

NOGS LOG

APRIL 2014

Volume 54, Number 10



APRIL 10 - SGS/NOGS/SPE-DELTA JOINT LUNCHEON
Presentation: Seismic Clustering Uncloistered - Application to Resource Plays
Guest Speaker: Kurt Marfurt, Ph.D.
The University of Oklahoma • Norman, Oklahoma

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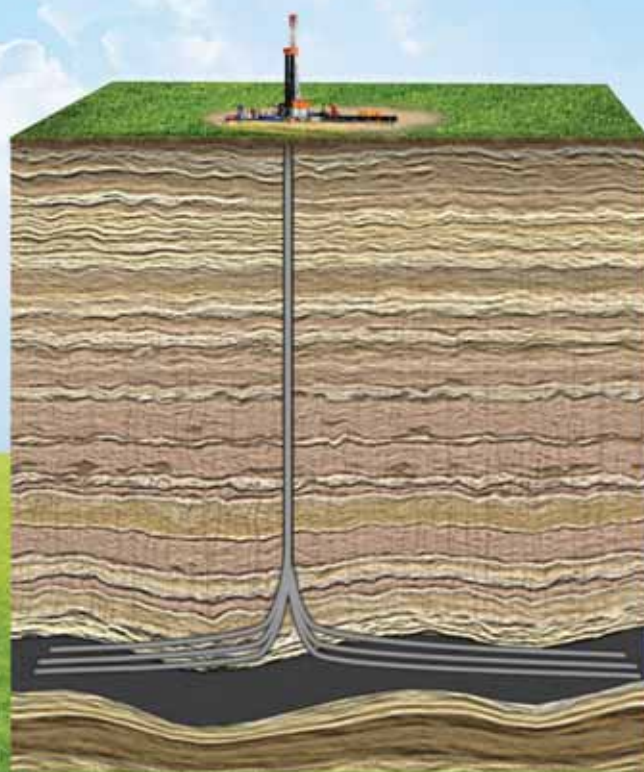
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on the cover

Cover Photo Submitted by: Thomas Klekamp

Cave at Short Creek — near Stab, Kentucky

The stream is named Short Creek due to its short length of about 150 feet as it traverses what is now a collapsed cave. The stream is part of a larger underground stream of some 7.5 miles that runs beneath a karst area known as Sinking Valley. Short Creek is an excellent example of a "karst window" where a section of an underground river is exposed at the surface.

A grist mill was located here in the late 18th and early 19th centuries. Short Creek has been in the Taylor family for generations and is accessible just off Route 80, east of Somerset, KY.

More information can be found at the AIPG Guidebook
<http://ky.aipg.org/GUIDEBOOKS/Ewers2011%20Guidebook.pdf>



Picture showing entire length of Short Creek

<http://kgs.uky.edu/kgsweb/download/misc/landuse/PULASKI/pulaskiissues.htm>

From the Editor

April will indeed be a busy month for our Society. Our monthly luncheon will be a joint society luncheon with both the SGS and SPE-Delta. The speaker will be Dr. Kurt Marfurt who will discuss "Seismic Clustering Uncloistered – Application to Resource Plays." The luncheon will be on the same day as Dr. Marfurt's one-day short course "3D Seismic Attributes for Prospect Identification and Reservoir Characterization." Both events will be on April 10 in the Shell Auditorium at One Shell Square. Please note that registration will be handled through SGS and must be done by April 3. See page 7 for registration details. An RSVP will be required as both events are expected to sell out.

NOGS will offer the "Petroleum Geology for Non-Geologists" course on April 15 also at the Shell Auditorium. This is an excellent opportunity for anyone interested in learning about the exploration and production of oil and gas. Another educational opportunity will be on April 16 and 17 when the Baton Rouge Geological Society and the Louisiana Geological Survey host the "Louisiana Subsidence and Land Loss Symposia" with a focus on coastal protection and the "Groundwater and Water Resources Symposia" with a focus on salt water intrusion. All of these events are advertised in this issue of the *NOGS LOG* as well as the NOGS website.

We do have a fun event planned this month and that is the NOGS Annual Golf Tournament on Monday, April 28. This event supports the Bill Craig Memorial Fund which provides funding for local earth science teachers and is an excellent way to spend the day whether you're a golfer or a volunteer.

Sheri Richardson – NOGS LOG Editor

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From the President

UPCOMING EVENTS

Last month was a busy month for NOGS and April will be just as active.

The Southeastern Geophysical Society has invited NOGS and SPE-Delta members to attend a one-day short course on April 10 entitled "3D Seismic Attributes for Prospect Identification and Reservoir Characterization" taught by seismic attribute expert and guru, Kurt Marfurt. Look on page 18 for more details or at the SGS website <http://www.sgs-neworleans.org/>.

For those who choose not to attend the short course, the SGS, NOGS, and SPE-Delta will have a joint luncheon meeting with Kurt Marfurt as the speaker and his topic will be "Seismic Clustering Uncloistered – Application to Resource Plays." Kurt is a world renowned seismic interpretation and attribute expert, so this luncheon topic will be a special one. Please register early as it is expected to sell out. See page 9 for details or the SGS website at <http://www.sgs-neworleans.org/>.

It's almost here! Get your foursomes ready for the NOGS Bill Craig Memorial Golf Tournament. The date is Monday, April 28 and it will be held at the Money Hill Country Club outside of Abita Springs. Look for details on page 21 in this issue of the NOGS LOG.

This month I would like to share with you one of my favorite geology-themed articles. It is K. Shields' abstract "New Exploration Strategy: Dry Hole Drilling" from the April 1983 issue of the Dallas Geological and Geophysical Society Newsletter and reprinted with permission from the Dallas Geophysical Society.

New Exploration Strategy: Dry Hole Drilling

Theory:

Obviously, there is a finite volume of hydrocarbons in the world. Applying basic set theory, we can locate these reserves either by drilling where the hydrocarbons are or drilling where they are not. An extensive program of either option will accurately pin-point the reserves. While independents appear to be pursuing the former option, the majors have obviously chosen the latter.

Advantages of Dry-Hole Drilling:

Economic advantages include: 1) cheaper acreage on prospective dry-hole locations, 2) tax write-offs provided by dry holes, 3) elimination of costly facilities such as pipelines, refineries, and tanks, and 4) elimination of nasty discoveries which will be eventually classified as "old oil" and will be underpriced. Dry holes were very profitable in the past when drillers would sell more than 100% of the stock in a well. After it was declared a dry hole, the investors lost their money and the driller walked off with the excess capital. This method became risky when hydrocarbons were found by mistake and the drillers had to pay more than 100% of the profit.

(continued on page 10)

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UPCOMING Events & Activities

April 10 • SGS/NOGS/SPE-Delta Joint Luncheon

Presentation:

Seismic Clustering Uncloistered – Application to Resource Plays

Guest Speaker:

Kurt Marfurt, Ph.D.

The University of Oklahoma • Norman, Oklahoma

See page 9 for Abstract and Biography

Please Register with SGS by April 3rd.

