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March 2007

# MISSISSIPPI GEOLOGICAL SOCIETY *eBulletin*



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~ PRESIDENT'S  
LETTER ~  
Bob Schneeflock

Society Brethren,

The March meeting will be a little different than most in that there will be no speaker per se.

Instead of trying to cram the Boland Scholarship presentations and a speaker into one meeting, Dave Cate and Tony Stuart will now have time to do it right.

The Boland Scholarship presentations will be followed by the induction of our newest Honorary Member.

Awards will also be presented to members who have given MGS over 5 continuous years of exemplary service in the most work intensive positions the society has.

Make an effort to come and honor those students and members for their hard work.

'til next month  
bs



" That's right ! No huffing and puffing for 30 minutes on the treadmill. We've developed a new stress test that is faster and more accurate. "

**In This Issue:**

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- MGS Membership Application

## MGS MEETING SCHEDULE

When	What	Where
September 14, 2006	Fall BBQ	Jackson Yacht Club
October 19, 2006	David Scott & Lisa Ivshin, MS O&G Board	River Hills
November 1, 2006	Ernie Mancini, University of AL	River Hills
December 9, 2006	MAPL/MGS Christmas Party	Colonial Country Club
January 11, 2007	Nick Tew, Ala Geol Survey	River Hills
February 8, 2007	Chuck Segrest – Petrophysical Evaluation of Gas Shale Reservoirs	River Hills
March 8, 2007	Boland Scholarship , Honorary Membership, and Awards	River Hills
April 12, 2007	TBA	River Hills
May 10, 2007	Spring Fling	Jackson Yacht Club

### How Low Can You Go?

**Don't forget this year's contest on low resistivity production from the Eutaw and Cotton Valley Formations.**

**Very nice prizes will be awarded.**

**For more information, contact:**

**Jack Moody                    at    (601) 359-9278**

**or**

**Bob Schneeflock            at    (601) 853-0701**

### OFFICERS MEETINGS

September 6, 2006

October 3, 2006

November 7, 2006

None in December

January 2, 2007

February 6, 2007

March 6, 2007

April 3, 2007

May 1, 2007

## **March 8th, 2007 MGS Meeting**

### **Boland Scholarship Awards**

**Top Students from Millsaps, Ole Miss, State, and Southern**

**Induction of our newest MGS Honorary Member**

**Awards to members for long standing exemplary  
service to MGS.**

#### **2007 CARBONATE FIELD TRIP**

##### **SOUTHERN BAHAMAS**

In late May (17-22) 2007, Lawrence R. Baria, with the assistance of Drs. Rick Major and Ezat Heydari, will be leading another carbonate field trip to the Out Islands of the southern Bahamas. Participants will examine fringing reefs, patch reefs, oolite shoals, tidal flats, eolian dunes, beaches, supratidal, intertidal and subtidal stromatolites and many other styles of recent depositional environments and carbonate facies.

Certainly on a trip of this nature, spouses will also be invited to go along. While the participants are out swimming, wading and hiking each day, the spouses can enjoy beautiful pink sand beaches, island tours and laid back Out Island hospitality.

The anticipated cost of this six day trip including round trip airfare from Jackson to Great Exuma, Bahamas, hotel, meals, 3 days of boat rentals and land transportation will be \$2,000.00 per participant, based on double occupancy.

A detailed daily schedule of the proposed field trip can be obtained by calling Larry Baria at (601) 932-0002. Participation will be limited to twelve persons, so sign up as early as possible. A deposit of \$800.00 will be due on April 17, 2007, to guarantee air charters and rooms.

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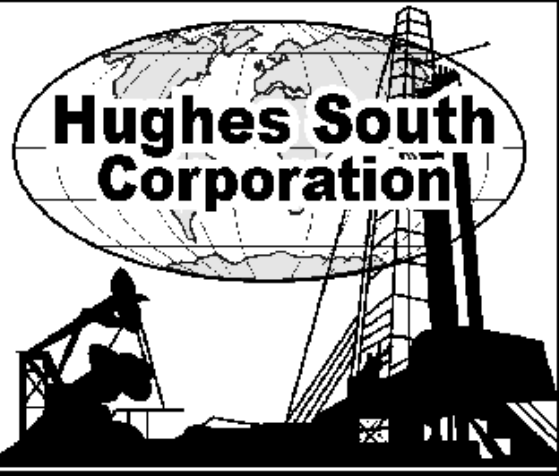
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# Floyd Shale Potential in the Black Warrior Basin

## Executive Summary

(republished by permission of Wood Mackenzie/Upstream Insights)

The Mississippian Floyd and Neal shales of the Black Warrior Basin are known to be the main source rocks for the region's conventional reservoirs. Following the success of the Barnett Shale in Texas and a general heightened interest in unconventional plays, a number of operators have recently accumulated large acreage positions in this region.

