

**MISSISSIPPI GEOLOGICAL SOCIETY**

# eBULLETIN

**Volume 70**

**No. 1**

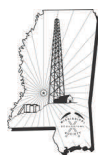
**September 2021**



**FALL BBQ CANCELLED**

**JACKSON, MS, FAIRGROUNDS TEST WATER WELL**  
Dr. David T. Dockery, RPG, Office of Geology

**OIL PATCH QUIZ**  
Steve Walkinshaw, Vision Exploration



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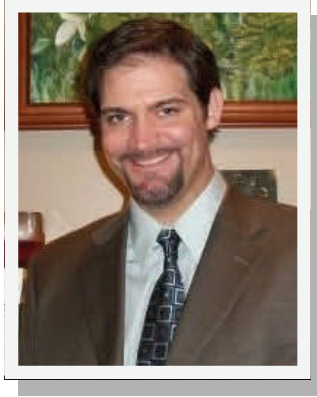
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# PRESIDENT'S LETTER

*David Snodgrass, MSOGB*



MGS Members,

Due to the ongoing Covid-19 pandemic the MGS as decided to cancel the Fall BBQ and continue to postpone our monthly luncheons at the River Hills Country Club until further notice. Unfortunately, MGS activity has been devastated by this pandemic. I do however, encourage members to maintain their membership as this will not last forever. So, please continue to give the MGS your consideration. On a sadder note, I also wanted to take a moment and let the membership know that the Mississippi State Oil & Gas Board lost one of its own in August to Covid-19, Margret Gracy. If you have ever had a docket with the Board, then you know who and/or worked with Margret Gracy. She was a wonderful lady and we will miss her dearly. I look forward to updating everyone next month, so stay tuned. For now, take care and stay safe.

MGS President,

David H. Snodgrass

# 2021-2022 MGS MEETING SCHEDULE

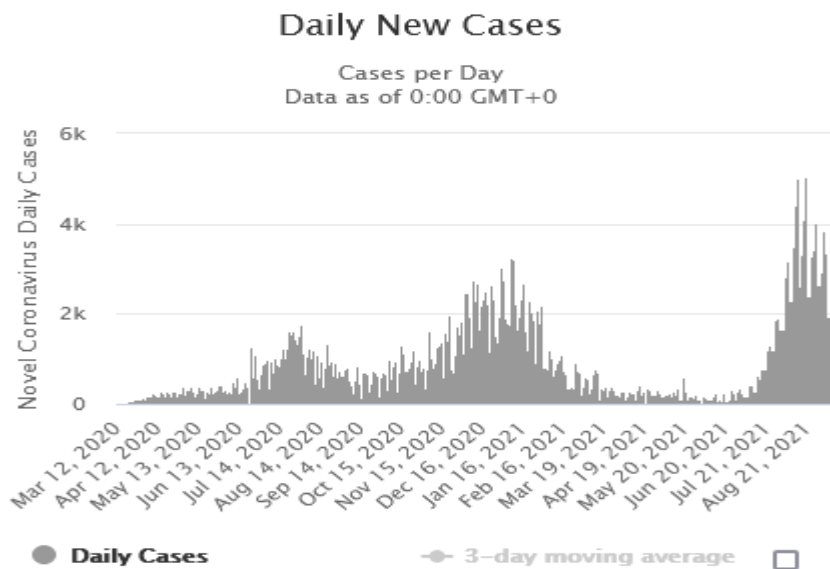
When	What/Who	Where
Cancelled	Fall BBQ	Jackson Yacht Club-5:30pm
October	TBD	River Hills – 11:30am
November	TBD	River Hills – 11:30am
December	Merry Christmas	
January	TBD	River Hills - 11:30am
February	TBD	River Hills – 11:30am
March	TBD	River Hills – 11:30am
April	TBD	TBD
May	Boland Scholarship Awards	TBD

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mnbirdwell@comcast.net

OFFICERS MEETINGS
TBD
TBD
TBD
TBD
TBD
TBD
TBD
TBD
TBD





# MGS SCHOLARSHIP AWARDS

Faculty & Students,

This is a new year and the Mississippi Geological Society along with the Boland Scholarship Fund would like to remind you that we want to honor the most outstanding overall students for the 2021-2022 year.