Visit www.sgs-neworleans.org or email e.brenneman@chevron.com and indicate if you'll be attending the short course and luncheon or just the luncheon. Please also note if you'd prefer a vegetarian meal. Due to the limited size of the venue, we cannot accept walk-ins. **An RSVP is required to attend.** Payments can be made via PayPal by clicking the appropriate link OR via check made payable to SGS (checks will be accepted at the door with RSVP).

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April 6-9

AAPG Annual Convention & Exhibition

George R. Brown Convention Center • Houston, TX

For more information, www.aapg.org

April 10

SGS Short Course - Dr. Kurt Marfurt

Hilton • New Orleans, LA

For more information, sgs-neworleans.org or see page 18

April 15

NOGS Petroleum Geology for Non-Geologists

One Shell Square • New Orleans, LA

For more information, www.nogs.org/calendar/ or see page 27

April 16 & 17

BRGS-LGS Subsidence & Groundwater Symposia

LSU • Baton Rouge, LA

For more information, www.brgs-la.org or see page 28

April 28

NOGS Golf Tournament

Money Hill • Abita Springs, LA • *For more information, www.nogs.org/calendar/ or see page 21*

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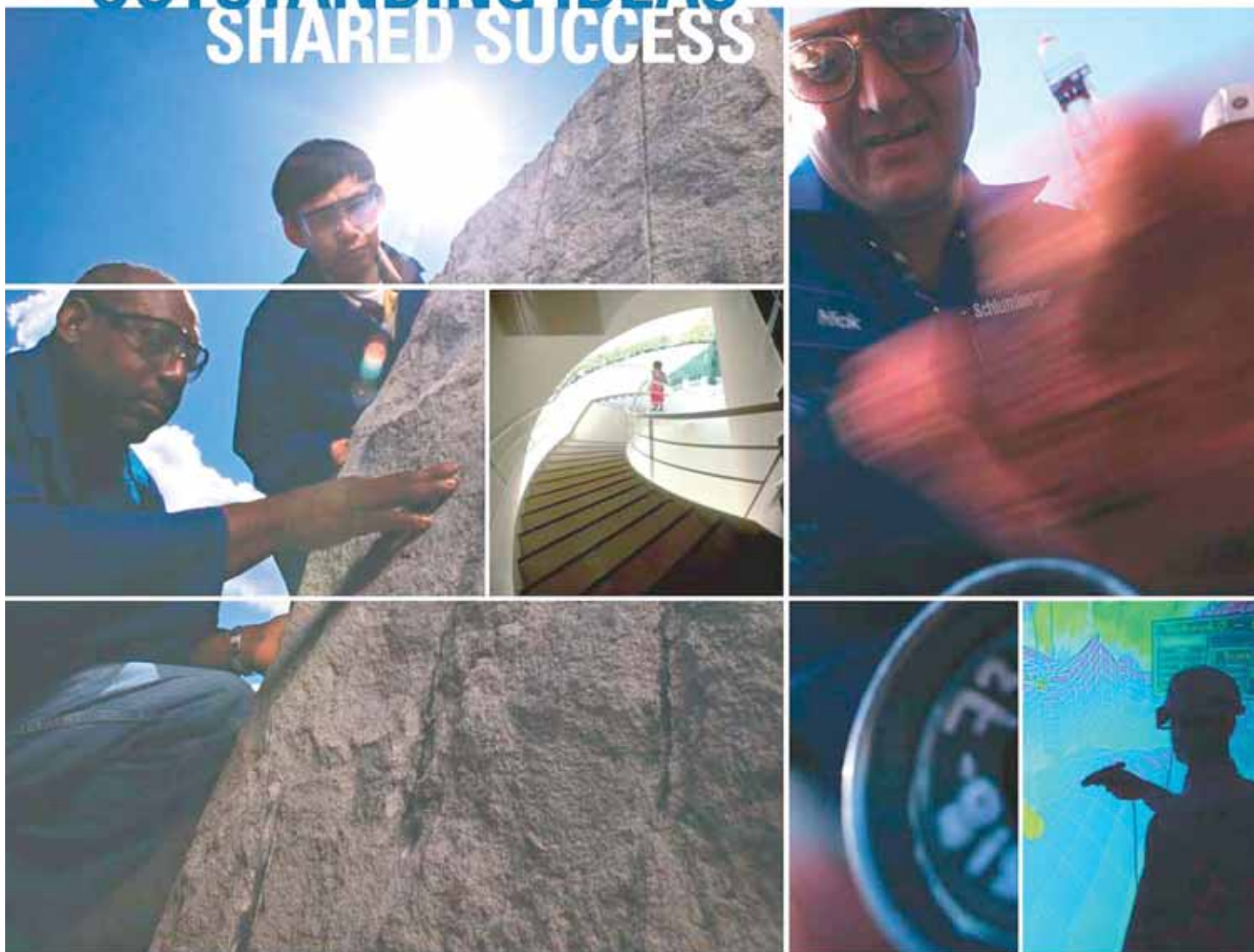
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April 10 SGS/NOGS/SPE-Delta Joint Luncheon Presentation

☆☆☆ at the Shell Auditorium in One Shell Square ☆☆☆

Seismic Clustering Uncloistered - Application to Resource Plays

Presented by

Kurt J. Marfurt, Ph.D.

The University of Oklahoma
Norman, Oklahoma



ABSTRACT

Clustering algorithms are used every day in marketing – from the good people at Amazon suggesting you buy a structural geology book based on your most recent purchase, to those at Google popping up a coupon on your smart phone when your GPS tells them you are once again standing in the Cheerios' Aisle at the local Save-a-Lot store. Seismic interpreters intuitively cluster, identifying seismic facies through reflector amplitude, phase, and configuration “attributes.” As the size of seismic volumes and the number of attributes increase, computer-assisted clustering helps us more rapidly extract and subsequently analyze patterns buried in the data.

Clustering algorithms are divided into two basic groups – “supervised” that requires interpreter training, and “unsupervised,” where the data “speak for themselves” and subdivide the data into “natural clusters.” If we understand the geology and physics of our reservoir and have sufficient well control, supervised clustering algorithms such as Probabilistic Neural Networks can help predict parameters such as gamma ray response and porosity from surface seismic data. In resource plays we may or may not understand the detailed geology, and often don't understand the variability in completion. In these situations some of the unsupervised and semisupervised clustering techniques can provide valuable information.

In this presentation, I will provide a very simple overview of two clustering algorithms commonly used by seismic interpreters – K-means and Self-Organizing Maps (commonly known as “waveform classification”) as well as the more recently introduced Generative Topological Mapping algorithm, emphasizing their strengths and weaknesses. I will then show how these algorithms can be used to identify variation in lithology in the Mississippi Lime of Oklahoma, completion in the Barnett Shale of Texas, and production in the Eocene Carbonate Wash of Tabasco Province, Mexico.

BIOGRAPHY

Kurt J. Marfurt joined The University of Oklahoma in 2007 where he serves as the Frank and Henrietta Schultz Professor of Geophysics within the ConocoPhillips School of Geology and Geophysics. Marfurt's primary research interest is in the development and calibration of new seismic attributes to aid in seismic processing, seismic interpretation, and reservoir characterization. Recent work has focused on applying coherence, spectral decomposition, structure-oriented filtering, and volumetric curvature to mapping fractures and karst with a particular focus on resource plays. In addition to teaching and research duties at OU, Marfurt leads short courses on attributes for the SEG and AAPG.

