HGS Bulletin
Houston Geological Society
Volume 53 Number 8
April 2011

Election Issue

2010-11 AAPG Distinguished Lecture

A Paradigm Shift in Understanding Fracture Origin and Fracture Influence on Deep Carbonate Reservoir Performance: A Study of Onshore Permo-Triassic Deep Reservoirs in Saudi Arabia

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The Bulletin
Houston Geological Society

Volume 53, Number 8 April 2011

In Every Issue

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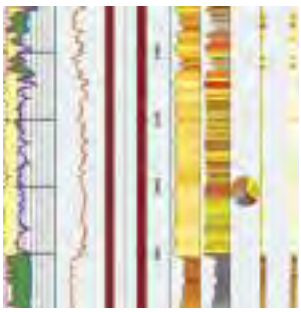

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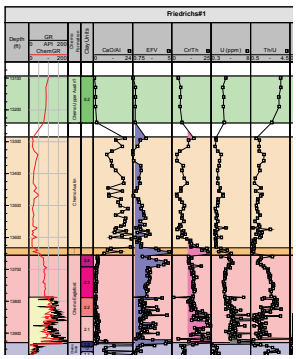

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About the Cover: Santa Catalina Mountains, near Tucson, Arizona *Photo by Ron F. Waszczak*

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

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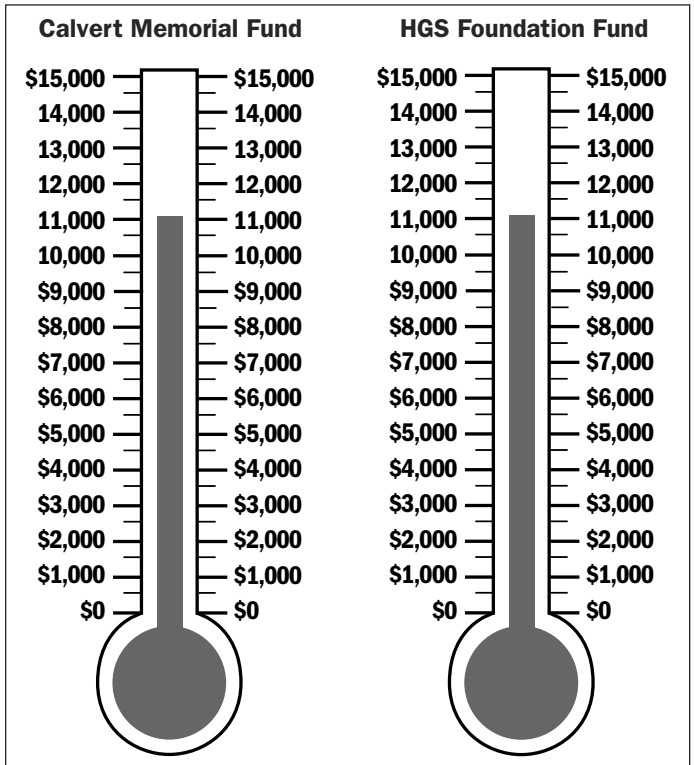
HGS Office Manager	Sandra Babcock	713-463-9476	sandra@hgs.org	

John Tubb, Jr.
jbtjr@sbcglobal.net

A Problem that We Need Work

In my February letter, I looked for reasons for the steady decline in HGS membership since 1991 when our membership then numbered 5,500. I asked for your thoughts on this problematic decline and was pleasantly surprised to receive two responses. One response gave a list of suggestions for increasing the membership and we are currently taking these into consideration.

The other suggestion dealt with a problem of seeming unfriendliness within our membership. This individual moved to Houston in the late 1970's and became active in the HGS as a member of the HGS Board of Directors. He moved away from the area in the late 1980's and upon moving back to Houston recently, he attended several of our technical meetings. His comment was that the mood at the meetings had changed, becoming "cliquish". Could this explain some of our problems? Probably. However, it depends on a person's point of view. One person's view of cliquishness could be another person's view of visiting with friends that they haven't seen recently. Regardless of how you look at it, this is still a problem that we need to work on at our meetings. How many times have you gone to a meeting and not known all of the people at your table? Did you make an effort to introduce yourself to everyone? How many times have you seen a person standing alone with no one to talk to? Our Treasurer-elect told me that a person came to one of the meetings as a walk-up, went inside, came out later and told her "I don't know anyone in there. No one talked to me. Please give me back my money," and he left. We can do better than this!



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

I know this perceived unwelcoming attitude toward those we don't know is only one of our membership problems. Working to correct this problem will help both potential new members and regular members alike.

On a pleasant note, the *HGS Legends Night* was a huge success. I would like to thank **Ashley Harris**, **Gaby Henriquez**, and **Sandra Babcock** for all of their work

Letter from the President *continued on page 9*

Scholarship checks being award to the respective funds (from left to right) John Tubb, Jr., Dick Bishop, John Adamick, David Meaux

UPCOMING
EDUCATION SCHEDULE

SHORT COURSES

Seismic Interpretation in Fold and Thrust Belts Using Fault-Related Folding Techniques **Massachusetts**	**August 15-18**

FIELD SEMINARS

Modern Terrigenous Clastic Depositional Systems **South Carolina**	**September 6-13**
Sedimentology and Sequence Stratigraphic Response of Paralic Deposits to Changes in Accommodation: Predicting Reservoir Architecture **Utah**	**September 22-29**
Fundamentals of Wrench Tectonics Applied to the Anatolian Plate **Nevada**	**September 26-Oct. 1**

EDUCATION CONFERENCES

Summer Education Conference **Ft. Worth, TX**	**June 6 -10**
Fall Education Conference **Houston, TX**	**September 12-16**

LAST CHANCE

Modern Terrigenous Clastic Depositional Systems **South Carolina**	**April 27-May 4**
Clastic Reservoir Facies and Sequence Stratigraphic Analysis of Alluvial-Plain, Shoreface, Deltaic, and Shelf Depositional Systems **Utah**	**April 30-May 6**
Complex Carbonate Reservoirs **Italy**	**May 8-14**
Play concepts and Controls on Porosity **Spain**	**May 15-20**

Registration and Information:

AAPG GEOSCIENCE EDUCATION

Toll-free (U.S. and Canada) (888) 338.3387, or (918) 560.2650 • Fax: (918) 560.2678 • email: educate@aapg.org
Download a registration form at http://www.aapg.org/education/index.cfm

Barry Katz
BJKatz.HGS@gmail.com

A Great and Unique Opportunity

You are now reading the HGS *Bulletin*'s April election issue. Once again this provides me an opportunity to discuss the importance of volunteerism to professional societies. First, let me thank each candidate for the HGS Board for their willingness to come forward and take on a leadership role in our organization, ensuring that the high quality technical and social program, short courses, and conferences continues. These individuals will also determine how the society's funds are spent on membership services for current members and those that may soon enter our profession. I would also like to thank those who stepped forward to serve as a potential member of the AAPG House of Delegates. They will help to review the membership applications and guide AAPG's direction. In an organization which has and will continue to undergo major changes , such activities are important to all engaged in our profession.

let me thank each candidate for the HGS Board for their willingness to come forward and take on a leadership role

Now it is our turn, once again. We need to review the information provided on each of the candidates and then vote. Your active participation in the election will help ensure that the incoming board will represent your interests and needs. Please remember that most of the positions that you will be voting on serve multiple year terms. Last year's election was dominated by apathy, as manifested by the very low member turnout. Less than a quarter of our membership voted in last year's election. As it is often said, you lose your right to complain if you did not vote. Please remember to vote.

Once the new board begins working in July, they will need your assistance on many fronts. Each of the HGS committees needs active members, including those that are willing to step-up and lead the committees. The introduction of new blood is key to preventing the society's programs from becoming stale and predictable. Many of the chairmen have also served for multiple years and they are looking for an heir apparent. There will also be a need for speakers at the various monthly meetings that HGS sponsors. There are as many as six HGS sponsored meetings each month. So if you have something new and exciting, let the new Vice President know so that an appropriate venue can be found. If you are unable to present but have a suggestion for a topic or speaker contact the Vice President as well. There is always a need to sense the pulse of the membership. The Vice President is working constantly to ensure that the program presented, fits the needs of the membership. He or she needs support from the membership.

Just as in US politics, as soon as one election concludes the next cycle begins. I would like you to consider serving on the HGS Board in the future. The nominating committee led by past President Gary Coburn has been actively searching for volunteers to step forward for several months and it has remained difficult to find volunteers to fill many of the ballot positions. We are all familiar with the reasons people find for not volunteering. But just consider what the world would look like if everyone used these excuses. There would be no professional societies. Opportunities for training and professional development, especially for those not employed by a large corporation, would be significantly less or much more expensive and there would be less opportunities for professional networks. How might such a world have impacted your career? Some of us may not be employed and some might be less well prepared. I promise you, unlike many nonprofit organizations that are concerned about their balance sheet, this is not a problem the HGS Board need to deal with. The Board will have the more pleasant task of determining how to effectively use the significant amount of funds available. Please consider making John Tubb's job as next year's nominating committee chair a little easier.

This is also the month of AAPG's Annual Convention at the George R. Brown Convention Center. If you haven't yet registered, please consider attending. This remains one of the best opportunities for learning what is new and for networking. Also, remember that volunteers are always needed for judging both the oral and poster sessions, so please consider stepping forward.

Letter from the Editor *continued on page 9*

HGS Guest Night – Saturday, May 21, 2011

Houston Museum of Natural Science 6:00 p.m.–10:00 p.m.

Wildfire Paleoecology along the Cretaceous Coast of Texas

Speaker:
Derek Main
Lecturer in Geology
University of Texas at Arlington

The Guest Night program includes a social hour, buffet dinner and featured speaker presentation:
6:00 – 7:30 cash bar and buffet dinner – tour the museum exhibits and visit with guests
7:30 move into IMAX for presentation of awards and speaker
Short intermission
9:00 IMAX movie (to be determined)
No payments accepted at the door. You must prepay online (www.hgs.org)
or send this form with credit card information. Online registration opens April 18, 2011.

Member name: _____ Member # _____

Names: _____

Email address: _____

Number of Guest Night Tickets _____ @ $30 each Guest Night Tickets Amount $ _____

Total Amount remitted $ _____

Send check and form to: HGS Office, Guest Night 2009, 14811 St. Mary's Lane, Suite 250, Houston, Texas 77079
or fax this form with credit card number to 281-679-5504

Credit Card number and type: _____ **Expiration Date (required):** _____

Name on Credit Card: _____

Daytime Phone number of Card Holder: _____

Billing Address for Card: _____

City, State and Zip: _____

Letter from the President

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to make the night a success. Profits from the gala were split between the two HGS scholarship funds. The total profit for the event was $11,694.36. As a result, each scholarship fund received $5,847.18. With receipt of these profits, both the Calvert Memorial Scholarship Fund and the Foundation Fund met their $10,000 matching goals. As a result, the HGS scholarship funds will receive $10,000 from both the HGS and the GCAGS! As scholarship fundraising is a year-round effort, your donation to HGS' funds is always welcome at http://www.hgs.org/en/donations/add.asp .

Ashley Harris has agreed to work part time as a consultant for the HGS. She will be using her marketing experience to work on marketing and advertising projects. Ashley will be an excellent addition to our staff.

The *Mudstone Conference* held in February had a sellout crowd of 480 attendees. Congratulations go to **Frank Walles** and his hard working committee.

Hope to see everyone at the AAPG Convention in Houston later this month. ■

Laissez les bon temps rouler!

From the **President**

Letter from the Editor

continued from page 7

My final thoughts for this month were inspired by my older daughter, Rebecca. As you may remember, she is a fifth grade school teacher in a Title I school. Title I schools are provided funds to aim to bridge the gap between low-income students and other students. The students are at risk of failure and living at or near poverty. Earlier this year I once again visited her classroom and talked with three classes about the oil industry and the importance of energy. Yes, I would like all HGS members to consider finding a little time to talk about geology, our industry, and the importance of what we do for society. Such a discussion is needed throughout the various school districts in the greater Houston area. But I would hope that some of you find a school like Rebecca's to visit. Rebecca has requested that I ask HGS members take the time to visit Title 1 schools and talk to the kids. They need role models who can show the value of education as the doorway to opportunities. These kids must be convinced that education is the path to a better life. I will be visiting Rebecca's school again this year to talk specifically about the importance of education and how I was the first in my family to finish college and complete an advanced degree. Whether anyone of those kids grow-up to be a geologist or a geophysicist is less important than whether they start to understand that the time in the classroom can be transformational, leading to a variety of opportunities and a pathway to success. ■

Until next month…

From the **Editor**

See you at the George R. Brown Convention Center!

Countdown to **AAPG**

Candidates for the 2011–2012 Executive Board

HGS Election Voting Instructions

The Houston Geological Society officer election voting period opens in April 2011 and continues to May 10, 2011. HGS members can vote online for the following candidates: President-elect, Vice President, Secretary, Treasurer-elect, Editor-elect and two HGS Directors.

An email will be sent to active HGS members that will contain the ballot web link. The highlighted link will take you to a secure webpage. Follow the easy instructions and review the candidates. Vote for HGS candidates of your choice using a personal Voting ID number.

1. Go to the HGS Website at **www.hgs.org**
2. Logon to the HGS Website with your member user name and password (If you don't remember your user name and password contact the HGS Webmaster)
3. Click the link on the email and you will be taken to the voting page
4. On the voting page, input the unique voting ID number located on the email. Each member has a unique voting ID number. Please do not share your number with anyone. You will be taken to the candidate list page.
5. Cast your votes by clicking on the boxes next to the candidate names. You will also see the candidate's biography that you can read to help you decide on the candidate you want to vote for.
6. When you are done selecting candidates, click the "submit vote" button at the bottom of the page. ■

President-elect (two candidates)

Martin M. Cassidy

Education:
Ph.D. Geology 2005 University of Houston.
M.S. Geology 1964 University of Oklahoma.
B.A. Geology cum Laude 1955 Harvard University.

Experience:

Dec. 2005–present	Research Scientist, Dept. of Geology, University of Houston study of CO_2 and Consultant Petroleum Geologist
June 1994–2005	Graduate student U. of H. and Consultant Petroleum Geologist
1991–1994	Amoco International New Ventures regional assessment
1988–1991	Amoco International New Ventures Indonesia
1986–1988	Amoco Production Technical Advisor New Orleans
1984–1986	Amoco (U.K.) Exploration Company Exploration Manager, London, England
1982–1984	Amoco (U.K.) Exploration Company Division Operations Supervisor
1973–1982	Amoco International Exploration Company Various assignments including New Ventures in Middle East, Far East Exploration operations Manager
1969–1973	Pan American Libya oil Company Chief Geologist, Tripoli, Libya
1962–1969	Pan American Petroleum Company, Geologist, South

Martin M. Cassidy *continued on page 15*

Michael F. Forlenza, P.G.

Education:
B.A., Geology, Columbia College, Columbia University, New York, NY.
M.S., Geology, University of Massachusetts, Amherst, MA.

Experience:

1982–1985:	Exploration Geologist, Texaco International Exploration, Inc., White Plains, NY
1985–1986:	Geophysicist, Exxon International Exploration (ESSO), Houston, TX
1986–1990:	Geologist, CA Rich Consultants, Inc., Glen Cove, NY
1990–present:	Senior Geologist, Malcolm Pirnie/ARCADIS U.S., Houston, TX

Professional Affiliations:
HGS Editor 2008-2009
HGS, NGWA, AGWSE, Texas Professional Geoscientist, Wyoming Professional Geologist, former AAPG Member

Statement:
The range and scope of the HGS activities is truly impressive. Facilitation of the numerous technical meetings and publication of the excellent monthly *Bulletin* are the most visible of these activities to our members. But the HGS does so much more: continuing education, conferences, publications, field trips, social events,

Michael F. Forlenza, P.G. *continued on page 16*

Candidates for the 2011–2012 Executive Board *(continued)*

Vice President (two candidates)

Bruce J. Martin

Education:
M.S. Geology 1979, Tulane University
B.S., Earth Science 1975, Louisiana State University of New Orleans

Experience:
Thirty year career as a manager and geoscientist, working exploration and development operations in both domestic and international venues, specializing in shale and carbonate reservoirs.

Achievements:
- Early exploration resulting in Haynesville Shale discovery for Chesapeake
- Gas/Condensate Trend extension of Barnett Shale for EnCana Oil Gas
- Recent Texas Haynesville Shale Trend extensions
- Identification of unfolding Haynesville Ls/Sh hybrid play

Previous Assignments:
Bruce has worked with exploration teams throughout the domestic U.S. on unconventional plays, including Haynesville, Bossier, Barnett, Marcellus, Monterrey and many others. He has had the pleasure of working with many of the primary unconventional shale operators such as Southwestern Energy, Chesapeake, Devon, and Mitchell Energy. Earlier in his career Bruce specialized in gulf coast onshore and offshore operations, ranging from Texas to Florida showing himself as a proven oil and gas finder in these states.

Bruce uses his level of experience to encourage the next generation of geoscientists by mentoring in intern programs while also being active in the Houston Geologic Society, SEG, and, AAPG, to foster geosciences.

Activities:
Fishing & Farming
Christian Mission and Medical Aid Work - Africa ■

David P. Meaux

Education:
B.S. Geology, University of Houston
M.S. Geology, University of Houston

Experience:

1989–1991	Shell Western E&P, Exploration Geologist
1992–1998	Earthfield Technology, Project Geoscientist
1998–2006	AOA Geophysics, Senior Geoscientist, Director
2006–present	BP America, Staff Geophysicist - Imaging R&D

Professional Affiliations:
AAPG, HGS, SEG, EAGE

Statement:
I would like to ask for your support in my candidacy as HGS Vice President. The HGS is a great organization which I have found very beneficial both in terms of professional development and career networking. I joined the HGS in 1989. Through the years I have maintained an active level of involvement in the society.

In 2009 I began serving a two-year term as HGS Treasurer-elect/Treasurer. My current obligation will be completed June of 2011. Serving on the HGS Board of Directors over the past few years has been a great experience and I have learned a great deal more about the challenges and requirements associated with managing this great organization. I believe this experience has helped me to be better equipped to serve in a higher role as your Vice President.

Great organizations like the HGS stay great because of the active involvement of its volunteers and its membership. In 2011 I'd like to utilize the experiences and skills I have gained as an HGS volunteer and officer, as well as those skills I have picked up along the way in my professional path, to contribute to this organization as your Vice President. ■

Candidates for the 2011–2012 Executive Board *(continued)*

Secretary (two candidates)

Matthew R. Cowan

Education:
B.S. Geology, Texas A&I University, 1993
M.S. Geology, Texas A&M University – Kingsville 2000

Experience:

2006–present	Lone Star Environmental, Chief Geologist
2004–2006	TRC Environmental, Staff Geologist
1997–2004	Lone Star Environmental, Chief Geologist
1996–1997	LSI – Staff Geologist
1995–1997	Texas A&M University – Kingsville, Geology Lab Instructor

Professional Affiliations:
Houston Geological Society (HGS)
Texas Association of Professional Geoscientists (TAPG)

Professional Activities:
Licensed Professional Teacher – State of Texas – Secondary Earth Science
Texas Professional Geoscientists License #1263

2006- present	Texas Association of Professional Geoscientists, President
2006–2007	HGS Environmental & Engineering Group, Treasurer
2007-present	HGS Environmental & Engineering Group Chairman

Professional Awards:

2007	HGS Rising Star Award
2009	HGS Presidents Award

Statement:
I am honored to be nominated for the position of Secretary of the Houston Geological Society (HGS). I have been involved with the HGS Environmental and Engineering Group since 2002 and as an officer since 2006. I have been active on issues regarding professional licensure since 2003 and I have worked with the Texas Association of Professional Geoscientist (TAPG) since 2004. In 2009 I had the honor of representing both TAPG and HGS testifying before the Texas Legislature on matters related to professional geoscientists. As a professional I believe I have an obligation to aide in the growth of our profession as a whole through professional societies. It would be an honor to serve in a capacity where I can serve my fellow geologists in guiding the HGS, encouraging its technical programs to meet the needs of the members and providing an avenue of professional development for those who are new to the profession as well as to those who are seasoned veterans. ■

Justin Vandenbrink

Education:
B.S. Geology, University of British Columbia, 1994
Diploma Communications/ Public Relations, B.C.I.T, 1998

Experience:

2001–present	RPS Energy, Geological Operations Manager
1998–2001	Broadcasting/PR
1995–1996	Inmet Mining – Exploration Geologist
1994–1995	Rennaissance Energy – Exploration Geologist

Professional Affiliations:
HGS, AAPG, CSPG, SEPM
APEGGA – Professional Geologist

Professional Awards:
2009 HGS Rising Star Award

Professional Activities:

2010	HGS Africa 2010 Committee
2009	HGS Career Day Speaker
2008–present	HGS International Exploratonists Chairman
2008–2009	HGS Holiday Party Organiser
2006–2008	APEGGA – MC for Graduates Workshop & Ring Ceremony

Statement:
I am honored to be nominated for the position of Secretary of the Houston Geological Society. Going through the process of becoming a professional geologist made me realize the obligation I have to maintain and support future growth of geoscience professions in North America. Volunteering with the HGS has allowed me the opportunity to meet so many great students and industry professionals in Houston. I am thankful for the camaraderie and want to give back by welcoming in the next generation and making the HGS even stronger. ■

Candidates for the 2011–2012 Executive Board *(continued)*

Treasurer-elect (two candidates)

Karen Sullivan Glaser

Karen Sullivan Glaser is the G&G Director of Curriculum for DCS at Schlumberger. She is a stratigrapher with experience in a variety of depositional environments including black shales, carbonates and deep water facies. She obtained a Ph.D. in geology from Rice University, a M.S. in petroleum geochemistry from the University of Oklahoma and a B.A. in geology from Colgate University in New York. Prior to joining Schlumberger she was employed at Exxon Production Research and Amoco Production Company, both in Houston. ■

Donald Walker

Education:
M.S. Geology, Colorado School of Mines, 2008
M.S. Petroleum Economics, French Petroleum Institute, 2006
M.S. Mineral and Energy Economics, Colorado School of Mines, 2005
B.S. Petroleum Geology, University of Oklahoma, 2004

Experience:
2008 – present Geologist, ConocoPhillips, Houston

Professional Affiliations:
Houston Geological Society
American Association of Petroleum Geologists
Society for Petroleum Engineers
World Affairs Council of Houston
International Association for Energy Economics

Professional Activities:
2009 – present AAPG Student Chapters Committee

Statement:
It is a great privilege to have the opportunity to run for Treasurer of the Houston Geological Society. The HGS plays a central role in advancing the geosciences and enriching the professional lives of many geoscientists in our community. I have benefitted tremendously from my involvement with the HGS, and I would consider it an honor to be able to give back to the organization by serving as Treasurer. Accurate budgetary tracking, timely identification of financial requirements, and proactive communication of financial information is vital to the continued success of the HGS. As Treasurer, I would strive to achieve these tasks in order to improve the efficiency of the organization's various programs and to strengthen the HGS as a whole. My relevant experience for this position includes serving as Treasurer for ConocoPhillips Lower 48 E&P United Way campaign and managing budgets for field trips to South Africa and Europe. I ask for your vote, and I look forward to bringing enthusiasm, commitment, and the perspective of an early career geoscientist to the HGS board as Treasurer. ■

Candidates for the 2011–2012 Executive Board *(continued)*

Director – Two-year term *Vote for two candidates*

Cecelia Baum Raborn

Education:
B.S. Geology, 2007 Columbia University

Experience:

2007	Geologist, Fugro Multi Client Services
2007–present	Geologist, Maersk Oil Houston

Professional Affiliations:
HGS, AAPG, GSH, SEG

Professional Awards:
2009 HGS Rising Star Award

Professional Activities:

2010-2011	HGS Secretary
2008-2010	Chairman NeoGeos
2008-2010	GSH-HGS Geoscience Day Committee

Statement
I am honored to accept the invitation to serve the Houston Geological Society as a Board member. HGS has been instrumental in shaping my career, and volunteering for the Society has been one of the most rewarding aspects of my professional life. I have learned a considerable amount about the HGS serving as Secretary over the past year and am anxious to continuing contributing to and improving the Society in the role of Director.