Each year, the Boland Scholarship awards 1 student from each institution a check that rewards students for their hard work and dedication to the Geosciences and their community.

We look forward to a great year and hope to see you at our monthly meetings.

Best Regards,

Matt Caton  
Editor



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# MONTHLY POST

## Dr. David T. Dockery III RPG

### JACKSON, MISSISSIPPI, FAIRGROUNDS TEST WATER WELL

David T. Dockery III, RPG

James Starnes (MDEQ-Office of Geology) got a call from a former MDEQ-OPC employee, asking for a friend with Waggoner Engineering, about groundwater resources at the State Fairgrounds in Jackson. This friend was told by a certain city source that there was no reliable groundwater there. James sent him images from *The Geology of Mississippi* showing the excellent aquifer encountered by the downtown MDOT well. That well was later mentioned in the WLBT July 8, 2021, Evening News Report as follows: “Andy Gipson [Agriculture and Commerce Commissioner] said the idea for an on-site well water system came from a similar move from the Mississippi Department of Transportation in 2010, when the agency drilled for water in an effort to sever its ties with the city of Jackson after outages.” Figure 1 is a cross section (not to scale horizontally) to the MDOT well (far right), which James sent from *The Geology of Mississippi*.

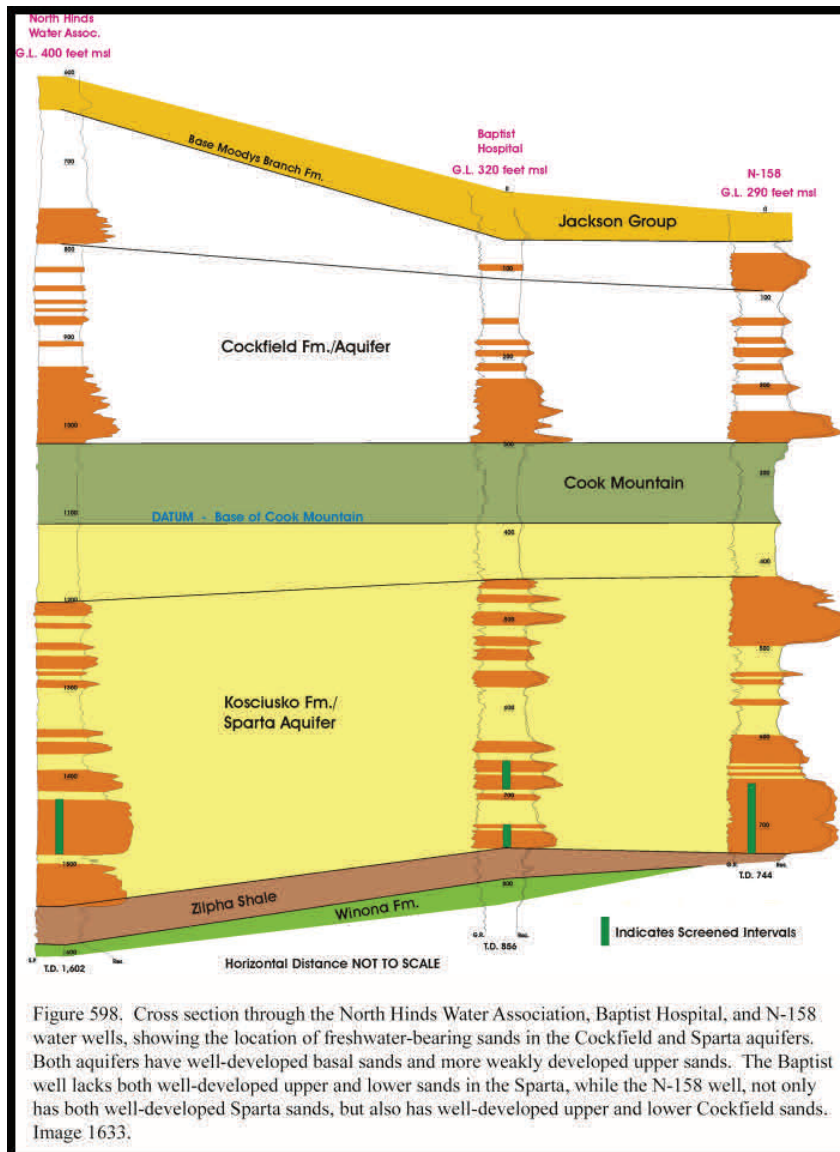


