

# NOGS LOC

JULY 2020  
Volume 61 No. 1

**NOGS**  
*Virtual Meeting*  
Monday, July 13, 2020





# NOGS JULY MEETING

MONDAY, JULY 13, 2020 11:30 AM  
ZOOM MEETING

**JAMES J. WILLIS, PH.D.**

## **WELD TYPES AND CLASSIFICATION: IMPLICATIONS TOWARD PETROLEUM SYSTEMS**

### **ABSTRACT**

Welds are structural/stratigraphic elements that record the juxtaposition of formerly separated geologic units and are generally associated with the flowage and/or dissolution of evaporites, especially halite, commonly in association with faulting. Their importance within Gulf of Mexico and other salt-related petroleum systems is well-established and documented. However, unit juxtaposition occurs in many additional geologic environments and thus represents a more diverse class of welds. Many of these welds are important for respective petroleum systems. In addition to evaporite dissolution, so too can dissolution of carbonates generate welds. On a smaller scale, stylolites form by pressure dissolution of carbonates and less commonly quartz sandstones, imparting permeability anisotropy due to impermeable (or less permeable) residue on the stylolite seam or in some cases due to seams serving as flow conduits. Intergranular stylolite formation can represent an important aspect of reservoir quality degradation as pore throats and spaces close during grain suturing in both sandstones and carbonate grainstones/packstones. As another example, welds may also form from shale flowage during faulting, such as progressive shearing and removal of clay smear, or during folding and resultant transfer of material from flank to core (an important factor in fold genesis during transition from parallel to similar folds)—formerly separated reservoir rocks can be placed in contact or near contact, resulting in complex reservoir commingling. Additionally, welds may form in sand injectite domains, as autochthonous or allochthonous sand is removed; in areas of mobilized asphalt; and in igneous environments, as melt invades and then is removed, often exhibiting remarkable similarity to salt systems. Weld residuum, representing residual material left behind during the flow and/or dissolution process, which can influence along-weld or cross-weld fluid flow, represents an important consideration for weld influence on petroleum systems, from large-scale welding of former salt sheets to reservoir-scale heterogeneity.

**[CLICK HERE](#)**  
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**ZOOM INFO WILL BE EMAILED DAY PRIOR**  
**TO MEETING**



James J. Willis received his B.S. and M.S. degrees in Geology from the now University of Louisiana-Lafayette in 1989 and 1990, respectively, and his Ph.D. as a National Science Foundation fellow at Baylor University, Waco, Texas, in 1993, graduating with an overall university gpa of 4.0. From 1994-1996, he studied planetary tectonics as a NASA-funded postdoctoral fellow at Southern Methodist University. In 1996, he returned to UL-Lafayette, where he was awarded in 1997 the Hensarling-Chapman Endowed Professorship in Geology. He began independent consulting activities in 1991, and in 2001 he left academia for full-time consulting for clients ranging from one-man shops to supermajors. James has been an active researcher, receiving several million dollars in grants from federal, state, and industry sources, has presented numerous talks, including a 2019 AAPG Levorsen award, and has published on a diversity of geoscience topics, including two best paper awards with GCAGS. He has been the GCAGS Publisher since 2006 and Managing Editor since 2011 and is serving as the General Chair for GeoGulf 2020. In 2018, he founded the Willis School of Applied Geoscience, reformulating decades of industry training and networking to provide fast-track industry-ready training for graduate students at zero cost—he graduated his first student last year. He is presently founding a new professional organization, the Association of Applied Geoscientists.

# IN THIS ISSUE



## On the Cover

### Étretat in Normandy, France

Étretat is a coastal region in northern France, well known for its stunning geological landscape. The chalky cliffs are composed of several layers, clearly distinguishable. These chalk layers are of varying hardness and can be clustered into three main strata: the lowest is a light, fine, stratified chalk aggregate, rich in foraminifera; the middle stratum is a compact chalk layer with beds that are tens of metres thick, and the uppermost stratum is composed of chalk nodules that, like the lowest stratum, is rich in foraminifera. Each year there are 6.2 million visits to France's historical sites of the First and Second World War.