THE LUNCHEON RESERVATION DEADLINE IS APRIL 3 - WWW.SGS-NEWORLEANS.ORG

"And Looking Ahead . . ."

The next luncheon will be held on May 5. Our guest speaker, Tim Osborn with NOAA in Lafayette, Louisiana, will present "Subsidence and Sea-Level Rise: The Impact on the Southeastern Louisiana Coast." Contact the NOGS office at 561-8980 or use the PayPal link on the NOGS website (www.nogs.org) to make your reservation.

Technical advantages include: 1) smaller risk of blowouts, gas kicks, well fires, oil spills, etc., 2) less need for expensive stand-by equipment on drilling rigs (BOPs, heavy mud, gas masks), and 3) faster drilling times (dry holes can be drilled faster because they do not have to go as deep as many producers.)

Current Outlook for Dry Holes:

Dry holes are becoming rarer as more areas of the globe have been explored. In 1917 the success rate for dry holes was 95% (Perrine, AAPG, 1918) and now the success rate is down to 83% (OGJ, August 14, 1978). At this rate we will run out of dry holes in the year 2394. Recently, the USGS tried to drill a dry hole (Atlantic COST well, OGJ, January 22, 1979) and hit a nasty pocket of hydrocarbons. They did the same thing in the Cook Inlet (OGJ, February 13, 1978). Because of the increasing difficulty of drilling dry holes, modern exploration techniques will be required.

Exploration Techniques for Dry Holes:

Geophysicists must do extensive mapping to look for areas that have non-closure and areas with dull spots. Geochemists can be helpful by completing immaturation studies. Drilling of structural lows may be effective if proper caution is used to avoid stratigraphic traps. Some dry hole locations are obvious (i.e. Canadian Shield) but it takes real skill to drill dry holes in the center of producing areas. We must strive to be oil nonfinders.

Conclusion:

Dry-hole drilling is an increasingly popular approach to locating hydrocarbon reserves. The major oil companies are in the forefront of exploration and research, but the independents are not far behind. Perhaps we can best maintain our lead by financial motivation for the explorationists. They should be given a percentage of every tax write-off for a dry hole. K. Shields - April Fool's

Chuck

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6	7	8	9	10 SGS-NOGS Joint Luncheon SGS Short Course Dr. Kurt Marfurt	11	12
AAPG Annual Convention & Exhibition - Houston, TX						
13	14	15 NOGS Petroleum Geology for Non-Geologists	16 NOGS Board Meeting	17	18 Good Friday	19
		BRGS & LGS Symposia, B.R., LA				
20 Easter	21	22 Earth Day	23	24	25	26
27	28 NOGS Golf Tournament Money Hill	29	30			

May						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5 NOGS Luncheon Holiday Inn	6	7 NOGA Installation Luncheon	8	9	10
	Offshore Technology Conference - Houston, TX					
11 Mother's Day	12	13	14	15	16	17
18	19	20	21 NOGS Board Meeting	22	23	24
25	26 Memorial Day	27	28	29	30	31

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."

The Auxiliary, along with spouses and friends, filled a dining room at Porter and Luke's Restaurant in early February to hear guest speaker Mr. Josh Kaston discuss "How to Protect Yourself in the Diamond Market." Forty members and guests enjoyed a very interesting and informative presentation, lovely decorations, and a delicious meal.



Chairman Mary Ellis Hasseltine, Speaker Mr. Josh Kaston, and Chairman Pat Williamson

Just around the corner is another function to which spouses and guests will be invited. Beverly Kastler, Linda Peirce, and Earleen Rodan are busy making plans for a gala party at the lovely home of Ann and Louis Gilbert. The Auxiliary will invite the NOGS officers so it will be a great time to meet and greet. Everyone is looking forward to our usual good food and fellowship.

Last, but not least, will be the Installation Luncheon at the New Orleans Country Club on May 14. You won't want to miss this lovely occasion. Beverly Christina and Camille Yeldell are planning another enjoyable event for us.

Peggy Rogers, NOGS LOG

Mr. Kaston is vice president of Béjé Wholesale Diamonds. His presentation involved very detailed descriptions of diamond weights, cuts, values, and most importantly what makes some less valuable. Mr. Kaston says you buy a diamond because you love the person you are buying it for, not as an investment. Everyone liked that statement!



Mr. Josh Kaston, Vice President of Béjé Wholesale Diamonds, presenting his talk on diamonds.

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NOGS FINDS WINNERS AT 2014 SCIENCE FAIR

by Michael N. Fein
Chairman, Awards Committee

On February 19, four NOGS members judged Junior and Senior Earth Science exhibits at the Region 9 Greater New Orleans Science and Engineering Fair. Judges for the Awards Committee were Art Johnson (Hydrate Energy), Fran Wiseman (retired), Bill Whiting (Consultant) and me (W&T). Thank you to our judges who volunteered their time for such a great endeavor.



This year the Junior Division for Earth Science was exceptionally strong with projects which would have placed higher in previous years but were Honorable Mention this year. In the Senior Division our winner in geological or environmental exhibits knocked it out of the park. It was wonderful to see quality participation from public schools in our local parishes. Having the young scientists manning their projects during judging, combined with the ability to read the abstracts online prior to judging the projects themselves, was invaluable.

The winnings were split between eight students; two of the Junior Division projects were awarded \$50 third place prizes and the Senior Division first place winner was a team comprised of one boy and one girl. Of the seven winning exhibits; five were from parochial schools (John Curtis Christian School, Christian Brothers School, and Holy Cross School) and two were from public schools (Patrick Taylor Science & Technology Academy).

We will celebrate two NOGS "hall of fame" teachers this year at our May luncheon. The teachers and their first place winning students and projects will be at our meeting.

Brother Laurence Konersmann of **Christian Brothers School** had his fourth winning exhibit since we started the luncheon program. His student who won **first place** in the **Junior Division** is **Scott Hawkins**, a seventh grader. Scott presented an exhibit entitled "Geothermal: Free Energy?" in which he simulated a geothermal system in his back yard, took measurements, and evaluated the results.



I have lost count how many times **Cathy Boucvalt** of **John Curtis Christian School** has brought first-place exhibits to NOGS over the last 16 years. This year, **Alexis Lang** and **Joshua Hartley** won **first place** in the **Senior Division** for their exhibit entitled "Go with the Flow: Can Freshwater Diversion Water Flow Be Used to Create Green Energy Using Hydroelectric/Kinetic Power?" This project measured flow, calculated efficiency, and modeled the economics of several diversion projects.

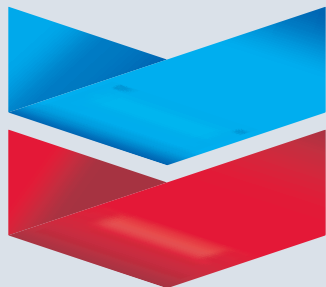
The **second place** and **third place Senior Division** awardees are both students of **Janell Simpson** from **Patrick Taylor Science and Technology Academy**. **John Tran**, an eleventh grader, presented "How Have Hurricanes Affected the Fishing Industry in Coastal Louisiana?" **Alexandra Walsh**, a tenth grader, presented "What Is the Effect of Riprap Modification on Erosion Caused by Water?"

