

NOGS LOG

FEBRUARY 2015

Volume 55, Number 8



FEBRUARY 2 - NOGS LUNCHEON

Presentation: Snowball Earth 3.0

Guest Speaker: Dr. Huiming Bao, Professor

Department of Geology & Geophysics, LSU • Baton Rouge, Louisiana

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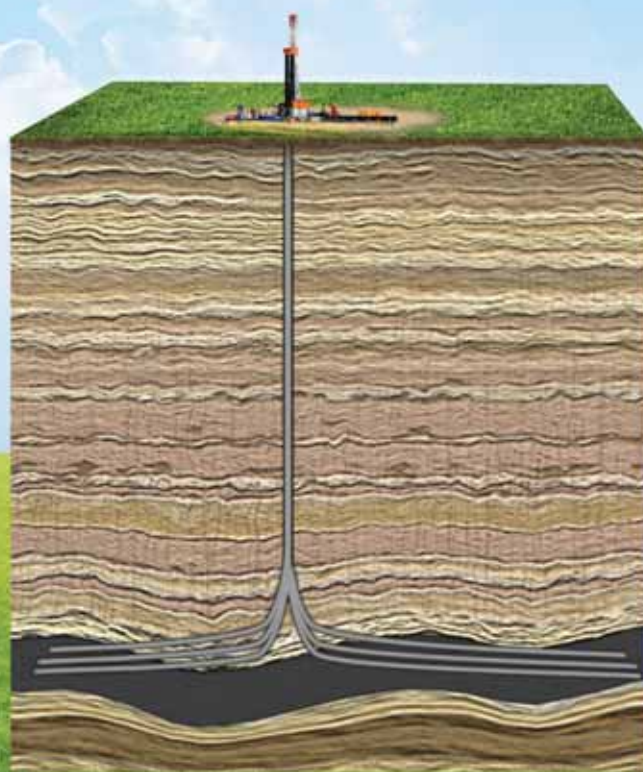
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Interested in contributing to the NOGS LOG? Please submit items by the 1st Friday of the month to nogseditor@gmail.com. Advertising requests should contact the NOGS office at info@nogs.org.

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on the cover

Cover Photo Submitted by Dana Smith

Antelope Island — Great Salt Lake, Utah

I had the opportunity to attend the Wasatch-Uinta field camp in Utah during the summer of 2012. We travelled extensively, seeing much of northern Utah and dipping briefly into Nevada and Wyoming. The surreal scenery, magnificent outcrops, and unique ecology made Antelope Island State Park my favorite destination.

Antelope is the largest island within Utah's Great Salt Lake. It is only accessible from the mainland by a narrow, 7 mile bridge over hypersaline waters teeming with brine shrimp and flies. However, once on the island, mountains, expansive prairie grasslands (cover), stark salt-rimmed coastlines, and one of America's largest, semi-free ranging bison populations (inset) welcome you.

The island is situated within the Basin and Range Province, where normal faulting has exhumed deep crustal rocks so that geologists can more readily enjoy them. Field guides tout the island's magnificent exposures of Archean to Early Proterozoic high-grade metamorphic and igneous rocks. However, one of my all-time favorite outcrops is slightly younger and can be found on the trek out to Elephant Head: a deformed glacial diamictite of the Late Proterozoic Mineral Fork Formation. The island's geology is varied, complex and well-worth the trip next time you find yourself in Utah.



From the Editor

Welcome Mardi Gras Season!

As the rest of the country packs up the remaining holiday items, we in New Orleans and Southeast Louisiana are gearing up for the season of Carnival. It is a time when energy in the region is high, king cakes appear at every corner and we start thinking about which parades we want to attend. Before moving here eight years ago, I thought it was really just about Fat Tuesday and Bourbon Street. Through the years, I have learned that it is about gathering with friends, enjoying amazing foods and reaching out for trinkets that we would later wonder why they seemed so important to acquire. It's a wonderful time to live here and share in the passion of the season.

As members of NOGS, we should feel compelled to share that same passion to our discipline of geology. Many members are stepping up by sharing their passion through their submissions to the *NOGS LOG*. A special thank you goes out to all the fantastic cover photos and special features that have been submitted. Did you know two very passionate and historic leaders of geology have birthdays on the same day this month? February 12th, Charles Darwin, father of evolution, would be 206 and James Dwight Dana, American geologist and pioneer of structural geology would be 202 this year!

Jana L. Prouhet - **NOGS LOG Editor**

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From the President

Greetings all! We are officially past the half-way point in our current Board year, and so far things have been going great. January had SGS and NOGS co-host the luncheon presenting John Dribus at Le Pavillon. This month the NOGS luncheon will be at our regularly scheduled location (Holiday Inn) hosting Dr.

Huiming Bao, who is presenting "Snowball Earth 3.0." Dr. Bao's topic seems timely with our recent bout of colder weather.

To reserve your seat for our February 2, 2015, luncheon, you can go to our new website to register! Speaking of our website, thank you Charlie Miller (Waring and Associates) for getting our NOGS page up-to-date and looking fantastic. It seems very user friendly and easy to navigate. I suggest everyone take some time to browse our new website!

The holidays usually create opportunities for us to catch up with those we don't speak with often, and for me it was no different. This Christmas, I heard from a good friend who reached out because he traveled to Scotland and was amazed at the scenery in the Highlands. Although he didn't know the specifics about how they were created, he knew it was geological and thought of me. It reminded me of my travels to Scotland in 2001, but that was before I had diverted my degree to geology. It's interesting to look at my pictures from there which ooze plate tectonics and think about how geology wasn't my path at that time. If only I knew then what I know now...

