

AAPG AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, AN INTERNATIONAL ORGANIZATION

# EXPLORER

AUGUST 2006

## Belize It or Not!

See page 18



Vol. 27, No. 8  
August 2006

AAPG  
**EXPLORER**

revealing



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**On the cover:** Some people visit Belize for the beaches; these geologists (Lucille Petruny and Kevin Pope) have other priorities in mind – like the potential this little Caribbean country holds for big oil finds. Belize is attracting much attention from these and other geologists who believe the country holds potential as an oil province. Shown is an outcrop near the town of San Pablo; the unit is a sand facies of the Orange Walk group. Story on page 18. Photo courtesy of David King.



Photo courtesy of Stephan Graham

AAPG is offering numerous field trips to geologically exciting locales in the next several weeks, including the one pictured here: Paleocene submarine channel-fill sandstone in a gently folded syncline, Wagon Caves Rock, Santa Lucia Range. The field trip is "Deepwater Siliciclastic Reservoirs," set Sept. 17-22, beginning and ending in San Francisco. See page 39 for more information on all upcoming field trips.

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## PRESIDENT'S COLUMN

# Berg's Inspirations Serve as Model

By LEE T. BILLINGSLEY

This month I begin my writing to you with mixed emotions, concerning the passing of Sidney Powers medalist Robert R. Berg on June 13 (see page 39).

I am sad because I will really miss him; but I am very pleased to tell you about him in hopes of inspiring you, as he inspired many of us who knew him.

Bob Berg, or "R squared," as he was known, practiced petroleum geology in the U.S. Rockies from 1951-66. He was a teacher, researcher and administrator at Texas A&M University from 1967-99. While at A&M he served as adviser to over 100 graduate students, including past AAPG president (2004) Steve Sonnenberg and me.

He received AAPG's highest honor, the Sidney Powers Medal, in 1993. He served as a mentor to me both during my academic tenure and long after (for which he also may have deserved a medal). Many small things during my workday as a petroleum geologist still remind me of him, because he was the consummate applied petroleum geologist.

After he officially retired from teaching at A&M, he maintained his office so he could continue to pursue his passions, helping students and studying petroleum geology.

\* \* \*

One of the most valuable lessons that students learned from Dr. Berg was to not give up on a perceived incomplete data set. In geoscience in general and petroleum geology in particular, data sets tend to be imperfect or incomplete. He taught us to make assumptions or look for other relationships so we could reach a conclusion, solve a problem or make a recommendation. (This is a valuable attribute in petroleum exploration and production.)

But as I reflect back on Dr. Berg's most significant contribution to both his students and others who became associated with him, I think it was his sharing of infectious enthusiasm for geology, especially petroleum geology. Sure, he taught basic principles to students, taught industry short courses, published technical articles and gave oral presentations. But long after the semesters ended and the pages were turned, his enthusiasm and inspiration endured in us. He motivated hundreds of



Billingsley

life-long learners and dedicated petroleum geologists.

My relationship with Dr. Berg is not unique among AAPG members. Most, if not all, of us have been aided or inspired by someone before us, and I hope we feel a sense of indebtedness. While a backward looking

"thank you" is certainly appropriate, the real satisfaction for a mentor occurs when we "pay it forward."

Perhaps that is why so many busy professionals donate their time, talents and treasures to organizations like AAPG.

\* \* \*

Inspired by service to the membership, the previous and current Executive Committees met in Tulsa on June 30 and July 1. With background from last year's EC, your current EC approved the following three important measures:

- ✓ Preliminary operating expense budget of \$12.2 million for 2006-07.
- ✓ Open an AAPG office in London.
- ✓ Reorganize committees into seven thematic groups, with a "committee manager" for each group. Some committees will receive revised mission statements and some will be merged.

The EC is committed to providing clear objectives for each committee, because your volunteer time is too valuable to waste. In future columns I will cover each of our groups of committees. But for now, summer is a good time to commit to service to your profession. One idea is to go to AAPG's Web site, review the committees and their mission statements, contact a chair and ask to be on the committee of your choice.

In the spirit of Bob Berg, commit to share your time, talent or treasure with others.

'Til next month,

Vol. 27, No. 8  
The AAPG EXPLORER (ISSN 0195-2986) is published monthly for members. Published at AAPG headquarters, 1444 S. Boulder Ave., P.O. Box 979, Tulsa, Okla. 74101, (918) 584-2555. e-mail address: postmaster@aapg.org  
Periodicals postage paid at Tulsa, Okla., and at additional mailing offices. Printed in the U.S.A.  
Note to members: \$6 of annual dues pays for one year's subscription to the EXPLORER. Airmail service for members: \$45.  
Subscription rates for non-members: \$63 for 12 issues; add \$67 for airmail service. Advertising rates: Contact Brenda Merideth, AAPG headquarters. Subscriptions: Contact Veta McCoy, AAPG headquarters. Unsolicited manuscripts, photographs and videos must be accompanied by a stamped, self-addressed envelope to ensure return.

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POSTMASTER: Please send address changes to AAPG EXPLORER, P.O. Box 979, Tulsa, Okla. 74101.  
Canada Publication Number 40046336.  
Canadian returns to: Station A, P.O. Box 54, Windsor, Ontario N9A 6J5  
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## London Office Gets Approval

The Executive Committee approved the opening of an AAPG Europe Office (AEO) in London, England, to develop a regional presence and to provide local marketing and distribution of AAPG products plus logistical support for events planned by AAPG's European Region.

With office space donated for a year by Imperial College at the South Kensington campus, the office looks to recruit new members, generate conferences, workshops and other education programs and provide other member services.

"The London office is an important next step toward AAPG's goal of being indispensable to geologists worldwide," said AAPG President Lee T. Billingsley. "London and the European Region provide an opportunity for AAPG staff and leadership to develop policies and procedures that can be applied to other international offices in the future."

Steve Veal, past AAPG vice president, has been named director of the office. He said the primary financial objective is for the AEO to become self-supporting within the third year of operation, with AAPG providing funding for the first year.

The European Region is the third-largest section/region with 2,796 members □

## Candidates Named for 2007 Ballot

The slate of candidates who will stand for AAPG election for 2007 balloting has been announced.

The president-elect winner will serve as AAPG president in 2008-09.

This is the first ballot that will carry candidates for two vice president positions – one for U.S. Sections and one for International Regions. All eligible voters may cast ballots for all offices and are not limited to voting for just one of the VP positions.

For this ballot, the vice president-Regions will serve a two-year term and the vice president-Sections will serve a one-year term. Subsequently, the terms will be two-year terms for both, with one of the vice president positions being selected annually.

The vice president-Regions will serve

for the 2007-09 term, the vice president-Sections the 2007-08 term, the secretary from 2007-09 and the elected editor from 2007-10.

The candidates are:

### President-Elect

- Neil F. Hurley, Colorado School of Mines, Golden, Colo.
- Scott W. Tinker, Bureau of Economic Geology, University of Texas, Austin.

### Vice President (Regions)

- John R. Hogg, ConocoPhillips, Calgary, Canada.
- John Kaldi, University of Adelaide, Adelaide, Australia.

### Vice President (Sections)

- John M. Armentrout, Cascade

Stratigraphic, Clackamas, Ore.

- John B. Curtis, Colorado School of Mines, Golden, Colo.

### Secretary

- Edward A. (Ted) Beaumont, independent geologist, Tulsa.
- Terence G. (Terry) O'Hare, Emerald Energy, Dallas.

### Editor

- Gretchen Gillis, Schlumberger, Houston.
- Barry J. Katz, Chevron, Houston.

A biography and statement by the candidates will appear in the January EXPLORER. Ballots will be mailed and available online in spring 2007. □

## Members Say 'Yes' to VP Changes

AAPG members overwhelmingly approved a constitution change that creates an additional vice president seat on the Executive Committee, effective with the 2007-08 term.

The additional vice presidential position allows for one to be designated as a vice president-Sections (U.S.) and the other vice president-Regions (non-U.S.).

The first year, the vice president-Regions will serve a two-year term and the vice president-Sections will serve a one-year term. Subsequently, the terms will be two-years for both, with one of the vice president positions being selected annually.

The measure was passed 5,216 (92

percent) to 453 (8 percent). The 5,669 valid ballots cast, both electronically and by paper, represent about 34 percent of the 16,750 of the membership eligible to vote. A two-thirds majority vote was necessary to institute the constitutional change.

The member vote changes Article V of the AAPG Constitution to allow for seven members of the Executive Committee (the House of Delegates chair also is a voting member of the EC). All eligible voters may cast ballots for all offices and are not limited to voting for just one of the VP positions.

The measure was passed overwhelmingly by a "stand-up" vote of the House of Delegates at the AAPG

Houston Convention just last April, with balloting beginning shortly thereafter. Balloting ceased on June 25 in accordance with the bylaws, and results were announced in time for the new position to be elected during this election cycle. Consequently the next AAPG officer ballot will carry candidates for the new position with candidates selected appropriately (see above).

Paper balloting again proved more popular with the membership, with 3,463 voting by paper and 2,221 by the Web. Thirty-six ballots were submitted by both paper and Web, in which cases the paper ballot was counted and the Web votes deleted. □

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**Schlumberger**

Global Geophysical's *James H. Scott*, busy laying seismic lines in the Gulf of Mexico's open water transition zone.



## Explorers Migrate South From Louisiana

# Transition Zone Getting Deep Look

By LOUISE S. DURHAM  
EXPLORER Correspondent

Unconventional hydrocarbons are so like, well, *in* these days.

Indeed, coalbed methane, shale gas, oil sands and such have quickly become the darlings of many operators and financial analysts alike.

But there are other things to be excited about as well.

For instance, the longtime E&P activity involving conventional hydrocarbons in the long-productive Gulf of Mexico coastal region keeps on going – and going well.

And despite all the years of drilling and production in this locale, there's a lot of territory still needing 3-D seismic.

"The thinking among veteran players in the region is there's plenty of remaining potential, including the relatively unexplored deep environments (>15,000 feet)," said Richard Degner, president of Global Geophysical Services. "This has prompted the need for long offset seismic data for more enhanced imaging."

Seismic crews are especially busy along the Texas coast, reflecting operators' interest in exploring the shallow water shelf area there and the transition zone, which – depending on who's talking – extends anywhere from two-six miles on either side of the beach.

It ain't easy.

The relatively narrow swath of the sparsely-surveyed transition zone encompasses a range of challenging, environments: ecologically-sensitive bays and estuaries, land and open water. Each area requires different types of vessels as well as different sources for seismic data acquisition, e.g., dynamite, vibroseis and airguns.

Negotiating the permitting maze is an expensive, time-consuming process involving local, state and federal agencies.

"The transition zone hasn't changed," noted Steve Mitchell, vice president-division manager at Fairfield Industries. "It still faces the same issues it has forever."

"It's still very expensive to shoot," he added, "and most transition zone shoots that have happened have been proprietary."

### Mustang Island

One such proprietary 3-D survey is kicking off at Mustang Island in the south Texas coastal area near Corpus Christi. The 50-square-mile program is being implemented by Global Geophysical and underwritten by Southwestern Energy.

"This is transition zone in the best sense of the word," said Mike Rhodes, geophysical operations manager at Southwestern. "It runs from the Gulf of Mexico onto Mustang Island and into the bay."

"This is the first transition zone shooting for us," Rhodes continued. "We have acreage onshore that we've never properly imaged because of the narrowness of Mustang Island, so we're trying to exploit the acreage we have and look at the surrounding acreage."

The goal of the long offset (19,000 feet) survey is to image deep objectives, Rhodes said, which have become the target du jour in the Gulf of Mexico coastal region.

Mum's the word on the capital commitment. But whatever the price tag, the cost of a proprietary transition zone 3-D survey would pale in comparison to the ultimate potential payoff of a sizeable deep gas find.

"Mustang Island is classic transition zone shallow marine," Degner said. "We have lagoon work, so we



The custom-deigned *James H. Scott* is outfitted with deepwater airguns for use in the open waters of the Gulf of Mexico's transition zone.



Photos courtesy of Global Geophysical  
Onland, swamps and marshes get coverage, too.



have our small airgun boat – the *Tiny Tune*, with a 20 bar-meter source – that pops around in just a few feet of water. Then as we get into the swamps and marshes between the island and the lagoon, we'll use explosives and vibroseis."

Moving out into the open water, Global will employ its initial custom-designed source vessel – the shallow-draft *James H. Scott* – outfitted with deepwater airguns.

Two specialized Jet boats will be used to move the gear around in the shallow marine and marsh areas.

Also slated for deployment in the Mustang Island program is the custom cable vessel *Ms. Cordelia*, which is a 150-foot catamaran named for Degner's mother. The vessel is specifically designed to deploy and retrieve the Sercel 408 ULS recording gear.

"One of the things that's particularly unique about this survey is we'll probably be shooting all four different sources in the same day in this one, reasonably small 50-square-mile survey," Degner said. "This will be achieved in cooperation with three, and possibly four, receiver types: dual sensors (hydrophone and geophone), land geophones, marsh geophones and hydrophones."

"Today, we can execute this multi-source project using one seamless recording architecture," Degner commented, "which in this case is a specific ocean bottom cable system."

"In fact, we'll record the whole survey from the island," he noted. "Even though we have different sources, we'll never leave the island with the recording instruments – even when we're shooting at 50 feet of water depth."

### OBC for the Transition Zone

While many folks associate ocean bottom cable more with deeper water applications, Global considered OBC to be ideal for the Mustang Island transition zone program as well.

Degner noted the system being used is a medium tackle configuration versus the big, heavy tackle, power-down-the-cable systems commonly associated with deep-water seismic surveys.

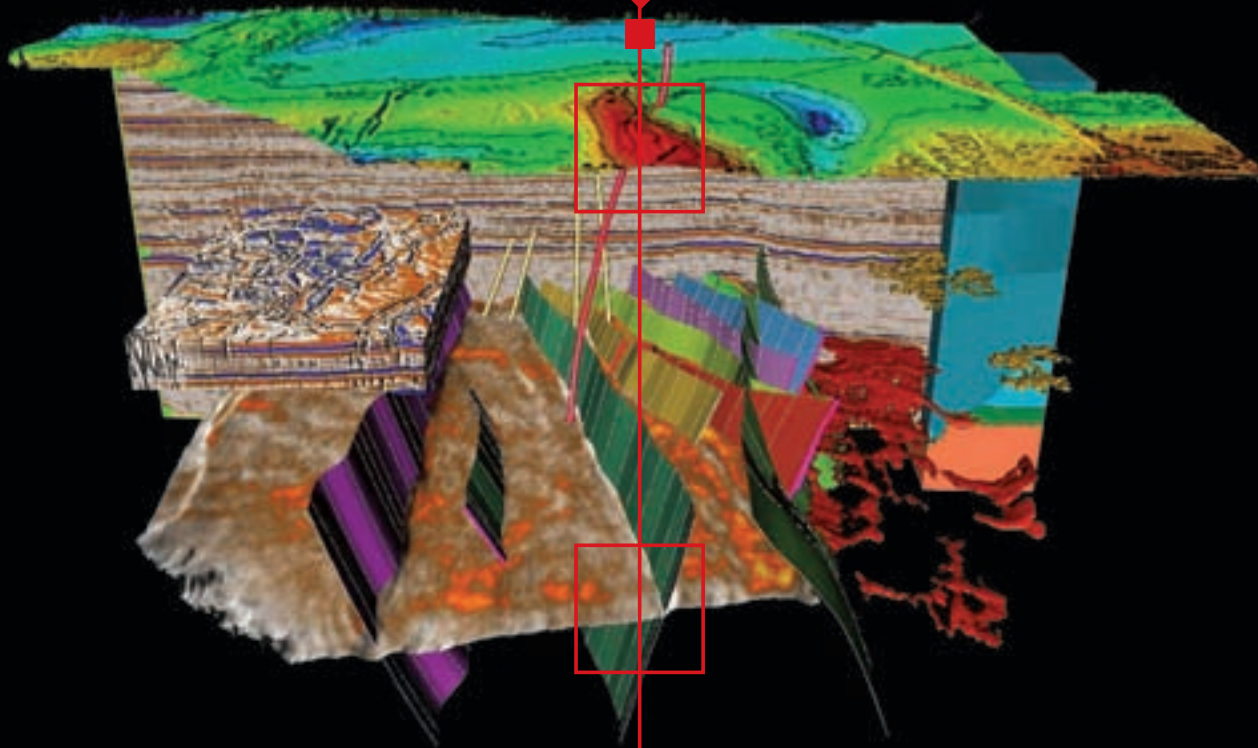
"The cables will connect directly into our land system and directly into a very shallow light tackle system," he said. "We can seamlessly have cable telemetry that runs through deeper areas, into shallows across the island and into the estuaries with the same telemetry configuration and power throughout."

When all's said and done, Mustang Island will be a highly cost-effective shoot, Degner predicted. The planned two-month program will get under way sometime after Labor Day, when the beach crowds have thinned and the nesting season for certain protected wildlife species is over.

### Matagorda Activity

Just a tad north of Mustang Island, Global has

See **Transition Zone**, page 11



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# Gulf Has Many Storms to Weather

By LOUISE S. DURHAM  
*EXPLORER Correspondent*

Verbal write-offs of the Gulf of Mexico are nothing new; it wasn't all that long ago that the region was derisively referred to as The Dead Sea.

To the surprise of many industry watchers, however, the "dead" region came roaring back to life – rather quickly – becoming the locus of an unprecedented level of E&P activity.

This was due in large part to sophisticated advances in technology that enabled exploration to cost-effectively move into the deep and ultra-deep water.

Once again, however, there are rumblings in The Patch that "this is it – production has peaked, exploration activity is declining and it's going to be downhill from here."

It's a topic that will be analyzed by a group of experts at the Gulf Coast Association of Geological Societies' (GCAGS) annual meeting in September in Lafayette, La., (see related story, page 12) when they congregate for the energy forum "The Gulf of Mexico Oil and Gas Industry – The Road Ahead."

The panel members will discuss their views of what's ahead and how it relates to their long-term strategies.

Forum participant Thomas Ahlbrandt, former U.S. Geological Survey World Energy Project chief and now vice president of geology for GSL Energy Corp. in Denver, will provide a calibration of GOM potential relative to the world.

"I'll try to put the Gulf of Mexico into a global context as to its oil and gas

potential," Ahlbrandt said, "where it looks to rank relative to other basins of the world.

"The Gulf is an excellent petroleum province – one of the few really high ranking ones in the U.S.," he noted. "It's a young petroleum system, and that's a good thing for hydrocarbon generation."

According to the most recent statistics, the GOM represents 3.1 percent of the world's known petroleum reserves, Ahlbrandt said. It has long been one of the top performing hydrocarbon provinces in the world.

### Storm Warnings

Unfortunately, Mother Nature is not impressed.

When hurricanes Katrina and Rita came roaring across the GOM in the third quarter of 2005, E&P activity in the impacted area came to an abrupt halt – albeit a temporary hiatus in most instances. But the devastation, which was primarily caused by wave action and water damage, resulted in many lengthy production shutdowns and billions of dollars in damage – some of it insured, some not.

While the super-majors have the deep pockets to continue with business as usual for the most part, the allure of the GOM diminished considerably for some of the smaller producers. In fact, some members of this group decided to sell all their Gulf holdings and concentrate their future drilling programs on terra firma.

Certain other smaller size companies



see the wisdom of staying in the GOM, just not on a 100 percent basis.

PetroQuest Energy, for instance, made a decision three years ago to play the Gulf in a methodical manner and combine it with activity elsewhere, which includes Oklahoma, South Louisiana and East Texas.

"We looked at the Gulf of Mexico in '02 and saw we could not grow being solely a shelf Gulf player," said GCAGS energy forum participant Charles Goodson, chairman, CEO and president of PetroQuest. "But we didn't feel as a company we were big enough to get into deep water.

"We looked for other areas along with the Gulf to smooth out our growth strategy," he said, "and at the same time continue to grow our Gulf projects at a reasonable rate.

"We recognized we had to high grade the Gulf of Mexico and drill fewer wells there that are most impactful," Goodson

said. "And that's what we've done.

"The Gulf is a great area," he noted, "and there are plenty of opportunities."

### Squeeze Play

Maybe so, but even if the GOM is only a part of your company's portfolio, you're feeling the squeeze from the insurance companies – more so than usual, following last year's storm-generated debacle.

"Our insurance tripled this year," Goodson noted. "That's for a company that had only one year of any kind of claim; no one knows how to forecast this.

"The MMS must step in and do some type of support for the insurance," he said. "They could do some second tier type of insurance or something."

Offshore players seek out varying types of insurance, e.g., offshore property and equipment, well control, liability, business interruption. In some instances the premiums have escalated to as much as 400 percent over those of 2005.

Some operators reportedly are delaying drilling until later in the fall – even though day rates may be higher – to avoid the idle time that comes with rig evacuations for most storms that enter the Gulf, often before their ultimate path across the water can be determined with any certainty.

Delayed drilling, in turn, will delay new production until close to the end of the year when prices may – or may not – be higher. □

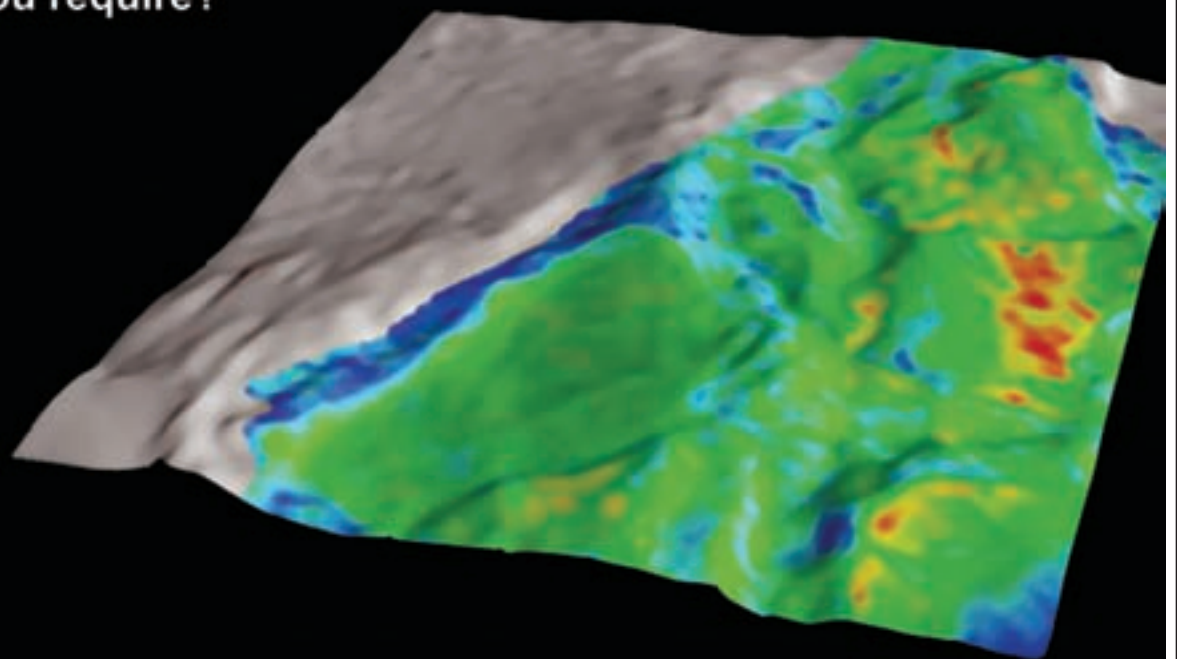
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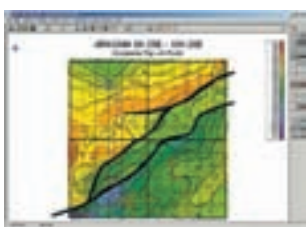
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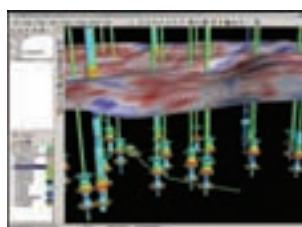
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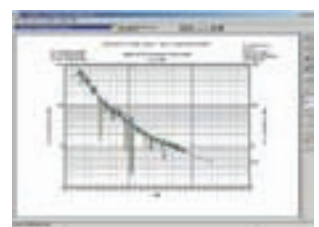
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*Louisiana Wants Bigger Royalty Share***Suit Shakes GOM Lease Sale System**

By LOUISE S. DURHAM  
*EXPLORER Correspondent*

It's that time again – another lease sale in the Gulf of Mexico.

