Volume 58, Number 4

HGS Bulletin

Houston Geological Society

December 2015

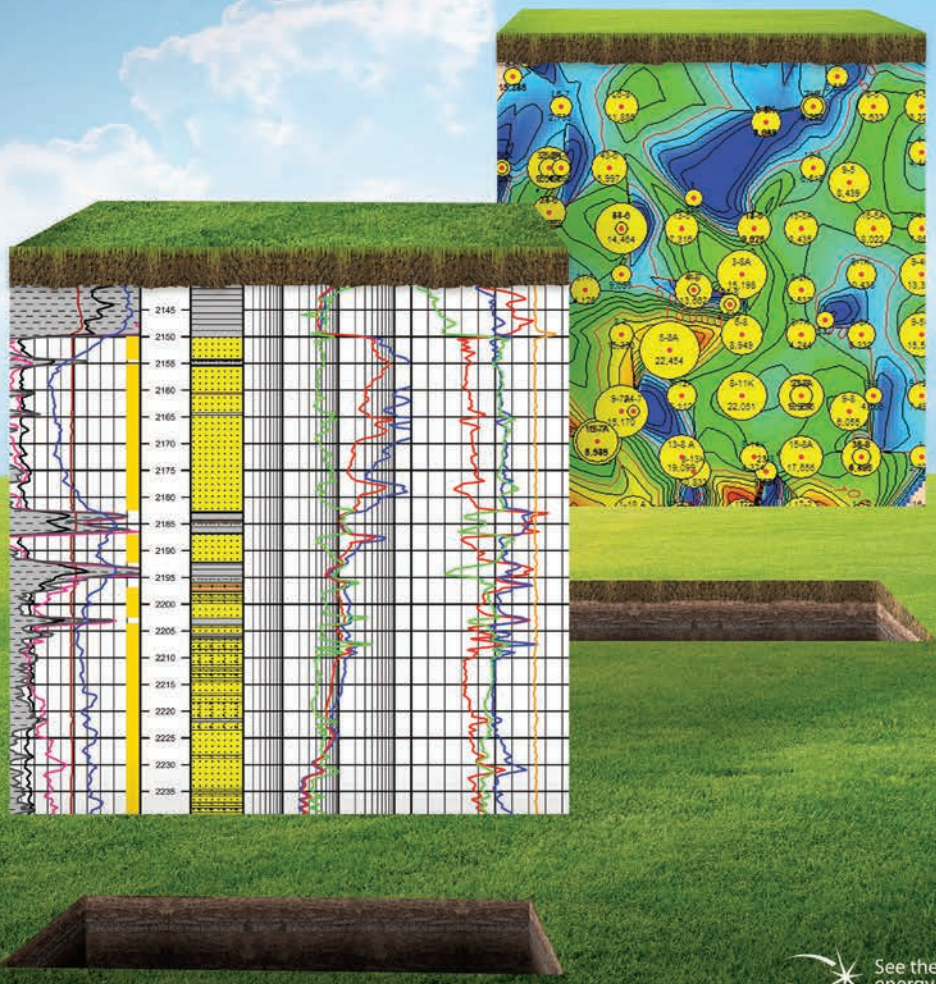
SEE THE ENERGY

U.S. SMART RASTERS AND WELL PERFORMANCE DATA

TGS offers a cost effective way for oil and gas companies to quickly identify and evaluate new prospects across the country.

- Nationwide well header/identification data for more than four million well records
- Depth-registered (smartRASTER®) log images and standard images from more than six million logs
- Detailed US production volumes for approximately 2.1 million wells
- Use of TGS Longbow™, a search and visualization tool

For more information, contact TGS at:
Tel: +1 713 860 2100
Email: info@tgs.com



WWW.TGS.COM

TGS See the energy.

The Bulletin
Houston Geological Society

Volume 58, Number 4 December 2015

In Every Issue

5 Your Board in Action
by Deborah Sacrey

7 From the Editor
by Jon Blickwede

28 GeoEvents Calendar

51 HGS Membership Application

52 HPAC

53 Professional Directory

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

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

Subscriptions: Subscription to this publication is included in the membership dues ($28.00 annually). Subscription price for nonmembers within the contiguous U.S. is $50.00 per year. For those outside the contiguous U.S. the subscription price is $75.00 per year. Single-copy price is $8.00. Periodicals postage paid in Houston, Texas.

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

Technical Meetings

11 HGS International Dinner Meeting
Seismic Sequence Stratigraphic Correlation of Miocene to Cretaceous Section from the Louisiana Continental Shelf to the Deepwater US GoM and the Bay of Campeche, Mexico

17 HGS Environmental & Engineering Dinner Meeting
Acid Mine Drainage: What It Is, Where It Is, and the EPA's Role

19 HGS Joint General and North American Dinner Meeting
Paleotopographic and Depositional Environmental Control on "Sweet Spot" Locations in Some Unconventional Resource Shales

25 HGS Northsiders Luncheon Meeting
U.S. Shale Plays: Evaluating Opportunities, Optimizing Your Own Operations

Other Features

30 HGS Applied Geoscience Conference

33 HGS Legends NIght 2016

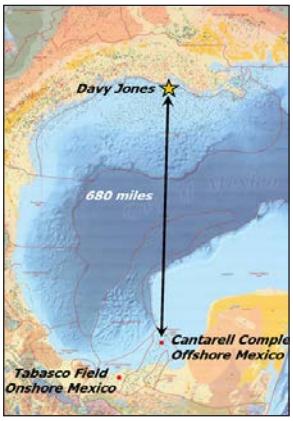
36 GCAGS 2016 Call for Papers

37 A Good Year for GCAGS
Charles A. Sternbach

43 Help Your Local High School

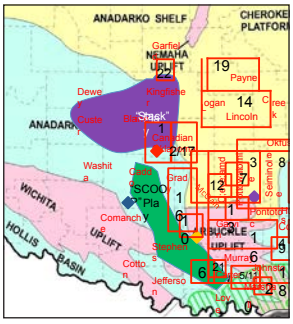
45 HGS Membership Directory Update Initiative
Bonnie Milne

47 Government Update
Henry M. Wise and Arlin Howles



page 11

page 17



page 19

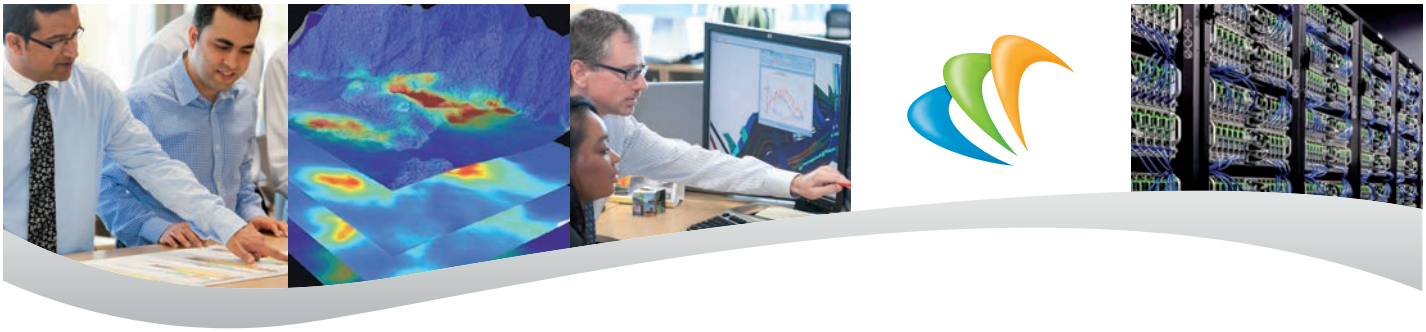
page 37

About the Cover: Santa Claus over Colombia headed north to Central America and Mexico, on his way to Houston off in the distance. (photo from NASA Black Marble Project: http://earthobservatory.nasa.gov/Features/NightLights/, via 3dfirstaid visual architecture: https://www.facebook.com/3dfirstaid/posts/1087947844548989)

Board of Directors 2015–16

President (P) Deborah Sacrey	Auburn Energy	713-468-3260	dsacrey@auburnenergy.com
President-Elect (PE) John Jordan	Anadarko	832-636-2471	John.Jordan@anadarko.com
Vice President (VP) Cheryl Desforges	Consultant	713-816-9202	Cheryldesforges@hotmail.com
Secretary (S) Gulce Dinc	ION Geophysical	713-231-2803	gulcedinc@iongeo.com
Treasurer (T) Larry Quandt	Consultant	713-206-0389/281-685-6221	lquandt777@gmail.com
Treasurer Elect (TE) Bryan Guzman	Ingrain Inc.	832-270-5842	bryanguzman85@gmail.com
Editor (E) Jon Blickwede	Statoil	832-228-6593	jonblickwede.hgs@gmail.com
Editor-Elect (EE) Tami Shannon	Oxy	361-563-2523	tami.shannon.biz@gmail.com
Director 15-17 (D1) Annie Walker	ION Geophysical	832-854-6989	Annie.Walker@iongeo.com
Director 14-16 (D2) Penny Patterson	ExxonMobil	713-553-8779	Penny.E.Patterson@ExxonMobil.com
Director 14-16 (D3) Jim Grubb	White Marlin Oil & Gas LLC	713-591-1155	jamesmgrubb@yahoo.com
Director 15-17 (D4) Justin Vandenbrink	Weatherford Inc.	832-205-4063	justin.vandenbrink@weatherford.com

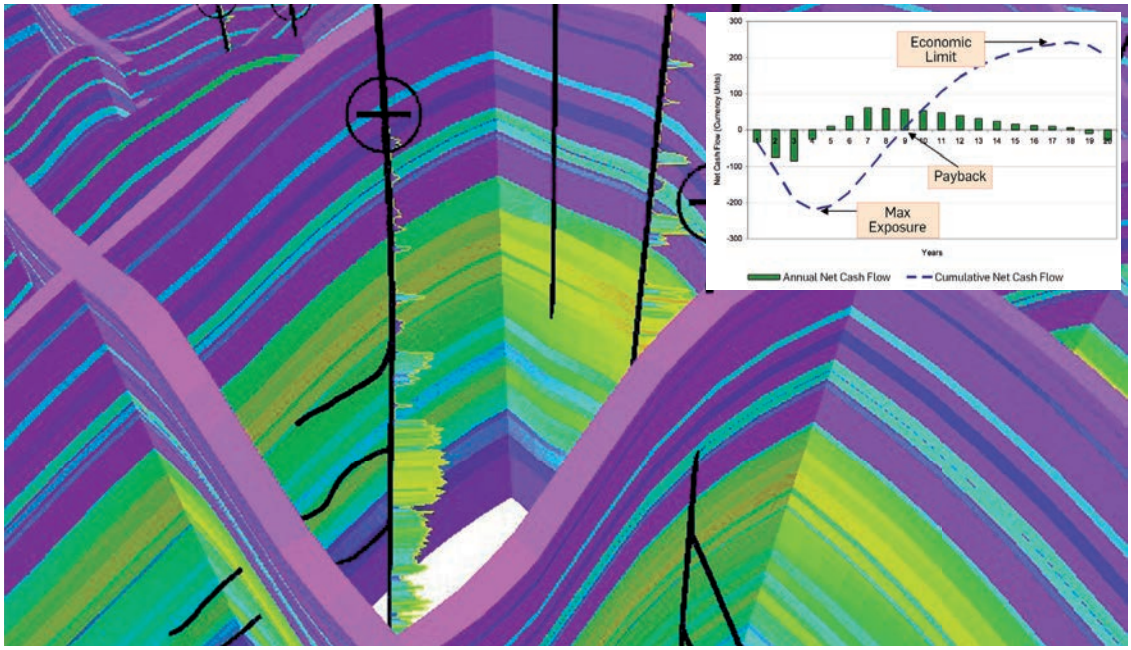
Committee	Chairperson	Phone	Email	Board Rep.
AAPG House of Delegates	Justin Vandenbrink	832-205-4063	justin.vandenbrink@weatherford.com	P
Academic Liaison	Germaine Johnson	832-486-2791	rocklady437@sbcglobal.net	D2
Advertising	Jill Kimble	713-463-9476	jill@hgs.org	E
Africa Conference	John Jordan	832-636-2471	John.Jordan@anadarko.com	P
Applied Geoscience Conferences	Frank Walles	832-472-8496/713-825-6136	Frank.Walles@bakerhughes.com	P
	Mike Cameron	713-496-6458	mcameron@hess.com	P
Awards	Mike Deming	713-503-1751	mike.deming.HGS@gmail.com	P
Ballot/Elections	Paul Hoffman	713-871-2350	phoffman@allen-hoffman.com	S
Calvert Fund	Carl Norman	713-461-7420	dod895@aol.com	PE
Continuing Education	Thom Tucker	281-413-0833	century@flash.net	D1
Deep Water Technology	Justin Vandenbrink	832-205-4063	justin.vandenbrink@weatherford.com	D4
Earth Science Week	Sharon Choens	713-320-1792	Sharon.choens@sjcd.edu	D2
Educational Outreach	Jennifer Burton	832-607-0074	jlbgeo@comcast.net	D2
Engineering Council of Houston	Sue Pritchett	281-451-6522	pritchett.sue@gmail.com	D2
Environmental & Eng. Geology	Matthew Cowan	713-777-0534	mrcowan1@hal-pc.org	VP
	Troy Meinen	713-962-5495	troy.meinen@erm.com	VP
Exhibits	Bryan Guzman	832-270-5842	bryanguzman85@gmail.com	D3
Field Trips	Ken Thies	713-598-0526	kenthies.kt@gmail.com	D1
Finance	Sameer Baral	440-708-8318	sameer.baral@gmail.com	T
Foundation Fund	John Adamick	713-816-9202	john.adamick@tgs.com	PE
General Meetings	Cheryl Desforges	713-594-5648	Cheryldesforges@hotmail.com	VP
Geomechanics	Heather Davey		heather.davey@wintershall.com	P
	Lans Taylor		lxtaylor@repsol.com	P
Golf Tournament	Mark Dennis	281-494-2522	mdennis@petrolog.com	D4
Government Affairs	Henry Wise	281-242-7190	hmwise@yahoo.com	D4
	Arlin Howles	281-753-9876	tidenv@yahoo.com	D4
Guest Night	Charles Sternbach	832-567-7333	carbodude@gmail.com	D4
HGS New Publications	VACANT			D1
HPAC	Shirley Gordon	832-289-0796	sggordon@msn.com	S
Imperial Barrel	Shawn Kushiyama	713-857-9958	shawn.kushiyama@shell.com	D2
International Explorationists	Steve Getz	713-304-8503	sgetz@sbcglobal.net	VP
	Sharma Dronamraju	713-503-5011	CEO@akdpsi.com	VP
Legends Night	Deborah Sacrey	713-468-3260	dsacrey@auburnenergy.com	P
Membership Growth	Phil Padgett		phil_padgett@yahoo.com	S
Membership, New	Sharie Sartain	281-382-9855	smsartain1@comcast.net	S
Museum of Natural Science	Inda Immega	713-661-3494	immega@swbell.net	D2
	Janet Combes		jmcombes@msn.com	D2
NeoGeos	Sean Kimiagar	817-727-6424	seankimiagar@gmail.com	D3
Nominations	Ken Nemeth	832-854-6989	knemeth@slb.com	EE
North American Explorationists	Donna Davis	832-517-7593	geology@texas.net	VP
	Bob Wiener	832-978-8123	rwiener@sbcglobal.net	VP
Northsiders	Sydney Mitchelle Weitkunat	281-433-1226	Sydney.Weitkunat@gmail.com	VP
	Ian McGlynn	713-471-0576	ian.mcglynn@bakerhughes.com	VP
Office Management	John Tubb, Jr.	713 805-5649	jbtjr@sbcglobal.net	PE
Science and Engineering Fair	Mike Erpenbeck	832-418-0221	mike.erpenbeck@hotmail.com	D2
Skeet Shoot	Tom McCarroll	713-419-9414	tom_mccarroll@yahoo.com	D4
Social Media	Dianna Phu	281-236-3131/713-589-2362	hgs.socialmedia@gmail.com	D3
Tennis Tournament	Sharma Dronamraju	713-503-5011	CEO@akdpsi.com	D4
Vendor's Corner	Rich Germano	832-647-5630	rgermano@fastenergydata.com	TE
Video Committee	Linda Sternbach	281-679-7333/832-567-7337	linda.sternbach@gmail.com	D3
Volunteer Coordinator	VACANT			P
Web Management	Linda Sternbach	832-567-7337/832-567-7337	linda.sternbach@gmail.com	D3
HGS Office Director	Andrea Peoples	713-463-9476	andrea@hgs.org	
HGS Administrative Assistant	Jill Kimble	713-463-9476	Jill@hgs.org	
HGS Web Content Manager	Brittany Davis-Morris	713-463-9476	BDM@hgs.org	



Robertson

Confidence

Reduce risk with geologic to economic workflows



Robertson offers an integrated geoscience, engineering and economic workflow to tackle complex reservoir development and production challenges:

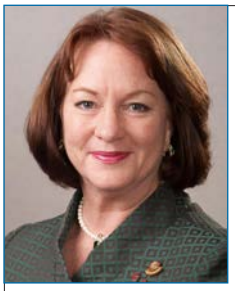
- Optimize cash flow and rate of return with our multi-disciplinary **PREG** asset valuations that integrate geophysics, geology, engineering and economics
- Gain greater subsurface understanding with the high-quality reservoir and geomechanical simulation and engineering capabilities of **Taurus Reservoir Solutions**

Learn more about the **Robertson** portfolio of integrated technology and services that span single-well to large field-scale solutions, across the E&P lifecycle.

cgg.com/preg

cgg.com/taurus

CGG GeoConsulting



Deborah Sacrey
HGS President
dsacrey@auburnenergy.com

Happy Holidays From Your Board!

