

HGSBULLETIN Houston Geological Society

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ELECTION ISSUE

RELATIONSHIP BETWEEN ANTICLINAL FOLDING AND THE EVOLUTION OF MECHANICAL STRATIGRAPHY, ROCK MECHANICS PROPERTIES AND RESERVOIR QUALITY IN THE TENSLEEP SANDSTONE AT ALCOVA RESERVOIR, CENTRAL WYOMING, USA PAGE 21

An Overview of Kurdistan: One of the Last Onshore Frontiers of Huge Hydrocarbon Potential

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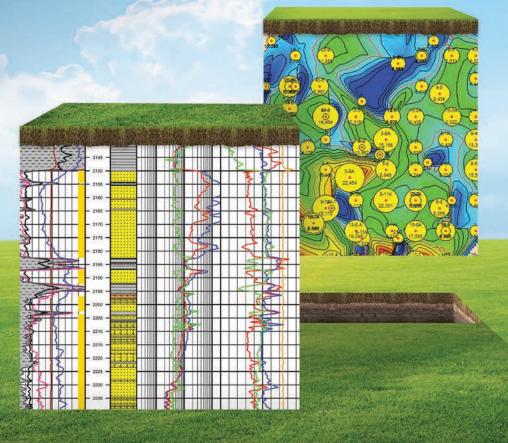
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The Bulletin Houston Geological Society

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April 2015

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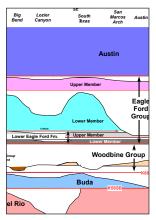
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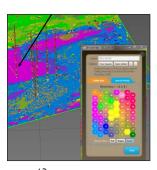
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About the Cover: Sermon in Stone, Bryce Canyon National Park, Utah (April 1992). Photo by Charles Revilla

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Ken Nemeth ken.prez.hgs@gmail.com

From the President

Presidential Ponderings

Inlike last month, the sun is shining, the temperature is nice, but I am still pondering anew. Because of the late 4th quarter downturn, the 1st quarter continuance, and the need to tell members that "It's only over if you want it to be;" I'm pondering the present and the past of oil field employment.

The oil business has changed positively in some respects from last month, depending upon your viewpoint. Saturday's Houston Chronicle (February 14) showed that the price of WTI price

was \$52.78 (up \$7.18 from last month) for March delivery, natural gas was \$2.80 (down \$0.08 from the previous month, but up from the previous day), and gasoline by my house was \$1.99 (up \$0.14). Rig utilization rates continued to drop as they were down by 98 from the previous week (2/13/2015) and 400+ from one year ago. This is nothing new, as Bulletin Editor Dave Miller points out in his article this month, when downturns come, companies react. He gave me a preview of his article and it got me thinking. Yogi Berra was known for his aphorisms and his most commonly quoted one (It's déjà vu all over again) can be applied to our current situation.

Back in late 1991 (this should qualify as a "Look Back in Time"), the industry was undergoing one of its surgical revisions. HGS saw a slight uptick in membership

and strived to help its un- (and under-) employed members by offering discounts to those members who had been RIF'ed (Reduction In Force) or were underemployed at that time. At that time, one of the things that the Society did was to offer an unemployment seminar. They invited many speakers, "head hunters", human resource types, and individuals who had overcome obstacles in their current job search. The previous June I had just gained full time employment after having been caught up in an earlier (1987) downsizing of the industry. Dave's article this month, together with my wife's recent finding of an article of mine that was published in the Kansas Geological Society Bulletin, set me to searching for an article that I wrote. You can find my commentary in the January, 1992 HGS Bulletin.

That Bulletin article discussed five key points that the author had discovered during his quest for employment. These were reevaluation, contacts, interviews, spirit, and activity. One of the avenues the author used to gain full employment was his activity (being active) in the Houston Geological Society. Your society has several committees and some web activity that could use volunteers to lead those committees or contribute useful web content. Don't underestimate the power of being a truly active HGS member. The author also offered some secrets for finding

a job but also asked, "Are there really any?"

HGS is a society run by volunteers. Don't be a volunteer only for that short period when you are unemployed. Yes, this has happened in the past. Ideally, members committing to run or serve on a committee serve for at least three years.

It's not too late to follow some of the advice in that article if you are now in the unemployed or underemployed ranks. This might even include those who have taken early retirement packages. It does bring home the importance of using your local, regional (section), and national organizations for networking, participation, and learning. Vice President John Jordan is working with event coordinators to discount costs for HGS events. Contact him for information regarding pricing for HGS meetings and seminars. AAPG also is looking into offering discounts for some of its upcoming events. Although nothing is confirmed as I write this, some announcements should have been made by the time you read this.

So you ask, what does this mean for your future? As a Young Professional, NeoGeo, or early retiree what can you look forward to in the future? Your future is yours to explore! This is not a case of survival of the fittest. Today's environment is open to the person that does not write "u r wlcm." It is open to candidates who can articulate what they are bringing to the company as the newcomer, the "youngster" caught up in a downturn, the midcareer person who was in the "wrong" play or the wrong political group, or the "old fart" that still wants to work for a company. What this means is that those who succeed in re-evaluating and reinventing themselves will continue to contribute to this industry. Entrepreneurial types will become independents.

From the President continued on page 9

Borehole Image Data Processing and QC

TASK Fronterra Geoscience is a world leader in the independent processing, quality control and interpretation of borehole image and dipmeter data. Some of our employees have been working with borehole image logs since imaging was first introduced!

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Borehole Image and Dipmeter Data Processing and QC

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www.taskfronterra.com





Dave Miller dwmiller.hgs@gmail.com

Will You Be a Survivor?

We are fortunate to work

in an industry in which, for

the most part, the salaries

are very good. We are

potentially unfortunate to

work in an industry which

is volatile and cyclical and

our good paying jobs can

disappear without any

warning at all.

A few days ago I was discussing my Editor's Column with a colleague. Considering the recent events in our business (falling oil prices, budget cuts, layoffs) he suggested I use a future column to reassure the younger members that everything will be okay for them. This seemed like a pretty good idea until I gave it some more thought. In good conscience, I can't tell or

try to convince anyone in our business that all will be fine in the future. I can, however, fairly confidently state that the industry will be okay and will probably have a good future. Whether or not any particular member will be a part of that future is much less certain.

Statistically, most of us will be just fine. However, even with a relatively low probability of losing your job, statistics don't matter if you are the one affected. In that scenario, it is now a 100% chance that you are facing a potentially life-changing event. I have been fortunate to work continuously in this business for over 35 years. At last count, I have lived through, and survived, a minimum of 10 rounds of "staff reductions". Many very talented friends and co-workers have left the business, usually not by their choosing. During my career, I have learned a few

things about how to survive the cyclical nature of the oil and gas industry.

My basic premise here is that life is not fair. You may be highly skilled and still lose your job. There are, however, a few things that you can do to improve your chances of being a survivor.

- Maintain and improve your skill set. The way we work has
 changed and will continue to change. Industry courses
 provide a great way to continue to learn, but training
 budgets are often an early casualty of a down cycle in
 our business. Often even in-house courses are cut back
 to "save money". It just so happens that HGS provides
 opportunities, via regular meetings and presentations or
 sponsored conferences and workshops that can help.
- Develop an extensive professional network. While it is critical to maintain and improve your skill set, it is often the case that retention of a job or finding a new job depends

more on who you know than on what you know. There is a great value having an extensive professional network. Many interesting jobs are never publically advertised and are often offered to someone the hiring manager is familiar with from working together on other projects as a partner, participating with them in professional committees or

> having had a memorable discussion with them at a conference, dinner, field trip, etc. Again, HGS provides an excellent opportunity to help you to build a robust professional network. Please pay attention to Ken Nemeth's repeated message concerning the benefits of participating in HGS and volunteering to help the society.

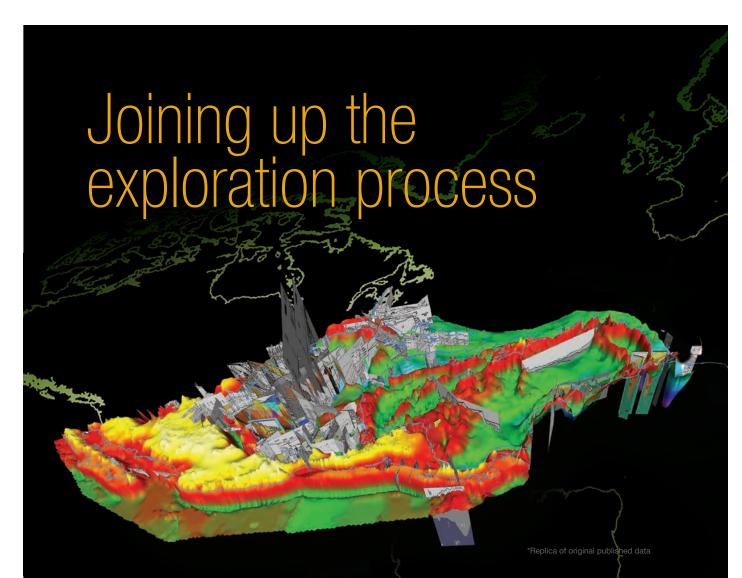
> So what can you do if the job disappears? Many years ago I received probably one of the most important pieces of financial advice I have ever received. It basically went along the following lines:

We are fortunate to work in an industry in which, for the most part, the salaries are very good. We are potentially unfortunate to work in an industry which is volatile and cyclical and our good paying jobs can disappear without any warning at all. It is important always to keep this in mind. The

suggestion that I was given was that it was critically important to maintain available cash equal to at least 6-12 month's salary. This is the difference between being confident at in interview and appearing desperate. It is too easy to forget that the good salary you are earning today may disappear tomorrow. If you have to worry about the check arriving in time or the annual bonus being paid with the expected amount and at the expected time, I would suggest some financial planning is in order.

We have an amazing opportunity, as professionals, to work in a challenging and rewarding industry. Many of us have had the opportunity to work in various basins and perhaps to work and live in other countries. When things are good, they tend to be very, very good. Please don't forget that the good times don't last forever and, while they will most likely return, it is up to each of us to prepare ourselves to be a survivor. HGS is here and available to help in this preparation.

Until next month, take care.



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From the President continued from page 5

Those who need a "company" anchor will concentrate on that task and succeed; I did. But you must re-evaluate before you know which road to follow. There are several HGS Board members, past and present, who could serve as mentors for this evaluation.

I have talked about networking in many ponderings, but the key will be to use that networking to get interviews. What has changed over the years (remember, that 1992 was about 22 years ago) is that it is as important to get an "informational' interview as it is to have the interview for the job. That is part of networking. It is also part of being active in your local geological society. Young professionals, AAPG is a wonderful organization, but if you are going to stay in Houston, HGS may be a better resource.

I can personally attest to the importance of keeping up your spirits. I attended the January Northsiders' lunch. The speaker and one attendee were young professionals seeking employment. They are young, energetic, articulate, and just asking for a chance - as are we all. It is a shame that the lunch was so poorly attended. Next year the Northsiders may move to a Woodlands location. If you are employed in that area, I hope that you will attend those lunches.

If you want to succeed in the down times as well as the uptimes, DON'T NEGLECT YOUR LOCAL SOCIETY. Knowing people at small companies or with small company connections may prevent you from being at the mercy of management, stock manipulation, and Wall Street. Older professionals follow one track for continued employment, young professionals follow another. Remember, just because you are only 25 years old doesn't mean you can't go out on your own.

For the earlier time period prior to the March Bulletin, it looked like HGS would have to cancel the Geomechanics Applied Geoscience Seminar Conference. It appeared that cancellation was our only hope of economic success. However, "great" negotiations conducted by John Jordan and the Westin Hotel got HGS to the point where it can carry through on this conference as a one-day event. Please follow the advertisements for registration information.

If you thought that you knew someone worthy of HGS recognition, it is too late for 2015, but not for 2016. HGS wants to recognize its volunteer contributors as well as its sponsors. If you think someone or some company deserves recognition, send that name to Andrea Peoples.

Elections for Board officers and AAPG delegates start this month. I was disappointed in the turnout of HGS candidates at the February 9th dinner meeting. This was an opportunity for the membership to see its future leaders. You should find the candidates' vitae elsewhere in the *Bulletin*. Please review this information when you decide who you want to lead HGS in the coming year. I thank Nominations Committee Chairman Barry Katz and his committee as well as the participating past presidents for their efforts.

HGS is a society run by volunteers. Don't be a volunteer only for that short period when you are unemployed. Yes, this has happened in the past. Ideally, members committing to run or serve on a committee serve for at least three years. This provides continuity, makes transitions to new leadership smoother, and provides a "corporate" memory for the committee. One common theme amongst long-time volunteers for HGS committees, or offices is that the effort has been well worth it. Why not join that group? Make HGS part of your professional development program, part of your network, and part of what you want to support and serve.

I hope that you had a chance to attend the Earth and Science Fair of Houston. If not I hope that you will consider HGS Academic efforts as part of your professional development in the future.

The future of HGS lies largely in the hands of the NeoGeos and AAPG Young Professionals. If they won't step up now HGS may not have to worry about HoD elections in the future. Too many "Rising Stars" have disappeared from the sky. The list of Distinguished Service candidates is shrinking. There won't be nominations for Honorary Life Membership if the young members of today aren't willing to participate locally for the long term.

Through the ups and downs of the oil industry in the next eight years, that group will determine if HGS has a 100th anniversary or is even functioning/operating at that time. Those who have preceded the younger members of today's Houston geological population (not only HGS members) have created the opportunities that those younger people now enjoy. I ask the young members, "Don't you want to leave something for those that follow you?"

I am the Nominations Committee Chairman for HGS next year. I'd love to fill a slate with 100% Young Professionals and NeoGeos for HGS offices. The future of our society is in your hands.

Until next month I wish you oil in your wells, porosity in your reservoir, permeability to produce it, and the software of your choice to interpret your seismic data. Twenty some years from now, when you look back in time will it be "Deja vu all over again" or "Look what we did!"



May 18th, 2015

Geomechanics in Unconventionals

Please join us for the Houston Geological Society's premier one day technical conference, focusing on geomechanical integration and advancement in the assessment of unconventional reservoirs.

The program will highlight field examples of geomechanical workflows, with sessions focusing on Unconventional Geology & Geophysics, and Integrated Workflows & Engineering Design.

Registration Open!

Registration Fees	
HGS Member	\$350
Non HGS Member	\$395
For those that wish to attend but are experiencing final current industry trends please contact Andrea People:	5°6

If you would like to be considered for a non-commercial technical poster presentation please contact Andrea Peoples at HGS.

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For more information please visit: www.hgs.org or contact Andrea Peoples: andrea@hgs.org





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11

For more information please visit: www.hgs.org or contact Andrea Peoples: andrea@hgs.org

Candidates for the 2015-2016 Executive Board

Houston Geological Society Officer Election

The candidates put forth by the Nominations Committee are:

President-elect: John Dombrowski, John Jordan

Vice President: Cheryl Desforges, Mike Erpenbeck

Secretary: Gulce Dinc, Fang Lin

Treasurer-elect: Sameer Baral, Bryan Guzman

Editor-elect: Tami Shannon

Directors (2 positions):

Christine Griffith, Justin Vandenbrink

Patricia Santogrossi, Annie Walker

HGS Election Voting Instructions

HGS members will soon receive a ballot with biographical sketches of the candidates.

Members will be able to vote in one of two ways:

by returning the paper ballot that will be delivered in the mail, OR

by voting online following instructions that will be delivered by e-mail.

PLEASE VOTE – Upon receiving the paper ballot or the e-mailed instructions!

The voting period opens April 10, 2015 and continues to May 10, 2015.

