

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

# EXPLORER

FEBRUARY 2006

**ARKOMA BASIN**

LITTLE  
ROCK

OKLAHOMA

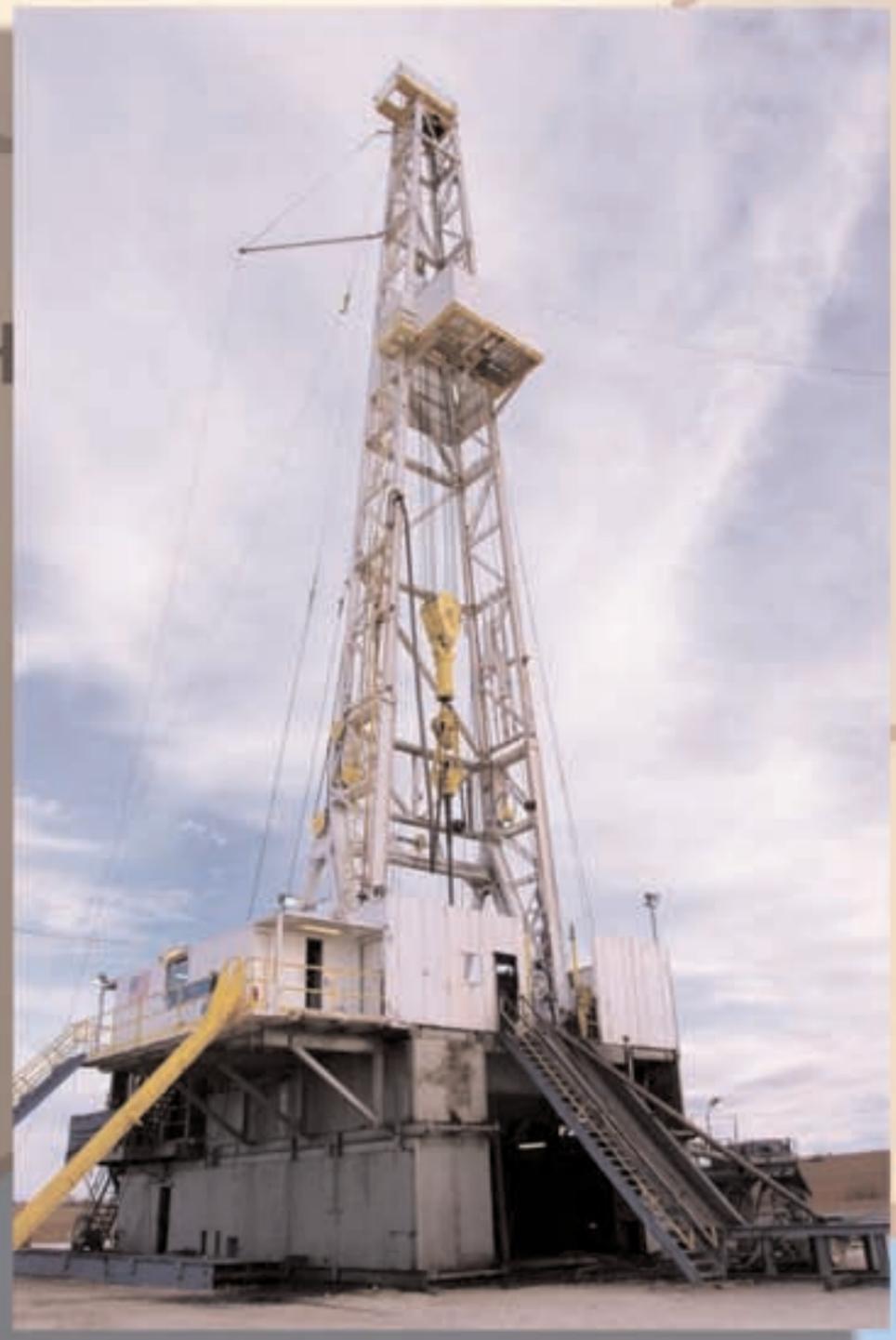
FORT WORTH

**BARNETT  
SHALE**

**The Once and  
Future Kings?**

**In the Midcontinent,  
They Rule**

**See pages 8, 12**



**Weeks Makes Historic Gift  
To AAPG Foundation**

**See page 6**

Vol. 27, No. 2  
February 2006

AAPG  
**EXPLORER**

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**On the cover:** The northern hemisphere calendar says winter, but the season is definitely hot in the U.S. midcontinent region, where two plays are on their way to becoming a part of exploration and industry legend: the prolific Barnett Shale and the promising Arkoma Basin's shale-gas play. See pages 8 (Arkoma Basin) and 12 (Barnett) for an update on activity. Cover graphic design by Rusty Johnson; photo of a rig working the Barnett Shale near Fort Worth by Landry Brogdon.

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## PRESIDENT'S COLUMN

# Geological Voices Need to Be Heard

By PETER R. ROSE

Geologists tend to see a lot of things differently than the general public does.

Knowing something about Mother Earth's long history of constant change, we don't immediately blame humankind for any detected current apparent change in the natural world – and a three-year trend loses significance when your yardstick is in millions (or even hundreds of thousands) of years.

Maybe it's their pervasive awareness of deep time that gives geologists other perspectives about current events – that, plus a characteristic geological dedication to comprehending natural processes, which inevitably involves integrative science and mathematics. And proceeding thence to consideration of geological influences upon the activities of humankind, such as agriculture, industrial development, economics and public health.

Maybe it has to do with our understanding that, because Mother Earth constitutes a coarse filter, a substantial envelope of uncertainty commonly attends geological conclusions – whereas the general public expects science to give precise answers (and quickly, too!).

\* \* \*

Most modern societies seem to be able to respond fairly quickly – if often ineffectively – to natural crises such as earthquakes, tsunamis, hurricanes, floods and mudslides. The public consciousness, and responsive democracies, can identify a crisis, especially where substantial public suffering is involved and publicized.

But it's the long-range problems that modern societies have a hard time addressing in a purposeful, informed and sustained way, and a lot of such problems have strong geological and economic roots. Also, the free market is most effective when it acts upon transactions at or near the margin, not on contemplated events 10 or 20 years down the road.

Here are some examples of such long-range problems:

- ✓ The realities of global energy-resource distribution, apparent world trends of economic development and finance and their consequences on reliable long-term energy supply, to both Western and emerging economies.

- ✓ The design and adoption of comprehensive energy policies by all nations – net producers as well as consumers – that will facilitate effective energy transitions over the next 50 years.

- ✓ Finding efficient, workable, legal and regulatory processes that will balance legitimate environmental protection and mitigation with important resource development and production.

- ✓ Arriving at an objective, documented understanding of global climate change, the degree of anthropogenic influence (if any), and practical measures of mitigation (versus prevention) of its effects. Geological perspective, which has been absent for much of this 20-year debate, is fundamental to such understanding.

- ✓ Setting up informed, practical (and utilized!) land-use principles in vulnerable terranes, such as landslide-prone foothills areas, naturally subsiding coastal areas and river floodplains.



Rose

\* \* \*

The geological voice has been mostly absent from such public discussions. In mid-December, I received a letter from the departing

AGI congressional intern, Peter Douglas. After witnessing many congressional hearings on energy policy last fall, Douglas observes (Dec. 16, 2005):

*"While I thoroughly enjoyed following the debates over energy policy, however, I found that they often lacked a scientific perspective. Among all the experts offering their opinions on how America can achieve energy independence, there are almost no geologists or other scientists testifying.*

*As a particularly glaring example, I recently attended a hearing on the theory of peak oil. While this was a fascinating hearing, there were no petroleum geologists there to offer their knowledge of the world's oil reserves.*

*I know that both AGI and AAPG are working to increase the presence of geoscientists in government affairs, and I hope that soon there will be greater geological input into discussions over energy policy."*

Of course, it's easy for geologists to cite other causes for their effective absence from the public forum:

- ✓ Short-term financial interests always trump long-term issues.

- ✓ Politicians and the media can't understand math and science and won't deal with uncertainty.

- ✓ Private-sector geologists are always accused of biased self-interest.

- ✓ Public-sector geologists are afraid to tell it like it is for fear of political repercussions.

- ✓ Geologists don't have an effective public voice.

- ✓ Science isn't a big contributor to political parties.

All are more or less true at different times and places – but they don't constitute an acceptable excuse! As concerned citizens and professional geoscientists, we have unique skills and important knowledge, and therefore we have special responsibilities to communicate what we can to public consideration of such critical long-range issues.

Geologists can carry out much insightful research on such topics, but until the implications and consequences have been successfully communicated to the public

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## President

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consciousness – media, politicians, leaders, citizenry – geologists haven't done their job.

Readers of Malcolm Gladwell's book *The Tipping Point* (2002) know that special skills are needed to change public thinking about the future – focus on "knowledge mavens," contact with "key connectors" and repetition of a sound, simple message. The spread of new ideas is analogous to an expanding epidemic!

AAPG's recent establishment of "GEO-DC," our new Washington presence that's directed by Don Juckett, provides an experienced "connector" who can identify useful opportunities for knowledgeable AAPG members to contribute to (see page 38). However, GEO-DC is not intended to be a substitute for member engagement!

And AAPG leaders will be treated to a coaching session on effective presentation techniques for TV, radio, press and hearings at the upcoming Leadership Conference (Feb. 10-12) in Galveston, Texas.

\* \* \*

There is legitimate reason for hope: There are quite a few examples of important and effective geological influence into public sector issues. Significantly, most of it has been behind the scenes, via effective regulation, interactions with legislative staff, government-requested committee reports and regional cooperatives.

For example:

✓ Geologically sound administration of UK petroleum resources by the Department of Trade and Industry was effectively managed for about 15 years by AAPG member John Brooks (current president of AAPG's European Region).

✓ The Norwegian Petroleum Directorate has incorporated sound geological concepts in its administration of Norway's offshore petroleum resources.

✓ By most accounts, offshore Gulf of Mexico E&P activities are being responsibly managed by the U.S. Minerals Management Service.

✓ Regional public ground-water councils, utilizing sound geohydrology, have greatly improved public water supply in many areas of the United States.

✓ Most state geological surveys do provide important guidance.

In the United States we have not yet seen the geological equivalent of Dr. Phil, and respected geological popularizers such as Sarah Andrews, Bill Bryson and Simon Winchester have tended to focus on the science of geology – and the people practicing it – rather than its applications to the current and future human condition.

But John McPhee, in *The Control of Nature* (1989) wrote a powerful trilogy about man's inadequacy in trying to control lava flows in Iceland, the ever-shifting Mississippi River in Louisiana and recurrent mudslides in southern California suburbs. And Michael Crichton's 2004 novel *State of Fear* dramatized the dangers of evangelistic environmentalism as it impacts the current debate on global warming.

\* \* \*

My guess is that many of the important long-range societal problems

## *We geologists must make sure that our knowledge and skills are major inputs to the formulation of energy policy.*

of the 21st century will involve basic geology and geological processes, especially as they impact economics, commerce, the environment and public health. Here are a few practical rules of thumb that may improve geologists' ability to influence such issues:

1. Trying to overcome Mother Earth may be heroic, but it's not a winning strategy; focus instead on trying to avoid and mitigate the effects of natural threats.

2. Don't automatically assume that humankind caused every observed (or suspected) new change in or on the Earth.

3. A geological perspective is essential for evaluating the significance of apparent new natural phenomena, and geoscientists can best provide it.

4. Vibrant, objective science, effectively communicated, is a fundamental requirement if societies are to successfully address long-term

natural problems; closely intertwined politicians, the environmental lobby, the media and selected scientists threaten such objectivity.

5. An enlightened and lawfully regulated free market is the most effective and powerful force to accomplish desired change regarding the use of earth resources – try to align it with resource and environmental goals.

6. Objective evaluation of environmental and economic trade-offs is essential for development and administration of sound resource policy.

7. Personal contact with legislators, regulators and staff is essential (as well as your Constitutional right) – all business is carried out on a personal basis.

continued on next page

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# Save Money – Register Now for Houston

Registrations are now being accepted for this year's AAPG Annual Convention in Houston – and registering by Feb. 17 could bring you considerable savings.

The registration fee for AAPG members is \$250 if done by Feb. 17; after that date the registration fee rises to \$295 (March 31 deadline) and \$365 (after March 31).

For Emeritus members the registration rates are \$125 by Feb. 17; \$148 by March 31; and \$183 after March 31.

The non-member registration rates for the same deadlines are \$345, \$395 and \$450, respectively. Student members can register for \$45 at any

time.

This year's annual meeting will be held April 9-12 at the George R. Brown Convention Center in Houston, with the Houston Geological Society serving as hosts.

The theme is "Perfecting the Search, Delivering on Promises."

The technical program is complete and the final announcement has been mailed, listing all of the sessions and activities surrounding the four-day



event. The technical program also is available online at the AAPG Web site, [www.aapg.org](http://www.aapg.org).

This year's program centers around nine themes:

- ✓ Successful Business Strategies.
- ✓ Learning From Exploration and Exploitation Successes, Failures

and Mistakes.

- ✓ Giant Fields of the World, and What They Have to Teach Us.
- ✓ Integrating Geology, Geophysics

and Engineering to Deliver Success.

- ✓ Reservoir Characterization and Modeling.
- ✓ Stratigraphy and Petroleum Systems.

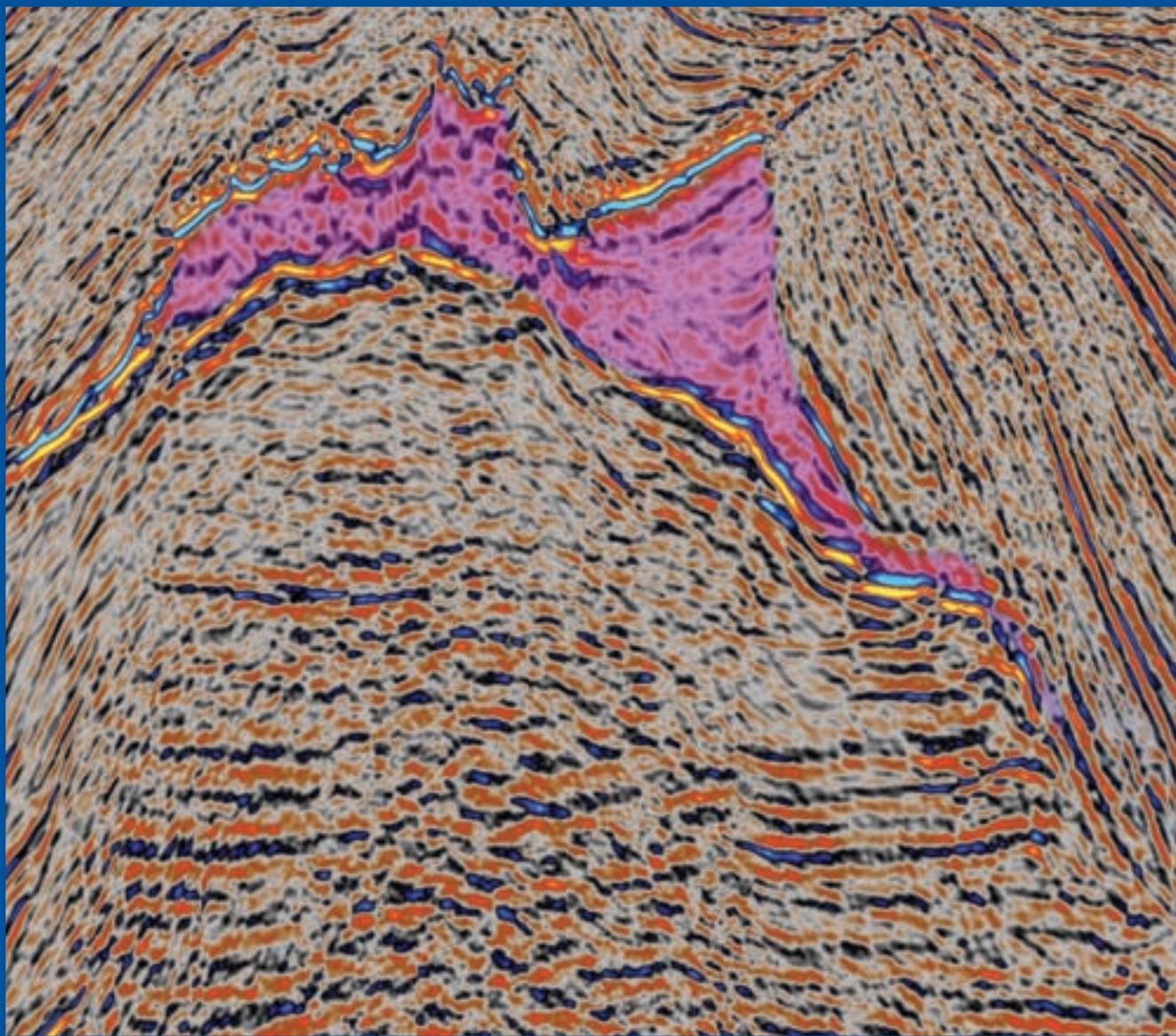
- ✓ Structures and Tectonics.
- ✓ Play Openers and Where They Are Leading Us.

- ✓ Delivering Resources and Environmental Quality for a Sustainable Future.

Registrations are being accepted online; for complete registration instructions refer to the announcement or the AAPG Web site.

But whatever method you choose, register by Feb. 17 for the first round of savings. □

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8. Start talking with your neighbors and friends about important long-term issues – use them to cast a wider net.
9. Support political candidates who will endorse sound long-range resource and energy policies.
10. Have reliable and understandable facts – not political rhetoric – to back up your case.

\* \* \*

I've been a petroleum geologist for 47 years now, and I take great pride in what my profession has contributed to the progress of humankind. Since about 1900, the astonishing advances in the standard of living of people around the world – though unevenly distributed – can largely be attributed to growing availability of reliable and affordable oil and natural gas, found mostly by geoscientists and developed mostly by our engineering colleagues. What a positive contribution petroleum geoscientists and engineers have made!

As the world now enters a long-term energy transition at the beginning of the 21st century, we geologists must make sure that our knowledge and skills are major inputs to the formulation of energy policy – as well as to all public issues that involve geological principles. AAPG is ready to assist.

Two new initiatives may help:

- ✓ To publish regularly in the EXPLORER personalized histories of geologists who were successful in impacting public policy, as well as accounts of individual AAPG members whose professional success beneficially impacted their communities.
- ✓ To begin aggressively circulating such stories to the news media.

AAPG has some amazing people among its members; we should see that their stories are made known to the general public.

\* \* \*

Recommended Reading: *The Control of Nature*, by John McPhee (Farrar; Straus & Giroux, 1989). Fascinating accounts by a master geological writer of three different episodes in which man attempted to control natural phenomena.

*Read it, you'll like it!*

Onward!

## Foundation Receives \$10 Million Gift

# Weeks' Generosity Continues

By LARRY NATION

AAPG Communications Director

Lewis Austin Weeks and his wife, Marta Sutton Weeks, always have been extremely generous donors to the AAPG Foundation, as was Weeks' father, Lewis.

And now Austin Weeks, who died in February 2005 at age 79, has added even more to the family legacy of giving with a bequest of \$10 million to the AAPG Foundation, the largest gift ever received by AAPG.

In making the announcement to AAPG Foundation Trustees, Marta Weeks said "the hope is that this gift is an impetus for the Foundation to set its goals high, and that this be a prelude to new horizons and even greater achievements."

Foundation Chairman Jack Threet said the gift indeed places the Foundation in excellent position to provide more assistance in furthering the science of petroleum geology and bringing new people into the profession as the industry enters a new, critical era.

AAPG officials said that "the fact that the gift is undesignated shows the trust the Weeks place in the Foundation."

The funds were placed in the L. Austin Weeks Memorial Endowed Fund, with purposes being considered by the Foundation trustees.

"The impact of this generous gift is only something we can dream about,"



Foundation Chairman Jack Threet and Marta Weeks.

Threet said, "and we want this to be a lasting legacy for Austin that will be a benefit to petroleum geologists for generations."

In announcing the bequest, Mrs. Weeks also presented a copy of "End of Suburbia," an award-winning film

documentary dealing with the coming hard choices modern civilizations – especially the energy-hungry United States – face as hydrocarbons become more elusive and expensive.

Austin and Marta Weeks have been longtime supporters of the AAPG

Foundation, with both having established named grants providing funds for graduate and undergraduate students in both the United States and internationally.

Lewis Weeks, Austin's father, was a successful geologist who credited with developing Australia's Bass Strait (see related story on next page), began the family's legacy of philanthropy. It was a bequest from Lewis Weeks that allowed building the Weeks Tower in 1975 at AAPG headquarters in Tulsa.

In 1984, the late Fred A. Dix, then executive director of AAPG and a close friend of the Weeks family, was in a meeting with AAPG Business Director Don O'Nesky.

"When we were brainstorming how to finance the Pratt Tower, an Australian entrepreneur made a run on Weeks Petroleum, which drove the stock up," O'Nesky recalled. "Fortunately, Lewis Weeks had left the AAPG Foundation 500,000 shares of Weeks Petroleum stock.

"Fred commented later that 'the Weeks' family generosity has now paid for the construction of both towers.'"

AAPG and AAPG Foundation Executive Director Rick Fritz said the future of AAPG and the profession has been brightened with the latest Weeks gift – and the Foundation will soon be announcing new and far-reaching initiatives. □



L. Austin Weeks

## Austin: Renaissance Man

Lewis Austin Weeks was born on the island of Curacao, March 25, 1925, the only child of Lewis G. and Una Austin Weeks.

At age two weeks he went to Venezuela to live, and later to Argentina and Brazil. In 1933 he was sent to the Beacon Prep School in Sussex, England, where he lived until 1939 when he went to live in Scarsdale, N.Y. He graduated from Scarsdale High School in 1942.

Austin graduated from Brown University in an accelerated program that put him through college in two years and eight months with a pre-med degree and an ensign's commission in the U.S. Naval Reserves. Following this he spent three months at Navy Communications School at Harvard University.

During the war, his overseas duty took him first to the Mediterranean theatre,

followed later by the Japanese occupation. Here he served on General Douglas MacArthur's Army-Navy communications staff in Tokyo (1945-46).

He did some post-graduate study at Brown University, then went to the University of Wisconsin, where he earned a master's in industrial bacteriology (1947-49). During summers he worked for the Sinclair Wyoming Oil Co. in Casper as a geological assistant and researcher on magnetic properties of granites and arkoses.

In 1950, he received his master's in geology from Columbia University, his thesis being in structural geology.

From 1950-52, he lived in Salt Lake City and worked as a field geologist for the General Petroleum Corp. He married Marta Sutton in August 1951, and they moved to Durango, Colo., where Austin

was field geologist for G.P.

He became a district geologist in 1953, and until 1957 did field and research work in Utah, Wyoming, Idaho, Colorado, Arizona, New Mexico and Nevada. Transferred to California in 1957, he did geological research at General Petroleum headquarters until 1960, when the company was reorganized and, along with many others, he was laid off.

Austin spent several years in real estate sales and investment before going back to work as a geological oceanographer for the Department of Commerce in Washington, D.C., as well as the Lamont Geological Observatory.

For the former, he was chief scientist for expeditions to the Andaman Islands for the International Indian Ocean

continued on next page

## Marta: Renaissance Woman

Marta Sutton Weeks (Mrs. L. Austin), presently of Miami, Fla., was born May 24, 1930, in Buenos Aires, Argentina. The second daughter of a geologist's family, she was reared on both the North and South American continents.

She received her early education in Holladay, Utah, and at the Bella Vista school in Maracaibo, Venezuela, later graduating from St. Mary-of-the-Wasatch Academy high school in Salt Lake City. She went on to Beloit College in Wisconsin for two years, then Stanford University, Calif., where she received a bachelor's in political science in 1951.

After her marriage to geologist Austin Weeks in 1951, she lived in Utah,

Colorado, California and Maryland before moving to Florida in 1967. She is the mother of two living children; one son died in a helicopter accident at age 23.

Mrs. Weeks' job and business experience started at age 13, when her father staked her to 200 cans of popcorn and she supplied popcorn to the local oil camp populace in Maracaibo, Venezuela. During her summers in college she worked for the legal department of the Mene Grande Oil Co. in Caracas, Venezuela, and also for the Centro-Venezolano Americano, teaching English to foreigners.

Most recently she has served as a director of several corporations, including

Weeks Petroleum Ltd. She also has served three years on the Board of Trustees of Beloit College and five years as a trustee of the University of Miami. She founded and was president for two years of the Stanford Club of Florida and is currently a director of the Weeks Air Museum at Tamiami Airport in Miami, Fla.

Mrs. Weeks is a strong believer in education and supports various programs in the sciences and humanities. She loves to travel and says one of the most interesting places she's ever been to was a recent trip to Antarctica.

"It was absolutely fantastic," she said.

Mrs. Weeks is an ordained Episcopal priest. □



Marta Weeks

# Lewis: Visionary, Philanthropist

The history of Bass Strait oil and gas activity is a fascinating chapter in the global petroleum industry evolution – and, ultimately, a rewarding chapter for AAPG.

Oil had been recorded along Australia's southern coastline since 1869, but it wasn't until 1960 that the offshore region was even considered for exploration and production.

Around that time former BHP executive (and AAPG member) Eric Rudd contracted Lewis Weeks, a leading American oil field geologist who, before retiring as president of Standard Oil of New Jersey (Exxon), had found oil seemingly everywhere – it was said he studied data for all of the world's known basins – and was about to enjoy retirement in his Westport, Conn., home.

Rudd wanted Weeks to help him convince BHP officials that an oil search in oil-dry Australia should be launched.

Weeks agreed, did some studying, then met with the BHP officials and told them he knew where oil could be found that was accessible to 90 percent of Australia's market.

Weeks was then offered – and accepted – a 2.5 percent royalty deal. And then he was asked, where's the oil?

"Come to your window," he replied. "It lies out there in the Bass Strait, and most particularly off the Gippsland Coast."

Incidentally, the Bass Strait was one of the world's roughest water areas – the region had been passed over since after 40 years of trying the adjacent coastline was dotted with nothing but 140 dry holes.

BHP decided to take a risk, however, and following encouraging results from an initial aerial survey, commissioned Australia's first offshore seismic survey that indicated several possible oil traps in the Gippsland Basin. Prior to drilling, however, BHP went looking for a partner and in 1964 convinced Esso Standard Oil (Australia) Ltd. to join the venture as a 50-50 partner.

A drillship brought in from the Gulf of Mexico spudded the first well in 1964 in water 42 meters deep, and after months of battling notorious bad weather the drill bit reached 1,318 meters and hit gas.

Striking pay dirt on the first ever try was almost unheard of – and it prompted additional exploration.

A year later the joint venture partners made a second major gas discovery at the Marlin Field and tapped the real prize: oil.

The giant Kingfish Field discovery soon followed, and since that time a host of fields were uncovered in quick succession, including Halibut, Dolphin, Perch, Flounder, Tuna, Snapper, Mackerel and Bream as well as oil at Barracouta and West Kingfish.

At its peak in the mid-1980s the Bass

Strait was producing over half a million barrels of oil a day.

At one point the Bass Strait discoveries supplied 70 percent of Australia's petroleum needs.

Prior to these finds Australia was almost totally reliant on imports of petroleum products.

And, according to Esso Australia, the oil and gas produced from the Bass Strait, combined with the cost of oil that otherwise would have had to be imported plus the tens of billions of revenue dollars paid by the joint venture to the government, equal an enormous impact on Australia's development. □



Photo courtesy of Esso BHP

Drilling in the Bass Strait, the ultimate result of Lewis Weeks' knowledge and vision.

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Expedition in 1964, and also worked as a biologist for Columbia University, studying plankton in the Antarctic in 1963. He consulted for the Israeli government with his father, L.G. Weeks, in 1963 and also was involved in other trips to the Lesser Antilles in the Caribbean and the Pacific.

In 1970-75, he started and was president of Weeks-Tator Consultants in Miami, Fla., and in 1970-84 was involved as a vice president and director of Weeks Petroleum Ltd., a Bermuda Corporation. When this company was raided on the London stock exchange in 1984, he retired.

