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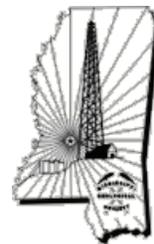
January 2011

# MISSISSIPPI GEOLOGICAL SOCIETY *eBulletin*



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# PRESIDENT'S LETTER

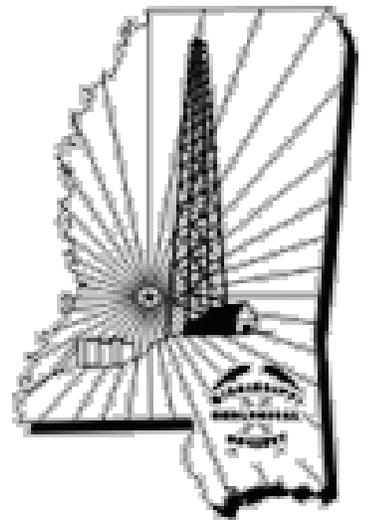
*Brian Sims*

Fellow Members:

Merry Christmas and Happy New Year. I hope everyone had a great Holiday Season. Karl has scheduled a really good talk for January on *Shale Gas Plays of the Black Warrior Basin and the Appalachian Thrust Belt of Alabama*. Dr. Jack Pashin, with the Geological Survey of Alabama, will be presenting.

Also, Dr. Pashin will be leading a PTTC and SE-CARB sponsored workshop on Tuesday, January 11 titled *The Role of Carbon Capture and Storage in Rejuvenating and Diversifying the Energy Portfolio of the Southeastern United States*. The tone of the Workshop is local and you should get a feel for how Mississippi and Alabama will benefit from this technology in the near future.

-Brian Sims



**MGS**

## **In This Issue:**

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**MGS Advertising Notice**

**MGS Boland Scholarship  
Fund**

**MGS Honorary Members**



## MGS MEETING SCHEDULE

When	What/Who	Where
September 9, 2010	Fall BBQ	Jackson Yacht Club
October 7, 2010	Art Johnson: RECENT DISCOVERIES IN SOUTH LOUISIANA FIELDS REJUVENATE PRODUCTION	River Hills – 11:30am
November 11, 2010	Kevin Macumber: CO2 EOR project a Raleigh Field in Smith Co., MS	River Hills – 11:30am
December 4, 2010	Christmas Party and Dance	Colonial Country Club
January 13, 2011	TBA	River Hills – 11:30am
February 10, 2011	TBA	River Hills – 11:30am
March 10, 2011	TBA	River Hills – 11:30am
April 14, 2011	TBA	River Hills – 11:30am
May 13, 2011	Spring Fling	Jackson Yacht Club

### OFFICERS MEETINGS

August 27, 2010

September 1, 2010

September 28, 2010

November 3, 2010

December 1, 2010

January 5, 2011

February 2, 2011

March 2, 2011

April 6, 2011

May 4, 2011

**Life is like a roll of toilet paper. The closer it gets to the end, the faster it goes. Make the most of it!**

# **MGS JANUARY SPEAKER:**

**Jack C. Pashin** is director of the Energy Investigations Program at the Geological Survey of Alabama. He received a B.S. degree in geology from Bradley University in 1982, and M.S. and Ph.D. degrees in geology from the University of Kentucky in 1985 and 1990, respectively. Over the past two decades, Jack has published numerous papers on the geology of conventional and unconventional hydrocarbon reservoirs and geologic carbon sinks. Dr. Pashin has won numerous awards for his research, has served as an AAPG Haas-Pratt Distinguished Lecturer, and is active in several geological societies and committees. Jack currently is Past Chair of the GSA Coal Geology Division, is an Associate Editor of the AAPG Bulletin, and serves on the Editorial Board of the International Journal of Coal Geology.