President-elect (two candidates)



John Dombrowski

Education:

M.S. Geology, Washington State University, 1976 B.S. Geology, Grand Valley State College, 1973

Experience

2007 – Present	Peace River Group, LLC Partner - Houston
2005 - 2007	Circle Oil, Plc. Project Manager - Houston
2000 - 2004	Fortesa International Inc. Exploration Manager
	- Houston
1999 - 2000	First Exchange Corporation, Inc. Consultant -
	Houston
1994 – 1999	Texaco North American Production, Inc. Senior
	Geoscientist – New Orleans
1988 - 1994	Texaco Exploration & Production, Inc. Area
	Manager – New Orleans
1987 – 1988	Texaco Exploration & Production, Inc. Assistant
	Regional Manager - Denver
1984 - 1987	Texaco Exploration & Production, Inc. Project
	Leader - Bakersfield
1975 - 1984	Texaco Exploration & Production, Inc.
	Exploration Geologist – Los Angeles

Professional Affiliations

AAPG, SEG, HGS, GSH, NOGS

Professional Activities

2012 – 2014 HGS Board Member – Director

John Dombrowski continued on page 18



John E. Jordan

Education:

M.Sc. Geology/Geophysics 1981 Wright State University, Dayton, Ohio B.S. Geology/Geophysics 1979 Wright State University, Dayton, Ohio

Experience

1996 – Present	Kerr McGee Oil & Gas/Anadarko Petroleum Co.
1993 – 1996	Samedan Oil & Gas
1987 – 1996	Arco Oil & Gas Southern District
1985 - 1987	Consultant
1981 - 1985	Chevron USA Western Region

Professional Affiliations

HGS, AAPG, AAPG HoD, DPA, SEG and TBPG

Professional Activities

HGS

Vice President (current)

Treasurer

Board of Directors (2 terms)

Chairman of the International Explorationist Committee

GCAGS Advisory Committee representitive

Delegate (18+ years; Foreman one term)

AAPG Membership committee

AAPG Survey Committee

DPA membership committee

Founding President of WSU student AAPG chapter (1980)

John E. Jordan continued on page 19

Vice President (two candidates)



Cheryl Desforges

Education

MBA Finance/International Business/ Decision & Information Sciences, University of Houston MS Physical Science/Geology, University of Houston CL BS Geology, Texas Christian University

Experience

2015 – present	Consultant
2013 - 2014	Eagle Hydrocarbons
2006 - 2013	Sabco Oil and Gas Company
2004 - 2006	Consultant, Ryder Scott Company, SCA
1998 - 2004	Randall & Dewey, Inc.
1995 – 1998	Environmental Evaluation Partners, Inc.,
	President
1989 – 1995	Consultant in both the Petroleum and
	Environmental Industries
1982 - 1989	J.M. Huber Corp.
1979 – 1981	Diamond Shamrock Corp.
1977 - 1979	Sonat Exploration Co.
1975 – 1977	Atlantic-Richfield Co.

Professional Affiliations

Licensed Professional Geoscientist, State of Texas # 2174 American Association of Petroleum Geologists - Certified Petroleum Geologist #2925 Houston Geological Society SEPM Society for Sedimentary Geology Society of Exploration Geophysicists

Honors and Awards

2008	HGS Distinguished Service Award
2006	HGS Volunteer of the Month (February)
2005	HGS President's Award and Volunteer of the
	Month (February)
1990	Arthur J. Ehlmann Award for TCU Geology
	Alumni
1974	Sigma Gamma Epsilon, geology honor society,
	University of Houston
1974	Gayle Scott Award for the Outstanding Geology
	Senior, Texas Christian University

Professional Activities

2009 – 2015 AAPG House of Delegates

Cheryl Desforges continued on page 19



Mike Erpenbeck

Education

B.S. Geology, San Diego State University 1977 M.S. Geology, Texas Tech University 1979 MBA, Finance, University of Houston 1989

Experience

2012 – present	Upstream Advisors Group – Manager
1997 - 2012	Ziff Energy Group – Senior Analyst, Project
	Manager, Manager U.S. Studies, Senior
	Associate
1990 – 1997	UMC Petroleum Revenue/Gas Balancing
	Account, Production Accountant, Accounting
	Analyst
1987 - 1990	Various Firms Consulting Geologist
1983 - 1987	Hemus Oil &Gas Manager of Geology
1981 - 1983	Pilgrim Exploration Geologist
1979 – 1981	Texas Oil & Gas (TXO) Geologist

Summary of Relevant Experience

I have performed a wide variety of geological and engineering functions within the Oil and Gas Industry over the past 30+ years. Throughout this period, and especially most recently, I have been tasked with the evaluation of industry trends and making planning recommendations to client management. This has afforded me the opportunity to have a high-level view of global and domestic activity, as well as of technological and operational trends at the regional level. I believe this strategic view and perspective will serve me well if I am elected to the position of Vice President of the HGS, whose job it is to determine and line up the topics and speakers for the General Lunch and General Dinner meetings.

In HGS I have been on the planning committees for the Mudstones, Geomechanics, and Africa Conferences. I have observed closely the derivation of the technical programs and, in some cases, have helped determine them. As a recent Board member of HGS for two years, I have been a part of the decision-making that has provided strategic direction for the Society. We have discussed and debated at length the nature of the needs and desires of the members, in light of the rapid technological change and the shifting demographics within HGS. As Treasurer, I have had the opportunity to relate financial data to measures of success of our meeting attendance, providing a further gauge of members' interests.

Secretary (two candidates)



Gulce Dinc

Education

MSc., Subsurface Geoscience, Rice University, USA, 2013 BSc., Geophysical Engineering, Istanbul Technical University (ITU), Turkey, 2010 Exchange Student, Geoscience, Delft University of Technology (TU Delft), Netherlands, 2009

Experience

June 2013 – Present Geophysicist, ION Geophysical Summer 2012 Intern Geophysicist, TOTAL E&P 2011-2012 Rice University AAPG Chapter Treasurer

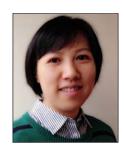
2009-2010 ITU, Geophysics Club President

Professional Affiliations

Houston Geological Society AAPG SEG TU Delft Mineral Club

Statement

It is an honor to be nominated for Secretary of Houston Geological Society. I have been involved with the activities of various geoscience societies ever since I started college and it helped me to broaden my horizons, expand my knowledge, and strengthen my passion about geoscience. Living in Houston, the capital of the oil and gas industry, brings a lot of great career opportunities, and societies like HGS play a crucial role to connect us all. Therefore, it is a great pleasure to be nominated for the position of HGS Secretary. I wish to use my energy and experience to be a part of this team and serve as the Secretary of HGS during the 2015-2016 term.



Fang Lin

Education

B.S., Geology, Chengdu University of Technology (China) M.S., Ore Deposit Geology, Chengdu University of Technology (China) Ph.D., Geosciences, Virginia Tech University

Experience

2013 - Present Chevron Energy Technology Company, Team

Leader

2005 – 2012 Chevron Energy Technology Company,

Petroleum Geochemist

2000 – 2005 Virginia Tech University, Graduate Assistant 1998 – 2000 Chengdu University of Technology, Instructor

Professional Affiliations

AAPG, HGS, GSA

Statement

My involvement in Houston Geological Society began when I registered for a professional training course offered by HGS years ago. Later, I became a regular member of the Society and served as the index editor for the HGS Bulletin from 2009 – 2014. It was a great learning experience and opened my eyes about the breadth and depth at which HGS operates and engages our local geological community and the communities far beyond. Personally I have enjoyed so many events organized by HGS, from Mudrock conferences to Lunch-and-Learns to Guest Nights. Participation in those activities not only enriched my learning; it also provided me the opportunity to interact with many outstanding individuals within our community. As such, I have encouraged many of my colleagues and friends to join HGS and to experience the positive changes it brings to one. Meanwhile, I want to do more and to continue to serve our great community. I am very honored to be nominated to run for the office of HGS Secretary. I will work hard to make it a wonderful experience for myself and for our community.

Treasurer-elect (two candidates)



Sameer Baral

My name is Sameer Baral and I am running for the position of Treasurer for HGS for the upcoming term of 2015-2016. I have been involved with the HGS in different capacities in the past, primarily running NeoGeos for 3 years. My involvement in the Houston

Geological Society has greatly contributed to my career and academic achievements. I am running for Treasurer to contribute even more to the society for its continued success and for the services it provides to the geoscience community in Houston and around the world.

I am originally from Kathmandu Nepal. I obtained my Bachelor's degree in Geoscience and Mathematics from Denison University in Granville, Ohio and I am currently pursuing my PhD in Geology from the University of Houston. After my post-baccalaureate studies I spent about six years in the petroleum industry working as a well-site geologist for Canrig Drilling Technology, as a geologist for IHS Kingdom (formerly Seismic Micro Technology), and as a development geologist for Thyssen Petroleum. As I have grown from a novice geologist to someone who is involved in exploration projects, so has my need to learn about petroleum systems. I have joined the graduate program at the University of Houston to fuel my passion for exploration and also to contribute to the geoscience community through my research.

Statement

The reason I want to run for the role of Treasurer is not only to have general financial oversight of the state of our non-profit organization but also to provide ideas and be directly involved in funding, fundraising and sales. As I will, if elected, be part of the financial planning and budgeting for HGS, I will endeavor to use my full capability and knowledge effectively to monitor and utilize the funds available in ways that will optimize the goals and endeavors of the HGS. I sincerely hope to have the members' favorable consideration of my candidacy.



Bryan Guzman

EducationBS Geology University of Texas at San Antonio

Experience

2007 – 2008 Geo-Tech Balcones Energy Library

2008 – 2013 Geologist Ingrain Inc.

2013 – 2015 Geologist – Cuttings Product Development -

Ingrain Inc.

Professional Affiliations

HGS, AAPG

Professional Activities

Judge AAPG Conventions/Poster Sessions

AAPG Annual Convention & Exhibition 2009 Speaker

2011 – 2015 HGS Chairman Exhibits Committee

2013 – 2014 HGS Secretary

Statement

Ever since I joined the HGS I have enjoyed the benefits of education, networking, and friendship. I have spent much of my time working on the exhibits committee organizing the set-up and transportation of the HGS booth for various conventions throughout the years. When I served as HGS Secretary, I was afforded the opportunity to learn more about the many functions of the HGS. It has been a pleasure to meet many people along the way, and I am thankful for the opportunities the HGS has provided me while serving as a committee chairman and secretary. Now that I have become more familiar with the society and its members, I would like to have the opportunity to serve in the capacity of HGS Treasurer.

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



Chris Griffith

Education

M.S. Geology University of Wisconsin B.S. Geology University of Illinois

Experience

Shell Exploration and Production – 36 years' experience, domestic and international exploration, appraisal, and development

Affiliations

AAPG, HGS member since 1979 AAPG delegate Houston–2002-2008

Statement

I have been an enthusiastic member of the Houston Geological Society for many years. I'd like to become more involved and serve the Society.



Justin Vandenbrink

Education

B.Sc. Geology, University of British Columbia, 1994 Diploma Communications/PR, B.C.I.T, 1998

Experience

2012–present	Weatherford, Global Manager Wellsite Geology
	and Pore Pressure
2001–2011	RPS Energy, Geological Operations Manager
1998–2001	Broadcasting
1995–1996	Inmet Mining – Exploration Geologist
1994–1995	Rennaissance Energy – Exploration Geologist

Professional Affiliations

AAPG, HGS, GSH, SPWLA, DGS, CSPG APEGGA Professional Geologist #80794

Professional Awards and Activites

2012-2013	HGS Vice President
2012-	HGS Africa 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 a professional geologist currently working as the Global Manager for Wellsite Geology and Pore Pressure Consulting with Weatherford. I have worked as a geologist and in business development for the past 20 years in exploration both domestically and internationally.

Maintaining contacts and sharing knowledge with industry peers is essential for all of us in oil and gas. The HGS is one of the best venues for this. Working as a past Vice President and Chair of the International Explorationists committee has given me good perspective on why I need to continue to volunteer to help the HGS move forward. I am honored to run as Director for the HGS in 2015.

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



Patricia Santogrossi

Patricia Santogrossi is geoscientist who has enjoyed nearly 40 years in the oil business. She is currently a Consultant to Geophysical Insights, a Tom Smith company that develops and implements their Paradise software. Formerly she was a Leading Reservoir Geoscientist

and Non-operated Projects Manager with Statoil USA E & P, an international arm of the state oil company of Norway. There she was engaged for nearly nine years in its Gulf of Mexico business development, corporate integration, prospect maturation, and multiple appraisal projects.

Patricia has previously worked with domestic and international Shell Companies, Marathon Oil Company, Vastar Resources till the parent Arco's acquisition by BP - in research, exploration, leasehold and field appraisal as well as staff development. Subsequently, Patricia became Chief Geologist for Chroma Energy, who possessed proprietary 3D voxel visualization technology, and for Knowledge Reservoir, a reservoir characterization and simulation firm that specialized in Deepwater project evaluations.

Patricia has been a member or SEPM for 40 years, of AAPG for nearly 31 years, and SEG for 12 years. She is currently in her second term as a Trustee for GCSSEPM. She served HGS as *Bulletin* co-editor and *Bulletin* Editor from 2011-2013 and edited a Geomechanics Proceedings and last year's Africa Conference. She also serves in her third term as a representative to the AAPG House of Delegates from HGS.

Patricia was a longtime member of Zonta International and the Zonta Club of Houston, with whom she performed community service locally and promoted literacy and advocacy as a means to improve the status of women worldwide.

Patricia was born, raised and educated in Illinois, and first headed to Texas after she received her MS in Geology from the University of Illinois, Champaign-Urbana. Her other 'foreign assignments' have included New Orleans and London. She resides in Houston with her husband of twenty-three years, Joe Delasko.



Annie Walker

Education
M.Sc., University of Tennessee–
Knoxville
B.Sc., LeMoyne College

Experience

2013 – present	Structural Geologist
	ION Geophysical
2012 - 2013	Research Assistant
	Structural Geology & Tectonics Research
	Group, University of Tennessee
2010 - 2012	Graduate Teaching Assistant
	University of Tennessee
2009 - 2010	Executive Assistant (civilian)
	CG93, United States Coast Guard
2006 - 2008	Research & Field Assistant
	LeMoyne College

Professional Affiliations

Houston Geological Society American Association of Petroleum Geologists, PSGD Geological Society of America The Geological Society, London Sigma Xi Research Honor Society

Professional Awards and Activites

AAPG Student Expo, ION Representative AAPG PSGD, Reviewer

Statement

From my first experience with the Houston Geological Society, I've been extremely impressed by its size, scope, enthusiasm, and impact. I am very pleased to be a nominee for the office of Director, and for the opportunity to participate in and contribute to the HGS on such an integral level. As an individual I am invested in scientific research, education, and outreach in both our profession and the community. The HGS is already a well-established, well-respected, and well-enjoyed platform for these same ideals. I continue to enjoy the Society's educational and networking benefits as a member, and now look forward to the opportunity to uphold and expand its success as an officer.

Editor-elect (one candidate)



Tami B. Shannon

Education

M.S. Environmental Science - GIS emphasis, Texas A&M University-Corpus Christi, 2007 B.S. Hydrogeology, Winona State University, 1997

Experience

2014 – Present	RPS Knowledge Reservoir, Project Lead
2012 - 2014	Resource Data, Inc., Sr. GIS Analyst/Programmer
2010 - 2012	Fugro Geoconsulting, Inc., GIS Coordinator
2007 - 2010	Deloitte Petroleum Services, Sr. GIS Analyst
2003 - 2006	Texas A&M University and UT Marine Science
	Institute – Research Assistant

Professional Affiliations

HGS - Member since 2007

TBPG- Geoscientist-in-Training, #46 (2012)

GSH - Member since 2015

Statement

I am extremely honored to be nominated as a candidate for the HGS Editor-Elect position. I have been an active HGS member

since 2007, taking part in attending societal events, trainings, conferences, and by essentially taking the opportunity to participate in the social networking aspects of the organization.

Truthfully, however, I realize I've been more of a passive memberhoping to gain [geologic] knowledge from others simply by being in their presence. Oh, yes, I've read the articles in the HGS *Bulletin*, but I've never really taken the time to know what is involved to put those articles together.

Now, it is my time to jump in the HGS waters, so to speak, and become more involved in the continued growth of this esteemed organization. I'm ready to volunteer my time and energy to understand really the industry for which I've developed such an enormous passion. Not only to read the articles in the *Bulletin*, but to understand what is behind them and to get to know the amazing people that put it all together so that this magazine can continue to show up flawlessly on my doorstep.

My experience as a Project Coordinator kind of says it all – I get people together, and I get things done. If elected to this office, I look forward to work with a talented group of individuals and to contribute to the best of my ability the continued professional and timely delivery of the respected and renowned *Bulletin*.

continued from page 12

2014

John Dombrowski—Candidate for President-elect

2012 – Present	HGS Web Management Committee
2012 - 2013	HGS Distinguished Service Award
2007 - 2010	HGS International Committee, African Conference
2007 – Present	AAPG Houston, House of Delegates
2013 - 2014	AAPG Houston, House of Delegates - Foreman
2014 – Present	AAPG House of Delegates - Constitution and
	Bylaws Committee

HGS Outstanding Board Member Award

Statement

Early in my career I discovered the personal and professional benefits of becoming an active member of my local geological society. I have been Treasurer of the L. A. Basin Geological Society, Secretary of the New Orleans Geological Society and a Director of the Houston Geological Society. In every instance I have experienced professional growth and personal satisfaction while giving back to my chosen profession.

