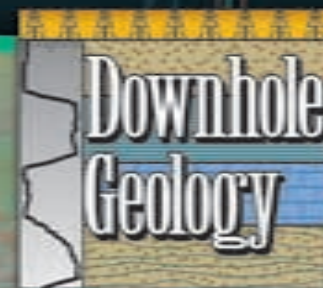


AAPG AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, AN INTERNATIONAL ORGANIZATION

EXPLORER

DECEMBER 2007



Look Out Below!

**Hidden Targets Are
Coming Into View**

See page 14



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On the cover: Looking deeper – and with more accuracy – has never been more important than it is for today's explorationists, a point that the complexities found in our cover's 3-D image of a salt dome in the Gulf of Mexico makes clear. Fortunately, emerging technology such as virtual source seismic is making the challenge a bit less daunting. See story on page 14. Image courtesy of Shell Oil.

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Vol. 28, No. 12
The AAPG EXPLORER (ISSN 0195-2986) is published monthly for members. Published at AAPG headquarters, 1444 S. Boulder Ave., P.O. Box 979, Tulsa, Okla. 74101, (918) 584-2555. e-mail address: postmaster@aapg.org
Periodicals postage paid at Tulsa, Okla., and at additional mailing offices. Printed in the U.S.A.
Note to members: \$6 of annual dues pays for one year's subscription to the EXPLORER. Airmail service for members: \$45.
Subscription rates for non-members: \$63 for 12 issues; add \$67 for airmail service. Advertising rates: Contact Brenda Merideth, AAPG headquarters. Subscriptions: Contact Veta McCoy, AAPG headquarters. Unsolicited manuscripts, photographs and videos must be accompanied by a stamped, self-addressed envelope to ensure return.

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POSTMASTER: Please send address changes to AAPG EXPLORER, P.O. Box 979, Tulsa, Okla. 74101.
Canada Publication Number 40046336.
Canadian returns to: Station A, P.O. Box 54, Windsor, Ontario N9A 6J5
e-mail: returnsIL@imex.pb.com

PRESIDENT'S COLUMN

Talk With Students Is Enlightening

By WILLARD "Will" GREEN
Greetings from Dubai, United Arab Emirates, where I'm attending the International Petroleum Technology Conference operated by SPE with AAPG, EAGE and SEG as partners. I'll report on this meeting and my November travels to London, Athens and Ankara in my February 2008 column.

My January column will feature an article by AAPG treasurer and University of Wyoming professor Randi Martinsen.

* * *

November 1 was a special day for me as I had the privilege of speaking to the AAPG Student Chapter and the Geology and Geophysics Club members at Texas A&M University.

My subject was "Energy Work Force," and the unprecedented opportunity for entry-level professionals in the petroleum industry – and what AAPG is doing to encourage students to choose petroleum geosciences as a career.

The group of 52 students and five professors showed keen interest and asked questions for 30 minutes after my talk.

Aggie Student Chapter President Aubrey Shellhorn Humboldt was excited about entering a team for the Imperial Barrel Award competition. Her only concern was, "how do we limit the team to only five students?"

Earlier in the afternoon I met with dean of geosciences Bjorn Kjerfve and acting associate dean and geology professor Ethan Grossman and Diane Barron, director of development for the College of Geosciences for the Texas A&M Foundation. I learned that enrollment in geology and geophysics has increased significantly in the past two years, and that one-third of all enrolling freshmen at the university do not specify a major.

Geosciences staff members are reviewing the high school records of incoming students to encourage those with strong science backgrounds to consider geology and geophysics.

We (AAPG members and industry)

need to do more to interest high school students in our profession.

* * *



Green

AAPG had two Section meetings in October.

✓ The Rocky Mountain Section met at Snowbird, Utah, where several inches of new snow welcomed our arrival on Saturday, Oct. 6.

The Sunday morning field trip in Little and Big Cottonwood canyons in the Wasatch Range started with a chilly 22 degree F. temperature but soon warmed to a comfortable level. I have skied in the Wasatch Range for at least the last 15 years and was glad to learn what is below the winter snow.

Convention chair Paul Anderson organized an outstanding meeting, with 660 participants.

✓ Our largest Section, GCAGS, convened in Corpus Christi Oct. 21-23, with 1,120 registrants.

During the meeting, featured luncheon speaker John Cousins, executive VP for ExxonMobil Exploration, said one-half of the current energy work force will be eligible to retire within the next 10 years (a situation we must help change).

I commend co-chairs Brent Hopkins and Dan Pedrotti for an excellent meeting.

* * *

With December coming on, it is a time for family and friends and to be thankful that we have each other.

Have a happy holiday season!

Will Green

Get Smart!

The Education Catalog Has Arrived

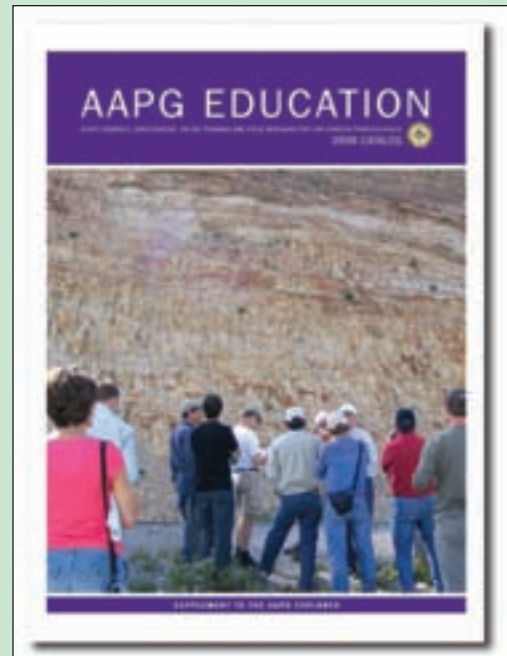
Looking to improve your skills or knowledge of a particular geoscience subject?

Need some specific information on a new area or discipline?

Your wishes have been answered.

AAPG's Education Catalog has arrived, filled with details about all of the short courses, field seminars and online training opportunities that AAPG will be offering in 2008.

Details also are available online at www.aapg.org.



*DOE to Remain Strong Supporter***AAPG, PTTC Form Alliance**

By LARRY NATION

AAPG Communications Director

AAPG and the Petroleum Technology Transfer Council have announced that AAPG has assumed management of PTTC activities, effective in early October.

Since 1994 PTTC, funded primarily by the U.S. Department of Energy with funds matched by the states and industry, has been a recognized force for transferring exploration and production technology to domestic U.S. producers.

Congress last year declined to provide FY '07 funding for many

elements of the DOE's natural gas and oil R&D program, from which PTTC drew its federal funds. DOE ultimately provided \$1 million of funding through September 2008 to help PTTC transition to a primarily industry-funded organization.

The AAPG Executive Committee and the board of PTTC both voted in late September for AAPG to assume management of the new organization. This includes fundraising, marketing and corporate operation of the PTTC program. The vote followed a 90-day due diligence period.

AAPG President Will Green said "the



PTTC has perhaps the most successful scientific technology transfer program for the independent U.S. producer and

has proven its value to the industry. The Association considers the program important for the industry, the members of AAPG and the country."

Outgoing PTTC Chairman Gene Ames noted: "The strengths of PTTC will be the same – most universities will stay engaged, regional volunteer groups will be autonomous and work closely with the universities, cross-discipline diversity will be encouraged and producers will comprise the majority of the volunteers.

"DOE remains a strong supporter," he continued, "and will strive toward some funding, albeit at a lower level than historical."

Members of the new board of directors include:

- Gene Ames, previous PTTC director.
- Chris Hall, producer, engineer.
- Terry Hollrah, independent geologist, Oklahoma City.
- Fletcher Lewis, independent/consultant, Oklahoma City.
- Barry "Nick" Tew, Alabama State Geologist and Oil and Gas Supervisor.
- Tom Williams, recently retired as vice president of technology for Noble Drilling.

"The goal of the board's makeup was to have a mix of engineers and geoscientists, and also a broad representation of the PTTC Producer Advisory groups," said Jim Blankenship, AAPG geoscience director.

"Finally the focus was designed to be, and is, on having a strong representation of independent oil and gas operators on the board," he added.

Green said PTTC's primary tool for transferring E&P technology will continue to be regional workshops, which will be supplemented with a strong Web presence, newsletters and other personal outreach. Using these tools, PTTC will continue to connect producers, the service sector, consultants, researchers and others with the data and technology information needed to spur technology application.

Topics addressed by PTTC activities have covered the full spectrum of E&P operations, including:

- ✓ Exploration.
- ✓ Unconventional resources.
- ✓ Enhanced recovery processes.
- ✓ Imaging technology.
- ✓ Drilling and completion.
- ✓ Hydraulic fracturing.

And that's just a partial list.

PTTC, serving industry locally through Regional Lead Organizations, typically at universities or geological surveys, has made serving independents its primary focus. This operation model will continue in the future. □

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Supply – as Well as Fear – is Factor

Prices Reflect More Than Hot Air

In 2006, Qatar's oil minister said about oil prices, "If you can stop the politicians from making negative statements, I am sure you will see almost fifteen dollars disappear from the price." And that was when oil was about \$58 a barrel.

Today, with oil knocking at the door of \$100, there is no doubt the "risk premium" also has bloated.

However, as the oil price soared nearly 30 percent in October and November, analysts also noted there are fundamental supply factors – beyond fear – pushing the price. Those factors include:

- ✓ Strong demand.
- ✓ Falling inventories.
- ✓ No production increases from OPEC.

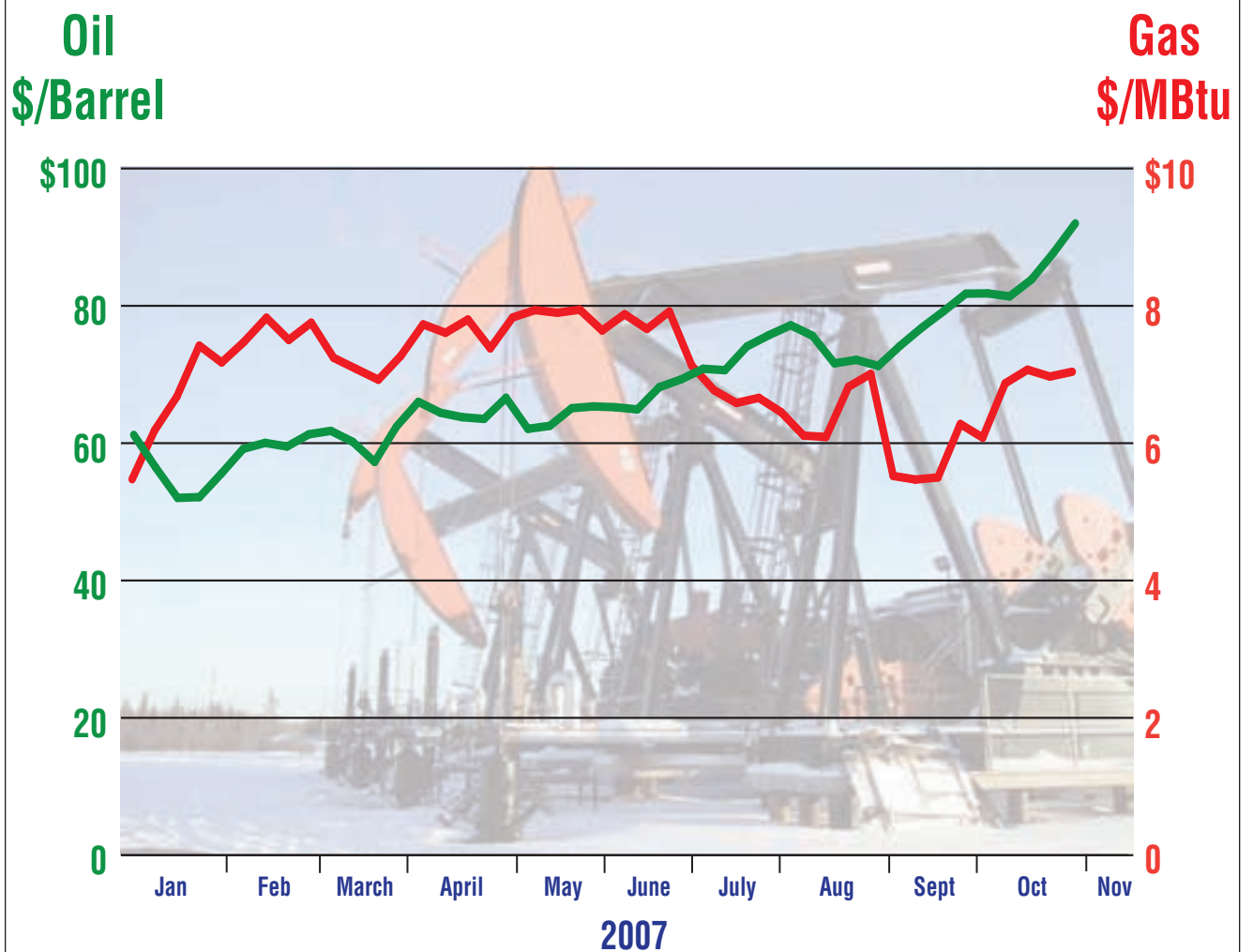
Interestingly, the Energy Information Administration says that while petrol prices have remained relatively cheap, U.S. gasoline demand has been about flat for the last few months, whereas it usually grows by about 1.5 percent each year. Meanwhile, refining margins are being squeezed as top dollar is being paid for the product and the extra costs haven't been passed on to the consumers – yet.

On the natural gas side, there are supply concerns – especially if winter is particularly harsh.

"The rising demand for gas, coupled with flat production, has tripled prices in the last four years," said Michael Zenker, an analyst with Cambridge Energy Research Associates. "I would estimate prices would average about \$7 through 2008."

He also said relief should arrive then in the form of liquefied natural gas, imported to alleviate shortages of the increasingly popular fuel.

– LARRY NATION



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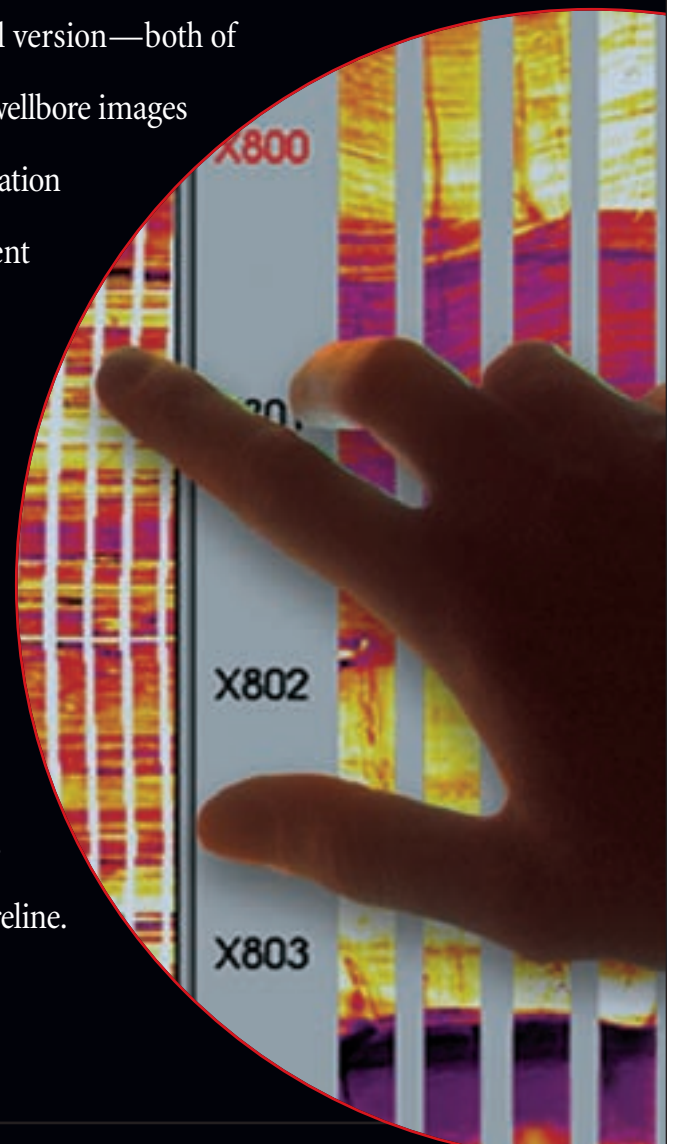


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Majority Vote Necessary to Take Office

Petition Candidate Enters Race

Three candidates for AAPG president-elect will be on the ballot for 2008-09 offices as a petition candidate successfully entered the slate for the fifth time in AAPG's 90-year history.

AAPG Advisory Council and Executive Committee-nominated candidates for president-elect on the ballot are:

President-Elect

□ **John C. Lorenz**, Geoflight LLC, Edgewood, N.M.

□ **Ronald A. Nelson**, Broken N Consulting Inc., Cat Spring, Texas.

The petition candidate for president-elect is:

□ **Dwight M. "Clint" Moore**, independent, Houston.

There were no other candidate petitions filed.

A flier that includes the candidates' biographies and candidate statements is inserted in this issue of the EXPLORER at page 9.

Lorenz and Nelson were nominated by the AAPG Advisory Council and approved by the AAPG Executive Committee. Moore entered the race by gaining the 50 required petition

signers.

This marks the third time Moore has appeared as a petition candidate. He was unsuccessful in the first petition bid for treasurer for the 2002-04 term and was successful in the second treasurer petition candidacy, holding office in the 2004-06 term.

One other petition candidate who was successful in AAPG election history is Will Green, who was voted president-elect in 2006 and is now serving as AAPG president.

AAPG Bylaws clearly state the methods by which candidates may

appear on the ballot and allow for the petition of non-nominated candidates to be delivered to headquarters for validation prior to Oct. 15.

In a Bylaws change effective in 2006, ballots for offices with more than two candidates now provide voting in order of preference; the candidate receiving a majority of the "first choice" votes is elected.

Previously, the candidate with the most votes was declared the winner without regard to a majority tally.

The new process allows for determination of a majority without a costly and time-consuming run-off.

If no candidate receives a majority of the "first choice" votes cast, then the candidate that received the least number of "first choice" votes shall be dropped from consideration, and the second choices of those voters whose first choice was the dropped candidate will be deemed those voters' first choice. The process is repeated until a candidate receives a majority vote.

Lorenz and Nelson were on a list of candidates for president-elect compiled by the Nominations Committee and approved by the Advisory Council and forwarded to the AAPG Executive Committee.

The Executive Committee is the governing body elected Association-wide to represent the members, plus the chairman of the House of Delegates, chosen by the delegates elected locally to represent the membership.

The Advisory Council, which consists of 20 persons, includes elected members from AAPG's U.S. Sections and international Regions; the elected officers of each Division; the immediate past-president; two former presidents; and the past-chairman of the House of Delegates.

Candidates for the other offices nominated are:

Vice President-Sections

□ **David H. Hawk**, Energy Analysis and Answers/Consultant, Boise, Idaho.

□ **W.C. "Rusty" Riese**, BP Americas, Katy, Texas.

Treasurer

□ **Edith C. Allison**, U.S. Department of Energy, Washington, D.C.

□ **Kay L. Pitts**, Aera Energy LLC, Bakersfield, Calif.

Ballots will be available online prior to April 1. Active members who do not have an e-mail address on file in AAPG's member system will be sent a paper ballot.

All votes must be received by May 15.

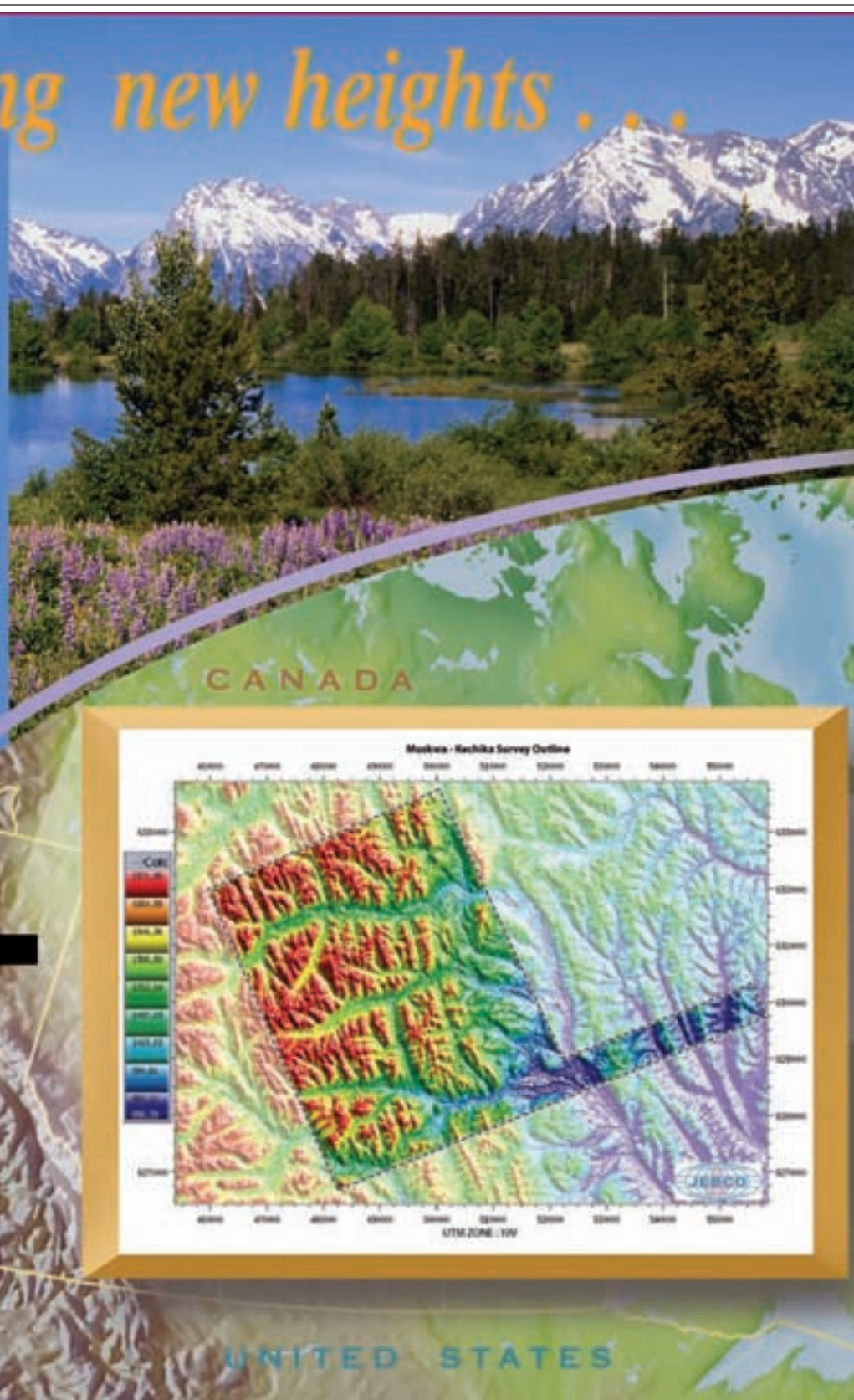
New officers will be announced following the counting by Survey and Ballot Systems, the third-party vendor that administers the AAPG national office elections. □

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Industry Applications Seen

Nano Is Huge on Research Agenda

By DAVID BROWN
EXPLORER Correspondent

Someday, the smallest technology on the planet could be the biggest news in the energy industry.

Nanotechnology involves engineering at the scale of atoms and molecules.

"Nano" denotes a billionth, so a nanometer is one-billionth of a meter, or one-millionth of a millimeter.

A benzyne molecule is about a nanometer wide.

A human hair is typically described as about 80,000 nanometers wide.

Researchers have studied the possibilities of practical nano-scale science for 25 years, with special emphasis on the properties of materials at that scale.

Today, nanotech involves many disciplines, including (but not limited to):

- ✓ Chemical engineering.
- ✓ Materials science.
- ✓ Applied physics.
- ✓ Electrical engineering.
- ✓ Mechanical engineering.

It's a Small World

Brian Towler is head of the Chemical and Petroleum Engineering Department at the University of Wyoming in Laramie. The university conducts nanoscience research through grants from the National Science Foundation, the U.S. Department of Energy and Wyoming's enhanced oil recovery program, he said.

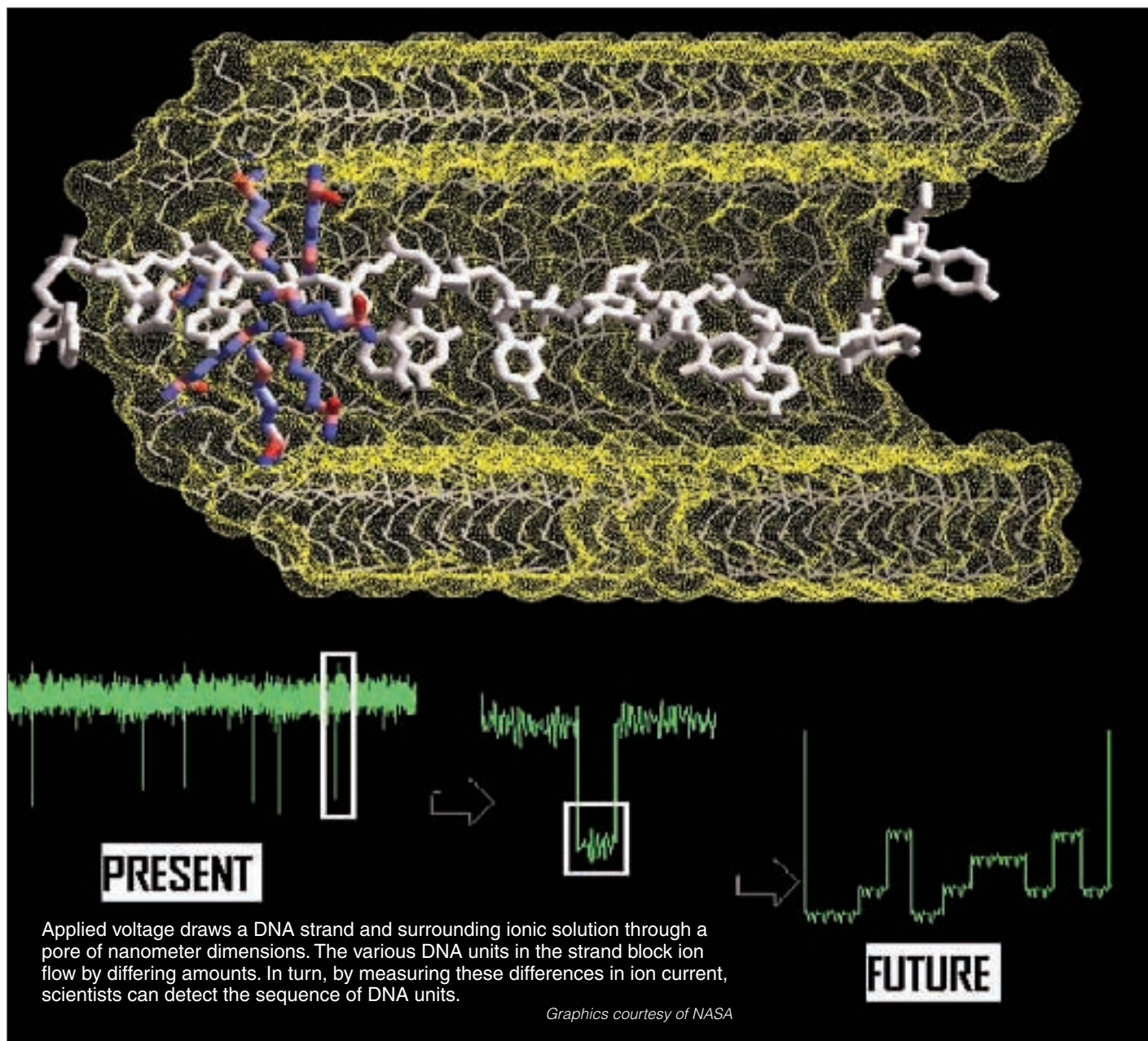


Towler

In a recent issue of the "International Journal of Nanotechnology," Towler and co-author Saeid Mokhtab theorized that nanotech could revolutionize the natural gas industry, from production to processing to pollution reduction.