## *From the Editor...*

Thanks to all those who continue to contribute to the monthly LOG. If you have any suggestions for future issues or have an article/photo(s) to contribute, please email me at [cmiller@ocsbbs.com](mailto:cmiller@ocsbbs.com). We would certainly love your input and any additional LOG content to be considered that may be of interest to NOGS members.

*Charlie*



Charles Miller III  
NOGS LOG Editor







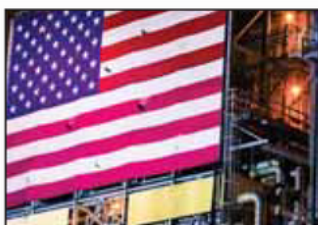
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# GeoGulf 2020 Call for Papers

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## **GeoGulf 2020 is GO for LAUNCH!**

After weeks of uncertainty, GCAGS and GCSSEPM are proceeding forward with their 70th Annual GCAGS/GCSSEPM Convention in Lafayette, Louisiana, September 30–October 2, 2020. Lafayette is an easy drive from many Gulf Coast locations for those with air travel concerns and we will continue to monitor the situation as the country reopens and will follow appropriate recommended safety practices. We sure hope to see you in Lafayette with spirits high and ready to come pass a good time.

As an exciting new aspect of our rebranded convention, GeoGulf 2020 is proud to host the AAPG Gulf Coast Section Student Exposition, which will include a dedicated student poster session, short courses and workshops, networking opportunities, and other activities. Abstract submission is now open—see details below. More details, including registration, are coming soon as the planning team gets back to business!

## **Planned GeoGulf 2020 Session Themes**

- “All Things Salt”—Tectonics, Oil and Gas, Seismic Acq., Proc., and Interp., Mining, etc.
- Deepwater Geoscience• Machine Learning and Artificial Intelligence Applications
  - Gulf of Mexico Temperature and Pressure
  - Smackover Session and Core Workshop
  - GIS Technology and Applications
  - Gulf Coast Environmental
- The Business Side—Legal, Unitization, Finance, Insurance, etc.
  - Geoscience Applications of Drone Technology
- Geomechanics—Conventional and Unconventionals
  - Carbon Capture / Underground Storage
- Success from Failure—Learning from our Mistakes
- Special GCSSEPM Session—Topic to be announced
- And more, including the AAPG Gulf Coast Section Student Poster Session

Because covid-19 interrupted development of our technical program, we still have room for additional speakers, both oral and poster. Please contact James J. Willis, [james.willis@geogulf.org](mailto:james.willis@geogulf.org) or [jwilli3@lsu.edu](mailto:jwilli3@lsu.edu), for more information as soon as possible.



JOHN R. DRIBUS

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## A MESSAGE FROM NOGS PRESIDENT

To all members and friends of the New Orleans Geologic Society,

I hope that you have been safe and well during this challenging combination of global pandemic, collapsed oil prices, and threatening recession! When my predecessor, Robert Rooney, wrote his first NOGS President letter one year ago, He reported that oil had closed that day at \$51.28 WTI, \$60.35 for Louisiana Light, and natural gas was at \$2.38. As I write my first President's letter, WTI is at \$29.65, Louisiana Light at \$37.34, and natural gas is at \$1.74 indicating that we have long road of recovery in front of us.