From 2012 through 2014 I had the pleasure of serving as a Director on the Houston Geological Society Board. The Board experience was eye-opening, challenging and satisfying work. Oversight of 7 Committees gave me an appreciation for all the effort and sacrifice our volunteers contribute. The monthly Board Meetings allowed me to understand better the business of running the world's largest local geological society.

I desire to continue my service to the Houston Geological Society as President - Elect. I am confident that my past experience with 3 different geological societies has me well prepared for this next step. As a partner in a small exploration company, I have gained valuable skills and experience in running a business. Lastly, I am fortunate to be at a stage of my career and business that allows me to commit the necessary time needed to address fully the requirements of this office. I would be honored, should you elect me to serve.

continued from page 12

John E. Jordan—Candidate for President-elect

Statement

I have been an Active HGS member since 1985 when I moved from Northern California to Houston. I was out of work and I knew almost no one. The HGS monthly meetings were a great place to meet fellow Geoscientists, learn about Gulf Coast geology and develop my career. The HGS offered many relevent short courses where I learned about petroleum systems and how to value producing oil and gas properties. Later, when I moved into International Exploration in the 1990's, attending HGS technical talks was how I learned about oil and gas plays around the world.

The HGS is a very unique organization. It is the largest local geological society in the world, and represents a melting pot of domestic and internationally focused geoscientists. It has achieved this standing through high quality techincal talks and educational programs supported by the strong pool of dedicated volunteers.

I would be honored to serve as the President of the Houston Geological Society. I have held several positions in the HGS in the past including current Vice President, Treasurer and Board Member. If elected, I would work to provide networking opportunites, offer timely, quality talks on diverse topics and provide relevent short courses designed to build up the skill sets of our Membership. As an Explorationist that has been unemployed in the past, I believe I am uniquely qualified to understand the needs of working and non-working geoscientists during this difficult time in our industry.

continued from page 13

Cheryl Desforges—Candidate for Vice President

2008 Gulf Coast Association of Geological Societies

Treasurer

2004 – 2006 HGS Treasurer/Treasurer-Elect

2005 Co-Chairman "Coastal Subsidence, Sea-level

and the Future of the Gulf Coast Conference"

2003 - present HGS Continuing Education Committee,

Chairman 2003-2004

2002 AAPG Convention Volunteer Liaison

Committee

1985 – 1989 Chairman HGS Publication Sales Committee

Chairman

Statement

Monthly meetings are a major component of HGS. They provide a venue to meet and socialize with other geologists, as well as a place to present and discuss new concepts and trends. Over the years, the presentations at monthly meetings have expanded my understanding of geological concepts across many geological provinces and depositional systems. They have provided first introductions, as well as alternative views and observations.

I would be honored to serve my fellow members as the Vice President of the Houston Geological Society in order to return partially what so many have given me. If elected, I will do my best to continue the long tradition of scheduling timely, relevant, and quality talks that will attract a large number of our members and be of immediate value to them.

continued from page 13

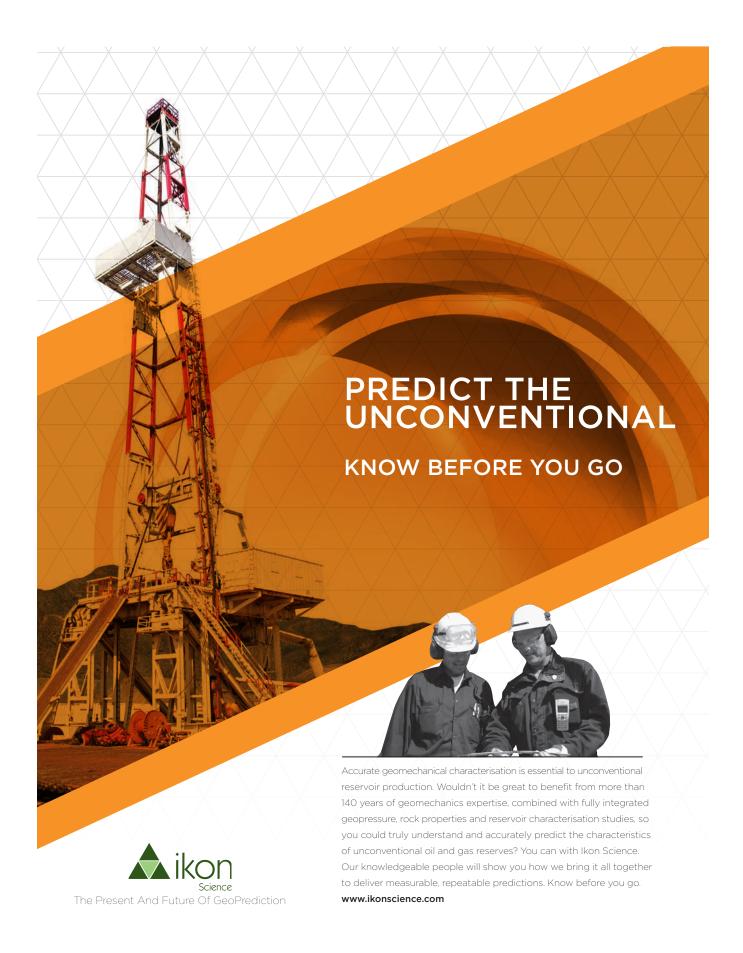
Mike Erpenbeck—Candidate for Vice President

Statement

I am honored to be in a position to be asking for your vote to help lead this great organization, the largest of its kind in the world. It was only later in my career that I became actively involved in HGS, and I realized, a bit late in the game, how gratifying it is to serve my fellow members. I think my relevant industry and

Society experience have prepared me well for this potential new challenge. If elected Vice President, I pledge to give my best efforts to continue to discover what Society members at all experience levels desire in their lunch and dinner presentations, and to bring outstanding speakers to these events. I ask for your consideration and your vote for this position.

Vote in the HGS election.



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HGS General

Economic Geology

Dinner Meeting

Peter Hennings, Anita É. Csoma ConocoPhillips Technology and Projects – Geological Technology Chris Zahm University of Texas Bureau of

Relationship between Anticlinal Folding and the Evolution of Mechanical Stratigraphy, Rock Mechanics Properties and Reservoir Quality in the Tensleep Sandstone at Alcova Reservoir, Central Wyoming, USA

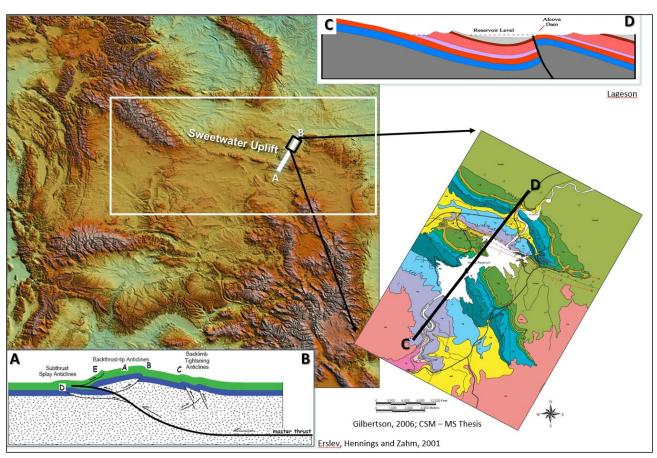


Figure 1. Location and structural context of the Alcova reservoir study area in central Wyoming.

Anticlines of Pennsylvanian Tensleep Sandstone are the most prolific oil-producing reservoirs in the Laramide Rockies. While the Tensleep's eolian and mixed carbonate lithologies are typically of excellent reservoir quality, the patterns of local production performance are complex being attributed to diagenetic variations and degree of natural fracturing. Based on our outcrop study (Figures 1 and 2) we find that deformation-triggered processes leading to cementation and other diagenetic

effects occur synchronously with fracturing. We also observe that the mechanical stratigraphy of the Tensleep Sandstone which governs fracture formation and character becomes more finely mechanically-layered as the folding process evolves (**Figure 3**). These effects must be studied in tandem while characterizing these reservoirs for field development and management.

HGS General Dinner continued on page 23

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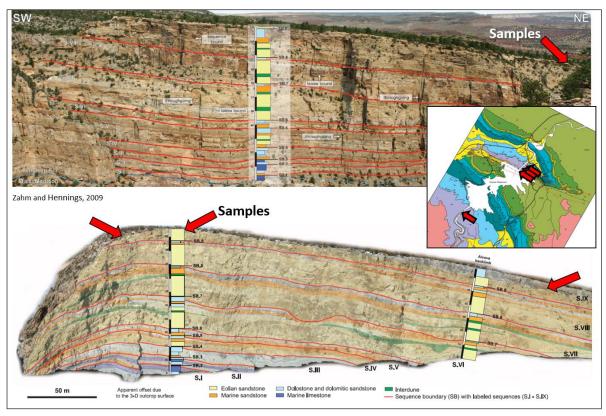


Figure 2. Views of the Tensleep Sandstone on the southwest side of Alcova reservoir where it is undeformed (upper) and on the northeast side of the reservoir where it is strongly folded (lower).

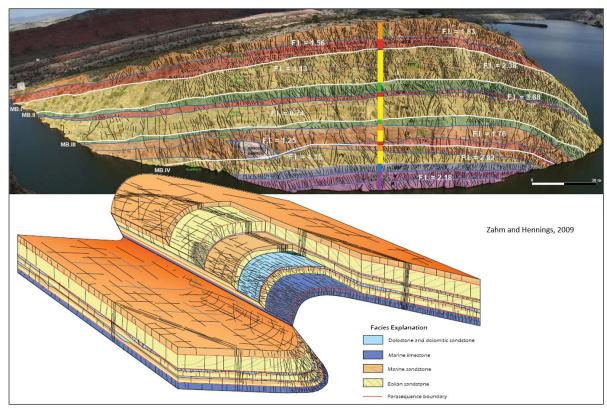
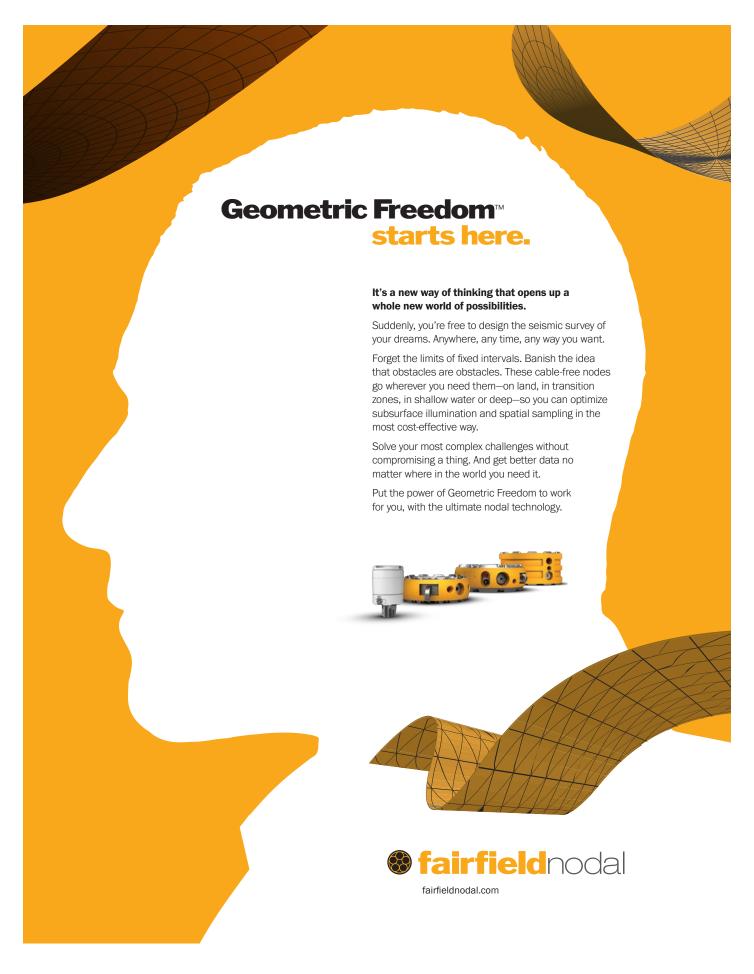


Figure 3. Fracture characterization of the Tensleep Sandstone at Alcova anticline (upper) and structural and mechanical stratigraphic model showing controls on fracture formation (lower).

HGS General Dinner continued on page 25



At Alcova Reservoir the Tensleep Sandstone crops out in the gently-dipping homocline of the Sweetwater Arch, herein referred to as the undeformed domain (U), and continuously in an oil field-scale basement-rooted fault-propagation fold (backlimb (B), forelimb (F), and crest (C)). (Figure 2). Within the context of these structural positions we compare porosity and permeability, petrographic character, outcrop fracture intensity, and geomechanical properties of samples obtained from the same bed of eolian subarkose sandstone (>75% quartz). We find that there is a systematic evolution of diagenetic and deformational characteristics that consistently tracks in the

sequence U->B->F->C. In this sequence φ decreases by 50%; K decreases by 10³; and fracture intensity, UCS, and Y increase by 6x. The fractures are dominantly strata bound and incompletely mineralized. Compaction bands are common at F and C. In this sequence petrographically, the matrix displays greater degrees of intragranular penetration and pressure solution, fractured grains, and cement overgrowths (mainly qtz) (**Figure 4**). In positions F and C, gouge-bearing shear zones are common in thin section and as deformation bands on outcrop.

HGS General Dinner continued on page 27

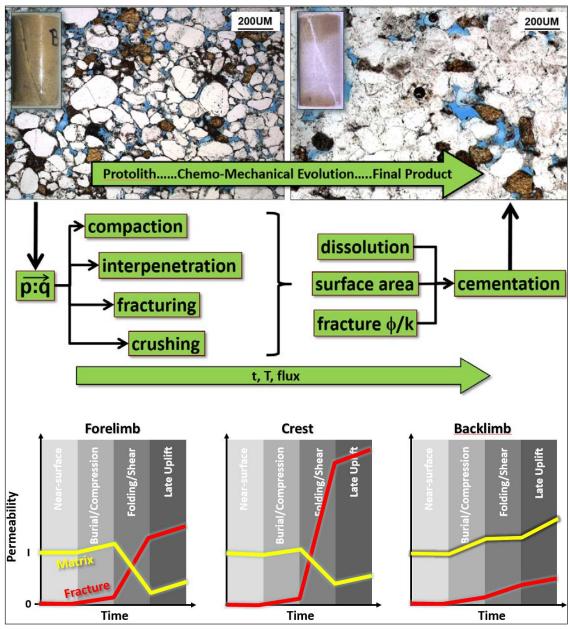
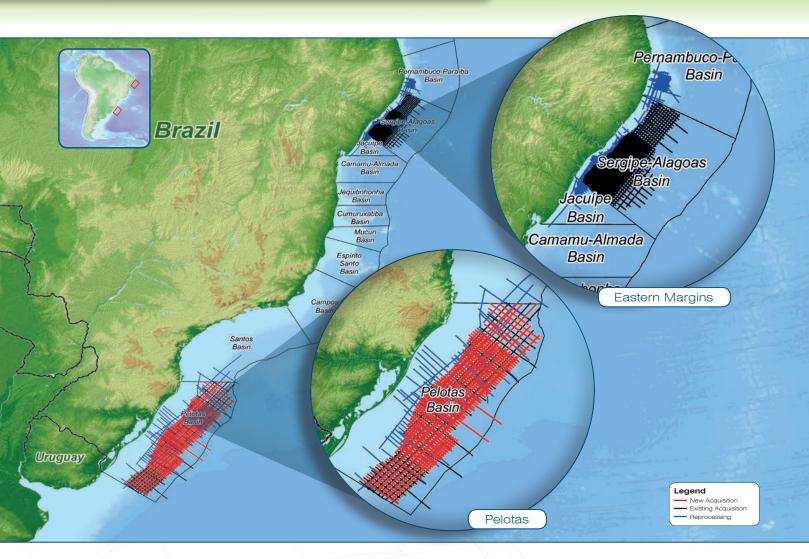


Figure 4. (upper) Thought-flow of how, with deformation, the Tensleep is transformed from a high-quality to a low-quality reservoir following a chemo-mechanical deformation pathway. (lower) Schematic evolutionary path of matrix and fracture permeability of the Tensleep Sandstone as a function of position in the anticline.

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An infill seismic survey for the Pelotas Basin is expected to commence in Q1 2015.



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HGS General Dinner continued from page 25

We conclude that the stress path due to folding produced a complex diagenetic and rheological response resulting in an overall degradation in reservoir matrix properties as the rock became cemented, stronger, and presumably more brittle. However, fracturing from grain- to bed-scale became pervasive which would greatly enhance bulk reservoir performance. These processes are a strong function of structural position, mechanical stratigraphic fabric, and presumably lithology, which makes it feasible to predict this behavior in the subsurface.