I look forward to bringing innovation, enthusiasm, and the perspective of a young geoscientist to the HGS board as Director. ■

Gary W. Coburn

Experience:
I am a geologist currently working the ultra-deep water for Murphy Oil in the Eastern Gulf of Mexico province. I have worked in basins around the world since I started my career back in 1978 with CNG. I have worked for companies including Superior Oil, Tenneco E & P, and Chevron and have seen many changes over the years. Having lived through and survived several industry boom and bust cycles, as well as acquisitions and mergers I understand the pressures and problems the HGS faces in the coming years.

Professional Affiliations:
AAPG, HGS, GSH, SEG
Texas Professional Geoscientist License #1989
North Carolina Professional Geologist License # 785

Professional Awards and Activities:
President HGS 2009-10
Vice President HGS 2008-09
HGS 2006 Rising Star Award
2003 to 2006; Co-Chair HGS Northsiders
2002 HGS Northsiders Origination Committee
Numerous professional papers published in the AAPG, GCAGS, W. VA Oil & Gas Survey, *Oil & Gas Journal* and *World Oil.*

Statement:
The HGS is by far the most organized and professional group with whom I have ever been associated. I am very well aware of what it takes to put on a great technical program month after month. There is an incredible amount of work that goes on in the HGS behind the scenes. I strongly believe we need more of our members involved in the nuts and bolts of the HGS and I will work to get more of our members involved on the various committees. We need more people willing to take on leadership roles. The HGS Board must get our younger people involved in leadership if we are to continue to be a vibrant, meaningful geological society for the future. I feel it is imperative to get more of our younger members to actively participate in the HGS. We can do this by making our meeting topics and our HGS activities and community outreach something they will find of value, both in their careers and personal life. We have the greatest concentration of professional geologists in the country. Building upon this base we can continue to grow our superb technical programs and community/school programs. I would be honored to have a part in this exciting time for the HGS. ■

Candidates for the 2011–2012 Executive Board *(continued)*

Editor-elect (one candidate)

Patricia A. Santogrossi

Education:
M.S., Geology, 1977, University of Illinois, Urbana, Illinois
B.S., Geology, 1974, University of Illinois, Urbana, Illinois. Outstanding Graduating Senior

Experience:

2005-present	Statoil EXP NA: London, UK and Houston, Texas. Leading Reservoir Geologist/ Appraisal Project Management
2002-2003	Knowledge Reservoir, Houston, Texas. Chief Geologist
2001-2002	Chroma Energy, Sugarland, Texas. Chief Geologist
1996-2000	ARCO Oil & Gas; Vastar Resources, Houston, Texas. Deepwater
1991-1996	Marathon Oil Company, Houston, Texas. Deepwater
1976-1991	Shell Oil Companies: Domestic, International and Research, Houston and Bellaire, Texas; New Orleans, Louisiana. Appraisal Lead, Strategic Evaluation, Special Projects/Province Lead

Professional Affiliations:
American Association of Petroleum Geologists; Houston Geological Society, SEPM (Society of Sedimentary Geology); Gulf Coast Society Section of Sedimentary Geology (GCSSEPM), Society of Exploration Geophysicists (SEG); Texas Professional Geologist #856

Professional Activities:
AAPG:

2007–2013	House of Delegates member from Houston Geologic Society
2000–2003	Geophysical Integration Committee
1994–2003	Research Committee
1992-1993	Convention Coordination
1990	Co-editor Memoir 48

GCSSEPM:

2009-Present	Trustee, Gulf Coast Section SEPM Foundation
2003-2004	Treasurer, Gulf Coast Section SEPM
2001	Vice President, Gulf Coast Section SEPM
1995	Contributing author Annual Research Conference
1994	Annual Research Conference Program Committee; Session Chair

SEPM

Mid 80's	Ad Hoc Membership Committee

OTHER
Geothrust Committee, University of Illinois Geology Advisory Alumni; Co-chair Texas-Louisiana Alumni Fundraising Group
1992-Present Member Zonta International: Offices held include Club President, District Literacy Chairman, and District Foundation Ambassador ■

continued from page 10

Martin M. Cassidy — *Candidate for President-Elect*

	Texas oil and gas and High Island sulfur exploration and development
1960–1962	Harvard University Teaching Fellow
1958–1960	M.S. University of Oklahoma
1956–1958	U.S. Air Force Ammunition Supply Officer, Korea. Denver.
1955–1956	Standard of Texas, Geologist

Professional Affiliations:
AAPG, Certified Petroleum Geologist
Sigma XI
The Geological Society, Fellow
AIPG, Certified Professional Geologist.
Texas Board of Professional Geoscientists License #3042

Professional Activities:

2004-2010	AAPG, delegate
1995-2010	AAPG Publication Pipeline committee, Chairman and various positions, now Vice Chairman.
2008	HGS AAPG Delegate Foreman
2007–2010	HGS International Group Treasurer.
1998–1999	HGS International Group Chairman.
1999	Presidents award.
1968–1969	HGS Vice President
1967–1968	HGS Treasurer

Statement:
I am honored to be asked to stand for president of the HGS that

Martin M. Cassidy *continued on page 16*

HGS Welcomes New Members

New Members Effective February 1, 2011

ACTIVE MEMBERS

Rachel Aisner
Mary Lindsey Bateman
Teresa Becker
Celine Caithamer
Alessandro Cantelli
Joseph Chandler
William Chastain
James Clippard
Robert German
Andrew Gladney
Bryan Guzman
Roman Kazinnik
Robert Klimentidis
William Koehn
David Kronman
Ariel Malicse
Henry Martin
Michael McKenna
Lisa Moreau
Jennifer Sano
Rick Schrynemeeckers
Rachel Sisswein
Fred Snyder
Alisan Sweet

STUDENT MEMBERS

Regina Dickey
Elizabeth Goree
Ghassan Jiha
Marissa Lewis
Hammad Masood
Bernard Okeke
Maria Peterson

Welcome New Members

Candidates for the 2011–2012 Executive Board *(continued)*

continued from page 15

Martin M. Cassidy — *Candidate for President-Elect*

is one of the premier local geological societies of the world. With our many committees and eager volunteers the HGS is providing interesting and educational programs at reasonable prices, and services to both our mature members and the successful new entrees to the oil and gas business.

As the industry evolves, continuing education for members of the HGS is particularly valuable to help us to learn the skills needed to take advantage of new opportunities. Joint meetings with other societies helps broaden our scope of knowledge

The opportunity to network among our fellow geoscientists is also important and we should make efforts to continue our successful programs to attract large attendance at our various noon and evening meetings. We need to not only to make special efforts to bring in our young new members but also to increase our membership among experienced geologists. We should be inviting in geologists who have never joined, including those recently retired persons, or those temporarily out of work. There is great satisfaction in working together to achieve common goals. There are many opportunities within the HGS, especially as we prepare to host the AAPG convention.

If elected I look forward to working with the other new officers, the directors, committee chairmen, and members to continue our successes of the HGS with prudent attention to the budget and emphasis on volunteers. ■

continued from page 10

Michael F. Forlenza, P.G.—*Candidate for President-Elect*

educational outreach, and student scholarships. All of these are the result of the efforts of numerous dedicated volunteers.

As the HGS Editor, I served two years on the HGS Board of Directors. The duties of the Editor were demanding and rewarding. Demanding because publication deadlines could not be ignored. Rewarding because I met and worked with many committed Society members who are interested in the continued development and growth of HGS.

It is the goal of all of the HGS leaders, but particularly of the HGS President, that each member becomes more involved with the Society: more involved in the technical meetings, more involved in HGS activities, more involved in community outreach, and more involved in sharing professional development with each other.

While the Society is healthy, the HGS faces many challenges going forward. These challenges will include maintaining and growing the membership, getting more young people involved, raising the visibility of the Society in Houston, greater public awareness of the role of geoscientists, and supporting the teaching of geosciences in Texas schools. As President-Elect, I will assist the HGS President in carrying-on the great work of the last 88 years and addressing these challenges. As President, I will look forward to leading the HGS as we move forward together. ■

Save the Date! July 21st, 2011
Techno-Fest and Techno-Conference

Techno-Fest was established years ago to bring new technology to the Oil and Gas Community in a one day local setting. In the early beginnings the event were vendors showing the latest in their technologies of software, regional studies or speculative seismic data with a predominant audience of Geologist. Last year the HGS added Techno-Conference. We understand that the exploration and exploitation takes an integrated approach across many scientific disciplines and are now expanding the breath of the conference across disciplines of Geology, Geophysics and Engineering.

The Theme for this year's Conference is "Profits in any Environment" Rene Mott, who is Chairman of Techno-Conference is now soliciting papers in the following topics:

- onshore and offshore new technologies
- new technologies in drilling and completions
- new technologies in geophysics
- new concepts in geology

A Call for Papers is being requested from interested parties that would like to share their case studies and proven new technology of the past year.

There are a limited amount of speaking positions for this one-day event.

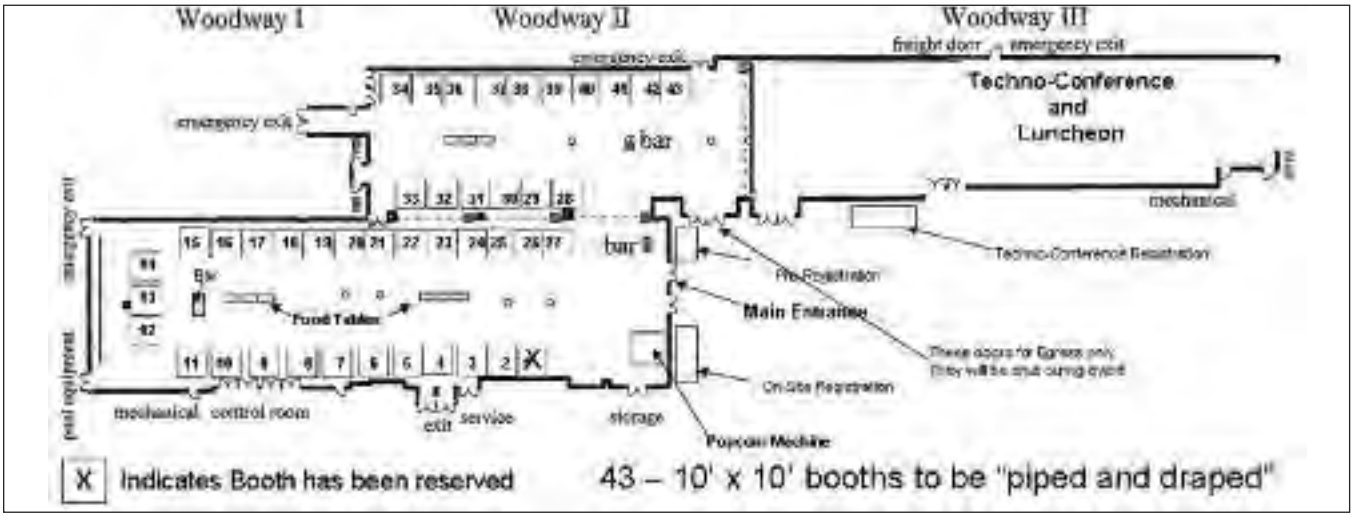
Abstracts and speaker bios are asked to be submitted by interested parties to René' Mott (queenmio@att.net) or Deborah Sacrey (dsacrey@auburnenergy.com) by April 30th, 2011 in *.doc format.

Final material will need to be in power point format *.ppt for presentations and are due June 21, 2011.

A public *.pdf file will need to be delivered at the same time to post to the a website for participants to before the event for note taking.

Final materials may be sent to René Mott (queenmio@att.net) for installation at the Techno-Conference. ■

Please join us in making this year's event a sell out!



SPONSORSHIP REGISTRATION FORM

Summer Techno-Fest and Techno-Conference 2011

Thursday, July 21st – 8:30am – 8:30pm

WESTIN GALLERIA • 5060 West Alabama, Houston, TX

Description: The HGS Emerging Technologies Group is inviting companies to come and share their new technologies and research. We are reserving space at the Westin Galleria Hotel. The event will be held on July 21st, from 8:30am to 8:30pm for both Techno-Fest and Techno-Conference. We will have finger foods and a cash bar for Techno-Fest. People attending this function will be eating and drinking while viewing the latest in technology and research. There will be a small admission fee for each person attending. An announcement will be run on the HGS site, if a URL is provided, the vendor list will be directed toward the vendor's home page. Sponsorship opportunities include Techno-Conference Luncheon, beverage bar at Techno-Fest as well as munchies served during Techno-Fest.

Companies wishing to participate as a sponsor should fill out the following contract, and return to:

Deborah Sacrey
Auburn Energy • 8588 Katy Freeway, Suite 260 • Houston, TX 77024
(office: 713-468-3260, fax: 713-468-3210) Include a fax cover letter
E-mail me along with faxing your reply at: dsacrey@auburnenergy.com

1) The undersigned hereby applies to be a general sponsor at the above mentioned Techno-Fest.

2) This contract must be signed and returned ASAP with check for amount appropriate to sponsorship level. (Check or credit card.)

General Sponsorship: ☐ **Platinum $1000** ☐ **Gold $500** ☐ **Silver $250** ☐ **Bronze $100.**

3) Contact me directly if you do not receive confirmation of the application within 3 days of sending.

4) Company's name will be posted at the event and on the website.

5) E-mail a gif or tif image of your company logo for inclusion on the HGS website.

***PLEASE INCLUDE THE CONTACT NAME FOR THIS EVENT!**

☐ **Refreshment Sponsorship** ☐ **General Sponsorship**

Company Name _____

*Contact Name _____ Title: _____

City, State and Zip: _____

Phone: _____ Fax: _____

Email: _____

• Let me know if you do not check your e-mail regularly. Most correspondence is by e-mail. •

URL Site: _____

Credit Card number and type: _____ **Expiration Date (required):** _____

Name on Credit Card: _____

Daytime Phone number of Card Holder: _____

Billing Address for Card: _____

City, State and Zip: _____

Signed: _____

Date: _____

If you have any questions, please contact
Deborah Sacrey, 713-468-3260 or dsacrey@auburnenergy.com
Bonnie Milne-Andrews, 281-874-2841 or bonnie.milne@swiftenergy.com

VENDOR REGISTRATION FORM

Summer Techno-Fest 2011

Thursday, July 21st – 8:30am – 8:30pm

WESTIN GALLERIA • 5060 West Alabama, Houston, TX

Description: The Houston Geological Society is inviting companies to come and share their new technologies and research. We are reserving space at the Westin Galleria Hotel in the Woodway Hall. The event will be held on July 21st, 2011 from 2:30pm to 8:30pm. We will have finger foods and a cash bar. People attending this function will be eating and drinking while viewing the latest in technology and research. There will be a small admission fee for each person attending. Exhibitors will be given 2 admissions with the booth fee. Additional admissions may be purchased. An announcement will be run on the HGS site, if a URL is provided, the vendor list will be directed toward the vendor's home page. Please indicate if you would be interested in Sponsorship.

Booths will be piped and draped. Vendors will be responsible for ordering furniture, electrical and internet/phone hookups (if necessary).

Companies wishing to participate should fill out the following contract, and return to:

Deborah Sacrey
Auburn Energy • 8588 Katy Freeway, Suite 260 • Houston, TX 77024
(office: 713-468-3260, fax: 713-468-3210) Include a fax cover letter
E-mail me along with faxing your reply at: dsacrey@auburnenergy.com

1) The undersigned hereby applies for space at the above mentioned Techno-Fest.
2) **This contract must be signed and returned ASAP with check for $400.00 if reserved by July 1 or $500.00 if reserved AFTER July 1, 2010.** (If you need more time to have a check cut, please contact Deborah Sacrey.)
   Make checks payable to HGS (Houston Geological Society). Space allocated is based on booths available at time of application.
3) Each company will be responsible for providing electrical/phone/internet. Information is included with this packet.
4) Contact me directly if you do not receive confirmation of the application within 3 days of sending.
5) Setup will begin at 7:00 am on the day of the event, and must be completed by 12 NOON. Dismantling will begin at 8:30pm and must be finished by 12:00 am.
6) You will be contacted with more information at least two weeks prior to the event.

***PLEASE INCLUDE THE CONTACT NAME FOR THIS EVENT!**

☐ **Refreshment Sponsorship** ☐ **General Sponsorship**

Company Name _____

*Contact Name _____ Title: _____

City, State and Zip: _____

Phone: _____ Fax: _____

Email: _____

• Let me know if you do not check your e-mail regularly. Most correspondence is by e-mail. •

URL Site: _____

BOOTH CHOICE: _____1ST _____2ND _____3RD (Booth floor plan on page 17)

Credit Card number and type: _____ **Expiration Date (required):** _____

Name on Credit Card: _____

Daytime Phone number of Card Holder: _____

Billing Address for Card: _____

City, State and Zip: _____

Signed: _____

Date: _____

If you have any questions, please contact

Deborah Sacrey, 713-468-3260 or dsacrey@auburnenergy.com
Bonnie Milne-Andrews, 281-874-2841 or bonnie.milne@swiftenergy.com

2011 HGS Annual Guest Night
Saturday, May 21, 2011
Wildfire Paleoecology along the Cretaceous Coast of Texas

by Dave Reynolds

What better place to learn about the fascinating Arlington Archosaur discovery than at the *Guest Night* event held at the Houston Museum of Natural Science! This year's event will be held on Saturday, May 21, 2011. Make your plans early to attend.

This year we are excited to have Derek Main, Lecturer in Geology at the University of Texas at Arlington talking about the new discoveries. He is helping with the urban Cretaceous dig in Arlington. This site has yielded a number of significant fossils since it was discovered in 2003 including a 95-million year old crocodile, a new lung fish, and a fossil that may be an early ancestor of the "duck-billed dinosaurs" or iguanodaunts.

The Arlington Archosaur site is notable for the opportunities it presents, a unique snapshot of a complete Cretaceous ecosystem, and a valuable teaching laboratory. The site covers some 2200 acres of once grassy prairie in the urban setting of Arlington. Mr. Main's Ph.D. advisor at the Earth and Environmental Sciences Department at UTA, Dr. Christopher Scotese, notes "the site is significant because it has a diverse fauna of reptiles and also abundant plant material, and the rock and the geology tell us quickly what kind of environment they lived in."

This site will resonate with many of us in the Houston area. In the mid-Cretaceous this site was a coastal part of the Cretaceous epi-cratonic sea. As Mr. Main puts it, "Arlington was the Galveston or the Mississippi Delta of the Cretaceous."

This discovery so close to the University of Texas at Arlington campus makes it a valuable teaching laboratory. College of Science Dean Pamela Jansma further notes that college students "don't usually have things like this in their backyard. If you read about dinosaur discoveries or important paleontological breakthroughs, most of the time they're in China, Mongolia or Africa. They're far away. It is a rare opportunity, especially in such a metropolitan area."

While a final repository for the fossils has not been decided, everyone agrees that the site is important for UT-Arlington as an educational tool.