But this time, there's a twist to the story.

This time, the sale might be blocked – and not because environmentalists will be throwing themselves in front of company limos.

This time, the governor of Louisiana is threatening a suit that could jeopardize the entire event.

The proposed August Western Gulf Lease Sale 200 constitutes about 3,787 offshore blocks. They're spread out over 20.4 million acres in the western GOM outer continental shelf planning area offshore Texas and in deeper waters offshore Louisiana, according to the Minerals Management Service (MMS).

The agency noted the blocks are sited between nine and about 210 miles offshore in water depths of four to more than 3,425 meters. The proposed sale could result in production of 136 to 262 million barrels of oil and 0.81 to 1.44 trillion cubic feet of natural gas, according to the MMS.

In contrast, the potential production from the 4,040 blocks offered at the March 2006 Central Gulf Lease Sale 198 offshore Louisiana, Mississippi and Alabama was estimated to be 276 to 654 million barrels of oil and 1.59 to 3.30 trillion cubic feet of natural gas.

The sales alone generate big bucks.

For example, successful bidders in the recent event in March anted up \$581,820,861 for 392 leases.

According to the MMS, funds from the total high bids are distributed to the general fund of the U.S. Treasury, shared with the affected states and set aside for special uses that benefit all 50 states.

But the real money comes later – years later – in the form of production royalty payments.

This is where Louisiana gets the shaft in the minds of many of its citizens and political leaders.

**A BIGGER Piece of the Pie**

Currently, the state receives 27 percent of royalties generated between the three-mile state-federal offshore boundary on out to six miles, according to Larry Wall, public relations coordinator at the Louisiana Mid-Continent Oil & Gas Association (LMOGA).

Some Louisianans think that's not enough.

Perhaps more maddening for them, beyond six miles Louisiana receives nothing, despite being the heart of the support structure for offshore GOM drilling and production.

This includes miles of pipelines that crisscross the state's fragile, coastal wetlands to carry hydrocarbons to major consuming areas, e.g., the northeastern states.

It is noteworthy that the federal government shares royalties from leased lands onshore on a 50-50 basis with the affected states.

Enough is enough, according to Louisiana Gov. Kathleen Blanco.

She's on a mission to cancel the upcoming August sale unless Washington agrees to share proceeds with Louisiana in a meaningful way, i.e., 75 percent of all revenue between three and six miles offshore and 50 percent of everything further out, according to Wall.

The revenue reportedly would be dedicated to restoring the vanishing

wetlands.

The state has engaged in a long-standing effort to begin accumulating the estimated \$16 billion needed to restore its coastal wetlands, which are disappearing at the rate of 35 square miles each year. The sense of urgency for funds has intensified since the devastating 2005 hurricanes.

"The governor's intent is to block the August sale and all future lease sales unless and until the state begins to get its share of revenues," said Sidney Coffee, chairman of the state's Coastal Protection and Restoration Authority.

Wall noted Blanco wants to collect



about \$2 billion annually from royalties.

There is concern the governor's big push will anger some government heavyweights. Some folks fear this, in turn, will lead to a loss of at least a portion of the reconstruction funds designated for the storm-ravaged state, which incurred the one-two punch from hurricanes Katrina and Rita in 2005.

Still, if money is to be spent to protect the coast and vulnerable coastal cities such as New Orleans, the coast must be there to protect.

continued on next page

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## Transition Zone from page 6

inaugurated a shallow water 3-D survey for Seismic Exchange Inc. (SEI) in waters between 60 and 165 feet deep off Matagorda Island. The *Global Scout* – a deeper draft, 100-bar-meter source vessel – will take on this job.

“Matagorda is a 1,000-square-mile shoot where we’re adding on to data we already have, extending it out to deeper water,” said Randy Johns, vice president of offshore marketing at SEI. “This is all very long offset OBC, dual sensor, high fold, high definition 3-D.”

The recording method being used for Matagorda Island is noteworthy.

“Instead of the recorder being on a

boat, we’re using land style recording by putting the instrumentation on a big jackup,” Degner said. “The recording instruments have their feet planted in the earth – albeit under maybe 100 feet of water. We have sensors 22 kilometers away from the recording vessel that are connected by underwater cable.”

The crew at Matagorda is the same group fielded by Global to implement SEI’s long offset, high-density 3-D program at Lone Star Bayou along the upper Texas coast. The survey area extended from High Island state waters off Texas to West Cameron state waters off Louisiana.

“The main purpose of the 3-D design effort at Lone Star Bayou was to improve the seismic image quality of the deeper sediments – between 20,000 and 30,000 feet deep – by using a 30,000-foot offset range,” noted Tom

Fleure, vice president of geophysical technology at Global.

The now-completed survey is tied to the area of the Shell Joseph well at High Island Block 10, which reportedly reached TD at 22,000 feet about mid-2005. Results of the well still have not been released, giving rise to much speculation over what may – or may not – have been discovered.

Not surprisingly, there’s considerable scurrying for data in the region.

“Our data are not completely processed yet,” Johns said, “but we have people begging to look at it once it’s completed.”

### Moving Westward

Johns believes the Texas coastal seismic activity represents a gradual shift in focus by the industry away from

Louisiana and toward Texas.

“We see a trend of people now looking at coming toward Texas, which is under-explored compared to Louisiana, and the terms of the state are reasonable,” he said. “We’re trying to get out in front of that crowd to get new data of interest for the industry.”

Still and all, no one’s writing off additional potential for the Louisiana coastal region, including the tedious-to-work transition zone.

“The transition zone really started in Louisiana,” noted Dan Smith, vice president of exploration at Sandalwood Oil & Gas, which has long been active in both this area and elsewhere in the state.

“We still see a lot of activity there and think it’s moving toward Texas because it’s been so successful in Louisiana,” Smith added. “It’s not done in Louisiana by a long shot.” □

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### A Tactical Decision

The demand for offshore revenue sharing is long overdue in the minds of many Louisianans – it’s the governor’s tactics that are causing a potential split for the population.

In fact, there’s been considerable objection coming from the oil and gas industry.

LMOGA, for starters, is not happy with the Blanco’s strong-arm approach.

“We support sharing the revenue stream, and Louisiana should get a bigger share,” Wall said. “But blocking the lease sale is blocking the revenue stream.”

“If you don’t lease the property, you can’t sustain the jobs, you don’t produce oil and gas and you’re not collecting royalties,” Wall noted. “Also, if you can’t invest in the Gulf, the investment money will go overseas.”

U.S. Rep. Bobby Jindal, R-Metairie, is pursuing a less-threatening approach to offshore revenue sharing. He chose to introduce a bill asking the federal government to give Louisiana 75 percent of offshore revenue between three and 12 miles offshore and 50 percent beyond that.

Blanco claims the proposed August lease sale is inconsistent with the state’s coastal zone management program, and she sent a 25-page letter to the MMS at the end of June detailing the concerns. The crux of the issue appears to be her belief that the agency hasn’t taken into account the dramatic change in the state’s environmental baseline.

The agency’s written response agreeing to meet with the governor to address the list of concerns may not suffice.

“We want to be sure we actually get feedback on specific measures listed in our letter before we agree to meet,” Coffee said. “If not, we’ll postpone the lease sale until our concerns are addressed. Then we have no recourse but to go to court.”

Meanwhile, the MMS is moving along with its plans for the August event.

“We’re proceeding ahead with everything needed in order to continue with the sale,” said Gary Strasburg, MMS spokesman. “We believe good blocks are being offered, and we anticipate a good sale.” □

GCAGS to See the LITE

# Explorers to Get 3-D View to a Thrill

By PAT BLAKE  
EXPLORER Correspondent

This year's Gulf Coast Association of Geological Societies (GCAGS) annual meeting, set Sept. 25-27 in Lafayette, La., is being called "Visualize the Possibilities" – with good reason.

Convention organizers promise to "Wow!" audiences with 3-D simulations that are built on visually immersive technology. The platform features dynamic, three-dimensional imagery of a particular setting that evokes a sensory understanding of what it would mean to actually be in that setting.

This is the innovation behind IMAX theaters known for generating stomach-jolting sensations such as taking a sharp corner at 180 miles per hour in a Formula One racecar or dropping a few Gs during a rapid vertical descent aboard a speeding rollercoaster.

Participants at the convention won't have to worry about any such motion-sickening joyrides. They will, however, be able to envision:

- ✓ The shift in pipelines during Hurricane Ivan.
- ✓ The surface affects of Hurricane Katrina.
- ✓ Remote collaboration using visualization.
- ✓ Many other presentations designed specifically for the GCAGS audience.

The images are being created using data gathered by geologists and then displayed on screens up to 37-feet tall to simulate the feeling of being completely immersed in the environment.



Photo courtesy of the Louisiana Immersive Technologies Enterprise

The site of the upcoming GCAGS meeting will be a new center dedicated to 3-D immersive technologies – which means a chance to really get into eye-popping data.

### Engulfed in Visualization

Visualization comes to the Gulf of Mexico through the Louisiana Immersive Technologies Enterprise (LITE), a venture jointly funded by the state of Louisiana, the Lafayette Economic Development Authority and the University of Louisiana at Lafayette.

Slated for an August 14 opening, LITE is made up of four venues:

- ✓ The world's largest immersive theater, with 175 seats that face a 37-foot screen. Participants in the first four rows wear "active goggles" that display dynamic images that are seen by the presenter; in the other rows participants see through "passive goggles" that display two-dimensional images similar to the IMAX experience.
- ✓ An immersive collaboration teleconference room.



- ✓ An immersive conference room.
- ✓ "The Cube," the world's first, six-sided 10-foot by 10-foot digital virtual reality chamber that projects images on all sides of the audience.

"When geologists look at their data on the computer, they have a massive chunk of information that represents some piece of the Earth that they look at to do analysis, but that data is fixed," says Carolina Cruz, LITE's executive director and chief scientist, and creator of the Cube. "Things change and move, and there are many dynamic features that need to be imbedded with the data."

"What a facility like LITE provides is the unique technology where geologists can look at the data and also understand the dynamic nature of what goes on with it. They can look at, 'What if we drilled this way,' or make bidding decisions such as, 'Do we want to own that field or not?'"

See **LITE**, page 14

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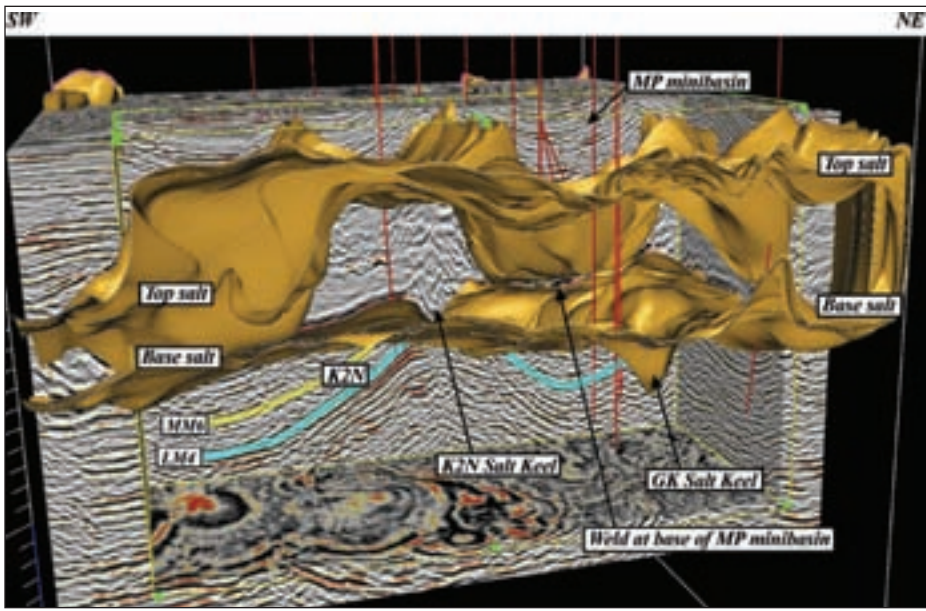
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Reality looks like this: GCAGS participants will get a lot of 3-D experiences at LITE.

**LITE**

from page 12

“They can look at not only the geological features of the reservoir,” she said, “but the economic and financial aspects, too.”

**New Dimensions**

As a one-of-a-kind facility built solely for the purposes of research and economic development, LITE holds great potential for the Gulf region and for the geoscientist community.

“The Gulf is particularly an excellent application arena for LITE because it is a contained space significantly populated with oil rigs and pipelines,” Cruz said. “Most if not all the geology in the region involves understanding the marine

underwater geology. Geologists, though, really don’t have a way to look at the Gulf as a whole. They look at it in sections, and when they reach the edge they have to download that section and reload another one.

“It is as if you were looking at a map and you reach the border of Louisiana and Mississippi,” she continued. “You have to fold up the Louisiana map and go into your glove compartment and open up a map of Mississippi. You don’t really have a whole picture of what’s going on.

“A place like LITE offers the capability of looking at data of a significantly larger order of magnitude than most of the other technologies today allows,” she said. “It is primarily because of the computer and graphics resources that drive the screen. A lot of oil companies do have similar systems, but they don’t have the computer and graphics power we have. We have a 60 gigabit connection.”

The GCAGS meeting includes three half-day sessions that explore the immersive technologies and its benefits to the oil and gas industry. The 1,800 expected participants will have the opportunity to simulate conventional practices such as LIDAR in an immersive environment, learn about gathering seismic-type imaging by using the bit as the noise generator to create images, visualize new forms of remote collaboration and many other techniques designed to help enhance skills by incorporating recent innovations.

“A lot of what we do as geoscientists is creative thinking,” said Mary Broussard, GCAGS general chair and geophysicist for Stone Energy. “It is truly interpretation where there are not only one or two answers to every problem – there are multiple solutions. When you are immersed in your data, your creative and interpretive powers are taken to another level.

“But there are a lot of people who don’t think or imagine in terms of 3-D,” she said. “When you bring them into the LITE auditorium and show them well-bores cutting through hydrocarbon reservoirs, it makes it much easier to explain than just by looking at 2-D pieces of paper.”

The value of immersive technology in the Gulf may be realized most readily by individual geologists. LITE is the only facility of its kind that is open to geologists – including students, academia and independents – who otherwise may not have access to this sophisticated set of interpretative tools.

“Geologists think in 3-D, and oftentimes in 4-D when we add the time component,” explained James Willis, independent geologist and technical program chair for the GCAGS convention. “In my office, I look at 3-D images and rotate them on a 2-D laptop screen. With LITE, I will have the opportunity to walk into a room that is fully immersive where I can see in three dimensions and improve upon what I am doing in my office.”

Beyond the full slate of presentations, courses and posters, the three-day GCAGS event includes the Prospect Expo hosted by the Louisiana Oil and Gas Association. Another headliner is the International Geological Correlation Program (IGCP) and its 490 Project, which will for the first time hold its convention in the United States simultaneous with the GCAGS gathering.

Known for their securitization of world-changing geological events such as the tsunamis of 2004, the IGCP-490 Project will meet in southern Louisiana to study the effects of Hurricanes Katrina and Rita.

For more information about GCAGS, LITE and the three-day meeting, go online to [www.gcags2006.com](http://www.gcags2006.com). □

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## Tuscaloosa Maturing Gracefully

By LOUISE S. DURHAM  
EXPLORER Correspondent

*You ain't seen nuthin 'til you've seen the Tuscaloosa.*

Sound familiar?

If so, it's because this was probably the most popular talk making the rounds of the professional meeting circuit in the late 1970s.

The deep expensive wells coming on stream in rapid succession in south-central Louisiana's Tuscaloosa Trend were gas condensate behemoths – suitable symbols of those heady times in the industry.

Fortunes were made.

Then, seemingly without warning, fortunes were lost when those folks who had bet everything but their children on the play got caught in the downdraft of plunging oil and gas prices that triggered the infamous 1980s oil industry depression.

Today, the Trend's several big-name fields, such as Judge Digby, Port Hudson, Morganza and others, continue to kick out impressive amounts of hydrocarbons. Production is from the Lower Cretaceous Tuscaloosa sands, principally the Lower Tuscaloosa Massive Sand facies.

As the longtime undisputed kingpin of the play, Amoco held a controlling interest



in the majority of the better fields in the heart of the Trend. In fact, the play's

longevity is due in large part to an aggressive redevelopment program Amoco initiated in 1994.

BP assumed the mantle of lead operator in the play via its purchase of Amoco, and its current inventory includes 46 producing wells in six fields in the vicinity of Baton Rouge, La. The company plans to maintain a two-rig program in the Trend for 10 years.

According to BP's onshore South Louisiana fact sheet, flowing tubing pressures exceeding 12,000 PSI and bottomhole temperatures reaching 370 degrees are the norm for the deep sand producers. Average well depth exceeds 21,000 feet.

Port Hudson Field is the crown jewel of the Trend. Since discovery in 1977, the field has produced a staggering 761.3 billion-plus cubic feet of natural gas and 85.8 million-plus barrels of condensate. BP currently operates 13 wells there.

"Port Hudson is different than every other deep Lower Tuscaloosa Field," said Steve Walkinshaw, president of Vision Exploration. "It's salt cored and very rich in condensate, while the remainder of the Trend is dry."

Despite the mega-production, exploration in recent years has been – and continues to be – spotty at best.

"There's not a lot of new things happening," said Remy Williams, consulting geologist and long-time Trend player. "It's kind of the same-old, same-old."

Walkinshaw concurred.

"When it comes to exploring in the Trend, it's very quiet," he said. "A lot of people are optimizing reserves, and I can't blame them."

"Vision is not the only one exploring, but small independents don't have the resources to shoot 100-square-mile 3-Ds," he said. "We're using 2-D data and well control to generate prospects."

"There are not a lot of people who understand the Trend," Walkinshaw noted. "These are Cretaceous reservoirs, and there aren't a lot of geologists still in the profession who have worked this trend and understand the clay content and the sand distribution and the regional picture – that's why you see some of the best gas wells being completed in known fields."

"But the presumption there are no new fields is incorrect," he added. "There are plenty of additional targets to drill – and the Tuscaloosa is not just deep."

#### Knowing Where to Look

In fact, production has occurred from the A and B sand units, which occur higher in the section and differ considerably from the Massive Sand.

The A and B sands can be as much as 9-10 percent chlorite as well as kaolinite, according to Walkinshaw. The chlorite lowers the log resistivity reading for productive intervals compared to the chlorite-free Massive Sand, which exhibits higher resistivity numbers.

"One must be very careful and experienced in working the logs in the area," Walkinshaw said. "If you start in the deep part of the Trend – which mainly produces from the Massive Sand – and move northward where you get on the shelf area in the Florida parishes part of the Trend, you'll have trouble understanding the need to make the transition from looking for high resistivity pay in the Massive Sand to low resistivity pay in the A and B sands in these parishes."

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See **Tuscaloosa**, page 20



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*Poetry in a Geologic Puzzle Box***Belize Oil: Stuff Dreams Are Made Of**

By DAVID BROWN  
EXPLORER Correspondent

Oil in Belize.

It could be an epic poem written by Byron, or a knowing verse by Rudyard Kipling.

It's also a ripping adventure, with a small band of True Believers finding victory on a remote frontier.

Oil in Belize has two main chapters.

The first, a tale of determination.

The second, a twist of politics and fate.

At the end, it's the story of a tiny part of a huge industry, in a very small corner of the world.

Belize stretches down 174 miles of Caribbean Sea shoreline, just south of Mexico's Yucatan Peninsula and east of neighboring Guatemala.

Covering less than 9,000 square miles, Belize is the second smallest nation in the Americas, and the only Central American country without a Pacific Ocean coast.

Formerly known as British Honduras, it gained independence from Britain in 1981. English is still its official language.

Decades of exploration dating back to the 1950s found minimal crude oil in Belize, nothing near commercial production.

Plenty of companies tried.

"Basically there were 51 wells drilled on very good prospects – Esso, Phillips, Placid, Spartan – they were really good stuff," said Larry Jones, president of Spartan Petroleum Corp. in Houston (and the current chair of the AAPG House of Delegates).

Now Spartan Petroleum is back, having signed a Production Sharing Agreement with the Belize government, covering a contract exploration area of almost 250,000 acres.

Given Mexico's prolific oil production and a smattering of small but commercial wells in northern Guatemala, finding oil in north Belize might have sounded perfectly predictable.

Not to Jones.



Graphic and photo courtesy David T. King

Geological map of Belize north of the 17th parallel.

For one thing, a 50-year history of dry holes did not inspire confidence.

Also, likely equivalent producing zones in Guatemala are far from prolific. The entire country's production is estimated around 22,000 barrels per day.

And in fact, the real daily oil production of Guatemala is:

(a) Anybody's guess, and

(b) Not much.

"I wasn't very sure there was oil in Belize," Jones said. "I had a 20-year hiatus waiting on oil to be found there."

#### A Dream – with Benefits

So when tiny Belize Natural Energy Ltd. discovered commercial oil reserves with three good wells onshore Belize last year, it sent a ripple through the industry.

The company had signed an agreement with Belize in 2002 and obtained an exploration license that ultimately covered 595,000 acres. It then acquired and processed 2-D seismic data in areas of interest.

By 2005, Belize Natural was ready to spud its first well, not far from unsuccessful previous drilling.

A true wildcat and longshot, the well came in.

Production reportedly flowed from two Cretaceous zones above 4,000 feet, the Yalbac and Hill Bank formations. Both are believed to have equivalents in the producing Coban formation in Guatemala.

Unlike other regional production, the Belize crude tested sweet – 38-degree API gravity.

Initial production of 500 barrels per day from the discovery well rose to 2,800 through additional drilling and development.

The government of Belize has 10 percent equity in the project.

Investment company CHx Capital of Denver also hold an equity share, according to CHx executive Todd Neugebauer.