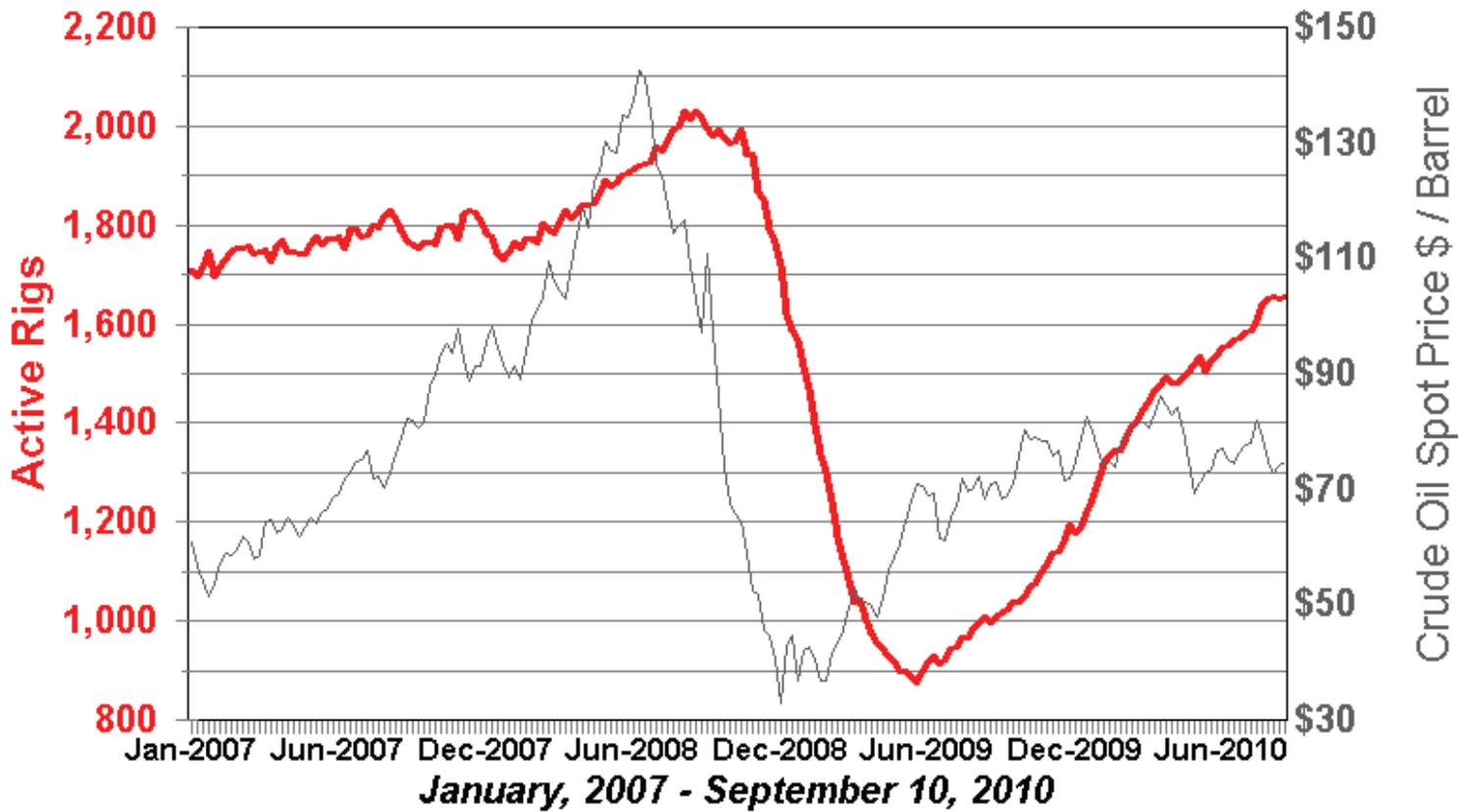
## **Shale Gas Plays of the Black Warrior basin and the Appalachian Thrust Belt of Alabama**

Jack C. Pashin, Geological Survey of Alabama

Shale gas development is active in multiple Paleozoic formations in the Black Warrior basin and the Appalachian thrust belt of Alabama. The diversity of these formations, which range in age from Cambrian to Mississippian, provides an excellent opportunity to examine shale formations with a wide range of reservoir properties in varied geologic settings. To facilitate development, a systematic, multidisciplinary approach is being applied to the evaluation of shale reservoirs. Key geologic variables addressed are stratigraphy, sedimentation, structure, hydrodynamics, geothermics, petrology, geochemistry, gas storage, and permeability.

