AAPG EXPLORER
OCTOBER 2011

Coastal Disturbance

Ireland's dramatic outcrops suggest margins of success

See page 34

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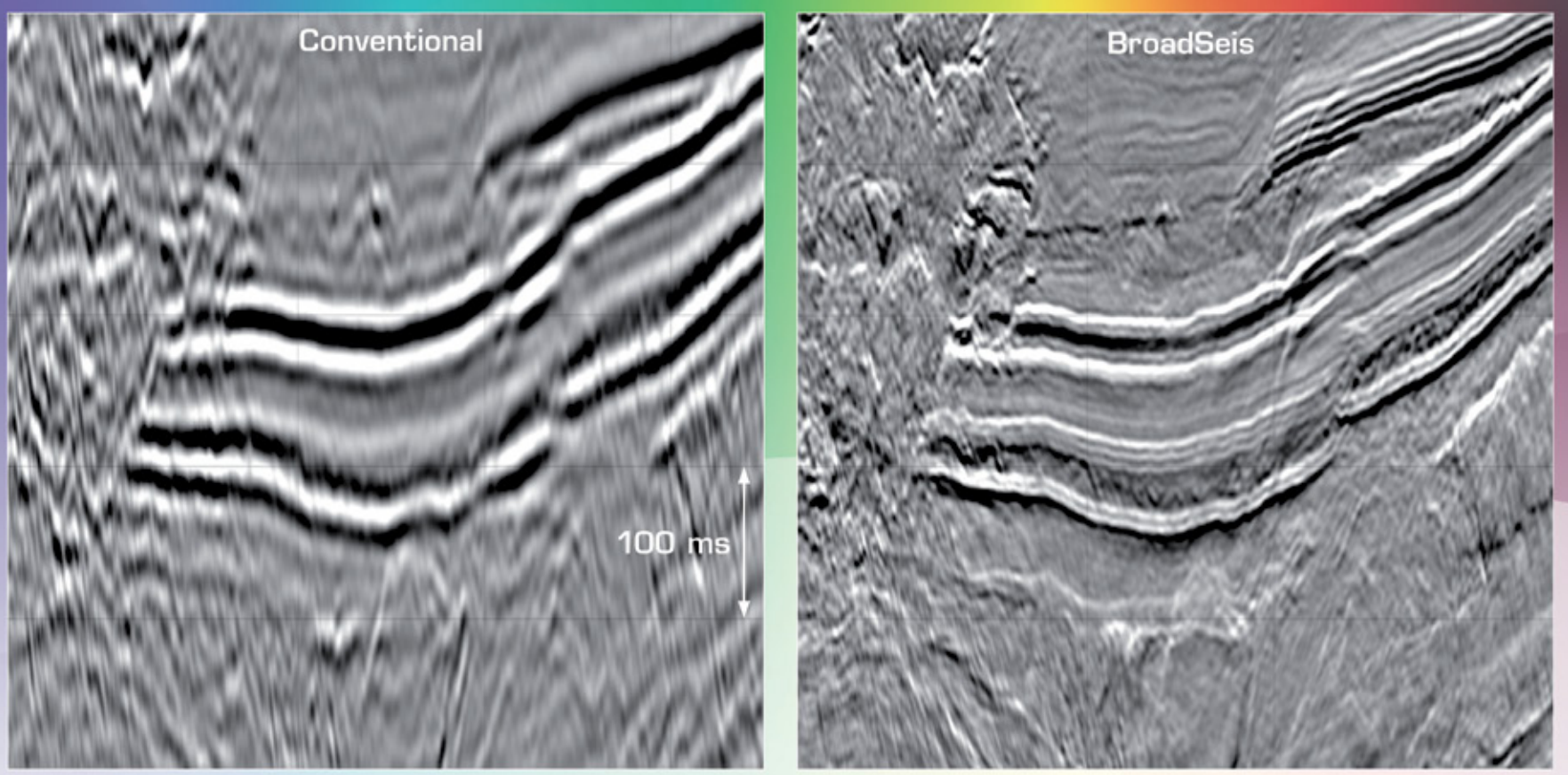