My niece wasn't as excited about the rock tumbler she received for Christmas as I was; however, I'm pleased to share with you that her favorite gift was an infrared thermometer! Her dad said she saw one at the science fair and was enamored. Even though the infrared thermometer outshined the rock tumbler this year, it's still a win-win and further proof that you're never too young or old to enjoy and be inspired by science fairs.



NOGS Office

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UPCOMING Events & Activities



February 2 • NOGS Luncheon

Holiday Inn Downtown Superdome

\$3.00 validated parking in hotel garage

Presentation:

Snowball Earth 3.0

Guest Speaker:

Dr. Huiming Bao

Department of Geology & Geophysics, LSU • Baton Rouge, Louisiana

See page 9 for Abstract and Biography

HOLIDAY INN DOWNTOWN SUPERDOME

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

ADMISSION:

With reservation \$30.00
Without reservation..... \$35.00
Student Member with reservations..... FREE

February 25

NOGA Luncheon

Chateau Golf and Country Club • Kenner, LA
For more information, Peggy Rogers (NOGA)

March 2

NOGS Luncheon

Holiday Inn Superdome • New Orleans, LA
For more information, www.nogs.org

**VOLUNTEERS
NEEDED!**

April 18

Fetch! Supersaurus Saturday

Louisiana Children's Museum • New Orleans, LA
For more information, www.nogs.org

April 27

NOGS Annual Golf Tournament

Money Hill Golf Course • Abita Springs, LA
For more information, www.nogs.org

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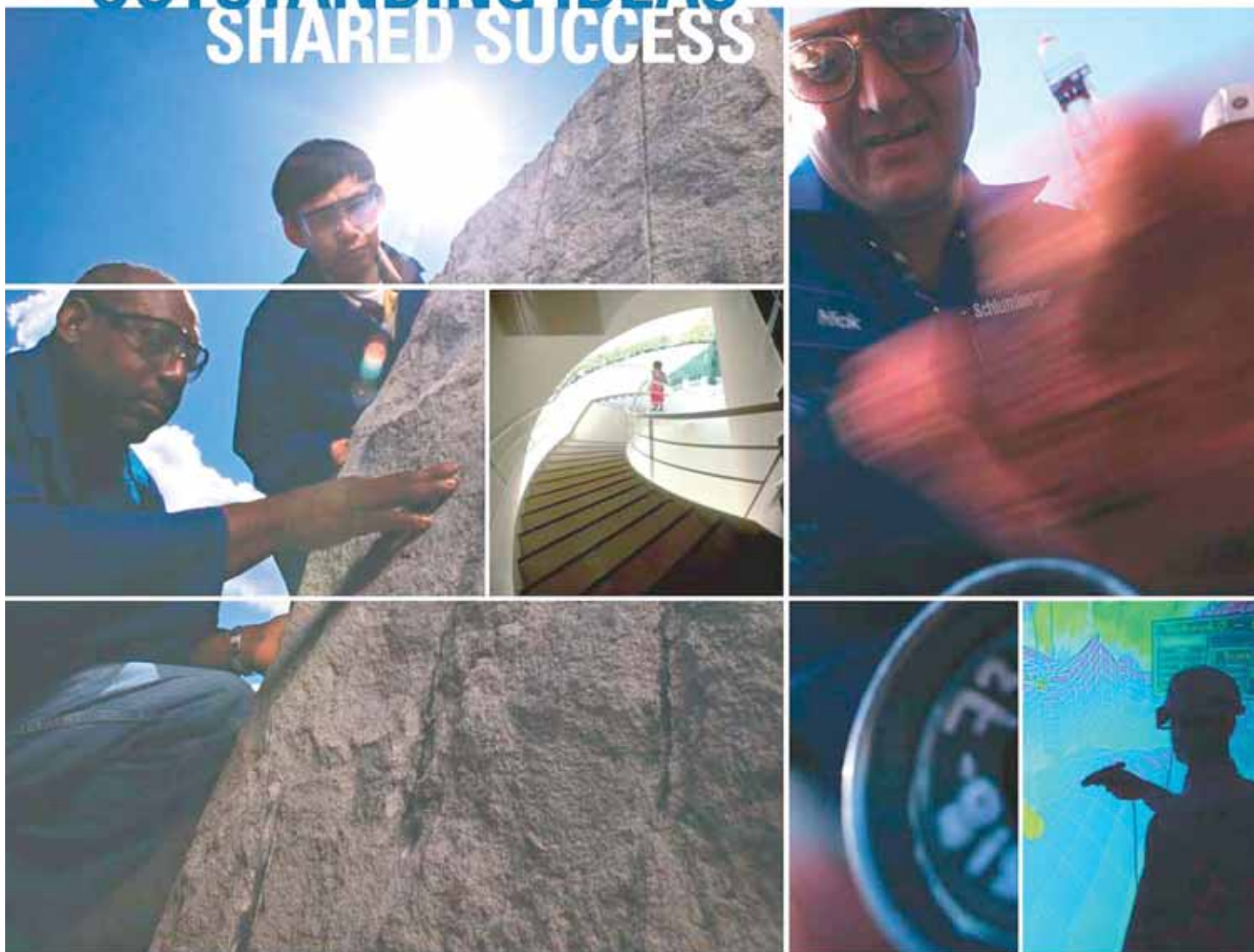
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Feb. 2 NOGS Luncheon Presentation

☆☆☆ at the Holiday Inn Superdome ☆☆☆

Snowball Earth 3.0

Presented by

Dr. Huiming Bao

Professor, LSU

Department of Geology & Geophysics

Baton Rouge, Louisiana



ABSTRACT

Right before the emergence of multicellular life and true animals on this planet at ~600 million years ago, the Earth was believed to be in a total frozen state for at least 8 million years. This is the so-called "snowball" Earth. The original hypothesis (Version 1.0) proposed in 1991 by Joe Kirschvink was based on paleogeomagnetic data. In 1998, Paul Hoffman and his colleagues revitalized the hypothesis to "snowball" Earth theory (Version 2.0) based on sedimentary and geochemical data. While alternative interpretations of the evidence in Version 2.0 have significantly weakened the theory and thus the doubt of a "snowball" state, new data from triple oxygen isotopes of sulfate deposited after the glacial meltdown has become the strongest support of the "snowball" Earth theory (3.0).