"The gas industry represents a major prospect for substantial, near-term adoption of nanoscale technologies with sustained benefits," Mokhtab and Towler wrote.

"Depending on the application,



Applied voltage draws a DNA strand and surrounding ionic solution through a pore of nanometer dimensions. The various DNA units in the strand block ion flow by differing amounts. In turn, by measuring these differences in ion current, scientists can detect the sequence of DNA units.

Graphics courtesy of NASA

nanomaterials are incorporated into a wide variety of hydrocarbon extraction, gas separations, solid-state gas sensors for air pollution monitoring, nano-adsorbent materials for environmental separations and corrosion inhibitors that are used in a broad range of gas industry markets," they added.

According to Towler, nanotech research has advanced far enough to

begin producing practical applications.

"The payoff is starting to come," Towler said.

"We will see significant advances and adoption of this technology in the next three to five years," he predicted.

Looking Into the Future

Possible nanotech breakthroughs for the oil and gas industry could show up in:

✓ Enhanced materials.

Inclusion of nanoparticles may lead to more durable and effective drilling components, lighter and sturdier offshore platforms and a variety of corrosion-resistant materials, among other benefits.

✓ New separators and nanomembranes.

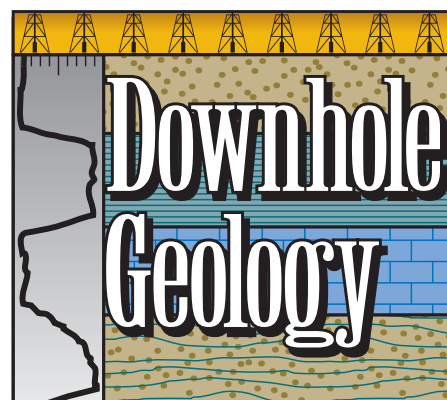
Stable and lightweight membranes could be used to filter impurities from heavy oil and tight gas, as well as in environmental applications.

"I'm very excited about the materials we're developing for better membranes and adsorbents for separations," Towler said.

"There are particular separation technologies that will be extremely useful – not only for the exploration and production industry, but also for the carbon-capture issue," he added.

✓ Advanced fluid additives.

Nano-scale additives might be used in everything from improved drilling



fluids to more efficient and environmentally friendly fuels.

✓ Sensors and imaging agents.

The special electrical and magnetic properties of nanomaterials make them well-suited for use as injected sensors and contrast agents.

Because they can withstand high temperature and pressure, nano-scale sensors could be especially useful for characterizing deep reservoirs.

Going for the (Cleaner) Burn

Alicia Jackson studied nanotech at the Massachusetts Institute of Technology. She's now a legislative fellow for the U.S. Senate Committee on Energy and Natural Resources in Washington, D.C.

See **Nano**, page 12

Consortium Eyes Applications

Showcasing the potential importance of nanotechnology for the oil and gas industry, eight companies have formed a consortium to study practical nanotech applications.

Known as the Advanced Energy Consortium, the project will be managed by the Bureau of Economic Geology (BEG) at the University of Texas at Austin, said BEG director Scott Tinker.

Consortium members are Shell International E&P, BP America, ConocoPhillips, Marathon Oil, Occidental Oil & Gas, Schlumberger Technology, Baker Hughes and Halliburton Energy Services.

"The consortium was formed because none of (the members) are deeply engaged in nanotech currently, and they can see the potential upside – in improved reserve management and a significant upside in enhanced recovery," Tinker said.

Each member company has made a rolling two-year pledge to fund the research, which will be carried out at universities and other research institutions around the world, he said.

Tinker, also AAPG president-elect, expects requests for proposals for global participation to go out next year. Rice University is technical partner in the project.

Work will begin as proposals are accepted, and "in three years, we would hope to see some interesting prototypes," he said.

Tinker called the AEC a positive sign because it shows "the industry collaborating to do pre-competitive research and a willingness to invest in the long-term future."

"That should send a very positive message to young people in our industry that there are still major challenges to solve," he noted.

– DAVID BROWN

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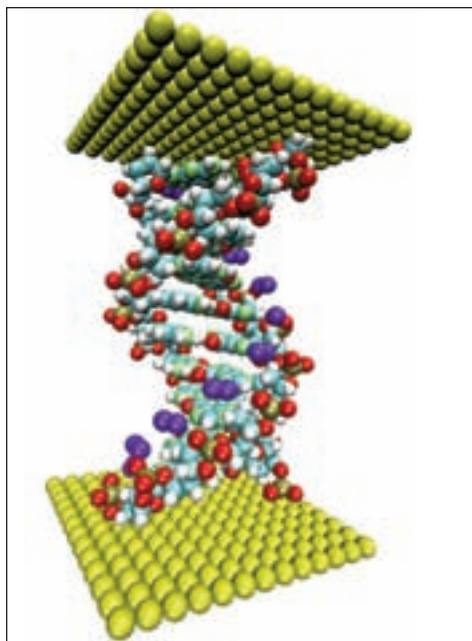


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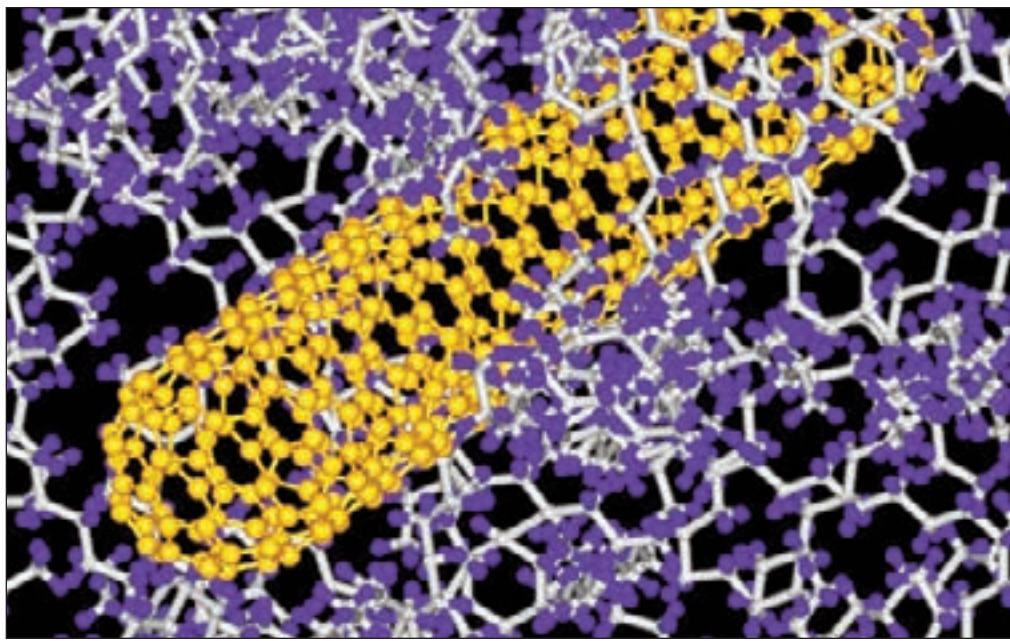
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An engineered DNA strand (left) between metal atom contacts could function as a molecular electronics device. Such molecules and nanostructures are expected to revolutionize electronics. Understanding the complex quantum physics involved via simulation guides design. For NASA, devices and sensors made from such molecules and nanostructures may be particularly useful when electrical power is limited. The image at the right shows a polymer-CNT composite.



Nano

from page 10



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"The main thing about nanotechnology is the incredible amount of surface area you have on each nanoparticle, or whatever you're using," she said.

Much of current nano-scale research aims for applications in biology and medicine.

"We did a lot of work looking at how we could layer nanoparticles to act as artificial photosynthetic systems," Jackson recalled.

"We also were tagging nanoparticles with molecules to search out tumor cells," she said.

But today's high oil and gas prices and growing energy demand, with projections for even higher demand in the future, have led nanotech researchers to look for possible uses in petroleum production, refining processes and fuels.

"The whole idea of putting nanoparticles into fuels to make them more efficient, or to burn cleaner, that's definitely something people are working on," Jackson noted.

She cited work done by Oxonica, an international nanomaterials group with headquarters near Oxford, England.

The company's energy division has developed ENVIROX™, a fuel-carried catalyst for diesel. According to Oxonica, ENVIROX saves fuel, catalytically removes engine deposits and reduces harmful emissions.

Because the additive enters the combustion chamber premixed with diesel, it changes the way the fuel burns, enhances efficiency and helps reduce unburned hydrocarbon and other waste products, Oxonica said.

Engineered nanoparticles also could improve the effectiveness of drilling mud and frac fluids. It's difficult to imagine an area of the industry that wouldn't benefit from nanotech advances.

"We're developing better sensors for detecting natural gas leaks and hydrogen sulfide detection and that sort of thing," Towler said.

"I think we can develop better lost-circulation materials with nanotechnology. We can create better particles that go into the formation." □



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*Breaking Through the Seismic Shields***Virtual Source Looks 'Underneath'**

By LOUISE S. DURHAM
EXPLORER Correspondent

There are certain technologies in the oil and gas industry that might best be described as *uber* high-tech.

A relative newcomer to this category is virtual source technology, whereby seismic data receivers downhole can be turned into sources.

It's all about the math.

Simply put, a surface-based seismic source can be mathematically transposed to a deep position by wavefield extrapolation and become a virtual source, according to Bob Hardage, senior research scientist at the Bureau of Economic Geology, University of Texas at Austin, and editor of the EXPLORER's Geophysical Corner.

These virtual sources can be specifically positioned in the wellbore beneath horizons that would distort the energy emanating from the surface source.

This can make all the difference in subsurface evaluation, given that oil and gas deposits often accumulate in reservoirs beneath certain rocks that have the capability to "hide" the reservoir by causing the downward traveling seismic ray paths to bend away from the troublesome rocks, Hardage noted.

They effectively conceal the hydrocarbons.

Following a seismic survey, the acquired data are processed and relied on to image structures and evaluate rock properties and fluid movement. But what you see via the data is not necessarily

what you get with the drillbit – particularly in locales where there's complex overburden and energy-distorting horizons such as salt interfering with the subsurface picture.

Virtual source technology is designed to circumvent this problem, enabling high resolution imaging of the reflectors beneath the problem surfaces.

Factors for Success

The technique was invented and patented by Rodney Calvert, chief scientist for geophysics, and research geophysicist Andrey Bakulin, both at Shell's Bellaire Technology Center in Houston.

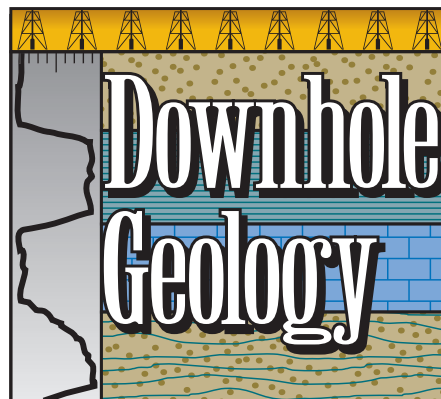
Hardage, writing in the July EXPLORER, called it "an emerging and valuable seismic technology that will allow you, in some cases, to image geology that is difficult to see with other imaging strategies."

Shell already is benefiting from applying the virtual source technique in vertical seismic profiles (VSP). These VSPs have been shot conventionally in



Lopez

exploration and development wells to acquire more accurate estimates of the rock velocities along the borehole and to better image the structure in the area surrounding the well, according to AAPG member Jorge Lopez, project leader



and principal technical expert for reservoir geophysics at Shell.

The conventional VSPs also are used in the production phase to monitor changes over time.

Here's the blueprint for the virtual source application, according to Shell:

✓ In virtual source VSPs, the sources are located on the surface and the receivers are downhole, just as with traditional VSP.

✓ The sources are activated in the normal standard sequence, and the downhole receivers record the energy from the source.

✓ Simple mathematical algorithms are used to convert this recorded energy to a sharp pulse, making it possible for each receiver to be turned into a virtual undisturbed pulse source.

✓ Other receivers in the borehole can record from this virtual source to provide a

higher resolution seismic image around the borehole.

Virtual source technology generates both pressure and shear waves, making it possible to derive added information from the seismic.

Borehole orientation is a factor in the technology's effectiveness.

"We always need sensors in the borehole, but they're more useful if they're deployed in a way to give you virtual source surveys," Lopez said. "That will normally mean the borehole will be deviated or horizontal, because then each of the sensors will be along a line and can be turned into sources that can then produce an image below the borehole."

"For applications related to reservoir monitoring," he added, "we normally prefer essentially horizontal wells."

Test Runs

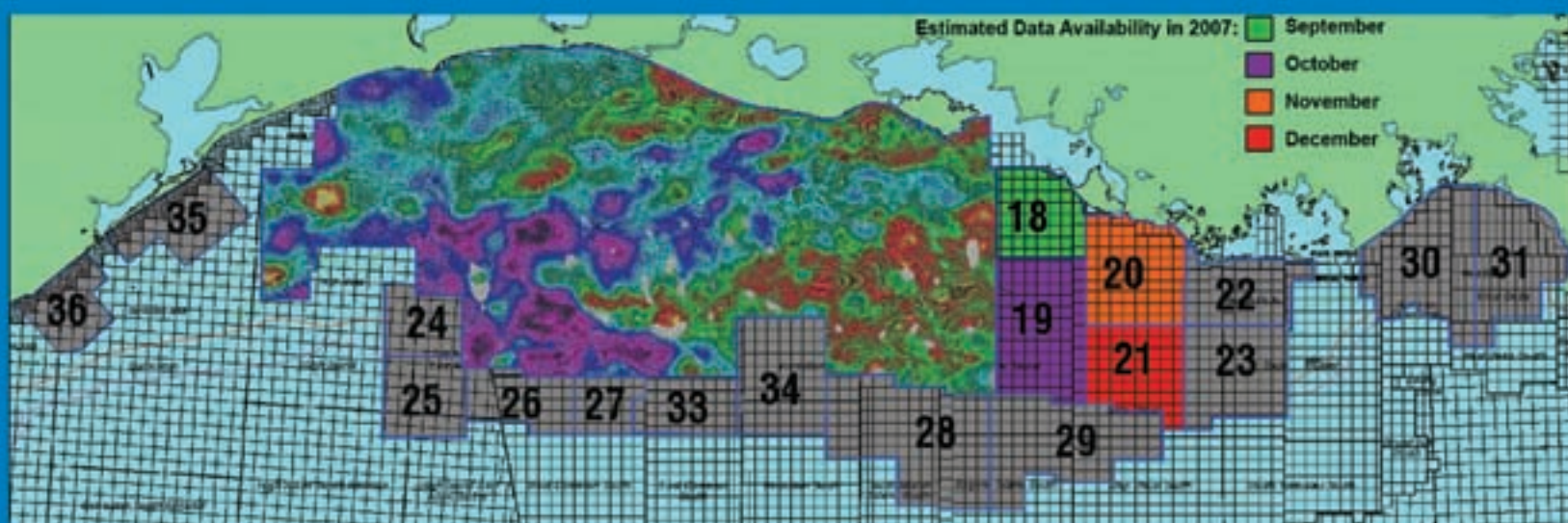
There are certain situations where virtual source technology is implemented via a vertical borehole, and the application works quite well.

This was the case at the Zuidwending salt cavern modeling study in the Netherlands, where the salt flanks were imaged from within the salt in order to nail down the location of the flanks of a salt dome being converted into a cavern for underground gas storage.

"With salt caverns, you're imaging something to the side of the borehole,"

continued on next page

More depth



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continued from previous page

Lopez said. "We were imaging the salt flank surface, which is parallel to the borehole. The sensors and reflectors must be parallel to each other, so they can both be vertical or both horizontal.

"We've now completed execution of the salt cavern survey, and it was very successful," Lopez noted. "We've seen the salt flank image and have the distance from the borehole to the salt flank, which is more precise than what was known before.

"The uncertainty bar was significantly reduced because of the survey."

Shell also completed a successful look-ahead VSP exploration application trial in the Gulf of Mexico in 2006. The look-ahead VSP with virtual sources was tested on a walkaway VSP data set, which was acquired while a well was drilling through a thick salt mass.

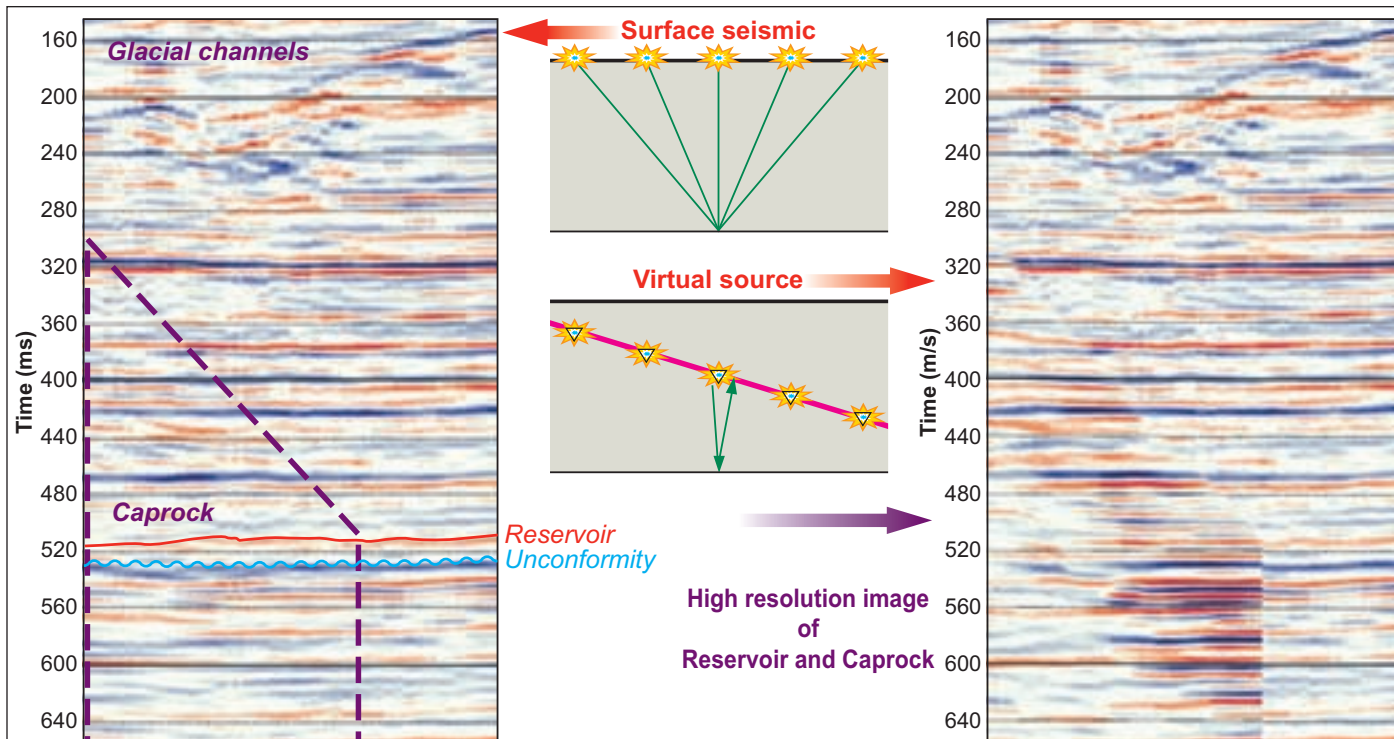
Unknown hazards lying ahead of the drill bit are relatively commonplace in the Gulf with its many widespread salt sheets. The objective of the Gulf trial was to detect intra-salt hazards while drilling and to accurately predict the base of salt in advance.

"In this case we were in the salt and an inclusion was observed on the seismic, and we weren't sure if it was an artifact or a real potential problem," Lopez said.

"Also, once you approach the base of the salt the geology can be quite complex, and you need a good prediction for depth because the driller must be ready to react.

"As you drill through the salt, the pressures beneath are often unpredictable," Lopez noted, "and if you don't have a good estimate of the depth of your objective, you can be surprised.

"One of the successes of this look-ahead VSP was to see ahead of the bit



Graphics courtesy of Shell

In conventional VSPs, one or more sources are placed in a pattern on the surface and check shots are let off in a standard sequence. A string of geophones located down the hole record the resulting seismic waves. Traditional check shots below salt can give erroneous results because of complex ray paths. With a virtual source VSP, the energy picked up by the geophones is manipulated mathematically so that any receiver can become a "source." Other receivers located below can then receive the signals from this virtual source. The "source" can be placed below the salt to give more accurate results.

and predict the depth of these two hazards – the inclusion and base salt – very precisely."

Another Dimension

Virtual source monitoring is becoming a complementary tool to conventional 4-D seismic technology, which is used to monitor changes in producing reservoirs and to observe results of the stimulation

methods used for enhanced recovery, according to Lopez.

As opposed to conventional 4-D, the virtual source receivers are buried permanently, overcoming the repeatability issues that often arise with 4-D acquisition, i.e., the inability to accurately repeat the receiver location.

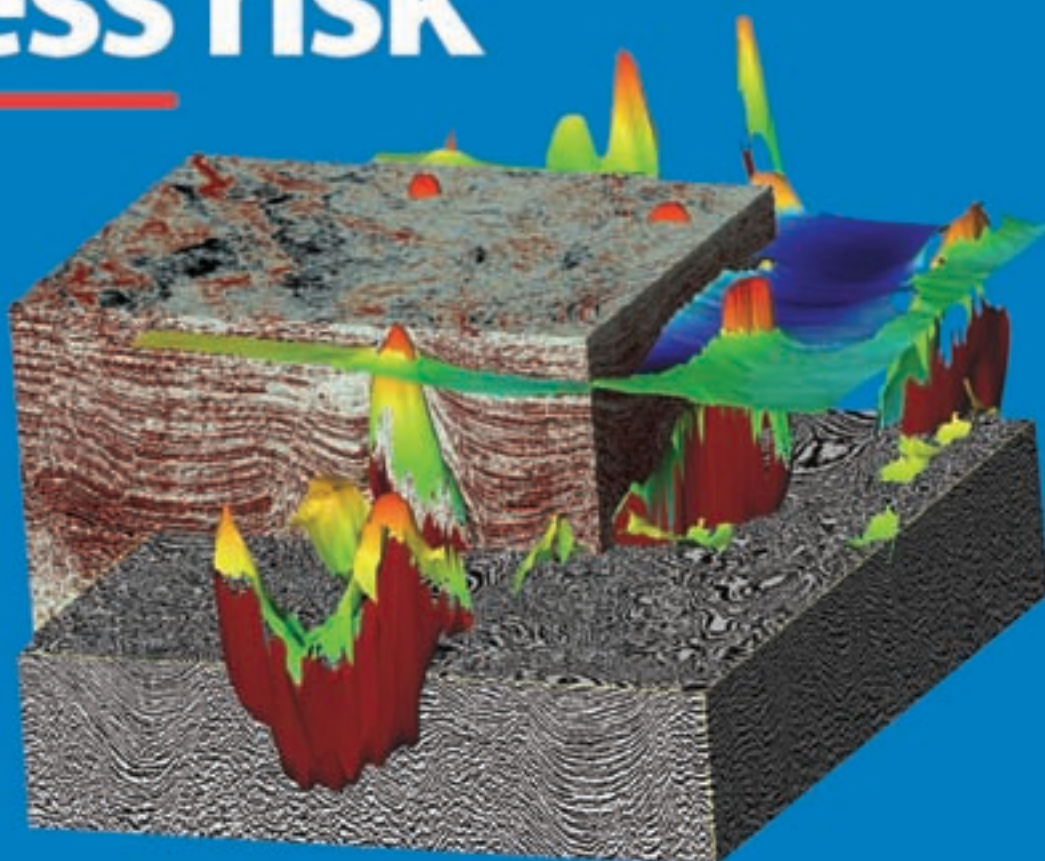
A virtual source survey has been put into play at the Peace River Field in Canada, where a complicated, near-

surface layer distorts the conventional seismic picture in this heavy-oil field, which is being produced via the steam injection enhanced recovery process.

It's uncertain where the steam goes because it doesn't follow a uniform path. Even when the process is repeated, the steam chooses the path of least resistance.

See **Virtual Source**, next page

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Virtual Source

from previous page

"What we're looking for is a way of producing a high resolution image of the reservoir over time so we can see where the steam goes," Lopez said. "This is a traditional 4-D, but the problem is the Peace River Field has some shallow distortions such as glacial channels, so the images are not of good enough quality."

"Also, the shallow subsurface changes over time because of seasonal changes, so the 4-D signals are not easily repeatable and you can't accurately map the steam front."

The virtual source application here was a test along a transect versus the entire area. A comparison of the surface seismic with zero-offset virtual source image reveals the improved resolution of the cap rock and reservoir images obtained via the virtual source.

"With the virtual source survey, we're able to remove all of the effects that occur above the reservoir and just concentrate on the reservoir and get a higher fidelity measurement," Lopez said. "This was a pilot test, and we're trying to deploy an areal test of the Peace River Field now."

Going Deeper

When using the virtual source technique, the extent of the image coverage is maximized when the sensors are deployed in wells drilled parallel to the reflectors, e.g., horizontal wellbores drilled above essentially level geology.

A reliable and inexpensive method to drill horizontal wells for observation could enable the technology to be enhanced to the point where one could create a grid of sensors and virtual sources below seismic-distorting obstacles to essentially

Peace River puzzle: Using virtual seismic to figure out what at this site in Canada lies below. The illustration at the right shows characteristic events in the seismic section before and after steam injection. Point A represents the top seal, B is the reservoir and C marks the underlying regional unconformity.

implement a seismic survey below the obstacles.

