any member of (circle one): Member Number: _____
HGS GSH API Houston HAPL SIPES Houston SPE Gulf Coast SPEE Houston SPWLA Gulf Coast

Thursday, September 21, 2006

Petroleum Club • 800 Bell (downtown)
Social 11:15 a.m., Lunch 11:45 a.m.

Register online, call, fax or e-mail your reservation to Mrs. B.K. Buongiorno at Tel: 713-651-1639, Fax: 713-951-9659, e-mail: bkspee@aol.com by 12:00 Noon, Tuesday September 19, 2006. **Members and Affiliates who register by September 19 pay $30. The cost is $35 for guests, non-members, and new registrations at the door.** No-shows will be billed. You can now sign up for SIPES Meetings online at www.sipeshouston.org, but payment is still required by regular mail or at the door.

SIPES Luncheon Meeting

by ***Bob Lieber***

The Role of Petrophysics in the World of the Independent: Wow or Wizardry?

Petrophysics (the integrated evaluation of a reservoir's hydrocarbons in place and potential deliverability) was once viewed as realm of the selected specialist. With the advent of computer based log analysis packages, many independent operators in the oil and gas industry feel the need for petrophysical specialization is past. Petrophysics is viewed as simply the science of putting four significant figures to the right of the decimal point when one or two will do, isn't it? This presentation looks at some of the assumptions about petrophysics widely held in our industry and shows them to be just that; assumptions. Among the topics to be discussed are "What does a porosity cut-off really mean"; "What does the Archie equation really calculate" and "I'm an independent, why do I have to worry about relative permeabilities." In these times of economic upheaval (hardly new to our industry) it is essential that technology levers be applied in the correct manner. Petrophysics may be "wow" or it may just be wizardry to you, but if you do not understand its correct application you may not be exploiting your reservoirs to their maximum potential. ■

Biographical Sketch

Bob Lieber is a petrophysicist with over twenty-five years of varied petrophysical, geological and geophysical experience in domestic and international offshore and onshore basins. He has spent time working for major oil companies, small independent operators and as a consultant. He is currently a petrophysicist with BP America working tight gas reservoirs in the Anadarko Basin. Bob is an AAPG Certified Petroleum Geologist, a board member and past president of the SPE GCS Reservoir Study Group and a member of the SPWLA.

So You Think It's Been Hot?

If you think it was hot last year you have reason; the global surface temperature in 2005 was the hottest in over a century of instrument data, according to scientists at the NASA Goddard Institute for Space Studies and Columbia University Earth Institute (Gutron , 2006; Hansen, et al., 2006). Last year surpassed the previous record holder, 1998, a year when a record El Nino boosted global temperature by an estimated 0.2°C. Perhaps more importantly, the five hottest years in the past century have occurred in the last eight years. This is not an anomaly, but a long term trend that has seen global temperature increase by 0.8°C in the past century with 0.6°C of that occurring in the last three decades. Since 1975 the temperature has risen rapidly at a rate of about 0.2°C per decade. Records of temperature inferred from tree rings and elsewhere have indicated the this warming is unique in the past 1000 years (Kerr, 2000). ■

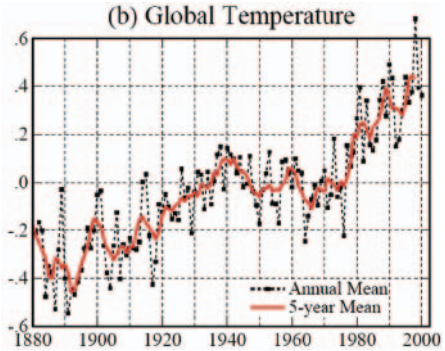

Figure courtesy NASA

References

Gutron, Rob, 2006: 2005 Warmest Year in Over a Century, NASA, can be viewed online at http://earthobservatory.nasa.gov/Newsroom/NasaNews/2006/2006012421540.html

Kerr, Richard A., 2000: Global Warming: Draft Report Affirms Human Influence, Science, Vol. 288, no. 5466, pp. 589 – 590.

Hansen, J., R. Ruedy, M. Sato, and K. Lo, 2006: GISS Surface Temperature Analysis, Global Temperature Trends: 2005 Summation, can be viewed at: http://data.giss.nasa.gov/gistemp/2005/?print=1&1=1&2=2&3=3

The 5th PESGB/HGS African Conference

Africa: The Elephants of the Future

Tuesday and Wednesday
12-13 September 2006
QE2 Conference Centre, London

Register ONLINE, view latest info, www.pesgb.org.uk
(Use links to PESGB web page from HGS Calendar event for 12-13 September.)

The conference committee
London: Ray Bate (Chairman), Duncan Macgregor (Technical Co-ordinator), Val Clure, Enzo Zappaterra and Mike Lakin (sponsorship)
Houston: Al Danforth, Ian Poyntz, Steve Henry and Gabor Tari.

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PESGB

HOUSTON GEOLOGICAL SOCIETY 1923

The 5th PESGB/HGS International Conference on African E & P

Africa: The Elephants of the Future

Preliminary Program

Tuesday 12th September

8.30	Registration & Coffee	
9.20	Welcome and Introduction	Chris Flavell – PESGB
	Session 1: Mediterranean and East Africa Frontier Basins	
9.35	Geological Evaluation of the East African Margin	Chris Cornwell and Andrea Pardon – Fugro Robertson
09.55	The Rovuma Basin — A Revitalised Exploration Province. The Petroleum Potential of Areas 2 and 5	B. Pilskog, J. Averty & P. Gomes – Hydro
10.20	Seychelles Oils and their place in the greater East Africa Petroleum System	C.J. Matchette – Downes, East Africa Exploration
10.45	***Coffee & Poster Presentations***	
11.15	New Discoveries in the Uganda Rift System	Bob Cassie, Chas Sheen, Ian Bulley and Justyn Wood
11.40	Oil and Gas Plays in the East Mediterranean	Evert Breman – Fugro Robertson
12.05	The Raven Story: A Play Opener in the Nile Delta	Jerry Siok et al. – BP Egypt
12.30	***Lunch and Poster Presentations***	
	Session 2 North African Reservoirs and Reserves	
13.45	**Keynote:** Paleodynamics of the North African Plate Margin	Professor Gérard M. Stampfli – University of Lausanne
14.10	The Application of Earth System Modelling to Source, Reservoir and Seal Facies Prediction on the African Margins: Examples from the Late Cretaceous of North and East Africa	Paul Markwick, John Jacques – GETECH, Paul Valdes and Roger Proctor
14.35	Correlation and Depositional History Recorded in the North Darag and Warda area, Gulf of Suez, Egypt	W. W. Wornardt - Microstrat Inc.
15.00	***Coffee and Poster Presentation***	
15.30	The remaining oil reserves of Libya, discovered and yet to find, categorised by petroleum province	D. D. Clark-Lowes and Don Hallett – Nubian Consulting
15.55	Hydrocarbon Source Rocks of the Maragh Low, Eastern Sirt Basin, Libya	Paul Swire, Hadi Said and Ibrahim Rabti - Veba
16.20	Occurence and distribution of Upper Triassic dolocretes: examples from the Oued Mya Basin and surrounding areas (Algeria)	Nordine Sabaou – BHP
16.45	Comparison between high and low sediment supply systems in deepwater clastic environments with examples from deepwater Mauritania	Paul Ventris and Alywn Vear – Woodside
17.10	**Keynote:** The Petroleum Geology of Southern Libya (MOVIE)	Sebastian Lüning – Univ. of Bremen
17.40	Evening Reception and Poster Presentations	

PES GB

The 5th PESGB/HGS International Conference on African E & P

Africa: The Elephants of the Future

Preliminary Program

Wednesday 13th September

8.30	Registration & Coffee	
	Session 3 Sub-Saharan and Atlantic Frontier Basins	
9.00	Basin Development Framework for frontier exploration targeting in Saharan Africa	S. R. Lawrence, R. Bray and I. Hutchinson -ECL/RPS Energy
9.25	The Bongor Basin in Chad: Characteristics of a frontier lacustrine petroleum system	Alistair Hill – EnCana
9.50	Exploration Potential of the Republic of Mali	John Scott – Mali Petroleum
10.15	Diachronous Rifting: New evidence from CongoSpan deep PSDM reflectors	Steve Henry – Innovative Exploration Services, A. Danforth and S. Venkatraman
10.40	***Coffee and Poster Presentations***	
11.10	Geometry and evolution of allochthonous salt sheets on the South Angolan margin	Ian Davison - Earthmoves, S. Henry, A. Danforth, P. Baptista and S. Venkatraman
11.35	Exploration Potential of the deepwater Lüderitz basin, offshore Namibia	A.J. Robinson – Hunt Oil, C.J. Nolan and R. Swart
12.00	Exploration Potential of the northern Orange Basin, offshore South Africa	David Van der Spuy – Petroleum Agency SA
12.25	***Lunch and Poster Presentations***	
	Session 4 Petroleum Systems of the Gulf of Guinea	
13.45	**Keynote:** Deep Structural Control of the Construction, Progradation and Hydrocarbon Occurrences of the Greater Niger Delta	Luc Saugy – Consultant
14.10	Insights into the Deepwater Stratigraphy and Structure of Offshore Nigeria from New Long-offset, Pre-stack Depth Migration Imaging	B. Radovich – Silver Grass Enterprises, C. D. Connors, Al Danforth and S. Venkatraman
14.35	Petroleum Systems of Rio Muni Basin, Equatorial Guinea	N. J. McCormack, A. S. Pepper, J. Clemson and J. Argent – Amerada Hess
15.00	***Coffee and Poster Presentations***	
15.30	Eastern Gulf of Guinea: Developing new plays and extending old ones	R. Bray, O. Jackson and R. Kieft – ECL/RPS Energy
15.55	Campanian Hydrocarbon System, Gulf of Guinea, West Africa	Ken Nibbelink – Devon
16.20	New Developments in the Tano Basin, eastern Côte d'Ivoire and western Ghana, West Africa	D. Valasek, M. Kaminski, J. Molnar, G. Tari and G. Walters – Vanco Energy
16.45	African Gas: Models for Development	Andrew Hayman – IHS Energy
17.10	**Closing Address**	

PESGB

The 5th PESGB/HGS International Conference on African E & P

Africa: The Elephants of the Future

Preliminary **Poster Presentations**

An Undrilled Elephant-a West Gas Prone, Mid-Basin Paleohigh Structure in the Frontier Bechar-Boudenib Depression, Southeastern Morocco	V. J Hamilton – Tethys Oil, M. S. James
Petrophysical Analysis in Reservoir Characterisation - Application in Triassic of Hassi R'Mel Field - Gas Field, Algeria	R. Baouche – Boumerdes Uni and A. Nedjari
Hydrocarbon accumulations, reserves and future potential in the Pre-Upper Cretaceous and Basement reservoirs in the Sirt Basin - Libya	Talaat Barsoum – TKB Consultants
The Zarzaitine Outcrops: An Analogue for the Prolific TAGI (Triassic) Reservoir in Algeria	Nordine Sabaou – BHP Billiton
The Mesozoic basins of the Tunisian Atlas: growth, deformation, basin inversion and fluid flow	A. W. Baird - Kingston University, C. J. Clayton and H. E. Madeisky
Exploration Potential of East Africa - The Importance of the 'Davie Transcurrent Deformation Zone'	John M. Jacques, P. J. Markwick, K. L. Wilson and D. G. Wright – GETECH, University of Leeds
Mesozoic rift basins in Tanzania: stratigraphic and structural development and petroleum potential	Mike Thomas – Dominion Petroleum
Prospectivity of the East Coast, South Africa	Jan Beckering Vinckers – PASA
Congo Fan (West Africa) Petroleum Systems: Matching and mismatching G3 observations to a time-stepped basin profile	W. G. Dickson – DIGS, C. F. Schiefelbein, A. G. Requejo, J. M. Brooks, M. E. Odegard & G. A. Jamieson
Modelled Petroleum Systems of the Douala Basin	Sumesh Naidoo – PetroSA
Regional evaluation of syn-rift reservoir and source rocks from conjugate West African and Brazilian Atlantic Margin Basins	A. McAfee – Core Labs, C. Brown, K. Richards and C. Schiefelbein
Trap Types, Capacity and Leakage in the Deepwater Nigeria Petroleum	D. Macgregor – MacGeology System and A. K. Williams – NPA Group
Airborne Gravity and Magnetic Onshore Survey over the Kassanje, Okawango and Etosha Basins (Angola)	L. Ameglio - Fugro Airborne Surveys, M. de Brito, S. Cardoso, R. Pawlowski, R. Yalamanchili, S. Egorov and A. Morgan
Uplift of the Namibian continental margin - a little or a lot?	Roger Swart - Namcor
Oil and Gas in Basement Reservoirs- A Possible Overlooked Play in West Africa	Tako Koning - Tullow
Interpreted crustal thickness in West Africa from new PSDM Reflection Seismic	Steven G. Henry, Al Danforth and Sujata Venkatraman

PESGB

Be a Citizen Scientist
Earth Science Week Activities
October 7 – 15, 2006
Annual Family Earth Science Festival

Houston Museum of Natural Science
Saturday October 7, 2006, 1:00pm- 5:00pm

Join us for the annual Family Earth Science Festival at the Houston Museum of Natural Science's Weiss Energy Hall. The festival will include an energy passport contest, hands-on demonstrations, special presentations, Boy Scout badge activities, and other great programs. We will have an opening ceremony at the entrance to Weiss Energy Hall at 1:00pm. Please join us as a visitor or a volunteer, and bring your family and friends! Please visit the museum's website at www.hgms.org for more information or contact Inda Immega at immega@swbell.net or Martha McRae at mmcrae1@houston.rr.com

Classroom Connections — Art & Essay Contest
Winners awarded October 7, 2006, 1:30pm

This year we are asking kids from classrooms around Houston to participate in our Art & Essay contests, which will be open to entries through October 2nd. The theme of these contests will be the national theme "Be a citizen scientist" which will focus on the scientific activities in our own community. The visual art contest will be open to grades K-5 and the essay contest will be open to grades 6–8. First, second, and third prize winners will be selected from each category and will be awarded at the Family Earth Science Festival on October 7th. For more information and contest guidelines, please contact Alison Henning at Alison_henning@yahoo.com or Jennifer Burton at jennifer_burton@anadarko.com

Our contest is modeled on the American Geological Institute's national contest. If you would like to learn more or submit a separate entry, please view the link below: http://www.earthsciweek.org/index.html

Two General Public Field Trips:

Galveston Island State Park
Saturday, October 14, 2006 9:00am-4:00pm

To fully celebrate this year's Earth Science Week theme, we are offering a new fieldtrip aimed at creating awareness of the geology of our area's coastal regions. Our coastlines are critical to our region's economy and recreation, but did you know how crucial they are to protecting us during hurricanes? With another active storm season upon us, there is no better time to broaden your appreciation of these precious regions. Please bring your family and friends and join area experts at Galveston Island State Park for a discussion and tour of key beach elements. Your entrance fee to the park will be waived and volunteers will be stationed at the entrance with information and directions. Please bring a sack lunch, water, sunblock and a pair of sturdy shoes. Please contact jennifer_burton@anadarko.com or mmcrae1@houston.rr.com for additional information and trip details.

Building Stones of Downtown Houston
Sunday, October 15, 2006, 2:00pm-4:00pm

Did you know that downtown Houston has some of the most fascinating geology? In the walls and floors of many of our downtown landmarks are some of the most beautiful and exotic rocks from around the world. Please join area experts in a tour of the city. There is no better way to be a citizen scientist in your community. Please email Neal Immega at n_immega@swbell.net for details and information. The tour will begin at One Shell Plaza (777 Walker) at 2pm.