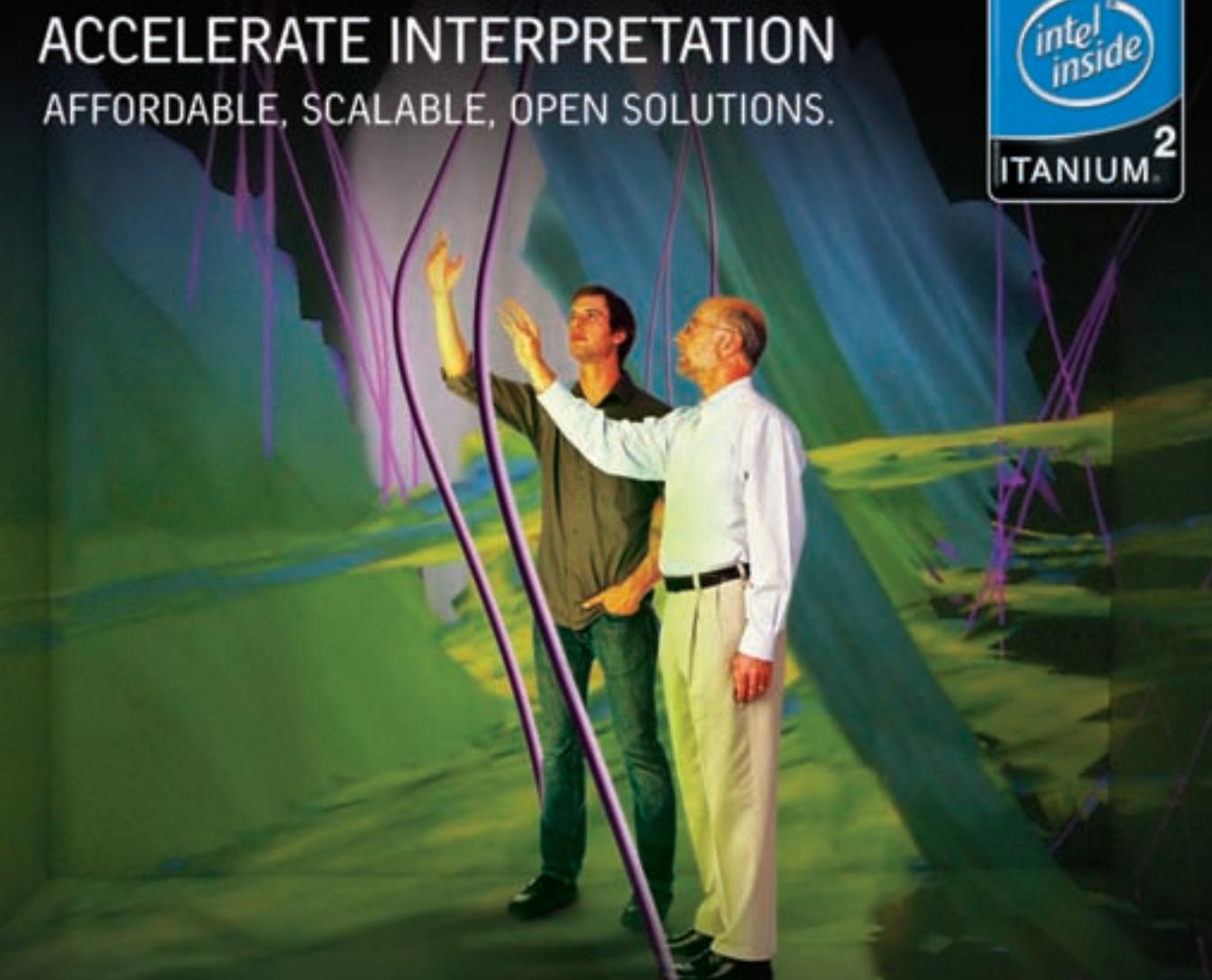
After that he was involved in volunteer photography in the Miami area, producing an annual calendar. He also was involved in funding support for the University of Miami, the University of Wyoming, AAPG, the Miami Metrozoo and SPE.

Weeks died in February 2005 in Florida. □

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Images courtesy of the BP Center for Visualization, the Laboratory for Atmospheric and MGA Goddard Space Flight Center.

## Arkoma Shale Play Expanding

# Barnett May Have Arkansas Cousin

By DAVID BROWN  
*EXPLORER Correspondent*

With the successful development of the Barnett shale, many midcontinent gas producers began searching for the next, big shale-gas play.

Looks like they found it.

Explorers are scrambling to grab leases in shale-gas plays on both the Arkansas and the Oklahoma side of the Arkoma basin.

Southwestern Energy Co. said in December it will invest almost \$340 million to evaluate and develop the Fayetteville shale in Arkansas during 2006.

The company also plans to spend \$53.5 million to buy 10 drilling rigs to drill in the Arkoma shale play.

Combined with earlier spending, Southwestern Energy will have an exposure of half a billion dollars and an 860,000-acre leasehold in the Fayetteville shale.

You could say, they think it's a promising play.

On the Oklahoma side of the basin, Devon Energy Corp. said it holds 70,000 net acres in an Arkoma gas play that includes potential in the Caney and Woodford shales.

Devon has become the largest producer in the Barnett shale, and last year began producing its 2,000th operated well in that play.

Like the Barnett shale, the Arkoma shale-gas plays are partly technology-driven and partly economics-driven.

And they require first-rate geological knowledge for successful development.

### A Big Deal Developing

About 80 wells had been drilled in the Fayetteville shale play by the end of 2005 and most of them were producing, according to Ed Ratchford, an AAPG member and geology supervisor for the Arkansas Geological Commission.

Most of the shale-gas wells on the Arkansas side of the Arkoma have been drilled to a depth of 2,000 to 6,000 feet, he added.

"The best well to date is the Stobaugh 2-1-H horizontal well, which produced 3.7 million cubic feet of gas per day as a 24-hour initial production test," Ratchford noted.

The shale-gas play area in Arkansas "stretches from the western part of the Arkoma Basin to the Mississippi River," Ratchford said.

However, most of the leasing and exploration activity occurs within the eastern Arkoma Basin and the Mississippi Embayment regions of Arkansas, where the Fayetteville Shale is considerably thicker compared to the western part of the state. The thickness of the Fayetteville Shale varies from 50-75 feet in western Arkansas, to approximately 300 feet in the eastern Arkoma – and it exceeds 1,000 feet in thickness in some portions of the Mississippi Embayment, Ratchford said.

Counties in the Arkansas play – moving east to west – include Phillips, Lee, Monroe, St. Francis, Prairie, Lonoke, Woodruff, Jackson, White, Faulkner, Cleburne, Van Buren, Conway, Pope and Franklin.

"The Fayetteville Shale is Late Mississippian-Chesterian in age, the same age as the Barnett Shale in the Fort Worth Basin in Texas," Ratchford said.

Development work in the Barnett shale created something of a template for evaluation of and drilling in the



Photo courtesy of Pete Lacker

That glow in the Arkansas morning sky could be a sign that something good may be on the horizon for the Arkoma Basin's shale-gas play, which some say could be the next big thing in the U.S. Midcontinent.

Fayetteville shale, Ratchford noted.

"The Fayetteville shale had never produced in Arkansas, but everybody knew there was gas in it. All that's changed with the frac technologies that were developed in the Barnett shale," he said.

Operators describe the Arkoma Basin shale-gas plays as being in their infancy. So little drilling and production work has taken place – and therefore, no one has a good estimate of overall reserves.

"We're still early on in the whole scheme of this thing – probably two million acres have been leased in Arkansas in the last one and a half to two years," Ratchford said. "There's been a big land-grab in here."

### Wait a Minute ...

Southwestern Energy began its Fayetteville shale swoop by quietly amassing a very large lease position.

"The whole thing was based on geological understanding with good engineering work in a legacy asset," said AAPG member John Thaeler, Southwestern Energy senior vice president-Arkoma Basin exploration and

production.

The company – now based in Houston but previously located in Arkansas – has been active in Arkansas for 76 years, Thaeler said. Much of its past activity took place in the Arkoma northeast of Forth Smith.

"That's our legacy asset, if you will. We have over 1,000 wells we have drilled in that area," Thaeler explained.

Just as important as that familiarity, the company already held 125,000 acres in what turned out to be the shale-gas play area, he said.

The company's geologists and engineers zeroed in on the Fayetteville shale through a tried-and-true exploration method:

They were looking for something else.

Southwestern Energy had identified a tight-formation unconventional gas play in the Wedington Sandstone Member of the Fayetteville Shale Formation, Thaeler said. While trying to make that play work, the company found that the formation was "producing more gas than it should have."

Additional work disclosed that the Wedington was enveloped by the Fayetteville shale, he noted.

## Fayetteville Formation Complex

Good geology is critical to working the Arkoma shale-gas plays, operators agree. Not only do you have to identify the formation boundaries and geosteer the horizontal laterals, you also have to know where you are in the shale.

"The whole Fayetteville Shale Formation is not productive. Typically, from the middle of the formation down to the base is prospective. The actual pay zone varies – you will not get pay through that whole interval," according to Ed Ratchford, geology supervisor for the Arkansas Geological Commission.

"The lower part of the Fayetteville is a very organic-rich shale with a lot of

chert and siliceous interbedded zones," he added.

This lower portion of the sequence contains interbedded siltstone while the upper member can approach 50 percent micrite, he said.

"You really have to scrutinize your well logs – the gamma-ray response typically goes off-scale and then wraps back around. It's also coincident with a higher resistivity response," he said.

"Those are the two key things you look for when characterizing perspective zones with well logs."

– DAVID BROWN

"We said, 'Wait a minute.' We realized that the Fayetteville shale was the same age as the Barnett," Thaeler recalled.

"The maturity of the shale is a little bit higher, but overall it's similar to the Barnett shale in potential," he added.

### Sideways

Since no one had ever seriously targeted the Fayetteville for its productive potential, the company was forced to do its own groundwork in assessing the shale.

"We levered off very limited well control to drill some vertical test wells, which we extensively logged and evaluated," Thaeler said.

"We geologically went in and evaluated where we thought the highest potential Fayetteville Shale was for us. We approached that by identifying pilot areas," he added.

While the first test wells were vertical, Thaeler expects almost all the company's 2006 Fayetteville drilling to be horizontal.

"The whole play is turning toward horizontal wells. They typically drill about a 3,000-foot lateral that's parallel to the maximum compressive stress direction in the subsurface. Then they do multistage fracs on them," Ratchford said.

Most of that fracturing work has involved nitrogen foam fracs, with a subordinate amount of slick water frac applications, he noted. Typical initial production ranges from two million-three million cubic feet of gas per day for the horizontal wells.

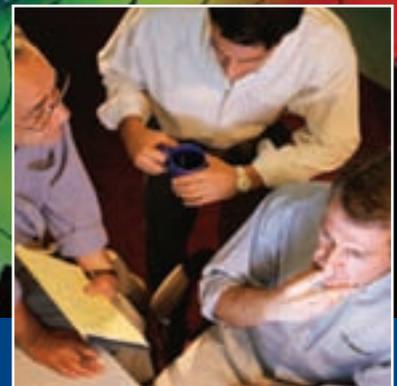
"We're looking at a very short snapshot in time here, so we don't have the data to look at a really accurate decline curve," Ratchford noted.

"Based on the limited data we do have, those horizontal wells are producing about 50 percent of their capacity in four to six months," he said.

See **Shale**, page 10



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## Shale

from page 8

### Barnett Inspiration

On the Oklahoma side of the Arkoma, the shale-gas plays are even newer and less well defined. They target the Caney Formation, age-equivalent to the Barnett, and the older Woodford shale.

"The whole emphasis on shale-gas in the Midcontinent has come from the Barnett shale in the Fort Worth Basin," said AAPG member Charles Wickstrom, managing partner of Spyglass Energy in Tulsa, which has done work in the western Arkoma Basin.

Barnett development began with vertical wells and big fracs, then moved to horizontal wells, a switch dictated by expansion of the play into populated areas, he noted.

Over the years, operators in the Barnett accumulated a wealth of knowledge about shale-gas work.

"This data has been disseminated throughout the industry and every midcontinent exploration company has been looking for, quote, the next Barnett shale," Wickstrom said.

Interestingly, the Arkoma plays began building before last year's big run-up in natural gas prices. Today's economics are speeding up shale-gas exploration throughout the Arkoma Basin.

"High gas prices are just that much better to recoup your investment," Wickstrom noted.

At the same time, operators lament the higher drilling and completion prices brought on by increased exploration demand and high product prices.

"Well costs have gone through the roof. Some of these wells (in the Arkoma shale-gas plays) are over \$4 million

## *The Embayment is characterized by poor well control and complex geology that includes horst-and-graben fault structures.*

completed," Wickstrom said.

Like the Fayetteville shale play, Oklahoma shale-gas exploration relies on a good geological and geochemical evaluation of formation potential.

"The whole key is looking at the total organic content and the thermal maturity of the rock," Wickstrom observed.

### Where's That Boundary?

In Arkansas, the Mississippi Embayment marks the eastern-most extent of the shale-gas play.

"When you step out into the Mississippi Embayment, you're sort of in a frontier area. It's pretty dicey trying to characterize the geology of the Fayetteville Shale in the Embayment region," Ratchford said.

The Embayment is characterized by poor well control and complex geology that includes horst-and-graben fault

structures, he noted.

"There are lateral facies changes and structural attenuation. You've got this Paleozoic basement that's block faulted, with 1,000 to 3,000 feet of unconsolidated Cretaceous, Tertiary and Quaternary sediments deposited on top of it," he said.

"There are places in the Embayment where the Fayetteville Shale appears to have been eroded partly or completely when it's uplifted on top of horst blocks," he added.

Across much of the Arkoma, the southern edge is defined by convolutions of the Ouachita Thrust Belt.

"When you're in the eastern Arkoma Basin and you move south toward the Ouachita front, the Fayetteville Shale is considerably deeper to test because there is a lot of thrusting and folding. There's definitely a southern boundary of the shale play, which operators tend to

avoid due to higher economic risks and technical challenges associated with drilling and well completions," Ratchford said.

"They're trying to figure out where the economic cutoff is located in the Embayment region and within the eastern and southern portions of the Arkoma Basin," he added. "How far can they safely lease?"

### Networking

Major players in the Arkansas shale-gas area include Southwestern Energy subsidiary SEECO Inc., Chesapeake Energy, Shell Exploration and Production, Hallwood Petroleum and Maverick Oil and Gas. On the Oklahoma side, players include Devon, Newfield Exploration and Tomahawk Exploration Ltd. of Australia.

Not surprisingly, Arkoma shale-gas development is following the existing transportation infrastructure.

"They're hugging the pipelines – there's a network of natural gas pipelines in place and some of the Fayetteville Shale geology is coincident with those pipelines," Ratchford said. "I suspect that trend of development will continue in the near future."

Thaeler confirmed that Southwestern Energy is concentrating in near-pipeline areas while taking a "rational approach to stepping out" into other parts of the Fayetteville play.

Development of the Arkoma shale gas will involve "infrastructure hurdles," according to Ratchford.

Thaeler, who has worked on international development projects, sees similarities in the Arkansas play.

"To me, development of the Fayetteville Shale is much like an international project," he said. "We're in an area that doesn't have a lot of oil and gas infrastructure." □

## Signs of an Expanding Play

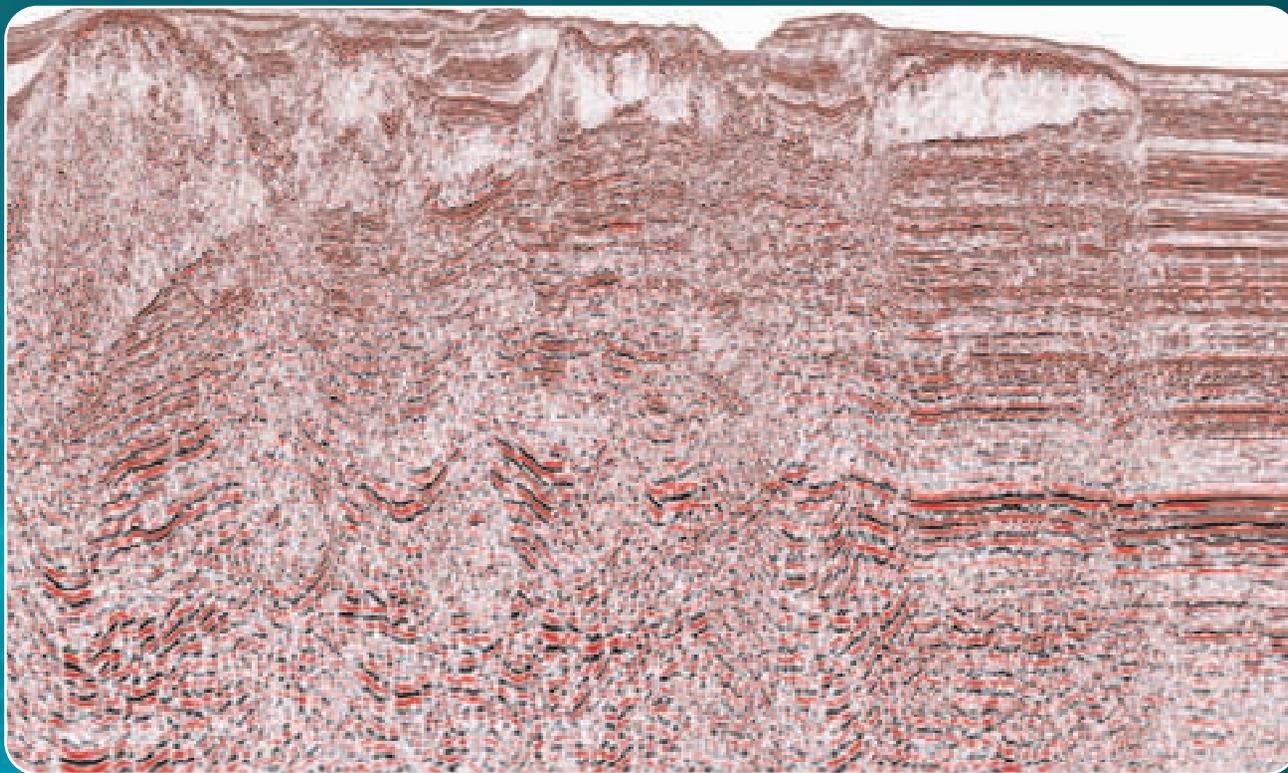
There are many signs of boom mentality surrounding the Arkoma shale gas play, including this: In December, international giant Schlumberger announced it plans to open an office and warehouse complex employing more than 100 people in an industrial park in Conway, Ark.

Construction is expected to be

complete by the middle of 2006.

The facility, located on a 20-acre site, will feature a 16,000-square-foot office and shop space, as well as a 15,000-square-foot warehouse. The complex also will house a cement bulk plant for cementing oil and natural gas wells. □

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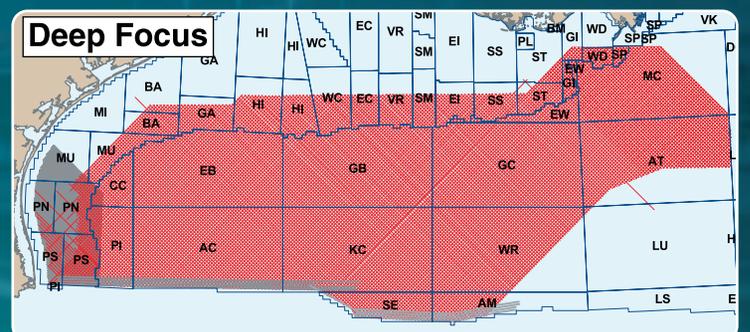
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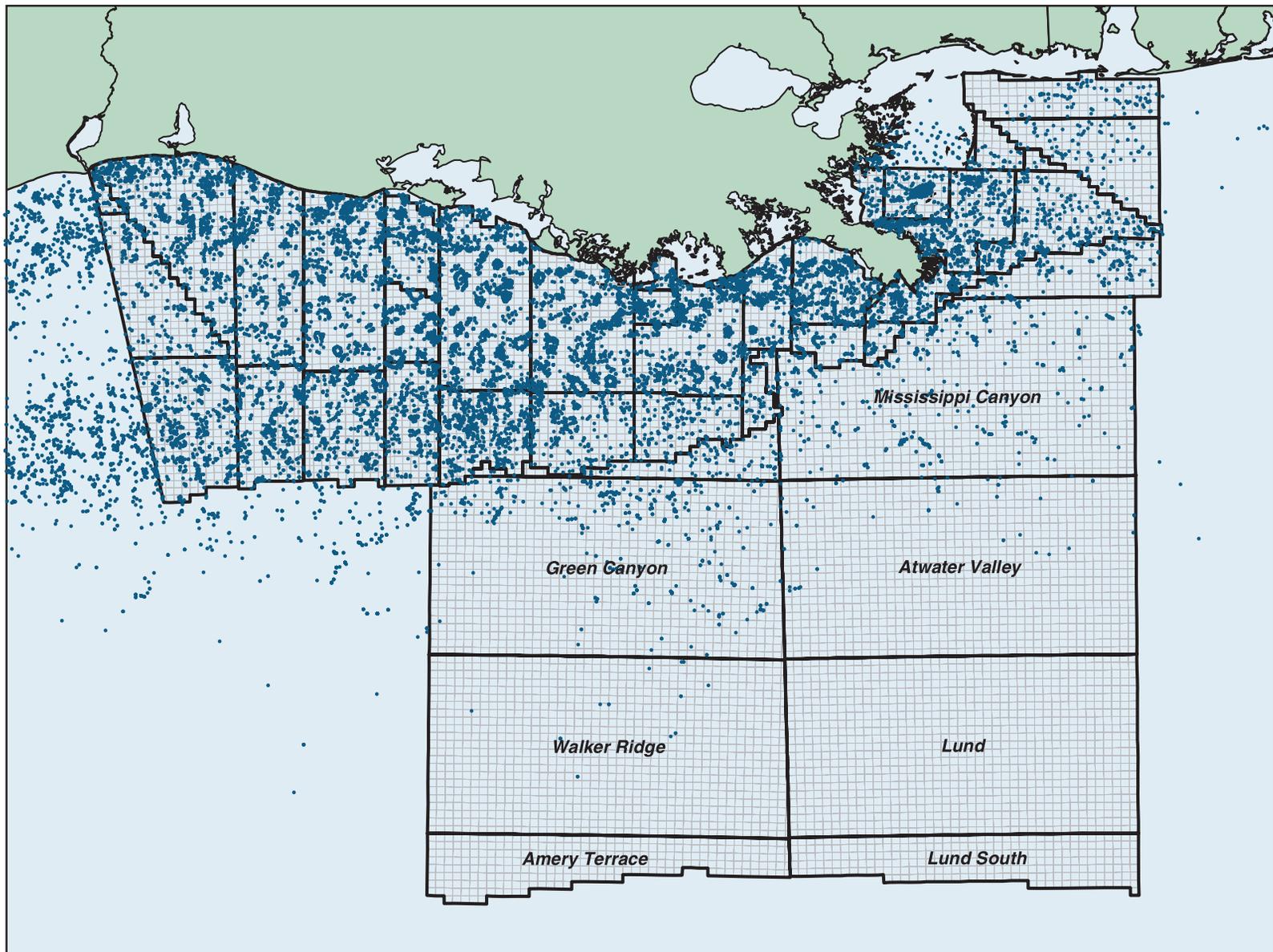
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*Texas Reservoir Chased Under Urban Setting***Barnett Shale a Stimulating Play**

By LOUISE S. DURHAM  
*EXPLORER Correspondent*

When it comes to tight reservoirs, the Barnett shale is about as tight as it gets.

And it's not enough just to induce fractures to allow the gas to flow, as Barnett drilling pioneer Mitchell Energy discovered after years of applying gel frac treatments to the rock.

The gas did flow, but the pricey gel applications resulted in only so-so economics.

Mitchell engineers cracked the economic barrier in the late 1990s when they ascertained water fracs performed much the same as the gel fracs while dramatically lowering stimulation costs – and a play was born (May 2005 EXPLORER).

In fact, the Barnett shale play in the Fort Worth Basin in north-central Texas has become so phenomenal that many industry participants now predict it ultimately will surpass the Hugoton Field as the largest natural gas field in the United States. Already, it's kicked out more than one Tcf of production, and there are likely several Tcf of booked reserves, according to consulting geologist and Mitchell Energy alum Kent Bowker.

The play took off with water fracturing, but it's horizontal drilling that has propelled it into a true "boom," noted Mitchell alum and consulting geologist Dan Steward at Republic Energy, which was one of the play's earliest operators.

"Horizontals have just swept through this thing," AAPG member Steward said.



Photo by Landry Brogdon

Coming to a development near you: Drilling in the Barnett Shale often takes place near residential areas, such as this site in the Fort Worth area – made possible largely due to advances in horizontal drilling technology.

"As of 11-1-05, there were 2,135 permits issued for horizontals in the Barnett, with about 5 percent of these being duplicates because of things like changed locations.

"About half of the horizontal permits

are in the core areas (sections of Denton, Wise and Tarrant counties)," Steward noted. "The others are non-core or new core, which some people say Johnson County is."

**A Major Player**

Not surprisingly, a goodly number of the horizontal wells being drilled can be attributed to the undisputed kingpin of the Barnett: Devon Energy. Devon established its presence in the play in 2001 upon purchasing Mitchell Energy and its already-impressive holdings in the Barnett.

"Devon is pretty much in the core area of Wise and Denton (counties), and we have a large position in Johnson, Parker and western Wise counties," said AAPG member Jeff Hall, exploration and exploitation manager of Devon's central division. "We have about 500,000 acres in the heart of the play.

"We've drilled 2,040 wells in the play," Hall said, "and we just finished our 293rd horizontal well. We have 18 rigs running in the play, and 15 of these are horizontal."

Mitchell pioneered the horizontal drilling effort when it drilled two wells that succeeded mechanically but not economically, due to lack of completion know-how, according to Steward.

Devon later worked diligently to fine tune the horizontal implementations and drilled the first commercially successful horizontal well in the play in 2002 in Tarrant County.

Nowadays it's commonplace for operators to use horizontal drilling technology in various reservoir types to

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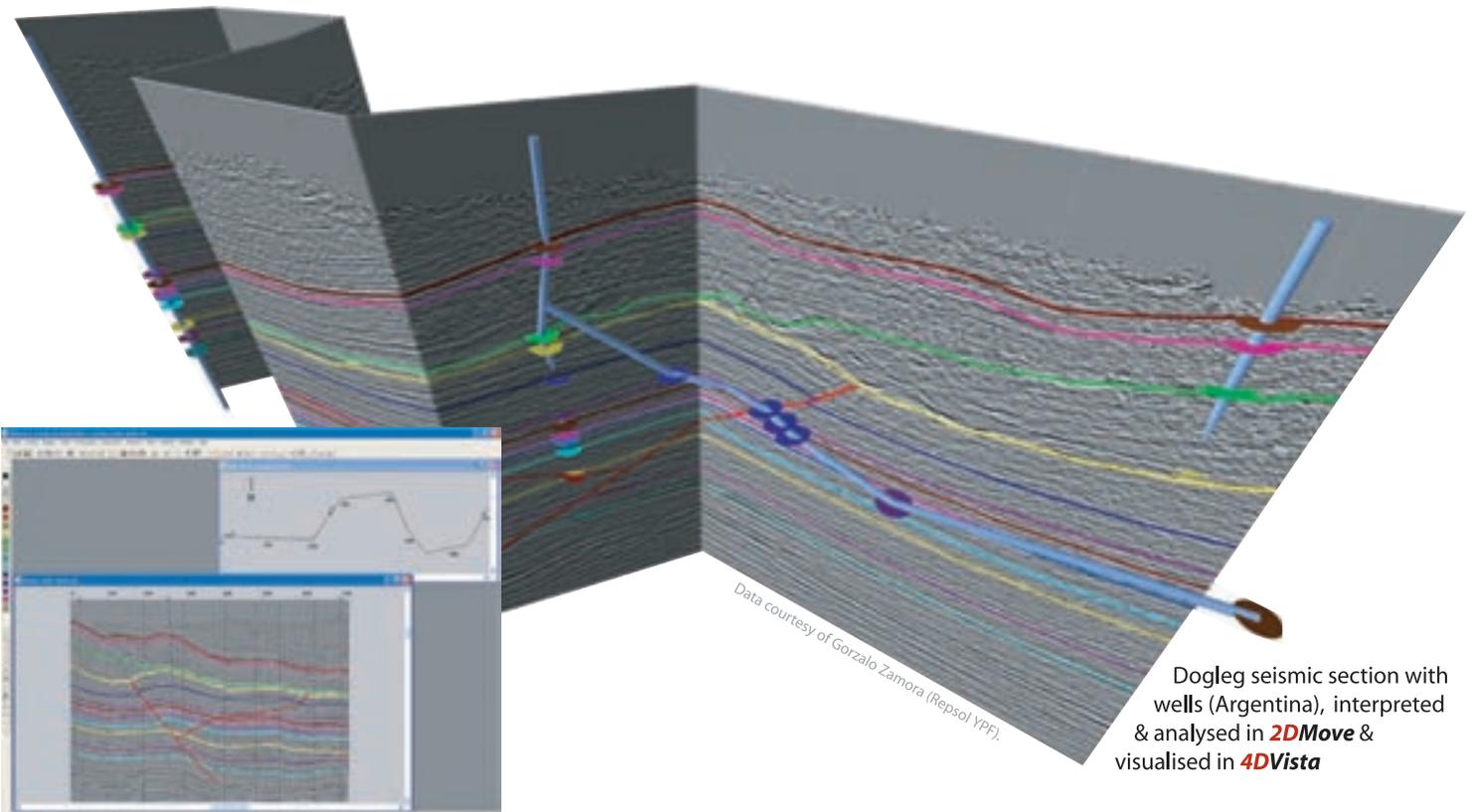
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Data courtesy of Gorzalo Zamora (Repsol YPF).