First, as your incoming President, I want to thank the outgoing Advisory Board for the excellent job they have done during these exceedingly challenging times. Robert Rooney served as President, and also provided our first ZOOM technical talk during the pandemic. Toby Roesler officially served as Vice President, but also took on the challenging task of trying to plan and schedule a social events program while everything was restricted during the early days of the Covid-19 pandemic. Sheri Richardson has served as our Board Secretary, and David Culpepper kept our books up to date as Treasurer. Paul Post began the year as Editor of the **NOGS LOG**, and Charlie Miller never missed a beat when he took over to finish the year. I also want to recognize the outstanding work done by our three Directors: David Reiter, Charles Holman, and Allan Melillo. This team was assisted by many others who faithfully served in special roles including Awards (Mike Fein), History and Publication Sales (Ed Picou), School Outreach (Tom Bergeon), AAPG (William Whiting), and Nominations (Jennifer Connolly). I apologize to the many others that I've not mentioned by name who helped in the background to keep our society together during the past year. And, finally I want to give special thanks to our Administrator Christy Himel who continues to work out the details of updating the NOGS online presence, as well as providing the administrative support to our luncheons, ZOOM webinars, and Board of Directors meetings. To all of you, thanks for your service this year.

Next year joining me on the Board will be President Elect Douglas Bradford who will work on rebuilding the social programs we lost to the pandemic's social distancing practices. Hillary Sletten joins the Board as Vice President with the responsibility for our program and monthly speakers. Michael Hopkins is already at work with David Culpepper to learn and take over the duties of Treasurer, and Rachel Carter becomes our new Secretary. Emmitt Lockard is our new Editor Elect and will work with Charlie Miller to ensure our **NOGS LOG** remains a rich source of on-line information for our technical community. David Culpepper will become a Director, joining Allan Melillo and Charles Holman as they continue in that role this year. I welcome these new leaders of NOGS as they join together to navigate us through the continuing challenges in front of us.

With that, I will close by thanking each member of NOGS for renewing your membership and remaining committed to the various programs and functions that NOGS exists for. In my next President's letter, I plan to review those key programs and services for you. Stay safe NOGS!

