

JANUARY 14 - SGS & NOGS JOINT LUNCHEON Presentation: Amplitude, Frequency, and Phase: Integrated Methods

for the Next Frontier in Seismic Stratigraphy

Guest Speaker: Mr. Andrew S. Madof

Chevron Energy Technology Company • Houston, Texas



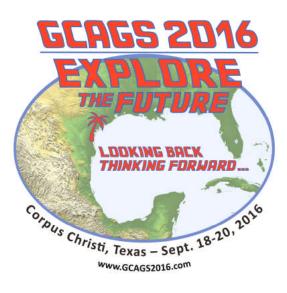
#### CALL FOR PAPERS

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 CGAGS 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 <u>barrykatz@chevron.com</u> by <u>December 15, 2015.</u> Once accepted for publication, a full manuscript should be submitted before <u>March 21, 2016</u>. Full instructions for manuscript submissions will be posted online at <u>www.gcags2016.com</u>

Convention presentations of Journal submissions are encouraged, but not required.



Published monthly by the New Orleans Geological Society. This issue was sent to press on December 19, 2015.

**Interested in contributing to the NOGS LOG?** Please submit items by the 1st Friday of the month to nogseditor@gmail.com. Advertising requests should contact the NOGS office at info@nogs.org.

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#### ON THE COVER

#### Cover Photo Submitted by Andrew S. Madof

Spectral-decomposition image of a weakly confined deepwater system from the Eastern Mediterranean, showing high-frequency channelized sandy turbidites that are represented by high-amplitude cooler colors. Based on frequency content, these deposits are presumed to be thin bedded. The darker and warmer colors, located lateral to the deep water system, represent lower frequency muddy turbidites and hemipelagites that are interpreted to be massive and thick on the basis of frequency distribution. See the Andrew Madoff's Abstract and Bio on page 8.

## From the Editor

I have good news and bad; first the bad. Carlo Christina is stepping down from writing the onshore Drill Bits report. Carlo had brought Drill Bits back in 2010 and it has been the 'crown jewel' in the NOGS LOG. Carlo told me that he was finding it harder to find interesting wells on which to report. The good news is that Kevin Trosclair, who drafted the maps for the onshore scouting report will be taking over for a period of six months. Kevin may want to take the onshore report in a new direction or focus on another aspect of the south Louisiana onshore oil patch. Al Baker indicates he will continue with the offshore report, but said that activity on the shelf was pretty slow.

I recently saw Ron Howard's In the Heart of the Sea. It tells of the hunt for sperm whale oil in the early 19th century. I noticed the parallels between the hunt for oil today with that of sperm whale oil 200 years ago. Both take place in the world's oceans, and are filled with financial backers, risk takers, chance and loss-some of it personal with grief. At the end of the film there is a poignant comment that in Pennsylvania they have found oil, oil that comes from the ground. Ironically, the modern oil industry saved the sperm whale from ultimate extinction, yet today various environmental groups vilify the oil industry for harming wildlife. Go see In the Heart of the Sea, it's a story about whaling, a large bull whale "with an attitude," and the genesis for Herman Melville's Moby Dick.

Since becoming editor, I have placed eight memorials in the NOGS LOG. Most were people I knew and respected. We normally draw from newspaper obituaries for those we memorialize. Whether this involves composing a memorial for a longtime friend or preparing your own in advance (for use in the far distant future, I pray), it is important to us at the NOGS LOG that we recognize our peers, colleagues, and friends in this way. We are grateful for any help and submissions you can provide in the future as we remember others.

Tom Klekamp, Editor



## 2016 ADVERTISING RATES

The New Orleans Geological Society was formed in 1941, with an initial membership of only 55. It has always been an active professional society and presently has a membership of 500.

AD SIZE	2015 RATE	<b>NEW 2016 RATE!</b>
Full Page (7.5"x10")	\$3500	\$1750
Half Page (3.75"x10" or 7.5"x5"	\$1850	<b>\$925</b>
Quarter Page (3.75"x5" or 7.5"x2.5")	\$1000	\$500
Eighth Page (3.75"x2.5")	\$600	\$300
Twelfth Page (3.75"x1.65")	\$375	\$188
Note Size (3.75"x.75")	\$120	\$60



#### **PREMIUM LOCATIONS**

Inside Front Cover	+30%
Opposite President's Page	+20%
Opposite Oral Abstract	+20%
Inside Back Cover	+30%
Outside Back Cover	+40%

**More Sporcle Games!** 

Geology Sporcle game links published in the December 2015 *NOGS LOG* under 'Staying Alert' received a recent spurt of plays from Sporcle statistics. The following links below are more games, some of which are non-geological and may be of interest to auxiliary members as well.