Biographical Sketch

PETER HENNINGS is Manager of Structure and Geomechanics, ConocoPhillips Technology and Projects. He leads a group of structural geologists, petrophysicists, geophysicists, and rock mechanicists who support ConocoPhillips' global exploration and production businesses through research, technology development and application, consulting, and knowledge



sharing activities. Peter's areas of expertise include the formation and evolution of petroleum systems; architecture and effectiveness

of structural traps; the internal architecture, pore pressure, and stress state of reservoirs and their overburden; characterizing and modeling deformation and fluid flow in stress-sensitive, faulted, fractured and compliant reservoirs; and deriving detailed models of subsurface stress and rock strength for horizontal drilling and stimulation of low permeability reservoirs and ensuring asset operational integrity.

Peter is Consulting Professor of Geophysics at Stanford University with a focus on reservoir geomechanics and is Adjunct Professor of Geology at the University of Wyoming with a focus on the petroleum geology of the Laramide Rockies.

Peter is the Founder and current Chair of the AAPG Petroleum Structure and Geomechanics Division, is an AAPG distinguished lecturer, and a GSA Honorary Fellow. Peter is the recipient of the 2015 George C. Matson Memorial Award, which is given each year at the annual convention of the Association in recognition of the best AAPG paper presented the previous year at the annual convention.

Peter received his Ph.D. in Geology from The University of Texas and his B.S. and M.S. in Geology from Texas A&M University.

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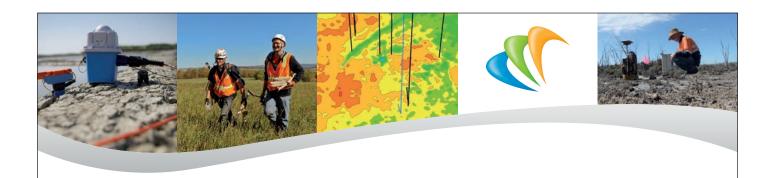
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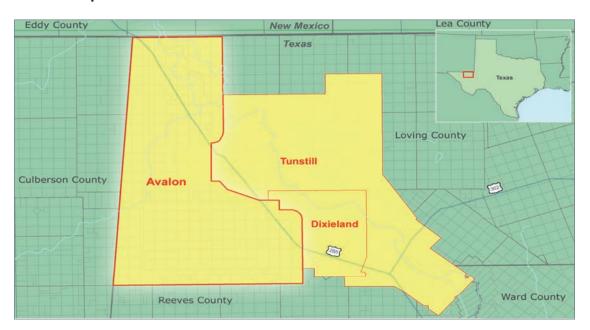
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Troy Meinen, P.G.

Don't Get Hurt! How to Stay Safe When You're Working in the Oil Fields.

In the past several years, with the rapid increase in drilling Lactivities in shale gas plays, and volatility in the price of oil, there has been an increased need for environmental consultants to be traveling around oil fields, gas plants and other oil and gas properties.

In addition to the more traditional soil and ground water investigations and clean-ups, we find ourselves helping with environmental site assessments, environmental safety and health assessments, water resource and water management projects and a host of other activities that place us in and around oil field workers and equipment.

We come to the field with a specific job, but the most important task for each of us is to make sure we and our staff come home safe. The major oil and gas companies have high expectations for contractors' safety on their sites. Many have specific nonnegotiable rules that must be followed. In addition, they usually expect workers to utilize behavior-based safety tools such as last minute risk assessments, job safety analysis, observations, and coaching.

This presentation will include a brief overview of common nonnegotiable rules and behavior based safety tools employed by many oil and gas companies. We will close out our time with Interactive hazard recognition exercises.

Biographical Sketch

TROY W. MEINEN is a Texas Professional Geoscientist and Global Health and Safety Advisor with ERM in Houston. Over his 19-year career, he has worked on a wide variety of industrial facilities and upstream oil and gas projects to address contaminated ground water, soil and sediment issues. He currently manages investigation and remediation of upstream oil and gas sites and



assists with due diligence for large oil and gas acreage position transactions for major Oil and Gas clients. This includes assessment of water use and protection, property transaction support, environmental impact assessment, environmental permitting and management, and Stakeholder concerns. Over the past 10 years, he has served as a trainer for both BP and ExxonMobil safety systems. He is responsible for growing clientspecific safety cultures in ERM and subcontractor teams around the globe.







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HGS International

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James W. Granath and Van H. Odell Dynamic Upstream E & P Consulting, Houston jgranath@q.com

An Overview of Kurdistan: One of the Last Onshore Frontiers of Huge Hydrocarbon Potential

Kurdistan is the generic term for the homeland of the ethnic Indo-European Kurdish people that occupies portions of the countries of Turkey, Syria, Iraq, and Iran. The area has also absorbed some other ethnic and religious groups, and thus it is difficult to pigeon-hole the population of Kurdistan. Most Kurds are Sunni Muslim but they do depart in some practices from Arabic Sunni. Interspersed with the Kurdish people are various



other religious minorities, such as Christians (including Chaldean Catholics), and Yazidis, both of whom have been prominent in recent news. Additionally, strictly ethnic minorities such as Arabs, Turkomen, Armenians, Jewish,

Azeris, Ossetians, and Persians add a diverse flavor to the 'Kurdish' population. Hence Kurdistan represents something of a 'melting pot' within the Islamic world, to borrow an American image. Estimates of the population in the Iraqi sector of Kurdistan are about 8.35 million, with a dominantly agrarian economy increasingly enriched by a vibrant and growing petroleum sector.

In Iraq the 'Kurdish Autonomous Region' was formed in 1970 to settle a particularly nasty round of fighting between the Kurds and the Iraqi central government (ICG), but it never developed into an effective governing body until 1991. The post-Desert Storm no-fly zone imposed by the western allies after the First Gulf War enabled the Peshmerga to dislodge the Iraqi military from the northern area that is now governed by the 'Kurdistan Regional Government' (the KRG). Since then de facto autonomy has allowed the Kurds to essentially develop a two-party parliamentary democracy of sorts based on the KDP and PUK political movements with its capital at Erbil. Prominent members of those movements have played important roles in the post-Saddam Hussein era. For example, Jalal Talabani from the PUK has served as the President of Iraq in the first post-Iraqi Freedom government, while Masoud Barzani of the KDP has been President and his nephew Nechervan the Prime Minister of the KRG. The boundary of the KRG with the ICG has been a sort of "no-mans'-land", a somewhat fluid zone between the Peshmerga and forces of the central government, as evidenced by the recent occupation of territory in the wake of Iraqi abandonment of frontier posts after the Islamic State (ISIS) invasion this past summer.

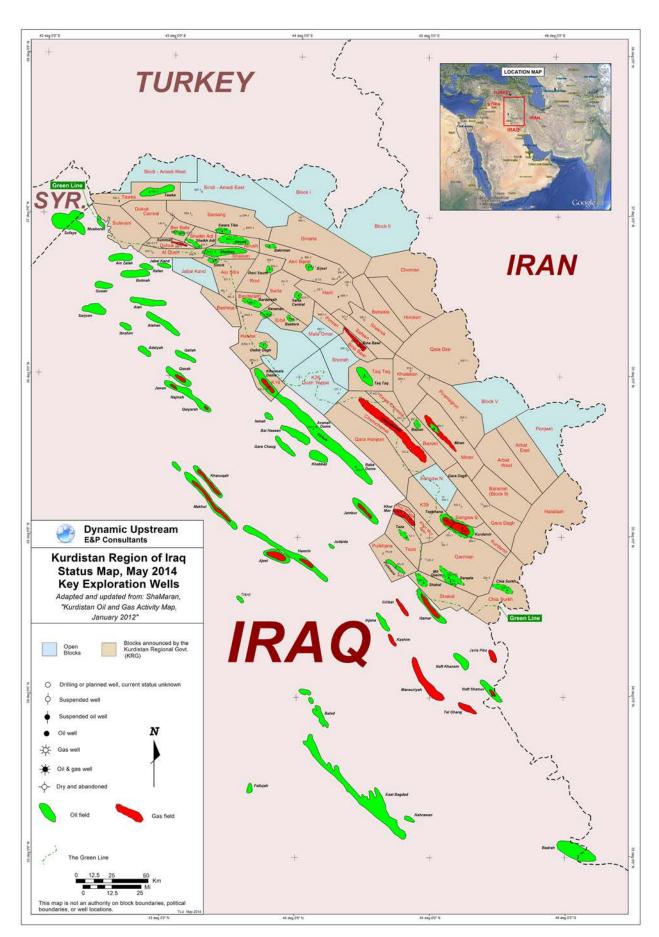
Exploration

Exploration in Kurdistan has been a stop/start affair due to impact of regional and world conflicts on the local economy. The first discovery was the giant Kirkuk oil and gas field made by the Turkish Petroleum Company in 1927. In 1939 several discoveries were added at Khor Mor, Chemchemal, Pulkhana, and Chia Surkh. Following World War II activity resumed in 1952 and continued until 1980. During this time 13 wells were drilled in Khor Mor, Pulkhana, Taq Taq, Chemchemal Demir Dagh and Jebel Kand, but most focus was on the south of the country in ICG territory. The Iran-Iraq War and the First Gulf War again interrupted activity.

With a growing independence, the KRG itself first offered PSC's in 2002 to a number of smaller independents who were brave enough to take the political risk. Petroleum has been one of the major bones of contention between the ICG and the KRG in post-Saddam Hussein times, and the central government has never condoned these PSCs as legal, although recent agreements are trending in that direction. Note that the KRG offered PSCs rather than the service contracts that characterize the central government's relationship to the industry, which offers obvious advantages to any operator. These drew considerable attention to Kurdistan because of the earlier discoveries.

The modern era of exploration began in 2005 in the wake of the Second Gulf War. Genel, DNO, and Gulf Keystone Petroleum were some of the earliest operators and probably lead the way in terms of delivering oil to market now. At that time, the KRG reported oil reserves in excess of 45 billion barrels, and that has gone up with the addition of a string of major world-class discoveries. The PSC regime, plus exploration success, has encouraged the recent entry of international majors, particularly ExxonMobil, Chevron, and Total in the last 3 years. Today, exploration, appraisal and development are in full swing despite the current regional unrest, and despite threats from the central

HGS International Dinner continued on page 32



government to cancel service contracts with operators that are also working in the KRG. At the time of writing there are 64 KRG PSC blocks, of which 42 have been drilled. The first wells are currently being drilled on four blocks, leaving 18 blocks (most with surface anticlines) undrilled. There are 31 named fields in 28 different blocks and only 13 blocks have dry holes.

This vigorous activity is evidenced by Total and Marathon who just recently announced their second discovery in Kurdistan in as many years. The Jisik-1 well on the Harir Block encountered oil and gas in the Jurassic and Triassic sections. This follows the Mirawa-1 discovery in 2013 in the same block. The general trend has been to make discoveries in deeper reservoirs with lighter oil deeper in the range. The Kurdistan region is still a frontier with involvement of ~40 small to large-size international oil companies, not all of which hold PSCs. Nevertheless, Tony Heyward, CEO of Genel, predicts a consolidation of the number of operators in Kurdistan, contracting by 75% in the next 5 years, with only the largest companies taking control of the oil and gas assets in the region. If this consolidation comes to pass, it will mark the end to the dominance of the small independent companies that successfully opened the province.

Production

Although the constitution specifies export through southern Iraq under central government control, with revenue sharing between the KRG and the ICG, operators currently export approximately 350,000 bopd by pipeline through Turkey to the Ceyhan seaport on the Mediterranean. From there it is tankered to customers, although the KRG has found it difficult to market its oil due to legal threats of intervention in the sales. Recent renewed agreements between the KRG and the ICG to share the country's oil and gas resource wealth specify export of 300,000 bpd of oil from Kirkuk and 250,000 bpd from Kurdistan through Turkey. The deal will overcome the dispute that halted exports from Kirkuk, and to some degree blunt a drive by the Kurds for an independent state, which appeared imminent this summer after divergent responses to the ISIS invasion. It offers some hope to help reunite the country in the midst of deep political divisions in the midst of the on-going complex regional conflict.

Geology

Strangely enough, many of us Americans would feel right at home in Iraqi Kurdistan. The border region with the rest of Iraq looks for all the world like Oklahoma in May as it's a winter wheat growing region—brilliant green up to the late Spring harvest. That gives way to the northern mountains that look extremely similar to many locations in New Mexico or Wyoming. Substitute piñon pine and juniper for the wild almond and olive trees and the countryside is a dead ringer, especially to areas in the mountain west that are dominated by limestone units with streaks of red

beds, the Madison Limestone with the overlying Phosphoria and Tensleep for example. The economy is pastoral, with sheep and goats instead of cattle, but the topography and scenery are similar.

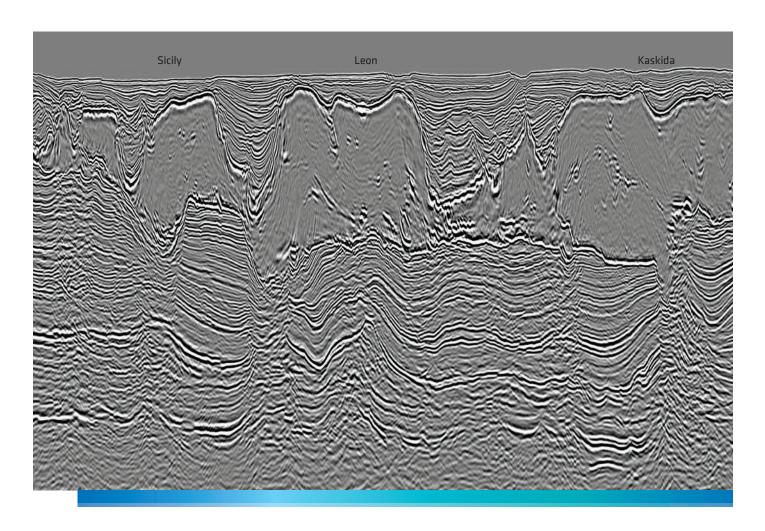
But this is after all Arabia. As is normal on the Arabian plate, the stratigraphy is characterized by a dominance of carbonate units separated by fine-grained siliciclastic sections with some subordinate evaporite units in the Permo-Triassic, the Jurassic, and the Paleogene. Unlike further south, the Hormuz Salt at the base of the section appears to be absent. Petroleum systems are many. At least four and possibly six petroleum systems are active and economic in various parts of the belt—one in the Triassic, two in the Jurassic, one in the Cretaceous, and possibly a Tertiary and potentially a Paleozoic system. Up until the current round of exploration, most assumed new petroleum occurrences would turn out to be restricted to the Jurassic, Cretaceous, and Tertiary, like the early discoveries, and prone to be heavy crude, but a big surprise has been the discovery of a prolific Triassic system of light oil.

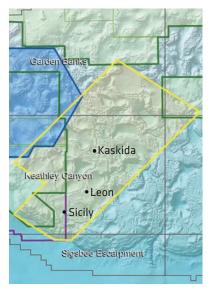
Each of the petroleum systems is based on multiple genetically-related source intervals with several potential reservoir rocks coupled to them. Each of the systems is separated by a semi-major unconformity or sequence boundary often occupied by an evaporitic-affiliated clastic section, with individual traps sealed by intermediary members of the local sequence. Type II source rocks in the Jurassic and Cretaceous systems tend to generate heavy, early maturity oils rich in resins, asphaltenes, and sulfur but they improve with depth and maturity. The deeper systems tend to produce much lighter crude, with gas and condensate also increasing toward the south in the region. The reservoirs are mostly fractured carbonates. In a nutshell, the stratigraphic column is prolific with certainly 10s of billions of barrels discovered so far. Total in-place estimates for the region are almost meaningless at this point in time.

Structure and tectonics.