Figure 598. Cross section through the North Hinds Water Association, Baptist Hospital, and N-158 water wells, showing the location of freshwater-bearing sands in the Cockfield and Sparta aquifers. Both aquifers have well-developed basal sands and more weakly developed upper sands. The Baptist well lacks both well-developed upper and lower sands in the Sparta, while the N-158 well, not only has both well-developed Sparta sands, but also has well-developed upper and lower Cockfield sands. Image 1633.

FIGURE 1



# MONTHLY POST

## *Dr. David T. Dockery III RPG*

The geophysical log of the Fairgrounds pilot well is shown in Figure 2, in which the Sparta section is like that in the MDOT well.

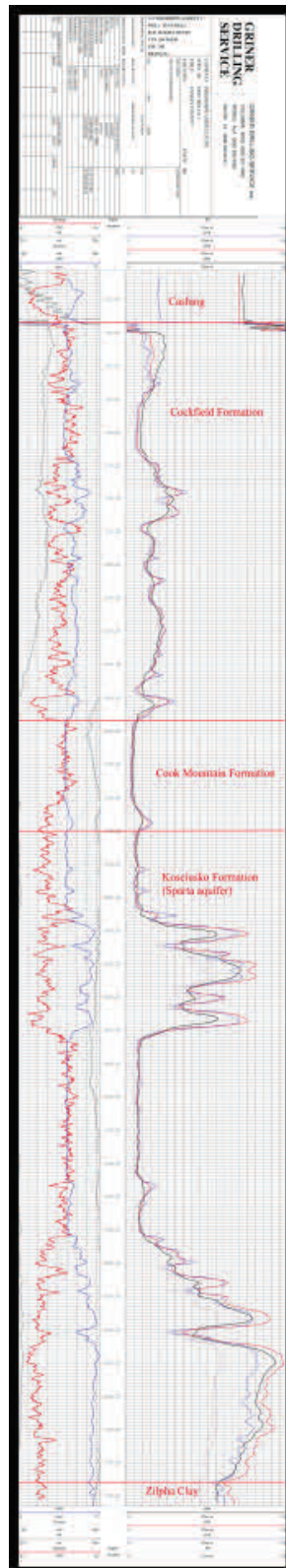


FIGURE 2



# MONTHLY POST

## *Dr. David T. Dockery III RPG*

Thus, the WLBT report of a “Major Water Source Located Under Fairgrounds” (Figure 3). A pump test on the Fairgrounds well was completed on August 9, 2021, with good results.



FIGURE 3





# MONTHLY POST

## *Dr. David T. Dockery III RPG*

Figure 4 shows Bill Oakley looking at himself testing the MDOT well in figures 601 and 602 of *The Geology of Mississippi*. Above the book is the clear stream of water from the pump test at 50 gallons per minute.

Bill Oakley measured the turbidity at 3, a low number for a deep well; the water appears perfectly clear to the eye. The water contained methane at 30 to 40 parts per million. Waypoint Analytical Laboratories of Ridgeland, Mississippi, measured the pH on site as 8.56 and the temperature as 26.8 degrees C or 80.24 F. Follow the good results of the test well, a production well will be drilled and tested.