BIOGRAPHY

Huiming Bao obtained his undergraduate degree in Geology from Peking University (China) in 1986, a Master's degree from Chinese Academy of Sciences in 1989, and a PhD from Princeton University in 1998. After three years' postdoc experience at UCSD in San Diego, he and his family were attracted to Louisiana in 2001 by the existing lab facility, wonderful colleagues, southern hospitality, warm weather, and the pleasant humidity. Bao calls himself a stable isotope geochemist, and is now holding the Charles L. Jones Professorship at Department of Geology & Geophysics, Louisiana State University.

THE LUNCHEON RESERVATION DEADLINE IS JAN. 30 - CONTACT THE NOGS OFFICE

"And Looking Ahead . . ."

The next luncheon will be held on March 2. Our guest speaker, Dr. Warren Wood, Naval Research Laboratory, Stennis Space Center, will present "Seismic Investigations of Gas Hydrates." 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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February 2015						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2  Luncheon	3	4	5	6	7
8	9	10	11	12	13	14  Valentine's Day
15	16 	17 	18  Board Mtg	19	20	21
22	23	24	25 NOGA Luncheon 	26	27	28
<p><i>February 2: NOGS Luncheon, Holiday Inn Superdome, 330 Loyola Ave. @11:30 am</i> <i>Guest Speaker: Dr. Huiming Bao, Professor, Department of Geology & Geophysics, LSU</i> <i>Will Present: Snowball Earth 3.0</i></p>						

March 2015						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2  Luncheon	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18  Board Mtg	19	20	21
22	23	24	25	26	27	28
29	30	31				
<p><i>March 2: NOGS Luncheon, Holiday Inn Superdome, 330 Loyola Ave. @11:30 am</i> <i>Guest Speaker: Dr. Warren Wood, Naval Research Laboratory at Stennis Space Center, MS</i> <i>Will Present: Seismic Investigations of Gas Hydrates</i></p>						

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."



Celebrating 60 Years!



The Auxiliary's 60th year celebration continues with a very interesting speaker coming up on February 25th at the Chateau Golf and Country Club. *The Advocate's* Pulitzer Award-winning cartoonist, Walt Handelsman, will talk about his inking and career. Once again, guests will be included in the invitation. Trudy Corona and Margie Conatser are making the arrangements. This should be a very entertaining day at a lovely venue. The details will be on the invitation arriving in February.

In December, NOGS entertained with a festive evening at the Metairie Country Club. Many Auxiliary members accompanied their husbands to enjoy a delicious meal, good music by The Profiles and a chance to admire all the Country Club's decorations, truly making the season bright! Camille Yeldell and Mary Walther lent a hand in the planning. A special dessert and "second line" march helped celebrate Jim Yeldell's birthday along with a rousing "Happy Birthday to You."

The Spring Social this year will be April 11th at the home of Paul & June Perret on Bayou St. John. Come and enjoy the beautiful sunset over the bayou, good food and fellowship. Jean Jones, Elizabeth Furlong and Susie Baker along with our hosts, the Perrets, are planning to make this evening truly wonderful.

Our 60th year celebration will close with the Installation Luncheon, May 13th at the Café Adelaide, Loews Hotel. Debra Fein and MaryEllis Hasseltine will be the committee for this luncheon.

You can still join the Auxiliary for the 2014-2015 year for \$12.50 paid to the treasurer now and enjoy the remaining 2015 events.

Peggy Rogers, *NOGS LOG*



Jim Yeldell, Camille Yeldell, Roy Walther, Mary Walther

New Orleans Geological Auxiliary Membership Application

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

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**April 18, 2015
11:00 AM - 3:00 PM**



Volunteers Needed

**Shifts 11AM-1PM & 1PM-3PM
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tom.bergeon@centuryx.com**



What

I work as a development geologist in a field first discovered in 1949. Although and prospect development, it is sometimes fun to stop and reflect on the tools of yesteryear, and tools we still use today.



Spiral Bow Spring Centralizer

Function: These centralizers are normally run between two stop collars or over one slip-on stop collar to provide the casing a smooth bearing surface.

What it's not — Candle Holder

On loan from the collection of **Bill Warren**

Geophone

Function: A geophone is a device which converts ground movement (displacement) into voltage, which may be recorded at a recording station. The deviation of this measured voltage from the base line is called the seismic response and is analyzed for structure of the earth.

What it's not — An Ice Pick

On loan from the collection of **Bob Shank**



Gauge Run Tool

Function: The gauge run tool is used to check for clean tubing. This particular tool happened to pick up pliers from 11,815' WLM that had fallen unknowingly into the well. Recovering the pliers saved the well!

What it's not — Side Wall Core Collection Device

On loan from the collection of **Steve Moore**

Glass Beads

Function: Mechanical lubricant as a means to increase rate of penetration of a drill string within a deviated well bore reducing torque and drag and extending drilling reach.