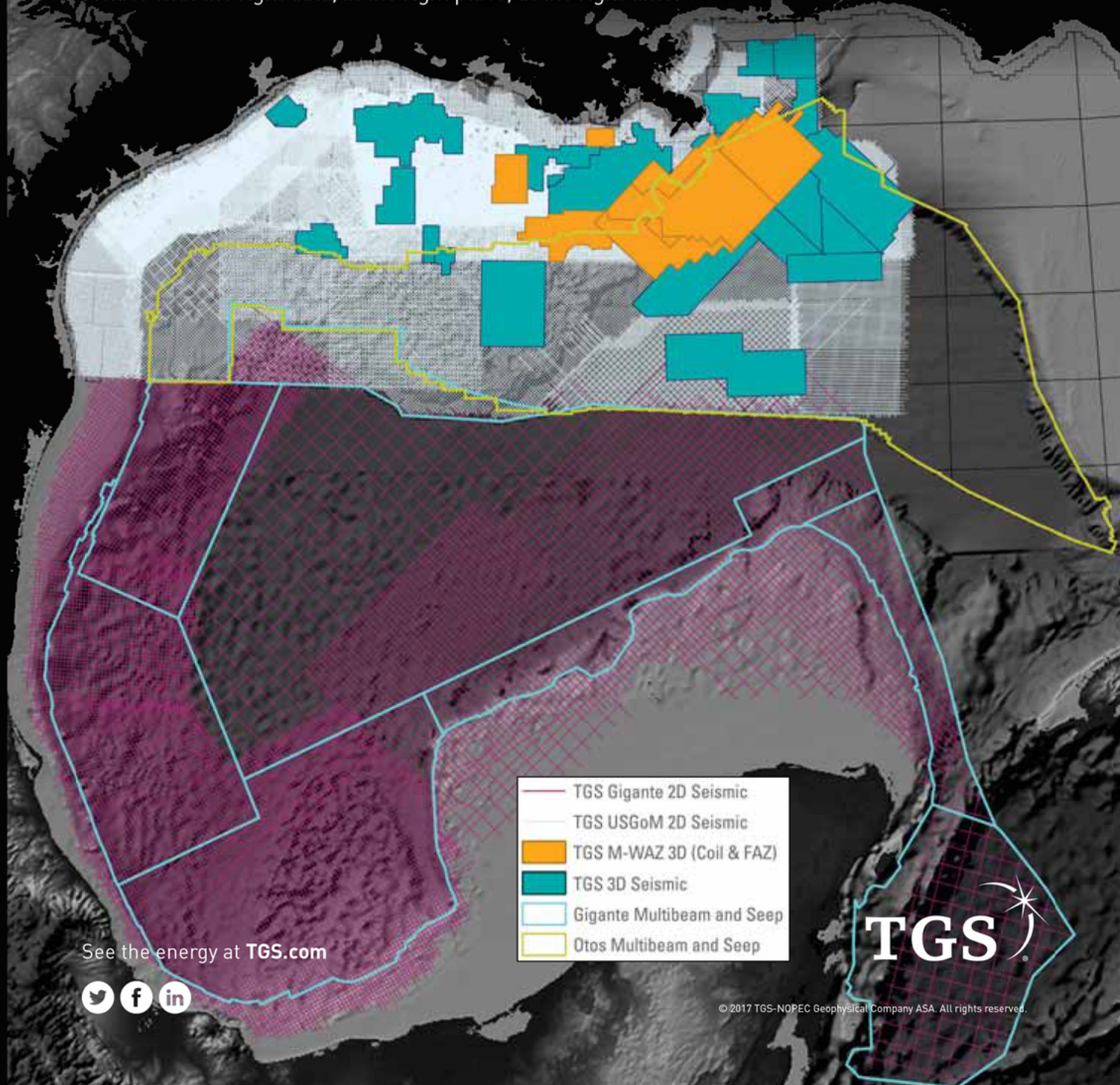
Regards,  
John Dribus





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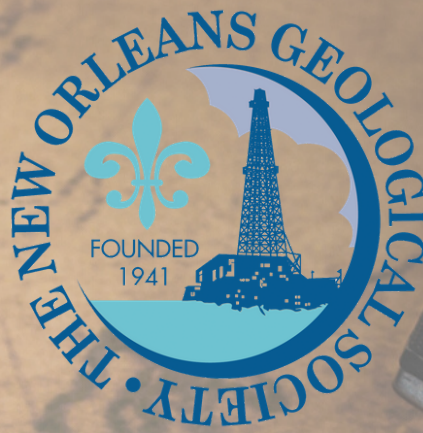


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# PICTURE FROM THE PAST



**Harrison L. Townes (R) AAPG President-Elect presents to Harluf C. "Pete" Peterson (C), NOGS's third President ('43-'44), AAPG's Recognition of Achievement Award to the Society on its 50th anniversary at the June 1, 1992 Monthly Luncheon; President John C. "Jack" Langford is at left.**

**Note: A framing of this photo hung in the NOGS Business Office until its closure. The framed photo, the award plaque and 50th Anniversary banner are stored in our climate-controlled storage unit.**

*Submitted by  
Ed Picou, Chairman - Historical Committee*



# advertising rates

The New Orleans Geological Society was organized on October 3, 1941, as a non-profit organization for the purpose of facilitating the development of the profession and science of Geology, with specific emphasis to exploration and production of petroleum and natural gas. Secondary related objectives include the dissemination of pertinent geological and environmental technological data, and the maintenance of a high standard of professional conduct of its members. The full history of the Society can be found at [nogs.org](http://nogs.org).