The region is often described as the frontal zone of the Zagros Mountains, which trend north out of the Iranian coastal regions of the Arabian Gulf, but the situation is more complicated than that. The northwestern-most part of Kurdistan is actually the frontal part of the Taurus orogenic belt in Turkey, separated from the Zagros by a triple junction near the Iraq-Turkey-Iran frontiers, each side with slightly different sequences of events. Facing the Taurus belt, Precambrian crystalline basement is exposed just over the Turkish frontier, while the Iranian Zagros side fronts against a group of allochthonous thrust sheets that contain exotic rock assemblages of ophiolites and fragments of Tethyan island arc assemblages. Iraqi Kurdistan is nevertheless on the Arabian plate, the basement of which is exposed in those exposures in the

HGS International Dinner continued on page 35





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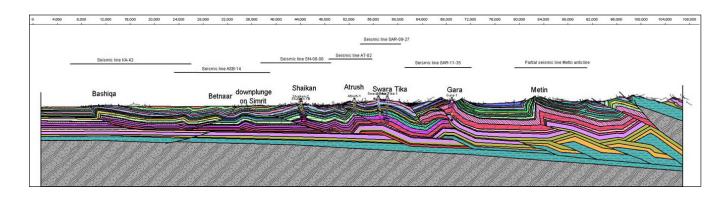
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north. The foreland basin tracks along the Tigris-Euphrates River system into its marine-flooded southern extent in the Arabian Gulf. Under the plains to the south of the mountain front are a number of buried basement-involved foreland block uplifts that trend all the way south into Saudi Arabia where Ghawar, the largest oil complex in the world, is located on one of the uplifts.

The frontal part of the thrust belt is buried under its own foreland basin section, and has undergone very little erosion so the thrust geometries are deceptively simple. Hence the classic terms "simply folded belt" and "imbricate zone" that have been used for years to characterize the geology. Classic overthrust geometries are effectively hidden because the deformation is so young. Nevertheless, the clastic parts of the section tend to host detachment horizons for the thrust architecture even in the front under the plains to the south of the topographic front. The major detachments occur in the Paleogene, Jurassic, and the Permo-Triassic. To the north, these connect to deeper detachment levels within the Paleozoic and at the base of the section at top crystalline basement under the topographic front. The development of the thrust belt has been comparable to others world-wide, with forward (southward) progression of deformation on deeper, younger thrust detachments, but the architecture of the detachment levels has set up a group of duplexes in the Paleozoic that uplift broad antiforms (so-called

"passive roofs") along the topographic front, within which many of the larger discoveries have been made.

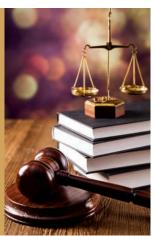
Biographical Sketch

DR. JAMES W. GRANATH is a consulting structural geologist based in Denver, Colorado, who has worked in academia and both minerals and petroleum exploration. Since 1976 he has taught at SUNY Stony Brook and spent 18 years with Conoco Inc in research, international exploration, and new ventures. In 1999 he opened a consulting practice focused on structural geology



and tectonics as applied to exploration problems, interrupted only by brief periods of working exclusively with Forest Oil and Midland Valley Exploration in Denver, and on projects in some 40 countries around the world. He is a member of AAPG, AGU, GSA and RMAG, and is a certified petroleum geologist (#5512). He is the author of numerous research papers and co-editor of several multi-author compendia. His expertise lies in seismic interpretation and integration with structural analysis, fracture analysis, regional synthesis, and prospect and play evaluation. He holds his PhD from Monash University in Australia, and a BS and an MS from the University of Illinois at Urbana-Champaign.





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Arthur D. Donovan BP

Chronostratigraphic Relationships of the Woodbine and Eagle Ford Groups Across Texas

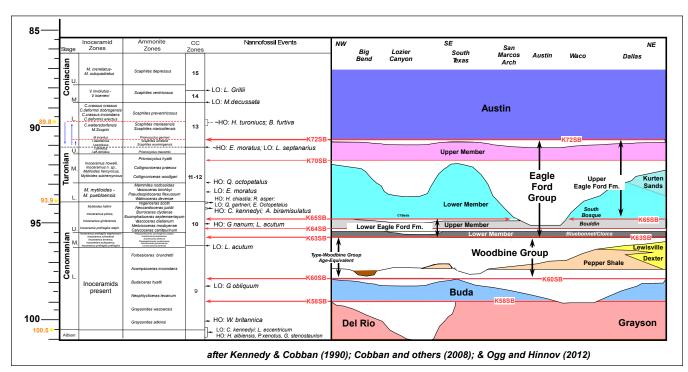


Figure 1: Summary of the geographic and chronostratigraphic distribution of Cenomanian through Lowest Coniacian strata across Texas

Based on traditional molluscan macro-faunal zonations (Adkins, 1932; Adkins and Lozo, 1951), the Woodbine and Eagle Ford Groups were each interpreted as unconformity-bounded chronostratigraphic units (depositional super-sequences) which were used to define the classic Upper Cretaceous (Woodbinian & Eaglefordian) Stages across the Gulf of Mexico Coastal Plain (Figure 1). Recent stratigraphic studies, however, have suggested that all or part of the organic-rich Lower Eagle Ford Formation in South Texas is actually age equivalent to the Woodbine Group in the subsurface of the East Texas Basin (Hentz and Ruppel 2010; Bryer, Denne, and Bush, 2014). Clearly only one of these proposed stratigraphic paradigms can be correct.

Donovan and others (2012, 2013, in press) defined four surface bounded allostratigraphic units (depositional sequences) in the outcrops of the Eagle Ford Group of West Texas and correlated these sequences into the subsurface of South Texas (**Figure 2**).

These four sequences, two of which occur in the Lower Eagle Ford Formation and two in the Upper Eagle Ford Formation, each have distinct petrophysical and geochemical characteristics that make them particularly useful for regional correlations. These sequences from the base up consist of an organic-rich, high resistivity, Lower (Allo-) Member of the Lower Eagle Ford Formation; a uranium-, thorium-, and bentonite-rich Upper (Allo-) Member of the Lower Eagle Ford Formation; a carbonaterich, as well as uranium-, thorium-, and bentonite-poor, Lower (Allo-) Member of the Upper Eagle Ford Formation; and a bentonite- and thorium-rich Upper (Allo-) Member of the Upper Eagle Ford Formation. The Lower Member of the Lower Eagle Ford Formation is also characterized by the presence of a high gamma ray/high resistivity maximum flooding surface. The basal portion of the Lower Member of the Upper Eagle Ford Formation also contains a diagnostic positive carbonate excursion, the peak of which is the interpreted proxy for the Cenomanian/Turonian

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HGS North American Dinner continued from page 37

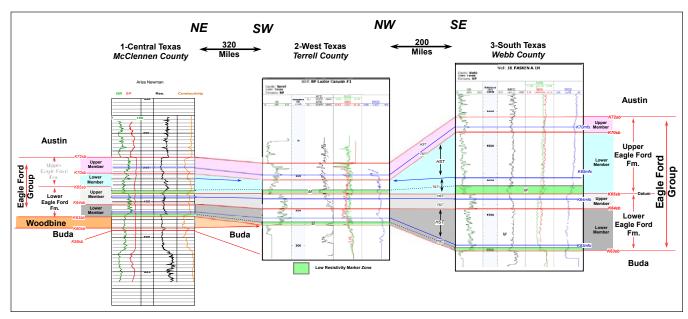


Figure 2: Correlation of the geo-physical logs of the BP/SLB #1 research borehole in Lozier Canyon (Terrell County), the type well in South Texas (Webb County), and a well in McClennen County near the classic Waco outcrops. The cross-section is datumed on the base the Upper Eagle Ford Formation. The four sequences (allo-members) within the Eagle Ford Group can be defined in the outcrops of West Texas, the subsurface of South Texas, and the outcrops and subsurface along the western flank of the East Texas Basin. The location of the three wells is noted on Figure 3.

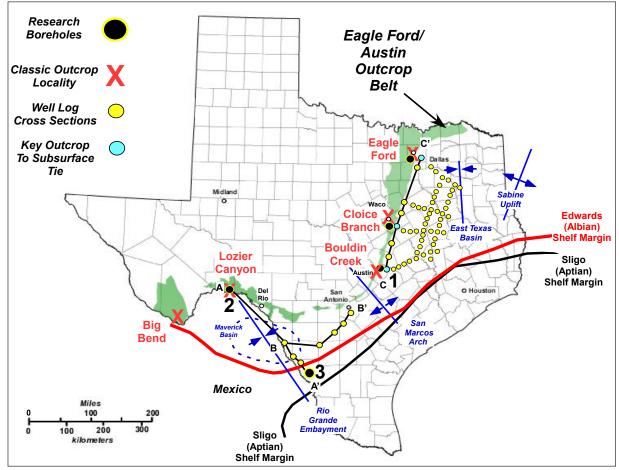


Figure 3: Major structural and physiographic features of Texas. Please note location of outcrop belt (green), cross sections, key cores, and outcrop localities.

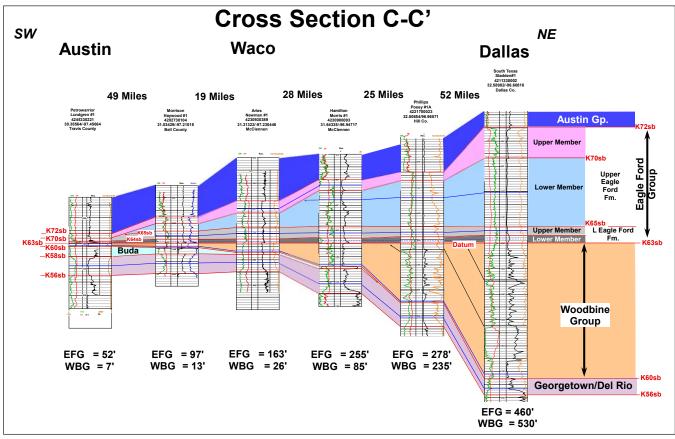


Figure 4: SW to NE well-log cross-section along the western flank of the East Texas Basin. The cross section is datumed on the interpreted K63sb at the base of the Eagle Ford Group. Please note the four sequences (members) within the Eagle Ford Group and the thickness variations of the Woodbine Group and Eagle Ford Groups. Woodbine thickness variations are primarily attributed to truncation by the K63sb at the base of the Eagle Ford Group. Eagle Ford thickness variations are primarily attributed to truncation by the K70sb at the base of the Upper (Langtry) Member of the Upper Eagle Ford Formation.

stage boundary. Low resistivity marker zones also define the base of both the Lower and Upper Eagle Ford Formations, while distinct higher gamma ray/low resistivity zones mark the interpreted maximum flooding surfaces of the Upper Member of the Lower Eagle Ford and Upper Member of the Upper Eagle Ford (Figure 2).

In order to evaluate how the Eagle Ford Group of South Texas correlates into the Eagle Ford and Woodbine Groups of the East Texas Basin, a grid of well-log cross sections, tied to the classic outcrop localities along the western flank of the East Texas Basin, was constructed (Figure 3). This differs from previous work where the Woodbine was correlated from the East Texas Field westward into the East Texas Basin (Hentz and Ruppel, 2010), or the Eagle Ford of South Texas was correlated into the condensed portions of the Eagle Ford and Woodbine in the southwestern portions of the East Texas Basin. Work to date suggests that the Lower and Upper Eagle Ford Formations, as well as the two depositional sequences (lower and upper members) within each formation, can be defined and correlated within the Eagle Ford Group in the East Texas Basin (Figure 4). Key to the allostratigraphic

correlations into the East Texas Basin was the identification of: 1) the organic-rich and bentonite-poor Lower Member of the Lower Eagle Ford Formation along with its distinctive high GR/resistivity maximum flooding surface; 2) the bentonite-, thorium-, and uranium-rich Upper Member of the Lower Eagle Ford Formation; and 3) the recent identification of the distinct positive isotope excursion at the base of the Lower Member of the Upper Eagle Ford Formation (Boling, 1984) in the Eagle Ford outcrops near Waco. With the correlations of the four Eagle Ford depositional sequences in place, the underlying Woodbine Group, and its distinctive low-resistivity basal Pepper Shale section can be more readily defined and recognized as an older depositional supersequence which gets truncated to the southwest in the East Texas Basin by a regional angular unconformity at the base of the Eagle Ford Group (Figure 4). Thus sequence stratigraphic correlations to date appear to support the classic biostratigraphic interpretation that: 1) the Eagle Ford Group is a coeval surfacebounded chronostratigraphic unit mappable across Texas; and 2) the underlying Woodbine Group is an older chronostratigrahic unit (supersequence) whose present distribution, thickness, and

HGS North American Dinner continued on page 41

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*For talk proposals, please contact peter.woodroof@petrofac.com or chris.howells@tgs.com. See events and register online at www.seapexconf.org facies patterns are heavily modified by the angular unconformity at the base of the overlying Eagle Ford Group (Figure 4). Clearly, future paleogeographic reconstructions of the Woodbine Group must now be done in the context of understanding preservational and erosional patterns within the Woodbine Group, and not simply interpreting the present distribution, thickness, and facies trends as the result of just primary depositional patterns.

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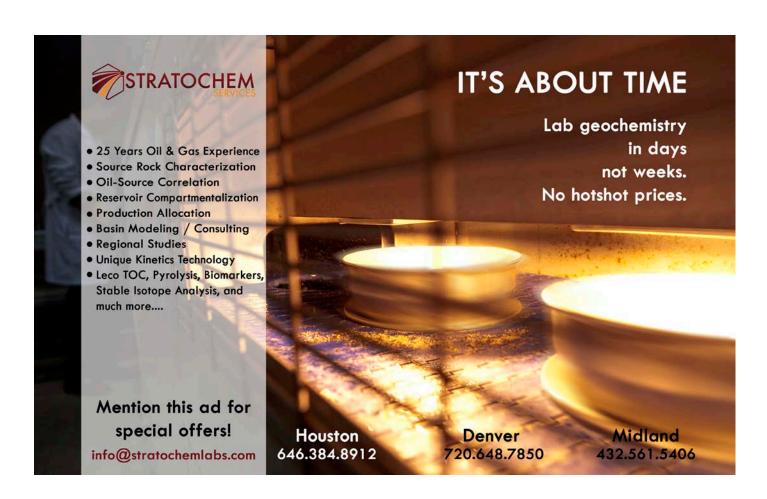
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Biographical Sketch

Dr. Art Donovan is the Senior Geoscience Advisor for Unconventional Reservoirs at BP. Art received his PhD from the Colorado School of Mines (CSM) in 1984. His PhD work on the Eastern Gulf of Mexico Coastal Plain was one of the pioneering efforts to apply sequence stratigraphic concepts to outcrop and shallow subsurface data. Upon graduation from CSM, Art was



employed by Exxon for 16 years where he had the opportunity to work numerous basins around the world and develop his skills in the fields of sequence stratigraphy, seismic stratigraphy, and basin analysis. In 2000, he left Exxon and joined BP as the Sed/Strat Discipline Lead, and then served as a member of BP's Global Exploration Assurance Team. Since 2009 Art has worked as the technical advisor for BP's unconventional exploration opportunities in North America, and then globally. He also leads BP's geoscience L&OD and R&D efforts on unconventional reservoirs. Well known externally for coordinating BP's Eagle Ford research efforts in the outcrops in West Texas, Art has led external AAPG and GCAGS Fieldtrips to visit these classic exposures, and in 2015 will be leading Eagle Ford field trips for the annual URTEC and GCAGS conferences. The author of many papers on the application of sequence stratigraphy, Art has taught short courses and led field trips for GSA, AAPG, GCAGS, SEPM, and The Geological Society on this topic. His "Sequence Stratigraphy for Graduate Student Short Course" has been a yearly occurrence at the GSA Annual Meeting since 1998. Art serves as the AAPG representative on the North American Commission of Stratigraphic Nomenclature (NACSN), and was the Chair of the commission in 2010. He has also served as the Technical Program Chair for GCAGS and the Vice-President of the HSG. Dr. Donovan is also an Adjunct Professor of Geoscience at the Texas A&M University, where he teaches a graduate course in stratigraphy and depositional systems each fall.



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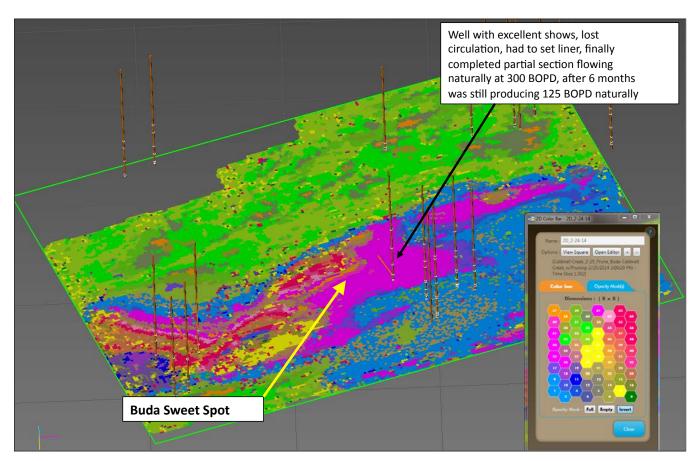
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Deborah King Sacrey Auburn Energy

Managing "Big Data" and Finding the "Sweet Spots": Principal Component Analysis and Neural Analysis of Seismic Attributes to the Rescue



Regardless of whether one is working in the unconventional or conventional reservoir world, getting through the mountains of seismic attributes is becoming a chore. Some attributes contribute more to understanding the subsurface than others, but which ones are the most important when it comes to finding the key to maximizing hydrocarbon production? The interpreter is always looking for ways to distill vast amounts of data down to key elements in order to make prudent choices for reducing risk in picking drilling locations.