Alabama shale reservoirs were deposited in euxinic sedimentary basins that were influenced by the development of cratonic carbonate ramps and orogenic foreland basins. Numerous sedimentary processes were active in these basins and resulted in complex stratigraphic architecture and heterogeneous reservoir quality. Folding and faulting affect the geometry and continuity of reservoirs, and fracturing affects subsurface flow and the applicability of completion technology to shale formations. Hydrodynamics and geothermics in the region are influenced by recharge along the frontal Appalachian structures, as well as gas pressure in the interiors of deep geologic structures. Heterogeneous permeability in stacked geologic formations is a key determinant of subsurface fluid chemistry and reservoir pressure. All shale formations examined in this study have generated thermogenic hydrocarbons in the geologic past, and hydrocarbon pressure persists today in many areas. Most prospective shale reservoirs can be classified as type III or IV source rocks that are sufficiently mature to have generated and stored large volumes of hydrocarbons. Shale is a dual-porosity reservoir in which some gas is stored in a free state, and some is adsorbed on organic matter. Reservoir pressure and temperature are critical parameters that determine the abundance and recoverability of free and adsorbed gas.

# U. S. Rotary Rig Count Total Active Rigs



WTRG Economics ©2010

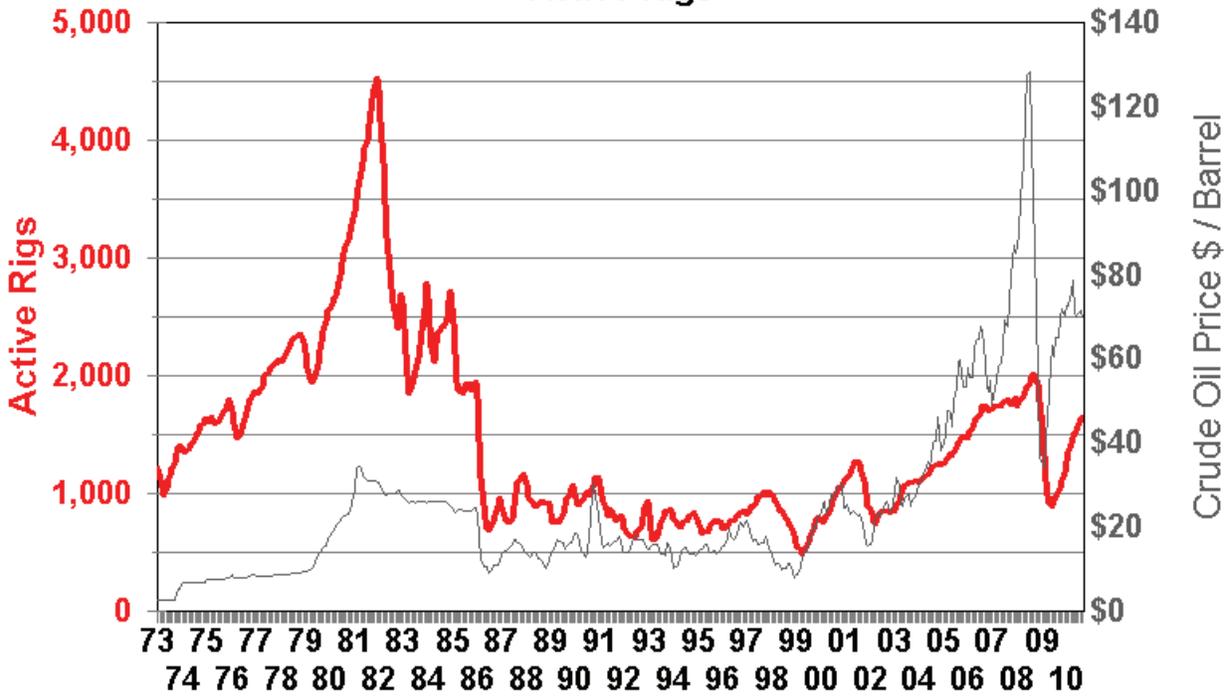
Sources: Baker-Hughes, Energy  
Information Administration (DOE),  
WTRG Economics