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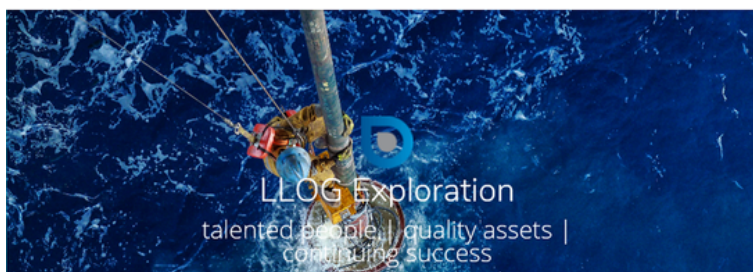
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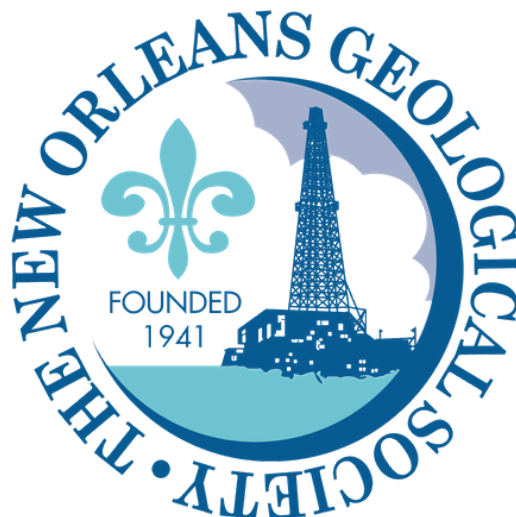
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# DRILL BITS

## OFFSHORE GULF OF MEXICO SHELF AND DEEPWATER ACTIVITIES BY AL BAKER

During May 2020, the U.S. Department of the Interior Bureau of Safety and Environmental Enforcement (BSEE) approved 56 Gulf of Mexico (GoM) drilling permits. There were 5 permits for shelf wells, and 51 permits were for deepwater wells. Of the total number of permits, there were 6 new well permits issued, 1 on the shelf and 5 in deepwater.

The single shelf new well permit was for an exploration well. Contango Operators received it for their Grand Isle 45 #1 well.

The 5 deepwater new well permits were for 4 exploration wells and 1 development well. Shell Offshore obtained 2 permits for exploration wells located in their Great White Field within the Perdido Fold Belt. Their Alaminos Canyon 857 #GD-4 and #GD-5 wells will target the Lower Tertiary (Paleogene) reservoir sands. Union Oil Company of California (Chevron) also received 1 permit for an exploration well, the Walker Ridge 678 #PN-5 that is situated in their Lower Tertiary St. Malo Field. BP Exploration & Production was awarded a permit for their exploration well, the Mississippi Canyon 518 #1. The development well permit was given to Beacon Growthco Operating Company for the Mississippi Canyon 427 #SS-3 well that is located in their La Femme Field.

On May 29th, IHS-Petrodata indicated that the GoM mobile offshore rig supply stood at 67, which is 2 less than last month. The marketed rig supply consisted of 41 rigs, of which 28 were under contract. The marketed rig supply was 1 more than last month, whereas the contracted rig supply number was the same as last month. The marketed contracted versus total rig supply utilization rate stood at 61.2%, and the marketed contracted versus marketed supply utilization rate stood at 68.3%. By comparison, the May 2019 total fleet utilization rate stood at 58.3% with 42 rigs under contract out of the 72 rigs in the fleet.

As of May 29th, BakerHughes reported that there are 12 active mobile offshore rigs in the GoM, which is 42.9% of the rigs under contract mentioned above. This active rigs number is 5 less than reported last month. Currently, there is 1 rig drilling on the shelf and 11 in deepwater. The shelf rig is located in the Grand Isle Area. In deepwater, there are 5 rigs in the Mississippi Canyon Area, 3 in the Green Canyon Area, 2 in the Ewing Bank Area and 1 in the Walker Ridge Area.

As of May 29th, the BakerHughes total U.S. rig count stood at 301 rigs, which is 164 fewer rigs than reported at the end of April 2020. Of the 301 rigs, 222 (73.8%) are oil rigs, 77 (25.6%) are gas rigs and 2 listed as Other. A year ago, there were 984 rigs working in the U.S. Thus, the current rig figure represents a 69.4% decline in rigs year over year. Texas continues to have the largest number of rigs presently with 127, which is 42.2% of the total number of rigs in the U. S. Louisiana currently has a total of 35 rigs, down 5 rigs from last month. Nationwide, Louisiana ranks third in the rotary rig count. New Mexico ranks second with 61 rigs.