The first three new games require filling in missing words. The next two are clickable quickie minefields in which a wrong answer knocks one out. Last is a word ladder where one letter changes with each rung.

www.sporcle.com/games/cfxlspo/missing-word-about-new-orleans www.sporcle.com/games/cfxlspo/geology-minerals-2-a-to-z www.sporcle.com/games/cfxlspo/pick-sedimentary-rocks-only www.sporcle.com/games/cfxlspo/clickable-us-state-capitals www.sporcle.com/games/cfxlspo/geologically-themed-ladder

Enjoy! Cyril Lobo



# From the President

As we approach the New Year, it is always a good time to reflect on the accomplishments of the past year and resolve to equal or surpass those accomplishments in the coming months of the next year. For NOGS, 2015 turned out to be a truly great year of not only social and educational activities, but also of long term commitments to educational and technical projects. In midyear 2015, the NOGS Board approved a long term commitment to help fund the construction of two new children's museums, one in New Orleans City Park, and another on the Northshore near Mandeville. And in October, NOGS established a long term sponsorship to a major project to create an Atlas of Surface Faults along the Louisiana coastal zone in an effort to help both public and private entities understand the impact of naturally occurring geologic processes on planning coastal zone restoration and industrial building projects. Of course, NOGS participated in several successful educational and social events, including the Greater New Orleans Science and Engineering Fair, Supersaurus Saturday at the Children's Museum, the annual NOGS Golf Tournament, the Deepwater Symposium and Seminar, and the Believe in Girls Event for Girl Scouts in Hammond, Each of these events took a lot of hard work by dedicated NOGS volunteers, both students and more "seasoned" members. So, as you prepare your New Year's resolution to perhaps quit smoking, eat less king cake, or maybe run 5 miles a day, please add a commitment to participate more in NOGS activities and its organization. Together in 2016 we can achieve NOGS stated goal of "disseminating pertinent geological and technological knowledge" to the public.

As most of you know, NOGS is an affiliated society of the Gulf Coast Association of Geological Societies, the GCAGS. Each year at this time, GCAGS has a couple of important deadlines of

note. The first is January 15, 2016, for submission of an abstract for next fall's annual convention to be held September 18 – 20 in Corpus Christi. The next deadline is February 15, 2016, for submission by NOGS members concerning nominations for GCAGS annual awards. If you would like to submit an abstract for the annual convention, or if you know someone who is deserving of one of the many annual GCAGS awards, please visit their website at www.gcags.org for more information.

And speaking of awards, I would like to extend my sincerest congratulations to NOGS member Mr. Art Johnson for his upcoming AAPG Distinguished Service Award to be presented at the next annual AAPG convention in Calgary in June. Art has always been one of the hardest working, generous, and dedicated NOGS members and has served in numerous NOGS Board and NOGS Memorial Foundation Trustee positions as well as several NOGS committee chairmanships. In addition, he serves as Treasurer of the La Bd. of Professional Geoscientists. I hope all of you can attend the AAPG convention just to see Art receive his well-deserved award.

And finally, PLEASE NOTE, the January NOGS Luncheon will not be on the first Monday of January, as you would expect. Instead, the meeting will be a joint technical presentation and luncheon with our sister society, SGS, on Thursday, January 14, at the Holiday Inn Superdome (our normal meeting venue). The presentation will be by Andrew Madof and is entitled "Amplitude, Frequency, and Phase: Integrated Methods for the Next Frontier in Seismic Stratigraphy." Please make your reservations online at www.nogs.org or by calling the NOGS office, and do so early as this meeting will undoubtedly be very well attended.

Have a safe and prosperous New Year and try not to drink too many egg NOGS.

**David Reiter** 

## T

#### **NOGS Office**

Office Manager: Annette Hudson

Phone: 504-561-8980 • Email: info@nogs.org • Website: www.nogs.org
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Correspondence and all luncheon reservations should be sent to the above address.



