

**AAPG** AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, AN INTERNATIONAL ORGANIZATION

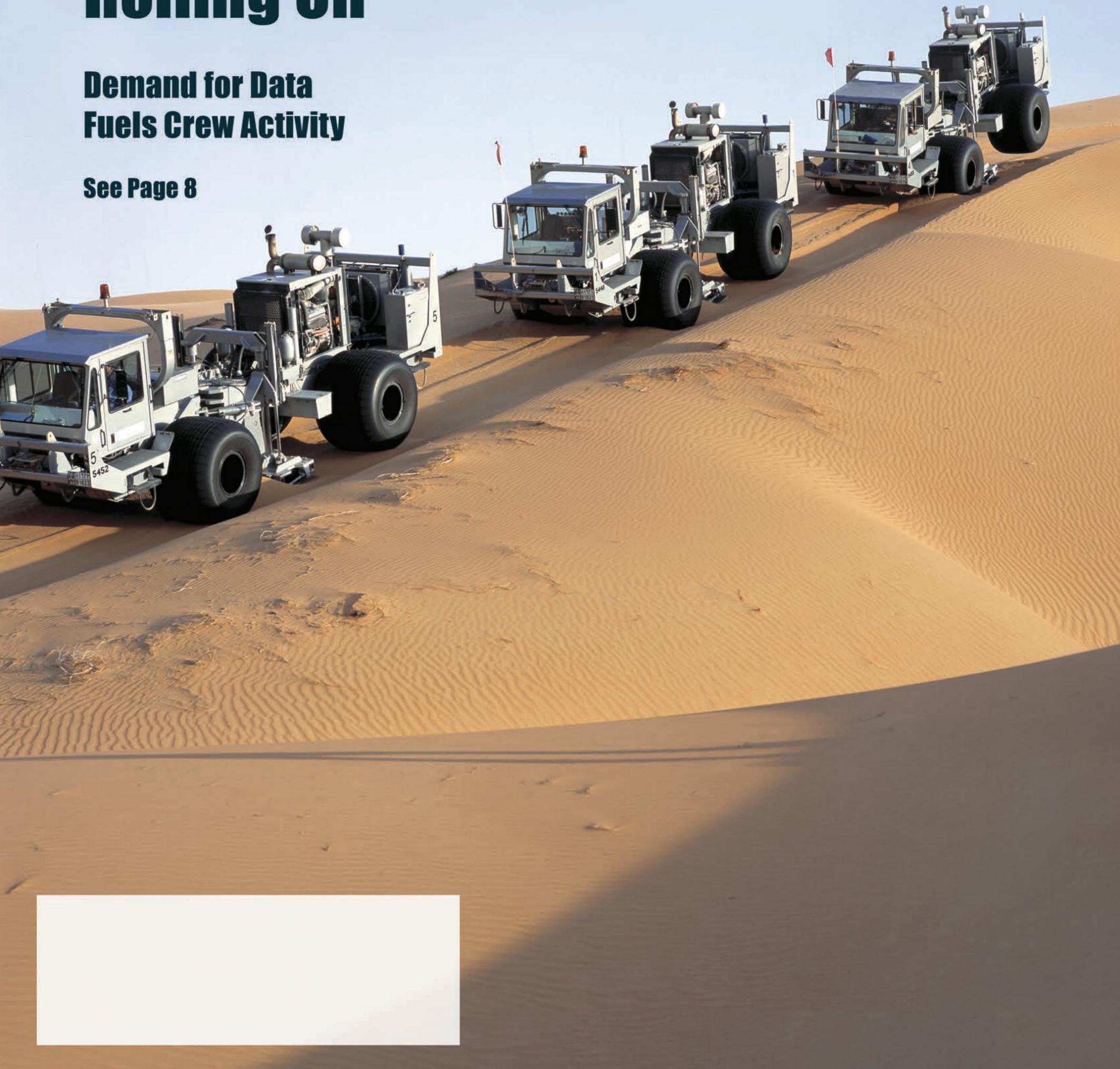
# EXPLORER

OCTOBER 2005

## Rolling On

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**See Page 8**





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**On the cover:** Geophysical officials say that rising energy prices have triggered an increase in demand for seismic services “across the board” – including new data acquisition. For an overview of the current state of the geophysical industry see page 14. Photo of field operations in Abu Dhabi courtesy of WesternGeco.

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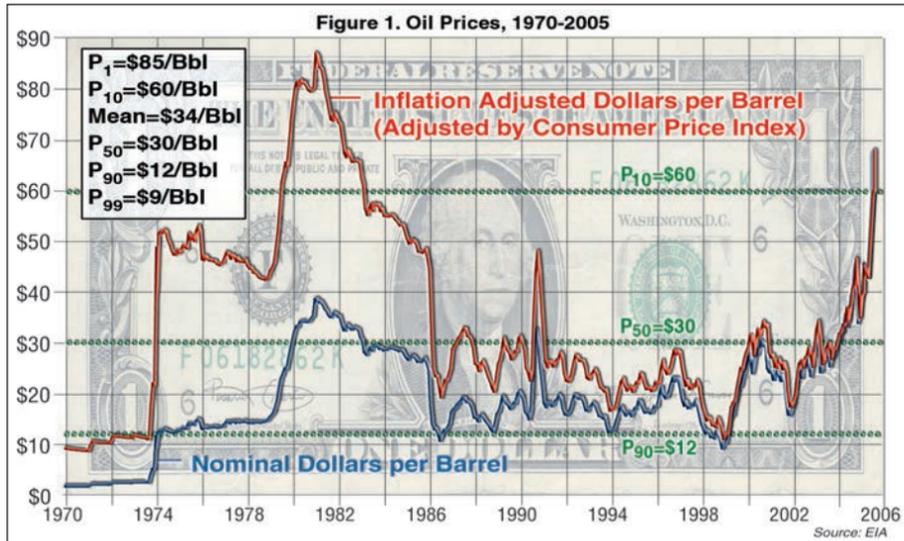
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## PRESIDENT'S COLUMN

# Prices a Stimulus, So Better Watch It!

By PETER R. ROSE

Adam Smith would have loved \$60 oil and \$10 gas.

Not just because energy folks are prospering (that's the inevitable other side of his "invisible hand" concept), but because he would have grasped immediately that elevated energy prices, especially if they are sustained, will stimulate various individual initiatives leading to an improved energy future for everyone.

Of course, that assumes that our society has finally learned to let the free-market economy work its wonders, for the magic of free pricing to influence, and distribute and reward buyers and sellers, consumers and producers, explorers and land-owners, entrepreneurs and financiers – and employers and employees.

On an inflation-adjusted basis since 1970, today's \$60 oil prices are now at about P<sub>10</sub> percent, about \$25 less than their peak during the 1980-81 period (figure 1). Today's elevated prices, if sustained, should encourage us to drive smaller, more efficient automobiles, improve the energy-efficiency of our homes and offices and promote public transport, thus reducing air pollution in our cities. That's precisely what higher energy prices accomplished in the energy crunches of OPEC I and II, and their aftermath. Higher energy prices motivate us to make our power generation and transmission, as well as our industrial

power usage, more efficient. Higher prices can stimulate us to innovate, with respect to finding and developing unconventional new energy sources, and to diversify our sources of power.

Sustained higher energy prices will encourage young people to study geoscience and engineering, responding to increasing demand for young professionals to pursue careers in a dynamic, technologically advanced industry whose healthy function is better recognized today as essential for the maintenance of the world economy and improvement in standards of living. As a petroleum geologist now in his 46th year of professional practice, I derive great personal satisfaction from the enormous – but mostly unsung – contributions my fellow geologists, geophysicists and engineers have made to the economic, material and cultural quality of life to peoples around the world. The many advancements of industrial and developing nations around the world have been built upon dependable and



Rose

See **President**, next page

## AAPG Officer Candidates

Seven candidates are currently slated to vie for positions as AAPG officers for 2006-07.

The list includes six people selected and approved as candidates by the AAPG Executive Committee (with Advisory Council input), plus one petition candidate.

Petitions for candidacy can be submitted prior to Oct. 15. Candidates for officers are:

### President-Elect

Willard R. "Will" Green, an independent/consultant with Green Energy Resources in Midland, Texas (petition candidate).

G. Warfield "Skip" Hobbs, Ammonite Resources, New Canaan, Conn.

Peter M. Lloyd, retired, formerly with Schlumberger, teaching for Heriot Watt University, Falicon, France.

### Vice President

John C. Dolson, TNK-BP, Moscow, Russia.

John C. Lorenz, Sandia National Laboratories, Albuquerque, N.M.

### Treasurer

Randi S. Martinsen, University of Wyoming, Laramie, Wyo.

William A. Morgan, ConocoPhillips, Houston.

The president-elect winner will serve as AAPG president in 2007-08. The vice president will serve for the 2006-07 term and the treasurer will serve for 2006-08.

Candidate statements and biographies are available online at [www.aapg.org](http://www.aapg.org), and will appear in the January issue of the EXPLORER. Official candidate campaign guidelines are available online.

## President from previous page

affordable energy. Our skills and labor and dedication and courage have enabled that remarkable progress over the past 150 years – and I have no doubt that we will continue to respond to the challenges of the future.

\* \* \*

But as E&P professionals, we also know by bitter experience that higher oil and gas prices, even as they stimulate innovation and enterprise, also tend to encourage us to relax our economic discipline and technical standards. Spurred by higher prices, the demand for new exploratory and development prospects outstrips the ability of the geotechnical community to generate them. Seeking perceived fat profits, outside investors – often inexperienced in E&P matters – come knocking, like goldfish coming up to feed. Projected \$90 oil in a prospect's DCF analysis can make even a doggy prospect look promising.

Nearly 20 years ago, Richard Nehring reviewed exploratory finding efficiencies of the 1970s and 1980s. The most efficient exploratory year, in terms of barrels found per exploratory foot drilled, was 1986, when oil fell to \$10 a barrel. Exploration was extremely selective that year – only the most promising prospects were being drilled.

Conversely, 1980 – when oil was \$40 a barrel and rising – was the most inefficient year. Investment money was being thrown away when we thought that oil was going to \$100 per barrel. I shudder at the thought of some of those doggy prospects to this very day!

As professionals, we have to remember that investment capital is also a precious resource, endeavor to maintain our objectivity and our standards, and to make

those investment dollars count. This is hard to do. Independents can make money just selling the prospect and the land, even if the venture itself may be technically and economically weak. Corporate geoscientists may feel substantial pressure to generate prospects and get them drilled, using cash flows suddenly available and burning holes in corporate pockets.

\* \* \*

I well remember the cold hard realities of 1986, having very nearly gone belly-up as a consequence. Like a drunk sobering up after a long binge, we realized that oil and gas were indeed commodities, and the laws of supply and demand still operated. Hundred-dollar oil? "This time it's different." What were we thinking? But the sustained low prices of the late 1980s (and again briefly in the late-1990s) reminded us inexorably that it is the nature of commodities to fluctuate substantially.

Now, I don't know whether \$60 oil is sustainable for the next year or so, and neither does anyone else. It may climb to still another price-plateau. What I do know is that oil and natural gas are commodities, and their prices will fluctuate. It certainly does appear that world demand is impinging on world supply at the present time, bringing upward pressure.

So, without wanting to "rain on anyone's parade," and just to keep ourselves honest, let's indulge in some brainstorming – let's explore some possible scenarios by which the pressure on global supply might be relieved, causing prices to fall:

□ A cooling-down of the global economy, especially the United States, India, and China (remember the collapse of the Asian tigers in the mid-late 1990s?).

□ Political stabilization of Iraq, allowing Iraqi production to maximize (mid-term to long-term, think what would happen if

exploration in Iraq discovered major new fields).

□ Increased production from Russia and the Caspian region, or from Venezuela, enters world markets.

□ LNG imports into the United States become substantial, setting a \$5/mcf floor on natural gas prices.

□ Energy efficiency in the Western economies improves significantly, reducing demand.

Of course, we could also list some developments that would work in the opposite direction, causing energy prices to rise even more! Even so, folks caught up in the present price-rises could get badly hurt in a drop from \$80 back to \$50, especially if they are overextended.

The Bottom Line: Maintain your technical and financial discipline and invest your excess cash flow wisely. Just because you're making a lot of money right now doesn't mean that you have to spend it right away!

Also, accept that some good projects that you would like to be involved in are going to be priced way out of your reach by some buyers who don't know what they're doing, and who don't think oil and gas are commodities.

\* \* \*

Consumers don't like paying 50 percent more for their gasoline than they did last year. They pay taxes and they vote. Their representatives properly listen to them. And that means our E&P industry is going to come under increasing public scrutiny. It's a time when all of us need to be especially cognizant of our public images. It's easy for the whole industry to get tarred with the brush of a single big foul-up.

In late August I heard Sen. Lindsey

Graham (R - S. Carolina) on one of the Sunday TV talk shows. He was suggesting that it may be time now for congressional hearings in which oil industry leaders come and talk to Congress, the U.S. citizenry and the world community about "these high (\$2.60/gallon) gasoline prices."

Looking back on the huge amounts of public moneys the U.S. government squandered on ill-advised energy projects in the 1970s and 1980s, as well as Windfall Profits, two- and three-tier FERC price controls, etc., one is filled with foreboding: "Here we go again."

Here's hoping we have finally learned. The most important agent in maintaining adequate future world energy supply is not government intercession, or new geotechnical breakthroughs or drastically accelerated drilling and producing infrastructure. It is in the continued maintenance of a vibrant free-market world economy.

Adam Smith would have understood that.

\* \* \*

Recommended reading: *Naked Economics*, by Charles Wheelan (2002, W.W. Norton & Co., NY), is the best, most readable book on modern economics available.

I personally believe that the single most common failing of most contemporary geoscientists is an all-too-common naiveté about economics, finance and business. It hurts society, their employers, and their own careers. More than ever before, it is imperative for geoscientists to be well versed with economics and financial principles. Wheelan's book is a great first step.

*Read it, you'll like it!*



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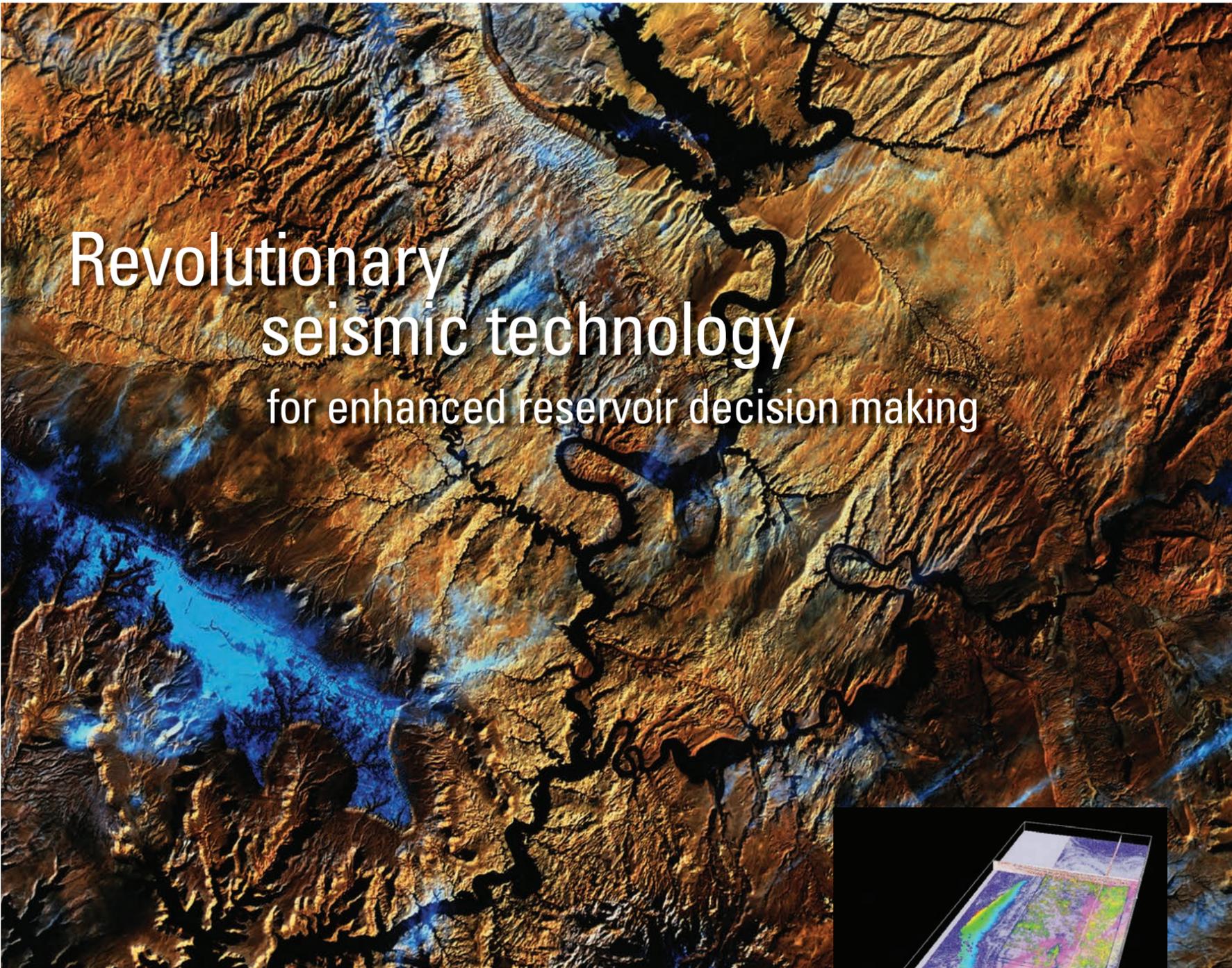
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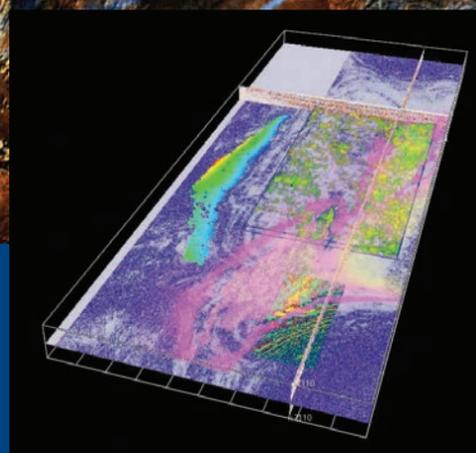
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## A Letter from Both Presidents

## AAPG, SEG to Explore Joint Meetings

By CRAIG J. BEASLEY  
SEG President

and  
PETER R. ROSE  
AAPG President

AAPG and SEG may be on the cusp of something very promising.

In late August in Houston, the presidents of AAPG and SEG (Pete Rose and Craig Beasley) and Lee Billingsley, AAPG president-elect, got together for dinner.

In our dinner conversation we traded notes about our two organizations, SEG and AAPG – lots of similarities, a few interesting differences. We talked about

*One of the main problems in merging such meetings is that both SEG and AAPG derive a substantial part of their discretionary annual income from them.*

some concrete ways by which SEG and AAPG could cooperate more frequently and more effectively. The two organizations have a long history of

working together and have many joint accomplishments in areas such as meetings and publications.

We agreed that we should try to take

the cooperation further and consider a large effort such as a joint annual meeting.

Presently, there's a lot of overlap and duplication of exhibitors, corporate sponsors, and attendees at SEG and AAPG meetings. The leaderships of both outfits have been hearing a lot lately from many of those good folks: "There are just too many meetings these days! Besides, the geological and geophysical disciplines are increasingly merging, just like the industry. Why don't you SEG and AAPG folks get together and combine your annual and international conventions, so there will be just one North American meeting and one international meeting?"

One of the main problems in merging such meetings is that both SEG and AAPG derive a substantial part of their discretionary annual income from them. Obviously if you just combine meetings, each partner ends up with about half the income it used to realize on a separate basis.

Unless:

- ✓ More people attend the merged conference.
- ✓ Exhibitors are willing to pay higher booth rental fees because they'll have larger audiences and, under the merged approach, they now have to pay for shipping, setting-up, tearing-down and staff costs only twice a year, not four times.
- ✓ Corporate sponsors are willing to provide increased contributions because their professional geoscientists don't have to attend as many meetings.
- ✓ Attendees are willing to pay registration fees that are a tad higher because the two conferences are bigger and better.

We all agreed: "Seems like it ought to be worth a try."

So where do we go from here? The first step is this joint letter, which will reach every member of the two organizations in early October, via *The Leading Edge* as well as the AAPG EXPLORER.

Second, we will each appoint a small Ad Hoc Committee of senior members of our respective organizations very soon, to form the AAPG/SEG Joint Meeting Evaluation Committee. We will be their immediate liaisons with our respective Executive Committees. Terry Young will succeed Craig in that function on Nov. 1, 2005. Lee Billingsley will succeed Pete on July 1, 2006.

Third, we will work together over the next two months to compose the Charge for the AAPG/SEG Joint Meeting Evaluation Committee, that asks for a "road-map," with all key issues identified, leading to a joint SEG and AAPG annual meeting and perhaps joint international meetings. Right now, we're thinking 2009 or 2010, but we'll listen to the Joint Committee.

This is a significant task and we do not underestimate the difficulty. Fortunately, both executive directors have embraced the concept. If successful, this step could lead to more significant ties between our two organizations. Therefore, we must investigate the possibilities and make it happen if possible.

Stay tuned! □

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Business and attendance were booming at the inaugural Summer NAPE.

## Lots of SOLD Signs Summer NAPE Was a Barn-Burner

By LOUISE S. DURHAM  
*EXPLORER Correspondent*

When the crowd of 4,200 registrants gathered at Summer NAPE in Houston during a couple of sultry days late in August, the exhibit hall at the George R. Brown Convention Center was a rockin' place.

Indeed, the energy level was almost palpable, as the din from the high-octane congregation reverberated off

the walls in the big room. In all, 250 companies participated in the event, where 375 booths were set up.

Summer NAPE was created and produced by NAPE Expo LP, which is a partnership comprising AAPL, AAPG, IPAA and SEG. The event replaces the former AAPG-sponsored APPEX event held each summer before AAPG joined into the NAPE partnership.

The earlier success of APPEX aptly demonstrated the need for a summer prospect expo.

Near-\$70 oil and \$10 gas alone can create excitement among a group of deal sellers and buyers. Commodity prices aside, there were plenty of good prospects being displayed for sale that had the buyers all revved up.

As a sign of the times, there also were a number of "sold" signs in some of the booths early on the expo's first day. While some deals were cut directly on the floor, there were instances where exhibitors planned to show prospects that sold before the meeting commenced.

There were reports that at least one prospect was sold during an owner's walk from his car to the exhibit booth where he planned to put it on display.

Not surprisingly, the bulk of the prospect generating shops showing their wares were smaller companies, with a number of new names included. There were properties being promoted as far away as Australia, in addition to the expected plethora of prospects in always-popular drilling locales such as Texas and Louisiana.

As is often the case with creative prospect generators, some of the deals on display carried some intriguing and catchy monikers. Sandalwood Oil & Gas, for instance, was promoting its "Monkey in the Mirror" prospect offshore South Louisiana. The prospect is a mirror image of one to be drilled by Sandalwood a short distance away at Monkey Island.

### Smiles All Around

For those who were there to learn something as well as buy and sell, Summer NAPE kicked off with a forum on "Perspectives on North American E&P." The forum, sponsored by IHS Energy, featured technologies that spur commercial production from unconventional reservoirs. The Summer NAPE luncheon featured a presentation by James Flores, chairman and CEO of Plains Exploration and Production.

All of it added up to satisfaction aplenty being expressed over AAPG's first experience in the summer event.

"I think it's great," said Rick Fritz, executive director of AAPG. "I think the high level of participation shows the importance of these merged meetings and how successful they can be. It shows how much can be accomplished with inter-society cooperation."

"We're very pleased with Summer NAPE," said Robin Forte, executive vice president of AAPL, where NAPE

See **NAPE**, page 11

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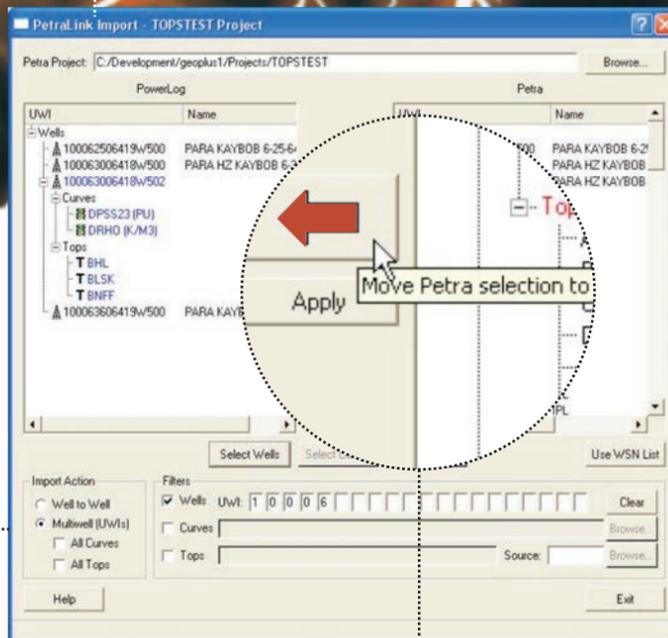
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32 Awardees to be Honored in Houston

# Mitchum to Receive Powers

Robert M. Mitchum, a research geologist who has been credited as a pioneer in developing the disciplines of sequence and seismic stratigraphy, has been named the 2006 recipient of the Sidney Powers Memorial Award.