The scramble to increase lease holdings in the Black Warrior's shales might suggest they could be the next big shale play in the Lower 48. However, the economic viability of emerging shale plays has yet to be proven, and many risks and uncertainties remain unsolved.

This report provides a technical and commercial review of the Floyd and Neal plays. We have identified the main players and the challenges they will likely face when trying to explore, develop, and commercialize these plays.

### **Black Warrior Shales**

Following the success of the Barnett Shale in Texas, focus is now turning to other domestic shale plays. The commerciality of the Floyd and Neal shales has yet to be proven. A decline in CBM production from the Black Warrior Basin has left a number of operators looking for new ways to further monetise their acreage. These shales offer significant potential to existing land holders. New entrants have also been accumulating land in Alabama and Mississippi, where acreage is considered prone to shale gas (see map on next page).

The Floyd and Neal shales are found at depths of 1,400 to 2,700 meters (4,000-9,000 ft), and have a thickness of 30 to 150 meters (100-500 ft). Limestone and carbonate beds enclose the shales, thus providing them with an ideal seal and fracture barrier. The shales are also known to be source rocks for many of the conventional Black Warrior reservoirs. Operators are hoping that Black Warrior shales have similar geologic characteristics to the prolific Barnett Shale.

### **Current Activity**

Leasing activity in the various shale plays in Alabama and Mississippi surged in 2006. Lease bonus payments rose from an average of US\$50 per acre in 2005 to as high as US\$1,000 per acre in 2006. Also, royalty rates jumped from an average of 15% to 25%, while the duration of a typical lease declined to three years.