FIGURE 4



# CURRENT PRICES

## Crude Oil WTI (NYM \$/bbl) Front Month

[+ WATCHLIST](#)

☀ OPEN

Last Updated: Sep 13, 2021 at 10:19 a.m. EDT - Delayed quote

\$ **70.56**

SETTLEMENT PRICE 09/10/2021

\$69.72

▲ 0.84 1.20%



## Natural Gas Continuous Contract

[+ WATCHLIST](#)

☀ OPEN

Last Updated: Sep 13, 2021 at 10:20 a.m. EDT - Delayed quote

\$ **5.161**

SETTLEMENT PRICE 09/10/2021

\$4.938

▲ 0.223 4.52%





# MONTHLY QUIZ

*Steve Walkinshaw*

## OIL PATCH QUIZ

Oil patch quiz time. Biogenic gas is a major constituent of the reservoirs that have been found to date in this general area. A large structure ("N") separates basins located to the east and west. Traditionally interpreted to be a carbonate platform, recent dives ("B") indicate this structure may have had a more complex origin.

In one respect, some of the reservoirs encountered within one field complex discovered recently within the eastern basin are different than those of the other fields discovered and developed to date, which are located further to the south in that same basin.

Two recent discoveries on its western and southwestern sides appear to be analogous to the largest carbonate gas field in the region ("F").

Questions...

Part 1: (a) What is the name of structure "N"? (b) Where is it located?

Part 2: What do the underwater images shown in "B" (taken of one of the flanks of structure "N") suggest about its origin?

Part 3: What is the prolific basin located east of this structure called?

Part 4: (a) What is the large basin immediately west of this structure called? (b) What are the names of two of the largest gas fields recently discovered in this western basin, to the west and southwest of structure "N"? (c) Name the operators of these two fields.

Part 5: What are labeled "L" and "M" in "C"?

Part 6: See "E". Name the fields labeled (a) "O" and (b) "P". (c) What is the general lithology and significance of the strata labeled "Q"?

Part 7: Name the large gas field shown in "F".

Part 8: Structure "R" in "G" is interpreted to be analogous to "F". (a) What is the probable lithology of its core? (b) Where is it located (in what country's EEZ)?

Part 9: (a) What is labeled "S" in "H" and "I"? (b) What's the significance of the solid bitumen impregnation observed in "K"?

Part 10: What is labeled "U" in "J" and "K" (2 words)?

Part 11: What are labeled "T" in "B"?

Bonus:

Part 12: What field complex in the eastern basin (mentioned in the introduction) is somewhat different than the others?

Part 13: Why some of the reservoirs encountered within that field complex different than those of the other fields discovered and developed to date, which are located further to the south in that same basin?

Part 14: In what country's EEZ is image "A" located?

Part 15: What regularly appears at the surface above structure "N"?

**Answers at end of Bulletin**



# MONTHLY QUIZ

*Steve Walkinshaw*

**3D SEISMIC IMAGE - TOP EARLY MIOCENE - AS MAPPED IN THIS UNDEVELOPED COUNTRY** A

Deep Shallow

**BATHYMETRY AND SEISMIC IMAGES** C

**UNDERWATER IMAGES - FLANK OF THIS STRUCTURE**

**B** N T

**BATHYMETRY - LARGE STRUCTURE** D

**SEISMIC LINE ACROSS TWO LARGE FIELDS IN THIS BASIN** E

**LARGE GAS FIELD** F

**LARGE STRUCTURE - THIS COUNTRY** G

**IMAGES OF POTENTIAL SOURCE ROCKS IN THIS BASIN**

**H** I

Amorphous bitumen 50 µm Amorphous lipinite

**J** K

30 µm Solid bitumen 50 µm

FULL CREDIT FOR THE SOURCE OF THESE IMAGES TO BE PROVIDED ONCE THE QUIZ HAS BEEN SOLVED



# GEOLOGY POST

## ARTICLES, PAPERS or NEWS?

**ATTENTION!!!!!!** Industry, Professors and Students:

I am looking for more content from the industry and our schools.