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**TURN IT TO THE RIGHT!**



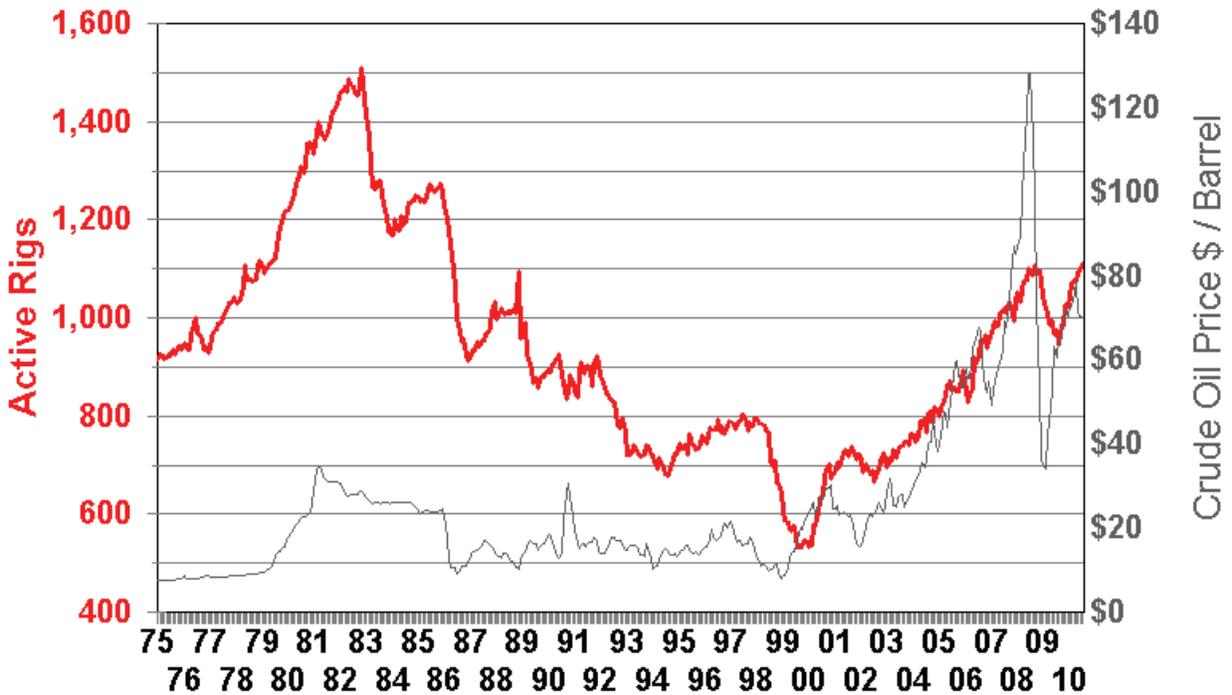
### U. S. Rotary Rig Count Active Rigs



January 1973 - September 10, 2010

Sources: Baker-Hughes, Energy Information Administration (DOE), WTRG Economics  
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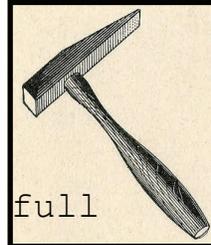
### Foreign Rotary Rig Count



January 1975 - July 2010

Sources: Baker-Hughes, Energy Information Administration (DOE), WTRG Economics  
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# ROCKHAMMER CORNER:



You know you are a geologist if

You watch Westerns movies just for the geology. Just watched full of

sixguns, Saints murder and mayhem about the settling of Utah. Main character announced he was heading for the Escalante. "Good," I thought,

"that's some really neat sandstone and slot canyons."