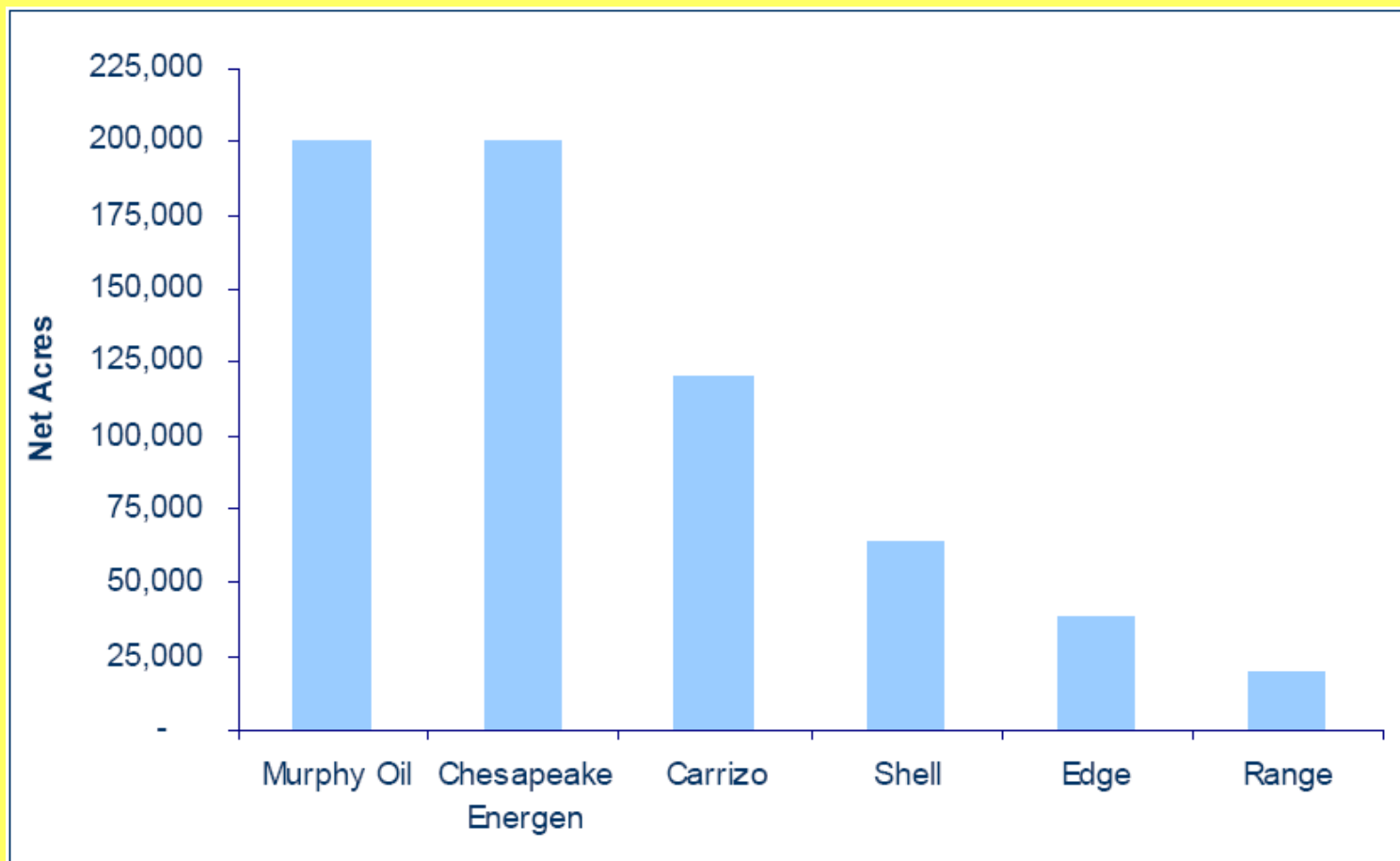
Murphy Oil has accumulated one of the largest acreage positions in the play. The company partnered with Noble to drill five exploration wells in Pickens County, Alabama, during 2006. Energen and Chesapeake have a joint lease ownership amounting to 200,000 acres. Chesapeake entered the area by purchasing 50% of Energen's 200,000 net acres in Alabama for US\$75 million, equivalent to US \$750 per acre. Chesapeake has also committed to pay US\$15.0 million of Energen's initial drilling costs. Shell holds a sizable position, but is pursuing a sale of its holdings.

Among the smaller independents, Carrizo has more than 100,000 net acres. Also, Edge Petroleum and Range Resources have accumulated 40,000 and 20,000 net acres, respectively. No wells have been drilled by these three companies, but each has announced plans to explore the shale play in 2007.