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## January 14 • SGS & NOGS Joint Luncheon

#### **Holiday Inn Downtown Superdome**

\$3.00 validated parking in hotel garage

#### **Presentation:**

Amplitude, Frequency, and Phase: Integrated Methods for the Next Frontier in Seismic Stratigraphy

#### **Guest Speaker:**

#### Andrew S. Madof

Coauthors: Ivana Bunting and Sean Connell

Chevron Energy Technology Company • Houston, Texas See pages 8 and 9 for Abstract and Biography

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Check with concierge or front desk for location. Lunch served at 11:30 am

#### **ADMISSION:**

Without reservation ...... \$35.00 Student Member with reservations...... FREE

#### February 5

**NOGS Luncheon** 

Holiday Inn Superdome • New Orleans, LA

Jeff Spencer: "40th Anniversary of the Tuscaloosa Trend in South Louisiana"

#### February 9-12

**NAPE Summit** 

George Brown Convention Center • Houston, Texas

For more information, http://napeexpo.com/shows/about-the-show/summit

Dhono

260-499-1554

brittlkime@gmail.com

#### February 11

**SGS Luncheon** 

Holiday Inn Superdome • New Orleans, LA

Dr. Barbara Radovich: "Mega-Regional View of Plays Around the Northern gulf of Mexico from an Onshore, Offshore Composited PSDM Seismic Grid" For more information, http://www.sqs-neworleans.org/

#### NOGS CONTACT LIST

Continued from previous page

#### **MEMORIAL FOUNDATION**

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UNO - Dept. of EES

### Jan. 14 SGS & NOGS Joint Luncheon Presentation

☆ ☆ ☆ at the Holiday Inn Superdome ☆ ☆ ☆

## Amplitude, Frequency, and Phase: Integrated Medthods for the Next Frontier in Seismic Stratigraphy

Presented by

#### Andrew S. Madof

Coauthors: Ivana Bunting and Sean D. Connell

Chevron Energy Technology Company Houston, Texas



#### **ABSTRACT**

An unfortunate conceptual and practical separation remains between the way stratigraphers and geophysicists use seismic data. Processors use amplitude, frequency, and phase to optimize seismic images, whereas interpreters use external forms, reflection terminations, and reflection configurations to unravel the stratigraphic evolution of sedimentary successions. As such, seismic stratigraphers frequently have little practical knowledge of geophysics, whereas many geophysicists lack a strong grasp of important geologic and stratigraphic concepts. To address these interdisciplinary shortcomings, we set forth an integrated approach that combines seismic stratigraphy with geophysics that bridges this nearly forty-year disciplinary divide. We propose a methodology that relies on the three wave-trace components, to better understand the amplitude, frequency, and phase of post-stack data, specifically within a seismic-stratigraphic context. We build on concepts of interpreting reflection terminations in amplitude by quantifying amplitude strength, continuity, and polarity, as well as dominant frequency and bandwidth, phase angle, and wavelet shape. We advocate against the current fashion of interpreting seismic as merely three-dimensional photographs, and of classifying the seismic-stratigraphic record through finer subdivisions, which surpass the limits of resolvability and detectability.

This approach facilitates the development of multiple working hypotheses through quantifying data limitations and resolvability by testing seismic stratigraphic interpretations via forward synthetic models. Only through an integrative, back-to-basics approach can we focus attention towards holistic geological and geophysical analyses to establish an integrated next frontier in seismic stratigraphy.