The Duke is probably rolling over in disgust.

***A geology student ranked first in his class. He graduated magma cum lava.***

## TOTAL IMMERSION GEOLOGISTS

Total immersion geologists: Are you totally obsessed with geology? If so, then you are a total immersion geologist. Here are the ten warning signs:

- 1) You judge a restaurant by the type of decorative building stone they use rather than their food.
- 2) You manage to turn any conversation into a discussion of geology, as in:  
"What did you think of that Superbowl game last night?"  
"I must have missed that conference. Who sponsored it? Geological Society of America?"
- 3) The only thing you notice about attractive members of the opposite sex is the stone in their jewelry.
- 4) You refuse to let nightfall stop your field excursions and continue looking at the outcrops using the headlights of your field vehicle.
- 5) You like rock music only because it's called "rock" music.
- 6) You will try to claw through the water flowing in a stream to get a better look at the bedrock at the base of the channel.
- 7) You will walk across eight lanes of freeway traffic to see if the outcrop on the other side of the highway is the same type of rock as the side you're parked on.
- 8) You name your children after rocks and minerals.
- 9) You're not sure if you have children.
- 10) You view non-geologists as subhuman.



**STOP CONTINENTAL DRIFT!  
IT IS DESTROYING THE OZONE LAYER,  
CAUSING GLOBAL WARMING, AND RUINING  
U.S. POLITICS!**

## Big Energy Stories of 2010

By [Geoffrey Styles](#)

Posted on Dec. 27, 2010

# Big Energy Stories of 2010

*By Geoffrey Styles*

*Ed. note: This piece first appeared on [Energy Outlook](#), Geoffrey Styles' blog.*

Many of the main energy trends of 2010 were predictable at the year's start, including the growing reliance of renewable energy on [government assistance](#) in the aftermath of the financial crisis, the debate over US [greenhouse gas legislation](#), the emphasis on [green jobs](#) and [competition with China](#), the [delayed arrival](#) of cellulosic biofuels, and the anticipation surrounding the [product launches](#) of the first mass-market electric vehicles. As interesting as all this was, the year in energy was dominated by two transformative events: the Deepwater Horizon accident and the multi-million barrel leak that ensued, and the less spectacular but no less profound awakening to the possibilities of the shale gas revolution.

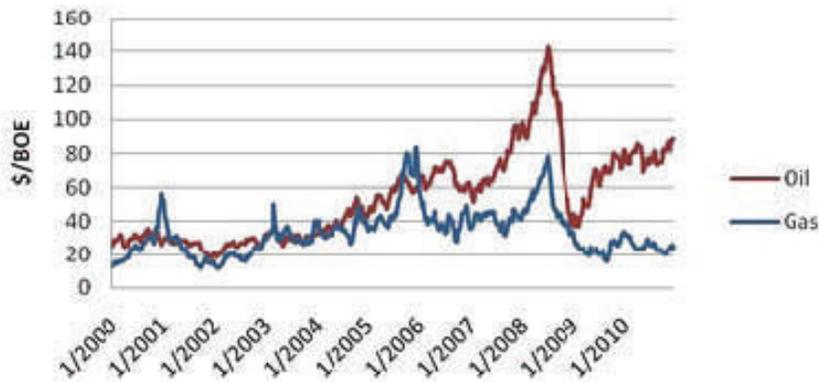
The Deepwater Horizon disaster has been the subject of such extensive coverage and investigation that there's little I can add concerning the facts, other than to note that we have not heard the last word on just [how much oil](#) actually leaked into the Gulf of Mexico. The consequences of our response to the spill will be with us for a long time, both in terms of reduced offshore drilling activity and the decline in US oil output that must inevitably follow. The impact will reach far beyond the tens of thousands of workers whose livelihoods are directly or indirectly linked to the US offshore industry. Early in 2010 it looked like the industry would finally be offered access to areas that had been off-limits for decades, and by year-end not only has drilling in the central and western Gulf come to a near standstill, but the prospect of leases in the eastern Gulf and the mid-Atlantic coast [has been foreclosed](#), perhaps permanently.