The **second place Junior Division** awardee is a student of **Lauren Young** of **John Curtis Christian School**. **Dax Ford** is a seventh grader who presented "Does the Rough Bottom Affect the Wave Velocity at Different Water Depths?"

There was a tie for **third place** in the **Junior Division**. **Trevan Burns** earned third place by presenting "What Type of Sedimentary Rock Best Absorbs Petroleum Oil?" He is an eighth grader at **Holy Cross School** and his teacher is **Tara Lavender**. **Cole Radetich**, a seventh grader at **Christian Brothers School**, also won third place for creating a really good glacial simulation titled "Glacier Effects on Land."

Congratulations to all the students for their hard work! Come out early to the May luncheon and experience some of the finest geological science education going on in our local schools.

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NOGS WELCOMES

Submitted by Tavia Prouhet

Trent M. Belisle is a geophysicist with the Bureau of Ocean Energy Management (BOEM). He earned his BS (2009) in Geology from the University of Louisiana Lafayette and began his career at Petsec Energy as a geologist.

Elizabeth A. Bodeu is a Ph.D. student at Tulane University where she is studying the structural geology of terrestrial planets. She received her BA in Earth and Planetary Science from John Hopkins University in 2011. Elizabeth is interested in the AAPG Student Chapter Committee.

Luke J. Smaha is a student at the University of New Orleans where he is majoring in Geology and Geophysics.

March 2014 Luncheon



NOGA board members and officers were invited to attend the March NOGS luncheon. In attendance were Peggy Rogers, Trudy Corona, Jean Jones, Mary Walthers, Linda Peirce, and Judy Lamarié.



Guest speaker Chris McLindon with Chuck Holman

Bryan Stephens, Kathy Haggard, Dr. Woody Gagliano, and Chris McLindon

PHOTOS COURTESY OF TOM KLEKAMP



Join us for a one-day short course on
***3D Seismic Attributes for Prospect Identification
and Reservoir Characterization***

Thursday, April 10

at the

Shell Auditorium

One Shell Square

701 Poydras St. • New Orleans, LA

Cost: \$125 (includes lunch)

Presented by

Kurt J. Marfurt, Ph.D.

Professor of Geophysics

The University of Oklahoma

See page 9 for biography

Please Register with SGS by April 3rd. Visit www.sgs-neworleans.org or email Erin Brenneman at e.brenneman@chevron.com and indicate if you'll be attending the short course and luncheon or just the luncheon. Please also indicate if you'd prefer a vegetarian meal. Unfortunately, due to the limited size of the venue, we cannot accept walk-ins. **An RSVP is required to attend.** Payments can be made via paypal by clicking the appropriate link OR via check made payable to SGS (checks will be accepted at the door with RSVP).

ABSTRACT

A seismic attribute is any measure of seismic data that helps us better visualize or quantify features of interpretation interest. Seismic attributes fall into two broad categories – those that help us quantify the morphological component of seismic data and those that help us quantify the reflectivity component of seismic data. The morphological attributes help us extract information on reflector dip, azimuth, and terminations, which can in turn be related to faults, channels, fractures, diapirs, and carbonate buildups. The reflectivity attributes help us extract information on reflector amplitude, waveform, and variation with illumination angle, which can in turn be related to lithology, reservoir thickness, and the presence of hydrocarbons.

In the reconnaissance mode, 3D seismic attributes help us to rapidly identify structural features and depositional environments. In the reservoir characterization mode, 3D seismic attributes are calibrated against real and simulated well data to identify hydrocarbon accumulations and reservoir compartmentalization.

In this course, we will gain an intuitive understanding of the kinds of seismic features that can be identified by 3D seismic attributes, the sensitivity of seismic attributes to seismic acquisition and processing, and of how 'independent' seismic attributes are coupled through geology. We will also discuss alternative workflows using seismic attributes for reservoir characterization as implemented by modern commercial software and practiced by interpretation service companies. Participants are invited to bring case studies from their workplaces that demonstrate either the success or failure of seismic attributes to stimulate class discussion.

Who should attend?

- seismic interpreters who want to extract more information from their data.
- seismic processors and imagers who want to learn how their efforts impact subtle stratigraphic and fracture plays.
- sedimentologists, stratigraphers, and structural geologists who use large 3D seismic volumes to interpret their plays within a regional, basin-wide context.
- reservoir engineers whose work is based on detailed 3D reservoir models and whose data are used to calibrate indirect measures of reservoir permeability.

Advanced knowledge of seismic theory is not required; this course focuses on understanding and practice.

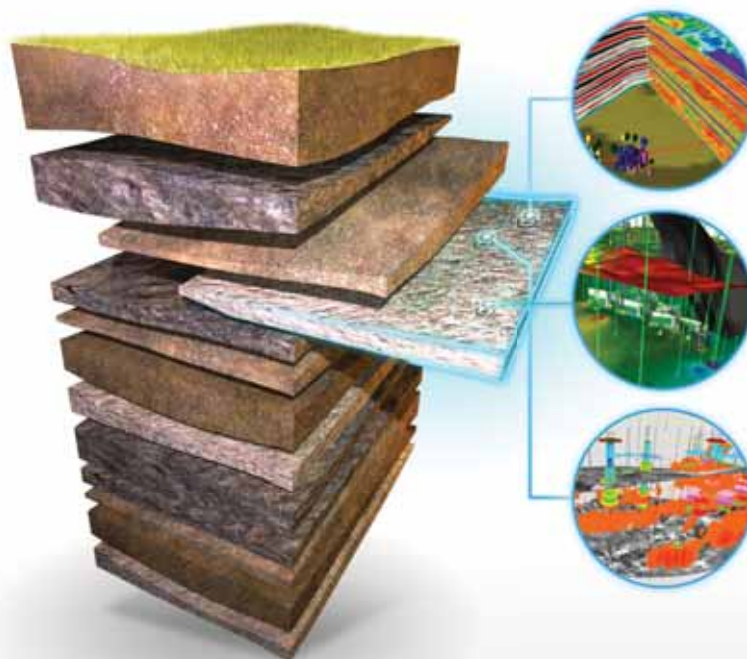
COURSE OUTLINE

Module name	Topics addressed
Geometric attributes	A summary of volumetric dip/azimuth, coherence, Sobel filter, amplitude and structural curvature, reflector shapes, lineaments, reflector rotation and convergence, and GLCM texture attributes.
Spectral decomposition	Theory, workflows, and advantages of the three most commonly used spectral decomposition algorithms (DFT, CWT, and matching pursuit). Their use not only in mapping "tuned" lithologies, but also as input to bandwidth extension, Q estimation, and phase discontinuity mapping of unconformities.
Attribute expression of tectonic deformation	Geologic expression of faulting and folding as seen on post stack volumes by coherence, curvature, and reflector rotation.
Attribute expression of clastic depositional environments	Geologic expression of fluvial/deltaic and deepwater systems as seen on post stack volumes by spectral decomposition, coherence, curvature, and reflector convergence attributes. Attribute expression of differential compaction.
Impact of seismic acquisition and processing on seismic attributes	The value of wide azimuth, dense spatial recording, and 5D interpolation on seismic attributes
Seismic Data conditioning	Theory and practice of structure-oriented filtering. Spectral balancing and spectral bluing. Residual velocity analysis and the impact on vertical resolution.
Statistical multiattribute analysis	Fundamentals of geostatistics, including collocated cokriging
Unsupervised Multiattribute Classification	Clustering algorithms including k-means, self-organizing maps (e.g. Stratimagic's "waveform classification") and generative topographic maps
Supervised Multiattribute Classification	A simple overview of neural networks

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Format: 4-person scramble with shotgun start at High Noon

Post tournament dinner sponsored by Diversified Well Logging

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Costs: \$140/individual, \$650/corporate, \$85/students. Hole sponsors are \$125.