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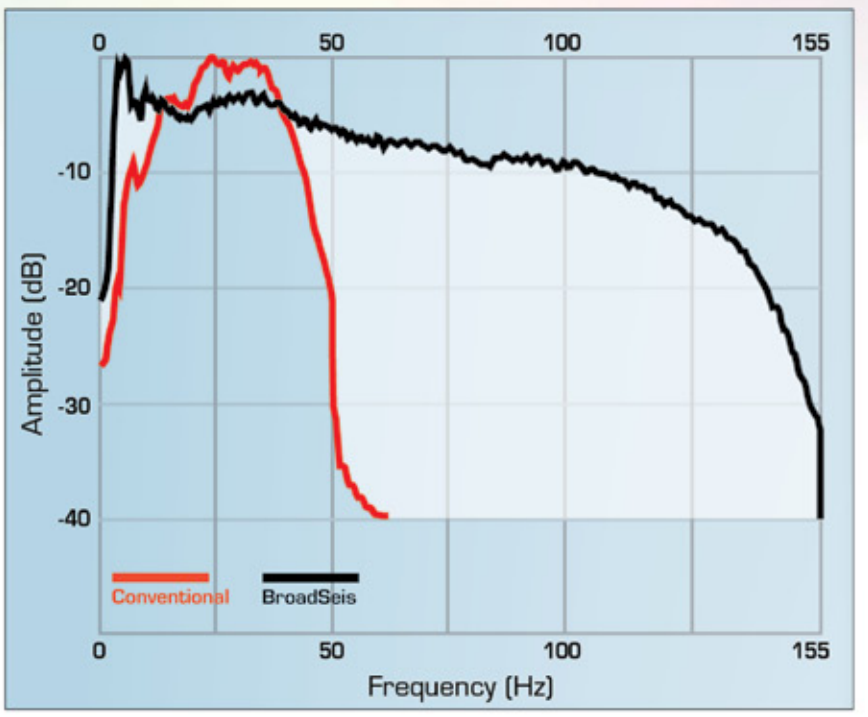

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Vol. 32, No. 10
OCTOBER 2011

AAPG EXPLORER

PRESIDENT'S COLUMN

Budget Matters

By PAUL WEIMER

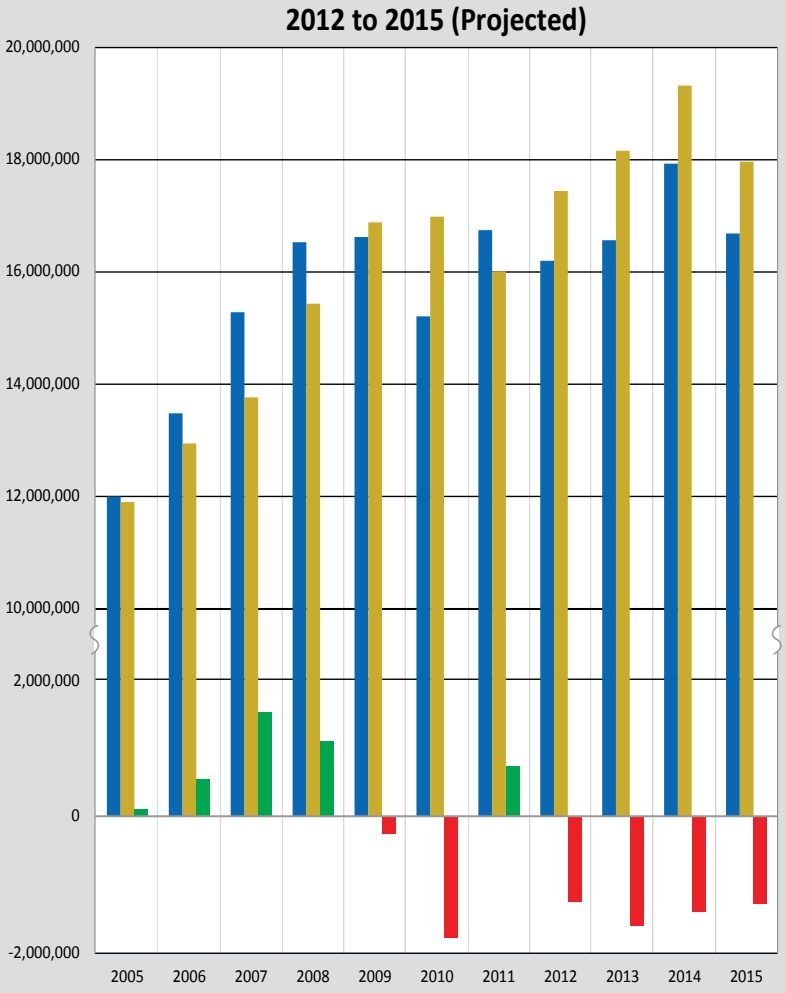
My co-author for this month's column is AAPG Treasurer Jim McGhay. You might think this is a boring topic, but it is critical to all members and to the future services that the AAPG can offer.