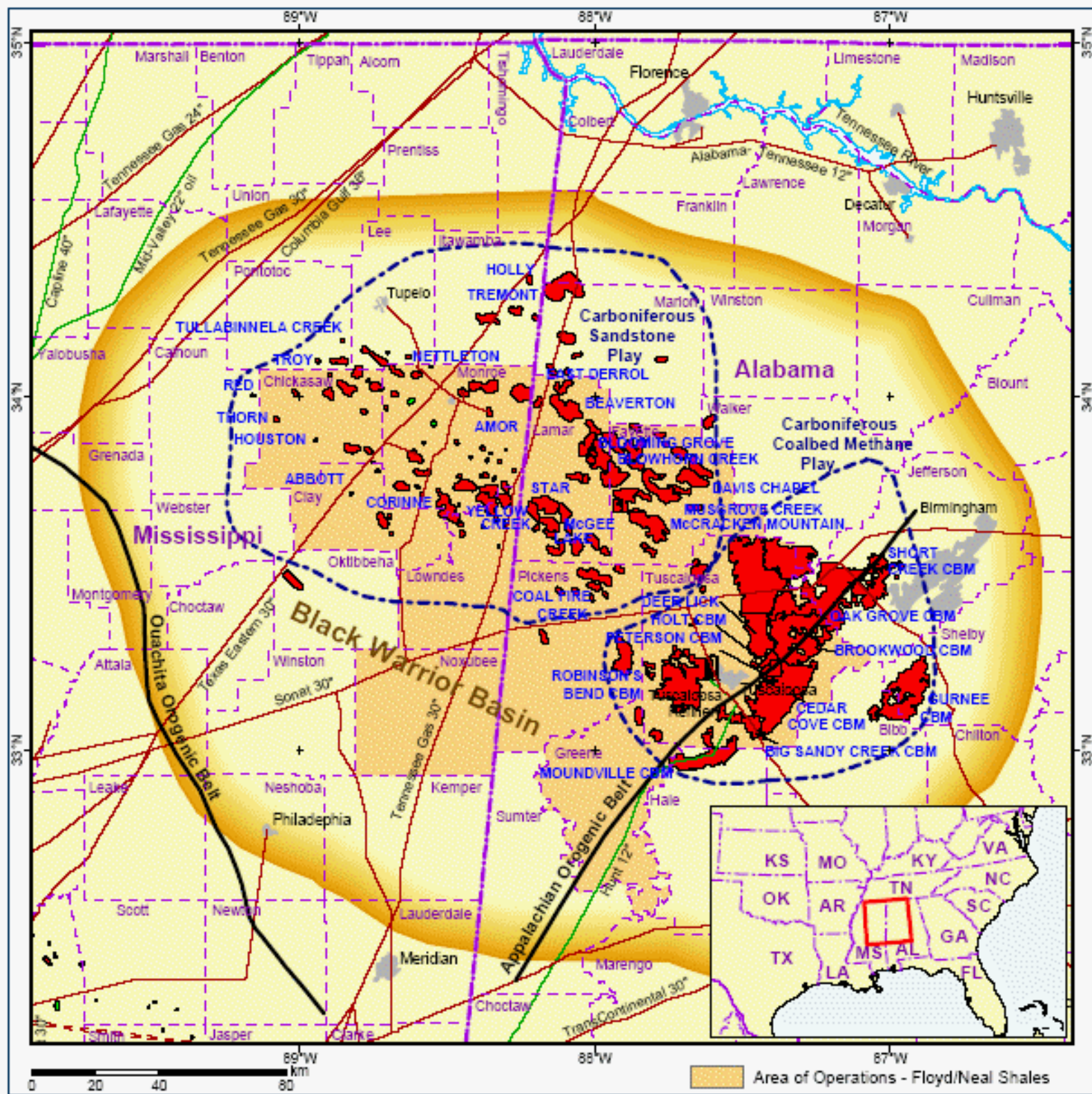
Two other companies, EOG and Denbury, have drilled wells in the shale play. However, their acreage position is unknown. Neither of the companies is reporting gas sales or giving guidance on their lease positions.

The following chart shows the net acreage position of the main operators in the Alabama and Mississippi shale plays.

### Acreage in Black Warrior Shale Plays



## The Floyd/Neal Shale Counties



## Challenges to the Play's Development

Wood Mackenzie has identified the major risks that are affecting the development of the Black Warrior Basin's shales.

These are a lack of well control, uncertain economics, and infrastructure constraints.

## Well Control

Dominion, Energen, Carrizo, Chesapeake, Murphy, Denbury, Edge, and EOG are among the small number of operators which are known to be shooting seismic and drilling shale targeted wells in the Black Warrior Basin. The limited amount of data available means that the viability of the shales cannot be confirmed.

Horizontal wells costing up to US\$3.0 million are expected to be the preferred method of development. In the Barnett Shale, advancements in drilling and completion technologies have been key to recent successes. Also, operators have formed alliances with service companies to control costs and share knowledge. By working closely together in the Barnett, companies have managed to lower drill time and optimise completion design. We predict that companies exploring Black Warrior shales will face similar challenges to early Barnett Shale operators.

## Economic Risk

The Barnett Shale is the most successful shale play in North America. In a previous Insight report (Shale Shines in the Lone Star State – October 2006), we suggested that the break-even gas price for the Barnett Shale is approximately US\$5.00/mcf. The Black Warrior's shales are generally of an inferior quality to the Barnett, both in terms of their thickness and gas yield. As a result, initial well production rates and reserves will generally be lower than in the Barnett Shale.

Indicatively, a well with initial production of 1.2 mmcfd and reserves of 0.9 bcf will have break-even economics of US\$7.00/mcf. This is significantly higher than the Barnett Shale, and at the upper end of many companies' view of the long term gas price.