Dogleg seismic section with wells (Argentina), interpreted & analysed in 2DMove & visualised in 4DVista

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achieve greater production via increased reservoir contact afforded by horizontal legs versus vertical wellbores. In the case of the Barnett, there are certain geologic conditions that in essence demand horizontal applications.

"The Barnett is dependent on fracture efficiency," Steward noted. "There's disagreement over whether or not it's dependent on induced or natural fractures, but most will tell you it's an induced fracture play; being able to induce a significant network of fractures at the wellbore is critical.

"Where you have good containment barriers above and below the Barnett and you frac, it (the stimulation) will stay in the zone," Steward said. "When you get outside the areas of good

containment, the percent of success with verticals is not high, but we're able to frac in the horizontals and keep a high percentage in the zone, so we have good connectivity to the rock – that's critical because if you can't stimulate the rock, it won't do anything."

**Urban Renewal**

Horizontal technology offers the advantage of drilling multiple wellbores off a single pad, thus leaving a small footprint and enabling access to targets significantly removed from permitted drilling locations. This is a major plus for the Barnett play given that the city of Fort Worth sits atop a vast quantity of Barnett gas.

"There's so much gas under Fort Worth," said Nick Steinsberger, consulting drilling and completions

engineer and Mitchell Energy alum. "If you move the city, there's probably several Ts (Tcfs) of gas there. To access it, you must use horizontals and you need long laterals."

Some folks view such problematic situations as too much hassle, while others see golden opportunity.

Four Sevens Oil Co. is among the latter.

"Our niche is drilling in these urban environments," said AAPG member Larry Brogdon, partner and geologist at Fort Worth-based Four Sevens, which has acquired considerable experience drilling underneath subdivisions from remote locations.

"We know how to put subdivisions together, which is a lot of work, manpower, a lot of title work," Brogdon noted. "But (it's) a good niche for us because some don't want to be involved

in that.

"We lease each home," Brogdon said, "and we like to put them together in a co-op, which is like a unit. The subdivision sticks together as one unit, so each owner participates in the unit on a pro rata share.

"Sometimes it seems like I've turned into a politician and a right-of-way man more than a geologist," Brogdon noted in jest. "They didn't teach all this stuff in Geology 101."

Four Sevens works up its own prospects and currently holds more than 34,000 acres in the play, with about 22,000 of this in the core area. Three rigs are running, and these folks lay their own pipe because everything they drill is in some kind of municipality where there's no pipeline infrastructure.

See **Horizontal**, next page



## LAND OPERATIONS

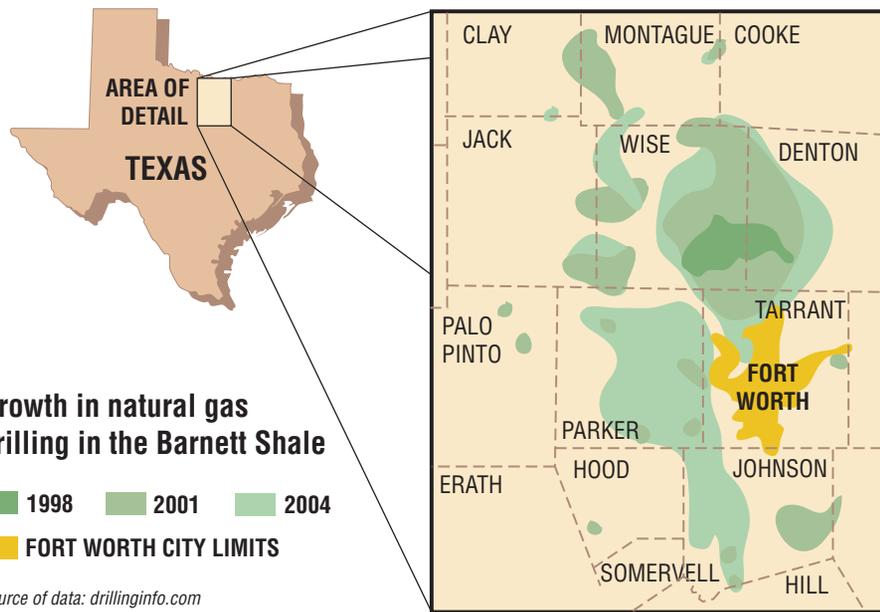
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## Horizontal

from previous page

"Some of the best part of the play is right in the urban areas," Brogdon said, "and some we'll never get to because there's too much culture and you can't get pipeline infrastructure in there."

"Sometimes you can't find enough places to drill that are far enough away from homes to get a permit from the city to drill," Brogdon added. "But there are some areas where there are creeks, floodplains from rivers, industrial corridors where we can find pad sites and drill underneath subdivisions, business parks, things like that."

"When we plan pad sites, we're not only looking for places to drill but looking for a route where we can bring a

pipeline, which is key."

### Location, Location, Location

In the Barnett, the preferred drilling orientation is perpendicular to the stress field, according to Brogdon. However, because suitable surface well site locations are something of a rarity in heavily subdivided, densely populated urban areas, the well pad may have to be positioned in a poor location on the primary lease, or even on an adjacent lease.

To achieve proper wellbore orientation in these challenging situations, Barnett operators are employing a new type of horizontal drilling approach dubbed the "turnzontal" where the well kicks off drilling in one direction to reach the target penetration point and then turns to its final azimuth direction toward the bottom hole at the secondary kickoff point.

Steward noted 3-D seismic has been a critical part of the horizontal wellbores. This is because operators are not only trying to avoid structural complexities, but also striving to understand the dips and dip rates in the areas where these wells are being drilled.

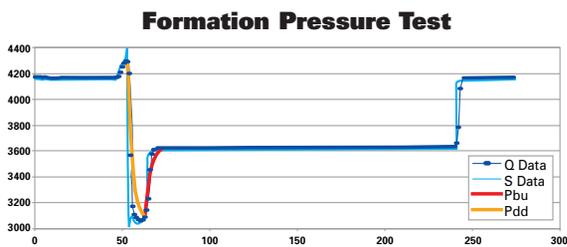
"There are a lot of advances being made in what we're doing with 3-D data," Hall noted. "As we drill more and look at well performance and go back and look

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## Candidates' Information Available

Complete biographical information on all seven candidates vying for positions as AAPG officers for 2006-07 can be found online at [www.aapg.org](http://www.aapg.org). The information also appeared in a special insert in the January EXPLORER.

The data also includes responses to the question of why the candidates are standing for AAPG office.

This year's slate includes six people selected and approved as candidates by the AAPG Executive Committee (with Advisory Council input), plus one petition candidate. Candidates for officers are:

#### President-Elect

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

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.

Official candidate campaign guidelines are available online.

continued from previous page

at the seismic, we start to see trends and realize there's a lot more value to seismic than just avoiding bad areas."

**Looking Good**

Looking to the future, Hall said Devon and others will continue to expand the productive limits of the play and establish the remote counties as either productive or not.

Where the Barnett is not productive, the challenge will be to determine what, if any, technology might reverse that.

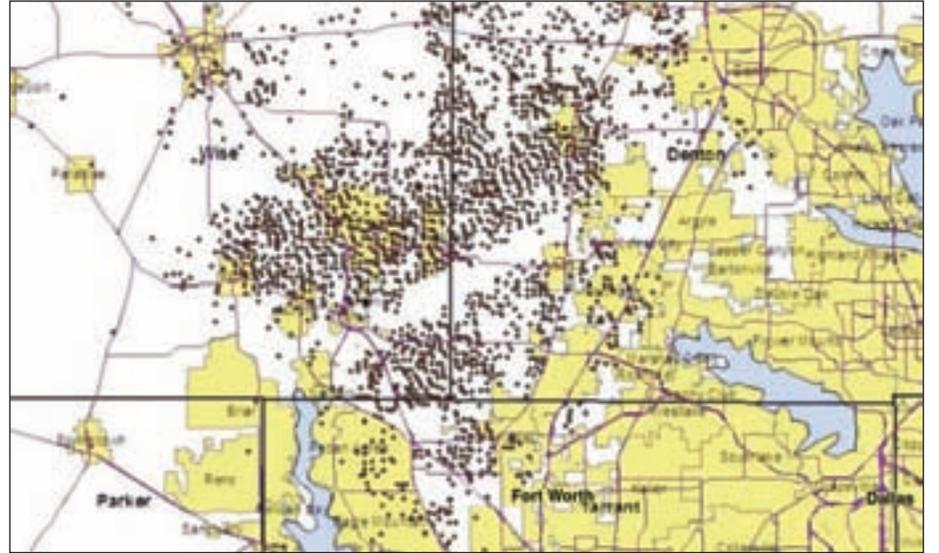
Given that some politicians in Washington, D.C., are noisily demanding the industry make the nation less reliable on imports while simultaneously refusing to allow drilling in new promising

domestic areas such as Alaska's Arctic National Wildlife Refuge (ANWR) and the Outer Continental Shelf (OCS) outside of the Gulf of Mexico, a play like the Barnett becomes particularly significant.

"What's remarkable is as an industry we've all looked at international projects with big reserves," Hall said, "and with the advent of the Barnett, as an industry we're starting to realize these older basins have a lot of hydrocarbons left.

"We just need to think about them differently – like shales as big time reservoirs," he noted. "No one thought until the Barnett there would be this kind of opportunity in these shales. It's really exciting to have a really large gas field in an old productive basin.

"It gives me encouragement there's a lot of hydrocarbons left to be found and a lot of opportunities and challenges we can undertake in the future." □



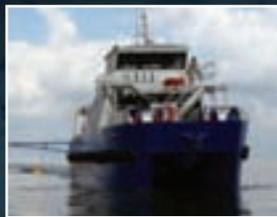
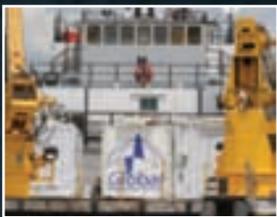
Map courtesy of Rick Gonzales/Search and Discovery

How active a play is the Barnett Shale? Just connect the dots.



# SHALLOW MARINE AND TRANSITION ZONE

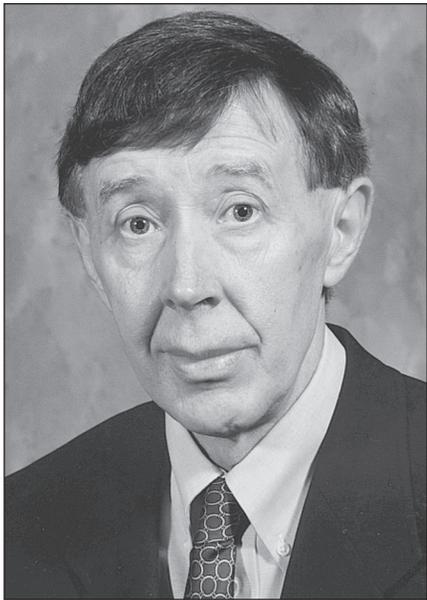
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## Groat to Lead New Center

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By LOUISE S. DURHAM  
*EXPLORER Correspondent*

They say you can't go home again. Just don't bother to tell that to Charles "Chip" Groat.

The man who not too long ago was the U.S. government's highest-ranking geologist recently returned to the University of Texas at Austin, where his continually evolving, high-profile career bridging academic pursuits with public policy was initially launched.

But the plum new appointment at the university effective June of this year is a far cry from Groat's earlier gig at UT, where he occupied the slots of associate

professor and acting director of the Bureau of Economic Geology.

This time around, he'll serve as founding director of the Center for International Energy and Environmental Policy. He'll also occupy the Jackson Chair of Energy and Environmental Resources and will lead the university's Energy and Mineral Resources graduate program within the John A. and Katherine G. Jackson School of Geosciences and the College of Engineering.

And in addition to these considerable responsibilities, he'll serve on the board of directors at Pogo Producing Co.

Can you say "active"?

The UT folks lured Groat away from the U.S. Geological Survey, where he was ensconced as executive director. He held the top spot at the Survey since November 1998, following a stint as associate vice president for research and sponsored projects at UT-El Paso, where he also was a professor of geological sciences, among a variety of other positions.

A host of earlier prestigious positions include:

- Executive director of the Center for Coastal, Energy and Environmental Resources at Louisiana State University, where he also once served as professor in the department of geology and geophysics.

- Director of the Louisiana Geological Survey, state geologist and assistant to the secretary of the Louisiana Department of Natural Resources.

- Executive director of the American Geological Institute.

### Policy Priorities

In a letter to Groat upon his resignation from the USGS, U.S. Department of the Interior Secretary Gale Norton noted "I cannot overstate your impact on the USGS and its contributions to science excellence and leadership under your stewardship."

"We're extremely lucky to get Dr. Groat," said Dr. William Fisher, dean of the UT Jackson School of Geosciences. "He is an academic who knows how to get things done at the national level, and who understands public policy in one of the most pressing areas facing the world today – the crossroads between energy and the environment."

Groat obviously recognizes the potential, too.

"The USGS is a great organization, and I likely would have stayed longer if this had not come up," Groat said. "But once I saw what it would allow me to get involved in, it was a pretty easy decision to take the step."

"The Jackson School (which unites the department of geological sciences with the Institute of Geophysics and the Bureau of Economic Geology) wanted to put new life into the program of energy and mineral resources," he noted. "The university decided it wanted to get involved in not just a fragmented look at energy and environmental stuff but to do so on a policy level."

"That's something I was given a chance to be a part of," he said, "and at this point it's a good thing to be doing."

"The idea for the Center for International Energy and Environmental Policy was to get into international policy in energy," Groat continued, "and to put the geosciences of the Jackson School, the College of Engineering and the LBJ School of Public Affairs together and say that what we do on policy should be based on science and engineering, which is a twist."

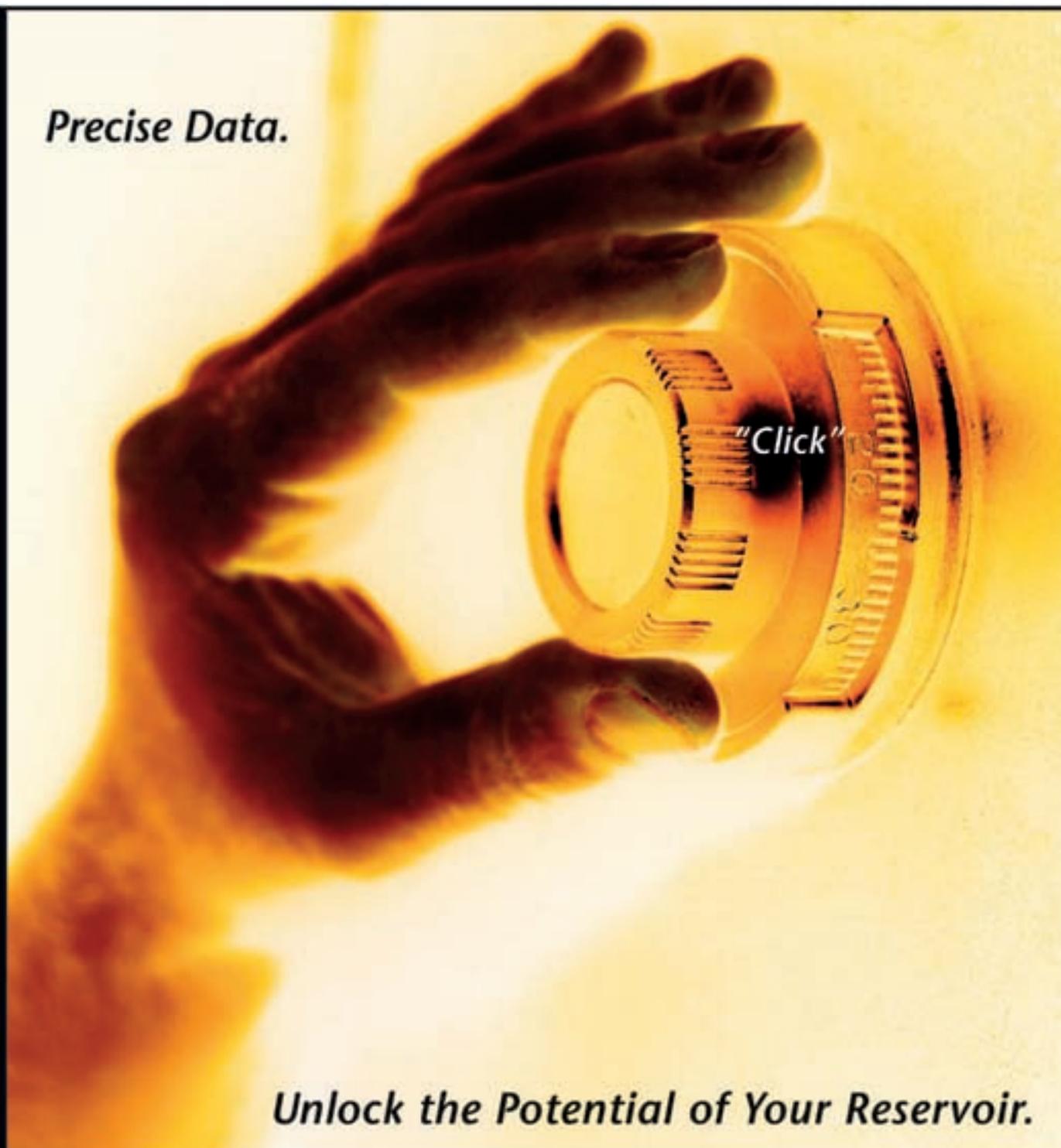
"Instead of sociologists and political scientists pontificating on policy, let's talk about what's needed and important from a science and engineering point of view in the energy field," he said, "and use that to inform policy recommendations."

### Finding the Drivers

The Center will support research informing governments and corporations

See **Groat**, page 18

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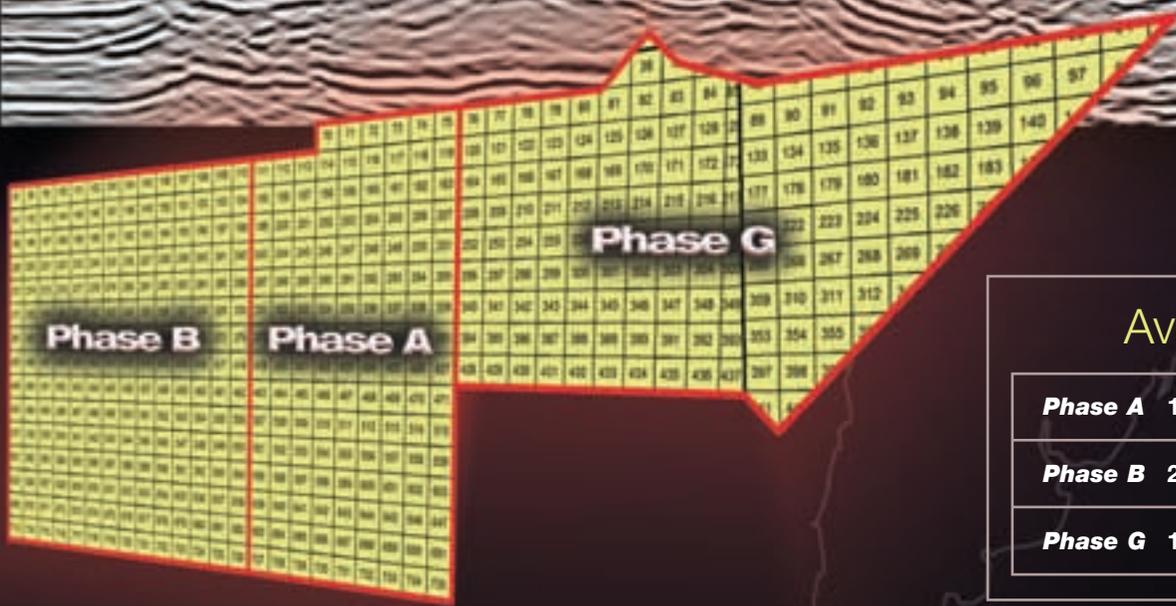
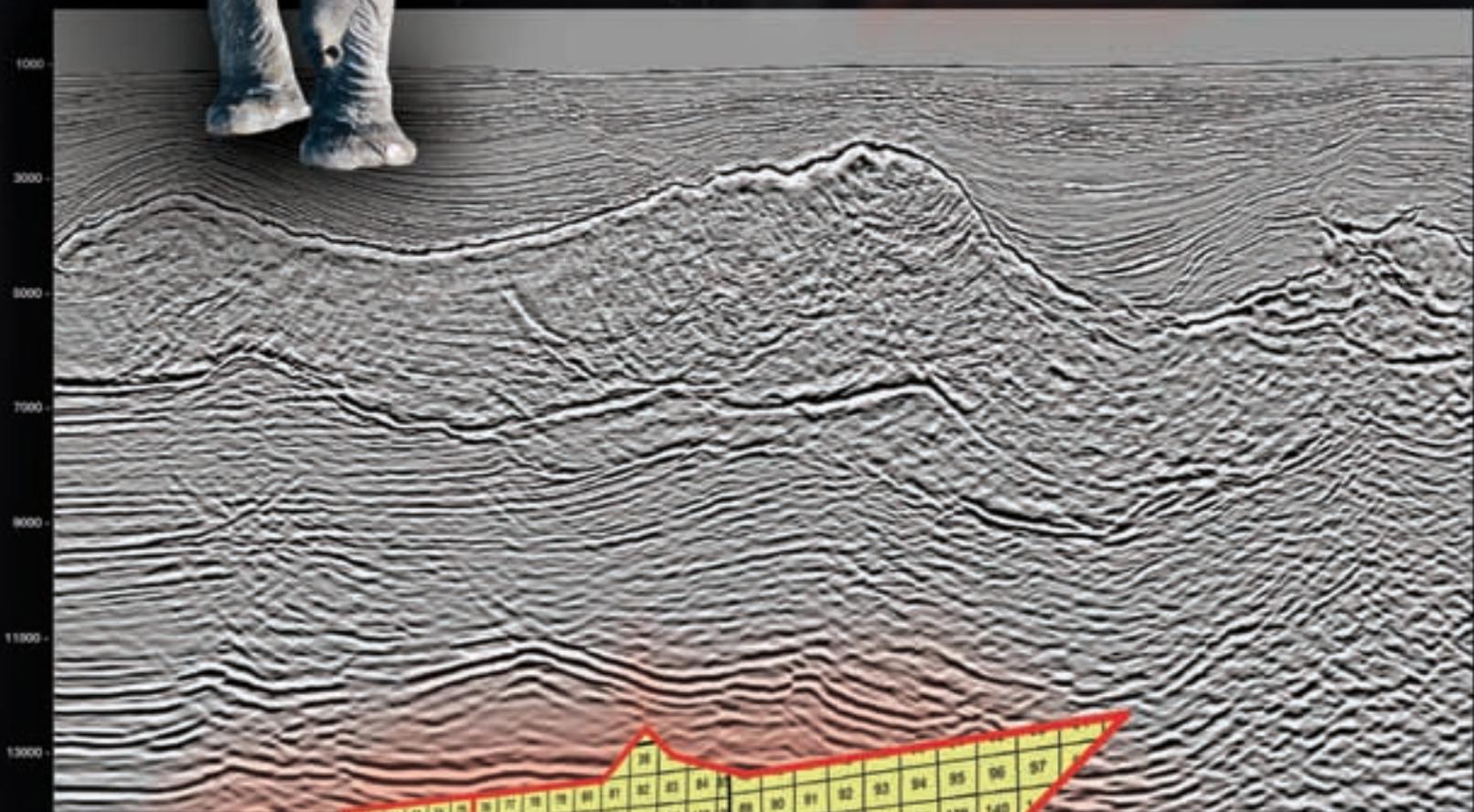
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## A Business Side of Geology

Given the challenges confronting today's oil industry, the thrust at the University of Texas Jackson School's Energy and Mineral Resources graduate program is timely.

Entrants into the program arrive with a variety of background expertise, e.g., geology, petroleum engineering, economics, biology.

"The idea is to get a master's degree that will lead them not to be explorationists or petroleum engineers, but to move toward the business, finance, risk management side of the industry," Chip Groat said. "They take courses such as energy law, energy finance, business, resource economics and end up with a master's degree

that's a combination of science and engineering and some business-smart kinds of courses."

The graduates are prepared to work for oil and gas companies, stock firms, banks, etc. In fact, increasing numbers of companies are eager to bring into their staffs people who understand the oil and gas business from the technical point of view, yet can deal with the numerous other aspects involved in finding and producing hydrocarbons.

"This doesn't mean they will stop hiring geologists," Groat emphasized, "but it's a program that's right for the times."

— LOUISE S. DURHAM

## Groat

from page 16

worldwide on the formulation of policies and strategies and the environment.

The university has committed to hiring up to six new faculty members in the Center. The approach being taken to accomplish this is an about-face from the typical method used to staff up a new entity where each involved group independently recruits faculty to come together to try to make the new organization work.

"We'll pick priorities and issues and then find people who will commit to working on those issues and give substance and a strong foundation to the Center's activity," Groat said. "This is unique in that it's science, engineering

and policy working together and working on an international scale.

"It brings expertise from the three partners together to work in concert rather than independently."

A sampling of the many issues the Center will address include:

✓ What major issues are facing the kinds of energy things this country has an interest in that have an international aspect, including the supply of natural gas – which entails LNG – to meet demands, expectations of the future?

✓ What are the options to obtain those supplies, and what are the barriers to making it happen?

✓ What policies can be put forward to overcome those barriers – and who can make it happen?

"We'll be looking at what will drive changes in attitude of politicians and the public about the need for these things," Groat said. "We'll try to put ideas on the table that come from a place that understands about producing energy and understands about what can be done, so this part of the world is heard from rather than just places far away from an oil well."

### (Much) More to Come

Given his years at the helm of the USGS, Groat understandably has considerable insight when it comes to energy supply.

"The doomsayers say we're running out of oil," he noted, "but just from the undiscovered resource assessments the Survey has done nationally and internationally, even with the oil that's known now the reserve growth has amounted to a lot more than the new discoveries."

In fact, Groat noted he doesn't recall we've ever actually run out of any resource and had to do something else.

Although the resources may be in place, admittedly there is a chronic problem of access of varying types when it comes to oil and gas deposits, Groat noted. For instance, prospective areas for new natural gas discoveries in the western United States can be inaccessible for a number of reasons, including insufficient numbers of Bureau and Land Management personnel to process the permit applications.

Still, he sees the positive.

"We haven't even applied reserve growth numbers to some of the big fields in other parts of the world," Groat said.