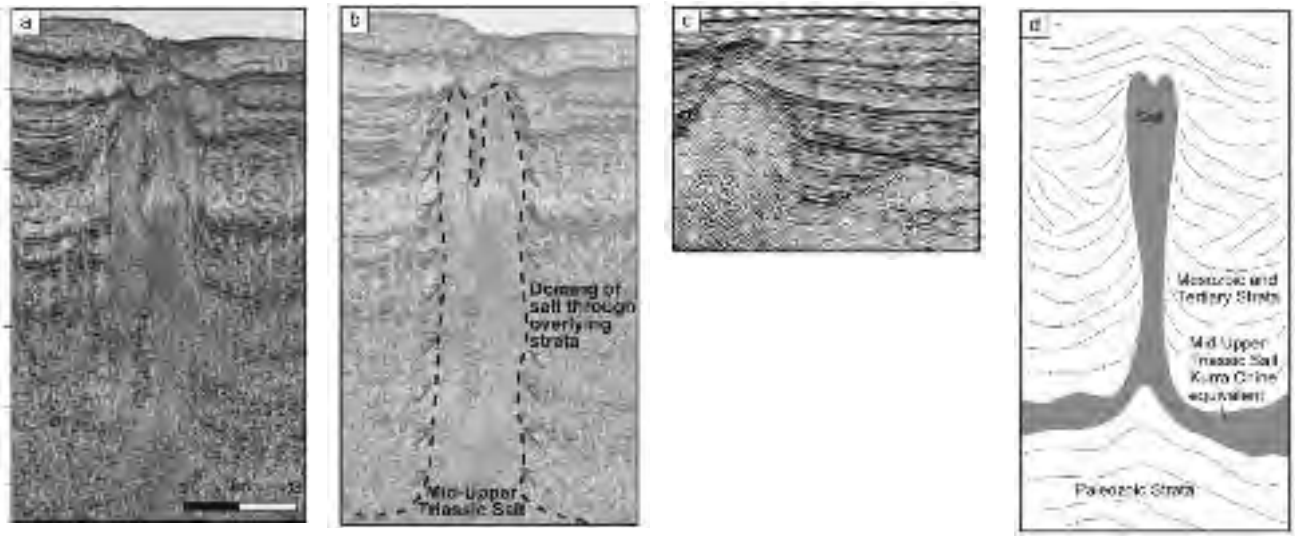
Derek J. Main grew up in Irving, Texas and has worked at local Texas museums and on a variety of interesting projects over the years. Some included the Big Bend Alamosaurus Project with the Dallas Museum of Nature and Science, and Jones Rance Palusysaurus Project with the Shuler Museum of Paleontology at SMU.

Derek earned his B.Sc. in Geology from UT-Dallas in 2001 and his M.Sc. in Geology from UT-Arlington in 2005 with a thesis on Woodbine Formation stratigraphy, paleoecology and paleobiogeography. In recent years he has continued his graduate work at UTA with a Ph.D. dissertation supervised by Christopher R. Scotese on the Arlington Archosaur Site and dinosaur paleobiogreography. Derek is a part-time lecturer at UTA and teaches courses on Earth systems and Earth history and dinosaurs, as well as leading students on excavations to the Arlington Archosaur site. He is a member of the Geological Society of America, the Society of Vertebrate Paleontology and the Texas Paleontological Society. ■

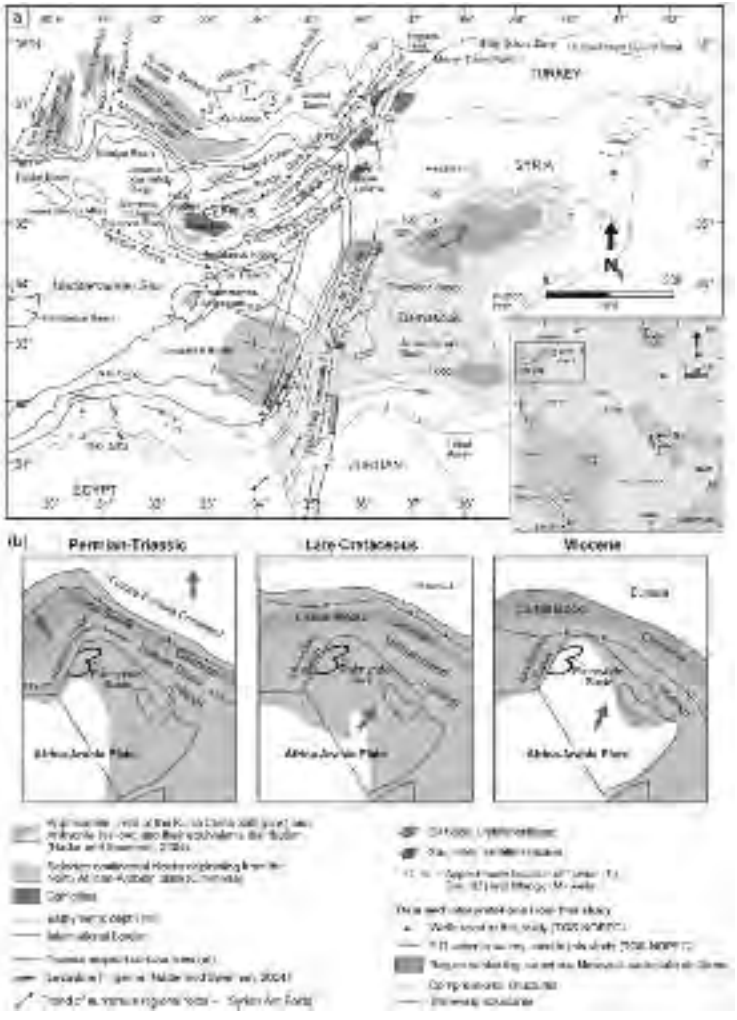
Addendum

The following figure captions and details have been added to last month's General Dinner Presentation

"Tectonic, Depositional, and Thermal History of the Levantine Basin that Resulted in Numerous Potential Structural and Stratigraphic Plays" by Lisa Marlow.



Above: Seismic evidence of possible salt diapir from Lower Mesozoic salt deposit in the Levantine basin. The salt is likely Mid to Late Triassic in age, possibly the equivalent to the Kurra Chine salt, which is thought to have extended into the Levantine basin from the Palmyride basin to the northeast (Figure 1). In parts of the Levantine basin the Triassic salt penetrates overlying strata. The above figures illustrate: (a) uninterpreted seismic line; (b) interpreted seismic line showing stratal terminations/truncation against the potential salt diapir; (c) known salt diapir from the Gulf of Mexico to highlight the similarities between a known salt with the interpreted salt of the Levantine basin (Forrest, 2000) (AAPG©2000 reprinted by permission of the AAPG whose permission is required for further use); and (d) schematic interpretation.
Reproduced by permission of GeoArabia from Marlow et al., 2011, v. 16, no. 2.



Right: Levantine basin, regional features and paleogeography of the southern Neo-Tethyan Margin. (a) Regional data and interpretations from this study: delineation of Kurra Chine salt and related facies (Nader and Swennen, 2004); rafted continental blocks (Robertson, 1998; Garfunkel, 1998, 2004; Stampfli et al., 2001); ophiolites (Robertson, 2002); bathymetric depth; Triassic isopach contour lines (Nader and Swennen, 2004); Levantine Hingeline, Syrian Arc folds and faults (Walley 1998; Beydoun, 1999; Mouty, 2000; Sawaf et al., 2001; Mart et al., 2005); oil and gas fields; general location of Tamar (T), Dalit (D), and Mango (M) wells; data set for this study - 4 wells (depth range 3,210–5,707 m (10,531–18,986 ft)) and 2-D seismic data (1,450 km length and 9 seconds two-way time) [seismic and wells from TGS NOPEC]; stratigraphic and structural interpretations from this study, i.e. Mesozoic carbonate platform region and compressional and strike-slip structures. (b) Paleogeographic reconstruction showing opening and closing of the Neo-Tethyan Sea and the relative position of the Levantine basin with respect to the African-Arabian Plate and Neo-Tethyan Margin (blue indicates estimated area underwater along the southern margin).
Reproduced by permission of GeoArabia from Marlow et al., 2011, v. 16, no. 2.

HGS Tennis Tournament

Friday, April 15th, 2011

Houston Racquet Club
10709 Memorial Drive
11:30 a.m. until 5:00 p.m.

Registration Fee is $50. Registration Deadline is April 8th.

This will be a round-robin tournament. Prizes will be awarded for first and second place in each division. Divisions may be combined based upon number of players. Door prizes will be awarded by blind drawing. All competitors are automatically entered into the door prize drawing, but you must be present to win.

Lunch will be provided prior to the event. Refreshments will be available throughout the day.

For more information, contact: Steve Brachman at 713-268-8810 or sbrachma@petrohunt.com

HGS TENNIS TOURNAMENT REGISTRATION FORM

Name:_____ Company:_____

Email:_____ Phone:_____

Division (Circle one): **A** **B** **C** USTA Rating (if known)_____

Registration Fee: **$50** + Sponsor Contribution: $_____ = Total: $ _____

Make Checks Payable to: The Houston Geological Society.

Mail Check and Registration Form to:
Attn: Steve Brachman, HGS Tennis Tournament
Petro-Hunt, LLC • 2901 Wilcrest, Suite 250 • Houston, TX 77402

Make plans to attend the AAPG 2011 Annual Convention & Exhibition in Houston, 10-13 April, at the George R. Brown Convention Center, where an international mix of professionals will be ***Making the Next Giant Leap in Geosciences*** In addition to a dynamic exhibition hall and networking opportunities, you'll experience a highly regarded technical program covering these themes:

- Molecules to Marketplace: The Business of Energy
- Global Deepwater Reservoirs: Giant Leaps in E&P
- Worldwide E&P: Opportunities in the New Decade
- Challenged Resource Frontiers
- Mudstones and Shales: Unlocking the Promise
- Siliciclastics: Advancing Research to Resource
- Insight into Carbonates and Evaporites
- Breakthroughs: Tectonics, Salt and Basin Analysis
- Integrating New Technology, Geophysics and Subsurface Data
- Energy and Environmental Horizons

Other highlights include:

All-Convention Luncheon featuring four geoscientist-astronauts — Apollo astronaut Harrison H. "Jack" Schmitt, and space shuttle astronauts Kathryn D. Sullivan, James F. Reilly II and Andrew J. Feustel. These scientists together represent a near uninterrupted timeline of the entire NASA manned space program, initiating in 1965 with Apollo training, to the latest space shuttle mission scheduled for Spring 2011.

Halbouty Lecturer David Lawrence, Executive Vice President, Shell Upstream Americas Exploration and Commercial, speaking on The Next Era of Exploration.

NEW FOR 2011: E-POSTERS

Monday, April 18, 2011

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

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

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

HGS International Dinner Meeting

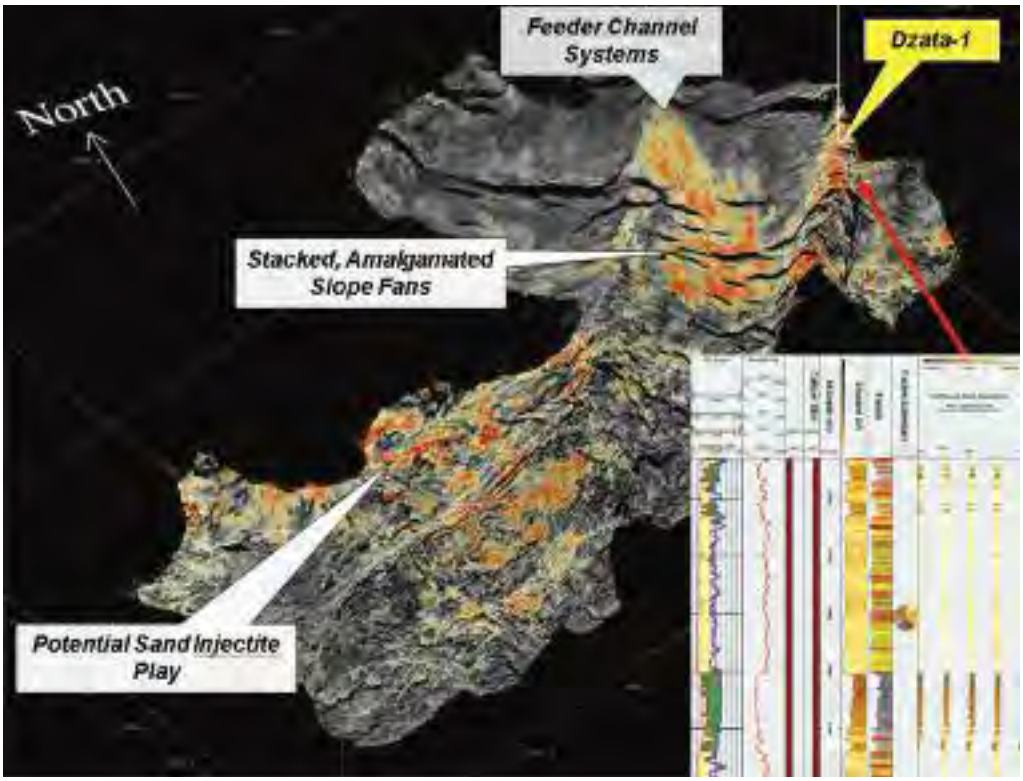
Christopher H. Bradley
Vanco Exploration Company
Houston, Texas

The Tano Basin of Western Ghana – a Complex, Intriguing and Prolific Deepwater Play

The offshore Tano-Ivorian basin straddling the Ghana-Côte d'Ivoire border along the West African transform margin has become one of the most active deepwater exploration plays in the world, resulting in multiple significant discoveries. Vanco is playing a significant part in this exciting play.

The offshore Tano-Ivorian basin…has become one of the most active deepwater exploration plays…resulting in multiple significant discoveries

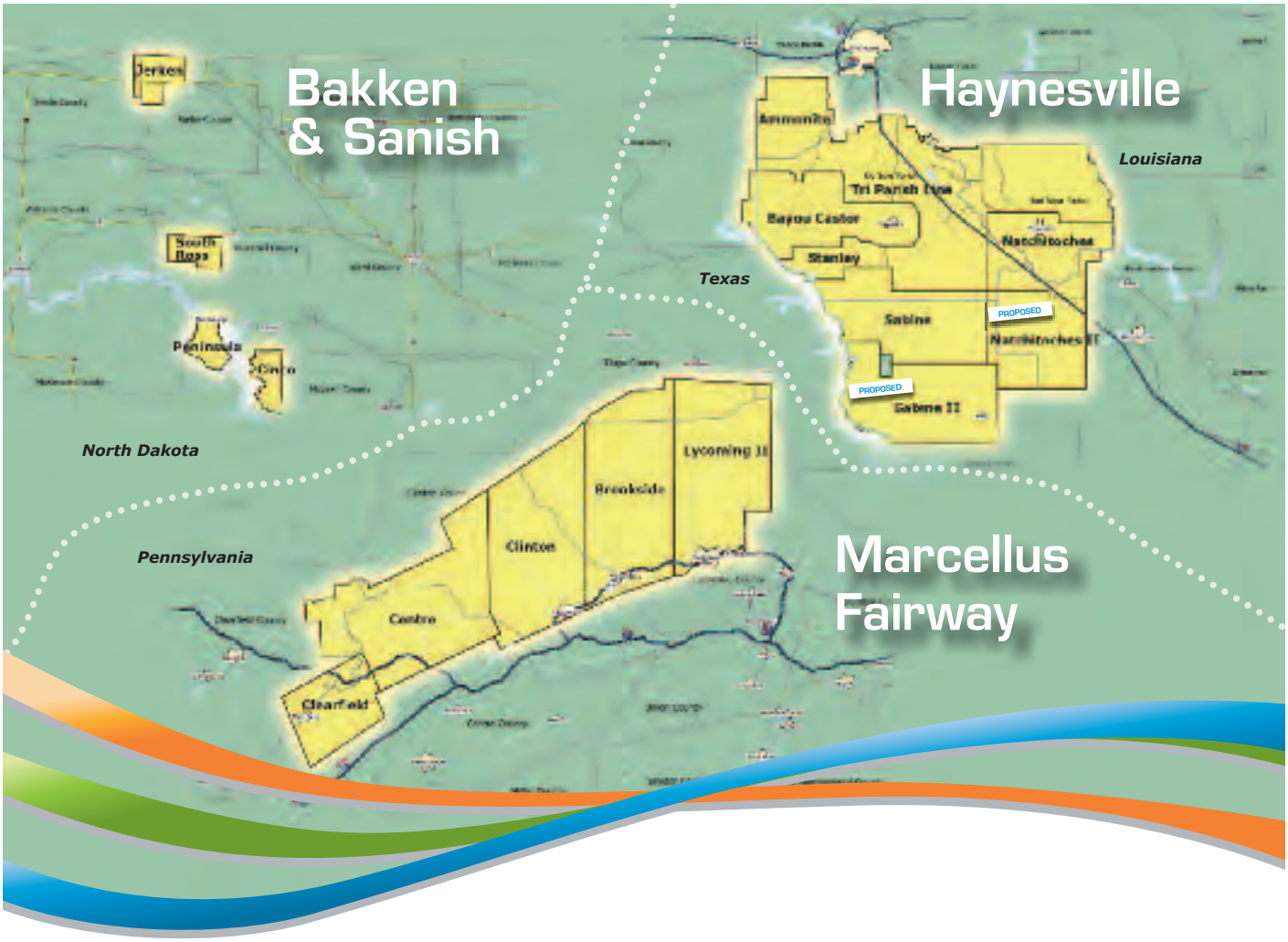
Vanco's recent Dzata-1 well targeted a structural trap formed by compression of a unique succession of outboard foredeep basin sediments adjacent to the Ghana Marginal Ridge. It is an internally-faulted, elongate, three-way dip closure at multiple levels within the Cenomanian and Albian section with the seal provided by the overlying Late Cretaceous and Tertiary claystones. The well was located based on a strong Class IIP AVO anomaly and encountered a gross hydrocarbon column of 94 meters with 25 meters of net stacked oil and gas pay in Albian sandstones opening a new prospective trend in the previously undrilled Romanche sub-basin in the eastern part of the Tano basin. The primary reservoir sandstone between the depths of 3,663 and 3,690 meters contains gas and light oil. Volatile black oil was recovered from a zone between 3,701 and 3,709 meters. Geochemical analysis of these hydrocarbons and penetrated source rocks suggest a two-phase petroleum system consisting of early oil and gas charge from a lacustrine source facies and a subsequent oil charge from a marine source facies. Increased gas influx from continued burial of the source facies appears to have depressed the original oil water contact further down structure and increased reservoir pressure until the seal for gas was breached charging the gas chimney evident on the structure.



3D perspective showing far stack seismic amplitudes on a Middle Albian surface. The warm colors are areas of sandy slope fan turbidites fed by amalgamated slope channels updip spilling downdip into a basin floor setting which are then remobilized and injected into overlying younger sediments.

The Dzata-1 provided positive seismic anomaly calibration which has allowed regional

continued on page 29



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HGS International Dinner continued from page 27

application of AVO and seismic inversion technology exploring the large 3,200 sq km 3D survey within Vanco's Cape Three Points Deep Water license. These technologies combined with seismic facies analysis and 3D visualization has revealed multiple opportunities in both the Lower and Upper Cretaceous deepwater plays that will be the focus of an upcoming drilling campaign in addition to appraising the Dzata discovery. Opportunities include structural/stratigraphic plays on the flanks of Dzata and nearby structures, stratigraphic plays in amalgamated channelized slope fans similar to Jubilee Field and an interesting unconventional sand injectite play.

Biographical Sketch

Christopher Bradley, an exploration geologist, joined Vanco in 2007 and has over 33 years of U.S. domestic and international exploration and production experience including overseas postings. He has spent the last 22 years working deepwater plays and new ventures worldwide both as a geoscientist and project manager for Conoco Inc., Kerr McGee, and Anadarko Petroleum Corporation.

Mr. Bradley has been involved with several large discoveries in deepwater plays in both West Africa and Brazil. He is trained in both the latest geologic and geophysical exploration concepts and technology with emphasis on sequence stratigraphy, seismic interpretation, basin modeling, deepwater sedimentology and deepwater drilling operations.

Since 2007, Mr. Bradley has been responsible for geological evaluation and resource estimation for all of Vanco's worldwide activities including the geological evaluation of the recent Dzata-1 discovery in Ghana and the Orca-1X bis well in Côte d'Ivoire.

Mr. Bradley holds a B.Sc. in Geology from the University of Connecticut and a M.Sc. in Geology from the University of Louisiana at Lafayette (formerly the University of Southwestern Louisiana).

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HGS Northsiders Luncheon Meeting

G. Hildred, K. Ratcliffe
Chemostrat Inc., Houston, Texas
and K. Schmidt
Pioneer Natural Resources, Irving, Texas

Application of Inorganic Whole-Rock Geochemistry to Shale Resource Plays: an Example from the Eagle Ford Shale, Texas

Introduction

Over the few past years, shale resource plays have become increasingly important hydrocarbon plays. In the USA, formations such as the Woodford Shale, the Marcellus Formation, the Haynesville Formation and the Eagle Ford Shale have become major hydrocarbon exploration and exploitation targets. However, understanding the controls on reservoir quality in these shale formations is still in its infancy, despite thousands of well penetrations.

Here, the Eagle Ford Shale is used to demonstrate how inorganic whole-rock geochemical data that are primarily obtained to provide stratigraphic correlations can be used to help understand mineralogy, organic content, and rock mechanics.