The discovery came near Spanish Lookout, about 125 miles east of Guatemala's largest oil field and less than 35 miles northwest of Belmopan, Belize's capital.

Belmopan is noted as one of the least populous capitals of any non-island nation in the world. San Marino city in San Marino may be smaller, but San Marino covers less than three-tenths of a percent as much area as

continued on next page

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Belize.

In one irony, the Spanish Lookout discovery came not far from the site of an early Belize wildcat, drilled by Gulf Oil in 1956.

The field lies under land of a German-speaking Mennonite settlement, which will share a small portion of royalties.

**Leading the Way**

Oil in Belize could be a novel by Graham Greene or Evelyn Waugh, a biting commentary from V.S. Naipaul.

It's the story of two women from Ireland; of another two long-time believers in Belize's potential; and of their investors and supporters.

One of the women, AAPG member Susan Morrice, is a Denver-based geologist with two decades of experience in Belize.

Jones has the highest regard for her. "She stayed 20 years and just kept working the system," he said.

CHx Capital, a backer of the discovery play, is headed by Denver oilman and AAPG member Alex Cranberg.

Cranberg is known as a wily investor – and also as Morrice's husband.

The other woman, Sheila McCaffrey, came from outside the industry to become eventual chairman of the operating company.

Another founder, AAPG member Jean Cornec, did seminal work in the 1980s identifying Belize's stratigraphy. Paul Marriott, a British rig contractor, headed the drilling operations.

But probably the biggest believer in the country's petroleum potential, Mike Usher, was a Belize engineer who died before the Spanish Lookout drilling began.

The discovery well and two confirmations – Usher 1, Usher 2 and



Almost Paradise? Belize is a land known for beautiful beaches and gorgeous scenery, which have made it a popular vacation destination. Several geologists believe it may be something more: They say the country holds a delicious potential for oil exploration.

Usher 3 – were named in his honor.

**'A Real Puzzle Box'**

AAPG member David King, a professor in the geology department at Auburn University, has conducted stratigraphic studies in Belize.

An overview paper, "Stratigraphy of Belize North of the 17<sup>th</sup> Parallel," by King, Kevin Pope and Lucille Petruny, appeared in the Gulf Coast Association of Geological Societies Transactions in 2004.

King referred to Belize as "a real puzzle box" in terms of geology.

"There is no formal stratigraphy in Belize. It's all informal. Cornec himself says

all the units are informal," he said.

"For a lot of the units, the type sections are just not there anymore," King added.

In general, south Belize is dominated by the Maya Mountains, a rugged plateau with a thick section of deformed and metamorphosed Carboniferous-Permian sedimentary and volcanic strata, according to King.

A thin section of Paleocene-Pleistocene carbonates comprises most of the coastal plain in north Belize. A moderately thick section of Mesozoic strata, mostly carbonates, is found in the subsurface and in outcrops near the mountains.

In north Belize, the Lower Cretaceous Hill Bank formation appears as a shallow

shelf carbonate unit that developed across the area before subsidence of the Chipas-Peten Basin, according to King.

The Hill Bank, consisting of porous, tan to gray limestones and dolostones, may be equivalent to the lowermost Coban formation and the San Ricardo in Guatemala.

The interbedded limestones, dolostones, shales and anhydrites of the Yalbac formation represent sedimentation on the eastern margin of the Chipas-Peten Basin, which began subsiding during Early to Middle Cretaceous, King wrote.

In northern Belize, the Yalbac thickens to more than 3,200 feet, as shown by well control. King et al. believe the Yalbac is probably equivalent to the upper Coban formation and lower beds of the Campur formation in Guatemala.

Two Anschutz Overseas Corp. wells drilled in 1972 made note of a dolostone "Roaring Creek oil zone" above the base of the Yalbac, King said.

**A Source Mystery**

Source rock remains a mystery for geologists who've studied Belize, including Cornec, and for previous exploration attempts.

"We primarily had a problem with sourcing," said Jones, who differentiates the country's oil from Guatemalan production.

"There's quite a bit of Jurassic involvement in Guatemala," he said. "That's not a very strong province right now."

"In the Corozal Basin, there's a lot of oil that's tight that has Jurassic footprints," he added.

King said stratigraphic mapping of Belize remains incomplete, and is complicated by the fact that the country's Ministry of Natural Resources does not act as a clearinghouse for formal

See **Belize**, next page

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## Belize

from previous page

nomenclature.

At the K-T boundary, "there's a fairly substantial section, in some cases 15-20 meters of ejecta, and it's not even mapped," he noted.

With so much work remaining, King sees all of Belize as a fertile region for stratigraphers.

"What's so interesting to me as a stratigrapher is that it's like the wild, wild west," he said. "There's a potential to find stratigraphic units that nobody has ever seen before."

### (Un)Royal(ty) Treatment

Oil in Belize should be a play by

Terence, the ancient Roman-Carthaginian with an eye for tragicomedy.

After Belize Natural Energy announced its discovery, the country's media widely reported royalty payments to the government at 7 to 7.5 percent.

That led to criticism of the official agreement with the company. Royalties in other countries approach 70 percent, some commentators noted.

Belize's Minister of Natural Resources, the Hon. John Briceno, defended the terms. He compared criticism in hindsight to speculation after winning a national lottery.

"Now that you know what you have, it's like the Lotto. After the Lotto has played and you know the numbers, you would say, 'If I used these numbers, I would have won the Lotto,'" he observed.

Other officials defended the terms as necessary to attract exploration after so

many past failures.

Local unhappiness over the government's take remained.

In June, Belize announced plans to tax Belize Natural's profits at 40 percent.

McCaffrey responded that the existing agreement set income tax at 25 percent. A tax rate of 40 percent would hamstring further exploration and development work and discourage industry involvement in Belize, she said.

By early July, the company and the government were locked in dispute, operations were suspended and McCaffrey had even threatened to pull up stakes and "go to another place in the world that has better conditions and more stable conditions."

The government's response:

See you later.

Oh, and thanks for the oil.

### The Stuff of Dreams

Clearly, Belize could not enter the oil age without an environmental dispute.

That's happening in Sarstoon Temash National Park in south Belize, where environmentalists say seismic work for exploration could disrupt a bird habitat, the only known lowland sphagnum moss bog in Central America and the only comfra palm forest in Belize.

King and his co-authors began their paper on Belize with a quote from Aldous Huxley, writing about the ends of the Earth.

Considering the background of the discovery group, a more poignant quote would come from the Irish poet William Butler Yeats:

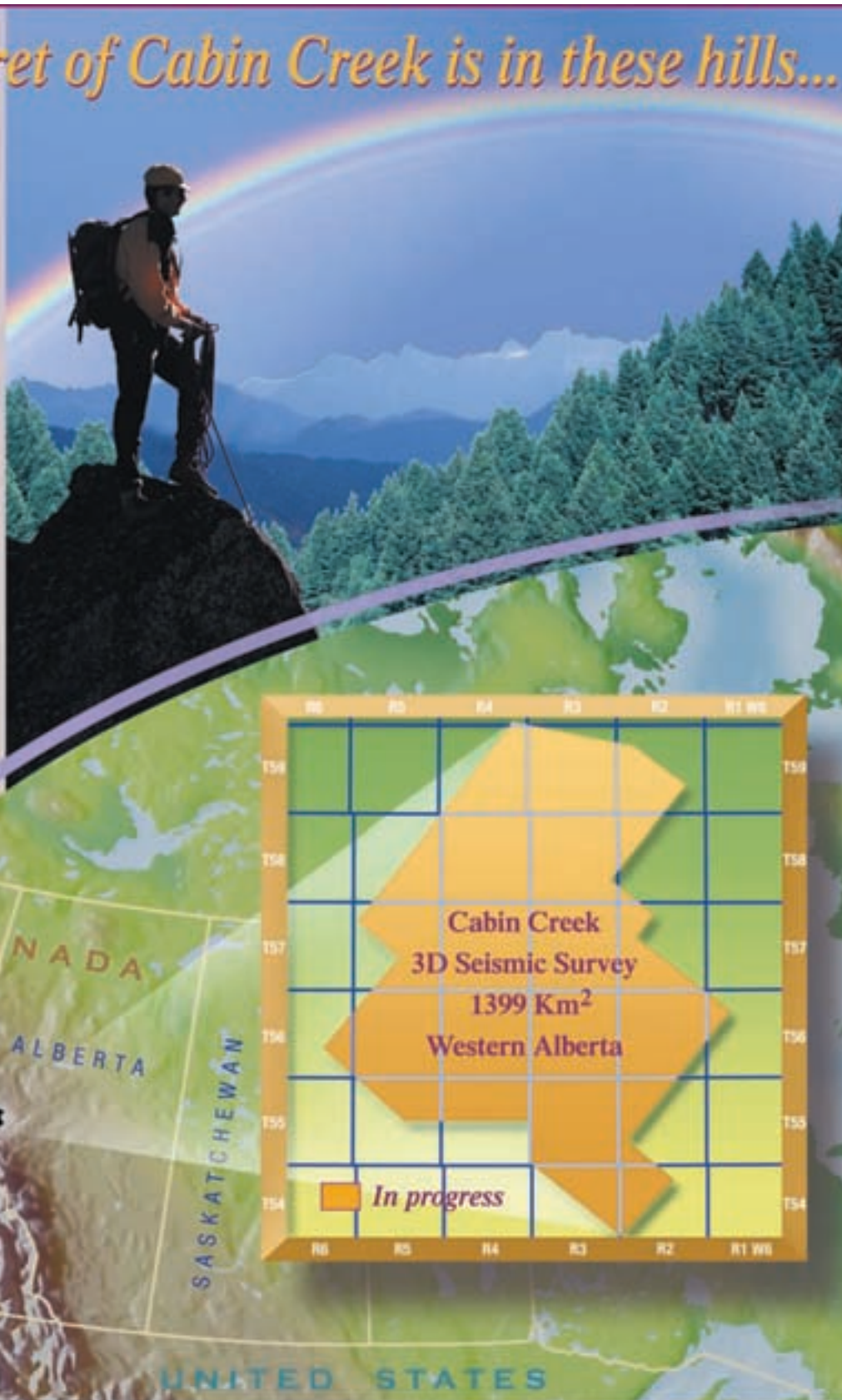
*I have spread my dreams under your feet;*

*Tread softly because you tread on my dreams.* □

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*New Ideas for New Frontiers*

## Tuscaloosa

from page 16

"Also, you typically have stratigraphic traps in the A and B in the Florida parishes that are productive," Walkinshaw added, "and not structural traps as in the Massive Sand."

### New Players

Vision's efforts to interest companies in exploring jointly and acquiring 3-D seismic surveys attracted a company that is not only new in the Tuscaloosa play but new to Louisiana as well.

Publicly-traded California Oil & Gas Corp., which is headquartered in Calgary, Canada, signed a Letter of Intent (LOI) to take a 40 percent interest in a Vision prospect targeting objectives below an older field that has produced 28 million barrels of oil from Tertiary formations.

Both the overpressured fractured Lower Chalk and the underlying Lower Tuscaloosa Massive Sand have been tested on the structure of interest and proved to be hydrocarbon bearing, according to a company news release in June.

Modern-day completion techniques weren't available when these targets were drilled to depths of 13,000 and 16,000 feet, respectively. The technology that was used failed to bring the wells on production.

The prospect agreement between the two companies includes acquiring a "state of the art" 3-D survey up to 35 square miles over the structure of interest. A well that initially went down in 1982 will be re-drilled.

This early well encountered what appears to be significant gas volumes in the Lower Tuscaloosa Massive Sand unit, according to California Oil & Gas, but mechanical failure caused it to be abandoned after testing gas.

California Oil & Gas also signed an LOI to participate in certain Louisiana activity with publicly traded Daybreak Oil & Gas — a small, relatively new company headquartered in Spokane, Wash.

The agreement is for California Oil & Gas to have a 15 percent working interest participation in a well to be drilled to test sands at depths of 10,000-11,000 feet in a prospect in St. Landry Parish. The objective reportedly is an unexploited Tertiary formation in a unitized field of more than 4,500 acres.

Still, the Tuscaloosa has captured the company's attention as well.

"Daybreak and partners put a basal Tuscaloosa well on production at 8,200 feet in Tensas Parish early this year," said company president Bob Martin. □



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# L.A. Quake Predictions Get Yawns

By BARRY FRIEDMAN  
EXPLORER Correspondent

Like Estragon and Vladimir, who are waiting for the inevitable in *Waiting for Godot*, geologists, too, are waiting for an earthquake to come to Los Angeles and its surrounding communities.

And like the two protagonists in Beckett's masterpiece, they also don't know when it will come, where it will appear or the extent of its impact.

So, as you'd imagine, last month's announcement that an earthquake of mammoth proportions for Los Angeles and southern California is, indeed, on the horizon (how many times already?) produced its share of alarm.

It also produced some skeptics – and yawns – as well.

## No Sure Thing

According to a study done by Scripps Institution of Oceanography at the University of California, San Diego, and which first appeared in the magazine *Nature*, the BIG one, in fact, has been almost 300 years in the making.

The man behind the study, geologist Yuri Fialko, was quoted as putting it this way:

*"For the public, the most important result of this study is that these data show definitively that the fault is a significant seismic hazard and is primed for another big earthquake."*

While scientists are unanimous in their beliefs that the San Andreas Fault or one of its not-so-distant cousins will

*"The tectonics pose a danger but they provide the structural traps for valuable oil to accumulate in."*

one day do the merengue under the Staples Center; geologists and those who specialize in the study of quakes are reluctant to get into the specifics of where, when and how big and bad it will be – the very thing that makes headlines.

One such scientist, Don Clarke, city geologist for 23 years for Long Beach, Calif. – and last year's chairman of the AAPG House of Delegates, and someone who was not involved in the aforementioned study – says the public should take even the latest study with a certain amount of skepticism.

"There have been many reports in the past and there will be many more because the San Andreas Fault is a major break in the crust," Clarke said. "Many scientists have studied the fault and a number of them have made predictions."

Most of them, it should be noted, were wrong.

Clarke, who also teaches geology and formation of petroleum for the California Oil Mentoring Entrepreneurial Training program (COMET), points out

that many of these predictions are no better than those who call political races or who will win the Tour de France, highlighting the biggest blunder in recent history.

"The most famous ... was the Parkfield experiment," Clarke said. "The USGS (U.S. Geological Survey) scientists had predicted an earthquake was going to occur after 22 years because they had a regular history of 22-year events. They got lots of money and set up an incredible amount of instrumentation." The moderate-size earthquake was due before 1993.

"The quake did not occur," he said. Still hasn't.

Even though Clarke finds nothing particularly "groundbreaking" or "radical" in the report, he is happy the mainstream media have "given it some inches."

## Beyond the San Andreas

This recent Scripps study shied away from any mention of specific time or place. It did, however, restate the

obvious: The southern end of the San Andreas Fault, near Los Angeles, is overdue for a major (7-7.9) or great (over 8) magnitude quake.

Specifically, the study revealed that stress has been building up on the lower third of the San Andreas, which runs 800 miles through the midsection of California, and that the fault "could rupture at any moment."

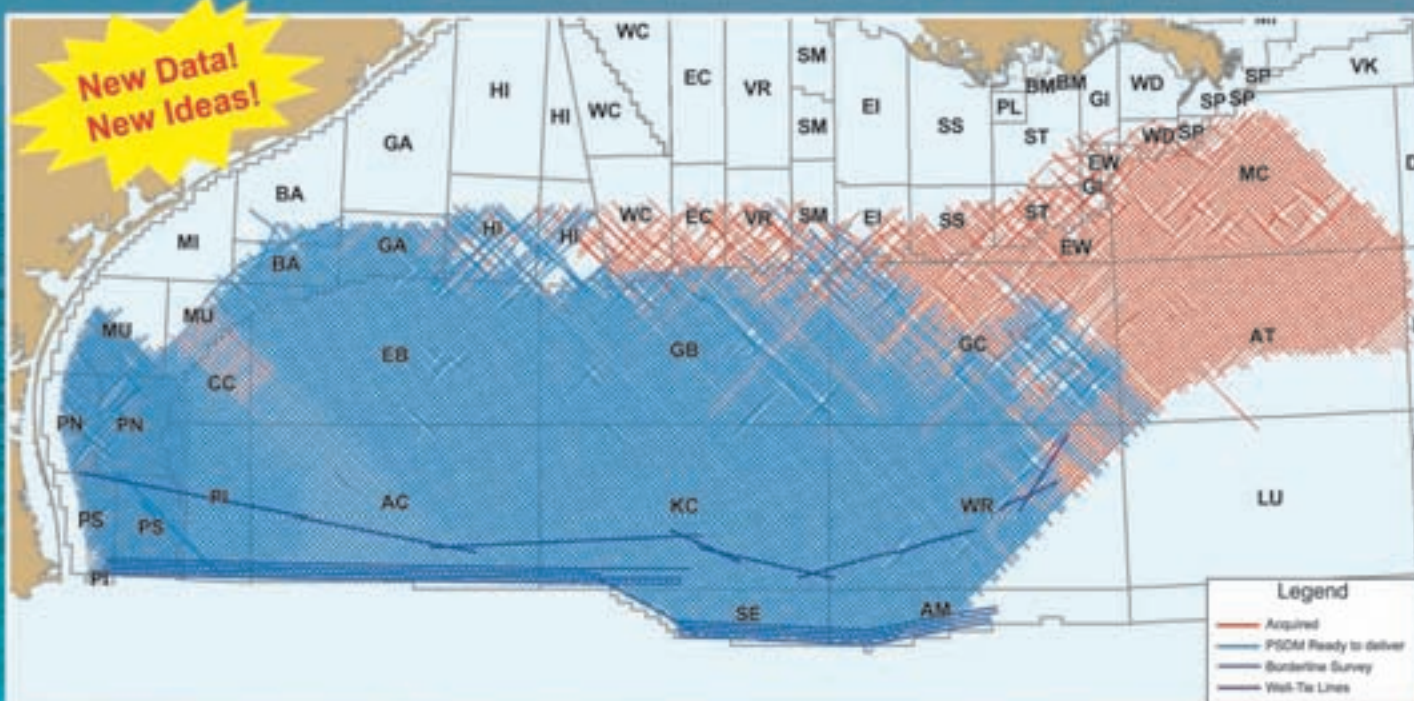
Previously, little was known about this 100-mile segment in the southern part of the state, which runs from San Bernardino, to the east of Los Angeles, to the Mexican border – but by using radar and global positioning data to track the movement (or lack thereof) of the fault, Fialko discovered that the southern end of the fault has shown little movement in the past 20 years, which increases strain, which in turn increases the chances of shifting.

The fault's annual movement (slip rate) was measured to be about an inch a year, which is similar to previous estimates, meaning pressure has been building for some time. This is important, because while a massive quake hit the central section of the state in 1857 and in the northern segment in 1906 (the San Francisco earthquake), the southern section, below Los Angeles, has not seen any serious activity in 300 years.

Fialko, who calls this 300 years of relative inactivity as the interseismic period, also found that the two sides of the southern San Andreas fault are

See **Earthquakes**, page 24

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Large crowds, exciting prospects and a forum on North American oil and gas plays are all expected to be part of this year's Summer NAPE Expo, set Aug. 23-24 at the George R. Brown Convention Center in Houston.

AAPG is one of the presenters of Summer NAPE, which is modeled after the AAPG's successful North American Prospect Expo. It is designed to provide a marketplace for the buying, selling and trading of oil and gas prospects and producing properties via exhibit booths.

Last year's Summer NAPE attracted 4,000 attendees for the 375 booths.

Officials expect this year's numbers to be even higher.

Pre-NAPE activities begin Aug. 22 with the forum "Perspectives on North American Oil and Gas Plays," featuring talks on:

- ✓ North American shale plays, including the Barnett Shale.
- ✓ Coalbed methane.
- ✓ Tight sands.
- ✓ Details on E&P opportunities from even exhibitors.

More information can be found online at [www.napeonline.com/home2.asp](http://www.napeonline.com/home2.asp). □

## Earthquakes

from page 22

acting independently, with one side showing more flexibility than the other.

Fialko theorizes that inactive period is over and we are now entering a seismic time. The problem, he told National Public Radio, is that nobody can predict when the inch of movement becomes THE INCH that sets off the quake.

And with that, Clarke has no disagreement, but indicates the greater danger is not, in fact, the San Andreas, but other faults in the region.

"The fault of greatest potential to harm Los Angeles is the Newport Inglewood Fault that diagonally crosses the Los Angeles Basin," he said. "This fault produced the famous Long Beach earthquake in the 1930s that resulted in

tighter building codes. The Newport Inglewood fault can produce a 7 magnitude earthquake.

"The San Andreas Fault can produce a greater earthquake," he added, "but it is 40 to 60 miles away from significant urban development."

The irony of all this is that the potential disaster in the region also has been a geologic bonanza. Clarke states that both the Whittier and Newport are sites of significant oil accumulations.

Most of Clarke's work with Long Beach involved oil development work, because the city is a major oil operator (Wilmington oil field).

"Much of the oil found in the Los Angeles Basin is associated with active earthquake faults," he said. "The tectonics pose a danger but they provide the structural traps for valuable oil to accumulate in."

### Living On the Edge

Clarke reminds that other faults in the Los Angeles area also have produced significant earthquakes like Whittier, and that some researchers have predicted that the Compton thrust that underlies the basin could also be a significant earthquake generator.

"The new prediction has the earthquake occurring south of the major metropolitan areas," he said. "Palm Springs and San Bernardino are much closer."

Also of concern, according to the study, is the relatively little-known San Jacinto Fault, which is under San Bernardino, Riverside and Borrego Springs; Fialko reported it is moving at twice the speed of previous estimates.

Fialko also reported that San Jacinto is thought to pose an even greater risk for an earthquake of magnitude 7, which is still enough to get you – or throw you – out of bed.

If that happens, or some combination of the above, many scientists in the field believe thousands of people in the Los Angeles region could be killed with an accompanying billions of dollars in property damage.

And, worse, according to Clarke, the area doesn't seem ready.

"The region is ill prepared to take on a major disaster," he says, citing a Los Angeles Times report that shows little coordination and planning between the agencies involved.

Illustrating his point is a statistic from the California Earthquake Authority, a leading residential earthquake insurer, which shows that only a little more than 13 percent of southern California homeowners now buy earthquake coverage.

The recent study, as those previously, have once again heightened expectations that the BIG one is coming and scientists have a handle on when.

Clarke wants to urge caution.

