

MISSISSIPPI GEOLOGICAL SOCIETY

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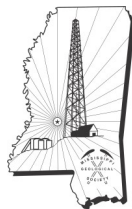
December 2020

MISSISSIPPI BUCATUNNA CLAY—MIRACLE CLAY?

Dr. David T. Dockery, RPG, Office of Geology

OIL PATCH QUIZ

Steve Walkinshaw, Vision Exploration



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PRESIDENT'S LETTER

David Snodgrass, MSOGB



MGS Members,

Wishing everyone a Merry Christmas and a Covid-free and Happy New Year !

While we are waiting on the return of our monthly luncheons, if you haven't already done so, it is time to read, *Mississippi Environmental Geology*, from David T. Dockery III and David E. Thompson. Contact me at my office directly at 601-576-4930 or by email at dsnodgrass@ogb.state.ms.us and I will put you in touch with someone that can direct you to the publication. Shamefully, I didn't know this existed until recently. It is a detailed look at Mississippi from many angles covering various topics such as ground water, foundations and slope failures, rivers and pollution, mines, oil and gas, emergency management and so much more. It is a great read, but don't think you will get through it in one sitting...it's long, but worth the time.

As previously mentioned, due to the ongoing Covid-19 pandemic the MGS will continue postponing our monthly luncheons at the River Hills Country Club until further notice. Please stay tuned. For now, take care.

Sincerely,

David H. Snodgrass



BOLAND SCHOLARSHIP WATCH

Faculty & Students,

This 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 2020-2021 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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CURRENT PRICES

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

[+ WATCHLIST](#)

☀️ OPEN

Last Updated: Dec 9, 2020 at 10:17 a.m. EST - Delayed quote

\$ **46.06**

▲ 0.46 1.01%

SETTLEMENT PRICE 12/08/2020

\$45.60



Natural Gas Continuous Contract

[+ WATCHLIST](#)

☀️ OPEN

Last Updated: Dec 9, 2020 at 10:16 a.m. EST - Delayed quote

\$ **2.484**

▲ 0.085 3.54%

SETTLEMENT PRICE 12/08/2020

\$2.399





MONTHLY POST

Dr. David T. Dockery III RPG

MISSISSIPPI BUCATUNNA CLAY—MISSISSIPPI MIRACLE CLAY?

David T. Dockery III, RPG

The Mississippi Department of Environmental Quality, Office of Geology sends a weekly Geology Report to MDEQ executives. These reports began on August 18, 2017, with the announcement that: “MDEQ [Division of Mining and Reclamation] anticipates that Liberty Fuels LLC will submit a permanent mine closure plan within 90 days.” Closure of the Liberty Mine and Mississippi Power Company’s \$7.5 billion-plus energy facility, a lignite coal gasification plant, was big news at the time. Weekly Geology Reports have continued since then with no lack of news to share. The following article is borrowed from the May 22, 2020, report. In it, Mining and Reclamation Division Director James Matheny explains the variety materials mined in Mississippi, and what they are used for. Then I added the novelty item in the second paragraph that follows.

Mining and Reclamation Division: When it comes to Mining in the state of Mississippi, most people think of Sand and Gravel or Borrow Material. However, some people may not know that there are other materials mined in the state and these materials have a wide variety of uses. Limestone mined in this state is used for Agricultural lime application as well as an ingredient in cement. Specialty sands mined in MS are used for golf courses, masonry, sand blasting, playgrounds, etc. depending on size and cleanliness. Specialty clays such as Bentonite are mined primarily in the northern 1/3 of the state. These clays are used for a variety of applications such as Cat Litter, Oil Absorbent, Fertilizer/Pesticide applications, Drop in Ceiling Tiles, Floor Tiles, Filler ingredient for asphalt sealant, Ceramics (dishes), Athletic Applications (baseball fields, golf courses), Anti-Caking Agent (animal feed), Fat & Oils sorbent (de-colorization of vegetable oils), and as molds for engine blocks.