Splitting the seismic signal into various components first started in the late 1970's with the measurement of single-trace attributes

like Instantaneous Phase and Instantaneous Frequency. Over the last 40 years, a plethora of attributes have been created and are commonly used in today's interpretation work flow. In addition to the Instantaneous attributes, there are the geometric attributes (Coherence, Curvature), Amplitude Enhancing (Sweetness, Relative Acoustic Impedance), AVO (Fluid Factor, Intercept Gradient), Spectral Decomposition (Envelope-based or Wavelet-Based) and Inversion (Poisson's Ratio, Density, Brittleness, etc.), and many more. How does one evaluate the effectiveness of these attributes when it comes to their interpretation?

HGS General Luncheon continued on page 45

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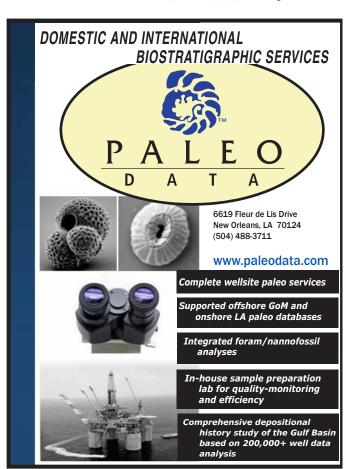
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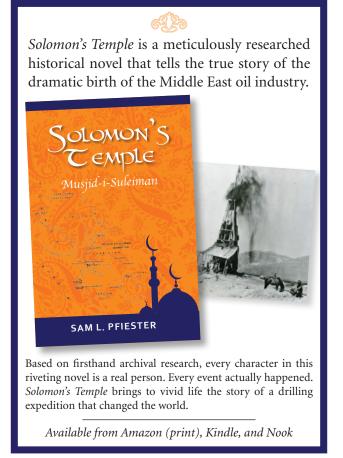
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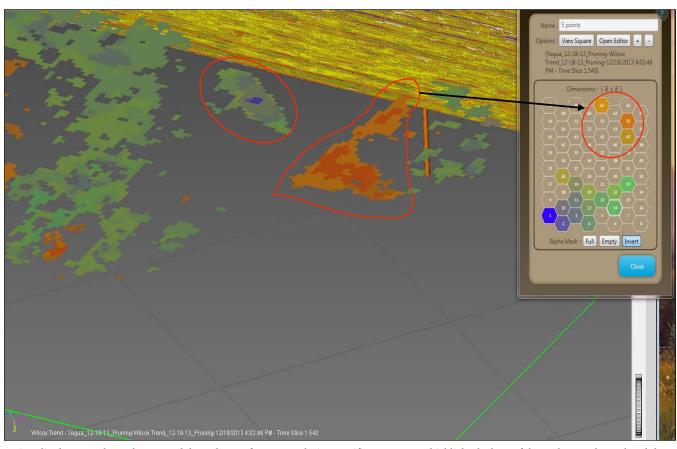
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A timeslice between the upthrown and downthrown features. Isolating specific neurons can highlight the base of the upthrown channel and the upper portion of the downthrown deposition. Other sand bodies can also be seen.

Using Principal Component Analysis (PCA), which is a linear quantitative process designed to understand which seismic attributes have interpretive significance, has proven to be an effective approach to sorting through vase amounts of data. This process looks for attributes which have the greatest amount of statistical variation and rates them accordingly. In turn, those "cream of the crop" attributes can be used in a classification process, Self-Organized Mapping (SOM), to further distill the natural clusters and patterns in the seismic data.

Several case histories showing examples of both the Principal Component Analysis and Self-Organized Mapping will be presented in order to allow the interpreter to see the importance of these time-saving tools when added to the interpretation workflow.

Biographical Sketch

Deborah is a geologist/geophysicist with 39 years of oil and gas exploration experience in the Texas and Louisiana Gulf Coast and Mid-Continent areas of the US. 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.

She started her own company, Auburn Energy, in 1990 and built her first geophysical workstation using Kingdom software in 1996. She helped SMT/IHS for 18 years in developing and testing the Kingdom Software. She specializes in 2D and 3D interpretation for clients in the US and internationally. For the past three years she has been part of a team to study and bring the power of multi-



attribute neural analysis of seismic data to the geoscience public, guided by Dr. Tom Smith, founder of SMT.

Deborah has been very active in the geological community. She is past national President of SIPES (Society of Independent Professional Earth Scientists), past President of the Division of Professional Affairs of AAPG (American Association of Petroleum Geologists), Past Treasurer of AAPG and is now President-elect of the Houston Geological Society. She is also a DPA Certified Petroleum Geologist #4014 and DPA Certified Petroleum Geophysicist #2. She belongs to AAPG, SEG, PESA (Australia), SIPES, Houston Geological Society and the Oklahoma City Geological Society (OCGS).

HGS General Luncheon continued on page 47



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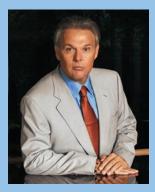


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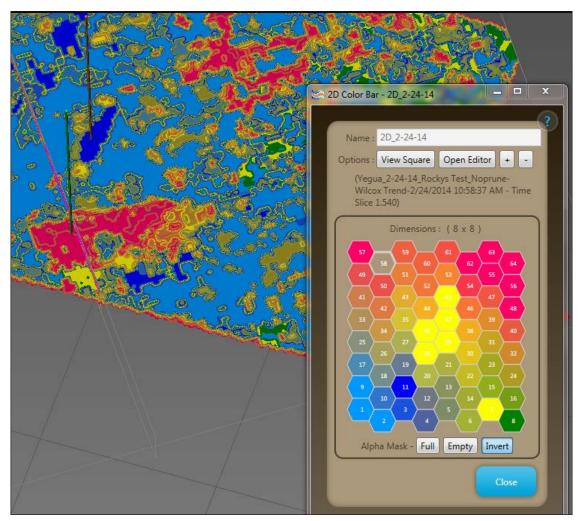
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All neurons are turned on for the full classification map. The base of the upthrown channel can still be identified, as well as the downthrown sand distribution.

Volunteers Needed for GCAGS Annual Convention



The Gulf Coast Association of Geological Societies Annual Convention will be held in Houston, Texas from September 20th through the 22nd, 2015. In order to make this all come together we will need a number of volunteers. They will be needed beginning Friday, September 18th through the 22nd. The duties will include helping prepare convention material, working the registration desk, and working in the speakers' and judges' rooms. Volunteer positons are open to students, geoscientists and others.

Please contact me at 713-591-1155 or by e-mail at jamesmgrubb@yahoo.com and provide me with your e-mail address, phone number and the days you are available to volunteer. Additional announcements will follow in the Bulletin. Thank you, Jim Grubb, Volunteer Chair

April 2015



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5	6	7 HGS Board Meeting 6 p.m.	8
12	13HGS General Dinner Meeting "Relationship Between Anticlinal Folding and the Evolution of Mechanical Stratigraphy, Rock Mechanics Properties and Reservoir Quality in the Tensleep Sandstone at Alcova Reservoir, Central Wyoming, USA," Peter Hennings, Page 21	14	15 HGS Environmental & Engineering Dinner Meeting "Don't Get Hurt! How to Stay Safe When You're Working in the Oil Fields." Troy Meinen, Page 29
19	HGS International Dinner Meeting "An Overview of Kurdistan: One of the Last Onshore Frontiers of Huge Hydrocarbon Potential" James W. Granath, Page 31	HGS Northsiders Luncheon Meeting Speaker TBA	22
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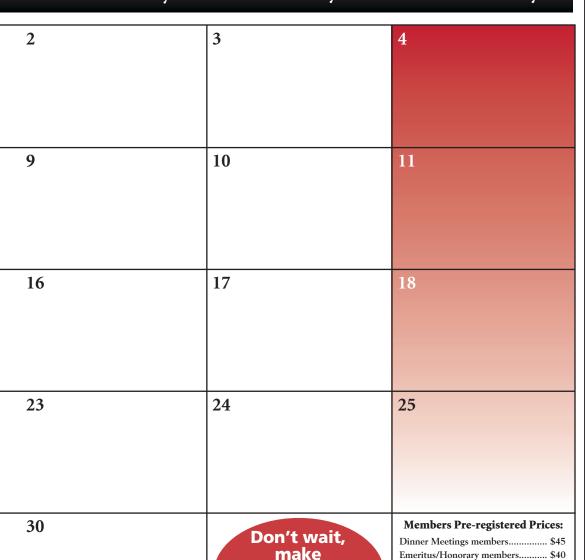


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AAPG House of Delegates Candidates

We are providing a brief informational summary of seven 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 three 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.

Requirements of the delegates include:

- · Familiarity with AAPG's Constitution and Bylaws
- · Acquaintance with AAPG's current policies and programs
- Willingness to inform the leaders of their society or region regarding AAPG's program of activities, particularly as it relates to cooperative participation and service
- Ability to process requests from the AAPG Executive
- Committee for information regarding eligibility of applicants for membership in the Association
- Availability to serve as local certification committeemen to process requests from the Board of Certification for information regarding applicants for Certification by AAPG
- Willingness to actively solicit applications from eligible geologists for membership in AAPG



Lee Backson

I would be pleased to continue to serve the society as a delegate to the HoD. I have been an AAPG member over 32 years and a delegate to the House for 19 years. I am currently serving as a Trustee of the AAPG Foundation and I am a member of the Trustee Associates, where I have served

as Chairman and Vice Chairman. Also, I am a member of the CORE committee of AAPG.

Professionally, I am currently retired after serving 8 years as a member of the Board of Directors of Crimson Exploration, Inc., (now Contango Oil & Gas). From 2000 to 2008, I was a consultant to industry clients, including Ft. Apache, Andex Resources, Continental Land & Fur Inc., and Grant Geophysical, Inc. Prior to consulting, from 1990 to 2000, I served as the Vice President, North America Exploration for Burlington Resources; Senior Vice President and General Manager of Gulf Coast Exploration for UMC Petroleum Corporation; and President of General Atlantic Gulf Coast (GAGC) that explored and operated in the offshore.

Before founding GAGC in 1990, I have held various officer and management positions with Kerr McGee, Pelto Oil Company, and Spectrum Oil and Gas. My career in exploration began in Houston with Shell Oil Company in 1963. My degrees are the Bachelor of Science (1961) and Master of Science (1963) in Geology from Iowa State University.



Richard Ball

I am grateful and proud to stand as a candidate for the AAPG House of Delegates (HoD). Like most geologists, I joined the AAPG as a Student member while working on my Bachelor of Science degree in Geology. Ever since then, I have noticed

AAPG has a growing need to improve member retention. This is where I have focused the majority of my volunteer efforts within the Association, serving as Student Chapters Committee Chair and Vice-Chair, as well as Young Professionals Vice-Chair. As AAPG Secretary (2013-15), I was able to see how a host of important issues, including member retention, affect every Section and Region. This global perspective highlighted the importance of service to the House of Delegates. I feel the time is right to seek a role in the governance of AAPG. If the members allow me, I will serve the HoD to the best of my ability.



Scott Douglas

Scott Douglas received a B.S. in Geology from Clemson University in 2008 and an M.S. in Geology from Baylor in 2010. His Master's Thesis was on the Norphlet of deep-water Eastern Gulf of Mexico funded by Nexen Petroleum USA, Inc, for whom he started working following graduation.

In his five years of work in oil and gas with Nexen, he has gained considerable experience in a short time working high profile projects all across the Gulf of Mexico in exploration, appraisal, development, and petrophysics. He has worked with Nexen in Dallas, Calgary, and Houston.

Scott has been a member of AAPG since 2008; since then has been motivated to become actively involved in AAPG both in the technical and leadership realm. During his time in Dallas, Scott spearheaded the role of AAPG YP (Young Professionals) Southwest Section Chair. He was in charge of coordinating networking events and getting young professionals to become more involved in AAPG across Dallas and Ft. Worth. Scott is motivated to bring young leadership and new creativity to a changing organization, and he is excited about the opportunities that it will provide.

AAPG House of Delegates Candidates continued on page 52

AAPG House of Delegates Candidates continued from page 51



Meredith Faber

Meredith Faber's first love might be English literature but, as the daughter of a geologist, geology is a very close second! Born and raised in Texas, Meredith attended Trinity University in San Antonio where she joined AAPG as a student member in 2003. She graduated with a Bachelor of Arts degree in

english and a Bachelor of Science degree in geosciences in 2005.

She went on to attend graduate school at Southern Methodist University in Dallas, Texas, where she split her time between teaching oceanography lab classes, participating in various student organizations (including the SMU AAPG Student Chapter) and earning a doctoral degree in geology with an emphasis on stable isotope geochemistry. She completed her dissertation research on isotopic and ecological investigations of the land snail record and novel data management techniques in 2012.

After graduation, Meredith joined Swift Energy Company in Houston, Texas, to work in exploration in onshore South Texas. Meredith moved to Noble Energy in 2014 and currently works in the Marcellus Business Unit. She credits AAPG with providing the opportunities that resulted in her present career path and considers it a privilege to give back to the Association by serving as the Young Professionals Committee co-chair. In addition to AAPG, she is a member of GSA, SEG, the Phi Beta Kappa Society and the Houston Geological Society.

Why I Accepted the Invitation to Stand as a Candidate for the AAPG House of Delegates: Since joining the AAPG Young Professionals (YP) Committee in 2008, I have had the opportunity to witness firsthand the growing emphasis the Association has placed on YP involvement. It has been an honor to assist standing AAPG Committees in acquiring YP volunteers, inform the membership of ongoing initiatives and events in the YP community through the AAPG Explorer ProTracks, lend a YP perspective to the planning and execution of Annual and Section meetings, and help develop future YP leaders at the Young Professionals Leadership Summit (YPLS). It is both an exciting and, given the current price environment, potentially tenuous time for YPs in industry and I feel that I could be of greater service to the YP demographic, and the Association membership at large, if I sought a role in the governance of AAPG. It is with considerable appreciation and pride, therefore, that I accept the nomination to stand as a candidate for the AAPG House of Delegates. I have had the privilege to participate in a House of Delegates meeting as an alternate and, if the membership will permit me, I would like to build upon that experience by serving as a Delegate.



Patrick T. Gordon

After receiving Bachelor of Science and Master of Science degrees in Geology in 1966 and 1968 from Texas A&M University, Pat spent two years in the United States Army, where he had the opportunity to do geology in Vietnam. He joined Gulf Oil Corp. in the Houston Exploration District

in 1970, where he explored for and found oil and gas in the Tertiary trends of onshore and offshore Texas. In 1975 he became a Regional Geologist and led an exploration team which acquired \$140,000,000 in offshore leases. In 1979 he went to Midland, Texas for Gulf where he supervised an exploration program covering over 650,000 acres in the Permian Basin. Pat has also worked for Michel T. Halbouty Energy, Arkla Exploration, Southwestern Energy, and as a consultant. In the past few years he found new reserves on a number of 3-D projects in the Oligocene Frio/Vicksburg trend in Texas and Louisiana. During his career, Pat has been instrumental in the discovery of over 20 new fields with total reserves of over 500 BCFE. He joined Gaither Petroleum Corp in 2001 where he is responsible for all geological and geophysical activities in the Texas Gulf Coast and in Offshore Tunisia. He has been a member of the American Association of Petroleum Geologists since 1968, is a Certified Petroleum Geologist, and is a Past President of the Houston Geological Society. AAPG activities include the oral presentation of a paper at the 1981 Convention, service on the Gulf Coast Regional Cross Section Committee, chairman of the Jules Braunstein Award Committee for the 2006 Convention, and a member of the Career Services Subcommittee of the Membership Committee. He has been a member of the House of Delegates since 1985 where he has served on the Credentials committee, and he has been foreman of the Houston delegation.



Sean Kimiagar

Sean Kimiagar is a young professional passionate about the energy industry and professional societies. He has contributed to AAPG through his involvement with the Student Chapters Committee and the AAPG-SEG Student Expo in Houston, Young Professionals Committee and

Division of Professional Affairs. He is currently the chair of Houston Geological Society's Finance and NeoGeos committees, as well as the recipient of the prestigious HGS Rising Star Award in 2014. Sean has earned his Bachelor and Master of Science degrees in petroleum geology and has worked with Abu Dhabi National Oil Company, BHP Billiton and Halliburton during his career in the oil and gas industry. Sean believes in the positive role AAPG plays in geoscientists' lives around the world and would cherish the opportunity to serve this community in the position of a House of Delegates member.