Mitchum, an AAPG Honorary member with Robert M. Mitchum Exploration in Houston, heads the list of those being honored this year by the Association.

AAPG awards, approved by the Executive Committee, are presented annually to recognize individuals for service to the profession, the science, the Association and the public.

As a recipient of the Powers Medal, Mitchum is bestowed the Association's highest honor.

Mitchum, also a recipient of the 1992 Robert H. Dott Sr. Memorial Award for AAPG Memoir 26, was a "key wordsmith" in creating many of the scientific definitions used by geoscientists today.

"If Peter Vail is the father of sequence stratigraphy, Robert Mitchum is the doctor who made the delivery," reads a citation he received from the Gulf Coast Section-SEPM.

Mitchum and his fellow honorees will be recognized at the opening session of the 2006 AAPG Annual Convention, which will be held April 9-12 in Houston.

An interview with Mitchum will be published in a future EXPLORER, and biographies and citations of all award winners will be included in a future BULLETIN.

Those award winners approved by the Executive Committee and who will be honored along with Mitchum in Houston are:

**Honorary Membership Award**

Presented to members who have distinguished themselves by their accomplishments and through their service to the profession of petroleum geology and to AAPG.

- Richard S. Bishop, consultant, Houston.
- Terry L. Hollrah, Hollrah Exploration, Oklahoma City.
- John Rold, consultant, Lakewood, Colo.
- Harrison "Jack" Schmitt, consultant, Albuquerque, N.M.

**Outstanding Explorer Award**

Presented to members in recognition of distinguished and outstanding achievement in exploration for petroleum or mineral resources, with an intended emphasis on recent discovery.

- Richard L. "Dick" Findley, Prospector Oil, Billings, Mont.

**Distinguished Service Award**

Presented to those who have distinguished themselves in singular and beneficial long-term service to AAPG.

- Martin D. Hewitt, EnCana Oil and Gas, Calgary, Canada.
- Neil F. Hurley, Colorado School of Mines, Golden, Colo.
- John Kaldi, Australian School of Petroleum, Adelaide, Australia.
- Larry C. Knauer, ChevronTexaco, Bakersfield, Calif.
- Jeffrey W. Lund, Access Exploration, Houston.

**Grover E. Murray Memorial Distinguished Educator Award**

Presented for distinguished and outstanding contributions to geological education, both at the university level and toward education of the general public.

□ G. Randy Keller Jr., Department of Geological Sciences, University of Texas-El Paso, El Paso, Texas.

□ Brian E. Lock, Geology Department, University of Louisiana, Lafayette, La.

□ Roger M. Slatt, School of Geology and Geophysics, University of Oklahoma, Norman, Okla.

□ John E. Warme, Department of Geology, Colorado School of Mines, Golden, Colo.

organizations whose area of work may not qualify for one of the existing awards, but is worthy of Association recognition.

□ Jordi "Jorge" Ferrer Modolell, retired, who was the general chair of the 2003 AAPG International Conference and Exhibition in Barcelona, Spain.

□ Roy Helge Gabrielsen, executive director-Division for Science, Research Council for Norway, Oslo, Norway.

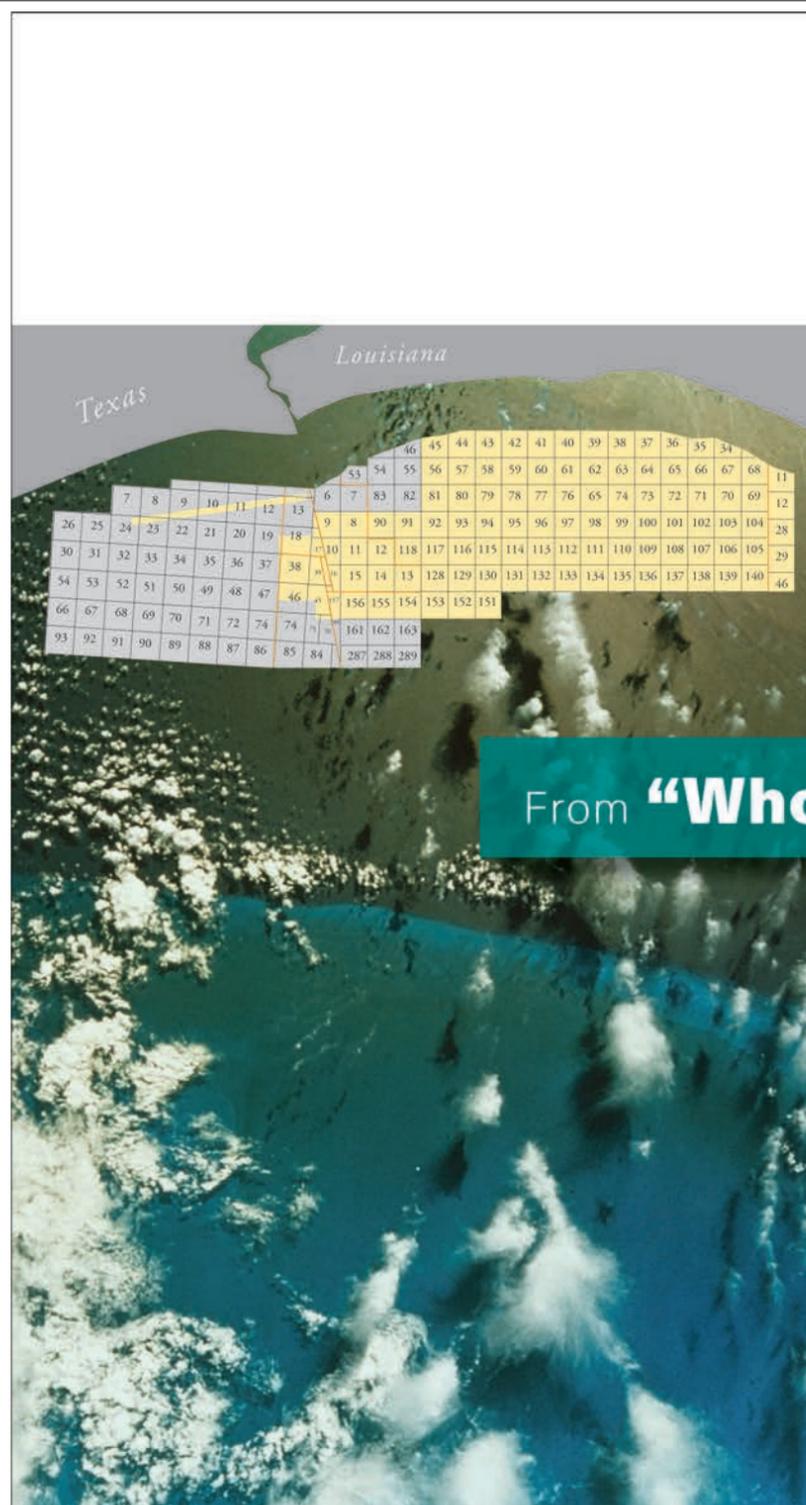


Mitchum

**Special Award**

Presented to individuals and

continued on next page

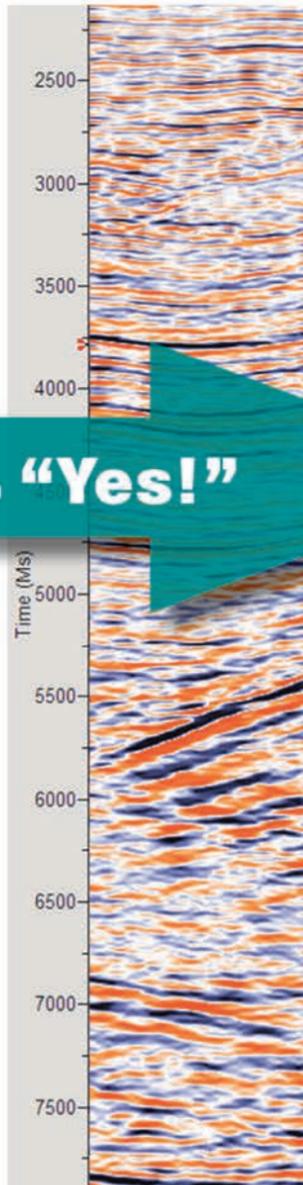


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Left (in yellow): Completed 104 block 3D survey.

Right: Extraction from recently acquired West Cameron Deep Shelf 3D seismic survey (13 second record length, 50m receiver interval, 120 fold, dual sensor receivers, and 9000m offsets.)

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**NAPE**  
from page 8

originated. "There's good energy here, and the prospects are selling.

"In fact," he added, "the energy level is comparable to the larger winter meeting. We'll absolutely do another."

Forte noted also that NAPE is a good competitor for a deal. He told of hearing from prospect generators on the brink of selling a prospect and then closing the deal as soon as they mentioned they would be taking it to NAPE.

Obviously the exhibitors, too, were happy campers.

"We sold what we have," said Robert Pledger, president of Benchmark Oil & Gas. "And we happened to mention a 12-well drilling program to someone who said he wanted in on it even though he hadn't seen it - we'll see what happens."

Exhibitor Jim Allen, president of J.L. Allen Exploration Ventures, was equally enthusiastic about the confab, even though he arrived empty-handed, having sold the prospects he had prior to the expo.

"This is really very good," he said. "It's comfortable and not so crowded like the bigger meeting. There's a good variety of prospects and a lot of lookers, and I've heard that many people have sold or made appointments." □

continued from previous page

**Public Service Award**

Presented to recognize contributions of AAPG members to public affairs — and intended to encourage such activities.

□ **Edward C. Roy Jr.**, Trinity University, San Antonio.

**Pioneer Award**

Presented to long-standing members who have contributed to the Association and who have made meaningful contributions to the science of geology.

□ **Frank Royse**, retired, Oro Valley, Ariz.

**Wallace E. Pratt Memorial Award**

Presented to honor and reward the author(s) of the best AAPG BULLETIN

article published each calendar year.

□ **Keith W. Shanley, Robert M. Cluff** and **John W. Robinson**, for "Factors Controlling Prolific Gas Production From Low-Permeability Sandstone Reservoirs: Implications for Resource Assessment, Prospect Development and Risk Analysis," which appeared in the August 2004 BULLETIN.

**Robert H. Dott Sr. Memorial Award**

Presented to honor and reward the author/editor of the best special publication dealing with geology published by the Association.

□ **G. Michael Grammer, Paul M. "Mitch" Harris** and **Gregor P. Eberli**, for AAPG Memoir 80, *Integration of Outcrop and Modern Analogs in Reservoir Modeling*.

**George C. Matson Award**

Presented to honor and reward the best oral presentation at the AAPG Annual Convention in Calgary.

□ **Michael R. Hudec** (co-authors were **Martin Jackson** and **Daniel D. Schultz-Ela**) for "A Compressional Origin for Minibasins Near the Sigsbee Escarpment, Gulf of Mexico." Hudec and Jackson are with the Bureau of Economic Geology, the University of Texas at Austin, Austin, Texas and Schultz-Ela is a consultant in Hotchkiss, Colo.

**Jules Braunstein Memorial Award**

Presented to honor and reward the best poster presentation at the AAPG Annual Convention in Calgary.

□ **Hege M. Nørdgård Bolas, Christian Hermanrun** and **Gunn M.G. Teige**, with Statoil (USA), Trondheim, Norway, for the poster "Seals and Overpressure in Mud-Dominated Systems."

**Journalism Award**

Presented for notable journalistic achievement, in any medium, which contributes to public understanding of geology, energy resources or the technology of oil and gas exploration.

□ **Michael Crichton**, an international author, for his recent science-based thriller *State of Fear*, which still tops the Best Seller List; and for his earlier novel *Jurassic Park*. Both works are "serious efforts by Crichton to take current scientific knowledge and put it into an entertaining and stimulating format." □

**Historic Conference Begins in November**

The inaugural International Petroleum Technology Conference, a jointly sponsored oil and gas meeting and exhibition with historic implications, will be held Nov. 21-23 in Doha, Qatar.

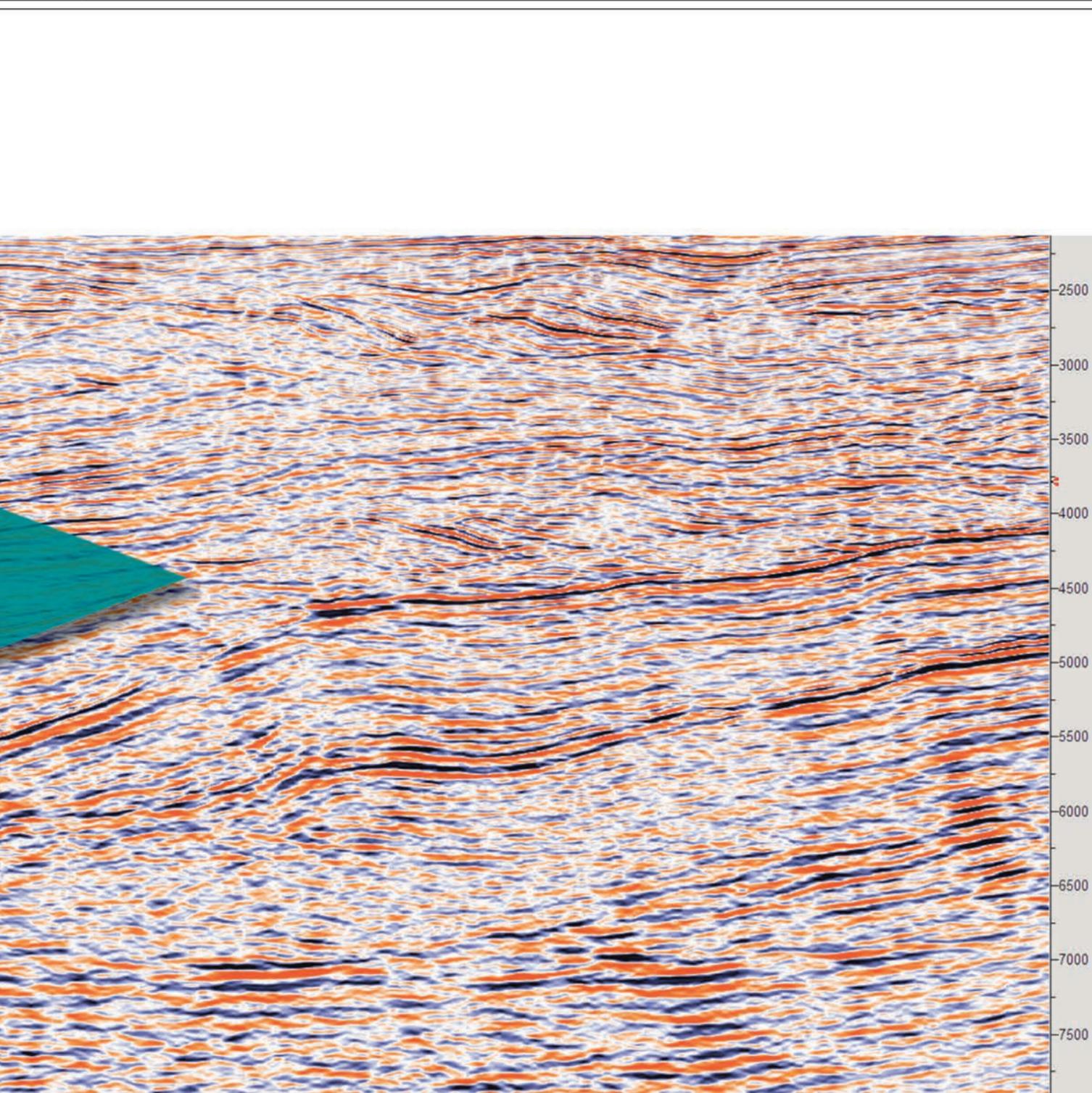
It is the first meeting ever to be jointly sponsored by AAPG, the European Association of Geoscientists & Engineers, the Society of Exploration Geophysicists and the Society of Petroleum Engineers.

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*Ivan Weathered in Great Shape***Katrina to be a Major Industry Test**

By LARRY NATION

AAPG Communications Director

One year ago today the Gulf Coast was still digging out from a Category 4 hurricane.

Hurricane Ivan had terrorized the Caribbean for 20 days in September, causing at least 92 deaths, slamming ashore at Gulf Shores, Ala., on Sept. 24, 2004.

The U.S. National Weather Service said Ivan was the most destructive hurricane to affect this area in more than 100 years.

Until Katrina.

And now, the Gulf Coast is again digging out from a Category 4 hurricane that topped Ivan in all categories. Katrina likely will be judged as the worst natural disaster to hit the United States to date, with the aftermath of the storm compounding the problems.

The industry weathered Ivan in great shape. And at press time, the reports from the "front" were still being tallied on Katrina.

Focusing on the industry's lot, Ivan's 2004 path included 150 platforms and 10,000 miles of pipeline. It hit seven platforms and significantly damaged 24 others.

The 2004 tempest wreaked havoc underwater, too, by triggering mudslides in the Mississippi River delta that damaged at least 13 pipeline systems. Another four large-diameter pipelines were shut-in from other causes due to Ivan.

"What is amazing (about Ivan) is that (this) storm came straight through the heart of the oil industry in the Gulf of Mexico, caused an impressive amount of destruction, yet resulted in no significant environmental or safety disaster," AAPG member Dan Orange said in a April 2005 EXPLORER report.

For Katrina, 561 platforms and rigs were evacuated, according to the U.S. Minerals Management Service (MMS), accounting for a quarter of U.S. oil production. Over 91 percent of daily oil production and 84 percent of natural gas production was shut-in in early September.

**Reeling**

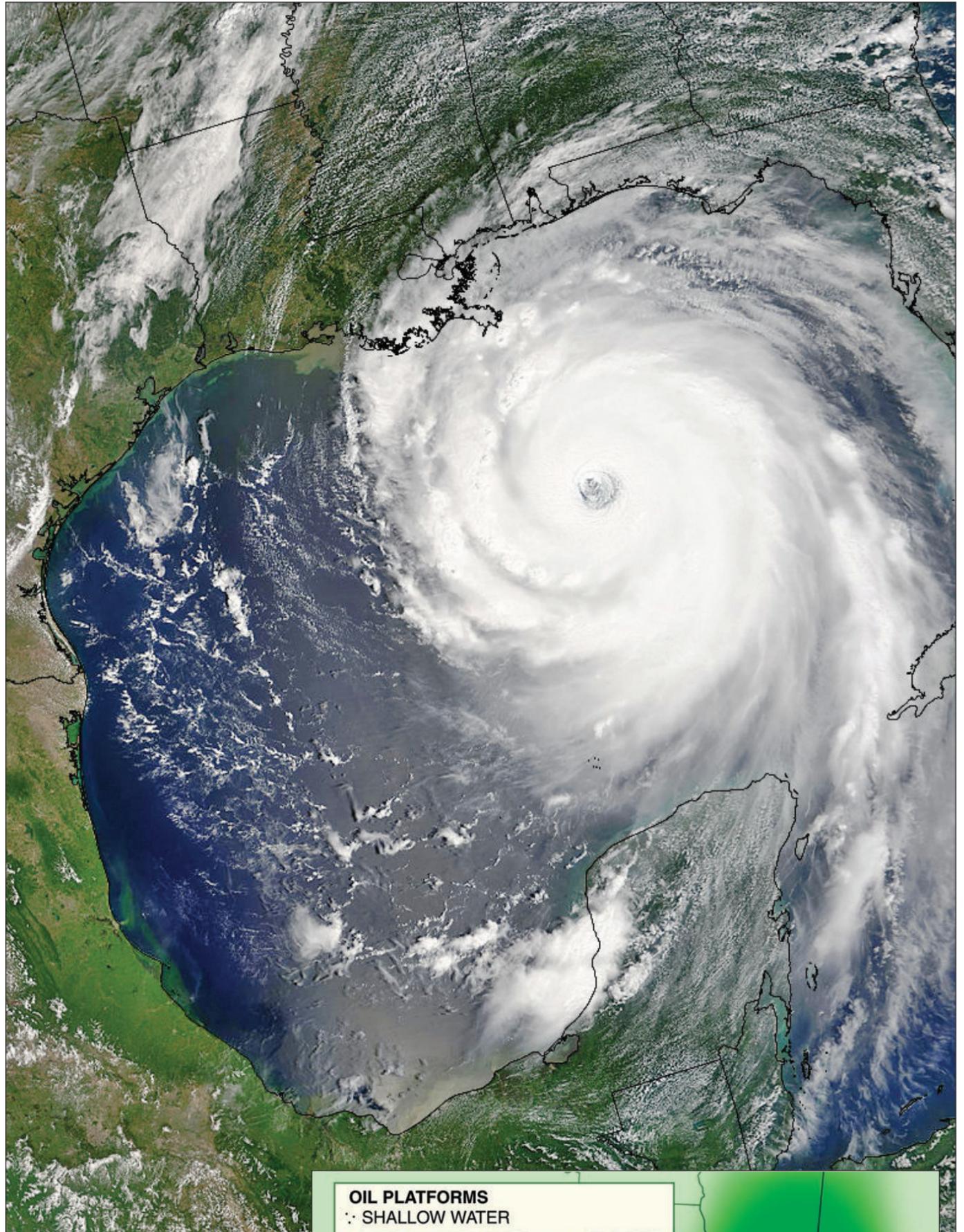
Hurricane Katrina's blitzkrieg – again through the heart of the Gulf's mid-section – left the industry reeling along with everyone.

Unlike 2004's Hurricane Ivan, which affected upstream oil production facilities and had a lasting impact on crude oil production in the Gulf of Mexico, it appears that Hurricane Katrina may have a more lasting impact on the downstream refinery production and the distribution system, the MMS said.

One of those major impacts was the closing of Louisiana Highway 1, two narrow lanes of road cutting through the marshes of south Louisiana that is a lifeline to about 17 percent of America's natural gas and about 16 percent of U.S. crude oil (September 2003 EXPLORER).

Its long-term effectiveness as a viable transportation route is anyone's guess, according to the Louisiana Department of Transportation.

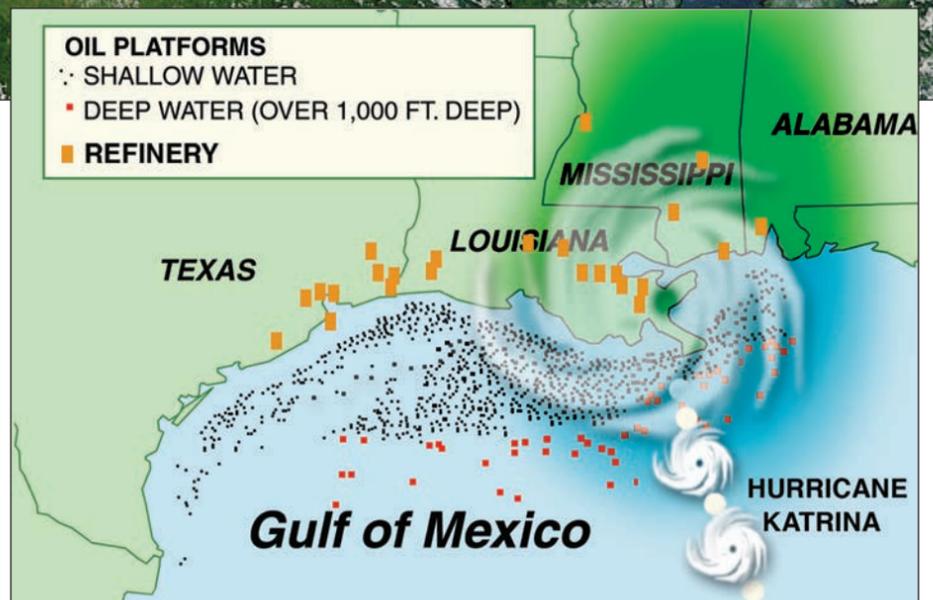
At press time, a week after landfall,



Hurricane Katrina turned slightly eastward before slamming into shore, redirecting the storm's most potent winds and rain away from the vulnerable city of New Orleans. That eastward movement put the western eyewall – the weaker side of the strongest winds – over the city with 145 mph winds and a storm surge that breached a protecting levee allowing Lake Pontchartrain to flood low-lying areas. The Gulf oil industry was hit hard as well, with refineries and off-shore platforms and pipelines suffering a variety of storm-related damages.