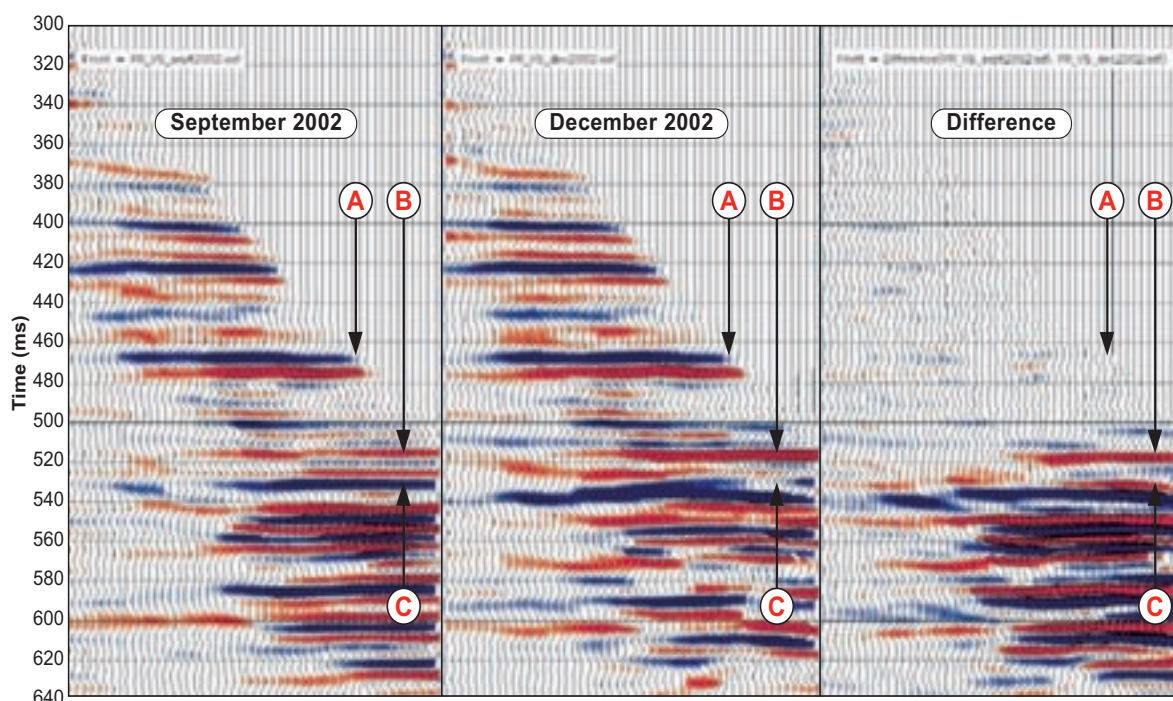
In case you're thinking there are numerous horizontal wells already drilled, you're right. The problem is that the producing horizontals are of no use because they're already in the reservoir.

"You want something above the

reservoir to image below," Lopez said. "It will be deployed between the surface and the reservoir at some intermediate depth that has to be below anything distorting your image, and enough above the reservoir because you don't want to be too close – the closer to the reservoir, the smaller the image becomes."

"I see a time where we have many horizontal wells drilled for observation below the shallow distortions," Lopez said, "so we'll have essentially a buried seismic survey underneath complexities."

"We're picking up momentum on getting there." □

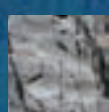


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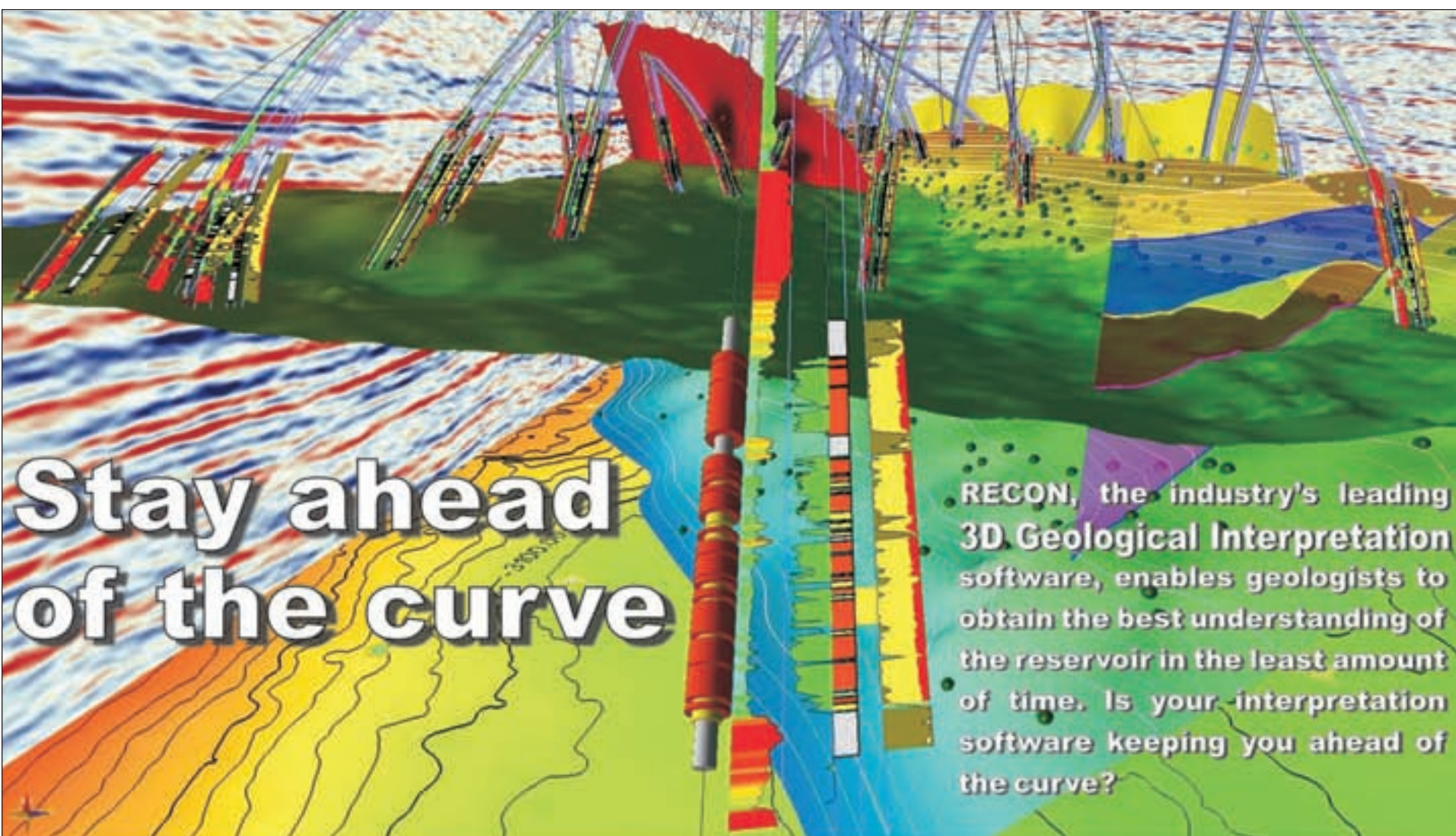
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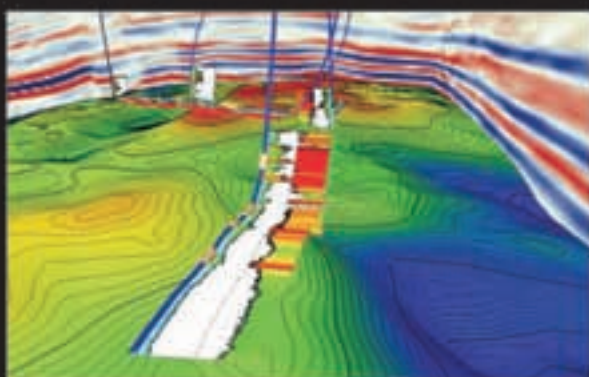
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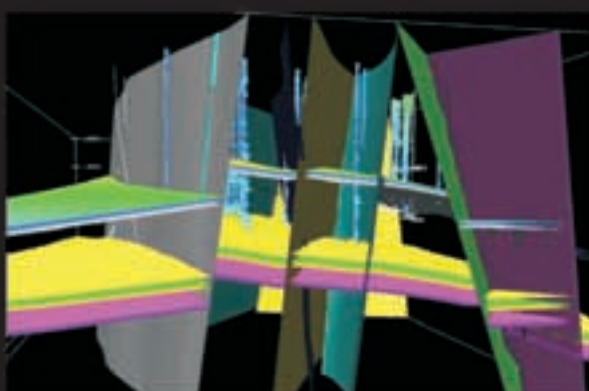
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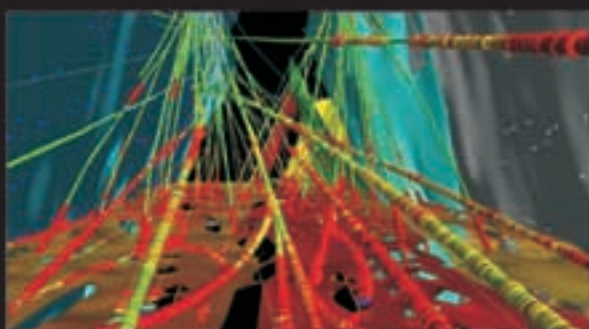
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Another Oil Product

Diamondoids Go 'Big Time' Nano

By DAVID BROWN

EXPLORER Correspondent

Think of the world's smallest diamonds.

Now divide that by about a billion, because we aren't talking an engagement ring here.

These are diamondoids, the smallest possible diamond crystals.

Adamantane, a carbon-cage molecule and the smallest diamondoid, has just 10 carbon atoms and 16 hydrogen atoms.

It's less than a billionth of a billionth of a carat.

What does that have to do with the petroleum industry?

Diamondoids occur naturally in crude oil and gas liquids – first identified and isolated from Czechoslovakian crude in 1933.

Skip ahead a few decades. Today, nanotechnology researchers are studying diamondoids for all sorts of potential uses.

Current research into diamondoids is "going in every direction."

"Basically, every field is involved with nanotechnology," said Nick Melosh, assistant professor in the Department of Materials Science and Engineering at Stanford University in Stanford, Calif.

Melosh is working with a research grant from Chevron Corp. to study the nature of diamondoids, with an eye toward practical applications of nanotech.

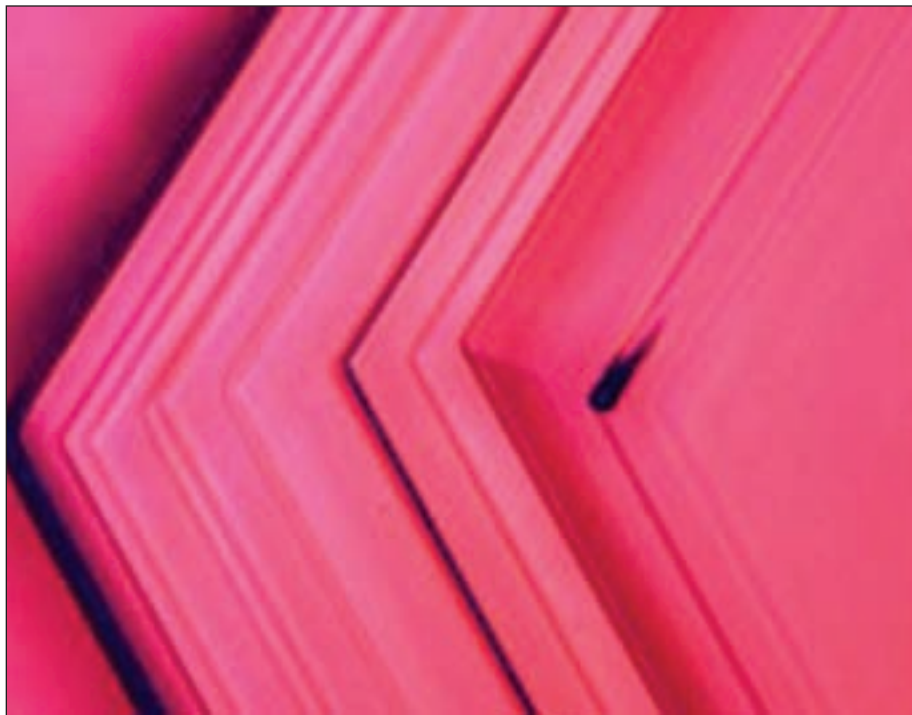


Photo by Jason Fabbri, Stanford University

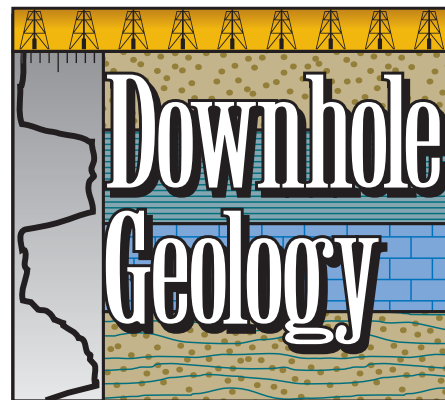
Diamondoids are a geologist's best friend? Perhaps research on these nano-jewels will lead to applications in the energy industry that we haven't even thought of yet.

And his research truly occurs at nano-scale. He said each individual diamondoid measures about one nanometer by half a nanometer.

"There aren't huge ones, yet – the

largest ones isolated are six diamond cages long, about 1.3 nanometers," Melosh said. "People are still trying to figure out how to process these things."

"Only in the last year and a half



have modified versions of diamondoids become available that are much easier to handle."

Excellent Emitters

Right now, Melosh and his research students spend time studying the unique properties of diamondoids.

Like most nano-scale materials, diamondoids sometimes behave differently from their large-scale counterparts, and sometimes similarly.

"They're like diamonds in some ways, so they're probably very mechanically and electronically stable," Melosh said. "And they are very robust in our experiments, especially mechanically."

See **Diamondoids**, page 20

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Diamondoids

from page 18

As it turns out, diamondoids make excellent field emitters – they are very good at emitting electrons “for various unknown reasons,” he noted.

Melosh has studied that capability with ultraviolet spectroscopy, using UV light to excite electrons off the diamondoids’ surface.

“In this case, we had these diamondoids self-assembled on a layer of gold or silver,” he said.

They emitted all electrons at the same energy level in those experiments, acting as tiny but efficient producers. That could point toward uses in improved solar cells, nano-batteries and low-energy lighting, according to Melosh.



Melosh

“You can get very high efficiencies of current-in to current-out,” he observed.

Because of their efficiency, diamondoids could be coming to your TV screen, if field emission devices (FEDs) replace liquid-crystal display (LCD) technology.

FEDs may offer sharper images while using less power than today’s displays.

“They are like diamonds in some ways, so they’re probably very mechanically and electronically stable.”

In October, researchers reported the results of new diamondoid experiments at the Advanced Light Source (ALS) division of the Lawrence Berkeley National Laboratory.

They found that 68 percent of all emitted electrons from a diamondoid monolayer on silver were within a single energy peak, said Wanli Yang, a physicist at the ALS lab.

“This monochromatic emission is

several times stronger than that reported for bulk diamond surfaces, which means much more electrons were emitted at the same speed, a very desirable property for use in FEDs,” Yang noted.

The Human Element

But diamondoids’ most important benefits for human beings should come inside human beings.

“The biggest thing you see coming up in nano right now is biology,” Melosh said.

“We’re actually looking at how to get conventional semiconductor technology interfaced with biological constructs, like cells,” he explained.

That research partly involves the potential use of nano-scale patterns and chemical release to regulate cell behavior. For his studies, Melosh has used stem cells derived from fat, a much less controversial stem cell source.

“You can actually harvest a fair amount of these adipose stem cells from fat, and people don’t have the same level of objection to liposuction,” he said.

One challenge is how to stimulate or record nerve activity without degrading the nerves, Melosh said.

The payoff could be practical nanotech-biology interfaces – we’re talking Bionic Man now.

“It would be great for things like prosthetics,” he said. “The big question is, how do you interface nerves with these new kinds of prosthetics?”

Diamondoids burst into the news, sort of, when Chevron MolecularDiamond Technologies announced it had successfully identified, isolated and produced groups of higher-level diamondoids.

Adamantane is the simplest form of diamondoid, a basic cage structure of the diamond lattice. Diamantane has two face-fused cages, and triamantane is somewhat more complex. Those are usually known as lower diamondoids.

The researchers at the Berkeley Lab used tetramantane with four cages, or higher diamondoids.

Each level of naturally occurring, higher diamondoid becomes exponentially more scarce, according to Melosh.

“There’s very, very little pentamantane,” he observed.

And for the Oil Industry ...

Chevron rocked the world three years ago when it first announced the availability of higher diamondoids in quantity.

Okay, maybe that story didn’t make it onto the front page of your newspaper. But it represented an important step forward for diamondoid research.

Now we think nothing of going to parties and discussing $C_{26}H_{30}$ hexamantane, known as cyclohexamantane in casual conversation, which also occurs naturally in petroleum.

The point? Higher diamondoids and diamondoids of different structures are now available to researchers in gram quantities, plenty enough for research work.

Current studies focus on electronics and biology, but it’s likely that diamondoids someday will find useful applications in oil and gas.

Then they’ll complete the cycle, providing benefits for the industry that gave them birth. □

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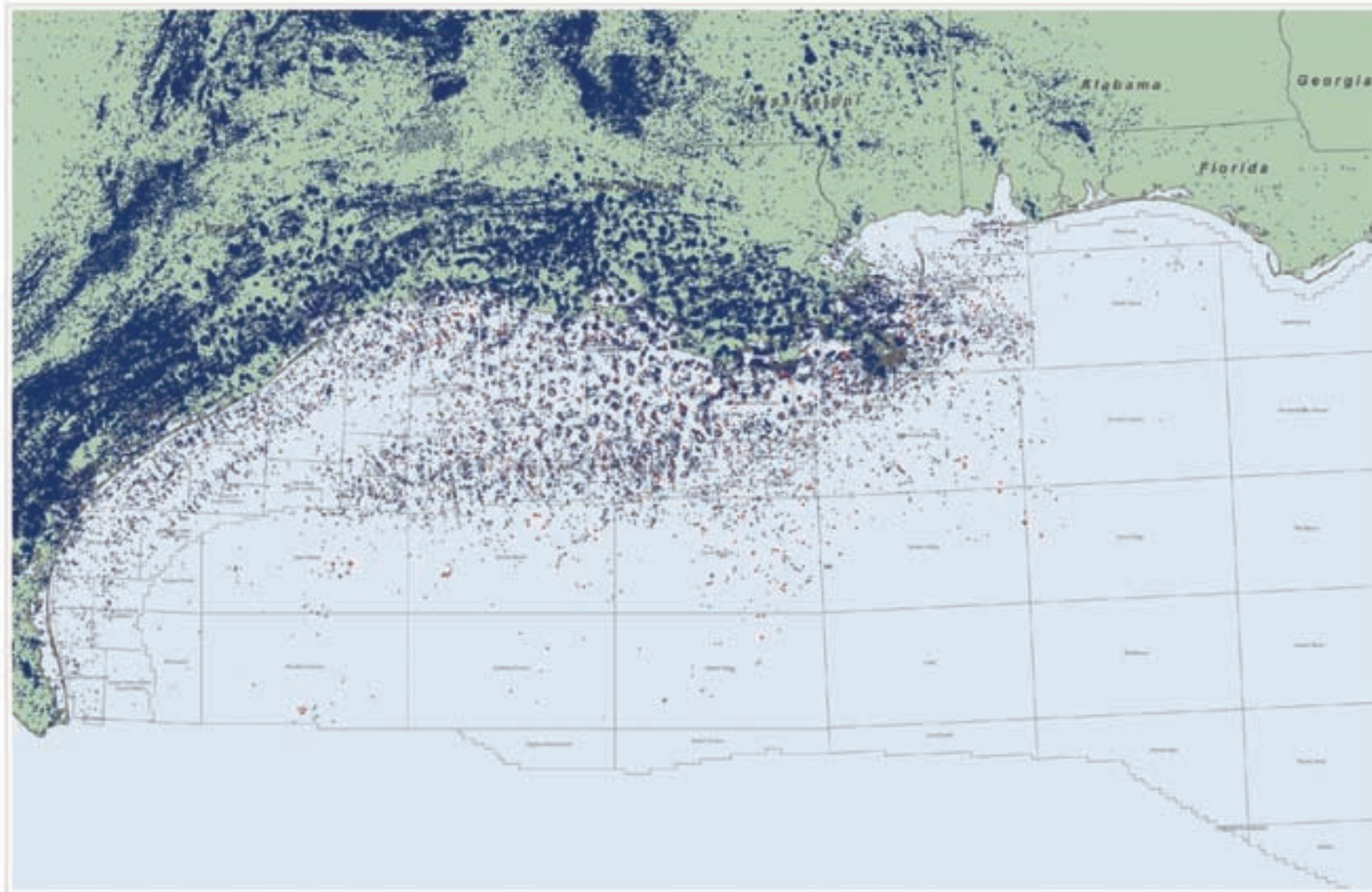
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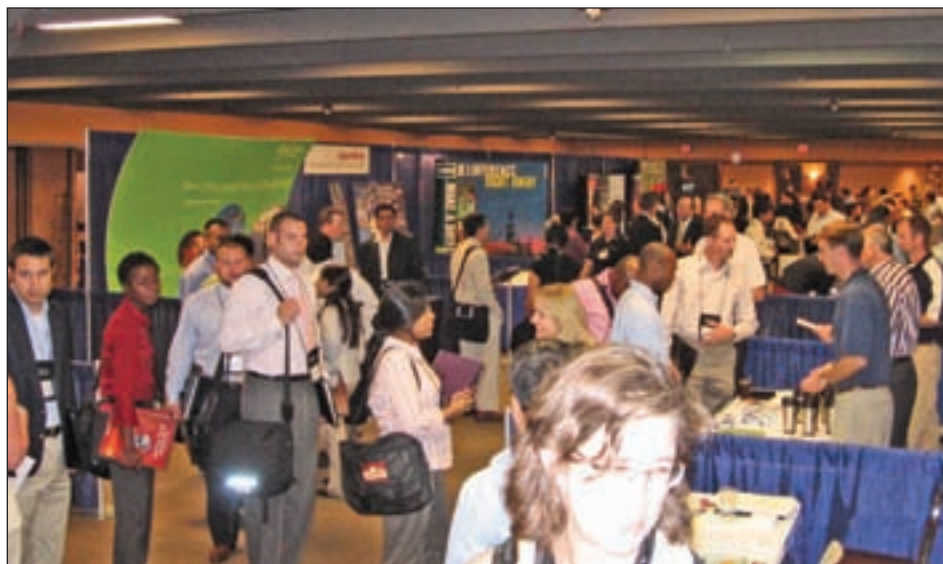
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The tenth time was another charm: A record-setting number of students and industry representatives attended the recent AAPG/SEG student expo in Houston.

Photos by Mike Mlynek

34 Companies on Site

Student Expo Was a 'Rockin' Time'

By LOUISE S. DURHAM
EXPLORER Correspondent

It's perhaps an understatement to describe the 10th annual AAPG/SEG student expo as a lively event.

Rockin' might be a more apt term.

A record-setting number of more than 230 ambitious, fired-up university students from both the United States and overseas assembled at the confab, seeking a future in the oil and

gas industry.

It was a golden opportunity to interact with the 34 companies on site – from the big guys to the not-so-big – who were aggressively looking for new recruits from among this assemblage of young, well-educated geoscientists.

In fact, the whole purpose of the annual expo is to link geoscience students with industry recruiters.

It's a good deal for everyone.

The students have the opportunity to present their work, network and interview with multiple companies gathered in one locale, while the companies enjoy a cost-efficient method for recruiting from a varied and sizeable student population.

The annual event is a particular boon for students at schools far removed from the oil patch, which recruiters frequently by-pass.

In fact, the initial motivation for the expo was to help students at universities where they don't get much industry exposure, and there's light recruiting, according to Mike Mlynek, assistant manager of member services-student focus at AAPG.

Mlynek noted also that many of the student attendees know the history of this cyclic industry, but they still believe it to be a vital industry both for now and in the future.

Today's Excellent Opportunities

Day one of the expo included field trips, an open poster session and an icebreaker. The following day was filled with interviews and poster presentations; poster awards were presented during an informal session.

The students submitted their resumes and poster abstracts prior to the meeting to allow the companies to identify attendees with specific skills.

The fact that numerous seasoned industry professionals are readying for retirement appears to have had a significant impact on recruiting parameters.

"A lot of the companies are looking for smart geoscientists – not necessarily geologists or geophysicists," said Adam Seitchik, exploration supervisor at Devon Energy, an expo sponsor. "In general we're looking for really smart energetic young students who are scientific, analytical thinkers."

"You can't teach people to be smart," he added, "but you can train those already smart to be good oil and gas finders."

Seitchik commented on the good diversity of students outside of core oilfield schools, noting they're all good strong candidates.

"What we're seeing are more students that don't necessarily have the soft rock or the structure background that companies used to look for," he said. "They may not have that focus – but that's OK as long as they have core geological course work."

"We're seeing more geochemists, people maybe with more of an environmental focus that see the oil and gas industry as an excellent opportunity to use their geological skills."

See **Students**, page 24



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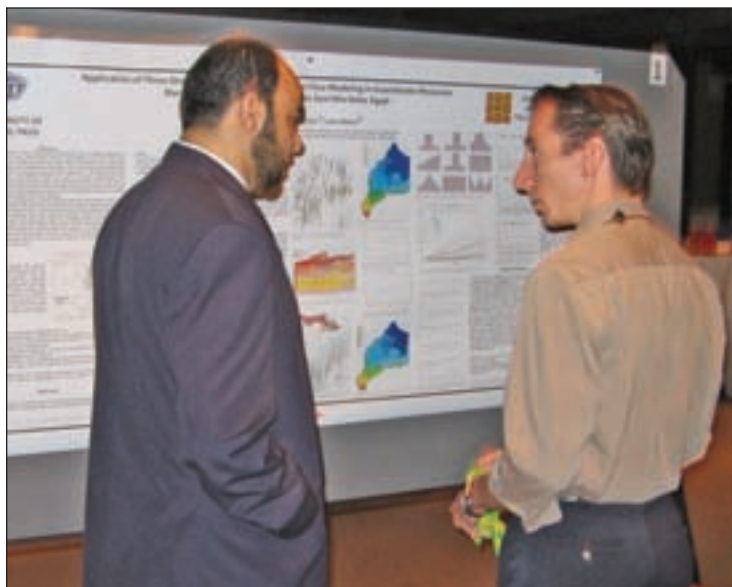
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Strutting your stuff: The poster sessions were an important part of the student expo, both in terms of science and networking.

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Students

from page 22

Report Cards

Not all of the student attendees were new to the industry.

In fact, Rutgers student Samuel Henderson is fourth generation Oil Patch – his family background is the natural gas side of the business in Ohio.

Henderson, who plans to complete his academic stint in July 2008 with a doctorate in paleo-oceanography, was new to the student expo series as of this year.

"I'm surprised at how many people are here," he said. "There are so many it seems they're (the companies) kind of swamped."