"It's finite, but that doesn't mean we're going to run out next year, or 10 years or even in the next 50 years." □

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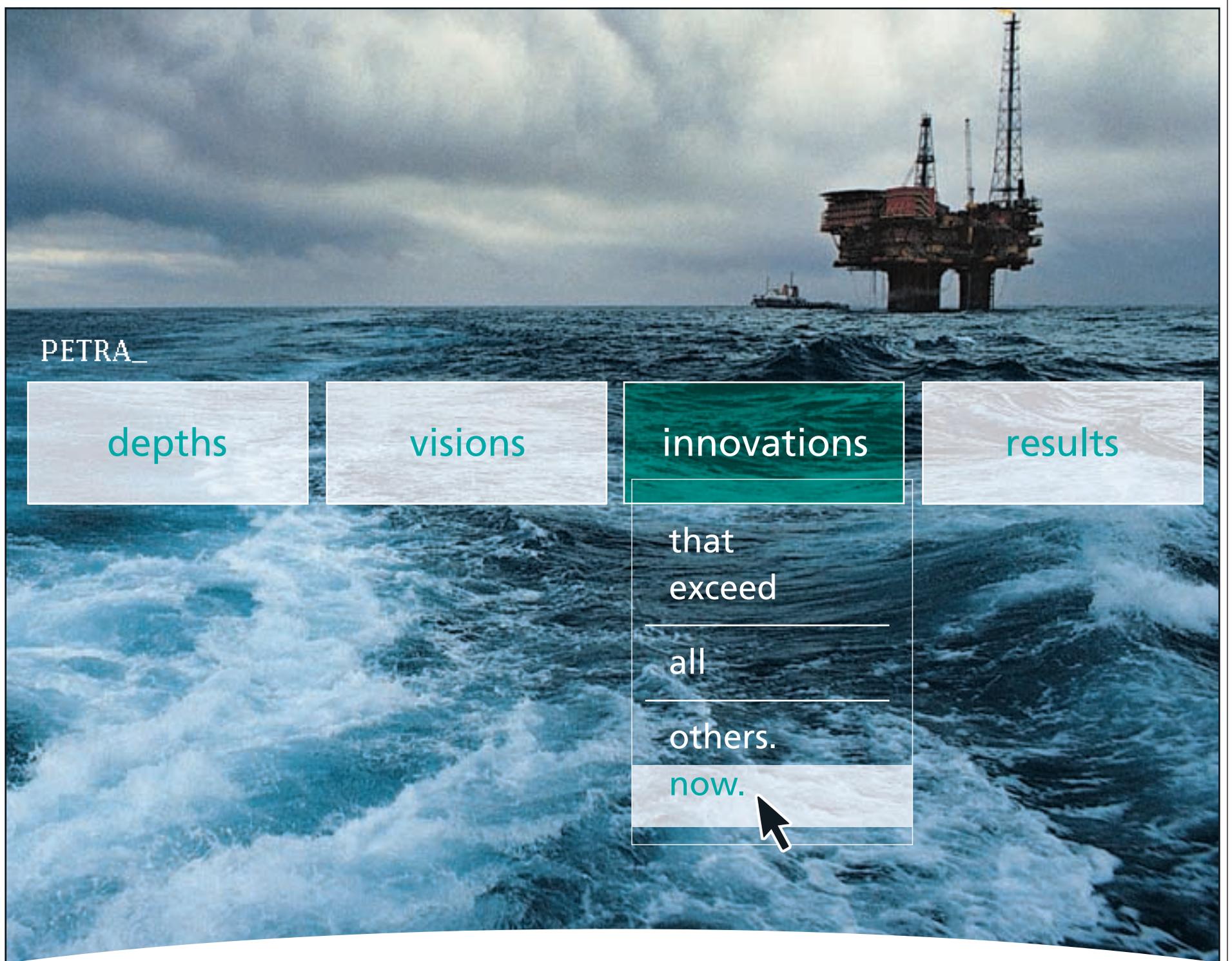
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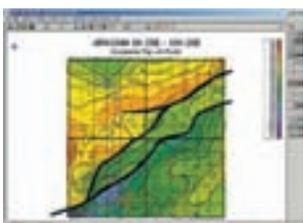
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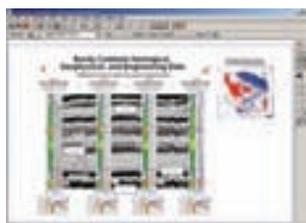
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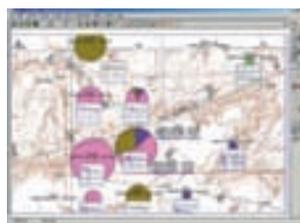
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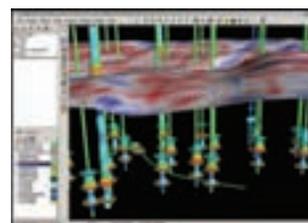
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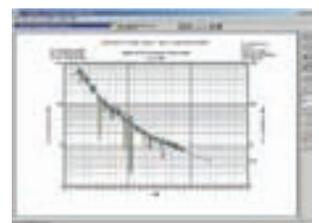
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# Civic Affairs A Part of Exploration

By LOUISE S. DURHAM  
*EXPLORER Correspondent*

The escalating need for oil companies to move into underdeveloped, often remote areas of the world to find new hydrocarbon reserves entails myriad challenges above and beyond the exploration process itself.

Cultures, customs, languages, governments – indeed, venturing into these locales is like stepping across a transparent border where suddenly everything is different.

Not surprisingly, successful operations in such areas depend heavily upon the cooperation and trust of the indigenous populace – a situation that is best attained via a demonstrated sense of social responsibility on the part of the oil entity.

Because the need for seismic data dictates that geophysical companies are often the first industry-symbol to arrive en masse on the scene of an exploration program, they shoulder the bulk of the responsibility for establishing good relationships with the community. Ideally, these carefully cultivated affiliations will carry over for many ensuing years of exploration and development activity.

Seismic activity by its nature interacts with communities and the political and social organizations where the work takes place. Therefore, previous knowledge of the area's economic and social conditions must be considered throughout the project, from planning to conclusion.

"We like to develop seismic work in the



*Photos courtesy of PGS Onshore*

There's more than one way to run a seismic operation – and companies that work in international areas have learned that an effective path to success is by becoming a part of the community. In Ecuador, PGS helped area children by building schools.

pre-job stages by involving the community so they can get some kind of collective benefit out of having the seismic done," said Norberto Soto, general manager of Latin America at PGS Onshore, which recently received a "Best in Class" distinction for achievements within environmental impact and social

responsibility awarded by Norwegian investment company Storebrand Kapitalforvaltning ASA.

"Establishing good relationships and opening communications paths at the start of a job before we get in the field is one of the most important things to do," Soto said.

## Beneficiaries

Consulting geophysicist Dick Sievers concurs.

"Because seismic goes in before anyone else, you have to do it right," he said. "Part of the overall program should always be a social investment. The first impression you make in an area where you hope to develop a long-term asset must be a good one.

"There's an ethical need to do right by the populace because you'll be developing resources in their area," Sievers continued. "It's a good investment for the company to get the people aligned with them right off."

Steps to make this happen veer off in many directions. For instance, Soto noted that when working in underemployed areas, PGS Onshore strives to ensure the jobs go to the people in the area.

That's ordinarily just the beginning. "We've found that often there are varied issues around indigenous people," Soto said.

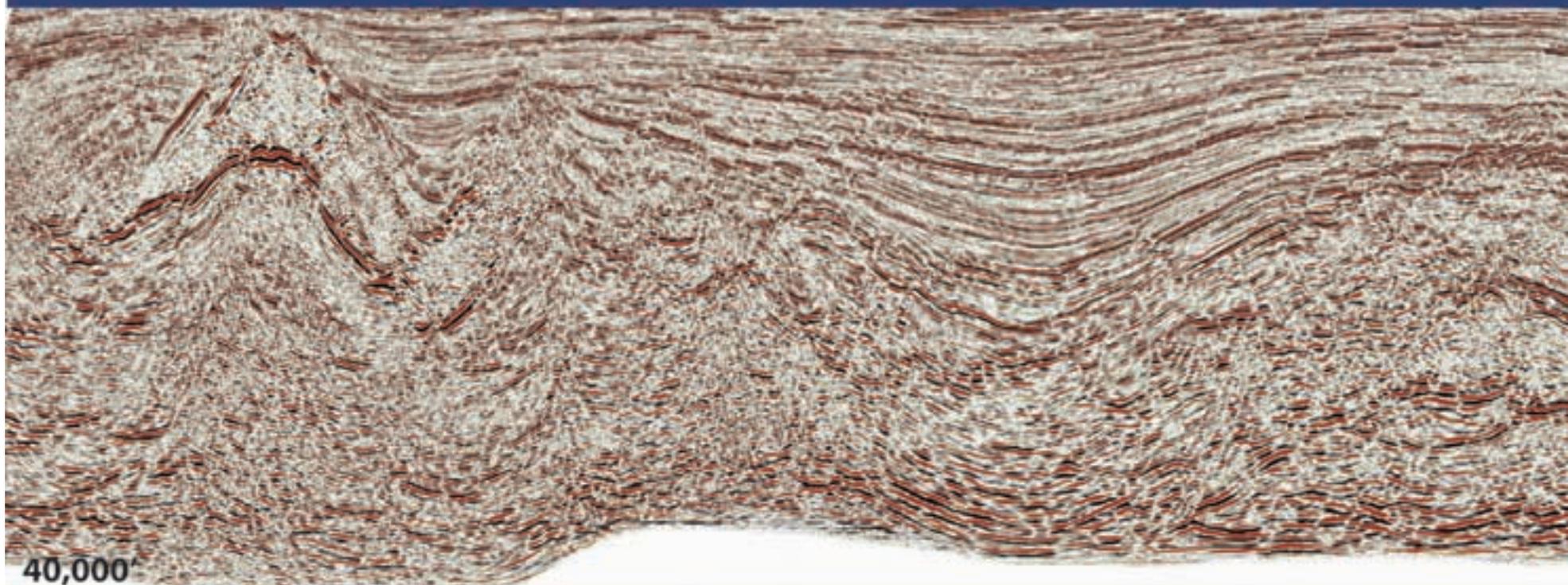
"These issues range from wanting respect for their culture, customs and land to conflicts with people from the outside moving in on what they see as underutilized land and trying to take advantage.

"They see their area as providing wealth to the nation, but they usually haven't been direct beneficiaries of that,"

continued on next page

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Soto noted. "In the past they had no access to operators to share in decisions, or at least to have their voice heard."

**A Spoonful of Sugar?**

One such example is Ecuador, where the natives' hostility toward the industry is constantly stoked by a complicated political situation, including a host of organizations opposed to hydrocarbon exploration.

Problems such as oil spills and broken pipelines from as much as 30 years ago add to the distrust.

Still, the industry is making strides to help ensure a brighter future for the region.

For starters, companies are recognizing the need to make a concerted effort to open paths of communication and establish trust with the various tribal groups. This approach to the community has been highly successful for PGS Onshore in Ecuador as well as in other countries where it has social action programs in place, including Bolivia, Mexico and Bangladesh.

The company acquired a survey in Ecuador's Oriente Basin as part of a project to redevelop the mature Sacha Field, which was discovered in the late 1960s.

Providing direct social benefits to area communities can prove invaluable to forming cordial relations. A caveat: projects should not focus on what you want them to have, but rather what they want.

"Sometimes in these areas either the governments or oil companies made large donations and built things – but

never asked the people what they wanted," Soto said, "and the people got things they didn't want or need."

"We go into an area and do a census, and inventory social needs by interviewing and talking to people," Soto said. "In one town in Ecuador, we saw a need for a multiple use building to work as an infirmary/school, but the community saw a need that if they had a little sugar mill to squeeze sugar out of sugar cane, they could increase sugar production and get more cash crop, so we helped build the mill."

"With a mill of their own they could boil the sugar down into blocks where it was easy to transport and also a higher value product," Soto noted.



A sweet success in Ecuador: The village needed a sugar mill where they could burn crushed sugar cane stalks for fuel, which PGS was happy to provide.

"We set up the mill so they could burn the crushed sugar cane stalks for fuel, so they didn't need a natural gas line or electricity to fuel it."

**First Steps**

To effectively implement its corporate social responsibility efforts in Ecuador's complex, turbulent social and political environment where the indigenous people are fractionated into various tribal groups, PGS Onshore opted to work with stakeholders at all levels through its ASOCOM organization (Community Action, or Asistencia Comunitaria), which comprises 22 professionals specializing in psychology, sociology, social work,

medicine, orthodontics, civil engineering, agronomy, forestry and permitting.

Numerous projects have been accomplished via the group's efforts that could go far to ensure progress in changing the attitudes toward petroleum exploration in this country, which has been long regarded as largely illiterate and impoverished. These long-term solutions include:

- ✓ Building schools.
- ✓ Constructing new roofs on more than 300 homes to improve living conditions for nearly 2,000 people.
- ✓ Installing electricity in homes.
- ✓ Reforesting native vegetation along seismic lines and heliports.
- ✓ Medical checkups and treatments.
- ✓ Donating a tractor to assist 300 families in a farming cooperative.

The program's impact on a particular seismic survey in Ecuador underscores its value to the company and the client.

Traditional no-permit areas threatened to cause considerable fold loss over the survey's target area, which would create big problems for the client. Landowners initially refused to provide access permits over the crest of the structure because of unsatisfactory remediation of oil spills on their land.

The ASOCOM group earned the confidence of the local landholders and obtained the permits by demonstrating the environmentally friendly work methods to be used.

**The Client's Role**

It is noteworthy that the client plays a major role in the social responsibility arena along with the seismic contractor.

This proved to be the case in densely populated Bangladesh, where the

See **Helping Hands**, next page

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Open wide: PGS Onshore was performing seismic operations in Ecuador's Oriente Basin and making dental care possible for area children.

## Helping Hands from previous page

company acquired a 3-D survey over 450 square kilometers for London-based Tullow Oil. The survey crews were comprised of local personnel.

"We work closely with people in remote parts of the countries where we operate," said Joe Mongan, group geophysical operations manager at Tullow. "This is especially important in Bangladesh, where there may be more than a million people living in an area where we might be physically working."

This was the case with the PGS survey. "With such a sizeable population, the issue of corporate social responsibility was vitally important," Mongan said. "We needed to work hand-in-hand with the

local people, inform them of what we were doing, publicly consult with them on what we're all about, and also provide local employment to the people.

"Some of our activity there was of direct benefit to local authorities, such as donations to school authorities, for example," Mongan noted. "Where we had to purchase the site for a drilling rig, we let the community have transfer of title so they could build a school once the site was abandoned."

An unusual aspect of the Bangladesh project was the innumerable farmers who owned the many small paddy fields that were crisscrossed by the seismic survey. Once the project was completed and the equipment removed, PGS compensated the many owners for any assessed damages.

It's typical in locales like Bangladesh for the schools to be in poor condition, both physically and in the realm of supplies and books.

"We've been successful in getting others to help sponsor educational needs, like refurbishing schools," said Gehrig Schultz, vice president of worldwide business development at PGS Onshore. "We set up ways for oil companies and vendors to donate supplies and help set up libraries."

Schultz noted also that PGS has donated geophysical libraries to student sections of the SEG in Latin America, an effort that dovetails with the AAPG Publication Pipeline Committee, which sends donated geoscience literature to students in remote areas where books are scarce at their own institutions (see September 2005 EXPLORER).

### Symbiotic Relationship

Corporate social responsibility is not limited to underdeveloped regions in faraway lands.

"Social responsibility has various connotations in various places," said Mark Russell, geophysicist at Aspect Energy in Denver. "Overseas, it's environmental as well as doing things to aid the communities you're working around, bring labor and other things into them."

"In the U.S., it's more an environmental responsibility, a work ethic, working with the community when you're there," Russell said. "You want to minimize the impact your operations have on the environment and on any ongoing operations the landowner has, like cattle ranching. Hopefully, you'll want to come back and drill producing wells, so you want to work with the landowners in the area."

"It's self interest, but it's also social responsibility to be a good neighbor and work well with everyone in the area, so they'll want you to come back."

"It's a symbiotic relationship," Mongan added. "Well-established and well-developed relations with local communities helps get the work done."

Russell suggested companies utilize information campaigns where needed to show the populace what the company will be doing and what the operations will entail. He recommended a public demonstration if necessary.

PGS took this approach recently in Chalmette, La., to demonstrate seismic technology prior to a survey through a residential area.

As the crowd of concerned citizens and government officials looked on, a 47,000-pound vibroseis buggy demonstrated the noise level and vibrations incurred during the data acquisition process. In an unusual twist, two light bulbs and two raw eggs were buried eight inches under the vibrating pads.

Following the demo, the two eggs were retrieved unbroken and the still-intact light bulbs were working, much to the apparent amazement and surprise of the assembled onlookers. □

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# House to Consider Expanded EC

A proposal to add an international vice president position to the AAPG Executive Committee will be considered by the AAPG House of Delegates in April at the group's annual meeting during the Houston convention.

The Executive Committee voted 6-1 to send the proposal to the House. AAPG members eligible to vote were notified of the proposal by postal service or e-mail in early January.

House of Delegates Chairman Donald D. Clarke said the proposal is an effort by the Executive Committee to respond to calls for proper representation of the international membership on the EC. Clarke noted that nearly 25 percent of

AAPG membership resides outside the United States.

The present vice presidential office would be specified as a U.S. Sections position.

The bylaws proposal also would change the term of office for both VP offices to two years, which would be staggered.

"The result will be a vice president-Regions, who is experienced with international issues and will focus on the international issues, and vice president-Sections, who will focus on the needs of the domestic sections," Clarke said. The proposal calls for the vice president-Regions to reside outside the U.S.

The addition of one position to the Executive Committee will make a total of seven elected officers along with the Chairman of the House of Delegates, for a total of eight voting members of the EC.

"Although this may present a problem with close votes (Roberts' Rules of Order prefers, but does not require, an odd number)," Clarke said, "most ECs have chosen to suspend consideration of such issues until a clear consensus emerges."

"This subject was discussed at length during the HoD mid-year meeting and during the Constitution and Bylaws (Committee) meetings," Clarke said. "We understand that there will be times when voting is difficult, but we are also

confident that the Executive Committee is filled with officers who are working to build a better AAPG, and the problems at hand will be resolved."

The proposed Constitution and Bylaws changes will require a two-thirds vote of those present at the House of Delegates meeting for approval. If the House approves, a change in the wording of the Constitution is necessary, changing the number of seats on the Executive Committee.

Consequently, an Association-wide vote then will be held, requiring a two-thirds majority for passage.

For further information, see <http://www.aapg.org/bylawschanges.cfm>. □

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## DL Program Due Busy Month

February is a busy month for the AAPG Distinguished Lecture program, with four speakers offering talks. They are:

✓ **Kitty Milliken**, senior research scientist at the Jackson School of Geosciences, the University of Texas at Austin, and this year's J. Ben Carsey Lecturer, will complete her winter tour with a Feb. 15 lecture to the Corpus Christi Geological Society.

✓ **Rebecca Latimer**, geoscientist and team leader for stratigraphy and geostatistics services, Chevron Energy Technology Co. in Houston, continues her year as the AAPG-SEG Intersociety Distinguished Lecturer with two talks this month. Her speaking dates are:

□ Feb. 20 – Oklahoma City Geophysical/Geological Society.

□ Feb. 21 – Dallas Geophysical/Geological Society.

✓ **Mark Rowan**, president of Rowan Consulting in Boulder, Colo., will be offering two topics: "Collisional Fold-and-Thrust Belts Detached on Salt," and "Salt-Sediment Interaction During Diapir Growth." His speaking dates are:

□ Feb. 21 – Canadian Society of Petroleum Geologists, Calgary, Canada.

□ Feb. 22 – Montana Geological Society, Billings, Mont.

□ Feb. 23 – Montana State University, Bozeman, Mont.

□ Feb. 24 – Idaho State University, Pocatello, Idaho.

□ Feb. 28 – Tulsa Geological Society.

□ March 1 – University of California-Santa Barbara.

□ March 2 – University of Wyoming, Laramie.

✓ **James Markello**, reservoir supervisor/reservoir adviser for ExxonMobil Research, Houston, will offer two topics: "The Carbonate Analogs Through Time (CATT) Hypothesis – A Systematic and Predictive Look at Phanerozoic Carbonate Reservoirs," and "Integrated Research for Carbonate Reservoirs." His speaking dates are:

□ Feb. 27 – University of Wyoming, Laramie.

□ Feb. 28 – Rocky Mountain Section of SEPM/RMAG, Denver.

□ March 1 – Montana Geological Society, Billings.

□ March 2 – Washington State University, Pullman.

□ March 3 – Nevada Petroleum Society, Reno.

□ March 6 – Brigham Young University, Provo, Utah.

□ March 7 – Idaho State University, Pocatello, Idaho.

□ March 8 – University of California-Davis, Calif.

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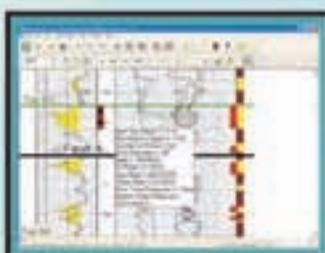
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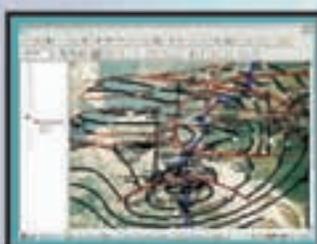
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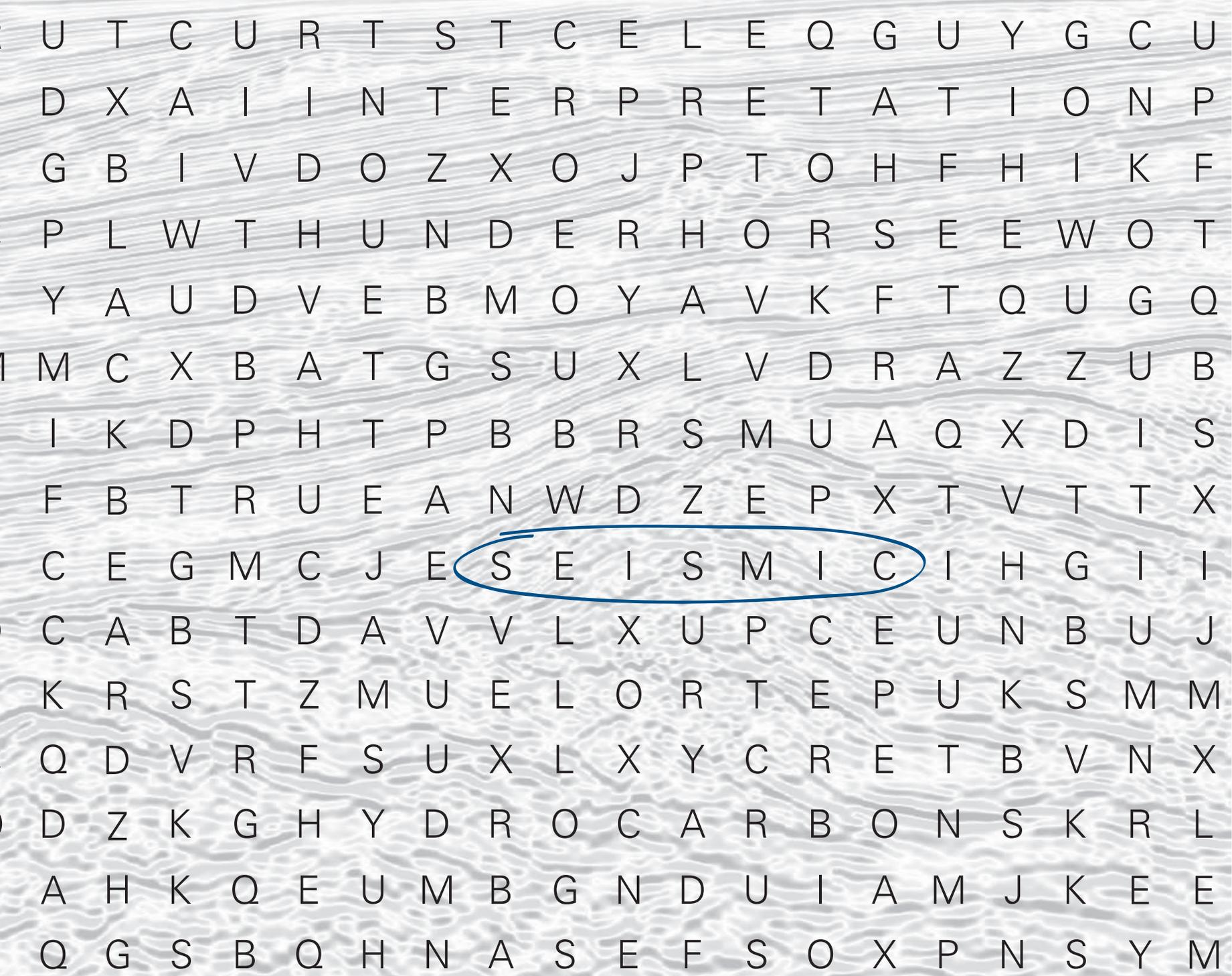
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*Notice: Seismic Is Not Geology***Digits Can Distract From the Rocks**

By LOUISE S. DURHAM  
*EXPLORER Correspondent*

Today's technology-driven geoscience milieu is a world removed from the paper-driven environment that once characterized the geologist's office. In those not-all-that-long-ago days, the E&P toolkit consisted of colored pencils, tracing paper and paper logs in large part, and maps and cross-sections were hand-drawn.

The evolution from low- to high-tech was gradual, beginning with the rise in popularity and increasing abundance of 3-D seismic data during the early to mid-1990s and the accompanying proliferation of workstations to manipulate and interpret these data.

At one time during the changeover, there was a brief but happy marriage of the old and the new.

"In the early to mid '90s, a lot of high quality 3-D volumes were in the workstations," said past AAPG Distinguished Lecturer Cindy Yeilding, technology unit leader for BP in Houston. "But people still tended to do a lot of work on paper – printing out logs, drawing cross-sections – because all were coming out of the age of drawing.

"They had all the data and could squash, flatten, color, manipulate and re-display but still draw on it with their hands," Yeilding noted. "People still worked in big workrooms with big tables and walls and rolls of Mylar and colored pencils, and prospect presentations were a group effort.

Cindy Yeilding will present the paper "Is the Work Station Killing Geology?" at 4:40 p.m. on Wednesday, April 12, at the AAPG Annual Convention in Houston.

Her co-authors are Lonnie Blake

and Peter Carragher. All are with BP in Houston.

Yeilding's talk is part of the session on "Reinventing E&P Organizations: Where We Are and What We Need to Be."

"There was a lot of geology going into the interpretations," Yeilding said, "and a lot of multiple models hanging on the walls for challenges and debate. There's a general consensus among many that this was the golden era of geoscience, when interpretation was at its peak."

But the workstation soon took on a life of its own, rapidly gaining momentum as the be-all, end-all in the geoscience world. Ultimately, many industry watchers – as well as many geoscientists themselves – started to believe that computers find oil and gas. Nintendo Geology had arrived.

But you can rev up the machine and shortcut the geology for only so long before it becomes a bit of a stretch to accept the end results that are generated.

Not surprisingly, a backlash of sorts appears to be under way.

**The Challenge**

When it comes to using technology, Yeilding is something more than an office-bound academician.

In addition to being an AAPG Distinguished Lecturer, Yeilding has

been honored as one of the profession's top explorationists. She was the leader of the BP team responsible for the 1999 discovery of Thunder Horse, one of the most significant discoveries ever in the deep water Gulf of Mexico.

In other words, she knows a thing or two about both technology and geology – which gives weight to her scheduled talk at April's AAPG Annual Convention in Houston: "Is the Work Station Killing Geology?"

The need to answer the question became increasingly apparent as Yeilding and her BP co-authors Lonnie Blake and Peter Carragher queried numerous colleagues in the industry about the topic – and realized right away they had hit a nerve.

"We're in a better position to do our work than we were 20 years ago," Yeilding noted. "We have access to digital data, visualization, interpretation software, and we can re-display, scroll through multiple data sets and share interpretations.

"I don't think the workstation per se is killing geology, but there are challenges we're facing.

"For instance, can we actually



Yeilding

create a sensible geological workflow using today's digital toolkit?" Yeilding queried. "My answer is 'no'; some things are missing.

"And does the toolkit that exists in the digital environment recreate probably the best practice we know of geoscience based on first principles?" she asked. "No."