Budget *matters* (noun). We sometimes marvel at the size of the AAPG and all of its moving parts, some of which are going in quite different directions. We have three governing bodies: Executive Committee, Advisory Council, and House of Delegates; three divisions (Division of Environmental Geology, Division of Professional Affairs, and Energy and Minerals Division); 12 Sections and Regions; more than 30 standing committees (with several subcommittees), and several *ad hoc* committees; and a myriad of services and products that are available to members, ranging from the BULLETIN to Career Services. Remember that the lion's share of the work is provided by volunteers, who serve for any number of different reasons; their dedication really is most impressive.


WEIMER

In short, AAPG (we) is all things to all people (us).

AAPG has five primary sources of income: members' dues (only 14 percent of the revenue budget), advertising in the EXPLORER and online, conferences and conventions (~55 percent of the revenue), education, and publications. The annual budget has grown from $11 million to nearly $18 million during the past seven years.



AAPG Budgets and Forecasts – Projections are based on continued current trends of revenue and expense. New sources of revenue while managing expenses will be required to turn these deficits into break-even results.

Running an operation this large and complex means that we must keep a watchful eye on the budget, and the AAPG staff does a superior job of this. Historically, our annual surplus/deficit fluctuates with good and bad years (see graph), and our goal is to maintain a rolling balance. Fluctuations in the budget are usually correlated with three factors: the income generated from the annual and international conventions, Special Publications, and the performance of our operating fund investments in the financial market. Unfortunately, this year and possibly next year are not strong years for the budget (see graph).

Budget *matters* (verb). We have lofty goals for increasing our services, such as more education; for international expansion, such as a local office serving each Region; for regional Distinguished Lecturer tours; and for holding Regional meetings similar to the current Section meetings. We know that these plans will be met, but we must temper the pace of attaining our goals with the reality of the budget. Getting costs under control and generating appropriate revenue are imperative in the coming years.

Given this scenario, what methods are the Executive Committee considering for addressing these budgetary matters?

1. A slight increase in dues will be proposed. There has not been an increase in dues for three years, and

See **President**, next page

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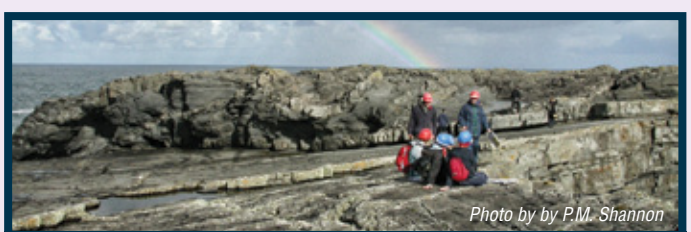

Sheet-like basin floor turbiditic sandstone beds of the Ross Sandstone Formation near the Bridges of Ross, Ireland.

ON THE COVER:

The dramatic outcrops that are found at the Bridges of Ross, at the southern extremity of Galway Bay in County Clare, Ireland – a location that is one of the field trip destinations that will be offered during the next Central and North Conjugate Margins Conference, set Aug. 22-24 at Trinity College in Dublin, Ireland. Other desitinations include Northern Ireland's Gieant's Causeway and Antrim Coast, and the Jurassic coast cliff secions of Dorset and Devon, England. See page 34. Photo by Chris Bradbury.