The psychological impact of the event could extend even farther than its physical and economic fallout. Whatever misgivings many people had about offshore drilling before the accident, the industry had built up trust through an impressive string of technical achievements--pushing the boundaries of resource accessibility from depths of a few hundred feet into nearly two miles of inhospitable ocean--and a solid reputation for safety. In the space of one day and the following weeks, that trust was shattered. Coming on the heels of a financial crisis that destroyed the trust of millions of Americans in the nation's largest financial institutions and markets likely amplified the effect. As fickle as we Americans sometimes seem, I wouldn't bet that this trust can be restored quickly, or to the same degree.

The shale gas revolution is a completely different kind of story, though it, too, has arguably been tainted by Deepwater Horizon. As it unlocks a resource that has converted the US natural gas supply outlook from one of scarcity and growing import dependence to expected abundance for decades, the gas industry can't assume it will receive the benefit of the doubt concerning the [environmental impact](#) of the drilling techniques that have made this turnabout possible.

## Natural Gas Price Diverges from Oil

Source: NYMEX Futures Prices



Perhaps one reason the impact of cheap natural gas hasn't sunk in yet is that the main market price for gas, the futures price at the [Henry Hub](#) in Louisiana, doesn't have much relevance for the average consumer. Residential gas customers don't buy their gas in the million-BTU (MMBTU) lots in which the futures contract is denominated; we buy gas in therms--one tenth of an MMBTU--and by the time we see it on our bills all sorts of handling and distribution fees and mark-ups have been added on. But when you compare the price of traded gas in barrels of oil equivalent (BOE) to the price of West Texas Intermediate crude, the remarkable divergence of the last two years becomes obvious, as shown in the chart above. Between 2000 and 2006 gas and oil tracked each other closely, allowing for the greater seasonal volatility of the former. There were even periods when a barrel-equivalent of gas was worth more than a barrel of oil. Yet while oil and gas prices fell precipitously when the recession and financial crisis burst the various asset bubbles, they have diverged sharply since then, with oil advancing back up to today's [\\$91/bbl](#) and gas settling into the \$20-25/bbl range in which we were accustomed to see oil prices a decade ago. Adjust that for inflation and you're looking at an average natural gas price for 2010 equivalent to \$20/bbl in 2000.

That might help explain why the developers of renewable electricity sources such as wind have [struggled](#) so much this year, despite receiving [\\$3.9 billion](#) in direct cash grants from the US Treasury. They're not competing with [less than 1%](#) of its electricity from petroleum this year, through September. Instead, they're competing with gas at an effective price of \$25/bbl or less. But if this is a new obstacle for some renewables, it surely represents a huge opportunity for the country as a whole, as we struggle to find our way out of the fiscal and competitive pit we've dug. Cheap energy has always been a key to growth, and right now, gas is the only energy source offering that without requiring an enormous up-front investment. It's no panacea, and it can't take on every burden without being spread so thin that its price advantage would disappear. But I'd much rather be looking at the possibilities this presents than at the constraints that high-priced oil and natural gas imposed only a couple of years ago.