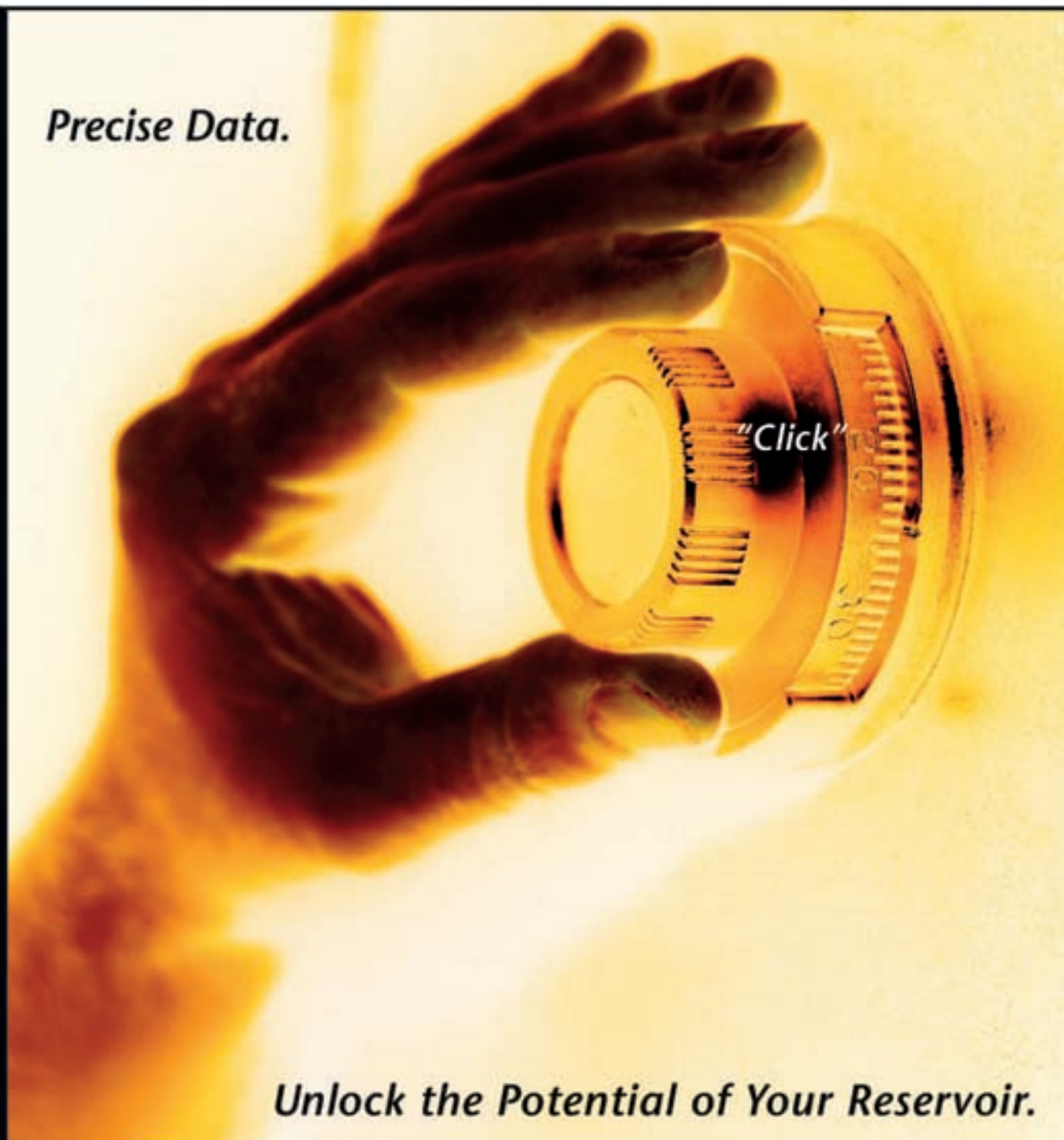
"Predictions have historically been bad," he said, cautioning those to look at these studies as forecasts instead.

He then says something equal parts obvious, chilling and unsatisfying.

"If earthquakes are occurring along the plate edges, then expect one if you live on a plate edge."

In California's case, that's about 34 million people. □

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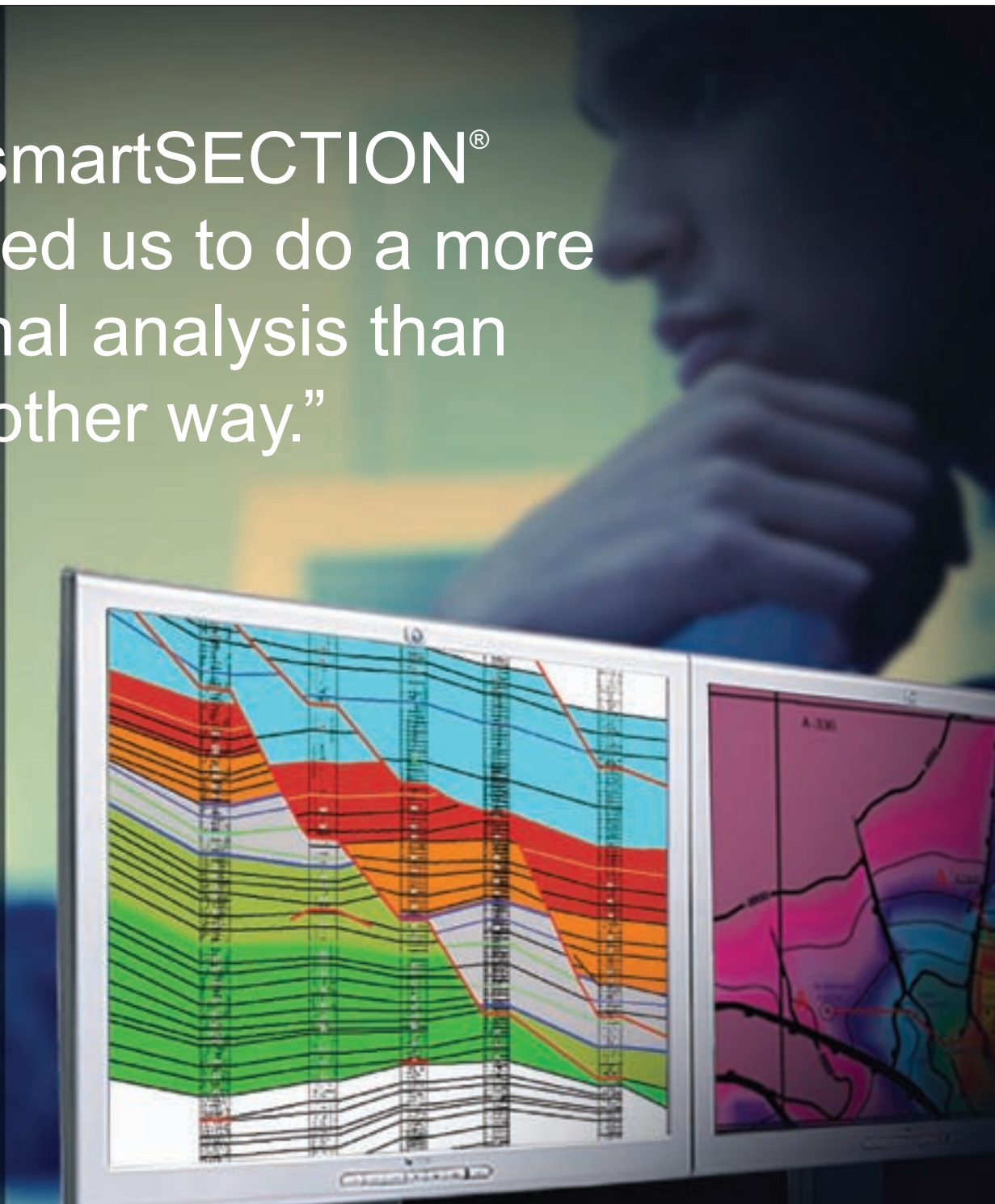


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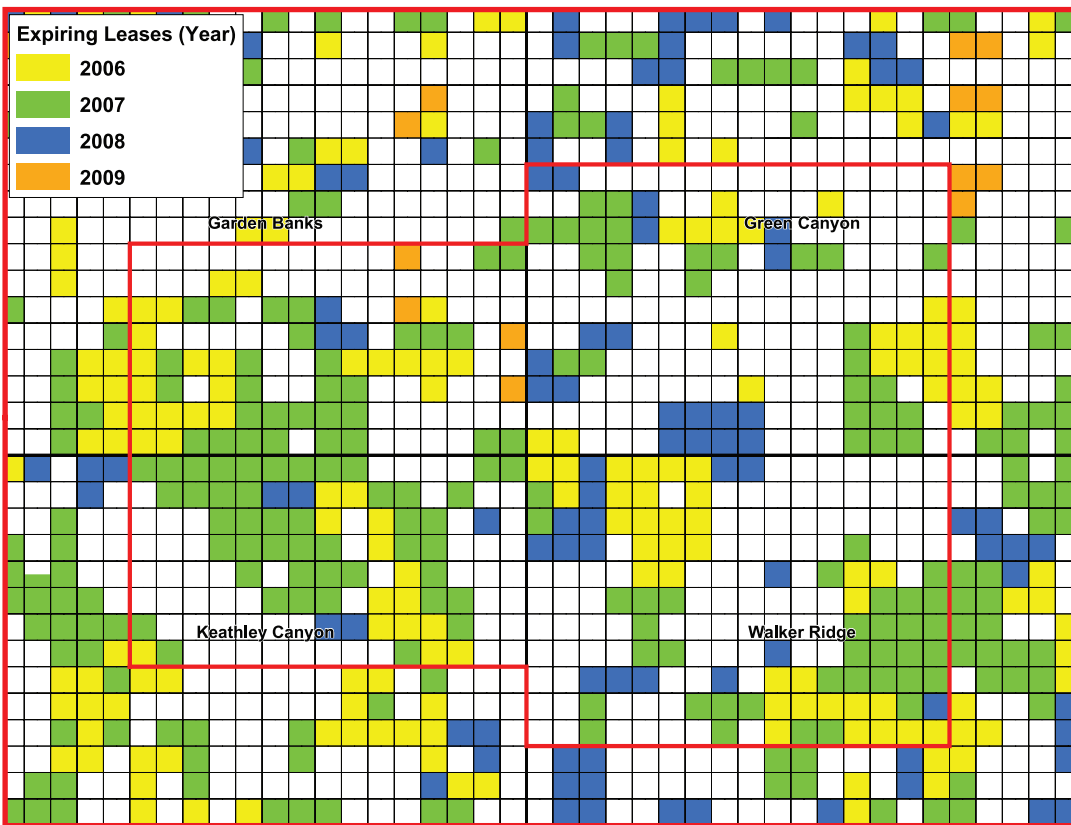
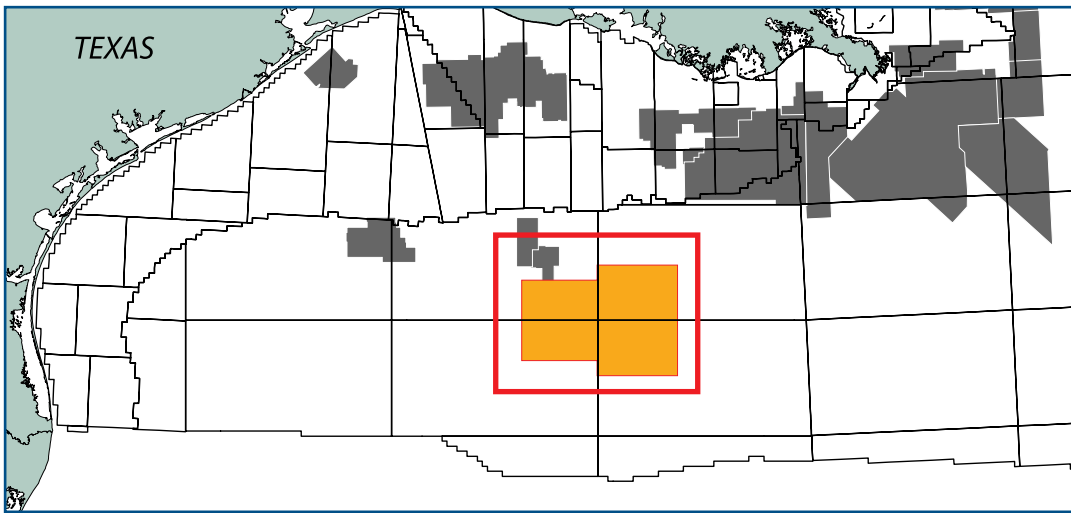
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# PEAKS. . . . TGS LISTENS

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Walker Ridge

## Special Paper Set in Perth

## Talk Seeks Geohazard Awareness

By LOUISE S. DURHAM  
EXPLORER Correspondent

Even the bravest of souls are known to fear Mother Nature's wrath, which can be mighty scary, unpredictable and often fatal.

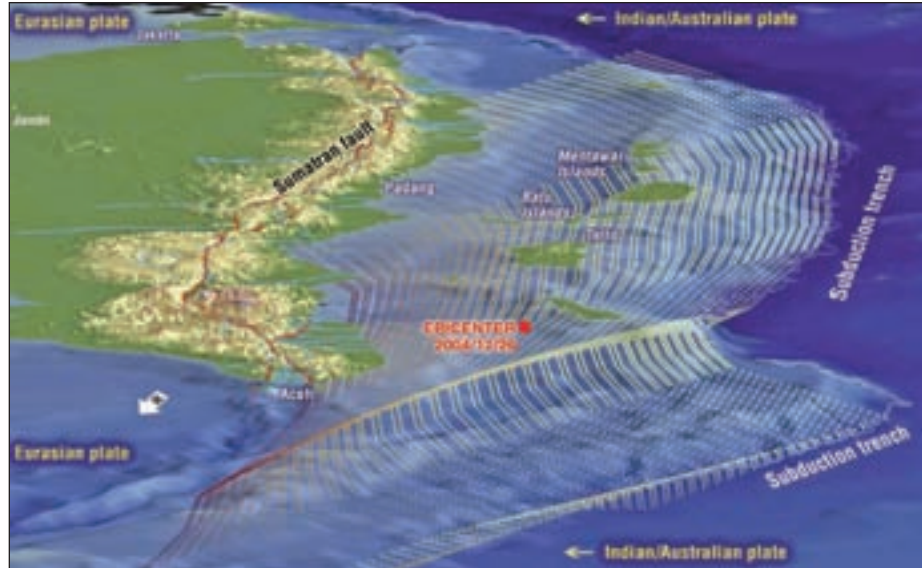
In the case of potentially devastating events like slow-moving hurricanes, there's time to prepare to ride it out and take your chances – or else “get out of Dodge.”

At other times, the forces of nature come together quickly and quietly to wreak catastrophic damage in seemingly no time at all.

Such was the case on Dec. 26, 2004, when an earthquake registering 9.3 on the Richter scale occurred far beneath the Indian Ocean close to the island of Simeuleu off the northern tip of Sumatra. The earthquake was one of the largest ever recorded, according to Ian Norton, tectonic plate modeling specialist at ExxonMobil.

In typical fashion, the resulting tsunamis initially caused water to suddenly recede from land – a brief, almost momentary warning of what would ensue that was recognized by a mere handful of the populace at best. As innocent locals and tourists alike reveled in the novelty of grabbing exposed fish, the seaward water movement suddenly reversed, and the ocean came rushing over the land with deadly ferocity.

The giant earthquake was sited in the collision zone where Indian oceanic crust is subducting, or sliding beneath Asia. In all subduction zones, movement is accomplished by stress that builds up along the dipping contact between the plates, Norton said, and sudden release of



Graphic courtesy of Ian Norton

The wavy lines and dots show the Sumatran subduction zone, the area where the Indian/Australian plate is being forced under the Eurasian plate.

stress when the rocks break, triggering an earthquake.

He noted this is graphically illustrated in the 2004 event by the sudden emergence of some old rice paddies from out of the sea on the Simeuleu coast. They are probably from the 19th century or earlier and subsided until they were flooded and re-emerged after the quake.

#### 'Enormous' Scope

There are several unique features about

this Boxing Day quake.

For starters, there's the enormous size of the rupture zone.

Seismologists have developed a scale other than Richter that is more useful for large events, which is called the seismic moment scale, Norton said. It's directly related to the rupture and the amount of slip on the fault.

“One way to understand the size of this quake is to compare with other earthquakes,” Norton said. “This was such a large event that this seismic moment

A special talk titled “The 2004 Sumatra Earthquake and Tsunami: Understanding a Unique Geohazard,” will be presented during the AAPG International Conference and Exhibition in Perth, Australia.

The presentation is not only a look back at the massive event but also a consideration of the challenges of “how we disseminate complex information” that could help save lives.

The talk will be given by Ian O. Norton, ExxonMobil Upstream Research, Houston. The co-author is Leonard P. McDonnell, The Edge Media Pty, Kyneton, Australia.

It is scheduled at 12:30 p.m. on Tuesday, Nov. 7.

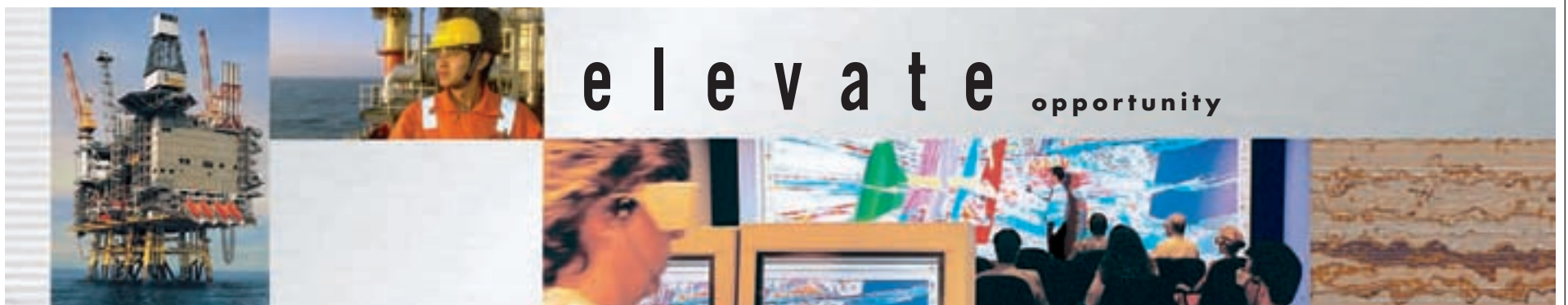
actually equals the sum of all seismic moments of all the earth's earthquakes for the last 11 years.

“Using calculations based on this scale, the rupture area of the Boxing Day event can be estimated as 500 by 250 km with 10 meters of displacement (slip),” he noted. “It was this huge displacement over such a large area that produced the destructive tsunamis.”

Another exceptional feature of this earthquake is its unique tectonic position.

The initial rupture close to the northern end of Simeuleu propagated quickly northward, traversing nearly 1,500 km to the plate boundary offshore Myanmar. This represents rupture of essentially the entire

See **Sumatra**, page 33



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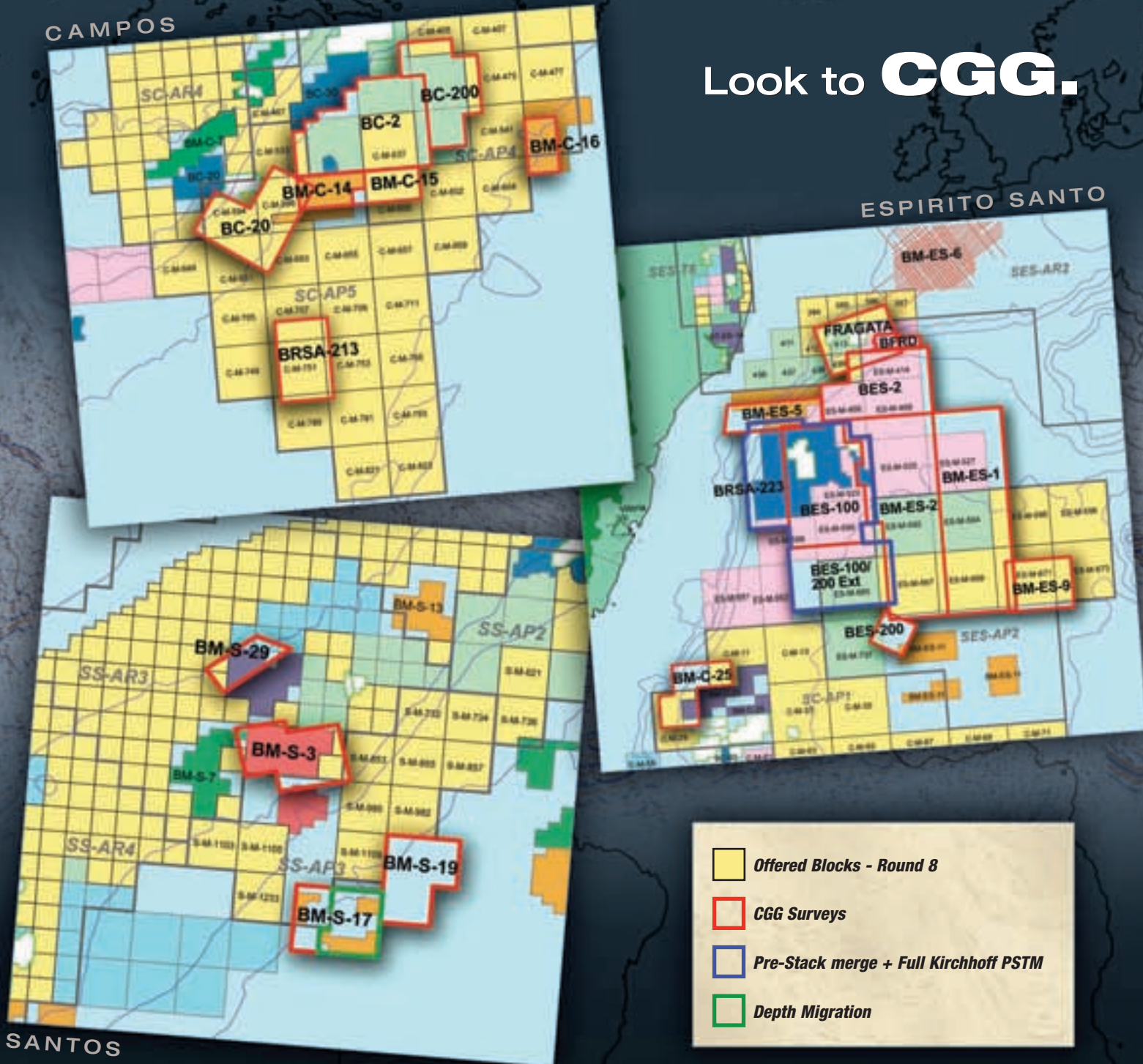
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## GEOPHYSICAL CORNER

## P-SV Data Most Impressive Image

(The Geophysical Corner is a regular column in the EXPLORER, edited by Bob A. Hardage, senior research scientist at the Bureau of Economic Geology, the University of Texas at Austin. This month's column, part 2 of a two-part series that began in July, is titled "High Resolution P-SV Imaging of Deepwater Near-Sea-floor Geology.")

By BOB A. HARDAGE  
and PAUL E. MURRAY

In last month's Geophysical Corner we considered how to improve the seismic resolution of deepwater, near-sea-floor geology using P-P data acquired with sea-floor-positioned multicomponent sensors.

This month we move to part two: We show how P-SV (converted-shear) data acquired with these same sensors provide even greater resolution of deepwater, near-sea-floor strata.