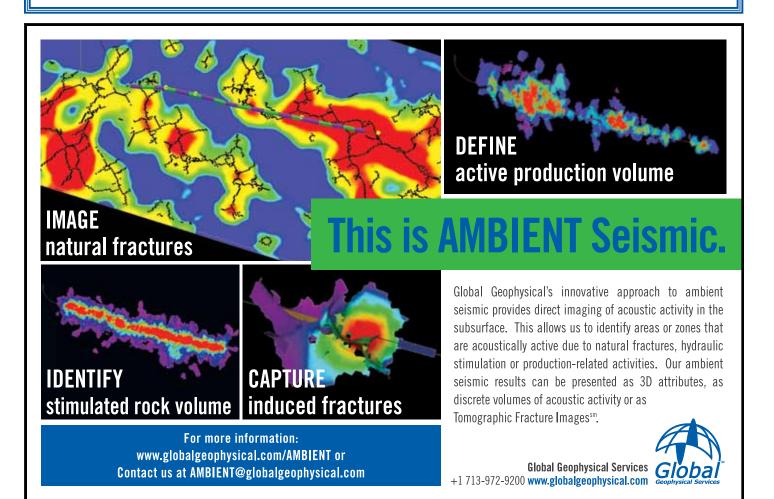
#### **BIOGRAPHY**

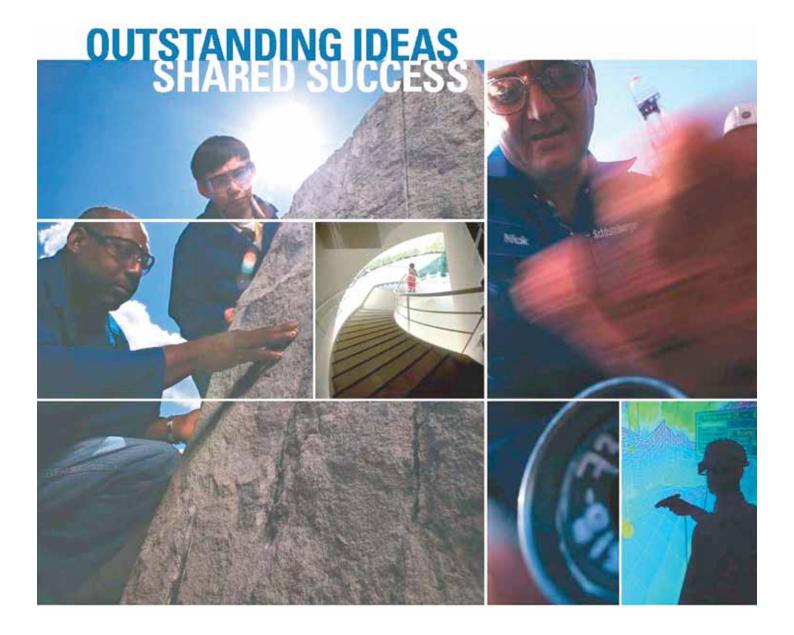
Andrew Madof is a stratigrapher with over 10 years of experience in seismic interpretation, subsurface mapping, attribute analysis, and geophysics, and is currently a senior seismic stratigrapher in the Seismic Stratigraphic Interpretation group, a team created by Henry Posamentier, in the Energy Technology Company at Chevron, in Houston TX. Andrew's expertise is in both clastic and carbonate settings, specifically in nonmarine, shallow marine, and deep water environments. He has worked on research, exploration, and reservoir management projects worldwide. Andrew's primary interests are in the tectonic controls on accommodation, and in the integration of geology, geophysics, and petrophysics. Prior to coming to Chevron in 2010, Andrew completed a PhD at Columbia University under Nicholas Christie-Blick, where his dissertation focused on the tectonic controls on clastic deposition.

#### THE LUNCHEON RESERVATION DEADLINE IS JANUARY 13 - CONTACT THE NOGS OFFICE

#### "And Looking Ahead . . . "

The next luncheon will be held on February 5. Our guest speaker, Jeff Spencer, Amromoco Energy LLC, will present "40th Anniversary of the Tuscaloosa Trend in South Louisiana." Contact the NOGS office at 561-8980 or use the PayPal link on the NOGS website (www.nogs.org) to make your reservation.





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## CALENDAR OF EVENTS: JANUARY & FEBRUARY 2016