"Most of students here are graduate students," Henderson noted, "and the undergraduates are being encouraged to seek higher degrees."

Henderson's initial expo experience was enhanced considerably when he captured third prize in the poster session.

Marine geologist/paleontologist Lindsey Geary was another expo first-timer. Geary is pursuing a master's degree at Florida State University and currently is writing a thesis on "Holocene Diatoms From Maxwell Bay Antarctica."

She gave the expo high ratings.

"Before the expo, I had sent applications to many companies," Geary said. "Four of them elected to interview me here at the expo but I'd had no earlier response."

"It seems like if you go to meetings like this it shows the companies you're really interested," she added.

"I've had good response here and feel confident I'll at least get an internship."

A Pause That Refreshed

During the recruiting experience and elsewhere, it's not uncommon to be asked what triggered a career decision.

Three-time expo attendee Fernando Enrique Ziegler, who is working toward a master's degree in geophysics at the University of Houston, where he's AAPG student chapter president, answers this question with a unique story.

After acquiring a bachelor's degree in physics at the University of Texas, Ziegler ventured to Houston to find employment. He quickly realized it would require a doctorate degree to get what he was seeking.

Meanwhile, he took a day-job tending bar in downtown Houston, where he met a number of geoscientists over time.

"Once I got to know them, they realized I had a degree in physics and said we need people like you in the oil business in geology and geophysics," Ziegler said.

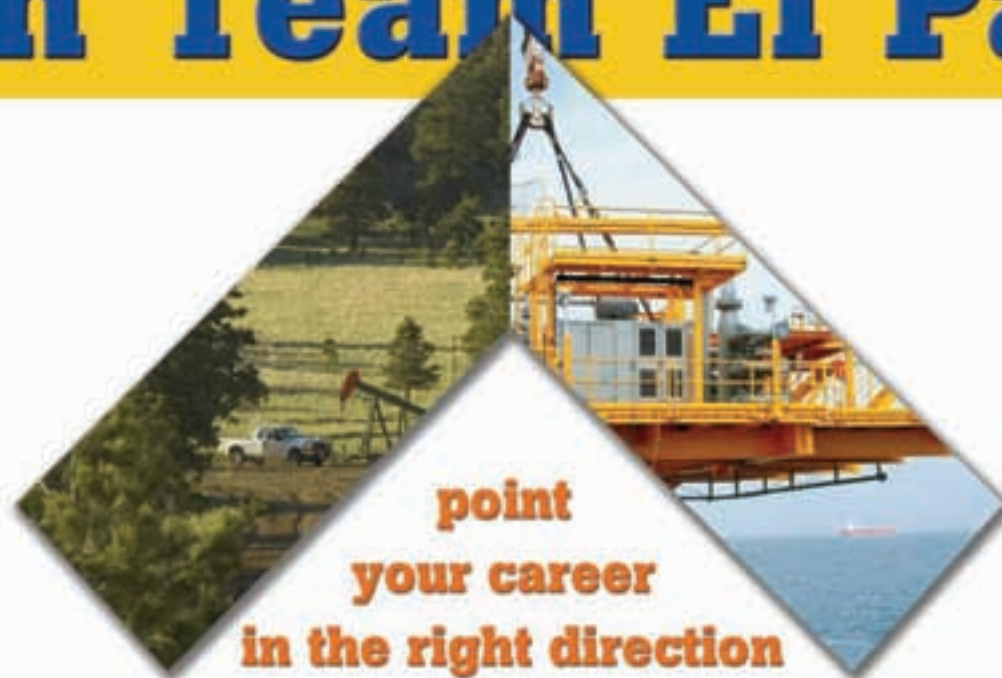
"They told me about the profession, and I thought it was very interesting."

"They pushed me to apply for graduate school and wrote letters of recommendation," Ziegler added. "I got accepted at U of H (University of Houston), and now I'm here."

The affable Ziegler, who already had interned with two of the companies at the expo, reported he had a couple of promising interviews during the event.

"The expo is great networking," he noted. □

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Creating a Modern Classic

'eText' Aspires to a New Standard

By BARRY FRIEDMAN
EXPLORER Correspondent

AAPG is about to publish a historic and significant book – historic because of its concept and significant because of its content. But first another subject is being discussed.

Author Stephen L. Bend, associate professor of geology at the University of Regina, Saskatchewan, Canada, is passionately talking about the miniatures he is making for an upcoming special on the History Channel called "Reinventors II" rather than his and AAPG's new *Petroleum Geology eTextbook*, scheduled for release this month.

"I am making Da Vinci's tank, vintage machine guns and ancient weaponry, and actually have a one-quarter-scale trebuchet in my back garden that hurls two-pound objects over 100 feet – it's great for my kids 'show and tell!'"

And then he adds – not that he needs to – "I have a very tolerant wife."

Having just labored over an exciting new development in the field of petroleum geology education – an eTextbook on CD-ROM with interactive video and audio – you can forgive Bend for tinkering in the backyard, lobbing whatever projectiles he has toward the house and testing his wife's patience.

His commitment to creating something new and fresh easily informs and inspires the various facets of his creativity.

Those who have seen it say the *Petroleum Geology eTextbook*, AAPG's first-ever e-textbook, is a worthy compendium to A.I. Levorsen's famed *Geology of Petroleum*, long considered

the mother of all petroleum geology textbooks.

It also is believed to be the first new single book to specifically offer an all-encompassing view of petroleum geology since Levorsen's tome.

(AAPG's Treatise of Petroleum Geology offered a more comprehensive look at the subject, but that came in three series, including a reprint series comprising 20 separate volumes.)

A New Gold Standard?

Before talking of either his or Levorsen's book, though, Bend wants to set the record straight on one thing.

"Let's dispense with the 'professor' thing," says a man who not only has a doctorate from the University of Newcastle-upon-Tyne in England, but also is a competitive cross-country skier and mountain biker.

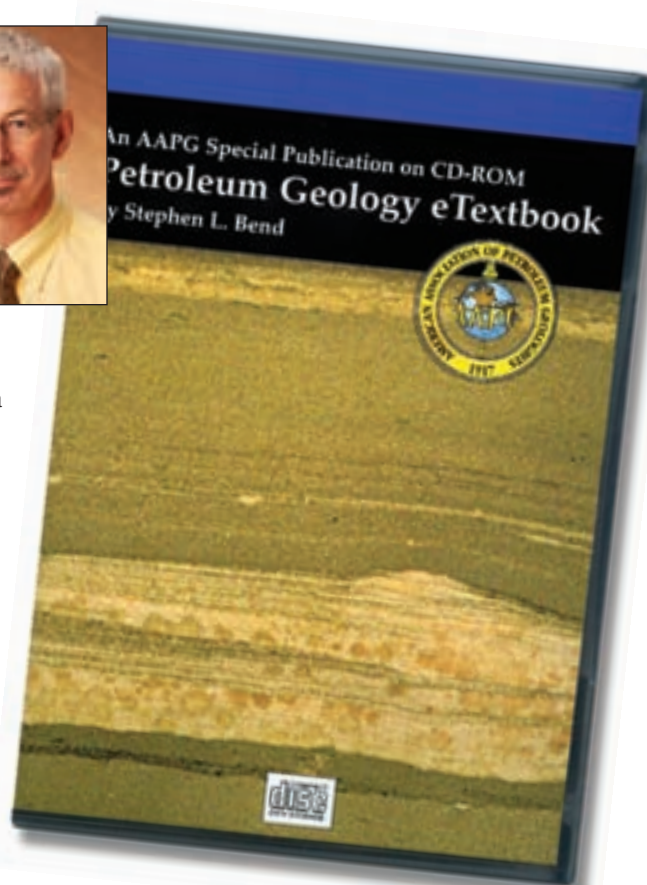
Fine.

For starters, then, Stephen is flattered by the comparison.

Calling Levorsen's book the industry's



Bend



"gold standard," he says, "I have a copy of *Geology of Petroleum* myself and often admire the volume of work and knowledge that is encapsulated in his book.

"As complete as that text was," he

continues, "technology, geological knowledge, geological practices and the means of executing the business of oil and gas exploration are always evolving."

And that evolution needed a newer information delivery system, one that would honor the fundamentals of the profession but be able to adapt when necessary.

With the *Petroleum Geology eTextbook*, Bend not only augments the great wealth of knowledge found in Levorsen's and other published geologic work, but also augments the way in which that information is transmitted and actually defined.

"Take, for example, our current and increased understanding of source rocks, petroleum generation, oil migration, seals and sealing surfaces, geophysical exploration, the constant evolution in petrophysical logging and the evolution in drilling practices," he said, "all of which have changed over the last 50 years."

Another discussion of that change can be found in the first line of the *eText*, where Bend wonders if the term "petroleum geologist" is even accurate anymore.

"Petroleum geology, as a sub-discipline of geology, has become both increasingly broad in scope and highly dependent upon a myriad of specialties," he said. "A 'petroleum geologist' may be principally a stratigrapher, a structural geologist, a sedimentologist, a geochemist, or 'well site geologist,' etc.,

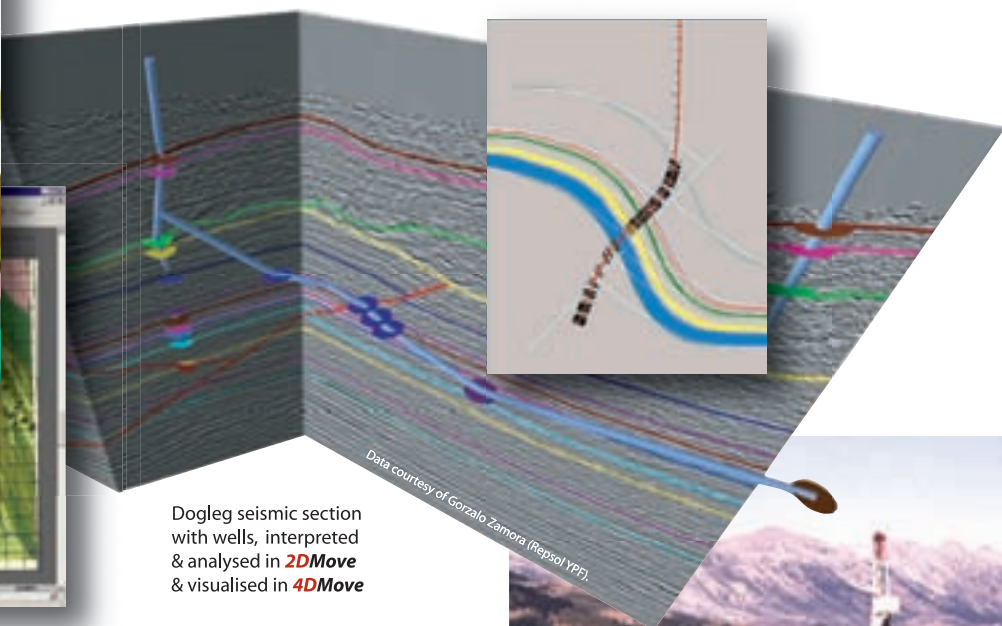
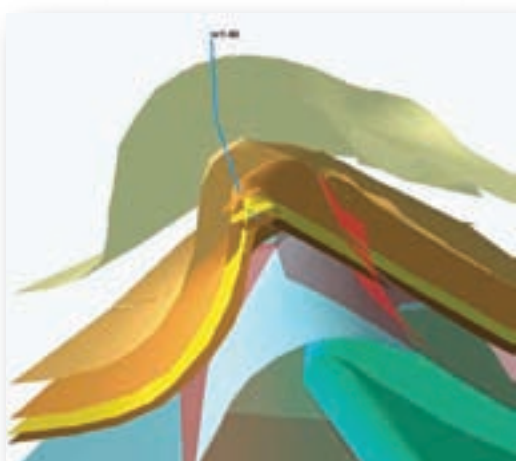
See **eText**, page 30

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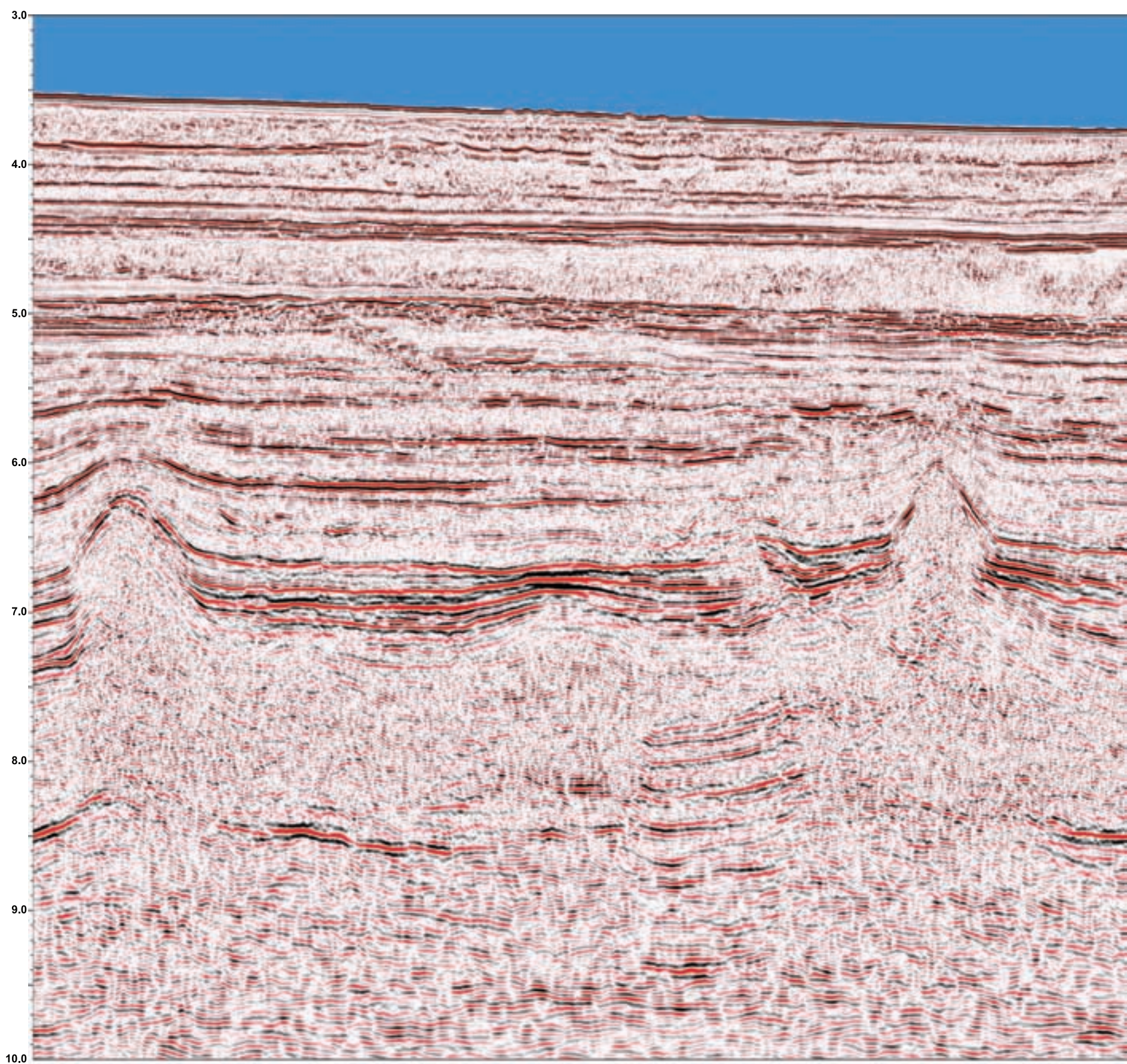
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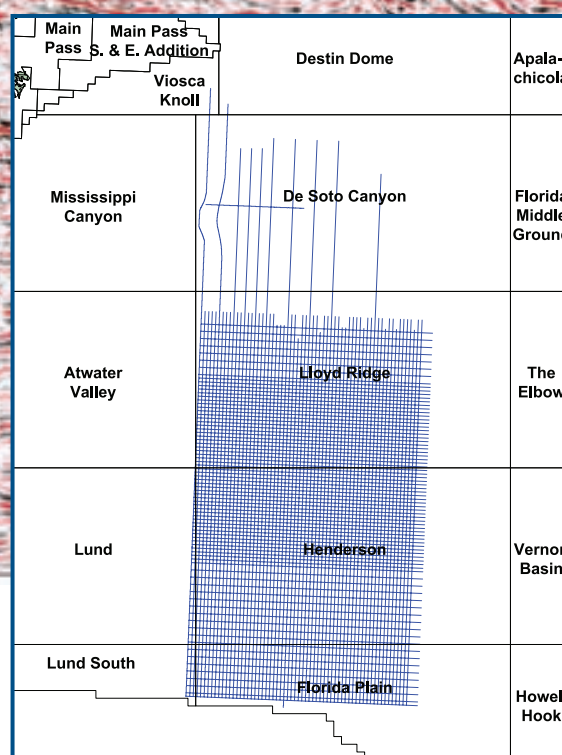
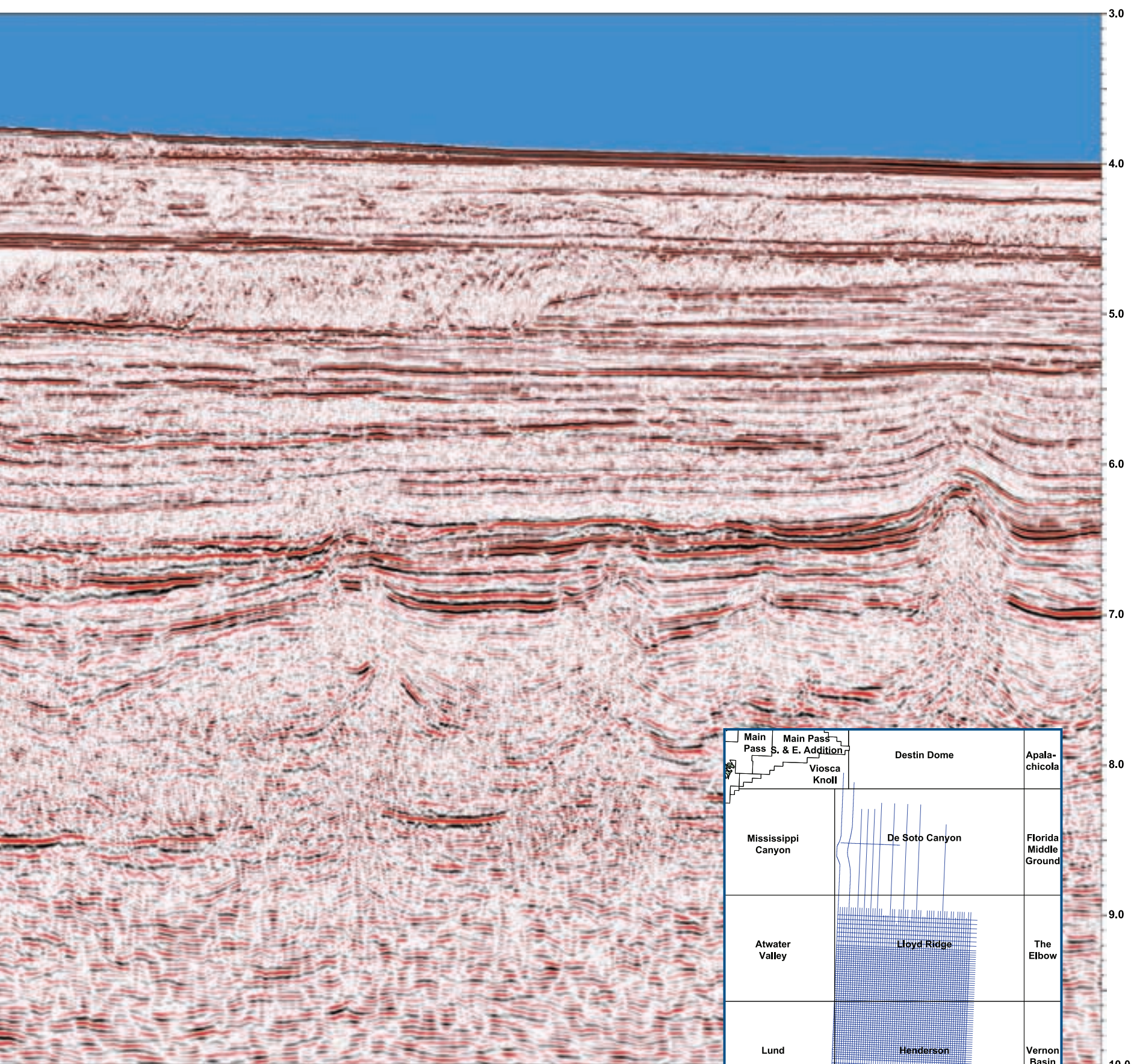


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eText

from page 26

all of whom apply their respective skills and knowledge in the exploration and production of oil and gas!

"However, everything has to be successfully integrated as ideas and interpretations of the subsurface evolve," he added. "So you could say that the petroleum geologist is not only a wearer of many 'hats,' but the 'hats' may also change throughout ones' career."

All of this, he says, is as much about science as it is art, comparing geology with abstract art – a field in which he is both a collector and creator.

"Like abstract art, interpretations of the subsurface exist in the mind," he said. "Even throughout the exploration and production history of an oil or gas field, the geologist cannot see or touch the reservoir buried within the subsurface."

"Another connection is creativity. A petroleum play and piece of art are both the fruits of a creative mind, enabled with the appropriate skills and tools to get the job done!"

The Times They Are A-Changing

Bend, an AAPG member since 1983, has worked as a field geologist for more than 20 years and operated the geochemistry laboratory in Halifax, Nova Scotia, for Exlog Canada. Through those years he developed an expansive interest in organic geochemistry and petrology.

For the past 17 years as a professor – there's that word again – he knows something about how to transmit that information.

"Student's expectations and the way in

AAPG's historic *Petroleum Geology eTextbook*, a CD-ROM that offers the first comprehensive look at the subject in decades, is the Association's first e-textbook.

The textbook, written by Stephen Bend, costs \$46 and can be ordered online at <http://bookstore.aapg.org>. It is catalog number 141.

which they learn and study have also changed," he said. "We live in an increasingly visual world, so in response, textbooks have also evolved. Contemporary textbooks, for example, in geology are becoming progressively visual."

"Geology is a very visual discipline and we have become increasingly adept in visualizing geological phenomenon."

As such, the *Petroleum Geology eTextbook* is media rich, of which Bend said, "I am especially pleased that we were able to include an interactive library of previously published material (i.e., scientific papers, book chapters) that users of this will no doubt find useful. The *eTextbook* also includes material that will be of use to the professional geologist, such as the inclusion of logging charts."

"It is my hope and intention that this *eTextbook* will be useful not only to the student of petroleum geology but anyone working in petroleum geology."

Gretchen Gillis, AAPG Elected Editor who oversees all technical and scientific publishing for the Association, is one such person.

Gillis, whose master's degree is in geological sciences from the University of Texas at Austin, says an *eText* could have nonetheless helped her in her training.

"I think I would have benefited tremendously from having Dr. Bend's *eText* when I began working as an exploration geologist," she said. "The training material I worked with as a newly hired exploration geologist was not nearly

as good as the *eText*."

"I hope the *eText* will encourage people who would naturally be drawn to geology to continue in the subject," she added. "The *eText* describes many facets of petroleum geology using engaging text and fabulous full-color graphics and videos, includes links to many classic papers, and the search function makes finding particular information a breeze."

Gillis says when Hannes Leetaru, who's on AAPG's Publication Committee, saw Bend's early work, it was natural that the organization would get involved.

"Leetaru was so impressed that he brought a copy to the AAPG Publications Committee meeting and showed it to us," she recalled. "While the Publications Committee offered a few suggestions, Dr. Bend deserves all the credit for the high quality of the end product."

Coming Soon: More

Gillis adds that this is not the only project of this sort coming down the pike.

Leetaru and AAPG are about to publish an electronic collection of teaching sets for petroleum geology, "which I think will be an excellent companion to the *eText*."

A companion, Bend believes, that can be used worldwide.

"While I was writing, editing and re-editing, it was always my intention to include examples and references from around the world," he said. "I wanted to make this textbook acceptable beyond

the USA and Canada."

Bend, who has been published in the *Journal of Fuel*, *Organic Geochemistry*, the *Canadian Journal of Earth Science* and others, understands the practical implications of such a book as well – namely, money.

"Yes, cost is one benefit," he said. "I have several 'textbooks' on my shelf right now that are too expensive for students enrolled in semester-based courses."

"AAPG has always published affordable texts, often aimed at the professional and scientist," he added. "It is gratifying that (AAPG) will now be able to offer a truly (affordable) introductory text!"

Gillis, too, thinks electronic publishing is a wave on which geologic texts should ride.

"Electronic publications offer the advantages of being able to hold thousands of pages, color graphics and videos at relatively low cost."

As an example, she says that AAPG will be able to easily update and expand the *eText*.

Bend not only wrote the text but also developed the overall vision, which meant selecting photographs, creating dozens of figures, producing the QuickTime VR (virtual reality) movies, selecting and editing previously published work, as well as soliciting contributions from others in the industry and dealing with dozens of permission request issues.

Bend says the whole project "was an insane amount of work!" adding that the process was like "... giving birth ... without the epidural."

"All joking aside," he said, "I can see many other publishing possibilities using a similar publishing format and I have several ideas I'd like to try."

Which will no doubt try Mrs. Bend's patience. □



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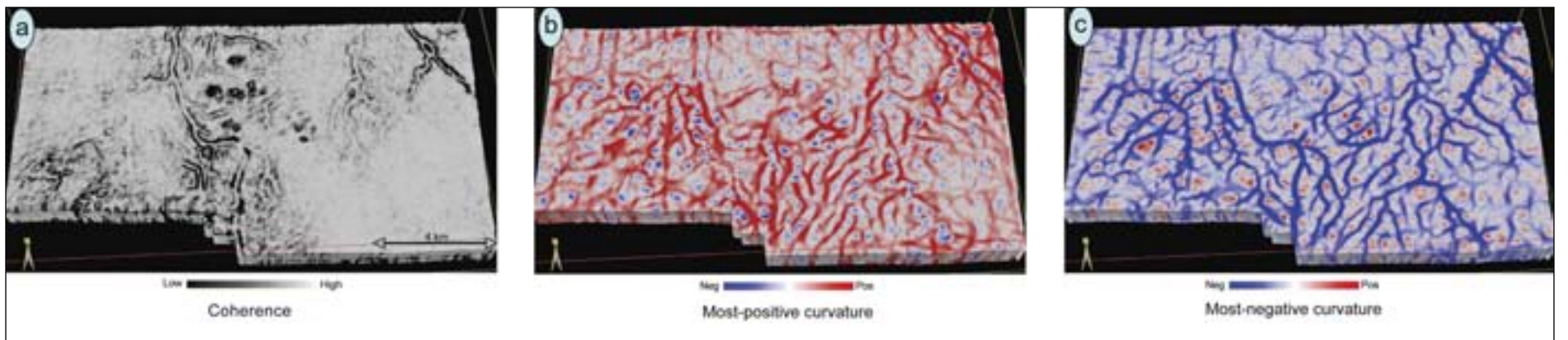
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Data courtesy of Arcis Corporation, Calgary

Figure 1 – Strat-slices through (a) coherence, (b) most-positive curvature and (c) most-negative curvature. We see some of the channel edges on the coherence display, but the most-positive curvature highlights most of the channel flanks and levee complexes. The thalweg (or channel-axis) for most channels is best seen on the most-negative curvature.