HGS/GSH Shrimp Peel

Friday, November 18, 2006 6pm. - 10pm.

at

Sam Houston Race Park

7275 N. Sam Houston Pkwy. West

(281.807.8700)

Boiled Shrimp - Beer & Beverages - Horse Races - Music - Door Prizes - Boiled Shrimp - Beer & Beverages - Horse Races - Music - Door Prizes - Boiled Shrimp

Tickets $25 Advance/ $35 at the Door

> Event held indoors - Pavilion Centre
> Enter through North gates
> Valet parking available
> Tickets mailed to address on form
> Pay with check or credit card
> Order by Nov. 10 – No refunds

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10575 Katy Freeway, Suite 290, Houston, Texas 77024

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Remembrance

Robert R. Berg

ROBERT R. BERG, 82, of Bryan, Texas, passed away June 13th, 2006, in Bryan. He was born May 28th, 1924, in St. Paul, MN. He attended St. Paul Central High School in Minnesota, graduating in 1942. He then continued his education at the University of Minnesota, receiving his B.A. in Geology in 1948 and his Ph.D. in 1951. He served in the US Army Air Corps Weather Service from 1943 to 1946. From 1951 to 1966, Dr. Berg worked in Oil Exploration, Rocky Mountain Area at California Co. (Chevron), Embar Oil Co, Cosden Petroleum Co. and consulting with Edward B. Wasson. He began his career at Texas A&M in 1967 as a Professor and Head of the Geology Department. In 1972 he was the Associate Dean of Geosciences and was the Director, Office of University Research until 1982. He held the Michahel T. Halbouty Chair in Geology from 1982 to 2005.

He received numerous awards and honors including Faculty Distinguished Awards in Research in 1977 and Teaching in 1982, Texas A&M Former Students Association; the Ben Parker Memorial Medal for outstanding service to the profession; American Institute of Professional Geologists, 1981; Achievement Award, Geosciences and Earth Resources Council, TAMU, 1982 and Scientist of the Year Award, Rocky Mt. Assn. of Geologists, 1983. His Honorary Membership Awards include AAPG, 1984; Gulf Coast Assn. of Geological Societies, 1985; AIPG, 1988 and Texas Section, APIG, 1989. He was elected to Membership in the National Academy of Engineering, 1988 and received the President's Award of Honor, TAMU, 1989; Outstanding Educator Award, Gulf Coast Assn. of Geological Societies, 1991; University of Minnesota Institute of Technology, Outstanding Achievement Award, 1992 and Past and Present Awards Celebration, 2005; the Sidney Powers Memorial Award, AAPG, 1993; Sigma Xi Distinguished Scientist Award, TAMU, 1996 and the Outstanding Educator Award, TAMU, 2000. Survivors include his wife, Jo of Bryan; two sons, Charles and wife Sarah of the Woodlands, TX, and William and wife Theresa of Ft. Collins, CO; three grandchildren, Matthew, Amanda and Camille.

Interment will be held at a later date in Wyoming. Memorials may be sent to the Texas A&M University Fund for the Robert R. Berg Professorship, TAMU Foundation, 401 George Bush Dr., College Station, TX 77840-2811 or to the charity of one's choice

The Obituary is from *The Bryan-College Station Eagle*, updated Tuesday, June 20, 2006.

Lettter to the Editor

I found the review/interview report by Sternbach and Osten (HGS *Bulletin*, June 2006) to be very informative and of considerable interest. However, I was shocked by one statement made in the subject article. The authors state on p. 37 that "....90% of planktonic forminiferia (tiny floating plants) in the oceans became extinct."

I do not question this statistic, neither do I take much exception to the mis-spelling of foraminifera. But I have yet, after 30 years as a micropaleontologist, to see any published data that placed foraminifera in the plant kingdom. Planktic foraminifera are unicellular protists (i.e. animal kingdom) that inhabit the pelagic realm of the oceans. Planktic foraminifera can provide critical bio- and chronostratigraphic information, and as such, need to be treated with some respect! For example, I have trouble, when mowing my lawn to regard my grass (and weeds!) as relatives of planktic foraminifera.

Good luck in your new, important position as Editor of the HGS *Bulletin*.

Sincerely,

Drew Haman
Katy, Texas.

Geoscience Center for Houston?

by ***Tom Fulton***

Our youth need encouragement to study science and to know more about the oil industry. Having been taught the some basics of earth science prior to being exposed to the science of finding petroleum is a distinct advantage. A Geoscience Center that gives equal attention to both geology and geophysics offers a wonderful educational opportunity for field trips and tour groups for everyone from K-12 students to industry professionals. This center can also provide much-needed geological and geophysical outreach materials to area schools. This is a step beyond the recent British Petroleum A-Plus For Science project which benefited science teachers. The planned program will assist teachers in reaching and influencing K – 12 students.

A Geoscience Center that gives equal attention to both geology and geophysics offers a wonderful educational opportunity for field trips and tour groups for everyone from K-12 students to industry professionals.

The Center is envisioned to be supported by the HGS and GHS. In addition, the UT Bureau of Economic Geology has provided space in their Houston Research Center on West Little York in west Houston. The space currently houses a small display of geophysical instruments and models, including a model of a seismic acquisition vessel. The display also includes core, cuttings, outcrop samples, thin sections, etc. This site is suitable for tours of K – 12 students to see rocks that contain petroleum and the geophysical instruments used to find it. Our anticipated targets are 4th & 5th graders to interest them in earth science just as they are being exposed to it in their schools, and 8th and 9th graders to raise awareness of the many earth science career opportunities.

The Center is modeled after the highly successful Society of Exploration Geophysicists (SEG) Geoscience Center in Tulsa. Although there are various pieces of equipment on display, the SEG center is not a museum. In fact much of the center is virtual, with online exhibits of some 144 instruments donated by companies and individuals. The virtual format allows access to layers of increasingly more complex information. The six year old center reaches over 3400 students annually. The emphasis is most definitely "hands on," and features rock identification and science demonstrations where each student is expected to participate. Susan Henley, the director, says that the geology portion started with her son's rock collection and has grown in scope and individual involvement to the extent that each student 'tastes' rock salt in the rock identification exercise, for example..

Perhaps the Geoscience Center in Houston would be an excellent place to display and use your rock collection in a training environment. Both the allotted space and content will be about equally distributed between geology and geophysics. The Museum Committee is the current GSH sponsor because of our tax situation and ability to provide equipment and displays. We hope to work with similar HGS committees to expand the offerings.

Individual programs/experiments are developed at the SEG and adapted from other sources such as the American Petroleum Institute and Project Learning Tree's "Energy & Society". The Energy & Society program seeks to increase awareness of teachers, K – 8 students and their parents about the critical links between energy and their daily lives. We plan to interface with HISD, teachers associations, the Houston Museum of Natural Science, the Children's Museum and other groups. The BEG's Houston Research Center is providing a place to start. Volunteers and contributions can help us realize our dream and make the Geoscience Center a major resource for our community. Please contact Tom Fulton (281-242-1806 and etinsl@alltel.net) with your ideas. ■

SIPES Houston Chapter 2006 Continuing Education Seminar

New E & P Opportunities—Case Studies, Bypassed Pays, Unconventional Resources And Play Openers

Tuesday, October 10, 2006

This full-day seminar will focus on active clastic and carbonate plays of onshore Texas and Louisiana. Presentations will include recent field development case histories, results of new technologies and advancements ranging from depositional concepts to reservoir definition, and unconventional resource plays. Cores of important reservoirs will be on display to enhance understanding of the relationships between these new concepts and the reservoir rock.

Presentations and Speakers

What Makes a Good Prospect?	Daniel Tearpock or associate	SCA
Future Plays, Bypassed Play—Life in a Post-Brightspot Era	Tom Ewing	Frontera Exploration Cons.
The Barnett Shale	Bob Loucks & Steve Ruppel	UTBEG
Discovery of Sligo Field	Mike Geffert	Greystone Petroleum LLC
Structural Controls on Porosity Evolution in Jurassic-Cretaceous Carbonate Plays	Jeffrey Dravis	Dravis Interests Inc.
Exploration for Thrombolite Buildups and Associated Facies, Northeastern Gulf of Mexico	Ernest Mancini	University of Alabama
3D Karst and Reservoir Geometry and Continuity in Eastern Margin of Midland Basin	Paul Lake	Repsol
Eastern Shelf of Midland Basin Exploration	Frank Brown	UTBEG
Evaluating Unconventional Reservoirs	Pat Leach	Decision Strategies
Brookshire Field Bypassed Pay	Ray Blackhall	Cosara Energy
Frio Core from Corpus Christi Bay	Ursula Hammes	UTBEG
Delta Models and Exploration	Janok Bhattacharya	University of Houston
Anatomy of a New Field Discovery (S. TX Vicksburg)	Mike Lucente	LMP Exploration

The seminar will be held at the Marathon Oil Corp. Conference Center, 10th Floor, 5555 San Felipe (at Yorktown). Registration includes a Binder and CD of the Proceedings; a Continental Breakfast 7:30-8:30 a.m.; Seminar 8:30 a.m-5:00 p.m. with Luncheon and Refreshments. Attendance can count toward professional development hours (PDH) required for licensed Texas Professional Geoscientists. Membership in SIPES is not required.

For Registration or Advertising information, please contact SIPES Houston Chapter
2006 Continuing Education Chair Bob Hickman at rghickman@earthlink.net or 713-868-3559

Registration

Pre-Registered by October 3	$ 175 for SIPES Members	$ 200 for Nonmembers
After October 3 (space available)	$ 225 for SIPES Members	$ 250 for Nonmembers

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Residual Stress

by ***John C. Lorenz,*** *Sandia National Laboratories, Albuquerque, NM*

Abstract

Residual stress, that component of the total stress that is locked into a rock and remains when all applied or boundary stresses are removed, becomes incorporated into sandstone reservoirs when sand grains are elastically compressed during burial and then locked into that deformed condition by a matrix framework created by diagenesis and cementation. Subsequent changes in the external confining stress conditions, during changed tectonic or thermal regimes or during uplift and exhumation, remove the external stress, but the sand grains remain elastically deformed as some of the compression in the grains is transferred to, and compensated by, equal but opposite tension in the cement and surrounding matrix. As a component of the total stress, residual stress has the same effect on a reservoir as an active stress, controlling the orientation of hydraulic fractures and the dynamics of natural-fracture permeability, and it is commonly difficult to distinguish from an active in situ stress. Residual stresses can also be locked into rock during changes in the thermal environment, when differential expansion or contraction (of mineral grains, and/or of interlayered beds or regions within beds of differing compositions) causes the buildup of elastic stresses that are internally balanced by volume constraints and intergranular locking.

Introduction

Residual or locked-in stresses—those stresses which are a cemented-in, potential-energy, elastic strain memory of an earlier stress system in the rock—can be as important to reservoir management as active stresses because they may reach magnitudes as high as 14,500 psi (e.g., Gay, 1975). This paper presents a synthesis and summary of the concepts and effects of residual stresses and offers several examples.

The realization that stress can be locked into materials probably came first at the practical level during quarrying operations centuries ago, when mine floor popups and the often dangerous and sometimes fatal rock bursts had to be anticipated and accommodated during quarry operations. Similarly, residual stresses are often cited as one of the causes for the need to add roof bolts to the backs of mines, and for spalling of rock off tunnel walls. Residual stresses have also long been known in metal casting, where some parts of a poured cast cool and solidify faster than others, causing local tensions and compressions in the material that must be relieved by a slow, uniform re-heating and cooling of the unit after it comes out of the mold. The ability to measure such stresses was developed well after they had been recognized, although Olsen (1957) indicates that measurements of locked-in stress magnitudes were made in rock as early as 1932, when rock was excavated from the canyon-wall sandstones for the construction of Hoover Dam.

Residual or locked-in stresses—those stresses which are a cemented-in, potential-energy, elastic strain memory of an earlier stress system in the rock—can be as important to reservoir management as active stresses.

Much of the research on locked-in stress in sedimentary rock was done in the 1960s and 1970s, coming out of the Shell rock mechanics research lab and the geology department of Texas A&M University (e.g., Friedman, 1972), with less frequent contributions from other well-known names in the field (e.g., Price, 1974; Voight, 1974). Although little basic research has been published recently, measurement techniques continue to be refined so that residual stresses as small as 1 MPa (145 psi) can now be detected (Pintchovius et al., 2000).

Theory

Residual stresses in rock are created in several ways. The process of greatest interest to the hydrocarbon industry is where sediment is cemented into rock under anisotropic confining stresses and then released from compression. Engelder (1993) offers the analogy that residual or locked-in stresses in sedimentary rock are similar to prestressed concrete, where tensile stress in one component of the composite material is counteracted and maintained by compressive stress in another component. For prestressed concrete, steel cables or rods are stretched, and, while they are held under tension by an external stretcher, that stretch is locked in place by pouring concrete over the cables and letting it cure. When the external tension is removed, the stretched cables cannot relax completely because relaxation is counteracted by the concrete: an internal force and balancing counter force are set up.

This is relatively easy to visualize for sandstones, where the individual grains of loose sand become compressed against each other during burial and/or tectonic compression, much like two rubber balls being manually pushed together by an athlete to create a flat zone of bounce-back pressure at the point of contact (Figure 1). In a sandstone, excessive compression would of course cause grain-contact pressure solution and a chemical release of the elastic energy (e.g., Billingsley, 2005), or grain cracking and a physical energy release, but below a certain threshold of pressure and temperature, the grains, like the rubber balls, will spring back elastically to their original shapes when the external pressure is released. However, if the grains are held in the compressed condition at depth, the elastic

Residual Stress *continued on page 31*

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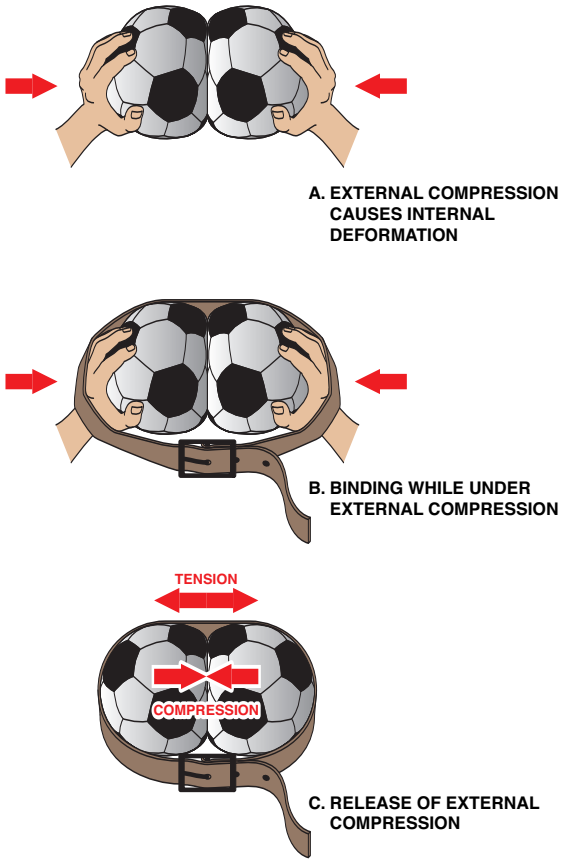

component of that deformation can be locked into place in the rock by the cement and matrix framework created by diagenesis and cementation (e.g., Bradley, 1963; Gallagher et al., 1974; Friedman, 1972).