\* \* \*

To achieve better resolution of geologic targets with seismic data, it is necessary to acquire data that have shorter wavelengths. The wavelength  $\lambda$  of a propagating seismic wave is given by:

$$\lambda = V/f$$

where  $V$  is propagation velocity and  $f$  is frequency.

This equation shows there are two ways to reduce an imaging wavelength  $\lambda$ : either increase  $f$ , or reduce  $V$ .

#### Option 1: Increasing the Frequency

If deepwater strata are illuminated with conventional air gun seismic sources towed at the sea surface, there is really no way to cause a significant increase in the frequency content of the illuminating wavefield that reaches the seafloor. A different data-acquisition strategy has to be used to acquire shorter-wavelength marine P-P data.

An approach now used for acquiring deepwater, short-wavelength P-P data is to use an Autonomous Underwater Vehicle (AUV) system.

An AUV travels only 50 meters or so above the seafloor and illuminates seafloor strata with chirp-sonar pulses having frequency bandwidths of 2-10 kHz. This increase in signal frequency shortens P-P wavelengths by about a factor of 100 compared to the wavelengths of an air gun signal. The result is an illuminating wavefield having wavelengths of less than a meter when P-wave velocity  $V_P$  is 1500 to 1600 m/s, a common range of  $V_P$  for deepwater, near-sea-floor sediments across the Gulf of Mexico (GOM).

An example of an AUV chirp-sonar image acquired in water depths of approximately 900 meters in one area of the GOM is shown in figure 1a. The image makes the same traverse across a targeted seafloor expulsion chimney that was illustrated in last month's article.

These high-frequency P-P signals penetrate only 40 or 50 meters into the seafloor, but they image bedding and fault throws of meter-scale dimensions across this image space.

#### Option 2: Reducing the Velocity

It is not possible to acquire shorter-wavelength P-P data by reducing  $V_P$  in a seismic propagation medium. The value of  $V_P$  within a system of targeted strata is fixed and cannot be altered.

A seismic imaging effort, however, can

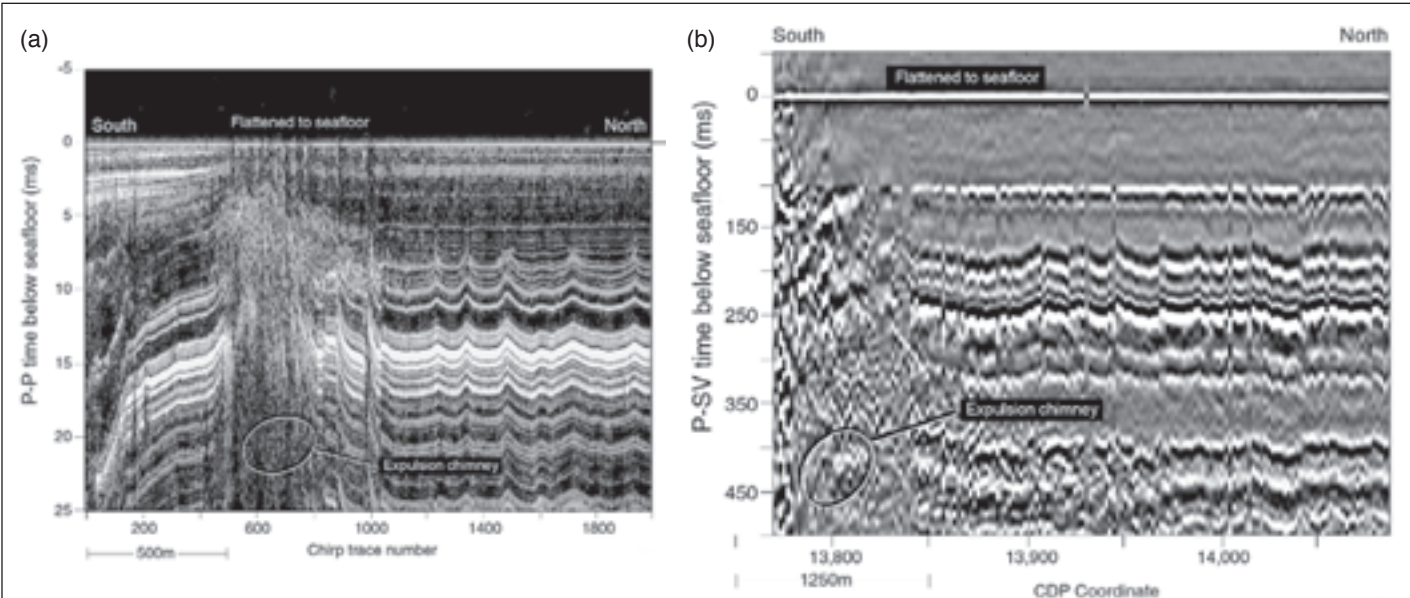


Figure 1 – (a) High-frequency (2-10 kHz) AUV P-P image of near-sea-floor strata across a fluid expulsion chimney. (b) Low-frequency (10-100 Hz) P-SV image along the same profile. Visual comparisons show the images have equivalent spatial resolutions and thus equivalent wavelength spectra. The south end of the P-SV profile starts at about AUV chirp-trace number 700. These images have been flattened to the seafloor, which causes small-throw faults (throws of one meter and less) to appear as chevron-shaped patterns.

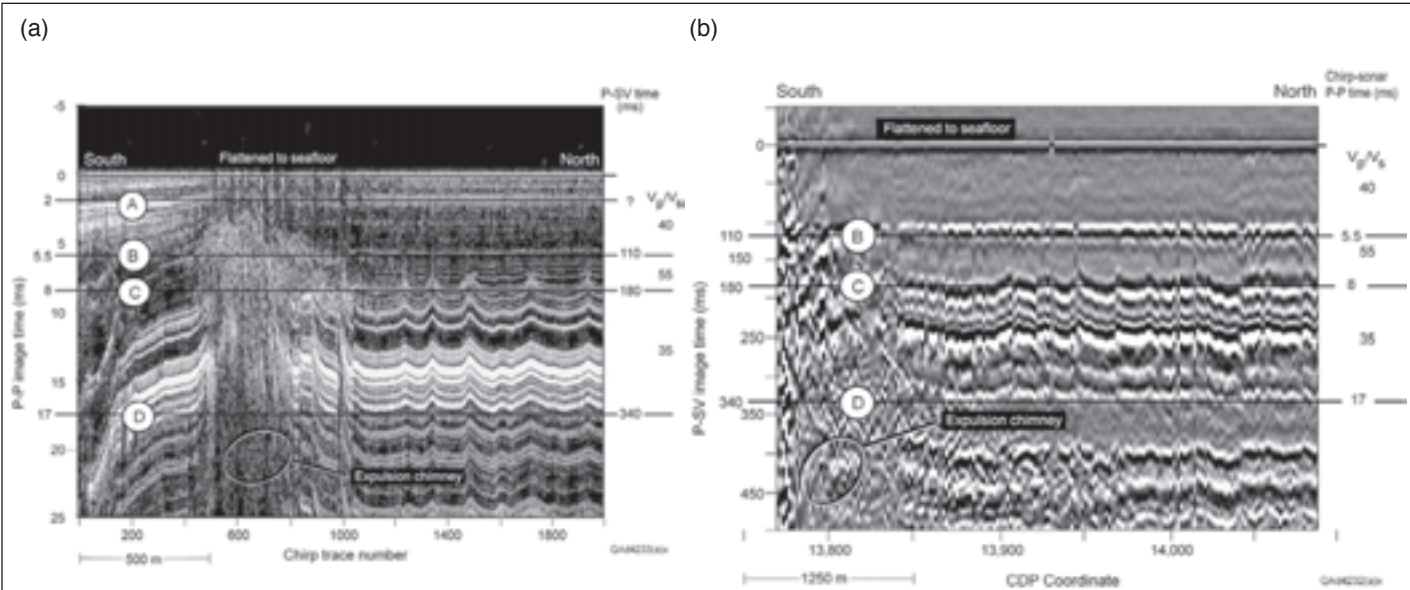


Figure 2 – The same images as in figure 1 with depth-equivalent horizons defined. A P-SV horizon equivalent to AUV horizon A is not labeled because it is quite faint in this P-SV display format. Interval values of  $V_P/V_S$  velocity ratio between the P-SV horizons are labeled on the right margins. P-P and P-SV image times are labeled on opposing sides of the images.

switch from the conventional approach of using the P-P seismic mode and focus on using another wave mode that does have reduced velocity within a targeted interval. That logic has great benefit for imaging deepwater, near-sea-floor geology when the imaging effort focuses on P-SV data rather than on P-P data.

Across most deep-water areas, S-wave velocity  $V_S$  in near-sea-floor sediments tends to be 20 to 50 times less than P-wave velocity  $V_P$ . Thus, if P-P and P-SV data have equivalent frequency content, which they do for shallow penetration distances of an illuminating P-P wavefield into the seafloor, P-SV data will have wavelengths much shorter than P-P wavelengths.

Shown as figure 1b is a P-SV image constructed from 4C data acquired with sea-floor sensors deployed along the same profile as the AUV data in figure 1a. The illuminating wavefield that created these P-SV data was a 10-100 Hz P-P wavefield produced by a conventional air gun array positioned at the sea surface.

Because  $V_S$  in near-sea-floor sediment along this profile is less than 100 m/s, the P-SV data have many wavelengths less than one meter in length, just as do the high-frequency chirp-sonar data. Visual

inspection of the images in figure 1 shows the spatial resolutions of kilohertz-range P-P data and low-frequency P-SV data are equivalent in deep-water, near-sea-floor geology.

The same data are shown again in figure 2, with depth-equivalent horizons superimposed to emphasize the amazing resolution of the low-frequency P-SV data. Horizon A shown on the AUV image is not easily seen on this particular P-SV image, so no P-SV equivalent horizon is labeled.

Note the large magnitudes of the interval values of the  $V_P/V_S$  velocity ratio. Also note how easy it is to identify where stratigraphy first becomes unconformable to the seafloor in these seafloor-flattened data (Horizon B).

Unfortunately, these high-resolution P-SV images cannot be extended to great sub-sea-floor depths. P-SV wavelengths increase and P-SV resolution then decreases with increasing depth below the seafloor because:

- ✓  $V_S$  increases with depth.
- ✓ Higher frequencies attenuate more rapidly with depth for P-SV wavefields than for their companion P-P wavefields.

At sub-sea-floor depths of several kilometers, P-P and P-SV data have

approximately the same resolution. However, for deepwater strata close to the seafloor, the spatial resolution of P-SV data is most impressive (figures 1b and 2b).

\* \* \*

Additional information about deep-water applications of multicomponent seismic data is available at [www.beg.utexas.edu/indassoc/egl/](http://www.beg.utexas.edu/indassoc/egl/).

WesternGeco provided the 4C OBC data used in this study.

Research funding was provided by Minerals Management Service.

(Hardage and Murray are both with the Bureau of Economic Geology in Austin, Texas.)

(Editor's note: Figures 1a and 1b in the July "Geophysical Corner" were incomplete; missing was the labeling for the expulsion chimney, which was located in the lower left-hand corner of both figures. Also, the symbol for the incident angle should have been a " $\phi$ " instead of a " $\theta$ ". The correct versions are available with the column online at [www.aapg.org](http://www.aapg.org).)

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### **GOM New Release Data**

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## WashingtonWATCH

By DON JUCKETT  
and DAVID CURTISS

June was an extraordinary month from the legislative perspective: Both the House and Senate Appropriations committees acted with unexpected alacrity and completed their work on DOE's oil and natural gas budget activities.

While both houses of Congress restored funding to the program in several areas, very little of the funding is targeted for the historical oil and natural gas programs. Noticeably absent was funding for the Petroleum Technology Transfer Council.

Both houses reaffirmed their support for the Energy Policy Act provisions for ultra deepwater and unconventional resources research.

In summary:

✓ The House Appropriations Committee recommended funding for \$12 million for natural gas hydrates and \$4.2 million in earmarked projects for specific performers in oil and natural gas research.

✓ The Senate Appropriations Committee recommended funding of \$17 million for natural gas hydrates program and \$10 million for oil technology, including tar sands and oil shale.

With DOE's allocated portion of the ultra deepwater and unconventional resources program – and assuming that the Senate language prevails and the earmarks from the House language are included in conference resolution of R&D budget – the current language would suggest that DOE's oil and natural gas research budget will be in the neighborhood of \$43.7 million. This compares to the 2006 budget of \$64 million.

House and Senate conferees will be named in the near future and the disparate budgets will be reconciled. This

### Congressional committees acted with unexpected alacrity and completed their work on DOE's budget activities.

conference activity will be the final opportunity for any modification of budget language.

GEO-DC ranks the probability for additional funding as very small, and the prospects for changing the restrictive language on how the budget may be allocated, slightly better.

As the reconciliation process moves forward, GEO-DC will advise AAPG members through the GEO-DC Web site.

\* \* \*

AAPG activated the GEO-DC Web site, issued the first Web-based "Action Alert" and mobilized member support for restoration of the DOE budget through individual contacts with members of Congress and appropriations sub-committee staff.

We will continue to use this site to keep AAPG members informed of current legislative and administration activities that impact the professional activities of AAPG members.

\* \* \*

In other legislative action, The Deep Ocean Energy Resources (DOER) Act of 2006 passed the House with a majority vote.

In response to high oil and natural gas prices during the 109th Congress, lawmakers have introduced several pieces of legislation aimed at making more Outer-Continental Shelf (OCS) acreage available for hydrocarbon exploration. Expanded OCS access is an issue that AAPG has long supported (for information visit <http://dpa.aapg.org/gac/index.cfm>).

The DOER Act, passed by the House before the Independence Day recess, is the result of bipartisan compromise. It allows states to determine if and when there will be oil and gas (combined) or natural gas leasing activity within 100 miles of its coastline.

It also asserts that states should benefit from revenues generated by such activity.

It reinvests a percentage of federal mineral receipts in three new federal Funds:

✓ The Federal Energy Natural Resources Enhancement Fund will support management of natural resources – such as wildlife habitat and fisheries – related to energy and minerals development on federal onshore and offshore lands.

✓ The Federal Energy and Mineral Resources Professional Development Fund will fund petroleum and mining

schools, engineering and applied geoscience programs focused on petroleum and minerals, career technical education and a variety of scholarships.

✓ The National Geo Fund will fund programs ranging from fuel production from unconventional resources to renewable energy. It also funds geologic mapping and geologic and geophysical data preservation.

Finally, the bill introduces price thresholds on royalty relief for OCS leases. If prices exceed certain limits the lease becomes ineligible for royalty relief. It also imposes a graduated "conservation of resources" fee on non-producing acreage or acreage not paying royalties.

The Senate must still act on its OCS legislation introduced by Sen. Pete Domenici (R-N.M.) before the House and Senate can reconcile the two bills and send a final version to the president for signature. Much work remains, but the political necessity of dealing with high energy prices in an election year is increasing the odds of action.

Stay tuned to Washington Watch and the GEO-DC Web site ([www.aapg.org/geoDC/](http://www.aapg.org/geoDC/)) for updates on this legislation.

\* \* \*

Finally, a short update on administration activities.

On June 21, the National Petroleum Council accepted and initiated action on a Global Oil and Gas Study requested by Energy Secretary Bodman on Oct. 5, 2005. AAPG will be represented in this study by Pete Rose.

The study work plan, including scope, organization and timetable can be found at [www.npc.org/](http://www.npc.org/). □

*Editor's note: Don Juckett, head of AAPG's Geoscience and Energy Office in Washington, D.C., can be contacted at [djuckett@aapg.org](mailto:djuckett@aapg.org), (703) 575-8293.*

## Unmasked Opportunities! SEG 2006

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Some features of this year's program are:

**SEG/EAGE Distinguished Instructor Short Course** – Seismic Attribute Mapping of Structure and Stratigraphy – by Kurt Marfurt

**Special Sessions and Luncheons** – Wide Azimuth Seismic; Near-Term and Long-Term Effects of Climate Change; The Economics of Mineral Discovery in the Early 21st Century; Natural Gas Hydrates: Detection and Quantification of This Potential Hydrocarbon Resource and Drilling Hazard; and the always popular Recent Advances and the Road Ahead; and much more

**Global Theatre** – The theatre showcases exhibitors from Africa working with speakers from industry-leading companies giving presentations that illustrate the business, geophysical, and geologic complexities of this geographic area. The theatre will be located in the exhibits area.

**Workshops** – The 10 February 2006 Gulf of Mexico 5.2 Earthquake: Insight and Implications; Geophysics of Heavy Oil; The University Partnership: Healthy or Not?; Stress Effects on Velocities; Geophysical Methods and Techniques Applied to Uranium Exploration; SQUID Technology for Geophysical Exploration; and much more

**Visualization Theatre** – This popular theatre will provide attendees with three days of presentations covering visualization solutions that are currently available to the E&P industry. The open theatre will be located on the exhibits floor.

**Applied Science Education Program** – This year's speaker is Richard Binzel, professor of Planetary Science in the Department of Earth, Atmospheric, and Planetary Sciences at MIT, and one of the world's leading astronomers studying Pluto and asteroids. His presentation topic will be "Exploration of the Pluto New Horizons Mission."

**Career Placement Area** – As a special feature, and in addition to the normal employment referral activities, this year at the SEG New Orleans Meeting, SEG will have a Career Placement Area. The Career Placement Area will be provided by SEG as an area for companies and job seekers to meet. For additional information contact Steve Emery at [semery@seg.org](mailto:semery@seg.org) or Cindy Blackshear at [cblackshear@seg.org](mailto:cblackshear@seg.org).

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## Sumatra

from page 28

boundary of the Burma plate, which is a small plate allowing plate motion between India and Asia. The Burma plate is detached from Asia along the Sagaing fault, which is a north-south strike-slip fault, according to Norton.

"Aftershocks of the main event show faulting within Asia, in the Burma plate and also within the subducting India plate," Norton said. "Some seismicity indicates the boundary between the Indian and Australian plates may run through this area as well.

"This would mean that the epicenter is at a very unusual location at the junction between four plates," Norton noted. "This location may have implications for recurrence time of such an event."

### A Valuable Lesson

Hundreds of aftershocks followed the initial catastrophe on Boxing Day. Some of these were from reactivation of the fault that initially ruptured, while others reflect fault activity on neighboring faults that were stirred up by the "big one." In fact, Norton said the whole subduction zone between Sumatra and Myanmar has been reactivated by this event.

In case you're wondering about the more-recent Indonesian earthquake of this past spring, which hit 6.3 on the Richter scale, Norton said it had no relation to the big episode in 2004.

It should come as no surprise this expert has a warning for beach lovers everywhere.

"If you're on a beach anywhere in the world – who would have expected tsunamis in Somalia? – and you see the sea recede, don't wander down and pick up fish. Run like hell to higher ground!" □

## It's Time to Prepare Abstracts For Long Beach Convention

The abstract submitting process has begun for the next AAPG Annual Convention, which will be held April 1-4 in Long Beach, Calif.

The theme is "Understanding Earth Systems – Pursuing the Checkered Flag."

Abstracts can be submitted through the Sept. 27 deadline. The Long Beach technical program's themes are:

- ✓ Deepwater Reservoirs.
- ✓ Stratigraphy and Sedimentology.
- ✓ Structural Innovations and Applications.
- ✓ Global Exploration Portfolio.
- ✓ Maximizing Our Potential: Reservoir Characterization and

Modeling.

- ✓ Geoscience Tools.
- ✓ Unconventional Reservoirs and Resources.
- ✓ Hydrocarbon Systems and Basin Analysis.
- ✓ The New Oil Business.
- ✓ Astrogeology and the "Bigger" Picture.
- ✓ Geoscience and Public Policy.
- ✓ Student Sessions.

More information on the meeting and technical program – including instructions for submitting abstracts – can be found on the AAPG Web site, at [www.aapg.org](http://www.aapg.org). □



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**Joseph L. "Joe" Alcamo**, to senior geophysical adviser, Vintage Production California (Oxy), Bakersfield, Calif. Previously geophysical consultant, Houston.

**Joan R. Barminski**, to deputy regional manager, Minerals Management Service-Pacific OCS region, Camarillo, Calif. Previously chief, reservoir evaluation and production, Minerals Management Service, Camarillo, Calif.

**James W. Barton**, to geosciences manager, Basa Resources, Dallas. Previously geologist, Pason Systems, Dallas.

**Richard G. Blake** has been appointed by Gov. Arnold Schwarzenegger to the State Board for Geologists and Geophysicists, Livermore, Calif. Blake is group leader in the environmental protection department at the Lawrence Livermore National Laboratory, Livermore, Calif.

**Brian Boslaugh**, to new ventures manager, Singapore Petroleum, Singapore. Previously geophysical adviser, Amerada Hess, Kuala Lumpur, Malaysia.

**Wayne K. Camp**, to senior geological adviser, Anadarko Petroleum, Jakarta, Indonesia. Previously project geological adviser, Anadarko Petroleum, The Woodlands, Texas.

**Craig Edmonds**, to district geology supervisor, Dominion Exploration and Production, Jane Lew, W.Va. Previously senior geologist, Dominion Exploration and Production, Jane Lew, W.Va.

**Bruce A. Gebhart**, to staff geophysicist, Shell Exploration & Production, Houston. Previously senior geophysicist, National Energy Group, Houston.

**Andrew Hanson**, to associate professor, University of Nevada Las Vegas, Las Vegas. Previously assistant professor, University of Nevada Las Vegas, Las Vegas.

**John D. Haun** has received the 2006 Outstanding Alumnus award from the University of Wyoming College of Arts and Sciences, Laramie, Wyo. Haun is an AAPG past president and resides in Evergreen, Colo.

**Bill Leslie**, to senior development geophysicist, Woodside Energy, Perth, Australia. Previously senior geophysical adviser, RamTech Holdings, Plano, Texas.

**Jeannie Fisher Mallick**, to senior geologist, Petrohawk Energy Corp., Houston. Previously Excalibur Consulting, Houston.

**R. Scott McCleery**, to senior geologist, Petroleum Development Corp., Bridgeport, W.Va. Previously staff geologist, ConocoPhillips, Houston.

**Thomas Scott Meyer**, to senior geologist, Dominion Exploration Canada, Calgary, Canada. Previously six Sigma black belt, Dominion East Ohio, Cleveland, Ohio.

**Jeff Milliken**, to lease acquisition manager-Gulf of Mexico, Marathon Oil, Houston. Previously regional team leader, Marathon Oil, Houston.

**Steve Nemcsok**, to geoscience leader, Vintage Production California, Bakersfield, Calif. Previously world wide exploration regional coordinator of production geoscience-Libya, Middle East and Russia, Occidental Oil & Gas Corp. Houston.

**Kent E. Newsham**, to manager-petrophysics, Apache Corp., Houston. Previously senior technical adviser-petrophysics, Apache, Houston.

**Brian D. Nicoud**, to senior geological and petrophysical adviser, William M. Cobb Associates, Dallas. Previously manager-reservoir geology, Core Laboratories, Houston.

**Michael R. O'Donnell**, to exploration geologist, Suemaur Exploration & Production, Fort Worth. Previously senior explorationist, Burnett Oil, Fort Worth.