What it's not — Salt Types

On loan from the collection of **Bill Warren**



Slide Rule Assortment

Function: The slide rule is a mechanical analog computer. The slide rule is used primarily for multiplication, division, and functions such as roots, logarithms and trigonometry, but it is not normally used for addition or subtraction.

What it's not — Line Distance Measure Tool

On loan from the collection of **Christine DeFriend & Steve Moore**

is it??

gh we now work in a time of advanced technology, computer based mapping tools that have gotten us to this point. In the images below you will some see



Pencil Extender

Function: Used to physically extend the length of the pencil and thus extend the life of the pencil. This tool was standard issue for Texaco drafters and geologists.

What it's not — Pencil Marking Kit

On loan from the collection of **Jerry Markowitz**

Mechanical Pencil Sharpener

Function: With this mechanical pencil sharpener and a few cranks of this tool, a single thick graphite rod inside the mechanical pencil is sharpened to a point. This tool was standard issue Gulf Oil geology tool.

What it's not — Pen Holder

On loan from the collection of **Abby Hymel**



Paper Electric Log

Function: A well log of formation resistivity gamma ray.

What it's not — Squiggly Line

On loan from the collection of **Tavia Prouhet**

Proportional Dividers

Function: Proportional dividers are used to transfer measurements from one scale to another. The proportional divider is used to make a drawing larger or smaller. Another function of a proportional divider is to divide lines or circles into equal parts.

What it's not — Scissors

On loan from the collection of **Bill Haworth**

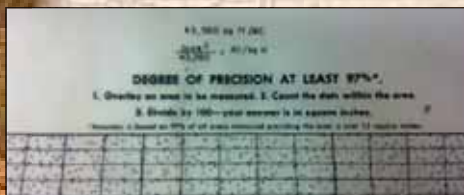


Acre Maker (Planimeter)

Function: Overlay is placed over structure map for easy volumetric calculation — count the dots to get acre-feet!.

What it's not — Tracing Paper

On loan from the collection of **Dave Balcer**



Submitted by Tavia Prouhet

Petroleum Systems in "Rift" Basins

34th Annual GCSSEPM Foundation Bob F. Perkins Research Conference
Houston, Texas December 6-9 2015

◆ Rifts & Overlying/Related Sag basins

➤ *Disproportionately*

– "Rich"

- ~30% of the "giant" fields are in rifts & overlying/related sag basins

– "Frustrating"

- Each rift basin or segment is a *UNIQUE* geological entity, yet all are variations on a common theme.

◆ Submit Abstracts by December 1, 2014

@ http://www.gcssepm.org/conference/2015_conference.htm

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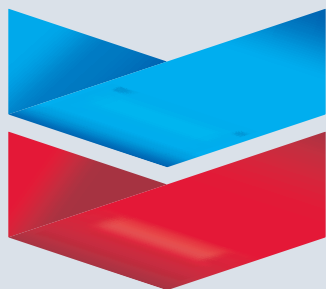
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South Louisiana and Offshore Gulf of Mexico Exploration and Production Activities

LAFAYETTE DISTRICT, ONSHORE AREA

By Carlo C. Christina

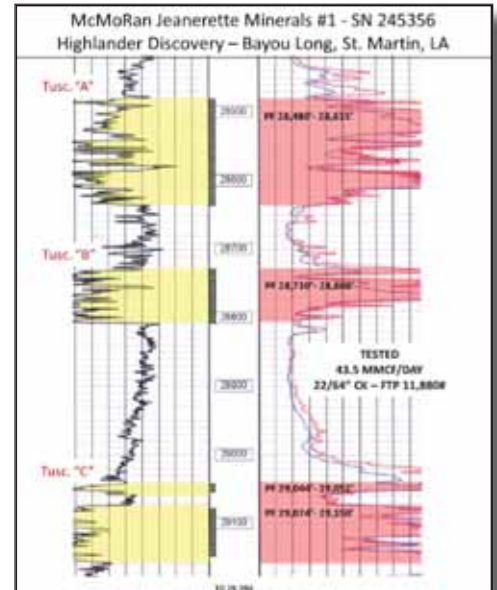
During the month of December, the Office of Conservation, Lafayette District, Onshore Area, issued only 25 permits to drill, of which 7 wells are permitted to depths less than 4500 feet. This is not good news.

BREAKING NEWS

There's good news and bad news in my report.

First, the bad news--the price of oil has dipped **below \$50 per barrel** for the **first time in more than 5 years**. Now, the very good news--**two significant discoveries** have been announced in South Louisiana, Onshore.

McMoRan announced a successful production test from its **subsalt well located in St. Martin Parish, (A)**, which tested gas at the rate of approximately **43.5 million cubic feet per day** on a 22/64 inch choke with flowing tubing pressure of 11,880 pounds. This production, **the first production from a subsalt well in South Louisiana, Onshore**, is from **perforations in Tuscaloosa Sands at a depth of 28,500 feet to 29,150 feet**. McMoRan plans to drill two additional wells on this structure, located on a 9,000 acre unit. McMoRan controls 60,000 acres in the subsalt play so we can expect more drilling in the near future, and is presently drilling below 15,800 feet in its #1 Lacassane. This subsalt well is located 95 miles to the west in Cameron Parish (245356)



The second significant discovery is located in **Vermilion Parish, (B)**, where PetroQuest announced its **Thunder Bayou prospect**, the #1 Hulin, had **logged 202 feet of net gas sand in the Cris R2 objective**. Casing has been set to 20,350 feet to protect the logged interval, and the well is currently drilling to a proposed total depth of 21,500 feet to test the Cris R3 objective. The well also encountered additional potential pay sands in the upper and mid Cris R sands that will require further evaluation. (247681)

The Cris R2 sand is productive in PetroQuest wells located two to three miles to the south in the prolific Bayou Hebert Field. Three wells have produced **more than 66 billion** cubic feet of gas and **1.2 million** barrels of oil **within the past 32 months**.