GEOPHYSICALCORNER

Curvature Can Be a Map to Clarity

(The Geophysical Corner is a regular feature 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, the second of a two-part series, deals with seismic curvature attributes: mapping depositional and diagenetic features.)

By SATINDER CHOPRA
and KURT J. MARFURT

Last month's Geophysical Corner illustrated the application of the most-positive and most-negative curvature attributes for detecting faults and fractures and calibration with borehole image-log data.

This month we illustrate the application of these attributes for mapping channels, levees and other stratigraphic features – particularly in older rocks that have undergone differential compaction.

* * *

In figure 1 we generate strat-cube displays through volumetric estimates of coherence, combined with most-positive and most-negative curvatures. A strat-cube is a sub-volume of seismic data or its attributes, either bounded by two horizons that may not necessarily be parallel, or spanning seismic data above and/or below a given horizon.

The displayed surfaces are 4 ms below the horizon used for generating the strat-cube.

Notice the clarity with which the north-south main channel stands out and a second channel in the top-right corner.

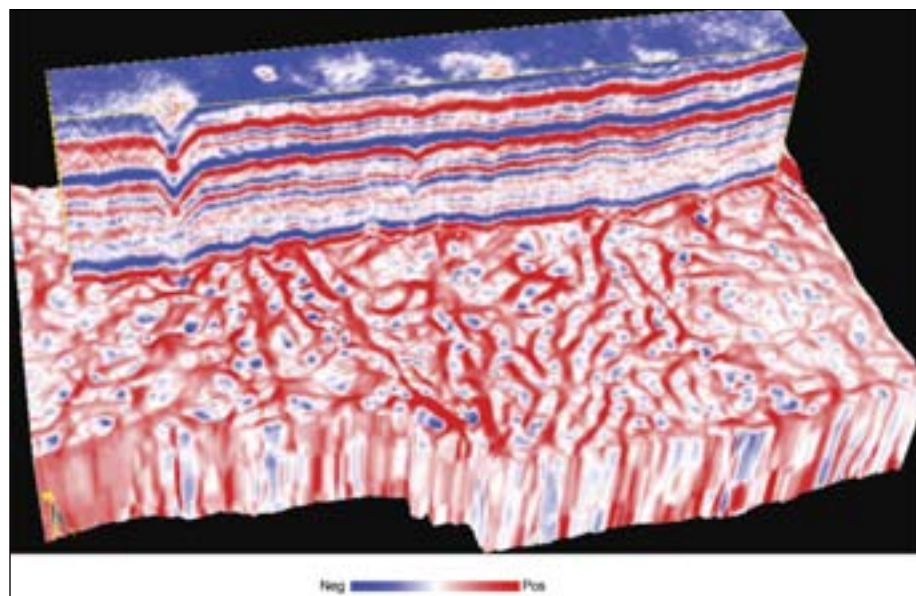
Because of differential compaction and the presence of levees, the most-positive curvature defines the flanks of the channels, potential levees and overbank deposits. The most-negative curvature highlights the channel axes or thalwegs.

The coherence image is complementary and is insensitive to structural deformation of the surface; instead, it highlights those areas of the channel flanks where there is a lateral change in the waveform due to tuning.

* * *

In figure 2 we show a chair display for a strat-cube constructed from the most-positive curvature attribute volume and an associated seismic profile.

Notice how the lineaments



Data courtesy of Arcis Corporation, Calgary

Figure 2 – Strat-cube through most-positive curvature allows an interpreter to correlate features on the attribute with their corresponding seismic signature. We see that some of the channel edges on the most-positive curvature correlate with local “highs” on the seismic data. Channel thalwegs seen in figure 1c correlate with local “lows” on the seismic data.

corresponding to the levees of the channels correlate with the localized “highs” on the seismic section.

Once an interpreter is able to see such a convincing correlation, the interpretation of smaller lineaments can be performed with more confidence.

* * *

In figure 3 we re-examine a survey discussed in detail by Sagan and Hart in

the November 2006 special AAPG BULLETIN issue on hydrothermally altered dolomite.

In figures 3a and 3b we display time slices through the most negative curvature volume at approximately the Trenton and basement levels. Note that by using a volumetric estimate of curvature, we can map the same diagenetically altered zones at the Trenton level and faults in the basement discussed by Sagan and Hart.

Sagan and Hart show how the structural control and diagenetic alteration result in a suite of en echelon valley-like features running northwest-southeast through the survey.

Conclusions

Like all attributes, curvature is valuable only when coupled with a geologic model of structural deformation, stratigraphic deposition or diagenetic alteration.

Curvature is particularly sensitive to flexures and faults.

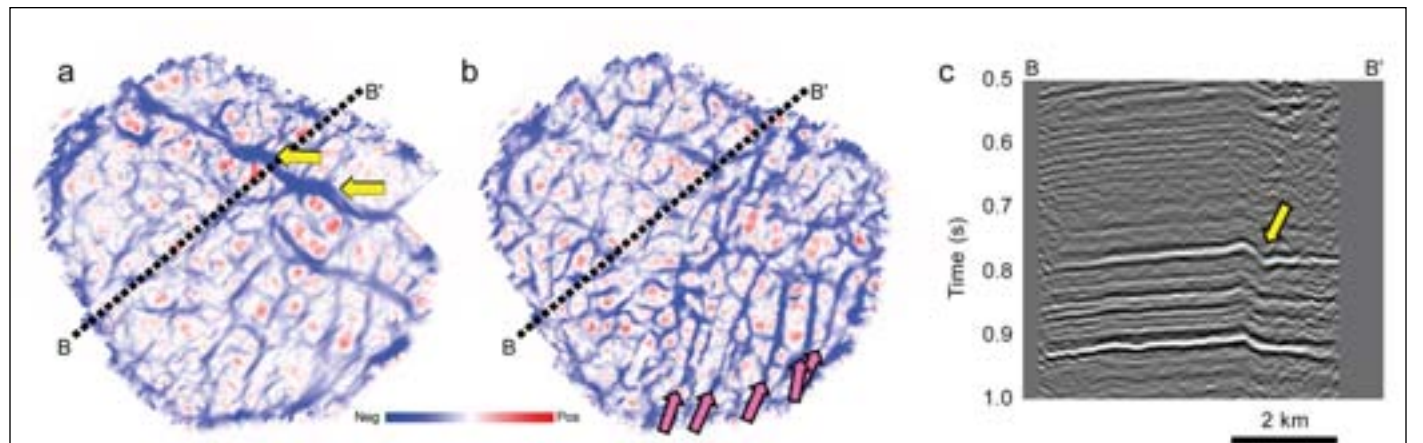
Curvature can be a powerful tool in mapping channels, levees, bars, contourites and other stratigraphic features, particularly in older rocks that have undergone differential compaction.

Discrete fractures often appear on most negative curvature. This behavior can be caused by sags about the fractures or by local velocity changes associated with stress, porosity, diagenetic alteration or fluid charge.

Although curvature attributes calculated on time surfaces after spatial filtering can display interesting features, volumetric curvature attributes provide more valuable information on fracture orientation and density in zones where seismic horizons are not trackable. □

We thank Arcis Corporation for permission to show the data examples and publish this work.

(Editor's note: Chopra is with Arcis Corp., Calgary, Canada; Marfurt is with the University of Oklahoma. Both are AAPG members.)



Data courtesy of CGAS, Columbus, Ohio

Figure 3 – Time slices at (a) $t = 0.80$ s (approximate Trenton) and (b) $t = 0.94$ s (approximate basement) through the most-negative curvature volume computed from a survey acquired over Saybrook field, northeastern Ohio. (c) Vertical slice through the seismic data. Yellow arrows indicate hydrothermally altered dolomite zones. Magenta arrows indicate faults in the basement.

Geoscientists redefine stamina

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Treating Symptoms Is Not a Cure

By DAVID CURTISS
and DON JUCKETT
GEO-DC

Financial news headlines these days proclaim a raging bull market in commodities.

Central bankers chew their fingernails at the release of each new inflation estimate, while speculators rack up unbelievable profits (unless on the wrong side of a trade). And consumers groan every time they fill up their gas tank.

This has brought politicians to the rescue, seeking quick cures to the problem of high prices.

But we need to treat causes rather than symptoms. The need for coherent policies for petroleum, coal and minerals has never been greater.

And in these sectors AAPG members can make significant contributions.

One of our primary goals at GEO-DC is to help policy makers make better decisions. Fortunately, we are not alone – three studies released this year by prominent and respected sources are providing opportunity to engage policy makers on minerals, coal and petroleum.

✓ In October 2007 the U.S. National Academy of Science (NAS) issued a report titled **Minerals, Critical Minerals and the U.S. Economy**.

While the federal government collects information on domestic and international mineral sources, it does not have a method to determine which are "critical," where supply disruptions could have

For more information on the reports in this article follow these links:

- ✓ **Minerals, Critical Minerals and the U.S. Economy** – http://books.nap.edu/catalog.php?record_id=12034
- ✓ **Coal: Research and Development to Support National Energy Policy** – http://books.nap.edu/catalog.php?record_id=11977
- ✓ **Facing the Hard Truths About Energy** – <http://www.npchardtruthsreport.org/>

significant economic and national security impact. The report presents such a methodology and recommends the federal government bolster efforts to collect and maintain such information.

Last year, in the 109th Congress, AAPG's Energy Minerals Division endorsed H.R. 6080, the Resources Origin and Commodity Knowledge (ROCK) Act, which would support these goals. In the 110th Congress we anticipate action on a new version of the ROCK Act, and EMD is again supportive.

✓ The United States is frequently described as the "Saudi Arabia of Coal." But what data is this moniker based on – and is it accurate?

Coal: Research and Development to Support National Energy Policy, a NAS report released in June 2007, investigates this question.

An important finding of the study is that while there are significant uncertainties in U.S. coal reserve and resource estimates, there is sufficient coal at current consumption to last until 2030 – and likely for more than 100 years. However, there is a real need for more "upstream" coal research to increase our understanding of

the resource base.

Currently, over 90 percent of federal R&D spending for coal is on the "downstream" side, focused on utilization, carbon capture and sequestration, and transport and transmission. Only 10 percent goes to mining and processing, environment/reclamation, reserve assessment, and safety and health.

AAPG's coal geologists have a lot to offer, and we welcome your views on this issue.

✓ In September 2007 the National Petroleum Council released the final version of its long-awaited report **Facing the Hard Truths About Energy**.

AAPG members made significant contributions to this analysis of global oil and natural gas through 2030. The report concludes that while the world is not running out of energy, there are significant challenges that could prevent these resources being the "sufficient, reliable and economic energy supplies upon which people depend."

This report impacts all AAPG members, and we encourage you to read it.

A cautionary note raised in all three reports concerns the future work force.

In 1991 the median age of AAPG's membership was 41; in 2001 it was 48; and in 2006 it was 53.

Our Association isn't unique. The minerals and mining geologists as well as the petroleum and mining engineers all face similar demographics.

But what do we do about it?

GEO-DC is collaborating with a broad coalition of organizations to develop legislation, the Energy and Minerals Schools Reinvestment Act, to rejuvenate the nation's petroleum and mining engineering and applied geology and geophysics programs.

The focus is on faculty and students, and providing the resources necessary to train up the next generation of geoscientists and engineers. It is an important step in dealing with this demographic trend.

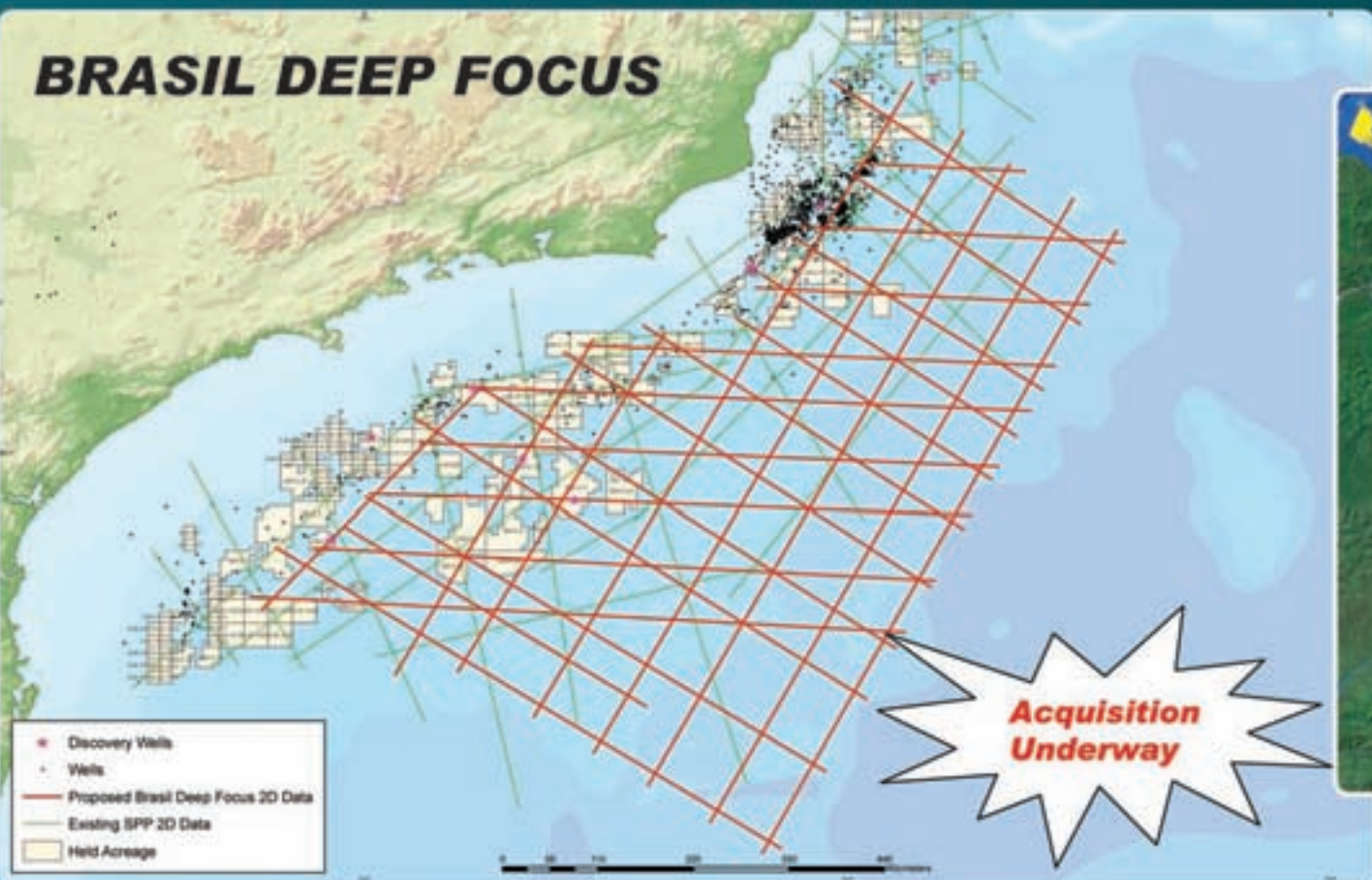
* * *

Finally, another important GEO-DC goal is to provide AAPG members with opportunities to get involved in the policy-making process.

Mark your calendars for March 4-5, 2008, and join us here in Washington, D.C., for Congressional Visits Day. You'll visit with policy makers and their staff to



continued on next page

When its a question of Brasil seismic...



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- Held Acreage

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Math Was His Bedrock

King Hubbert: An Irascible Iconoclast

(Editor's note: Much has been said – and debated – about the famous Hubbert Curve, a bell-shaped chart that may or may not be correct, and which may or may not have something to do with predictions of remaining global oil resources.

But the man who gave the Curve its name, M. King Hubbert, was more than a faceless statistician or detached theorist. He was a geologist, an AAPG Distinguished Lecturer and the author of several papers and articles.

Past AAPG president and Sidney Powers Medalist and retired Shell Oil executive James E. “Jim” Wilson (see page 37) knew Hubbert – and he knows what was truth about the man and what was myth.

Here, in the first of a two-part series, he introduces Hubbert to a new generation – and he reminds the older generation just who he was and why he mattered.)

By James E. “Jim” Wilson

The lecturer came into the room carrying a small board and a can of iced-cold beer.

He acknowledged a brief applause, went to the table, placed one end of his board on two books, opened the can of beer, took a sip and poured the remainder into a container under the table.

He turned the wet, cold, empty can upside down at the high end of the slanted board.

Several in the audience exchanged glances and wondered if this was to be a lecture on temperance or geology. Most of the audience fixed on the empty can and listened, more or less, to the lecturer who was saying something about pore pressure and that all water-laid sediments, including shale, contain some water in pore spaces of varying sizes:

As the pore pressure in the rocks increased from overburden and/or tectonic forces, the strength of the rock decreased – in some types of rocks more than others. In the laboratory, specially designed equipment developed data showing the relationship between pore pressure and the strength of rocks.

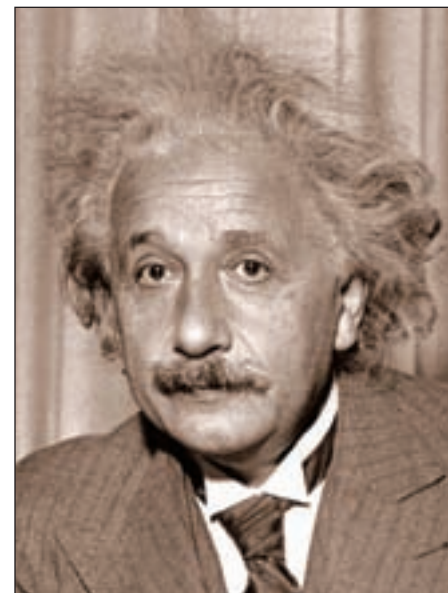
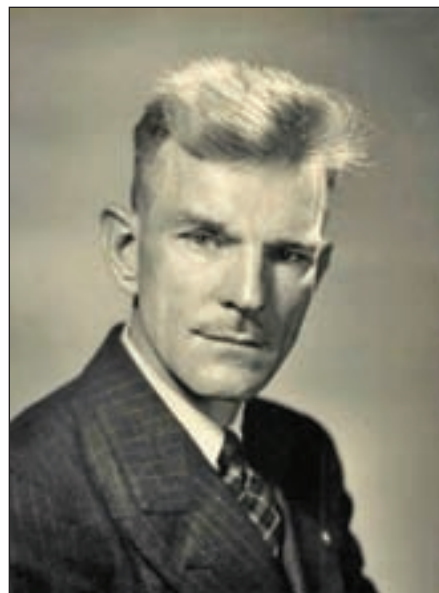
It was this condition that allowed strata to be warped and folded sometimes, to the breaking point. It also

allowed portions of deep layers of “mother salt” to squeeze into overlying strata and push toward the surface as “salt domes.”

By this time everyone turned their attention to the empty beer can, which had begun to move gradually down the incline.

The lecturer watched with them and

See **Hubbert**, next page



Hubbert and Albert: They may have more in common than people realize.

continued from previous page

talk about issues important to AAPG members, such as:

- ✓ Creating policies that deal with causes rather than symptoms.
- ✓ What is the antidote to high oil prices?
- ✓ More efficient use of the resources we have.
- ✓ Enabling us to increase supply by increasing land access and training the future work force.

Come join us, and join the debate. □

(Editor's note: David Curtiss and Don Juckett, of AAPG's Geoscience and Energy Office in Washington, D.C., can be contacted at dcurtiss@aapg.org, djuckett@aapg.org; or by telephone at 1-703-575-8293.)

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Unearth A Masterpiece.

Hubbert from previous page

explained that as the cold air inside the empty can began to warm, it expanded. The wetness of the rim of the can formed a seal with the board. The expanding air increased the pore pressure of the wetted surface, and gravity moved the can on this cushion of air.

Something to Talk About

The year was 1961, the lecturer was Dr. M. King Hubbert and the occasion was a stop on one of AAPG's Distinguished Lecture tours.

The lecture was from a joint paper, "Roll of Fluid Pressure in Mechanics of Overthrust Faulting," by Hubbert and William W. Rubey of the U.S. Geological

Survey. Hubbert had been selected to do the lecture tour.

Text books had described and pictured the overthrust type of faulting in which buckling strata fracture at a low angle and one side is pushed over the other. Geologists had mapped in the field and puzzled over what mechanism could overcome rock friction and push a plate or slab of rocks for miles.

Hubbert was one of those geologists – and he discovered that Bill Rubey had mapped many overthrusts and also puzzled over the mechanics of their origin. They each had suspected that pore pressure in the rocks might have had a part in this phenomenon.

Combining their ideas and experimentation, they produced the joint paper, which was the basis for this lecture.

Publication of this paper also encouraged reinvestigation of faulting along the Rocky Mountain Trench

reaching from Alaska to Mexico. The Anchutz Ranch was perhaps one of these areas in northern Utah and southwest Wyoming that were reinvestigated with a better understanding of the overthrust faulting phenomenon, with 3-D seismic technique playing the major role in discovery and development of this giant field.

Discovery of a giant field in an overthrust stirred the memory and imagination of the theory that a buried overthrust system extended from the Ouachita Mountains in southern Oklahoma in a giant arc to the Marathon Basin in the Big Bend country of West Texas.

The word "overthrust" became the magic word of everyday "barber shop talk," leading to an extensive "lease-play" from the Red River southwestward. Land that had never been closer to oil than the gas station was leased, and small town

newspapers visualized derricks dotting their cotton fields and dairy farms. There were groups who began worrying about pollution.

This dreamland oil play disappeared when the next lease rental dates were passed.

Genius at Work

The year is now 2007. Why bring up Hubbert 46 years later?

The reason is Albert Einstein. This is not to draw a parallel between these two scientists, but to note a crossing of their trails at the schoolhouse. It was the similarity of their thoughts on education that triggered my memory of M. King Hubbert. They both felt strongly about freedom of choice in education, but advocated more mathematics and physics in curricula. Are not these views strongly advocated today?

They each felt that any theory or relationship had to be mathematically validated. Hubbert's lectures were characterized by a blackboard filled with equations. Einstein once said all he needed by way of furniture in his office was a table, a chair, a thick pad of paper and a drawer full of pencils.

Then, he added a large wastebasket to hold his mistakes.

Einstein left Germany because of the rigidity of its courses and teaching methods. He emigrated to Switzerland and renounced his German citizenship. He enrolled in the Zurich Polytechnic to study mathematics and physics. Einstein preferred the theoretical aspect of these sciences, and felt he had a special talent for abstract and mathematical thinking.

It was later, as a clerk in the patent office at Bern, when he had much time to do abstract thinking and develop equations. A paper dealing with one of those abstractions was on energy and mass. Out of this would arise the best-known equation in all physics: $E = mc^2$ – one of the building blocks of his General Theory of Relativity.

At an early age on his farm at San Saba, Hubbert exhibited his inquisitiveness when he wondered why his toy windmill turned faster than the big one. (The British correct us: it is wind pump, not mill, but tell that to the ranchers in West Texas.)

King Hubbert absorbed all of the education available in his native San Saba County and at a nearby junior college, as rapidly as the parched land of this west Texas county soaked up the occasional rain. (Hubbert was named for Marion King, a favorite teacher of his parents in San Saba.)

One of his professors at the junior college recommended he go north to school. He applied at the University of Chicago and was accepted. Not having money for transportation, he labored at various occupations to get there.

A friend asked why he went north to college when there were good universities in Texas. He replied he wanted to go to a school that didn't play football.

In 1924, nearing the end of his first year at Chicago, he was told he was to select a major. He replied that he did not want a major, he wanted "an education," but he did select geophysics and geology, with mathematics as a minor. Hubbert went from the University of Chicago to Columbia University for graduate work, where he was frequently more teacher than student.

Einstein used the solar system in determining the speed of light, whereas Hubbert looked to phenomenon both on and below the surface of the earth – the underground flow of fluids, the strength

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of rocks and the part they played in the strength of the earth.

At the end of his presidential year at Geological Society of America in 1963, his address was titled, "Are We Retrogressing in Science." He said, among other things:

"... That curriculum be so revised as to make it not only possible but mandatory for students to receive a working knowledge of all the fundamental principles of science."

Forty years later, does this have a familiar ring?

The Good, the Bad and the Ugly

I first met King Hubbert at a company (Shell) cocktail party in Houston in 1946. I learned he was from San Saba, and I mentioned that some years ago I had visited my cousin's ranch near there. I learned that Hubbert was director of exploration and production at the Bellaire Research Lab.

I next saw King in 1953 in Casper, Wyo. I had just returned from an assignment in Holland and had been posted to Casper. The big buzz word there was hydrodynamics. He came up from Houston to brief me on the theory, and go over his hydrodynamic contour map of the Big Horn Basin.

He suggested that I send a geologist to the lab to spend some time with him, naming one he already had worked with and who understood the concept.

Hubbert and I got along fine, but I learned later that he was abrasive, impatient and even "fearsome."

I later saw this side of him when teams of researchers came to visit and describe what they were doing, and we would in turn give short talks on what we were doing.

One of our geophysicists gave a poorly organized presentation with some inaccuracies. Hubbert went to the blackboard and, as I have said in exaggeration, he derived an equation showing that this fellow was a congenital idiot.

This sort of conduct by King became rather commonplace, and people admired his brilliance but derided his method of criticism.

In the ensuing years, I got along well with King. He would seek me out at conventions, and we would have a drink together. Indeed, in 1974 he asked me to be his citationist when he was elected to Honorary Membership in AAPG.

The Wake-Up Bell

Now, about his place in history far beyond the world of AAPG.

After asking a few questions of geologists of a generation or more ago, "Does the name M. King Hubbert ring a bell?" I often got the response: "He must have been before my time."

Two or three others said, "Was he the guy who said we're running out of oil?"

King Hubbert did not say "we're running out of oil."

The media coined this phrase to create a sensational headline. What he did say, in a paper given in 1956, was that, at the present rate of discovery and development, current technology, and the estimated ultimate, U.S. oil production would peak in the early 1970s.

(Editor's note: Next month Jim Wilson's personal look at King Hubbert continues with a look at his famous paper, "Nuclear Energy and Fossil Fuels," which gave birth to the "Hubbert Curve" – and the debate about its meaning that continues to this day.)

Recollections Came First-Hand

In his professional travels and over multiple generations, James E. "Jim" Wilson has rubbed shoulders and was personal friends with a number of influential people – including King Hubbert.

A Sidney Powers medalist and past president of AAPG, Wilson trained as a geological engineer at Texas A&M University, then went to work for Shell Oil in 1938.