2015	EVENT	LOCATION	CONTACT / INFO
8 Jan	Baton Rouge GS Luncheon	Mike Anderson 1031 W. Lee Dr. Baton Rouge	Lisa Pultz lisapultz@cox.net
8 Jan	NOGS LOG submissions due for February 2016 issue	Cyberspace	nogseditor@gmail.com or 985-630-2480
12 Jan	La Bd Prof Geoscientists Monthly Meeting - Open	9643 Brookline Suite 101 Baton Rouge	Georgeann McNicholas apply@lbopg.org
14 Jan	SGS & NOGS Joint Luncheon Andrew Madof, Chevron "Amplitude, Frequency, and Phase: Integrated Methods for the Next Frontier in Seismic Stratigraphy"	Holiday Inn Superdome	annette@nogs.org or 504-561-8980
15 Jan	GCAGS Call for Papers Deadline	Corpus Christi	www.aievolution.com/gca1601
18 Jan	Martin Luther King Day		
19 Jan	SIPES Luncheon	Andrea's Metairie	Reservations: Carol St. Germaine 504-267-3466
21 Jan	SPWLA Luncheon	Holiday Inn Superdome	https://www.spwla.org/ chapters/new-orleans
1 Feb	NOGS Luncheon Jeff Spencer "40th Anniversary of the Tuscaloosa Trend in South Louisiana"	Holiday Inn Superdome	annette@nogs.org or 504-561-8980
5 Feb	NOGS LOG Submissions due for March 2016 issue	Cyberspace	nogseditor@gmail.com or 985-630-2480
11 Feb	SGS Luncheon Dr. Barbara J. Radovich "Mega-Regional View of Plays Around the Northern Gulf of Mexico from an Onshore, Offshore Composited PSDM Seismic Grid"	Holiday Inn Superdome	www.sgs-neworleans.org or robin.broussard@shell.com 504-425-7437
12 Feb	Baton Rouge GS Luncheon	Mike Anderson 1031 W. Lee Dr. Baton Rouge	Lisa Pultz lisapultz@cox.net
10-12 Feb	NAPE - Houston	George Brown Convention Ctr	http://napeexpo.com/shows/ about-the-show/summit
16 Feb	SIPES Luncheon	Andrea's Metairie	Reservations: Carol St. Germaine 504-267-3466
17 Feb	NOGA Luncheon Speaker: Jeff Crouere of "Ringside Politics"	Metairie CC	Trudy Corona 504-737-6101
19 Feb	SPWLA Luncheon	Holiday Inn Superdome	https://www.spwla.org/ chapters/new-orleans
24 Feb	GNO Science and Engineering Fair	UNO	Mike Fein 1feinmn1@cox.net 504-717-6465

#### New Orleans Geological Auxiliary News

"The objective of the Auxiliary is to promote fellowship among the wives of the members of the New Orleans Geological Society and to render assistance to NOGS upon request."

As promised the NOGA ladies and their guests were treated to a perfect weather day to enjoy the view from the Southern Yacht Club along with the delicious lunch of crab cakes or chicken and wild mushroom crepes. Pat Williamson showed her decorating skill with the very attractive table decorations that were shared with some of the guests. Alma Dunlap, Pat's co-chairperson, graciously handled all the other details to see that everyone truly had a great outing. It was nice to visit with Carlene Grieshaber and her daughter, Cate; Judy Lemarié and her daughter, Jane; and Earleen Rodan and her daughter, Cathy. It was a treat to have the NOGS Office Manager, Annette Hudson, who gives the Auxiliary a helping hand so often, enjoying the day with us.



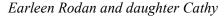
Alma Dunlap and Pat Williamson

The Auxiliary has already enjoyed two very special events this year and hope that more members

will partake in the upcoming luncheon February 17th at the Metairie Country Club when MaryEllis Hasseltine and Judy Sabaté will have speaker Jeff Crouere, the host of "Ringside Politics," to inform and entertain members and guests. Look forward to getting your invitation.

#### Peggy Rogers, NOGS LOG







Judy Lemarié and daughter Jane

#### **New Orleans Geological Auxiliary Membership Application**

Name	_ Spouse's Name
Address	Home Phone
City, State, Zip	Cell Phone
Spouse's Company	Email

Dues: \$25 payable to New Orleans Geological Auxiliary
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## **NOVEMBER 2015 LUNCHEON**



Dr. Sherwood Woody Gagliano, CEO Coastal Environments, Inc.; Chris McLindon of Stone Enery, Inc. and NOGS' Shallow Fault Atlas; and Ed Picou



Mike Merritt, our November luncheon speaker and a Commissioner on the SLFPA-West confers with SLFPA-East Regional Director, Robert A. Turner, Jr.