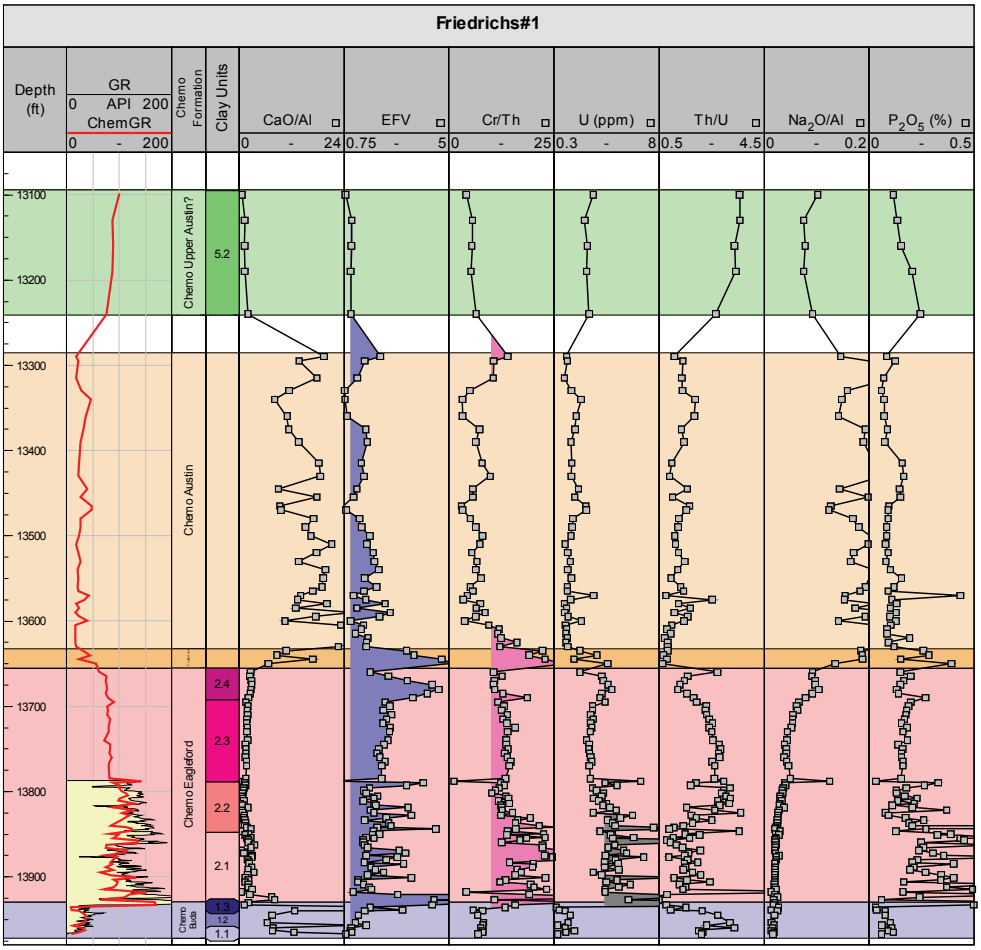

Figure 1. Chemical logs constructed for elements and element ratios used to define chemostratigraphic packages and geochemical units. Each square represents the location of an analysed sample.

The primary application of whole-rock geochemical data is to provide a chemostratigraphic correlation, which is of primary importance for temporally and geographically constraining other reservoir characteristics. The Eagle Ford Shale is divisible into two geochemical packages based on changing U values. Both packages can be further subdivided into three geochemical units, based on changing values of P, Th/U and Cr/Th. The top of the formation is readily geochemically defined by a decrease in the values of U, Cr/Th and V. Placing the top of the Eagle Ford Shale with confidence in itself is an important aspect for the drilling of horizontal wells, in addition to being able to chemically identify target zones within the formation itself.

Reservoir quality in shale resource

HGS Northsiders Luncheon *continued on page 33*

HGS Northsiders Luncheon continued from page 31

plays is dependent on numerous factors, including mineralogy, terrigenous input, bottom water conditions during deposition and TOC values. Mineralogically, the Eagle Ford Shale is relatively simple, comprising quartz (av. 13%), calcite (av. 50%) and clay minerals (illite, illite/smectite, kaolinite and chlorite; av. 27%), with lesser amounts of pyrite, apatite and plagioclase feldspar. TOC values are typically between 1% and 7%. Each of these mineral phases and the TOC contents are readily modeled from the same elemental dataset used to define chemostratigraphic correlation framework. Furthermore, consideration of redox-sensitive elements, such as V, Ni, Th, U and Co provides a means to determine the degree of anoxia during deposition. The mineralogy plays an important role in how readily the formation can be fractured and because the inorganic geochemistry is directly linked to mineralogy, it is possible to calculate the relative brittleness of the mudstones.

The methodologies demonstrated here in the Eagle Ford Shale to define chemostratigraphic correlations, determine mineralogy, and better understand bottom water conditions are readily applicable to any shale-gas resource play around the world.

Methodology and Dataset

The Eagle Ford Shale is a dark grey, calcareous, locally organic-rich mudstone of Cenomanian – Turonian age that is sandwiched between the Cenomanian-age Buda Formation and the Coniacian – Santonian-age Austin Chalk. The study area, in south Texas, forms a narrow strip that extends from La Salle County in the SW to Lavaca County in the NE, a distance of >150 miles. Over this distance, the Eagle Ford Shale varies in thickness from approximately 75 to 300ft.

HGS Northsiders Luncheon *continued on page 35*

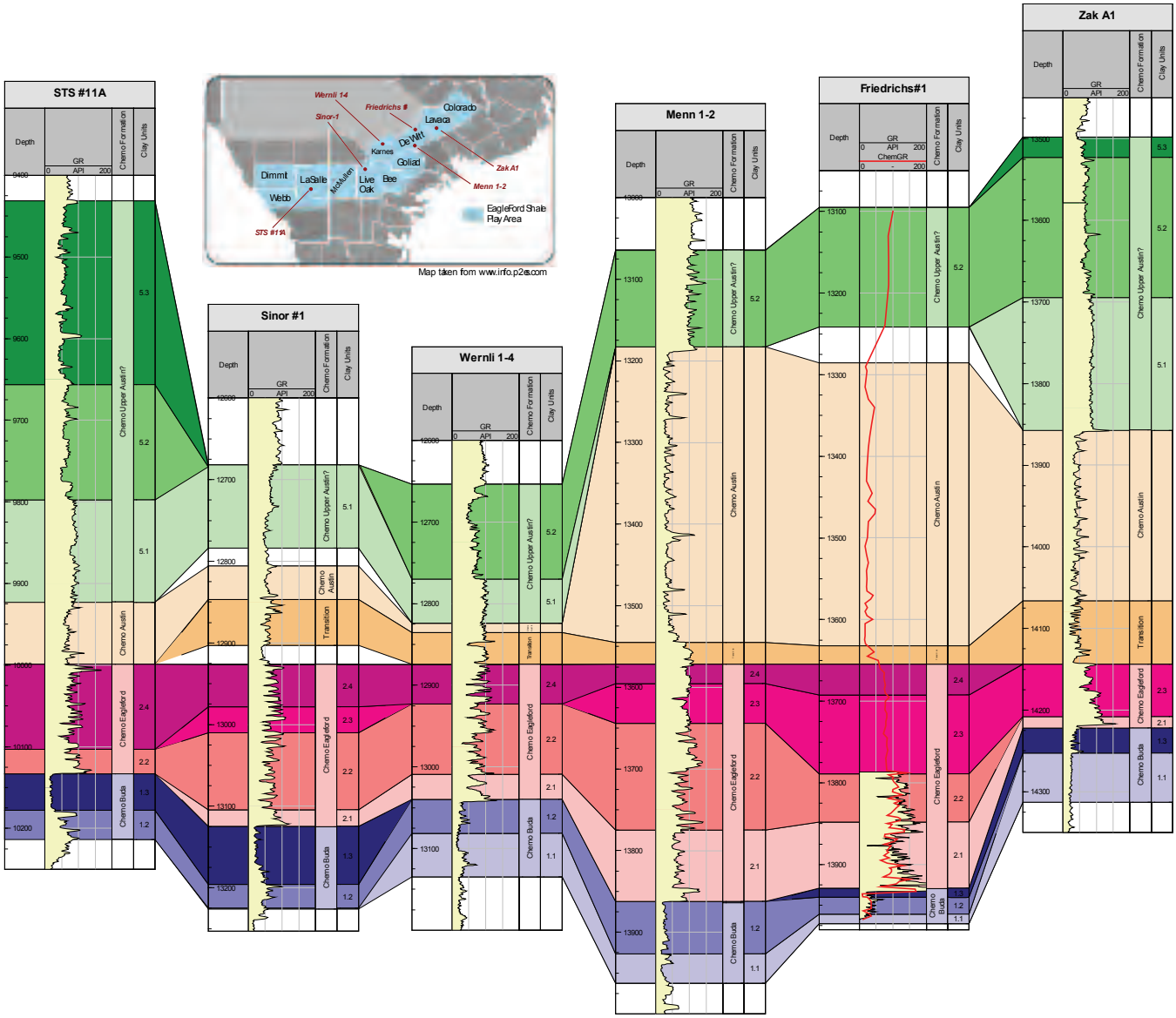

Figure 2. Chemostratigraphic correlation summary of the Eagle Ford Shale and the overlying Austin Chalk in selected wells.

HGS Northsiders Luncheon *continued from page 33*

Over 500 samples from 11 wells have been analysed using inductively coupled plasma optical emission (ICP-OES) and mass spectrometry (ICP-MS), following a Li-metaborate fusion procedure (Jarvis and Jarvis, 1995). These preparation and analytical methods provide data for 10 major elements, 25 trace elements and 14 rare earth elements. Precision error for the major element data is generally better than 2%, and is around 3% for the high abundance trace element data derived by ICP-OES (Ba, Cr, Sc, Sr, Zn and Zr). The remaining trace elements are determined from the ICP-MS and data are generally less precise, with precision error in the order of 5%.

Applications

Stratigraphic characterization and correlation

Developing stratigraphic frameworks is the key to the exploration for and exploitation of any hydrocarbon basin. In shale plays, the more traditional methods to stratigraphic correlations used by the petroleum industry are often limited. Commonly, the restricted basin nature of their accumulation can limit the use of biostratigraphy and palynomorphs are often thermally degraded. Electric log correlations are hampered by high, but erratic U values that reflect a mixture of detrital input and authigenic enrichment from sea water. Furthermore, the apparent macro-scale homogeneity of the mudrocks precludes the recognition of sedimentary facies that can be used for stratigraphic correlations, particularly when the only samples available are cuttings. Figure 1 displays the chemostratigraphic characterization of the Eagle Ford Shale in well Friedrichs #1 and Figure 2 the extension of that characterization into five of the 11 wells in the study.

Once a robust chemostratigraphic correlation is achieved, it can also be used as a basis for determining the well pathways in horizontal multilateral wells, pre- and post-drill or at well-site (Schmidt et al. 2010).

Mineral and TOC modeling

An important aspect to understanding shale reservoirs is determining their mineralogy and TOC contents. Typically, this is achieved using x-ray diffraction (XRD) and LECO analysis respectively. However, major element geochemistry can been used to provide semi-quantitative mineralogical data (Paktunc 2110, Rosen et al., 2004). Here, bulk mineralogy calculated from whole-rock geochemical data are compared against mineralogical data acquired from XRD to demonstrate the strengths and weaknesses of using calculated mineralogy. Similarly, semi-quantitative TOC values can be calculated from trace element geochemistry. This is achieved by determining a linear regression equation between selected trace elements and measured TOC. Provided the relationship between trace elements and TOC has a regression coefficient of over 0.8, it can be used to model TOC values where LECO determinations have not been made.

Paleoredox

Understanding paleoredox conditions is of paramount importance to shale-gas exploration, since high TOC values are only typically found in sediments deposited where bottom conditions were anoxic or euxinic. Oceanic anoxic events have long been recognized and studied (Schlanger and Jenkyns 1976) and in recent years, much has been written on the use of elemental geochemistry in sediments and water columns as a proxy for depositional redox conditions (e.g. Tribovillard et al., 2006, Turgen and Brumsack 2006, Tribovillard et al., 2008, Negri et al., 2009, Jenkyns, 2010). The key to using major and trace element changes to understand paleoredox conditions in ancient sequences is understanding the geological controls on each of the elements. Principal components analysis provides a quick and effective way to detangle the influences of terrigenous input, carbonate production and authigenic enrichment from sea water on major and trace elements. Vertical and lateral changes in elements associated with authigenic enrichment within the Eagle Ford Shale provide a means to understand temporal and geographic changes in paleoredox conditions, therefore providing important data regarding likely hydrocarbon productivity.

Relative Rock Brittleness

Another important feature of shale-gas production is the — fracability of the formations being drilled. This is controlled by the inorganic and organic composition of the sediments and the rock fabrics. Using the whole-rock geochemical data it is possible to define a relative brittleness value for any analysed sample. While this does not provide a quantitative value such as a Young's Modulus calculation, it does provide a rapid and visual indication of relative brittleness within the formation. This measure can be rapidly determined from core samples as well as from cuttings samples in horizontal wells.

Conclusions

Until relatively recently, the prime purpose of obtaining whole rock inorganic geochemical data for the petroleum industry has been for stratigraphic purposes. However, with increased exploration in shale resource plays, it is rapidly becoming apparent that the same dataset obtained to help refine stratigraphic correlations can be used to;

- Determine bulk mineralogy semi-quantitatively
- Determine TOC semi-quantitatively
- Understand temporal and lateral variation in paleoredox conditions
- Determine relative changes in rock brittleness

While the calculations of mineralogy, TOC, and brittleness are not as accurate as direct measurements using XRD, LECO or rock mechanics methodologies, the results described here can all be

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HGS Northsiders Luncheon continued from page 35

achieved rapidly and at no extra cost from the same ICP-derived data used for chemostratigraphy. Furthermore, the applications for the Eagle Ford Shale can readily be applied to any shale resource play. ■

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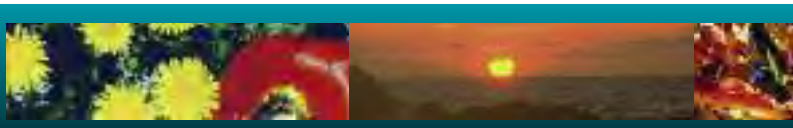
Biographical Sketch

Gemma Hildred graduated from the University of Birmingham with an M.Sci. Honours degree in geology in 2006. Gemma began her career at ChemoStrat International Ltd in 2006 and is now a senior geologist at ChemoStrat Inc in Houston, overseeing proprietary work throughout North America. Gemma also continues to research and publish work on the applications of inorganic wholerock geochemical data to geosciences and to the oil industry, specifically studying low accommodation fluvial sequences in Western Canada and the chemostratigraphic characteristics of the Eagle Ford Shale, West Texas.

April 2011



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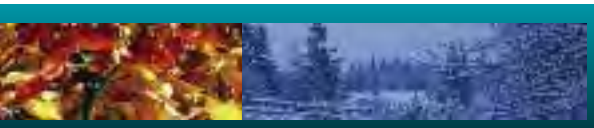
3	4	5	6
10 **AAPG 2011 Annual Convention & Exhibtion** *Houston, TX*	11	12	13
17	18 **HGS International Dinner Meeting** *"The Tano Basin of Western Ghana – A Complex, Intriguing and Prolific Deepwater Play," Christopher H. Bradley, Westchase Hilton,* Page 27	19 **HGS Northsiders Luncheon Meeting** *"Application of inorganic whole rock geochemistry to shale resource plays: Eagle Ford Shale, Texas.", Crowne Plaza Hotel,* Page 31 **HGS Environmental & Engineering Dinner Meeting** *"Lunar Regolith: Field Methods, Geoscience, and Lunar Myths", Black Lab Pub,* Page 43	20 **HGS General Luncheon Meeting** *2010-11 AAPG Distinguished Lecture "A Paradigm Shift in Understanding Fracture Origin and Fracture Influence on Deep Carbonate Reservoir Performance: A Study of Onshore Permo-Triassic Deep Reservoirs in Saudi Arabia", Mohammed S. Ameen, Petroleum Club* Page 45
24	25 **HGS North American Dinner Meeting** *"'Petroleum Resources of the Great American Carbonate Bank: Lessons from Heterogeneous Reservoirs, Diverse Traps, and Unconformity Thinking," Charles Sternbach, Westchase Hilton,* Page 49	26	27



GeoEvents

Thursday	Friday	Saturday
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7	8	9
14	15 **HGS Tennis Tournament** *Houston Raquest Club* Page 24 *June Bulletin Submission Deadline*	16
21 **SIPES Luncheon Meeting** *"Eagle Ford Shale Prospecting with 3D Seismic and Microseismic Analysis" Galen Treadgold, Bruce Campbell, Bill McLain Steven Sinclair and David Nicklin, Petroleum Club* Page 53	22	23
28	29	30 **NOW you can make your reservations on-line at www.hgs.org**

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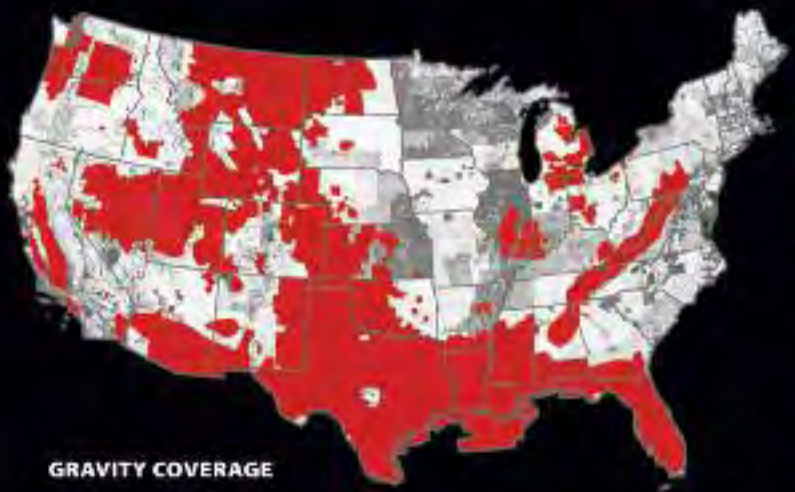

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Charles David Stone, P.G., P.E.
Technical Support Section, Remediation Division
Texas Commission on Environmental Quality

Lunar Regolith: Field Methods, Geoscience, and Lunar Myths

The lunar regolith was the object of the earliest direct exploration of the Moon. NASA probes from the Ranger and Surveyor programs collected data that supported the preparation for the manned landings of the Apollo program. Regolith data influenced the design of the Apollo Landing Module and Apollo astronaut training for surface excursions. The advance data also contributed to the development of Apollo field methods and sampling tools, while direct experience resulted in their subsequent evolution.

The lunar regolith provided innumerable individual samples from which unique geoscience has been gleaned. The finest-size fractions of the regolith comprise near-microscopic particles that include glass beads that were formed by surface impact melting and in lunar volcanic fire fountains. Scanning electron microscope and geochemical data abound for these particles, and a non-destructive method was developed for discriminating the origins of individual particles.

Various myths have existed regarding the Moon. These comprise the gamut from lunar composition to the Apollo "landing hoax." Definitive geoscientific responses are provided. ■

Biographical Sketch

Charles David Stone is a licensed Professional Geoscientist and a licensed Professional Engineer in the State of Texas. He received a Bachelor of Science degree in the geological sciences from The University of Texas at Austin and a Master of Science degree in lunar geochemistry from the University of Tennessee at Knoxville. He has served as geologist and/or geochemist with firms in Texas and Hawaii. Prior to his tenure at the Texas Natural Resource Conservation Commission/Texas Commission on Environmental Quality, he managed the Hazardous Waste Division at the Honolulu office of Metcalf and Eddy, Inc.

Charles was a Contract/Project Manager in the Petroleum Storage Tank State-Led Remediation Section before coming to the Technical Support Section. He currently performs technical reviews of groundwater hydrology, environmental modeling and remediation engineering submittals to the TCEQ Remediation Division and contributes to the Texas Risk Reduction Program Guidance Document production effort.

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Mohammed S. Ameen
The Structural Geology & Rock Mechanics Group
Saudi Aramco
Dhahran, Saudi Arabia

2010-11 AAPG Distinguished Lecture

A Paradigm Shift in Understanding Fracture Origin and Fracture Influence on Deep Carbonate Reservoir Performance: A Study of Onshore Permo-Triassic Deep Reservoirs in Saudi Arabia

Characterizing fractures and their geomechanical impact on reservoir performance is the ultimate objective of fracture and in-situ stress characterization. This presentation provides evidence contrary to the common perception of the major role played by fractures in the production performance of deep carbonate reservoirs. It is based on a recent study by Saudi Aramco in Saudi Arabia.

Reservoir performance is mainly controlled by the matrix porosity and permeability that were preserved by early hydrocarbon placement.

The highly variable performance of the Permo–Triassic reservoirs in onshore giant fields in Saudi Arabia has been attributed to the presence of natural fractures. Similar preproduction pressure profiles and hydrocarbons in the different reservoir units have been attributed to vertical communication through large faults. To validate these assumptions, we studied the static and dynamic data from the reservoirs. We identified two distinctive fracture domains based on fracture orientation and density. Fracture evolution is mainly controlled by extensional and consequent compressional plate tectonics instead of local structures. In-situ stresses in the study area are dominated by Zagros Plate tectonics and affect fracture aperture differently in the two fracture domains. The impact of fractures on reservoir performance is mostly subtle because of the nature and distribution of the fractures. Fracture-enhanced productivity occurs locally in some of the producing wells and results from high-density fracture clusters (including mesoscopic faults) with channel-type apertures. Reservoir performance is mainly controlled by the matrix porosity and permeability that were preserved by early hydrocarbon placement.

The following findings challenge the common views on the influence of fractures in the reservoir performance: 1) individual fractures are dominantly tensile and small (mesoscopic and microscopic); 2) individual faults are small and not readily resolvable at seismic scale; 3) the depth and carbonate nature of the reservoir make the fractures highly susceptible to fast-healing unless preserved within the hydrocarbon column; 4) initial vertical pressure gradient changes with production indicate a lack of present-day communication across the anhydrite sealing layers between the different reservoir units; 5) horizontal well direction does not generally have an impact on productivity; and 6) sustained and heavy losses of circulation are rarely encountered in the reservoir wells. ■

Biographical Sketch

Mohammed S. Ameen received his Ph.D. and Diploma in Structural Geology and Geomechanics from Imperial College, London in 1988 and has had 25 years of academic and industrial experience. He has published 26 articles on fractures and folds, edited three special publications for the Geological Society (London), and has patented a new method for the characterization of microfractured reservoirs.