As I am writing this, I am sitting in a software booth at the SEG Annual Convention in New Orleans. As one might expect, it is lightly attended — a sign of the times in our industry.

Nevertheless, I am happy to report we had a better than expected turnout at the 2015 GCAGS Convention, with a total attendance of 1,292 attendees. However, not as many people took advantage of the short courses, field trips and luncheons as we had hoped, as I believe people were trying to conserve dollars, and use the event for networking. This tells me that "destination conventions" in the next few years may be difficult for attendance and making extra money for all these organizations may be a challenge.

The HGS Board has been discussing ways in which we can help ease the pain people are feeling during this period of low commodity prices. One thing the Board voted to do is extend student membership status for those who have graduated, but have not yet found a job. Currently students get a significant price break on HGS dinner and luncheon meetings, which helps their budget, while allowing them to gain knowledge from the technical program. AAPG has a policy to help students "transition" to full membership which carries them through two years after graduation. The Board decided to accept this policy as well.

The HGS Board has been discussing ways in which we can help ease the pain people are feeling during this period of low commodity prices. One thing the Board voted to do is extend student membership status for those who have graduated, but have not yet found a job.

Another way in which we are attempting to help is to offer a discount to members who are unemployed and want to attend luncheons and dinners, but are struggling financially. This process requires calling the HGS office to request such a discount, and is heavily reliant on the honor system… but it is one way the HGS can help mitigate costs for our members.

This continues the theme I started earlier this year for the GCAGS Convention — which is, if you still have a job, please sponsor attendance at a technical presentation for someone who doesn't! It doesn't cost much, and you might help someone find a significant contact through networking opportunities, and gain technical knowledge at the same time!

So next month is our Legends Dinner! I would like to remind everyone that the Legends Dinner is the primary way the HGS raises funds for both scholarship programs. We expect a full house this year, as the theme is "Geophysicists Who Have Made a Difference in Geologist's Careers," and our key speakers are **Tom Smith**, founder of Seismic Micro-Technology, **Alastair Brown**, author of arguably the most popular book on 3-D seismic interpretation, and **Peter Duncan**, who has helped many people understand what is going on with their fracs with micro-seismic data. Sponsorship is a key element to making sure the Foundations are funded for next year's students. It is completely tax deductible (for those of you who have that consideration at the end of the year), and definitely goes to a great cause!

The Board is also talking about hosting new social events for next year. This would be to promote networking and trying to help people to make industry contacts outside their normal circle. We are thinking about having "Happy Hour" events at places around town. If you have some good ideas, please let us know!

So, from the Board to our members, we wish you a wonderful holiday season, and stay safe and positive. As with all down cycles, this one too will end. ■

Respectfully,
Deborah

The 15th HGS-PESGB Conference on African E&P

September 12-14, 2016 • Houston Texas

Exhibitor/Sponsorship Form

Company _____

Contact _____

Address _____

_____

City State/Province Postal Code Country

Phone _____ Fax _____

Email _____ Web Site _____

Exhibitors: With the purchase of a 10' X 10' space you will get one table, 2 chairs and a waste basket.

You will receive 2 exhibitor passes good for admittance to the exhibit hall only.

EXHIBIT SPACE ORDER $1900.00 per 10' X 10' booth space: _____ booth(s) = $_____

Contact Andrea Peoples at the HGS office for booth selection 713-463-9746 Booth # _____.

Do you require internet access at your booth? ☐ Yes ☐ No

Do you require electricity at your booth? ☐ Yes ☐ No

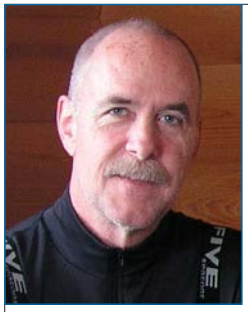
(You must purchase electricity from the hotel, HGS will send out the required form.)

SPONSORSHP OPPORTUNITIES				
Tanzanite	Ruby	Sponsorship Opportunities	Actual Cost/300 Guests	Sponsorship Amount
$10,000	$5,000	Lunch – Day One	$15,000	
$10,000	$5,000	Lunch – Day Two	$15,000	
$9,000	$4,500	Day One Reception – 2 Drinks plus Food	$11,000	
$9,000	$4,500	Day Two Reception – 2 Drinks plus Food	$11,000	
$5,000	$2,500	CD of Extended Abstracts	$5,000	
$5,000	$2,500	Meeting Room Rental	$5,000	
$5,000	$2,500	Technical Session	$5,000	
$5,000	$2,500	Breakfast Day One	$12,000	
$5,000	$2,500	Breakfast Day Two	$12,000	
$5,000	$2,500	AV Equipment and Services	$25,000	
$5,000	$2,500	Am & PM Break Food & Beverage Day One	$5,000	
$5,000	$2,500	Am & PM Break Food & Beverage Day Two	$5,000	
$2,500	$1,250	Poster Gallery	$2,500	
$2,500	$1,250	Delegate Bags	$2,500	
$1,000	$500	Speaker Gifts	$3,000	
$1,000	$500	WIFI	$2,000	
$1,000	$500	Conference Signage	$3,000	
$1,000	$500	Printing Proceedings Catalogue	$10,000	
$500	$250	Note Pads, Pens	$1,000	
$	$	General Fund – You fill in the amount		
			Booth Space + Sponsorship TOTAL $	

Mail completed form along with your check made out to: HGS: 2016 Africa Conference Exhibit/Sponsorship
Houston Geological Society • 14811 St. Mary's Lane, Suite 250 • Houston, TX 77079 USA

Credit Card Option: To pay by credit card contact the HGS Office +1 (713) 463-9476

Questions: HGS Office Telephone: +1 (713) 463-9476; Fax: +1 (281) 679-5504; Email: office@hgs.org

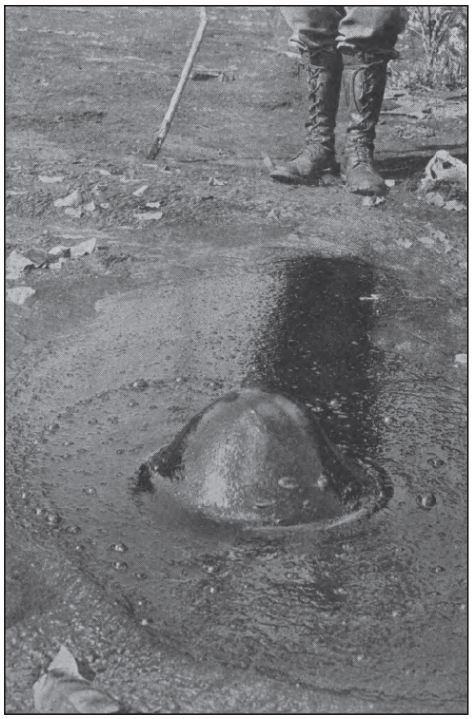


Jon Blickwede
jonblickwede.hgs@gmail.com

The Power of Seeps

With so much emphasis placed on the development of new technology for finding oil & gas, and rightly so, we sometimes forget that there are some old tools and techniques that still retain their usefulness. The most ancient of all methods for petroleum exploration was first applied by early man, who discovered that a sticky black substance (biodegraded oil, or pitch) found in certain places at the Earth's surface, was an effective sealant/caulking material.

During my expatriate assignment for Amoco Venezuela in the 1990's, some of my most memorable experiences were the various excursions I took into the Orinoco Delta, where we understood that the Government was planning to offer two large blocks in the First (and turned out to be the last) Exploration Bid Round scheduled for 1996-97. The delta of the Orinoco River is roughly the same size as Switzerland, but to this day still hasn't a single road or other sort of modern infrastructure within the delta proper. By the 90's, neither had any modern seismic been acquired in the interior of the delta, or oil & gas exploration wells drilled, despite the existence of two significant oil fields on the northern (Pedernales Field) and western (Tucupita Field) delta fringe. Nevertheless, we perceived there was a significant risk that the outer portion of the delta, where one of the blocks had been defined, might be gas-prone — this part of the delta being near to the gas discoveries and producing fields of the Columbus Basin offshore eastern Trinidad. And in those years (and probably to this day), a gas discovery in the remote Orinoco Delta would have been deemed non-commercial.



The main inhabitants of the Orinoco Delta are the people of the Guarao indigenous group, thought to have settled in this region thousands of years ago. The delta is not the most easily habitable part of eastern Venezuela, and it's believed that the Guarao were originally driven into the delta seeking refuge from more belligerent tribes in the region. There is essentially no dry ground, so the Guarao communities are built on stilts along the banks of the distributary channels. And only a single type of fruit or vegetable, *ocumo chino*, or dasheen, can be cultivated in the perpetually soggy ground. As such, the limited diet of the Guarao consists of basically just two foodstuffs: the potato-like dasheen, and fish. The critical importance of the latter as their only significant source of protein means that the Guarao's fishing technology is paramount to their survival. And an essential material for that technology is pitch from oil seeps, both to seal the ends of sections of bamboo that are used as floats/bobbers set out in the channels with line and hooks on which fish bait is attached, as well as caulk for their main transportation, dugout canoes made from mangrove trees. The Guarao name for pitch is *oray*. Thus, my primary strategy to search for oil seeps was to travel by boat from one village to another, and inquire if anyone in the community knew of any places nearby where *oray* could be collected. If they claimed to know of such localities, usually a group of men would immediately offer to guide me to the site, which typically would be a subaqueous spot in the mangrove jungle where they dove underwater and excavated in the mud with their hands and feet, emerging, amazingly, with nodules of pitch. How those hidden seeps might have first been encountered is still a great mystery to me.

I visited the environs of the exploration block in the outer delta, called Punta Pescador, on a few of my excursions. I was armed with a treasure map of sorts, a copy of an old report from a couple of geological expeditions in the 1920's that had

From The Editor *continued on page 9*

From the Editor continued from page 7

been passed to me by a friend in Caracas, in which a number of oil seeps/pitch localities were documented in the area. The localities were marked on a series of roughly sketched maps, and using these in conjunction with my usual inquiries at the Guarao communities, I searched and searched for probably a total of three weeks, to no avail. Finally, during early December 1996, just before the bid deadline for Punta Pescador and the other nine blocks in the First Round, we were traversing a small channel where we'd been before, and lo and behold found a ~50 meter stretch of the channel with oil bubbling to the surface in a number of places and spreading out in a sheen. Samples were taken and hot-shotted back to Houston for analysis, which confirmed not only that it was indeed crude oil, but also revealed the chemical composition which correlated to oil produced at the Pedernales Field far to the west. Amoco management ended up deciding to place a significant bid (something in the neighborhood of USD 100 million, as I recall—a huge bid in those days) on the Punta Pescador block, and won. I don't believe that any bid would have been made by Amoco unless that oil seep had been confirmed.

Later, 3D seismic was acquired in the Punta Pescador block by Amoco, and a wildcat was drilled in another part of the block than the oil seep. Though the well did not reach its ultimate objective, apparently only gas was encountered, and the license was dropped. But I still recall seeing and sampling that oil seep, and the ensuing excitement and impact it created.

You might have been hoping that I'd disclose the location of the seep in Punta Pescador. Well I'm sorry… that information is just too powerful. ☺ ■

Monday, December 7, 2015

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

Cost: $45 Preregistered members; $50 non-members/walk-ups

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card.
Pre-registration without payment will not be accepted.
Walk-ups may pay at the door if extra seats are available.

HGS International Explorationists Dinner Meeting

Walter Wornardt, PhD
MICROSTRAT Inc.
Houston, Texas

Seismic Sequence Stratigraphic Correlation of Miocene to Cretaceous Section from the Louisiana Continental Shelf to the Deepwater US GoM and the Bay of Campeche, Mexico

Seismic data, maximum flooding surfaces (MFS), marker species, high resolution biostratigraphy and well logs have permitted the correlation of Miocene to Cretaceous sediments from deep wells in South Marsh Island Blocks 222 and 234 to the Davy Jones #1 and #2 wells in South Marsh Island Blocks 230 and 234 of the northern Gulf of Mexico (GoM) shelf. Within the Upper Miocene MFS 7.30 Ma (*Big A*), 8.80 Ma (*Disc 12*) and 10.20 Ma (*Big 2*) MFS were recognized in the South Marsh Island block 222, 230, 234 and 245. Within the middle Miocene the 12.0 Ma (*Text W*), 13.15 Ma (*Big H*) and 14.20 Ma (*Cib Op*) MFS were recognized in the same blocks. Sediments in the Upper Miocene were deposited in ecozones 2 to 3; Middle Miocene sediments were deposited in ecozone 4, mainly as lowstand slope fan sediments.

SEISMIC SEQUENCE STRATIGRAPHIC SUMMARY PEMEX BALAM 101 CAMPECHE BAY, MEXICO		
Sequences Boundaries, Maximum Flooding Surfaces, Systems Tracts	**Age (Ma)**	**Relative Age**
		Late Miocene
Sequence Boundary	5.73	
Maximum Flooding Surface	6.00	
Top Lowstand Prograding Complex		
Sequence Boundary	6.96	
Maximum Flooding Surface	7.65	
Top Lowstand Prograding Complex		
Sequence Boundary	9.26	
		Middle Miocene
Maximum Flooding Surface	10.21	
Top Lowstand Prograding Complex		
Bottom-Set Turbidites		
Sequence Boundary	11.70	
Maximum Flooding Surface	12.20	
Top Lowstand Prograding Complex		
Sequence Boundary	12.70	
Maximum Flooding Surface	13.15	
Sequence Boundary	13.60	
Maximum Flooding Surface	14.20	
Top Lowstand Prograding Complex		

Figure 1: *Sequence Stratigraphy in the Miocene*

The MFS's recognized in wells in blocks 222 and 224 were correlated on seismic and well logs to the McMoRan South Marsh Island 230 #1 and 234 #2 Davy Jones wells. The #1 well was placed at the well location along the well trace on Fairfield seismic lines and projected to 35,000 feet. The stratigraphy below the Lower Miocene was interpreted below the salt.

Davy Jones #1 and #2 reported approximately 200 feet of pay in the Wilcox Formation while the Davy Jones #2 well also reported to have penetrated the Tuscaloosa Formation as well as Cretaceous carbonates. The Tuscaloosa sands may be correlated to lower Tuscaloosa sands in several onshore wells in Mississippi and Louisiana.