Mike Merritt with his wife, Dr. Jayne Fleener, Dean of the North Carolina State University College of Education (formerly Dean, College of Education of LSU), and Mrs. Marion Incollingo (Jayne's mother of Bloomington, Indiana)



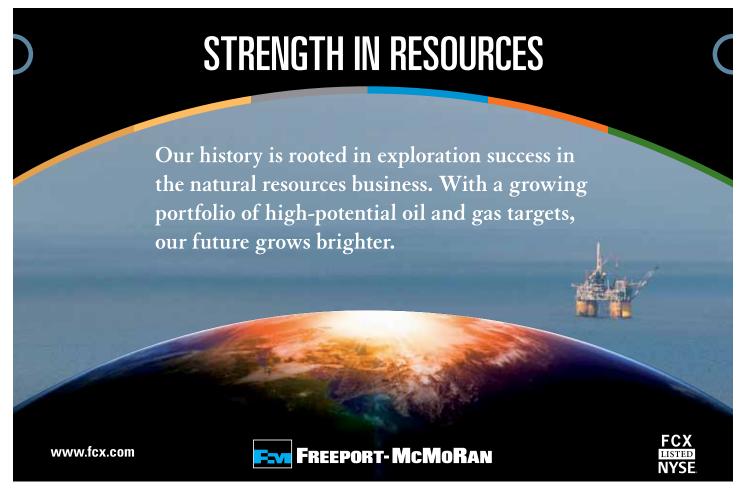
Kelly Haggar explains his point to Bill Furlong (partly hidden), Chris McLindon, and Monte Shalett

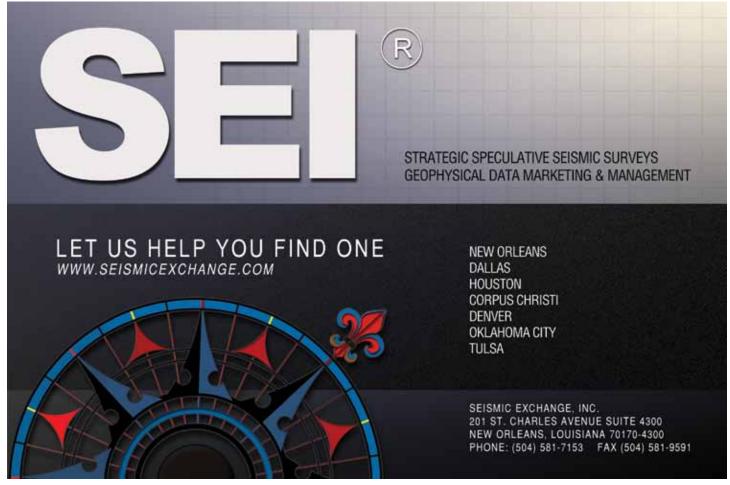


UNO Dept. of Earth & Environmental Science students at the November NOGS luncheon. L-R: Lewis Jones, Rachel Carter, Rachelle Thomason, Zexuan Wang, Joshua Flathers, David Cross, and Joseph Frank



L-R: Kathy Haggar, NOGS Vice-President; Dr. Sherwood "Woody" Gagliano, CEO of Coastal Environments, Inc.; Mike Merritt, Luncheon Speaker; and Ed Picou





#### South Louisiana and Offshore Gulf of Mexico Exploration and Production Activities

LAFAYETTE DISTRICT, ONSHORE AREA By Carlo C. Christina

The most recent total rig count for the United States is 744 rigs, down from 1931 rigs in November 2014. By comparison the total rig count for South Louisiana is 34 rigs, down from 67 rigs one year ago.

More importantly, the Office of Conservation, Lafayette District, Onshore Area, issued only 6 permits to drill during the month of November, compared to 30 permits one year ago. Of these 6 wells, 3 are shallow salt dome wells and are neither significant nor interesting.

Following is the most significant location:

#### **NEW LOCATION**

In Vermilion Parish, Cameron Canal Field, (A), Davis Petroleum will drill the #1 Broussard in Sec. 31, 2S-12W, located 1 mile southeast of current production in the field. The well will be drilled to a depth of 13,500 feet, offsetting a dry hole, which had been drilled to 16,525 feet in 1985. (249424)

Cameron Canal Field was discovered in 1979 and has produced a total of 907,411 barrels of oil and 16.4 billion cubic feet of gas from 7 wells having productive sands between 11,900 feet and 14,000 feet.

#### **COMPLETION**

LLOX has completed the #1 LL&E as a gas well in **Golden Meadow Field**, (B), Lafourche Parish flowing 4199 MCF and 85 BCPD through perforations 14,526 to 14,560, overall. The well was drilled to a total depth of 14,770 feet in Sec. 64, 19S-21E and completed in a Big hum sand having more than 150 feet of pay. (249189)

#### **BREAKING NEWS**

In October 2010 Drill Bits returned to the NOGS LOG after a brief absence. At that time I agreed to report on the most significant and interesting exploration activities in South Louisiana, Onshore. Since then I have filed 63 reports. I am sorry to report there will not be "number 64."