In his early research, Ameen conducted the classic work on the fractures and folds across the Taurus-Zagros Range, Iraq, covering 30 major fold traps. The work has been published in the *AAPG Bulletin*, the *Geological Magazine*, *The Journal of Petroleum Geology*, and the *Proceedings of the Conference on Fractured and Jointed Rock Masses*, USA, 3-5 June 1992. Subsequently he worked on geotechnical, environmental and hydrocarbon-related projects in Europe and the Middle East, including fracture and geomechanical

HGS General Luncheon *continued on page 43*

HOUSTON
FINE MINERAL SHOW

APRIL 29TH - MAY 1ST, 2011

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Wendy's Minerals
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Edward's Minerals
Top Shelf Minerals
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Investments From Earth

For more information contact Dave Waisman at 509.458.2331 | www.FineMineralShow.com

Embassy Suites Hotel near The Galleria – 2911 Sage Road, Houston, TX

Photo: Jeff Scovil

HGS General Luncheon continued from page 45

characterization for nuclear waste repositories and strategic gas storage in depleted reservoirs.

Dr. Ameen joined the Reservoir Characterization Department at Saudi Aramco in 1998 as the in-house fracture and geomechanics specialist dealing with development issues. Since 2004, he has been leading the Structural Geology and Rock Mechanics Group in Saudi Aramco. In his 13-year career with Aramco he has researched and dealt with exploration and development applications of fractures and geomechanical characterization in the vastly diverse reservoirs and environments across Saudi Arabia. His recent publication on the deep Khuff carbonate gas reservoir (*AAPG Bulletin*, January 2010) set a paradigm shift in understanding fractures and their impact on carbonate reservoir performance. Ameen is an active member of the AAPG, Society of Petroleum Engineers, European Association of Geoscientists and Engineers, and the Geological Society (London).

Monday, April 25, 2011

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

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

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

HGS North American Dinner Meeting

Charles A. Sternbach,
President, Star Creek Energy
Houston, Texas

Petroleum Resources of the Great American Carbonate Bank: Lessons from Heterogeneous Reservoirs, Diverse Traps, and Unconformity Thinking

Great American Carbonate Bank. The Cambrian – Ordovician carbonate bank covers large areas of the midcontinent U.S. and extends into Canada, Greenland, Scotland and South America. Bob Ginsberg and Jim Derby in 1980, called this carbonate bank of epi-continental proportions "The Great American Bank". J. L. Wilson later added "Carbonate" to the name, hence "Great American Carbonate Bank – GACB". Petroleum geologists know many of these earliest Cambrian and Early and Middle Ordovician GACB reservoirs by the terms Ellenburger, Arbuckle, Knox and Beekmantown.

Petroleum geologists know many of these earliest Cambrian and Early and Middle Ordovician GACB reservoirs by the terms Ellenburger, Arbuckle, Knox and Beekmantown.

A new AAPG Memoir *The Great American Carbonate Bank* will be published later in 2011 or early 2012. The speaker, a co-editor of the Memoir and author of its petroleum resources chapter, will present new information from this publication.

Production history. Hydrocarbon graphs, charts and maps of productive trends enable insights at the field, basin and regional scale. Approximately 3,650 fields have produced oil and gas in about 30 producing regions. Production is heavily concentrated in Texas, Oklahoma, Kansas, Nebraska, New Mexico, Michigan, Ohio, and Kentucky. More than 28,000 oil wells and 3,000 gas wells have produced 4.13 billion BO and 21.18 TCF gas cum. Most (57%) of the combined 7.66 billion BOE hydrocarbons are oil. Under current market conditions it would appear timely to review GACB reservoirs. Of note, 50 oil and gas fields with reserves of > 1MMBOE have been found since 1987, indicating discoveries in these fabled reservoirs are still occurring.

There are two giant fields greater than 500 MMBOE: Gomez (5.3 TCF) and Puckett (3.8 TCF) gas fields in Pecos County, Texas. And

HGS North American Dinner *continued on page 51*

Poster Session by Steve Getz

In addition to the presentation by Charles Sternbach, Steve Getz will be presenting a poster that shows the locations of the main midcontinent basinal areas on the southeastern margin of the Transcontinental Arch of the United States, along with a schematic cross-section for each of the basinal areas. These cross-sections depict the effects that regional and local vertical crustal movements had on the structural-stratigraphic development of the basins and the associated petroleum systems.

Specifically, these schematic cross-sections give the viewer a unique binocular depiction of the basic Phanerozoic lithologic sequences deposited in those basins, along with the major unconformity surfaces that formed and separated those sequences, when:

1) The middle Cambrian break-up of the North American plate led to the formation of the Iapetus (pre-Atlantic) Ocean basin passive margins sequences;
2) The middle and late Paleozoic Pangean continental reorganization occurred;
3) The mid-Cretaceous through lower Tertiary (i.e., Laramide) plate collisions occurred in what are now the western states of the U.S.

HGS North American Dinner continued from page 49

there are seven oil fields greater than 100 MMBO in Texas and Kansas. One might ask: how do significant outlier discoveries like Wilburton Field (400 BCF) or Maben Field (51 BCF) occur? Maben was more than 100 miles away from age-equivalent production at time of its discovery. We will discuss methodologies to assess frontier areas that may yield future surprises.

Heterogeneous reservoir. Depositional settings include: 1) mid shelf, 2) deep shelf and 3) inner detrital belt. Most production comes from the mid-shelf setting from dolomite reservoirs with 3-15% matrix porosity; limestone reservoirs are relatively rare. The deep shelf and inner detrital belt also produce significant hydrocarbons; field examples will be discussed.

Fractures and karst-related processes create heterogeneous reservoirs in all depositional settings. Wells can produce at spectacular rates of up to several thousand BOPD for oil and up to 50 to 100 MMCFG/D for gas. Cavernous porosity and "bit drops" can occur. A well with tight or impermeable rock that presents oil or gas shows may be close to unproduced oil and gas. "Dry holes" with hydrocarbon "shows" may identify nearby untapped reserves or future discoveries.

Diverse trap styles. Stratigraphic truncation traps can date from Early and Middle Ordovician or subsequent periods of sub-aerial exposure and erosion. "Early" traps favor entrapment over long periods of hydrocarbon migration. Structural traps are mainly of Mississippian to Pennsylvanian age, though many ages are possible. Maps and cross-sections over analog fields show many and diverse trap styles.

The GACB can possess significant reservoir storage capacity. Historical production occurs where GACB reservoirs are juxtaposed with source rock and seals, by the Sauk/Tippecanoe unconformity and younger unconformities (especially the pre-Woodford unconformity at e.g. Oklahoma City Field) and by faulting. Trap analysis can prioritize an exploration program in fault-bounded structures by mapping regional thickness of sealing and non-sealing strata juxtaposed with GACB reservoirs.

"Unconformity Thinking". The Sauk/Tippecanoe unconformity: 1) creates erosional traps, 2) enhances reservoir by karst and dissolution processes (in ways not contemplated by early proponents of unconformity exploration who focused primarily on siliclastics) and 3) provides surfaces for fluid and hydrocarbon migration.

In addition to the majority of reserves found at or near the unconformity, production occurs hundreds of feet into the GACB. Generally this occurs in tall structures where large columns of hydrocarbons fill reservoirs far below the top of GACB reservoirs. Cases of "stacked pays" in the mid-shelf setting of the GACB are rare, possibly due to drilling practices. Stacked pays do occur in the inner detrital belt setting of the Prairie du Chien group in Michigan where sandstone reservoirs interfinger with carbonate seals.

The speaker will share insights from personal exploration experiences. It is hoped that insights from historical production, analog fields, and new tools will lead to more reserves in both old and new areas.

Lessons and strategies. GACB reservoirs have produced oil and gas for about 100 years. Lessons from history suggest that strategies to future success might include:

1) Continued focus on reservoirs and traps below the Sauk/Tippecanoe unconformity and younger unconformities
2) Trap analysis of fault closures and horst blocks can identify traps and hydrocarbon fluid levels
3) Favorable fundamentals and hydrocarbon shows may yield surprises even in outlier basins
4) Persistent exploration around wells that made some oil or gas might find new reserves
5) Exploring or re-working fields for possible stacked pays, particularly in the inner detrital belt or shelf-edge depositional settings
6) Use of seismic and other techniques to assess variable reservoir
7) Directional drilling that intersects more fractures and karst related fabrics,
8) Identification of thermally mature source-rock rich sub-basins that may provide hydrocarbons to overlying GACB reservoirs in conventional traps
9) Thrust belt plays for carbonate reservoirs (e.g. Flavien Field, Canada)
10) Unconventional plays for Cambrian shale, an example of which includes triangular thrust belt wedges of Conasauga Shale "Mushwads" in the southern Appalachian fold belt. ■

Biographical Sketch:

Charles A. Sternbach is a past President and Honorary Member of HGS. He was a staff geologist for Shell (1984-97) and Houston exploration manager for Tom Jordan (1997-2004). He is president of First Place Energy and Star Creek Energy (2004 to present). Sternbach has been an active AAPG member for 30 years. In 2008, he originated "Discovery Thinking" forums at AAPG Annual meetings where he continues to organize and chair these popular forums every year. Charles is a longstanding student of Paleozoic and carbonate reef reservoirs. His companies have discovered new reserves of oil and gas from the Great American Carbonate bank in Texas and Michigan.

HGS Shrimp Peel

Saturday, May 14, 2011

6pm - 10pm

Sam Houston Race Park

7275 N. Sam Houston Pkwy. West

281.807.8700

Tickets
$30 - advance
$35 - at the door

- Event held indoors - Pavilion Centre
- Enter through North / Pavilion gates
- Free parking
- Valet Parking available ($8)
- Purchase tickets online at hgs.org
- Deadline to purchase tickets online - May 6
  (No Refunds)

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SIPES March Luncheon Meeting
Eagle Ford Shale Prospecting with 3D Seismic and Microseismic Analysis

***Galen Treadgold, Bruce Campbell, and Bill McLain**, Global Geophysical*
***Steven Sinclair and David Nicklin**, Matador Resources*

The Eagle Ford Shale in south Texas is one of the more exciting shale plays in the United States. Recently published reports of well tests describe gas well rates exceeding 17 mmcf/d and oil well rates in excess of 1500 bopd, with unconfirmed rates of 2000 bopd. Acreage lease rates continue to climb as more positive results come from drilling within the trend. A key issue for the exploration companies is finding where to focus acreage acquisition and optimize drilling plans for optimal gas and oil recovery. Our paper will briefly consider the geologic context of the Eagle Ford and then look at geophysical techniques, in particular, full azimuth acquisition and processing, fracture/stress field prediction, inversion and microseismic for understanding the variability of this unconventional reservoir.

Seismic Tools – Processing, Inversion, Interpretation

3D seismic data offer a number of opportunities to understand potential heterogeneities in the Eagle Ford Shale reservoir rocks. Products from the 3D data available in the Eagle Ford can be divided into three categories – processing derived, inversion derived, and interpretation derived. From processing, long offset and full azimuth 3D datasets allow for a derivation of anisotropic parameters in the shale. Layer anisotropy (VTI – Vertical Transverse Isotropy) and azimuthal anisotropy (HTI – Horizontal Transverse Isotropy) may help infer pressure cells, clay content and stress/fracture potential. Simultaneously solving for VTI and velocity provides a better velocity field for feeding pore pressure predictions and may provide some insight into spatial

SIPES Luncheon Meeting *continued on page 55*

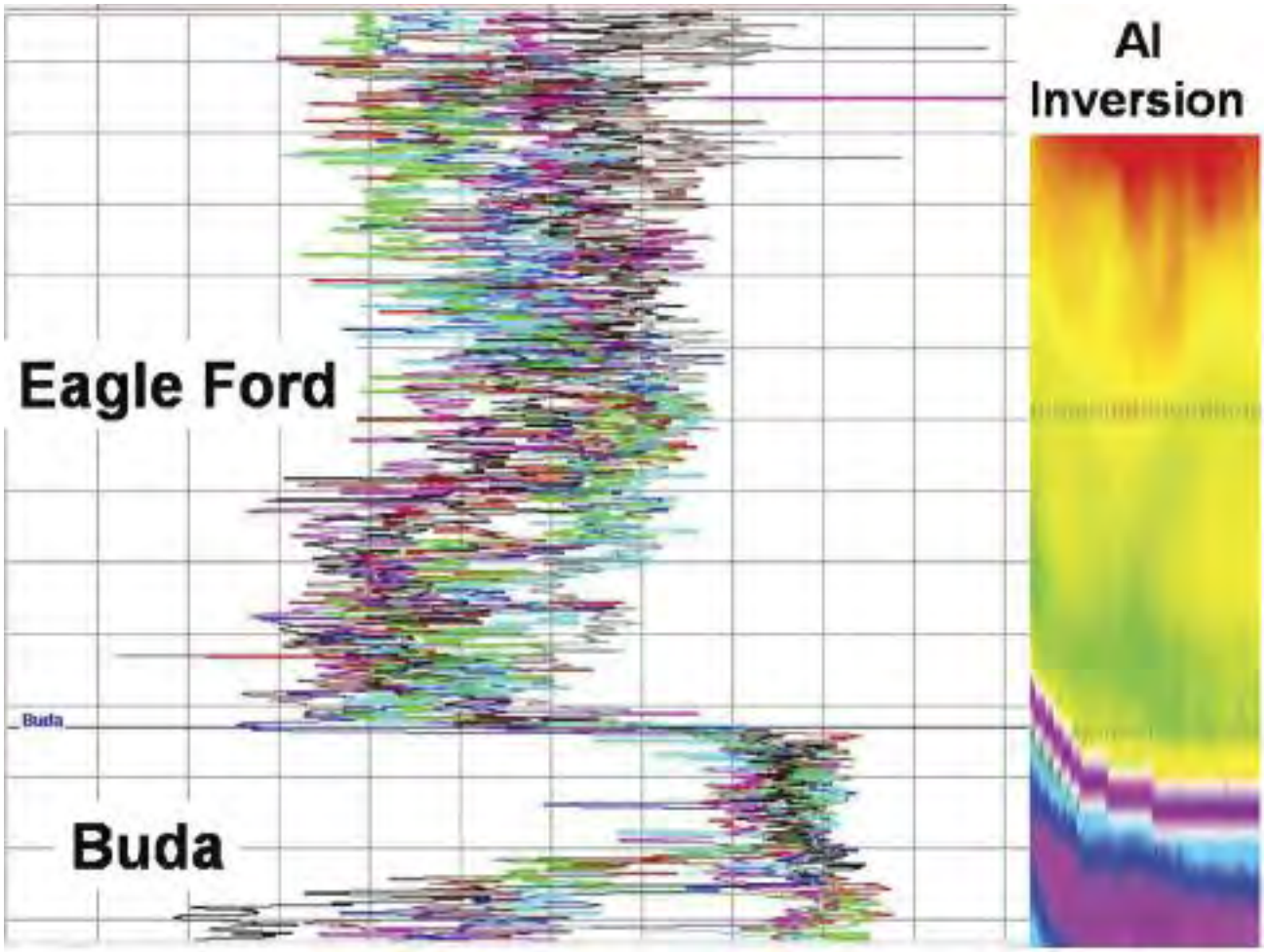


Figure 1. Impedance curves created from eight wells are combined on this graphic, hung on a common Eagle Ford – Buda interface. The Buda impedance shows little variability while the Eagle Ford varies in impedance demonstrating reservoir quality variations.

SIPES Luncheon Meeting continued from page 53

variations in layer anisotropy. Combining maps of velocity and VTI across the shale should help highlight harder pressure zones that will ultimately be more productive intervals (high pressure should appear as low velocity zones with lower VTI). Building on the velocity and VTI characterization of the travel times one can search for azimuthal variations in the velocity field (HTI). While open fractures are considered unlikely in the Eagle Ford, prediction of stress field variations from HTI anomalies should help identify frac thief zones – areas where frac energy is lost due to limited-azimuth frac propagation. Basic imaging improvement will also accompany the improved characterization of the velocity/anisotropy field. It is also necessary to address anisotropy prior to any elastic inversion attempt. Far offset amplitude variations, due to poor characterization of the velocity and anisotropy fields, will lead to incorrect elastic parameters from the inversion.

the pursuit of shale acreage and the designing of a shale drilling campaign are best accomplished through a comprehensive understanding of the geologic and geomechanical framework of the shale

With the refined processing products described above, it is possible to begin extracting rock property information through an inversion of the seismic. Well data from the core area of the play indicate acoustic impedance variations in the shale that may highlight porosity variations (Figure 1). With added well data (including shear velocity) an elastic inversion can be performed to help highlight variations in density, Poisson's ratio and even rock strength. Maps indicating 'fracability' and lithology are the ultimate goal of an elastic inversion. In the map shown in Figure 2, extracted from within the Eagle Ford, 'fracability' has been computed from an axis rotation and translation within inverted $\lambda\rho$-$\mu\rho$ space (where λ is Lame's constant, ρ is density and μ is shear modulus) to yield an estimate of ductile vs. brittle behavior similar to Goodway et. al. (2007). While it's easy to create rock-property attributes from seismic datasets, getting value from the exercise requires careful calibration with multiple wells combined with a carefully acquired and processed 3D dataset.

SIPES Luncheon Meeting *continued on page 56*

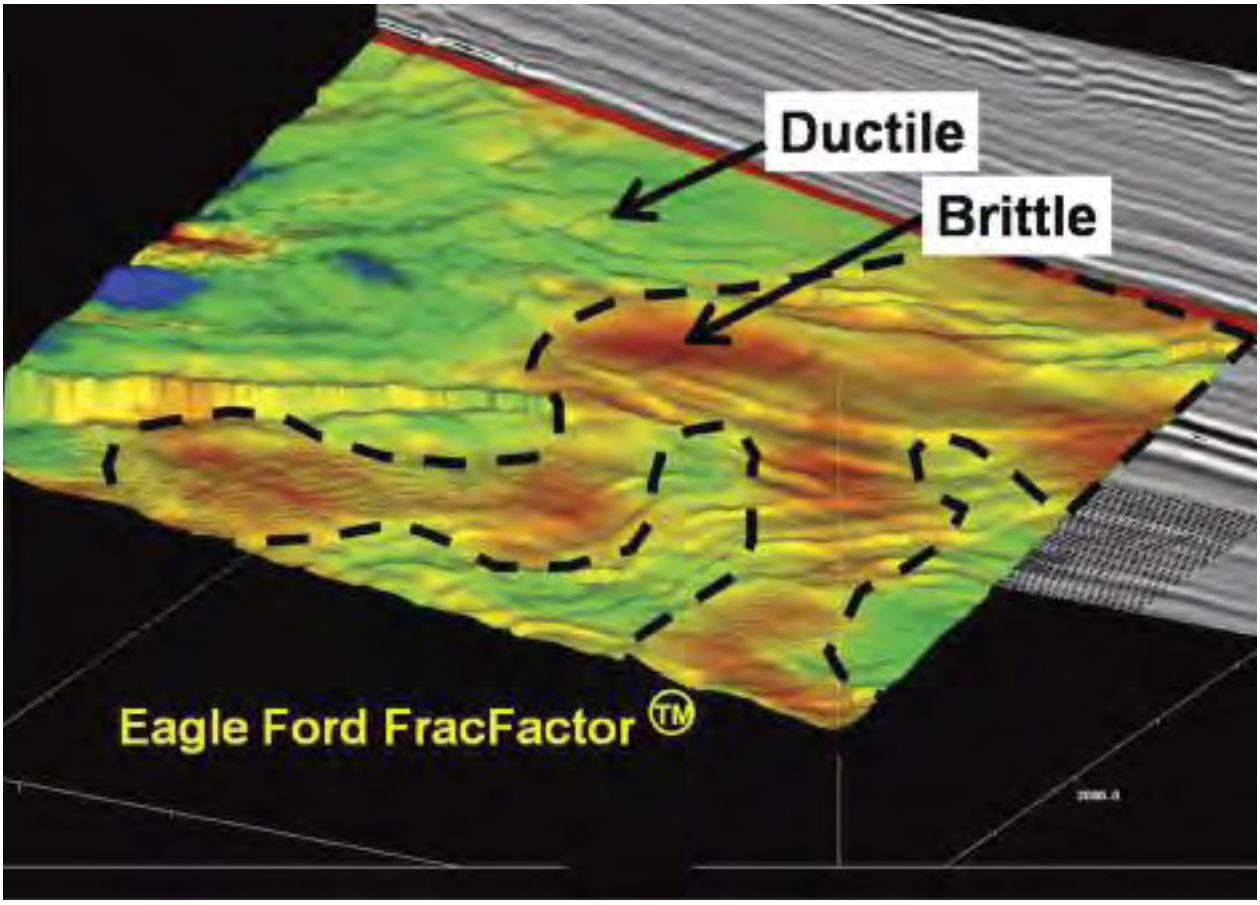


Figure 2. The visualized map shows spatial variations in Eagle Ford fracability inferred from an elastic impedance inversion. High values of the attribute are shown in warm colors and correspond to more brittle behavior.

SIPES Luncheon Meeting continued from page 55

Interpretation is the third tool used to track changes in the Eagle Ford Shale (Figure 3). Curvature and coherence attributes are used to highlight subtle variations in the seismic volume that may indicate small breaks in the reservoir. When combined with processing and inversion products a picture of the shale emerges that highlights the variability of the package. Operators are also integrating microseismic into their reservoir descriptions. Monitoring fracs allows for validation of the seismic products and offers the best chance to understand the rock mechanics driving production.