Please register early! This event always fills up and we are limited to **only 120 players**. Remember you are not registered until NOGS has received payment and you are confirmed by Annette. Make sure you supply your handicap or a score that typifies a set of rounds of golf over recent time no greater than 2 years in the space provided.

We need volunteers. If you can help out, you will be treated to a day of fun, food, and be eligible for some door prizes.

Donations of any kind are welcome.

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Annette Hudson: 504-561-8980 or annette@nogs.org

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COMMITTEES NEED YOU!

Boy Scouts/Girl Scouts Committee:

A Chairman is needed.

This committee promotes and supports the Scouting movement and assists in all matters pertaining to geology, including the Geology Merit Badge Program. If you're interested, please contact Bill Whiting at Bootscon@aol.com or info@nogs.org. If there are any Eagle Scouts looking to assist in this worthy cause, it would be greatly appreciated.

Sponsorship Committee:

A Chairman is needed.

This committee secures funding from sponsors to help finance various activities of the Society. This committee also ensures that sponsors are thanked and adequately recognized for their generosity.

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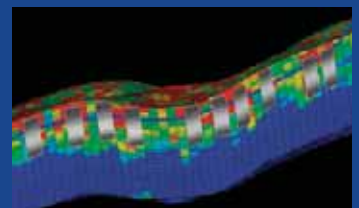
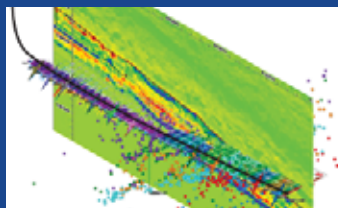


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South Louisiana and Offshore Gulf of Mexico Exploration and Production Activities

LAFAYETTE DISTRICT, ONSHORE AREA

By Carlo C. Christina

The Tuscaloosa Marine Shale play is heating up again. Goodrich Petroleum has taken the lead in the play after announcing that it bought 120,000 net acres and 6 wells from Devon Energy for \$126,000,000, and later announced that it will drill 32 wells in the TMS in 2014. Goodrich has 2 rigs running now, and will bring the total to 5. The Weyerhaeuser #51 H in St. Helena Parish and the Blades #33 H in Tangipahoa Parish are waiting on completion rigs. Recent completions have averaged more than 1100 barrels of oil equivalent per day. Two new locations are listed later in this report.

Halcón Resources has joined the play announcing that it now has 307,000 net acres in the play and plans to spud 10 to 12 wells in 2014.

During the month of February 2014, the Office of Conservation, Lafayette District, Onshore Area and Offshore Area, issued 56 permits to drill. Following are the most significant and interesting locations:

NEW LOCATIONS

Goodrich Petroleum has permitted 2 horizontal wells in the Tuscaloosa Marine Shale play, each to a projected depth of 21,000 feet. In East Feliciana Parish, **Beech Grove Plantation Field**, (A), the #1 Beech Grove 94 H will be drilled in Sec. 94, 1S-2E, located 2 miles south of the #74 H, the nearest TMS production, which has produced 68,941 BOE in 18 months. (247705)

The second location is the Goodrich #1 SLC INC 81 H, located in **Spillman Field**, (B), in West Feliciana Parish. It will be drilled in Sec. 81, 1S-2W, located 10 miles southeast of nearest TMS production, the #63 H, which has produced 64,430 BOE in 16 months. (247644)

Petroquest Energy will drill an interesting well in Vermilion Parish in **Tigre Lagoon Field**, (C), in Sec. 36, 13S-4E, to a projected depth of 21,000 feet. The well will test the prolific Cris R sands which are producing in Bayou Hebert Field, located 3 miles to the southeast. (247681)

Bayou Hebert Field, an old field which was discovered in 1966, went off production in 2005. Petroquest restored production in 2012 with one of the most significant discoveries in recent years. The Petroquest #1 Thibodeaux was recently completed in the Cris R massive sands, having 248 feet of net gas pay, and a second well has 210 feet of net gas sand.

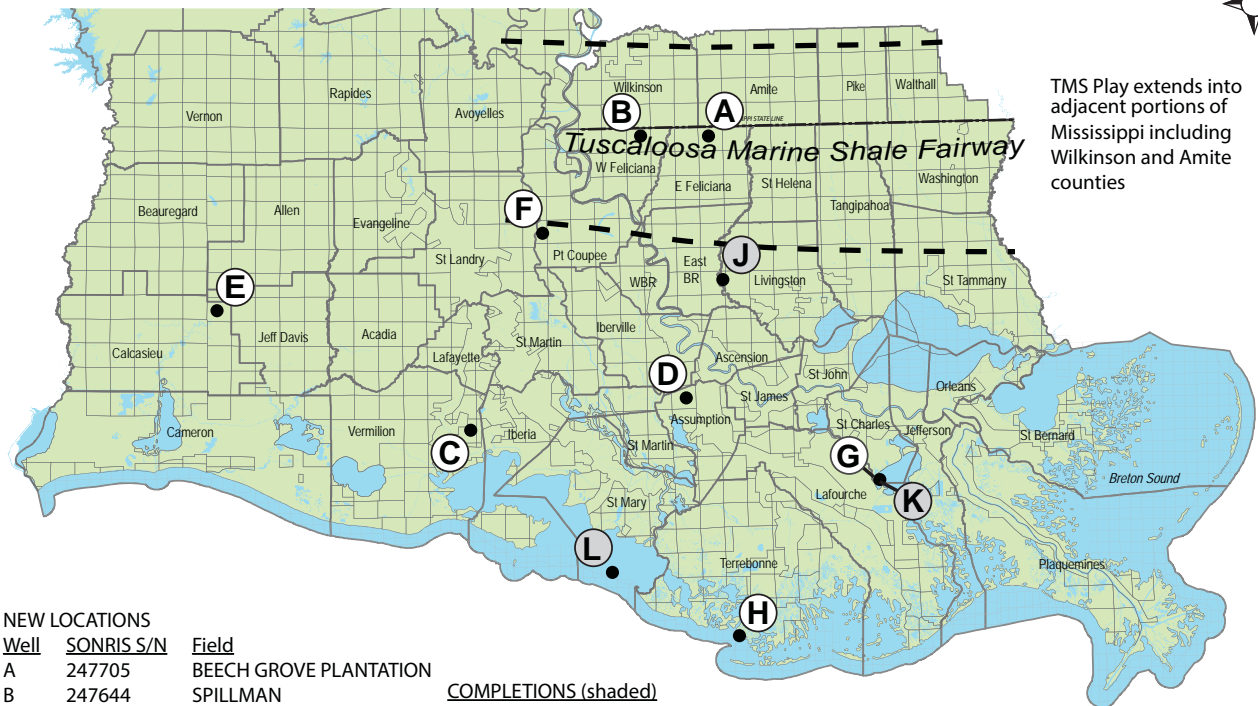
Three wells in Bayou Hebert Field are **currently producing 110 million cubic feet of gas and 2200 barrels of oil a day**. At today's current gas and oil prices, these 3 wells are generating **\$506,000 a day from gas and \$237,600 per day from oil**, or gross revenue of **\$743,600 per day**. As you read this report, these wells will have generated a total of **\$22,308,000** in the month of April.