Denise Stone

Denise M. Stone is an independent geological consultant who has been involved in international and domestic oil and gas exploration for over twenty years.

During her career she has worked at Unocal, Superior Oil/ Mobil, Amoco and

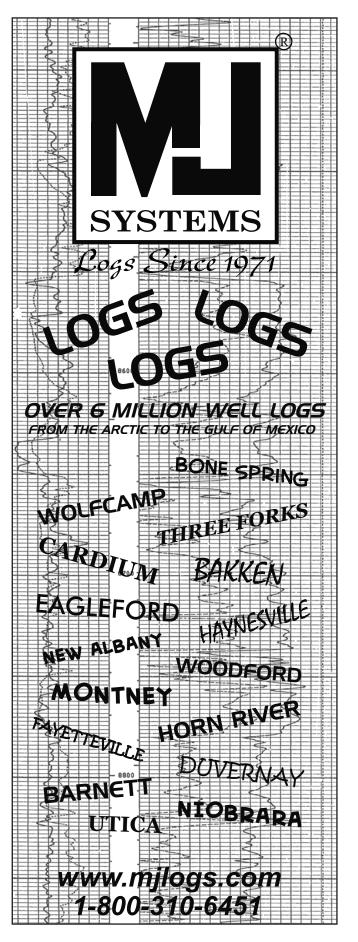
BP. As a consultant she has worked for a variety of different clients on E&P projects. Denise has a B.S. in Geology from Texas Christian University and a M.S. in Geology from Memphis State University.

She has served the HGS in multiple leadership roles including past President (2002-2003). In addition, she is very active in the AAPG. In 2010 she completed a 3-year term on the Advisory Council representing the Gulf Coast Region, and she is a past Chairman of the Houston House of Delegates. Denise is a long-standing member of the Publications Committee, and she most recently served as editor of AAPG Memoir 104, Oil and Gas Fields of the Cook Inlet Basin, Alaska. She is a Licensed Professional Geoscientist (#1550) in the State of Texas and also is an AAPG Certified Petroleum Geologist (#5622).

Statement

The position of delegate affords an opportunity to serve my profession and my colleagues and help grow the AAPG with new energetic members full of ideas for the future.

Vote in the HGS elections.



HOUSTON GEOLOGICAL SOCIETY presents



Legends AAPG Imperial Night 2015 Barrel Award

Honoring the Legends That Mold the Geoscientists of Tomorrow

The annual Legends ■ Night dinner event of the Houston Geological Society (HGS) was held on Monday, January 19, honoring two university professors and Geology Department faculty and industry advisors who have dedicated their time and energy to produce winning teams of the



AAPG Imperial Barrel Award (IBA): Chris Zahm (University of Texas) and Mary Broussard for Brian Lock (University of Louisiana at Lafayette). The event brought in 23 sponsors and resulted in just over \$42,000 in profits for the Calvert Memorial and HGS Foundation scholarship funds, which presented scholarships to 14 undergraduate and graduate students from 8 universities.

The IBA is a worldwide competition in which university teams interpret and analyze seismic datasets to present their findings and recommendations to industry experts. According to Dave Cook, co-chairman for the AAPG IBA, 123 teams from 37 countries participated in the competition in 2014 and even more are expected to participate in 2015. The competition is valuable in providing students insight into a career in petroleum exploration and is described by former IBA Participant Sarah Allen as "eight weeks of some of the most condensed work in your academic career, but essential in setting you apart from your colleagues in this competitive industry." HGS is a proud sponsor of the AAPG IBA program with President Ken Nemeth presenting a check in the amount of \$20,000 during the event.

Committee chairman John Tubb kicked off the presentations, discussing the role of education and events such as the IBA contest in creating future industry Legends. Even though both speakers had previously denied any "Legend" status in their acceptance due to their lack of oil discovery, John stated that "all advancements in science are achieved by men and women while standing on the shoulders of giants". He emphasized that we all stand on the



shoulders of others, be they parents, teachers, professors, mentors or geologists who established the foundations of geology. Someone has to teach these young minds to think geologically, and those makers-of-Legends are Legends in their own right.

The first honorary speaker of the night, Mary Broussard, spoke about her experiences as an IBA team industry advisor. According to Mary "the IBA competition changes the lives of students, and is the single best tool in preparing them for their future careers. Students learn to synthesize multiple pieces of geologic information to form a cohesive exploration strategy." She also mentioned that 11 universities from the Gulf Coast Section will be competing in 2015, vying for a victory that could result in more talented students applying for the program, better recruiting by the industry and stronger oil and gas curriculum for the university.

Chris Zahm had a similar message stating that "the IBA program creates 'legends' and is an investment in the future of the petroleum industry." He stressed that mentoring is a key component for success and that the IBA competition is vital in "inspiring future petroleum geologists, igniting the exploration fire and instilling science and methods needed to begin the exploration process."

Investing one's time and knowledge for the benefit of our industry, present and future, seemed to be the over-arching message of the evening. If you would like more information, please visit www. hgs.org or http://iba.aapg.org.

Thank you to our sponsors for making an extraordinary donation possible and thank you to all who attended for participating in such a legendary event. We'll see you next year!

HGS Legends Night continued on page 55

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Modern Terrigenous Clastic Depositional
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Strand-Plain Deposits Field Seminar

April 20-24, 2015
Austin, TX

April 21-23, 2015
Austin, TX

April 29 - May 6, 2015
S. Carolina

May 1-8, 2015
Utah

SHORT COURSES

Basic Well Log Analysis July 13-17, 2015 Assessment, Forecasting and Decision-Making July 18-19, 2015 in Unconventional Resource Plays San Antonio, TX (with URTeC meeting) Geomechanics for Completion Optimization July 18, 2015 in Unconventionals (with URTeC meeting) Introductory Geochemistry for Condensate-Rich July 19, 2015 Shales and Tight Oil San Antonio, TX (with URTeC meeting) Fractured Reservoir: From Geologic Concepts August 24-28, 2015 to Reservoir Models Casper, Wyoming

FIELD SEMINARS

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Tight-Carbonate Reservoir Analogues

Fractures, Folds and Faults in Thrusted Terrains

Seismic Interpretation in Fold- and Thrust-Belts

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Missouri River: Canoeing with Lewis & Clark

Devonian Reef Facies Models,

August 17-21, 2015

Montana

August 31-September 4, 2015

www.aapg.org/career/training/









The University of Texas at Austin Research Position in Clastic Sedimentology

The Bureau of Economic Geology, Jackson School of Geosciences at The University of Texas in Austin invites applicants for a full time research position in clastic sedimentology and stratigraphy. We seek an experienced candidate to conduct cutting edge research and lead the Quantitative Clastics Laboratory (QCL), a consortium-funded research group focused on the description, analysis, and quantification (morphometrics) of clastic depositional systems that are potential reservoir analogues.

This is a senior-level position. Requirements include a PhD in geology or closely related field, five to ten years of post-PhD experience, a strong record of publishing, evidence of successful leadership, as well as the ability to acquire and retain industry sponsors.

The candidate's research focus could include, but would not be limited to, source-to-sink dynamics, process sedimentology, evolution of complex continental margin settings, basin analysis, sequence stratigraphy, and application of seismic geomorphology to reservoir characterization. The candidate should be motivated to work with colleagues in developing improved understanding of scaling issues from the core to seismic level, including the roles of outcrop description and physical modeling. A strong desire and ability to successfully sponsor PhD and Master's level students is also highly valued.

Success in this position requires a desire to lead a small team, and to craft a long-term vision that will result in growing and sustaining the QCL. Abundant opportunities exist for collaborating with industry researchers, interacting with other researchers and faculty of the Jackson School, advising graduate students, and acquiring or sharing laboratory and field equipment.

Preference will be given to candidates with deepwater clastics systems expertise, and those who have an appreciation of energy industry needs and challenges.

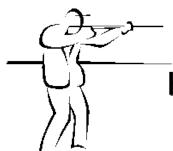
The Bureau of Economic Geology, with a staff of 250 including approximately 60 graduate student research assistants, is the oldest research unit of The University of Texas at Austin. The Bureau hosts ten research consortia, strongly supported by industry. We enjoy outstanding IT resources and support. The Bureau has a diverse workforce, extensive laboratory facilities, and operates the largest rock-core collection in the U.S. (~1500 miles of core). The Jackson School of Geosciences is highly ranked and is the largest U.S. geoscience program. Austin is a thriving city of about 1 million, renowned for live music and Texas Hill Country ambiance.

Candidates can apply at the Research Scientist or the Senior Research Scientist level, depending upon qualifications. Go to https://utdirect.utexas.edu/apps/hr/jobs/nlogon/search/0/ for complete description and to apply for posting number 141111010702 (Research Scientist) or 141111010701 (Senior Research Scientist).

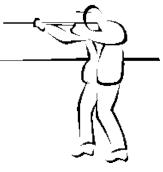
The University of Texas at Austin is an equal employment opportunity/affirmative action employer. All positions are security sensitive, and conviction verification is conducted on applicants selected.







HGS SKEET SHOOT



Saturday, June 27, 2015 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 until 1:30. 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 FRIDAY, JUNE 19. AFTER JUNE 19, 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.

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If you prefer to pay by check, mail this form with a check made out to HGS to:

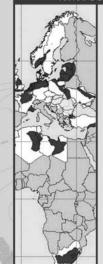
Houston Geological Society, 14811 St. Mary's Lane, Ste. 250, Houston, TX 77079

Name:	oany:								
Email: Phone:									
Preferred time: (circle one)	9:00	10:00	11:00	12:00	Ammo: (circle one)	12 gauge	20 gauge		
Registration Fee: \$ + Sponsor Contribution: \$ = Total: \$									
If you wish to register as a squad, please return forms for all squad members together.									

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

Two New 2015 Events





International Shale Plays

28-29 April 2015 - Houston, TX

All shale plays are different, and all shale plays shed light on other shale plays. Join experts to discuss world shale plays and share the "lessons learned" in dealing with a wide variety of lithologies, reservoir conditions, and degrees of heterogeneity. Find out the "must have" technologies and the emerging ones that are helping identify sweet spots, improve drilling and completion, and to return to the laterals and optimize the reservoir by launching a strategy of stacked pays and "stranded pay capture." Join experts who will share their experience and research findings in plays in Argentina, Colombia, China, Australia, Mexico, and other countries. We will compare them to analogues in North America with the goal of improving success rates in exploration, and optimizing production from existing and new reservoirs.

Woodford Shale Forum: **Focus on Optimization**

This year's AAPG Woodford Shale Forum will focus on new developments and understanding of how to optimize reservoirs by improving reservoir characterization and developing a better understanding of reservoir behaviors.

- · New technologies for imaging and pinpointing sweet
- · Characterizing pore architecture and fractures
- · Bringing geologists and engineers together for new hydraulic fracturing
- · Enhanced workflows for seismic, geological, and engineering improvements
- Identifying stacked pays
- · Recovering stranded pay

We will also have a special Entrepreneurship session that



reviews how successful entrepreneurs in the oil industry have developed, launched, and financed their ventures.



aapg.to/GTW2015IntlShalePlays

aapg.org/career/training/in-person/forums

Loyd Tuttle loydtuttle@comcast.net

Bob Liska

Jim Thorpe liska.bob@gmail.com thorpejim@comcast.net

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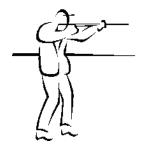
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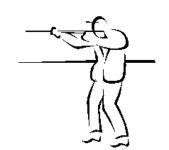






ANNUAL HGS SKEET SHOOT

Saturday, June 27, 2015 Greater Houston Gun Club 6702 McHard Road, Missouri City



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- Logo on HGS Website

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- Logo on HGS Website

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To register online, please go to http://www.hgs.org/eventskeetshoot

Please email your company logo to office@hgs.org. Note: Company logos (300+ dpi) must be received no later than May 1, 2015.

If there are any questions, please contact Tom McCarroll—713-419-9414 or tom_mccarroll@yahoo.com.



HGS Welcomes New Members

New Members Effective February 2015

ACTIVE MEMBERS	Sam Hiebert	Morgan Rosenberg	Donna Davis
Kyle Barrie	Connie Jump	Michael Ross	John Miller
Arpita Bathija	Felicitas Kaiser	Christian Scheibe	
Dawn Bissell	Geir Christian Kjeldaas	James Shipps	STUDENT MEMBERS
Liz Bloch	Nathan Kuhle	Jeffrey Senison	Eric Bergersen
Bryant Bradley	Sarah Leedberg	Mitchell Sims	Chen Chen
Scott Brooks	Hunter Lockhart	Akash Singh	Zack Collins
Alex Brown	Brenton Lucas	Tiffany Tchakirides	Ziquan Fan
Josh Burrus	Tim Marshall	Duncan Thom	Stephanie Fernandez
Carrie Cazes	John Mohr	Sally Thurner	Wey Foo
Brenton Chentnik	Anyela Morcote	Jaclyn Venhaus	Ryan Kenyon
Daniel Eakin	Jasmin Moxham	Zach Wallace	Adam King
Janis Franklin	Tod Nicholson	Sebastian Wiedmann	Bradley Nuse
Esteban Fernandez Azparren	Robert Nikirk	Daniel Xia	Jacob Paddock
Beatriz Garcia-Fresca	Hernan Ricardo PeÑas		Stefan Scrantz

EMERITUS MEMBERS

Chuck Caughey

Welcome New Members

2015 Houston Open Enrollment Course Schedule

Amanda Peters

Debra Phillips

& Associates

Rose

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Christopher Ginn

Kathryn Griener

Risk Analysis, Prospect Evaluation and Exploration Economics

April 20 – 24, 2015 September 14 – 18, 2015

Evaluating Tight Oil and Gas Reservoirs

May 18 - 22, 2015

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Government Update by 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 – AOR #12 (2014)

The Texas Board of Professional Geoscientists has issued AOR#12 (2014), "What is the distinction between academic research and the public practice of geoscience?"

Most public institutions of higher education are members of a larger administrative system. Examples of such systems would be the University of Texas and the Texas A&M University Systems. Members of these systems include universities, colleges, extensions, and research entities. Each has specific responsibilities and tasks that may include basic and applied research activities by professionals of these agencies. These public institutions and agencies commonly "educate" the public and provide our state with expertise in wide ranging disciplines, including geosciences.

An exemption exists in the Texas Geoscience Practice Act (Act) Section 1002.252 (4) that relates to work conducted by individuals who are employees of universities (public and private), colleges, and member institutions of university systems, where the work is performed for the benefit of the institution and under contract between the employee and the institution. This document seeks to clarify the position of the TBPG regarding when an individual is performing tasks that are, or are not, exempted by TBPG rules and regulations.

Specifically, when an individual is performing work as a representative of a university (public or private), college, or a member institution of a university system, then that work would qualify for exemption under Section 1002.252 (4) of the Act. Two criteria would be expected for this exception to remain valid.

- 1. The salary of the individual developing the research product is paid by the institution.
- 2. The liability for the research work product is covered by the institution, not by the employee.

For cases where university or college employees perform geology-related work outside the system, their salary and liability are not covered by the university; and, when that employee represents himself/herself and not the university or college, these activities are not exempt under Section 1022.252(4) of the Act. The activities then constitute the public practice of geoscience, if the activity (research or not) is a geoscience product and meets the standards of public practice.

AGI Geoscience Policy Monthly Review (January 2015)New Committee Members in House and Senate

Congressional committees in both the Senate and the House of Representatives welcome new members and say farewell to others in the 114th Congress. Although Republicans have finalized the majority of their committee assignments, Democrats are still working to place members.

House Science, Space, and Technology (SST):

Lamar Smith (R-TX), Chair; Eddie Bernice Johnson (D-TX), Ranking Member

New members: John Moolenaar (R-MI), Steve Knight (R-CA), Brian Babin (R-TX), Bruce Westerman (R-AR), Barbara Comstock (R-VA), Dan Newhouse (R-WA), Gary Palmer (R-AL), and Barry Loudermilk (R-GA). The new Democratic members have not yet been announced.