Ultimately, the pursuit of shale acreage and the designing of a shale drilling campaign are best accomplished through a comprehensive understanding of the geologic and geomechanical framework of the shale driven by a focused processing, inversion and interpretation of the seismic and microseismic. ■

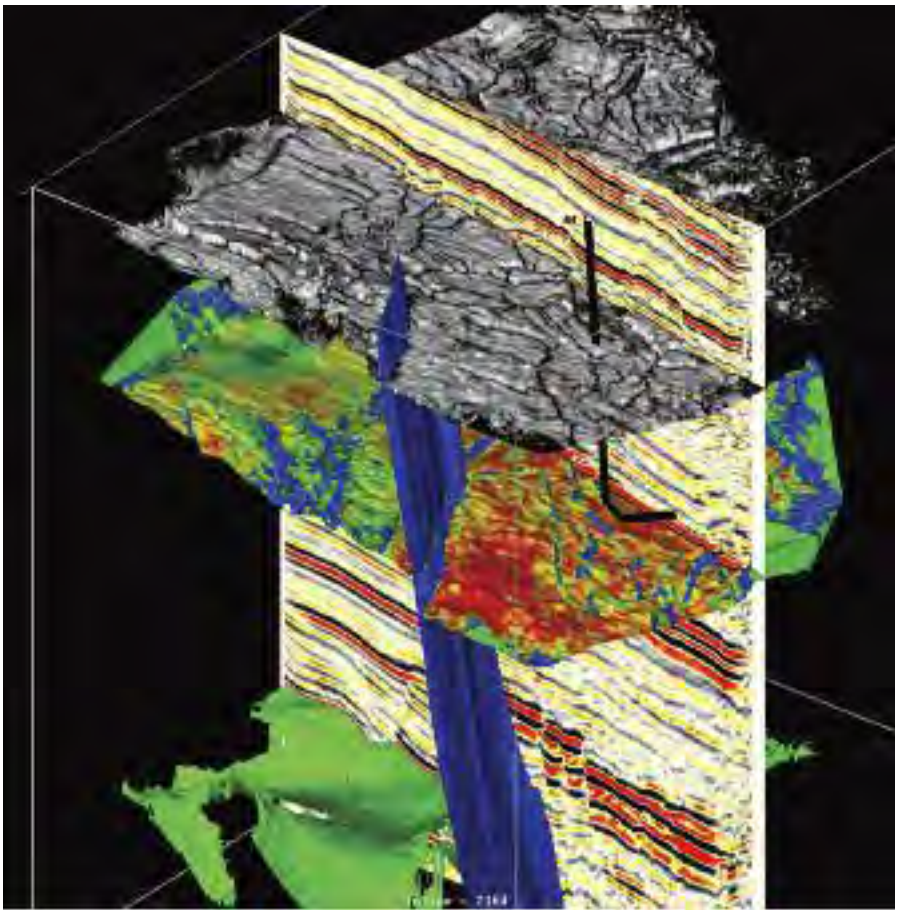


Figure 3. 3D visualized view of a portion of Global Geophysical's Patron Grande 3D in South Texas. The upper horizon displaying coherence illustrates complex faulting below the Olmos Formation. The multicolored horizon represents the base Eagle Ford amplitude and highlights numerous extensional faults that complicate drilling horizontal wells. A large fault (blue) associated with deep salt movement is also seen cutting through the Eagle Ford to the Olmos.

Reference

Isotropic AVO Methods to Detect Fracture Prone Zones in Tight Gas Resource Plays, Goodway, Varsek and Abaco (*CSPG-CSEG Convention, 2007*).

Biographical Sketch

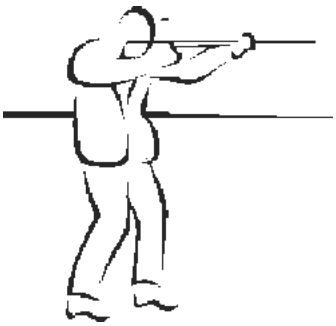
Galen E. Treadgold, vice president of Weinman GeoScience (a division of Global Geophysical), received a B.S. in Geology and Marine Science in 1982 from the University of Miami before starting his geophysical studies at The University of Texas at Austin and receiving an M.A. in Geology/Geophysics in 1985. Galen joined ARCO that same year and over the next 15 years worked in various technology, exploration and management positions including coordinating AVO projects, teaching the first ARCO AVO school, managing the ARCO British technology group and managing ARCO's Trinidad and Venezuela exploration effort. In 2000, Galen joined Weinman Geoscience where he's held the position of chief geophysicist and now, vice president. Galen's main interests are reservoir characterization and azimuthal analysis for fracture detection. He's given recent talks at the SEG in Denver, the 2010 Hedberg Conference in Austin and the 2010 RMAG conference in Denver. Galen is a liaison to the SEG Global Affairs Committee.

Thursday, April 21, 2011

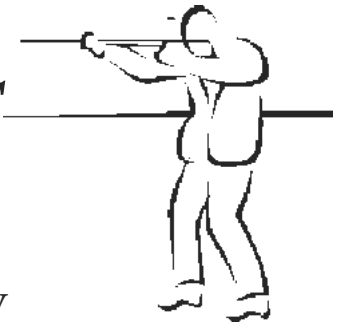
Houston Petroleum Club in the Discovery Room, 800 Bell St. (downtown Houston). Social 11:15 AM, Luncheon 11:45 AM

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

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



28th Annual HGS SKEET SHOOT



Saturday, June 18, 2011

Greater Houston Gun Club
6702 McHard Road, Missouri City

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

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

IMPORTANT!!

WE ARE LIMITED TO 160 SHOOTERS IN FOUR ROTATIONS. ENTRY FEE IS $80 PER SHOOTER FOR REGISTRATIONS RECEIVED BY SATURDAY, JUNE 11. AFTER THAT, REGISTRATION WILL BE STRICTLY ON A "SPACE AVAILABLE" BASIS AND THE ENTRY FEE WILL BE $95 PER SHOOTER. REGISTER EARLY!!

For more information, contact: Tom McCarroll at (713)419-9414 or tom_mccarroll@yahoo.com.

For directions to the club, visit www.greaterhoustongunclub.com.

****

HGS SKEET SHOOT REGISTRATION FORM

Name: _____ Company:_____

Email: _____ Phone:_____

Preferred shooting time: (circle one) 9:00 10:00 11:00 12:00

Indicate ammunition required: (circle one) 12 gauge 20 gauge

Please return form(s) with check for $80.00 per shooter, payable to: ***Houston Geological Society***

If you prefer to pay by credit card, please call Sandra at the HGS office, (713) 463-9476.

Mail to: ***Tom McCarroll • 2668 Hwy. 365 #329 • Brenham, TX 77833***

Registration Fee: $_____ + Sponsor contribution: $_____ = Total: $_____

If you wish to shoot with a specific squad (5 shooters max.), please submit all forms together.

****

ALL SHOOTERS WILL BE REQUIRED TO SIGN A DISCLAIMER OF RESPONSIBILTY BEFORE THEY WILL BE ALLOWED TO SHOOT!

PESGB

Queen Elizabeth II Conference Centre, London
7-8 September 2011

The 10th PESGB/HGS Conference on African E&P

AFRICA: A LEGACY OF EXPLORATION AND DISCOVERY

QEII Conference Centre, London, 7 - 8 September 2011

The conference will be kicked off with an Evening Lecture on Tuesday 6 September, by Duncan MacGregor, at The Geological Society, Burlington House, Piccadilly, London, entitled 'African Rift Plays: Is the Present the Key to the Past?'

This annual conference, alternating between London and Houston, has established itself as the primary technical E & P conference on Africa, with an attendance regularly exceeding 300, including operators, consultants, governments and academia.
There will be a large poster programme in addition to the oral programme of about 25 high quality talks covering all aspects of E & P in all regions of Africa. Special sessions are planned on rift systems, including the East African rift and the conjugate margin pre-salt plays of the South Atlantic. Papers have already been submitted/invited on: African Topography and Palaeoclimate; Lacustrine Carbonate Reservoirs; Turbidite Outcrop Analogues; Albertine Basin; Lake Malawi Drilling and Evolution; Moroccan Gas Discoveries; Jubilee Field, Ghana, post-first production; Red Sea Drilling; Onshore Cabinda Discovery; Campos Basin Exploration.

ABSTRACTS: Poster and some oral presentation slots are still available. Please send an abstract (circa 200 words) to Duncan Macgregor at **dmacgregor@surestream-petroleum.com** and also to Richard Dixon at **dixonr2@bp.com** as soon as possible. Extended abstracts are normally written once your paper is accepted and are issued on a conference CD.

For draft oral programme and registration please see PESGB website from April onwards.

Details of sponsorship opportunities and display booths are available from the PESGB - please contact **rebecca@pesgb.org.uk** for more information.

PESGB

2011 Conference Committee: Ray Bate (Chairman), Duncan MacGregor & Richard Dixon (Technical Co-ordinators), Al Danforth and Ian Poyntz (HGS, Houston).

HGS Recognizes Charles Knobloch for Addressing the Society at the February General Meeting on very short notice.

Open Discussion on Recent Developments with the Texas Board of Professional Geoscientists and Q&A on Intellectual Property

Charles Knobloch is a professional geoscientist and U.S. intellectual property attorney with over thirty years experience in the oil and gas industry, over twenty of those years with Conoco. He is on the Program Committee for the Houston-based Offshore Technology Conference and Chairs their OTC-SEG committee. He was on the steering committee for the Society of Petroleum Engineers – Subsea Facilities Management Advanced Technology Workshop, holds the DuPont Engineering Excellence Award, and was member of the multi-industry team that developed a dual-gradient method of drilling deep water wells, now being implemented by Chevron. As a geoscientist, he previously was on the Finding Leadership Team for Conoco Indonesia. He now provides executive and upper management support, including deployment of his "Lost Secrets of Edison" technology commercialization program. He is partner at Arnold & Knobloch, LLP (www.aklaw.com), a U.S. patent and intellectual property firm that specializes in strategic positioning of intellectual property around the world. Mr. Knobloch serves as Vice Chair (elect) of the Texas Board of Professional Geoscientists and Chairs the Oil and Gas Workgroup. ■

A Night at the Opera!

Back by popular demand, Houston Geological Society will gather for a post – AAPG social event in Houston's Theater District. Mozart's "Marriage of Figaro" will be presented at the Wortham Center by Houston Grand Opera on the following dates:

Friday, April 15, 7:30 pm
Sunday, April 17, 2:00 pm
Saturday, April 23, 7:30 pm
Wednesday, April 27, 7:30 pm
Saturday, April 30, 7:30 pm

Groups of ten or more receive a 10% discount. Groups of twenty or more enjoy a 15%. We will receive the following benefits and options, and we have time to plan.

- Priority Seating
- Pre-performance Gathering Space Available for Catering and/or Cocktails
- Restaurant Discounts
- Recommended Pre- or Post-performance Entertainment
- Pre-performance Lectures

Contact: Marsha Bourque, at m22799@yahoo.com

HoustonGrandOpera

AAPG House of Delegates Candidates

We are providing a brief informational summary of the 25 candidates for the HGS delegation to the AAPG House of Delegates. A formal ballot will be sent to those eligible to vote by AAPG. Each voting member will be asked to vote for 16 individuals.

The House of Delegates of the AAPG is made up of delegates from affiliated societies and international regions throughout the world. They are selected by popular vote from within their respective areas and serve a three year term.

Duties of the delegates include:

- Being familiar with AAPG's Constitution and Bylaws;
- Being acquainted with AAPG's current policies and programs;
- Informing the leaders of their society or region regarding AAPG's program of activities, especially as it relates to cooperative participation and service;
- Processing requests from the AAPG Executive Committee for information regarding eligibility of applicants for membership in the Association;
- Serving as local Certification committeemen by processing requests from the Board of Certification for information regarding applicants for Certification by AAPG;
- Actively soliciting applications from eligible geologists for membership in AAPG.

SANDI BARBER

It has been my honor to represent the Houston geological community in the AAPG House of Delegates for 20 years. I have used my experience in HGS committees and offices, especially as HGS President, to best represent my Houston colleagues in House committees and as the House Secretary-Editor. I deeply desire to continue to represent my colleagues and ask for your vote.

My professional background includes over 15 years in exploration/exploitation for Unocal and as consultant, and nearly 10 years as trainer and consultant in various geoscience software. I am currently the SMT technical account manager for EOG.

STEVEN BRACHMAN

Steven Brachman has nearly 30 years of experience in the oil and gas industry. He is presently Exploration Manager – Houston District for Petro-Hunt, LLC . Previously, Brachman worked for Pogo Producing Co, Southwestern Energy, Araxas Exploration, Wintershall, BP Exploration, SOHIO Petroleum Co, Gulf Oil Co, and as an independent consultant. He is past-President, Secretary, Treasurer, Finance Committee Chairman and Personnel Placement Committee Chairman of the HGS. He also served as AAPG Convention Committee Chairman and Short Course Instructor, as well as Gulf Coast Representative on the DPA Advisory Council. Brachman has been representing HGS members in the House of Delegates for 9 years.

MARILYN TAGGI CISAR

Marilyn Taggi Cisar is a thirty-three year veteran of the oil patch, and a thirty year member of AAPG. She is a long time resident of the Houston area and has served previously on the House of Delegates representing the HGS. Marilyn has worked for Royal Dutch Shell primarily on oil and gas development projects in major North American onshore basins. Her long term interest has been in the development and redevelopment of Vicksburg, Frio, and Wilcox tight gas resevoirs in South Texas. Currently she is pursuing development opportunities in the Haynesville Shale play of northern Louisiana. Marilyn has a S.B. degree in Earth and Planetary Science from the Massachusetts Institute of Technology and an M.S. degree in Geology from Iowa State University.

Marilyn first served in the House of Delegates representing the Houston area in 1992. She has served as Chairman of the Credentials Committee several times and was the recipient of the AAPG House Delegates Long Service award in 2009.

TOM DIGNES

Tom Dignes is currently Biostratigraphy Team Leader at the Chevron Energy Technology Company in Houston. Tom has spent 26 years with Chevron in the San Francisco Bay and Houston areas in various biostratigraphic, exploration, and development geology postings. Additionally, he has 5 years experience with Exxon, Mobil and ExxonMobil in Dallas and Houston, where

he led technical teams for offshore Brazil, eastern Canada, and in biostratigraphy. Tom received his Bachelors degree in Earth Sciences from Dartmouth College, his Masters in Geology from the University of Rhode Island, and a Ph.D. in Geological Oceanography from the University of Maine. In addition to serving two terms as a Houston Geological Society representative to the AAPG House of Delegates, Tom has served as Delegate, Secretary, Councilor, and President of the AAPG affiliated Northern California Geological Society.

JOE EUBANKS

Joe Eubanks is presently the Exploration Manager for Preston Exploration, LLC located in The Woodlands, Texas. Joe focuses his efforts on the exploration and exploitation of East Texas, South Louisiana, Gulf Coast Texas and South Texas. Before joining Preston, he was a Geological Engineer for Tenneco Oil Company in San Antonio and Houston, Texas. He graduated from the University of Texas at Arlington with a B.S. in Geology in 1980. Joe is an AAPG Certified Petroleum Geologist and a Licensed Professional Geoscientist in the State of Texas. Additionally, he has been a Committee Chairman, Executive Committeeman and "Presidents Award" recipient for the HGS. He has been a member of the AAPG since 1980 and a member of the HGS since 1982. Joe has been honored to serve as a delegate for the past six years and has concentrated his efforts on increasing membership value.

BRUCE A. FALKENSTEIN, P.G., P.G.

Currently a geoscientist with Vanco Exploration working deep water basins in Brazil, Africa and Black Sea. Previously he was VP Exploration & Geology at Transmeridian Exploration for 10 years, developing Caspian Region fields, and 20 years as a geoscientist for Amoco and BPAmoco. He graduated with a B.S. Honours Chemical Physics from the University of Calgary in 1980. He has been a practicing geoscientist for over 30 years. He holds both a Geology and a Geophysics Professional License in Texas, is an AAPG certified geophysicist and a CAP licensed physicist. He is very active in his profession. For the HGS - received the Presidents Award for his efforts as Chairman of the Membership Committee; Chairman of the Advertising Committee; ran for election as an Officer several times. For the AAPG - 17 years as HOD delegate and as Membership Chairman for the Houston area; served on the TacOps III and MED committees; and is Trustee Associate of the AAPG Foundation. He further supports the bridging of higher education and industry by currently serving a 2 year term as Councillor at Large of the Canadian Association of Physicists and a 4 year term as Director of the American Friends of the University of Calgary, Inc., a U.S. 501(c)(3) charitable corporation.

JAMES M. GRUBB

I have been an active member of AAPG for 25 years. I have served in the House of Delegates for the last six. I find this a very rewarding experience and I would like to serve another term with your vote of confidence.

I am an Exploration Geologist that began my career with Chevron Oil Company thirty-five years ago and over the years have worked with midsized and family run companies such as Signal, Louisiana Land and Exploration, L.B. Simmons, J.M. Huber and now Slawson Exploration Company.

I find that working with applications for AAPG membership takes me to companies and geologist I might not meet otherwise. It is a rewarding experience to verify and follow applications through approval for membership.

I look forward to continuing this process.

WILLIAM (BILL) EDWARD HOTTMAN

Currently Vice President of Business Development at Fugro Seismic Imaging, Bill previously worked at 4th Wave Imaging, Halliburton, and Shell. He graduated from the Cal State University at Fullerton with a B.A. in Earth Science in 1972. He received M.S. and Ph.D. degrees from TAMU in 1975 and 1978 respectively. He is a member of AAPG, HGS, SPE and SEG. He has been actively involved in the AAPG Student Chapters Committee for over 25 years.

INDA IMMEGA

I am a native Texan and have geology degrees from Texas A&M and Indiana. I am also a "graduate" of Shell and am following up my petroleum geology career as a full time volunteer. At HGS and at AAPG, I have worked on many committees; now, most of my efforts are toward educational outreach. I chair the Museum of Science Committee. I am privileged to have served as a Delegate before, I know the job, and I have the time and ability to do it well.

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AAPG House of Delegates Candidates

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JOHN E. JORDAN, JR.

I would be excited to serve in the AAPG House of Delegates. I have served in the HoD in the past. My duties included vetting new AAPG members, certifying DPA applicants and voting on Bylaw changes at the annual AAPG meeting. My goal, as your representitve, is to maintain and uphold the values of that attracted me to AAPG: ethical business practices and high professional standards. I have been an Active AAPG member since 1984 and a Certified DPA member. As an Exploration Geophysicist, I believe I understand the issues of the working geoscientist and would be pleased to represent you in the HoD.

NINA C. LIAN

Nina has been a geoscience consultant since 1997 and started Decipher Geoscience in 2001. She has consulted for a variety of companies: ExxonMobil, Pemex through the Scotia Group, Total, Burlington Resources, ConocoPhillips and most recently with Shell. Nina started in geoscience while working at USGS in Woods Hole, MA and then with the Woods Hole Oceanographic Institute. She graduated from Cornell University with an M.S. in Geology. Nina started her career in the petroleum industry with Exxon Production Research Co for 11 years and then with Exxon Exploration Co for 3 years before leaving Exxon to start consulting. Nina is a member of AAPG, SEG, GSH, HGS, and SIPES. She holds a Texas Professional Geologist license and is a Certified Petroleum Geophysicist through AAPG/DPA and a Certified Petroleum Geoscientist through SIPES.

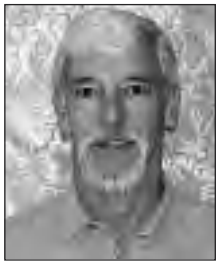
PATRICK J. MCCARTHY

Patrick McCarthy is the president of Magna Operating, LLC, an independent operating and prospect generating company. He has over twenty-four years of oil and gas experience in exploration and development. Mr. McCarthy holds a Bachelor of Science Degree in Geology (1986) from The University of Texas at Austin. He is a member of the Houston Geological Society, the American Association of Petroleum Geologists, and has served on the AAPG House of Delegates (2010). He currently serves on the board of directors at the Petroleum Club of Houston. Mr. McCarthy is a registered Professional Geoscientist in Texas (#4695), and has previously served as President of the Gulf Coast Geological Library.

JIM MCCULLOUGH

Jim McCullough is currently Global Geologic Advisor for ConocoPhillips (COP). Prior to acquisition of Burlington Resources by COP, he was GM of Geosciences and Land for the Gulf Coast. Previous assignments in management and prospect generation were at Unocal, Inexco, TXO, EDC and LL&E. Jim earned a B.A. in Geology (1975) from the University of Tennessee and a M.S. in Geology (1977) from the University of Memphis. Serving as a delegate enables me to insure high standards of membership, contribute to the growth and strategies of the organization and lay the framework for the next generation of industry geoscience leaders.

RICK OLIVER



Exploitation Geologist, ExxonMobil Production Company, Houston, TX. Currently with the US Joint Interest group, stewarding many of the company's non-operated U.S. properties. Received a Bachelor's of Science degree in 1978 and a Master's of Science in 1980 from Stephen F. Austin University, Nacogdoches, Texas.

Spent the past 30 years with Exxon, now ExxonMobil, with various exploration, production and business assignments, including: Development Geologist, Lafayette; Exploration Geologist, Denver; Exploitation Geologist, Houston. Provinces worked include: GOM shelf, Louisiana Onshore, East Texas, South Texas and the Rocky Mountains. Has been a member of AAPG for 32 years and an active member of HGS for the past 9 years.

DAVID A. PUSTKA

David A. Pustka is a petroleum geologist, specializing in prospect generation and other exploration activities in the Gulf of Mexico. After his graduation in 1976 from The University of Texas at Austin, David joined Houston Oil & Minerals and worked as an exploration geologist in its Texas State Waters Division. After leaving HO&M at its merger with Tenneco Oil, David began successfully building independent petroleum companies, both public and private, through exploration and development activities. Throughout his career, David has held the senior technical position at each company where he has worked while additionally serving as an officer and/ or director at Walter Oil & Gas, British-Borneo Exploration, Basin Exploration, and Mariner Energy. Currently,

David's exploration consulting group provides exclusive prospect generation in the Gulf of Mexico for LLOG Exploration Company. David is an active member of AAPG, HGS, IPAA, the Chancellor's Council of The University of Texas System, the Hill Society of the Jackson School of Geosciences at The University of Texas at Austin, the Asante Society of the Houston Zoo, and the President's Circle of the Houston Museum of Natural Science.