## Infrastructure

There currently is limited infrastructure in the basin. Without the construction of gathering and transmission pipelines, and the addition of gas processing and compression, a full-scale development programme remains unlikely. Any future commitment to building a large-scale midstream project will involve lengthy feasibility studies and a large capital commitment. This is unlikely to occur prior to companies becoming comfortable with the potential of the region.

## Conclusion

In our opinion, the dash to secure leases in the shale gas plays of the Black Warrior Basin has peaked. Following a surge in leasing in 2005 and 2006, the resulting rise in costs is cooling activity in these plays. Up to now, companies have been acquiring leases on a largely speculative basis. The large lease bonuses were paid during a period of record commodity prices.

The Floyd and Neal shales have some favorable attributes. However, there is currently no commercial production from either of these plays, and none is imminent. We view these plays as being high-risk for investors, and their successful development will be dependent on a period of sustained high gas prices. More importantly, operators are waiting for well data which will support further investment. They are looking for confirmation that the geology is conducive to building a sustainable productive resource. Once companies become comfortable with the potential of these plays, then they may be more willing to divert capital into the development of the much needed infrastructure.

The play has many unknowns, and at this early stage in its development, operators have yet to laude its success. Considering the numerous challenges involved, these plays may remain on the margins of most company's portfolios. Investment in lower-risk, lower-cost opportunities may remain the order of the day in the Lower 48.

A truly honorable man helps a young elephant, Read on,

In 1986, Mkele Mbembe was on holiday in Kenya after graduating from Northwestern University. On a hike through the bush, he came across a young bull elephant standing with one leg raised in the air. The elephant seemed distressed, so Mbembe approached it very carefully. He got down on one knee and inspected the elephant's foot, and found a large piece of wood deeply embedded in it. As carefully and as gently as he could, Mbembe worked the wood out with his hunting knife, after which the elephant gingerly put down its foot. The elephant turned to face the man, and with a rather curious look on its face, stared at him for several tense moments. Mbembe stood frozen, thinking of nothing else but being trampled. Eventually the elephant trumpeted loudly, turned, and walked away. Mbembe never forgot that elephant or the events of that day.

Twenty years later, Mbembe was walking through the Chicago Zoo with his teenaged son. As they approached the elephant enclosure, one of the creatures turned and walked over to near where Mbembe and his son Tapu were standing. The large bull elephant stared at Mbembe, lifted its front foot off the ground, then put it down. The elephant did that several times then trumpeted loudly, all the while staring at the man. Remembering the encounter in 1986, Mbembe couldn't help wondering if this was the same elephant. Mbembe summoned up his courage, climbed over the railing and made his way into the enclosure. He walked right up to the elephant and stared back in wonder. The elephant trumpeted again, wrapped its trunk around one of Mbembe's legs and slammed him against the railing, killing him instantly.

Probably wasn't the same elephant.....



**The Mississippi Geological Society would like to thank the following members for remembering to pay their 2006 – 2007 dues:**