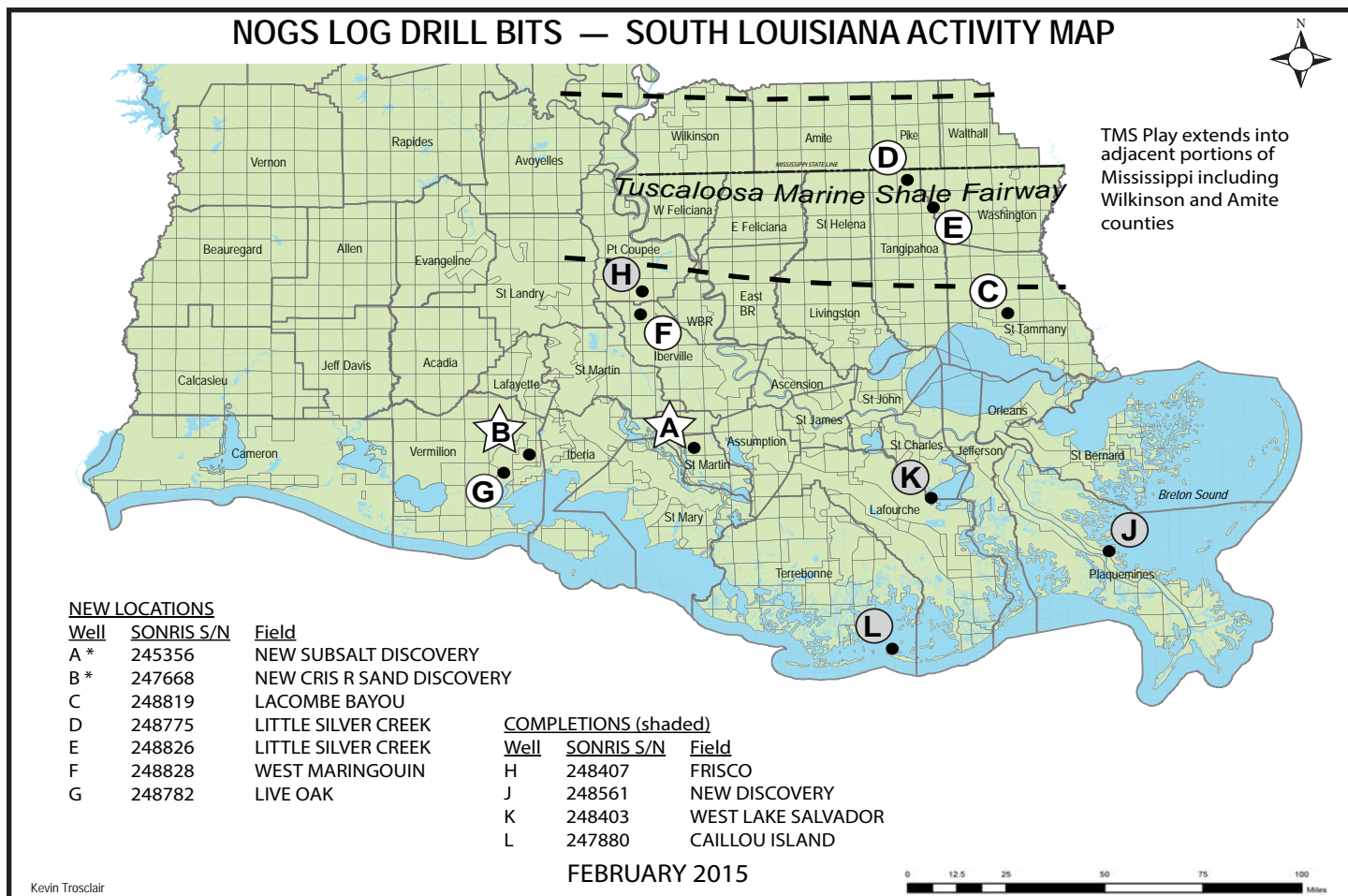
NEW LOCATIONS

Although the price of oil has dipped below \$50 per barrel, three permits have been issued for new wells in the **Tuscaloosa Marine Shale**.

The long-awaited location for the Helis Oil & Gas Company Tuscaloosa Marine Shale well has been permitted in **Lacombe Bayou Field, (C)**, Saint Tammany Parish. The #1 Eads Poitevent will be drilled as a straight hole to a depth of 13,374 feet to evaluate the Tuscaloosa Marine Shale. If preliminary results are encouraging, the well will be plugged back and sidetracked to drill a horizontal leg in the Marine Shale. It is located in Sec. 34, 7S-12E, approximated 7 miles northeast of the Townsite of Mandeville. (248819)

Goodrich Petroleum Company will drill 2 wells in **Little Silver Creek Field, (D)**, and (E). The #2 B-Nez 43 H, will be drilled in Sec. 43, 1S-8E in Tangipahoa Parish to a proposed depth of 21,000 feet, or 13,000 true vertical depth in a lateral leg of 7,200 feet. (248775)





The Goodrich #1 Painter 5 H will be drilled from the surface location in Sec. 7, 2S-9E, to a projected depth of 20,000 feet, in a lateral leg of 7,000 feet. The bottom hole location is in Sec. 5, 2S-8E in Washington Parish. (248826)