**Dan Parker**, to senior geophysicist, Petrohawk Energy, Houston. Previously independent consultant, Houston.

**John Ratliff**, to enterprise engineer, Network Appliance, Austin, Texas. Previously solutions architect, Sun Microsystems, Austin, Texas.

**Trent Rehill**, to senior interpreter, Woodside Energy North Africa, Tripoli, Libya. Previously senior explorationist, Murphy Sabah Oil, Kuala Lumpur, Malaysia.

**Carlos Alberto Roa**, to vice president-exploration, Leor Energy, Houston. Previously senior geological adviser, Burlington Resources/ConocoPhillips, Houston.

**Ross Saunders**, to senior geophysicist adviser, Energy XXI, Houston. Previously senior geophysical specialist, Kerr McGee Oil and Gas, Houston.

**Erik Scott**, to deepwater sedimentologist, Shell E&P Europe, Aberdeen, Scotland. Previously geologist, Shell Egypt, Cairo, Egypt.

**James D. "Jim" Shaffer**, to hydrologist, Nance Petroleum, Billings, Mont. Previously senior geologist, HydroSolutions, Billings, Mont.

**Bob Spang**, to lead geoscientist, Marubeni Oil & Gas, Houston. Previously staff geologist, Amerada Hess, Houston.

**Stewart G. Squires**, geophysicist, FIML Natural Resources, Denver. Previously geophysical adviser, Aspect Energy, Denver.

**Daniel C. Steward**, to senior geologist-deepwater, Noble Energy, Houston. Previously geologist-deepwater exploration and projects business unit, Chevron, Houston.

**Joe Studlick**, to senior general manager, Maersk Oil and Gas, Houston. Previously president, Seis-Strat Services, Houston.

**Mark Vozar** has retired as manager of geophysics from XTO Energy, Fort Worth. Vozar resides in Bedford, Texas.

**Chris Wayne**, to international exploration manager, Lewis Energy Group, Addison, Texas. Previously vice

continued on next page

## Abstracts Still Sought For Hedberg Conference

Abstracts are still being sought for the next AAPG Hedberg Conference, which deals with "Heavy Oil – Origin, Prediction and Production in Deepwaters."

The abstract deadline, however, is fast approaching; abstracts must be submitted by Aug. 15.

The conference, sponsored by the AAPG Research Committee, will be held Oct. 8-10 in Veracruz, Mexico.

It is designed for experts from industry, academia and government agencies – in both research and E&P activities – to examine the mechanisms of formation of heavy oils; the pre-drill prediction and identification of these hydrocarbons; present and future technologies; and their potential importance to future oil production.

The technical program comprises posters and 30-minute talks, set around the themes:

- ✓ Deepwater Setting – Geology, Economics and Technology.
- ✓ Oil Quality Controls – Review and Case Studies.
- ✓ Heavy Oil, Deepwater and Offshore Case Studies.
- ✓ Comparison with Onshore Production Techniques – State of the Art.

To submit an abstract, contact Debbie Boonstra in the AAPG education department at 918-560-2678, or e-mail to [debbi@aapg.org](mailto:debbi@aapg.org).

More information on the conference and abstract process can be found on the AAPG Web page, at [www.aapg.org](http://www.aapg.org).

continued from previous page

president, DeGolyer and MacNaughton, Dallas.

Jeremy M. Wolpert, to geologist, Seneca Resources, Williamsville, N.Y. Previously geologist I, Equitable Resources, Pittsburgh, Pa.

*(Editor's note: "Professional News Briefs" includes items about members' career moves and the honors they receive. To be included, please send information in the above format to Professional News Briefs, c/o AAPG EXPLORER, P.O. Box 979, Tulsa, Okla. 74101; or fax, 918-560-2636; or e-mail, [smoore@aapg.org](mailto:smoore@aapg.org); or submit directly from the AAPG Web site, [www.aapg.org/explorer/pnb\\_forms.cfm](http://www.aapg.org/explorer/pnb_forms.cfm).)*

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See for yourself. For a map showing deepwater fields, expiring acreage and sample analogs, visit [ihs.com/energy/bestdata](http://ihs.com/energy/bestdata).

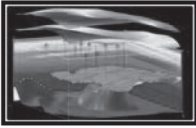
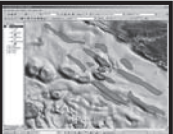
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# AAPG Candidate Campaign Policy

The American Association of Petroleum Geologists stands in the eyes of the public as a respected scientific organization of professional petroleum geologists. The furtherance of the purpose of AAPG is best served by elections of AAPG officers, which are to be conducted in an honorable and dignified manner.

Pursuant to the authority granted by the provisions of Article III, Section 2, and Article II, Section 10 of the Bylaws of AAPG, the Executive Committee of AAPG adopts this Officer Election Campaign Policy to assure fair and complete debate by the candidates for AAPG offices without undue cost or expense to any candidate.

1. Candidates for office in AAPG are permitted and encouraged to:

a – Attend United States Sectional and International Regional meetings and there be introduced, meet with members of AAPG, address gatherings of members at the request of the president of AAPG and answer questions from members. Answers or comments may not be self-aggrandizing or derogatory to an opponent; a professional manner shall be maintained at all times.

b – Under the conditions listed in 1a, attend other meetings at which a significant number of AAPG members may be in attendance so long as all candidates for the particular office have been invited. At the request of the presiding officer of the host organization, candidates may address such meetings and answer questions from the audience. (A candidate may attend meetings that the candidate routinely attended prior to becoming a candidate, but no campaigning or lobbying should take place at such meetings during the period of candidacy except under the conditions described herein.)

2. Candidates shall notify the office of the executive director of AAPG of visits to all meetings described in paragraph 1 above, excluding United States Sectional and International Regional meetings. Such notification shall take place not less than 14 days prior to the first day of such meeting. The executive director of AAPG will, in turn, notify the candidate's opponent(s) of such date and confirm that all candidates are invited. A candidate may not attend any meetings other than United States Sectional and International Regional meetings unless both the candidate and the candidate's opponent(s) are invited to attend.

3. Candidates for office in AAPG and members of AAPG are not permitted to participate in or arrange for, and shall discourage nonmembers of AAPG from participating in or arranging for:

a – Mass mailings, letter writing campaigns or telephone calls in the interest of a candidate.

b – Receptions or cocktail parties for the purpose of promoting a candidate.

c – Engagements, including speeches and talks, which might be interpreted as providing an unfair advantage for one candidate over another. Lecture engagements that could be construed as personal promotion by or for a candidate should be avoided, although a candidate may lecture or give technical presentations consistent with the type, frequency and venue he/she routinely gave prior to becoming a candidate. Commitments made prior to learning of his/her candidacy may be honored, provided they are listed by title, venue of presentation and date, and attached to the signed and dated acceptance of this Officer Election Campaign

Policy. Additional engagements, including speeches and talks, undertaken after becoming a candidate must be cleared by the executive director and agreed to by the opposing candidate(s).

The executive director shall intervene in cases where he/she determines that the projected speaking appearances clearly exceed the pattern of the individual's past speaking engagements or if, in the opinion of the executive director, the appearances may constitute the appearance of campaigning.

d – Interview with the media, including print, radio, TV or any other media, with the intent to publicize or promote a candidate.

4. AAPG headquarters staff shall maintain scrutiny of its own operations to ensure compliance with the spirit and the letter of this policy.

5. The president of AAPG shall, upon the nomination of candidates, notify the candidates of the requirements of this policy. This policy shall be published annually in the AAPG EXPLORER in order that the general membership of AAPG is informed of the policy.

6. The executive director may elect to intervene in cases where he/she determines that a candidate is undertaking activity that may constitute the appearance of campaigning or appears to be creating an unfair advantage for one candidate over another. Such activity need not be limited to the above described activities. The executive director may undertake this intervention absent a formal complaint if he/she feels it is imperative to preserve the fairness of the election. Any intervention by the executive director shall be reported within five (5) days to the Executive Committee.

7. Any Active AAPG Member may file formal charges of violations of the Officer Election Campaign Policy in writing with the executive director. Executive director shall report the charge to the Executive Committee within five (5) days. Upon a report to the Executive Committee of a charge of a violation of the policy, the following events will occur:

a – The Executive Committee will review the charge, and if the Executive Committee determines that it is likely a violation has occurred, it will send notice within 10 days to the candidate charged setting forth the charge and requesting that the candidate respond in writing to the charge within 10 days of the date of the sending of notification by the Executive Committee. The notice shall also set forth the time and place at which the candidate may personally appear before a representative of the Executive Committee for a hearing on the charge.

b – The Executive Committee shall, within 10 days after receipt of the written statement from the candidate charged or within 10 days after the hearing, whichever is later, render its decision as to whether a violation of this policy was committed by the candidate. Failure to make such a decision and to immediately thereafter notify the candidate charged shall be considered a finding that a violation did not occur.

c – Upon the finding of a first violation, the Executive Committee shall immediately send a written admonition and warning to the candidate charged.

d – On each subsequent finding of a violation, the Executive Committee shall impose a penalty upon the candidate ranging from reprimand to disqualification as a candidate in the current election. □



The Geological Society

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14/15 February 2007  
Burlington House, London

**3**D seismic and sequence stratigraphic techniques, including high resolution biostratigraphy, are being used to model depositional frameworks for exploration, development and production situations.

3D seismic techniques provide information on depositional geometry and lithologies. Sequence stratigraphy can identify major depositional boundaries, aid play fairway definition and provide a predictive element to play analysis. Biostratigraphy provides a chronostratigraphic framework and, when integrated with wireline logs, allows sequences to be recognised from well data, providing calibration to the seismic data.

Papers are sought which show improvements in understanding and application of depositional models, from the integration of these techniques from a range of petroleum provinces.



Abstract submissions deadline: 30 September 2006  
Extended abstracts will be distributed on CD

Call for Papers - 30 September 2006

Convenors: Mike Thomas, John Argent, Phil Copestake, Matthew Allen  
Contact: Mike Thomas Email: [miked.thomas@btopenworld.com](mailto:miked.thomas@btopenworld.com)

For further details please contact Lucy Kimber, Conference Office, The Geological Society, Burlington House, Piccadilly, London W1J 0BG. Tel: +44 (0) 20 7534 9944. Email: [lucy.kimber@geolsoc.org.uk](mailto:lucy.kimber@geolsoc.org.uk)



For further details please contact Lucy Kimber, Conference Office, The Geological Society, Burlington House, Piccadilly, London W1J 0BG. Tel: +44 (0) 20 7534 9944. Email: [lucy.kimber@geolsoc.org.uk](mailto:lucy.kimber@geolsoc.org.uk)

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e-mail:  
[rmag2006@aol.com](mailto:rmag2006@aol.com)

**WWW.UPDATE**

# Members Move Toward E-Commerce, E-Voting

By JANET BRISTER  
*Web Site Editor*

As costs of doing business continually rise, electronic options are provided by businesses to offset those costs. AAPG is no different.

We are slowly seeing our membership grow comfortable using their computers to communicate their needs and do business with AAPG.

And that's a good thing – for everyone.

In March 2004 AAPG introduced online balloting for members to cast their votes in the annual election of officers.

Over half of the participating membership quickly jumped on board to use this convenient system instead of the paper method.

Not only was this viewed as a cost-saving move, but also AAPG leaders hoped it was a way to encourage greater participation from the entire AAPG membership in the election process.

When the final count was made in 2004 one-third of the votes made were received electronically.

We have seen a modest increase as we complete not only this year's officer elections but also the voting for the Constitution and Bylaws amendment proposal.

Forty-two percent of the 6,237 votes received during the officer election were cast electronically. During the proposed amendment voting, 5,684 ballots were cast, and 39 percent of those were sent electronically.

Currently members are being asked to comment on the global climate debate. At press time that online debate was 10 days old, and already 739 visits had been made to those pages. Over half of these were new visitors and 45 people registered to post their comments.

Soon, DPA members will be able to submit their professional development hours electronically and keep track of those requirements online.

The membership directory is proving to be a valuable tool to AAPG members, especially now that Vcards have been added for easy download of contact information to one's address book.

## Benefit From RSS Feeds

Have you been checking the RSS feeds?

As browser software is upgraded developers are incorporating the RSS feed feature. We have several RSS feeds for aapg.org to help our membership know quickly the latest information posted.

Take a few minutes to read about these feeds and how they can save you time in gleaning the information you desire to keep you informed.

Good browsing! ☐

Daniel C. Huston  
Holly Hunter Huston



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**Abstracts Due**  
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Submit your abstracts online at  
**[www.aapg.org/longbeach](http://www.aapg.org/longbeach)**

  
**Priority Exhibit**  
**Space Deadline**  
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## Earth Science Week Seeks 'Citizen' Scientists

This issue of the EXPLORER carries a poster for Earth Science Week, promoting a series of events Oct. 8-14 engaging students and the public in an effort to spread earth science literacy.

With a theme of "Be A Citizen Scientist," Earth Science Week 2006 marks the ninth year AGI has sponsored this international event. Each year, local groups, educators and interested individuals organize activities to discover the Earth sciences and promote responsible stewardship of the Earth.

The AAPG Foundation provides funding support for materials and promotion of the celebration.

"Citizen science affords everyone an opportunity to investigate earth science questions," said Ann E. Benbow, AGI's director of education and outreach.

AAPG local societies also are involved, and past ESWs have been a platform for societies to hold public outreach activities. It is hoped the posters will find their way to a public location where teachers, students and others will know of the activities available.

Earth Science Week Toolkits also will be released in August, which include:

- ✓ A 12-month school-year activity calendar, suitable for hanging.
- ✓ The new Earth Science Week poster, including an activity.
- ✓ Up-to-date fact sheets and other materials from the U.S. Geological Survey.
- ✓ A park-views DVD from the National Park Service.
- ✓ A detailed climate change booklet from NOAA.
- ✓ An earth science education brochure and more from NASA.

- ✓ Posters from Scholastic, IRIS and EarthScope.

- ✓ A GeoCaching pamphlet from Geological Society of America.

- ✓ An Earth-science CD from ESRI.

- ✓ Materials for classroom and home.

In addition, copies of the careers-oriented 2005 Toolkit ("Geoscientists Explore the Earth") and the natural hazards-focused 2004 Toolkit ("Living on a Restless Earth") are available for order.

Orders outside of the United States will incur additional shipping charges. For special shipping, bulk orders and more information, visit [www.earthsciweek.org/materials/index.html](http://www.earthsciweek.org/materials/index.html).

Also, there are three national contests as part of Earth Science Week 2006. The photography, visual arts and essay contests offer opportunities for both students and the general public to participate in the celebration, learn about earth sciences and compete for prizes:

- ✓ The **photography contest**, open to all ages, focuses on "Using and Studying Earth's Resources."

- ✓ The **visual arts contest** is titled "Earth Science in Your Home Town." Students in grades K-5 are encouraged to draw, paint or create a poster on any aspect of earth science that affects their local community.

- ✓ Students in grades 5-9 are eligible to enter the **essay contest**: "Be a Citizen Scientist!" Essays must be no longer than 500 words and should highlight the ways every person can contribute to a better understanding of our planet.

The first place prize for each contest is \$300. To learn more about these contests, including how to enter, visit [www.earthsciweek.org/contests](http://www.earthsciweek.org/contests). □

**Have you signed up yet???**

## 1st Annual AAPG Fall Education Conference

**Houston, TX**  
**September 11-15, 2006**

**Focusing on Deep-Water Exploration**

Courses will include:

- Jurassic-Recent Subsurface Geology — GOM/Caribbean
- Pore Pressure Prediction in Practice
- Interpretation of 3D Seismic Data
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- Deep-Water Sands — Integrated Stratigraphic Analysis
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**Tuition for the week is only \$1095 for AAPG Members**  
**or \$1195 for Non-members\***  
**or \$275/day for individual courses**

**\*(price increases to \$1195/1295 respectively after August 14, 2006)**

REGISTRATION AND INFORMATION:

Toll-free (U.S. and Canada) 888-338-3387, or 918-560-2650  
Fax: 918-560-2678; e-mail: [educate@aapg.org](mailto:educate@aapg.org)

Download a registration form at <http://www.aapg.org/education/fec.cfm>



Photo courtesy of Eva Moldovanyi

EVERYONE has a good time on AAPG GeoTours – note the smiles by those who went on the recent Wine Country tour in California's Napa-Sonoma region, the most popular GeoTour in AAPG history. And yes, there was geology: The Jarvis Winery, located behind the group above, is completely underground in a man-made cave system. The group also toured the Geysers geothermal area.

## SPOTLIGHT ON EDUCATION

AAPG has several opportunities in the next several weeks for those who want to make vacation time last a little longer by taking a field seminar. There also are short courses to help you brush up on much-needed skills (and earn Professional Development Hours, too).

First up is a class for those office staffers who could benefit from knowing the basics of geology; there's still time to register for Norm Hyne's "Basic Petroleum Geology for Non-Geologists" course, set Aug. 29-31, in Houston.

And in September the AAPG education department is offering five exciting field seminars. They are:

✓ **Modern Deltas**, Sept. 11-15, covers the sedimentary architecture of deltas. Course begins in Baton Rouge, La., and ends in New Orleans.

✓ **Fractures, Folds and Faults in Thrusted Terrains**, Sept. 11-16, for geoscientists to understand the geology and complexity of exploring in thrust belts, with examples from the spectacular Sawtooth Range. Course will begin and end in Great Falls, Mont.

✓ **Deepwater Siliciclastic Reservoirs**, Sept. 17-22, a new course focused on the broad range of deepwater reservoir facies. The course will begin and end in San Francisco.

✓ **Modern Terrigenous Clastic Depositional Environments**, Sept. 19-26, covers the sedimentology, facies

architecture and sequence stratigraphy of modern terrigenous clastic depositional systems in tidal estuarine, incised valley, shelf, shoreface barrier island, fluvial and alluvial environments. This seminar begins in Columbia, and ends in Charleston, S.C.

✓ **Sedimentology and Sequence Stratigraphic Response of Paralic Deposits to Changes in Accommodation: Predicting Reservoir Architecture – Book Cliffs, Utah**, Sept. 21-28, demonstrates how a combination of detailed sedimentology and stratigraphy are used in a sequence stratigraphic approach to aid in the prediction of reservoir facies at both the exploration and production scale. This trip begins and ends in Grand Junction, Colo.

\* \* \*

Those preferring indoor education will have six powerful courses to choose from in AAPG's first annual Fall Education Conference, to be held Sept. 11-15 in Houston. The theme is "Deepwater Exploration."

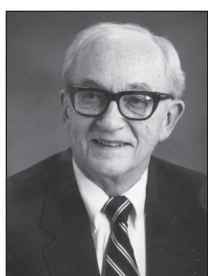
The conference features three concurrent sessions each day – and badges can be shared with co-workers during the week.

For further information, see the AAPG Web site at [www.aapg.org/education/index.cfm](http://www.aapg.org/education/index.cfm); or call 918-560-2650; or e-mail to [educate@aapg.org](mailto:educate@aapg.org). □

## IN MEMORY

Robert R. Berg, an award-winning educator and recipient of AAPG's Sidney Powers Medal, died June 13 in Bryan, Texas. He was 82.

Berg, an AAPG honorary member since 1985, began his career in oil exploration in 1951, working for several companies,



Berg

including Chevron. In 1967 he started his career in education as a professor and head of the geology department at Texas A&M University. In 1972 he was named associate dean of geosciences and director of the Office

of University Research. He held the Michel T. Halbouty Chair in Geology from 1982-2005.

He received numerous awards from several geologic and educational groups. From AAPG, he received four A.I. Levorsen Awards (two each with GCAGS and the Southwest Sections), and in 2000 he received the Grover E. Murray Memorial

Distinguished Educator Award.

He received the Sidney Powers Award, AAPG's highest honor, in 1993.

**Carl T. Anderson**, 86

Wichita Falls, Texas, March 2, 2006

**Robert Raymond Berg**, 82

College Station, Texas, June 13, 2006

**Maynard G. Christenson**, 81

Denver, June 4, 2006

**Herman Grady Cottrell**, 84

Midland, Texas, May 18, 2006

**Fred Edward Grinstead** (AC '51)

Tyler, Texas

**George H. O'Brien Jr.**, 78

Midland, Texas, March 11, 2005

**James G. Watkins** (AC '58)

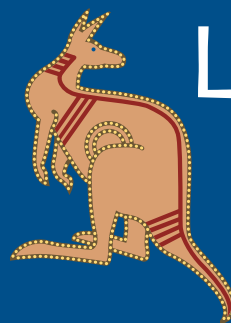
Reeds Spring, Mo.

**Donald Gene Weinkauf**, 78

Tulsa, May 23, 2006

(Editor's note: "In Memory" listings are based on information received from the AAPG membership department. Age at time of death, when known, is listed. When the member's date of death is unavailable, the person's membership classification and anniversary date are listed.)

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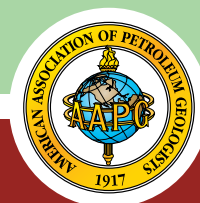
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NOVEMBER 5-8, 2006

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Email: [convene2@aapg.org](mailto:convene2@aapg.org)

## New Endowment Provides Geodata for U. of Kentucky

The AAPG Foundation has received funding to endow a Digital Products University Subscription for the University of Kentucky, in Lexington, Ky.

The endowment was made by Trustee Associate Jay Henthorne Jr., of Wooster, Ohio, in honor of Lois J. Campbell, a retired professor at the school and Henthorne's mentor.

This endowment will provide over 500,000 pages of maps and geological information of AAPG's Digital Library to students and faculty in perpetuity – and the collection continues to grow.

The Foundation's Digital Products University fund is designed to help

alums give back to their alma maters by making it easier for students there to have access to crucial geological data.

The fund helps guarantee:

✓ That generations of students will have quality materials for their education.

✓ Your alma mater will continue to provide education excellence.

✓ Your support of the Foundation in amassing this critical Digital Library.

For more information on the Digital Products University Subscription program contact Rebecca Griffin in the AAPG Foundation office at 918-560-2644; e-mail to rgriffin@aapg.org.

## MEMBERSHIP AND CERTIFICATION

The following candidates have submitted applications for membership in the Association and, below, certification by the Division of Professional Affairs. This does not constitute election, but places the names before the membership at large. Any information bearing on the qualifications of these candidates should be sent promptly to the Executive Committee, P.O. Box 979, Tulsa, Okla. 74101. (Names of sponsors are placed in parentheses. Reinstatements indicated do not require sponsors.)

Membership applications are available at [www.aapg.org](http://www.aapg.org), or by contacting headquarters in Tulsa.

### For Active Membership

#### California

Shepherd, Sunday Kirk, Chevron, San Ramon (B.R. Bracken, J.R. Gilbert Jr., W.L. Fisher)

#### Colorado

Alfano, Joseph Michael, Alfano Enterprises, Castle Rock (G.M. Simmons, A.R. Venditti, C.L. Rudolph); Mohseni, Paula Pennington, Stone Energy, Denver (D.B. Koval, J.C. Besler, R.D. Liebling)

#### Illinois

Cokinos, James Sophocles, Illinois State Geological Survey, Champaign (R.J. Finley, D.G. Morse, H.E. Leetaru)

#### Louisiana

Mixon, Vikki W., consultant, West Monroe (R.E. Sharp, L. Stewart, J.H. McCarter Jr.)