Then there is this from Amazon and **Mississippi Miracle Clay:** Mississippi Miracle Clay 100% Pure Magnesium Bentonite Clay Hydrated Clay, 8 ounces for **\$59.00** (bentonite is mined by the ton). And these: Mississippi Miracle Clay Mmc Facial Oil, 4 ounces **\$44.00**, Detoxifying Clay Cleanser, 4 ounces **\$44.00**, Mississippi Miracle Clay Mineral Castile Soap, 5 ounces **\$29.00**, Morning Minerals Eye Mask, 1 ounce **\$44.00**, Overnight Purifying Eye Treatment, 1 ounce **\$74.00**, Mississippi Miracle Clay Simple Clear Complexion System, **\$82.00** weight not mentioned, Mississippi Miracle Clay Mineral Bath Soak Detoxing, 16 oz **\$44.00**, Mississippi Miracle Clay Mineral Toner, 4 ounces **\$34.00**, Mississippi Miracle Clay Liquid Mineral Bath Soak Relaxing Lavender, 16 ounces **\$44.00**, Mineralized Lip Glaze, 1 ounce **\$27.00**, **OR** you can get the Mississippi Miracle Clay Southern Beauty Beginner Package for just **\$165.00** (Figure 1).



Figure 1



MONTHLY POST

Dr. David T. Dockery III RPG

Almost 100 hundred years before Mississippi Miracle Clay was marketed, certain residents of Smith County, Mississippi, ate Bucatunna Clay (a practice called geophany) and percolated water through the clay to make a mineral liquor. Figure 2 shows the early clay leaching operation by the Easom family.



Figure 2



MONTHLY POST

Dr. David T. Dockery III RPG

Figure 3 shows, on left, the handwritten notes on the process by Franklin Earl Vestal and Frederic Francis Mellen of the Mississippi Geological Survey dated March 13, 1936, and, at right, a picture of the modern process.