Photo credit: NASA/Jeff Schmaltz,  
MODIS Land Rapid Response Team

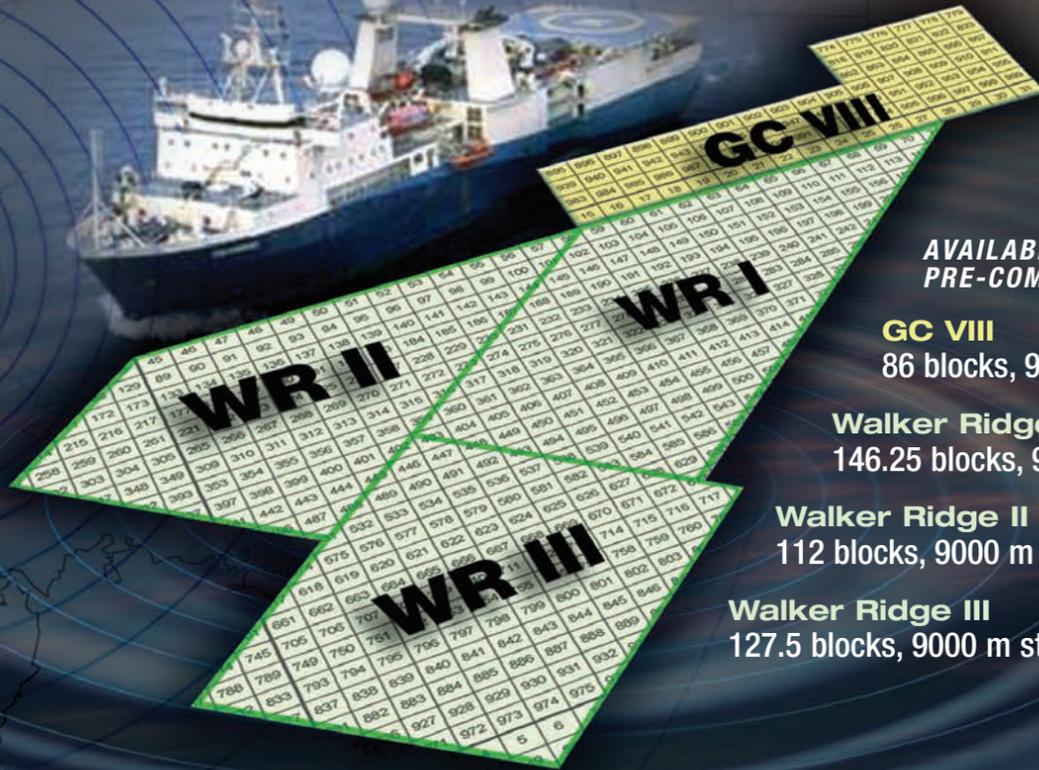
EXPLORER graphic by Rusty Johnson



See **Katrina**, page 16

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LOOK TO



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*Geophysical Industry Update: Whistle While You Work***Market is Humming a Happy Tune**

By LOUISE S. DURHAM  
*EXPLORER Correspondent*

It is indeed fortunate that the oil and gas industry tends to attract a hardy bunch of folks with an unflinching determination to continually wrest more hydrocarbons from deep within the earth.

These sturdy souls always rise up, brush themselves off and essentially begin again following the intermittent oh-so-stressful industry downturns.

Just look at the geophysical sector, for example.

A mere couple of years back, last rites were in order; today, it's going gangbusters.

"We see more demand for seismic services across the board, such as libraries, reprocessing, new data acquisition," said Chip Gill, current president of the Houston-based International Association of Geophysical Contractors (IAGC). "Still, it's important to remind ourselves how far down the geophysical industry was. So while it's definitely improved, we have to take that in the context of how bad things were."

But, darn, it's hard to show restraint when business is humming like now.

"It's a really positive time in the industry," said Deanna Goodwin, president North and South America at Veritas. "Capacity is being stretched to the point where supply and demand match, and that's a positive change."

"The mood in the company is good, the morale is terrific and there are lots of vehicles still in the garage at 7:00 in the evening."

The attitude at WesternGeco is equally ebullient.

"We've seen a significant shift in the balance for supply and demand across both our land and marine services," said Elaine Buck, the company's marketing manager for North America, including Mexico.

"One of the good things we see today is increased collaboration with our customers," Buck said. "We're more involved in their longer planning cycle, which is definitely required considering the vessel capacity (tightness) and crew capacity for land that's worldwide."

"That's a real message that all the seismic contractors want to push is that clients need to be talking to us today about 2007."

The sometimes-thorny procurement process still needs some tweaking in the minds of some industry participants.

"The E&P companies continue to make efforts to shift an unrealistic and imbalanced amount of risk on to the contractors," Gill said. "The amount of risk is not commensurate with the value of the contracts."

The good news is this appears to be changing.

"It's becoming a little more reasonable, with both the contractors and E&P companies looking at risk and trying to be reasonable and fair," Goodwin said. "When capacity is tight like now, the oil companies don't have as much leverage, so we're able to negotiate fair contracts that are becoming more favorable."

**Booming Gulf Activity**

If anyone needs proof of the uptick in marine activity, they need look no further than the Gulf of Mexico, where time-sharing is the M.O., given the crowded waters.

Managing time in the Gulf with vessel

activity is a challenge industry-wide, according to Goodwin. With multiple vessels working in close proximity and multiple wells being drilled, contractors must plan their shoots accordingly.

There is a consensus among many folks that this kind of market offers tremendous opportunities for development of new technologies. In fact, some new high-tech applications already are under way.

Not surprisingly, some of the newer technologies being used are in the still-frontier deepwater play with its horde of salt bodies, which provide numerous

challenges for data acquisition to adequately image and evaluate the subsalt drilling targets.

"The new thing in the marine environment is in wide azimuth, i.e., rich azimuth with towed streamer and true wide azimuth with nodes," said Steve Mitchell, vice president of operations at Fairfield. "That's the new stuff versus conventional long offset."

All-azimuth illumination is crucial for accurate imaging where reservoirs are partially obscured by salt bodies or other complications; seabed nodal seismic systems can be used to acquire true all-

azimuth surveys in a cost-effective manner, according to Mitchell. They also offer precise repeatable positioning for time-lapse surveys.

A full-scale field trial of nodal seabed technology was scheduled to kick off in September to image the subsalt section at BP's Atlantis field in the GOM. The program will use Fairfield's Z 3000 nodal system designed for deepwater use.

WesternGeco continues to build upon its Q technology suite for enhanced

continued on next page

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Photo courtesy of Fairfield Industries

The deep Gulf continues to be of interest in both normal exploration shooting and a growing interest in 4-D possibilities.

continued from previous page

reservoir delineation, characterization and monitoring, which has proven valuable to address subsalt issues.

"We're excited about a new acquisition mode called over/under where we actually stack the streamers one on top of the other," Buck said. "This enhances the low and high frequencies, which is important for subsalt imaging."

"For deepwater subsalt imaging, we're ramping up this work, while Q Seabed is our next technology enhancement for deep gas over the shelf," she said. "It's an enhancement over the older but robust OBC system we have."

The positive fallout from the increasing number of wells operators anticipate drilling in the deepwater is wide ranging. For instance, the ensuing

infrastructure builds will yield increasing opportunities for independents because the play will be opened to smaller companies.

Also, operators of large fields can look outside for small reserves to pump into the same infrastructure.

**Looking Ahead**

Barring the unexpected, activity in the marine side of the business is anticipated to continue escalating, particularly in the GOM.

"The Gulf of Mexico will continue to be strong, especially the deep Gulf, and I think we'll see another generation of shooting take place," said Bob Peebler, president of I/O. "In addition to normal exploration type shooting, we'll see a growing interest in 4-D, both in towed streamer and on seabed type installations, where I think we're still in the early adopter stage."

"I think the mega-trend is a renewed interest in land geophysics," Peebler said, "and it makes sense to us if you look at where the oil and gas reserves are."

"As places like Russia, Libya, Nigeria and others re-open, there's almost a missed round of technology used in many of these places, so we're starting to see a significant increase in land activity."

"As I talk to executives in the IOCs – the BPs, the Shells – I think they're all increasing resource allocation toward land," he added, "and I think this will bode well for the industry."

Much of the land activity in North America will be in the more unconventional plays such as the tight gas sands, fractured reservoirs, the Barnett Shale play, Peebler noted. In places like Russia and China, the action will be focused more on typical exploration type plays.

"Coming with the increasing activity are a lot of regional players," Peebler said. "All over the FSU we see a lot of small companies taking up new technology, so there's sort of an interesting race going on. There are a lot of companies forming, and some of the more aggressive ones are purchasing new technology to get an edge."

"It will be interesting to see how land activity unfolds, and five years from now who will have leadership positions around the world."

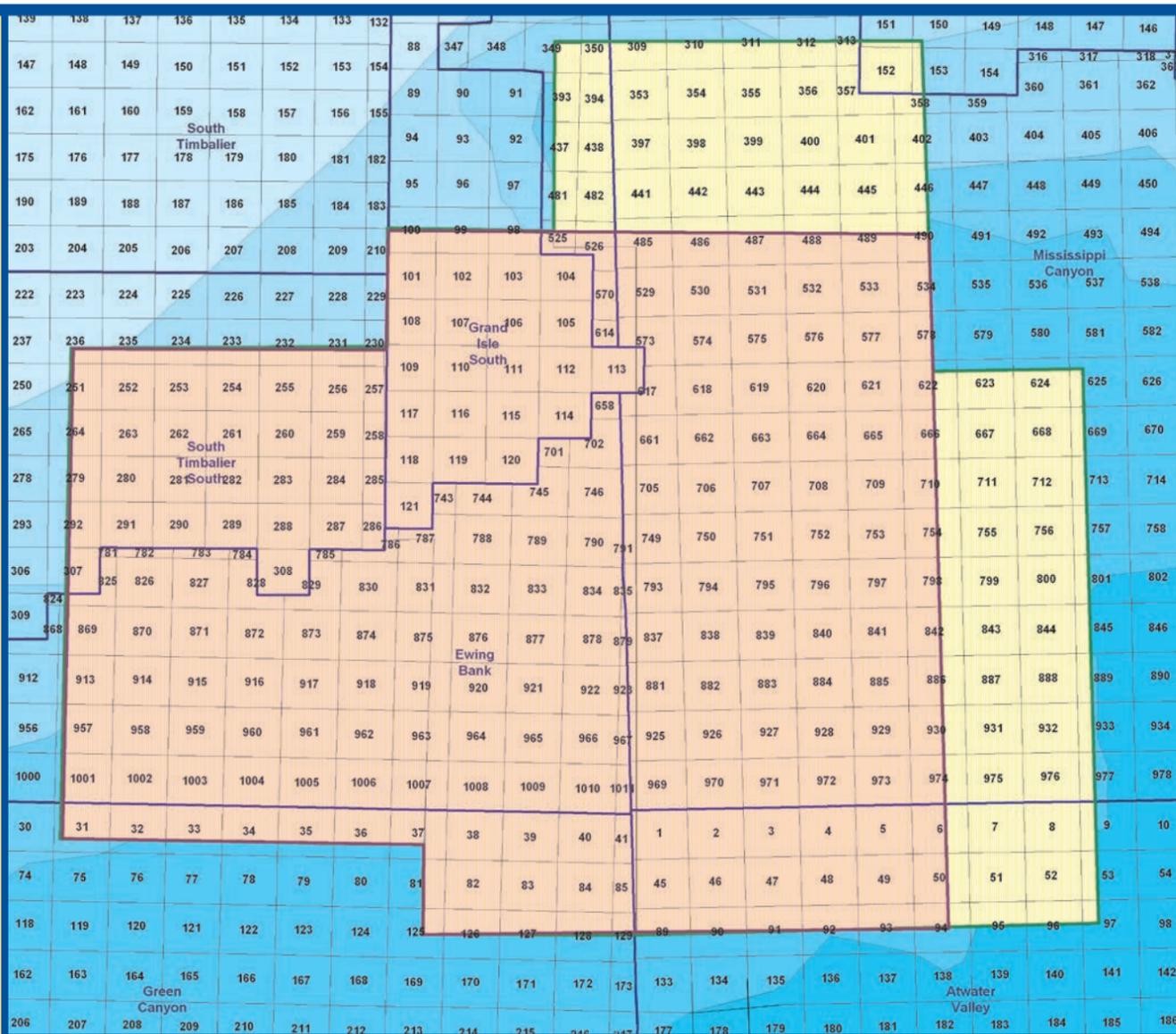
Because land carries more technical challenges than marine, it's likely many previous surveys were under-sampled. The main reason for this, according to Peebler, is the cost of the recording with all the crews, cables, etc., has limited the number of sensors people would like to employ.

"I think over time, technology will let people put more sensors out, especially as we move into the digital world," he said. "We'll see a renewed interest and another turn of the crank for land shooting."

Where does he think the hot spots will be located?

"I don't think the majority of future activity will be in North America; it will be where the oil and gas is – the Middle East, Russia, China, etc." □

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## Katrina

from page 12

the industry was still struggling to make contact with employees, and damage assessments were just beginning.

Orange is familiar with the scenario – and was AAPG's Program Committee chairman for the Offshore Technology Conference (OTC) last May. The focus was offshore geohazards.

"Dealing with hurricanes isn't like dealing with earthquakes," said Orange, who is president and CEO of AOA Geophysics. "We know where they are and when they'll hit."

"Companies have set up a 'war room' where there is a well-rehearsed script to follow," he said. The war room is remote from the storm's impact and

has the latest communications gear as well as "real time" onsite data available.

The war room script includes:

- ✓ Shut in the pipelines.
- ✓ Close the valves.
- ✓ Secure the platform.
- ✓ Evacuate personnel

"Then they hunker down and wait for the storm," he added.

### Surveying the Damage

What is happening in the wake of this storm is what Orange calls the "damage assessment ritual."

As soon as feasible, the first phase is surveying the damage. It begins with fly-bys in fixed wing aircraft to determine the status of the platforms – and look for oil slicks.

Dallas-based Insurance Data Systems said some of these first

passes "don't look good." The U.S. Coast Guard reported at one point that 20 rigs or platforms were missing, either sunk or adrift, plus one confirmed fire where a rig was. The fire was not a hazard and was allowed to burn out.

Meanwhile, other crews are charged with looking at what's happening on the seafloor.

"Every survey boat is being contracted immediately," Orange said, to look for new seafloor pock marks and at – or for – pipelines.

After Katrina, these boats are in short supply while the demand is high. At press time, Orange said the companies were still trying to get people to the boats.

He said the boats' equipment might include multi-beam bathymetry, side-scan sonar and high-resolution sub-bottom profilers. Some also may use

high resolution 2-D seismic.

Then, triage begins with crews repairing the damage.

There are times, Orange said, the platforms are so damaged that the rigs cannot accommodate the crews; hotel-like boats are contracted to provide living quarters.

Pipelines are designed and built to withstand the rigors of major hurricanes, but the hazards are difficult to overcome, especially if they are in the path of a mudslide, "which really packs a wallop," Orange said.

After Hurricane Ivan, in the Main Pass areas, Orange said it was "20 miles of spaghetti" due to the tangled, displaced pipelines. One was pushed three-and-a-half miles from its mooring.

Orange said the Gulf area "is a well-known hazard environment, with fluffy sediments" where the crown jewels of the industry operates in near sea-level on an active delta heading to the on-land hubs.

He anticipated that one of the outcomes of the double whammy of Katrina and Ivan is an increased focus, including case studies and information-sharing, on the infrastructure and geohazards.

### AAPG's Response

Katrina's malevolent bequest has left a staggering toll on society as well as the industry, and the impact is certain to be felt and remembered for generations. Many oil companies have already made generous corporate charitable responses as some struggle with internal losses as well.

AAPG is involved in Katrina relief funding on several levels. Both AAPG and the AAPG Foundation have made donations to a charitable fund on the members' behalf.

Also, a list of reputable relief organizations as listed by the U.S. Federal Emergency Management Agency is available on the AAPG Web site.

Additionally, the OTC, of which AAPG is a sponsoring society and board member, donated \$100,000 to the American Red Cross to assist in relief efforts in the Gulf Coast communities affected by Hurricane Katrina. The OTC is operated by 14 professional societies and trade associations representing all aspects of the offshore industry and sponsors an annual technology conference in Houston.

The AAPG established a message board on the AAPG Web site to assist in locating alternative temporary housing, office space and to assist in communicating those arrangements. Members are encouraged to use the message board to coordinate efforts to assist others in rebuilding their libraries, their businesses, their lives. □

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Images courtesy of Laboratory for Atmospheres, NASA Goddard Space Flight Center and BP Center for Visualization.

## Katrina Cancels GCAGS Meeting

One of the casualties caused by Hurricane Katrina and the subsequent calamity was the Gulf Coast Association of Geological Societies' annual meeting, set for New Orleans in late September, which was cancelled.

GCAGS President Tom Bergeon said "the best path forward is to take our efforts and focus them forward to the 2006 convention scheduled for Sept. 24-26, in Lafayette, La." □

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*GOM Results Could be Profound***Deep Thinking in a Shallow Way**

By LOUISE S. DURHAM  
*EXPLORER Correspondent*

Geophysical contractors are riding a whole new wave of popularity these days, fueled by rising energy demands that have spurred the need for new seismic data.

One of the hotbeds of activity on the domestic front is in the shallow shelf waters of the Gulf of Mexico and adjacent coastal regions of Texas and Louisiana. Indeed, there's some sizzling seismic action here.

The driving force for all the activity is the operators' hunger for new data to help evaluate structures and define drilling targets at depths far greater than the plethora of past discoveries in the region, which ordinarily maxed out at 12,000-15,000 feet subsea.

A diverse throng of contractors is on the scene to accommodate the explorers' needs, applying new technology and new acquisition techniques in many cases.

"Our clients have indicated they need coverage on the very shallow shelf right up to the barrier islands and across the barrier islands and across the estuaries in the whole Gulf of Mexico," said Richard Degner, president of Global Geophysical Services.

"They need surveys with a very large seismic source of 75 to 100 bar-meters and very long offsets of 30,000-plus feet," he said, "and to ensure they properly image their objectives of varying depths and steep dips, they also need tight spatial sampling – something

*"Our clients have indicated they need coverage on the very shallow shelf right up to the barrier islands and across the barrier islands and across the estuaries in the whole Gulf of Mexico."*

with very high resolution and reasonably small cell size."

Global recently deployed its fourth seismic crew since the company's operational start less than six months ago. That crew is acquiring a high density, long offset 3-D program for Seismic Exchange Inc. (SEI); the shoot is in shallow state and federal waters from High Island to the West Cameron area.

"We'll tie it to the recently drilled Joseph well at High Island Block 10 and with some of the deep discoveries recently made in the West Cameron state waters area," said Randy Johns, vice president marketing offshore division at SEI. "There's the potential for a new trend out there, and that's what we're trying to chase back toward Louisiana."

**Going Deeper**

It is perhaps fitting testimony to the resurgence of the only-recently-beleaguered seismic industry that a

shiny new, custom-designed vessel is being used for the project – and that a relatively new company brought it to market.

"The *James H. Scott*, which was recently christened by Global (see related story page 19), is designed specifically for shallow water, and it's the ideal situation for what we're trying to do at this time," Johns said. "It's basically a catamaran that can get into about four feet of water and can give us the energy we need with its 100 bar-meter seismic source."

"We're going after deep structures, so we need that energy."

The program is utilizing the Sercel 408 ULS recording system, which ties continuous and contiguous lines from the shallow marine environment to the 408 UL in land and swamp, according to Degner.

"The lines can run from 200 feet water depth up onto the shore," he said, "and we can record with a patch with the same power configuration, the same power structure and the same

continuous coverage all the way across."

Johns noted the data acquired also will be used to improve the subsurface definition for smaller companies still looking for targets shallower than 12,000 feet. This will be achieved via much tighter bin size, higher fold and longer offsets.

**Other Players**

Specialized seismic acquisition technology of a whole different kind is being deployed in the Gulf by RXT (Reservoir Exploration Technology), which became a U.S. entity in 2004 after its original launch as Terra Seismic Services in Norway in 2002.

The company works exclusively with I/O's VectorSeis Ocean (VSO) system, which is a redeployable ocean bottom cable imaging system using VectorSeis® full wave sensors for multi-component data acquisition on the seabed.

RXT has completed several full wave surveys in the Gulf for a major oil company, according to vice president Larry Wagner. GX Technology served as project manager for the program. While declining to be specific about the objectives, Wagner noted it was highly likely some of the work was for deep targets.

"(The technology) is very valuable for both deep and shallow targets," Wagner

continued on next page

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## Shallow Water Vessel to Meet Specialized Needs

By LOUISE S. DURHAM  
*EXPLORER Correspondent*

When the folks at Global Geophysical were making plans for the July christening of their new seismic vessel, the *M/V James H. Scott*, they recognized the event called for something other than the standard ho-hum champagne ceremony. After all, the festivities would take place in the town of New Iberia in southernmost Louisiana, long known as a place where the good times roll.

Given the region's colorful reputation and the town's proximity just up the road from Avery Island salt dome – home to world-famous Tabasco products – it was entirely appropriate that the new boat ultimately was christened with a gallon jug of Tabasco sauce.

The unconventional ceremony was also in keeping with the uniqueness of the vessel itself, which was built in direct response to the need for advanced technology to adequately work shallow water deep plays, particularly in the Gulf of Mexico.

"The shallow shelf has been gaining momentum for some time," said Global president Richard Degner. "It became apparent a year ago that there was a



Crew members watch as Sara Scott and Terry Sadler wield a gallon of Tabasco sauce toward the *M/V James H. Scott* seismic vessel at the christening ceremony.

need for a specialized aluminum-hold catamaran vessel with airguns that could provide exceptional utility in very shallow water of less than 10 feet, with a very large marine source, i.e., a 100 bar-meter source."

With its light weight, all-aluminum design and shallow draft of less than five feet, the *Scott* – which came with a price tag of \$3 million – can take its large source array into the very shallow waters, shallow marine inlets, estuaries



and bays worldwide.

It is noteworthy that along with all of its state-of-the-art technology, the *Scott* also serves as a reminder of the human side of the seismic industry – the vessel was named in honor of the late James Scott, a well known, highly regarded and talented marine crew manager at Western Geophysical prior to joining PGS Onshore with his friend Degner. During his career, Scott worked worldwide in challenging shallow marine environments of the GOM, West Africa, the Middle East and more.

Scott's sister was on hand to wield the jug of Tabasco sauce at the christening ceremony, and several of his former crew members operate the boat today. □

continued from previous page

noted. "It's a highly configurable system in the sense we can establish some acquisition geometry because of the way the system is constructed.

"The signal fidelity we get from the sensor technology is probably the real

key to being able to image the reservoir better than in the past."

Fairfield Industries, which has been active in the shallow water GOM for more than two decades – it kicked off its first 2-D transition zone program in Louisiana in 1976 – bet on the future when it began shooting its deep shelf long offset 3-D data program a few years back.

"We started this back before the MMS granted royalty relief and when natural gas was about \$3," said Steve Mitchell, vice president operations. "Our deep shelf program is doing real well and going strong as ever.

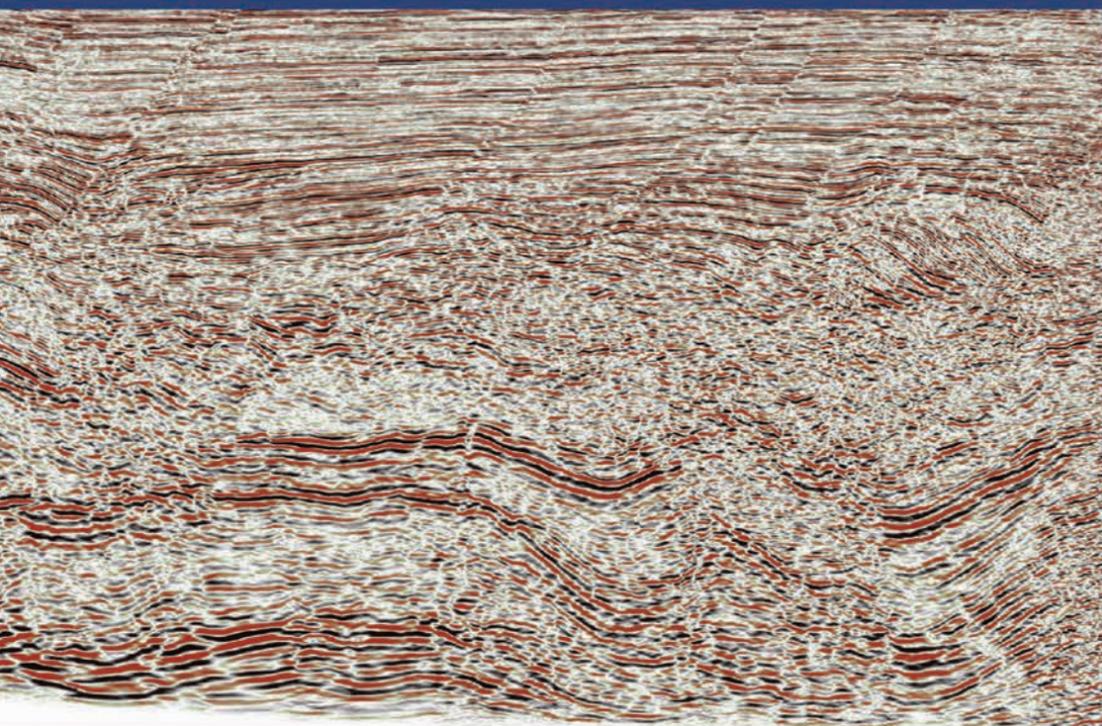
"We're doing long offset recording, and we shot 250 new blocks last year," Mitchell said. "We'll do at least that much this year."

### Different Perspectives

Just as the Gulf clearly has many lives, so too are there many ways to look at it. For instance, 3-D seismic is not necessarily *de rigueur* for evaluating the challenging deep gas play.