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Annual Meeting**

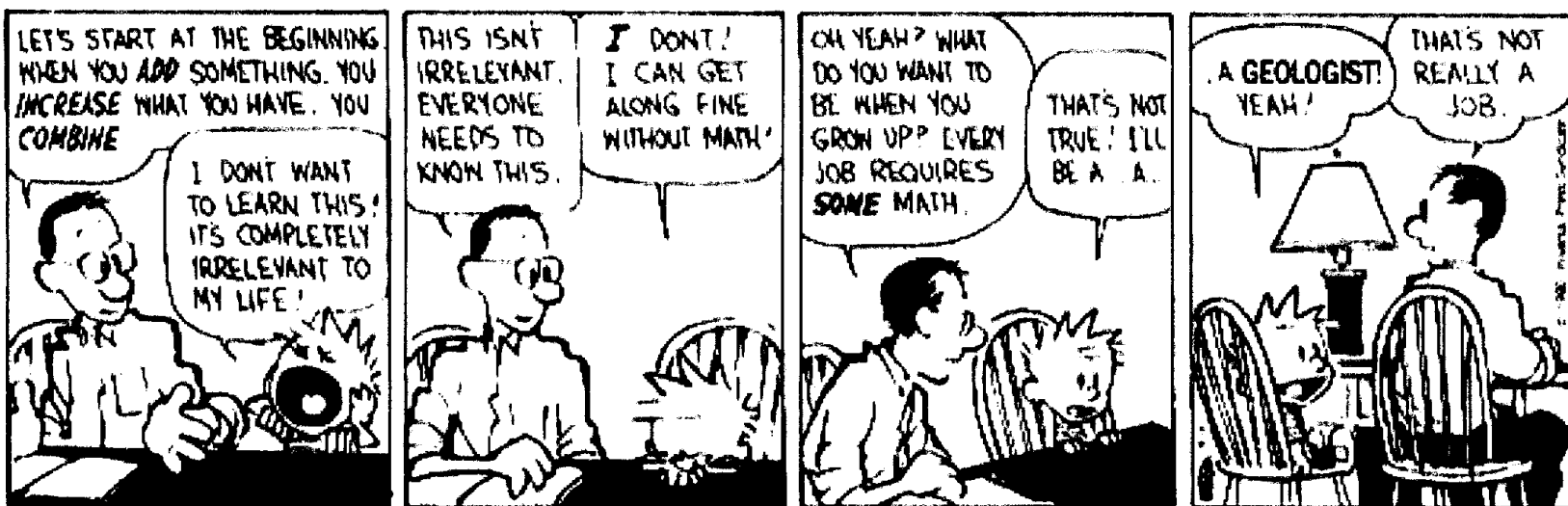
**February 22-23rd, 2007  
Starkville, Mississippi**

For more information see our website @ <http://www.msacad.org>

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 Lew Murray  
 James M. Nix  
 Michael A. Noone  
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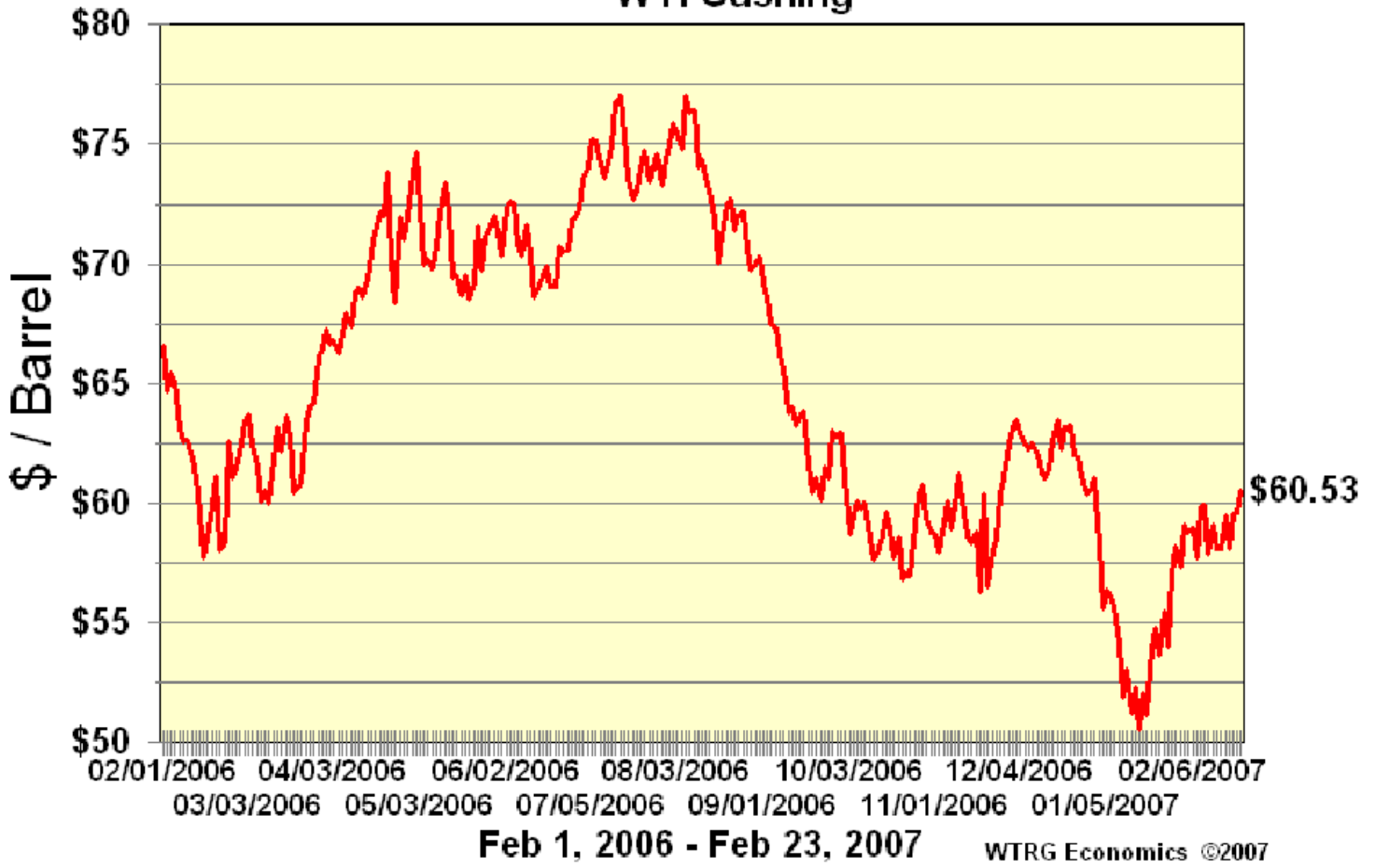