This is not evident and in fact is largely irrelevant as long as the rock remains buried and under external compression, i.e., as long as the athlete keeps pushing the two balls together. However, when the sandstone is uplifted and exhumed, or when tectonic compression ceases or changes, the elastically compressed grains start to relax and expand. Some of that expansion is prevented, locked in as a residual compressive stress, by the cement that now surrounds the grains, much as if a belt had been wrapped around the two balls, holding them tightly together before release by the athlete. Some of the stored elastic strain is relieved and transferred to an equal but opposite strain in **Residual Stress** continued on page 33

Figure 1. Schematic of one mechanism for creating locked-in stress. A: External compression (hands, asymmetric basin subsidence, or a nearby thrust belt) causes elastic deformation of grains at the points of contact. B: While being held together by the external compression, the grains are bound together in the compressed state (by a belt, by cementation). C: Removal of the external compression (uplift, cessation of thrusting) does not allow a full relaxation of the elastic deformation because it continues to be held in place by tension in the binding agent (cement, a belt), forming an internally balanced system with unreleased potential elastic strain energy.

Residual Stress continued from page 31

the cement, and an internally balanced system of unrelieved compression and tension is set up. If the cement is dissolved, the residual stress in the rock is released (Friedman, 1972). This system, initial compression in sand grains that is opposed by tension in the cement, is in a sense the opposite of the prestressed concrete example, where initial tension is compensated by compression. Nevertheless, the end result, an internally balanced, tension-compression couple, is similar.

This phenomenon has been demonstrated by laboratory experiments where artificial rocks have been cemented together under confining stresses (e.g., Gallagher et al., 1974; Lajtai and Allison, 1979; Rathore et al., 1989). Because the confining pressures in these experiments were anisotropic in order to simulate the common geologic condition of overburden loading combined with asymmetric tectonic forces, the component grains were elastically compressed more in one direction than the other two. When the external compression was released in these experiments, the grains subsequently expanded more in the direction of previous maximum compression than in the other two directions, providing the basis for the strain-relief method for determining in situ stress.

Limestone does not retain residual stresses as easily as sandstone because limestone is more ductile than sandstone under the same pressure and temperature conditions (see Griggs and Handin, 1960). Internal stresses in limestones are dissipated in part by this ductile creep, and in part by the twinning of the component calcite crystals, more easily accommodating strain so that elastic strains do not accumulate. Finally, limestone is more soluble, more susceptible to pressure solution, so that residual stresses in limestones can be dissipated chemically at lower pressures than in sandstone.

Thermal residual stresses can be more complicated. Rocks expand and contract with changing temperatures, thus changing the depth of burial and the surrounding temperature of a rock can set up the potential for internal stresses due to volume constraints. Engelder (1993) suggests that rock can behave plastically during heating but can be ductile during cooling, and that stress can be locked into the rock in this way because grain arrangements that are in stress equilibrium in a rock at one temperature may not be at another. Thermal strains may even become sufficiently large to create fractures in rock (e.g., Billingsley, 2005). Russell and Hoskins (1973) present measurements showing that test samples of granite can change size by 0.07% during a change from 0° F to "room temperature," and Haxby and Turcotte (1976) report that limestone and sandstone exhibit about 0.001% strain per degree centigrade change in temperature. These authors also note that the volume change **Residual Stress** continued on page 35

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Residual Stress continued from page 33

in sandstone is about 20% larger than that for limestone, thus bedding-plane slip and/or locked-in stresses between beds can be set up in an interbedded sandstone-limestone system merely due to temperature changes.

Some minerals expand or contract more than others, thus internal stresses can also be set up along the crystallographic boundaries when a multimineral rock such as granite cools from a melt (e.g., Engelder, 1993) or even when it changes temperature because quartz expands and contracts three to five times more than calcite and feldspar. The stresses created by differential expansion are largely locked-in because of interlocking crystals and volume constraints. Finally, some minerals expand/contract a different amount depending on which crystallographic axis is measured. Quartz, for example, expands nearly twice as much in the direction normal to the C axis as it does parallel to that axis during temperature changes, although the importance of differential expansion along crystallographic axes is probably minimal in sandstones where the quartz grains are randomly oriented.

Measurements of residual stress magnitudes are subject to interpretation, as it is not always clear whether a reported stress magnitude is from a residual or present-day stress or both. Friedman (1972) reported measured residual stresses ranging from 100 bars (1500 psi) in granite to 205 bars (3000 psi) in Weber Sandstone at the Rangely Dome in Colorado, and as large as 700 bars (12,000 psi) in some siltstones. Both White (1946) and Olsen (1957) measured residual "expansion forces" in the range of thousands of psi in granites and sandstones, and Gay (1975) reported residual stresses in both igneous and sedimentary rocks with magnitudes up to 100 MPa (14,500 psi).

These magnitudes are not unreasonable: although the elastic energy stored in individual sand grains is miniscule, the combined energy of the tens of billions of sand grains found in a cubic meter of sandstone is significant. Friedman (1972) reported that stored strain energy levels due to locked-in stresses are on the order of 104 ergs per cubic centimeter of rock (about 240 calories per cubic meter). Given geologic time, the general weakness of rock and the large volume of rock in geologic systems, this is sufficient energy to affect the strata when confining stresses are released or pore pressures change.

Field examples

The characteristics of locked-in stresses are essentially the same as those of stresses caused by active compression or extension, therefore without detailed measurements it is often difficult to distinguish between an active and **Residual Stress** continued on page 36

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a residual stress. Because residual stresses are stored elastically, a formation that has been stressed can retain a memory of that stress for hundreds of millions of years (Friedman, 1972; Gay, 1975). Even areas that are presently tectonically inactive can have anisotropic horizontal stresses at depth, locked in during previous tectonic events, or stress axes that are no longer oriented in the vertical and horizontal planes due to folding of the strata after stresses were locked in. A residual stress can be determined to exist where the stress axes are not vertical and horizontal, where there is an excessive stress magnitude (i.e., greater than can be accounted for by present tectonics or the overburden) or where a differential stress is recognized in a tectonically quiescent area. Engelder (1993) suggests that the residual stresses measured in Paleozoic strata in upper New York state, locked in during the late Paleozoic Alleghanian orogeny, are oblique to the present-day stress system and, due to the difference in orientation, relatively easy to distinguish from it.

Another definitive example of residual stress is found in the 4000-ft-thick, interbedded sandstone, shale and coal Mesaverde Group in the Piceance Basin of northwestern Colorado. Tests conducted during the US Department of Energy's Multi-Well Experiment in the Piceance basin during the early 1980s showed that the in situ stresses in shales and coals of this formation are isotropic and equivalent to the weight of the overburden (Figure 2) (Warpinski and Teufel, 1989), meaning either that these rocks have never been anisotropically stressed, which is unlikely in a basin surrounded by basement-involved thrust faults, or that any stress anisotropy created by a historic horizontal compression or extension has been released during viscous relaxation over time. In contrast, measurements of the in situ stresses in the interbedded sandstone layers showed that 1) the two present-day horizontal stresses in the sandstones are unequal, differing by about 600 to 800 psi and that 2) the horizontal stresses in the sandstones are less than the weight of the overburden (Warpinski and Teufel, 1989).

The last time these strata were subjected to anisotropic horizontal compression was during burial and Laramide tectonism 80–40 million years ago (Lorenz and Finley, 1991), thus any stress anisotropy must be relict from that era. The strata have been uplifted as part of the Colorado Plateau, but there is no evidence for anisotropy in whatever horizontal strains may have developed during this event. Because the shale lithologies are currently relaxed to an essentially fluid condition, they do not carry and therefore cannot be transmitting an anisotropic horizontal stress to the interbedded sandstones, which are discontinuous, lenticular bodies floating within the shales. Because an active anisotropic horizontal stress cannot be transmitted through isotropically stressed shales to the sandstones, the stress anisotropy measured in the sandstones must be a residual stress, relict from an earlier tectonic compressive event, presumably the Laramide orogeny (Lorenz and Finley, 1991). The record of that compression is preserved by the stresses locked elastically into the sandstones, but it has disappeared over time from the shales and coals. Warpinski (1989) used a five million year time constant to model the relaxation rate of shale in this basin.

Similar conditions have been reported by McLellan (1988). Although the data presented in McLellan's paper were not used to infer that the measured stresses are residual, that is the most plausible way to interpret them. McLellan indicates that stresses measured in shales of the Cardium **Residual Stress** continued on page 41

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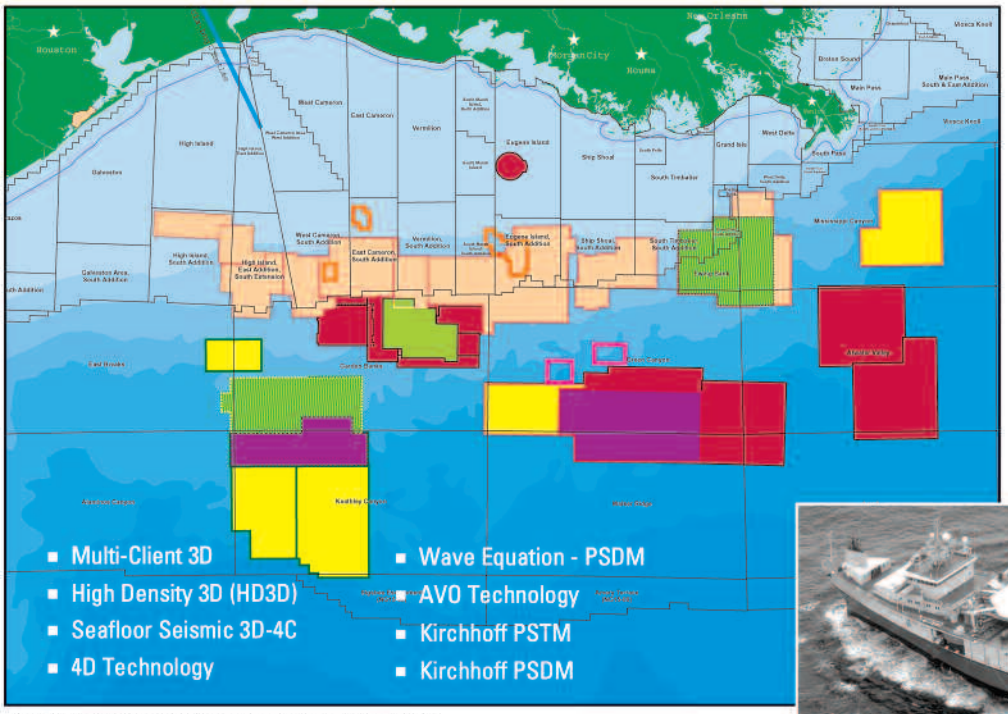

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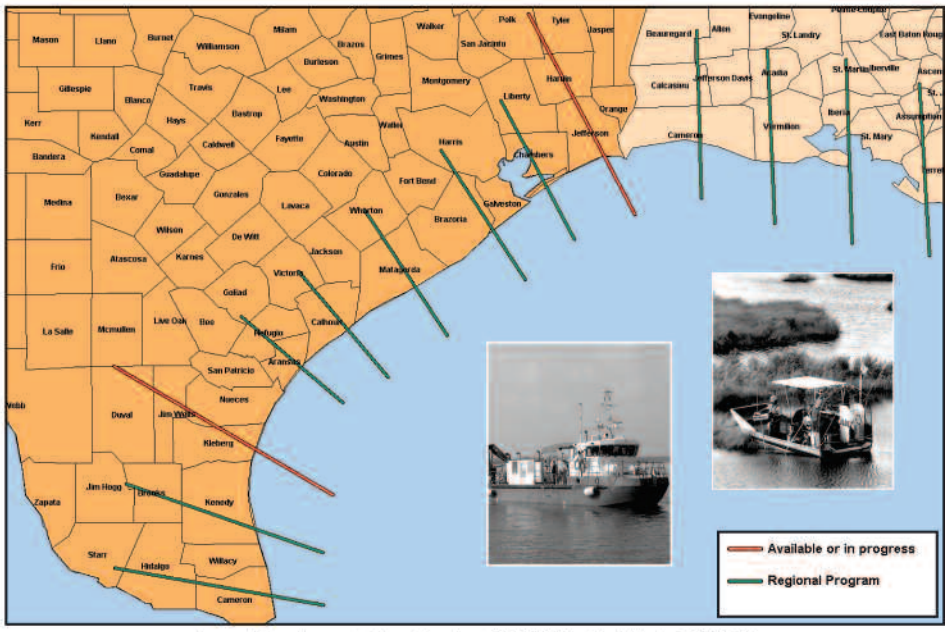

For more information contact James Bogardus at 281-509-8124 or Chuck Ward at 281-509-8380

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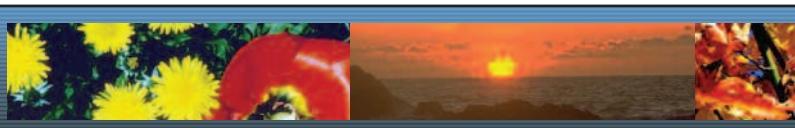

Sunday	Monday	Tuesday	Wednesday
	NOW you can make your reservations on-line at www.hgs.org	**Reservations:** The HGS prefers that you make your reservations on-line through the HGS website at www.hgs.org. If you have no Internet access, you can e-mail reservations@hgs.org, or call the office at 713-463-9476. **Reservations for HGS meetings must be made or cancelled by the date shown on the HGS Website calendar, normally that is 24 hours before hand or on the last business day before the event.** If you make your reservation on the Website or by email, an email confirmation will be sent to you. If you do not receive a confirmation, check with the Webmaster@hgs.org. Once the meals are ordered and name tags and lists are prepared, no more reservations can be added even if they are sent. **No shows will be billed.**		
3	4	5 **HGS Executive Board Meeting**	6
10	11 **HGS General Dinner Meeting** by Robert Daniels *"Winning with Strategy: Leveraging Position, Access and Opportunities in the Gulf of Mexico"* Page 9	12 **HGS/PESGB 5th Annual Africa Conference** London, U.K. Page 19	13
17	18 **HGS Annual Golf Tournament** Page **HGS International Explorationists Dinner Meeting** by Cathy Farmer *"Boqueron Field, Venezuelen"* Page 13	19 **HGS Northsiders & North American Explorationists Joint Luncheon Meeting** By Peter Bartok *"New Insights into the Geologic Development of Reforma, Southern Mexico"* Page 15	20
24	25 **GCAGS/GCPE 56th Annual Convention** Lafayette, Lousiana Page 60	26	27 **IQPC Seminar & Workshops** London, U.K. *"Carbonate Reservoir Prediction, Modeling & Stimulation"*

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GeoEvents

Thursday Friday Saturday

Members Pre-registered Prices: General Dinner Meeting .....$28 Nonmembers walk-ups..... $35 Env. & Eng. .....$25 Luncheon Meeting .....$30 Nonmembers walk-ups..... $33 International Explorationists .....$25 North American Expl. .....$25 Emerging Technology $25	1	2
7	8	9
14	15	16
SIPES Luncheon Meeting by Bob Lieber *"The Role of Petrophysics in the World of the Independent: "*Page 17 **HGS & NeoGeos Dinner Meeting** by Petroskills staff *"Career Development Workshop"* Page 59	22	23
28 **Continuing Education Course** by Gary Citron & John Howell *"Risk Analysis and Portfolio Concepts for Managers"* Page 16	29	30

Upcoming GeoEvents

Saturday, October 7
Earth Science Week: Annual Family Festival *Houston Museum of Natural History, page 23*

Monday, October 9
HGS General Dinner Meeting *Norphlet Aeolian Dunes in the DeepWater Gulf of Mexico, Ted Godo*

Tuesday, October 10
Environmental & Engineering Dinner *Case Examples and Remediation of Dense Non-Aqueous Phase Liquid (DNAPL) Sites, Bruce Manchon*

Saturday, October 14
Field trip to Galveston Island State Park, *page 23*

Sunday, October 15
Field trip to view building stones of downtown Houston, *page 23*

Monday, October 16
HGS International Explorationists Dinner *Worldwide Reality Check of Seals and Sealing Models, José Guzmán*

Tuesday, October 17
Northsiders Luncheon

Thursday, October 19
NeoGeos Etiquette Dinner

Monday, October 23
North American Explorationists Dinner *Distinguishing Shorefaces Versus Delta Fronts in the Rock Record, Janok Bhattacharya*

Wednesday, October 25
HGS Luncheon Meeting

color

Residual Stress continued from page 36

Formation in the Wapiti Field of Alberta are isotropic and of a magnitude that is consistent with an interpretation that they are supporting the overburden in an essentially fluid fashion. However, stresses measured in the interbedded sandstones are anisotropic, and in fact are greater in magnitude than those required to support the overburden, suggesting that they are residual stresses locked in during conditions of high tectonic compression and deeper burial. This is supported by the orientation of the maximum horizontal stress, which trends NE-SW and normal to the Rocky Mountain front, from which a horizontal compressive stress was most certainly derived when it was an active thrust belt. Coupled with the lack of stress difference in the shales, this measurement suggests the stress is residual.