On May 21st, the U.S. Department of the Interior Bureau of Ocean Energy Management (BOEM) announced the initial Phase 2 acceptances of the bids received at OCS Sale 254 that was held in New Orleans on March 18, 2020. A total of 5 out of the 71 bids were deemed acceptable. The remaining 66 bids are still under evaluation by the BOEM.



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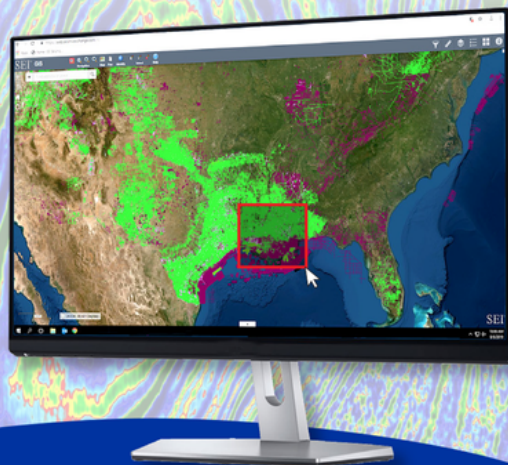
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Bill Craig Memorial Fund provides for any earth science related educational or scientific purpose that is a direct benefit to grades K-12 teacher or teachers within the Greater New Orleans Area. This area is defined as the area encompassing New Orleans, Jefferson, Plaquemines, St. Bernard and St. Tammany Parishes.

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# NEWS FROM THE PAST



At Weeks Islands, Iberia Parish, Louisiana, Shell Oil Company leased mineral rights from the state of Louisiana and from the Smith family. In 1941, Shell's first well at Weeks Island was a dry hole. Shell completed the No. 1 Smith-State Unit well in April 1945 from perforations 13,505-520. This well was the discovery well for Weeks Island oil field and pronounced the deepest oil producer in the world.

"World's Deepest Oil Producer Flows Near New Iberia" headlined an April 12, 1946 article in The Town Talk (Alexandria, LA, p. 20) A year later after the completion of the No. 1 well, the No. 2 well (photograph) was drilled to a total depth of 14,301 feet and completed from perforations 13,763-78. The No. 2 well, drilled just 400 feet from the No. 1, became the world's deepest oil producer. On April 12, 1946, Joe L. McHugh, the state conservation chairman, and John A. Smith, representing the Smith family, turned the valve to bring in the well. That evening Shell Oil hosted a party and dinner in Lafayette to celebrate the new record well.

Jeff Spencer  
GCAGS Historian  
spencerj320@gmail.com

APR 12 1946

## World's Deepest Producer Oil Well Sets Three New Records

BY LARRY GUERIN

WEEKS ISLAND, La.—Three new records were established here today when the Shell Oil Co. brought in the world's deepest producing oil well in the heart of the Evangeline country.

The well is the second drilled in the Weeks Island field by the Shell Co., and went to a depth of 14,301 feet. It is producing, however, from a depth of from 13,763 to 13,778 feet. On a production test the well flowed at the rate of 530 barrels per day.

The previous world's record was held by Shell's Well No. 1, just 400 feet away from the gusher brought in yesterday. Well No. 1 was brought in April, 1945, and is producing from a depth of 13,505 to 13,520 feet.

Although the Weeks Island well is not the deepest hole ever drilled, it is producing oil from the greatest depth ever known in the history of oil production. Several deeper wells have been drilled, chiefly in California and Texas, but they either turned out to be dry holes or produced insignificant amounts of oil.

A second record established was

the 13,430 foot string of seven-inch well casing which was run and cemented in the record time of 11 hours and 45 minutes.