In Iberville Parish, **West Maringouin Field**, (F), PetroQuest Energy will drill the #1 Carriere to test Vicksburg sands at a depth of 10,731 feet. It will be drilled in Sec. 85, 7S-9E one mile north of Nonion struma production at 9100 feet. (248828)

Stone Energy will drill an interesting well in Vermilion Parish, **Live Oak Field**, (G). The #1 Godchaux will be drilled to 18,900 feet in Sec. 85, 14S-3E. It will seek production in the prolific Cris R sands, located 7 miles west of the recent new discovery by PetroQuest in its Thunder Bayou prospect, as noted above. (248782)

COMPLETIONS

In **Frisco Field**, (H), Pointe Coupee Parish, Will-Drill Production has completed its #1 Smith as an oil well in the Upper Wilcox sand flowing 190 BOPD through perforations **11,248 to 11,878 feet**, overall, including 3 frack stages. The well was drilled to 12,050 feet in Sec. 5, 6S-9E, one mile southeast of nearest production. (248407)

Century Exploration has completed its #1 SL 21380 as a **new discovery**, (J), in Plaquemines Parish flowing 422 BOPD through perforations 13,300 to 13,328 feet. The well was drilled 4 miles west of production in Quarantine Bay in Sec. 26, 18S-16E. (248561)

In St. Charles Parish, **West Lake Salvador Field**, (K), Tri-C Resources has failed in its attempt to extend production to the west with the plugging of the #1 SL 21302 at a total depth of 13,197 feet. The well was drilled to test Cris I sands in 16S-21E. (248403)

In **Caillou Island Field**, (L), Plaquemines Parish, Hilcorp Energy has completed the #112 SL 1249, as an excellent gas well flowing 16,630 MCFG and 350 BCPD in the Tex L Sand through perforations 16,065 to 16,085 feet. This well, originally permitted by GCER Onshore as the #1 SL 1248, is located 1 mile south of the nearest production and was drilled on the state lease taken in June 1949. (247880)

OFFSHORE GULF OF MEXICO SHELF AND DEEPWATER ACTIVITIES

by Al Baker

During December 2014, the BOEM approved **88** Gulf of Mexico drilling permits. Of these, **21** were for shelf wells and **67** were for deepwater wells. Of the total number of permits, there were **13 new well permits** issued: 5 new wells situated on the shelf and 8 new wells situated in deepwater.

The shelf new well permits consisted of 5 development wells. The permits were awarded to **Arena Offshore** for their **Eugene Island 314 #C-21** and **Eugene Island 338 #K-19** wells, to **Bois d'Arc Exploration** for their **Ship Shoal 171 #2** well, to **W&T Offshore** for their **Ship Shoal 359 #A-18** well and to **Chevron U.S.A.** for their **Bay Marchand 3 #SJ-25** well.

The deepwater new well permits consisted of 6 exploratory wells and 2 development wells. The exploratory new well permits were given to **Chevron U.S.A.** for their **Keathley Canyon 414 #1** well, to **Anadarko Petroleum** for their **Green Canyon 903 #6** well, to **Freeport McMoRan Oil & Gas** for their **Mississippi Canyon 64 #SS-5** and **Green Canyon 643 #SS-2** wells, to **Statoil Gulf of Mexico** for their **Walker Ridge 160 #SS-1** well and to **LLOG Exploration Offshore** for their **Mississippi Canyon 300 #2** well. The development new well permits were awarded to **Fieldwood Energy Offshore** for their **Green Canyon 65 #A-23** well and to **Petrobras America** for their **Walker Ridge 469 #CH-4** well.

On December 31st, IHS-Petrodata reported that the Gulf of Mexico mobile offshore rig supply stood at **118**, which is 1 greater than last month. The marketed rig supply consisted of **91** rigs, of which **73** were under contract. The contracted versus total rig supply utilization rate is **61.9%**, while the marketed contracted versus marketed supply utilization rate stands at **80.2%**. The marketed rig supply number reflects an increase of 2 rigs in comparison to the number reported last month, while the contracted rig supply number decreased by 1 rig during the same time period. In contrast, the December 2013 fleet utilization rate stood at 73% with 81 out of the 111 rigs under contract.

On December 26th, BakerHughes indicated that there were **58** active mobile offshore rigs in the Gulf, which is **79.5%** of the rigs under contract mentioned above. This active rigs number is **4** more than reported last month. The current active rigs count compares to 61 active rigs during the same period last year, representing a **4.9%** decrease in yearly rig activity.

On January 6th, **Chevron Corporation** announced a significant discovery at its **Anchor Prospect** in the deepwater Gulf of Mexico. The **Green Canyon Block 807 # 2** well found **oil pay in multiple Lower Tertiary Wilcox sands**. The well, which is located approximately 140 miles off the Louisiana coast, was spudded in August 2014 and was drilled to a **total depth of 33,749 feet**. Appraisal drilling on the discovery will commence in 2015.

The next central Gulf of Mexico lease sale, **OCS Sale 235**, is slated for March 18, 2015 in New Orleans by the BOEM. The current low prices for both oil and gas should provide for an interesting sale outcome.