Submissions can include anything from professional papers, thesis abstracts, job opportunities to pictures. Anything!!!!

If you have any information or news you would like to share with the Society **PLEASE** email them to the MGS Editor at:

[mcaton13@yahoo.com](mailto:mcaton13@yahoo.com)

Thanks & Regards,

Matt Caton  
Editor

# GEO LINK POST

**USGS TAPESTRY OF TIME AND TERRAIN** <http://tapestry.usgs.gov> The CCGS is donating to all of the 5th and 6th grade schools in the Coastal Bend. Check it out—it is a spectacular map. You might want a framed one for your own office. The one in my office has glass and a metal frame, and it cost \$400 and it does not look as good as the ones we are giving to the schools. Call Owen 510-6224 if you want one for your office for \$150. Duncan, Mike, Chris, Dave, Bob Randy, Seb., Kevin, Ken, Craig, Patrick, Robert.

**FREE TEXAS TOPO'S** <http://www.tnris.state.tx.us/digital.htm> these are TIFF files from your state government that can be downloaded and printed. You can add them to SMT by converting them first in Globalmapper. Other digital data as well.

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<http://www.geographynetwork.com/> Go here and try their top 5 map services. My favorite is 'USGS Elevation Date.' Zoom in on your favorite places and see great shaded relief images. One of my favorites is the Great Sand Dunes National Park in south central Colorado. Nice Dunes.

<http://antwrp.gsfc.nasa.gov/apod/astropix.html> Astronomy picture of the day — awesome. I click this page everyday.

<http://www.spacimaging.com/gallery/ioweek/iow.htm> Amazing satellite images. Check out the gallery.

<http://www.ngdc.noaa.gov/seg/topo/globegal.shtml> More great maps to share with kids and students.

[www.geo.org](http://www.geo.org) Don't forget we have our own web page.

<http://micro.magnet.fsu.edu/primer/java/scienceoptiscu/owersof10/>

<http://asterweb.jpl.nasa.gov/gallery/default.htm> Great satellite images of volcanoes

<http://terra.nasa.gov/gallery/> More here

[www.ermapper.com](http://www.ermapper.com) They have a great free downloadable viewer for TIFF and other graphic files called ER Viewer.

[www.drillinginfo.com](http://www.drillinginfo.com) This is an incredible (subscription) well and completion data service for independents. Can be demo'ed for free.

<http://terraserver.com/> Go here to download free aerial photo images that can be plotted under your digital land and well data. Images down to 1 meter resolution, searchable by Lat Long coordinate. Useful for resolving well location questions.

<http://www.fs.fed.us/gpnf/volcanocams/msh/> This is a live cam of Mt. St. Helens refreshed every 5 minutes. At the bottom are old videos of past eruptions in this cycle. It is worth a watch especially now.



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# MONTHLY QUIZ

*Steve Walkinshaw*

## ANSWERS

Part 1: (a) What is the name of structure "N"? the Eratosthenes Seamount (b) Where is it located? the Eastern Mediterranean, south of Cyprus

Part 2: What do the underwater images shown in "B" (taken of one of the flanks of structure "N") suggest about its origin? The presence of columnar basalt and active hydrothermal vents, along with a strong magnetic anomaly, suggests magmatic activity is associated with its origin and its manifestation as a paleotopographic high throughout much of its history

Part 3: What is the prolific basin located east of this structure called? the Levantine Basin

Part 4: (a) What is the large basin immediately west of this structure called? the Herodotus Basin (b) What are the names of two of the largest gas fields recently discovered in this western basin, to the west and southwest of structure "N"? Calypso and Glaucus (c) Name the operators of these two fields. Calypso – ENI; Glaucus – ExxonMobil

Part 5: What are labeled "L" and "M" in "C"? mud volcanoes

Part 6: See "E". Name the fields labeled (a) "O" and (b) "P". "O" is the Aphrodite structure; "P" is the (North) Leviathan structure (c) What is the general lithology and significance of the strata labeled "Q"? this stratigraphic interval includes the Messinian evaporites, which are regionally important topseals deposited in very unique conditions... where massive sea level changes occurred over a relatively short period of time, resulting in the deposition of a thick basin-centered series of evaporites "sandwiched" between pre-"MSC" (Messinian Salinity Crisis) and post-MSC deepwater sediments.