Granted, there's 3-D seismic

See **Deep Gas**, page 22



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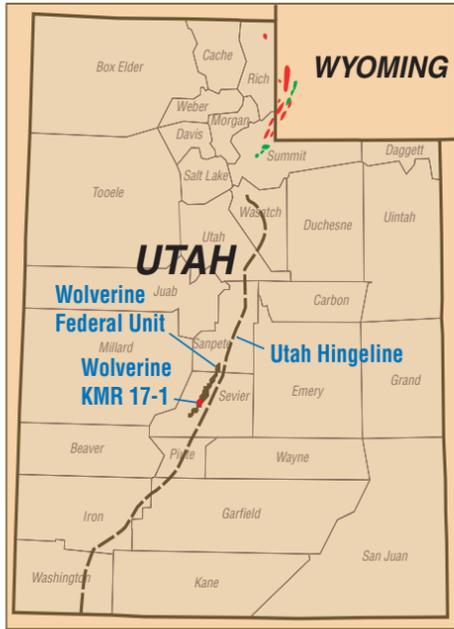
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# Drilling Permits Backlogged



By **DIANE FREEMAN**  
*EXPLORER Correspondent*

New efforts are under way to provide better access to oil and gas resources in Utah now that drilling activity and permit applications have increased dramatically.

Kent Hoffman, deputy state director of lands and minerals in the Utah state office of the Bureau of Land Management, said his office has seen significant increases in permit applications for drilling as well as interest in energy related rights-of-way and unconventional energy resources such

as shale and tar sands.

He said Utah has a myriad of opportunities for petroleum exploration and development.

Efforts to permit more access include preparation of new land use plans, environmental impact statements and proposals for research and development leasing of oil shale, he said.

"We recognize access as being fundamental as we try to make resources available," he said. "Access ranges from the planning stage, where we make allocations in our resource management plan for leasing and development, down

to the physical access, like getting a road in.

"Utah certainly has some topographical and archaeological challenges," he added.

Hoffman, who was a speaker at the recent AAPG Rocky Mountain Section meeting in Jackson Hole, Wyo., said that some of the federal legislation that can present obstacles to drilling in the region includes compliance with the National Environmental Act and Endangered Species Act.

Recent case law relating to the National Historic Preservation Act also affects development in Utah, he said, because "most of the concerns we have are the prehistoric Indians and artifacts here."

Applications for drilling permits in Utah this year are expected to rise to a record of just under 1,000. However, there will be a backlog of 400 applications that have yet to be acted on, Hoffman said.

"It will still be a six-month backlog," he said. "It's a record number – we can't keep up with them."

In comparison, the state approved 500 drilling applications in 2003 and 700 in 2004, he said.

More than 90 percent of the current applications deal with the Uinta Basin.

Infield drilling for secondary oil recovery and exploration and production of deeper gas in the area has piqued interest in the region, he said.

"It's an old field (40-50 years old) but we're getting a double whammy there," he said. "Its production has been sporadic in the last four to five years, and it got very active in the last two and a half years. It's a good solid producing basin. But lately we've seen an exponential interest in secondary recovery and seismic geophysical exploration.

"New discovery of deeper gas also has piqued interest," he added.

### Covenant Field Update

Along with the Uinta Basin, the big news in Utah has been the Covenant Field discovery in central Utah (April EXPLORER). Even though so far production is limited to just a couple of wells, Hoffman agrees that it is a "very significant discovery for increasing the energy supply."

He also noted that the Covenant play is in an area where the BLM's office lacks the skills and expertise to be readily available – it's "definitely a new area for production and permitting."

Wolverine Energy made the discovery of the new Covenant Field in Sevier County in May 2004, said Tom Chidsey, petroleum section chief for the Utah Geological Office, part of the state's department of natural resources.

"Since then, they're up to seven wells and one is a dry hole," Chidsey said. "They're producing from two wells now and the field averages 1,500 barrels of oil a day.

"They're building some additional production facilities for the remaining wells but they won't be completed until September," he added. "Once those are in place, then they will complete the remaining wells. Production could go up to 20,000 barrels a day."

Chidsey noted that the Covenant Field is located on private land as well as BLM land and on state school trust lands.

"Wolverine has stated it is delineating

See **Utah Activity**, page 22

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## Deep Gas

from page 19

coverage aplenty over the shelf and adjacent transition zone. The problem is these earlier data were acquired using short offsets and short record lengths, meaning they are ill-suited to adequately define the deep structures currently of interest.

Today, long offset 2-D data are in demand to provide a better image in the deep area, particularly on a regional basis. They can help to tie in areas of interest and also to high-grade areas when looking for deep prospects. Proprietary, prospect-specific 3-D data can be acquired later as needed.

"Quite often the regional structural imaging on 2-D can be quite good and useful when it complements older shorter 3-D surveys acquired," said Kenneth Mohn, exploration vice president at Fugro. "It can be beneficial in an exploration program."

Although an "old" name in the industry with a worldwide presence, Fugro is just now implementing its first spec survey in the Gulf. It's a regional long offset (10,000 m) 2-D program on the shelf extending from about 30 feet of water depth out to 300 feet.

"Client interest was the determining factor in doing the program," Mohn said. "The data will be used to help image the deep targets, and we're seeing good results in the far offsets on the deep records. You can process the data to get maximum benefit out of the

far offsets."

Sharing the enthusiasm for long offset 2-D data is PGS Onshore, which launched its Deep Shelf Gas Play Imaging Program in mid-2004 in response to the operators' professed need for a more sophisticated evaluation tool for the deep play. The program is designed to tie the Lower Tertiary Wilcox sediments onshore to the expanded Wilcox offshore. This geologic section has been prolifically productive in southeastern Texas and into southwestern Louisiana.

To image the subsurface at a depth greater than 40,000 feet, the program is using ultra-long offsets of 41,000 feet max, 20 second records and a nominal fold of 125 onshore and 250 offshore. □

## Utah Activity

from page 20

25 additional targets as wildcat prospects, besides what they're developing in Covenant Field," he said.

He noted that obtaining drilling permits for federal land is more difficult than on state or private land.

"At least the east portion of this land does not involve forest land, but the western portion of the play involves some forest land and that becomes more difficult to drill in," he said.

However, none of the land is located near a national park.

"There are other areas in Utah that are more environmentally sensitive," he said. "At this point the new discovery has not had a significant impact on Utah, but it has the potential to be very significant if the play pans out – if some of those 25 prospects turn out to be discoveries. It could have a huge impact on Utah's oil production.

"However, sometimes we get a one-field wonder with a big discovery like this and then never find another one," he said.

Chidsey noted that other companies are exploring in the region, too, and leasing activity has picked up.

"Right now what we're seeing is a lot of leasing, not drilling. They're just development wells now," he said.

Chidsey added that some farmers currently are getting as much as \$1,000 an acre for drilling rights in the area.

"In central Utah there have been as many as 25 wells drilled in the past 50 years looking for what Wolverine has found," he said. "It's a hot leasing play. Basically it was dead for leasing and drilling here before this." □

## Southwest and Pacific Sections Name Levorsen Award Winners

Daniel M. Jarvie, with Humble Geochemical Services Division in Humble, Texas, is the winner of the Southwest Section's A.I. Levorsen Memorial Award, presented annually to the best paper presented at the group's annual meeting.

Jarvie's paper was "Geochemistry of Unconventional Gas Shales: Using the Barnett Shale as a Model for Highgrading Exploration Plays."

His co-authors were Ronald J. Hill and Richard M. Pollastro, both with the U.S. Geological Survey in Denver.

Jarvie will receive his award at the 2006 Southwest Section meeting, set May 14-16 in San Angelo, Texas.

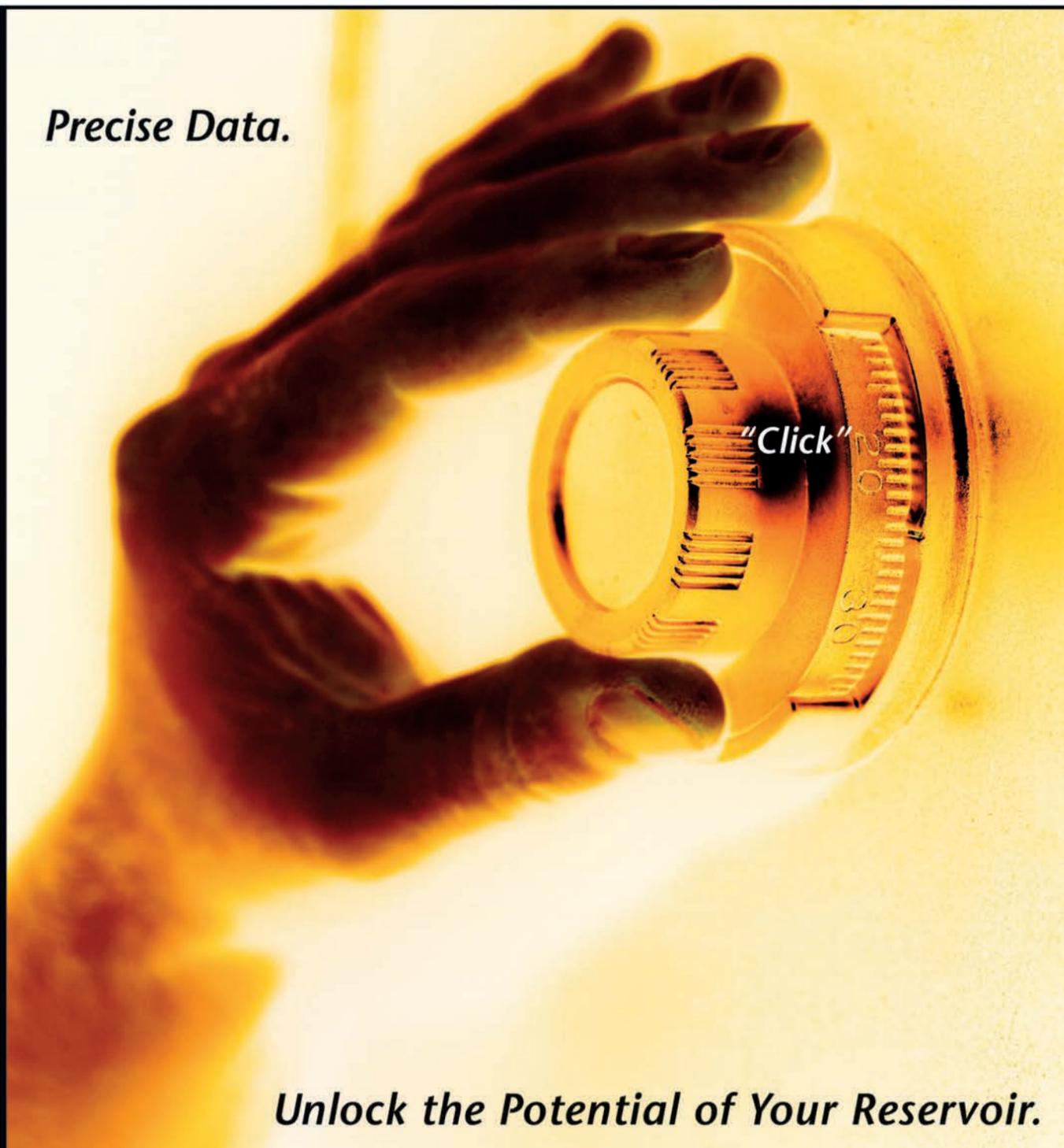
Jacob A. Covault, with the Department of Geological and Environmental Sciences, Stanford University, in Stanford, Calif., is the winner of the Pacific Section's A.I. Levorsen Memorial Award, presented annually to the best paper presented at the group's annual meeting.

Covault's paper was "Sea-Level and Tectonic Controls on Late Quaternary Sedimentation in San Diego Trough, Offshore California."

His co-authors were William R. Normark with the U.S. Geological Survey in Menlo Park, Calif., and Stephen A. Graham with the Department of Geological and Environmental Sciences, Stanford University, in Stanford, Calif.

Covault will receive his award at the 2006 Pacific Section meeting, set May 8-11 in Anchorage, Alaska. □

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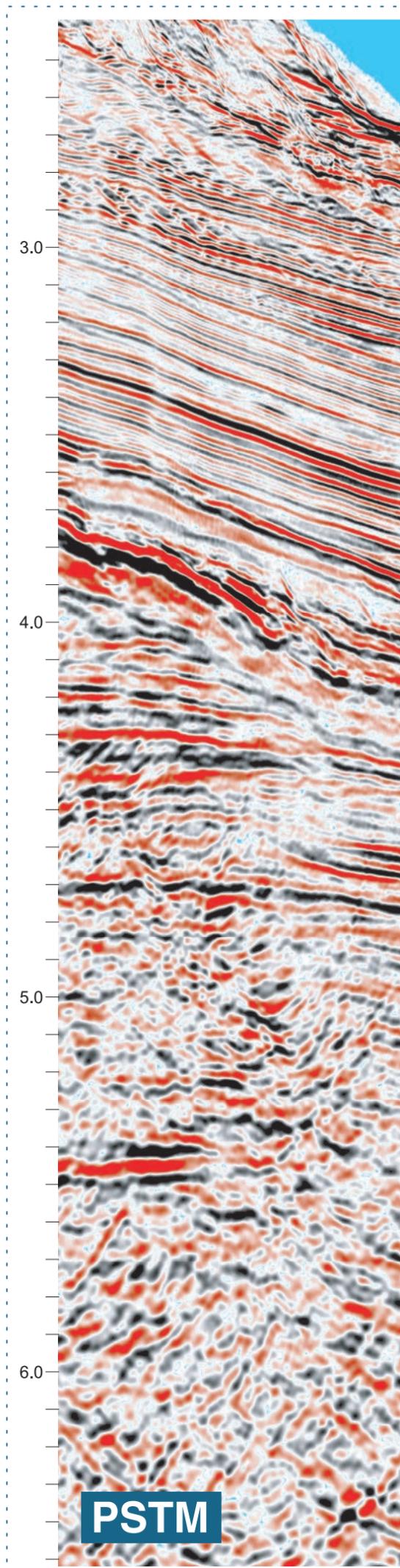
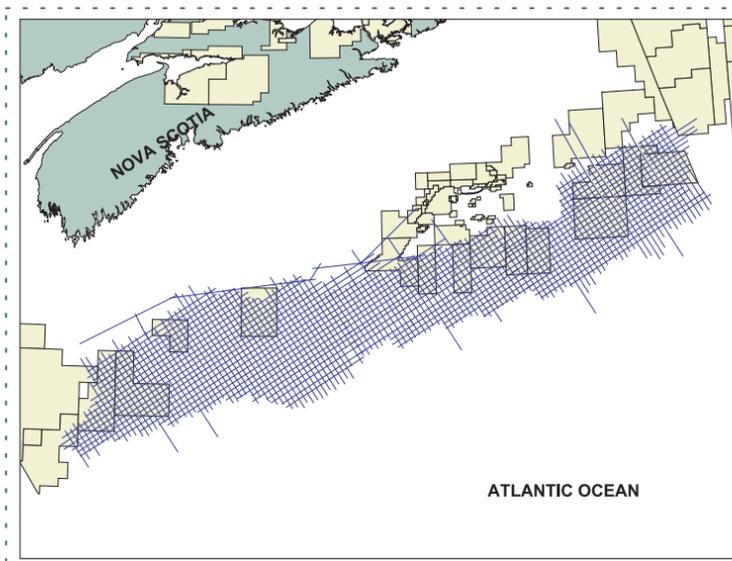
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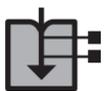
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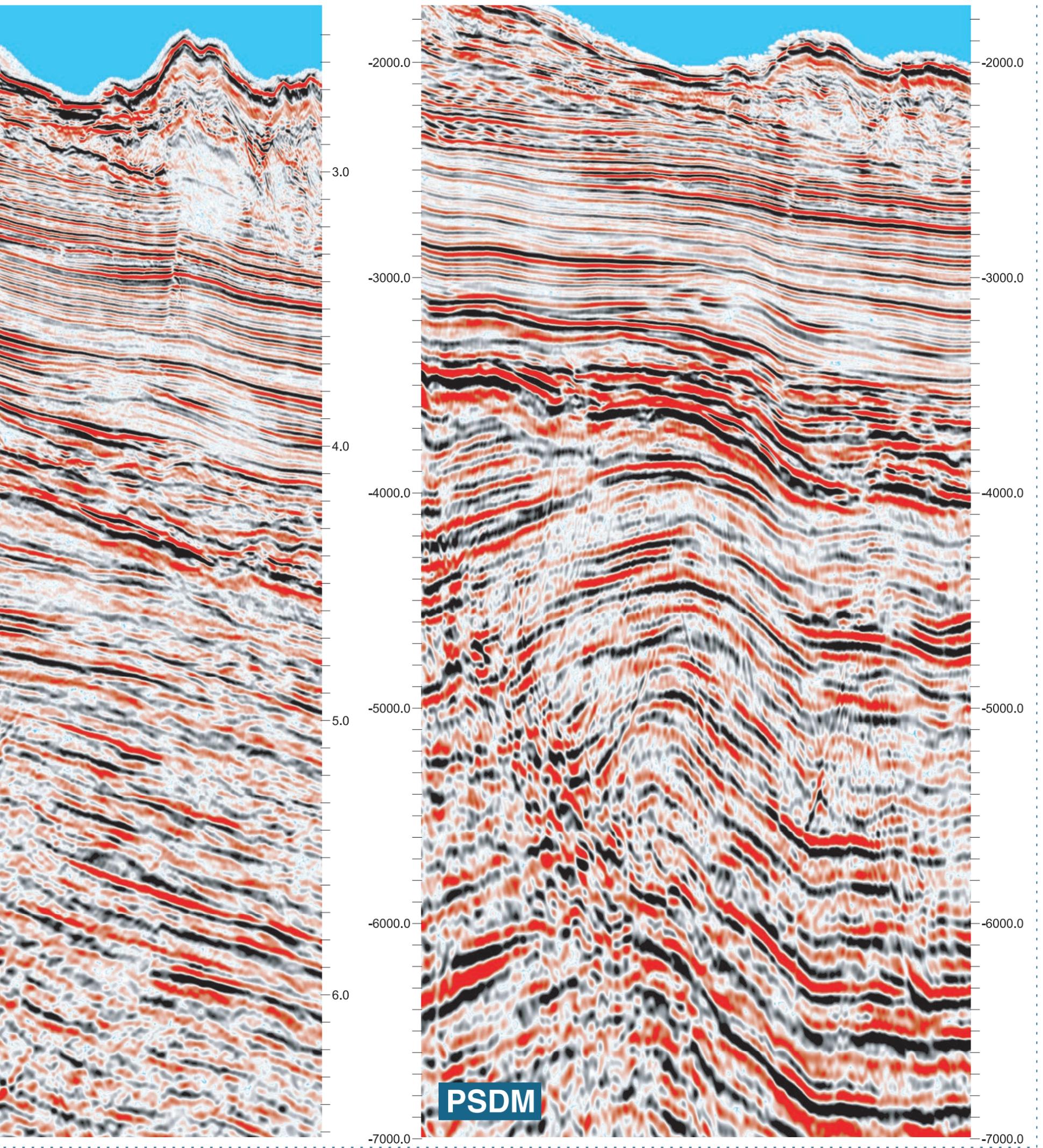


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# REGIONS AND SECTIONS

(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 domestic Sections.

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

Contacts: For Regions, Dana Patterson Free, at 1-918-560-2616, or e-mail to [dfree@aapg.org](mailto:dfree@aapg.org); for Sections, Donna Riggs, at 1-918-560-2612, or e-mail to [driggs@aapg.org](mailto:driggs@aapg.org).

This month's column, an overview of the Africa Region, was prepared by Deborah Ajakaive, Region president.)

The Africa Region has come a long

way over the years and has much to show for it. Some of the recent accomplishments include:

- ✓ Winner of the 2003-04 AAPG Membership Enhancement contest.
- ✓ Increase in the number of House of Delegates members from one to six.
- ✓ Planning and organizing the first ever West African Deepwater Conference in Lagos, Nigeria (November 2005).
- ✓ Completing a continental survey on the number of university and polytechnic schools offering geosciences in the Africa Region.
- ✓ Substantial increase in AAPG Student membership. (There currently are 30 AAPG Student Chapters in the Africa Region.)

✓ Presentation of three AAPG Grants-in-Aid to outstanding students in Nigeria.

Despite these achievements, the Region continues to face several challenges.

For one, the Region, which experienced a healthy net growth of 8 percent from 2003-05 and currently makes up 17 percent (1,053 members) of AAPG's international membership, experienced a significant decline this year.

Limited resources and inadequate means of communication (including language barriers) were other challenges facing the Africa Region, making it difficult to carry out many of the planned activities.

\* \* \*

Effective measures are being considered to increase new members, retain current members and attract former Active members to return to AAPG.

Some of our planned strategies for this year are:

#### Membership

We hope to recruit and retain more members through increasing awareness of AAPG benefits to members by:

- ✓ Focusing on improving numbers in areas with low membership.
- ✓ Tracking former Active members to find out why they left AAPG.
- ✓ Encouraging intersociety collaboration (with local geoscience societies and local chapters of SEG, etc.) for networking purposes and to increase membership.

✓ Encouraging key personnel in the oil and gas industry to speak to prospective members working in the industry.

✓ Organizing paid professional workshops to give hands-on experience and certification upon completion.

✓ Actively pursuing ways of improving communication among members.

✓ Investigating the logistics of operating an AAPG regional office through local geosciences societies.

✓ Encouraging participation of members at crucial international conferences and meetings.

✓ Continuing to promote a high professional and ethical standard and respect for all Active members.

For Student members, strategies are:

✓ Initiating workshops for younger students to encourage them to study geoscience subjects.

✓ Organizing student expos and linking these where feasible to other workshops or conferences held in Africa.

✓ Leaping toward the Virtual Student Expo by creating an active database of student's curriculum vitae/resumes and keeping close contact with local and international recruiters.

✓ Promoting and creating more viable AAPG Student Chapters in African schools where geoscience courses are taught.

✓ Creating a yearly competition among African geoscience students and providing scholarships to the winners.

✓ Encouraging the Grants-in-Aid Program to students for field research work.

✓ Continuing to promote a high professional and ethical standard and respect for all Student members.

#### Membership Dues/Funding

We hope to create more effective ways for the collection of membership dues and funding by:

✓ Investigating more convenient ways to receive payment of membership dues.

✓ Embracing and generating incentives for funding from governments and large corporations in the oil and gas industry or related fields, and private individuals, e.g., endorsements for company.

#### Planned Activities

✓ Nigerian Association of Petroleum Explorationists (NAPE) annual conference, Nov. 13-17, Abuja, Nigeria.

I welcome all to join us in actively participating and utilizing the endless possibilities and contributions that AAPG has to offer toward the development of Africa and the AAPG international Region as a whole. I look forward to a very successful year and would gladly receive any questions, comments and suggestions toward maintaining the lofty momentum set forth by AAPG. □

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## GEOPHYSICAL CORNER

## Do You Need Marine EM Methods?

(The Geophysical Corner is a regular column in the EXPLORER, edited by Dallas consulting reservoir geophysicist Alistair R. Brown.)

By STEVEN CONSTABLE

In the space of just a few years a new geophysical technique has appeared on the scene – marine controlled source electromagnetic (CSEM) sounding, also known as Seabed Logging by Statoil and R3M by ExxonMobil.

Such a rapid rise is bound to create some confusion, and so here I will try to explain just what CSEM methods are and what they can do for the exploration geologist.

\* \* \*

First, what is it?

Marine CSEM is one of two electromagnetic techniques applied to offshore exploration (see figure 1). The first technique, the marine magnetotelluric (MT) method, is, to a good approximation, simply the marine implementation of a method well known on land (see, for example, Karen Christopherson's January 1999 Geophysical Corner).

The application of MT in the marine environment is very much the same as for on land (the mapping of gross geological structure), and the method has been used successfully to map:

- ✓ Base of salt in the Gulf of Mexico.
- ✓ Extent of carbonate in the Mediterranean.
- ✓ Thickness of basalt in the North Atlantic.

Marine CSEM, however, behaves very differently to EM used on land, which I will discuss below.

Actually, marine CSEM is not that new; Charles Cox of Scripps Institution of Oceanography proposed the method in the 1970s to compensate for the loss of MT signal at the deep ocean seafloor. By towing an EM transmitter close to the seafloor, EM energy couples well to seafloor rocks but, like the MT signal, gets absorbed quickly by seawater.