JAMES V. RICHARDS

James V. (Jim) Richards is a consulting Exploration Geologist in Genesis Producing Company, L.P.'s Office located in Houston, Texas. He graduated from The University of Texas with a Bachelor of Science Degree in Geology in 1956 and attended graduate school at the University in 1960. Before joining Genesis in 1981 as the Houston office manager, he was an independent petroleum geologist in Houston for ten years and opened the Houston office as manager for Weeks Petroleum. During a two year absence from Genesis Mr. Richards managed the Houston office for Crossroads Oil Company and served as a director financing Louisiana Offshore Ventures which was a part of Houston Energy and Development. Prior to that, he was Texas Offshore Geological Manager for King Resources Company and Coastal States Gas Producing Company (1965-1977), and was Area Geologist for Coastal in Lafayette, Louisiana and Abilene, Texas from 1960 to 1965. He is a certified member and longtime delegate of The American Association of Petroleum Geologists, served on the board of the Houston Geological Society, past treasurer of The Society of Independent Professional Earth Scientists, and is a charter member of Onshore Exploration Independents. Mr. Richards is a licensed geoscientist in the State of Texas and a retired U.S. Navy Commander.

SANDY RUSHWORTH

Sandy Rushworth, has worked in international and domestic energy exploration for over 30 years at Amoco, Texaco, IHS Energy & Marathon. Her current position is with Marathon Strategic & New Ventures Worldwide exploration. Prior to Marathon, Sandy was Global Data Advisor at IHS Energy. Sandy started her career at Amoco in Denver in 1980 and moved with Amoco to Houston in 1991. Sandy holds an M.S. degree in Geochemical Oceanography from University of Hawaii and has been a member of AAPG since 1976 when she received a B.S. in geology at Beloit College in Wisconsin. Sandy is an active member of HGS and RMAG in Denver. She has been serving in the Gulf Coast AAPG House of Delegates since 2005 where she strives to ensure that new AAPG active members reflect the current international diversity of our industry.

DEBORAH KING SACREY

Deborah is a geologist/geophysicist with 30 years experience in the Texas and Louisiana Gulf Coast and Mid-Continent areas of the U.S.. She received her degree in Geology from The University of Oklahoma in 1976 and immediately started working for Gulf Oil in their Oklahoma City offices.

In 1985 she moved to Dallas to become Chief Geologist for a small independent exploration company, Peko Oil and Gas, where she worked on several exploration joint ventures with Texaco in the Arkoma Basin.

In 1988 Peko merged with Weeks Exploration, a Houston oil and gas company, and Deborah started working the East Texas Basin and Mississippi Gulf Coast. Deborah left Weeks in 1990 and started her consulting business. She built her first geophysical workstation using Kingdom software in 1996. She specializes in 2D and 3D interpretation along the Texas and Louisiana Gulf Coast.

Deborah has been very active in the geological community. She is past national President of SIPES, past President of the DPA of AAPG and is DPA Certified Petroleum Geologist #4014 and CPA Certified Petroleum Geophysicist #2.

ROBERT C. SCHEIDEMANN, JR.

I am just concluding my first three year term as a Delegate, and I would like to be elected for another term. I accept the responsibilities that come with the role, as I believe that it is an honor to serve and represent the Houston AAPG & HGS membership. I have been a member of AAPG since 1979 and have worked for Shell in the Gulf Coast since 1980. Thanks for your consideration!

SARAH STANLEY

I have been a member of the HGS and AAPG since 1981 and have served on committees in both organizations, and as HGS secretary for 2002-2003. It has been my privilege to serve in the AAPG House of Delegates. The Houston HOD is a dynamic group who perform a valuable function for the AAPG members in the

AAPG House of Delegates Candidates *continued on page 65*

2011 WTGS Fall Symposium
September 28-30, 2011
Midland, Texas

CALL FOR PAPERS

WolfBerry! Avalon Shale! WolfBone! Leonard Shale! WolfFork! Atoka Wash! WolfBo!
Or, just plain ole' Ellenburger, San Andres, Wolfcamp, Morrow, Abo, Yates, Devonian!

No matter what you call it, 300+ Drilling Rigs in the Permian Basin are penetrating it!

The Permian Basin is **HOT**, and we would like to hear your story during the 2011 WTGS Fall Symposium. We are interested in ***technical talks, papers and/or posters*** with direct relevance to the evaluation, discovery, and/or production of the multiple Permian Basin plays.

Please contact one of the following Technical Co-Chairs:

Lou Mazzullo	303.384.9668	Lou@MazzulloEnergy.com
Robert Nail	432.686.6771	Robert.Nail@Whiting.com

Science and Engineering Fair of Houston

On February 19th, HGS President John Tubb presents our organization's contribution to the 52nd Science and Engineering Fair of Houston (SEFH). The presentation took place at the Science and Engineering Council of Houston (ECH) Annual Leadership Conference, which was held at the University of Houston. On behalf of SEFH Chairman Dr. Larry Spears at U of H, Dean David Shattuck accepts the $5000 HGS check. John Tubb also presents ECH acting-President Jessica Lucas with our $2000 HGS support of two summer HMNS interns. Our two interns will be selected from the Science Fair held April 8th. The Science and Engineering Council of Houston was founded in 1945 to be a forum for many of the science and engineering societies to collaborate in building communication and projects especially to support K-12 activities encouraging children to enter the science and engineering fields of study.

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Houston area by screening potential AAPG members; participating in making and changing AAPG bylaws that affect all members; and by representing the interests of the Houston geoscience community to the AAPG. I respectfully request that HGS members elect me to another term.

CARL STEFFENSEN

Geologist Carl Steffensen (B.S.. Geology 1980, Illinois; M.S. Geology 1982, Texas A&M) has nearly 30 years industry experience with ARCO, Vastar, and currently BP America, Inc. During this time he has worked a variety of Tertiary, Mesozoic, Paleozoic, and Pre-Cambrian exploration and production projects in the Gulf of Mexico (shelf and deepwater), onshore Gulf Coast, Midcontinent, Midwest, southeastern U.S., and Latin America, with a focus on carbonate sedimentology/stratigraphy and petroleum systems. Carl has served in many positions with both the HGS and AAPG, and is currently a member of the AAPG Distinguished Lecturer Committee and an AAPG Associate Editor.

JOHN TUBB

John Tubb has been a Consulting Geologist since 1996. He has worked in the industry for over 40 years for Tenneco, Aminoil, Michigan-Wisconsin Pipeline Co. and Japex. He has a B.S. in Geology from SLI (UL Lafayette now) in Lafayette, Louisiana, and his M.S. and Ph.D. from University of Illinois. John was a Delegate of Lafayette Geological Society for one year and was also Secretary of the LGS. He served 14 years as Delegate for the Houston Geological Society. John has been Treasurer-elect, Treasurer, and President-elect of HGS and is currently the HGS President. He has been a member of HGS since 1975, a member of AAPG since 1958, and is a DPA Certified Geologist.

JUSTIN VANDENBRINK

Justin Vandenbrink is the Manager of USA Geological Well Operations for RPS Energy. He has a B.Sc. in Geology from the University of British Columbia and a Communications Diploma from BCIT in Vancouver. Currently based in Houston, Justin has spent the past 17 years working in the North American Oil and Gas industry as a geologist. He has volunteered with the HGS the past 3 years as the Chair for the International Explorationists Group.

GERRIT WIND

Former Amoco geologist and now working as a geological consultant, most recently through Knowledge Reservoir. As an active AAPG HGS and SIPES member I can contribute to the House of Delegates in providing feedback to the AAPG. Over the past three years, as Chair of the AAPG Publication Pipeline Committee, I had the opportunity to attend the AAPG Tulsa Leadership Days and now feel I want to contribute more to the local AAPG membership and to the organization.

MIRIAM WINSTEN

Miriam Winsten is an Account Manager and Principal Geologist for Schlumberger Data & Consulting Services (DCS) Global, and is located in Houston. She has more than 25 years experience in the oil and gas industry working with Schlumberger since 2001. Miriam has held various management positions during her career at Schlumberger. Recently she served as the DCS North Gulf Coast Operations Manager where she supervised a diverse team of experts in geological, geophysical and engineering consulting, data services, geomechanics, borehole seismic, and engineering solutions. She began her oilfield career as a geologist with Marathon Oil Company where she was responsible for prospect generation and evaluation, exploitation, and field studies for onshore and offshore shelf and deepwater Gulf of Mexico. Miriam holds a Bachelor's degree in Geology from Binghamton University and a Master's degree in Geology from Bowling Green State University.

Miriam is seeking reelection to the AAPG Texas House of delegates. As a long-standing member of the geological community, Miriam feels it is important to devote time to an organization that has played an integral role in her profession. She believes it is essential to encourage professionals to become active members of AAPG and lend their support to the meetings, conventions, training, and other programs, where they can actively participate in the discussions and decision-making around the energy challenges facing the industry today and in the future. ■

Government Update

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

If you'd like the most up-to-date Texas rules, regulations, and governmental meeting information we direct you to the HGS website to review The Wise Report. *This report, which comes out as needed, but not more often than once a week, offers the most up-to-date information that may be of interest to Texas geologists.*

TBPG Issues Advisory Opinion #3

The Texas Board of Professional Geoscientists has issued Advisory Opinion #3, "What constitutes 'responsible charge'". This advisory opinion serves as a guideline for when work should be directly performed by a Professional Geoscientist and when oversight of another person by a Professional Geoscientist is appropriate. In summary, "the intent of supervision, responsible supervision or direct supervision as it relates to responsible charge is that the P.G. must be in a position to not simply proofread work after the fact when it is too late to verify its accuracy. A P.G. in responsible charge is accountable for the final quality of a work product and the accuracy of the underlying data used to produce the work product. A P.G. in responsible charge who supervises others in the performance of specific tasks that contribute to a final work product must be able to monitor work in progress and, if necessary, step in and provide additional guidance or corrections before undetected errors become deficiencies in the final geoscience work product to the detriment of public health, safety or welfare." The entire Advisory Opinion can be found at: https://tbpg.state.tx.us/Advisory-Opinions.html

AGI Government Affairs Monthly Review (January 2011)

National Oil Spill Commission Releases Final Report

The National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling released their final report, "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling" (http://www.oilspillcommission.gov/final-report), on January 11, 2011. The Oil Spill Commission (OSC) discussed the results and their recommendations with the media and the public in a series of public events.

The commission stressed the urgency and importance of creating a more effective safety and regulation system while maintaining offshore development and fossil fuel energy supplies. They emphasized increasing research and development for offshore oil and gas as well as spill response and containment.

A "culture of complacency" regarding safety standards and regulation within the industry and the federal government led to a series of preventable mistakes that caused the disaster, highlighting what the commission called a systemic problem with offshore drilling. Key recommendations include the formation of an independent safety organization and including the National Oceanic and Atmospheric Administration (NOAA), the US Geological Survey (USGS), the Department of Energy (DOE), the Environmental Protection Agency (EPA) and academia for environmental considerations concerning leasing and risk assessment. The report recommends giving NOAA, the Coast Guard and EPA a role in formulating oil spill response and containment plans.

The report discusses the need to research the effects of oil and gas development in less understood frontier areas, such as the Arctic and the Atlantic, and suggests creating a board of experts from NOAA, USGS, DOI, DOE, EPA, professional societies, academia, industry, and NGOs to head such research.

The commission recommends that Congress provide annual mandatory funding for oil spill response research. The commission suggests that funding for additional research and safety enforcement could come from portions of fees that drilling companies pay for federal leases and from new regulatory fees that could be imposed.

Congressional response to the report has varied. Senator Barbara Boxer (D-CA), Chairman of the Senate Committee on Environment and Public Works, stated that the report highlighted the need for more safety regulations and plans on supporting legislation to act on the commission's recommendations. Congressman Fred Upton (R-MI), Chairman of the House Energy and Commerce Committee, issued a statement saying the report failed to answer the question of what went wrong and instead spread blame in general. He noted that the results should not be allowed to stunt American petroleum production, increasing dependence on foreign oil, a position echoed by House Natural Resources Committee Chairman Doc Hastings (R-WA) in his comments.

The American Petroleum Institute (API) has voiced concerns of miscommunication with BOEMRE (Bureau of Ocean Energy Management Regulation and Enforcement). The API wants to improve communication so the permitting process for deep-water drilling can resume.

Commission co-chairs Bob Graham and Bill Reilly acknowledged that passing regulatory legislation in a Republican-led House will be difficult, but expressed hope that the recommendations will not go unheeded.

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Senate Committee Leadership Update

The Senate did not see as many changes in committee leadership from the 111th Congress moving in to the 112th as did the House, and the Democrats retained a slight majority after the November elections. The new Chair of the Senate Committee on Agriculture, Nutrition and Forestry is Debbie Stabenow (D-MI), and Charles "Pat" Roberts (R-KS) is now the Ranking Member.

John D. Rockefeller IV (D-WV) will continue as Chairman of the Senate Committee on Commerce, Science, and Transportation, and Kay Bailey Hutchinson (R-TX) remains Ranking Member. Rockefeller plans to focus on improving infrastructure and strengthening science, technology, engineering and mathematics (STEM) education, and Hutchinson has expressed continued interest in NASA oversight.

Jeff Bingaman (D-NM) and Lisa Murkowski (R-AK) continue as Chair and Ranking Member of the Committee on Energy and Natural Resources, respectively. Murkowski is expected to push for oil and gas development in the Arctic.

Barbara Boxer (D-CA) remains Chairman of the Committee Environment and Public Works and has introduced legislation to monitor contaminants is drinking water and reduce air pollution. Ranking Member James Inhofe (R-OK) is expected to sponsor a bill that would block EPA from regulating greenhouse gases.

The Senate Committee on Health, Education, Labor and Pensions leadership is the same, with Tom Harkin (D-IA) as Chair and Michael Enzi (R-WY) as Ranking Member. The two have plans to rewrite the No Child Left Behind Act.

House Committee Leadership Update

Members and chairs of key House committees have been appointed for the 112th Congress. In the Energy and Commerce Committee, Fred Upton (R-MI) is the Chair and Henry Waxman (D-CA) is the Ranking Member. Subcommittee chairs include Mary Bono Mack (R-CA) for Commerce, Manufacturing and Trade, Ed Whitfield (R-KY) for Energy and Power, John Shimkus (R-IL) for Environment and Economy, and Cliff Stearns (R-FL) for Oversight and Investigations. A leaked Republican agenda for the committee focuses on opposing greenhouse gas regulation, curtailing rising gas prices, and investigating the cost of renewable electricity standards.

In the House Natural Resources Committee, Doc Hastings (R-WA) is the Chair and Edward Markey (D-MA) is the Ranking Member. Key subcommittee chairs include Doug Lamborn (R-CO) for Energy and Mineral Resources, Rob Bishop (R-UT) for National Parks, Forests and Public Lands, and Tom McClintock (R-CA) for Water and Power. The committee promises to look closely at federal wild lands policy and energy development, including offshore drilling. The committee held a hearing on the National Oil Spill Commission's report on the Deepwater Horizon disaster on January 26, 2011.

Adding the designation "space" this year, the House Committee on Science, Space, and Technology will be led by Chair Ralph Hall (R-TX) and Ranking Member Eddie Bernice Johnson (D-TX). The committee is returning after successful passage of the America COMPETES Reauthorization (H.R. 5116). Authorization of the National Earthquake Hazards Reduction Program (NEHRP), however, was stalled in the Senate and will require a new bill from the SS&T Committee. Subcommittee chairs include Andy Harris (R-MD) for Energy and Environment, Mo Brooks (R-LA) for Research, Science and Education, and Ben Quayle (R-AZ) for Technology and Innovation.

Energy Bits in Congress

The Administration has indicated that "chunks" of energy policy will be the focus in working with the new 112th Congress. Indeed, in President Obama's State of the Union address, he called for 80 percent of electricity to come from clean energy by 2035, for a million electric vehicles to be on the road by 2015 and for

80 percent of Americans to have access to high speed rail by 2036. With regards to clean energy, the President included wind, solar, nuclear, clean coal and natural gas as clean resources.

In response to the President's speech, Congress is looking at revising measures considered in the 111th Congress and incorporating new ideas to meet the challenges put forth by the President and other congressional priorities. In a public address on January 31, 2011, Senate Energy and Natural Resources Chairman Jeff Bingaman described the energy priorities for the 112th Congress. Like the President, Bingaman started his talk by highlighting the advances in China, a nation that invested $51.1 billion in clean energy in 2010. Bingaman called for work on four elements of the energy equation for the United States: 1) energy research and development; 2) a domestic market for clean energy; 3) financial tools to provide the capital to build clean energy systems; and 4) policies to promote clean energy manufacturing. Bingaman noted that only 0.3 percent of gross domestic product (GDP) was spent on clean energy research and development in the U.S. in 2007 and he called for investments in energy technology research.

Bingaman has long been a champion of a renewable electricity standard (RES), which would require utilities to garner a percentage of their energy from renewable energy resources. Responding to the President's request for a clean energy standard (CES) that would include nuclear, natural gas and clean coal plus renewables, Bingaman indicated he would consider this idea with his colleagues on the committee. Bingaman also defined clean coal as coal-fired power plants with carbon capture and sequestration. Committee Ranking Member Lisa Murkowski (R-AK) has not indicated a position on CES yet, while Senators Lindsey Graham (R-SC), Tom Carper (D-DE) and Mark Begich (D-AK) have indicated support for some form of CES.

Look for Congress to work on several measures that prioritize energy efficiency, some energy standards for electricity generation, some energy technology research and development, and policies to stimulate clean energy infrastructure and manufacturing.

Congress Considers Restricting EPA Climate Change Initiatives

Senator John Barrasso (R-WY) and nine other Republican senators introduced a measure to remove the Environmental Protection Agency's (EPA) authority to regulate greenhouse gas emissions (GHGs). The bill, Defending America's Affordable Energy and Jobs Act, (S.228) was submitted on January 31, 2011. Another measure (S.231) sponsored by Senator Jay Rockefeller (D-WV) would be less restrictive and would only seek to delay the EPA rules for stationary sources by two years.

In the House, Representative Ted Poe (R-TX) and many cosponsors started the first session of the 112th Congress on January 5 with a bill (H.R. 153) to prohibit any funds for EPA to implement any regulations pertaining to GHGs or for any enforcement of any cap and trade program.

Senator James Inhofe (R-OK), who is the Ranking Member on the Environment and Public Works Committee, and Representative Fred Upton (R-MI), who is the Chair of the Energy and Commerce Committee, will unveil draft legislation soon that seeks to restrict EPA regulations for GHGs under the Clean Air Act. This flurry of legislative action signals a move away from climate change legislation to efforts to discuss and control any actions taken by EPA to regulate emissions that contribute to climate change.

Policymakers Want Safer Drinking Water

Congress is zeroing in on the Environmental Protection Agency (EPA), and not just in regards to climate change regulations. Many policymakers want the EPA to do more to ensure safe drinking water. California Senators Barbara Boxer and Dianne Feinstein introduced legislation (S.79) to amend the Safe Drinking Water Act to require a standard and advisory for hexavalent chromium in drinking water for vulnerable individuals. Senator Boxer introduced a bill (S.78) to protect vulnerable individuals from perchlorate in drinking water. Senator Frank Lautenberg (D-NJ) intends to introduce legislation to add more potential drinking water contaminants to the growing list of chemicals that EPA regulates. Lautenberg wants standards and rules for gasoline additives like MTBE, pesticides and "fracking" chemicals.

Chemicals associated with hydraulic fracturing for oil and gas extraction remain a significant concern for members of Congress. On January 31, 2011, Representatives Henry Waxman (D-CA), Ed Markey (D-NJ), and Diana DeGette (D-CO) posted a letter addressed to the EPA about the amount and use of diesel fuel in hydraulic fracturing. They want to know what EPA is doing about potential contamination of drinking water by the diesel fuel and if the past use of diesel fuel violates any part of the Safe Drinking Water Act.

Congressman Questions Use of Science in Oil Spill Response

Representative Raul Grijalva (D-AZ) sent a letter to President Obama on January 25, 2011, questioning the administration's use of science in their response to the BP Deepwater Horizon oil spill. The letter, interspersed with the text of internal government email exchanges, indicates that the administration ignored or altered federal scientists' comments or analyses in its published oil budget report from August of 2010. The oil budget report was used by Carol Browner, Director of the White House Office of Energy and Climate Policy at the time, to publicly state that most of the oil was gone.

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The congressman writes "While there is room for legitimate internal debate about scientific issues, this exchange gives the distinct impression that the White House was more concerned about public image than scientific accuracy in describing the effectiveness of its cleanup efforts."

NASA Warns of Inadequate Funding and Time to Accomplish Tasks

The National Aeronautics and Space Administration (NASA) released a "Preliminary Report Regarding NASA's Space Launch System and Multi-Purpose Crew Vehicle" on January 13, 2011, that states the agency does not have enough funding or time to develop and fly a heavy lift vehicle (HLV) and manned capsule by 2016.

Under the NASA Authorization Act of 2010, (S.3729; Public Law 111-267) Congress directed NASA to develop a new heavy lift rocket and crew capsule based on previous designs to send crews and supplies into deep space by 2016 as part of the Space Launch System (SLS). However, NASA said in the report that none of the studied design options are feasible under Fiscal Year 2011 funding levels.

The SLS was developed after the proposed cancellation of the Constellation program (Bush-era rocket and space capsule project). The Obama administration has made it clear it wants to shift manned spaceflight and rocket launches to private industry while NASA focuses on future deep space exploration targets.