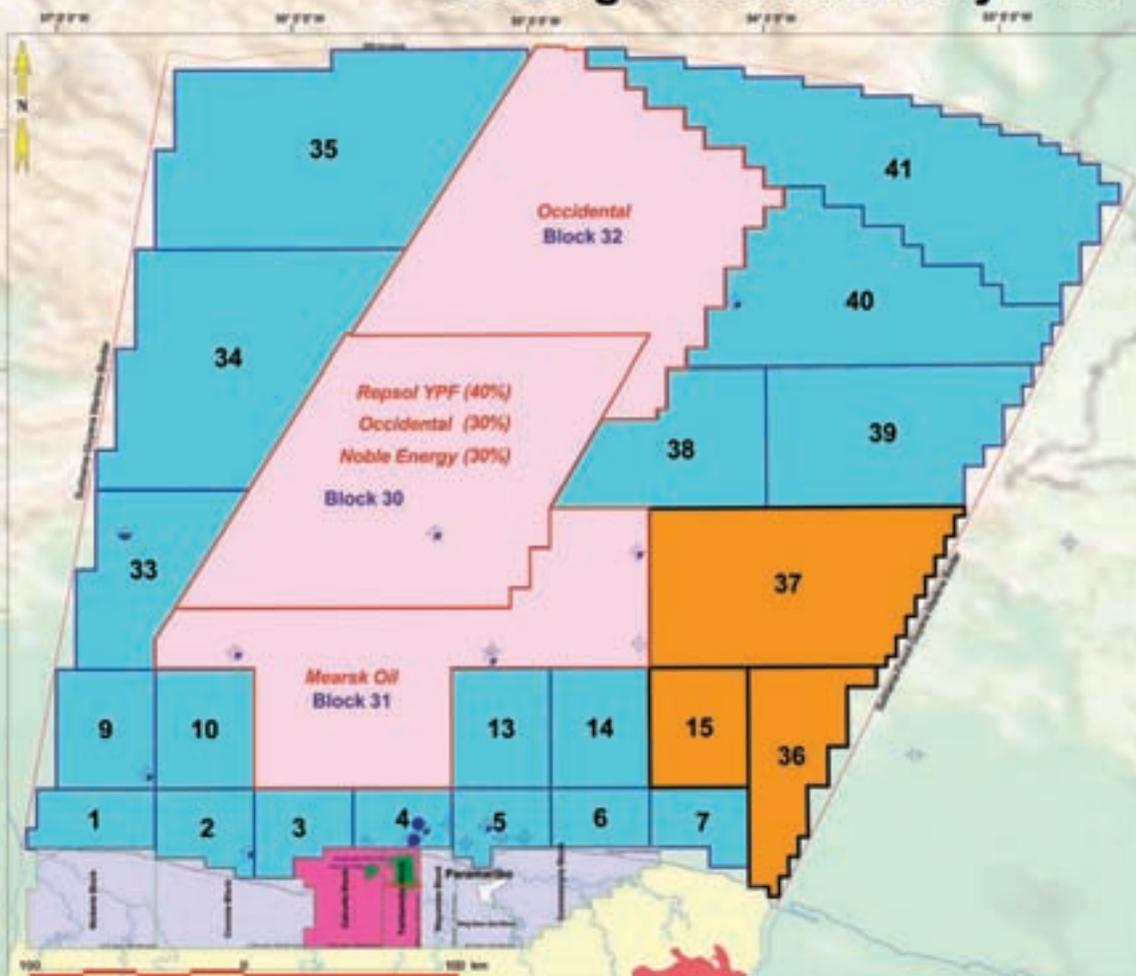
See **Workstations**, page 30

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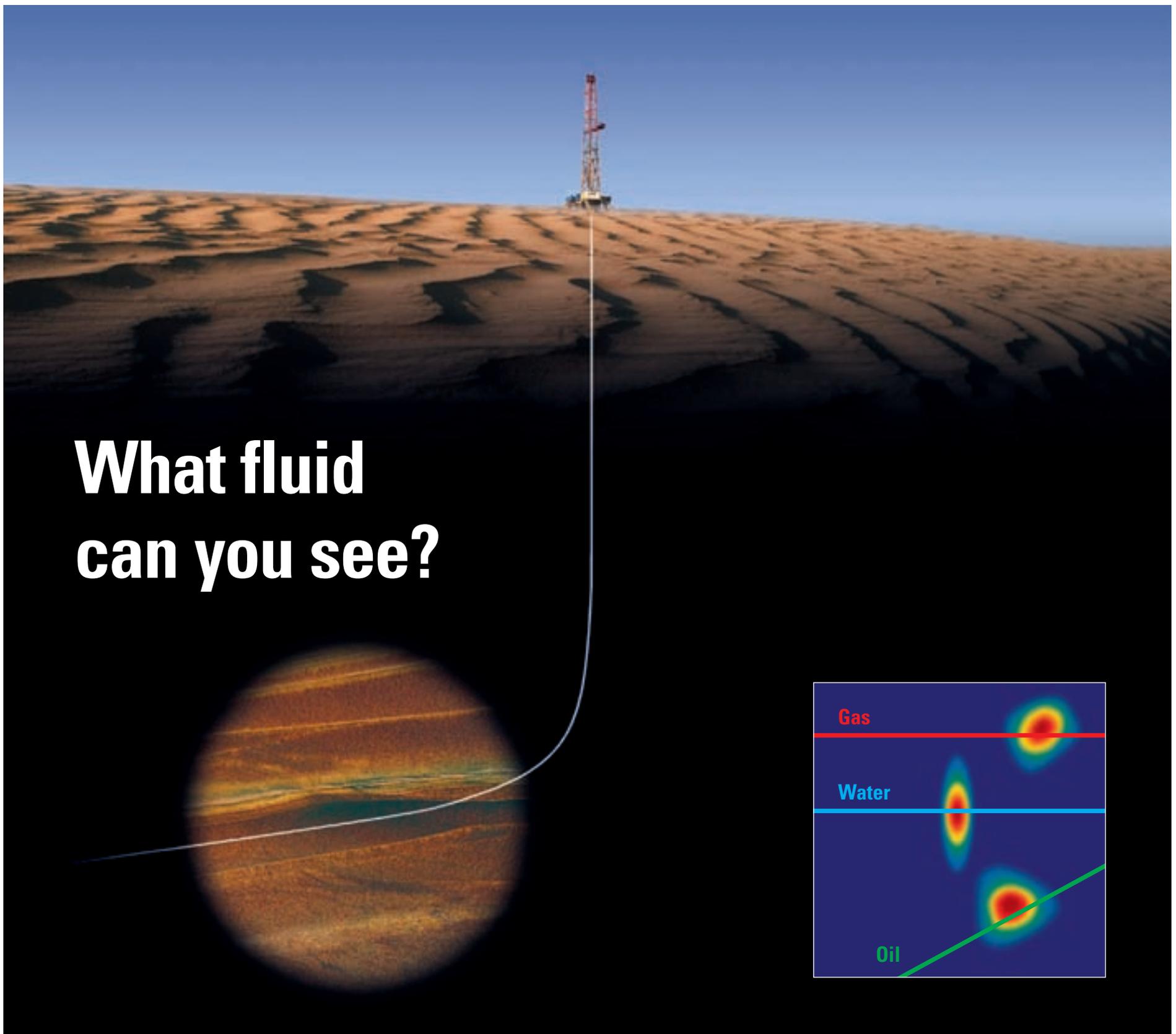
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## Workstations

from page 28

Among other questions Yeilding pondered:

- ✓ Is the workstation the best working environment for collaboration and integration?
- ✓ Do geoscientists always query each other as robustly as needed, or simply let the computer do the thinking for them?
- ✓ Have work spaces – isolated cubicles, lack of walls and downsizing of collaborative work spaces – stifled our ability to collaborate, challenge and integrate?

"The workstation is enabling us to do a lot of things," Yeilding said. "But

we need to challenge the workflow created by the current readily accessible software and our way of working."

### Garbage In ...

Fields are becoming harder to find and to develop, so it's more important than ever before to maximize the geoscience interpretation effort. Obstacles today come in the form of the toolkit itself as well as behavioral and environmental issues, which can be controlled once identified.

In the case of the toolkit, there are gaps in geologic interpretation using the workstation.

For instance, Yeilding noted it's difficult to construct a good representative, or geologic-looking, cross section. This could be improved upon by hand input yet it's rarely done,

owing in part to the ever present need to do more, faster.

There's also a tendency to overlook the need to rigorously load information about data quality and problems with data into the workstation environment. Information about seismic acquisition parameters, feathering, etc., is not available, so the inclination is to just believe what's there on the screen.

"We used to use dashed lines and post values on maps, so if someone questioned the interpretation they could re-contour right in front of you," Yeilding said. "Now people let the computer do the contouring, and it's not always geologically valid.

"Every line is given equal weight, but some lines might represent a very robust interpretation and others be really interpretive," she noted. "It's hard to discriminate when you just print the map out."

In fact, these maps sometimes don't structurally restore, i.e., the fault patterns and contours don't represent something that adheres to the first principles of structural geology. The result: erroneous maps.

### A 'Full-Body Contact Sport'

Among the behavioral issues of concern, there's a trend today to believe seismic is geology. It's important to remember seismic is an interpretation, Yeilding noted, and though it reflects some aspects of the geology, it rarely shows the full picture.

A continuing struggle is the ability to create and explain multiple models because there's a tendency to get hung into one, especially when using the computer as the primary tool.

"We don't always test our interpretations against the first principles of geology," Yeilding said. "You must ask if it's a geologically accurate interpretation."

There are ways to get into a better groove.

For starters, it's important to encourage less experienced geoscientists to feel comfortable in asking others for their ideas and to test their own ideas against colleagues.

Universities can strengthen programs to focus more on the rocks in outcrop, i.e., real data, in place of emphasizing workstation skills. Companies want students who understand the geology; the workstation skills can be acquired at the company.

"Another point on behavior is some people say geology is a collaborative science," Yeilding said. "I say it's a full-body contact sport.

"We need big collaborative spaces, big walls and not be afraid of paper," she said. "A basic challenge in terms of environment is to create a business case for the appropriate collaborative workspace.

"You don't want interpreters working in little cubicles and not talking to each other."

Regarding the toolkit, Yeilding noted it's important to keep supporting software development and to support the people doing this. But she exhorts to not ignore tools and applications just because they can't be done on a workstation – and she's optimistic about where this is all headed.

"I can envision a future where we can create, iterate, collaborate, challenge and capture our projects in a completely digital framework," Yeilding noted. "My caution is that for many geoscience problems, we're not quite there yet." □

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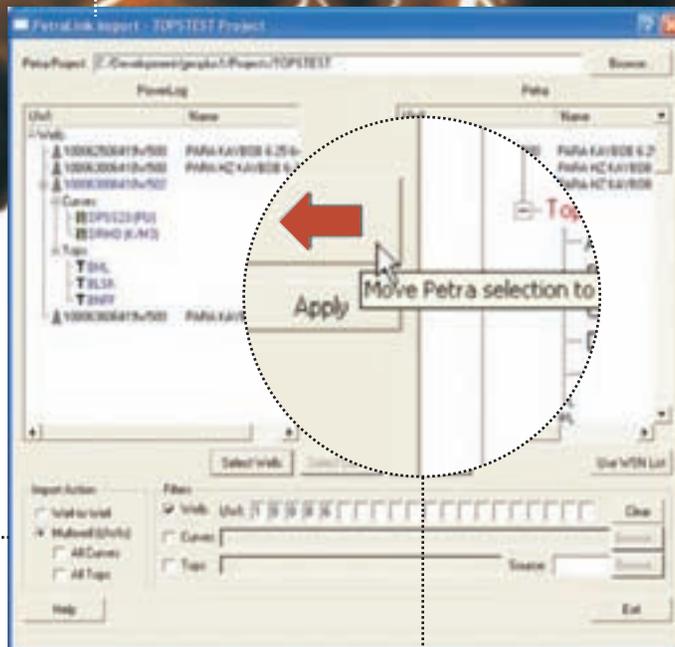
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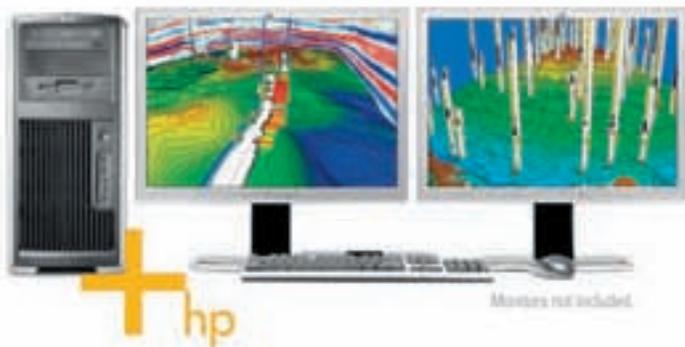
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## GEOPHYSICAL CORNER

# Depth Registration Has Pitfalls

(The Geophysical Corner is a regular column in the EXPLORER, edited by Bob A. Hardage, senior research scientist at the Bureau of Economic Geology, the University of Texas at Austin. This month's column is titled "Depth Registration of P-Wave and S-Wave Images.")

By BOB A. HARDAGE  
and I.J. ALUKA

Last month's Geophysical Corner introduced the concept of elastic wavefield seismic stratigraphy, a seismic interpretation technology that expands traditional P-wave seismic stratigraphy into the emerging world of multicomponent seismic technology.

Two assumptions are involved in elastic wavefield seismic stratigraphy:

- ✓ Across some stratigraphic intervals, one mode of an elastic wavefield will exhibit different seismic sequences and/or seismic facies than will its companion wave modes.
- ✓ S-wave seismic sequences and facies are just as important in geologic interpretation as are traditional P-wave seismic sequences and facies.

Once these two assumptions are accepted, a serious interpretational challenge is immediately encountered: *depth registration of P and S images*. An interpreter must be confident a targeted data window in P-wave image space is depth equivalent to a data window selected from S-wave image space before the seismic sequences and facies in these respective windows can be used in an elastic wavefield seismic stratigraphy analysis.

Until depth-equivalent P and S data windows are defined, no meaningful geological interpretation of P and S seismic sequences or facies can be done. Techniques seismic stratigraphers use to define depth-equivalent coordinates in P-wave and S-wave image spaces include:

- ✓ P-wave and S-wave synthetic seismograms.
- ✓ Multicomponent VSP data.
- ✓ Map and section views of P and S images of structure and stratigraphy.

Only the latter two options are discussed here.

### Multicomponent VSP Data

Multicomponent vertical seismic profile (VSP) data allow rigorous and accurate depth registration of P and S images – if the VSP data are acquired with receiver stations distributed over a large vertical interval.

The depth origin of a seismic reflection can be determined precisely only if closely spaced receivers span the interface that produces that reflection. The longer the vertical array of receiver stations used in VSP data acquisition, the larger the number of reflecting interfaces spanned and the more depth-equivalent P and S reflections identified.

Examples of nine-component (9-C) VSP data used to define depth origins of P, SH and SV reflections across an interval of Morrow channel deposition are shown in figure 1. These data are examples of depth-based VSP imaging.

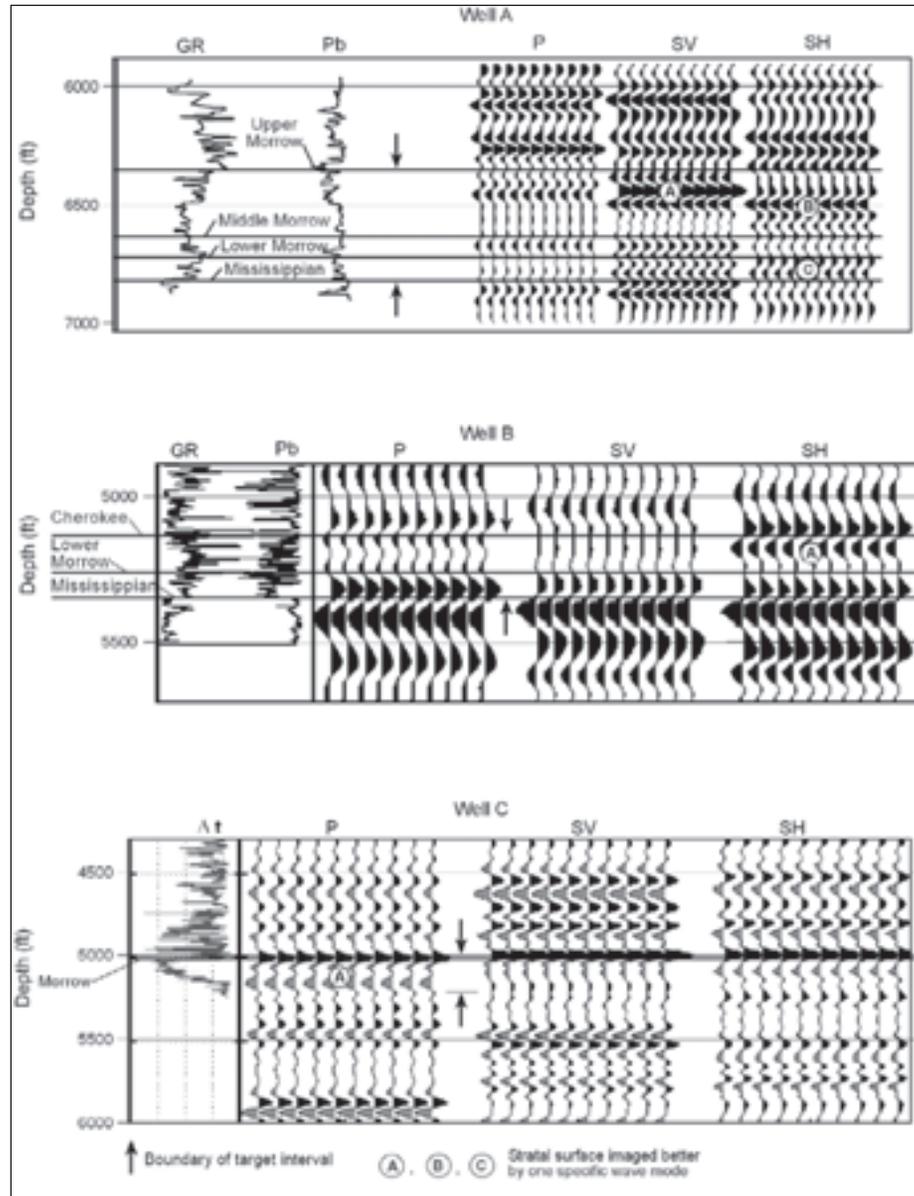


Figure 1— Depth-based P, SV, and SH images constructed from nine-component VSP data acquired in three wells penetrating Morrow-channel environments. One wave mode often reveals a key stratal surface within a target interval that its companion wave modes do not. Examples of such surfaces are labeled A, B, and C.

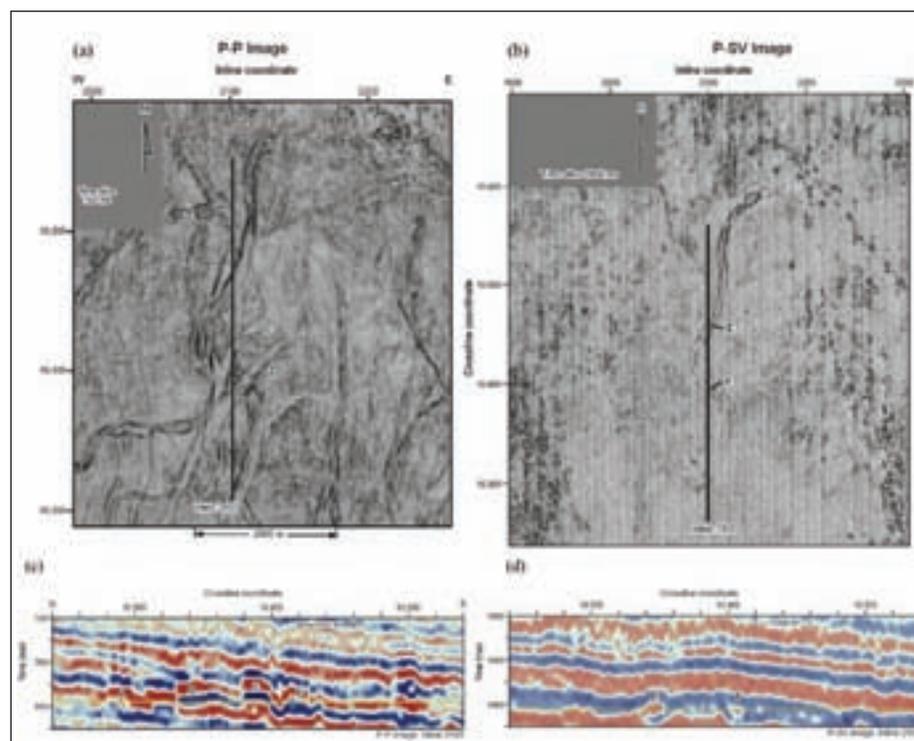


Figure 2 – Map views of thin stratigraphy (a) and (b) used to depth register P-P and P-SV images. In map view, equivalence of thin P-P and P-SV channel features results in P-SV time 1,964 ms (b) being defined to be depth equivalent to P-P time 796 ms (a). It is more difficult to determine depth-equivalent image coordinates using 2-D section views (c) and (d) of this same stratigraphy. Horizontal yellow lines across the section views define the positions of the time slices. The vertical sections are positioned along inline coordinate 2100. Channel features A through F on the map views are the same features labeled A through F on the vertical sections.

The three VSP wells shown in figure 1 are in three different states: Texas, Kansas and Colorado. The images show that at each well, each elastic wave mode produces a reflection sequence and a seismic facies character across the targeted Morrow interval that are different than what its companion wave modes produce.

The different stratal surfaces imaged by each wave mode form the basic architectural elements of elastic wavefield seismic stratigraphy.

### Map Views and Section Views Of P and S Stratigraphy

An example of horizontal time slices through P and S coherency volumes used to define depth-equivalent stratigraphy is illustrated as panels (a) and (b) of figure 2.

The P-P image shows a system of several intertwined channels. The P-SV image shows only one channel, but that channel tracks one of the P-P channels, leading to the conclusion that the P-P and P-SV data are imaging the same stratigraphy.

The channel architecture shown on these two images persists for a narrow vertical range of only two to three time samples in each image space.

Two important conclusions can be made:

- ✓ P-P image time 796 ms (a) is depth equivalent to P-SV image time 1,964 ms (b).
- ✓ P-P and P-SV modes often show significantly different sequence and facies pictures of the same stratigraphic interval.

This latter conclusion is a fundamental premise of elastic wavefield seismic stratigraphy. There is much yet to understand about rock and pore-fluid properties that cause P-P and P-SV images to differ as much as these examples.

Shown in panels (c) and (d) of figure 2 are vertical slices through these P and S data volumes along highlighted profile 2100. The horizontal yellow line across each vertical slice shows where the horizontal slice from the corresponding data volume was taken.

Using only vertical displays of P-P and P-SV data, an interpreter would have to have great courage to claim the two yellow lines are depth equivalent. In contrast, few interpreters seem to object to the statement that the two map views in panels (a) and (b) are depth equivalent.

These examples lead us to the conclusion that map views of thin stratigraphy can be a rather precise option for depth registering two elastic mode images, whereas depth registration is usually more difficult using vertical section views.

\* \* \*

The U.S. Department of Energy funded the research on elastic wavefield seismic stratigraphy that is partly reported here.

(Editor's note: I.J. Aluka is a professor of physical science with Prairie View A&M University, Prairie View, Texas.)

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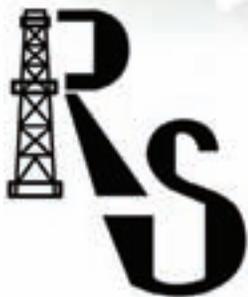
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*Shared Trait: Sense of Humor***'Legends' Share Words of Wisdom**

By LOUISE S. DURHAM  
*EXPLORER Correspondent*

More than 300 enthusiastic attendees turned out for the recent Geo-Legends dinner and panel discussion hosted by the Houston Geological Society – including 15 past presidents of HGS.

All were there to glean knowledge and insight from four “legendary” honorees who were assembled to present their perspectives on geology and oil exploration – past, present and future – and also talk about what can only be described as über-fascinating lives and careers.

This year's confab, spearheaded and moderated by HGS vice president Linda Sternbach, was the third event in the HGS Legends series, which kicked off in 2001. This year's honorees and their defining area of expertise were:

- ✓ Albert Bally (seismic interpretation of complex structure).
- ✓ Arnold Bouma (deepwater sands and depositional processes).
- ✓ Peter Rose (prospect and risk analysis).
- ✓ Peter Vail (sequence stratigraphy).

The common ground they share – other than geology itself – is that all worked for major oil companies during the 1960s and 1970s and later established new career paths as teachers and communicators.

“It's a tremendous honor to be included in this group,” said current AAPG President Rose. “I see this as a form of mentoring, which has sort of gone by the wayside as we've become



Four of a kind: Peter Rose, Arnold Bouma, Peter Vail and Albert Bally had plenty to talk about during the recent Geo-Legends dinner in Houston.

*Photo courtesy of Arthur Berman*

more mobile and people no longer stay with companies for a long time. At most companies, there aren't a lot of the older geoscientists on board.

“One of the things local societies can do is provide some of that framework that used to be found in the company for people to share their experiences,” Rose said.

While attendees at such an event might have a predetermined notion of

what they expect to hear, that's not always the case.

“When you start asking older people about lessons learned,” he said, “you can get some real surprises.”

“Once at dinner, I asked someone ‘Do you have any fundamental wisdom to pass along?’” Rose said. “He said ‘Yes, it's awful easy to borrow more money than you ought to.’”

“This was totally unexpected, but

what we learn from each other in these kind of things is often not geological,” Rose noted. “Much of the time it has to do with life or nothing geotechnical.”

**Just Do It**

A profound sense of humor appears to be a shared trait among seasoned experts who successfully negotiate the minefields that dot life and career.

Geologist Peter Vail recalled a time somewhat early on in his illustrious 30-year career at Exxon when he requested a transfer to the geophysical research group. To his chagrin he discovered after the fact the group was comprised of theoretical mathematicians and theoretical geophysicists.

“After about a month, the group leader called me into his office,” Vail said, “He told me I had no future at Exxon.”

The Geo-Legends audience likely was inspired to learn Vail has not been one to fritter away his days after assuming the role of Emeritus Professor at Rice University following a 15-year stint there.

“I retired but didn't have anything to do,” he said. “I figured if I had to live as long as the IRA actuarial table said I would, I should get busy. So I formed my own company with one of the goals to find oil and gas for my own account.”

Looking to the future, Vail thinks there are still a lot of good oil and gas

See **Legends**, page 36

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## Legends

from page 34

prospects available for drilling. He predicts if prices stay high, exploration will continue for quite some time.

When it comes to deciding on a geology career or not, Vail noted:

"Find out all you can about what you're interested in, and you'll know what to do. Then do it, and stick with it."

### 'A Heroic Activity'

Rose offered some career lessons learned that those new to the profession might want to keep on file to re-visit on a regular basis:

✓ Don't limit yourself; every opportunity offers you something.

✓ The geological perspective is essential to consideration and decisions as to long-range questions about mineral resources, environmental considerations and ground water supply. Geologists are best able to address the important elements of these questions and must step up to do so.

✓ Because of substantial and economically irreducible uncertainty, the geologist must first dream, imagine, intuit and approximate, applying an inexact science to the earth.

This personalizes plays and prospects, he said, and, when combined with ambition, makes most geoscientists optimistic.

"Prospecting is a heroic activity," he said.

### What's In a Name?

Geo-Legends honoree Arnold

Bouma, who now serves as adjunct professor at Texas A&M university, elicited hardy laughter from the audience when he mentioned the now well-known "namesake" sequence he identified dividing deepwater turbidites into intervals – a groundbreaking event in the annals of geology.

"I have no idea who called it the Bouma sequence," he said. "Everyone I met said 'Oh, you must be the son of Bouma,' because if something was named for you, you had to be six feet under."

Of all the speakers, Bouma, who was born and educated in the Netherlands, perhaps had the most unusual encounter with rocks that sparked an interest in geology.

"I got to know the most fantastic person with two years of schooling," Bouma said. "He was a grave digger, and I helped him, and what beautiful rocks filled with fossils – all Oligocene."

Like Bouma, Bally was born in the Netherlands, but he grew up in Italy during the time of Mussolini's regime.

While there's considerable angst today about all the easy finds having been made, Bally offered insight into just how long this mantra has been around. It dates at least as far back as the early days of his career in Italy.

"They said at that time the easy oil had been found," Bally said. "It's just that it wasn't easy for me, the guy doing the work during those hot summer months in Italy."

He noted in earlier times in the industry, new geologists were given substantial responsibility and the opportunity to perform and meet substantial challenges. They took responsibility for dry holes and learned from this.

"Management was simple and direct," Bally said. "The techniques of diffusing responsibility were yet to be discovered."

Bally, who is a Rice University Professor Emeritus, lamented that today's younger geoscientists spend most of their time looking at a computer screen and minimal time in the field

studying the actual rocks. This is, in fact, an issue beginning to concern many in the industry.

"They live so much in the virtual world," Bally said. "This may be the way of the future and may lead to progress, but it will attract a different breed of people to geoscience."

Bally cited results of a recent survey regarding skills expected by industry. Computer skills and workstations ranked at the top, leadership was at the lowest level of "soft skills," and international living was even considered to be a soft "skill."

"I believe the survey is correct," Bally said, "and I wonder if the industry has lost its understanding of the role of the geoscientist."

### Wanted: More Geoscientists

During the Q&A session following the presentations, Bouma was blunt about where the new big ideas in geological research will originate.

"We know a lot, but there's still a lot we don't understand," he noted. "One thing to make progress is not forget geophysics and geochemistry but go back also to the rock and find what we can do with it, what does it mean," Bouma said. "It won't be that the computer tells us what it means – that's bull. It just goes fast, and management likes it."

Anyone contemplating a career in geology will be encouraged by Bouma's upbeat take on the future.