He did extensive field mapping for Shell until he was called to active military duty in 1942. He was wounded in action in France.

Leaving the U.S. Army with the rank of



Wilson

Houston – the first geologist and youngest vice president in the

major, Wilson returned to Shell, taking staff and management assignments in the Gulf Coast, mid-continent and the Rocky Mountain region.

In 1960, at age 44, he was named vice president for exploration production in

company's history.

After retiring from Shell in 1973, Wilson began an active consulting career, both domestic and international, primarily for major industrial corporations before devoting full time to his research on the wine country of France, culminating in the 1998 award-winning book *Terroir: The Role of Geology, Climate and Culture in the Making of French Wines*.

Wilson received the 1987 Sidney Powers Medal, was named an AAPG Honorary Member in 1977, was AAPG president in 1972-73 and holds many other Association and professional honors. □

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MULTIPLE HIRES IN ENERGY—SCIENCE, ENVIRONMENT, AND POLICY RESEARCH

The Jackson School is building a premier education and research program in Energy—Science, Environment and Policy Research. We seek scientists at the forefront of their disciplines attracted to challenging areas of scholarship that require collaboration across disciplines and programs. We seek to address compelling questions within the broad theme of determining how we can create an energy future that is sustainable and environmentally and economically robust. These questions include, but are not limited to:

- How can we integrate classically separated disciplines (geomechanics, geochemistry, tectonics, stratigraphy, petrophysics, geophysical imaging, regional/basin scale studies) to advance interrelationships at the forefront of energy and environmental science?
- How do fluid-rock interactions and the interplay between mechanical and chemical processes influence fluid flow and storage in the subsurface?
- How can we improve identification and recovery of energy resources by comprehensive integration of information at all scales, integrated numerical modeling, and innovative automated and continuous monitoring?
- Can we solve the compelling environmental issues associated with the extraction and use of fossil fuel energy sources, including water and land use, and carbon sequestration?
- Can we develop energy policies founded on solid scientific and engineering information and innovative approaches that will simultaneously promote environmental stewardship and energy security?

Over the next three years we will hire six or more faculty and scientists who complement our existing strengths. We are interested in a wide variety of research areas ranging from rock/fluid systems, subsurface sensing, tectono-stratigraphy, carbon management, energy economics and policy, basin-scale analysis and modeling, and resource and reserve geoinformatics. We also encourage applications from innovative scientists in other areas related to energy—science, environment and policy.

Opportunities exist at any level, and can be within or in combination with any Jackson School Unit—the Department of Geological Sciences, the Bureau of Economic Geology, or the Institute for Geophysics. The schedule of appointment is also negotiable.



MULTIPLE HIRES IN EARTH SURFACE AND HYDROLOGIC PROCESSES

The Jackson School is building a premier education and research program in Earth Surface and Hydrologic Processes. We seek outstanding scientists at the forefront of their disciplines who are attracted to challenging areas of scholarship that require collaboration across disciplines and programs. We seek to address compelling questions in surface and hydrologic processes within the broad theme of determining how surface and hydrologic processes are influenced by their dynamic setting at the interface of the lithosphere, atmosphere, hydrosphere, and biosphere. These questions include:

- How do climate, ice sheets, and tectonics interact to define the distribution and character of sea level change?
- How do coastal zone geology, biology, biogeochemistry, and hydrology respond to surficial processes, particularly to sea level change?
- What are the impacts of climate variability/change and land use change on water, nutrient, and sediment cycles?
- What is the integrated result of the interplay between tectonic deformation, climate change, and biota on the Earth's surface and on the supply, distribution, and storage of sediments?
- What are the physical, chemical, ecological processes and social forces that will determine the sustainability of our water resources?

Over the next three years, we will hire six or more faculty and scientists who complement our existing strengths. We are interested in a range of research areas from quantitative geomorphology to hydrologic-biologic interactions to societal impacts and resource sustainability, and capabilities ranging from modeling landscape dynamics to remote sensing, shallow environmental geophysics, aerogeophysics, and monitoring groundwater and coastal systems. We also encourage innovative scientists in other areas related to surface and hydrologic processes to apply. Opportunities exist at any level and within any Jackson School Unit—the Department of Geological Sciences, the Bureau of Economic Geology, or the Institute for Geophysics. The schedule of appointment is also negotiable.

Send applications and inquiries to: Office of the Dean / Jackson School of Geosciences, The University of Texas at Austin / PO Box B, University Station / Austin, TX 78713.

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MAKING A DIFFERENCE

Murphy Oil: Hometown Hero

By BARRY FRIEDMAN
EXPLORER Correspondent

It may be one of the most fruitful partnerships ever developed between a petroleum company and its local community.

To the people of El Dorado, Arkansas, there is no *may be* about it. It is.

Murphy Oil, a worldwide exploration and production company and the United States ninth-largest refiner, has promised almost \$50 million dollars in scholarships to the graduating seniors in its small Arkansas hometown, located about 120 miles south of Little Rock.

The program is called the "El Dorado Promise," and it awards free college scholarships to students who have completed four years at El Dorado High School.

The caveat: There isn't a caveat.

Specifically, graduating seniors can use the scholarships at either in-state or out-of-state institutions (capped at \$6,200 per year) and there's no stipulation as to what they study — or whether they even return to El Dorado.

Other than the obvious good will generated by the program, Magan Parker, a spokeswoman for Murphy Oil, put it this way:

"El Dorado is our home — it's our corporate headquarters and has been since the founding of the company," she said. "Knowing that the foundation of any vibrant community is its education system, good schools are a must-have to attract industry and high caliber employees.

"We believe the Promise can achieve this, in addition to challenging students to excel and go on to pursue post-secondary education.

"There are no strings attached for students who receive Promise money for college," she said. "Our hope is that they go to the school of their choice, learn all they can and experience everything the world has to offer.

"If they choose to return to El Dorado, great."

Commitment to Community

The program was inspired, Parker said, by a similar one in Kalamazoo, Mich.

"Their program was funded by anonymous donors and is different in that it limits the students' choice of college to public post-secondary institutions within the state of Michigan."

The El Dorado program places no such restrictions.

In fact, the longer a student attends public school in El Dorado, the more he or she is eligible to receive.

For instance, students who attend school from kindergarten through 12th grade are eligible for the full \$6,200 annually, while students who transfer in after kindergarten are eligible on a sliding scale.

Further, any student who completes four years at El Dorado high school is eligible for up to 65 percent of the \$6,200, or more than \$4,000.

James Fouse, who is the El Dorado school administrator of the Promise,



called Murphy Oil "a wonderful and committed community partner," and said that "while it has only been in place since Jan. 22 (2007), I can tell you in my discussions with students—and I have talked to all 4,500 — they are much more serious about their futures."

Fouse says the number of students taking Pre-AP and AP courses is up, and that 83 percent of the senior class at El Dorado High School went to college in 2007, compared to 59 percent in 2006.

Claiborne Deming, Murphy Oil's president and chief executive, was quoted as saying, "We are committed

Our hope is that they go to the school of their choice, learn all they can and experience everything the world has to offer.

to making El Dorado a great place to live and work, and we created the promise to further invest in El Dorado's greatest resource, our children."

Fuel for the Future

Specifically, Murphy Oil, which has reported revenue of almost \$12 billion and is the main supplier for gasoline to stations belonging to Wal-Mart and Sam's Club, has promised to contribute \$5 million a year for 10 years to fund the El Dorado Promise.

According to state figures, fewer than 15 percent of the residents in surrounding El Dorado communities have college diplomas. National figures rank Arkansas 49th in the nation for college graduates, with only a 16.7 percent graduation rate. West Virginia is last at 14.4 percent.

Fouse said it's those kinds of figures that make a program like this so important.

"This is as much a community building program as it is an academic program," he said. "Both the city and the school district have seen a decline

continued on next page

Winter Conference Coming

Communication? Good = \$\$ Savings

By LARRY NATION

AAPG Communications Director Hermann Eben, management consultant from Midland, Texas, is a people person in more ways than one. With an outgoing and easy-to-smile personality, he is a hail-fellow-well-met. He also is a student of the human animal – especially in observing and measuring strengths, weaknesses and communication skills.

Affiliated with Trim Tab Solutions consultancy in Midland, Texas, Eben is dead serious in his dedication to leadership coaching to create high performance leaders.

Eben, who has been consulting with the AAPG headquarters staff for the past four years, also has led seminars at annual AAPG Leadership Conferences, coaching AAPG members in strategy and goals alignment, creating action plans and, one of his main topics, managerial communications skills for geoscientists.

Eben is one of 12 instructors who are offering courses at the AAPG Winter Education Conference, to be held Feb. 11-15 in Houston.

The conference offers a smorgasbord of a curriculum where registration is for the entire week and the badge is transferable. Courses also are priced individually and include refreshments and a buffet lunch each day, in addition to course notes. Member discounts are available.

The conference has three different tracks – Business, Unconventional Reservoirs, Seismic and Petrophysical – with multiple courses successively available in each track. Also, attendees can mix and match the courses as they so desire. Transferable badges allows for multiple individuals from a company to receive training.

In the course titled "Thinking on Your Feet," Eben teaches techniques on how to communicate memorably and with clarity and brevity – and focuses on persuasion.

"While there is a tendency for

people to think they communicate well, the reality is that their actual



Eben

performance suffers lack for formal training in the communication skills," Eben said.

"Scientists in particular sometimes can have difficulty in getting their message across due to the technical nature of the

subject," he added, "because of a lack of focus on that particular skill set."

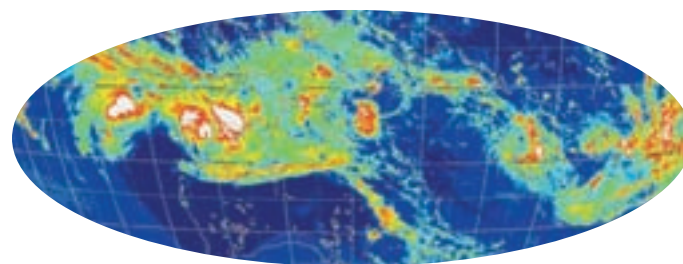
Eben, who holds two degrees from Oklahoma State University and is included as one of the top 100 OSU football players in its history for his All-American performance as a wide receiver, continued that communication skills are vital on numerous levels, especially as a part of a team.

Noting his experiences in various executive management roles over 12 years for Pioneer Natural Resources and its predecessors, and previously as a corporate developer and planner in the oil industry, Eben flatly asserted "bad communication costs money."

The course is one of a suite of management-level education classes Eben leads that range from executive and group coaching and strategy design to conflicts and conflict resolution using the Kolbe System, which is built on the fact that our "innate talents" are unchanging, constant and identifiable.

This is in stark contrast to our skills and learned abilities, he added, which are in flux throughout our lives.

For further information on Eben's course and the Winter Education Conference, see the AAPG Web site or contact Debby Boonstra with the AAPG Education Department. □



MULTIPLE HIRES IN CLIMATE SYSTEMS SCIENCE

The Jackson School is building a premier education and research program in Climate System Science. We seek scientists at the forefront of their disciplines attracted to challenging areas of scholarship that require collaboration across disciplines and programs. We seek the expertise required to address fundamental questions associated with a changing Earth system, including:

- What processes control the rates of change and variability of the climate system, including the atmosphere, ocean, cryosphere, land surface, and biosphere?
- Can we improve our ability to anticipate these changes and determine the potential impacts on society?

Over the next three years, we will hire six or more faculty and scientists who complement our growing strengths. We will hire individuals who will enable us to build a comprehensive climate program and who will make fundamental advances in our understanding of the climate system. These areas include, but are not limited to:

- Improved modeling of the Earth system, specifically including ice sheets, the global carbon cycle, and interaction between the components of the Earth system
- Enhanced observation of the Earth system, including remote sensing of Earth-surface processes and components
- Greater capability to utilize geologic archives to understand climate change, including paleoclimatology, paleoceanography, and paleobiology
- Improved ability to link climate and hydrology, particularly at the basin-to-continent scale
- Increased strengths in atmospheric dynamics and physical oceanography
- Increased ability to understand variability and quantify uncertainties, including statistical climatology
- Greater capability to address societal impacts and vulnerability, including adaptation and mitigation

We encourage applications from innovative scientists in other areas that are related to climate system science. Opportunities exist at any level, can include cluster hires, and can be within or in combination with any Jackson School Unit—the Department of Geological Sciences, the Bureau of Economic Geology, or the Institute for Geophysics. The schedule of appointment is also negotiable.



NEW HIRES IN GEOSCIENCE EDUCATION

The Jackson School of Geosciences seeks individuals attracted to the challenge of geoscience education at the university level. As leaders in geoscience pedagogy, candidates should excel as teachers and developers of courses set in field, laboratory, and lecture environments. The new hires may also contribute to the Jackson School's commitment to educate the wider community of the public and K-12 pre-college students.

We encourage applications from those with proven records of teaching and related experience at the college level. Candidates are expected to hold a PhD degree in the geosciences or a closely related field. Additional credentials may include experience in securing external funding, and a record of publications related to geoscience education.

Opportunities exist for appointments as Lecturer, Senior Lecturer, Adjunct Faculty, or tenure-track Faculty, depending upon credentials and interests. Appointments will be primarily within the Department of Geological Sciences, but may include affiliations with the Jackson School's main research units, the Bureau of Economic Geology or the Institute for Geophysics. The schedule of appointment is negotiable.

Ph.D. is minimum requirement for application. Send inquiries and applications (cover letter, CV, list of publications, list of references, statements of teaching and/or research interests) to: Randal Okumura, Office of the Dean / Jackson School of Geosciences, The University of Texas at Austin / PO Box B, University Station / Austin, TX 78713 or jobs@jsg.utexas.edu.

For more information on the school and its hiring program visit us online at www.jsg.utexas.edu/hiring.

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continued from previous page

in populations since 1980. The goal of the El Dorado Promise is to give scholarships, bring students back to the community where new jobs will have been spawned, and raise their families here in El Dorado.

"We have experienced a growth of 157 new students this year, 53 of them in kindergarten," he said. "This is coupled with the El Dorado Forward Program that passed a 1-cent sales tax to promote the city, build a civic center and bring new jobs to the community."

The requirements to keep the college scholarship are simple enough:

- ✓ Have a 2.0 GPA each semester.
- ✓ A minimum of at least 12 hours per semester.

✓ Be enrolled in a two- or four-year degree program.

Parker said this is by design.

"We want the Promise to reach as many students as possible," she said. "There are already scholarship opportunities based on academic achievement and grants based on financial need. The Promise applies to

MURPHY OIL SCHOLARSHIPS

Length of Attendance Benefit

K-12	100%
1-12	.95%
2-12	.95%
3-12	.95%
4-12	.90%
5-12	.85%
6-12	.80%
7-12	.75%
8-12	.70%
9-12	.65%
10-12	.None
11-12	.None
12	.None

all students. It's what makes this program unique."

Asked about the effect on his community, Fouse mentioned one of the most obvious differences since the program was announced:

"Even the Wal-Mart greeters have a bigger smile on their faces these days." □

REGIONS AND SECTIONS

Plans Continue for APPEX London

By MIKE LAKIN

Chairman, APPEX London

Preparations for the seventh annual AAPG Prospect and Property Expo in London – APPEX London – are well under way, and this growing event promises to be a new milestone in developing global deal-making under one roof.

APPEX London will be held March 5-7 at the London Business Design Centre, the event's new home.

Many invitations for the international speaker program have been confirmed, and the conference will be complemented by an enlarged prospect exhibition of upstream opportunities.

The exhibition also will include an expanded International Pavilion, with representation from many of the world's key national oil companies and hydrocarbon producing countries.

APPEX is being organized and timed around a proven format that allows upstream E&P decision-makers and their ventures and business development teams to come and meet their equivalents from around the world, discuss opportunities and deal-make.

The event is not designed to be a technical conference but more of a business forum (commercial and technical), although a large majority of the new venture fraternity are indeed geologists and geophysicists.

Of course, as explorationists we all know that the starting point for any good "upstream deal" is a clear understanding

The APPEX program itself takes a wide view of the world's hydrocarbon potential, with regional sessions targeting key areas of activity and expert speakers chosen to appeal to the broad audience attending.

of the subsurface. APPEX is truly a multi-disciplinary event, bringing together not only the O&G folk (including the AAPG membership) but many of our other

upstream colleagues representing such disciplines as:

- ✓ Commercial.
- ✓ Financial.

They Came, They Saw, They Liked

How valuable has London APPEX become for the exploration industry?

The following are just a few testimonials and evidence that APPEX is meeting its objectives:

✓ "We had a large, remote E&P project and needed a partner to operate. The company that took our deal saw it first at APPEX."

– Matthew R. Silverman, exploration manager, Robert L. Bayless Producer, Denver.

✓ "APPEX (2007) introduced us to a company that farmed into our

Spanish project as a direct result of seeing the opportunity at our stand. We are delighted that Serica will be a Key Sponsor for APPEX in March 2008."

– Ian Wilson, exploration manager, Serica Energy, London.

✓ "We needed to get the senior decision makers from the biggest companies in the business to view our farm-out opportunities. We met them at APPEX last year."

– Graham Heard, exploration and technical director, Northern Petroleum, London.



- ✓ Legal.
- ✓ Engineering.
- ✓ Operational.

Without that multi-disciplinary approach APPEX simply would not be effective – and I am delighted that the AAPG is able to facilitate and welcome the interaction essential for such an event.

* * *

The APPEX program itself takes a wide view of the world's hydrocarbon potential, with regional sessions targeting key areas of activity and expert speakers chosen to appeal to the broad audience and disciplines attending.

Scheduled presentations include:

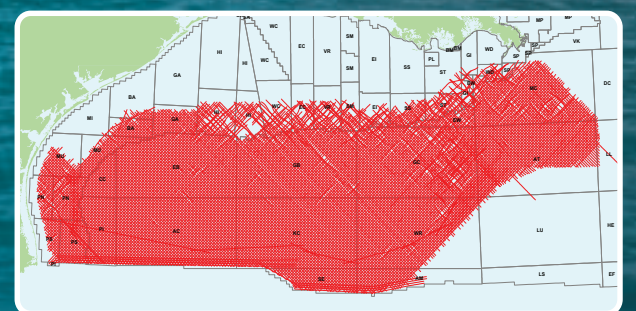
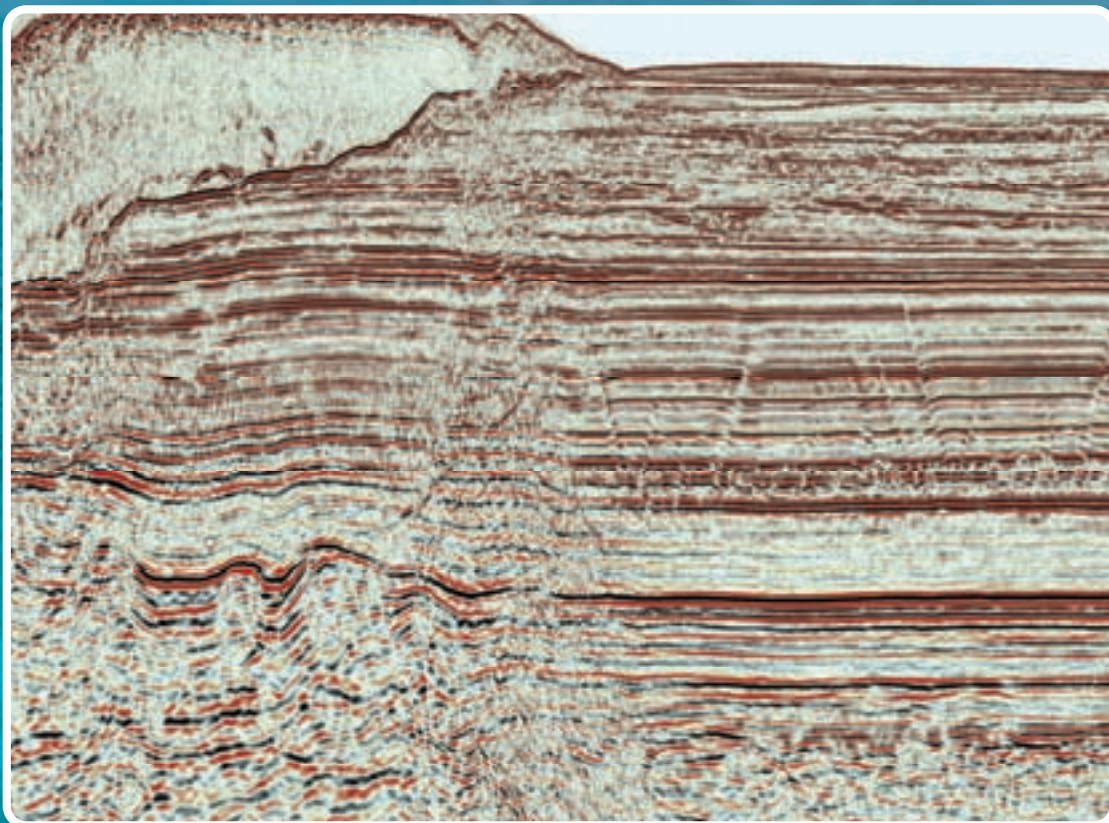
✓ Two "Prospect Forums" for exhibiting companies to present specific deals.

✓ A half-day "Finance Forum," sponsored by ABN Amro, which is designed specifically for upstream E&P management with reports on financing E&P projects and their companies.

See **APPEX London**, page 42



We would like to thank all companies who have participated in Deep Focus and have made the project such a success!



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No Accident to APPEX Success

Successful meetings don't happen by accident.

Members of a dedicated, London-based APPEX volunteer committee have been responsible for keeping the meeting on track, and without their efforts APPEX would not exist. All are providing invaluable industry expertise and their time.

They include:

- ✓ Joe Staffurth (exhibition).
- ✓ Terry Jackson and Dirk Cuthbertson (marketing).
- ✓ Lucy Kennedy and Steve Veal (with AAPG's European office, also past chairman and now director).
- ✓ John Brooks and Richard

Hardman (Advisory Board chairs).

- ✓ Jackie Banner (sponsorship).
- ✓ Charles Speh (social events).
- ✓ Enzo Zappaterra (speaker program).

✓ Ivstán Bérczi (president, AAPG European Region).

Also Gina Godfrey at the International Pavilion and Jeff Lund are our U.S.-based APPEX representatives.

We encourage any feedback, ideas and suggestions for the conference that will help us improve APPEX for you and your organizations.

— MIKE LAKIN

APPEX London

from page 40

✓ A half-day pre-conference seminar on the "Management and Marketing of Upstream Deals and Farm-outs," sponsored and run jointly by Envoi Limited and JSI Services.

If you have yet to attend APPEX but are involved in new ventures anywhere in the world, and are either looking to find new opportunities or divest existing assets, consider joining us in London for APPEX 2008.

After all, APPEX is being endorsed by an increasing number of organizations that recognize the benefits of a truly "global" event to complement the more regionally focused conferences now

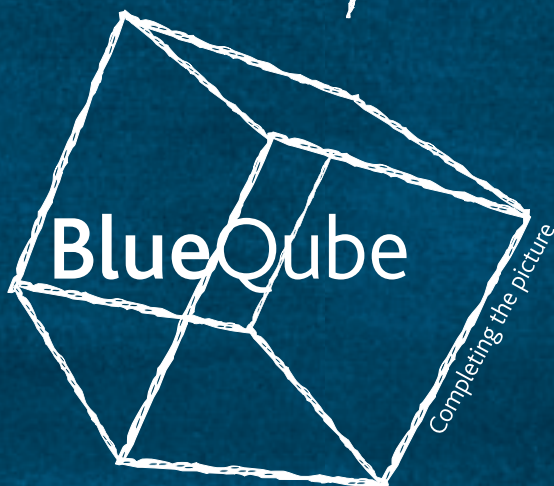
held in their own regions. The Energy Institute, the OGP and London's Geological Society all have endorsed APPEX – and more endorsements are expected from groups in the Far East, Australasia, Europe, the United States and South America.

And if you are familiar with APPEX, we look forward to seeing you again in 2008.

For more information or to register as an exhibitor or attendee, go to the Web site at apex.aapg.org.

Also, e-mail me in London (mikelakin@envoi.co.uk) or Peggy Pryor at the AAPG in Tulsa (ppryor@AAPG.org) with queries or requests and we will do our utmost to assist you. □

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MEETINGS OF NOTE

2007 International Meetings

Dec. 4-6, International Petroleum Technology Conference (AAPG, EAGE, SEG, SPE), annual meeting, Dubai, U.A.E.

2008 U.S. Meetings

Feb. 7-8, NAPE (North American Prospect EXPO), AAPL, annual event, Houston.

Feb. 24-27, Southwest Section, AAPG, annual meeting, Abilene, Texas.

March 29-April 2, AAPG Pacific Section, annual meeting, Bakersfield, Calif.

April 20-23, AAPG Annual Convention, San Antonio.

* May 5-8, Offshore Technology Conference, annual event, Houston.

* June 7-11, Karst from Recent to Reservoirs: International Conference on Paleokarst and Multi-Permeability Flow Systems, Rapid City, S.D.

* July 9-11, AAPG Rocky Mountain Section, annual meeting, Denver.

* Aug. 27-28, Summer NAPE (North American Prospect Expo), AAPL, annual event, Houston.

Sept. 3-7, AAPG Foundation Trustee Associates, annual meeting, Jackson Hole, Wyo.

* Sept. 15-20, Association of Environmental and Engineering Geologists, annual meeting, New Orleans.

* Sept. 21-24, Society of Petroleum Engineers, annual meeting, Denver.

Oct. 5-9, Geological Society of America, annual meeting, Houston.

* Oct. 11-15, AAPG Eastern Section, annual meeting, Pittsburgh.

* Nov. 9-13, Society of Exploration Geophysicists, annual meeting, Las Vegas.

(* Denotes new or changed listing.)

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For San Antonio, the Early Bird Gets the \$\$\$

By RANDA REEDER-BRIGGS
AAPG Annual Meetings Manager

You've heard about the meeting for months, but now the official technical program and registration announcement for the next AAPG Annual Convention is about to become a reality.

Members will receive the San Antonio meeting announcement with the January EXPLORER, in a new design that will make it easy to find all the details you need.

And if you attended either the 2006 or 2007 annual conventions, you are eligible for special reduced registration fees.

In other words, if you attended either

of the past two AAPG meetings (in Long Beach or Houston) and if you register by Jan. 24, you'll save up to \$350 on your registration fee.

The meeting will be held April 20-23 at San Antonio's Henry B. Gonzalez Convention Center. The theme is "Deliver the Conventional; Pursue the Unconventional."

The technical program is expected to address the challenges of unconventional plays – including shale



gas, oil shale and coalbed methane.

The announcement will include all the papers and posters that are being built around 12 areas. They are:

- ✓ Hydrocarbons from Shale and Coal.
- ✓ Deepwater Slope to Basin Systems.
- ✓ Structural Geology.
- ✓ Sedimentology and Stratigraphy.
- ✓ Reservoir Characterization and Modeling.
- ✓ Hydrocarbon Systems and Basin Analysis.