In the Bay of Campeche of the Mexican GoM, the 4929m Balam-101 well near Cantarell Field penetrated sediments of Pliocene, Miocene, Oligocene, Eocene, Paleocene, and Cretaceous age above the Oxfordian sandstone producing reservoir. At least

HGS International Dinner *continued on page 13*

HGS International Dinner continued from page 11

HIGH RESOLUTION BIOSTRATIGRAPHY, SEQUENCE STRATIGRAPHY AND PALEOENVIRONMENTAL SUMMARY

SOUTH MARSH ISLAND BLOCK 223, GULF OF MEXICO

Depth (feet)	Sections	First Downhole Occurrence of Stratigraphically Significant Foraminifers	Age (Ma)	CN Zones	FM Zones	Series	Paleobathymetry (generalized) (feet)	Depth (feet)
12090	CRIS I	in *Sphenolithus heteromorphus*	13.60+	NN5	N9/8	Middle Miocene	Upper Bathyal Ecozone 4 600-1500	12090
12210		in *GLOBOROTALIA PERIPHERONDA*						
12330	CIB OP	Maximum Flooding Surface	14.20					
12330		*CIBICIDES OPIMA OPIMA*						
12390		*Discoaster petaliformis*						
12810							Outer Neritic Ecozone 3 300 - 600	12810
12930		*GLOBIGERINOIDES SICANUS*	14.80					
13290	AMPH B/ ROB L	Maximum Flooding Surface	15.60	NN4	N7	Lower Miocene	Upper to Middle Bathyal Ecozones 4-5 600 - 3000	13290
13290		*Helicosphaera ampliaperta*	15.60					
13420		*ROBULUS L (ROB 43)*						
13920	ROB 54B / GYROIDINA 9 (X)	Maximum Flooding Surface	16.86					
13920		*ROBULUS MAYERI (ROB 54B)*						
13920		*GLOBIGERINOIDES ALTIAPERTURUS*						
13960		*Discoaster deflandrei* acme	16.40±					
14220		base *Calcidiscus premacintyrei*						
15060		*CRIS A / ROB CHAMBERSI* (r) (climbing)						
15660								
16260		*CATAPSYDRAX CF. STAINFORTHI*						
16410		*CATAPSYDRAX STAINFORTHI*	17.10					
16530	CRIS A	Maximum Flooding Surface	18.00	NN3	N6/5			
16530		*CRIS A (ROB CHAMBERSI)*						
16530		*SIPHOGENERINA FREDSMITHI*						
16530		*DISCORBIS B*						
16530		*MARGINULINA ASCENSIONENSIS* (r) (climbing)						
17160		*Sphenolithus disbelemnos*						
17850	MARG A	in *Sphenolithus belemnos*	18.00+					
18330		Maximum Flooding Surface	19.10					
18330		*BOLIVINA TENUISTRIATA*						
18660		base *Sphenolithus belemnos* (vr)						
19590		Maximum Flooding Surface	19.95	NN2	N4			
19770		base? *Helicosphaera ampliaperta*						
20940		Maximum Flooding Surface	21.30					
20940		*GLOBIGERINOIDES PRIMORDIUS*						
21180		*Discoaster deflandrei* increase with *Cyclicargolithus abisectus* (small)						
21540		*LENTICULINA JEFFERSONENSIS (CRIS R)*						
22050	CRIS R	Maximum Flooding Surface	22.90					
22350		still in *Discoaster druggii*						

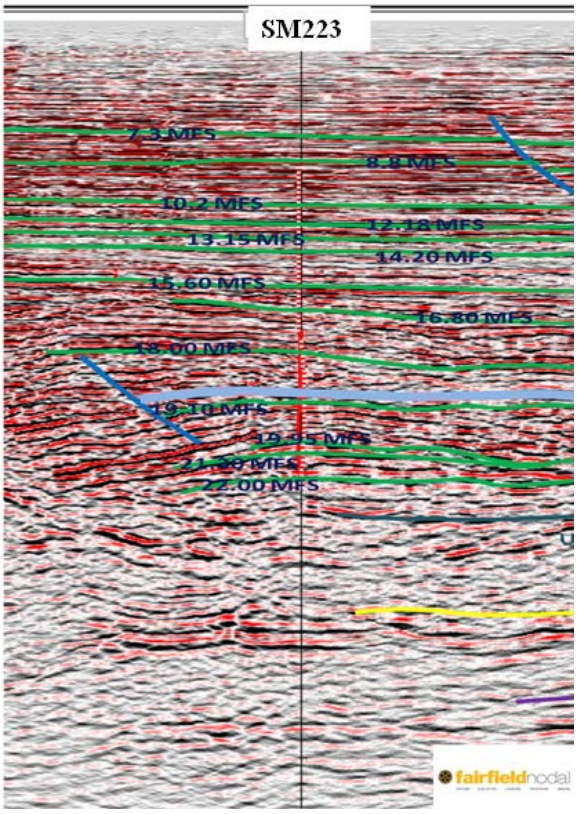


Figure 2: *South March Island Block 223, Gulf of Mexico High Resolution Biostratigraphy*

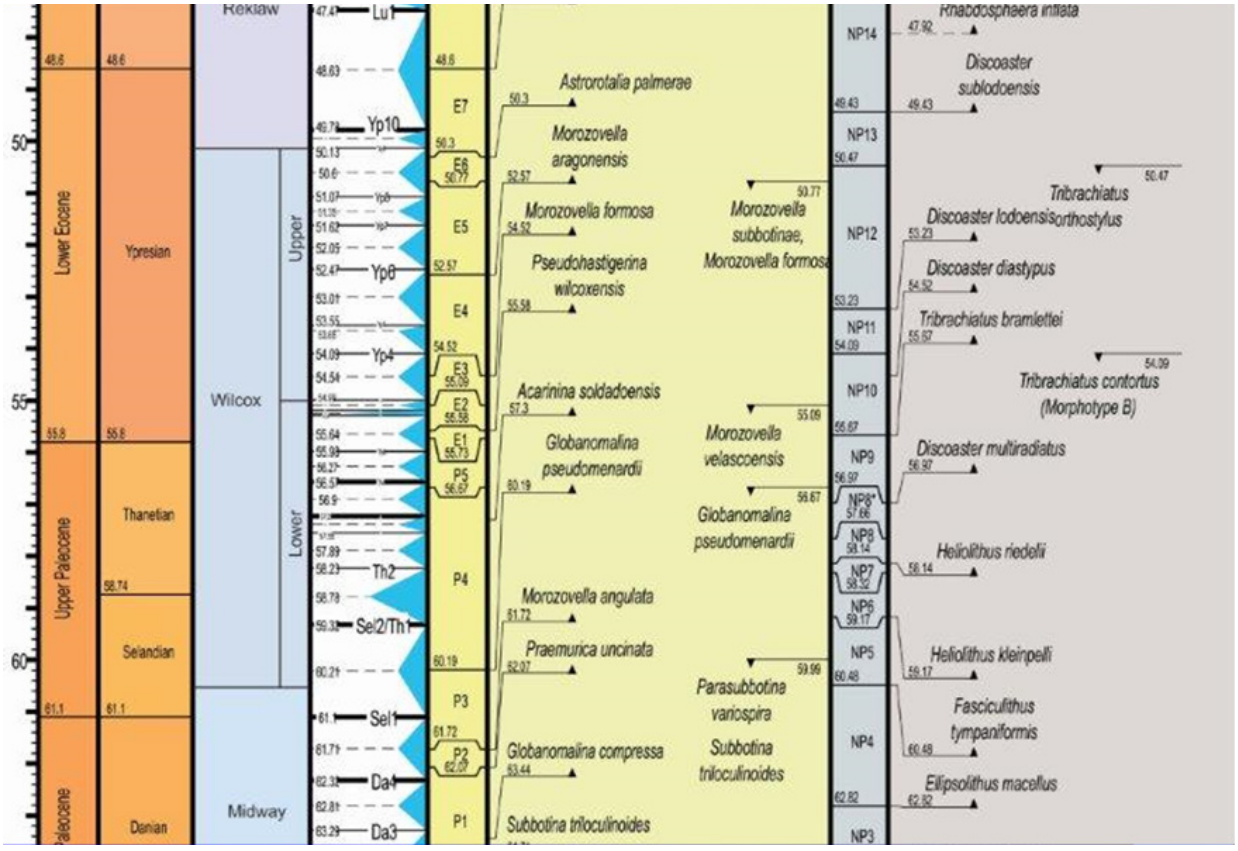
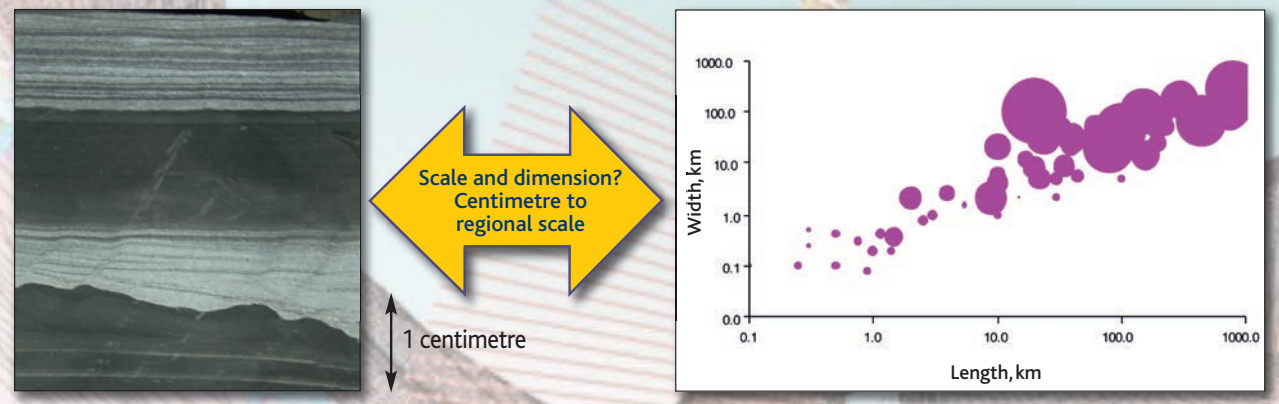


Figure 3: *Cycle Chart, Gradstein 2012*

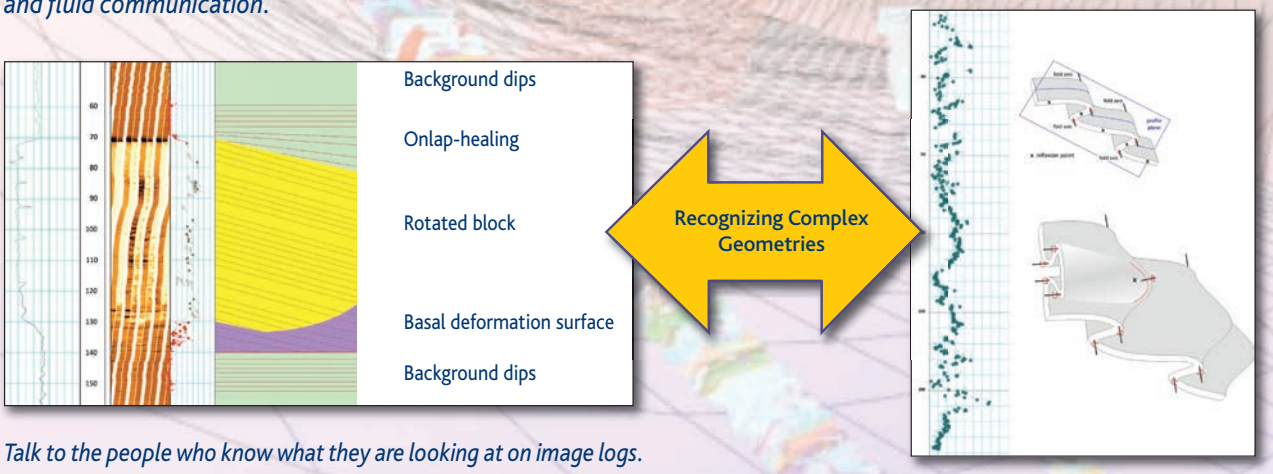
HGS International Dinner *continued on page 15*

Getting into **Deep Water**

RECOGNISING MASS TRANSPORT COMPLEXES (MTC) are part and parcel of any exploration or development in continental margin, abrupt margin and submarine canyon plays. Based on hundreds of kilometres of image and cores studies, **TASK FRONTERRA** has determined that at least 12% of deep marine deposits are deformed by creep, failure or rotational slumping. We have conducted numerous studies in the Gulf of Mexico, West Africa, Brazil, West of Shetlands, Nile Delta, Australia: North West Shelf and Malaysia.



Whether you are looking to sequester CO_2 in compartmentalized sediments, or looking at field development strategies – you want to be using the people who can measure and characterize these sediments in terms of geometry, scale, contacts and fluid communication.



Talk to the people who know what they are looking at on image logs.
Talk to the people who have worked on MTC compartmentalization in fields across the globe.

A GLOBAL FOOTPRINT – OFFICES IN TEN LOCATIONS ACROSS EUROPE, NORTH AND SOUTH AMERICA, THE MIDDLE EAST AND ASIA PACIFIC. COMPLIMENTARY EXPERTISE TO ASSIST CLIENTS IN THEIR UNDERSTANDING OF MATURE RESERVOIRS, CARBONATES, DEEP-WATER FIELDS AND UNCONVENTIONAL HYDROCARBONS, ESPECIALLY SHALE GAS WITH OUR INTEGRATED SHALE GAS WORKFLOW.

TASK Fronterra GEOSCIENCE

ABERDEEN • BOGOTA • CAIRO • DENVER • HOUSTON • MIDLAND • OKLAHOMA CITY • PERTH • TULSA • VIENNA

TASK FRONTERRA GEOSCIENCE 2401 PORTSMOUTH, SUITE 280 HOUSTON, TX 77098 TEL: +1 713 634 0777

www.taskfronterra.com

HGS International Dinner continued from page 13

twenty maximum flooding surfaces are recognized in this well.

The stratigraphic section in the South Marsh Island wells can be correlated with the same 3rd order MFS's in the ultra-deep water Shell Baha #2, Alaminos Canyon 557 well, and to the Pemex Balam-101 well, Bay of Campeche, Mexico.

This direct line of correlation from the northernmost to the southernmost Gulf of Mexico may aid future exploration in offshore Mexico. ■

SERIES / STAGES	FORMATIONS	ZARRA (2007)	SEQUENCE BOUNDARIES & MAXIMUM FLOODING SURFACES	GRADSTEIN ET AL. 2008	
				LETTER DESIGNATION	AGE (Ma)
MIDDLE EOCENE	QUEEN CITY		SEQUENCE BOUNDARY	LU2	45.35
	REKLAW		MAXIMUM FLOODING SURFACE	LU1	47.03
			SEQUENCE BOUNDARY	LU1	47.47
LOWER EOCENE			MAXIMUM FLOODING SURFACE	YP9	49.95
UPPER PALEOCENE	LOWER WILCOX	WILCOX 1B	SEQUENCE BOUNDARY	TH5	56.57
			MAXIMUM FLOODING SURFACE	TH4	56.90
		WILCOX 2	SEQUENCE BOUNDARY	TH4	57.23
			MAXIMUM FLOODING SURFACE	TH2	57.89
		WILCOX 3	SEQUENCE BOUNDARY	TH2	58.23
			MAXIMUM FLOODING SURFACE	SEL2/TH1	58.78
		WILCOX 4	SEQUENCE BOUNDARY	SEL2/TH1	59.32
			MAXIMUM FLOODING SURFACE	SEL1	60.21
LOWER PALEOCENE	MIDWAY	MIDWAY	SEQUENCE BOUNDARY	SEL1	61.10
			MAXIMUM FLOODING SURFACE	DA4	61.71