In Assumption Parish, **Napoleonville Field**, (D), Hilstar Oil & Gas will drill the #1 Masur in Sec. 33, 12S-13E to a projected depth of 13,318 feet. The well is located on the north flank of the dome 1½ miles northwest of a recently completed oil well, the Petrodome #1 Hensarling, which has produced 45,000 barrels of oil in 6 months. (247622)

Expert Oil & Gas will drill a deep test in **Gillis-English Bayou Field**, (E), Calcasieu Parish, in Sec. 19, 8S-7W, to a depth of 14,100 feet. This Hackberry test, the #1 Caswell Sterling Timbers, is located on the north flank of the field, 1 mile northeast of nearest production. (247706)



NOGS LOG DRILL BITS — SOUTH LOUISIANA ACTIVITY MAP



NEW LOCATIONS

Well	SONRIS S/N	Field
A	247705	BEECH GROVE PLANTATION
B	247644	SPILLMAN
C	247681	TIGRE LAGOON
D	247622	NAPOLÉONVILLE
E	247706	GILLIS-ENGLISH BAYOU
F	247601	BAYOU LATENACH
G	247637	WEST LAKE SALVADOR
H	247687	DOG LAKE

COMPLETIONS (shaded)

Well	SONRIS S/N	Field
J	247397	WILDCAT
K	247321	WEST LAKE SALVADOR
L	246949	WILDCAT-DISCOVERY

Kevin Trosclair

APRIL 2014



Pennington Operating Company will drill a Wilcox test in **Bayou Latenach Field**, (F), in Point Coupee Parish in Sec. 39, 5S-7E, to a proposed depth of 14,600 feet. The #1 Kean is located 1 mile from a well which had produced 320,000 barrels of oil in 32 years through perforations 13,318 to 14,378 feet in the Middle Wilcox section. (247601).

In St. Charles Parish, Square Mile Energy continues to develop the **West Lake Salvador Field**, (G), with the #1 SL 20644 as a southerly extension to the field. The well will be drilled in 16S-21E to test the Cris I sands at a depth of 14,022 feet. (247637)

GCER Onshore will drill its #1 LL&E in **Dog Lake Field**, (H), in Terrebonne Parish, to a projected depth of 16,550 feet to test Tex L sands. The well is located in Sec. 12, 22S-15E, on the south flank of the field which went off production in 2011. (247687)

COMPLETIONS

Strand Energy has plugged and abandoned its **wildcat**, (J), the #2 Weyerhaeuser located in Livingston Parish. The well was drilled in Sec. 2, 7S-2E to a depth of 9,120 feet. (247397)

In St. Charles Parish in **West Lake Salvador Field**, (K), Tri-C-Resources has completed the #1 SL 20936 as a gas well in the Cris I reservoir flowing 2302 MCFD and 48 BCPD. The well was drilled to 13,826 feet in 16S-21E and completed through perforations 12,990 to 13,029 feet, overall. (247321)

Castex Energy has completed its **discovery**, (L), the #1 SL 21122, in St. Mary Parish as a gas well flowing 5112 MCFG and 115 BCPD through perforations 11,198 to 11,206 feet in the Cib Carst sand. The well was drilled in 19S-10E, to 11,550 feet, 3 miles north of excellent Cib Carst production in Eugene Island Block 18 Field. (246949)

OFFSHORE GULF OF MEXICO SHELF AND DEEPWATER ACTIVITIES

by Al Baker

During February 2014, the BOEM approved **65** Gulf of Mexico drilling permits. Of these, **34** were for shelf wells, and **31** were for deepwater wells. Of the total number of permits, there were **11 new well permits** issued. These included **4 shelf** (1 exploratory and 3 development), and **7 deepwater** (5 exploratory and 2 development) **new well permits**.

On the shelf, the one exploratory new well permit was granted to **Byron Energy** for their **South Marsh Island 6 #1** well. The three development well permits were issued to **Arena Offshore** for their **Eugene Island 314 #C-16** well, to **Chevron U.S.A.** for their **Eugene Island 360 #C-18** well, and to **GoMex Energy Offshore** for their **East Cameron 272 #D-15** well.

In deepwater, **Shell Offshore** was awarded four exploratory new well permits to drill their **Walker Ridge 96 #2**, **Walker Ridge 508 #5**, **Mississippi Canyon 525 #2**, and **Mississippi Canyon 812 #1** wells. **Shell Offshore** was also given a development new well permit for their **Green Canyon 248 #GL-7** well. **ExxonMobil** was granted an exploratory new well permit for their **Mississippi Canyon 211 #MD-1** well. **Dynamic Offshore Resources** received a development new well permit to drill their **Garden Banks 213 #1** well.

On February 28th, IHS-Petrodata reported that the Gulf of Mexico mobile offshore rig supply stood at **111**. The marketed rig supply consisted of **85** rigs, of which **80** were under contract. The contracted versus total rig supply utilization rate is **76.6%**, while the marketed contracted versus marketed supply utilization rate stands at **94.1%**. The total and marketed rig supply figures reflect an increase of 1 rig each as to those reported last month. They also compare to 81 out of the 106 rigs that were available during February 2013, for a 76.4% fleet utilization rate.

On February 28th, BakerHughes indicated that there were **55** active mobile offshore rigs in the Gulf, which is **64.7%** of the rigs under contract mentioned above. This active rigs number is two less than reported last month. The current active rigs count compares to 52 active rigs during the same period last year, representing a **5.8%** increase in yearly activity.

On February 7th, **Energy XXI** provided a drilling operations update on their **West Delta 73 Field**. The **El Diente** well was drilled to 9,272 feet measured depth/8,074 feet true vertical depth, including a 1,000-foot lateral into the **F-35 Sand**. The well is currently being placed on production. **El Diente** is the tenth consecutive successful horizontal well at West Delta 73, where net oil production has grown to more than 6,000 BOPD.