"I'm convinced geology will be a very good direction for the next 10 and very likely the next 20 years," he said. "There's very likely more oil and gas than we realize, but it becomes more difficult and we need people: geologists, geophysicists." □

## Registration Open for London APPEX

Regular and online registration is now available for the sixth APPEX London Prospect and Property Exposition, to be held March 6-9.

This year's event will once again offer a superb exhibition composed of upstream opportunities, coupled with a conference program showcasing the latest in UK and global industry activities and hydrocarbon potential – all presented in a true business atmosphere.

The conference will be held at the IBIS Hotel, Earl's Court in West

Brompton, London – the third year the conference has been held at the site.

APPEX London is operated by AAPG with endorsement from the Geological Society of London, the Energy Institute, the International Association of Oil and Gas Producers and the UK Department of Trade and Industry. IHS is the industry sponsor for the APPEX Global Perspectives Forum.

Updated forum information – including exhibition and registration details – are available on the AAPG Web site at [www.aapg.org](http://www.aapg.org). □

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- ◆ Each half-day session begins with keynote talks by industry experts, after which participants convene at the poster booths for in-depth dialogue with presenters
- ◆ An opening reception Sunday will be held overlooking the harbor of Palma, Mallorca's capital, and an all-conference excursion to outcrops, followed by a rustic reception with typical Balearic food and music, rounds out the second full day
- ◆ You may also elect to participate in a spectacular 4-day post-conference field trip exploring the architecture and internal heterogeneities of depositional facies in two different types of carbonate platforms on Mallorca and its sister island, Menorca

On-line registration is open 17 February–19 April. Qualify for a discount if you pre-register before 19 April. To register and make hotel reservations, go to [www.aapg.org/mallorca](http://www.aapg.org/mallorca) and follow the links. Questions? E-mail [info@gemworldevents.com](mailto:info@gemworldevents.com).

REPSOL, Shell, Statoil and SAGEX are heightening their profile through sponsorship; is your company interested? Opportunities are still available. For details, e-mail Bruce Lemmon at [bruce@gemworldevents.com](mailto:bruce@gemworldevents.com). You will also find an on-line information request form at [www.aapg.org/mallorca](http://www.aapg.org/mallorca).



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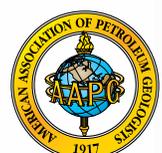


Image provided by Dhahran Geoscience Society

## WashingtonWATCH

## AAPG Is Pursuing Role in Energy Act

By DON JUCKETT

Washington, D.C., from Thanksgiving through the new year usually takes on the characteristics of a sleepy tourist town. This year, however, has been different. With new energy legislation, high energy prices and a focus on the aftermath of hurricanes Katrina and Rita in the Gulf of Mexico, energy is an active topic in Congress and in the executive branch.

\* \* \*

In early August, President Bush signed the Energy Policy Act of 2005 into law. This is the first comprehensive update of United States energy policy legislation in more than 12 years. At nearly 2,000 pages, the act contains many provisions impacting AAPG's members.

Efforts on the part of federal agencies to implement the provisions of this law have begun. As professionals, business managers and as citizens, AAPG members will be impacted and need to take an active role in ensuring that implementation of this law enhances clean and efficient global energy supply.

Among the act's provisions is unprecedented funding for technology initiatives for the oil and natural gas industry. From OCS Royalty revenues, the act provides appropriations for \$50 million annually, for 10 years, to fund technology development in resource

AAPG's newly created Geoscience and Energy Office-DC (GEO-DC), which officially opened on Dec. 1, 2005, has begun the process of addressing some issues at the national level on behalf of the Association members. It has enjoyed some early success.

There will be many opportunities for the Association to make its presence felt in Washington – and in turn to benefit from its involvement. AAPG's reputation as an apolitical, highly objective professional organization is known and respected in the Washington

environment. The GEO-DC office can identify, frame and present opportunities.

However, without the active involvement of the membership, the office becomes just so much window dressing. It is therefore incumbent on this office to work to maintain an informed and engaged membership.

The GEO-DC office serves you, the members. Without your input and involvement the Association's resources are not as well used.

I can be contacted at [djuckett@aapg.org](mailto:djuckett@aapg.org), (703) 575-8293.

– DON JUCKETT

recovery in ultra-deep water, and recovery of unconventional natural gas and other petroleum resources including technology challenges for small producers.

Ongoing policy direction for this initiative will be provided through two advisory committees to the secretary of energy. AAPG has positioned itself to gain appointments to each of those committees.

Under one section of the act, the U.S. Department of Energy hosted a day-and-a-half meeting in response to the legislation requirement to update Congress on the 10-year perspective for U.S. natural gas supply and demand. Predominant supply side themes – from the approximately 90

participants – focused on access to prospective federal acreage, improving the efficiency of federal lands permitting and concern about the supply of trained work force (for field operations as well as geoscience professionals).

The central theme for the meeting was provided by an update of the 2003 National Petroleum Council's "Balancing Natural Gas Policy – Fueling the Demands of a Growing Economy." Those updates can be found on DOE's Web site at [http://fossil.energy.gov/news/techlines/2005/tl\\_natgas\\_comments.html](http://fossil.energy.gov/news/techlines/2005/tl_natgas_comments.html).

Other opportunities exist to weigh in on implementation of the provisions of the act. Some of those include:

✓ Royalty incentives for natural gas production in the Gulf of Mexico – both deep wells in shallow water and deepwater wells.

✓ Provisions to expedite and streamline federal permitting processes, including additional funding to support the efforts.

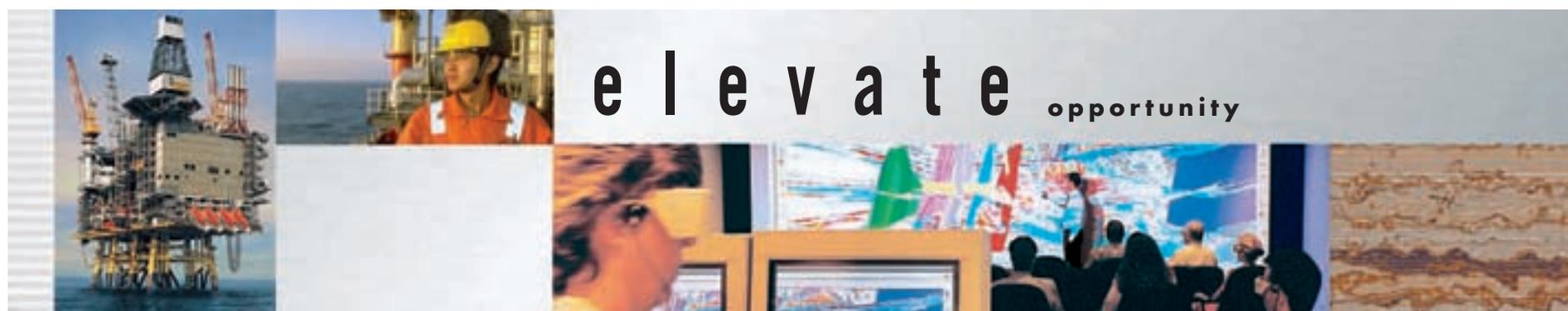
✓ A comprehensive inventory of oil and natural gas resources in the U.S. OCS resource estimates on federal onshore, together with identification of impediments to development.

✓ Studies on several key issues in coalbed methane development.

\* \* \*

In early October, Secretary of Energy Samuel Bodman tasked the National Petroleum Council with a new study on global oil and natural gas supply. In his request, the secretary posed key questions concerning what the future holds for global oil and natural gas supply, and the industry's ability to provide incremental oil and natural gas supplies in a timely manner and at costs to meet future demand without jeopardizing economic growth.

He further asks the council to recommend energy management strategies to the United States that will ensure the greatest economic stability and prosperity. □



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## 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).*

### 2006 U.S. Meetings

\* Feb. 10-12, AAPG Leadership Conference, Galveston, Texas.

April 9-12, AAPG Annual Convention, Houston.

May 1-4, Offshore Technology Conference, Houston.

\* May 7-10, Pacific Section, annual meeting, Anchorage, Alaska.

May 14-16, Southwest Section, annual meeting, San Angelo, Texas.

\* June 10-13, Rocky Mountain Section, annual meeting, Billings, Mont.

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

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 26-June 1, Canadian Society of Petroleum Geologists, annual meeting, Calgary, Canada.

\* June 2-5, European Association of Geoscientists and Engineers, annual meeting, Vienna, Austria.

\* Nov. 5-8, AAPG International Conference and Exhibition, Perth, Australia.

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

### 2007 U.S. Meetings

\* April 1-4, AAPG Annual Convention, Long Beach, Calif.

\* April 30-May 3, Offshore Technology Conference, Houston.

\* Sept. 9-11, Mid-Continent Section, annual meeting, Wichita, Kan.

\* Sept. 23-28, Society of Exploration Geophysicists, annual meeting, San Antonio.

\* Sept. 30-Oct. 3, Society of Petroleum Engineers, annual meeting, New Orleans.

\* Oct. 6-9, Rocky Mountain Section, annual meeting, Snowbird, Utah.

\* Oct. 9-14, AAPG Foundation Trustee Associates, annual meeting, Maui, Hawaii. □

## IN MEMORY

Richard Earl Anderson (EM '61)  
Las Vegas

Donald Vernon Bigelow, 87  
Oklahoma City, Nov. 10, 2005

Neal Allen Carter, 66  
Slidell, La., Nov. 26, 2005

Andrew Lee Diehl (AC '50)  
Oakhurst, Calif.

William Thomas Gans, 61  
Midland, Texas, April 4, 2005

Richard Eugene Heffner, 76  
Spring, Texas, Sept. 2, 2004

Mark E. Hoel, 46  
Tomball, Texas, July 2005

Anthony E.L. Morris, 84  
Laguna Beach, Calif.  
June 16, 2005

Robert Vernon Peppard, 78  
Plano, Texas, June 2005

Dallas Odell Peterson, 79  
Saint George, Utah  
December 2004

James Robert Price, 63  
Littleton, Colo., Nov. 25, 2005

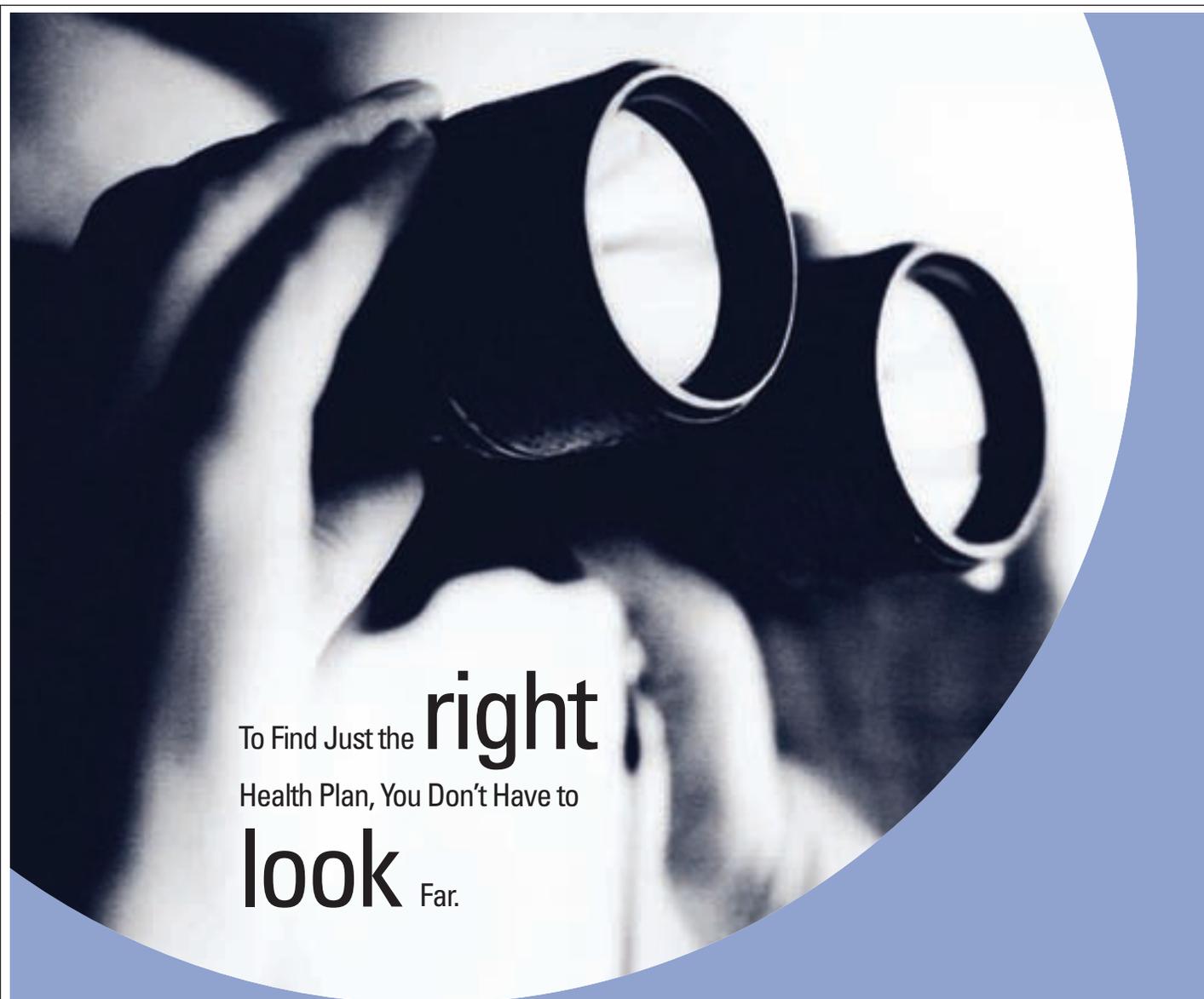
James Donald Weir, 90  
Calgary, Canada, Nov. 3, 2005

\* \* \*

AAPG member John Roy Melton, 74, of Dallas, was erroneously included in the "In Memory" column in the January EXPLORER.

AAPG regrets the error.

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



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## 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 was provided by Joan Barminski, president of AAPG's Pacific Section.)*

This year's AAPG Section meeting schedule starts right after the convention in Houston – and the first one is about as far away from Texas as you can get in the United States.

The Pacific Section meeting will be held May 8-10 in Anchorage, Alaska, held jointly with the Geological Society of America's Cordilleran Section and the Society of Petroleum Engineers' Western Region.

"North to Alaska: Geoscience, Technology and Natural Resources" is the meeting theme, which will be examined with papers, posters, field trips, workshops, short courses and special events that take advantage of the geologic setting.

The keynote address, presented by Henry Posamentier of Anadarko Petroleum, will be on "3-D Seismic Expression of Deep Water Depositional Elements: Reducing Risk of Lithology

Prediction."

Technical sessions will range from "Petroleum Geology of Northern Alaska and the Brooks Range," to the issues of rural energy in Alaska. You also can opt to hear the latest thinking on the "Geology of the Circum-Arctic," "Active Tectonics of the Northern Cordillera" and "Late Paleozoic-Early Mesozoic Paleogeography of Northern Alaska."

Volcano hazards and monitoring also will be addressed, along with "Geoscience Education and Public Outreach in Alaska – Unique Problems, Unique Solutions," plus a discussion of Arctic gas resources.

And since no visit to Alaska is complete without sampling the region's amazing geology, the following field trips are offered:

- ✓ Chugach Accretionary Prism and Resurrection Bay Ophiolite.
  - ✓ Late Mesozoic and Cenozoic Forearc Basins of the Matanuska Valley.
  - ✓ Prince William Sound Tidewater Glacier Tour (boat trip).
  - ✓ Denali National Park: Mesozoic Marine and Cenozoic Nonmarine Basins, Tertiary Volcanics and the Modern Denali Fault.
  - ✓ Kuparuk River Oil Field Tour, North Slope, Alaska.
  - ✓ Quaternary Climate Change in Southern Alaska: The Record from Glaciers, Dust, Dunes and Dirt.
  - ✓ Anchorage 1964 earthquake tour.
- Detailed information can be found online at <http://anchorage2006.com>. Online registration is available now through April 1. □

## AAPG Meeting In Paris A 'Big Step' for Geologists

*(Editor's note: This article appeared previously in the AAPG Delegate's Voice.)*

By JEAN-MARIE MASSET  
General Chair – Paris 2005

Despite some pre-convention concerns, the 2005 International AAPG Conference and Exhibition in Paris, France, was a great success. The organizing committee and AAPG did a great job in having everything ready for the success (congratulations to all of them).

Even if conciliating positions was not always an easy task, Pete Rose did a fantastic job understanding French positions and translating them in American language (we all know that this cannot be reached on all subjects). He definitely is a great AAPG president (ready for the U.N.?).

Allow me to illuminate some of the major highlights of the meeting:

1. Second best attendance ever for an AAPG international meeting (can we compete with Rio?).
2. A great opening session with a French energy minister delivering a clear and motivating message to the attendees.
3. A management forum that was honored by the presence of a number of high-level E&P executives (thanks to Pinar Yilmaz and Alain-Yves Huc).
4. A technical program that was enlarged to include highly successful new theme sessions such as 3-D/4-D, heavy oil and EOR (thanks

to Christophe Mercadier and Bernard Colletta).

5. Owing to a prime location in the exhibition hall, a very-well attended poster session (thanks to Keith Gerdes and Jean-Jacques Jarrige).

6. A great field trip to the "Anot sandstone" (thank you Alain(s)).

7. Active participation of students who are the future of our industry; I have no doubt that they will be our ambassadors to attract the younger generation and will help change our industry's image. In addition, the possibility of AAPG granting two scholarships for students in ENSPM in 2006 would be greatly appreciated.

8. A fantastic "point d'orgue:" the AAPG VIP event in the Louvre. Instead of glancing at Mona Lisa, participants had the chance of their life to stare at her (as long as they could stand it). All could check that the body in the next room had been removed (see D. Brown).

9. The friendship of the French people was the last discovery made by some AAPG geologists who promised to come back if another conference is to be held in Paris.

So, yes, definitely Paris was the place where the entire petroleum geologists' community met.

And, as you may know, "Armstrong" is a famous name in France, so allow me to paraphrase the historic words from a famous Armstrong: "A big step for the petroleum geologists and, maybe, a small step for humanity." □



**WWW.UPDATE**

# Online Calendar In Members Only

By JANET BRISTER  
AAPG Web Site Editor

We have a new calendar for you, and it's so nice and clean. Pristine, even.

Why? Because it's time to plan, and we can help make that task easy. Fun. Go ahead, pencil in training, meetings, vacations, paydays.

You can let the AAPG Web site give you a hand.

For you we have your basic perpetual calendar with all AAPG-sponsored meetings and training opportunities highlighted and linked to the complete details about these events.

In fact, while you're reviewing these dates you may as well register for the meetings or courses you want to attend. You can do that, too. After all, most courses and seminars have a limit for attendance, so while you're filling in your calendar go ahead and save time by registering now.

And not just time – many events have tiered pricing, so signing up early can actually save you money (see page 5).

Registering online is secure, safe and simple. However, do allow yourself plenty of time to complete the process so you can carefully make your selections and not feel rushed.

Before you register be sure you have your membership card and your payment of choice handy. This will help you smoothly complete your transactions.

Remember to put them away when you're finished, too!

### Firewall Update

Those using Norton Firewall computer security will need to visit the Members Only section of our Web site, because we have new instructions there for configuring the firewall.

This became necessary because AAPG brought all of Datapages services "in house." The servers changed but the

content didn't – sort of. The content continues to grow and expand as data is added constantly. But, because of the switch some disruption of service might happen for those using security software.

When you log in you'll see access notes and instructions regarding Norton Firewall. Just take a few minutes to read and incorporate these configurations into your own system.

Of course, if you have no access problems, you should ignore the notes and just enjoy the upgraded service.

### What's Your Profile?

Speaking of the Members Only section – have you ever reviewed your profile there?

This would help, because when AAPG switched data management tools we had a small conversion problem. For instance, until the switch we only retained birth year for our members. Now we can keep the complete birth date.

By default all birthdates were saved as January 1 of the birth year.

Be sure to update other information as well.

Editing your personal profile is so simple.

Once you've logged into the Members Only area you simply click on the "Profile" text near the top of the page.

Here you review the data. If there are any corrections needed find the series of gray buttons just after the red "American Association of Petroleum Geologists" words.

Click on the small gray "edit" button, change the necessary information in the fields available, then click the small "submit" gray button at either the top or bottom of the page, on the far right.

Instantly your information will be changed.

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# PROFESSIONAL NEWS BRIEFS

**Jeff Aldrich**, to chief geologist, PetroSA, Cape Town, South Africa. Previously consultant, PetroSA, Cape Town, South Africa.

**Brian C. Ball**, to senior exploration geologist, David H. Arrington Oil and Gas, Midland, Texas. Previously geologist, Chevron, Midland, Texas.

**Phillip E. Byrd**, to senior geologist, Cimarex Energy, Tulsa. Previously geologist, Questar, Tulsa.

**Chris Chaffin**, to explorationist, Penn Virginia Oil & Gas, Houston. Previously staff geologist, Hilcorp Energy, Houston.

**Michael D. Cochran** has retired as executive vice president-exploration from Endeavour International, Houston. Cochran will remain in a consulting capacity during a transition period.

**Rudi de Zoeten**, to senior geologist, Kosmos Energy, Dallas. Previously advising geologist, Unocal/Chevron, Sugar Land, Texas.

**Robin Dean**, to geological manager, Gasco Energy, Englewood, Colo. Previously senior geologist, Gasco Energy, Englewood, Colo.

**Ryan Fairfield**, to senior geophysicist, Avalon Exploration, Tulsa. Previously senior geophysicist, ConocoPhillips, Houston.

**George W. Grunau**, to vice president-exploration, United Resources, Austin, Texas. Previously staff explorationist,

Vintage Petroleum, Tulsa.

**Ben D. Hare**, to president/chief operating officer, Panhandle Royalty, Oklahoma City. Previously vice president/chief operating officer, Panhandle Royalty, Oklahoma City.

**Dean Hennings**, to director-exploration technology, Kerr McGee Oil & Gas, Houston. Previously exploration license manager, Kerr McGee North Sea (UK), Aberdeen, Scotland.

**Mike Henry**, to division engineer, manager-geology and subsidence, Long Beach Gas & Oil, Long Beach, Calif. Previously senior geologist, Long Beach Oil & Gas, Long Beach, Calif.

**Gail Hildreth**, to chief of staff-Oregon Senate office of Douglas Whitsett, Salem, Ore. Also owner of Sunset Ridge Farms (equestrian division), Klamath Falls, Ore.

**Richard B. "Dick" Hill**, to geologist, Whiting Petroleum, Midland, Texas. Previously geologist, Chevron, Midland, Texas.

**Wade Hutchings**, to team leader-Angola Block 32 exploration, Marathon Oil, Houston. Previously team leader-Gulf of Mexico regional group, Marathon Oil, Houston.

**Idar A. Kjolraug**, to exploration manager, Endeavour Energy Norge AS, Asker, Norway. Previously chief geologist, Fugro Multi Client Services, Oslo, Norway.

**Andy Lydyard**, to president and chief executive officer, Comet Ridge USA, Denver. Previously managing director, Comet Ridge Ltd., Perth, Australia.

**Carlos Macellari**, to manager of geology and interpretation, Repsol YPF, Madrid, Spain. Previously vice president-exploration and development, Hocol SA, Bogota, Colombia.

**Louis J. Mazzullo**, to exploration and development manager (U.S.), Mediterranean Resources, Austin, Texas. Previously petroleum geological consultant, Louis Mazzullo Inc., Albuquerque, N.M.

**Robert K. Merrill** has formed Catheart Energy, Sugar Land, Texas. Previously technical manager of geology, Samson International, Houston.

**Kehinde "Kenny" Olafiranye**, to earth scientist, Chevron Nigeria, Lagos, Nigeria. Previously junior geoscientist/intern, Petro-Canada UK, London, England.

**Dave Percy**, to senior geologist, Cimarex Energy, Midland, Texas. Previously consultant geologist, Midland, Texas.

**David J. Pertl**, to geologist, Mewbourne Oil, Amarillo, Texas. Previously geologist, Riata Energy, Amarillo, Texas.

**Tom Plawman**, to geophysicist, BP, Anchorage, Alaska. Previously consultant, Petrotechnical Resources

Alaska, Anchorage, Alaska.

**Laura L. Sarle**, to geologist-onshore Gulf Coast, BP America, Houston. Previously geologist, PetroHunt, Houston.

**Joseph Schwab**, to project geologist, EOG Resources, Midland, Texas. Previously geologist, Chevron, Midland, Texas.

**Tony B. Soelistyo**, to Sarawak exploration geologist, Murphy Sarawak Oil, Kuala Lumpur, Malaysia. Previously Sadewa development geologist, Unocal Indonesia, Balikpapan, Indonesia.

**Bob Spang**, to staff geologist, Amerada Hess, Houston. Previously senior geologist, Unocal, Sugar Land, Texas.

**Douglas Wyatt**, to consulting scientist, Washington Group International, Aiken, S.C. Previously senior scientist/technical adviser, EG&G/National Energy Technology Lab, Morgantown, W.Va.

*(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, smooore@aapg.org; or submit directly from the AAPG Web site, www.aapg.org/explorer/pnb\_forms.cfm.)*

## REGISTER TODAY

<http://appex.aapg.org>

### SCHEDULE OF EVENTS

#### Tuesday, 7 March

Exhibition  
Experts Panel: *Perspectives on International E&P Business Dynamics*  
Keynote: OPEC – E&P Spending  
Investment Opportunity Presentations and Lunch  
Europe Session  
End-of-Day Reception

#### Wednesday, 8 March

Exhibition  
Forum: *Global Scramble for O&G Resources Middle East – Eurasia Panel*  
Forum: *Latin America Opportunities*  
Investment Opportunity Presentation and Lunch  
Finance Forum  
End-of-Day Reception

#### Thursday, 9 March

Exhibition  
Forum: *North African Panel*  
Forum: *Sub-Saharan Panel*  
Investment Opportunity Presentation and Lunch  
End-of-Day Reception



March 6-9, 2006

Ibis Hotel • Earls Court, London

Visit <http://appex.aapg.org>  
for registration, sponsorship and  
exhibit information



## Pennsylvanian Footprints in the Black Warrior Basin of Alabama

edited by

Ronald J. Buta – Andrew K. Rindsberg – David C. Kopaska-Merkel

### Alabama Paleontological Society Monograph No. 1

In 1999, a science teacher scouted a surface coal mine in north-central Alabama for his class, and found a treasure trove of vertebrate trackways that had been imprinted on a tidal mud flat 310 million years before. The Union Chapel Mine is now recognized as the world's best Carboniferous tracksite. This volume — an unusual collaboration between amateurs and professionals — tells not only about the footprints and associated fossils, but also about the unprecedented effort to rescue the site from reclamation.

#### Highlights

- Descriptions of trace fossils and fossil plants
- Photographic atlases of hundreds of specimens
- Earliest evidence of group behavior in fish and amphibians
- Global context and significance of the site
- Written for the educated layperson

\$49 plus \$4 shipping and handling to destinations in the USA

For ordering information, see [www.alabamapaleo.org](http://www.alabamapaleo.org)

# EDUCATION UPDATE

## Online Education Courses

- Introduction to Geological Reservoir Characterization**  
Spring Semester 2006
- Technical Writing**  
10-week course; class begins second day of every month.
- Professional English**  
Class begins on demand
- How to Find Oil and Gas Information on the Internet**  
Class begins on demand
- Environmental Issues in the Oil and Gas Industry**  
Class begins on demand

## 2006 SHORT COURSES

- Winter Education Conference**  
Feb. 6-10, Houston  
Courses are:  
Essentials of Subsurface Mapping (Feb. 6)  
Introduction to Computer Mapping (Feb. 7)  
Reservoir Engineering for Geologists (Feb. 6-7)  
Well Completions and Interventions (Feb. 6-7)  
Basic Openhole Log Interpretation (Feb. 6-7)  
Rock Properties of Tight Gas Sandstones (Feb. 8)  
Introduction to DSTs for Geologists (Feb. 8)  
Log Analysis of Shaly Sands (Feb. 8)  
Practical Mapping of Surfaces, Properties and Volumes for Reservoir Characterization (Feb. 8-10)  
Evaluation and Development of Unconventional Resource Plays (Feb. 9-10)  
Practical Wireline Tester Interpretation Workshop (Feb. 9-10)  
Integrated Exploration and Evaluation of Fractured Reservoirs (Feb. 9-10)

- E&P Methods and Technologies: Selection and Applications**  
April 7-9, Houston  
(with AAPG Annual Convention)

- Strategic Play Analysis**  
April 8-9, Houston  
(with AAPG Annual Convention)

- Basic Petroleum Geology for Non-Geologists**  
April 25-27, Houston  
Aug. 29-31, Dec. 5-7, TBA

- Geochemical Exploration for Oil & Gas: Strategies for Doubling Exploration Success While Halving its Cost**  
May 11-12, Houston

- Quantification of Risk – Petroleum Exploration and Production**  
June 6-9, Denver

- Practical Salt Tectonics**  
June 26-28, Dallas

- Application of Structural Geology in Prospecting in Thrusted and Extensional Terrain**  
July 31-Aug. 4, Jackson Hole, Wyo.