Figure 4: *Sequence Stratigraphy in the Baha-557 well, Alaminos Canyon, GoM*

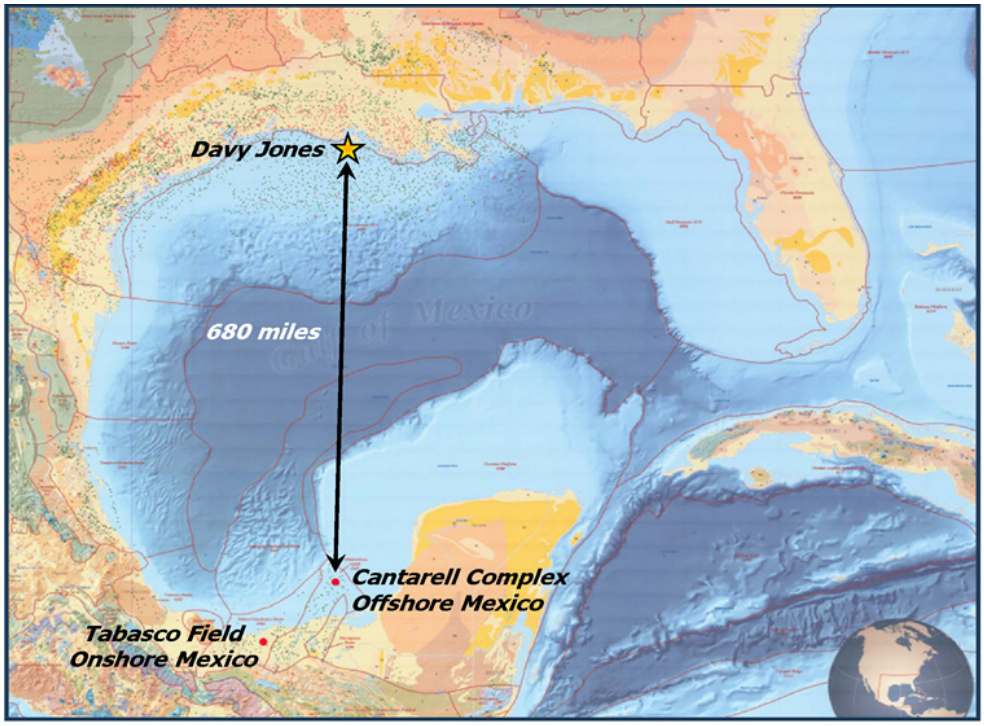


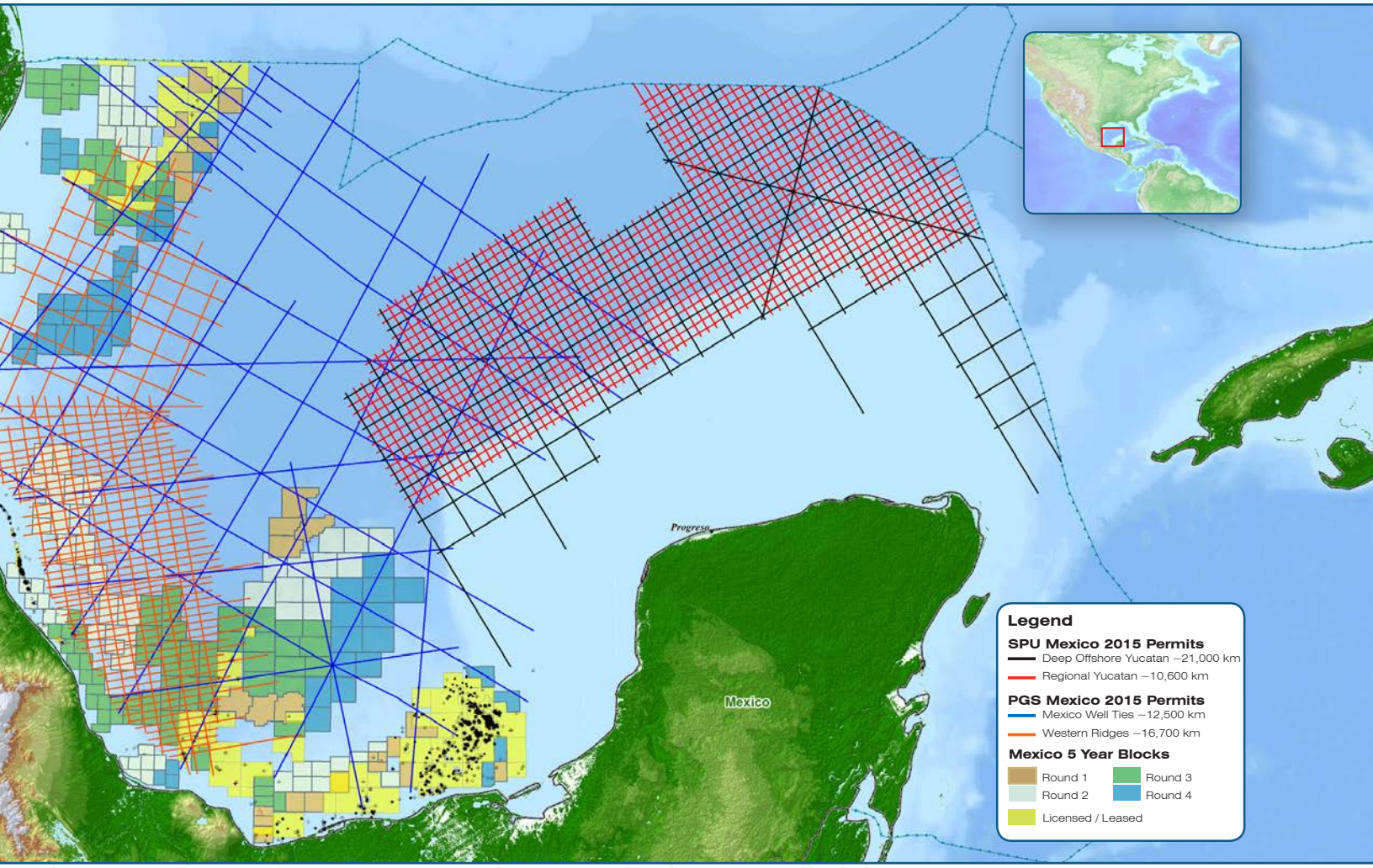
Figure 5: *Map Showing Relationship Between Davy Jones Well and Cantarell Wells, GoM*

Biographical Sketch

Walter W. Wornardt PhD (dw@micro-strat.com) is a professional geologist, practicing seismic sequence stratigraphy and micropaleontology. Beginning with Chevron in drop core analysis offshore Oregon, he subsequently worked at Esso Production Research on palynological correlations in Europe, and performed research on diatoms at Unocal. He was also Chairman of the Department of Geology for three years at University of Redlands, California. In 1983 Dr. Wornardt founded MICRO-STRAT Inc. with offices in Denver, Egypt, and finally Houston, carrying out thousands of biostratigraphic projects. With Dr. Peter Vail he initiated the methodology of well-log/seismic sequence stratigraphic analysis in 1988, followed by more than 30 courses taught in many different countries, solving many complex stratigraphic problems in West Africa (Nigeria, Senegal, Namibia), Egypt, South America and the United States. Recently he has performed similar studies of the deep La Posada well and Vermilion, and unconventionals, Eagle Ford South Texas, East Texas Tuscaloosa, Utica, Saudi Arabia and Poland. A diehard Green Bay Packer fan, Dr. Wornardt has BS and MS degrees in geology from the University of Wisconsin at Madison, and a PhD in geology/paleontology from the University of California at Berkeley.

Mexico GoM

Newly Acquired Multi-Client 2D Seismic



Spectrum's latest long-offset 2D seismic survey offshore Mexico is a collaborative effort with PGS and Schlumberger, spanning approximately 60,000 km. The survey provides seamless broadband seismic coverage across the Gulf of Mexico from the Yucatan Platform in the southeast, to the Perdido Fold Belt in the northwest, tying key wells in producing hydrocarbon basins and sampling emerging pre-salt plays. These strategically placed surveys will help provide greater insight to clients preparing for subsequent licensing rounds.

+1 281 647 0602
mc-us@spectrumgeo.com
www.spectrumgeo.com

in association with Schlumberger PGS

Spectrum

Wednesday, December 9, 2015

Black Lab Pub, Churchill Room • 4100 Montrose Blvd.
Social 5:30 p.m., Dinner 6:30 p.m.

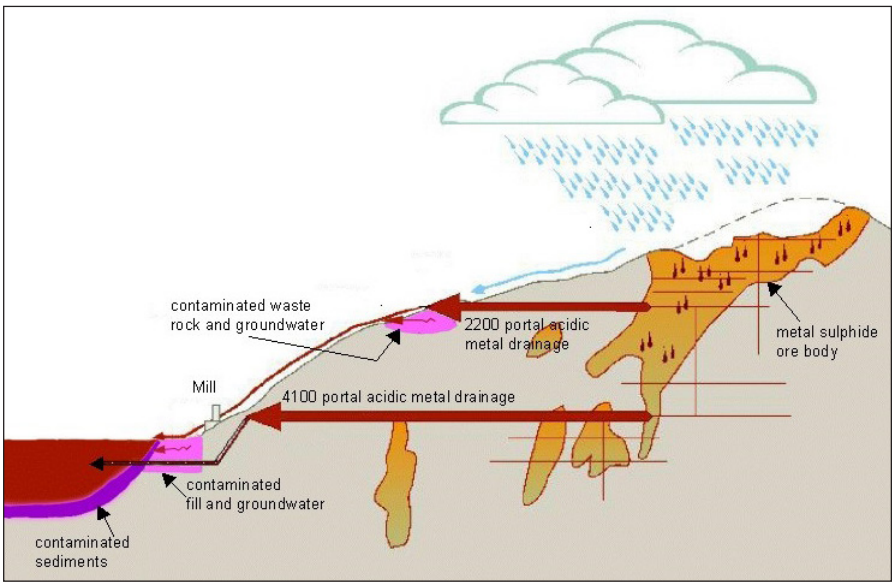
Cost: $30 Preregistered members; $35 non-members/walk-ups

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card.
Pre-registration without payment will not be accepted.
Walk-ups may pay at the door if extra seats are available.

Matthew R. Cowan, P.G.
Terrain Solutions Inc.

Acid Mine Drainage: What It Is, Where It Is, and the EPA's Role

Since the Gold King Mine incident in Colorado earlier this year, the spotlight has been on the U.S. Environmental Protection Agency (EPA) and its activities in Colorado. The EPA is addressing the issue of acid mine drainage with a degree of success, but also a degree of failure. Acid mine drainage is the result of a chemical reaction that occurs when water is polluted from contact with the products of mining activity. It is formed when pyrite, an iron sulfide, is exposed and reacts with air and water to form sulfuric acid and dissolved iron. Some or all of this iron can precipitate to form red, orange, or yellow sediments in the bottom of streams containing mine drainage. The acid runoff further dissolves heavy metals such as copper, lead, and mercury into ground or surface water. The negative effects are contaminated drinking water, disrupted growth and reproduction of aquatic plants and animals, and corroding effects of acid on parts of infrastructure such as bridges. From 40 hardrock mines it is estimated that 17-27 billion gallons of polluted water are produced every year. This presentation will focus providing a brief explanation of the chemical reaction, how acid mine drainage forms, and an examination of recent cases. ■



Biographical Sketch

Matthew R. Cowan, P.G. has more than 18 years of professional experience in geology, environmental remediation and hydrogeology. Mr. Cowan is currently the Chief Field Geologist for Terrain Solutions Inc., overseeing site investigations and remediations of soil and groundwater. Mr. Cowan is a graduate of Texas A&I University with a Bachelor's Degree in Geology with a Minor in Mathematics, and obtained his Master's Degree in Geology from Texas A&M University-Kingsville. He is a Licensed Professional Geoscientist in Texas and Louisiana. In addition he is a Licensed Public School Teacher in Texas. Mr. Cowan has been serving as the HGS Environmental and Engineering Group Chairman since 2007, and is a past HGS Secretary. He is also past Treasurer/Secretary and current President of the Texas Association of Professional Geoscientists, and serves on the Board of Directors for AIPG Texas Section. In addition, he is currently Vice President of the Texas A&I Alumni Association.

Monday, December 14, 2015

HGS Joint General and North American Dinner Meeting

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

Cost: $45 Preregistered members; $50 non-members/walk-ups

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card.
Pre-registration without payment will not be accepted.
Walk-ups may pay at the door if extra seats are available.

Roger M. Slatt
Institute of Reservoir Characterization, School of Geology and Geophysics, Sarkeys Energy Center, University of Oklahoma
Brenton J. McCullough
Devon Energy Co., Oklahoma City, Oklahoma
Institute of Reservoir Characterization, School of Geology and Geophysics, Sarkeys Energy Center, University of Oklahoma
Carlos E. Molinares-Blanco
Institute of Reservoir Characterization, School of Geology and Geophysics, Sarkeys Energy Center, University of Oklahoma
Elizabeth T. Baruch
Origin Energy Co., Brisbane, Australia
Institute of Reservoir Characterization, School of Geology and Geophysics, Sarkeys Energy Center, University of Oklahoma

Paleotopographic and Depositional Environmental Control on "Sweet Spot" Locations in Some Unconventional Resource Shales

Both the Woodford Shale (Oklahoma) and the Barnett Shale (Texas) are prolific unconventional resource shales. Both of them sit atop unconformities on the surface of underlying carbonate rocks. There is variable topographic relief of >300 ft on the unconformity surface in some areas due to incised valley and/or karst formation during periods of subaerial exposure resulting from lowered sea level. Anomalously high thicknesses of the shale can form within these topographic depressions during marine transgression. Also, it is likely that the topographic relief creates areas of restricted marine circulation, and subsequent, localized anoxic depositional environments conducive to preservation of organic matter. The occurrence of basal stratigraphic intervals of high TOC, plus the discontinuous, pod-like distribution of TOC in two 3D seismic areas support this hypothesis. In addition, it is possible that during the time after unconformity formation and prior to marine encroachment into topographically low areas, lacustrine environments may develop, which could be sites for earliest accumulation of organic-rich, mud that would generate Type I, oil-prone kerogen upon burial. Such localized, anomalously thick, TOC-rich zones are potential 'sweet spots' for drilling. Similar characteristics might also prevail in other 'siliceous' unconventional resource shales, particularly if they are underlain by carbonate rocks. ■

Reference

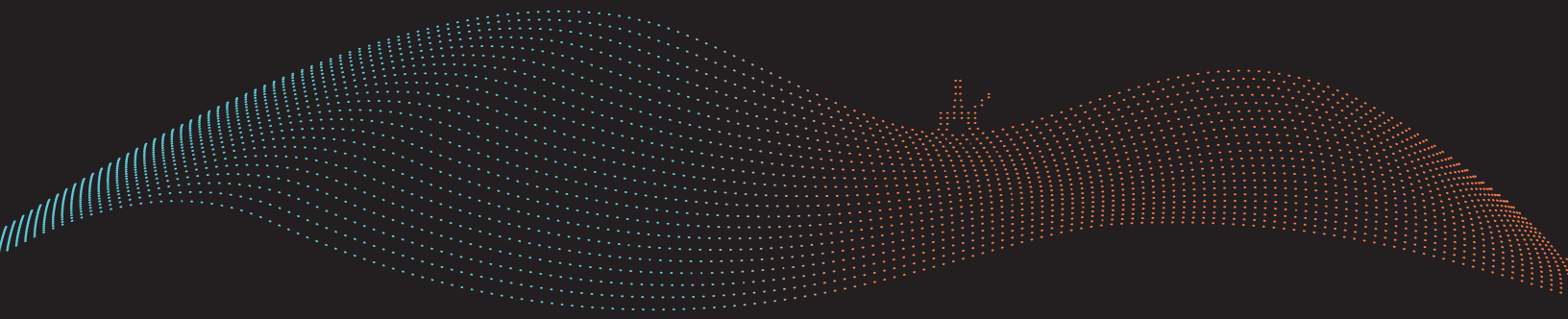
Cardonas, F., 2014, Integrated characterization of the Woodford Shale in the southern Cherokee Platform: unpublished M.S. thesis, University of Oklahoma, 98 pp.

Biographical Sketch

Dr. Roger M. Slatt is currently the Gungoll Family Chair Professor of Petroleum Geology and Geophysics at the University of Oklahoma. He was Director of the School of Geology and Geophysics and Eberly Family Chair Professor at the University of Oklahoma from 2000-2006. He formerly was Head of the Department of Geology and Geological Engineering at the Colorado School of Mines (1992-2000) and Director of the Rocky Mountain Region Petroleum Technology Transfer Council (1995-2000). He earned his PhD in 1970 from the University of Alaska. He has taught geology at Memorial University of Newfoundland, Arizona State University and Colorado School of Mines and worked in the petroleum industry for Cities Service Research, ARCO Research, and ARCO International Oil and Gas Co. He has written more than 150 articles, including presentations made. And he has authored, co-authored or edited six books on petroleum geology, reservoir geology, seismic and sequence stratigraphy, shallow marine and turbidite depositional systems, geology of shale, glacial and Pleistocene-Quaternary geology, and geochemical exploration. He has organized technical conferences for AAPG. Recognition that he has received includes: recipient of the AAPG Distinguished Service Award, AAPG Distinguished Educator and Honorary Member, SEG Distinguished Service Award, SPE Esso Australia Distinguished Lecturer, and both AAPG and SPE Distinguished Lecturer. More than 100 of his graduate students received their degrees during his academic career.

HGS Joint General and North American Dinner *continued on page 21*

blueback reservoir
GeoScience Solutions Partner



BLUEBACK RESERVOIR GOES FORTH UNDER A NEW NAME

Blueback Reservoir is a renowned Geoscience Solutions Partner and Cegal a leading provider of customized IT solutions to the oil and gas industry. Together we will fill the gap between E&P and IT.