While shopping for vacation clothes, Earl & Louise passed a display of bathing suits. It had been at least ten years and twenty pounds since Louise considered buying a bathing suit, so she sought Earl's advice.

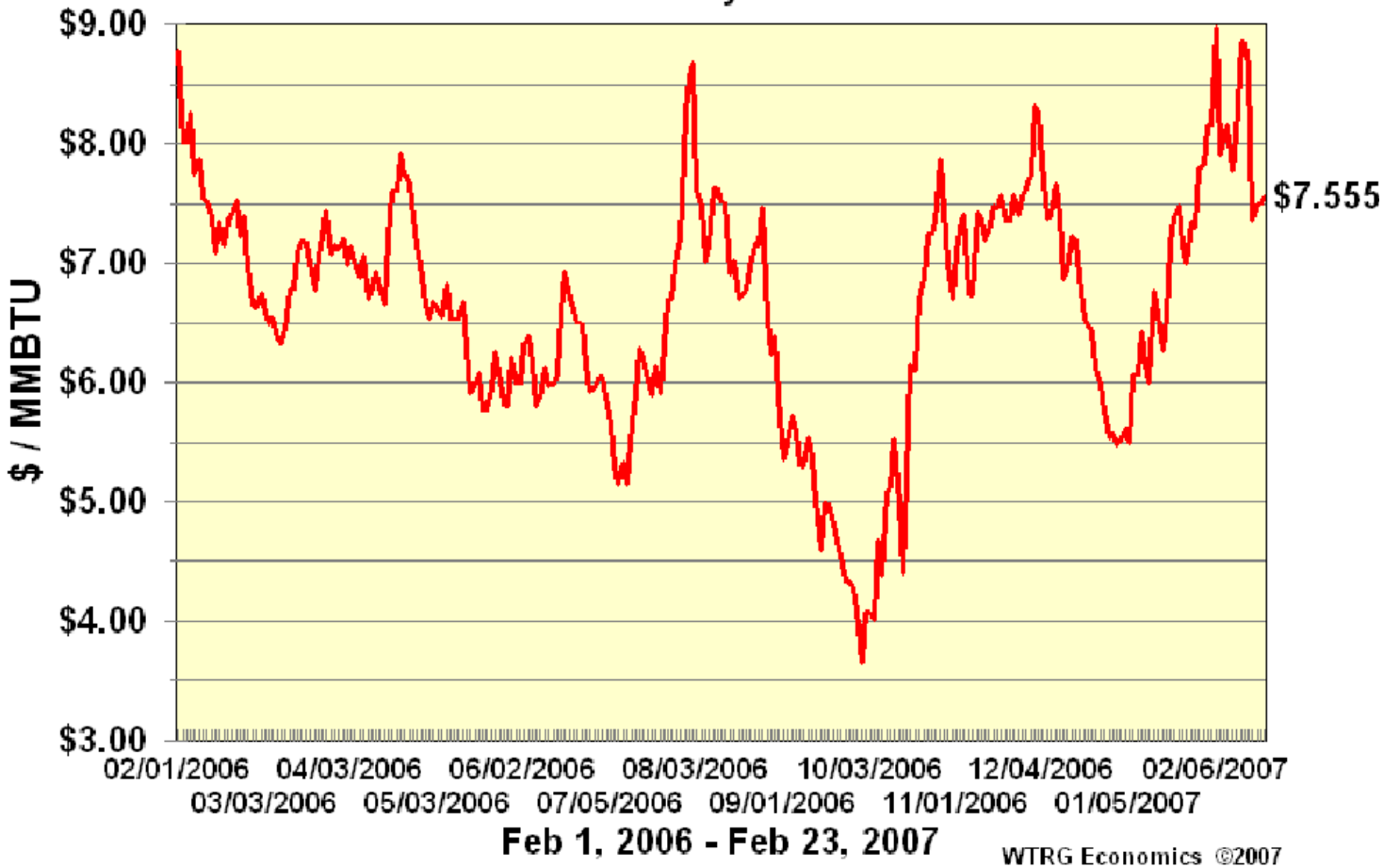
"What do you think?" she asked. "Should I get a bikini or an all-in-one?"