- Basic Well Log Analysis**  
Aug. 15-18, Austin, Texas

- Fall Education Conference on Deepwater Exploration**  
Includes:  
✓ Jurassic-Recent Subsurface Geology, Paleogeography and Regional Tectonics of the Gulf of Mexico and Caribbean Region  
✓ Interpretation of Three-Dimensional Seismic Data  
✓ Deepwater Sands – Integrated Stratigraphic Analysis  
✓ Pore Pressure Prediction in Practice  
✓ Risk Analysis of Deepwater Exploration Prospects

- Deepwater Salt Tectonics**  
Sept. 11-15, Houston

- Practical Mapping of Surfaces, Properties and Volumes for Reservoir Characterization**  
Sept. 30-Oct. 1, New Orleans  
(with SEG annual meeting)

## 2006 FIELD SEMINARS

### Carbonates

- Equatorial Carbonate Systems – Modern and Miocene Analogs for Carbonate Plays in SE Asia**  
May 14-20, Indonesia

- Complex Carbonate Reservoirs: The Relationship Between Facies and Fracturing**  
May 20-26, Italy

- Controls on Porosity Types and Controls in Carbonate Distributions**  
May 28 - June 2, Spain

- Sequence Stratigraphy and Reservoir Distribution in a Modern Carbonate Platform, Bahamas**  
June 12-17, Florida/Bahamas

### Clastics – Ancient

- Clastic Reservoir Facies and Sequence Stratigraphic Analysis of Alluvial Plain, Shoreface, Deltaic, and Shelf Depositional Systems**  
April 23-29, Utah

- Ancient Clastics: Book Cliffs and Canyonlands, Utah (formerly Foreland Basin Clastic Reservoirs, Book Cliffs, Utah)**  
May 15-23, Utah

- Predicting Clastic Reservoirs Using Applied Sequence Stratigraphy: Understanding the Fundamental Drivers of Basin Fill Architecture**  
June 5-11, Utah/Wyoming

- Sedimentology and Sequence Stratigraphic Response of Paralic Deposits to Changes in Accommodation: Predicting Reservoir Architecture, Book Cliffs, Utah**  
Sept. 21-28, Colorado/Utah

### Clastics – Modern

- Modern Deltas**  
Sept. 11-15, Louisiana

- Tectonics and Sedimentation**  
Exploration Potential, Tectonic Framework and Depositional Systems of Strike-Slip and Extensional Basins  
April 1-7, California

- Folding, Thrusting and Syntectonic Sedimentation: Perspectives from Classic Localities of the Central Pyrenees**  
June 12-16, Spain

- Fluvial to Turbidite Reservoir Systems of SE Asia: High Resolution Exploration and Development Applications from Outcrop to Subsurface**  
July 19-28, Malaysia/Brunei

- Fractures, Folds, and Faults in Thrusted Terrains: Sawtooth Range, Montana**  
Sept. 11-16, Montana

- Submarine Fan and Canyon Reservoirs, California**  
Oct. 2-7, California

### Geotours

- GeoTour to Trinidad and Tobago**  
April 26-May 2, West Indies

- Napa-Sonoma Wine Country GeoTour**  
June 10-14, California

- Lewis and Clark GeoTour: Marias River to Gates of the Mountains, Montana**  
Aug. 15-20, Montana □



**2006 Joint Meeting:**  
AAPG - Pacific Section  
GSA - Cordilleran Section  
SPE - Western Region

## North to Alaska: Geoscience, Technology, and Natural Resources

Anchorage, Alaska  
Technical Sessions May 8-10, 2006  
Theme Sessions, Workshops, Short Courses  
Brooks Range Orogen Symposium  
Pre- and Post-meeting Field Trips

Locally hosted by: Alaska Geological Society and Alaska Section, SPE  
Early registration deadline April 1, 2006  
For information or registration visit:  
<http://anchorage2006.com>



### NEW Short Course!!

**Geochemical Exploration for Oil and Gas: Strategies for Doubling Exploration Success while Halving its Cost**  
Date: May 11-12, 2006  
Location: Houston, Texas  
Tuition: \$700 AAPG members, \$800, non-members (increases to \$800/900 after 4/13/06), includes course notes and refreshments  
Content: 1.5 CEU  
Instructors: Detmar Schumacher, Geo-Microbial Technologies, Inc., Mora, NM, and Leonard LeSchack, Topaz Energy Exploration Ltd., Calgary, AB, Canada

**Who Should Attend**  
CEOs, VPs of exploration, exploration managers, investors and drilling fund managers and, of course, exploration and development geoscientists. This course is essential for anyone who needs to cost-effectively develop, evaluate, or fund prospects, or high-grade otherwise unexplored acreage. It will also be of interest to senior government officers concerned with enhancing domestic energy production and related environmental issues.

## MAYbe you need a MAY course with AAPG!!

### Field Seminars

<p><b>Equatorial Carbonate Systems - Modern and Miocene Analogs for Carbonate Plays in SE Asia</b> Leaders: Paul Orville, Petrex Asia Reservoir &amp; Stratigraphy Group, Kuala Lumpur, Malaysia; Robert K. Park, Kadeco Energy Co. Ltd., Jakarta, Indonesia Dates: May 14-20, 2006 Location: The trip will begin and end in Jakarta, Indonesia. Participants should plan to arrive for an evening welcoming reception at 18:00 on May 13 and plan their departure for the evening of May 20. Tuition: \$2,850 USD (increases to \$2,950 after 4/13/06), includes travel to/from the island resort of Pulau Putri, all meals on Pulau Putri, field refreshments, ground transportation to/from Bandung and night of May 13 hotel in Jakarta and 3 nights hotel in Bandung Limit: 20 Content: 4.2 CEU <b>Who Should Attend</b> Exploration and Development geologists, geophysicists, reservoir and production engineers, log analysts and exploration and development managers who want a thorough working knowledge of productive carbonate reservoir systems.</p>	<p><b>Complex Carbonate Reservoirs: The Relationship Between Facies and Fracturing</b> Leaders: Raffaele Di Cola, G.E. Plan Consulting, Ferrara, Italy Dates: May 20-26, 2006 Location: begins in Naples and ends in Pescara, Italy Tuition: \$2,650 USD (increases to \$2,750 after 4/07/06), includes guidebooks, transportation expenses during the field seminar and all meals during the course. Limit: 15 Content: 4.2 CEU <b>Who Should Attend</b> Petroleum/exploration geologists and geophysicists who are involved in the interpretation of carbonate sequences/reservoirs in sub-thrust and thrust belts settings; reservoir geologists and engineers that deal with the 3D characterization and distribution, at reservoir scale, of carbonate facies and fracture/faults.</p>
<p><b>Ancient Clastics: Book Cliffs and Canyonlands, Utah (formerly Foreland Basin Clastic Reservoirs, Book Cliffs, Utah)</b> Leader: John K. Baskley, Consulting Geologist, Indev/Hals, CO Dates: May 15-23, 2006 Location: Begins and ends in Moab, Utah Tuition: \$2,100 (increases to \$2,200 after 4/17/06), includes 4-wheel-drive transportation and course notes on CD Limit: 15 Content: 6.0 CEU <b>Who Should Attend</b> Exploration and production geologists, geophysicists, log analysts, engineers, and exploration and development managers who want a thorough working knowledge of clastic depositional systems directly associated with energy resources.</p>	<p><b>Controls On Porosity Types and Distribution in Carbonate Reservoirs</b> Leaders: Evin K. Prinsen, Kansas Geological Survey, Lawrence, KS; Robert H. Goñizalez, University of Kansas, Lawrence, KS; Mateu Esteban, Carbonates International, Mallorca, Spain Dates: May 28-June 2, 2006 Location: Almería Region, SE Spain, begins and ends in Las Negras, Spain; Fly from London/Barcelona/Madrid Tuition: \$2,500 USD, dependent on exchange rate (increases to \$2600 after 4/14/06), includes field transportation, all meals and lodging during trip, guidebook Limit: 15 Content: 4.8 CEU <b>Who Should Attend</b> Petroleum geologists, engineers, and geophysicists who are involved in interpreting carbonate sequences.</p>



For further information, please contact the AAPG Education Department  
Phone: 918-560-2650; Fax: 918-560-2678; e-mail: [educate@aapg.org](mailto:educate@aapg.org)  
Or log on to [www.aapg.org/education/index.cfm](http://www.aapg.org/education/index.cfm)

**FOUNDATION UPDATE****Foundation (General)**

Richard Adam  
Ariel D. Auffant  
Lee B. Backsen  
Richard Arthur Baile  
Gilbert Thomas Benson  
Bruce E. Bernard  
Richard S. Bishop  
*In memory of E.F. "Bud" Reid and Robert and Ramona Sneider*  
Louis C. Bortz  
Alexander G. Bray  
Herbert L. Brewer  
Joseph M. Brusio Jr.  
Alexander P. Bump  
Robert J. Bunge  
Dhreama R. Burford  
*In memory of Arthur E. Burford*  
Ray A. Burke  
Charles Byrer  
Joseph A. Canales  
Darren A. Chevis  
Kenneth W. Ciriacks  
Gertrude Obianuju Coker  
Edward J.L. Davies  
Raymond A. Donelick  
Joel S. Empie  
*In memory of J.R. Jackson Jr.*  
Paul David Evans  
George Eynon  
James Derek Fairhead  
William L. Fisher  
Thomas A. Fitzgerald  
Scott Alan Geauner  
Katherine Jessie Hall  
William Van Harlow Jr.  
David William Harris  
Sherod Alexander Harris  
Hyman Lee Harvard  
Zhiyong He  
Steward L. Henry  
Melvin James Hill  
*In memory of Ted L. Bear*  
Ronald Jay Hill  
Paul F. Hoffman  
Kevin B. Hopkins

John Hall Howard  
Dan Allen Hughes  
Kingdon R. Hughes  
Wilson Humphrey  
*In memory of Robert E. "Bob" Megill*  
John Douglas Jeffers  
Kerr-McGee Foundation Corp.  
Marie Kjolleberg  
Jon Brandon Koenig  
Robert C. Leibrock  
Chrystal Dawn Lemons  
John Ernest Lucken  
*In memory of John Buffington and Dennis Irwin*  
Stanley U. Madu  
James C. Matthews  
Gerard McGinn  
William Ballou Miller  
Clifton R. Naylor Jr.  
Richard A. Neumayer  
Leslie Owen Niemi  
Samuel H. Peppiatt  
Jerry T. Reece  
William Eddy Richardson Jr.  
Edward Carl Roy III  
Lee R. Russell  
Deborah K. Sacrey  
William Ray Scheidecker  
Greg Schoenborn  
Torsten Scholz  
Glenn Lincoln Shepherd  
*In honor of H.C. Jamison*  
Justin Smith  
Dennis M. Sparks  
Paul J. Szatkowski  
Allen Y. Tamura  
Nnaemeka F. Ukaigwe  
Michael R. Wisda  
*In memory of Robert E. "Bob" Megill*  
Jonathan P. Wonham  
George D. Woodruff Jr.  
Jane Woodward

**Awards Fund**  
*Teacher of the Year Award*  
Paul F. Hoffman

Five new endowments have been announced for the AAPG Foundation's Digital Product University Alumni Fund.

The new gifts, which endow access to students for the entire AAPG digital library, are:  
✓ From Marta Weeks, a subscription for the University of Wisconsin in memory of her late father-in-law, Lewis G. Weeks.  
✓ From Paul Strunk, a subscription for Kansas State University.  
✓ From Bruce Falkenstein, subscriptions for the University of Calgary and Oregon State University.  
✓ From Dan Smith, subscriptions for the University of Texas at Austin.

The Foundation's Digital Products University Alumni Fund allows alumni to provide, with a one-time gift or bequest of \$12,500, access for current students to AAPG's digital library – over 450,000

pages of information.

\* \* \*

In other Foundation news, the Grants-in-Aid Program recently received funding for two new Named Grants:

✓ Bill Barrett has provided funding for the Barrett Family Named Grant, which will provide \$500 annually to a geoscience graduate student at Kansas State University.

✓ Herbert and Shirley Davis have provided funding for an annual \$500 grant in their names for a geoscience graduate student at Oklahoma State University.

For information on these and other Foundation programs contact Rebecca Griffin (1-918-560-2644; rgriffin@aapg.org), or visit the Web site at foundation.aapg.org. □

**Continuing Education Fund**

Mavatikua Lubanzadio  
Frank V. Matute

**Digital Products Fund**

Virginia L. Riggert

**University of Wisconsin Alumni**

Marta S. Weeks  
*In memory of Lewis G. Weeks*

**Kansas State University Alumni**

Paul M. Strunk

**University of Illinois Alumni**

John W. Shelton  
*In honor of Jack C. Threet*

**Distinguished Lecture Fund**

Eric Anthony Foster

Brian R. Greenhalgh  
*In memory of Karl J. Schmid*

Salwa Mohd Nor  
William Otis Williams  
*In memory of Roy Alan Worrell*  
Donald L. Ziegler  
*In memory of E.F. "Bud" Reid*

**Eugene F. Reid Dibblee Fund**

Willis Reider Brown  
*In memory of E.F. "Bud" Reid*  
Jack C. Threet  
*In memory of E.F. "Bud" Reid*

**E.F. Reid Scouting Fund**  
(All in memory of E.F. "Bud" Reid)

Robert Bruce Ferguson  
Harold H. Sullwold  
Jack C. Threet

Eugene C. Tripp  
Vaughan Production Company

**Grants-in-Aid Fund**

Rebecca Griffin  
*In honor of Jack C. Threet, John Amoroso, James Gibbs, William Crain and William Fisher*  
Nedra Keller Hansen  
*In memory of Kenneth Keller*  
Olubiyi Ishola  
David McFall  
*In memory of Hubert Hays Jr.*

**Gustavus E. Archie Memorial Grant**

Marlan W. Downey  
*In memory of Robert M. Sneider*  
Lynne Feldkamp  
John T. Kulha  
*In memory of Robert M.*

*Sneider*  
Virginia L. Riggert  
*In memory of Robert M. Sneider*

Lee Sager  
*In memory of Robert M. and Ramona Sneider*  
John W. Shelton  
*In memory of Robert M. and Ramona Sneider*  
David C. Tarshes  
*In memory of Robert M. Sneider*  
John (Jack) B. Thomas  
*In memory of Robert M. and Ramona Sneider*

**Gustavus E. Archie Memorial International Grant**  
(The following are all in memory of Robert M. and Ramona Sneider)

continued on next page

**Characterize Your Formation****Shale Gas  
Coalbed Methane  
Tight Gas Sands**

**Intertek Westport Technology Center's lab provides unconventional gas services:**



- shale permeability for tight rock
- adsorption isotherms
- source rock evaluation
- calculating gas in place

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**SEG New Orleans 2006  
Call for Papers**

SEG International Exposition and Seventy-Sixth Annual Meeting  
New Orleans, Louisiana • 1-6 October 2006

In 2006, SEG will return to historic New Orleans, located on the mighty Mississippi River, gateway to the Gulf of Mexico, and home to jazz, Cajun cuisine, and Mardi Gras. Do not miss this opportunity to present your latest techniques, research results, and case histories at what promises to be an extremely well attended and exciting meeting of geoscientists from around the world.

Technical Program Chairman Rocky Detomo and his committee officially invite you to submit your contributions for oral and poster presentations at the upcoming SEG International Exposition and Seventy-Sixth Annual Meeting. High-quality contributions from all geophysical and related disciplines and from every part of the world are welcome. Papers illustrating practical application of emerging techniques and new work that challenges technical limits and old paradigms are especially desired and will receive preferential consideration.

Because of the popular location, it is likely that both attendance and technical paper and poster submissions will be very high. Therefore, it is the technical committee's intent that the number of technical sessions will be limited and that only the best contributions representing each component of the discipline spectrum will be accepted. Submissions must conform to standard SEG formats and must be written in clear English. Submissions tendered after the deadline or with formatting problems, unclear text or figures, or deliberate commercialism may be rejected. The committee especially encourages submissions for poster presentations.

**Abstract kits will be available online after 14 December 2005. Hard copies can be requested from the SEG Business Office.**

**DEADLINE FOR ABSTRACT SUBMISSION IS 12 APRIL 2006, AT 5 P.M. U. S. CENTRAL TIME.**

Rocky Detomo, Technical Program Chairman  
SEG New Orleans 2006 International Exposition and Seventy-Sixth Annual Meeting  
P. O. Box 702740, Tulsa, OK 74170-2740 USA  
callforpapers@seg.org

**www.seg.org**



# MEMBERSHIP AND CERTIFICATION

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

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

## For Active Membership

### Alaska

Chapman, Mark Anthony, self-employed, Hoover (reinstate)

### Arizona

Pope, Alasdair Jeremy, Rio Tinto Exploration, Oro Valley (R. McClay, W.R. Jamison, D.H. Johnston)

### Montana

Lageson, David Rodney, Montana State University, Bozeman (reinstate)

### Texas

DeGraff, James Michael, ExxonMobil Upstream Research Co., Houston (J.H. Anderson, D.G. Carpenter, J.R. Markello)

### Utah

Mancini, Anthony Joseph, retired, Layton (reinstate)

### West Virginia

Dolezal, Darin Anthony, Dominion Exploration, Jane Lew (R.E. Goings, C.A. Edmonds, K.R. Bruner)

### Egypt

Mostafa, Alaa El-Din Ramadan, Alexandria University, Alexandria (A.N. Shahin, K.K. Bissada, M.A. Younes)

### France

du Fornel, Elodie, Gaz De France, Saint Denis La Plaine (P.C. Dekker, P. Imbert, A.G. Mascle)

### Italy

Drake, Matthew Elsworthy, Eni E&P Milan, Milan (A.J. Hook, L.M. Davidson, E. Vetri)

### Norway

Gyllenhammar, Carl Fredrik, Dong Norge AS, Stavanger (J.B. Thomas, J.B. Blankenship, R.D. Fritz); Jahren, Jens Sigurd, University of Oslo, Oslo (K.O. Bjorlykke, J.P. Nystuen, D.A. Karlsen); Karlsen, Dag Arild, University of Oslo, Oslo (J.P. Nystuen, K.O. Bjorlykke, J.I. Faceide)

### Peru

Grosso, Santiago Andres, Petrobras Energia Peru, Lima (J.A.B. Daudt, C.A. Ardiles, K.H. Valencia Cardenas)

### Turkey

Atalay, Mesut, Yerbil Ltd., Ankara (reinstate)

### Vietnam

Tran, Nhuan Quang, Chevron International E&P-Unocal Vietnam, Ho Chi Minh (G.J. Solomon, L.D. Phan, V.N. Le)

## Certification

The following is a candidate for certification by the Division of Professional Affairs.

### Petroleum Geologist

#### Australia

Beckett, David, Santos Ltd., South Australia (Geological Society of London)

continued from previous page

Loretto Ann Drake  
Lorraine Felts  
Girl Scout Troop 5900  
Dale W. and Audrey J. Hardwick  
Kathleen J. Hawkins  
Barry and Barb Lindsay  
Bud and Dorothy Meyer  
Francis Meyer  
Charles L. and Linda Reid  
John T. Smith  
Robert Weeden

*Richard W. Beardsley Named Grant*  
James McDonald

*Fred A. and Jean Dix Named Grant*  
Vicki L. Beighle, James E. Briggs, Bryan Haws, Anne Payne and Donna Riggs  
*In honor of David Lange*  
John (Jack) B. Thomas  
*In memory of Fred A. Dix Jr.*  
Jack C. Threet  
*In memory of E.F. "Bud" Reid*

*Norman H. Foster Memorial Grant*  
John Ernest Lucken  
*In memory of Norman Foster*

*Jean G. Funkhouser Memorial Fund*  
Gerard J. Demaison  
*In memory of Jean G. Funkhouser*

*Robert K. Goldhammer Memorial Grant*  
Jan Henk Van Konijnenburg

*Barrett Family Named Grant*  
William J. Barrett

*R.E. McAdams Memorial Grant*  
Jack C. Threet  
*In memory of E.F. "Bud" Reid*

*Ohio Geological Society Named Grant*  
James McDonald

*Weimer Family Named Grant*  
Robert J. Weimer

### K-12 Fund

Bruce S. Appelbaum  
David A. Cagle  
*In memory of William Craig Marshall C. and Jane Crouch*  
George C. Hale  
Paul A. Harrington  
Paul F. Hoffman  
Gene E. Richards  
*In memory of E.T. Hill*  
Jack C. Threet  
*In memory of E.F. "Bud" Reid*  
William O. Williams  
*In memory of George Wesley*

**Public Service Endowment Fund**  
James A. Gibbs  
*In memory of Robert Lamb*

*Jack C. and Catherine I. Threet Named Fund*  
Jack C. Threet

**Pratt BULLETIN Fund**  
Virginia L. Riggert □

## Shale Gas: Source Rocks as Reservoirs

[www.humble-inc/shgas.html](http://www.humble-inc/shgas.html)

March 29-31, 2006 • Golden, Colorado • Seminar Leader: Dr. Michael R. Walls

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## READERS' FORUM

### A Global View?

President Rose's column in the January EXPLORER makes a strong case that "internationalizing" the AAPG is good for the organization. I do not dispute that. But is it good for the current members?

Aren't they the same thing, you ask? Not if the president's views fail to reflect the views of the membership.

A disconnect between the officers of an organization and its members is not unknown. President Rose urges members to contact their representatives in the House of Delegates and express their opinion on the direction he is taking the AAPG. I endorse this request entirely. But the problem is that most members will not do so (do you even know who your delegates are?) – and even if you do contact your delegates, will they vote your opinion or the opinion of the president?

A minority of the membership could end up determining the future of the AAPG against the wishes of the majority.

I suggest a ballot distributed by mail, asking the entire membership to vote directly on the future of the organization.

President Rose says: "We need to decide what we want our organization to be in the 21st century – a group of professional, mostly North American geoscientists, or a truly international community of professional geoscientists." My vote is for remaining a North American-centered organization where international geoscientists are welcome.

The AAPG should serve the current membership, not serve itself by expansion.

Has the AAPG helped you through one of the industry downturns by reducing your membership fees when you lost your job? How about providing a strong lobby in Congress? Even with a Republican

*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.*

president the administration has not been able to open ANWR to exploration. Has the AAPG been as active as they should have been in that fight? That is something that would really help the members by creating new jobs.

Have they actively opposed the purchase of U.S. oil companies by foreign oil companies, which result in lost jobs at home and lowers our national security?

Do the articles in the AAPG BULLETIN discuss the areas you are exploring or developing? The internationalization of the AAPG has been going on for many years – most obviously in the articles that appear in the BULLETIN. More and more of them deal with countries other than the USA, Canada and Mexico (the first "A" in the AAPG). Look at the table of contents of any recent issue of the BULLETIN and you will see that already there are more international articles than American ones.

President Rose talks about reducing the membership fees for foreign members. Why not reduce them for American members? For example, I would be willing to go entirely electronic with the BULLETIN (no paper copy or CD) and only have access to it online if that would reduce my membership fee. I am retired but still do some geological consulting, and frankly I would not even subscribe to the BULLETIN if I did not have to be an AAPG member for certain insurance benefits (and even there the high cost of membership almost offsets the cost savings on the insurance).

By the way, were you able to get health insurance through the AAPG at a reasonable cost with your pre-existing medical condition?

Is the AAPG working for you? Maybe we should fix what we have before we change who we are.

Do you want a WAPS (World Association of Petroleum Geologists) or an effective AAPG (American Association of Petroleum Geologists)?

Paul Roales  
Tulsa

### Rose Responds

*(Editor's note: The following is AAPG President Pete Rose's response to the previous letter.)*

I will address Mr. Roales' concerns fully in my next President's Column in the March EXPLORER. In the meantime, please be aware that all Active members will be able to cast their vote on the proposed new officer position, Vice President (Regions), because that is a Constitutional amendment, first requiring approval by a simple majority in the House of Delegates, followed within 60 days with ballot-voting by all Active AAPG members, and requiring approval by two-thirds of members voting.

Setting up this new EC position will also require some Bylaws changes, but these require only approval by two-thirds of the delegates voting in the House of Delegates, and are contingent on the

passage of the Constitutional amendment.

This proposed additional vice president has arisen from initiatives undertaken by past President Pat Gratton and me over the past 18 months – to set up an organizational structure that reinforces the very real need for much better support by AAPG's Tulsa HQ for AAPG's Sections and Regions, by having a VP for each. If this proposal were adopted, we would have elected officers representing U.S. Sections (VP, Sections) and international Regions (VP, Regions). I see that as a win-win deal favoring improved member services for everyone.

In recent discussions, the EC has unanimously recognized the need to study the whole question of graduated dues very carefully. Accordingly, the HoD will not take up this issue this coming April. Before Feb. 1, I will appoint a blue-ribbon committee to frame, model and evaluate alternate methods by which dues would be administered, for U.S. as well as international members, in a scaled way that would be fully equitable for all members, and would be based, directly or indirectly, on ability to pay. The EC is committed to that principle.

In the meantime, has Mr. Roales inquired about qualifying as an Emeritus member, with its reduced dues? Vicki Beighle at HQ can help with this.

I would respectfully ask Mr. Roales to consider whether it really serves the interests of present AAPG members to allow the Association to be bypassed in the field of petroleum geology. After all, most developing geotechnology is exportable – and while the United States has been the chief developer and exporter

continued on next page

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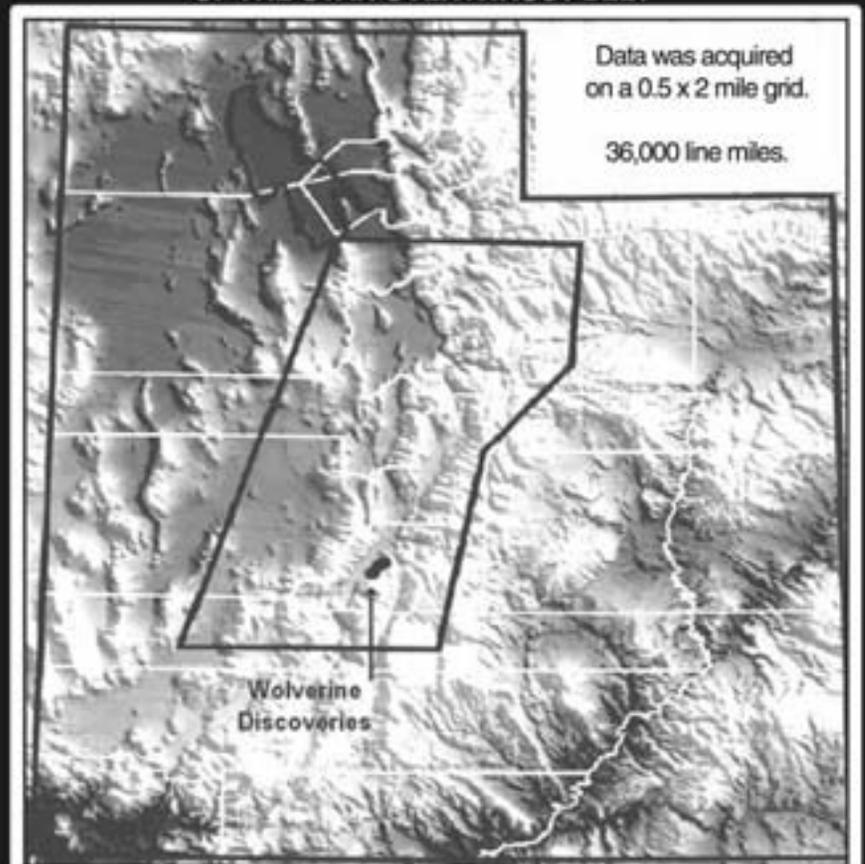
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of geotechnology in the past, we can expect that more and more will migrate overseas, in pursuit of the much larger remaining petroleum resources that exist in Russia and the Middle East.

Do we want to choose to be a regional association rather than to be an integral part of that global future? Does such a decision really serve the interests of present AAPG members? I think not.

Answering other questions: We did, last June, establish a Washington office (GEO-DC), specifically to address the legitimate issue of AAPG providing input to Congress and the Executive Branch. Please see the article in the January EXPLORER on Don Juckett, new GEO-DC director.