Relevance/Application

Locked-in stresses can be one of the controls on natural fracture orientations when younger stresses are superimposed on a formation (e.g., Friedman and Logan, 1970), so predictions of subsurface fracture orientations based on tectonic reconstructions must take into account the compound geologic history of a region. Residual stresses are also critical to quarry and tunnel operations, where the release of external confining stresses allows the stored stresses to create destructive rock bursts (Olsen, 1957). Laboratory experiments suggest that splits form normal to the maximum confining stress when artificial rock cemented under anisotropic confining conditions is released from confinement (Lajtai and Alison, 1979; Rathore et al., 1989). Partial release of the stored stresses causes anisotropic expansion of the rock along the direction of the maximum locked-in stress, creating numerous sub-millimeter-scale splits (microcracks) normal to that direction. The rock is more easily cut along than across the splits, spawning the quarry workmen's "rift" vs. "hardway" terminology.

This is the same mechanism that underlies the technique for determining in situ stress orientations and magnitudes with Anelastic Strain Recovery measurements on newly recovered cores from oil wells and for determining strain orientation from archived cores with sonic transit-time measurements along different directions across the diameter of the core (Teufel, 1982; Hill et al., 1994). There has always been discussion of whether or not similar microfractures can be caused by an active in situ stress anisotropy before the rock is cut free and released from the confining stress, and, in fact, preexisting fractures, which would be oriented normal to stress-release splits, may explain some of the ambiguous results obtained from these tests (e.g., Queen and Rizer, 1990).

At the larger, meter scale, locked-in stresses may cause many of the younger outcrop cross-fracture patterns, formed during uplift and exhumation (e.g., Reik and Currie, 1984), especially where the cross fractures are not present in the nearby subsurface. Bradley (1963) suggested that the more quickly a rock was released from confining stresses the more likely the locked-in stress would be to cause fracturing, but without much data to back up this suggestion.

In the subsurface, residual stresses control hydraulic fracture orientations in the same way active stresses do. At the Multi-Well Experiment site described previously, the west-northwest-trending maximum horizontal (residual) compressive stress causes hydraulic fractures to propagate along planes parallel to that trend in the Mesaverde reservoir sandstones.

The magnitudes of residual stresses, since they are relict from active stress systems and are partially released and compensated by tension in the cements, should be lower on average than the magnitudes of active stresses, but no data base exists to confirm or refute this. If so, however, the lower anisotropies of residual stresses should exert somewhat less constraint over hydraulic fracture propagation than the typical active stress.

The Multi-Well Experiment data also suggest that locked-in stresses behave much the same way as active stresses in terms of changes in pore pressures and the total stress in a system. Reduced pore pressures cause an increase in the net external confining stresses, which tend to squeeze shut the natural fractures and shut down system permeability. Therefore, it is important to anticipate the possibility of locked-in stresses **Residual Stress** *continued on page 43*

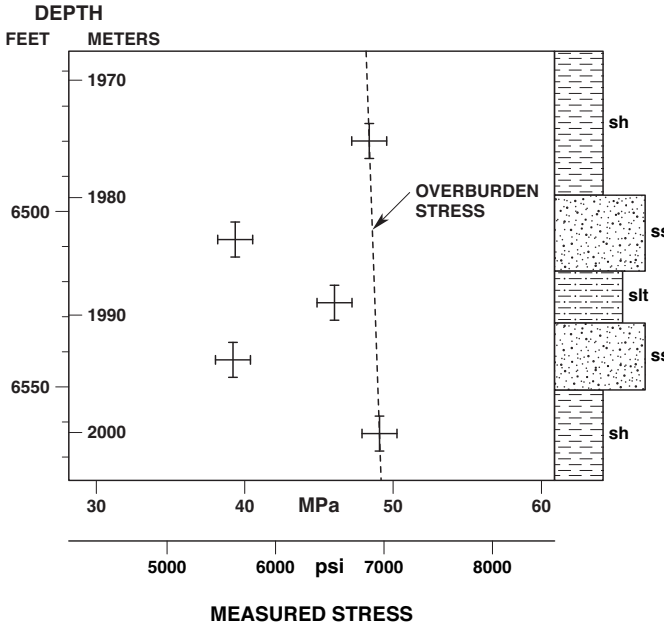

Figure 2. Summary of the relationship between measured stress and lithology in Mesaverde strata at the Multi-Well Experiment site in the Piceance basin, Colorado (see Warpinski, and Teufel, 1989, for more detail). Stresses in the shales are at overburden values, indicating that the ductile shales have relaxed and must support the weight of the overburden, whereas the rigid framework structure of the sandstones supports some of the overburden, leaving stress in the sandstone at a lower value. (Figure provided by N.R. Warpinski).

 continued from page 41

and stress anisotropy in geologic provinces that have had a compressional structural history even though they are currently tectonically inactive and to recognize that overprinted stress systems are possible in structurally complicated areas. A compound structural history can complicate geologic interpretations: Gay (1975) reports measurements of residual stresses that are no longer symmetrical to the present-day vertical and horizontal axes, while Friedman and Logan (1970) suggest that residual stress can control the orientations of natural fractures that form under later superimposed stress conditions.

Summary

Residual or locked-in stresses can be caused by thermal changes or, more important to the oil and gas industry, by the cementation under compression of elastically deformed grains into sandstones. Published laboratory experiments have corroborated field observations such as the measurement of anisotropic stresses in sandstones embedded in isotropically stressed shales. This condition indicates that the anisotropic stresses must be residual stresses, locked in by a framework of cement surrounding elastically deformed sand grains. Residual stresses of up to 14,500 psi have been reported (Gay, 1975) and are capable of controlling hydraulic fracture orientation as well as the dynamics of fracture permeability. ■

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Residual Stress *continued on page 45*

Residual Stress continued from page 43

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Acknowledgments

Lively discussions over the years with Randy Billingsley and Bill Rizer have helped to define the arguments presented here. Norm Warpinski graciously permitted the use of Figure 2. Mona Aragon drew up Figure 1 from half-baked sketches. This manuscript has benefited from reviews by Scott Cooper, Bill Rizer, and others.

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New Message Board

*by **Dianna Phu,** NeoGeos Chairperson*

A new message board is available on the HGS website for the use of the HGS community. The online forums can be accessed at (www.hgs.org) by

1. placing the mouse over "HGS Forums" in the Navigation Panel on the left of the Homepage
2. selecting "HGS Forums" from the expanded menu that drops down,
3. and choosing Option # 2, The phpBB Forums, from the list,
4. or by accessing the board directly at http://www.neogeos.org.

Anyone can view the contents of a forum, unless it is restricted. Users must register if they want to post comments or to have access to the private messaging system or other features.

Committee Chairs—Use the Board.

- Promote discussion of topics relevant to your committee.
- Post announcements for meetings and events.
- Discuss your agenda.
- Get feedback after an event.
- Gather ideas for future events.
- Simply chat about whatever you want.

The message board has an easy-to-use graphical interface that walks you through the registration and message posting process. It has several features that can enhance communication within the group and within the community. The board has features that allow the user to set up polls to find out your members' opinions on various topics; include hyperlinks to onsite and offsite resources, for example a site to register for an HGS event; include pictures in posts; include pictures in the area where your username is shown (called an avatar) or in your signature. Each registered user has control over his/her own profile. Users can adjust and personalize settings for email notifications, privacy, time zones and signatures. If there are many discussions, announcements or questions that focus on a specific issue, a separate forum can be created by the Web master. If the interest exists, do not hesitate to request a new forum.

Usergroups can be set up by request. Usergroups can make use of bulk mail features associated with the private messaging system, group statistics and forum access. Usergroups can be open to the public or they can be restricted, requiring an authorized person to add users. We welcome your feedback or whatever questions you may have about this feature!

An active message board can add tremendously to the communication within an organization as large as the HGS. Try it out and encourage others to use it! Don't be shy about asking for help or making! ■

HGS Welcomes New Members

Effective August 2, 2006

EMERITUS MEMBERS
David Callaway

ACTIVE MEMBERS
Robert Angel
Lyle Baie
Amanda Baker-Fortenberry
Richard Bast
Andre Boullion
Brian Brennan
Tony Carollo
Charles Cusack
Danielle Deemer
Pierre Orly Dupont
Rajendra Eti
Abato Garza
Brantly Goodwin
Peter Hansen
John Helms
David Heroy
Chris Huenink
Matthais Imhof
Keith Mahon
Michael Mazzella
Bret McDaniel
Tom Miskelly
Elliot Pew
Jarrett Pierce
Patrick Rutty
Ken Schwartz
Paul Sivon
Venkata Tadikonda
Rudy Wildenstein

ASSOCIATE MEMBERS
Lesley Byatt
Johathon Funk
Steven Wright

Welcome New Members

Thanks GCAGS

Board members of the Houston Geological Society's scholarship funds, namely the HGS Foundation Fund for undergraduate students and the Calvert Memorial Fund for graduate students, express their appreciation to the Gulf Coast Association Of Geological Societies (GCAGS) for providing matching funds for our scholarship programs this past year.

As enrollment in geoscience programs increases at our colleges and universities, and as tuition and fees increase far beyond annual rates of inflation, the need for scholarship monies to support needy and well-deserving students increases. The matching funds have enabled us to maintain the number of scholarships and their amount for the coming academic year. We especially appreciate this gesture in a year when GCAGS experienced a loss of revenue due to Katrina-caused cancellation of its annual meeting scheduled for New Orleans.

Vendor Corner Recognition and Thanks

The Houston Geological Society (HGS) would like to recognize and thank the many vendors who demonstrated their financial support through providing "Vendor Corners" during the many evening technical meetings. These are the folks who provide poster session displays of their company's products, studies or services. They provide a great focal point during the social hour for the attendees to the meeting.

As a result of last year's Vendor Corners, the HGS recently sent checks for $2875 each to the Geoscience Technology Training Center of the North Harris Montgomery Community College and to the HGS Foundation Fund (Undergraduate Students). Make sure that you recognize their contributions, and thank them, when you see them at our meetings.

The HGS would like to thank the following:

A2D Technologies
Baseline Resolution Inc.
CGG Americas Inc.*
Charles Schwab
Dickson International Geosciences*
EarthField Technology
Fugro Robertson, Inc**
Fugro Airborne Surveys**
Genetek Earth Research Corporation
Geochemical Solutions International*
IHS Energy Group
Knowledge Reservoir*
Loren & Associates
Micro-Strat Inc.*
TGS-NOPEC Geophysical Company

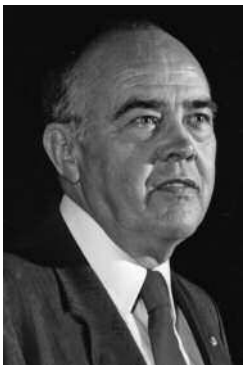
*Hosted more than one Vendor Corner
**Most Active Supporter of HGS Vendor Corners

NOTE: If your company would like information about hosting a "Vendor Corner" during the upcoming HGS 2006-2007 year, please contact Paul E. Babcock @ 713 890-3603 or pbabcock@pecorp.com.

Remembrance

James Otis Lewis, Jr., 1922-2006—A Life of Involvement

by ***Arthur E. Berman***



Jim Lewis passed away peacefully at his weekend home in Washington County on June 2, 2006. Jim was dedicated to his family, friends and geology. His life was full of extraordinary accomplishments in the petroleum field. He was President of the Houston Geological Society (HGS), the American Association of Petroleum Geologists (AAPG) and the Society of Independent Professional Earth Scientists (SIPES), holding honorary life memberships in each. A successful independent oil finder in southwest Texas, Jim was recognized for his intellectual and scientific achievements as an AAPG Distinguished Lecturer and recipient of the A. I. Levorson Award. He received several Distinguished Service Awards, chaired numerous conventions, and remained involved in the leadership of the professional societies that he loved throughout his life.

In addition to a long list of impressive professional accomplishments, he believed what really matters in life are your family and friends. Jim and his wife Gwinn had seven children and 14 grandchildren. Jim made friends everywhere he went and maintained his "lunch bunch" group of life-long friends until the day of his passing, when he and his great friend John Amoruso were scheduled to meet.

James O Lewis, Jr. was born in Owensboro, Kentucky, in 1922. His earliest interest in geology began when he was six listening to his father, a school teacher, talk about outcrops near his home and visiting wells with an uncle who was in the oil business. He entered the University of Kentucky, but his studies were interrupted by World War II. He served in the U.S. Navy for three years before returning to complete a B.S. in mechanical engineering and an M.S. in geology in 1949.

According to Amoruso, Lewis wanted to work for a mining company, but when he learned that oil companies paid more, he accepted a job with Magnolia Petroleum Company and moved to Houston where he began a long career working Texas and the Gulf Coast. In 1950, he joined P.R. Rutherford, a Houston independent oil and gas producer, where he met his future wife, Gwinn McMahan, a fellow geologist. In 1955, he set up his own offices as a consultant and independent petroleum geologist. In 1957, he found his first production from a serpentine plug with the discovery of the Torch Field in Zavala County, Texas. He continued working in south Texas where he drilled and operated many successful wells. His particular love of southwest Texas was the focus of the company he later established, Retama Oil Corporation.

Jim was a practical, hands-on person. He liked to fly his plane to south Texas so he could monitor and maintain his producing wells. He had an outstanding collection of logs, well files and scout tickets in his office and was glad to share with others. A geologist once asked if he could use Jim's files. Jim said he could but to please leave him a list of what he had borrowed. The geologist replied that he would not because that would give away the area he was investigating. After that, Jim always said, "If anyone wants to steal a map from me, go ahead, but leave one of yours for me!"