## OFFSHORE GULF OF MEXICO SHELF AND DEEPWATER ACTIVITIES

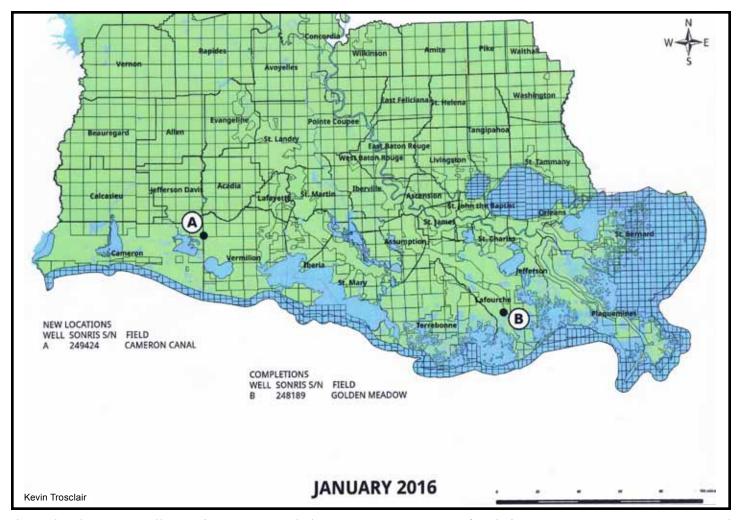
by Al Baker

During **November 2015**, the **BOEM** approved **82** Gulf of Mexico drilling permits. Of these, 7 were for shelf wells, and **75** were for deepwater wells. Of the total number of permits, there were **6 new well permits** issued consisting of **1 shelf** permit and **5 deepwater** permits.

The single new shelf well permit was issued to **Arena Offshore** for their **South Timbalier** 131 #K-3 development well.

The five new deepwater well permits were for 2 exploration wells and 3 development wells. The two exploration well permits were awarded to ConocoPhillips for their Alaminos Canyon 475 #1 well and to LLOG Exploration Offshore for their Viosca Knoll 959 #1 well. The





three development well permits were awarded to Hess Corporation for their Green Canyon 572 #SA-2 and #SB-2 wells and to Shell Offshore for their Alaminos Canyon 857 #GB-6 well.

Over the past eleven months, there have been only 9 new wells permitted on the Gulf of Mexico **shelf**, whereas there have been **64** new well permits issued in **deepwater**. The November shelf new well permit was the first permit issued in this region since June of this year.

On November 25th, **IHS-Petrodata** reported that the Gulf of Mexico mobile offshore rig supply stood at **122**, which are **4** more than reported last month. The marketed rig supply consisted of **74** rigs, of which **56** were under contract. The contracted versus total rig supply utilization rate is **45.9%**, while the marketed contracted versus marketed supply utilization rate stands at **75.7%**. The marketed rig supply number is **3** more than reported last month, and the contracted rig supply number is **2** less than reported last month. In contrast, the November 2014 fleet utilization rate stood at 62.7% with 74 out of the 118 rigs under contract.

On November 25th, **BakerHughes** indicated that there were **30** active mobile offshore rigs in the Gulf of Mexico, which is **53.6%** of the rigs under contract mentioned above. This active rigs number is **3** less than reported last month. The current active rigs count compares to 54 active rigs during the same period last year, representing a **44.4%** drop (minus 24 rigs) in yearly rig activity.

The next federal offshore lease sale, **OCS Sale 241**, is scheduled for **March 23**, **2016**, and will encompass the Central Gulf of Mexico Planning Area.

On November 18th, **Shell** announced that it **found 100 million barrels of oil** in a deepwater extension to its **Kaikias Field.** The August 2014 Kaikias discovery, which is in 4,575 feet of water, is located approximately 60 miles offshore Louisiana in the Mars-Ursa Basin. At Kaikias, Shell found roughly **300 net feet of oil** pay. The company drilled the recent appraisal well to about 34,500 feet by directionally drilling both vertically and horizontally to avoid hazardous salt formations. It is the longest well that Shell has ever drilled.