The casing was cemented with 1000 sacks of high-temperature cement. Subsequently a five-inch liner was set and cemented down to a depth of 14,083 feet.

In drilling for the oil sand, Shell set another record when it brought in the world's deepest producing gas distillate well.

As in many bayou-country drilling operations, the new Shell well was drilled with a marine drilling rig, brought to the drilling location by a dredged canal. The drilling unit was the same used to drill Well No. 1.

It is now flowing through an 11-64 inch choke with a tubing pressure of 2750 pounds. The gas-oil ratio is 1425 cubic feet per barrel and gravity of the crude is 33 degrees. Although the well can flow at 530 barrels per day under Louisiana proration it will be permitted to produce at the rate of 380 barrels per day.

The total time from start of drilling to completion was 284 days. Excluding 85 days of "trouble time," the actual drilling days were 191.

Fifteen days were lost in moving the rig back to Well No. 1 for reconditioning purposes, which

was supplying the fuel for Well No. 2; 43 days were lost in "fishing" out a stuck drill stem, and 23 days more were lost in "side-tracking." Drilling around the unrecoverable remnants left at the bottom of the hole.

Drilling operations for the new well reached the \$400,000 mark.

J. L. McHugh, state conservation commissioner, and John A. Smith, representing the members of his family who own part of the land on which the drilling was done, together turned the valve to bring in the first official production today from more than two and a half miles below Louisiana swampland.

### MAYOR PRESENT

Also present to witness the ceremonies were Mayor Armand Viator of New Iberia; A. J. Galloway, Houston, vice president in charge of Shell's east of the Rockies exploration and production operations, and W. S. Milton, New Orleans, state manager of Shell's marketing department.

Among others present were E. N. Van Duzee, Lake Charles, manager of the Shell division office; P. E. Hurley, manager, and R. W. Faulk, superintendent, of the Shell Refinery at Norco; P. E. Foster, manager of the refinery at Houston; A. J. Jago, executive assistant to Mr. Galloway, and W. A. Alexander, production manager, both of Houston; Sheriff Gilbert Ozanne of Iberia Parish and Paul Hebert, president of the Iberia Parish Police Jury.





# **Book Summaries of Interest**

## **Contributed By: Bill Haworth**

*Dickas, Albert C., 2012, 101 American Geo-Sites You've Gotta See.* Here is a good overview of interesting geologic sites from around the country, including at least one from every state. All of the sites include an explanatory discussion with pictures and cross-sections, and a brief list of references. Many of the sites are well known (e.g., Louisiana's Avery Island) but some less so. Alabama's site, perhaps less well known, but quite compelling (as are many other examples in the book), is the large Wetumpka Meteor Impact Crater in Central Alabama. Rocks near the contact of the Piedmont metamorphics and the Gulf Coastal plain sediments are contorted and shattered over several miles. The references for this site include a listing of research papers on the locality and the original paper recognizing the origin of this feature.

The Geo-Sites book also includes a discussion on the evolution of geology as a science and a short section on the history of the earth, which may be especially helpful for non-geologists. The author is Professor Emeritus from the University of Wisconsin, Superior, and has written a follow-up in 2018 entitled *101 American Fossil Sites You've Gotta See*. Both books have received favorable reviews online.

If you can't travel to some of these sites, many have informative videos on YouTube.



# NOGS Continues Virtual Meetings



John Dribus provided a great virtual presentation for us in June. Here are a few slides from John's presentation.