January 2015 Luncheon



John R. Dribus and Carlo Christina

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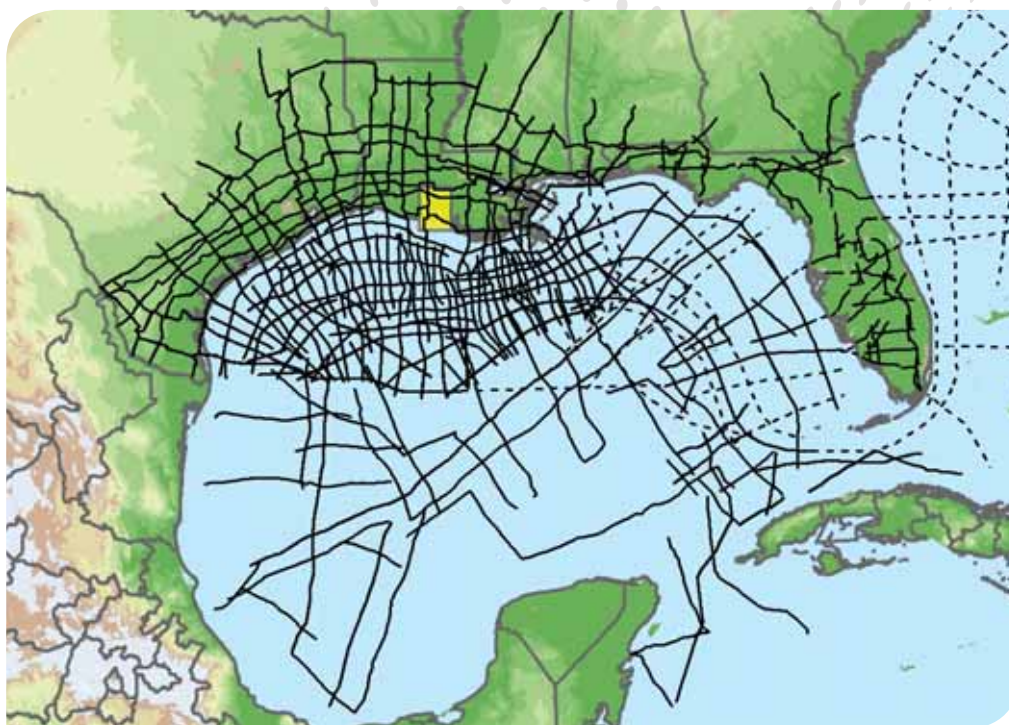
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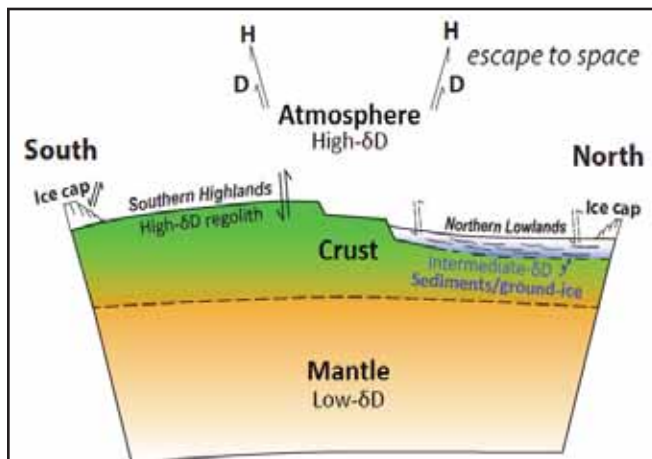
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NASA, Planetary Scientists Find Meteoritic Evidence of Mars Water Reservoir

Article taken from NASA website, <http://www.nasa.gov/press/2014/december/nasa-planetary-scientists-find-meteoritic-evidence-of-mars-water-reservoir/>

NASA and a team of planetary scientists have found evidence in meteorites on Earth that indicates Mars has a distinct and global reservoir of water or ice near its surface.

Though controversy still surrounds the origin, abundance, and history of water on Mars, this discovery helps resolve the question of where the “missing Martian water” may have gone. Scientists continue to study the planet’s historical record, trying to understand the apparent shift from an early wet and warm climate to today’s dry and cool surface conditions.



This illustration depicts Martian water reservoirs. Recent research provides evidence for the existence of a third reservoir that is intermediate in isotopic composition between the Red Planet’s mantle and its current atmosphere. These results support the hypothesis that a buried cryosphere accounts for a large part of the initial water budget of Mars. NASA

The reservoir’s existence also may be a key to understanding climate history and the potential for life on Mars.

“There have been hints of a third planetary water reservoir in previous studies of Martian meteorites, but our new data require the existence of a water or ice reservoir that also appears to have exchanged with a diverse set of Martian samples,” said Tomohiro Usui of the Tokyo Institute of Technology. “Until this study, there was no direct evidence for this surface reservoir or interaction of it with rocks that have landed on Earth from the surface of Mars.”

Researchers from the Tokyo Institute of Technology, the Lunar and Planetary Institute, the Carnegie Institution, and NASA, located at the Johnson Space Center in Houston, studied three Martian meteorites.

The samples revealed water composed of hydrogen atoms that have a ratio of isotopes distinct from that found in water in the Red Planet’s mantle and current atmosphere.

While recent orbiter missions have confirmed the presence of subsurface ice and melting ground-ice is believed to have formed some geomorphologic features on Mars, this study used meteorites

of different ages to show that significant ground water-ice may have existed relatively intact over time.

Researchers emphasize that the distinct hydrogen isotopic signature of the water reservoir must be of sufficient size that it has not reached isotopic equilibrium with the atmosphere.

“The hydrogen isotopic composition of the current atmosphere could be fixed by a quasi-steady-state process that involves rapid loss of hydrogen to space and the sublimation from a widespread ice layer,” said John Jones, a member of NASA’s Mars Curiosity rover team.

Curiosity’s observations in a lakebed, in an area called Mount Sharp, indicate Mars lost its water in a gradual process over a significant period of time.