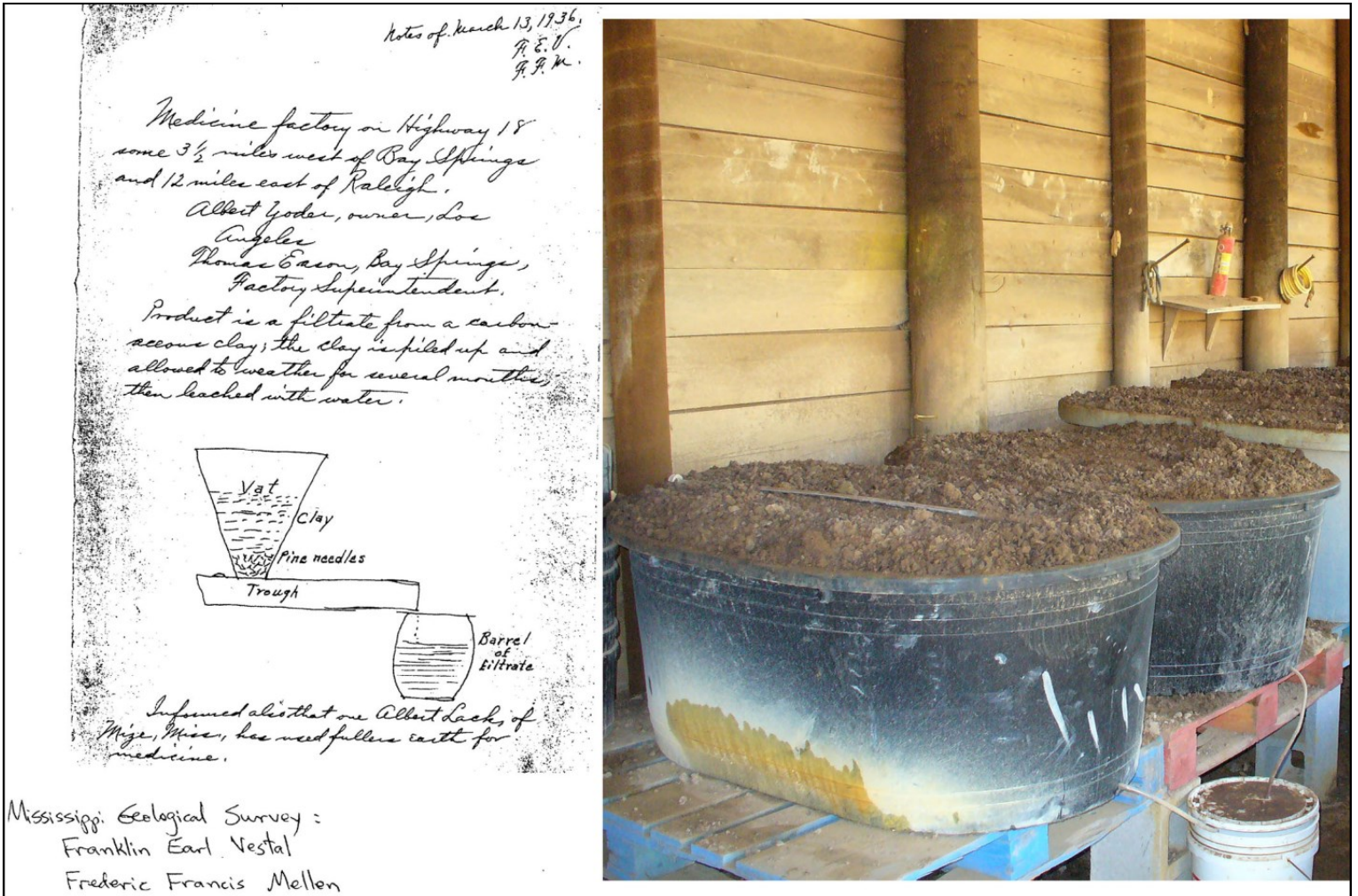


Figure 3



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Dr. David T. Dockery III RPG

The origin of the clay-eating practice is said to have started in the 1930s when a swine flu epidemic killed off pigs across the Smith County (and elsewhere) with the exception of a certain farm where the pigs regularly eat the Bucatunna clay. People then started eating the clay for their own health. Sometime later, a quarry opened in the Bucatunna Clay from which the clay was sold as a soil amendment and a mineral supplement for livestock. This quarry was in operation in 1970 when the Mississippi Geology Survey was studying the geology of Smith County. The present-day quarry is shown in Figure 4.



Figure 4. Citronelle Formation overlying the Bucatunna Clay in the Strite Mine in Smith County, Mississippi. The upper red pool has acidic iron-oxide-tinted red mine runoff water. Picture (digital) taken by Michael LaBelle on December 10, 2007.



MONTHLY POST

Dr. David T. Dockery III RPG

Figure 5 shows a bottle of Bucatunna mineral water concentrate given to the writer in 1970, when he was the driller's helper for the Smith County geology bulletin. This concentrate is an astringent; the missing portion at the top was used to stop bleeding in a patient on the blood thinner Coumadin.



Figure 5. Bottle of Bucatunna mineral water concentrate obtained in 1971 during work on the Smith County geology bulletin (Bulletin 116). The missing volume at top was successfully used on a Coumadin patient in 2010 to stop bleeding from a cut lip. Picture was taken on November 19, 2010.

Figure 5

The Bucatunna Clay also has its own iron sulfide-oxidizing bacterial flora. As originally processed for sale, the raw clay was dug from the quarry and spread beneath open sheds and periodically tumbled for periods up to a year. In that time, the clay's flora "ate"/oxidized pyrite, converting it into iron oxide, a variety of sulfate minerals, and sulfuric acid (the concentrate in Figure 5 has a pH of 1.84 as tested by David Cobb). When I was a geology graduate student at Ole Miss in 1975 and 1976, probably the smartest student in our class, Dan Thompson, selected the mineralogy of the Bucatunna Clay for his master thesis. His thesis title was: "Mineralogy and Origin of the 'Medicine Earth' Sulfates in the Bucatunna Clay, Central Mississippi."