## Technology Transfer Workshop The Role of Carbon Capture and Storage in Rejuvenating and Diversifying the Energy Portfolio of the Southeastern United States

**When:** 8:30 AM to 4:30 PM, January 11, 2011

**Where:** Capital Club, 125 S. Congress Street #19, Jackson, MS

**Registration Fee:** \$125.00

The southeastern United States is at the forefront of technology development in carbon capture and storage, which is providing a range of opportunities in the energy industry. Technology development includes the construction of a 25-Mw CO<sub>2</sub> capture facility at a pulverized coal plant in Alabama and a coal gasification plant with pre-combustion capture in Mississippi. Testing of geologic carbon storage in mature oil reservoirs, coal, and saline formations has verified the injectivity and capacity of major carbon sinks and has been instrumental in developing and implementing reservoir monitoring technology. This workshop features presentations by prominent researchers in carbon capture and storage and covers numerous topics relating to carbon capture and storage in the southeastern United States. The workshop is designed for a broad range of participants, including geologists, engineers, managers, and regulators.

### Agenda

Time	Title	Presenter	Affiliation
8:30	Welcome	Jack Pashin	Geological Survey of Alabama
8:45	Why Carbon Capture and Storage?	Mike Karmis	Virginia Tech
9:15	Southern Company CCS Research and Development Efforts	Richard Esposito	Southern Company
10:00	CCS Best Practices: Examples from the Field	Tim Carr	West Virginia University
11:00	Million Ton per Year Injection into Brine Reservoir, Cranfield, MS: Measurement, Monitoring, and Modeling	Ian Duncan	Texas Bureau of Economic Geology
12:00	Lunch (provided)		
13:00	SECARB Virginia and Alabama Coal Seam Tests	Nino Ripepi	Virginia Tech
14:00	Black Warrior Basin Saline Formation Site Characterization Project	Peter Clark	University of Alabama
14:45	CO <sub>2</sub> -Enhanced Oil Recovery Pilot in Citronelle Field, Alabama	Jack Pashin, David Kopaska-Merkel	Geological Survey of Alabama
15:45	Wrap-up and Open Discussion	Jack Pashin	Geological Survey of Alabama
16:00	Adjourn		

### Registration

Name: \_\_\_\_\_ Affiliation: \_\_\_\_\_

Address: \_\_\_\_\_ e-mail: \_\_\_\_\_

Submit registration and fee to: **Dr. Ibrahim Çemen**  
Dept. of Geological Sciences, University of Alabama  
Tuscaloosa, AL 35487

## **MGS BOLAND SCHOLARSHIP FUND**

The Society's L. F. Boland Scholarship Fund is open to donations (tax deductible) year round. Your contribution will help the Society recognize and reward outstanding earth science students at its annual Honors Day meeting on March 11, 2010.

Since inception in 1980, the Society has honored 104 students with the Boland Award. If you would like to contribute, please contact Dave Cate at 601-718-9397 or mail your check (L. F. Boland Scholarship Fund) to him at 217 W. Capitol St., Jackson, MS 39201.

The MGS gratefully acknowledges the following contributors to the L. F. Boland Scholarship Fund for the 2010-2011 year.

Maurice Birdwell  
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Maurice Meylan  
Julius Ridgway  
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Stewart Welch  
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September 2009 – May 2010

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1/2 Page Ad (6" x 4")	\$300	\$ _____
1/4 Page Ad (3" x 4")	\$200	\$ _____
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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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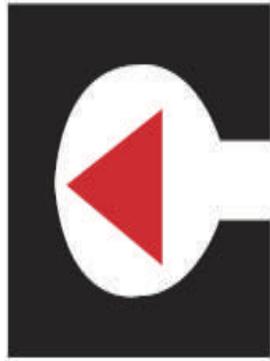
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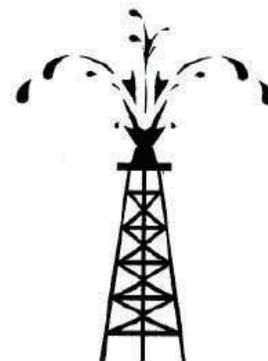
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