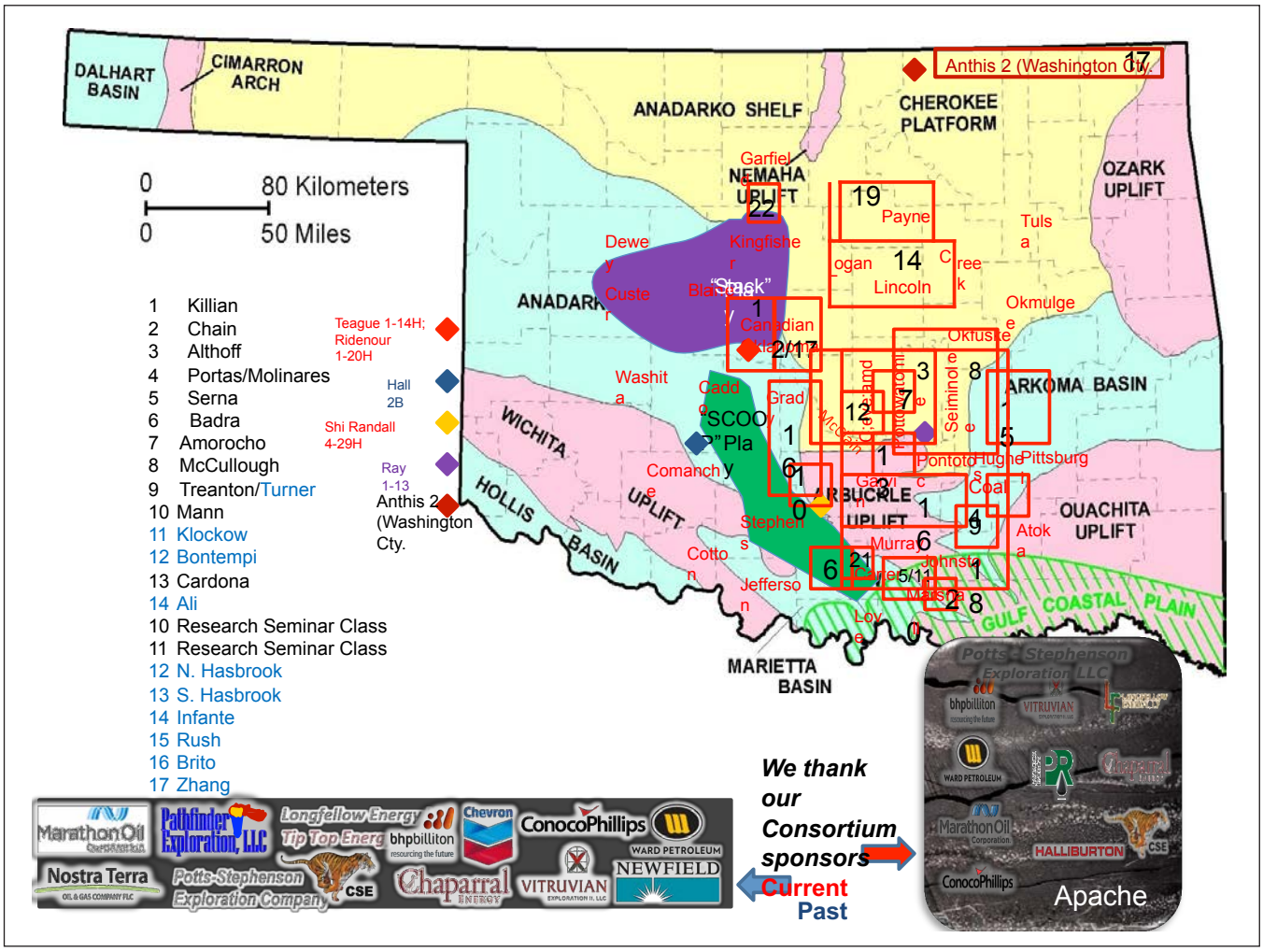
As we continue to expand our offerings in the future, we will remain best in class for geoscience expertise and software products.

Read more at cegal.com

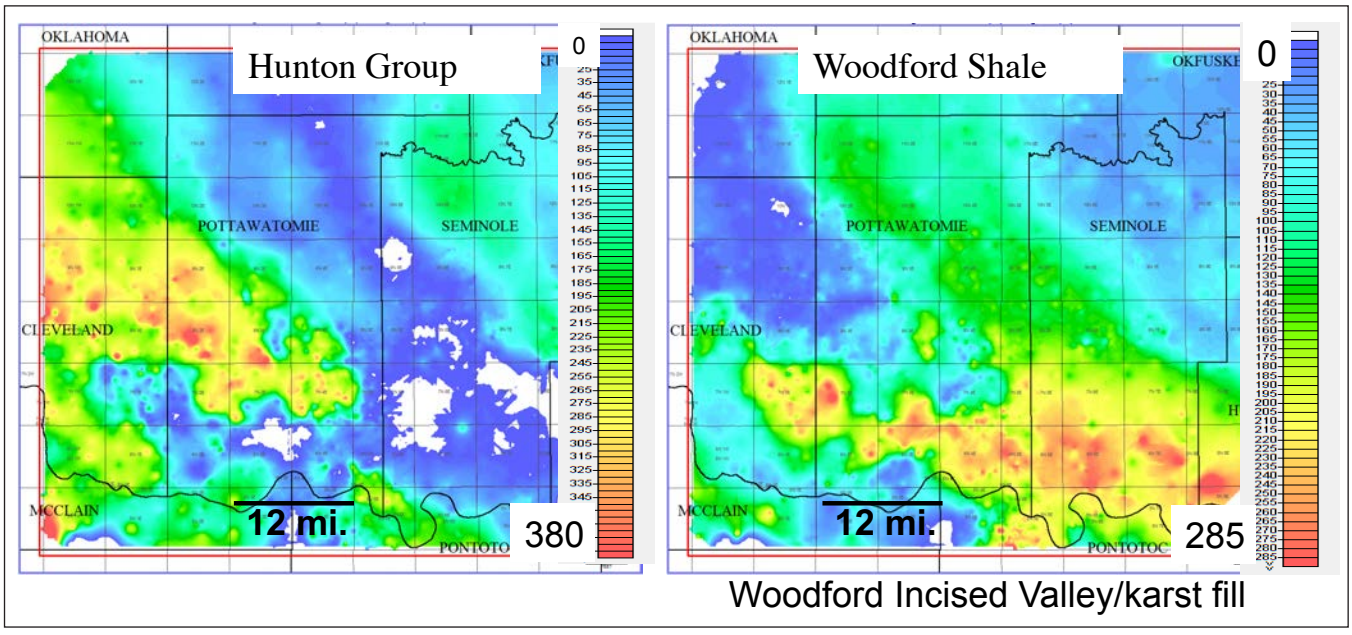
cegal

HGS Joint General and North American Dinner

continued from page 19



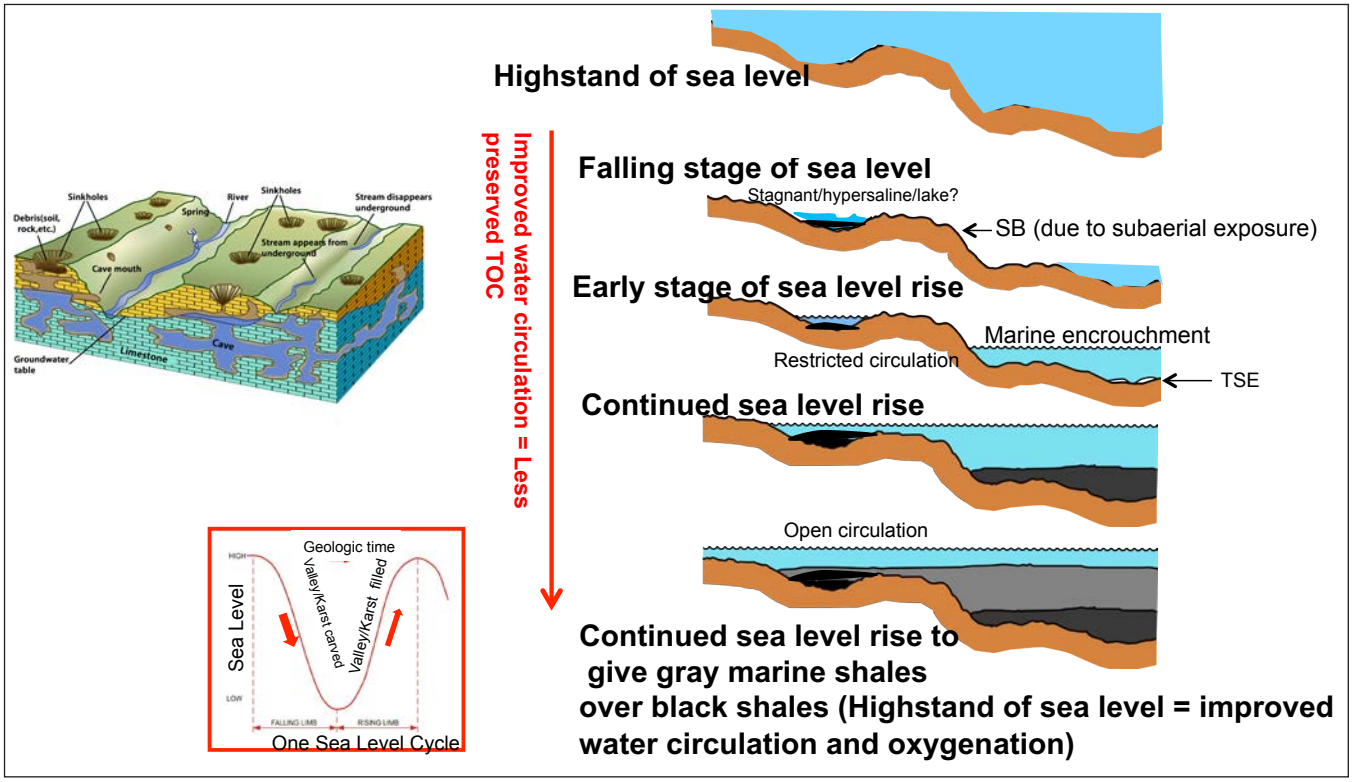
Areas of recently completed (black names) and completing (blue names) student theses on the Woodford. Consortium Sponsors are also shown.



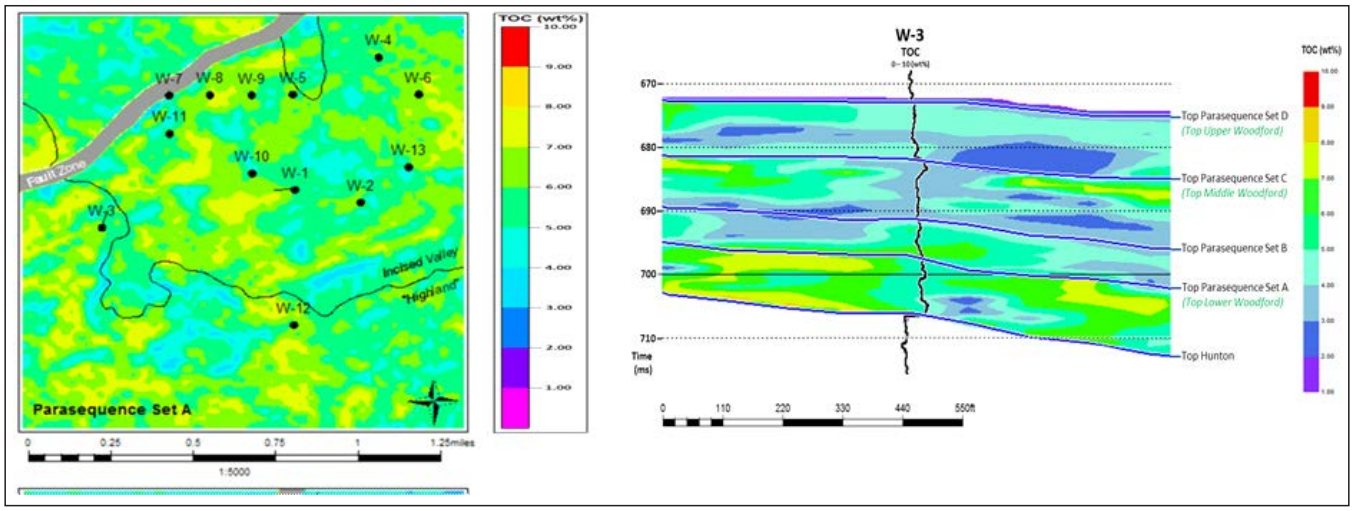
Isopach thicknesses of Hunton Group and overlying Woodford Shale. Valley fill (Woodford) is thin where underlying Hunton is thick and vice versa

HGS Joint General and North American Dinner *continued on page 23*

HGS Joint General and North American Dinner continued from page 21



Depositional model for the Woodford through one Sea Level Cycle showing differential deposition due to irregular topography on the unconformity surface



3D seismic inversion to TOC distribution showing both laterally and vertically discontinuous TOC distributions. After Cardonas, 2014.

Tuesday, December 15, 2015

Southwestern Energy Conference Center, 10000 Energy Drive, Spring, TX 77389
Social 11:15 a.m., Luncheon 11:30 a.m.

Cost: Active/Associate Members - $30, Emeritus/Life/Honorary - $25
Students who are members of HGS - $10, Non-members - $40

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card.
Pre-registration without payment will not be accepted.
Walk-ups may pay at the door if extra seats are available.

Susan Smith Nash, PhD
American Association of Petroleum Geologists, Tulsa, OK

U.S. Shale Plays: Evaluating Opportunities, Optimizing Your Own Operations

The ongoing downturn in oil and gas prices, combined with high costs and steep decline curves has dealt a death blow to many parts of what were once prospering shale plays. Companies have had to take write-downs, and many have put their properties on the selling block. The fact that there is a great deal of inventory turnover in today's U.S. shale plays means that there are significant opportunities for operators who know how to identify sweet spots and to utilize technologies to economically produce.

If you are an operator in a shale play that has converted itself into an uneconomic money sink, there is no doubt that you have already instituted cost-cutting / cost-postponing measures, such as drilling horizontals without completing. You've also gotten a lot more efficient with your frac jobs, and you're conducting geological fracs rather than geometrical fracs. In addition, you've improved your produced water efficiencies and are geosteering with better precision.

But it's not enough. Your costs are still high and your wells are not uniformly productive. So, what next? Do you put it all on the selling block and try to sell as quickly as possible to stop the hemorrhaging? If you do, you're in a "going out of business" mode, and you're not really going to get much for your "fire sale," unless you happen upon a miracle and are able to leverage what you clear in a highly efficient producing property that does not have any unwelcome surprises lurking in the leases. Or, do you keep drilling and completing, but utilizing new technologies to optimize your production, knowing that you're rolling the dice and it's quite possible that your gambles will not pay off, at least in this iteration, as you're still somewhere in the learning curve.

Alternatively, you may optimize your operations to the best of your ability, with a view to grooming your properties for a sale, or you may implement a strategy that will, over time, result in profitability.

Regardless of the strategy you employ, there are a few considerations to keep in mind.

1. **Heterogeneity comes in many different forms.** Know your reservoir and your lithologies. You may have fine-grained sand interbeds, or you may have more mudstone or marly facies. Understanding the nature of the heterogeneity (lithology, fracture density, pore architecture, diagenetic alteration / overgrowths) really does matter.
2. **Fluid migration pathways are more important than you may think.** While it's easy to believe that all shales as essentially self-sourcing ("my source rock is now my reservoir"), that's not actually the case in all shales, and depending on the fracture networks and the pore architecture, you may have differentially enriched sediments which constitute excellent sweet spots. Understanding the source, direction, and geochemistry of the reservoir fluids (including gases) will help you pinpoint the sweet spots.
3. **Connectivity, but for how long?** Knowing how long your induced fractures will stay open, and which proppants seem to live up to their promise can make the difference between a well you'd like to purchase, or one you'd like to run from.
4. **Frac interference, thief zones, and other signs of "over-muscling" the frac design.** Conventional wisdom suggests that the bigger the frac the better, and the more rock you "rubble-ize" the better. But some reservoirs exhibit behavior that deviates dramatically from conventional wisdom. Sometimes it is not easy to determine what exactly went on, but if there is frac interference or thief zones, it is an indication that there are ways to move the hydrocarbons, and that there is a certain level of responsiveness to stimulation. So, these areas bear reconsideration, particularly if there is high TOC. It's important to keep in mind that recovery rates can hover around 10%, which means that there's definitely oil in place.
5. **Geochemistry can give you an edge.** Whether you're looking at kerogen-typing or isotopes which can help you with gas / oil fingerprinting, the more geochemical information you have, the better you can determine where to drill, and also the kinds of fluids to use in drilling and completion.

HGS Northsiders Luncheon *continued on page 27*

HGS Northsiders Luncheon continued from page 25

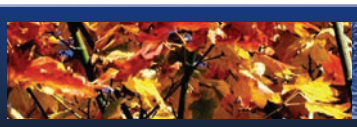
6. **Stress regimes and pore pressure are potential solutions to "cliff-dive" decline curves.** Understanding the stress regimes, pore pressure, and also the orientation of fractures, along with migration pathways, can help you fine-tune your completions in order to maintain flow and reduce the rapid declines. High IPs can be exhilarating, but it's not so thrilling when the rates basically drive off a cliff and are flat all too soon. A more tempered approach may be the solution.