Part 7: Name the large gas field shown in "F". the giant Zohr Field (located within the Egyptian EEZ)

Part 8: Structure "R" in "G" is interpreted to be analogous to "F". (a) What is the probable lithology of its core? carbonate (b) Where is it located (in what country's EEZ)? Greece

Part 9: (a) What is labeled "S" in "H" and "I"? a vitrinite particle (b) What's the significance of the solid bitumen impregnation observed in "K"? it is indicative of the presence of a deeper, thermally mature source rock

Part 10: What is labeled "U" in "J" and "K" (2 words)? framboidal pyrite

Part 11: What are labeled "T" in "B"? tube worms

Part 12: What field complex in the eastern basin (mentioned in the introduction) is somewhat different than the others? The Karish Field complex (Karish and North Karish Fields)

Part 13: Why some of the reservoirs encountered within that field complex different than those of the other fields discovered and developed to date, which are located further to the south in that same basin? some of the reservoirs produce thermogenic oil

Part 14: In what country's EEZ is image "A" located? Lebanon

Part 15: What regularly appears at the surface above structure "N"? the Cyprus Eddy, a large, warm core, anticyclonic eddy



# MONTHLY QUIZ

*Steve Walkinshaw*

## CREDITS

Image "A": "Mysteries of the East: New Discovery is Perfect Timing for Lebanon's License Round", Spectrum Geo Newsletter, Issue 71, 2019

Image "B": Nautilus Live website, Ocean Exploration Trust (in partnership with NOAA), <https://nautiluslive.org/album/2012/08/17/highlights-eratosthenes-seamount#&qid=1&pid=12>

Image "C": "Examples of deep-water play types in the Matruh and Herodotus basins of NW Egypt" (Gabor Tari, Robert Kohazy, and Katie Hannke, OMV; Hussein Hussein, OMV Egypt; Bernhard Novotny, OMV Azerbaijan; and Jean Mascle, Géosciences Azur), The Leading Edge, SEG, July 2012

Image "D": "Deep-water archaeological discoveries on Eratosthenes Seamount" (Benjamin Ballard, Andrei Opait, and Kelsey Cornwell), Deep Sea Research Part II: Topical Studies in Oceanography, Volume 150, April 2018, Pages 4-21, Elsevier

Image "E": "Mega-Scale Swells and Diapirs in the Deep Levant Basin, Eastern Mediterranean, and their Association with Recent World-Class Gas Discoveries" (Yuval Ben-Gai and Yehezkel Druckman), Search and Discovery Article #10518 (2013)

Image "F": "Zohr Giant Gas Discovery – A Paradigm Shift in Nile Delta and East Mediterranean Exploration" (A. Cozzi, A. Cascone, L. Bertelli, F. Bertello, S. Brandolese, M. Minervini, P. Ronchi, R. Ruspi, and H. Harby), Search and Discovery Article #20414 (2018)

Image "G": <https://www.pgs.com/multiclient/hotspots/easternmediterranean/findoutmore/geology/>

Images "H", "I", "J" and "K": "Source rock characterization of mesozoic to cenozoic organic matter rich marls and shales of the Eratosthenes Seamount, Eastern Mediterranean Sea" (S. Grohmann, S. Fietz, R. Littke, S. Daher, M. Romero-Sarmiento, F. Nader, and F. Baudin), Oil and Gas Science and Technology, 73, [49], 2018; <https://doi.org/10.2516/ogst/2018036>