When I was Editor of the HGS *Bulletin* a few years ago, Jim Lewis called me one afternoon to say how much he looked forward to getting his *Bulletin* in the mail. He said he would like to meet and discuss a number of topics, but that I would have to pick him up because his sight was deteriorating and his wife refused to let him drive. When I met him, he was wearing what I later learned was his signature guayabera shirt. He suggested we eat at his favorite lunch place, a Vietnamese restaurant called Nam on Westheimer. We ate there every month for the rest of his life.

At that meeting he asked me what I knew about the Wilcox play that was going on in the Walker Ridge and Alaminos Canyon areas of the deepwater Gulf of Mexico. I told him Josh Rosenfeld's theory about a major sea-level drop in the late Paleocene-early Eocene caused by the suture of Cuba and Florida. Jim was so excited that he practically came out of his chair. He said, "I have believed that there had to have been a drawdown in the Wilcox since my early exploration **Jim Lewis** *continued on page 53*

Jim Lewis continued from page 51

days in south Texas, but I would not have suspected such an ingenious mechanism!"

Jim asked me if I knew how the HGS *Bulletin* came to exist. I answered that I did not. He explained that soon after the AAPG decided to have its national meeting in Houston in 1923, some of the meeting's organizers discovered an AAPG bylaw that required that the host city have a local AAPG chapter. Houston had an informal group of "rock hounds" who met socially at the old Bender Hotel in downtown Houston, but this was hardly a formal AAPG chapter. In the summer of 1923, Donald Barton and the Rycade Oil Corporation began monthly lunch meetings at the University Club, above the drug store at Rusk and Main streets. John Suman, Wallace Pratt, Donald Barton and other luminaries of our profession somewhat hastily founded and chartered the Houston Geological Society just in time for the annual meeting later that year.

After the 1923 AAPG meeting, Jim explained, one of the principal functions of the HGS was to have cocktail parties with liquor provided by the organization. With the coming of economic hard times in the 1930s, the Society determined that it needed some means to raise money for its cocktail parties. Someone suggested that the HGS publish a magazine and that the increased dues could be used for alcohol! "So you see what kind of a proud heritage you are now part of as HGS *Bulletin* Editor?" Jim laughed.

Every subsequent time we met for lunch, Jim would bring another heirloom of HGS or AAPG history because he knew that, like him, I loved knowing the history of our profession. I called Jim regularly as I was researching my "From the Editor" columns for the *Bulletin* for his clear, imminently practical perspective.

"I think that it's so important for geologists to belong to a society and participate in what the society does," he told me almost every time we talked.

As devoted as he was to geology, Jim loved his wife, his family, and west Texas most of all. Jim's love of West Texas went beyond his professional interest, though he wrote several fine papers about the geology of that region. The stark beauty and serenity of the area brought him a peace that he found nowhere else. He decided to propose to Gwinn while sitting a well near the Davis Mountains, and the two of them returned for their honeymoon and each summer with the family to celebrate their anniversary. Jim and Gwinn made a final trip to Ft. Davis in 2005 marking 48 years marriage. Jim's last wish was that his and Gwinn's ashes be scattered in the Davis Mountains.

Jim Lewis devoted much of his time to giving and sharing what he knew with people. He combined competency and talent, practicality and wisdom. His down-to-earth approach enabled him to participate in professional activities at every level, and he never declined an invitation to do more work. He was a man who gave his time and energy without hesitation, and did every job well. Jim was happiest and at his best when he was unconditionally engaged with people, with learning and with sharing. His was, above all, a life of involvement. ■

The Difference a Degree Makes

NASA scientists tell us that the earth has warmed about a degree in the past century, and the warming trend seems to be accelerating during the last 30 years (Hansen, 2006). While virtually all parts of the earth have warmed to some degree over the century, the most significant increases in temperature have occurred in the higher latitudes of the Northern Hemisphere (Kay, 2006). Temperatures in Alaska have warmed by 5°C in the last century causing glaciers to retreat and rain to fall in winter. Alaska and other high latitude areas are remote places far from major population centers, so the warming has gone largely unnoticed by the general population.

Further south along the Pacific coast the temperature increases have been less dramatic, but change is occurring. Biologists are noting a significant shift in fauna around Monterey Bay, from animals favoring cool water to warmer water types usually seen far to the south (Kay, 2006). Nor is this simply a demographic shift; some species low on the food chain have been seriously stressed and populations have decreased significantly. We as humans are not likely to notice these changes until the ripple effects likely to occur all along the food chain become evident. For example, we may see a sharp decrease in salmon spawning in the northwest. If these effects do occur we could see significant loss in the fishing industry all along the coast. While we really do not know the outcome, one thing is certain; we fill find out. ■

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Remembrance

Robey H. Clark

by ***Clint Moore***

Robey Harned Clark passed away suddenly Sunday morning to be with the Lord. Robey was born October 02, 1921 at Hope Plantation, Mound, Louisiana, to Margaret Harned & Alexander Clark. Robey is survived by his sweetheart and wife of 58 years, Joanne Justus Clark of Amarillo, his sons and daughters in law, Robey A. Clark of Dallas, David J. Clark and Margie of Charlotte, NC., William C. Clark and Susan of Bandera, TX, and Daniel H. Clark and Amy of Moreno Valley, CA., his brother Thomas A. Clark of Mayo, Florida and seven grandchildren; Brooke Clark of Dallas, Alena Clark of Denver, CO., Robey W., Hamilton & Daniel Clark of Charlotte, NC., Will & Sara Clark of Bandera, TX. He was preceded in death by his Father, Mother and his sister Margaret.

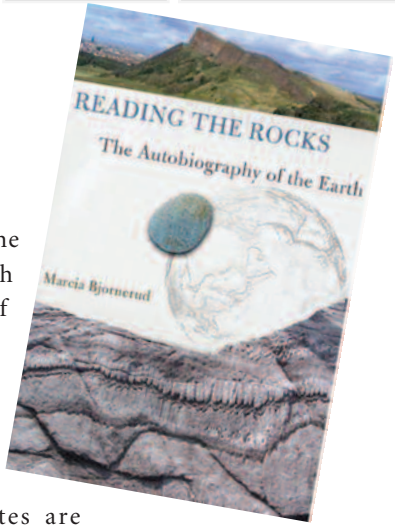
Robey attended elementary school in Mound, Louisiana and graduated from Tallulah High School, Tallulah, Louisiana in 1938. He graduated from Louisiana State University with a degree in Geology in 1943. He enlisted in the Navy during WWII and served as an Ensign & Lieutenant in the Pacific aboard several Navy LST's.

After the war, Robey worked for Magnolia Oil Company in Oklahoma City and then took a leave of absence to obtain an MS Degree in Geology at the University of Wisconsin before returning to work for Magnolia Oil which later became part of Mobil Oil Company. While attending the University of Wisconsin he met his bride of 58 years Joanne Justus of Beloit, Wisconsin. They were married in 1948 and started their life together in Lake Charles, Louisiana with transfers to New Orleans, Denver and Houston. In 1971, Robey joined Diamond Shamrock Corporation as its VP of Exploration and Production in Amarillo. He retired from Diamond Shamrock in 1982, continuing to work as a consulting geologist in Amarillo.

Robey's exploration expertise covered the Gulf Coast states, the Gulf of Mexico, the Mid-Continent, the Rocky Mountain region, Alaska, the North Sea, Australia and New Zealand. Robey believed that it was the duty of every geologist to support the science and practice of geology through its scientific and professional organizations. He was an active member of the AAPG and served terms as its secretary in 1976 and president in 1980. He was also very active with his Alma Mater, Louisiana State University, in the College of Basic Sciences. He served on the college Advisory Board for many years and was inducted into its "Hall of Distinction" in April of 2003. Robey was laid to rest at the Bolton Cemetery in Bolton Mississippi next to his father, mother & sister. ■

Book Review by George O. Chandlee

Bjornerud, M., 2005, *Reading the Rocks: The Autobiography of the Earth*, Westview Press, Perseus Books Group, 237 pp., $26.00.



A metaphor is defined by Merriam-Webster's as "a figure of speech in which a word or phrase literally denoting one kind of object or idea is used in place of another to suggest a likeness or analogy between them: figurative language." The use of metaphors can be an effective literary tool for emphasizing and driving home a point. Metaphors are tools of human language that we all use to describe events beyond our power to convey in detail or that are derived from direct experience. And that is just the purpose of subtitling this book The Autobiography of the Earth. The author uses the historical geological record of the Earth as a metaphor for a recorded autobiography of the Earth. That is, an account of Earth history as recorded, not by the written or oral word, but by messages recorded in the Earth's crust.

To many nongeoscientists the Earth's crust represents a complicated, interwoven tapestry of a very ancient history, many parts undecipherable, that is essentially irrelevant for day-to-day existence. This history, in a temporal sense, is beyond the limits of human experience. But to a geoscientist, rocks constitute the illustrated narratives, the detailed descriptions of development, destruction and reincarnation, that characterize Earth history. For more than 4 billion years the Earth has kept a detailed diary of every event that has occurred in its past, in the beach sands, volcanic deposits, riverbank muds, structural terranes and stratigraphic sections.

This book starts literally at the beginning of Earth history and explores the development of the Earth as a swirling eddy of hot gases and material from the birth of the sun. Following an exploration into the formation of the solar system and Earth, the origin of the moon is discussed.

The book offers an explanation for the origin of the moon, as understood from analysis of Earth and lunar rocks. From similarities in the crust of the Earth and moon and from other characteristics of the Earth-moon system, Bjornerud hypothesizes that the moon is the result of an oblique collision between the Earth and another planet, probably the size of Mars. Lunar rocks are very similar to terrestrial counterparts in their oxygen isotope ratios, which are as distinctive as fingerprints in identifying rocks with common origins. Yet moon rocks also differ from Earth rocks. Lunar rocks have very high concentrations of titanium and almost no water. These observations seem to contradict earlier hypotheses about lunar origins. Lunar rocks are too similar to Earth's for the moon to be a captured planet, but too different for the moon to be a twin sister or a "chipped-off" clone. The moon seems to be a mix of earthly and alien matter. The lack of water in its crust suggests that the moon has experienced an intense phase of heating, possibly the result of a collision between Earth and an unknown planet that vaporized the water in the outer layers of both planets and resulted in the lack of water in moon rocks.

Bjonerud spends time discussing the importance of chondrites, the oldest accessible unaltered material in the solar system. Chondrites are meteorites named for the tiny spherical grains called chondrules that give them a distinctive, pebbly structure that is very different from the interlocking igneous texture typical of other meteorites. Chondrules and other constituents of chondrites are older than the planets, formed when the solar system was still a fairly homogeneous cloud of gas and dust particles. This is based on close similarities between the proportions of nongaseous elements in chondrites and in the sun.

Throughout the book Bjornerud explores the concept of "deep time," the extremely long history of the Earth relative to humankind's brief tenure. The author takes the reader on an engaging tour of Earth history in simple but clear language and describes where it is stored and how much of it still remains to be discovered.

The history of the Earth is dynamic and constantly changing. So too has been the life that has existed on Earth. While life has persisted through numerous catastrophes, extinctions, periods of stability and cataclysmic upheavals, that life has constantly changed. The lessons of this history, the author argues, have serious implications for the immediate future of our planet, especially as they relate to global environmental change.

Bjornerud has written this book by developing and relying on a metaphor; that the rocks are "books" and the job of geoscientists is to "read" the books. The stories we read in those books shape our perceptions of experience. The works entrusted in the rocks of the Earth not only offer portraits of the way things have been, but also tell us what might or will be. Thus, Earth's history is not only an opening to the past, but also a door to the future, however vague or subject to interpretation that future may be. As geoscientists, we all know the expression "geology is an art," and what a thought-provoking art it is.

This book provides broad a overview of Earth's history, but includes sufficient details to make the story compelling. The book will be interesting to two groups: the educated layperson who may not know a chondrite from a comet and geoscientists interested in getting a broad overview (and a sort of "refresher course") of Earth history. ■

Geo-profile: "Dinosaur" George Blasing
How to be a Paleontologist by Really Trying

by ***Neal Immega and Scott Singleton***

Nearly every child wants to be a vertebrate paleontologist at about the age of ten. The problem is that a person has a better chance of becoming a professional football player than getting a paying job in the field. One young man from Hondo found a loophole to allow him to pursue his dream – he went commercial.

George Blasing is a genuine paleo addict. He lives and breathes fossils. If anyone comes within striking distance, that person is going to learn something about fossils. So, is this paragon a professor? A researcher at some venerable institution? A museum curator? None of the above.

In 1997, George left the corporate world and started a "little" shop in San Antonio, Dinosaur World. This is the most low-impact of enterprises, which specializes specializing in quality replicas of really cool fossils. It has become a sort of commercial museum that, in addition to fascinating many kids-at-heart, supports his habit and serves as a base of operations for his many paleo-related activities. George is a cross between Peter Pan and the Pied Piper: he leads public field trips and is an irrepressible speaker who does hundreds of talks and classes for everyone from kindergarteners to seniors. He has chalked up more than a million pairs of ears so far. He has very good ties with top-tier collectors and has been curator for ed several paleo exhibits. One of his most imaginative exhibits set life-sized dinosaur restorations among appropriate Mesozoic plants in the San Antonio Botanical Garden. More recently, George has started producing a series of educational videos. He is also making science more accessible to kids in a series of educational comic-book-style books.

Maybe George Blasing has found the dream job of every geologist by never growing up. He's a generous soul, though, and will share his good fortune. Dinosaur World is a good reason for a field trip to San Antonio. A recent project of his, though, is coming closer this September and will be worth a jaunt up to Humble to have a look. George will be exhibiting about a hundred species — 75 full-scale prehistoric replicas — at the Houston Gem & Mineral Society's (HGMS) show on September 22-24 (www.hgms.org). At the HGMS show you can get closer to these specimens than you will ever manage in a museum.

And you can pretend that you haven't grown up, either! ■

CVV: What Is It? Why Use It?

When you pay online for HGS events or fill out a membership application or renew your membership with a credit card you are asked to input a CVV, Card I.D., or Code. This three- or four-digit number is used to verify the authenticity of the user and help prevent unauthorized use of the card number by someone. HGS pays additional credit card fees when members complete credit card transactions without inputting the CVV number.

"HGS pays additional credit card fees when members complete credit card transactions without inputting the CVV number."

CVV is a new authentication procedure established by credit card companies to further efforts toward reducing fraud for Internet transactions. It consists of requiring a card holder to enter the CVV number at transaction time to verify that the card is on hand. The CVV code is a security feature for "card not present" transactions (e.g., Internet transactions), and now appears on most (but not all) major credit and debit cards. This new feature is a three- or four-digit code that provides a cryptographic check of the information embossed on the card. Therefore, the CVV code is not part of the card number itself.

The CVV code helps ascertain that the customer placing the order actually possesses the credit/debit card and that the card account is legitimate. Each credit card company has its own name for the CVV code, but it functions the same for all major card types. (VISA refers to the code as CVV2, MasterCard calls it CVC2, and American Express calls it CID.) This security number should be typed in the Card Code box when entering information at the HGS Your Pay Connect payment site.

The back panel of most Visa/MasterCard cards contains the full 16-digit account number, followed by the CVV/CVC code. Some bank cards, however, show only the last four digits of the account number followed by the code. You can find the four-digit card verification number on the front of the American Express credit card above the credit card number on either the right or the left side of the card.

Why Use It?