#### Texas

Boles, Herbert F., independent, Midland (W.R. Green, W.B. Perry Jr., J.T. Hollis); Edgar, Arlen Lewis, independent, Midland (J.M. Party, W.R. Green, P.H. Lufholm); Hae Hae, P. Kevin, Anadarko Petroleum, Spring (G.R. Bole, M.L. Broussard, W.S. Houston); Mazzoni, Stefano, ExxonMobil Production, Houston (D.P. Curtin, R.S. Jaynes, A.N. Foster); Osterlund, David P., Great Western Drilling, Midland (J.W. Adams, R.P. Richards, J.M. Party); Ramsey, E. "Elizabeth" Blanche, Southwestern Energy, Houston (M.B. Williams, K.A. McDonald, J.M. Ramsey); Reyes, Ramon Garcia, COG Operating, Midland (J.M. Party, D.A. O'Nesky, T.F. Gawloski); Sugiaman, Fransiskus J., Chevron, Houston (C.A. Caughey, D.E. Self, J.W. Hidore); Tribble, Michael Wayne, Riley Geological Consultants, Slaton (reinstatement); Warner, Robert A., Lonestar State Operating, Mabank (reinstatement)

#### Wyoming

Black, Brian James, Navarro Research & Engineering, Casper (T.C. Anderson, P.K. Hae Hae, T.H. Morris)

#### Indonesia

Kang, An, CNOOC SES Ltd, Jakarta (W. Peikang, X.L. Ye, W.A. Gajkowski); Shen, Weifeng, CNOOC SES Ltd, Jakarta (N. Guritno, W. Peikang, X.L. Ye); Xia, Tian Fang, CNOOC SES Ltd, Jakarta (X.L. Ye, W. Peikang, N. Guritno)

#### New Zealand

Ilg, Bradley Richard, NZ Geological & Nuclear Sciences, Lower Hutt (M.J. Arnot, B.D. Field, M.F. Doe)

#### Saudi Arabia

Sodagar, Taher M., Saudi Aramco, Dhahran (J.L. Rice, A.M. Khusheim, N.M. Robinson Jr.)

## Certification

The following are candidates for certification by the Division of Professional Affairs.

### Petroleum Geologist

#### United Kingdom

Simpson, Graeme Stirling, Gaffney, Cline & Associates, Hampshire, England (Geological Society of London)

### Petroleum Geophysicist

#### Texas

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September 24 - 27, 2006

## IX SIMPOSIO BOLIVARIANO

PETROLEUM EXPLORATION IN THE SUBANDEAN BASINS



## Assuming New Challenges

### INVITATION

On behalf of the Executive Organizing Committee of the IX Bolivarian Symposium, we invite professionals, executives and scientists of the oil industry to participate in this event. It will be a wonderful opportunity to discuss the significant challenges facing the oil industry in the Sub-Andean Basins concerning business development and the technological advances that have been affecting this sector as a whole.

This important forum of the Colombian Association of Oil Geologists and Geophysicists – ACGGP, will take place in the beautiful city of Cartagena de Indias, on the Colombian Caribbean, sponsored by the private and public sector of the oil industry.

In co-ordination with the National Agency of Hydrocarbon (ANH) sponsored "Colombian Petroleum and Gas Investments Workshop", to be held September 24.

Cartagena de Indias  
Colombia  
Convention Center  
Hilton Hotel

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## Visualize the Possibilities

Announcing the:

# GCAGS

56th Annual Convention

# GCPE

11th Annual Gulf Coast Prospect Expo

HOSTED BY  
THE LAFAYETTE GEOLOGICAL SOCIETY  
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THE GULF COAST SECTION OF SEPM

**Lafayette, Louisiana**  
**September 25 – 27, 2006**

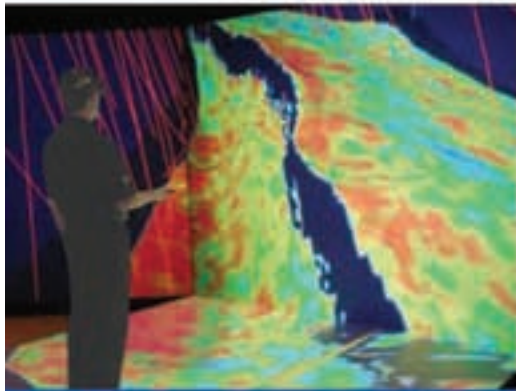
*First time in GCAGS history, 3 technical sessions will be held in a 3-D STEREO IMMERSIVE ENVIRONMENT, using the state-of-the-art 175-seat auditorium at the Louisiana Immersive Technologies Enterprise (LITE) facility.*

## CONVENTION HIGHLIGHTS

- Over 130 Oral & Poster Presentations
- 3 Field Trips, 5 Continuing Education Courses
- Forum of Top Industry Leaders Discussing “The Gulf of Mexico Oil and Gas Industry: the Road Ahead”
- GCAGS has combined with the Gulf Coast Prospect Expo
- Geoscientists with the International Geological Correlation Program 490 will join our convention with focus on Natural Disasters
- 3-D immersive visualization presentations in new LITE facility - Live Stereo Format, Seismic Interpretation, Geologic Interpretation, LIDAR, Outcrop Imaging, and Effects of Hurricanes

For up-to-date convention details visit

**[www.gcags2006.com](http://www.gcags2006.com)**



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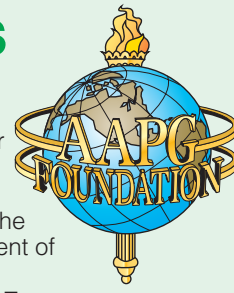
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## READERS' FORUM

**Exploring 'A Whole New World'**

Regarding the interesting article "Peak Oil Doesn't Mean No Oil" by David Brown (July EXPLORER):

The world's sedimentary basins are still underexplored for oil and even more so for natural gas.

As 3-D seismic becomes more and more available on a regional basis it also illuminates progressively deeper hydrocarbon traps. There is a whole new world down there with giant traps that do not conform to the "shallow" structures (less than 15,000 feet) that we have drilled so far. I wish companies would tackle this new world instead of buying back their shares. Hydrocarbons in these ultra-deep giant prospects may turn out to be natural gas more than oil.

Therefore, rather than debating the meaning of "Peak Oil," it would be far more productive to emphasize that natural gas can substitute for oil in almost all uses – for a price. Gas-to-liquids technologies and other segments of hydrocarbon chemistry are progressing rapidly, supported largely by new development of high-performance catalysts. It seems justified to look at the availability of hydrocarbons "in the round," instead of oil and natural gas separately.

We don't have to "freeze" like rabbits hypnotized by a snake called "Hubbert's curve of conventional oil." We AAPG members can create the conditions (price, availability, environmental acceptance, etc.), which would trigger the widespread substitution of oil by natural gas.

This, then, would put the discussion about "Peak Oil" firmly in the category "interesting, but irrelevant."

There is no doubt in my mind that consumers worldwide, for various reasons, will increasingly turn to coal,

*Editor's note: Letters to the editor should include your name and address and should be mailed to Readers' Forum, c/o AAPG EXPLORER, P.O. Box 979, Tulsa, Okla. 74101, or fax (918) 560-2636; or e-mail to forum@aapg.org. Letters may be edited or held due to space restrictions.*

nuclear, geothermal and so-called "renewable" primary energy forms during this century. I expect energy-on-energy competition to be fierce after 2050, signaling an era of energy plenty. Hydrocarbons, while declining on a percentage basis, will still represent a considerable portion of the energy mix in the year 2100.

A final thought: As long as hydrocarbons are plentiful, high prices will result in high production capacity. Conversely, low prices ("nobody wants to buy that stuff") will result in low investments and lead to low production capacity. The Energy Information Administration's graph (page 21) completely misses this important point by predicting low production capacity when prices are high.

Wolfgang E. Schollnberger  
Potomac, Md.

**Petition**

If a candidate must have the approval of the Nominating Committee, Advisory Board and/or the Executive Committee, AAPG will become an "old boy's network" (July EXPLORER).

A petition candidate is one who is eager to run (and) who may have ideas that are contrary to the AAPG establishment. A selected (Nominating Committee) candidate may not be anxious to be an officer and all the travel and work that it entails, but loathes turning down his friends' entreaties.

As for any perceived advantages, I

think it is the non-petition candidates who have the imprimatur of the Nominating Committee who have the advantage. It takes fortitude and work to become a petition candidate. To limit the time to acquire signatures to 30 days seems a bit short. Also, the requirement that only the candidate personally must acquire these signatures makes it much harder to run.

On the other hand, requiring only 50 signatures seems too few to be able to be on the ballot. This number should be increased to 100 or 150.

In summary, I think the petition candidacy has served AAPG well, opening up what was formerly a very closed process. To make it harder to become a petition candidate would make our organization more insular.

David Rosen  
Midland, Texas

I read in the July EXPLORER with disbelief that the incoming Advisory Council chair was advocating yet another study on ways to restrict our petition nomination and candidacy process.

The four proffered "suggestions" or "goals" will retrace ground already covered by the leadership of the House of Delegates' Constitution and Bylaws Committee, the HoD and/or the Executive Committee. They were all bad ideas when originally proffered and, regrettably, create even more legal expenses as they will apparently be studied and written once again.

Should the AC be doing this study in

the first place, especially since they generate the nominee slate that gets challenged by a petition candidate – and since the EC and/or HoD leaderships have reviewed most of these, and chosen not to recommend proposed bylaw changes?

As one who had to utilize petition candidacy to serve as AAPG treasurer, I can tell you that it is neither easy nor a preferred manner by which one gets on the ballot. The process of gathering 50 signatures for your candidacy is difficult enough, and it is clearly a good "vetting" test of your potential candidacy, even when assisted by your colleagues.


Fortunately, AAPG's founding fathers felt very strongly about providing for an open nomination petition process, as I was told years ago by one of the key 1970 C&B writers. In fact, their reasoning was revolutionarily simple: They wanted to provide a very open opportunity for "nominations from the floor," to assure that the membership got to vote for candidates they preferred.

They also adhered to this principle in setting up the rules of the HoD as well, where just one delegate can nominate a candidate from the floor to run for an HoD office. They also felt 50 signatures, from any voting members, was considered reasonable, because it was over twice the number of the AC & EC combined.

The C&B designs were based primarily on the fairness, transparency and openness contained in Robert's Rules of Order – the parliamentary law of many organizations.

All four of the "suggested goals" fall under any reasonable Robert's definition of an "attempt to limit the number of

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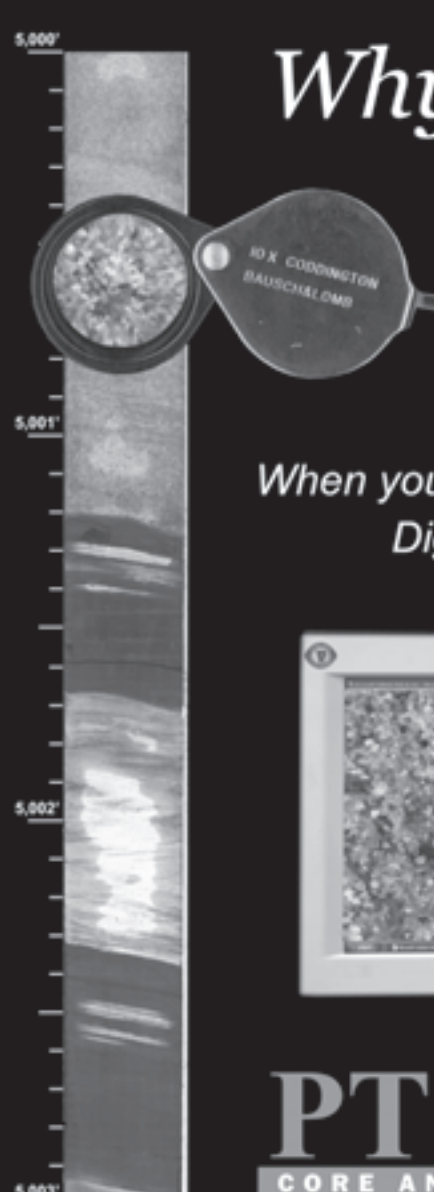
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candidates" by making it much more difficult to qualify as a petition candidate. If we further restrict or hinder petition candidates, we would be clearly infringing on the precious freedom of the membership to have open access to the ballot, and thus the free choice of selecting who they wish to lead them.

I have always believed that the voting AAPG membership should be the ultimate determinants of whether someone should be elected or not, and NOT:

✓ Whether they got 50 percent of their signatures from more than one Section/Region.

✓ Whether they were "vetted-rejected" by the AC/EC.

✓ Whether they were branded as a "petition candidate."

✓ Whether they had to gather all the petitions themselves.

Truly honorable democracy does not add these restrictions to ballot access.

Election rules are about facilitating the voting memberships' right to decide who they want to lead them. In our history, two petition candidates have won and two have lost, and the members made that choice.

In the end, AAPG's current petition nomination process protects democracy for the membership.

Dwight "Clint" Moore  
Houston

#### The Climate Card

I think the climate card posted on the AAPG Web site (July EXPLORER) answers a question that no longer exists, and the AAPG needs to realize that.

The facts on the card are as accurate as they were seven years ago, but the world today is very different than it was in 1999 when this card was first conceived. The public is no longer arguing about whether or why the earth is warming. The public today take it as fact that global warming is occurring, and they want to do something about it.

AAPG can't stop that perception anymore than it can stop the melting of the world's glaciers in the lower latitudes.

We live in a different era than 1999: one of high oil prices, global terrorism, threats of energy supply disruptions and a huge increase in the research and production of alternate fuels. The rise of China and India as consumers of hydrocarbons also is a factor in the public consciousness. The public wants to reduce consumption, try alternate fuels, cut emissions and reduce the dependency on foreign oil because it affects their pocketbooks and safety. If these steps also happen to help the environment, then all the better.

AAPG should get on board with the new era and promote conservation and good stewardship of our natural resources.

The final quote in the climate card says: All of the principal causes of climate change are beyond the control of human beings." This may be true in fact. I don't know. However, it sounds like the world's petroleum geoscientists are pounding the table and saying we are helpless and can't do anything to better the earth. This only reinforces the perception of self-interest and the lack of credibility we already have.

Let's scrap the climate card and instead put out a "conservation card" and educate the public on ways to reduce our dependency on foreign oil and better preserve the environment. I think people would pay more attention to something like that coming out of the AAPG. It at least addresses the questions of 2006.

Brent Boyd  
The Woodlands, Texas

Having been a member of AAPG since 1976 it was amusing, as well as frightening, to see the AAPG has now

determined that "All of the principal causes of climate change are beyond the control of human beings," and that "the climate warming projections fall well within documented natural variations in past climate."

AAPG failed to note that the first dependable mercury thermometer was invented in 1714 by Gabriel Fahrenheit, with the first standard scale. If interglacial time periods are 15,000-40,000 years apart, and 250 years of temperature data are available, the analogy would be to parachuting into Death Valley in July at sunrise, taking 15 minutes of readings and deciding 87 degrees is the constant temperature of the area – having no idea that it could get up to 125 by late afternoon.

I'll store this AAPG "factoid" with the Bishop of Ushers pronouncement in the 1654 that the earth was created in October, 4004 B.C.; the Roman Inquisition's decree at Galileo's heresy trial

in 1663 that the earth was the center of the universe; that Scotland never had trees; and with those oil men out there who pronounced they'd drink all the oil there was ever to be found in the Rocky Mountains, or west of the Mississippi, or not in the bottom of a creek!

Enough with the rhetoric – let's move on to real science.

I suggest that all AAPG readers familiarize themselves with the two fairly recent publications from the National Academy of Sciences concerning climate change and an analysis of historical temperature determinations in the atmosphere before jumping on this AAPG bandwagon. They are:

✓ Surface Temperature Reconstructions for the Last 2,000 Years ([http://dels.nas.edu/dels/rpt\\_briefs/Surface\\_Temps\\_final.pdf](http://dels.nas.edu/dels/rpt_briefs/Surface_Temps_final.pdf)).

✓ Understanding and Responding to Climate Change (<http://dels.nas.edu/basc/Climate-LOW.pdf>).

For those of you unfamiliar with the National Academy of Science it was formed in 1863 at the request of Abraham Lincoln to "investigate, examine, experiment and report upon any subject of science or art," whenever called upon to do so by any department of the government. It currently has over 2,000 members, of which 200 have won Nobel Prizes, so please don't dismiss this as an eco-terrorist group formed yesterday.

Finally, the American Institute of Petroleum (API) now has on its Web site a whole section titled "Global Climate Change Policy," where in the section titled API Voluntary Climate Challenge Program you'll read:

"Climate change is a serious issue. The build-up of greenhouse gas emissions could be affecting the world's climate and may continue to do so. However, the severity of a future problem is unclear.

See **Forum**, next page



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## Forum

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Also, if serious climate problems develop, they may not occur until the end of the century or later. Finally, the costs of reducing emissions – and therefore the impacts on the economy and consumers – vary greatly, depending on when and how GHG reductions are made.

“Although the scientific uncertainties and potential high costs of rapidly reducing emissions argue against excessive, mandatory, near-term programs, U.S. oil and natural gas companies have long agreed that enough is known about the climate change problem to take meaningful action.”

Now refer to the AAPG's own Code of Ethics before joining putting your own reputation on the line:

✓ Members shall not make false, misleading or unwarranted statements, representations or claims in regard to professional matters, nor shall they engage in false or deceptive advertising.

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The AAPG is a scientific organization dedicated to the advancement of science (and art) in exploration and development of hydrocarbon deposits, not global warming. We would best to preserve our pronouncements for things we know best.

Jeff Howdeshell  
Houston

(Editor's note: The Climate Change Card is available for viewing on the AAPG

Web site, along with a candid and active discussion. Join in at [www.aapg.org](http://www.aapg.org).)

### Climate Change

Mr. Evans and Boyer certainly feel strongly about their position on “global warming” (Readers' Forum, June EXPLORER). What I find most interesting is the premise that a geological organization is not allowed to have positions that “embarrass” them. I feel that all geoscience organizations have a unique viewpoint to add to this debate, and that there is virtually no other group of sciences that routinely view our environment in millions of years (at a minimum). This is critical to having a better understanding of the multitude of causes of warming.

It would appear that both men prefer that science in geology should be “let's go along with what everybody else says,” and only support that which is politically correct instead of maintaining a healthy skepticism.

I am very interested in hearing ALL sides of this issue.

Craig Anderson  
Houston

It has been suggested recently that geologists and, more specifically, petroleum geologists should not comment on global warming because they have no scientific expertise in the field and are captive to the petroleum industry, presumably leaving the field open to politicians, journalists and climatologists with large federal grants. However, global warming is global climate change and global climate change has a history and geologists know history.

Geologists know that for the vast majority of earth history the climate has been hotter than at present, a greenhouse rather than an icehouse.

Geologists know that we are living in the fourth ice age, beginning with climate

deterioration in the Pliocene with a score of cold/warm cycles. During some of the short warm intervals it has been warmer than today, but for 90 percent of the past million years it has been colder with extensive ice development. The last ice sheet covered much of North America and Europe and melted back between 15,000 and 8,000 years ago, and we now are in a 10,000-year interglacial stage interrupted between 1500 and 1850 by the Little Ice Age.

Thus, geologists can make the following observations:

✓ The normal climate of the earth is a greenhouse, where warm temperatures exist from equator to the poles and sea levels are high. This has been the case for 90 percent of the last 600 million years.

✓ Icehouse climates are unstable with rapid and large fluctuations in temperature.

✓ Since all of the potential causes of the current ice age are still operative it is rational to expect another ice advance.

✓ The present interglacial has persisted for 10,000 years and if the frequency of previous glacial/interglacial cycles is any guide, we should enter another glacial episode soon and possible very quickly.

✓ The Little Ice Age many have been pulse of this next episode.

The popular view is that man is disturbing nature's balance by adding carbon dioxide to atmosphere by burning fossil fuels, and if we would just let nature alone all would be fine. However, nature has taken its course for the past several billion years and it was not all fine. Some 99 percent of all species that have lived are now extinct. With indifference to individual suffering, nature has indulged in numerous biolade attacks, gigantic caldera explosions as at Yellowstone, serial megafloods as in the scablands of the Northwest, giant tsunamis and megaclimate changes, all wiping out

untold millions of species.

To make matters worse, in about 2,500 years the solar system will plow into a large cloud of interstellar gas and dust 1,000 times more dense than the space through which we now travel. If the cloud is sufficiently dense, hydrogen atoms could flow into the lower atmosphere reacting with oxygen to form water vapor, a far greater contributor to the greenhouse effect than carbon dioxide and perhaps leaving the earth to our anaerobic friends.

The point here is that conditions on earth constantly change. If there were no people, the climate would still be on its current roller coaster. If we move it a bit toward the warm side, this is better than a two-mile ice sheet atop the world's great grain growing regions.

We also benefit from having sufficient energy in the form of fossil fuels to have a chance, for the first time in history, for a reasonable comfortable lifestyle. However, geologists also know that fossil fuel resources are limited and that we will have to move to alternatives.

Thus, our contribution to the greenhouse effect also is limited, but in the past the alternative to sufficient energy resources has been a much shorter life expectancy.

Joseph P. Riva  
Great Falls, Va.

### Geology 101

I totally disagree with the opening sentence of the article on paleo markers (July EXPLORER), stating “Geology 101 teaches that the past is the key to the present.” This is a total misrepresentation of the Uniformitarian Principle, which states in its short form that “The Present is the Key to the Past.”

More disturbing is the apparent lack of editorial oversight that should have caught this egregious error. Any geology 101

continued on next page

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**REGIONS AND SECTIONS**

**McGowen Named to New R&S Liaison Position**

*(Editor's note: Regions and Sections is a regular column in the EXPLORER offering news for and about AAPG's six international Regions and six U.S. Sections.)*

News items, press releases and other information should be submitted to the EXPLORER/Regions and Sections, P.O. Box 979, Tulsa, Okla. 74101.

Contact: Carol McGowen, at 1-918-560-9403; or e-mail to [cmcgowen@aapg.org](mailto:cmcgowen@aapg.org).

Carol McGowen has joined the AAPG staff in the new position of Regions and Sections manager.

As such, McGowen will serve as the primary liaison between AAPG headquarters and the six U.S. Sections and six international Regions of AAPG.

This position evolved from a need to provide a dedicated staff person who is directly responsive to member requests and information needs. The position also is designed to encourage an exchange of best practices among all groups.

McGowen holds a bachelor of geoscience degree from the University of Tulsa and has nearly 10 years of

mid-continent oil and gas industry experience. In addition, she brings considerable experience in non-profit management and international awareness, including travel to Europe, Latin America and Africa.

As the direct point of contact at AAPG headquarters, her responsibilities will include:

- ✓ Primary liaison with Sections and Regions officers.
- ✓ Liaison with AAPG House of Delegates members and AAPG affiliated societies.
- ✓ AAPG membership development support, including oversight of Section and Region membership review committees.