GEOLOGY POST

ARTICLES, PAPERS or NEWS?

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

I am adding a dedicated section that includes 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

Thanks & Regards,

Matt Caton
Editor



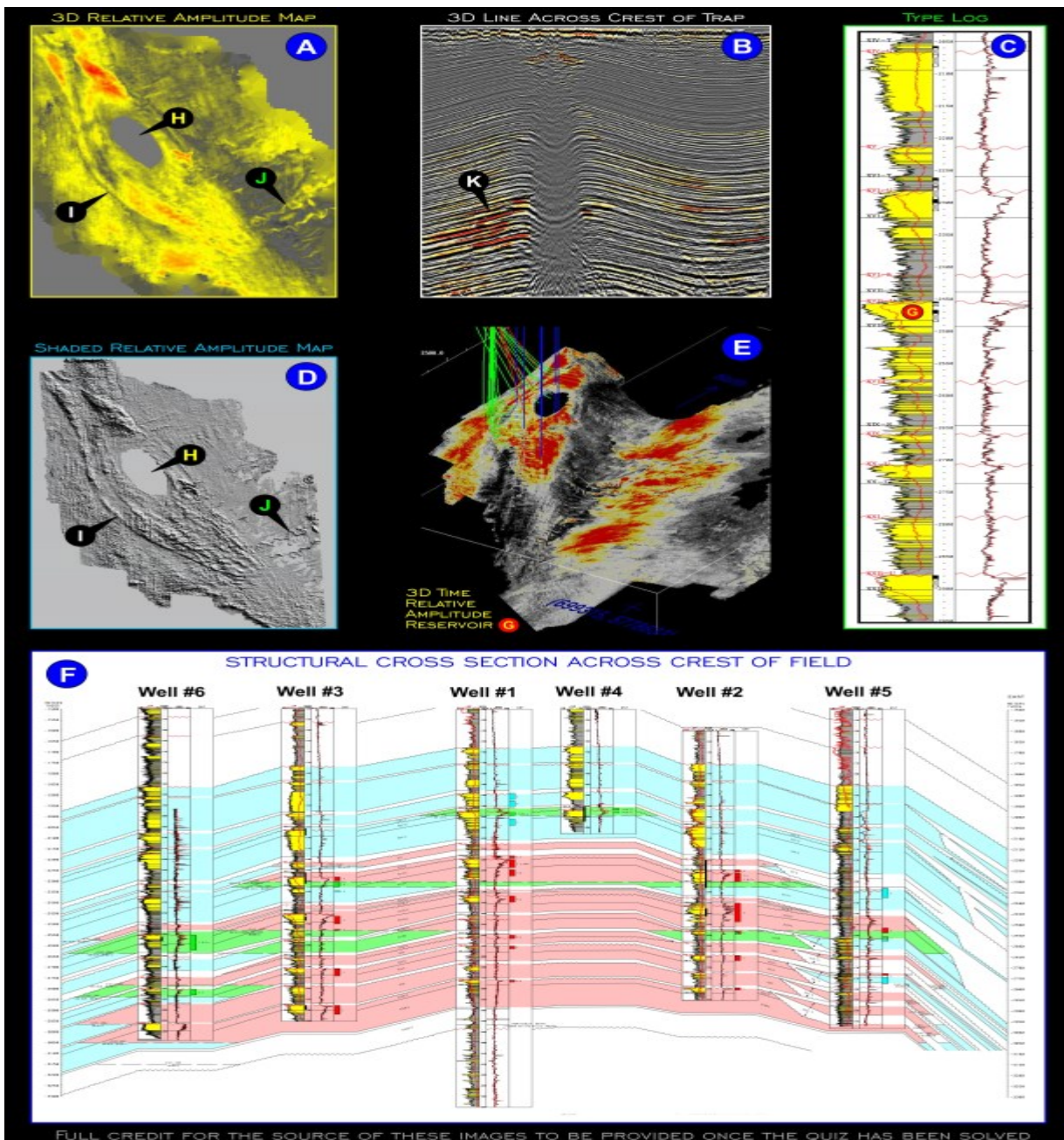
MONTHLY QUIZ

Steve Walkinshaw

OIL PATCH QUIZ

International oil patch quiz time. This large field was originally considered to be a giant gas trap with very minor oil columns. Following the acquisition of a 3D survey 23 years ago, a well drilled 3 years later to test the downdip limits of the gas columns discovered a significant volume of oil.

This remote field area is one where seismicity and weather can be challenging. EUR was initially estimated to be 2.3 Bbo and 17.1 TCF, but production peaked very early in the life of the field.





MONTHLY QUIZ

Steve Walkinshaw

Questions...

Part 1: Where is this field located (country)?

Part 2: What is the name of this field?

Part 3: What is the name of the operational consortium?

Part 4: What is (a) the name and (b) age range (x-y) of the producing reservoirs?

Part 5: What landform are all field wells drilled from?

Part 6: What type of fault trapped the reservoirs labeled "K" in panel "B"?

Part 7: What is labeled "H"?

Part 8: What is labeled "I"?

Part 9: What is labeled "J"?

Bonus:

Part 10: What drilling record has been set repeatedly in this field?

Part 11: What two animal species have been cited by environmentalists as having been most detrimentally impacted by development activity here?

Part 12: What international oil company was forced to exit the area in 2006?

Part 13: When did production peak in this area?

Answers at end of Bulletin

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.

FREE NATIONAL TOPO'S [http://store.usgs.gov/b2c_usgs/b2c/start/\(xcm=r3standardpitrex_prd\)/.do](http://store.usgs.gov/b2c_usgs/b2c/start/(xcm=r3standardpitrex_prd)/.do) go to this webpage and look on the extreme right side to the box titled TOPO MAPS DOWNLOAD TOPO MAPS FREE.

<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 Don't forget we have our own web page.

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

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