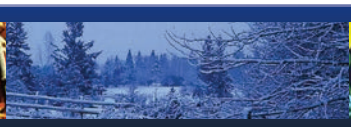
There are additional points to consider when evaluating acquisitions or grooming your properties for optimization or sale. Please review my other papers for additional information (forthcoming) or attend my talk at the HGS Northsider's lunch meeting in December. ■

Biographical Sketch

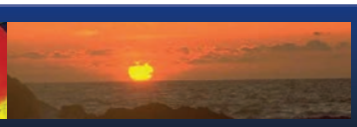
Dr. Susan Smith Nash has organized numerous workshops, forums, educational events and research conferences on the topic of unconventional resources in her capacity of Director of Education and Professional Development of the AAPG. In addition, she has worked with cross-disciplinary teams to work on knowledge transfer, understanding, and research initiatives in optimizing exploration and development of unconventional and mature reservoirs. Her current interests involve supporting new technologies for green development of unconventionals. - See more at: http://www.aapg.org/career/training/instructors/details/articleid/3139/susan-nash-phd#sthash.A5HirKE7.dpuf

December 2015





Sunday	Monday	Tuesday	Wednesday
	Members Pre-registered Prices: Dinner Meetings members..... $45 Emeritus/Honorary members..... $40 Student members..... $10 Nonmembers & walk-ups..... $50 Except - Env. & Eng. ..... $30 Nonmembers & walk-ups..... $35 Emeritus/Honorary members..... $15	1 **HGS Board Meeting** *6 p.m.*	2
6	7 **HGS International Dinner Meeting** *"Seismic Sequence Stratigraphic Correlation of Miocene to Cretaceous Section from the Louisiana Continental Shelf to the Deepwater US GoM and the Bay of Campeche, Mexico," Walter W. Wornardt, PhD, Page 11*	8	9 **HGS Environmental & Engineering Dinner Meeting** *"Acid Mine Drainage: What It Is, Where It Is, and the EPA's Role," Matthew R. Cowan, Page 17*
13 **GCSSEPM Perkins Conference** *Omni Houston Hotel, Westside Houston, TX Page 9*	14 **HGS Joint General and North American Dinner Meeting** *"Paleotopographic and Depositional Environmental Control on "Sweet Spot" Locations in Some Unconventional Resource Shales," Roger M. Slatt, Page 19*	15 **HGS Northsiders Luncheon Meeting** *"U.S. Shale Plays: Evaluating Opportunities, Optimizing Your Own Operations," Susan Smith Nash, PhD, Page 25*	16
20	21 **HGS Office Closed**	22	23
27	28 **HGS Office Closed**	29	30



GeoEvents

Thursday	Friday	Saturday
3	4 Don't wait, make your reservations online at ww.hgs.org	5
10	11	12
17	18	19
24	25 Christmas Day	26
31		

Reservations:
The HGS prefers that you make your reservations on-line through the HGS website at www.hgs.org. If you have no Internet access, you can e-mail reservations@hgs.org, or call the office at 713-463-9476. **Reservations for HGS meetings must be made or cancelled by the date shown on the HGS Website calendar, normally that is 24 hours before hand or on the last business day before the event.** If you make your reservation on the Website or by email, an email confirmation will be sent to you. If you do not receive a confirmation, check with the Webmaster@hgs.org. Once the meals are ordered and name tags and lists are prepared, no more reservations can be added even if they are sent. **No-shows will be billed.**

January 25, 2016
HGS Legends Night

March 8-9, 2016
HGS Applied Geoscience Conference
The Woodlands, TX

April 3-6, 2016
AAPG/SEG ICE
Barcelona, Spain

May 8-16, 2016
HGS Grand Canyon Field Trip
Grand Canyon

June 19-22, 2016
AAPG ACE
Calgary, Alberta

Applied Geoscience Conference

March 8 - 9, 2016

Integrated Approaches of Unconventional Reservoir Assessment and Optimization

Please join us for the Houston Geological Society's premier technical conference, offering the latest breakthroughs, technical perspectives and integrated approaches to unconventional reservoir assessment.

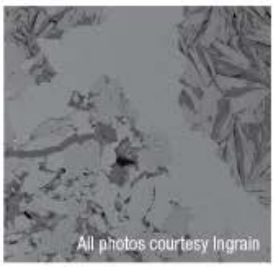
Day 1
- Nano-scale Reservoir Behavior and Observations
- Petroleum System Attribute Integration
- Petrophysical Integration to Optimize Completions
- Hybrid Unconventional Opportunities

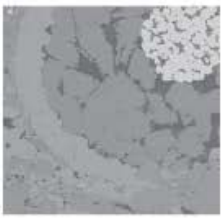
Day 2
- Unconventional Technology for Tight Reservoirs
- Geophysical Advances for Reservoir Characterization
- Recompletions and Refracturing
- Integrated Reservoir Characterization for Fun and Profit

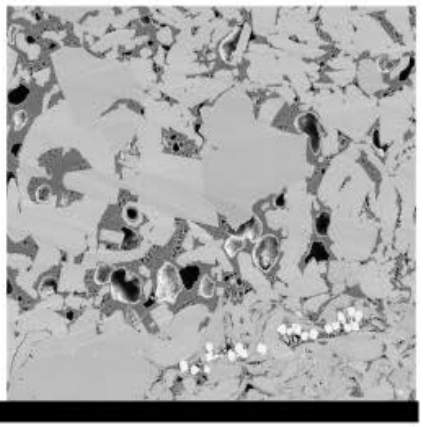
We will also feature posters highlighting university research, a multi core program supporting the oral technical program and a luncheon keynote address.

ANADARKO CONFERENCE CENTER
1201 Lake Robbins Drive
The Woodlands, TX 77380

Anadarko Petroleum Corporation







Registration Open!

For more information please visit: www.hgs.org

Sponsorship Opportunities

Brand your company with the premier event designed for integrated asset teams.

To Sponsor, please contact Andrea Peoples at andrea@hgs.org or 713.463.9476

93% Rated the overall quality of the technical presentations as good or exceptional compared to other industry conferences

Opportunities	Platinum Sponsors $15,000	Titanium Sponsors $10,000	Gold Sponsors $5,000	Silver Sponsors $2,500	Bronze Sponsors $1,000
Logo on Sponsorship Banners	✓	✓	✓	✓	✓
Advertisement in Program Book	Full Page	1/2 Page	1/4 Page	1/8 Page	
Complimentary Full Registrations	4	3	2	1	
Complimentary Vendor Booth	✓	✓	✓		
Recognition by HGS in Program Book, onsite signage, post show highlights and thank you in HGS Bulletin	✓	✓	✓	✓	✓
Recognition in Conference Announcements and Website (logo with hyperlink)	✓	✓	✓	✓	✓

91% Rated the talks as applicable to their every day work

Mail Sponsor Request to:
Houston Geological Society
14811 St. Mary's Lane, Ste. 250
Houston, TX 77079

For more information and to register please visit: www.hgs.org

Applied Geoscience Conference

March 8 - 9, 2016

Integrated Approaches of Unconventional Reservoir Assessment and Optimization

To sponsor, please indicate your sponsorship level_____with payment (payable to HGS) to: **HGS, 14811 St. Mary's Lane, Ste. #250 - Houston, Texas 77079 - Attn: Andrea Peoples**, or you can email your sponsorship form to andrea@hgs.org.

Name_____Phone_____Amt. Enclosed_____

Company_____Email_____

Billing Address_____

Credit Card #_____Exp. Date_____Sec. Code#_____

Approved by_____Date_____

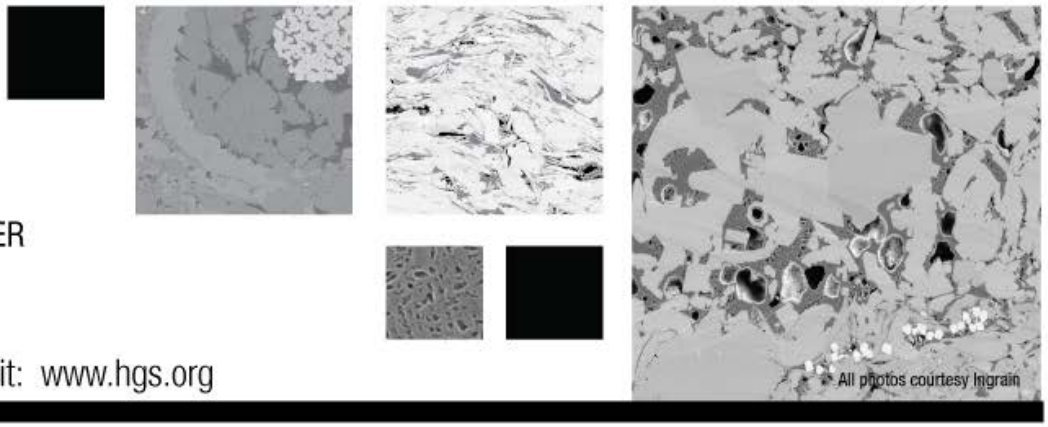
If you would like HGS to invoice your sponsorship please complete the section below:

Invoicing Address_____

Accounting Contact Name_____Contact Email Address_____

Special Billing Codes_____Approved by_____Date_____

Please email your company logo to andrea@hgs.org. Note: Please send only company logos at 300+dpi



ANADARKO CONFERENCE CENTER
1201 Lake Robbins Drive
The Woodlands, TX 77380
For more information please visit: www.hgs.org

HOUSTON GEOLOGICAL SOCIETY presents

Legends Night 2016

Geophysicists Who Have Impacted Geologists

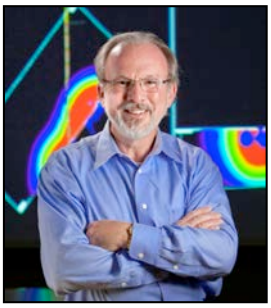
REGISTER NOW!

Monday, January 25, 2016

HGS invites you to join us for the next Legends Night dinner event honoring three geophysicists who have made significant contributions to the field of geology. See their biographies on page 35.

Alistair Brown
Author of 'Interpretation of Three-Dimensional Seismic Data'

Tom Smith
Founder and former president of Seismic Micro-Technology (SMT)



Peter Duncan
Founder and Co-Chairman of MicroSeismic, Inc.

Norris Conference Center, CityCentre
816 Town & Country Blvd., Suite 210
Houston, Texas 77024

This HGS special event has limited seating. Please make your reservations online at www.hgs.org. Tickets are $50 per person.

Be a Sponsor!

Please contact the HGS office, 713-463-9476, or email andrea@hgs.org for information on sponsorship opportunities.

All event profits benefit the HGS Scholarship and Calvert Memorial Funds.

HGS LEGENDS NIGHT 2016

JANUARY 25, 2016

Geophysicists Who Have Impacted Geologists

SPONSORSHIP FORM

All event profits benefit the HGS Scholarship Funds.

Corporate Platinum Sponsor - $10,000

- Dedicated table with company logo
- 10 complimentary dinner registrations
- Icebreaker reception with scholarship recipients
- Formal recognition at event
- Company name & logo listed as sponsor on online registration page and in related HGS articles

Corporate Silver Sponsor - $2,500

- 6 complimentary dinner registrations
- Icebreaker reception with scholarship recipients
- Formal recognition at event
- Company name & logo listed as sponsor on online registration page and in related HGS articles

Individual Sponsor - $500

- 1 Complimentary dinner registration
- Icebreaker reception with scholarship recipients
- Formal recognition at event

Corporate Gold Sponsor - $5,000

- 8 complimentary dinner registrations
- Icebreaker reception with scholarship recipients
- Formal recognition at event
- Company name & logo listed as sponsor on online registration page and in related HGS articles

Corporate Bronze Sponsor - $1,000

- 4 complimentary dinner registrations
- Icebreaker reception with scholarship recipients
- Formal recognition at event
- Company name & logo listed as sponsor on online registration page and in related HGS articles

Company Name: _____

Sponsorship Type: _____ Amount Enclosed: _____

Contact Name: _____

Street Address: _____

City: _____ State: _____ Zip Code: _____

Phone: _____ Fax: _____

Email: _____

Please submit company logo along with form and payment. Payment by credit card or check. Please make checks payable to *Houston Geological Society*. Email form to andrea@hgs.org or fax to 281-679-5504.

Name of Cardholder:_____ Card Type: _____

Number: _____ Expiration Date: _____

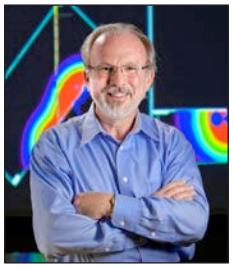
Houston Geological Society • 14811 St. Mary's Lane, Suite 250 • Houston, TX 77079 • 713-463-9476

HOUSTON GEOLOGICAL SOCIETY presents

Legends Night 2016

Geophysicists Who Have Impacted Geologists

Alistair R. Brown is a Consulting Reservoir Geophysicist working out of Dallas, Texas. His specialties are interpretation of three-dimensional seismic data, stratigraphic interpretation, optimum use of interactive workstations, seismic reservoir identification and evaluation, and the meaning of seismic amplitude. He spends much of his time teaching interpretation methods and advising on interpretation problems worldwide. Alistair graduated from Oxford University in England, having attended The Queen's College, and has over 40 years of geophysical industry experience. He has been using 3D seismic data since 1975 and interactive workstations since 1980. He has developed many new interpretation methods and is a widely published author in his field. The making of the first horizon slice in 1979 was a particular accomplishment. The 7th Edition of his book *Interpretation of Three-Dimensional Seismic Data* (AAPG Memoir 42 / SEG Investigations no. 9) was published in 2011 following previous editions in 2004, 1999, 1997, 1992, 1989, and 1986. He won the SEG Best Presentation Award in 1975, was AAPG Distinguished Lecturer in 1988-89, SEG Distinguished Lecturer in 1991, and Petroleum Exploration Society of Australia Distinguished Lecturer in 1994. Furthermore in 1999-2000 he was the inaugural Joint AAPG/SEG Distinguished Lecturer. In 1998 Alistair was awarded SEG's Special Commendation Award for his work in developing and teaching 3D methods. In 2002 he was awarded Honorary Membership in the Geophysical Society of Houston, and in 2004 Honorary Membership in Dallas Geophysical Society. In 2006 he received his highest honor, namely Honorary Membership of the Society of Exploration Geophysicists. In 2009 AAPG awarded Alistair the Distinguished Service Award. He is also a member of EAGE. He was Chairman of *The Leading Edge* Editorial Board from 1986 to 1988 and editor of the Geophysical Corner in AAPG *Explorer* from 2004 to 2005.



Peter M. Duncan is Founder and Co-Chairman of MicroSeismic, Inc. a Houston based oil field service company specializing in hydraulic fracture stimulation surveillance and evaluation. He holds a PhD in Geophysics from the University of Toronto. His early career as an exploration geophysicist was with Shell Canada and then Digicon Geophysical, first in Calgary then in Houston. In 1992 he was one of three founders of 3DX Technologies Inc., a publicly traded independent oil and gas exploration company. Duncan was 2003-04 President of the Society of Exploration Geophysicists (SEG). Duncan was the Fall 2008 SEG/AAPG Distinguished Lecturer speaking on the subject of passive seismic at 45 venues around the world. He is an Honorary Member of SEG, the Canadian Society of Exploration Geophysicists (CSEG), the Geophysical Society of Houston (GSH) and the European Association of Geoscientists and Engineers (EAGE). He received the Enterprise Champion Award from the Houston Business Journal in 2010, the World Oil Innovative Thinker Award in 2011, and was the 2013 EY National Energy Entrepreneur of the Year. In 2014 he received the Virgil Kauffman Gold Medal from SEG.

Tom Smith studied geology, physics and a little geophysics at Iowa State University where he met his wife Evonne. They are recognized as geological pioneers who helped develop KINGDOM, one of the oil and gas industry's most intuitive and cost-effective software for seismic interpretation. At Iowa State, he earned a BS and MS in geology where he determined that the buried Manson meteorite impact structure was 20 miles wide with seismic refraction.

Tom began his career as a data processing geophysicist at Chevron Geophysical, but left that position in 1980. He received a doctorate in geophysics from the University of Houston in 1981. In 1984, the Smiths founded Seismic Micro-Technology to develop KINGDOM which grew into a full-featured integrated geophysical and geological interpretation package used today in more than 80 countries. It was one of the first personal computer-based geophysical software ever created, initiating a global renaissance in oil and gas exploration. The company staff of 150 worked from four international offices when it was sold in 2007. Since then, the Smiths have donated funds to revitalize the ISU Geology Field Camp in Shell, Wyoming. In the last several years, Tom and a small team have been working on neural networks to assist interpretation. He will share a few thoughts on his professional career, explain how KINGDOM evolved, discuss business principles and practices that helped it succeed, and finally, suggest that there are new ideas in interpretation practices that are more compelling than golf.

CALL FOR PAPERS

66th GCAGS Convention

September 18-20, 2016

American Bank Center
Bayfront Convention Hall

Corpus Christi, Texas

We're Building Sessions in these Themes

- The Gulf of Mexico Systems
- Conventional Carbonates & Clastics
- Tight Gas Plays
- Understanding the Resource Plays
- The Changing Coastal Landscape
- Mexico and Latin America
- Advances in Geophysical Technologies
- Enhanced and Secondary Recovery
- Reservoir Prediction and Quality
- Climate from Multiple Perspectives
- Protecting and Stewarding Water Resources
- Other Sessions Developed from Submissions

And We're Planning Field Trips & Short Courses, Too.

Want to Help? Have Ideas? Need Information? Contact Dawn Bissell, Convention Chairman, chair@gcags2016.com

Join the 2016 GCAGS Convention with an Oral or Poster presentation!

Please submit a 250-word abstract or summary of your planned paper or poster before **January 15, 2016** to our Technical Program Chairs, **Bob Critchlow** or **Rick Paige** at ***techprogramchair@gcags2016.com***. Authors of accepted papers and posters will be notified **February 9, 2016**. Final extended abstracts, with or without figures, and full papers for publication in the *GCAGS Transactions* will be due by **March 21, 2016** to the *GCAGS Transactions* Editor, **Jennifer Smith-Engle**. Full information, instructions, size limitations, and helpful hints for abstracts, summaries, extended abstracts, and full papers can be found on

www.gcags2016.com

Thank you for your participation!