✓ New and Expanded Plays in North American and Global Basins.

- ✓ Geospatial Technology and Astrogeology.
- ✓ Environmental Concerns Related to Resource Development.
- ✓ Alternative Energy.
- ✓ Shaping Our Industry: People and Policy.

Complete details – including how to save money on registration fees – will be in your hands with the January EXPLORER.

Also, for more information keep watching the Web site at www.aapg.org/sanantonio. □

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There's Still Time to Get Suggestions To Denver

There's still time to have an impact on the technical content of the 2009 AAPG Annual Convention and Exhibition.

Organizers of the event, which will be held in Denver June 7-10 that year, want members to have a say in the technical program's content.

But time is running out; the deadline for suggestions is Dec. 15.

The meeting's theme is "Image the Past – Imagine the Future."

To start preparations, the Organizing Committee is seeking member suggestions for oral and poster sessions, session chairs, short courses, field trips, instructors and trip leaders – and the committee is especially interested in receiving suggestions of a "global nature that will appeal to the vast majority of attendees."

Organizers said they want the technical program to cover a broad spectrum of geological interests, including:

- ✓ Global Deepwater E&P.
- ✓ Stratigraphy and Sedimentology.
- ✓ Structural Geology.
- ✓ Exploration and New Plays.
- ✓ Philosophy of Exploration.
- ✓ Resource Development and Reservoir Characterization.
- ✓ Tight Gas.
- ✓ Unconventional Reservoirs.
- ✓ Hydrocarbon Systems and Basin Analysis.
- ✓ New Opportunities and Technologies.
- ✓ Astrogeology.
- ✓ Petroleum Geology and Public Policy.
- ✓ Alternative and Renewable Energy.
- ✓ The Environment and Responsible Development.
- ✓ Geophysical Applications.

Organizers said they hope to link many of the sessions to recent advances in the exploration for conventional and unconventional emerging resources with global applicability.

Send suggestions via e-mail to general technical program chair Steve Sonnenberg at sasonnenbg@aol.com and include contact information with your recommendations.

Note that submittal of a suggestion does not guarantee inclusion in the program.

And remember: The deadline for submitting suggestions is Dec. 15. □

Plan Your Year-End Gift Today!

Sometimes the best gifts are “gifts that keep on giving.”

Through the generosity of the late Gordon Atwater and L. Austin Weeks, the AAPG Foundation established an Operating Fund which is used to support salary and overhead expenses. Because of this gift, 100 percent of contributions to the AAPG Foundation will provide support to the program of your choice.



The AAPG Foundation offers you the opportunity to give a Digital Products University Subscription to benefit your Alma Mater in perpetuity. A one-time gift of \$12,500 will endow a subscription in the name of your designated university and at the same time honor an esteemed colleague or someone of your choosing. This gift provides the entire online AAPG/DataPages Digital Library (1917-present) with petroleum, geology and geophysics information continually being added. Currently, 39 universities and colleges are receiving this tremendous



benefit. Call the Foundation office today to include your Alma Mater at 888.945.2274, ext. 644 or visit the Foundation Web site at foundation.aapg.org/dp_fund.cfm



Tax Law Expires on December 31...

Less than 30 days remain for donors over age 70½ to make a charitable gift (up to \$100,000) to the AAPG Foundation through their IRAs without incurring taxable income (no tax deduction). Distributions made under this law could satisfy the donor's minimum required distribution for that tax year – especially if they may not need the extra income and do not wish to pay tax on it. Consult your tax adviser about your IRA and the possibilities to either increase your support or make a special gift to the Foundation.

For further details regarding gifts to the Foundation, contact Rebecca at 888-945-2274 Ext. 644 or rgriffin@AAPG.org.



On behalf of the AAPG Foundation Board of Trustees and Staff, we wish you a Happy Holiday Season and a New Year of Health, Happiness and Prosperity!

SPOTLIGHT on...

A Lot of Skills in the Tool Box

The first thing you might notice about AAPG member Deborah Patterson is her place of employment: The Stanley Works, in New Britain, Conn.

How many other AAPG members have a similar address?

Knowing more about her only increases the fact that she is not on the typical petroleum geologist's career path.

She attained a doctorate in geological sciences, is trilingual and once owned her own sports bar-laundromat combo for 10 years.

And after her recent job promotion

she is director of environment, health, safety and security for The Stanley Works, a worldwide manufacturer and marketer of tools and hardware.

She readily admits she has led an exciting professional career path.

"I've done everything except dance and sing," she said.

Patterson earned bachelor's and master's degrees in geology from the University of California-Santa Barbara, and a doctorate in geological sciences from the same. She believes



Patterson

her academic studies have afforded her the opportunity to work abroad and secure such prominent job titles as a research scientist for Exxon; senior project geologist for Dames & Moore; and manager of environmental health and safety for GE.

"They are research and analysis driven degrees, which can be applied to different problems," Patterson said. "I wouldn't be here without the geologic and research training."

— SUSIE MOORE

PROFESSIONAL
NEWS BRIEFS

Allen Balla, to business development manager-FireFly Solutions, ION, Houston. Previously consultant, Houston.

Robert "Bob" Blackmur, to senior geologist, Mariner Energy, Houston. Previously senior geologist, Stone Energy, Houston.

Bill Blount, to advanced senior geologist, Marathon Oil, Houston. Previously senior staff geologist, El Paso Exploration and Production, Houston.

Philip Bunting, to associate geologist, Chesapeake Energy, Oklahoma City. Previously graduate intern, Encore Acquisition, Fort Worth.

Kenneth Daniel, to geologist, EnCana Oil & Gas (USA), Dallas. Previously vice president-geology/partner, Ovation Energy II, North Richland Hills, Texas.

Cynthia L. Dinwiddie has been awarded the Rossiter W. Raymond Memorial Award and Alfred Noble Prize from AIME and ASCE. Dinwiddie is senior research engineer, Southwest Research Institute, San Antonio, Texas.

Michael Halpin, to associate geophysicist, Chesapeake Energy, Oklahoma City. Previously geophysical analyst, Fairfield Industries, Sugar Land, Texas.

Tracy Hulseley, to associate geologist, Chesapeake Energy, Oklahoma City. Previously graduate student, Texas Tech University, Lubbock, Texas.

Jeffrey Johnson, to vice president-integrated reservoir services, Object Reservoir, Houston. Previously global services director, Paradigm, Houston.

Bobby Kepley, to associate geologist, Chesapeake Energy, Oklahoma City. Previously graduate student, Oklahoma State University, Stillwater, Okla.

Rudolf Kleiber, to president, chief executive officer and board member, Elko Energy, Toronto, Canada. Previously senior consultant, Oilfinder International, London, England.

Tako Koning has been awarded the 2007 Africa Regional Service Award by the Society of Petroleum Engineers (SPE) in recognition of 10 years of service on the board of directors for the SPE Angola section. Koning is consultant for Tullow Oil Angola in Luanda, Angola.

Terry Mattalino, to geoscience data coordinator, Stonegate Production, Houston. Previously account manager-southern region, IHS, Houston.

Steven O'Connor, to general manager-exploration, L&M Petroleum, Wellington, New Zealand. Previously senior geoscientist, Mighty River Power, Auckland, New Zealand.

Ralf K. Polinski, to petrophysics domain champion, Schlumberger Overseas (S.A.), Doha, Qatar. Previously wireline global account manager, Schlumberger Italiana, Milan, Italy.

Jeffrey Ronck, to senior geologist, Chesapeake Energy, Oklahoma City. Previously advanced geologist, Marathon Oil, Houston.

Gabor Tari, exploration adviser, OMV, continued on next page

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READERS' FORUM

Climate Change Issues

Regarding AAPG's new statement on global climate change and the formation of a new Global Climate Change Solutions Committee (November EXPLORER):

The climate change statement is fine – however, I strongly object to the formation of a committee to research potential “solutions.”

There are no “solutions” to natural climate change, and since anthropogenic climate change is minor and weak at best, all this committee will do is pander to the political spectrum of disaster mongers who promote AGW as a grave danger to civilization, as a way to raise taxes and impose draconian

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.

regulations as well as further their political agendas.

This committee is unnecessary, useless and a waste of people's time. As a 35-year member I object to such stupidity and waste of AAPG resources.

Michael L. Johnson
Houston

Mid-Continent Levorsen Won By Tim Carr

Timothy R. Carr, of Morgantown, W.Va., has won the A.I. Levorsen Memorial Award for presenting the best paper at the Mid-Continent Section's annual meeting.

The meeting was held in September in Wichita, Kan.

Carr's winning paper was titled “Kansas Oil and Gas Activity, 1869-2006.”

He will be recognized at the Mid-Continent Section annual meeting, set Oct. 5-9, 2009, in Tulsa. □



Carr

continued from previous page

Vienna, Austria. Previously president, AllyGabor Geoscience, Bellaire, Texas.

John G. Williams, to executive vice president-exploration, Endeavour International, London, England. Previously executive vice president-exploration and production, Index Oil and Gas, Houston.

David R. Taylor, to vice president-business development, Petro Andina Resources, Calgary, Canada. Previously vice president-exploration, Husky Energy, Calgary, Canada.

Hank Woods, to geologist, Common Resources, Spring, Texas. Previously geologist-international new ventures, Newfield Exploration, Houston.

Bob Zilinski, to exploration manager, Direct Petroleum Exploration, Denver. Previously international geological adviser, Direct Petroleum Exploration, Denver.

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



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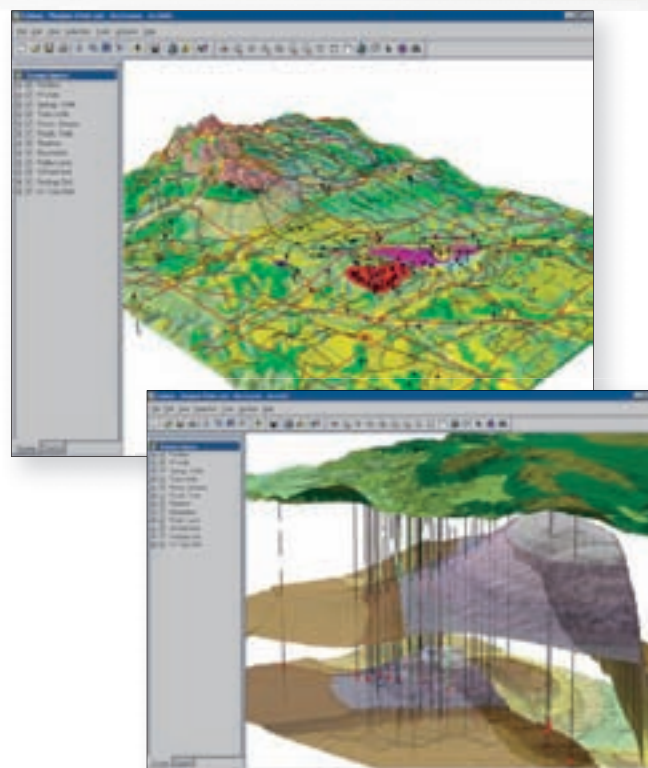
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Strunk to Chair Trustee Associates

New Foundation Trustee Associates officers were elected at the group's recent meeting in Maui, Hawaii.

The new officers are:

☐ **Paul Strunk**, chair (one-year term).

☐ **Jerry Namy**, vice chair (one-year term).

☐ **Jay Henthorne**, secretary-treasurer (two-year term).

The group's next annual meeting will

be Sept. 3-7 in Jackson Hole, Wyo.

* * *

Several generous gifts of note

recently have been given to the AAPG Foundation, including:



✓ A generous gift to the Foundation's K-12 Fund by Foundation Trustee

William J.

Barrett will provide funding to expand support of K-12 programs that will benefit future generations by educating students, teachers and parents about the science of geology and its relationship to current events such as global climate change and world energy needs.

✓ AAPG President **Will Green** has provided a gift designated to the Robert Berg Outstanding Research Award, which will recognize reservoir characterization, petrophysics or related fields.

✓ Trustee Emeritus **Bill Crain** has provided an additional gift to benefit the William E. and Jean Crain Grant-in-Aid Fund, which will provide a grant award of \$2,000 annually to a geoscience student at the University of Minnesota, Duluth.

✓ Trustee Associate **David Worthington** joins Crain by establishing the David Worthington Grant-in-Aid, which will provide an annual grant to a geosciences student at Rice University. (The GIA program is intended to honor a person while encouraging geology students to consider a career in petroleum geology. University Restricted Grants are a special endowed segment of the Named Grants-in-Aid program that provide a way to give a gift restricted to a donor's alma mater in perpetuity.)

✓ Trustee Associate **David "Scotty" Holland** has provided a generous gift to establish the David S. Holland/AAPG Foundation Professorship at Hardin Simmons University in Abilene, Texas.

He provided the endowment to encourage the teaching of geology and professional development through AAPG and other societies at Hardin Simmons University.

* * *

During this holiday season, the AAPG Foundation's Board of Trustees and Trustee Associate officers gratefully acknowledge all contributions during 2007.

You've helped make our Foundation, our Association, our profession and our future stronger and better.

Thank you. ☐

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The names that appear here are of those who have made donations to the AAPG Foundation in the past month – predominately through adding some additional monies on their annual dues statement.

To these people, and to those who have generously made donations in the past, we sincerely thank you.

With your gifts, the AAPG Foundation will continue its stewardship for the betterment of the science and the profession of petroleum geology.

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Named Grant
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In honor of Gerald Friedman and John Shelton

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John R. Todd II

Robert K. Goldhammar
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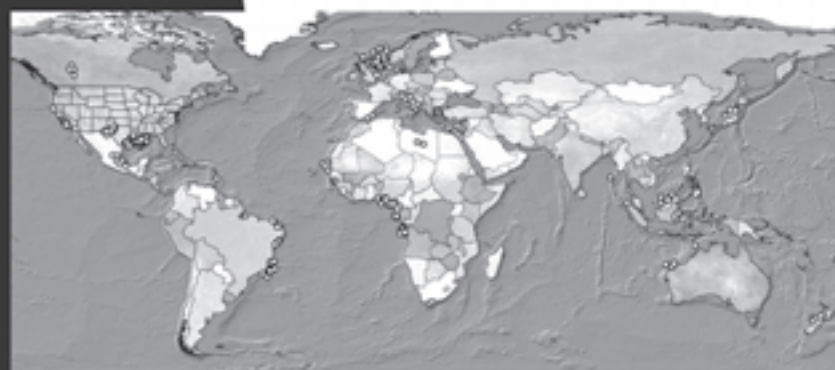
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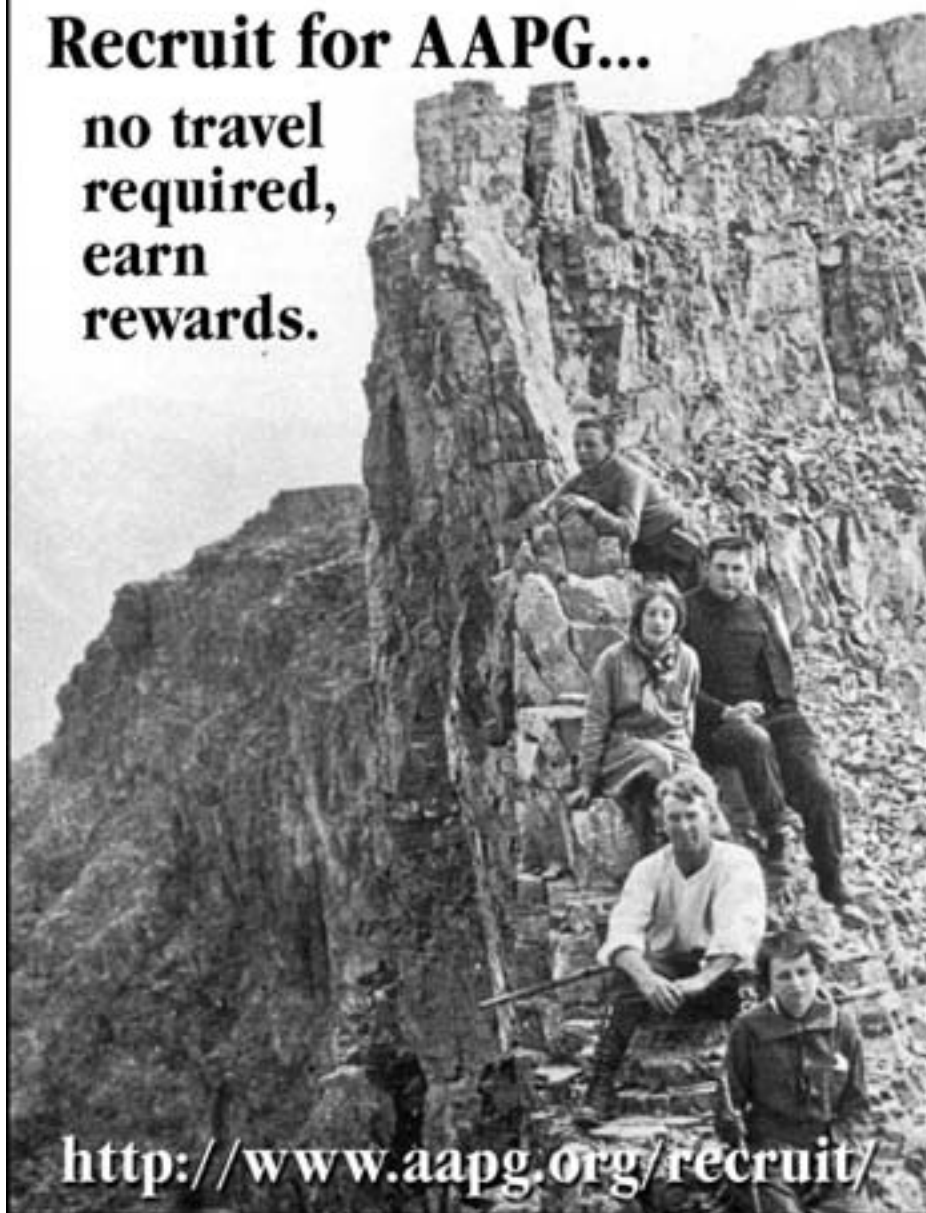
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Contacts

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FOR MORE INFORMATION

Rocky Mountain Section AAPG - www.rms-aapg.org

Colorado Oil & Gas Association - www.coga.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 nor certification, 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, or by contacting headquarters in Tulsa.

For Active Membership

California

Olson, Erlend, Terralliance, Newport Beach (D. Schumacher, A.E. Prelat, C.A. Freeman)

Idaho

Languirand, Karl E., Materials Testing & Inspection, Boise (J.K. Applegate, J.P. Walker, D.H. Hawk)

New Mexico

Chipera, Steve J., Chesapeake Energy, Los Alamos (D.G. Harville, J.A. Miller, D. Bish)

New York

Wohlabaugh, Norman K., Golder Associates, Buffalo (reinstate)

Oklahoma

Jackson, Susan R., Technology Management Services, Tulsa (V. Schatzinger, R. Jacobs, R.W. Tillman)

Pennsylvania

Carter, Kristin Marie, Pennsylvania Department of Conservation and Natural Resources, Bureau of Topographic & Geologic Survey, Pittsburgh (J.A. Harper, J.W. Castle, D.G. Patchen)

Texas

Andrus, Vlad E., IHS, Houston (J. Zumberge, L.K. Smith, G. Kramchak); Barnes, William McCargo, self-employed, Conroe (reinstate); Boatner, Prentis Lee, Houston Energy, Houston (reinstate); Burke, Caroline, Hess Corp., Houston (S.G. Crews, M.X. Cheng, D.E. Ballentine); Centanni, Sylvia Ann, Schlumberger-DCS, College Station (reinstate); Edwards, Christopher Mark, ExxonMobil, Houston (V. Abreu, R. Bloch, A. Sprague); Esch, William Lee, ExxonMobil Upstream Research, Houston (J. Welton, R.E. Klimentidis, J.S. Hanor); Long, Martin Troy, BP America, Houston (C.L. Farmer, D.H. Phillips, E. Shaw); Meeks, Lisa Kaye, DeGolyer and MacNaughton, Houston (D. Thomas, C. Jenkins, D. Nebrigo); Moss, Corey Charles, ExxonMobil, The Woodlands (R.A. German, P. Reynolds, C.R. Mazzo); Raskin, Greg S., Chevron, Houston (K.M. Doyle, A.H. Saller, W. Combs); Ross, Malcolm I., Shell, Houston (G.S. Steffens, P.R. Vail, P.R. Winefield); Tiller, Scott Allen, Multimedia Games, Round Rock (reinstate); Ubaha, Emmanuel Asuquo, Shell, Houston (J. Ejedawe, D. Omene, B. Ozumba)

Virginia

Dennen, Kristin O., U.S. Geological Survey, Reston (R.T. Ryder, R.C. Milici, P.D. Warwick)

Argentina

Poultene, Sylvie, CGC, Vicente Lopez (M.L. Miller, V.N. Ploszkiewicz, A.G. Pleimling)

Colombia

Ramirez, Victor, Ecopetrol, Bogota (E.A. Mancini, M.R. Mello, N.C. Azambuja Filho)

England

Besly, Bernard, Besly Earth Science, Newcastle-Under-Lyme (N. Sabaou, J.D. Collinson, N. Mountney); Huang, Chunju, University of Colorado at Boulder, Oxford (P. Weimer, D.A. Budd, M.J. Pranter); MacDonald, David Grant, BP Exploration, Sunbury-on-Thames (M.B.J. Bowman, W.C. Riese, G. McMaster); Macquaker, James Harry, SEAES, University of Manchester, Glossop (R.L. Gawthorpe, K. Bohacs, J. Redfern); Paintal, Gautam, Badley Ashton and Associates, Horncastle (B. Kostic, J. Bauer, D. Payne)

India

Dasgupta, Sumangal, BG Exploration and Production India, Mumbai (G. Ghosh, S.K. Roy, S. Chowdhury); Murthy, M.V.K., ONGC, Rajahmundry (P.K. Padhy, M.K. Samanta, B.P. Ramprasad)

Indonesia

Slamet, Germawan, Hess Corp., Jakarta (M.N. Whelan, D.C. Webby, S.B. Pluim)

Korea

Park, Yong-Joon, Korea National Oil Corp., Gyeonggi-Do (I. Cho, S. Park, E.M. Kim)

Nigeria

Yousaf, Imran, Tullowil International, Warri (K.M. Javaid, A.A. Adesida, S. Asim)

Norway

Fossen, Haakon, University of Bergen, Bergen (P. Hudleston, R.B. Faereth, O.J. Martinsen)

Romania

Neculae, Pandele, PETROM (member of OMV Group), Bucharest (W.J. Schneider, R.S. Bishop, J.O. Medou)

Russia

Ponomarenko, Anna, TNK BP, Tyumen (J.A. Dolson, E. Cazier, A. Carter)

Saudi Arabia

Al-Mutairi, Bader A., Saudi Aramco, Dhahran (D.M. Bacchus, R.F. Lindsay, M.S. Ameen) □

Certification

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

Petroleum Geologist

Texas

Radjef, Eric M., Brigham Exploration, Austin (W. Sercombe, K. Kramer, A. Blair); Williams, Craig Mitchell, Jones Energy, Austin (A.W. Blair, C.G. Goss, J.L. McGrew III)

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INMEMORY

Three people who have filled important leadership roles for AAPG – including a past president and Sidney Powers award winner – have recently died.



Busch

Daniel A. Busch, a Sidney Powers medalist, prominent international lecturer and consultant and a past AAPG president, died at his home in Tulsa Nov. 7. He was 95. Busch, a 65-year AAPG member who was among the Association's most honored members, was an AAPG Honorary Member, served as president in 1973-74 and received the Powers Medal in 1982.

After receiving his master's and doctorate in geology from Ohio State University, Busch worked with the Pennsylvania Topographic and Geological Survey; was a consultant with Huntley & Huntley in Pittsburgh, Pa.; was senior research geologist and staff geologist for Carter Oil Co.; and exploration manager for Zephyr Petroleum in Tulsa.

He became a consultant in 1954 and taught, lectured and consulted internationally. He also was an AAPG Foundation Trustee Associate.

* * *



Roy

Distinguished educator and highly decorated AAPG member **Edward Carl Roy Jr.** died in San Antonio Nov. 9. He was 71.

After receiving bachelor's and doctorate degrees in paleontology and sedimentary geology from Ohio State University, Roy worked with Shell Oil for two years before joining the faculty of Trinity University in San Antonio, where he built his career. In addition to his professorial duties where he inspired many students to become petroleum geologists, Roy also served as dean of the Division of Science, Mathematics and Engineering, and vice president of Academic Affairs.

Roy's AAPG honors included Honorary Membership, the Distinguished Educator Award, Distinguished Service Award, Public Service Award and the A.I. Levorsen Award.

He also was the general chairman of the AAPG Annual Conventions in San Antonio in 1984 and 1999.

His son, Edward Roy III, also is an AAPG member and works with Marathon in Houston.

* * *



Mairs

Thomas Mairs, Southwest Section member of the AAPG Advisory Council and past chairman of the House of Delegates, died of cancer on Oct. 29. He was 70.

Mairs, a Dallas independent geologist

specializing in the Gulf Coast region, particularly the Cretaceous-Jurassic trend, also served as president of the Division of Professional Affairs, was general chairman of the 1997 AAPG Annual Convention in Dallas and was an AAPG Foundation Trustee Associate.

Association honors include the Distinguished Service Award, the HoD Distinguished Member Award and the HoD Honorary Member Award.

* * *

Charles A. Barlow, 56
Charleston, W.Va., Sept. 25, 2007
Lewis Timothy Braun, 83
Denver, Aug. 23, 2007

Daniel A. Busch, 95
Tulsa, Nov. 7, 2007
John Doyne Cooper, 68
Fullerton, Calif., Sept. 3, 2007

Byron Bennett Gibbs, 88
Shreveport, Sept. 16, 2007
Wallace Edison Graham (EM '56)
San Antonio

Milton Todd Heald (EM '54)
Roanoke, Va.

James C. Hollingsworth, 84
Shreveport, Sept. 26, 2007

Vance Edward Katherman, 83
Casper, Wyo., Dec. 1, 2006

Thomas C. Mach (AS '01)
Tulsa

Thomas Mairs, 70
Dallas, Oct. 29, 2007

Don D. Montgomery Sr., 97
El Dorado, Ark., September, 2007

George W. Moore, 79
Corvallis, Ore., Oct. 4, 2007

Joseph Kent Morgan, 80
Greenwood Village, Colo.,
Sept. 24, 2007

Danny J. Nichols, 37
Nacogdoches, Texas, Sept. 25, 2007

Warren Yale Pickering, 91
Oklahoma City, May 18, 2007

Edward Carl Roy Jr., 71
San Antonio, Nov. 9, 2007

Bert Scales, 75
Houston, June 18, 2007

James Richard Taylor, 76
Parker, Colo., Sept. 25, 2005

Henry Hugh Wilson, 82
Lothian, Md., Oct. 14, 2007 □

(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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POSITION AVAILABLE

**Assistant Professor
Stephen F. Austin State University**

The Department of Geology invites applications for a tenure-track position at the assistant professor level in one or more of the following specialties: mineralogy, geochemistry, environmental geology, hydrology, stratigraphy, sedimentology, or carbonate petrology. Expertise in multiple disciplines, including GIS, would be an advantage, as would be an ability to contribute to a proposed Environmental Ph.D. program. Applicants should have a Ph.D. in geology, a strong commitment to excellence in teaching, and willingness to direct MS geology graduate students in research. Teaching responsibilities will include introductory courses, upper level and graduate courses in the applicant's specialty, and occasional weekend field trip courses. Other expectations include research, university service, and continuing professional development.