To aid in the prevention of fraudulent credit card use, we ask that you input the 3- or 4-digit code on the back of your credit card when making payments online or when you provide your credit card information to the HGS office. When submitting credit card information and the CVV number, your data are protected by Secure Socket Layer (SSL) technology and a digital certificate. HGS pays additional credit card fees when members complete credit card transactions without inputting the CVV number. ■

HGS – NeoGeos Career Development Meeting

When: September 21, 2006 • Where: 950 Threadneedle, Suite 170, Houston TX 77079
Time: 6:00 p.m. to 8:00 p.m. • Dinner will be served at 6:00 p.m.

PetroSkills would like to invite the HGS NeoGeos to our facility for a career competency discussion and demonstration. The purpose of this meeting will be to:

- Use our Competency Analysis Tool (CAT) — live online analysis to determine your skill gaps
- Review our Geoscience Career Development Matrices
- Learn about our Geoscience courses
- Meet our Geoscience instructors and Discipline Managers
- Leave with your own personalized development plan

Please RSVP to Patty Davis at pdavis@petroskills.com or call 281.597.1048 ext. 103.
Questions or comments? Email neogeos_houston@yahoo.com.

PetroSkills was created in the year 2001 by BP, Shell, and Oil and Gas Consultants International (OGCI) to provide competency-based petroleum training. Today, PetroSkills has successfully evolved into a global industry-driven training company that spans the petroleum industry. Our alliance membership is made up of such major and independent oil companies as BP, Shell, OGCI, Halliburton, Saudi Aramco, Oxy, ConocoPhillips, Chevron, Repsol YPF, Marathon, TTG Systems, John M. Campbell & Company, UTT and ResModTec.

PetroSkills competencies and courses are built for the industry by the industry.

PetroSkills®

25th Anniversary Annual Technology Conference

National Association of Black Geologists & Geophysicists (NABGG)
September 27–30, 2006
Magnolia Hotel, downtown, at 1100 Texas St., Houston, TX 77002
"The Vision of a Few, Fulfilled by Many"

Who should participate: We invite all geoscientists, geosciences organizations, companies, and educational institutions as well as numerous corporations and government agencies to celebrate with us this pinnacle moment in our history. **Exhibit booths, sponsorships, conference booklet and website advertisement space may still be available—if interested contact us immediately. Posters and Oral Papers** focusing on any aspect of the Earth Sciences including geology, geophysics, geosciences applications, planetary sciences, oceanography, geological education, the business of geology and geosciences careers are planned. A few time slots may still be open in the talks and poster sessions schedule—contact us immediately if you wish to present. **Geosciences Students** are invited and financial assistance may still be available. Scholarship recipients are strongly encouraged to be volunteers or give technical presentations. Social events are planned for spouses and guests.

Conference Highlights Include (check www.nabgg.org regularly for any updates and more detail):
Golf Tournament—Wednesday Morning, September 27
President's Reception—Wednesday Evening, Magnolia Hotel
Technical Sessions and Booth Exhibits—Thursday, September 28
Scholarship Awards Luncheon—Thursday Noon
Technical Sessions Featuring Students and Booth Exhibits—Friday Morning
Benefactor Awards Luncheon—Friday Noon
Business Meeting—Friday Afternoon, September 29
Black & Gold Ball—Friday Evening
Community Outreach Activity—Saturday Morning, September 30

For information or registration, visit www.nabgg.org, send email to nabgg_us@hotmail.com, or contact **Ms. Carolyn Jones**, Conference Chairperson, 281-879-3667, or **Ms. Elizabeth Watkins,** 713-446-6098. NABGG is a non-profit 501(c)(3) organization. Any donations are tax deductible. Discounted hotel room rates at the Magnolia Hotel are available.

2006 GCAGS / GCPE Annual Convention

Lafayette, Louisiana

September 25 – 27, 2006

CONVENTION HIGHLIGHTS

- Over 130 Oral & Poster Presentations
- 3 Field Trips, 5 Continuing Education Courses
- Forum of Top Industry Leaders Discussing "The Gulf of Mexico Oil and Gas Industry: the Road Ahead"
- GCAGS has combined with the Gulf Coast Prospect Expo
- Geoscientists with the International Geological Correlation Program 490 will join our convention with a focus on Natural Disasters
- 3-D immersive visualization presentations in new LITE facility - Live Stereo Format, Seismic Interpretation, Geologic Interpretation, LIDAR, Outcrop Imaging, and Effects of Hurricanes

3 technical sessions will be held in a 3-D Stereo Immersive Environment at the new Louisiana Immersive Technologies Enterprises (LITE) facility.

Online Registration Available NOW

www.gcags2006.com

NOAA PRESS RELEASE
Issued: 8 August 2006

NOAA: August 2006 Update to Atlantic Hurricane Season Outlook

Summary

NOAA continues to predict a high likelihood (75% chance) of an above-normal 2006 Atlantic hurricane season and a 20% chance of a near-normal season, according to a consensus of scientists at National Oceanic and Atmospheric Administration's (NOAA) Climate Prediction Center (CPC), National Hurricane Center (NHC), and Hurricane Research Division (HRD). Therefore, 2006 is forecast to be the tenth above-normal season in the last twelve years. See NOAA's definitions of above-, near-, and below-normal seasons.

This updated outlook calls for a seasonal total of 12-15 named storms, with 7-9 becoming hurricanes, and 3-4 becoming major hurricanes (categories 3-5 on the Saffir-Simpson hurricane intensity scale). The likely range of NOAA's Accumulated Cyclone Energy (ACE) index (Bell and Halpert, 2000) is 110%-170% of the median. These totals include the three tropical storms (Alberto, Beryl, and Chris) that have already occurred. Therefore, for the remainder of the season, we expect an additional 9-12 named storms, 7-9 hurricanes, and 3-4 major hurricanes.

The predicted 2006 activity mainly reflects a continuation of conditions associated with the multi-decadal signal, which has favored above-normal Atlantic hurricane seasons since 1995. These conditions include warmer than average sea surface temperatures (SSTs), lower vertical wind shear, reduced sea level pressure, and a more conducive structure of the African easterly jet.

While we are predicting an active season, a repeat of last year's record season is unlikely. The season is also expected to be slightly less active than previously forecast on 22 May 2006, when 13-16 Named Storms, 8-10 hurricanes, and 4-6 major hurricanes were predicted. The expected activity is lower for three reasons: 1) atmospheric and oceanic conditions are not as conducive as previously forecast, 2) the transition away from La Niña-like rainfall patterns occurred more quickly than expected, and 3) the very persistent upper-level ridge pattern over the eastern U.S. and western Atlantic, which contributed to the extremely active 2003-2005 hurricane seasons, is not present.

Discussion

1. Expected Activity — 75% chance above normal, 20% chance near normal, 5% chance below normal

An important measure of the total seasonal activity is NOAA's ACE index, which accounts for the collective intensity and duration of Atlantic named storms and hurricanes during a given hurricane season. The ACE index is also used to define above-, near-, and below-normal hurricane seasons (see Background Information). A value of 117% of the median (Median value is 87.5) corresponds to the lower boundary for an above-normal season.

For the 2006 Atlantic hurricane season, the expected ACE range is 110%-170% of the median. Based on this range and on the 75% probability of an above-normal season, we expect a seasonal total of 12-15 named storms, 7-9 hurricanes, and 3-4 major hurricanes. This predicted ACE range can be satisfied even if the numbers of named storms, hurricanes, or major hurricanes fall outside their expected ranges.

The vast majority of named storms and hurricanes are expected to form during August-October over the tropical Atlantic Ocean, which is typical for above-normal seasons. These systems generally track westward toward the Caribbean Sea and/or United States as they strengthen. NOAA does not currently make seasonal forecasts for landfalling hurricanes. However, similar above-normal seasons have historically averaged 2-3 landfalling hurricanes in the continental United States and 2-3 hurricanes in the region around the Caribbean Sea.

The conditions that produce hurricane landfalls are very difficult to predict at these extended ranges. As a result, it is currently not possible as part of this outlook to predict the number or intensity of landfalling hurricanes, or whether a given locality will be impacted by a hurricane this season. It is important that residents and government officials in hurricane-vulnerable communities have a hurricane preparedness plan in place.

2. Expected Climate Conditions — Active multi-decadal signal, above-average Atlantic Ocean temperatures

All of the Atlantic hurricane seasons since 1995 have been above normal, with the exception of two moderate to strong El Niño years (1997 and 2002). This contrasts sharply with the 1971-1994 period of generally below-normal activity (Goldenberg et al., Science, 2001). The regional atmospheric circulation anomalies contributing to these long-period fluctuations in hurricane activity is strongly linked to the tropics-wide multi-decadal signal (Bell and Chelliah, 2006). Since 1995 this signal has been very conducive to above-normal hurricane seasons and warmer Atlantic SSTs, and it is again the main factor guiding the 2006 outlook.

NOAA: August 2006 Update continued from page 62

Over the North Atlantic, key aspects of the multi-decadal signal expected during the 2006 hurricane season include 1) warmer SSTs, lower surface air pressure, and increased moisture across the tropical Atlantic, 2) an amplified ridge at upper levels across the central and eastern subtropical North Atlantic, 3) reduced vertical wind shear in the deep tropics over the central North Atlantic, which results from easterly wind anomalies in the upper atmosphere (green arrows) and weaker easterly trade winds in the lower atmosphere (dark blue arrows), and 4) weaker easterly winds in the middle and lower atmosphere, resulting in a configuration of the African easterly jet (wavy blue arrow) that favors hurricane development from tropical waves moving westward from the African coast.

This outlook calls for a lower level of activity than was predicted on 22 May 2006. The May forecast called for 13-16 Tropical Storms, 8-10 Hurricanes, and 4-6 Major Hurricanes. The chances of an extremely active season are now lower for three reasons: 1) neither the atmospheric wind and air pressure patterns, nor the tropical Atlantic SSTs, are as conducive as expected; 2) long periods of suppressed convection near the date line, which acts to lower the vertical wind shear over the tropical Atlantic, are no longer present, 3) the very persistent upper-level ridge pattern over the eastern U.S. and western Atlantic, which contributed to the extremely active 2003-2005 hurricane seasons, is not present. One factor known to significantly impact Atlantic hurricane seasons is ENSO (Gray, 1984). El Niño favors fewer hurricanes and La Niña favors more hurricanes. Based on the most recent ENSO outlook issued by NOAA's Climate Prediction Center, ENSO-neutral conditions are expected in the tropical Pacific through much of the Atlantic hurricane season. Therefore, ENSO is not expected to impact this hurricane season.

3. Multi-decadal fluctuations in Atlantic hurricane activity

Atlantic hurricane seasons exhibit prolonged periods lasting several decades of generally above-normal or below-normal activity. These fluctuations in hurricane activity result almost entirely from differences in the number of hurricanes and major hurricanes forming from tropical storms first named in the main development region, which spans the tropical Atlantic Ocean and Caribbean Sea.

Hurricane seasons during 1995-2005 have averaged 15 named storms, 8.5 hurricanes, and 4 major hurricanes, with an average

ACE index of 179% of the median. NOAA classifies nine of the last eleven hurricane seasons as above normal, and seven as hyperactive (ACE > 175% of median). In contrast, during the preceding 1971-1994 period, hurricane seasons averaged 8.5 named storms, 5 hurricanes, and 1.5 major hurricanes, with an average ACE index of only 75% of the median. One-half of these seasons were below normal, only three were above normal (1980, 1988, 1989), and none were hyperactive.

4. Uncertainties in the Outlook

The main uncertainty in this outlook is related to the strong variability in atmospheric and oceanic conditions across the tropical Atlantic in recent months. This variability is partly related to strong intraseasonal fluctuations in convection and upper-level divergence over the central equatorial Pacific. Current conditions are only modestly conducive to an above-normal season, although they may become even more conducive as impacts fade from the enhanced convection over the central equatorial Pacific during mid-June through early-July.

Another uncertainty is the upper-level circulation anomalies over the eastern U.S. and western North Atlantic. The last three hyperactive hurricane seasons (2003-2005) featured a persistent upper-level ridge in these regions. This ridge has been notably absent so far this season. Our only seasonal predictor for the circulation in this area is a significant El Niño or La Niña, neither of which is expected this season. A persistent ridge over the eastern U.S. would favor increased activity and more hurricane landfalls.

Cautionary Notes

1) It is currently not possible to confidently predict at these extended ranges the number or intensity of landfalling hurricanes, or whether a particular locality will be impacted by a hurricane this season. Therefore, residents and government agencies of coastal and near-coastal regions should always maintain hurricane preparedness efforts regardless of the overall seasonal outlook.

2) Far more damage can be done by one major hurricane hitting a heavily populated area than by several hurricanes hitting sparsely populated areas. Therefore, hurricane-spawned disasters can occur even in years with near-normal or below-normal levels of activity. Examples of years with near-normal activity that featured extensive hurricane damage and numerous fatalities include 1960 (Hurricane Donna), 1979 (Hurricanes David and Frederic), and 1985 (Hurricanes Elena, Gloria and Juan). Moreover, the nation's second most damaging hurricane, Andrew in 1992, occurred during a season with otherwise below normal activity.

Visit the main link http://www.noaanews.noaa.gov/stories2006/s2678.htm to see the press release and additional links. ■

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Government Update

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

Just because the HGS has been off for two months doesn't mean nothing was going on over the summer. This has been an active summer.

TBPG News

The Texas Board of Professional Geoscientists has adopted the following rules:

§851.28 License Renewal and Reinstatement (effective September 1, 2006)
§851.30 Firm Registration (effective September 1, 2006)
§851.31 Temporary License (effective September 1, 2006)
§851.80 Fees (effective April 20, 2006)

The following rules have been proposed:

*§851.30 Firm Registration
*§851.32 Continuing Education Program
**§851.80 Fees
§851.152 Firm Compliance
§851.156 Geoscientist's Seals

Additional information on these rules can be found at:
http://www.tbpg.state.tx.us/New%20Rules2.htm

TCEQ News

WQMP Update Released

The Texas Commission on Environmental Quality (TCEQ) has released the draft April 2006 Update to the Water Quality Management Plan for the State of Texas (draft WQMP update).

The Water Quality Management Plan (WQMP) is developed and promulgated in accordance with the requirements of the federal Clean Water Act, §208. The draft WQMP update includes projected effluent limits of indicated domestic dischargers useful for water quality management planning in future permit actions. Once the commission certifies a WQMP update, the update is submitted to the United States Environmental Protection Agency (EPA) for approval. For some Texas Pollutant Discharge Elimination System (TPDES) permits, the EPA's approval of a corresponding WQMP update is a necessary precondition to TPDES permit issuance by the commission. The draft WQMP update may contain service area populations for listed wastewater treatment facilities and designated management agency information.

A copy of the draft April 2006 WQMP update may be found on the commission's Web site located at:
http://www.tceq.state.tx.us/nav/eq/eq_wqmp.htm

Rulemaking Comments Now Accepted Via Internet

The TCEQ now accepts internet-based, electronically submitted comments for all rulemaking. Up to 10,000 characters (approximately 2.5 pages) may be submitted through the eComments form. Each submittal will receive an automatic e-mail from the TCEQ verifying receipt. All comments received via the eComments form will then be converted to a Word file, submitted to the technical staff for review and response, and electronically archived with the rule project file. Written public comment will continue to be accepted by mail, courier, or fax. Additional information, and a preview of the eComments form can be found at: http://www.tceq.state.tx.us/comm_exec/communication/media/06-06eComments.html

Proposed Amendments to the UST Rules

The TCEQ proposes amendments to §§334.2, 334.5, 334.8, 334.71, 334.84, 334.301 - 334.303, 334.306, 334.310, and 334.313, relating to underground storage tank rules.