If you'd like to publish in the *GCAGS Journal* -
The Peer-Reviewed Journal of Gulf Coast Geoscience

Submit an extended abstract of at least 600 words, including 1-2 representative figures, to the *GCAGS Journal* Editor, **Barry Katz** at ***barrykatz@chevron.com*** by **December 15, 2015.** Once accepted for publication, a full manuscript should be submitted before **March 21, 2016**. Full instructions for manuscript submissions will be posted online at **www.gcags2016.com** Convention presentations of Journal submissions are encouraged, but not required.

A Good Year for GCAGS

by Charles A. Sternbach, GCAGS President 2014-2015

Fellow GCAGS members, I want update you regarding the progress GCAGS has made this year, and share with you a few highlights. GCAGS was honored to welcome 1,292 attendees to the 65th Annual GCAGS Convention September 20-22, 2015 at the George R. Brown Convention Center. The Houston Geological Society was proud to host our convention this year and to shine brightly among the 13 stars in the GCAGS constellation. Houston serves as headquarters for many energy companies and universities focused on technology, exploration, and innovation. Houston is a gateway of technology and exploration "know how" to the world. We enjoy a great exploration community filled with talented and friendly geoscientists centrally located within the prolific Gulf Coast province. Our convention theme: "Leadership, technology, discovery, and education" captured this dynamic time and place.

GCAGS unites us. When I became GCAGS president, the first thing I did was join all 13 affiliated societies. I wanted to see what each affiliated society was doing, read the publications, newsletters, field trips and technical meeting notifications. I was amazed by the quality and quantity of GCAGS programs available to explorers and scientists interested in Gulf Coast geology. To better share this information monthly events are now posted on GCAGS webpage web link under the Member society news and events http://www.gcags.org/

The GCAGS theme this year was ***United We Explore, United We Learn.*** GCAGS societies share a common geology and a special bond. I believe there is strength in unity and all affiliated societies members can benefit from broad participation in GCAGS programs. Please join me in attending GCAGS events outside of your local society.

GCAGS benefits us. Another initiative this year was to inform the approximately 10,000 members of GCAGS about the many benefits and resources from GCAGS. These are also posted on the GCAGS and have been published in many affiliated society publications and web pages.

The benefits of GCAGS membership include:

1. The Annual Convention and Exhibition
2. Society Representation
3. AAPG Advisory Council Representation
4. Student and Faculty Grants
5. The Scholarship Fund (now $195,500)
6. Student Chapter Leadership
7. Advertising
8. Participation in the Imperial Barrel Award Competition
9. Honors and Awards
10. Teacher of the Year Award
11. *GCAGS Transactions*
12. *GCAGS Journal*
13. www.gcags.org
14. Social Media

We will focus on a few of these benefits below:

Annual Convention and the Awards Ceremony: The Gulf of Mexico remains the 'go to' basin for oil companies to deliver a great return on investment. Innovations in drilling and seismic processing, the strong work ethic of its workforce, and most importantly the abounding ingenuity of scientists like you make the Gulf the basin that "keeps on giving." Every year at the awards ceremony, the GCAGS and GCSSEPM honor those

A Good Year for GCAGS *continued on page 38*

Teacher of the Year, Ilena Krupala

GCAGS dedicates Transactions to John Amoruso

A Good Year for GCAGS continued from page 37

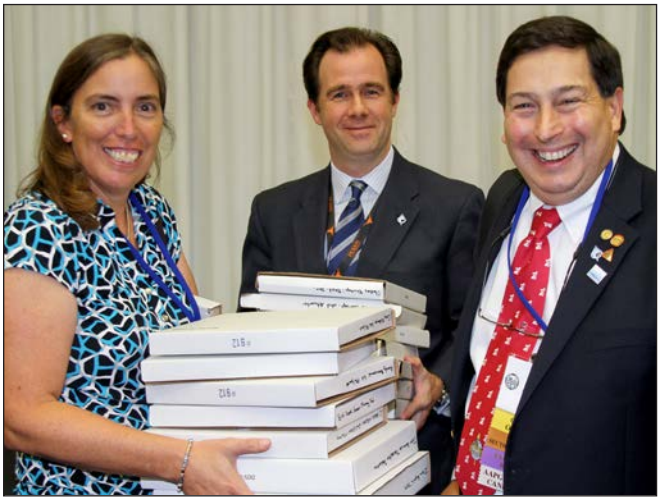
GCAGS 1st Place IBA Team, University of New Orleans: Christopher (Mark) Johnson, Elijah Ayobami Adedeji, Joshua Flathers, Dr. Royhan Gani (faculty advisor), Joseph Frank, John (Trey) Kramer, and Toby Roesler (industry mentor)

who have shared their research, ideas, and concepts with the rest of the scientific community. The awards ceremony recognizes exemplary individuals whose contributions enable others to build on hard-won technical knowledge and understanding. We owe the awardees great appreciation for their legacy of service and advancement of Gulf Coast geoscience.

The Awards Ceremony recognized the 2015 recipients of GCAGS and GCSSEPM special honors, as well as awardees of the best presentations and best published papers in the 2014 GCAGS *Transactions* and GCAGS *Journal*, all of whose works have made important contributions to GCAGS and the advancement of geosciences. Highlights of GCAGS Awardees follow. A full listing of awardees can be found in the GCAGS *Transactions*.

This year's GCAGS *Transactions* were dedicated to John Amoruso. Others being honored this year include Steve Hill, receiving GCAGS Honorary membership, Dallas Dunlap, Mike Quinn, and Mike Fein receiving GCAGS Distinguished Service, and Ilena Krupala who will receive the Owen R. Hopkins Outstanding Earth Science Teacher Award.

13 teams competed in the AAPG Imperial Barrel Award competition within the Gulf Coast Section. We are proud to recognize all the teams. The awardees as follows: 1st Place, University of New Orleans; 2nd Place, University of Louisiana at



GCAGS Executive Kate Kipper prepares the awards for the honorees (with assistance from Dallas Dunlap and Charles Sternbach)

Poster Chairman Meredith Faber presents award to Sasha Gumprecht

Charles Sternbach (2014-15 GCAGS President), Linda Sternbach (Technical Program Chair), Larry Bartell (General Chair), and Dianna Phu (Secretary and Convention Web Chair)

"Geo-Generations" panelists: Tom Tinker, Scott Tinker, and Nathan Tinker. Standing behind them is panel moderator Charles Sternbach.

Lafayette; and 3rd Place (tie), University of Texas at Austin and Stephen F. Austin State University.

Convention special programs: In keeping with this year's convention theme, "Leadership, Technology, Discovery, Education," we hosted an "Educational/Leadership Forum 2.0" designed to educate the young and old on core topics concerning Gulf Coast geology. This year we had six globally recognized experts on the Gulf of Mexico: Scott Tinker, John Dribus, Brian Horn, John Snedden, Richard K. Stoneburner and Charlie Kerans. These world renowned scientists shared their expertise on why the Gulf of Mexico is one of the richest hydrocarbon provinces in the world, a "fertile crescent" of resources, technology, and ingenuity. This event was thought provoking and well attended.

Following the forum, we convened a special multi-generational panel of distinguished geologists called "Geo-Generations, 60 Years in the 'Patch' and Counting." This panel discussed where our industry has been, and where we might be going. We will produce a video of this event for future posting on the GCAGS, HGS, and AAPG webpages.

Another popular forum was "Geologists as Leaders in Finance, Banking and A&D" chaired by Steve Brachman and Jeff Lund.

We also had three very popular luncheons:

- All Convention Luncheon: "Chevron's Key Discoveries and Developments in the Deepwater Gulf of Mexico, a Story of Steady Growth," Karl (Ken) Eisenmenger, Exploration General Manager, Chevron Deepwater Exploration and Projects
- DPA Luncheon: "How to Survive and Thrive in Good Times and Bad," Charles Goodson, CEO of PetroQuest

A Good Year for GCAGS *continued on page 40*

General Chairman Larry Bartell (center) and All Convention Luncheon speaker Ken Eisenmenger (right)

A Good Year for GCAGS continued from page 39

The GCAGS Leadership Team, at our annual meeting in Houston

- GCSSEPM Luncheon: "Model the Rock! Using Diagenesis Simulation for Rock Property Prediction," Rob Lander, GEOCOSM

Welcoming students to our industry: the GCAGS 2015 Annual Convention committee worked hard to engage the powerhouse known as the SEG/AAPG Student Expo. Both events occurred in contiguous convention space with a day of overlap. GCAGS seasoned professionals got to interact with many BS, MS, and PhD candidates preparing to enter our industry. Numerous students attended the entire convention at a special rate ($35). Through special funding many students participated in GCAGS programs.

One of the best gifts GCAGS gives the scientific community is its annual publication of the Transactions and GCAGS Journal in conjunction with its annual convention. For those working Gulf Coast geology, these publications have become the number one reference for understanding regional and local geology. After 65 years, there is a cornucopia of research, geologic models, case histories, and ideas captured on these pages. These articles provide the foundation for future generations working Gulf Coast geology. Thanks to all of you who have contributed and shared your ideas.

I would like to give special thanks to Larry Bartell, GCAGS General Chairman 2015, for volunteering his time and talent over the past two years to organize this convention. It is a daunting task and Larry did a superb job! I would also like to recognize Linda Sternbach, our GCAGS Technical Program Chair, for taking on the formidable job of overseeing nearly 100 oral presentations, many posters, judging efforts, short courses, field trips and leading numerous volunteers on her committees. Thanks to Deborah Sacrey for a great job on special events and the many volunteers working with her. Deborah also represented HGS ably as President during this convention. You can see many volunteers and committee chairs on the committee webpage: http://www.gcagshouston.com/steering-committee/

Please join me in thanking them when you see them for a job well done!

The vitality of the Gulf Coast Section would not be possible without the support and dedication of our numerous committee chairs. Special thanks go to our Executive Director Kate Kipper, as well as Treasurer Steve Hill for many years of dedicated service and new treasurer Sean Kimiagar, Managing Editor James Willis, GCAGS webmaster Jill Willis, GCAGS Journal Editor Barry Katz, Continuity Committee Chair Dallas Dunlap, Convention webmaster Dianna Phu and Linda Sternbach, and all the other committee chairs. Special thanks to our GCAGS convention officers: Brent Hopkins, vice president, Mike Erpenbeck, treasurer, and Dianna Phu, Secretary.

The Gulf Coast Section of AAPG has two representatives on the AAPG Advisory Council: John Jordan and William M. Whiting. We thank our representatives for good communication between the Section and the Advisory Council. Martha Lou Broussard and Mary Broussard have distinguished themselves by long term service in Advisory Council roles in prior years. It is a humbling honor to be surrounded by such wonderful and dedicated professionals.

We are particularly pleased to wish Dawn Bissell, General Chairman, Brent Hopkins the new incoming president of GCAGS (2015/2016), the Corpus Christi Geological Society, and the rest of the planning team all the best for a great GCAGS convention planned for Sep 18-20, 2016 in Corpus Christi. See you there! http://www.gcags2016.com/

Help Your Local High School!

Are you interested in supporting your local high school in science and math? If you are, then the HGS is joining a Society of Petroleum Engineers-Gulf Coast Section (SPE-GCS)-led program that will fulfill your aspirations!

Over the past year, the SPE-GCS, with leadership from Dick Murphy (SPE-GCS member and retired Marathon Oil Company engineer) has created a successful science in-class tutoring program at three high schools in Fort Bend ISD. Six SPE members volunteer at the high schools (Austin, Dulles and Clements) one or more days a week, mentoring and tutoring high school students in physics, chemistry or biology. These tutors work closely with the teachers, helping to explain the concepts to the students and giving them more individual attention. We recognize that in the Greater Houston area there are many technical experts who have flexible daytime hours (e.g. retirees, the unemployed or underemployed, self-employed, part-time workers, college students) and might find this a rewarding opportunity. These six volunteers have found the experience personally very rewarding.

The SPE-GCS is seeking to expand this program in Fort Bend ISD and to Katy ISD, and needs volunteer tutors who are willing to commit to a minimum of half a day per week helping in the classroom. Our experience shows that the day does not have to be the same day every week. However, a regular commitment helps to ensure continuity of effort, gaining the trust of the teachers, administration and students and keeping the tutoring program viable.

This opportunity is open to anyone with science and technology skills. You are not required to live in Fort Bend or Katy school districts in order to volunteer within them. But if you would rather volunteer at a high school in another school district, please let me know so that I can gauge the interest of expanding the program elsewhere.

If interested, please contact Dick Murphy at stancal@windstream.net, 281-265-3893 (home), or 832-545-3893 (mobile).

The HGS fully supports this effort and hopes that some of its members will sign up! ■

13TH ANNUAL

World-Class Education Conference

HOUSTON, TEXAS
FEBRUARY 29-MARCH 4, 2016

Courses Include:

- Deepwater Reservoir Connectivity
- Fluvial Sedimentology and Geomorphology
- Applied Seismic Geomorphology and Seismic Stratigraphy – Extracting Geologic Insights from 2D and 3D Seismic Data
- Carbonate Reservoir Geology: Understanding Depositional and Diagenetic Factors Controlling Porosity
- Carbonate Depositional Systems
- Applying Ideas of Carbonate Sedimentology, Stratigraphy and Depositional Environments to Petroleum Exploration and Production
- Extracting Geology from Seismic Wiggles: Basic Seismic Interpretation for Non-Geophysicists
- Integrating Data from Nano- to Macro-Scale: Improving Characterizations of Unconventional Plays
- Essentials of Production Geology
- Shale Gas Geomechanics
- Applications of Stable Isotope Geochemistry in the Petroleum Geosciences
- Log Analysis of Shaly Sand Reservoirs
- Log Analysis of Hydrocarbon-Bearing "Shale" Reservoirs

Hosted by:

Norris Conference Center
816 Town & Country Lane, Suite 210
Houston, TX 77024
Phone: 713-590-0950
Fax: 713-590-0961

Registration and Information
Call AAPG toll free in the U.S. and
Canada at 888.338.3387 or 918.560.9430
F: 918.560.2678 • E: educate@aapg.org
W: www.aapg.org/career/training/in-person/education-conference

AAPG World-Class Education Conference 2016
February 29-March 4, 2016 - Houston, Texas

Upcoming Education Courses

2015-16 Courses:

SHORT COURSES

Last Chance! Practical Salt Tectonics	**Dec. 1-4, 2015** Houston, TX

E-SYMPOSIA

Permian Basin Geologic / Reservoir / Completion Models	**Dec. 10, 2015** 2 pm, CST
Field Safety Webinar	**Dec. 17, 2015** 2 pm, CST
Fluvial Sedimentology and Geomorphology	**Jan. 14, 2016** 2 pm, CST

SHORT COURSES

World-Class Education Conference	**February 29-March 4, 2016** Houston, TX
Basic Well Log Analysis	**April 25-29, 2016** Austin, TX
How to Find Bypassed Pay in Old Wells Using DST Data	**April 26-28, 2016** Austin, TX
Petroleum Geology for Engineers (with OTC meeting)	**May 6, 2016** Houston, TX
Basic Seismic Interpretation	**May 17-18, 2016** Tulsa, OK
"Old" (pre 1958) Electric Logs: A Quick Review	**May 19, 2016** Tulsa, OK
Quick Guide to Carbonate Well Log Analysis	**May 20, 2016** Tulsa, OK

FIELD SEMINARS

Modern Terrigenous Clastic Depositional Systems	**April 2-9, 2016** South Carolina
Field Safety Course for Field Trip Leaders	**April 6-7, 2016** Houston, TX
Carbonate Reservoir Analogues: Play Concepts & Controls on Porosity (with Barcelona ICE mtg.)	**April 7-12, 2016** Almeria, Spain
Reservoir Analogues from Modern & Ancient Turbidite Systems, Tabernas Basin (with Barcelona ICE mtg.)	**April 7-10, 2016** Spain
Interp. of Thrust Belts & Foreland Basins: Models from the Spanish Pyrenees (with Barcelona ICE mtg.)	**April 7-10, 2016** Spain
Fractured Carbonate Reservoirs Outcrops (with Barcelona ICE mtg.)	**April 7-9, 2016** Italy
Sequence Strat., Facies Architecture & Reservoir Characterization	**April 30-May 7, 2016** Utah

www.aapg.org/career/training/

AAPG Education

A Simple Hello Can Lead to a Million Things

by Bonnie Milne

The Houston Geological Society has an astonishing 279 Emeritus, 3,296 Active and 165 Associate Members. Our HGS organization consists of geoscience professionals, educators, students, and interested industry parties throughout the Houston area and beyond. Members of HGS include a cross-section of many disciplines of geology, geophysics, and engineering, with members of all ages and all levels of experience.

An important function of The Houston Geological Society is to enable members to network and interact. Towards this objective, the HGS Membership Directory can be a powerful tool allowing members to find each other and connect. However, the Membership Directory requires updating and improvements to provide the best possible vehicle for networking.