Vol. 32, No. 10

The AAPG EXPLORER (ISSN 0195-2986) is published monthly for members by the American Association of Petroleum Geologists, 1444 S. Boulder Ave., P.O. Box 979, Tulsa, Okla. 74101-3604, (918) 584-2555. e-mail address: postmaster@aapg.org. POSTMASTER: Please send address changes to AAPG EXPLORER, P.O. Box 979, Tulsa, Okla. 74101. Canada Publication Agreement Number 40063731 Return undeliverable Canadian address to: Station A, P.O. Box 54 • Windsor, ON N9A 6J5 • E-mail: returnsIL@imex.pb.com

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Candidate Bios Online

Biographies and individual information for all AAPG candidates for the 2012-13 Executive Committee are now available online at www.aapg.org.

The material includes each candidate's written response to the question of why they accepted the invitation to stand for public office, plus a brief video statement by each candidate that was filmed at the recent AAPG Leadership Days event in Boulder, Colo.

The president-elect winner will serve in that capacity for one year and will be AAPG president in 2013-14. The vice president-Sections and secretary will serve two-year terms, beginning July 1.

Ballots will be mailed in spring 2012.

The slate is:

President-Elect

❒ **Donald D. Clarke**, geological consultant, Lakewood, Calif.

❒ **Lee Krystinik**, Fossil Creek Resources, Arlington, Texas.

Vice President-Sections

❒ **Thomas E. Ewing**, Frontera Exploration Consultants, San Antonio.

❒ **Kenneth E. Nemeth**, Schlumberger Seismic Reservoir Characterization, Houston.

Treasurer

❒ **Rebecca L. Dodge**, Midwestern State University, Wichita Falls, Texas.

❒ **Deborah K. Sacrey**, Auburn Energy, Houston.

We have lofty goals for increasing our services ... but we must temper the pace of attaining our goals with the reality of the budget.

President
from previous page

they have been raised only four times during the past 15 years, for an average increase of less than 3 percent/year. Given the rate of inflation, the effort to increase our international presence, and the doubling in the services offered to members during the past 12 years, we think the relatively low dues are remarkable. We also think that our dues structure is quite competitive with our equivalent societies that are roughly our size in total members. An increase in dues of $10 US will address about $250,000 US, or about 15 percent of the operations budget shortfall.

2. A slight increase in registration fees for upcoming annual and international conventions (ACE, ICE respectively) will also help close the budget gap while still keeping these conferences competitively priced.

3. An increase in the shipping charges of the hard copy of the BULLETIN to those subscribers. One of the requirements of AAPG membership is that each member will receive a copy of the BULLETIN and EXPLORER as part of his/her dues. In April 2004, the Executive Committee voted to make the digital BULLETIN the primary method of delivery for all members.

The intent was for those members who continue to receive the printed BULLETIN to pay for some of the shipping costs. A substantial amount of the shipping costs (80 percent) is still being absorbed by the Association, and these costs will be switched to those who choose to receive a hard copy of the BULLETIN. Increasing the shipping costs for those members who receive the hard copy BULLETIN will raise about $40,000 for the budget.

4. A decrease in the amount of members' travel costs that have been defrayed by the Association. During the past four years, the total member travel costs paid by the Association have doubled (more than $1.46 million US). A travel policy is being developed that will fairly address what kind of travel costs will be reimbursed by the AAPG; these changes will also make a significant impact on the budget.

5. All AAPG programs are currently being reviewed to find minor cost savings in the short term. Small savings in multiple programs will have an important cumulative effect on the budget.

In summary, although minor increases in these fees along with careful stewardship of our expenses will go a long way toward redressing the near-term budget deficits, for the AAPG to continue to grow and serve all of its members' demands, we need to develop new, additional sources of income to achieve our goals … and that will be the subject of a future column.