"Better get a bikini," Earl replied. "You'd never get it all in one."

### Crude Oil Spot WTI Cushing



### Natural Gas Spot Henry Hub



## North American Rotary Rig Counts

The U.S. rotary rig count was up 15 rigs to 1,746 for the week of February 16, 2007 and is 13.0 percent higher than last year.

The number of rotary rigs drilling for oil is up 15 at 267. The number of rigs targeting oil is 52 rigs higher than last year's level of activity. Rigs currently drilling for oil represent 15.3% percent of total drilling activity.

Rigs directed toward natural gas were unchanged at 1,473. The number of rigs currently drilling for gas is 146 greater than last year's level of 1,327.

Year-over-year oil exploration in the US is up 24.2 percent. Gas exploration is up 11.0 percent. The weekly average of crude oil spot prices is 1.75 percent lower than last year and natural gas spot prices are 13.4 percent higher. Daily crude oil and natural gas futures and spot prices are available on our site.

Canadian rig activity\* was down 5 at 635 for the week of February 16, 2007 and is 82 lower than last year's rig count. Canadian drilling falls rapidly in the spring to avoid environmental damage during the spring thaw and rainy season.

\*The Canadian drilling industry experiences wide seasonal swings and even year over year comparisons can lead to incorrect conclusions.

## North American Rig Count

				Change		Percent Change	
	02/16/07	02/09/07	02/17/06	Weekly	Annual	Weekly	Annual
Total U.S.	1,746	1,731	1,545	15	201	0.9%	13.0%
Offshore	88	83	79	5	9	6.0%	11.4%
Land	1,658	1,648	1,466	10	192	0.6%	13.1%
Inland Waters	26	26	21	0	5	0.0%	23.8%
Oil	267	254	215	13	52	5.1%	24.2%
Percent	15.3%	14.7%	13.9%	0.6%	1.4%		
Gas	1,473	1,473	1,327	0	146	0.0%	11.0%
Percent	84.4%	85.1%	85.9%	-0.7%	-1.5%		
Directional	369	361	363	8	6	2.2%	1.7%
Horizontal	345	346	255	-1	90	-0.3%	35.3%
Gulf of Mexico	84	80	78	4	6	5.0%	7.7%
Gulf Oil	3	3	8	0	-5	0.0%	-62.5%
Percent	3.6%	3.8%	10.3%	-0.2%	-6.7%		
Gulf Gas	81	77	70	4	11	5.2%	15.7%
Percent	96.4%	96.3%	89.7%	0.2%	6.7%		
Canada	636	641	718	(5)	(82)	-0.8%	-11.4%
North America	2,382	2,372	2,263	10	119	0.4%	5.3%



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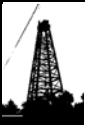
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**P.O. BOX 422, JACKSON, MISSISSIPPI 39205-0422**

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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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Please make checks payable to the Mississippi Geological Society. If you have any questions, contact Lindsey Stewart at (601) 961-5264 or lindsey\_stewart@deq.state.ms.us.



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