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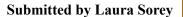
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#### All Shook Up: Seismicity in the New Madrid Fault Zone

If one were to flip through the safety procedure booklet of an elementary school in Memphis or St. Louis, one would skim over sections dedicated to a sampling of typical emergencies or natural disasters:fire,tornado,flashflooding,earthquake.... earthquake? Though some seismically sensitive residents west of the Rockies may scoff at the idea of the Central Time Zone being plagued by earthquakes of any meaningful magnitude, geologists across the United States have long been aware of the prolific seismic activity emanating out of the New Madrid Seismic Zone. Extending from its namesake in New Madrid, Missouri, the fault zone stretches into parts of Kentucky, Arkansas, and Tennessee. The NMSZ is associated with the Reelfoot Rift, thought to be a Mesozoic failed rift now buried beneath the sediment blanket of the Mississippi Embayment. It remains best known for a series of large earthquakes in 1811 and 1812 caused by the settling and shifting of the fault system. The three events and their associated aftershocks stand out in historical records across the United States. With moment-magnitudes estimated between 7 and 8, the shaking propagated out from epicenters in southern Missouri and could be felt across the Mississippi River Valley. Scientists uniformly agree on the historical devastation wrought by the high intensity of the 19th century quakes which instigated large sandblows, soil liquefaction, and even landslides along the bluff line only avoided causing catastrophic loss of human life due to the relative sparseness of people in areas that are now major population centers like Memphis and Little Rock. However, discussion of the implications of the New Madrid earthquakes begs the question, "If it happened then, will it happen again?"

It is difficult to understate the amount of work on the subject of recurrence intervals for New Madrid seismicity. Multiple publications postulate a recurrence interval for 1811-1812 comparable earthquakes of approximately 500 years with a 25-40% chance of a magnitude 6 or larger quake within fifty years. Some researchers even indicate a recurrence interval as low as 200 years. The USGS studies largely promote this view that region remains in a period of active seismicity where small modern quakes are associated with accumulating tectonic stress. This guides the ongoing push for emergency preparedness across the region,

where a large magnitude earthquake could prove catastrophic to large swathes of the American Midwest and South.

But a growing community of researchers contends that this may not necessarily be the case. Geodetic surveys implementing GPS data measure the magnitude of small scale displacements and surface creep. One recent AGU study indicates a regional compressive strain less than 3 x 10-9/ yr with surface creep rates around 2-4 mm/ yr. According to some, this magnitude of motion represents afterslip associated with larger events along NMSZ faults and indicates that modern seismic activity in the region is the manifestations of a prolonged aftershock sequence from the 1811-1812 series. At least one AAAS paper posits that the threat from large NMSZ quakes has been overstated. In rebuttal, USGS researchers argue that if the region were not still accumulating stress that one would observe a decrease in rate of small-scale earthquakes, which they contend has not happened. Indeed, the AGU study in in August explicitly notes that even if ongoing activity represents an aftershock series, it does not preclude the possibility of serious earthquakes in the future due to the potential for moderate to large magnitude quakes resulting from reloading associated with various postseismic processes.

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Over 200 individuals in field operations, project development, technology, finance, engineering and resource assessment from the geothermal, oil, gas and renewable energy sectors are expected to attend.

The conference goal is to connect attendees with the knowledge, technical expertise and equipment options they need to successfully transition an existing oil or gas field into an electricity-generating system. To that end, speaker presentations are delivered in a plenary session format with several breaks designed for networking.

#### Workshop

A pre-conference workshop on April 25th, A Primer on Geothermal Energy Resources, provides a focused introduction for those new to the geothermal and energy communities. The workshop is limited to 50 registrants to provide a classroom atmosphere with ample time for questions and answers. Four Continuing Education Credits given.

#### **Speakers and Posters**

We are accepting abstracts for speakers and poster presentations. Abstracts are due by February 5, 2016.

#### Registration

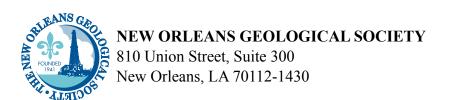
Registration will open soon for the 2016 Power Plays conference and workshop.

#### **Contact Us**

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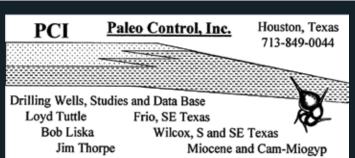
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