On February 19th, **Stone Energy** announced two exploration gas discoveries. Their deepwater **Amethyst** exploration well in **Mississippi Canyon 26** encountered approximately 90 feet of net hydrocarbon pay (natural gas, condensate, and natural gas liquids) in one interval suggesting a commercial discovery. A single or multi-well tie-back to Stone's 100 percent owned Pompano Platform, located less than 5 miles from the discovery, is a likely development plan.

At **West Cameron 176**, the results at the deep gas **Tomcat** exploration prospect also suggest a commercial discovery with approximately 30 feet of net hydrocarbon pay (natural gas, condensate, and natural gas liquids) in the **Camerina** interval. Initial development plans are to tie-back the well to a nearby Stone-operated production platform on East Cameron 64. Production is anticipated to commence during the second half of 2014.

On February 25th, **Stone Energy** also provided a drilling update on its **Cardona** well (**Mississippi Canyon 29 #4**). According to their press release, the well encountered 84 feet of net oil pay in the development section interval. The well is expected to complete drilling operations in March 2014. Plans are to flow the Cardona well to the Stone-operated Pompano Platform with first production anticipated in early 2015.



NOGS

PETROLEUM GEOLOGY FOR NON-GEOLOGISTS

A One-Day Course

Tuesday, April 15, 2014

8:30 a.m. to 3:30 p.m.

Shell Auditorium • One Shell Square
701 Poydras Street • New Orleans, LA

The New Orleans Geological Society is presenting a one-day course on “Petroleum Geology for Non-Geologists.” The course will consist of a brief introduction to Basic Geology, followed by a review of how oil and gas are formed, how they are concentrated into reservoirs, the geological and geophysical methods used in exploration, and an overview of drilling and completion practices.

This course should be of significant benefit and interest to anyone who in one way or another works with geologists and geological data, such as land personnel, administrative assistants, draftsmen, and computer programmers and processors.

Instructors will be Duncan Goldthwaite, consulting geologist, Bob Branson, consulting geologist, and Bruce Robertson, consulting geologist and geology professor at the University of Southern Mississippi.

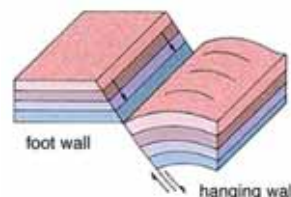
Cost will be \$35.00 per participant. Course notes and mid-morning refreshments will be provided. Interested persons can register and pay via PayPal through the Society's website www.nogs.org/payment-center/, then click on “Buy Now” under NOGS Special Events, or by sending a check for \$35.00, made out to the New Orleans Geological Society, to:

New Orleans Geological Society
810 Union Street • Suite 300 • New Orleans, LA 70112

When registering, please give your name, work or home address, email, telephone number and company affiliation, if any.

Baton Rouge Geological Society & Louisiana Geological Survey

Fourth Annual Louisiana Subsidence & Land Loss Symposia Focus on Coastal Protection



April 16, 2014

Eighth Annual Louisiana Groundwater & Water Resources Symposia Focus on Salt Water Intrusion



April 17, 2014

Dalton Woods Auditorium
Energy, Coast & Environment Building
Louisiana State University
Baton Rouge, Louisiana

Presentation:
Titles due March 10, 2014
Abstracts due April 1, 2014

For more information, email dcarlson@lsu.edu or go to www.brgs-la.org/

FOR EARLY REGISTRATION:

Fill out the registration form below, detach and send the form with a check made out to Baton Rouge Geological Society to cover all costs to the address below.

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Baton Rouge, LA 70803

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Address _____
City _____ State _____ Zip Code _____
Day Time Phone Number _____
Email Address _____
If you are registering as a student, state academic major and University you are attending:

Signature of Advisor: _____

REGISTRATION FOR:

Groundwater & Water Resources Symposia: Student \$10 _____ Professional \$50 _____
Subsidence & Land Loss Symposia: Student \$10 _____ Professional \$50 _____
Both of the symposia: Student \$10 _____ Professional \$75 _____

Submitted by Sheri Richardson

The Advocate – Ted Griggs

“Halcón will spend \$95 million in Tuscaloosa shale.” February 28, 2014

<http://theadvocate.com/home/8494006-125/halc%C3%B3n-will-spend-95-million>

Halcón Resources will devote around \$95 million in 2014 to drill 10 to 12 wells in the Tuscaloosa Marine Shale with confidence that it can overcome drilling issues that have hampered production from some competitors' early wells, Chairman and Chief Executive Officer Floyd C. Wilson said Thursday.

On Feb. 20, Goodrich Petroleum President Robert Turnham said as many as 45 to 60 wells, and maybe more, may be drilled in 2014. Goodrich alone plans to drill or partner in 32 wells. In 2013, there were 10 wells drilled in the Tuscaloosa.

Halcón's initial wells in the oil-rich formation, which stretches across the middle of Louisiana into Mississippi, are projected to cost \$13.3 million apiece. Halcón has boosted its leased acreage in the Tuscaloosa to 307,000 acres from the 75,000 it had in mid-2013. The company will move its first rig into the formation in March and another in April. But Wilson doesn't expect much production in 2014.

Wilson described the Tuscaloosa as “one of the most attractive” emerging formations in North America, although there are production challenges.

Halcón's team has been working the play for more than a year. The company is the leading driller in El Halcón in the eastern portion of the Eagle Ford Shale in Texas. El Halcón is similar to Tuscaloosa.

That experience, as well as data-sharing agreements with other drillers in the Tuscaloosa, will help Halcón overcome the issues with Tuscaloosa.

“This play has not had the benefit of 10 or 15 rigs drilling in it. It will That's when the avalanche of new data comes to everybody,” Wilson said. “You've had a couple of pioneers out there drilling wells with some tremendous success and some mechanical issues.”

Goodrich Petroleum, one of the largest players in the formation, has run into problems in two of its most recent wells where debris plugged portions of the horizontal sections of the wells. The debris resulted from fracturing, or fracking.

The process involves forcing millions of gallons of water, sand and chemicals underground at high pressure to crack the rock and release oil and gas. Drillers fracture multiple sections of the horizontal section of a well, which can be 7,500 feet long.

In Goodrich's wells, debris blocked the wells' production a few hundred feet into the horizontal section.

Halcón Chief Financial Officer Mark Mize said the problems are more mechanical than geological.

“If you want to take one analogy, this is the Eagle Ford Shale,” Mize said. “It's just a slightly higher clay content like El Halcón.”

More than 12,000 wells have been permitted in Eagle Ford since 2010, with 4,416 of those in 2013, according to the Texas Railroad Commission.