The purpose of the proposed amendments is to incorporate into agency rules, changes to statute which were effective September 1, 2005, based on language in Senate Bill 485, House Bill 1987, and Senate Bill 1863 (Article 5) from the 79th Legislature, 2005, and to incorporate changes suggested by stakeholders during and following a meeting of the Petroleum Storage Tank (PST) Rules Advisory Group held November 29, 2005.

Of interest, among other things, is that the PST reimbursement fund has been extended to expire on September 1, 2008. It is anticipated that 1,260 sites will be remediated by responsible parties by September 1, 2008. It is estimated that the PSTR Account (0655) will spend an estimated $58 million in FY 2006 and an estimated $58 million in FY 2007 to reimburse the remediation costs at these sites. Reimbursements for these sites could cost as much as $45 million in 2008. The total estimated reimbursement costs of $161 million for FY 2006, FY 2007, and FY 2008 would include: costs for eligible cleanup activities at the 1,260 sites until September 1, 2008; costs for the payment of protested claims that have arisen during that period; and costs for the payment of claims submitted during that period, for work performed in previous years for which claims had not been previously filed.

It is estimated that 500 PST sites will elect to transfer (opt-in) to the state lead program by July 1, 2007. This transfer will be in addition to the state lead program's current inventory of 213 sites. In addition, approximately 300 more sites are expected to be added to the state lead program over the next five years, based on

routine criteria. These 300 sites are currently not in the reimbursement program and not eligible to opt-in to the state lead program. These anticipated transfers coupled with the sites already in the state lead program could cost as much as $12 million in FY 2007, $36 million in FY 2008, $30 million in FY 2009, and $24 million in FY 2010. Thus, total state lead program cleanup costs from FY 2007 through FY 2010 are estimated to be $102 million, and it is not known how many of these sites will be fully remediated by that time. In addition, once sites that are eligible to opt-in are transferred to the state lead program, owners or operators of those sites are exempted from any further liability for costs related to site cleanup.

Units of federal, state, or local governments owning petroleum storage tanks (PSTs) will experience beneficial fiscal impact as a result of administration or enforcement of the proposed rules. It is estimated that 70 local governments and 38 state and federal agencies will benefit from extending the expiration date of the PST Reimbursement Program and from allowing PST sites to be more easily transferred to the state lead program.

The proposed rules are located at:
http://www.sos.state.tx.us/texreg/sos/PROPOSED/30.ENVIRONMENTAL%20QUALITY.html#82

TCEQ Revises Proposed "Water Quality Protection Areas" for Quarries Rule to Include PGs

The TCEQ revised its proposed "Water Quality Protection Areas" for quarries rule, to allow professional geologists to certify the geoscience components of the program. This rule came out in the Texas Register in March 2006 and the language at that time gave everything to the professional engineers. Public comments convinced the TCEQ to modify the rule language to include professional geologists. The new rule will be 30TAC311.71-311.82. The approval date was 7/12/06 and the rule tracking number is 2005-051-037-PR. Additional details can be found at: www.tceq.state.tx.us/rules/pendadopt.html

Note that this rule is actually a "pilot" program for protecting watersheds from quarrying operations. There are currently no other environmental regulations for gravel quarries in the state. This rule applies only to the John Graves Scenic Riverway, a small segment of the Brazos River in Palo Pinto County (between Fort Worth & Abilene). Hopefully, in the future, it will be expanded statewide. This represents a small victory for professional geologists, but it's better to get in the game early while rules like this are still being created.

Railroad Commission of Texas News

The Railroad Commission of Texas The Railroad Commission of Texas (RRC) proposes new §§4.201 - 4.226, relating to Purpose; Applicability and Exceptions; Responsibility for Management of Waste to be Recycled; Definitions; General Permit Application Requirements for Commercial Recycling Facilities; Minimum Engineering and Geologic Information; Minimum Siting Information; Minimum Real Property Information; Minimum Design and Construction Information; Minimum Operating Information; Minimum Monitoring Information; Minimum Closure Information; Notice; Protests and Hearings; Administrative Decision on Permit Application; Standards for Permit Issuance; General Permit Provisions; Minimum Permit Provisions for Siting; Minimum Permit Provisions for Design and Construction; Minimum Permit Provisions for Operations; Minimum Permit Provisions for Monitoring; Minimum Permit Provisions for Closure; Permit Renewal; Exceptions; Modification, Suspension, and Termination; and Penalties, in 16 Texas Administrative Code, Chapter 4, new Subchapter B to be entitled "Commercial Recycling." The RRC proposes the new rules in response to a petition for rulemaking concerning commercial recycling facilities, and based on its experience with permitting such facilities over the past several years. The proposed rules are located at: http://www.sos.state.tx.us/texreg/sos/PROPOSED/16.ECONOMIC%20REGULATION.html#27

EPA News

New Hazardous Waste Manifest Form

The U.S. Environmental Protection Agency (EPA) has announced changes to the uniform hazardous waste manifest form and its continuation sheet. If you use the manifest, please note these important changes:

Only the new Federal Uniform Hazardous Waste Manifest can be used starting 9/5/2006. Everyone in the nation will be using the new federal manifest. Until 9/5/2006, you should use the Texas Uniform Hazardous Waste Manifest. If your waste is in transit at midnight on 9/4/2006, the Texas Manifest will still be valid when it reaches its destination.

Copies of the new manifest can be obtained through EPA registered printers. The EPA will not distribute manifests. Texas will only distribute to Conditionally Exempt Small Quantity Generators (CESQGs) and Small Quantity Generators (SQGs), but only up to 50 copies per site per year. After that, the generator will need to contact an EPA registered printer. Large Quantity Generators, Transporters, TSDFs, Consulting Firms, Remediation Firms, etc., should contact EPA for a list of approved manifest providers or register with the EPA to print their own manifests. You can find EPA registered printers at the following website: wwww.epa.gov/epaoswer/hazwaste/gener/manifest/registry/printers.htm

Government Update *continued on page 66*

Government Update continued from page 65

Texas Waste Codes will still be entered on the form. Use two of the 6 waste code blocks in Item 13 for the Texas Waste Code, regardless of whether the waste is hazardous or industrial Class 1.

If you are shipping only non-hazardous waste, enter the 5-digit Texas Registration numbers instead of the EPA ID numbers for generator, transporter and receiver.

Instructions for completing the new manifest can be found in Title 40 Code of Federal Regulations, Part 262, Appendix, at the following website: www.epa.gov/epaoswer/hazwaste/gener/manifest/registry/man-inst.pdf

If you have questions call: 512-239-6413 or email: wasteval@tceq.state.tx.us

All Appropriate Inquiries Standard

The EPA has determined that new ASTM standard E 1527-05 is in full compliance with the requirements for conducting All Appropriate Inquiries (AAIs) specified in the recently published EPA rule, "Standard and Practices for All Appropriate Inquiries."

The latest versions of ASTM E 1527-05 Standard Practice for Environmental Site Assessments: Phase I ESA Process and the EPA AAI document (40 CFR Part 312), as well as ASTM E 1528-06 Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process are now available at the ASTM website for Standards on Environmental Site Assessments for Commercial Real Estate: http://www.astm.org/e50comp06.html

Changes to E 1527-05 fall into three categories:

- The first primarily relates to expanding definitions to include new terms introduced in the 2002 act, and citing the environmental professional definition and declaration required by the EPA AAI regulation act.
- The second includes specific action items required by the EPA AAI regulation.
- The final category of revisions provides a framework and guidance on the more abstract requirements in the EPA AAI regulation.

Changes to E 1528-06 include:

- A limited environmental due diligence screening process that is not intended to provide CERCLA liability protections and can be conducted by someone other than an environmental professional.
- Amending the term "recognized environmental condition" to a "potential environmental concern."

New Call-Before-You-Dig Number

On March 10, 2005, the Federal Communications Commission (FCC) approved the use of 811 as the national call-before-you-dig telephone number. The FCC further ordered that the number be in use within two years, or by April 2007. The Common Ground Alliance (CGA), a 1,200-member inter-industry group that promotes the safety of all underground facilities accepted the challenge to develop a national campaign to promote awareness of the 811 number. Once 811 is fully functioning, landowners, construction companies, and contractors across the United States will be able to call one number—811—to have pipelines and other underground facilities located before they begin excavations. The implementation of 811 will promote a consistent, easy approach to ensure the security of our underground assets and the safety of the communities in which they are located independent of state borders or industry boundaries.

U.S. House of Representatives Cuts LUST Funding

On May 18, 2006 the U.S. House of Representatives passed the Department of the Interior, Environment, and Related Agencies Appropriations Act, 2007 (H.R. 5386). This bill provides $72,759,000—the budget request—for the leaking underground storage tank (LUST) program. This represents a decrease of $7,194,000 compared to the fiscal year 2006 level, which included a one time supplemental funding to address hurricane damage in Louisiana and Mississippi. Additionally, the House provided $20 million less in categorical grant funding to the states for the underground storage tank program than President George W. Bush's request. Motor fuel taxes generate approximately $170 million per year for the LUST Trust Fund. In fiscal year 2005, the administration reported a fund balance in excess of $2.3 billion. The Treasury Department reported that in fiscal year 2005 the fund also received $77.7 million from interest on the fund balance.

AGI Government Affairs Monthly Review (April 2006)

Senators Introduce New Yucca Legislation

On April 6, 2006, Senate Energy and Natural Resources Committee Chair Pete Domenici (R-NM) and Senate Environment and Public Works Committee Chair James Inhofe (R-OK) announced joint sponsorship of the Nuclear Fuel Management and Disposal Act (S.2589), a bill drafted by the Department of Energy (DOE) to revitalize the Yucca Mountain nuclear waste repository program. Provisions in the bill would "facilitate the licensing, construction, and operation of a repository at Yucca Mountain," Energy Secretary Samuel Bodman wrote in a letter to Vice President Dick Cheney accompanying the bill.

One of the primary provisions in the legislation would remove the 70,000 metric ton limit on the amount of nuclear waste that

can be stored in the repository. According to a 2002 Environmental Impact Statement, the site has the capacity to store 120,000 metric tons of waste. Without lifting the 70,000-ton cap, the repository will likely be oversubscribed as soon as it opens.

Further provisions in the bill would: remove 147,000 acres of land around the repository from public use to comply with Nuclear Regulatory Commission (NRC) licensing requirements; authorize construction of a rail line connecting Yucca Mountain with the national rail network; give DOE the authority to regulate the transportation of radioactive materials; reform the funding system to give DOE easier access to the Nuclear Waste Trust Fund; eliminate "essentially duplicative regulation" by exempting nuclear waste stored in NRC-certified containers from federal, state, and local regulation; authorize the Environmental Protection Agency to administer air quality permits; and ensure adequate water supplies for the nuclear waste activities.

DOE officials are optimistic that Congress will eventually pass the legislation. "We believe it is very important to get Yucca Mountain open so we can start moving waste from the communities all around the country where it exists," said Deputy Energy Secretary Clay Sell. "We're going to work with our congressional allies and supporters to get it passed as quickly as possible."

Despite sponsoring the DOE bill, Domenici is planning to introduce his own legislation on the repository, which he called three-fourths complete in early April. He is currently in the midst of conversations with Energy and Natural Resources Committee Ranking Member Jeff Bingaman (D-NM) and Senate Minority Leader Harry Reid (D-NV), an opponent of the Yucca Mountain Project.

House Resources Committee Holds Alternative Energy Hearing

On April 6, 2006, the House Resources Subcommittee on Energy and Mineral Resources heard testimony on developments in renewable and alternative energy resources on federal lands. Officials from the Navy, the Department of Energy (DOE), the Forest Service, and the Department of the Interior (DOI) presented lawmakers with details of their agencies' efforts to increase alternative energy use and development. Efforts at DOI are being concentrated in wind energy, concentrated solar power, geothermal power, biomass management, gas hydrates, oil shale and tar sands. At the Forest Service, the two focal points for renewable energy are hydropower and energy from biomass.

Wayne Arny, a deputy assistant secretary at the Navy, detailed Navy investments in wind, ocean, solar, and geothermal power, emphasizing the Navy's unique geothermal plant. Capable of producing 270-megawatt capacity of electricity, the plant is the only geothermal plant on Department of Defense (DOD) lands. Lawmakers were surprised to learn that although the plant is located on federal lands, it is owned by an independent private contractor, who gives the Navy a share of the revenue generated from the electricity sales. Arny explained that when the plant was built in the 1980s, the Navy could not legally own the electricity generated. The Navy's share of the revenue generated from the electricity sales is used for energy development, education, and management.

AGI Government Affairs Monthly Review (May 2006)

Bipartisan Group Introduces New Clean Air Legislation

On May 3, 2006, a bipartisan group of senators led by Clean Air Subcommittee Ranking Member Tom Carper (D-DE) introduced the Clean Air Planning Act of 2006 (S.2724), which aims to make significant reductions in mercury, nitrogen oxides (NOx), sulfur dioxide (SO2), and carbon dioxide (CO2) emissions from power plants. S.2724 is a "new and improved" version of clean air legislation introduced by Carper in the 108th Congress. "This is the only bill that has attracted support from the utility industry, environmental groups, and a bipartisan group of lawmakers," Carper said.

Emissions controls in the legislation are stricter than those in the Environmental Protection Agency's (EPA) new Clean Air Interstate Rule (CAIR) or those proposed by the President's "Clean Skies" Initiative (S.131). "When it comes to clean air, we can do better than current law and we can do better than the President's plan," Carper said. Specifically, the legislation would require every power plant to capture 90% of the mercury in the coal burned in the plant by 2015; reduce SO2 emissions by roughly 82% by 2015; and reduce NOx by nearly 68% by 2015. To reduce NOx emissions, the bill would set up two cap-and-trade programs, one in the eastern U.S. and one in the western U.S. to ensure that NOx pollution is reduced in the area where it causes the most health and environmental problems.

The legislation would also institute a cap-and-trade program for CO2 emissions from power plants in an attempt to slow human-induced climate change. Emissions would be capped at 2006 levels in 2010, and would decrease to 2001 levels by 2015. Power plants could satisfy emissions requirements by reducing CO2 output or by buying CO2 credits from other industries. EPA analyses estimate that under this program, the cost to reduce carbon emissions would be only $1 per ton. "This is a bill that will make significant strides toward improving our air quality and reducing our greenhouse gas emissions at a reasonable cost that industry can afford," said cosponsor Senator Dianne Feinstein (D-CA).

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Drought Monitoring Legislation Moving Through House and Senate

The Environment, Technology, and Standards Subcommittee of the House Science Committee passed the National Integrated Drought Information System Act of 2006 (H.R.5136) on May 4, 2006. The bill, which was introduced in early April by Representatives Ralph Hall (R-TX) and Mark Udall (D-CO), would authorize $94 million over five years to establish a National Integrated Drought Information System (NIDIS) with the goal of improving drought monitoring, prediction, mitigation, and response. The main component of the NIDIS legislation is the creation of a drought early warning system that integrates scientific information about precipitation conditions and provides assessments of the timing and severity of droughts. Additionally, the legislation involves improving communication about drought predictions with federal, state, local, and tribal governments and the public to improve decision-making. The National Oceanic and Atmospheric Administration (NOAA) would be responsible for creating and coordinating NIDIS.

A Senate version of the legislation, S.2751, was introduced on May 5, 2006 by Senator Ben Nelson (D-NE). "The research done upfront in monitoring drought trends will help our capabilities to mitigate and respond to its devastating effects in a much more effective manner," Nelson said in a press release accompanying the legislation. "Planning for drought and implementing a risk management type strategy will save taxpayers billions in reduced disaster assistance in the future."