Applicants should send a letter of application, curriculum vita, statement of teaching and research interests and educational philosophy, copies of official transcripts, article reprints, and contact information for three references, to: Dr. R. LaRell Nielson, Chairman, Department of Geology, PO Box 13011, Stephen F. Austin State University, Nacogdoches, TX 75962. Review of applications will begin by Jan. 15, 2008; the position will start in Fall 2008. EOE; security-sensitive position; criminal history will be checked.

Faculty Position in Geological Engineering

The **University of North Dakota Department of Geology & Geological Engineering** invites applications for a tenure-track faculty position in geological engineering at the assistant professor level. We seek an outstanding candidate that will develop a strong externally funded research program and contribute to the Department's graduate and undergraduate programs. Teaching responsibilities will include engineering geology, geomechanics, and graduate courses in area of expertise. Applicants are expected to have a B.S. in geological engineering and must have a Ph.D. in geological engineering, engineering geology, or a closely related science or engineering field. The successful candidate will be expected to work toward qualifications to become registered as a professional engineer.

The position is available August 16, 2008. Review of applications will begin as soon as a suitable pool

of applicants is obtained. We will be interviewing candidates at the Denver GSA meeting.

More information about UND may be found at: <http://www.und.edu>. As an Equal Opportunity/Affirmative Action employer, the University of North Dakota encourages application from minorities and women. Applicants should submit a statement of teaching and research interests, curriculum vitae, and names and address of three professional references to:

Geology & Geological Engineering
Attn: Chair, Geological Engineering Search Committee
Leonard Hall Room 101
81 Cornell Stop 8358
Grand Forks ND 58202-8358

**ENDOWED CHAIR POSITION IN
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OKLAHOMA STATE UNIVERSITY**

The Boone Pickens School of Geology at Oklahoma State University (OSU) invites applications and nominations for a distinguished geophysicist

with demonstrable international reputation and strong research background to fill The Boone Pickens Chair in Exploration Geophysics position at the full professor level. Applicants are required to have a Ph.D. degree in geophysics or related field.

The applicants should have a broad background in the geophysical sciences especially in seismic reflection techniques applied to oil exploration. The School also will consider applicants with an expertise in crustal scale reflection seismology. Specific research areas may include, but are not restricted to, seismic data processing and quantitative seismic analysis, seismic attribute analysis based on rock physics, or processing and inversion for 4D applications. Applicants must have a strong research and publication record, a demonstrated ability to attract external funding, and be tenurable at the time of appointment. Salary and benefits will be competitive and commensurate with experience and future potential.

The successful candidate will be expected to pursue a vigorous research program, as well as a strong record of publication and funding. The candidate will supervise M.S. graduate students and develop courses in his or her specialty and participate in the development of an anticipated

Ph.D. program in the School of Geology. In addition, they will participate in teaching introductory geology courses.

The successful candidate will join a faculty of eleven geoscientists, including two other geophysicists, and will be part of a strong petroleum geology and tectonics research group that includes six other faculty and has close ties to the petroleum industry. The School of Geology has a well equipped geophysical laboratory with a Geometrics 48 channel seismograph, an Iris Syscalpro 10 channel resistivity system, an AGI Supersting resistivity system, a Scintrex C-G5 gravimeter, a Geometrics control source audio magnetotelluric system (Stratagem), a Pulse Ekko GPR system, a Geonics EM-34 system, a Geometrics 858 Cs vapor magnetometer, and state-of-the-art software for processing both potential field and seismic data. In addition the School has recently constructed the Devon Teaching and Research Laboratory, which contains state-of-the-art 3-D image processing facilities.

Applicants should submit a complete vita/resume, statement of research and teaching interests, and a list of five persons who could provide references, including names, phone numbers, e-mail addresses, and complete mailing addresses. Applications should be sent to: Geophysics Search, Boone Pickens School of Geology, 105 Noble Research Center, Oklahoma State University, Stillwater, Oklahoma 74078-3031. Phone: (405)-744-6358. Fax: (405) 744-7841. Screening of candidates will begin in January 21, 2008 and will continue until the position is filled.

Inquires about this position may be directed to Dr. Estella Atekwana, Chair of the search committee (estella.atekwana@okstate.edu) or Dr. Jay Gregg, Head of the School of Geology (jay.gregg@okstate.edu), both at the above address. More information on OSU and the Boone Pickens School of Geology can be found on the web <http://www.pio.okstate.edu> and <http://www.okstate.edu/geology> respectively.

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continued on next page



FACULTY POSITION AVAILABLE

The Department of Petroleum and Geosystems Engineering

The University of Texas at Austin

The Department of Petroleum and Geosystems Engineering seeks an outstanding applicant for Assistant Professor. The successful applicant will hold a tenure track position. A Ph.D. in Petroleum Engineering or a closely related discipline is required and the applicant must have an outstanding record of research accomplishments and a strong interest in undergraduate and graduate teaching.

Two or more years of experience in the exploration and production (E&P) industry is strongly preferred, especially for those without a degree in Petroleum Engineering. Successful candidates are expected to teach undergraduate and graduate courses, develop a strong sponsored research program, collaborate with other faculty, supervise graduate students, and be involved in service to the university and the profession. Applications from women and minorities are strongly encouraged. The Department is especially interested in candidates with research accomplishments and interests in one or more of the following general areas: natural gas engineering, unconventional resources such as heavy oil, enhanced oil recovery, geological sequestration of greenhouse gases, deepwater drilling and production, integrated reservoir characterization.

The Department of Petroleum and Geosystems Engineering at The University of Texas is the top-rated graduate program in the US in the latest US News and World Report ratings and has had the largest Ph.D. program in the US for many decades. The Department also has one of the largest and best undergraduate degree programs in Petroleum Engineering as well as an outstanding undergraduate degree program in Geosystems Engineering and Hydrogeology, an interdisciplinary degree with the Jackson School of Geological Sciences.

Interested persons should submit a detailed resume including academic and professional experience, statements regarding their teaching and research interests, a list of peer reviewed publications and other technical papers, and names and contact information for three or more references to:

Larry Lake, Interim Chairman
Department of Petroleum and Geosystems Engineering
The University of Texas at Austin
1 University Station, C0301
Austin, TX 78712-0228

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continued from previous page

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Geologist Wanted

Wolverine Gas and Oil Corporation, an aggressive Michigan based independent, is seeking a geologist with 5-7 years of major oil company experience to fill a staff geologist position in its Grand Rapids, Michigan office. Applicants must be self-motivated with proven oil and gas finding capabilities. Proficient subsurface analysis, petrophysical and computer application skills are required. Broad exposure to continental US Basins a plus. Resumes with references may be sent to Wolverine Gas and Oil Corporation, 55 Campau NW, Grand Rapids, MI 49503, c/o JPV.

Chevron's Reservoir and Seal Prediction Team has an immediate opening for an experienced **seal analyst** in its Houston office.

- The successful candidate will be skilled at applying top, lateral and/or fault seal analysis techniques to exploration, development, and production problems within an integrated basin analysis framework. He or she will conduct projects using skills that can include stratigraphic interpretation of mud-rich siliciclastic systems, petrophysical characterization of shales, structural interpretation and fault framework modeling as components of seal risking.
- The primary job function is to work with members of the Reservoir and Seal Prediction Team and explorationists in our operating units to provide pre-drill seal forecasts to evaluate risk for our worldwide exploration program.
- This position involves 1) independent project work and consulting with business unit personnel and 2) evaluation, promotion, and design of new technology solutions. Other responsibilities may include developing technical programs and teaching courses.

- The candidate should have:
- A graduate degree in sedimentology, stratigraphy, structural geology or rock physics with a strong background in top and/or fault seal analysis.
 - Petroleum industry experience.
 - Computer skills related to seal analysis and specialty programs for office productivity.
 - The ability to work individually and collaboratively

with technical and operations teams.

- Strong presentation skills.
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**Kansas Geological Survey
University of Kansas, Lawrence**

SECTION CHIEF – Energy Research Section - Research Associate to academic rank of Senior Scientist, depending on qualifications. Full-time position to lead section, conduct research and disseminate information about Kansas energy. Requires advanced geoscience degree; experience in management, developing/implementing a research program, addressing technical challenges related to energy industry; and record of high-quality written and oral presentations, including peer-reviewed publications. Prefer terminal degree in the geosciences and background in petroleum.

PETROLEUM GEOSCIENTIST or Petroleum ENGINEER – Energy Research Section. Research Assistant to academic rank of Senior Scientist, depending on qualifications. Full-time position to conduct research and disseminate information about Kansas energy. Requires advanced degree in the geosciences or petroleum engineering, demonstrated ability or potential to develop/implement a research program and address technical challenges related to the energy industry, and record of, or potential for, high-quality written and oral presentations, including peer-reviewed publications. Prefer terminal degree in the geosciences or petroleum engineering and background in petroleum.

Possible academic appointment in appropriate department at the Univ. of Kansas for either position. Women and minority candidates are especially encouraged to apply. Full announcement and application instructions at <http://www.kgs.ku.edu/General/jobs.html>. Review begins Jan. 15, 2008. Annette Delaney, HR, hr@kgs.ku.edu or (785) 864-2152. Technical questions, Rex Buchanan, rex@kgs.ku.edu, (785) 864-2106. EO/AA employer.

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We seek an individual who will establish a well-recognized, externally funded research program in geophysics, with a preference toward reflection seismology, petrophysics, or potential fields as applied to energy-related research. Applicants should complement and/or expand on departmental strengths in geophysics, structure geology and tectonics, sedimentology, and/or crustal studies. We seek a person with the ability to cooperate productively with other SER faculty in geology and geophysics, mathematics, chemical and petroleum engineering, economics, and other energy-related fields. The successful candidate will be involved in the undergraduate and graduate teaching mission of the Department of Geology and Geophysics. The SER is an ambitious, state-funded institute that seeks innovative researchers working on new approaches at the forefront of the expanding fields in energy research. Information about the School of Energy Resources is available at uwyo.edu/SER. Additional information on the Department Geology and Geophysics can be obtained at <http://home.gg.uwyo.edu/>.

Applications should include a statement of research and teaching interests and accomplishments, curriculum vitae, and the names and contact information for three individuals who can provide letters of evaluation. Review of completed applications will begin October 1, 2007; however, applications will be accepted until the position is filled. Send an electronic copy of your application to: Ms. Carol Pribyl at cpribyl@uwyo.edu; if you have additional application materials to send, please direct them to the Geophysics Search Committee, Department of Geology and Geophysics, University of Wyoming, 1000 East University Avenue, Dept. 3006, Laramie, WY 82071-2000.

The University of Wyoming is an equal opportunity/affirmative action employer.

DIRECTOR'S CORNER

'Listening' Can Take Many Forms

By RICK FRITZ

At the end of World War II a young U.S. Army soldier name Charles returned home to Oklahoma. Tired from his duty but exhilarated by his return home, one of the first things he wanted to do was see his favorite aunt. Aunt "Pebble," as she was called, was working in downtown Tulsa at the Singer Sewing store.

On his way down the street his eye caught a young woman working on mannequins in the store window. Engaged by her beauty, he watched her. When she felt his presence she turned and waved him away.

Inside the store, he asked his aunt about the young woman. She told him her name was Marilyn and that she was a fantastic girl.

She introduced them – and at the same time warned Charles that Marilyn had four tough, older brothers who chased any suitors away.

Looking for opportunity but not demolition, Charles decided on a strategy. His plan of action was simple – first he made friends with Marilyn's sister. Then he began to date their sister.

Charles and Marilyn were married one year later.

* * *

Communication and opportunity go hand-in-hand with strategic planning.



Fritz

At AAPG, the leadership and staff are constantly looking for opportunities to serve our members. Part of this is expanding our ability to communicate and understand members' needs.

To accomplish this we are embarking on a new system of communication with both members and non-members.

Last winter at the Leadership Conference we asked consultant Glenn Tecker of Tecker and Associates to come and talk about "building a great society." Glenn is among the world's leading experts on not-for-profit associations.

A key part of Tecker's message is that communication is a key part of building a better organization – especially *listening*.

Experts say that it takes much more than annual surveys to understand members' needs and even wants.



Tecker made a point that it takes several types of "listening tools," because each tool only reaches a particular subset of members.

To build a better society we need information on a broad spectrum of the membership. This requires a broad research base.

As a result, AAPG is building a Flexible Membership Research Toolbox. The toolbox will include the following tools:

- ✓ Traditional and online surveys.
- ✓ Spontaneous intercept interviews at meetings.
- ✓ Executive interviews.
- ✓ Data mining of member's interests.
- ✓ Web-based focus groups.
- ✓ Instant response groups.
- ✓ Specialized studies.
- ✓ Town Hall meetings.
- ✓ Past-member interviews.

Of course, we will not use all of these tools in any one year. The goal is to build a database over a period of three to four years that will ensure AAPG leadership has access to a common stream of information that allows them to make the best decisions for the benefit of the membership.

A good definition of an "association" is "a group of people who voluntarily come together to solve common problems, meet common needs and accomplish common goals."

The Flexible Membership Research Toolbox will be a key tool for building a better society and looking for common opportunities.

* * *

Marilyn and Charles were my mom and dad, and they made the best of their opportunity. Their marriage lasted over 50 years.

My mom passed away last month at age 81 to rejoin my dad. She was an extraordinary woman who gave her kids her energy and passion for life.

She will be greatly missed but greatly remembered by all who knew her.

What's Next? Keeping Focus

Statement Process Was Revealing

By CHARLES G. "Chip" GROAT
DEG President

The climate change position statement rewrite process in AAPG brought to light several interesting characteristics of our membership and AAPG as an organization.

✓ We have a broad range of opinions, beliefs and science-based interpretations related to climate change.

✓ We are not shy about going beyond our specific areas of expertise in developing these.

✓ We are willing to commit energy, personal time and meeting time through AAPG to the consideration of topics that some do and some don't consider mainstream to the profession of petroleum geology.

✓ When the process was completed, we not only had a new position statement, but demonstrated a willingness to institutionalize activities in this area through the creation of a permanent committee, the Global Climate Change Solutions Committee.

The first and second of these should come as a surprise to no one. We have opinions and beliefs about a wide variety of things that some may consider not germane to AAPG's mission or program and, while they are commonly expressed freely, they don't become part of the AAPG program.

The third point is the one that merits considerable attention, for it is in this area that we find the potential for growth in the mission and role of AAPG – and when we decide to move in a particular direction, we relate to the fourth point by



Groat

institutionalizing the effort in some way.

* * *

Two of our divisions, EMD and DEG, are examples of this.

In both cases the formation of the divisions was preceded by discussions of whether or not activities in these areas were significantly relevant to the mission and role of AAPG and whether they should be made a formal part of the AAPG structure and program.

In both cases there were opinions, beliefs and science-based interpretations brought to bear in the process that led to the decision to form the divisions. In these cases, many of the companies, agencies and universities we work for were engaged in activities that would fall in the domains of EMD and DEG and the decisions were made to proceed.

If we fail to consider opportunities for expansion of our program we will limit the impact of our profession.

If we make the wrong decision we will blur our focus – to the consternation of our members and those who view us from the outside.

If we make the wrong decision we will blur our focus – to the consternation of our members and those who view us from the outside.

* * *

This is a DEG column. How does all of this relate to DEG?

The decision to institutionalize climate change activities includes a role for DEG in supporting technical sessions and publications in this area.

Are there other areas where AAPG as a whole or DEG might develop activities or programs that follow the same path as climate change in terms of being considered in ways that lead to their becoming an ongoing part of our program?

For DEG these might include the environmental aspects of:

- ✓ Alternatives to petroleum such as biofuels and hydrogen cells.
- ✓ Water resource impacts of various energy technologies.
- ✓ Habitat impacts and enhancement in energy resource and infrastructure development – for example, offshore seismic surveys and production platforms.
- ✓ Best practices in implementing energy-related environmental regulations in the United States and abroad.



* * *

Thanks largely to the action of Mike Jacobs during his term as DEG vice president, we have added committees and strengthened others to increase our activities in some areas such as environmental geophysics and hydrogeology.

What needs further consideration is the range of subjects that are of interest to the membership of AAPG, relate to our capabilities and mission and enhance the services we provide to our members and the profession.

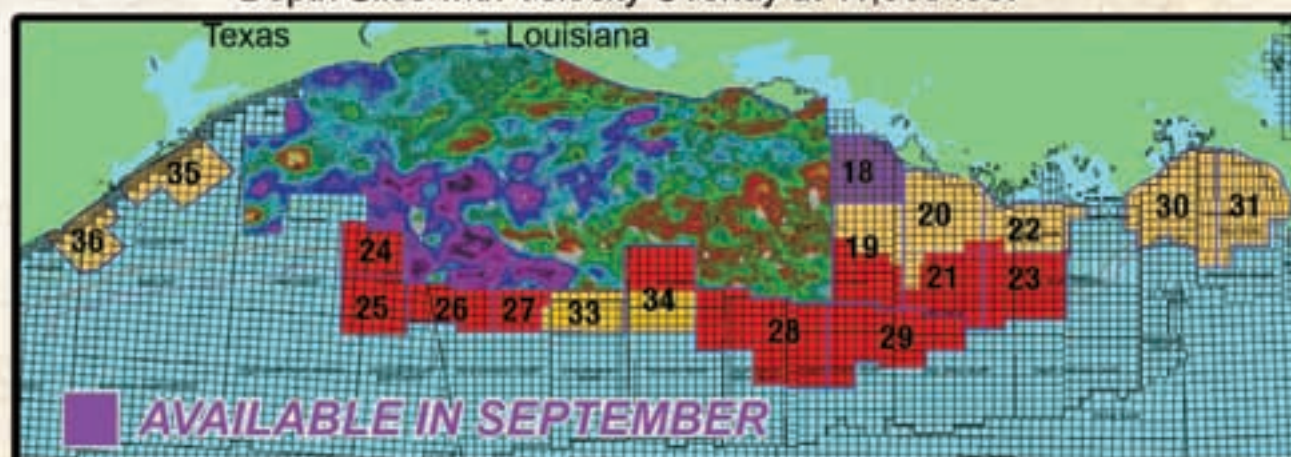
DEG also would like to expand its membership, which in part could come from offering programs that appeal to those who have energy interests and who would join AAPG principally to be involved in DEG programs and activities.

I and other members of the DEG Executive Committee and Advisory Board welcome suggestions for appropriate expansion of the scope of the DEG program into areas that would keep us moving forward. □

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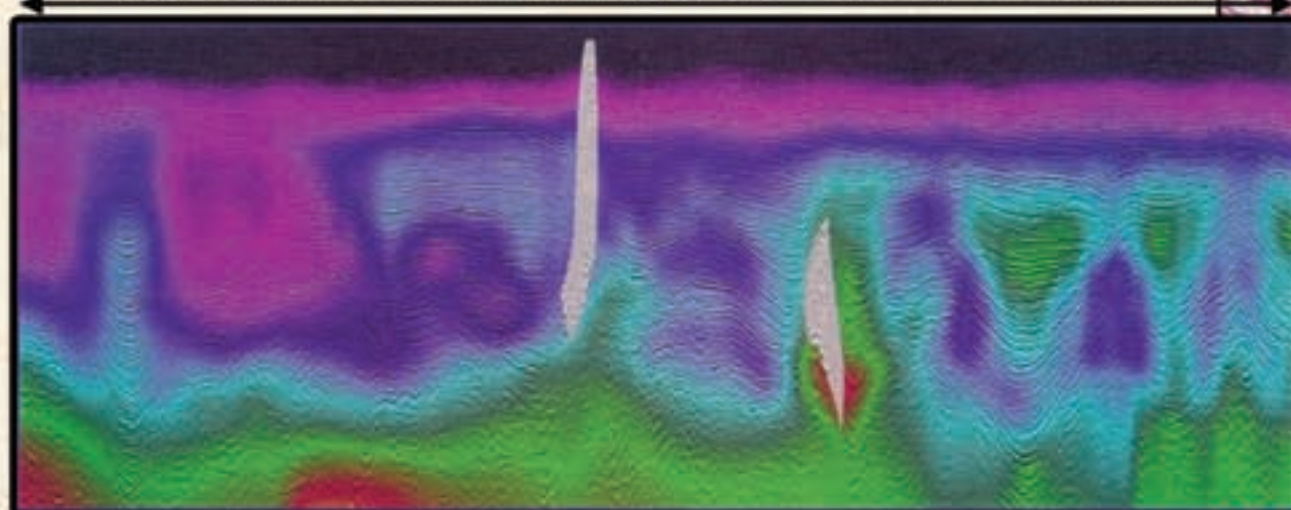
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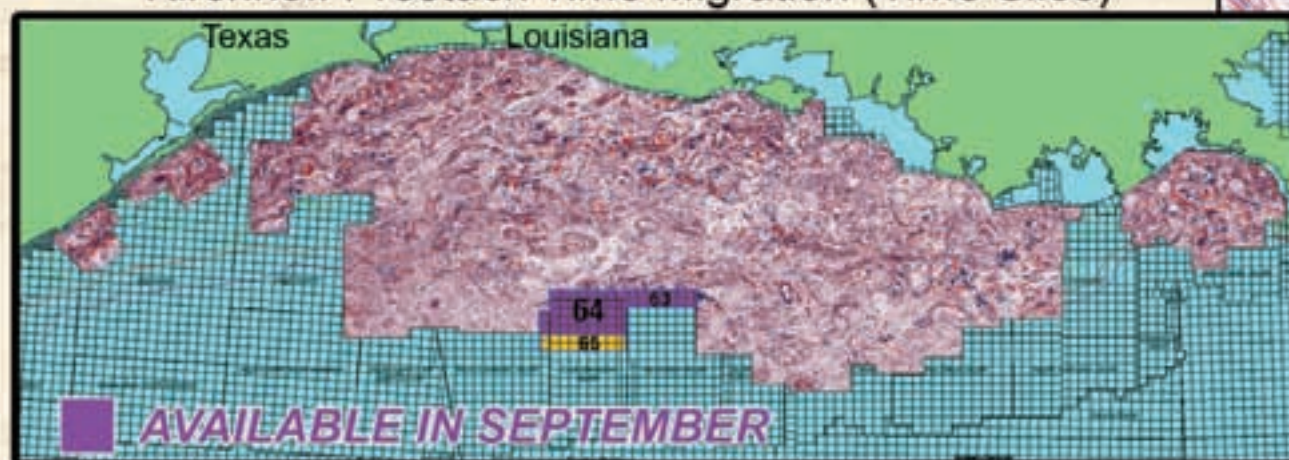


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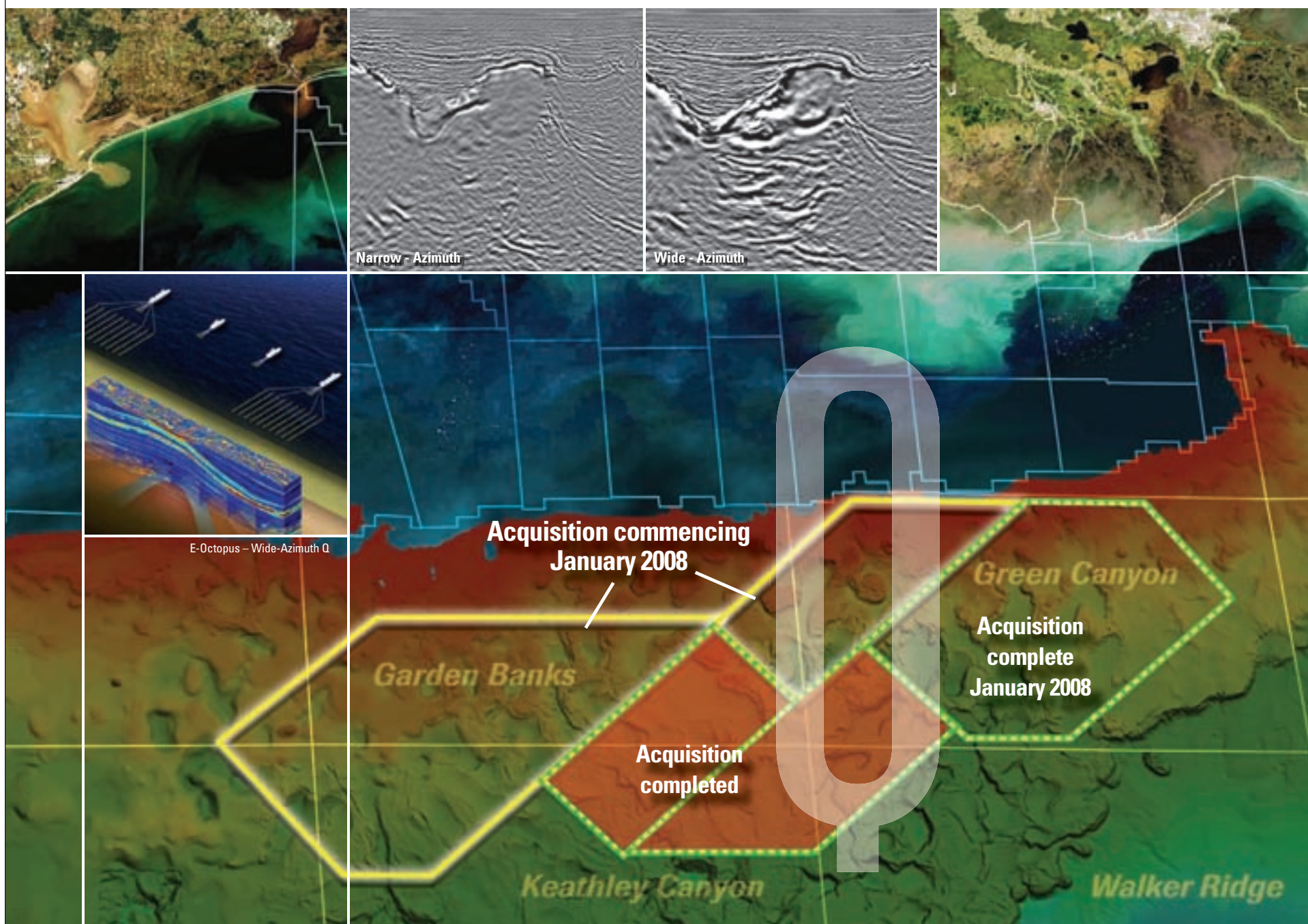
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