House Natural Resources:

Rob Bishop (R-UT), Chair; Raul Grijalva (D-AZ), Ranking Member

New members: Bruce Westerman (R-AR), Garret Graves (R-LA), Dan Newhouse (R-WA), Ryan Zinke (R-MT), Jody Hice (R-GA), Amata Coleman Radewagen (R-AS), Tom MacArthur (R-NJ), Alex Mooney (R-WV), Cresent Hardy (R-NV), Ruben Gallego (D-AZ), Norma Torres (D-CA), Debbie Dingell (D-MI), and Mark Takai (D-HI)

House Appropriations:

Hal Rogers (R-KY), Chair; Nita Lowey (D-NY), Ranking Member New members: Scott Rigell (R-VA), David Jolly (R-FL), David Young (R-IA), Evan Jenkins (R-WV), C.A. Dutch Ruppersberger (D-MD), and Derek Kilmer (D-WA)

Senate Energy and Natural Resources:

Lisa Murkowski (R-AK), Chair; Maria Cantwell (D-WA), Ranking Member

New members: Shelley Moore Capito (R-WV), Cory Gardner (R-CO), Steve Daines (R-MT), Bill Cassidy (R-LA), Elizabeth Warren (D-MA), Mazie K. Hirono (D-HI), and Angus King (I-ME)

Senate Commerce, Science, and Transportation:

John Thune (R-SD), Chair; Bill Nelson (D-FL), Ranking Member New members: Cory Gardner (R-CO), Dan Sullivan (R-AK), Steve Daines (R-MT), Tom Udall (D-NM), Joe Manchin (D-WV), and Gary Peters (D-MI)

Government Update continued on page 62

Government Update continued from page 61

Senate Environment and Public Works:

James Inhofe (R-OK), Chair; Barbara Boxer (D-CA), Ranking Member

New members: Shelley Moore Capito (R-WV), Mike Rounds (R-SD), Dan Sullivan (R-AK), and Ed Markey (D-MA)

Senate Appropriations:

Thad Cochran (R-MS), Chair; Barbara Mikulski (D-MD), Ranking Member

New members: James Lankford (R-OK), Shelley Moore Capito (R-WV), Bill Cassidy (R-LA), Steve Daines (R-MT), Brian Schatz (D-HI), Tammy Baldwin (D-WI), and Christopher Murphy (D-CT).

New Subcommittees Announced for the House Natural Resources Committee

The newly appointed Chair of the House Natural Resources Committee, Rep. Rob Bishop (R-UT), has changed the organizational structure of the subcommittees for the 114th Congress. The structure under the previous Chair, Rep. Doc Hastings (R-WA), included subcommittees for Energy and Mineral Resources; Fisheries, Wildlife, Oceans, and Insular Affairs; Indian and Alaska Native Affairs; Public Lands and Environmental Regulation; and Water and Power.

Under Rep. Bishop's new structure, the Fisheries, Wildlife, Oceans, and Insular Affairs Subcommittee is replaced with two new subcommittees: Indian, Insular, and Alaska Native Affairs chaired by Rep. Don Young (R-AK) and the Subcommittee on Water, Power, and Oceans chaired by Rep. John Fleming (R-LA). The Public Lands and Environmental Regulations Subcommittee is renamed Federal Lands and is chaired by Rep. Tom McClintock (R-CA). In addition, Chairman Bishop added a new Oversight and Investigations Subcommittee chaired by Rep. Louie Gohmert (R-TX). The Energy and Mineral Resources Subcommittee remains unchanged and will continue to be chaired by Rep. Doug Lamborn (R-CO).

Atlantic Ocean Opened for Outer Continental Shelf Oil and Gas Leasing

The Bureau of Ocean Energy Management (BOEM) announced its 2017-2022 Outer Continental Shelf Oil and Gas Leasing program which includes plans to open the Atlantic Ocean for oil and gas leasing. The current plan (2012-17) only includes oil and gas development in the Gulf of Mexico and Arctic Ocean. Although portions of the Atlantic Ocean are included in the plan, there is no guarantee that the region will be leased. Virginia currently does not have a revenue-share system like that of Gulf Coast states that allows them to share in offshore oil development revenue.

Many Republicans expressed concern that the new plan is too restrained, excluding potential resources in the Eastern Gulf of Mexico, the Northern Atlantic, and the Pacific Ocean. Industry members also voiced concerns that the plan contains too little acreage. Some Eastern seaboard Democrats oppose the plan, citing the potential impact of an oil spill, similar to the Deepwater Horizon spill, on their beaches, fishermen, and tourism, while others favor the jobs that new leases would create.

President and Federal Agencies Propose New Restrictions, Leases in Arctic

In late January 2015, the Obama administration and federal agencies proposed new policies governing Arctic oil and gas exploration. These policies restrict activities in the Arctic National Wildlife Refuge (ANWR) and open up new leases in the Chukchi and Beaufort Seas. The proposed polices received both praise and opposition from members of Congress, industry, and environmentalists.

On January 25, 2015 the Obama administration proposed designating 12 million acres of ANWR as wilderness following the release of the U.S. Fish and Wildlife Service's (FWS) Comprehensive Conservation Plan and final impact statement. This designation would ban oil and gas development, road construction, and other activities. Alaskan members of Congress strongly opposed to this proposal, which Senator Lisa Murkowski called an attack on Alaskan sovereignty.

Following the Administration's ANWR recommendations, the Bureau of Ocean Energy Management (BOEM) announced its 2017-2022 offshore leasing plan. The plan, released January 29, 2015 includes opening up leases in the Chukchi and Beaufort seas off Alaska, while protecting Barrow Canyon and Hanna Shoal, which are used by bowhead whales and walruses respectively. The leasing plan was met with frustration from many members of industry who feel it offers too few new leasing locations. Many Republicans feel the plan covers too small an area and contains too many restrictions, while many Democrats oppose Arctic drilling in general, arguing the likelihood of oil spills.

Leasing for Offshore Wind Farms Sells Half of Allotments

On January 29, 2015 the Department of the Interior (DOI) held the largest sale of federal waters for offshore wind development with 742,000 acres open for bidding. Two companies, Offshore MW LLC and RES America Inc., bought a total of 354,000 acres of land near Martha's Vineyard, Massachusetts for a price tag of \$448,000. Though the sale nearly doubles the area leased by DOI for renewable energy development, two additional lease tracts available for sale received no bids, leaving leases on just over half the area offered unsold.

Earlier in January, two utilities terminated their agreements to purchase power from Cape Wind, the nation's first-ever offshore wind farm located off the coast of Massachusetts, after it failed to reach a financial milestone. On January 21, 2015 Cape Wind was suspended from participating in New England's wholesale energy markets. ISO New England, the regional transmission organization responsible for moving electricity over Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont, did not give a concrete reason behind Cape Wind's suspension.

Process of Hydraulic Fracturing Linked to Ohio Earthquakes

A report released January 5, 2015 by the Seismological Society of America (SSA) links hydraulic fracturing to earthquakes experienced in Ohio in 2014. Hydraulic fracturing is the process of injecting pressurized fluids into wellbores to open fractures in rock that release natural gas or petroleum products. In the past, the disposal of wastewater from hydraulic fracturing and other oil and gas acquiring processes has been linked to earthquakes, including a magnitude-5.7 earthquake east of Oklahoma City in 2011. However, the SSA study reveals a connection between the actual process of hydraulic fracturing and earthquakes, not just byproducts such as wastewater injection. This report comes shortly after the release of data showing Oklahoma to be one of the most earthquake-shaken states, with more than 560 quakes in 2014.

The SSA study found that in Poland Township, Ohio, it appears that the process of hydraulic fracturing activated a previously unknown fault, generating earthquakes up to magnitude-3.0. To connect the earthquakes with specific hydraulic fracturing events, scientists compared the timing of shaking with the timing of hydraulic fracturing, a technique called 'template matching'. In analyzing the earthquakes, scientists were also able to outline the location of the previously unknown fault.

China Ends Export Quotas on Rare Earth Elements

According to a statement released on December 31, 2014 China has ended export quotas they previously placed on rare earth elements (REEs) after the World Trade Organization (WTO) declared the quotas illegal in August 2014. REEs are critical elements in the production of mobile phones, electric cars, solar panels, and defense technologies, China produces approximately 90 percent of the world's REE supply, although it only has 50 percent of global reserves. The U.S. and other industrialized nations accused China of implementing quotas to drive up international prices, which forced manufacturers to limit production of certain products or find substitute materials.

Although China abolished the quotas, they have instituted new licenses and tariffs that analysts suggest will keep export prices of

REEs as much as 15 to 25 percent higher than domestic prices, a strategy intended to draw international manufacturing to China. U.S. and European companies have begun work to expand mining and processing of REEs in their own countries, which would diversify the global market, but it could take several years before the infrastructure is complete.

NASA Launches Soil Moisture Active Passive Satellite

On January 29, 2015 NASA launched the Soil Moisture Active Passive (SMAP) instrument, a satellite that will collect soil moisture data to enhance climate modeling and improve lives by predicting floods and droughts. SMAP's active radar will transmit microwaves and measure their reflected signals; slight shifts in the reflective energy will indicate soil moisture levels. Separately, its passive radiometer will receive and measure microwaves generated by Earth's ions and electrons; strong signals will indicate dry ground and muffled signals will indicate the presence of water in soil.

The data relayed by SMAP will not only assist scientists with updating climate modeling, but will also allow for more accurate flood predictions by providing soil moisture levels prior to rain storms and earlier and more accurate assessments of droughts. SMAP covers a wider territory than any previous soil assessment strategy and will be the first Earth orbiter of its kind, measuring soil moisture across the world every two to four days.

National Research Council Reports on Priorities in Ocean Research for Next Decade

The National Research Council (NRC) issued a report on January 23, 2015 detailing eight priorities for the next decade for ocean research and laying out the difficult financial decisions the marine science community faces. Marine researchers face increasing costs of infrastructure—such as research vessels, drilling platforms, and observatories—that outpace static federal funding for marine science. The NRC report recommends that, given these circumstances, the Division of Ocean Sciences within the National Science Foundation limit infrastructure costs to 50 percent of its annual budget. To make these cuts, NRC suggested decreasing scientific ocean drilling, building fewer new research vessels, and reducing spending on the Ocean Observatories Initiative.

The eight priorities laid out by the report for ocean science research in the next ten years include a focus on sea level change; geohazards such as undersea volcanism, mega-earthquakes, tsunamis, and undersea landslides; change in marine food webs; the role of marine biodiversity in ecosystem resilience; and climate change impact on marine ecosystems, among others.



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.

<u>Text</u> 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 or Adobe Photoshop. Files should be saved and submitted in .ai, .eps, .tif or .jpg format. Send them as separate attachments via email or CD if they are larger than 5 MEGs 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.

<u>Photographs</u> 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 5 MB) or on CD or DVD.

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The *Bulletin* is printed digitally using InDesign. Call the HGS office for availability of ad space and for digital guidelines and necessary forms or email jill@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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Monthly	\$ 700.00	\$500.00	\$ 400.00	\$200.00	Free	Free

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Qualifications for Active Membership

- Have a degree in geology or an allied geoscience from an accredited college or university; or
- 2) Have a degree in science or engineering from an accredited college or university and have been engaged in the professional study or practice of earth science for at least five (5) years.

Qualifications for Associate Membership (including students)

- Be involved in the application of the earth or allied sciences.
- Be a full-time student enrolled in geology or in the related sciences.

Apply online at www.hgs.org and click on Join HGS

Annual Dues Expire Each June 30. (Late renewals – \$5 re-instatement fee) Annual dues are \$28.00; emeritus members pay \$14.00; students are free.

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Houston Petroleum Auxiliary Council News

Janet Steinmetz, 281-531-7204

ATTENTION ALL HGS MEMBERS! Please share this article with your spouse. Spouses of geologists, geophysicists, landmen and engineers are invited to join HPAC, an organization designed especially for you.

Our HPAC social calendar has been full all year with a wide variety of events. **Game Day** last month was a perfect example of how creative our members are. **Daisy Wood** and her committee wowed us with their decorations, door prizes and a festive atmosphere at the Braeburn Country Club. In addition, a delicious luncheon was served. A good time was had by all. We look forward to next year.

HPAC is blessed to have so many talented ladies among its members. This month you will get to know a little more about another of our amazing ladies - Sara Nan Grubb:

"I grew up in Denison, Texas, the only child of two school teachers. It was an idyllic childhood, despite the fact that my mother, who taught first grade, and my father, who taught in High School, always knew everything I did and didn't do before I got home in the afternoon.

I attended North Texas State College. While I was there it became North Texas State University, and then North Texas University. I majored in Speech and Drama, but always managed to take unrelated classes because of an interest in a particular subject – intellectual or amours. Consequently, I graduated fully qualified to teach 5 different subjects.

Immediately after graduation I went to Grants, New Mexico to teach High school Speech and Drama and direct the Junior and Senior plays. I was also the oratorical director, and had many state and national oratorical winners. Grants was a mining town, having four uranium mines. Three of these underground and a large open pit mine. I had students in my classes who were older than I was. Grants was known as the sugar beet capital of the world and location of the largest known deposit of uranium in the free world.

After one year I moved to Santa Fe and taught typing and English. Living in Santa Fe during the mid-1960's was really wonderful. The city still had the flavor of old Santa Fe, but had just begun to modernize and expand. After 5 years of living in the mountains I thought that as long as I was still single and had no family or responsibilities I owed it to myself to travel and see another part of the world. I arrived in Nassau Bay to Clear Creek Schools and taught Home Economics, English and Speech at Webster Intermediate. Our school became the winner of more UIL (University Interscholastic League) place winners in the history of the Clear Creek School District. My arrival day was July 20, 1969. I thought I had died and gone to heaven. I thought that the party atmosphere was the normal everyday life. Of course, we had just successfully landed a man on the moon! The NASA area was probably the most exciting place in the world to be at that time. During the Apollo Missions, I became a news 'stringer', which is fact checking and background, for Nicholas Chriss, who was the US and Soviet Space reporter for the Los Angeles Times and later The Houston Chronicle.

Since marriage and children, I have been involved with the Houston Livestock Show and Rodeo, and am a serving member of Memorial Drive Baptist Church.



I met Jim Grubb on an airplane. I've always said, 'Thanks to God and Continental Airlines' this 42 year relationship has grown and flourished. We have 4 great children, 2 super daughters-in-law, and one perfect granddaughter.

My membership in HGA, Geo Wives and now HPAC, and the relationships formed through these organizations, has always brought great joy and fulfillment. These ladies have given me warm friendships, support and leadership opportunities throughout these 30 + years.

Jim Grubb is currently Vice President of Exploration for White Marlin Oil and Gas."

It is with deep sadness that we report the loss of two of our loyal, long-time members — **Suzanne Howell** (Bill) and **Sylvia Morris** (Jeff). Our thoughts and prayers are with their families. We will miss them.

You are always welcome to attend our Bridge Groups. **Cinco Más** will get together on Thursday, April 9 at the Westchase Marriott. Call **Audrey Tompkins**, 713-686-0005 for details. For information on the **Petroleum Club Bridge Group** meeting on April 15, please call **Daisy Wood** at 832-581-3231.

Next month we will finish off the year with a bang. On May 4 the **Book Club** will discuss Donna Tartt's, *The Goldfinch*. There will be plenty to talk about. Be prepared!

Mark your calendar for Thursday, May 14 and our annual **Spring Style Show and Luncheon** at Maggiano's Little Italy Restaurant. Our hostesses, **Mary Ann Cole** and **Kathi Hilterman**, will make sure you have a wonderful day. We will also be introduced to our new officers for next year. Invitations will be in the mail.

We look forward to seeing you. For information on Membership please contact **Susan Bell** at 281-597-0858. ■

HPAC

2014–2015 dues are \$20.00 Mail dues payment along with the completed information

to **Susan Bell** • 11431 Legend Manor • Houston, Texas 77082

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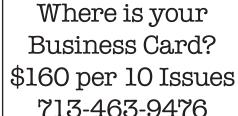
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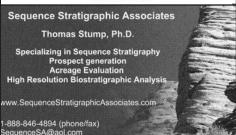
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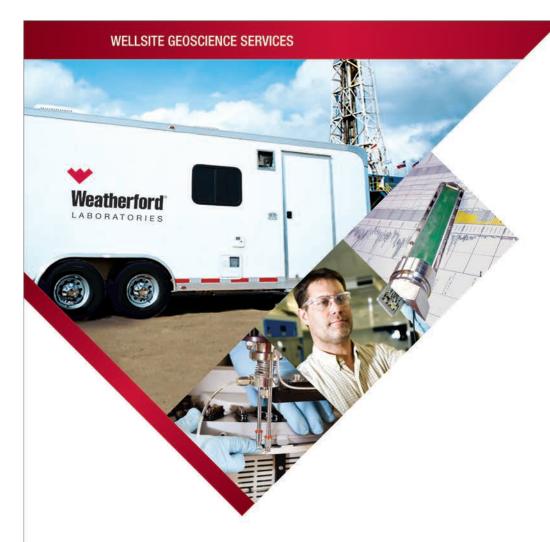
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