Uncertainty about future funding is another source of confusion at the agency. NASA is currently operating at 2010 funding levels under the continuing resolution, and the agency is required to continue all established programs until new legislation is passed. This means $215 million could be spent on the soon-to-be-cancelled Constellation program by the end of February unless Congress takes action.

The report has garnered strong reactions from leaders in Congress, and congressional response remains somewhat divided on the administration's plan for NASA and spaceflight. Representative Ralph Hall (R-TX), Chairman of the House Committee on Science, Space, and Technology, issued a statement that condemns the cancelling of the Constellation Program and notes the need for discussions with NASA on the future of the human spaceflight program. Senate Commerce, Science, and Transportation Committee members Kay Bailey Hutchinson (R-TX), and Bill Nelson (D-FL) sent a letter to NASA Administrator Charles Bolden saying the report gives no specific reasons why none of the design options are affordable. The letter emphasizes that the NASA Authorization Act of 2010 "is not an optional, advisory document: it is the law."

EPA Delays Greenhouse Gas Permitting for Biomass Fuels

The United States Environmental Protection Agency (EPA) announced January 12, 2011, that it will delay for three years setting greenhouse gas (GHG) permitting requirements for industries that use biomass as fuel. In a news release, EPA indicated it will use the additional time to gather more input and analysis from the scientific community. EPA will revisit comments received from a July 2010 Call for Information to better understand whether burning biomass results in a net increase or decrease in emissions. EPA will formulate a decision concerning how to deal with the emissions and whether permits are necessary.

The move signals to some an approval of biomass as a form of clean energy by EPA, while others view it as an indication towards a more moderate approach to regulation. The deferral comes as EPA is enacting controversial permit requirements for newly built and modified facilities that emit large amounts of GHG, such as power plants and refineries.

NASA/NOAA: 2010 Tied for Warmest Year on Record

Climate records show that 2010 has tied for the warmest year on record, according to a NASA news release and a monthly report from the National Oceanic and Atmospheric Administration (NOAA). Global air temperature measurements were taken from land- and sea-based measurements and find no statistical difference between average temperatures for 2010 and 2005.

The announcement comes as several peer-reviewed journal articles have reported alarming predictions for a warming planet. *Nature Geoscience* published an article (http://www.nature.com/ngeo/journal/vaop/ncurrent/full/ngeo1047.html) in January that reported sustained warming for at least 1,000 years, regardless of future carbon dioxide emissions. This climate inertia results from positive feedbacks such as melting permafrost and less ice cover, according to the study. Another study in *Nature Geoscience* reports that melting glaciers could contribute to as much as 16.1 centimeters of sea level rise. Areas such as the Alps and New Zealand are expected to see the most rapid loss of glaciers and may experience diminished stream flows in the spring, according to the report. The Intergovernmental Panel on Climate Change (IPCC) estimates that under current emissions scenarios, melting of ice sheets and glaciers could raise sea level 18 to 59 centimeters over the next century. Despite these projected changes, a new US Geological Survey (USGS) study (http://www.usgs.gov/newsroom/article.asp?ID=2666&from=rss) suggests that Arctic sea ice loss and extinction of polar bears can still be averted if atmospheric carbon dioxide concentrations are stabilized at 450 parts per million.

Colorado Approves First Uranium Mill in 25 Years

Colorado has approved the first uranium mill to be built in the U.S. in over 25 years. On January 4, 2011, the state's Department of Public Health and Environment approved Energy Fuels Inc.'s application for a license to operate a joint uranium-vanadium mill in the western Colorado town of Naturita. Energy Fuels, a Canadian company, owns two uranium mines in proximity to the mill and plans to process 500 tons of ore per day, enough to fuel 2,000 megawatts of nuclear power, according to the company. Local opposition groups have raised concerns that Energy Fuels has not set aside sufficient funds to finance clean up of contaminated groundwater and soil that could result from the tailings disposal.

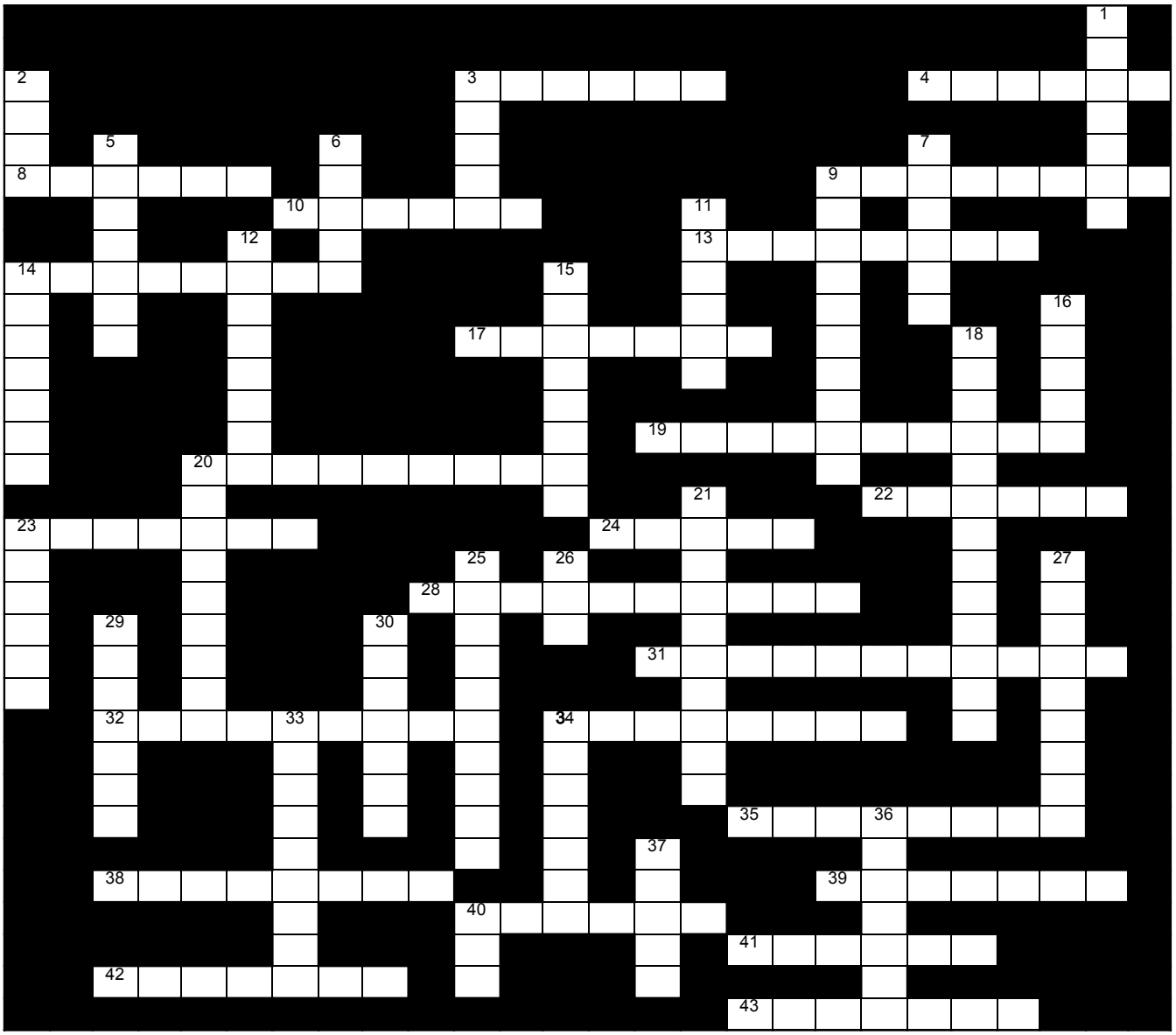
China Drafts New Mining Laws to Reduce Pollution

China has drafted new pollution standards that may constrain the domestic production of critical materials. China currently produces 97 percent of the world's rare earth element (REE) supply and recently established export quotas that have created global supply constraints. China secured its place as the number one producer of REEs partly through lax environmental standards. Those standards drove down costs and forced other mines to abandon production, but lower pollution limits and more regular enforcement may reverse that trend. The new standards will be released as soon as February 2011. The standards were approved by China's Ministry of Environmental Protection in December of 2010.

Study: Advanced Biofuels Could Replace 58 Percent of World's Liquid Fuel

A new peer-reviewed study (http://pubs.acs.org/doi/pdfplus/10.1021/es103338e) has indicated that 10 to 58 percent of the world's liquid fuel consumption could be replaced by advanced biofuels grown on marginal lands. The study identified grassland, shrubland, and savannahs worldwide that could be harvested for biofuels without displacing agriculture or pasture. Those gains can only be realized from cellulosic and other advanced biofuels, the study emphasizes. The findings were published in the January 1, 2011 issue of *Environmental Science and Technology* and were partially funded by the Energy Biosciences Institute, a joint project of BP, two universities, and the Lawrence Berkeley National Laboratory. ■

April Crossword of Oil Field Terms



ACROSS

3 A device employed to catch debris from drillable tools

4 A pipe connection around a valve or other control mechanism that is installed to permit passage of fluid through the line while adjustments or repairs are being made

8 Heavy lifting mechanism

9 A process of dispose a hydrocarbons during clean-up

10 A particularly crooked place in a wellbore

13 Wearing away by friction

14 The emptying or depressurizing of material in a vessel

17 A pipe fitting on which the external thread is larger than the internal thread to allow two pipes of different sizes to be connected

19 A heavy, flanged steel fitting connected to the first string of casing

20 A colloidal clay that swells when wet

22 When dissolved in water, produces a solution that resists a change in pH

23 Impermeable rock overlying an oil or gas reservoir that tends to prevent migration of oil or gas out of the reservoir

24 A device inserted in a flow line to regulate the rate of flow

28 Refers to the installation of permanent equipment for the production of oil or gas

31 A bladed or bow spring tool that helps center tools or pipe in the wellbore

32 The movement of oil from the area in which it was formed to a reservoir rock

34 A device used to direct fluid flowing from a well away from the drilling rig

35 The device used to remove unwanted gas from a liquid

38 Small pieces of rock that break away due to the action of the bit teeth

39 Plates which change the direction of flow of fluids

40 Equivalent of 42 U.S. gallons

41 An obstruction in the borehole

42 The space between two concentric objects, such as between the wellbore and casing

43 An interconnected pathway through the matrix of the rock

DOWN

1 The procedure of recovering lost or stuck equipment in the wellbore

2 To reduce pressure in a wellbore by moving pipe

3 Water that has large quantity of salt

5 A substance whose particles are so fine that they will not settle out of suspension

6 High point

7 Barium sulfate

9 Application of hydraulic pressure to the reservoir formation to create fractures

11 Steel pipe placed in an oil or gas well as drilling progresses to prevent the wall of the hole from caving in during drilling

12 A hole made by drilling or boring

14 An uncontrolled flow of gas, oil, or other well fluids into the atmosphere or into an underground formation

15 A centrifugal device for removing sand from drilling fluid to prevent abrasion of the pumps

16 An area consisting of a single reservoir or multiple reservoirs

18 A method of improved recovery in which water is injected into a reservoir to remove additional quantities of oil

20 Blowing out of formation fluids outside the casing

21 An area of reduced diameter in pipe caused by excessive longitudinal strain

23 Collapsing of the walls of the wellbore

25 Hydrocarbons which are in the gaseous state under reservoir conditions but which become liquid either in passage up the holeor at the surface

26 American Petroleum Institute

27 A porous and permeable underground formation containing an individual and separate natural accumulation of producible hydrocarbons

29 The compass direction of a directional survey or of the wellbore

30 Failure of a metal under repeated loading

33 The phase of petroleum operations that immediately follows successful exploratory drilling

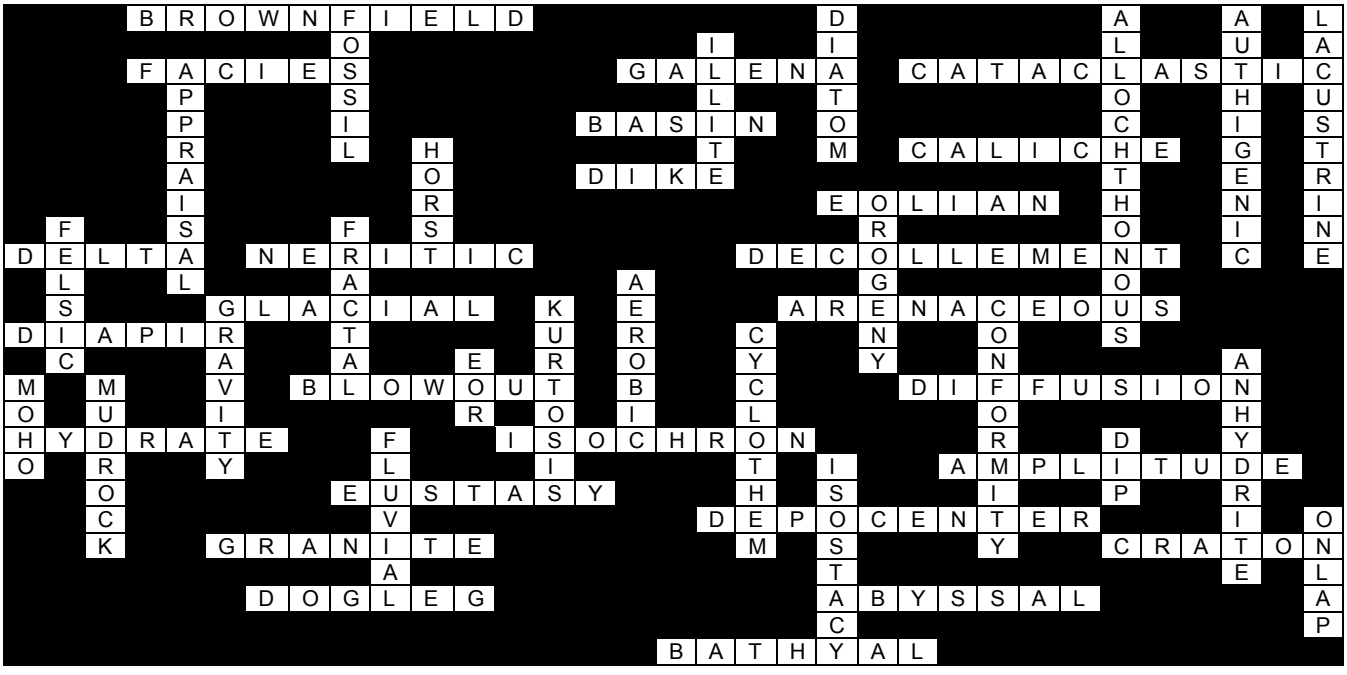
34 The employee directly in charge of a drilling or workover rig and crew

36 To cease efforts to produce oil or gas from a well

37 To drain off liquid or gas

40 The cutting or boring element

March Crossword Puzzle Answers



Full Color Ads Now Available!

HGS *Bulletin* Instructions to Authors

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

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

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

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

Advertising

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

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10	$823	$1,387	$2,488	$4,734	$5,680	$7,830	$7,560	$6,858	$6,750	$2,700
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8	$750	$1,260	$2,242	$4,307	$5,169					
7	$665	$1,123	$2,014	$3,834	$4,600					
6	$590	$990	$1,782	$3,392	$4,069					$1,890
5	$497	$837	$1,503	$2,860	$3,432	$4,698	$4,536	$4,104		
4	$405	$683	$1,223	$2,326	$2,792					
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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.

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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.

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Job Title: _____

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Work Phone: _____ *Fax Number:* _____

Circle Preferred Mailing Address: Home Office

Professional Affiliations: _____

❑ AAPG member No.: _____

Professional Interest:

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

School _____

Degree _____ *Major* _____ *Year* _____

_____

School _____

Degree _____ *Major* _____ *Year* _____

_____

Earth Science Work Experience _____

_____

_____

_____

Applicant's Signature _____ *Date* _____

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

Name: _____

Signature _____ *Date* _____

Membership Chairman _____ *HGS Secretary* _____

revised 8/6/10

Houston Petroleum Auxiliary Council News

Winona LaBrant Smith, HGS Liaison

April is the month of renewal as new life springs forth. It is an invigorating time of the year. HPAC responds to this feeling with all the stimulating events that are described below.

May 6, 2011, HPAC will host its Spring Luncheon/Style Show at Braeburn Country Club, 8101 Bissonnet. Installation of the 2011-2012 Officers will be held at this time. Fashions will be furnished by Excessories of Katy, Texas. The Show Coordinator, **Marty Pearson**, will be assisted by models from the HPAC membership. **Mickey Murrell** and **Wanda Shaw** are the Chairs with **Connie Griffith, Marion Hawkins, Katherine McKinney,** and **Sheri McQuinn** assisting. This is our final meeting for the year and one of the outstanding events for HPAC. Make your reservations ASAP.

The Spring Road Trip will be held March 31. This event, led by **Martha Lou Broussard**, is part of our Exploring Houston program. We will tour one of the oldest towns in Texas—Goliad. Martha Lou has an ability to find and explore some of the most interesting areas in and around Houston. Thank you, Martha Lou!

Exploring Houston's bus trip will be centered on the historical date of March 27, 1836. Col. James Fannin and 341 of his men were executed at the Presidio La Bahia under orders from General Santa Anna. On March 31, 2011, 175 years later, we will be visiting the Presidio and the Mission Espiritu Santo, which the Presidio was built to protect. The fort and mission are located in Goliad. It was founded in 1749 and is the third-oldest city in Texas. After we learn our Texas history we will visit the National Historic Courthouse Square that has been restored to its 1894 appearance, with great shops, of course. Hurry to reserve your spot on the bus by sending a check for $22, payable to Geowives, to Martha Lou Broussard, 3361 Bellefontaine, Houston 77025. This includes entrance fees and lunch. We will leave from Memorial Drive Presbyterian Church promptly at 8:00 a.m. and return about 6:00 p.m. Guests are welcome.

HPAC has two active Bridge Groups. One meets at the Petroleum Club, 800 Bell Avenue, Houston 77002, on the third Wednesday of each month from 10 a.m. to 3 p.m. $30.00 tariff includes coffee, tea, and refreshments all day long, a bountiful buffet lunch in the Wildcatter Grill, valet parking, tax, and gratuity. **Daisy Wood** (713-977-7319) or **Marcy Miley** (713-782-6935) should be contacted one week in advance. Spouses are welcome. The Cinco Mas Bridge Group, (contact **Audrey Tompkins** 713-686-0005) meets at the Westchase Marriott Hotel, 2900 Briarpark, on the second Thursday of each month. The cost is $16.00, which includes a full buffet, including coffee and tea all day. $1.00 is donated by players as prize money.

Karen Mermis is the member selected from the HPAC virtual garden of stimulating members to be highlighted for the month of April. Karen has been a member of SPE (Society of Petroleum Engineers) since 1990. She has held every job in that organization, serving as President two separate terms. Born in Chicago, Illinois, she moved to Houston in 1957, when her Dad was transferred. She attended Texas Lutheran College (now University) in Seguin. She worked as an accountant in the oil industry, where one of her co-workers invited her to go out on a blind date. One year later, she married that blind date and they celebrated their 40th wedding anniversary in 2010. Her husband, **Delven Mermis**, formed Mermis Engineering in 1977 and she served as VP and Treasurer of that small company, which survived until Delven's retirement two years ago. Karen and Delven have two sons (Jared and Jason) who graduated from Texas A&M, and four grandchildren, whom they unconditionally adore. Karen was a member of the Houston A&M Mothers club for eight years and served as President of that organization in 1997-98. It was one of the biggest responsibilities she ever had. Up until a few months ago, she sang in her church choir, and was a member of the Junque Hunters Antique club of Houston. Karen owned her own Gift Basket Online Store from 1998 until 2004. Her latest hobby is learning the art of making miniature porcelain dolls (5 1/2" tall) and dollhouse furniture. Karen has been a member of HPAC since its inception. She was instrumental in the forming of HPAC by serving on the Organizational Committee. She has served on our Christmas Luncheon Committee and is the current Editor of the HPAC newsletter.

Remember that HPAC has several Interest Groups: *Bridge* (contacts: listed above) and/or *Book Club* (contacts: **Martha Lou Broussard**, 713-665-4428 or **Phyllis Carter**, 281-397-9888) and *HPAC Exploring Houston* (contact: **Martha Lou Broussard**, 713-665-4428 or mlbrou@rice.edu).

Geologists, please encourage your spouses to join HPAC, where they will have the opportunity to meet other spouses of Geologists, Geophysicists, Engineers, and Landmen. They will participate in informative and entertaining programs, delicious lunches, and welcoming fellowship.

An HPAC membership form is included on the next page. (Contact: **Winona LaBrant Smith** at 713-952-2007)

You are invited to become a member of

HPAC

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

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Please choose a committee assignment if you are interested.

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

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Ghulan Sarwar

Pete, realizing that he is plain old "faulted out"...

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04/04-08/11	Drilling Fundamentals for the Geologist	Siegel	Houston, Texas
04/18-20/11	Seismic Interpretation Workshop	Cherry	Houston, Texas
04/25-29/11	Practical Interpretation of Open Hole Logs	Maute	Houston, Texas
MAY			
05/02-03/11	Basic Petroleum Engineering for Non-Engineers	Lanman	Houston, Texas
05/07-11/11	Applied Subsurface Geological Mapping	Agah	Dubai, UAE
05/09-13/11	Applied Subsurface Geological Mapping	Brewton	Houston, Texas
05/23-27/11	Sequence Stratigraphy of Carbonates	Sarg	Houston, Texas
JUNE			
06/06-10/11	Applied Subsurface Geological Mapping	Brewton	Calgary, Canada
06/13-17/11	AVO, Inversion and Attributes: Principles and Applications	Willis	Houston, Texas
06/20-24/11	Applied Subsurface Geological Mapping	Shoup	Kuala Lumpur, Malaysia
06/20-24/11	Image Log Application & Interpretation	Willis	Houston, Texas

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