- ✓ Providing assistance to Sections and Regions to develop comprehensive business plans.
- ✓ Representing AAPG at key Sections and Regions meetings and all major international meetings.

Members will have a chance to meet McGowen during the coming year either during your area meeting, a special visit or at the AAPG annual and international meetings. She can be contacted at [cmcgowen@aapg.org](mailto:cmcgowen@aapg.org); or 1-918-560-9403. □

continued from previous page

instructor that teaches what this article stated should be required to hand in their degrees.

George Klein  
Sugar Land, Texas

**Speak for Yourself**

I was appalled by the comment made by Skip Hobbs (June EXPLORER), as a representative of AAPG, in his discussions with Congressman Shays that exploration in ANWR would save money that we (presumably U.S. citizens and residents) would not be paying to "oil exporters that despise the American way of life."

I suggest that Mr. Hobbs do a bit of homework before he soils the good reputation of the AAPG by insulting the citizens and governments of Canada, Mexico, Nigeria, Saudi Arabia and Venezuela – the top five sources of imported crude to the United States, who together supply 71 percent of the total (source: Energy Information Administration).

Even if Mr. Hobbs finds some or all of these countries, their citizens and/or their governments personally objectionable, he needs to keep his opinions to himself when representing the AAPG, as is clearly implied in the AAPG Code of Ethics.

Allan Scardina  
Rijswijk, The Netherlands

**Wanted: Intelligent Design**

It has come to my attention that some geologists and geophysicists still interpret fault data on the basis of Intelligent Design (ID), perhaps unwittingly.

Though less prevalent than they were (for) a generation or two, some interpretations illustrated in recent and contemporary publications still include cross-sections in which thrust faults are shown to curve upward with a traditional "sled-runner" profile, only to die out immediately beneath the 2006 A.D. grass roots. This implies that a fault emplaced some 40 million or more years B.P. was so ingeniously contrived that, after at least 40

million years of erosion and/or deposition it would die out neatly at the earth's surface.

If that's not Intelligent Design, I don't know what is.

One also can encounter seismic profiles in which similar features are interpreted to die out progressively upward, with zero offset precisely at a 2006 seismic datum. Now that requires not just your everyday Intelligent Design, but Super Intelligent Design (SID). Examples can be supplied.

It would be instructive to hear from other EXPLORER readers of comparable instances (of which there must be many) of ID and SID in the earth sciences.

Peter B. Jones  
Calgary, Canada

**The Coming Years**

Companies are earning more profits now due to high oil prices; these profits should have to be invested for prospecting in new frontier areas, as well as to maximize secondary recovery technologies.

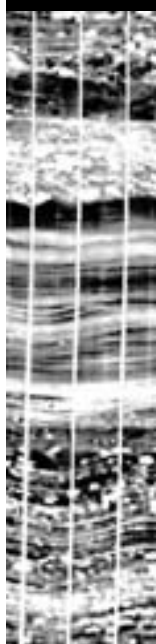
Companies currently are devoting (their resources) to deepwater exploration but we have to also know that up to what depth and up to what extent we should prospect and explore in the deeper basins of the world.

Also, AAPG President Peter Rose said the coming years for petroleum geoscience will be "global, challenging, exciting and rewarding." I totally agree. Demand is increasing, and the petroleum industry has not found any major reserves like Ghawar, so coming years will be very challenging.

On one side the challenge is to maximize the secondary recovery by advanced technology development; on the other side, the challenge is discovery of new reserves by more advanced and integrated applications of the principles of earth sciences. The challenge will be in both technology and science and their fruitful, integrated utilization in the prospecting and exploration of petroleum.

Vinay K. Sahay  
Bombay, India

**BOREHOLE IMAGING COURSE**  
unlock the value



Hundreds of image logs have been acquired by US Oil companies in recent years. There is currently an important resource of image logs sitting in data archives. Images can provide unrivaled information of the geological structure, stratigraphy and sedimentology from the wellbore. The application of image logs in our industry has long been undervalued or not fully appreciated.

The interpretation of images is a skill that needs to be learned and the best way to do so is with some of the industry's leading interpreters. Borehole images, both wireline and LWD can fill a vital data gap between core and seismic data.

**Course aims...**

- Carry out QC of borehole image data: wireline and LWD
- Design a borehole image logging program
- Provide a brief structural interpretation
- Classify major lithofacies types and sediment dispersal indicators
- Describe fractures and faults
- Appreciate limits of borehole images

**Who should attend...**

- Geologists, Petrophysicists & Geophysicists working with integrated reservoir models

**Overview...**

- Image log technology and practice
- Quality control
- Structural analysis
- Horizontal well analysis
- In-situ stress analysis
- Sedimentological characterization - in clastics and carbonate rocks

**Date...**

- 12th, 13th and 14th September 2006

**Venue...**

- Westchase, Houston, USA

**Instructors...**

- Lawrence Bourke, Task Geoscience, Perth
- Adam Styles, Task Geoscience, Aberdeen

**Price...**

US\$ 2250 + Taxes, per attendee. Price includes lunch, coffee and snacks, Course notes and Exercises.

Task Geoscience reserves the right to change any details of this course and to cancel the course up to 30 days before the course due date. Please see our website for confirmation of this event.

**DAY 1: Introduction:** Borehole Image, Dipmeter and LWD acquisition and processing techniques, Log quality and artefact image recognition. **Structural Interpretation:** Basic principles - quick-look interpretation, Structural dip identification, unconformities, Large scale fault deformation structures. **Practical Exercise** - tectonic tilt, faults, unconformities.

**DAY 2: Structural Interpretation:** Fracture analysis. **Practical Exercise** - fracture analysis. Integration with surface seismic and production data. **Practical Exercise** - integration with seismic and production data. Analysis of borehole images in horizontal wells. **Sedimentological interpretation:** borehole image and dipmeter data.

**DAY 3: Sedimentological Interpretation** (continued): borehole images - clastic sequences. **Practical Exercise** - clastics. **Sedimentological interpretation:** carbonate sequences. **Practical Exercise** - carbonates. Approaches to permeability classification - carbonates; Petrophysical applications of image logs, *in-situ* stress analysis. **Practical Exercise** - *in-situ* stress analysis.

Request a booking form today from [lawrence.bourke@taskgeoscience.com](mailto:lawrence.bourke@taskgeoscience.com)

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**Who should participate:** We invite all geoscientists, geosciences organizations, companies, and educational institutions as well as numerous corporations and government agencies to celebrate with us this pinnacle moment in our history. **Exhibit booths, sponsorships, conference booklet, and website advertisement space are still available. Posters and Oral Papers** focusing on all aspects of the Earth Sciences including geology, geophysics, geosciences applications, planetary sciences, oceanography, geological education, the business of geology, and geosciences careers are welcome. **Geosciences Students** are invited and financial assistance may be available. Scholarship recipients are strongly encouraged to be volunteers or give technical presentations. Social events are planned for spouses and guests.

Conference Highlights Include (check [www.nabgg.org](http://www.nabgg.org) for updates):

- Golf Tournament** - Wednesday Morning, Sept 27
- President's Reception** - Wednesday Evening, Magnolia Hotel
- Technical Sessions and Booth Exhibits** - Thursday, Sept. 28
- Scholarship Awards Luncheon** - Thursday Noon
- Technical Sessions Featuring Students and Booth Exhibits** - Friday Morning
- Benefactor Awards Luncheon** - Friday Noon
- Business Meeting** - Friday Afternoon, Sept. 29
- Black & Gold Ball** - Friday Night
- Community Outreach Activity** - Saturday Morning, Sept 30

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**EMD Announces Best Paper, Poster Awards for Houston Sessions**

The Energy Minerals Division has announced the technical award winners for presentations at the recent AAPG Annual Convention in Houston. They are:

**Frank Kottowski Memorial Award (Best Paper)**

✓ Timothy Collett, Scott Dallimore and Steve Hancock, for "Field Analysis of Effective Reservoir Permeabilities in Gas-Hydrate-Bearing Sediments."

Collett is with the U.S. Geological Survey, Denver; Dallimore is with the Geological Survey of Canada, Sidney, Canada; and Hancock is with APA Petroleum Engineering, Calgary, Canada.

**Best Poster (Tie)**

✓ Kira Diaz-Tushman, Stephen E. Laubach and Randall Marrett, for "Fracture Pattern Heterogeneity in Km-Scale Reservoir-Analog Outcrops."

All are with the University of Texas at Austin.

✓ Stephen G. Schurger, K. David Newell, Timothy R. Carr and James G. Blenco, for "Integrated Subsurface Carbon Sequestration and Enhanced Coalbed Natural Gas Recovery Using Cement-Kiln Emissions, Wilson County, Kansas."

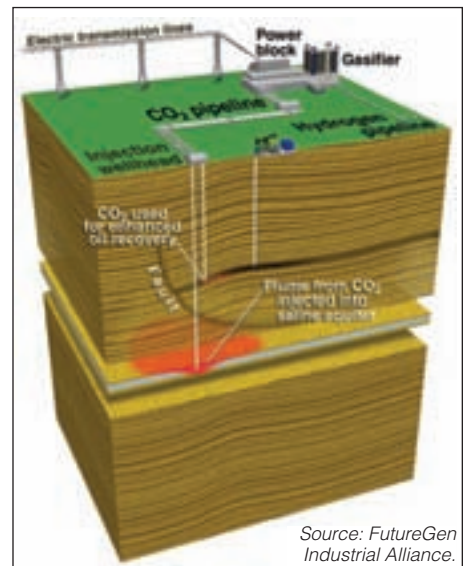
Schurger, Newell and Carr are with the Kansas Geological Survey, Lawrence, Kan., and Blenco is with the Oak Ridge National Laboratory, Oak Ridge, Tenn. □

**EMD**

from page 50

Texas, West Virginia and Wyoming submitted FutureGen proposals in May 2006. The FutureGen alliance will evaluate the proposals and compile a short list of candidate sites by the end of summer, and DOE will review the sites prior to the alliance's final selection of a site by summer 2007.

The FutureGen site, which can pave the way for many similar sites to come, will offer a unique opportunity to open new markets for vast U.S. coal reserves, representing an environmentally sound return to the coalfields that fueled American industry for more than 200 years. □



Source: FutureGen Industrial Alliance.

Figure 2 – Schematic diagram of a FutureGen site.

 **The RMAG and PTTC Present** 

**Shale Gas: From Grass Roots Exploration to Production**

Monday, September 25, 2006  
Denver Marriot Hotel

Lunch Included  
Social Hour Afterwards

The focus of the twelve talks includes major plays in the Rocky Mountains and elsewhere, geochemical methods and models, reservoir properties, source rocks, maturation, and fractures.

The keynote luncheon speaker will be Dan Jarvie of Humble Geochemical Services Inc., who will discuss "The Assessment of Shale Gas Systems"

Take this opportunity to network with hundreds of industry professionals involved in all aspects of shale gas development.

For more information and registration, visit [www.rmag.org](http://www.rmag.org) or call 303.573.8621



**W.G.A. 2006 Field Conference**  
September 15<sup>th</sup> – 19<sup>th</sup>

Parkway Plaza Hotel, Casper Wyoming

The theme of this year's WGA field conference, "Back to the Basics and into the Future," reflects fresh insights merging with geologic fundamentals to enhance the value of Wyoming's energy heritage, with a little help from high commodity prices. A two day excursion September 15-16 will link "classical geology" to new techniques of reservoir description, stressing applicability to enhanced recovery, to production of coal and coal-related resources, and to uranium extraction. A one day field trip Sunday September 17 will deal with Laramide structural dynamics and processes that helped shape the modern landscape, followed by the traditional Ice Breaker Sunday night. A two day technical session will commence September 18.

**Casper-Rawlins-Hanna-Shirley Basin** (two days): LIDAR assisted mapping of Tensleep fractures at Alcova, basal Tertiary boulder beds, Independence Rock, Lost Soldier uranium project, Bairoil Field, Rawlins uplift, Hanna mining history and coal sequences, exhumed Tensleep oil ring, past and future of Shirley Basin uranium deposits. **Leaders:** Nick Jones, Bob Maxwell, Jim McClurg, Mark Milliken, Bob Odell & Pegui Yin **Structural Geology of Casper Mountain and SE Corner of Wind River Basin** (1 day): Sites described in Don Stone's 2002 AAPG paper Morphology of the Casper Mountain uplift and related subsidiary structures, central Wyoming: Implications for Laramide kinematics, dynamics, and crustal inheritance. **Leaders:** Murray Dahill, Don Stone & Kent Sundell

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	Member	Non-Member
___ Casper-Rawlins-Hanna-Shirley Basin, Sept. 15 & 16* (includes 1 night Rawlins lodging & lunches)	___ \$175	___ \$225
___ Structural Geol. of Casper Mtn., Wind R., Sept. 17* (includes lunch)	___ \$ 75	___ \$125
___ Technical Session, Sept. 18 & 19 (includes Ice Breaker and 1 lunch)	___ \$125	___ \$175
___ Membership	___ \$ 30	
<b>Totals \$</b>	<b>\$ _____</b>	<b>\$ _____</b>

\*limited to 40 participants

Mail, Fax or Email this registration form to:  
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Reservations can be made by calling the Parkway at (307) 235-1777



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- Supervisory tasks

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### Post-doctoral researcher-sequence stratigraphy University of Colorado-Boulder

The Energy and Minerals Applied Research Center at the University of Colorado is seeking candidates to fill a post-doctoral research position in sequence stratigraphy. The position will last for 2 years, beginning in late 2006. The project will focus on the evolution of late Quaternary turbidite systems in slope basins in offshore, Nigeria. 3-D seismic data will be interpreted to study near-surface depositional systems, with the goal of developing analogs for deeper features. Candidate must have a strong background in sequence stratigraphy and seismic interpretation, and a working knowledge of UNIX systems. Specific experience in Nigeria is not a pre-requisite. Salary will be commensurate with experience. Interested candidates should send vitae, plus three names of references to Paul Weimer at: Department of Geological Sciences, University of Colorado, Boulder, CO 80309-0399 or [paul.weimer@colorado.edu](mailto:paul.weimer@colorado.edu). Screening of applications will begin August 1 and will end when a successful candidate has been identified. The University of Colorado at Boulder is committed to diversity in equality and employment.

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Informal enquires should be made to Dr Joe Macquaker or Prof Rob Gawthorpe by telephone on +44 (0) 161 306 9379; fax: +44 (0) 161 309 9361 or email: [joe.macquaker@manchester.ac.uk](mailto:joe.macquaker@manchester.ac.uk) or [rajeshree.rana@manchester.ac.uk](mailto:rajeshree.rana@manchester.ac.uk)

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In order to facilitate the Company's strategy of growth and development, we have recently established a regional South East Asia New Business Development team based in Singapore and are seeking to strengthen the team with enthusiastic, self-motivated individuals in the following disciplines:-

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The Senior Exploration Geologist will be responsible for the generation of new, and evaluation of existing exploration opportunities in the Asia/South East Asia region. The ideal candidate will have at least 10 years' relevant oil industry experience and extensive technical knowledge of the basins in the region and current knowledge of area activity.

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## DIRECTOR'S CORNER

## Work Force Must Come to Forefront

By RICK FRITZ

Manpower is the buzzword in our profession today – it's a hot topic in the petroleum industry worldwide, and in the United States it is a very hot topic in Washington, D.C.

According to the U.S. Department of Labor (DOL) there is a projected shortage of professionals in numerous disciplines due to the retirement of post-World War II "baby boomers" during the next 10 years.

One of the basic concerns for scientific societies is that students are not entering scientific disciplines at the rate needed to fill jobs. This is a problem that starts in the requirements for science in prep schools; geoscience, a truly multi-disciplined science, has seen lower enrollment in many universities in the United States during the past several decades.

For the petroleum industry the shortage of petroleum geologists, geophysicists and engineers already is acute. Although many good schools remain, many petroleum curriculums at schools in the United States and Western Europe have deteriorated during the past 20 years.

Also, there is the continued reluctance of some students to enter into a petroleum career due to the perceived friction between petroleum and the environment. Geologists, by nature, are typically concerned about the environment, so it is important that we do everything possible to dispel this perception.

Numerous government, non-profit and

*AAPG is working with a number of its standing committees to evaluate the manpower issue as it relates to petroleum geology.*

for-profit entities are studying manpower issues. In the United States, AAPG has been asked to support several work force initiatives.

For example, the American Petroleum Institute (API) has initiated a work force study using a contractor "The WorkSource," an affiliate of the Gulf Coast Work Force Board based in Houston. The API effort is funded by its members. Products prepared by The WorkSource group are currently under review by the API taskforce, which includes AAPG and various corporate entities.

Jim Blankenship, AAPG's geoscience director, is our representative for this group.

The National Research Council, led by the Board on Earth Sciences and Resources authorized by the Energy Policy Act of 2005, is scoping a study titled "Emerging Work Force Trends in the U.S. Energy and Mining Industries."

The U.S. Department of Labor has initiated work on an Energy Competency Model to be used in designing training programs at all training levels to prepare the work force for work in the energy

sector. A number of organizations – including IPAA, API and AAPG – have been asked by DOL to contribute their perspectives on the model.

AAPG is supporting the American Geological Institute's efforts in this area. AAPG also is working with a number of its standing committees to evaluate the manpower issue related to petroleum geology.

\* \* \*

Many universities, once again facing an increasing demand for petroleum-related disciplines, are gearing up to develop a new crop of energy professionals.

This is an exciting time and a great opportunity for AAPG members to support and show leadership. I encourage you to contact your alma maters and offer support. AAPG's Visiting Geologist Program (VGP) is a great way to give back to your school and the VGP program can be offered anywhere in the world (see [www.aapg.org](http://www.aapg.org) for more information on becoming a VGP).

AAPG also is developing PowerPoint presentations and film clips that show the importance and value of a petroleum-related degree. We are specifically developing information to show the high-tech nature of petroleum geoscience.

Manpower is similar to oil in that supply and demand are often related more to geography. In many countries, such as Russia, Eastern Europe, China, India, etc. there are many highly qualified petroleum professionals and students.

I recently visited Moscow and I was impressed with the enthusiasm for the petroleum industry of students from Moscow State and other universities.

The problem is how to unite the supply of young qualified professionals worldwide with demand. AAPG is uniting with other societies to develop student programs and job fairs around the world.

\* \* \*

Work force needs are a complex global problem that will not be solved overnight. AAPG is working to provide information, support and programs to help develop new opportunities and professional growth for our members and students.



## Energy Minerals Division

## 'FutureGen' Holds Promise for Coal

By WILLIAM A. AMBROSE  
EMD President

"Clean coal" is rapidly becoming more important as energy demands continue to rise.

Clean coal is coal that has been stripped of minerals and other impurities. It is then gasified and burned, and resulting flue gases can be treated with steam and re-burned to make CO<sub>2</sub> in the flue gas economically recoverable. The CO<sub>2</sub> can then be sequestered for enhanced oil recovery (EOR), enhanced coalbed methane recovery (ECBM) or long-term storage in deep, brine-bearing formations.

\* \* \*

One reason why clean coal is so important to the United States is because the coal resource base is enormous.

The United States possesses approximately 6,000 Quads (10<sup>15</sup> British Thermal Units [Btu]) of coal resources, which greatly dwarf its 300-Quad resources of oil and gas (figure 1). At current rates of consumption, America has at least another 250 years of coal supply from its resource base of >1,700 billion short tons of measured, indicated and inferred resources (Energy Information Agency).

Coal is central to the U.S. energy economy, accounting for 80,000 direct jobs and supplying 51 percent of the nation's electricity (Center for Energy Economic Development). More than 300 gigawatts (GW) of electrical capacity in the United States are provided by coal (FutureGen Industrial Alliance).

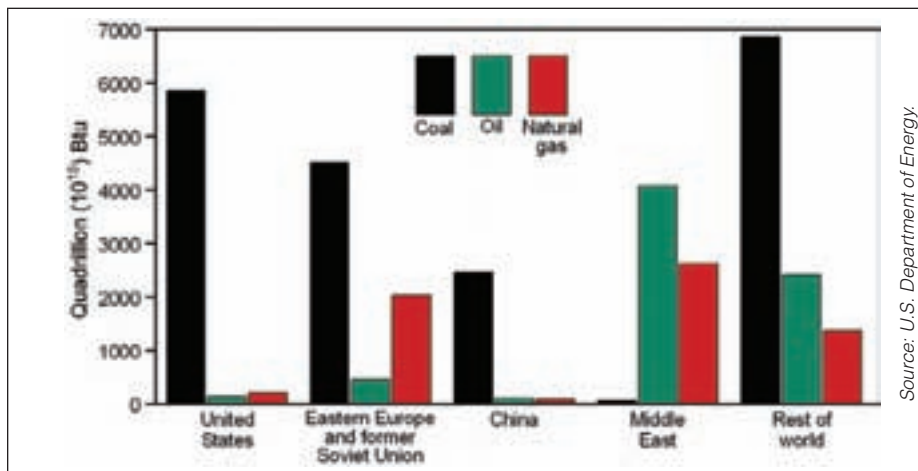


Figure 1 – World energy resources. Although the United States has limited oil and natural gas resources compared to the rest of the world, it has an abundance of coal.

Moreover, coal is domestically available and – unlike international oil supplies – relatively insulated from physical security threats.

Although constructing new conventional coal-fired power plants can meet increasing demands for energy, doing so will lead to increased air pollution, as well as more CO<sub>2</sub> in the atmosphere.

Some states, such as California, are unwilling to purchase electricity from plants incapable of controlling greenhouse-gas emissions, which are viewed as contributing to global warming.

(The United States emits approximately 5.7 billion metric tons annually, according to the International Energy Agency.)

\* \* \*

Clean coal technology, such as "integrated gasification combined cycle" (IGCC), offers a more efficient and less-polluting alternative than simply pulverizing and burning coal to create electricity. IGCC power plants remove pollutants from coal to create synthetic natural gas (syngas) that drives turbines to produce electricity.

A new industry-government partnership to encourage development and integration of new "clean coal" technologies is "FutureGen," a \$1 billion partnership between the U.S. Department of Energy (DOE), private industry and foreign countries to design, build and operate a 275-megawatt, coal-fueled electricity and hydrogen production power plant with near-zero emissions of SO<sub>x</sub> and NO<sub>x</sub> (figure 2, page 48).



At least 90 percent of CO<sub>2</sub> emissions from the plant (one million tons per year) must be sequestered initially, with a future potential of sequestering nearly 100 percent.

An additional objective is to prove the effectiveness, safety and permanence of CO<sub>2</sub> sequestration and to establish protocols for CO<sub>2</sub> measuring, monitoring and verification.

Areas suitable for FutureGen facilities must satisfy several technical criteria in four main categories. It must:

- ✓ Be at least a 200-acre site with proximity to and capacity for delivery of coal resources.
- ✓ Have capacity for injectivity and long-term storage of approximately 50 million tons of CO<sub>2</sub> in brine-bearing formations or subsurface coal seams.
- ✓ Include the potential for EOR in nearby mature oil fields.
- ✓ Have nearby rail facilities and pipelines.

Illinois, Kentucky, North Dakota, Ohio,

See **EMD**, page 48

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