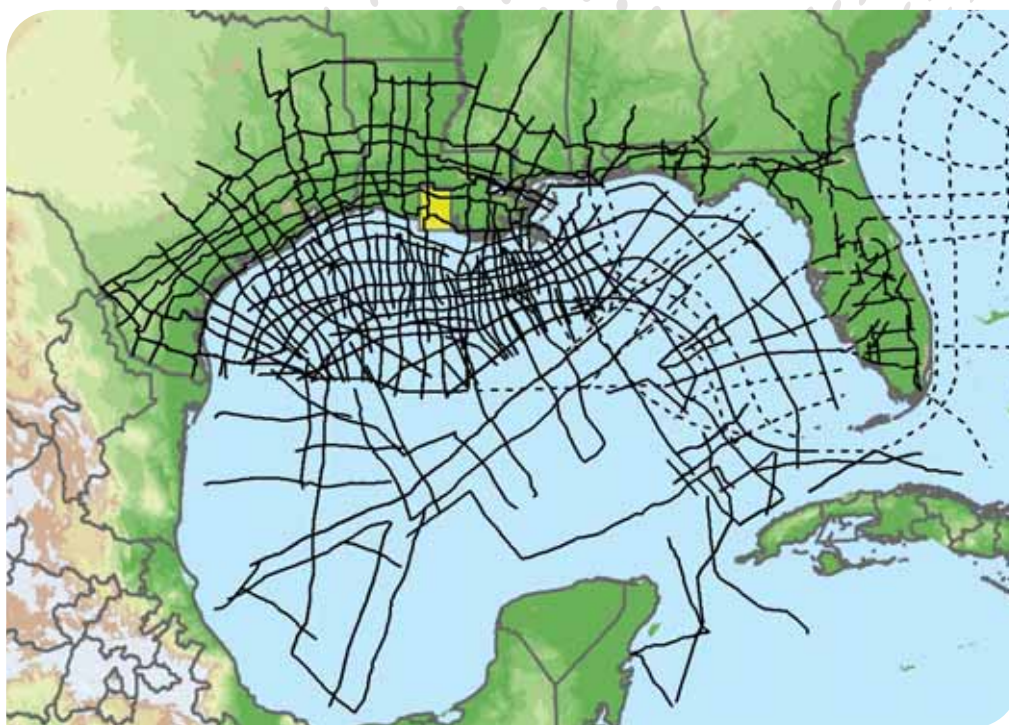
Halcón is familiar with Tuscaloosa's issues and has ideas for working around them, Wilson said. The company is sharing that information with drillers.

“We would expect everyone's ability to get these wells drilled will improve with experience,” Wilson said.

Goodrich CEO Walter Goodrich told investors and analysts on Feb. 20 that the company has made progress in resolving the issues as they occur.

The company plans to land the wells lower in the formation, where the clay content is lower and there have been fewer issues with plugging, Goodrich said.

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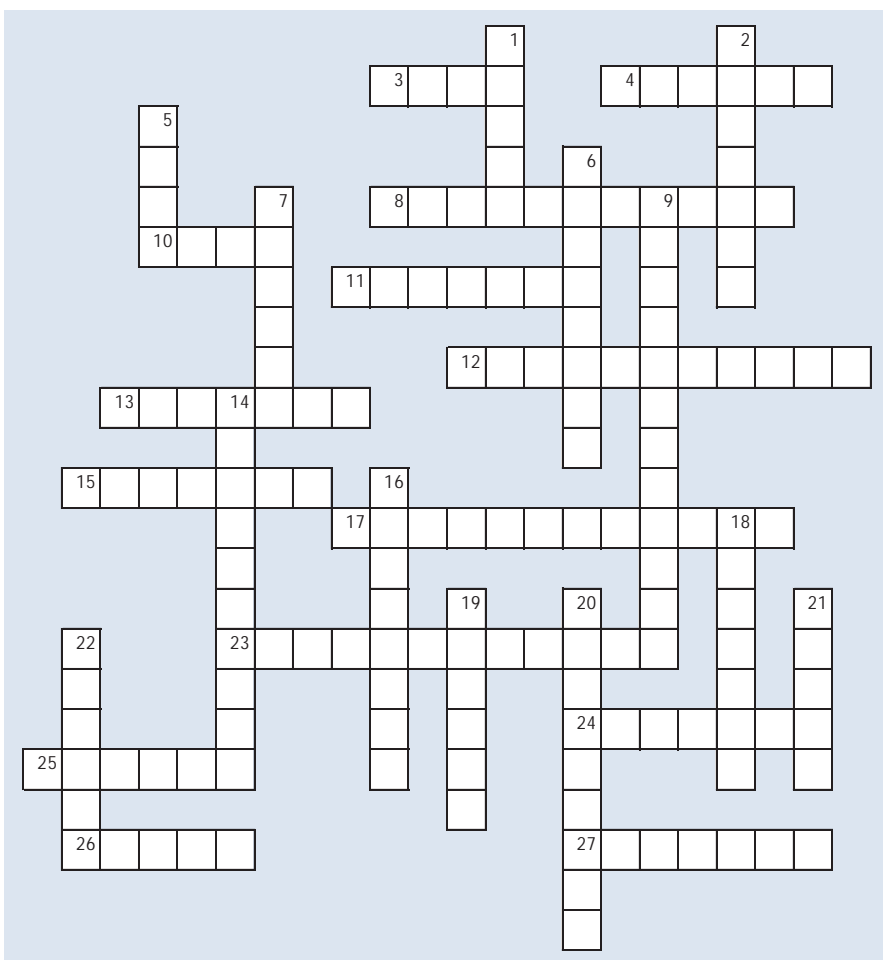
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ON THE LIGHTER SIDE

Geology 101

Across

- 3 Molten rock material on Earth's surface
- 4 One of the most abundant minerals in the earth's crust
- 8 Rock formed by the alteration of the minerals, textures and composition due to exposure to heat, pressure, and chemical actions.
- 10 Mound or ridge of wind-blown sand
- 11 Vent in Earth's surface through which molten rock and gases escape
- 12 Rock formed from the accumulation and consolidation of sediment, usually in layered deposits
- 13 Naturally occurring, inorganic solid with a definite chemical composition and an ordered internal structure
- 15 Exposure of bedrock
- 17 Study of ancient life through fossils
- 23 Contact between two rock units of significantly different ages
- 24 Large, bowl-shaped crater associated with a volcanic vent
- 25 Ridge that separates two adjacent drainage basins
- 26 Fracture or fracture zone in rock along which movement has occurred
- 27 Rock formed by the crystallization of magma or lava



Down

- 1 Molten rock material that occurs below Earth's surface
- 2 Wearing away and movement of earth materials by gravity, wind, water and ice
- 5 Bend or flexure in a rock unit or series of rock units that has been caused by crustal movements
- 6 Volume of pore space in a rock, sediment or soil
- 7 Hot spring that intermittently erupts a spray of steam and hot water
- 9 Measure of how well a material can transmit water
- 14 Trembling of the earth caused by a sudden release of energy stored in subsurface rock units
- 16 Resistance of a mineral to being scratched
- 18 Thick mass of ice that forms on land from an accumulation and recrystallization of snow significant enough to persist through the summer and grow each year
- 19 Remains, imprints or traces of an ancient organism that have been preserved in The rock record
- 20 The resistance of a fluid to flow
- 21 Mudflow composed of water and volcanic ash
- 22 Variations in the height and slope of Earth's surface

Clues: <http://geology.com/geology-dictionary.shtml>

Puzzle created with <http://www.armoredpenguin.com/crossword/>

Solution:





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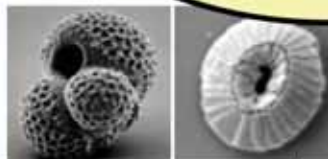
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