The AAPG BULLETIN cannot publish articles that are never submitted. Indeed, fewer and fewer articles on U.S. geology are being sent in, whereas many international articles are submitted. That's why "E&P Notes" was created, to address operational, largely U.S. matters. Incidentally, most of those articles AAPG pays to have written – they are not submitted by AAPG members.

Health insurance is very expensive, everywhere, for everyone. AAPG's group insurance is, in fact, attractively priced in relation to the coverage offered. I would urge Mr. Roales to talk to Terry Hollrah, Insurance Committee chair (Oklahoma City).

In conclusion, we are working very hard to improve service to our U.S. members, as well as our international members. I would submit that the \$75 annual dues paid by Active members is a bargain, especially when you compare it with annual dues for other professional associations.

Peter R. Rose  
AAPG President

**The Crash**

Regarding your story that looked back at the oil crash of 1986 (January EXPLORER): This is a really good overview of what happened to so many of us in the oil industry – and a cautionary tale for those entering it.

The real problem is how do we support and fund the really innovative prospects and technology and still maintain the financial discipline so preciously learned from the crash? It will take leaders of very high quality and maturity to carry the industry forward to provide the energy we need.

One source of experienced people to provide the bridge between the two generations of professionals is to actively recruit people who left during the crash, but would like to help out. I would be glad to work again to bridge the gap.

Bill Moore  
Hereford, Ariz.

**Rewarding Relationship**

Barry Friedman said early on in his story, "Fault, Fold Atlas A Teaching Tool" (December EXPLORER), that the divide between industry and academia in the fields of hydrocarbon exploration and earthquake detection is narrowing ..."

He then dealt mainly with geophysics, but I can assure you that the divide he cited didn't exist decades ago in California.

Even before World War II, UCLA professor Ulysses Simpson Grant IV, affectionately known as "The General," worked as a consultant to oil companies.

In the years that followed, Mason Hill, exploration manager for Richfield Oil in the glory days of Coles Levee and Cuyama Valley, taught at UCLA as an adjunct professor. So did Harold Sullwold, consulting oil geologist, who taught at UCLA as an adjunct professor after getting his Ph.D. degree there.

U.C. Santa Barbara professor of geology John Crowell often worked as a consultant to oil companies during the summer.

Most notable of all, perhaps, was A.I. Levorsen, one of AAPG's greats, who left the oil patch to serve as dean of the School of Mineral Sciences at Stanford University. So until recently, a close and rewarding relationship existed between academia and industry.

Robert H. Paschall  
Bishop, Calif.

*(Editor's note: We'd add to the list the late Ted L. Bear, AAPG past president, who taught at UCLA beginning in 1957 and from 1974-78 at USC.)*

**Supply and Demand**

I was disappointed – no, depressed – to read the letter from geologist Fred Haeberle (December EXPLORER) of Ohio.

I think Fred "jumped ship."

Sure, ExxonMobil can bring a barrel to the surface (in some of their domestic wells) for \$28/bbl. But if China and India are paying \$63/bbl, why would ExxonMobil sell that barrel of crude for \$35/bbl? My goodness, what a way to run a ship ... Let supply and demand continue in the good 'ol market system.

I remember when Jimmy Carter signed the "excess profits tax" (and he hosted a big party that night at the White House), but where was Jimmy when (a few years ago) the revenue income and operating costs of my wells were almost the same. He didn't come out with a "disaster income tax relief."

Good 'ol Fred jumped ship!  
Gilbert N. Freeman  
Scottsdale, Ariz.

See **Forum**, next page

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**Forum**

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**Explore the Tethyan**

With the recent interest in oil production and the vulnerability of Gulf of Mexico production (due to storms), perhaps we should initiate interest in the Mediterranean as an oil frontier.

The Tethyan is one of the oldest ocean basins on earth and has been in existence since at least the Permian. The area has been subject to tectonic activity, but not to the effect to destroy petroleum production but to produce traps and seals.

Evidence indicates that the sea has dried up several times and extensive layers of salt have formed (forming more traps?).

Neighboring lands are prolific oil producing countries. The rivers and seaways have deposited organic layers, and deltas such as the Nile would be a prime target for exploration. The properties of the region are much like the Gulf of Mexico.

These and other reasons would qualify the basin as a prime exploration and possible oil producing region. Perhaps the membership could correlate papers and information outlining the potential of the Mediterranean Sea.

Randy Pochel  
Fresno, Calif.

**True Believers**

Regarding the recent Readers' Forum debate about science and creationism: Beware the true believers on either side who characterize any opposition or imagined opposition in generalities.

One writer's "broad mass of American public" "backwoods folk" (December EXPLORER) and another writer's "religious bigots" pejorative statements (November EXPLORER) are, after all, fighting words and often stop all debate.

The people who loudly and vehemently try to stifle any evolutionary teaching in schools are a small number, albeit loud voice. I hear the same from the other side, which holds a prejudice for anything religious.

The rest wish to live with open minds and forgiving and patient hearts.

The traits found in Americans that have held us in good stead and has kept us among the most advanced of civilizations is our acceptance of a variety of political and religious thought. Unlike the Europe of the 19th and 20th century, we did not careen toward a secularist society that filled a spiritual

gap with political zealots such as Mussolini, Hitler and Stalin. One might disagree with religious dogma of this type or another, but one must acknowledge the beneficial role of a spiritual underpinning in society.

To sacrifice either scientific curiosity or a spiritual character of a people in the name of absolutism is to threaten all.

Recently I have delved into string theory, which devotees worship and detractors detest. Consider the conundrum if indeed the universe came about by the interaction of dimensional strings and that such interactions can cause the creation of unlimited numbers of universes. Then, how many debates on origin are possible in these multi-universes?

Tom McCarty  
Sherman, Texas

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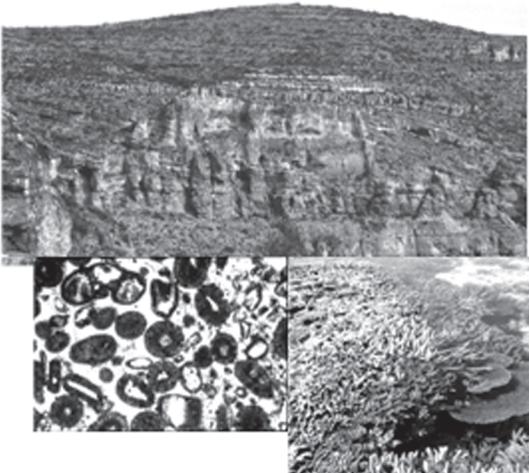
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**DIRECTOR'S CORNER**

# Courses Reflect New Strategic Model

By RICK FRITZ

AAPG has a history of providing good professional education to its members. This has been an important AAPG service, but now we are at a crossroads as a provider.

During the past 15 years competition and costs have increased. As a result, we are re-evaluating AAPG educational services and determining a new strategic model for the future.

Based on the last "All Member Survey" and a separate Education Committee survey, you indicated that you want AAPG to provide professional education opportunities, including short courses and field trips. We typically provide short courses and field trips associated with meetings and select offerings throughout the year.

Also, members said they wanted AAPG to add some shorter and less expensive courses, plus online opportunities.

\* \* \*

To reach these goals, we first evaluated staff and internal costs. As part of an Association-wide assessment, we reduced staff in education and developed a new reduced overhead allocation. Now we have an efficient, streamlined department through which we can build a new educational system.

Second, Pat Gratton and Pete Rose (immediate past and current president, respectively) made changes to the charge and make-up of the Education Committee. The primary mission for this committee now is to develop new

**AAPG offers the following types of continuing education:**

- ✓ **Education conferences** – Multi-course education seminars in Houston, scheduled for Feb. 6-10 and Sept. 11-15.
- ✓ **Short courses** – Two- to five-day intermediate to upper level courses, designed for intense focused study.
- ✓ **Online education courses** (both fixed schedule and self-paced) – AAPG and AGI funded a series of 20 Interactive Online Learning (IOL) modules developed by the Bureau of Economic Geology. The cost is only \$35 per module.
- ✓ **Field seminars** – AAPG plays an important role in making sure members have a broad spectrum of opportunities to look at the rocks.
- ✓ **GeoTours** – A newer product that provides an opportunity for members to visit and experience culture and outcrops in unique packages that spouses and other family members can enjoy.
- ✓ **Training Partners** – Designed to let us review your needs and develop an in-house customized training program.

For more information see page 43, or go online to [www.aapg.org](http://www.aapg.org).

educational opportunities designed to meet the needs of the membership.

As a result, AAPG has a unique opportunity to build new products and services for our members. For example, this year AAPG will offer for the first time both winter and fall Education Conferences in Houston. The conferences are composed of various courses that last from one to two days during a week period. You can choose to attend just one or two courses, or you can pay for the whole week.

The conference's unique incentive is that you can pay for one pass and share

it with others in your group, i.e., one week's pass will allow one entry into the "Basic Openhole Log Interpretation" course on Wednesday, and then someone else can take the course on "Unconventional Resource Plays" on Thursday and Friday.

If these conferences are well attended this year we will consider other locations.

We also are developing new global workshops for AAPG and with sister societies. We plan to make these workshops a key service for members around the world.

\* \* \*

I read a quote by John W. Gardner: "The ultimate goal of the educational system is to shift to the individual the responsibility of pursuing his or her own education." I believe this is true – continuing education is critical to continued professional development and personal growth.

I know in my own career it is difficult to take the time for additional training – but when I do take time, the opportunity is always beneficial to me, both personally and professionally.

AAPG now offers a Petroleum Geologist Professional Certificate program. It is designed to help you guide your future training needs and develop a record of training.

The staff and Education Committee's charge is to help develop new content for AAPG's educational offerings, and to provide oversight for existing courses. AAPG benefits by having direct access to the cutting edge of petroleum geology, and that's in you as members. So we will be calling on many of you to help with this effort.

Of course, if you have an interest in developing a new course for AAPG please contact any of the chairs or vice chairs, or contact Debbi Boonstra, our education department coordinator at 918-560-2630.

Thanks.



## 'Unconventional' Aspects

# EMD Has Active Houston Program

By ANDREA REYNOLDS  
EMD Vice Chair

The Energy Minerals Division is excited to present its technical program and activities for the upcoming AAPG Annual Convention in Houston April 9-12. EMD has a very attractive program and both EMD and AAPG members will be treated to a variety of technical sessions, short courses and a lignite field trip.

The technical program is appealing in both its breadth of topics and the quality of the papers to be presented.

□ The EMD-sponsored oral and poster sessions include:

✓ **CO<sub>2</sub> Sequestration** – Coals/Shales/Produced and Unproduced Reservoirs as Sequestration Targets (co-sponsored with DEG).

✓ **Coalbed Methane** – Pushing the Technical Envelope in Defining Producibility.

✓ **Unconventional Reservoirs** – Breaking Paradigms.

✓ **Fractured Clastics and Carbonates** – What Constrains Their Reservoir Limits?

✓ **Gas Hydrates** – Emerging Hydrate Deposits: Indices of Active Petroleum Systems Leading to Recognition of Future Energy Targets.

✓ **Advances and Applications in**

Geospatial Information Technology: Remote Sensing, GIS, GPS and GPR.

□ The EMD luncheon on Tuesday, April 11, will feature EMD division awards and guest speaker Peter Dea, president and CEO of Western Gas Resources in Denver. His talk, titled "Perfecting the Search for Unconventional Resource Plays," will address the multi-disciplined aspects necessary to unlock the riches in unconventional gas.

Development results of the last decade show dramatic success as this resource leads the U.S. gas supply growth, reserve additions, technology advancements, environmental mitigation and drives major pipeline projects.

□ EMD is offering three pre-meeting short courses that are scheduled from 8 a.m.-5 p.m. on Saturday, April 8.

They are:

✓ "EOR and the Expanding Field of Carbon Dioxide Flooding" (Course #11) will provide an overview of the modern practices of CO<sub>2</sub> enhanced oil recovery and is geared toward geoscientists and managers who are familiar with oil reservoirs but not necessarily conversant in enhanced recovery techniques. Topics covered include worldwide activity/interest in sequestration and CO<sub>2</sub> EOR, current projects and databases, climate concerns regarding emissions capture, and residual oil zones. Case studies of ongoing floods and current procedures will be highlighted throughout the course.

✓ "Introduction to GIS for Petroleum Exploration and Development" (Course #12) is a timely and exciting course to bring geoscientists up to date with geographic information systems and to understand how this powerful technology is increasingly being applied today in exploration and production. Many companies now feature spatial databases, and AAPG will be building its own soon.

As a special feature of this course, four instructors will cover private, university and industry experiences, so the material will have wide appeal to AAPG members.

✓ A core workshop (Course #13) on "Core Analysis for Exploration and Development of Sorbed Gas Reservoir Systems," which features many renowned instructors and will demonstrate the importance of drilling, sampling and analyzing coalbed methane and shale gas reservoirs.

The course supports technically sound, financially prudent evaluation/development of these complex reservoirs, and is a must for gaining a better understanding of how core analysis can play a critical role in reservoir characterization and risk reduction during exploration and development of coal and shale gas reservoir systems.

□ The post-meeting EMD field trip (Trip #10) is "Environments of Deposition of Texas Lignites: The Good, The Bad and The Ugly," which will be held on Thursday, April 13. Participants will examine various



Texas Eocene lignite deposits and enjoy a Texas barbecue lunch. A special poster presentation will be held at the Lake Somerville spillway to observe fluvial settings. A visit to the ALCOA Sandow open-cast mine will highlight deltaic environments and include observation of mining and reclamation technology as well as power plant and aluminum processing operations.

□ The EMD leadership/business meeting will be held from 1-5 p.m. on Saturday, April 8, at the Hilton Americas Hotel.

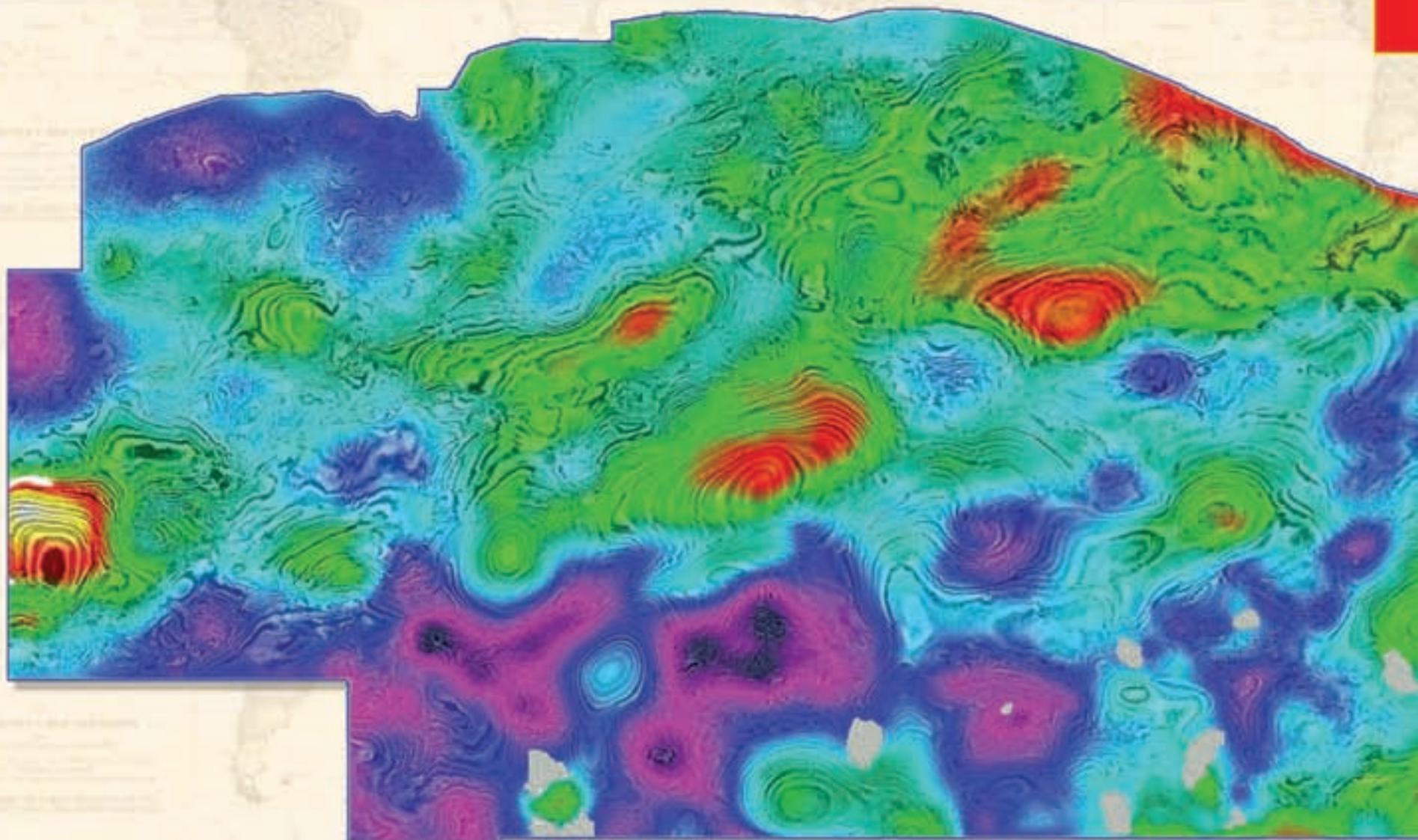
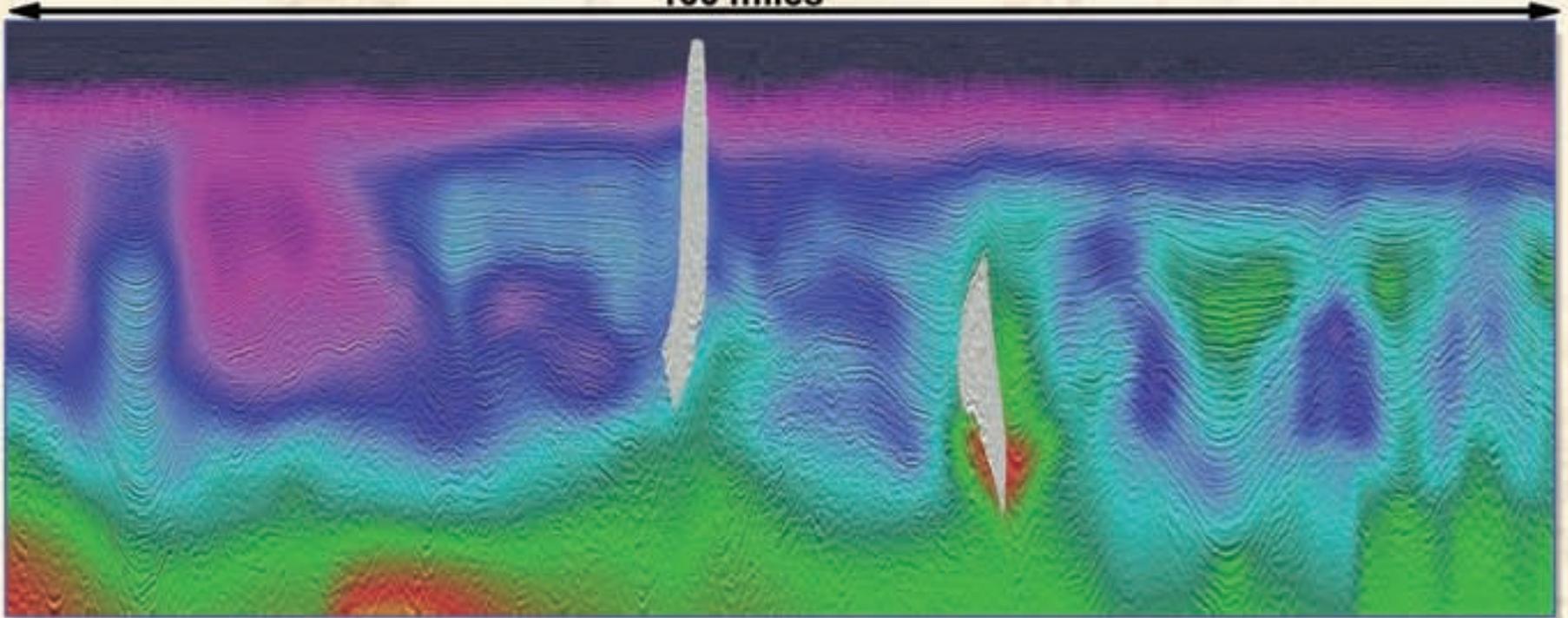
The 2006 AAPG Annual Convention in Houston is going to be one of the organization's largest, and EMD has an inspiring program. We encourage all AAPG members to discover the "unconventional" aspects of the Energy and Minerals Division.

We look forward to seeing y'all in Houston! □

**FAIRFIELD INDUSTRIES'  
NON-EXCLUSIVE DATABASE  
3D PRESTACK DEPTH MIGRATION**

Rapidly changing lateral velocities

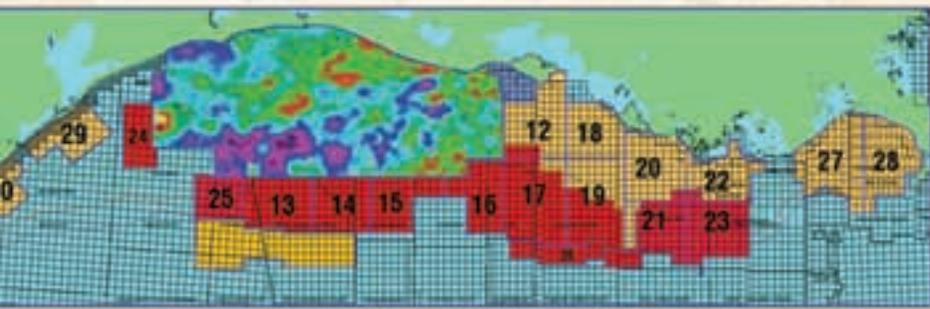
XLine Stack With Migration Velocity Overlay  
100 miles



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

**FAIRFIELD'S DATA PROCESSING DIVISION CAN  
APPLY THE SAME EXPERTISE TO YOUR  
PRESTACK DEPTH NEEDS**

cause severe seismic ray path distortion.



Areas 1 - 11 complete.

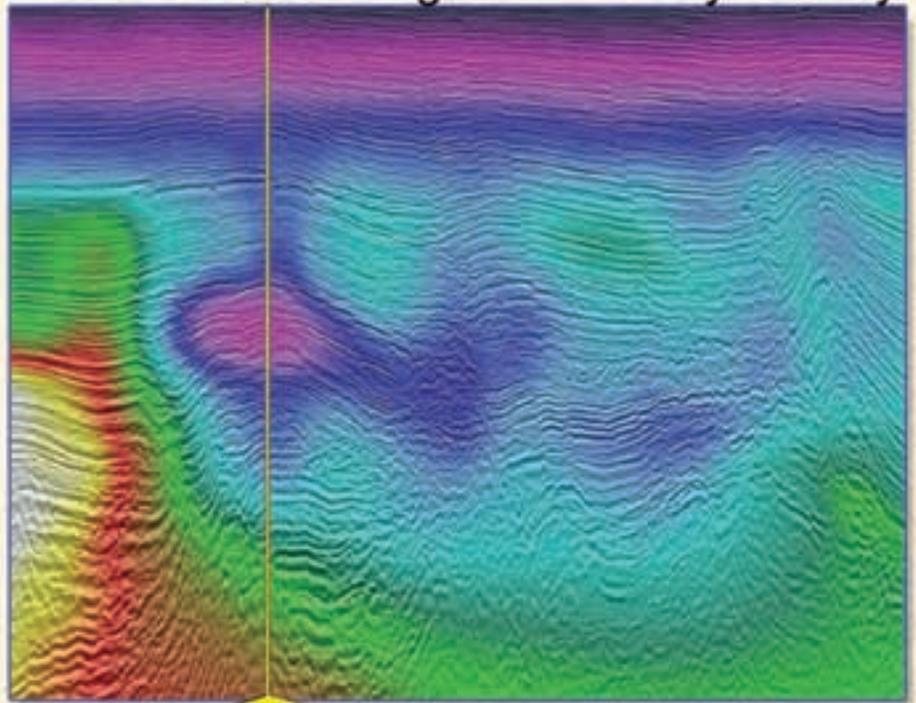
**Accuracy in the Velocity Model means:**

**A. Flat Depth Gathers for:**

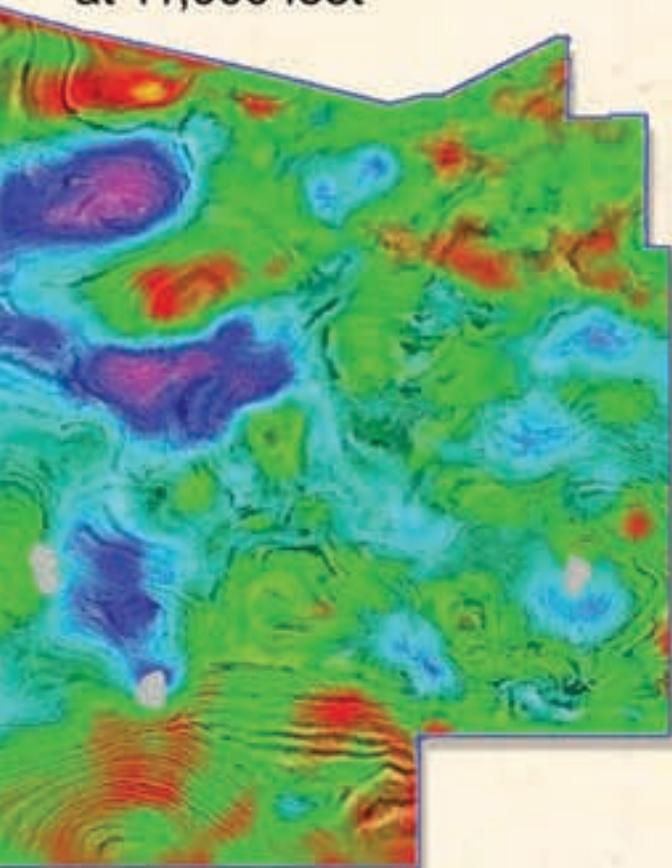
- 1. Better Structural Image
- 2. Better AVO Analysis

**B. Better Pore Pressure Analysis**

Inline Stack With Migration Velocity Overlay

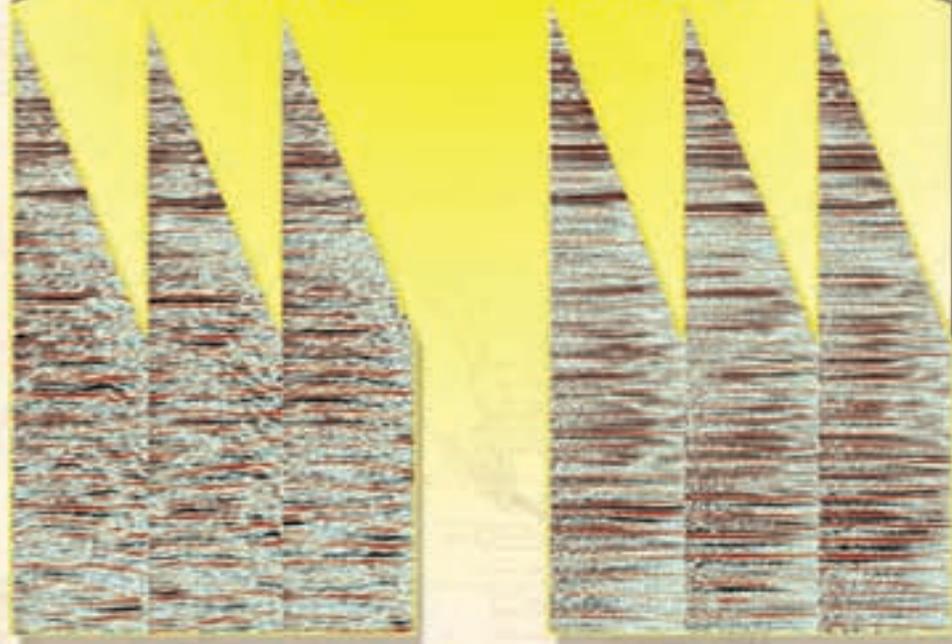


Depth Slice with  
Velocity Overlay  
at 11,000 feet



PSTM Gathers

PSDM Gathers





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- 5 onshore/offshore programs underway

**2006**

- Kirchhoff and wavefield extrapolation migration volumes for deepwater subsalt
- Kirchhoff time and depth migration volumes for deep shelf gas
- Newly reprocessed transition-zone data

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*If you did not precommit with us in 2005, join us in 2006!*