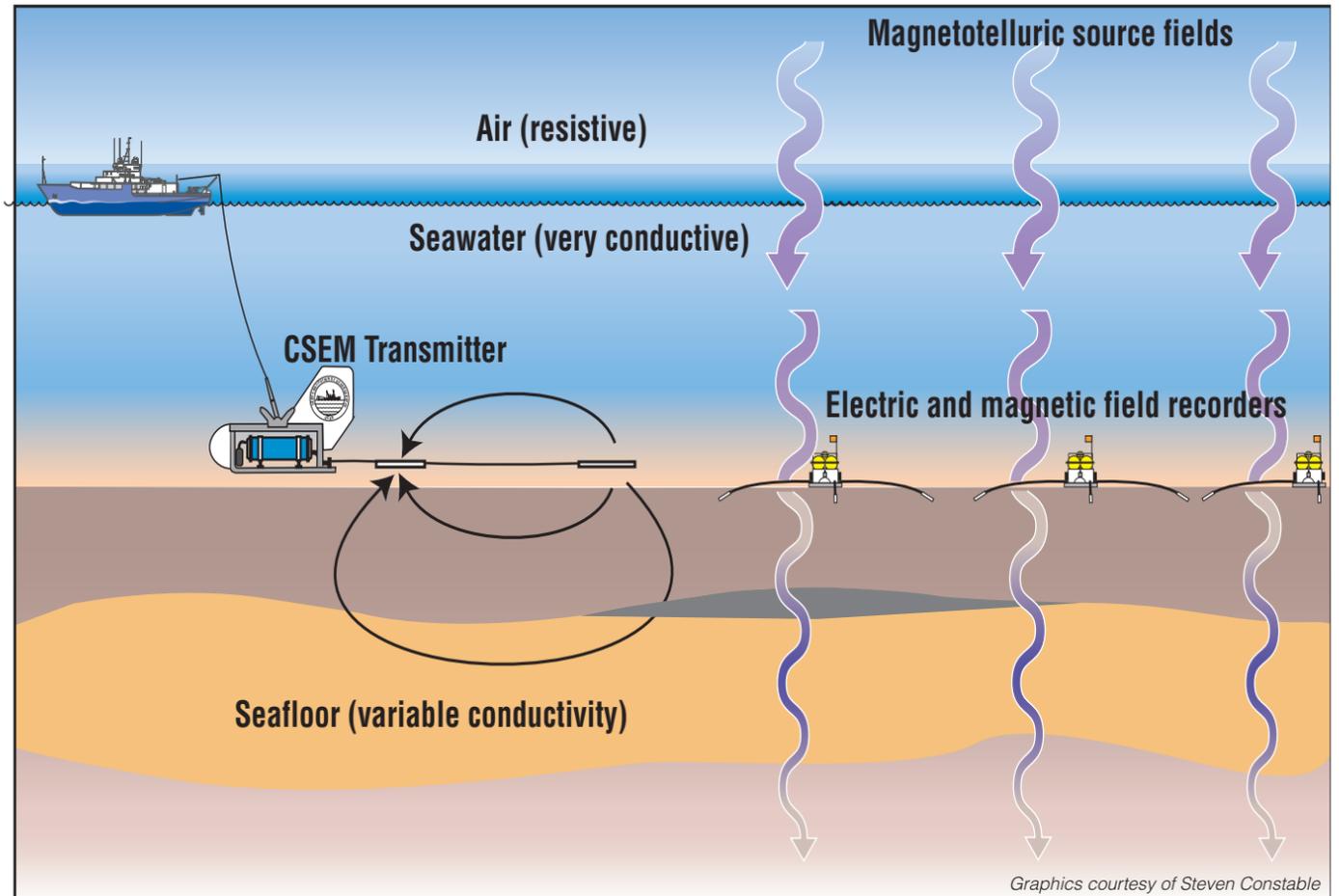
The most important concept in any EM method is skin depth. EM energy decays exponentially in conductive rocks over a distance given by the skin depth:

$$\text{Skin depth} = 500 \text{ meters} \times \text{square root (resistivity/frequency)}.$$

At a period of one second, the skin depth in seawater is about 270 meters; this means that over each 270 meters the amplitude of EM energy decays another 37 percent. In 1000 Ohm.m basalt, at the same period the skin depth is nearly 16 kilometers, so energy will propagate from the transmitter to the seafloor receivers mostly through seafloor rocks, making the method sensitive mainly to seafloor geology.

This behavior, because it looks a little bit like seismic refraction, has caused some confusion. Seismic waves decay geometrically as they spread, but retain a resolution that is proportional to wavelength no matter how far they travel. EM signals decay exponentially as conductive rocks absorb energy (and get heated by electromagnetic induction!) and have a resolution that is proportional to the depth of the target.

This is not quite as bad as it sounds,



Graphics courtesy of Steven Constable

Figure 1.

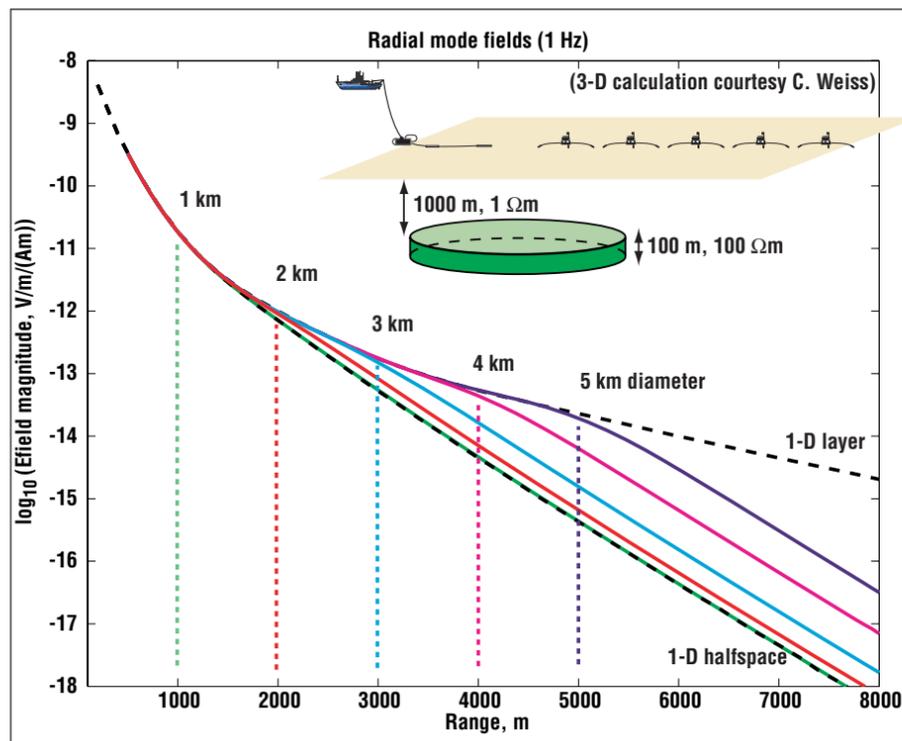


Figure 2.

since the skin depth provides an intrinsic depth measure; potential field methods (gravity, magnetics, DC resistivity) have no depth resolution other than that associated with spatial geometry. However, a target does need to be about as big as it is deep to be visible by EM methods.

\* \* \*

So why, if the method has been around for 30 years, has the exploration community just "discovered" marine CSEM? There are at least two reasons:

- The first is that if the water depth is shallow compared with skin depth, EM

energy from the transmitter reaches the atmosphere, where it becomes a true wave and propagates geometrically.

This "air wave" rapidly becomes the dominant signal at the seafloor receivers and removes the sensitivity to seafloor geology that we have in deeper water. Thus, until hydrocarbon exploration moved to water around 1,000 meters deep, it was difficult to take advantage of the marine CSEM method.

- Second, it has long been known that the marine CSEM method is preferentially sensitive to resistive rocks (compared with MT methods, which are most sensitive to conductive rocks), and

thin resistive horizons in particular.

However, it was not until Statoil and ExxonMobil demonstrated that the method works with horizons as thin as oil and gas reservoirs that it became clear that marine CSEM could be used to discriminate resistive drilling targets from conductive ones. Of course, because oil and gas are resistive compared to sand and shale, this appears to provide direct detection capabilities.

One should caution that evaporites, volcanics and carbonates are all also resistive, so the method is less a hydrocarbon detector and more a resistor detector.

\* \* \*

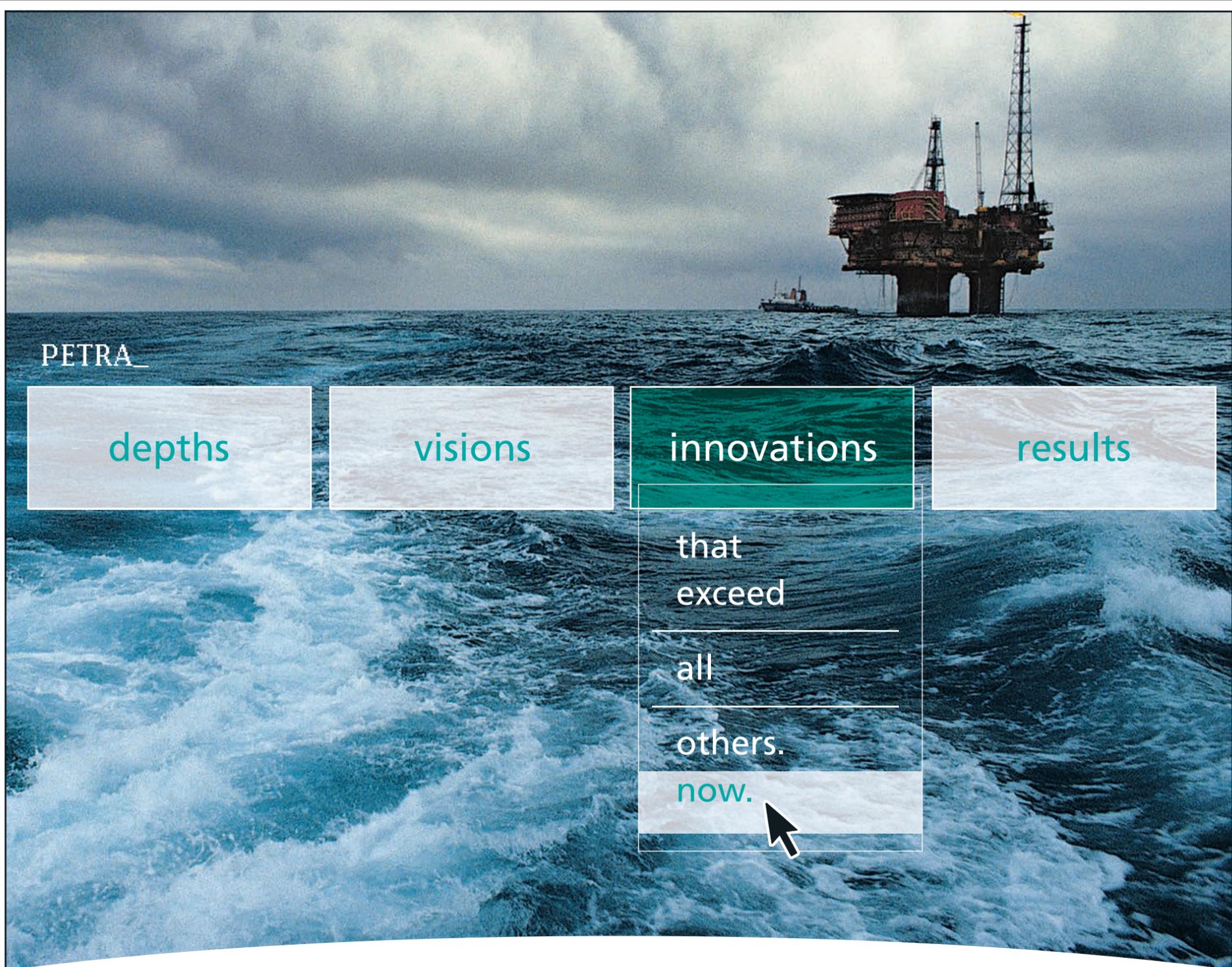
Figure 2 shows how the method can detect hydrocarbon reservoirs.

The CSEM transmitter is assumed to be over the left edge of reservoirs one, two, three, four and five kilometers wide, buried one kilometer deep. For seafloor receivers over the reservoirs, the EM fields are much larger than if the reservoir were not there (indicated by the broken line labeled "1D halfspace"). An infinitely thick reservoir is indicated by the line labeled "1D layer."

The vertical scale is logarithmic, so the fields associated with the five kilometer disk are 100 times larger than they would otherwise be; clearly, given the right conditions, the marine CSEM method can provide an unambiguous indication of resistive targets. However, these calculations neglect the electrical conductivity associated with geological complexity in the host rocks, such as resistive shallow gas hydrates or shallow carbonates, for example.

The calculations represented in figure 2 are quite complicated. To interpret real data without such modeling, it has become practice to divide the measured electric fields by

See **Geophysical**, page 30



PETRA

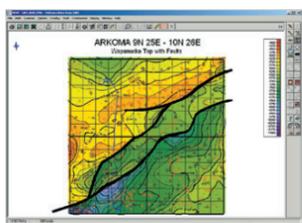
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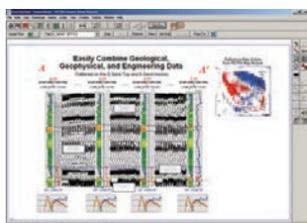
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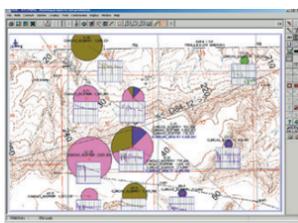
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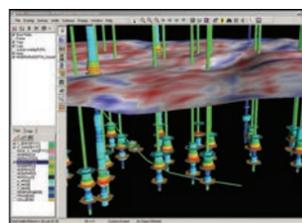
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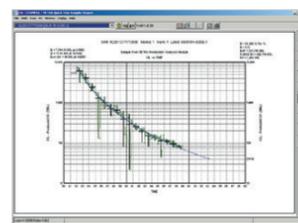
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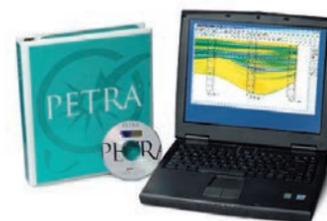


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## Geophysical

from page 28

the 1D background response (similar to using a reduced travel time in seismics), or even to simply normalize by the response of an instrument assumed to be positioned off target. Resistive features then stand out as anomalies in the data.

Since resistors anywhere in the section can produce such anomalies, one needs to be very cautious in using this simplified approach. Additional data are always important, and so, for example, MT data can be used to provide background conductivities (even the relatively large reservoir shown in figure 2 is invisible to the MT method), or other frequencies and geometries of CSEM data can be used. Figure 2 shows only the radial, or in-line, geometry of the CSEM method; the azimuthal, or broad-side, geometry behaves somewhat differently.

Figure 2 also shows only one frequency (1 Hz), but other frequencies – having other skin depths – will help resolve ambiguities in the interpretation. As in any geophysical interpretation, taken alone CSEM data will not yield a single unambiguous model.

It can be seen from figure 2 that at short ranges there is no sensitivity to the target. At larger ranges where the target is manifest the electric fields are very much smaller, and so the noise floor of the transmitter-receiver system determines how deep a target can be detected. The vertical axis is in units of electric field at the receivers (in volts per meter) divided by the transmitter dipole strength, given in turn by its

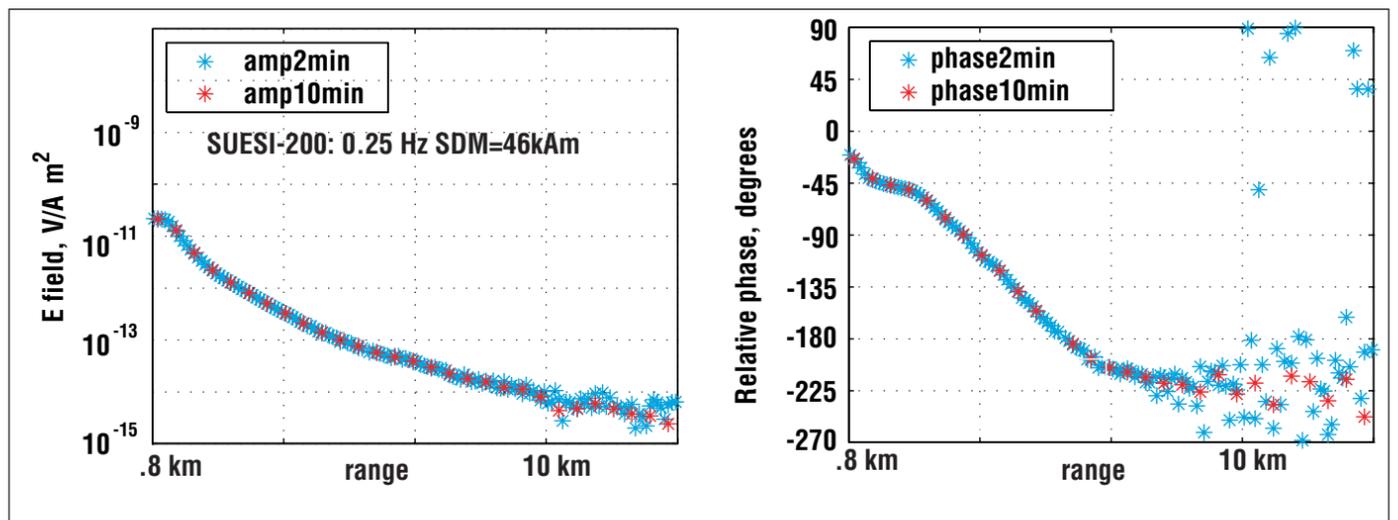


Figure 3.

antenna length (meters) times zero-to-peak transmission current, in amperes. Typical transmission currents are hundreds of amps, typical antenna lengths are hundreds of meters, and typical receiver sensitivity is hundreds of picovolts per meter.

Another factor of 10 can be obtained by stacking, giving a total noise floor around -15 log units. Figure 3 shows the amplitude and phase of real CSEM data stacked into two-minute and 10-minute data frames. The phase varies over a smaller range than the amplitude, but does not contain any independent information.

\* \* \*

Does marine CSEM work?

Undoubtedly yes, for big enough targets in relatively deep water. However, even though the method has been around for 30 years in the

academic communities, the intensive application to continental shelf exploration is very new, and there is still a lot of work yet to be carried out to develop the interpretational skills and experience to get the most out of this method.

The take-home points:

- ✓ The marine CSEM method is not new, but the application to hydrocarbon detection is.
- ✓ The method detects resistors, not hydrocarbons per se.
- ✓ Resolution decreases with depth of investigation, and targets must be relatively large.
- ✓ The method is best suited to deep water. Shallow water eventually destroys sensitivity.

✓ Frequency, and thus skin depth, must be chosen for target depth and host rock resistivity.

✓ Interpreting amplitude anomalies can be dangerous; if possible, do the modeling.

✓ More is better; MT data and other CSEM geometries and frequencies will aid interpretation.

✓ Resolution for EM methods is worse than for seismics, but better than for potential fields.

✓ Total noise floor is a combination of transmitter, receiver and processing characteristics.

*(Editor's note: Steven Constable is with Scripps Institution of Oceanography.)*

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## Curriculum Tweaking

## Student Numbers Beginning to Grow

By BARRY FRIEDMAN  
EXPLORER Correspondent

With the price of oil hanging high, changes are beginning to be detected in career choices for geoscience students at American universities and colleges.

For years, the environmental side of geology – hydrology, pollution, regulatory work – was where the jobs were.

They still are – but with oil at \$70 per barrel, students may now be willing to take a chance on an industry that not long ago was described as “sunset.”

According to the results of a recent study on student trends taken by the American Geological Institute (AGI), the

**Figure 1. University of Texas Geoscience Student Data**

Year	Bachelor's Students/Graduates	Master's Students/Graduates	Ph.D. Students/Graduates
2002	155/29	76/16	80/9
2003	206/0	96/0	96/0
2004	210/42	90/34	108/28

*Source: American Geological Institute*

recent B-12 shot the industry has received in the form of higher oil prices has, in fact, caused some schools and students to re-focus on “old school” geology, though not at the expense of

other ancillary programs.

“At the strong schools, the curriculum has remained fairly stable and focused on strong, fundamental geology programs,” said Christopher M. Keane, who

conducted the study for AGI. “Some of the schools with softer enrollments appear to be tweaking their core curriculum to address more environmental topics, and few seem to have made structural pushes into the geospatial analysis arena as a primary focus of their program.

“On average, programs that have retained a traditional geology core have remained strong,” he said.

Keane is AGI’s communications and technology director and editor for *Geotimes*. His study suggests that overall enrollments in the nation’s university geology departments are up 5 percent per year over the last three years.

A caveat would be that the figures are not comprehensive: Laura Stafford, AGI’s communication manager, said “schools do not do a good job of communicating changes to us, and I suppose we must not be doing a great job of getting these schools to send us updated information.”

#### Promising Trends

Still, the figures that are available reveal some promising trends.

A look at the numbers for the University of Texas at Austin, for example, shows a steady increase in both students enrolled and the numbers who have graduated since 2002 (figure 1).

The California Institute of Technology also showed an increase, especially in its doctorate programs, which had 137 students in 2002, compared with only 59 in 2000.

Keane, though, doesn’t think university programs will see a windfall of students due to recent surges in oil prices.

“I think there remains a lot of memory about the hiring bubble in the 1980s among the faculty, and thus I do not expect to see a large adjustment of programs towards guiding students into industry,” he said.

“One of the key things about the geosciences is that our enrollment is now better mirroring the other physical sciences again,” he continued. “All of the physical sciences took enrollment hits during the dot-com boom, but have started to recover since.”

This is borne out by another study done by AGI in 2003, which reported that 25 percent of geology students in Ph.D. programs dropped out because of a poor job market.

With the recent surge in oil prices, that, at least, should no longer be the case.

Keane says he is unsure which order the cause and effect goes, but adds:

“Many of the departments over the last five years that have gone away had changed their curriculum into more specialty areas at the undergraduate level in efforts to increase student enrollments,” he said.

“In some cases this failed; in others, the success has facilitated the evolution of the department from being strictly geology-centric,” he added.

#### Room to Grow

There are about 30-40 schools, Keane believes, which have done and continue to do the heavy lifting when it comes to producing students for the petroleum industry. But there are now over 350 other schools with advanced geology programs in the country that are producing geologists of all stripes.

Some of those schools have reported



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continued from previous page

figures to AGI, and the data suggests that, at least from 2001-04, no great shifts in enrollment numbers or graduation rates have occurred.

Asked what kinds of students are graduating, Keane was less than ebullient.

"We were hearing that on average the quality of new graduates remains satisfactory, but that incoming student quality remains an issue," he said. "The single greatest common issue with the student body is poor writing and business skills."

Of course, it doesn't matter how many or how good the students are if there aren't jobs for them when they graduate. And when prices are low, as they were in the early 1990s, companies do less exploring.

At \$60 per barrel, though, the demand for good geologists once again increases.

Nevertheless, Keane suggests that the industry's demographics rather than prices have the biggest effect on occupational opportunities.

"Job opportunities are being driven by attrition of older workers in most sectors," he said.

**Options Are Open**

One sector where it's not, though, is in academia.

"It appears to me there are a lot of recent grads that are fixated on going into academia, and the retirement wave has not really hit that community yet, so the opportunities are a bit scarcer," even with a renewed oil and gas industry.

One such student is Eva-Maria Rumpfhuber, a transfer student from Austria, now studying at the University of Texas-El Paso, where during the past five years the numbers of students pursuing Ph.D.s has gone from 18 in 2000 to 43 in 2005.

Rumpfhuber said that for some students, what happens in the industry is less important than their own interests and goals. As for a job in oil and gas exploration, she is keeping her options open.

"In my internship this summer I got an insight in the oil industry, especially its R&D programs," she said. "Isn't it amazing that we are able to travel to the moon, but we have so many unanswered questions about the Earth?"

"To me, the more I learn and the broader my background, the better I understand my own field," she said. "It will take a while until we have every problem solved, so there is no threat of getting bored in the geosciences." □

**LOOKINGBACK**

**Some Evolve, And Some Don't**

By MARLAN DOWNEY

Perhaps a review – and awareness – of the past may make us better geologists in the future.

\* \* \*

We've had a lengthy exchange of letters recently in the EXPLORER on Darwin, evolution and religion, continuing debates that started exactly 150 years ago.

For those interested in the evolution of our species, the annual Darwin

Awards recognize those less evolved members who have removed themselves from the human gene pool by actions of conspicuous stupidity.

And the winner of the 2005 Darwin Awards?

"When his .38-caliber revolver failed to fire at his intended victim during a hold-up in Long Beach, Calif., would-be robber James Elliot did something that can only inspire wonder. He peered down the barrel and tried the trigger again. This time it worked."

And honorable mention?

"When a man attempted to siphon gasoline from a motor home parked on a Seattle street he got much more than he bargained for. Police arrived at the scene to find a very sick man curled up by a motor home near spilled sewage.

"A police spokesman said that the man admitted to trying to steal gasoline and plugged his siphon hose into the motor home's sewage tank by mistake.

"The owner of the vehicle declined to press charges, saying that it was the best laugh he'd had in years." □

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## PROFESSIONAL NEWS BRIEFS

**Fredrick J. Barrett** has been appointed chief operating officer, Bill Barrett Corp, Denver. Barrett is president and director of the company.

**John Bedingfield**, to deputy managing director-exploration and development, Apache Corp., Perth, Australia. Previously regional exploration manager, Apache Egypt, Cairo, Egypt.

**Bruce A. Bennett** has formed Ellington Energy, Fredonia, N.Y. Previously president, Bennett Geological Consultants, Cherry Creek, N.Y.

**Silverio "Sil" Bosch**, to exploration geologist, Esenjay Petroleum, Corpus Christi, Texas. Previously exploration geologist, Suemaur E&P, Corpus Christi.

**Stephen Brand**, to vice president-exploration and business development, exploration and production, ConocoPhillips, Houston. Previously president, Australasia exploration and production, ConocoPhillips, Houston.

**James C. Cobb** has been elected treasurer, American Geological Institute's Executive Committee, Alexandria, Va. Cobb is director and state geologist, Kentucky Geological Survey, University of Kentucky, Lexington, Ky.

**George Eynon**, to vice president-business development, Canadian Energy Research Institute, Calgary, Canada. Previously senior director, research-natural gas, Canadian Energy Research Institute, Calgary, Canada.

**Jim Gagliardi**, to principal consultant-geology, Landmark Graphics, Houston. Previously subsurface asset manager-

### Groat To Head New Policy Group

Charles G. "Chip" Groat has resigned as director of the U.S. Geological Survey and has been appointed founding director of a new public policy center at the University of Texas at Austin focusing on energy and the environment.