The Directory Committee 2015-2016 is anchored by the following individuals: John Tubb Jr., Brittany Davis-Morris and Bonnie Milne. Together with cooperation from website chair Linda Sternbach and Membership Chair Sharie Sartain, the group will spearhead all aspects of the online **Directory Update Initiative** (otherwise known as DUI). The goal of the committee is to prepare a robust and searchable Membership Directory available as a link on the HGS Website as well as a downloadable PDF for those who prefer to do their networking with a printed medium.

Please be aware that members will receive an email blast in the near future with instructions to log on to the hgs.org website for the purpose of updating and augmenting your personal data.

Although the submission of personal data and information will be the personal choice of the Member, the Directory Committee will format the request to add the following updated information to your profile:

- Name and Title
- Company
- Address
- Phone Number
- Email address
- Status of Membership (Active, Associate, Emeritus) and date of joining HGS
- Degree- School- Year Degree Received
- Spouse/Partner Name
- Photo
- Resume (available only if submitted by member and available as a 'drop down' on the Website Directory. The resume will be available for review only online and will not be included in the printable version.

Again, **all personal information submitted will be at the discretion and choice of the member!**

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.

AGI Geoscience Policy Monthly Review (August 2015)

Senate Confirms Nominees to Two DOE Posts

The Senate confirmed Monica Regalbuto as Assistant Secretary for Environmental Management and Jonathan Elkind as Assistant Secretary for International Affairs at the Department of Energy (DOE) on August 5, 2015. The voice-vote confirmation ended a lengthy waiting process for the nominees who were originally nominated in late 2013 and early 2014, respectively.

Dr. Regalbuto previously served as head of DOE's Office of Environmental Management, where she oversaw cleanup of nuclear facilities. She has also worked at the DOE Office of Nuclear Energy and Argonne National Laboratory.

Mr. Elkind previously served as the Principal Deputy Assistant Secretary for the Office of Policy and International Affairs. He has also worked at the Brookings Institution, focusing on energy security and foreign policy, and at the U.S. National Security Council.

Administration Releases Final Carbon Rules for Clean Power Plan

President Obama unveiled the U.S. Environmental Protection Agency's (EPA) final carbon rules for the power sector in its Clean Power Plan on August 3, 2015. The plan aims to address drivers of climate change in the U.S. by reducing power emissions by 32 percent compared with 2005 levels by the time it is fully implemented in 2030. The rule includes new standards for vehicle emissions, renewable energies, and fossil fuel-based power plants. The EPA has created targets that vary by state to reflect their unique energy mix; states have the option of developing their own response or using a federal plan.

The rule is contentious among Republican members of Congress who are working to craft legislation that would allow states to opt out of the plan's requirements. Some governors have gone a step further, saying that they will refuse to implement the regulations. Depending on the approach that states take, plans will likely develop over a few years and face challenges in Congress and the courts before being fully implemented.

Administration Announces Nominations for DOE and NSF Posts

President Obama announced the nomination of Cherry Murray as Director of the Department of Energy's (DOE) Office of Science and Richard Buckius as Deputy Director for the National Science Foundation (NSF) on August 5, 2015. Both nominees await confirmation to their posts by the Senate.

Dr. Murray is currently a professor of technology and public policy and physics at Harvard University, and has served on the Secretary of Energy Advisory Board and the Commission to Review the Effectiveness of the National Energy Laboratories at DOE. She is a former president of the American Physical Society.

Mr. Buckius is currently Chief Operating Officer at NSF, a senior science adviser at NSF, and professor of mechanical engineering at Purdue University. He served as Assistant Director for Engineering at NSF from 2006–2008.

Report: USFS Spending More Than Half of its Budget to Fight Wildfires

The U.S. Forest Service (USFS) released a report on August 5, 2015 detailing the impacts of increasing costs of fighting wildfires on its non-fire work. Wildfire seasons have become longer, more severe, and more difficult to predict, forcing the USFS to spend over half of its current budget to fight wildfire and shift $700 million from non-fire programs. The agency predicts that in the next ten years, it will spend two-thirds of its appropriated budget on dealing with rising wildfire costs.

The USFS' non-fire programs provide critical ecological services that help to prevent wildfires, such as protecting watersheds, fighting invasive species, and reducing hazardous fuels. However, the increasing severity of wildfire season—burning twice the acreage it did 30 years ago and lasting 78 days longer than in the 1970s—has crowded out USFS forest stewardship programs.

The report underpins the Administration's proposal to restructure wildfire budgeting to fund roughly 70 percent of anticipated fire suppression costs through the USFS budget, with remaining suppression costs covered by a separate fire suppression cap. This proposal would eliminate "fire borrowing," the practice of dipping into non-fire funds within the USFS budget when suppression funding runs dry. Supporters argue that the proposal would free up funds for wildfire mitigation to help reduce the severity of future fires. Opponents counter that the USFS budget should include the entire cost of suppressing fires and that the proposal allows USFS to circumvent statutory budget caps.

Senators urge Congress to reform budgeting for wildfire suppression. Senators on both sides of the aisle have urged

Government Update *continued on page 49*

HGS Welcomes New Members

New Members Effective October 2015

ACTIVE MEMBERS

Shelly Alexander
Joseph Boreman
Bradley Cey
Kyle Day
David Dickins
Rachel Johnson
Ronald Kenny
Kunio Kubo
Dhananjay Kumar
Cin-ty Lee
Kandy Lukats
Odudu Ndebbio
Kurt Remington
Justin Robbins
Jim Schneider
Chelsea Toews
Roger Trejo
Donald Yezerski
Joy Young

ASSOCIATE MEMBER

Todd Buehlman

EMERITUS MEMBERS

Charles Burnette
Clifford Foss
William Gibbs
Maynard Little
Burl McKeel
Paul Potter

STUDENT MEMBERS

Joel Camacho
Chrisopher Hendrix
Jennifer Holley
Scott Leaseburge
Jingxuan Liu
Minh Luong
Maryam Nasizadeh
Devin Thomas
Matthew Vacek

Welcome New Members

Government Update continued from page 47

Congress to reform the nation's budgeting for wildfire suppression, which currently requires the U.S. Forest Service (USFS) to use funds from fire prevention and non-fire programs when fire suppression funding runs dry. At a field hearing in Seattle, Washington on August 28, 2015, Senators Maria Cantwell (D-WA) and John Barrasso (R-WY) highlighted the importance of maintaining wildfire prevention programs, such as reducing excessive fuel loads, that will diminish the size and severity of future fires. Earlier in the month, a bipartisan group of 11 Western senators pledged to reform wildfire budgeting.

Bills have been introduced that would eliminate "fire borrowing," but Democrats and Republicans have disagreed over the mechanics of a solution. Some senators want the USFS budget to contain all wildfire suppression funding, while others would supplement catastrophic fire seasons with funding from different sources. Still others would make wildfire suppression funding contingent upon hazardous fuels removal, which would reduce long-term costs.

These discussions have occurred amidst the release of a USFS report on the impact of fire borrowing on non-fire programs and USFS Chief Tom Tidwell ordering a freeze in non-fire spending to ensure that funds are available to cope with a catastrophic 2015 wildfire season that has burned more than 7.5 million acres across the Western U.S.

Court Affirms Decision to Strike Down SEC Conflict Mineral Rule

On August 18, 2015, the U.S. Court of Appeals for the District of Columbia Circuit voted 2–1 to affirm its prior decision to strike down a regulation in the U.S. Securities and Exchange Commission's (SEC) conflict mineral rule. The regulation would require companies to disclose on their websites if mineral components in their goods may have originated in conflict areas. The SEC developed the rule under the 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act to discourage the use of conflict minerals—gold, tantalum, tin, and tungsten—that are sold to finance militias in war-torn Democratic Republic of the Congo in Africa.

The D.C. Circuit panel struck down the disclosure regulation in April 2014, reasoning that it violated free speech. The SEC and human rights groups petitioned the court to reconsider the decision in light of a later ruling by the same court upholding Department of Agriculture regulations that mandate the disclosure of the country of origin of meat products on labels. The panel ruled that the meat labeling regulation did not require the reversal of its conflict minerals ruling. ■

HGS *Bulletin* Instructions to Authors

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

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

Figures, maps, diagrams, etc., should be digital files using Adobe Illustrator 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.

Photographs may be digital or hard copy. Hard copies must be printed on glossy paper with the author's name, photo or figure number and caption on the back. Digital files must be submitted in .tif, .jpg or .eps format with 300-DPI or greater resolution at the printing size and be accompanied by figure captions that are linked by the file name of the image. The images should be submitted as individual email attachments (if less than 5 MB) or on CD or DVD.

Advertising

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.**

Random Inside Ad Placement Black & White Prices Shown Color add 30% to prices shown below					Specific Page Color Ad Placement					
No. of Issues	Random Eighth Page	Random Quarter Page	Random Half Page	Random Full Page	Inside Front Cover Full Page	Inside Back Cover Full Page	Page 2 Full Page	Outside Back Cover Half Page	Back of Calendar Full Page	Calendar Quarter Page
10	$823	$1,387	$2,488	$4,734	$7,830	$7,560	$7,384	$6,858	$6,750	$2,700
9	$823	$1,387	$2,488	$4,734						
8	$750	$1,260	$2,242	$4,307						
7	$665	$1,123	$2,014	$3,834						
6	$590	$990	$1,782	$3,392						$1,890
5	$497	$837	$1,503	$2,860	$4,698	$4,536	$4,466	$4,104		
4	$405	$683	$1,223	$2,326						
3	$327	$550	$990	$1,886						$1,080
2	$232	$392	$704	$1,339						
1	$146	$246	$443	$842	$1,404	$1,296	$1,313	$1,080	$1,296	$810
Professional Directory Section Business Card Ad 10 Issues – $160 ($30 for each additional name on same card)										

Website Advertising Opportunities

HGS has multiple website advertising opportunities for your company! We've expanded our offerings to include a 275 x 800 pixel, rotating banner ad on the front page of the website. We have kept the popular Event Calendar and Geo-Job Postings advertisement locations!

	Home page Banner	Home Page (200 x 400 pixels)	Event Calendar (200 x 400 pixels)	Geo-Jobs (120 x 90 pixels)	Website Business Card (Members Only)	Personal Resumes (Members Only)
One year	$3,000.00	$2,800.00	$2,500.00	$1,400.00	Free	Free
6 months	$2,000.00	$1,800.00	$1,500.00	$750.00	Free	Free
3 months	$1,500.00	$1,300.00	$1,000.00	$450.00	Free	Free
Monthly	$ 700.00	$500.00	$ 400.00	$200.00	Free	Free

We still offer Geo-Jobs - where your company can post job openings for 14 days at $50.00 or 30 days at $100.00.

For more information regarding website advertising visit HGS.org or email jill@hgs.org.

Application to Become a Member of the Houston Geological Society

Qualifications for Active Membership

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

Qualifications for Associate Membership (including students)

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

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

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

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

Payment method:

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

Card # _____

Expiration Date: _____ Card I.D. _____

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

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

Name: _____

Address: _____

_____

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

Email: _____

Job Title: _____

Company: _____

Company Address: _____

_____

Work Phone: _____ *Fax Number:* _____

Circle Preferred Mailing Address: Home Office

Professional Affiliations: _____

❑ AAPG member No.: _____

Professional Interest:

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

School _____

Degree _____ *Major* _____ *Year* _____

_____

School _____

Degree _____ *Major* _____ *Year* _____

Earth Science Work Experience _____

_____

_____

_____

Applicant's Signature _____ *Date* _____

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

Name: _____

Signature _____ *Date* _____

Membership Chairman _____ *HGS Secretary* _____

revised 7/30/14

Houston Petroleum Auxiliary Council News

by Shirley Gordon, HPAC-HGS Liaison

Members of the Houston Geological Society, please show this article to your spouse. Spouses of geologists, geophysicists, engineers, and landmen who are current members of their respective professional organizations are eligible for membership in the Houston Petroleum Auxiliary Council, better known as HPAC. HPAC is an organization designed to further friendships and common interests among spouses of HAPL, GSH, SPE and HGS.

With our function at the Brookwood Community in the past, we are now anticipating our December 15th event. With much eagerness we are looking forward to a delightful and entertaining program presented by the Uptown Dance Centre featuring "Highlights of the Nutcracker Suite." **Phyllis Carter** and her committee have planned a delightful day. This event is very popular, so hopefully you have already made plans. Remember, the Racquet Club has excellent food, so it would be an ideal time to repay people to whom you "owe" a lunch. The time will be 10:30AM-1:00PM. The price is $45.00, and a cash bar will be available.

The Book Club convenes again on February 1, 2016 with the book *Isabella, the Warrior Queen*. Hostess will be **Wanda Shaw** and **Mickey Murrell**, and our discussion leader will be **Sandra Pezzetta**. The book club currently has 27 members, why not consider becoming member #28? Call **Mickey Murrell** at 281-469-2272 for more information – she would love to hear from you.

Calling All Bridge Players! There are two bridge groups associated with HPAC. One group meets the third Wednesday of each month at the Petroleum Club, now at 201 Louisiana. **Daisy Wood** is the coordinator for that group, so if Wednesdays suit your schedule, contact her at 832-571-3132 or 713-826-7952. The other group, "Cinco Mas," meets the second Thursday at the Westchase Marriott, 2900 Briarpark. **Audrey Tompkins** is coordinator for that group and can be reached at 713-686-0006.

Again, sincere thanks to all of you who volunteered to help with the 2015 GCAGS Convention. Without your support, this convention would not have been nearly as successful. The registration desk was manned by many volunteers, while the hospitality room was hosted by **Mr. (Ray)** and **Mrs. (Sally) Blackhall**. The self-enrichment programs were enjoyed by all who attended.

This month we are featuring **Margaret Eisenhardt Jones**. Margaret was President of the Houston Geological Auxiliary in 2004-2005. Now, at age 92, she remains an integral part of HPAC. Margaret was born in Calhoun, Louisiana in 1923, and has two brothers aged 72 and 70. The family later moved to West Monroe, Louisiana, where she attended school. According to Margaret, the family had very little money, so she was obliged to go to work after a year in junior college. And work she did. When she retired, she was executive assistant to the Superintendent of Schools for the Houston Independent School District Not bad for a girl from West Monroe, says Margaret.

Margaret met her first husband, **William (Bill) Eisenhardt** on a blind date in New York City in 1947 while there with her cousin Peggy. Margaret says "I caught his eye, and he mine." Seemingly following her mother's footsteps, Margaret's first son Charles (Chuck) was born when she was thirty-six years old, and son Jeff when she was forty. Bill Eisenhardt was a respected geologist contributing much to the field of geology. After his death, Margaret met and married William Case Jones in 1993. They were married five years before his passing in 1998.

Margaret loves to dance, and has been a member of many dance clubs. She vows she will "dance again". She is also a longstanding member of Memorial Drive Presbyterian Church. Though now residing in an assisted living facility, it doesn't slow her down. Since she no longer drives, she has an assistant who *chauffeurs* her to appointments. Of course, visits to the hairdresser are a priority. Margaret is in remarkably good health except for an occasional lapse of memory. You will almost always find her at the HPAC meetings. This year, she volunteered for the December luncheon committee. Margaret, when we grow up we want to be just like you! You have an interesting, exceptional life, and HPAC loves you.

Have a safe and happy holiday season!

Mickey Murrell, Norma Jean Jones, and Linnie Edwards

Hospitality Committee Linnie Edwards, Margery Ambrose, and Mary Harle

Sheri McQuinn, Janet Steinmetz, and Edie Bishop

You are invited to become a member of

HPAC

2015–2016 dues are $20.00 Mail dues payment along with the completed information

to **Wanda Shaw** • 1506 Haven Lock Drive • Houston, Texas 77077

YEARBOOK INFORMATION

Last Name	First Name	Name Tag
Spouse Name	Company	
Street Address	City State	Zip
Email Address	Home Fax	
Home Phone	Cell Phone (Optional)	Home Email Address

Please choose a committee assignment if you are interested.

☐ Fall Event ☐ Yearbook ☐ Bridge ☐ Membership

☐ Christmas Event ☐ Spring Event ☐ Notification ☐ Book Club

☐ Exploring Houston ☐ Courtesy

WELLSITE GEOSCIENCE SERVICES

When time is money, Wellsite Geoscience is money well spent.

Whether you're exploring a basin, producing a well or completing a shale play, time is money. That's why Weatherford Laboratories brings a suite of formation evaluation technologies right to the wellsite. Utilizing mud gas and cuttings, these technologies provide detailed data on gas composition, organic richness, mineralogy and chemostratigraphy in near real time. As a result, operators now have an invaluable tool to assist with sweet spot identification, wellbore positioning, completion design and hydraulic fracturing. We call it Science At the Wellsite. You'll call it money well spent.

SCIENCE AT THE WELLSITE™

www.weatherfordlabs.com

Formation Evaluation | **Well Construction** | **Completion** | **Production**

Weatherford
LABORATORIES

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

Periodicals
U.S. Postage
PAID
Houston, Texas