AGI Government Affairs Monthly Review (June 2006)

House Passes Offshore Drilling Legislation

On June 29, 2006 the House passed the Deep Ocean Energy Resources Act (DOER, H.R. 4761) by a vote of 232 - 187. This bill would lift the 25-year moratorium on drilling for oil and natural gas off most of the U.S. coastline. States have the option to maintain the offshore drilling ban within 100 miles of their coastlines.

Part of the federal revenue generated from offshore drilling royalties would fund the Energy and Mineral Schools Reinvestment Fund (EMSRF). Funds will be distributed to petroleum, mining, applied geology and geophysics schools to support education and research and to encourage the growth of professionals in the energy workforce. Additional funds would be available for K-12 science education. H.R. 4761 also establishes the National Geo Fund to fund geologic mapping, geophysical and other seismic studies, earthquake monitoring programs, and preservation and use of geologic and geophysical data.

House Science Committee Passes Competitiveness Legislation

On June 7, 2006 the House Science Committee passed three bills to increase the competitiveness of U.S. research and education. The Early Career Research Act (H.R. 5356), Research for Competitiveness Act (H.R. 5357), and Science and Mathematics Education for Competitiveness Act (H.R. 5358) were introduced to the House on May 11, 2006 to increase the competitiveness of math and science in the U.S. These bills were included as part of the President's American Competitiveness Initiative (ACI) outlined in the State of the Union this year. The bills would provide grants from the Department of Energy and the National Science Foundation to stimulate innovative and high-risk research in the U.S. Because they are related grant programs, H.R. 5357 was merged into H.R. 5356 and passed by a voice vote; H.R. 5358 focuses on K-12 teaching programs and undergraduate science and math education programs and was passed independently by voice vote. The bills are now ready for consideration by the full House.

Abandoned Hard Rock Mine Cleanup — 'Good Samaritan' Legislation

The Senate Committee on Environment and Public Works held an oversight hearing on June 14, 2006 to consider whether potential liability deters 'volunteers' from cleaning up abandoned hard rock mine sites. There are over 500,000 abandoned hard rock mines in the U.S. — many of them abandoned long before modern environmental laws were enacted — and it is estimated that about 20 percent of these mines pose significant risk to watersheds into which they leach acids and heavy metals.

Support for the proposed 'Good Samaritan' legislation (S.1848, S.2780) is split. Senators Ken Salazar (D-CO) and Wayne Allard (R-CO), co-sponsors of S.1848, argue that the bill would encourage mine cleanup at a level that could not be funded by the existing Superfund and Brownfield programs. Volunteers would be exempted from the Clean Water Act — and other laws that do not allow for partial cleanups — and would not be held accountable for pollution they did not help create. The EPA's Administrator, Stephen Johnson, supports passage of the Good Samaritan bills. He emphasized that because little remediation has been done in decades at thousands of mines, even incremental or partial cleanup will have a positive effect on the environment.

In contrast, Senator Barbara Boxer (D-CA) was not very enthusiastic about the Good Samaritan legislation. She believes that the bills would roll back environmental laws and standards, and may potentially put communities living near contaminated mines at higher risk. Boxer pointed out that mechanisms to deal with the cleanup of abandoned hard rock mines — such as the EPA's Superfund and Brownfield programs — are already in place. "Why create new legislation and bureaucracy, when the means to deal with these issues are already in place?" Boxer asked.

Others are voicing concern over the ability of volunteers to undertake complex cleanups. Terry Harwood, the former Executive Director of the Agriculture Department's Hazardous Materials Policy Council, cautioned that "the potential for good-intentioned, technically qualified Good Samaritans to make a discernible impact on this huge problem is highly questionable." Harwood suggested that the Superfund program be fully funded, so that the EPA has the ability to properly do its job. Committee ranking member Jim Jeffords (I-VT) agreed with Harwood, and suggested that the EPA should also "issue long-overdue rules to require mining companies to set aside money now for existing and future cleanups."

Reauthorization of the Brownfields Program

Members of the Water Resources and Environment Subcommittee of the House Committee on Transportation and Infrastructure met on June 8, 2006 to discuss the successes and future challenges of the Environmental Protection Agency's (EPA) Brownfields Program. Brownfields are former industrial and commercial sites (such as factories, gas stations or salvage yards) where property redevelopment may be complicated by the presence of hazardous substances or other pollutants. In the U.S. there are estimated to be 450,000 to one million brownfields sites, which tend to drive down property values and provide little or no tax revenue.

The Brownfields Revitalization and Environmental Restoration Act of 2001 (S.350), which authorized the EPA to grant funds for assessment and cleanup of brownfields and to provide liability protection, will expire at the end of fiscal year 2006. Although several concerns were cited, panel members showed general support for the reauthorization of the brownfields program. Susan Parker Bodine, Assistant Administrator of the EPA's Office of Solid Waste and Emergency Response, emphasized the program's effectiveness over the past five years. To date, the program has resulted in the assessment of more than 8,000 properties and has revitalized neighborhoods, created public parks, and reduced urban sprawl.

However, there are some outstanding issues with the brownfields program. Terese Manning, the Senior Planner and Brownfields Coordinator for the South Florida Regional Planning Council, proposed that there be more flexibility in EPA's grants, including a rolling grant application process, simplified program requirements, and the availability of multi-purpose grants that could be used for assessment, cleanup, demolition and property reuse planning. Manning also emphasized the importance of increased funding for the program. "EPA only funds approximately one-third of all applications," she said. "Increased funding, or even funding at the levels in the current Act will return more properties to productive use." The brownfields site assessment and cleanup program is currently authorized at a funding level of $200 million annually, but appropriations have peaked at only $98 million.

House Soils Caucus Formed

The House Soils Caucus was approved by the House Administration Committee and is now an official congressional entity. The caucus is chaired by Congressmen Tom Latham (R-4th IA) and Jim Costa (D-20th CA) and currently has 17 members. The mission of the House Soils Caucus is to heighten the awareness of and appreciation for the importance and role of soils and soil science among policymakers and the public to promote proper soil management and conservation to ensure the continued production of high-quality and abundant food, feed and fiber, while protecting and enhancing the environment and natural resource base across the nation. The geoscience community is encouraged to invite other members of Congress to join the Caucus and support soil science research, education and public outreach. More information about the House Soils Caucus is available from the Soil Science Society of America.

Supreme Court Rules on Clean Water; Will Rule on Clean Air Next

On June 19, 2006 the Supreme Court ruled in favor of two landowners regarding the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers interpretation of the Clean Water Act. In the joint cases of Rapanos v. United States and Carabell v. U. S. Army Corps of Engineers, the court reached a 5 to 4 decision requiring the lower courts to reconsider the definition of navigable waters and whether the federal government has authority over wetlands that are adjacent to or separated by man-made berms from their tributaries. The lower courts must now reconsider whether the two landowners can continue development on their property with or without a permit from the EPA. The decision, which was very close, did not definitively resolve the Clean Water Act statute, leaving the government, the public and the lower courts to continue to grapple with the definition of navigable water and how best to protect wetlands. Chief Justice John Roberts wrote, "It is unfortunate that no opinion commands a majority of the Court on precisely how to read Congress' limits on the reach of the Clean Water Act. Lower courts and regulated entities will now have to feel their way on a case-by-case basis."

On June 26, 2006 the Supreme Court agreed to hear the case of Massachusetts v. Environmental Protection Agency. The case involves 12 states, 13 environmental groups, New York City, Baltimore and American Samoa, who argue that the EPA has the legal authority to regulate carbon dioxide under the Clean Air Act. The EPA has maintained that carbon dioxide is not a pollutant and therefore **Government Update** *continued on page 70*

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cannot be regulated under the act. Lower courts have upheld this position and now the Supreme Court will consider these rulings. A decision is expected next year and could affect related cases within the court system, most notably an automakers challenge to California's decision to regulate carbon dioxide emissions from vehicles. In addition, the Supreme Court's recent activity in environmental issues may motivate further action in Congress and the administration. According to a quote in E&E Daily, Senator Olympia Snowe (R-ME) offered the following comment about the Supreme Court's action, "The fact of the matter is that the court is filling a void caused by the inaction within the Congress and the administration. It appears the only way to spur greater U.S. action is through the courts."

National Academies Report on Climate Change Papers

The National Academy of Sciences issued a report on June 22, 2006 stating that conclusive scientific evidence shows that the climate of the past several decades is the warmest that the Earth has experienced in 400 years. Climate data for years before 1600 become increasingly poor, thus making it impossible to conclude decisively that the Earth is warmer now than it has been in a millennium.

This report was issued in response to a long-standing conflict that began with the publication of a 1998 Nature article (392: 779 – 787) by M.E. Mann et al. The article used a variety of climate proxies to show an increase in global temperatures over the past 100 to 150 years, a period of time corresponding to global industrialization and increased emission of anthropogenic CO_2. A key graph from the paper, showing the rise in temperature over time, now referred to as the "hockey stick" graph because the curve has the shape of a hockey stick, was used several years later in the 2001 United Nations' Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report. The paper and the assessment gained the attention of prominent U.S. lawmakers, including House Energy and Commerce Committee Chairman Joseph Barton (R - TX). Congressman Barton drafted letters to the IPCC, NSF and the authors of the study requesting additional information about the funding for the research, the methods and conclusions of the Nature article and about the process by which Dr. Mann's graph was included in the IPCC report.

In response to Mr. Barton's investigation, House Science Committee Chairman Sherwood Boehlert (R – NY) requested the National Academy of Sciences (NAS) to examine the evidence presented in the Nature paper and other papers and provide "expert guidance on the current scientific consensus of the paleoclimate record". The report found that several lines of evidence show with high confidence that the past few decades have been warmer than any comparable period in the past 400 years. Between 900 and 1600 the data is less conclusive, and beyond that, the report stated, the data is not reliable due to the scarcity of proxy data. The Academy noted that the collection of additional climate proxies, especially from the southern hemisphere, would increase the certainty of climate models.

The NAS report and press release can be found at: http://www.nationalacademies.org/

The Nature article can be accessed at Dr. Mann's website: http://holocene.meteo.psu.edu/Mann/.

Rep. Barton's letters to the IPCC, NSF, Dr. Mann, Dr. Hughes and Dr. Bradley can be read at: http://energycommerce.house.gov/

House Science Committee coverage of the letters and the NAS report are available at:
http://www.house.gov/science/hot/climate%20dispute/index.htm

International Panel Issues a Statement on Teaching Evolution

On June 21, 2006, the Inter-academy Panel on International Issues (IAP) released a statement calling on parents, teachers and politicians to educate children about scientific methods and information. The statement, which was signed by 67 major national science academies (including the US National Academy of Sciences), describes scientific knowledge as being based on observation and developed through "testable and refutable" hypotheses. The statement also charges that "within science courses taught in certain systems of public education, scientific evidence, data and testable theories about the origins and evolution of life on Earth are being concealed, denied, or confused with theories not testable by science." Questions of meaning or purpose, IAP argues, are beyond the purview of science, and should therefore be discussed in a social, political or religious context, not in a scientific one. The press release and full text of the statement, including all signatories, can be viewed at: http://www.interacademies.net/

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.
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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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10575 Katy Freeway, Suite 290 • Houston, TX 77024
Telephone: 713-463-9476 Fax: 713-463-9160

Payment method:

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

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Expiration Date: _____ Card I.D. _____

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

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

Name: _____
Address: _____

_____

Home Phone: _____ *Spouse's Name:* _____
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Job Title: _____
Company: _____
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_____

Work Phone: _____ *Fax Number:* _____
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Professional Affiliations:
❑ Active AAPG Others: _____

Professional Interest:
❑ Environmental Geology
❑ International E&P
❑ North American E&P (other than Gulf Coast)
❑ Gulf Coast E&P (onshore & offshore)

Membership Directory Preference
❑ CD Rom
❑ Printed

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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HGA *and* GeoWives **News**

News

Technofest

Registration for Technofest on July 25 was facilitated by Sally's Sweethearts. Volunteers included Sally, Kat, Norma Jean, and Donna.

Thank you all.

NAPE® 06 (formerly North American Prospect Expo)

33 of Sally's Sweethearts came out in force to work NAPE registration in August at the George R. Brown Convention Center. Thousands passed through the Auxiliary Team's hands as everyone rushed to quickly enter the exhibition. A huge task was accomplished quite professionally. Thank you sweethearts.

Events

Luncheon

Friday September 22, 11:00 a.m.

On Friday, September 22, Sara Nan Grubb will open the Auxiliary year with a luncheon at the River Oaks Apartments—Claremont Room, starting at 11:00 a.m. Re-connected with friends not seen over the summer. For further information, call Sara Nan Grub at (713) 278-9369.

Welcome Lunch

Tuesday, September 26, 11:00 a.m.

GeoWives Officers will host a welcome lunch at the home of the President, Sara Nan Grubb, 11212 Memorial Drive, Houston. All GeoWives members and all new HGA members are invited. Tthe purpose of the luncheon is to integrate new HGA members into our smaller group, to get to know them, and to make them feel welcome. ■

As a HGA member you are invited to join

GeoWives

2005–2006 dues are $7.50

make check payable to *GeoWives* and mail to:

Sara Nan Grubb
11212 Memorial Drive
Houston, Texas 77024

Please provide the following

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email: _____

I will help plan a GeoWives activity ☐
I will serve on a committee ☐
Notification / Phone Committee ☐
Courtesy / Hostess ☐
My home is available for a meeting ☐

You are invited to become a member of

Houston Geological Auxiliary

2005–2006 dues are $20.00

make check payable to *Houston Geological Auxiliary* and mail to: Sally Blackhall • 8714 Sterling Gate Circle • Spring, Texas 77379

HGA YEARBOOK INFORMATION

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Street Address	City	Zip
Birthday, Month, Day ONLY	Email Address	Home Fax ( )

NOAA Still Predicts an Above Normal Hurricane Season

Despite a very quiet early hurricane season along the Gulf and Atlantic coasts, with only three tropical storms compared to a record seven named storms by this time last year, forecasters at NOAA are predicting a very active season through October. In a mid-season outlook for the rest of the season issued on August 8, NOAA forecasts a 75% chance of above normal activity with an additional 9 – 12 named storms, of which 7 – 9 will become hurricanes, and 3 – 4 will become major hurricanes.

This forecast is down slightly from the pre-seasonal forecast in May, largely because sea surface temperatures (SST's) have been milder than expected and other conditions favorable for the intense storm activity that we saw last year have not materialized, yet. But SST's are now on the rise and there is a consensus of opinion among scientists at the National Oceanic and Atmospheric Administration's (NOAA) Climate Prediction Center (CPC), National Hurricane Center (NHC), and Hurricane Research Division (HRD) that an above normal season will occur from now until the end of October.

The predicted increase in activity is all part of an active multi-decadal signal, characterized by above-average Atlantic Ocean and Gulf temperatures and atmospheric conditions favorable for strong storm formation. This multi-decadal signal has been with us since 1995, a period of increased tropical storm and hurricane activity and strong storm intensity.

For further information, the reader is encouraged to go to the NOAA Web site and the links contained therein: http://www.noaanews.noaa.gov/stories2006/s2678.htm ■

Check out the New HGS Message Board at http://www.hgs.org via "HGS Forums"

http://www.neogeos.org

- **Online discussions**
- **Event information and announcements**
- **Virtual networking**
- **Public forums for HGS and GSH Committees**

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