The Center for International Energy and Environmental Policy will support research informing governments and corporations worldwide on the formulation of policies and strategies on energy and the environment. Three

schools at the university will sponsor the center and co-hire its researchers: the Jackson School of Geosciences, the Lyndon Baines Johnson School of Public Affairs and the College of Engineering.

In addition to directing the center, Groat will hold the Jackson Chair in Energy and Mineral Resources at the Jackson School and will lead the university's Energy and Mineral Resources graduate program within the Jackson School and the College of Engineering. □

deepwater, ChevronTexaco, Bellaire, Texas.

**Julie Garvin**, to president, Roxanna Oil, Houston. Previously geoscience adviser, Marathon Oil, Houston.

**Stephen Keenihan**, to managing director-China, Apache, Beijing, China. Previously regional exploration manager, Apache, Egypt, Cairo, Egypt.

**Eric Kubera**, to geophysicist, Nexen Petroleum USA, Dallas. Previously geophysicist, Unocal, Sugar Land, Texas.

**William "Bill" Lefler**, to senior explorationist, Woodside Energy (USA), Houston. Previously consulting geologist, INEXS, Houston.

**Stewart Levin** has been named a Geophysical Research Fellow by Landmark (Halliburton's Digital and Consulting Solutions Division). Levin is a senior geophysicist with Landmark, Houston.

**Thomas Maher**, to regional exploration manager, Apache Egypt, Cairo, Egypt. Previously manager geology, Apache Egypt, Cairo, Egypt.

**Ernest A. Mancini** has been elected president of the American Geological Institute, Alexandria, Va. Mancini, a University of Alabama Distinguished Research Professor, is director of the Center for Sedimentary Basin Studies at the University of Alabama, Tuscaloosa, Ala., and is the current AAPG elected editor.

**Jim McColgin**, to president-Asia Pacific exploration and production, ConocoPhillips, Houston. Previously vice president-exploration and business development, exploration and production, ConocoPhillips, Houston.

**Rich McLean**, to new ventures manager-Africa, Central Asia and Latin America, Marathon Oil, Houston. Previously team leader-North Africa and Caribbean, Marathon Oil, Houston.

**Simon Todd**, to vice president-operations, BP Trinidad and Tobago, Port of Spain, Trinidad and Tobago. Previously vice president-operations, BP America, Houston.

**Louis Willhoit**, to vice president-geophysics, Coldren Oil and Gas, New Orleans, and chief executive officer VTV Inc., Denver. Previously vice president-geophysics, Energy Partners, New Orleans.

**David Verdun**, to vice president-R&D and customer support, Paradigm, Houston. Previously executive vice president-R&D, Landmark, Houston.

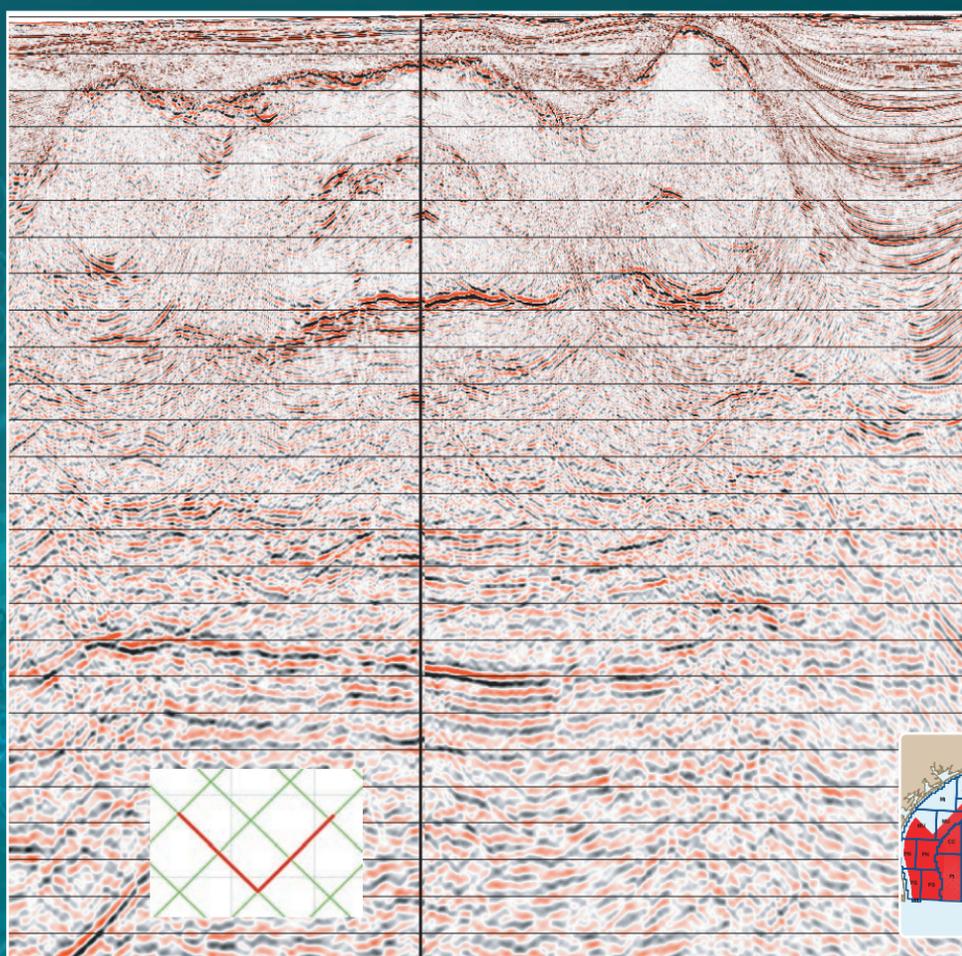
**J.P.F. (Pat) Welch**, to project geologist, EOG Resources, Midland, Texas. Previously area geologist, Great Western Drilling, Midland, Texas.

**Chris Wickens**, to senior geophysicist, BG Canada Exploration and Production, Calgary, Canada. Previously contract geophysicist, EnCana Corp., Calgary, Canada.

**Robert E. Zilinski Jr.**, to geologic team leader-Powder River Basin, Western Gas Resources, Denver. Previously senior geoscientist, Western Gas Resources, Denver.

*(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).)*

## What Do These Two Have In Common?

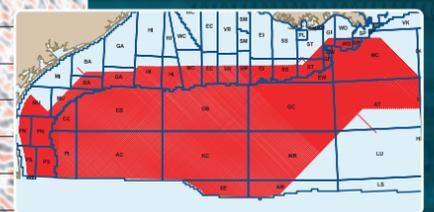


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The one on the left is a matter of opinion.  
Answer: Each one is a nice tie...

**WWW.UPDATE**

# Web Site Gets 'Hit On' a Lot

By JANET BRISTER  
AAPG Web Site Editor

Our Web site – www.aapg.org – is a busy place – with an average of 78,427 visits a month and 484,607 hits.

Visits are a first-time click into the aapg.org address. Hits are pages inside the domain that are viewed. Thus, an average viewer enjoys about six pages on aapg.org before getting the information or service they need and clicking out.

And, there are a lot more AAPG-related hits to add to that number too, if you include registration for AAPG meetings, which is being handled by a third-party vendor.

It all adds up to a lot of traffic.

The statistics show that, as you would expect, the AAPG home page at www.aapg.org is the primary entry point for most visitors to the AAPG Web site.

\* \* \*

The fact that the www.aapg.org is the primary entry point for most visitors to the AAPG Web site is probably not surprising to many of you.

However, there are a few other favorite entry points. These include:

- ✓ The AAPG Bookstore.
- ✓ The AAPG members-only area.
- ✓ The EXPLORER.
- ✓ Whatever meeting deadline is approaching.

The meeting of highest interest recently had been Paris, but with the annual convention paper submittal deadline approaching, September was certain to see a peak of activity focused on Houston.

Members are getting predictive in their Web surfing habits at aapg.org. Mondays seem to be the favorite day to browse the site, with Thursdays following closely.

However, monthly patterns are pretty consistent in showing weekend usage is lower by about a third from the workweek usage (Monday through Friday), but no particular week stands out.

Sections and local organizations must be planning some important meetings, because the new version of the AAPG calendar has been taking quite a few hits. Or maybe it's just something new that people are curious about.

So, let's look at some averages.

AAPG's three Divisions each have their own site within the aapg.org domain, and they are seeing a steady access of their pages:

✓ EMD is averaging 1,978 visits monthly and 3,106 hits, which is an average of 1.57 pages per visit. EMD recently revamped its site, adding member-focused features.

✓ DEG's averages are 1,002 visits per month and 1,133 hits – an average of 1.13 pages per visit.

✓ DPA has the highest visitors each month, 2,047 – but they are second to EMD in the pages accessed, with 2,906 hits for an average of 1.4 pages per visit.

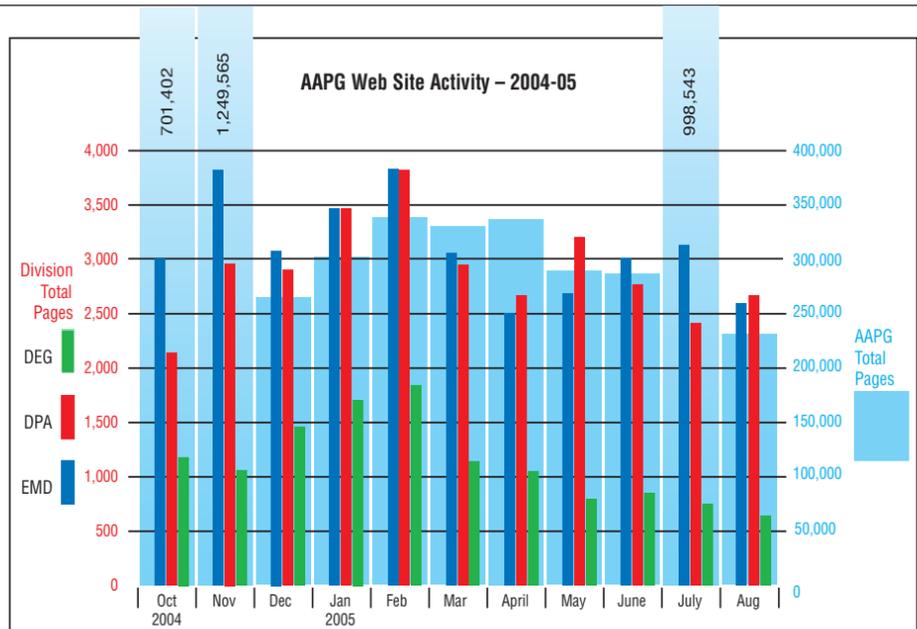
The online Bookstore slowed down during the summer, but since October 2004 it has had 49,469 visitors accessing 340,107 pages. This averages out to 4,497 visits per month.

We are always receiving feedback from visitors to the AAPG Web site.

Sometimes they are kudos and sometimes they are notices of broken links or simply typos stumbled upon.

In every case these are appreciated because it demonstrates users value this site.

So thank you – and good browsing!



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## SPOTLIGHT ON PUBLICATIONS

# Process Is Simple For Book Proposals

By BEVERLY MOLYNEUX  
AAPG has been in the book publishing business since the 1920s, starting with "special publications" and "special volumes." Memoirs replaced the special volumes in the 1960s, and other series have been added through time.

Today, AAPG publishes Memoirs, Studies in Geology, Methods in Exploration and Hedberg and Archie

series. In addition to special publications, AAPG also offers digital products. Increasingly, publications are a combination of both print and digital media to reduce costs and exploit the flexible platform of digital publishing.

AAPG's publishing mission is to provide members, other geoscientists and in some cases non-geologists with timely and useful publications at the lowest possible cost.

The Publications Committee is headed by William DeMis, of Marathon Oil, and elected AAPG Editor Ernest Mancini of the University of Alabama.

The publishing process is a simple one:

- ✓ A formal proposal is submitted to the geosciences director, who forwards it to the chair for evaluation.
- ✓ The Publication Committee, in the evaluation process, focuses on scientific merit, timeliness and value to the AAPG membership.
- ✓ The Publications Committee recommends changes, and forwards these to the committee chair and the elected editor.
- ✓ The elected editor makes the final decision and sends out an approval letter, and the book process is under way.

Complete, final manuscripts are due at AAPG headquarters within 12 months after proposal acceptance. Once received at HQ, the production process begins and generally takes 15-18 months from start to printed product.

The Publications Committee and AAPG staff produced 16 print publications in the 2002-03 and 2003-04 years combined, in addition to various digital products. Two print publications have been released so far in 2005-06, and another six print publications are scheduled for release before the end of this year.

The Publications Committee welcomes new book proposals, and can act quickly on submittals.

Publication proposal guidelines are available online at [http://www.aapg.org/pubs/pubs\\_proposal.cfm](http://www.aapg.org/pubs/pubs_proposal.cfm).

*(Editor's note: Beverly Molyneux is an editor-coordinator for AAPG publications.)*

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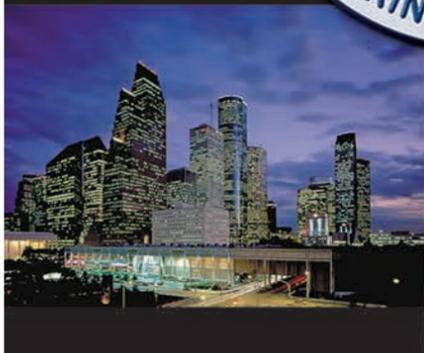
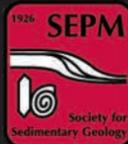
# HOUSTON

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# FOUNDATION UPDATE

A new member has been added to the AAPG Foundation Trustee Associates. He is:

□ **Robert C. Leibrock**, Amerind Oil Co., Midland, Texas.

## Foundation General

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## Mark your Calendars Now!

# 3rd Annual AAPG Winter Education Conference Houston, TX February 6-10, 2006

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- Reservoir Engineering for Geologists
- Rock Properties of Tight Gas Sandstones
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- Well Completions & Interventions
- Introduction to DST's for Geologists
- Practical Wireline Tester Interpretation Workshop
- Basic Openhole Log Interpretation
- Log Analysis of Shaly Sands
- Integrated Exploration and Evaluation of Fractured Reservoirs
- Essentials of Subsurface Mapping
- Introduction to Computer Mapping
- Practical Mapping of Surfaces, Properties and Volumes for Reservoir Characterization

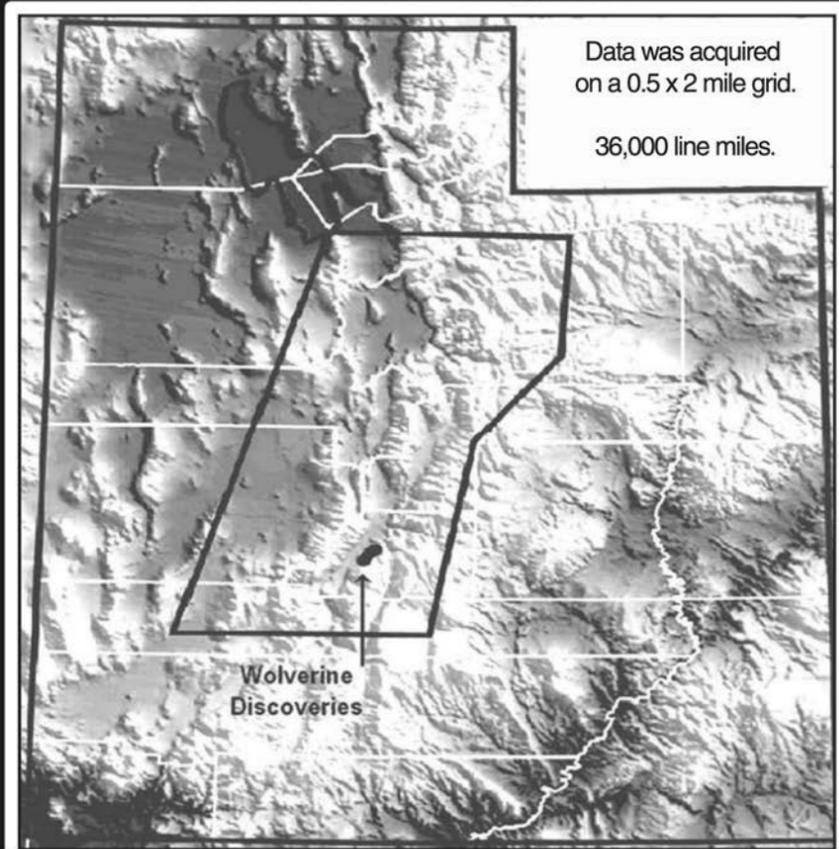


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## INMEMORY

Ted Lee Bear, an AAPG past president, honorary member and Foundation Trustee Associate, died suddenly on Aug. 15. He was 88. His residence was in Dove Canyon, Calif.



A graduate of the University of California at Los Angeles, Bear was decorated for his service in World War II and returned to join a consultancy and later partnered with Harold Hoots, forming Bear and Kistler and Associates in 1957.

As a consultant for Humble Oil, Bear was responsible for discoveries of the Castaic Junction, Plieto Hills, Rosedale and other fields in California. He was also involved in geological evaluations of the petroleum potential in Libya, Algeria, Nigeria, South Africa and Turkey.

Bear began lecturing at UCLA in 1957, and from 1974-78 at the University of Southern California – but UCLA was where his heart was, and he was an enthusiastic support of Bruin sports, especially football, and could be seen standing on the sidelines with the team at home games.

He was AAPG secretary in 1973, AAPG president from 1984-85, received Honorary Membership in 1988 and was an AAPG Foundation Trustee Associate.

The family requested donations be made to the AAPG Foundation's General Fund or K-12 Fund.

William C. Gussow, the winner of AAPG's Pioneer Award in 2000, died Aug. 20. He was 97.

Gussow also was an AAPG Distinguished Lecturer in 1955-56.

\* \* \*

**Ted Lee Bear, 88**  
Dove Canyon, Calif.,  
Aug. 15, 2005

**Roger Lewis Billings, 72**  
Conroe, Texas,  
July 21, 2005

**Charles Ulysses Crausaz, 83**  
Chatel-Sur-Montsalvens,  
Switzerland, March 20, 2005

**John Wallace Cooke Jr., 81**  
Conroe, Texas,  
May 23, 2005

**Frank Richard Goodban (EM '51)**  
Oceanside, Calif.

**John Milton Graves, 79**  
Tulsa, July 30, 2005

**William Carruthers Gussow, 97**  
Ottawa, Canada,  
Aug. 20, 2005

**Louis Henry Michaelson, 86**  
Midland, Texas,  
July 17, 2005

**Norman Stewart Morrissey, 86**  
Tulsa, Aug. 10, 2005

**Robert Bowden Porter, 81**  
Midland, Texas,  
Dec. 30, 2004

(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.)

\* \* \*



## 2005 WTGS Fall Symposium

Midland, Texas ★ October 26-28, 2005

### Unconventional Reservoirs, Technology, & Strategies

Keynote Speaker Michael Beattie, Anadarko  
Haley Field West Texas

Luncheon Speaker: Scott Tinker, BEG  
Beyond EOR in West Texas

### Alternative Perspectives for the Permian Basin

#### Symposium Topics

- Tight gas sands
- Basin Centered Gas
- North America Shale Gas
- North America Coal Gas
- Hydrothermal Dolomites
- Overthrust Exploration – Covenant Field Utah; Ouchita Thrust, Texas
  - Aeromag, Landsat, and Gravity-Magnetic Techniques
  - Petrophysics for Unconventional Reservoirs
    - Oil and Gas Reserves Estimating
    - Seismic Imaging, Micro-seismic
- New Perspectives on Permian Basin Carbonate Reservoirs
- Outcrop Modeling Guadalupe and Sacramento Mountains

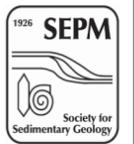
Visit the WTGS website for a registration form: <http://www.wtgs.org/>  
Pre-registration deadline is October 17, 2005.

For information contact: Paula Mitchell at the WTGS office at (432) 683-1573  
General Chairman: Michael Raines (432) 688-3782.  
Technical sessions: Kurt Cox 303.526.9602 or Denise Cox 303.713.1112



## Joint Research Conference The Application of Earth System Modelling to Exploration

([www.geolsoc.org.uk](http://www.geolsoc.org.uk) and [www.sepm.org](http://www.sepm.org))



Conveners: Paul Markwick (GETECH, University of Leeds), Joe Curiale (Unocal Corporation) and John Suter (ConocoPhillips)

### CALL FOR ABSTRACTS

Abstract Submission begins November 15, 2005

**Abstract  
Submission  
—Deadline—  
March 15, 2006**

**2006  
July 11-13  
Snowbird  
Utah, USA**

**Earth Systems** modelling has changed significantly in the last 10 years, with the development of more sophisticated models, a larger portfolio of experiments and tests of modelling validity, as well as a more robust understanding of the relationship between tectonics and the dynamic landscape (palaeogeography). In addition, further information has also been gathered on source and reservoir depositional systems, such that the early debates amongst source rock workers on the relative importance of productivity or preservation is no longer appropriate. And yet the needs of Industry remain: to reduce exploration risk, especially in frontier basins (including deep-water), by better understanding the processes responsible for source, reservoir and seal facies, their distribution and nature. In frontier areas this is largely without the benefit of well control and therefore is almost entirely dependent upon modelled predictions.

This conference will bring together the leading experts in the fields of Earth Systems Modelling and Frontier Exploration, in order to assess the current status, facilitate inter-disciplinary and Industry-Academia collaboration, and help identify and define the direction of future developments in the application of modelling to exploration, especially with respect to risk reduction in frontier areas

# 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

Salisbury, Alice Coffee, Aera Energy, Bakersfield (reinstatement)

### Louisiana

Greber, Stephen C., Winchester Production, Shreveport (P.L. Lakin, O.R. Berg, W.D. Huffman)

### Ohio

Richardson, Jeffrey G., Columbus State College, Columbus (S.M. Bergstrom, E. Slucher, J. McDonald)

### Texas

Bryarly, Michael J., Veritas DGC Inc., Houston (F.M. Wall, L.R. Chaboudy Jr., M.M. Cassidy); Converse, David Rhys, ExxonMobil Upstream Research, Houston (I.A. Russell, R.M. Stuart, A.E. Bence); Driskill, Brian W., Shell International E&P, Houston (D.J. Hall, L.A. Poprik, G.D. Hatcher); Grimsley, Steve K., Amerada Hess, Houston (T.M. Cordingley, P.R. Parks, S.M. Ehlinger); Matoush, Julie Kickham, ExxonMobil, Houston (L.O. Fernandez, D.A. Yurewicz, T. Hauge); Rodriguez, Jose Ricardo, Killam Oil, San Antonio (E.B. Hoin, W.T. Dees, J.B. O'Bara); Rodriguez, Nancy Marie, ExxonMobil Exploration, Houston (J.A. Watson, D.J. Bouquet, H.F. Cunningham); Tibiletti, Wendi R., Output Exploration, Stafford (G.S. Grinsfelder, M.B. Holland, P.G. Rigsby); Welch, Rhonda A., ChevronTexaco, Houston (F.E. Abegg, J.J. Toups, C.W. Hollister)

### Argentina

Feinstein, Enrique Horacio, Vintage Oil Argentina, Buenos Aires (R.W. Potter, R.J. Merino, J.E. Morales)

### Australia

Brown, Stuart Anthony, Woodside

Energy, Perth (reinstatement); Daniels, Michael Claude, Helix-RDS, Perth (reinstatement)

### Canada

Crawford, Frank, Groundstar Resources, Calgary (reinstatement)

### England

Barbullushi, Roland, independent, London (H.D. Johnson, K. Gallagher, J.A. Cartwright)

### Malaysia

Fitzsimons, Daniel William Thoms, Schlumberger, Kuala Lumpur (T. Basu, A.C. MacDonald, S. Rae)

### Nigeria

Imagbe, Lucky Osaro, University of Jos, Nigeria, Jos (E.C. Ashano, E.E. Ibie, U. Nkeme)

### Norway

Loseth, Tore M., Hydro, Bergen (O.J. Martinsen, W.S. Helland-Hansen, R.J. Steel)

### Russia

Khatizov, Sergei Faizovich, TNK-BP, Moscow (J.C. Dolson, R. Herbert, P.D. Carragher); Ostapenko, Sergey Vitalievitch, TNK-BP Management, Moscow (J.C. Dolson, R. Herbert, P.D. Carragher); Pavlov, Vladimir Yuryevich, TNK-BP Management, Moscow (J.C. Dolson, R. Herbert, P.D. Carragher); Shubin, Alexander Valeryevich, TNK-BP Management, Moscow (J.C. Dolson, R. Herbert, V.K. Shimansky); Turenko, Sergey Konstantinovich, Tyumen State Oil and Gas University, Tyumen (J.C. Dolson, R. Herbert, V.K. Shimansky)

### Thailand

Kitvarayut, Nualjun, Unocal Thailand, Bangkok (D.C. Webby, J.A. Stites, R. Jagerman)

## Certification

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

### Petroleum Geologist

#### Texas

Blackburn, Randolph Russell, EOG Resources, Tyler (reinstatement)

#### United Kingdom

Brooks, John Reginald V., consultant, Brookwood (Geological Society of London)

## SPOTLIGHT ON EDUCATION

Unexpected delays have pushed delivery of the 2006 AAPG education department catalogue to November; you'll receive it with your next EXPLORER.