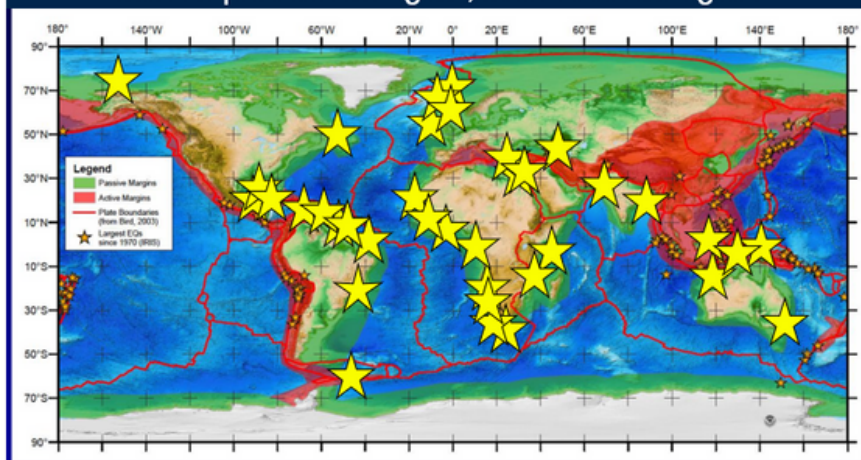
## Recent Discoveries and Global Outlook for Conventional Exploration: June, 2020



Prepared for NOGS ZOOM Presentation June 8, 2020

## Top Exploration Hot Spots 2020-2022.

Most large oil discoveries have been found in rifts or passive margins, not active margins

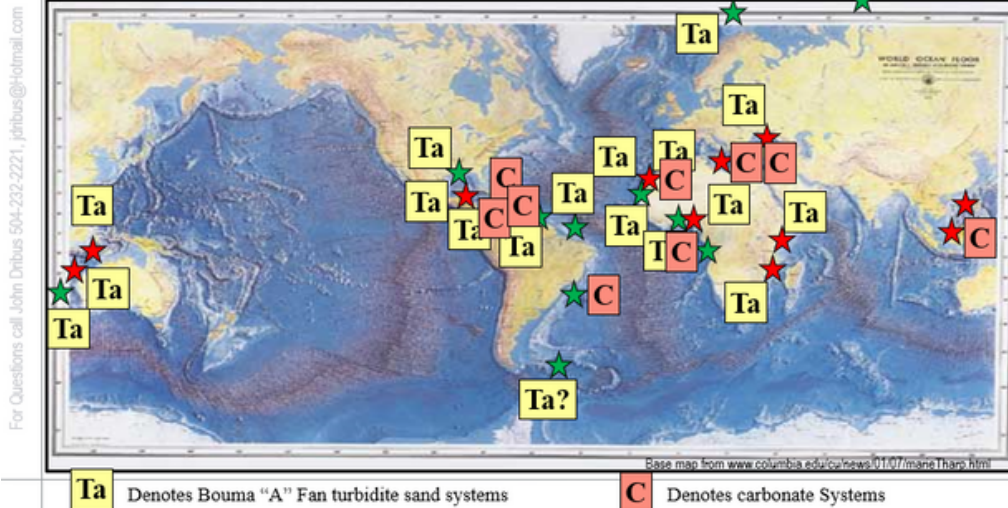


Modified From Paul Mann, University of Houston, 2014



## Major Deepwater Discoveries and Their Reservoir Lithologies

Deep water Turbidite Fans remain hottest target, carbonate reefs follow.



## Top Ten Exploration Hot Spots for 2020-2022

1. **Equatorial South America:** Guyana and Suriname
2. **Pre-salt Brazil:** Santos and Campos Basins.
3. **Mexico DW Gulf of Mexico:** Perdido, Campeche, Sureste Basins.
4. **Eastern Mediterranean:** Egypt, Cyprus, Lebanon, and Israel.
5. **USA Gulf of Mexico and Alaska:** Mioc/Plio, Jurassic, and LTertiary.
6. **South Africa/Namibia/Angola:** Outinequa Basin, Brulpadda find.
7. Barents Sea, North Sea, Norwegian Sea.
8. Trinidad and Tobago, Bahamas, and Colombia Caribbean.
9. Newfoundland and Nova Scotia.
10. Kara Sea: Russian Arctic shelf

## Top Ten Exploration Hot Spots 2020-22

Most large oil discoveries have been found in rifts or passive margins, not active margins