“In the absence of returned samples from Mars, this study emphasizes the importance of finding more Martian meteorites and continuing to study the ones we have with the ever-improving analytical techniques at our disposal,” said Conel Alexander from the Carnegie Institution for Science.

In this investigation, scientists compared water, other volatile element concentrations and hydrogen isotopic compositions of glasses within the meteorites, which may have formed as the rocks erupted to the surface of Mars in ancient volcanic activity or by impact events that hit the martian surface, knocking them off the planet.

“We examined two possibilities that the signature for the newly identified hydrogen reservoir either reflects near surface ice interbedded with sediment or that it reflects hydrated rock near the top of the Martian crust,” said Justin Simon from NASA’s Johnson Space Center. “Both are possible, but the fact that the measurements with higher water concentrations appear uncorrelated with the concentrations of some of the other measured volatile elements, in particular chlorine, suggests the hydrogen reservoir likely existed as ice.”

The information being gathered about Mars from studies on Earth and data being returned from a fleet of robotic spacecraft and rovers on and around the Red Planet are paving the way for future human missions on a journey to Mars in the 2030s.

The "Prophet of Spindletop"

Pattillo Higgins (December 5, 1863 – June 5, 1955) was a businessman and self-taught geologist. He partnered to form the Gladys City Oil Gas and Manufacturing Company and later, established the Higgins Standard Oil Company.

Pattillo Higgins was born December 5, 1863, in Sabine Pass, Texas. His family moved to Beaumont when he was six, where he attended school until the fourth grade, after which he apprenticed as a gunsmith under his father's direction. Patillo was a troublemaker. In one event, a local deputy fired a warning shot over Higgins' head, Higgins fired back, mortally wounding the deputy. The wounded deputy fired again, striking Higgins lower left arm, which was later, amputated. Higgins stood trial for the murder, but was acquitted when a jury found he acted in self-defense. After his acquittal, he worked as a logger along the Texas-Louisiana border, apparently unhindered by his lack of an arm. In 1885, at a revival, Higgins found God. Realizing that the lumber camps were immoral, he returned to Beaumont, Texas to make bricks.

Brickmaking sparked his interest in oil and gas, as he used it for his kilns. He traveled to Pennsylvania to learn about these fuels and study the geological signs of underground oil. What he learned reminded him of what Beaumont folks referred to as "Sour Hill Mound", a place he frequented with his Sunday school students. The odor was due to the sulfur springs around the mound. Convinced that this salt mound had oil below it, Higgins and partners formed the Gladys City Oil, Gas, and Mfg. Co. in 1892. Formally-trained geologists dismissed the idea of finding oil along the Gulf Coast. However, his informal training in geology influenced his belief that Spindletop contained oil due to the presence of mineral water and gas seepage, and he convinced his partners to proceed. His first three wells were failures. Higgins resigned but retained ownership and leases.

Undaunted, Higgins placed ads in trade journals in an effort to garner interest in the prospect of hitting

oil. He received only one—from a Croatian-American named Anthony Lucas. Lucas signed agreements with Gladys and also with Higgins in 1899, and in June of the following year, he began to drill. The first well Lucas made with his light equipment collapsed after reaching 575 feet. This failure exhausted the partners' finances, so Lucas turned to John Galey and James Guffey in Pittsburgh for backing. The terms set forth by Guffey (who held and controlled the funds) limited Lucas to a small cut, and eliminated Higgins from the deal.

In late October 1900, with an experienced crew, drilling resumed using a newer, rotary type bit. Drilling through the sands proved difficult. On January 10, 1901, the six tons of four-inch drill pipe began to shoot up out of the hole. The geyser shot oil over 150 feet high and flowed an estimated 100 MBbls of oil per day. The Lucas #1 well was at a depth of 1020 feet, with an IP greater

than all of the oil wells in the U.S. combined at the time. Spindletop oilfield churned out over 3 MMBO the first year, and over 17 MMBO following, effectively ending John D. Rockefeller's monopoly.

Higgins sued Lucas for royalties, and the parties settled out of court; he maintained his leases, later established other wells with various investors, with an eccentric habit of pulling his interests out, leaving the majority of the profits for others.

Higgins' lifestyle was varied. He was a wildcatter, draftsman, inventor, artist and engineer to

name a few. His religious beliefs kept him away from public resorts, as well as maintaining a strong belief against the selling of alcohol. In addition to residing in Beaumont, he owned estates in Houston and San Antonio. He remained a bachelor until 1905, when he adopted Annie Johns, who at the time was fifteen. Three years later Higgins married her, and later had three children with her, despite the scandal. He died in San Antonio on June 5, 1955.

Six months after Higgins' death, he was dramatized in the CBS history series, *You Are There*, in the episode entitled "Spindletop - The First Great Texas Oil Strike."

Excerpted and edited from Wikipedia
http://en.wikipedia.org/wiki/Pattillo_Higgins





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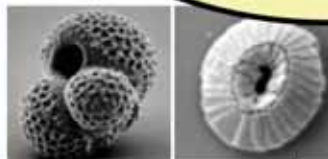
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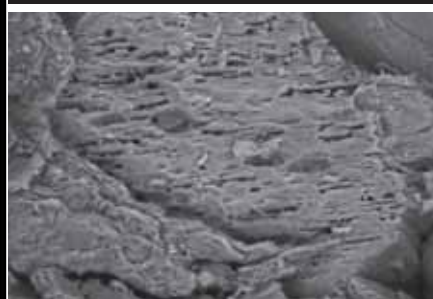
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