However, here's a sneak peak at some of the highlights we're offering this year.

- ✓ A new field seminar – "Folding, Thrusting and Syntectonic Sedimentation: Perspectives from Classic Localities of the Central Pyrenees," offered in June, in Spain
- ✓ Two new GeoTours – "GeoTour to Trinidad & Tobago," offered in the spring, and "Napa-Sonoma Wine Country GeoTour," in California, in June.
- ✓ Three new short courses –

"Strategic Play Analysis," in April (with the AAPG Annual Convention) in Houston; "Application of Structural Geology in Prospecting in Thrusted and Extensional Terrain," in Jackson, Wyo., in August; and our fall education conference on deepwater exploration, a themed conference in September in Houston patterned after our successful Winter Education Conference

✓ A new online course – "Environmental Issues in the Oil and Gas Industry," a self-paced course you can take at your convenience.

Can't wait until November? Information on our remaining 2005 courses and the new program for 2006 can be found now, on the AAPG Web site at [www.aapg.org/education](http://www.aapg.org/education).

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## Commentary

# 10 Reasons Petrol Prices Will be High

By RICHARD G. GREEN  
DPA President-Elect

Multiple factors are fueling the price increases for crude oil and ultimately gasoline pump prices. Gasoline prices are dependent on crude oil prices since crude oil is the feedstock for refined gasoline.

Consumers have long benefited from the oil industry they love to hate providing abundant gasoline. The cumulative effect of poor economic policy and misguided environmental law is a reality of potential gasoline shortages and national security problems.

Do not expect gasoline prices to return to former levels.

Listed below are 10 good reasons gas prices will remain high.

**1. We are at war, and war breeds uncertainty.**

Uncertainty fuels speculation and this has affected oil markets. The war is with a religious sect, not a defined geographic entity; the enemy is a radical sect of Islam, and the world's greatest oil reserves underlie generally friendly Muslim countries that could fall prey to these extremists.

The war with terrorists and the

uncertainty will persist indefinitely, probably for decades.

**2. The dollar is declining in relation to other benchmark currencies.**

Thus, gasoline is higher priced in the United States than four years ago but nearly the same in Europe due to Euro strength against the dollar.

**3. Deliverability of crude oil is at or near capacity worldwide.**

Far too few oil wells have been drilled in the last decade to maintain or increase this deliverability. Prices for oil have been relatively low and volatile for

20 years inhibiting capital investment. As a result the large oil deliverability surplus available in the mid-1980s is now gone and gasoline prices rise.

**4. No new giant oil fields have been found in 20 years despite extensive world-wide seismic exploration and drilling using state-of-the-art technology.**

These giant fields historically have been the supply source for a large portion of oil supplies. Without new giant discoveries oil production decline rates escalate because smaller fields deplete faster.

**5. Drilling and operating costs have soared.**

The average cost to drill wells in the United States has increased 50 percent in the last five years, and critical items such as steel casing and tubing are now in short supply and expensive. This will cause even higher costs in the future.

**6. Crude oil and gasoline are taxed at multiple levels.**

Oil is typically taxed at local and state levels. After refining, gasoline is also taxed at the pump by states and also by the federal government. As a result, even ignoring income taxes, the largest cost component of gasoline at the pump is taxes. Typically taxes account for 30 percent of the pump price consumers pay.

**7. Domestic refining costs have increased in order to comply with federal, state and, in some regions, local environmental laws.**

The largest cost component for gasoline after taxes is refining costs, which average around 20 percent. Almost 50 percent of U.S.-based refineries have been forced to close in the last 15 years mostly due to high-cost environmental mandates. The unintended effect of environmental regulation has been to reduce our national refining capacity to critically low levels and increased gasoline and crude oil imports. We have damaged our own national security, and no new refineries have been built in decades. We are now vulnerable to refinery destruction or import supply disruptions.

**8. Demand outside the United States is dramatically increasing and the U.S. economy is recovering from 9/11.**

China has become the second largest importer of crude behind the United States and may eventually overtake it since per capita consumption is still small compared to the United States. Demand in populous India is also increasing rapidly.

The United States has declined in energy consumption as compared to the rest of the world but still consumes 25 percent of the world's refined products.

**9. The oil service sector has been weakened by decades of poor prices.**

The total number of drilling rigs worldwide has declined to less than the number of rigs in just the United States in 1985. Virtually all useable rigs are already drilling. Many more rigs will need to be manufactured and this will take considerable capital and time.

**10. Economically attractive energy alternatives to gasoline do not exist.**

✓ Fuel cells are still decades and



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continued on next page

## READERS' FORUM

### History and the Oman Mountains

Regarding your article "Medalist a World Geologist" (June EXPLORER), on the occasion of Ken Glennie's well-deserved award of the Sidney Powers Medal:

I was a colleague of Ken during my career as an explorationist with the Royal Dutch-Shell Group. In fact, upon completion of my basic training with the company in late 1963, my first overseas assignment was supposed to be a six months "roving party" with Ken in Afghanistan. Plans changed, however, and in January 1964 I was sent to Oman instead, first as well-site geologist for six months then as field geologist for two years. This was just before Ken would move his studies of recent desert sedimentation to Oman.

Regarding the structural interpretation of the Oman Mountains, Glennie is quoted as saying: "I led a team mapping the Oman Mountains. In all the work previous to that, everyone had thought that all the rocks were deposited where they currently were found."

Actually, sedimentary rocks of the Hawasina Group and basic/ultra-basic rocks of the Semail Group were first recognized in 1904-05 by Pilgrim, but it was in 1928 that Lees, an IPC geologist, published the results of his and Gray's memorable geological survey of the interior of the Oman Mountains. With profound insight, Lees concluded that both the Hawasina and the Semail had been emplaced as huge nappes thrust during the Upper Cretaceous.

After World War II, IPC was exploring the Oman petroleum concession and their geologists carried out more extensive fieldwork from 1949-60, the results of which are mostly in unpublished reports. During that period a drastic change of ideas was introduced by Morton, who made the Hawasina a lateral equivalent of the clearly autochthonous Aruma shales found in the desert wells, and abandoned the concept of thrust sheets altogether.

Following the drilling by IPC of a number of unsuccessful exploration wells, their Oman concession was taken over, lock, stock and barrel, by Shell.

The first Shell fieldwork campaign (1963-64) was carried out by Hans Kapp and Peter Llewellyn, who made a comprehensive survey of the autochthonous sediments of the central Oman Mountains. With respect to the Hawasina and Semail, a secondary objective, they stuck to Morton's ideas.

Party chief Peter Kassler and I did the second Shell campaign (1964-65). Part of it dealt with the Haushi-Huqf area in southern Oman, the other part was devoted to "plugging the holes" and extending the surveyed area of the previous campaign. That is when Kassler and I started to express some doubts as to the validity of Morton's ideas, following

*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.*

our field observations in the Hawasina and Semail rocks.

For the third Shell field season (1965-66), I was party chief and my co-worker was Jan Horstink. On our request, our bosses agreed that the campaign would be devoted to the unraveling of the Hawasina-Semail complex. As work progressed, we could subdivide the Hawasina and map its various units (a number of the current formation names are ours) and observe its relationships with the overlying Semail and underlying sediments. It became more and more evident that we were in the presence of huge allochthons, just as Lees had thought 40 years before.

The Shell field seasons lasted from early October to May, seven days a week under the tent or the stars, with a two-week leave over Christmas and New Year – truly the good old days! Thus, much mapping had been carried out in the Oman Mountains before Glennie's arrival.

Another of Glennie's quotes was: "The reason for going back to Oman was that the head of Shell's global exploration had been on a field trip to Oman in the 1960."

Indeed, this visit by Rudi Beck took place during my second field season. I took him around for a couple of days, showing him why we favored an allochthonous origin for the Hawasina and the Semail. At the same time, I told him that this type of fieldwork was not very relevant to petroleum exploration and would best be carried out by university people who had the time that we did not have. He then said, at the foot of an exotic block in the Wadi Hawasina, that it could be a job for the Shell exploration lab people, "as they have spent enough time already on delta and desert studies." At the moment, I did not give much importance to this statement.

Unknown to us, of course, was the fact that our re-interpretation of the Oman Mountains structure gave rise to much controversy in the Oman and Hague offices, where Morton's ideas were taken for granted.

In 1966, when Horstink and I were back in the Netherlands at the research lab to write our report, we were surprised to learn that an Oman Mountains team was being formed there, comprising Michel Boeuf, Mike Hughes-Clarke, Mark Moody-Stuart (future Shell CEO), Pete

See **Forum**, next page



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much higher fuel prices from reality.

✓ Ethanol additives to gasoline are politically popular but inefficient since more energy is required to produce a gallon of ethanol than is gained.

✓ Natural gas-powered vehicles work, but natural gas is also of uncertain supply.

✓ Hybrid gas-electric cars are viable and could slightly reduce domestic demand increases if widely accepted. Unfortunately, they are not significant on a global basis and are

not proven reliable on a long-term basis.

Gasoline prices will drop with increased supply of product or reduced demand. This could happen for a short time, particularly in localized markets.

Longer term, to increase supply will require years of time – not months – and large capital investments needed in a climate of political and economic uncertainty. This seems as unlikely as a large global demand decrease.

Prices for gasoline will remain high. □

## Forum

from previous page

Pilaar and Ben Reinhardt, under the leadership of Ken Glennie.

Our report (unpublished), "The Mesozoic Nappes of the Oman Mountains" was completed in January 1967. In 1973 the Glennie group published the article "Late Cretaceous Nappes in the Oman Mountains and Their Significance" in the AAPG BULLETIN. In 1974 the book "Geology of the Oman Mountains" was published. In its early pages, a couple of lines refer to Jan Horstink's and my interpretation.

As far as the prospectivity of the sub-Hawasina structures was concerned, a well was drilled later on one of the four possible locations selected by Horstink and myself. The results showed that the Oman Mountains acreage could be safely relinquished.

I have kept imperishable memories of my time in Oman, certainly the best of my Shell career. Still, in retrospect, I regret that Jan Horstink and I did not publish a paper in 1967. However, I had just gotten married, was on my way to Canada and Horstink was back in Oman as field party chief.

I think that the "inside story" of Oman Mountains' successive interpretations could be of interest to the readers of the EXPLORER, especially the younger ones, as the days of large scale, exciting and ground-breaking field work by oil geologists in more or less unknown areas is over.

And, a word of advice to them: Publish early if you have something really new to say!

Jean Haremboure  
Allan, France

## MEETINGS OF NOTE

*Editor's note: Meetings listed here are sponsored by AAPG or an affiliated group. An asterisk denotes a new or changed listing. For further information on these listings contact the AAPG convention department (convene@aapg.org)*

*Also, a comprehensive list of earth science meetings is maintained by the American Geological Institute on its Web site, which can be accessed via a link from AAPG's Web page (www.aapg.org).*

## 2005 U.S. Meetings

Oct. 9-12, Society of Petroleum Engineers, annual meeting, Dallas.

\* Oct. 12-16, AAPG Foundation Trustee Associates, Branson, Mo.

Oct. 16-19, Geological Society of America, annual meeting, Salt Lake City.

Nov. 6-11, Society of Exploration Geophysicists, annual meeting, Houston.

## 2005 International Meetings

\* Nov. 21-23, IPTC – International Petroleum Technology Conference, Doha, Qatar.

## 2006 U.S. Meetings

April 9-12, AAPG Annual Convention, Houston.

May 1-4, Offshore Technology Conference, Houston.

\* May 8-11, Pacific Section, annual meeting, Anchorage, Alaska.

\* June 21-24, Society of Independent Earth Scientists (SIPES), annual meeting, South Lake Tahoe, Nev.

\* September 14-16, Southwest Section, annual meeting, San Angelo, Texas.

Sept. 24-26, Gulf Coast Association of Geological Societies, annual meeting, Lafayette, La.

Sept. 24-27, Society of Petroleum Engineers, annual meeting, San Antonio.

Oct. 1-6, Society of Exploration Geophysicists, annual meeting, New Orleans.

Oct. 8-11, Eastern Section, AAPG, annual meeting, Buffalo, N.Y.

Oct. 18-22, AAPG Foundation Trustee Associates, San Antonio.

Oct. 22-25, Geological Society of America, annual meeting, Philadelphia.

## 2006 International Meetings

March 27-29, Middle East Geosciences Conference and Exhibition (GEO), Manama, Bahrain.

\* May 15-17, Geological Association of Canada and Mineralogical Association of Canada, annual meeting, Montreal, Canada.

\* May 15-18, Canadian Society of Petroleum Geologists, annual meeting, Calgary, Canada.

\* June 11-14, European Association of Geoscientists and Engineers, annual meeting, Vienna, Austria.

Oct. 20-25, AAPG International Conference and Exhibition, Perth, Australia.

\* Nov. 21-23, PETEX, London, England.

## Drill It

I am greatly disappointed in the trend toward questionable science and zealotry expressed in letters to the EXPLORER.

Creationism and God belong in churches, not in AAPG journals. Instead we should be seeing discussions on how

to best educate the public on evolution, to prevent blunders like the Kansas board of education. If the body of AAPG members cannot resolve nonsense like intelligent design/creationism and the difference between faith (believing without evidence or data) and theory (rigorous testing of ideas against

observed data), then this organization is in serious trouble.

Like evolution, the data for global warming is overwhelming. If this data were a prospect, we would have drilled it years ago.

David Gallaher  
Idaho Springs, Colo.

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**U.S. Geological Survey Mendenhall Postdoctoral Research Fellowship Program**

The U.S. Geological Survey (USGS) invites applications for the Mendenhall Postdoctoral Research Fellowship Program for Fiscal Year 2007. The Mendenhall Program provides opportunities to conduct research in association with selected members of the USGS professional staff. Through this Program the USGS will acquire current expertise in science to assist in implementation of the science strategy of its programs. Fiscal Year 2007 begins in October 2006.

Opportunities for research are available in a wide range of topics. The postdoctoral fellowships are 2-year appointments. The closing date for applications is December 1, 2005. Appointments will start October 2006 or later, depending on availability of funds. A description of the program, research opportunities, and the application process are available at <http://geology.usgs.gov/postdoc>. The U.S. Geological Survey is an equal opportunity employer.

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**Search Reopened: SEDIMENTARY GEOLOGY, UNIVERSITY OF WYOMING**

The Department of Geology and Geophysics (<http://home.gg.uwyo.edu>) invites applications for a tenure-track, assistant professor position in sedimentology/stratigraphy. Higher rank (associate professor) is possible with appropriate qualifications. Ph. D. is required at time of appointment, August 2006. We seek an individual who shows the potential to develop an internationally recognized, externally funded research program, will be involved in the undergraduate and graduate teaching mission of the department, and will build on departmental strengths in sedimentation, energy research, seismology and structural geology. Specialty is open, but may include such diverse fields as quantitative basin analysis, seismic stratigraphy, carbonate sedimentation, paleoclimate reconstruction, physical sedimentology and sediment transport. The Department is home to the Institute for Energy Research (<http://www.ieronline.org/>) and the University has a strong and long-standing commitment to energy-related research in the geosciences.

Applications should include a statement of research and teaching interests and accomplishments, curriculum vitae, and the names and contact information of three references. Review of completed applications will begin November 1, 2005. Send an electronic copy of your application to Ms. Carol Pribyl at [cpribyl@uwyo.edu](mailto:cpribyl@uwyo.edu); if you have additional application materials to send, please direct them to Sedimentary Search Committee, Dept. of Geology & Geophysics, University of Wyoming, 1000 E. University Ave., Dept. 3006, Laramie, WY 82071.

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**UNIVERSITY OF WYOMING: GEOHYDROLOGIST**

The Department of Geology and Geophysics at the University of Wyoming invites applications for a tenure-track position in geohydrology at the assistant professor level. Higher rank (associate professor) is possible for individuals with an established research program and demonstrated ability to secure external funding. Ph. D. is required at time of appointment, August 2006. We seek an individual who shows the potential to develop an internationally recognized, externally funded research program and who will be involved in the undergraduate and graduate teaching mission of the department. We welcome applicants with any specialization within the general field of geohydrology, including those who will build on departmental strengths in sedimentation, energy research, seismology, tectonics and structural geology. Additional information on the Department can be obtained on our web page (<http://home.gg.uwyo.edu/>).

Applications should include a statement of research and teaching interests and

accomplishments, curriculum vitae, graduate transcripts, and the names and contact information of three references. Review of completed applications will begin January 3, 2006. Send an electronic copy of your application to: Ms. Carol Pribyl at [cpribyl@uwyo.edu](mailto:cpribyl@uwyo.edu); if you have additional application materials to send, please direct them to the Geohydrology Search Committee, Prof. Carol Frost, Chair, Department of Geology and Geophysics, University of Wyoming, 1000 E. University Ave., Dept. 3006, Laramie, WY 82071. The University of Wyoming is an equal opportunity/affirmative action employer.

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**SAN DIEGO STATE UNIVERSITY STRATIGRAPHY/SEDIMENTOLOGY AND LOW-TEMPERATURE GEOCHEMISTRY**

The Department of Geological Sciences at San Diego State University invites applications for two tenure-track Assistant Professor positions, one in stratigraphy/sedimentology and one in low temperature geochemistry, beginning Fall 2006. A Ph.D. is required at time of appointment and post-doctoral experience is preferred. We seek motivated teacher-scholars who will establish vigorous, externally funded and nationally recognized research programs involving both graduate and undergraduate students. Research specialty within the two positions is open but will preferably complement and build on existing strengths in the department. See <http://www.geology.sdsu.edu/>. Applicants should submit a cover letter, statement of research and teaching interests, curriculum vitae, and names and contact information of three references to: Faculty Search Committee, Department of Geological Sciences, San Diego State University, San Diego CA 92182-1020. Deadline Nov 1, 2005. SDSU is a Title IX, equal opportunity employer and does not discriminate against individuals on the basis of race, religion, national origin, sexual orientation, gender, marital status, age, disability or veteran status, including veterans of the Vietnam era.

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**Pevehouse Chair in Geosciences – an Endowed Position in Petroleum Geology and Geophysics Texas Tech University**

The Department of Geosciences at Texas Tech University invites applications and nominations for the Pevehouse Chair in Geosciences. The purpose of this endowed position is to support education regarding the origin, exploration, and recovery of hydrocarbons. A Ph.D. in geosciences or closely allied field is required at the time of appointment. The ideal candidate should have demonstrated research abilities and experience regarding geologic and economic aspects of hydrocarbon exploration and production. The chair holder is expected to conduct an externally-funded research program in his/her specialty, teach graduate and undergraduate courses, and maintain ties with the petroleum industry. The position is expected to be filled at the tenured full professor level.

Texas Tech is one of the four major state-supported multi-disciplinary universities in Texas. It consists of ten colleges, Graduate School, School of Law, Health Science Center, with about 29,000 students enrolled. The Department of Geosciences consists of seventeen faculty, eleven in solid earth science and six in atmospheric science. The solid earth specialties cover major areas of geology, geochemistry, and geophysics. The atmospheric group specializes in severe storms, wind energy, and airborne hazardous substances. At present, the department has about 70 undergraduate majors and 40 graduate students. The department computer labs have geologic interpretational/modeling software packages such as Geographix Discovery, SMT Kingdom Suite, and GoCAD, as well as GIS packages. Research labs include facilities for stable isotope analysis, x-ray diffraction, and ICP elemental analysis, TEM and SEM, and a thin-section preparation facility with technician. There are many opportunities for multidisciplinary research. In addition to Geosciences, the successful candidate

See **Classifieds**, next page



**DEAN  
The College of Earth and Energy  
and  
Lester A. Day Family Chair and Director of the Sarkeys  
Energy Center**

**The University of Oklahoma**

The University of Oklahoma invites nominations and applications for the joint positions of inaugural Dean of the College of Earth and Energy and the Lester A. Day Family Chair and Director of the Sarkeys Energy Center. This new College, which will begin operation in January 2006, brings together the University's world-renowned academic programs in Petroleum and Geological Engineering, and Geology and Geophysics, with the Oklahoma Geological Survey and the Sarkeys Energy Center. The Dean and Director will be a visionary, dynamic and energetic leader who will chart a bold course for the future to engage multiple disciplines and industries in the study of the Earth and energy.

**The New College:** The College of Earth and Energy is being formed as a response to new challenges in energy and Earth sciences that require a coordinated, multi-disciplinary approach involving academic programs, research centers and institutes, and policy- and service-related organizations. The new College emphasizes science and engineering in all forms of energy; Earth science; and energy management and policy to address the human, business and societal dimensions that are essential to the future. The College also recognizes the importance of linkages with industry and the development of innovative programs that link academia with practice. The units composing the College currently enroll 235 undergraduate and 187 graduate students and employ 50 faculty and 79 administrative and technical staff. The combined research expenditures of these units in 2004-05 (FY05) were \$4,440,424.

**Responsibilities:** The Dean and Director provides overall academic, intellectual and administrative leadership for the College of Earth and Energy and reports to the Senior Vice President and Provost. The successful candidate will be awarded the endowed Lester A. Day Family Chair as Director of the Sarkeys Energy Center. The Dean and Director is responsible for the quality and effectiveness of instructional, research and service programs and serves as the chief spokesperson with external constituencies including advisory boards, donors and the private sector. Further, the Dean and Director has overall responsibility for decision-making in the areas of faculty and staff recruitment, development and retention; resource allocation; and facilities and equipment management, and also actively promotes diversity.

**Qualifications:** Candidates must have an earned doctorate or equivalent experience and be eligible for appointment as a faculty member in a school of the College at the rank of Professor with tenure. Preference will be given to candidates with a strong commitment to education as demonstrated by success as an instructor in higher education, in industry or government training or outreach programs, etc.; a distinguished record of scholarly research nationally and internationally; outstanding administrative leadership and management skills, fund-raising capabilities, and a working knowledge of higher education. The candidate also must possess effective communication and interpersonal relation skills for establishing wide contacts within the University and beyond, including those with leaders in business, industry and government, and for working effectively with the diverse disciplines within the College. Candidates with executive experience in business, industry and government are encouraged to apply.

**The University:** Established in 1890, the University of Oklahoma is a public research university that enrolls over 23,000 students at its main campus in Norman and an additional 7,000 students at the Health Sciences Center in Oklahoma City, the Schusterman Center in Tulsa and in continuing education programs. The University ranks first nationally among public institutions in the number of National Merit Scholars per capita and is developing a new Research Campus, contiguous to its main campus, that collocates University, government and private sector components to promote synergy for mutual benefit. Located 20 miles south of Oklahoma City, Norman is rich in culture and the arts with outstanding public schools and a variety of recreational resources.

**Applications and Nominations:** The search committee will begin screening applications on 1 October 2005 and the search will continue until the position is filled. The preferred start date is 1 January 2006. Applications should include a letter of interest demonstrating how the candidate fulfills the qualifications for this position, a complete curriculum vitae or resume, and the names and addresses of at least six references. Nominations and applications should be directed to:

Paul B. Bell, Jr., Search Committee Chair • Dean, College of Arts and Sciences,  
Vice Provost for Instruction, Ellison Hall, Room 323, Norman, OK 73019  
[pbell@ou.edu](mailto:pbell@ou.edu)  
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The University of Oklahoma is an Equal Opportunity/Affirmative Action employer and has a policy of being responsive to the needs of dual career couples. Applications from women and minorities are specifically encouraged.

**DPA**

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within all the Divisions and a lot of great ideas were shared about providing more services to our membership.

It dawned on me during that meeting that I was the first female president of DPA. I decided to ask divisions manager Norma Newby to research some statistics on the female membership in the various Divisions, and she came up with:

✓ EMD has 1,263 members, 131 of which are female, for a total of 10.37

percent of its membership.

✓ DEG has 1,437 members, 200 of which are female, for a total of 13.91 percent of its membership.

✓ DPA has 3,182 members, only 140 of which are female, for a mere total of 4 percent of its membership!

My question (and challenge!) is, why aren't more women geoscientists members of the Division of Professional Affairs!? I know that about 40 percent of DPA's membership is listed as consultants or independents, but I know a lot of women consultants – so that shouldn't be a show-stopper!

Ladies out there – JOIN THE DPA – I know you are "certify-able"! ☐

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## Classifieds

from previous page

has the opportunity to work with the Petroleum Engineering Department which maintains facilities to conduct core analysis, experiments on drilling fluids, cements, enhanced recovery technologies, and reservoir simulation. Petroleum Engineering also has a nuclear magnetic resonance imaging lab and an artificial lift research lab that consists of a 4100 ft test well, with circulation equipment and automated well control equipment. Geosciences and Petroleum Engineering conduct joint research through the Center for Applied Petrophysics and Reservoir Studies.

Lubbock is a community of about 200,000 people, located on the Southern High Plains of Texas, in proximity to major oil industry in the Permian Basin. The altitude and semi-arid climate of the region are conducive to outdoor activities. Lubbock hosts frequent musical, theatrical, and sporting events, and offers numerous options for shopping and dining. The cost of living index is low compared to national norms.