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

www.ermapper.com They have a great free downloadable viewer for TIFF and other graphic files called ER Viewer.

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

<http://terrasrver.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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2020-2021

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(Note: Please contact Steve Walkinshaw at (601) 607-3227 or mail@visionexploration.com for details concerning placing your ad on the MGS web site.)

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1979-1980	Philip R. Reeves		



MONTHLY QUIZ

Steve Walkinshaw

ANSWERS

Here's the recap:

Part 1: Where is this field located (country)? Russia

Part 2: What is the name of this field? Chayvo

Part 3: What is the name of the operational consortium? Sakhalin-I

Part 4: What is (a) the name and (b) age range (x-y) of the producing reservoirs? (a) Nutovo Formation, (2) Miocene-Pliocene

Part 5: What landform are all field wells drilled from? Sakhalin Island

Part 6: What type of fault trapped the reservoirs labeled "K" in panel "B"? there is no substantive trapping fault

Part 7: What is labeled "H"? the gap in data caused by the crestal gas chimney

Part 8: What is labeled "I"? per ExxonMobil, the oil/water contact for that sand

Part 9: What is labeled "J"? slope channels and fan deposits

Part 10: What drilling record has been set repeatedly in this field? world's longest ERD well

Part 11: What two animal species have been cited by environmentalists as having been most detrimentally impacted by development activity here? herring and gray whales

Part 12: What international oil company was forced to exit the area in 2006? Shell

Part 13: When did production peak in this area? 2007

Here are the credits for / source of the images shown in the montage.

All images: "Chayvo Field, Sakhalin Island, Russia: Identification of a Significant Oil Leg from 3-D Seismic and Execution of a World Class Extended Reach Drilling Program" (Ted Apotria, Randall Mathis, Rick J. Powell, and Bridget Venner), Search and Discovery Article #110043

This is a terrific paper about Chayvo Field.