Review of applicants will begin December 1 and

continue until the position is filled. Applicants should submit a letter of application, curriculum vitae, a statement of teaching and research interests, and names and contact information (including e-mail address) of at least 3 professional references. Applications should be sent to:

Dr. Thomas Lehman  
Pevehouse Chair Search Committee  
Department of Geosciences  
Texas Tech University  
Lubbock, TX 79409-1053

Send questions regarding the position to [tom.lehman@ttu.edu](mailto:tom.lehman@ttu.edu). Details about the Geosciences Department, its faculty, and research facilities may be found at [www.gesc.ttu.edu](http://www.gesc.ttu.edu), and the Petroleum Engineering Department at [www.pe.ttu.edu](http://www.pe.ttu.edu). Texas Tech University is an equal opportunity/affirmative action institution.

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Bass Enterprises Production Company, a medium sized independent located in Fort Worth, Texas, is currently seeking to fill the following positions.

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The ideal candidate will be a creative person with outstanding prospect generation capability and a proven track record for finding oil and gas. This person will be expected to handle the entire spectrum of geological duties ranging from rank exploration through development operations. BS degree in geology (MS preferred) is required with a minimum of 5 years of oil industry experience.

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We are looking for a highly proficient 2-D and 3-D seismic interpreter. The ideal candidate needs to have strong prospect generation skills and a proven track record for finding oil and gas. BS degree in geology or geophysics is required with a minimum of 5 years of oil industry experience.

Both positions are located in Fort Worth, Texas. Please send resume to the Division Geologist or Division Geophysicist, Bass Enterprises Production Co., 201 Main Street, Suite 2900, Fort Worth, TX 76102 or via email at [geologist@basspet.com](mailto:geologist@basspet.com) or [geophysicist@basspet.com](mailto:geophysicist@basspet.com).

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**DIRECTOR'S CORNER**

# Workshop Studies Goals and Tactics

By RICK FRITZ

AAPG's President Pete Rose has called fiscal year 2005-06 "The Year of the Divisions."

As a result, the first joint Division Workshop was held in Dallas on Aug. 5; officers from all three Divisions were present, as well as Pete Rose and past-president and Advisory Council chair, Pat Gratton.

The meeting's purpose was to review the strategic plan for each Division and define their goals and tactics.

AAPG has three Divisions: the Energy Minerals Division, the Division of Professional Affairs and the Division of Environmental Geosciences (see box).

In the workshop's first stage we examined each Division and defined its current reality, e.g., what is the membership of each Division, and what is the value produced by their association?

This was a good exercise with remarkable focus of the significant contributions of each Division. For example:

- ✓ Even with the advent of state certification, DPA certification remains an important part of professional development and support.
- ✓ The EMD Web site is a significant tool for energy minerals information and professional interaction.
- ✓ DEG's *Environmental Geosciences*

## AAPG's Three Divisions

The Energy Minerals Division (EMD) was started in 1977, and the inaugural meeting of the EMD was approved by the AAPG House of Delegates on June 12. EMD's first business meeting was conducted by President Loyd Carlson on June 13, 1977, in Washington, D.C.

The EMD was formed as a forum for professional development in energy minerals, unconventional hydrocarbons, energy economics, geothermal energy and geospatial information.

The Division of Professional Affairs (DPA) was started in 1965, and the first chairman of the AAPG Professional Standards Committee was John A. Taylor. The executive committees were not formed until 1968, with the first DPA

president being W. Dow Hamm.

A key part of the DPA's mission is to provide profession recognition and development through peer reviewed certification.

The Division of Environmental Geosciences (DEG) was unanimously approved at the House of Delegates meeting June 21, 1992, in Calgary, Canada. The first DEG business meeting was held June 22, 1992, with the first president being named as Bernold M. Hanson.

Its primary mission is to educate the AAPG membership and the general public about important environmental and conservation issues that affect petroleum/energy minerals exploration and production.

journal is a valuable peer reviewed publication.

Once the current reality was defined the second stage was to note how that reality is different from the ultimate goals of each Division. That process allowed us to ask ourselves, "How do we reach those goals?" This "strategic how" is critical to building the "tactical - what, who, when and where" of an overall business plan for the Divisions.

I cannot describe the details of the tactical plans at this time, as each Division leadership is in the process of reviewing the results of the workshop. Once reviewed, each Division will modify its current business plan.

However, I will note the following three key categories we discussed:

- ✓ How do we solicit new members?
- ✓ How do we develop new products and services to increase the value of

each Division?

- ✓ How do we fund current and new products and services?

The final stage of the workshop was to define a set of deliverables based on the strategic plan. For example, the leadership of the Divisions agreed to immediately request funding from the AAPG Foundation. As a result, in their meeting on Aug. 21-22, the Foundation Trustees approved \$18,000 to fund two EMD publications and \$22,000 to support the DEG *Environmental Geosciences* journal this year.

The workshop was an exciting opportunity for all three Divisions to work together on strategic goals. The Divisions are important to AAPG and provide a significant value to our membership.



(Editor's note: If you would like to join any or all of the Divisions, please contact Norma Newby by e-mail at [nnewby@aapg.org](mailto:nnewby@aapg.org); or by phone at 1-918-560-2613 (toll free at 1-888-945-2274 ext. 613.)

## D.C. Office, Training, Certificates Programs Advance

# DPA Running With Initiatives

By DEBORAH K. SACREY  
DPA President

Wow! What a great meeting we had in Calgary in June. Many kudos to Convention General Chair John Hogg and his fellow committee people - even if they did break Houston's 2002 attendance record! (Editor's Note: Sacrey is from Houston.)

The DPA Executive Committee and Advisory Board met on the cold, blustery Saturday before the kickoff of the convention. It was a good day to be inside, in meetings, and much got accomplished during this session.

First, and foremost, was the almost unanimous agreement to help AAPG fund the GEO-DC (Washington office). The nod was given to appropriate \$50,000 per year for three years of DPA monies. A board of governors is in place to help find a director to work in the office, which we are renting within AGI's space in Washington, D.C.

This board of governors comprises the current and immediate past presidents of AAPG; the current DPA president; the chairman of the DPA's Government Affairs Committee; five other AAPG members, who will have alternating two- or three-year terms, appointed by the four permanent positions mentioned previously.

Thus, the first board of governors consists of Pete Rose, Pat Gratton, Carl Smith (DPA's Governmental Affairs Committee chair), Reggie Spiller, Lee Gerhard, John Armentrout, Ray Thomasson, Jim Gibbs and myself.

There already are a half dozen or so resumes for the director's position that

have been sent to headquarters, so work has begun to evaluate potential candidates!

\* \* \*

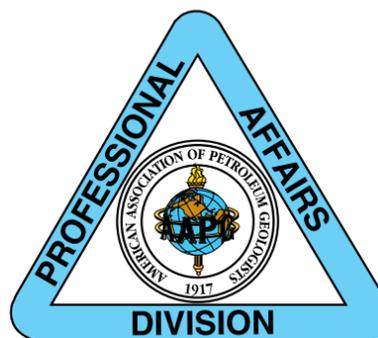
The DPA board also voted to create a new membership category called Board Certified Member. A Board Certified Member will be required to earn 20 Professional Development Hours (PDHs) per year *and* attend an ethics presentation or course. We are hoping this will be phase 1 of getting a level of membership that eventually would have a "leg up" on registration in any state in the country.

Phase 2 would be working with the National Association of State Boards of Geology to prepare geoscientists for the test and maybe even be able to administer the test (long-range wish list!). At least for now, the board certified member would report their PDHs each year when they pay their dues. One would be able to go to the DPA Web site and get into their account to do the reporting.

We are still working out the details for all of this, and Bob Shoup is working on the wording for the bylaw changes to account for this membership level - but it is moving forward!

Professional Development Hours would be counted as follows:

- ✓ .33 PDH - Lunch or dinner technical presentations.
- ✓ .33 PDH - Convention talks.
- ✓ .50 PDH - Convention poster sessions.
- ✓ 1.0 (per hour of instruction) - Continuing education courses.
- ✓ 2.0 PDH (per hour of instruction) -



Field trips.

- ✓ 3.0 PDH/year - Professional committee service.
- ✓ 4.0 PDH/year - Professional service as committee chair or officer.

The requirement of 20 PDHs per year should be easy for most of us, as we all love to go to technical presentations!

\* \* \*

Another monumental meeting was held in July with representatives from large independent oil companies, service companies and major oil companies, along with leadership from DPA, SPE, SPEE and AAPG President Pete Rose, to discuss the practicality of certification of reserves evaluators.

The overall consensus was that "certification" is an extremely broad term, and most likely NOT feasible, considering the gamut of technical expertise needed for the evaluation of reserves.

What was decided, however, was there was a dire need for training and education!

It was resolved that the move forward would put emphasis on establishing a series of courses that would cover everything from SEC definitions to exercises regarding mapping and calculation of hydrocarbons in place. All the companies involved, as well as the organizations represented in this meeting, resolved to contribute to this training program. The result would be a better educated geosciences community that would get "certificates" for attending and passing the coursework, but not necessarily would become "certified"!

It was an outstanding meeting with a lot of positive energy and commitment. Dan Tearpock was asked to take this initiative back to the Exploratory Committee on Reserves Evaluation and help redirect its study.

Thanks to all who attended and gave their valuable insight!

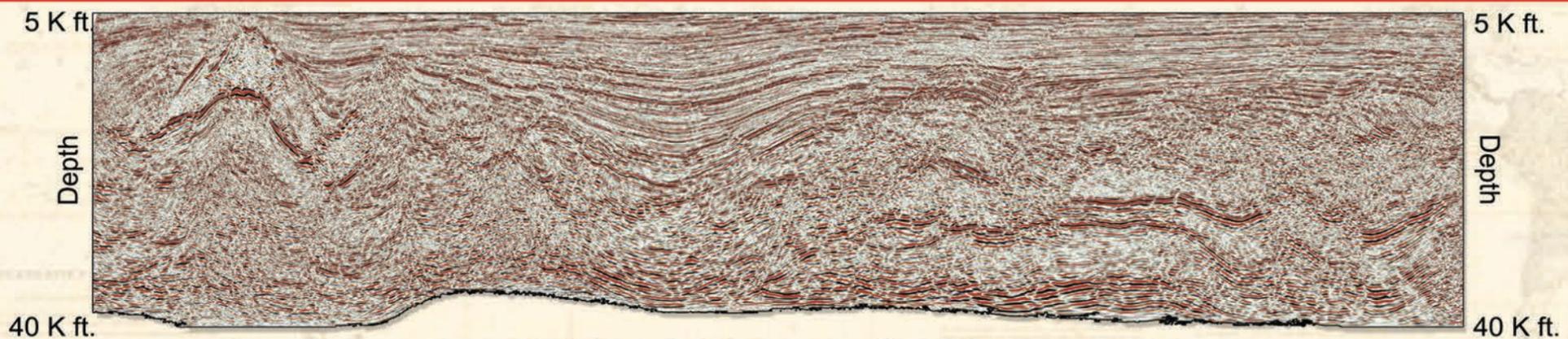
\* \* \*

AAPG President Pete Rose in early August invited the Executive Committees of all three Divisions to Dallas for a Division Summit (see Director's Corner above). He has decided that this is the "year of the Divisions." Executive Director Rick Fritz chaired the meeting, which focused on issues of branding (recognition), membership and grants from the Foundation.

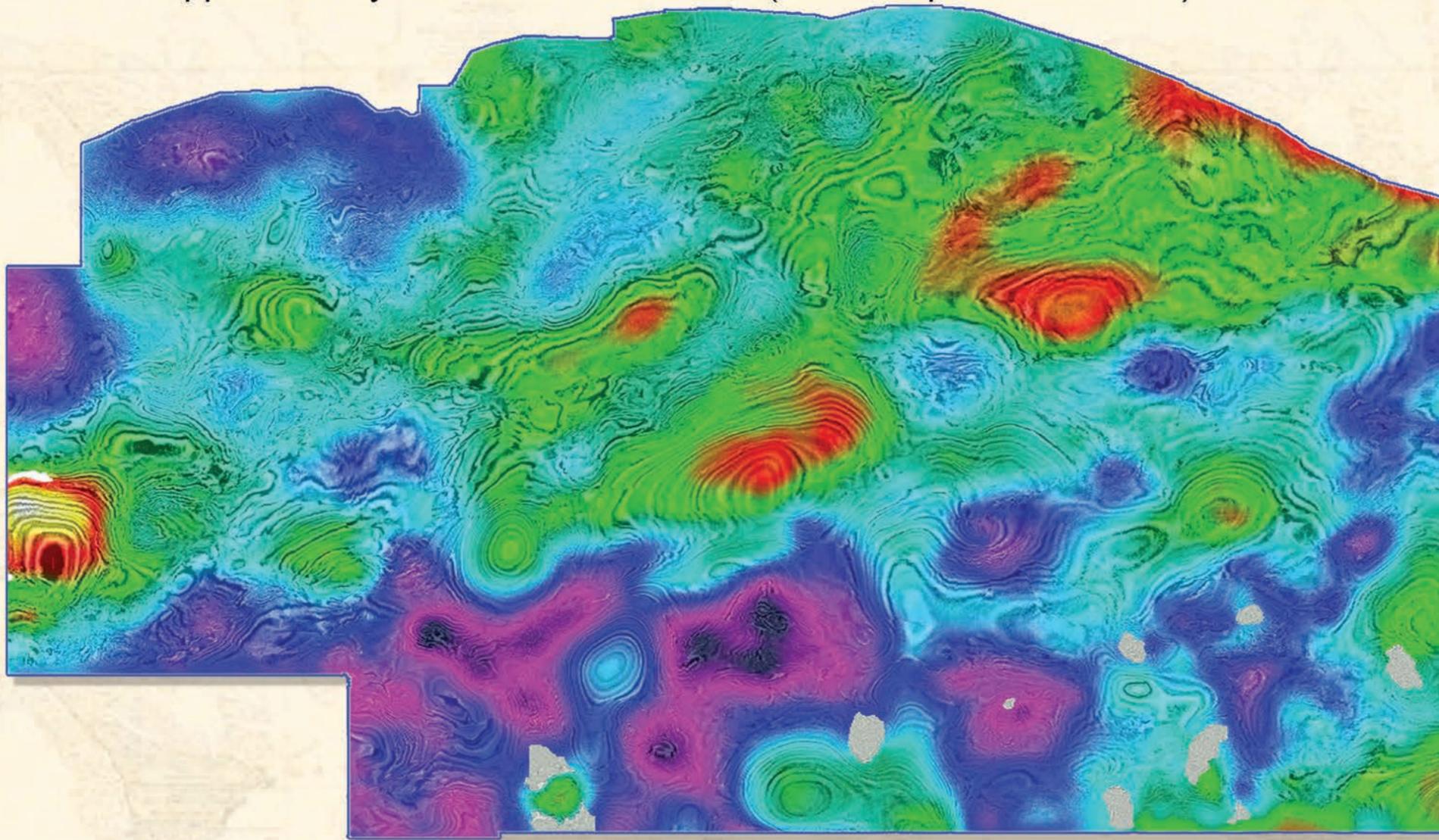
It was an interesting and enjoyable day, and I believe much was gained in the exercises that Rick had us work through. There is a surprising amount of synergy

See **DPA**, page 43

# FAIRFIELD INDUSTRIES' NON-EXCLUSIVE DATABASE



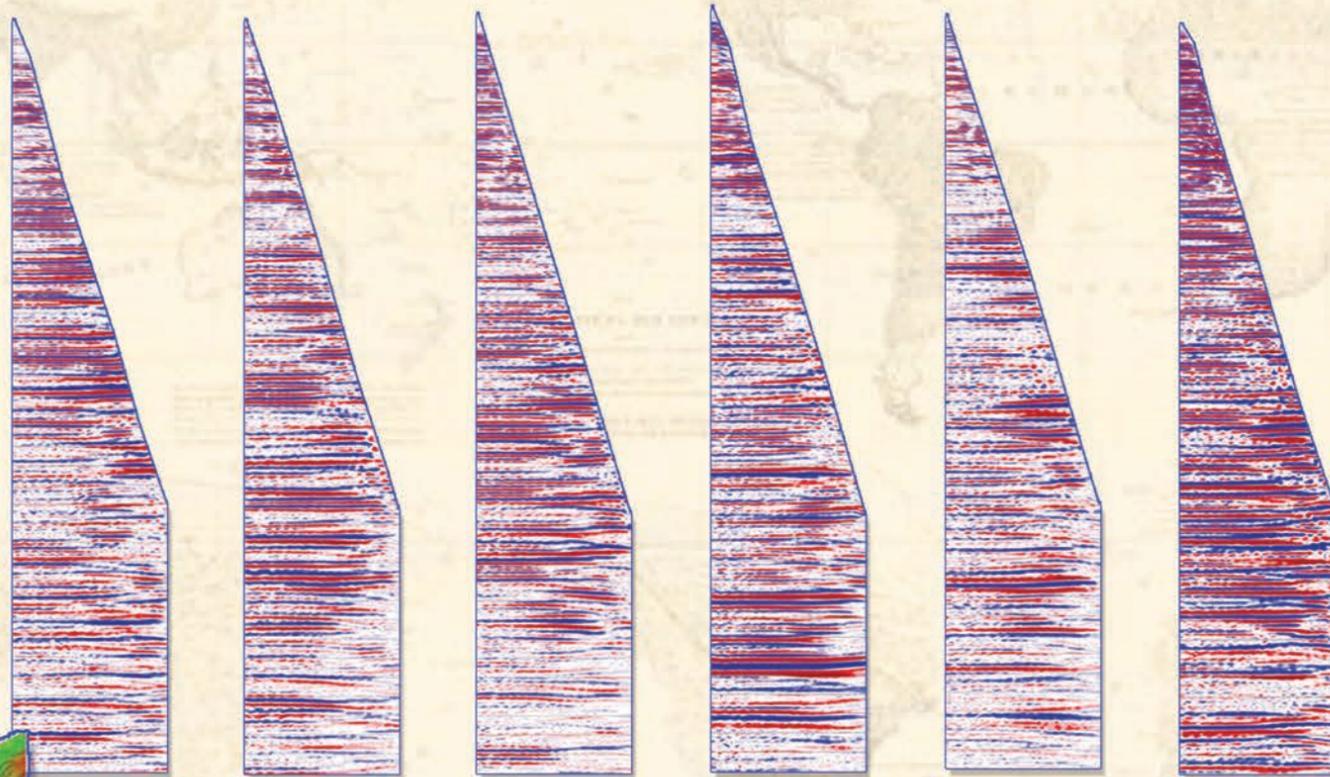
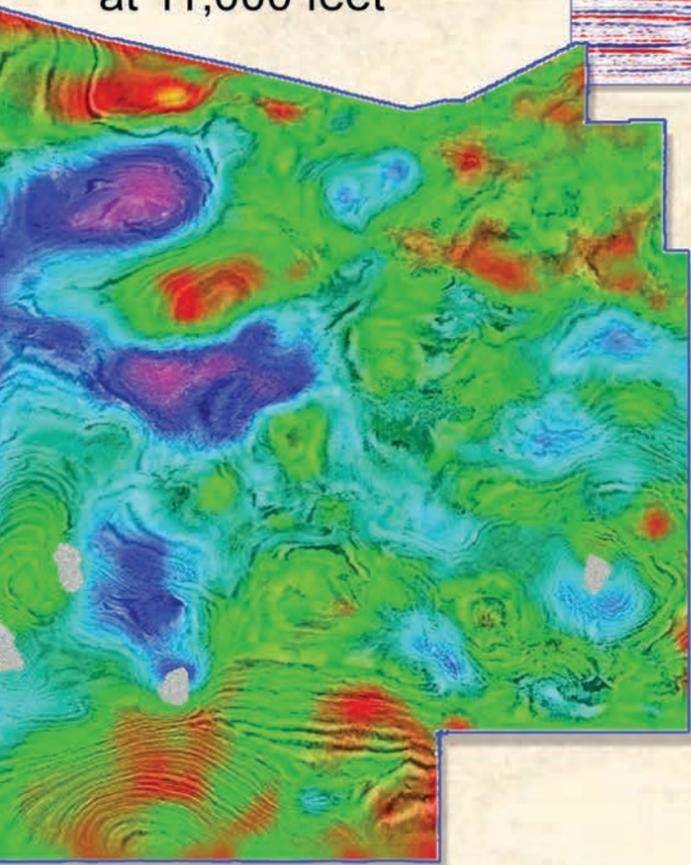
Approximately 793 GOM OCS Blocks (16,596 square kilometers)



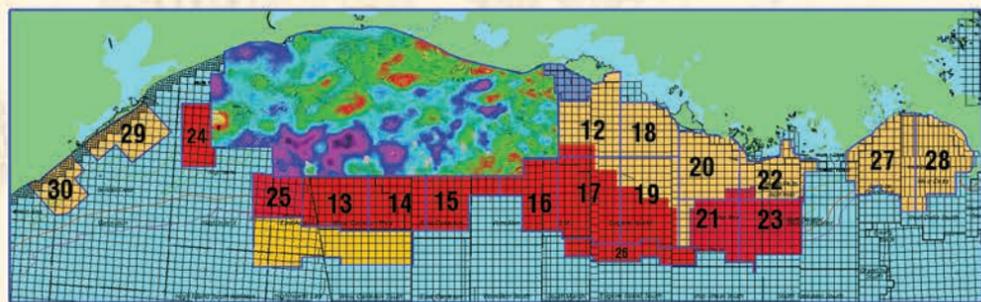
- The tomographically derived velocity model above illustrates a rapidly changing lateral velocity.
- Rapidly changing lateral velocities cause severe seismic ray path distortion.
- The flat and continuous events on these PSDM gathers demonstrate the accuracy of the velocity model which provides a better structural stack and gathers for AVO analysis.

# 3D PRESTACK DEPTH MIGRATION

Depth Slice with  
Velocity Overlay  
at 11,000 feet

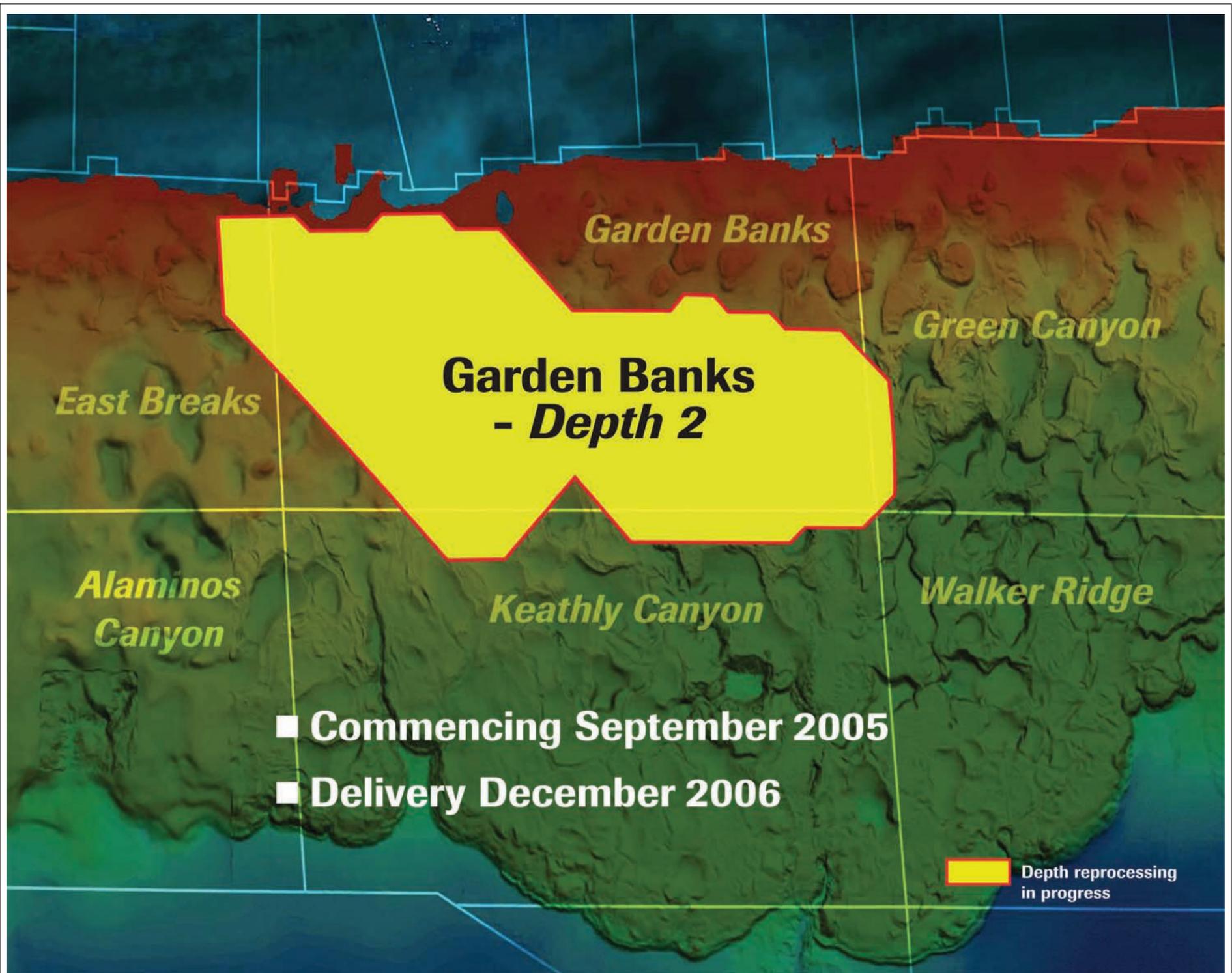


**Flat Depth Gathers Mean:**  
**1. Better Structural Image**  
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Areas 1 - 11 complete.





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