Paul Weimer

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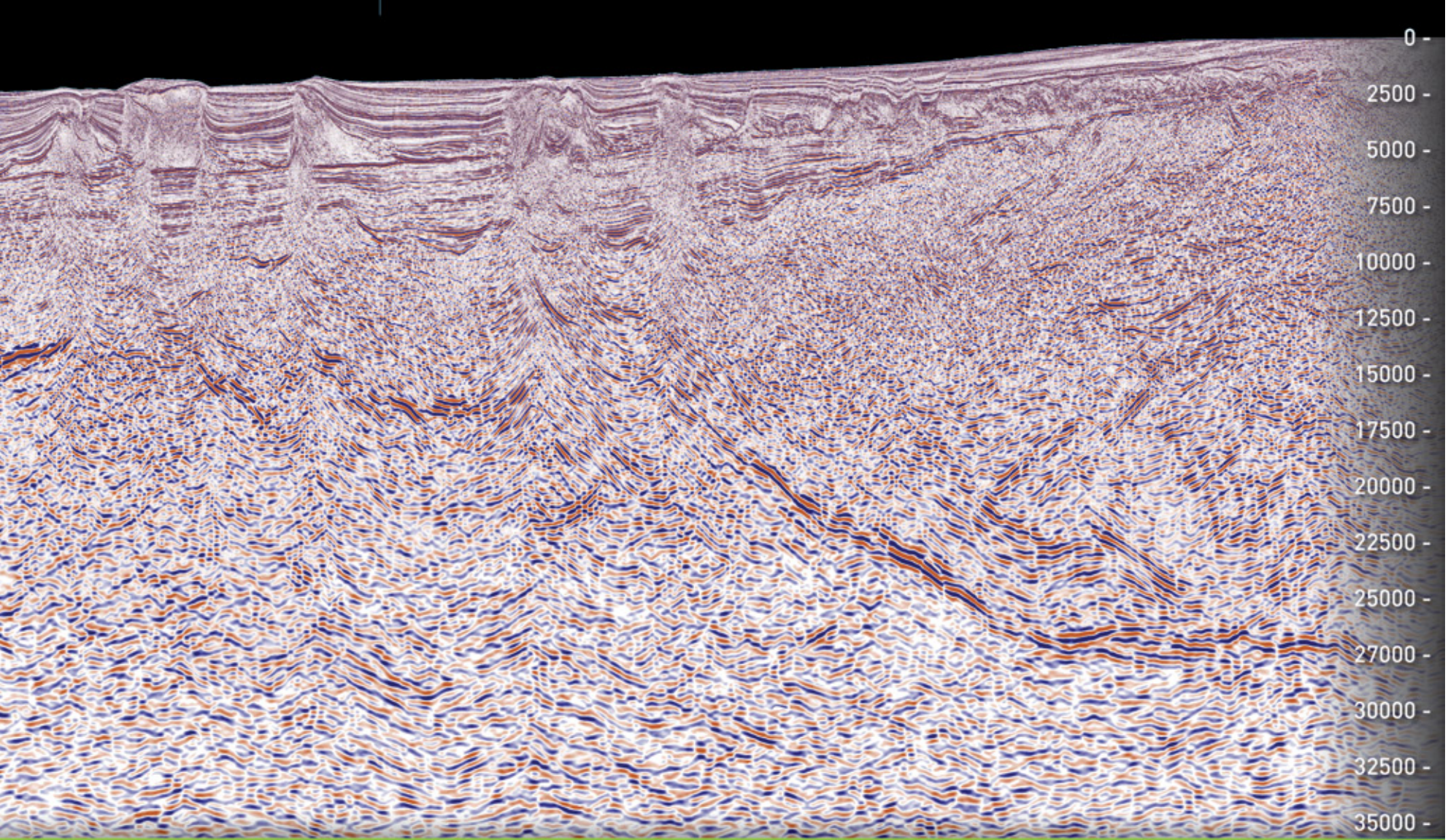

TURE.

BasinSPANS
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Gries gets Halbouty Leadership Award

Weber to Receive Powers Medal

By SUSIE MOORE, Communications Project Specialist

Koenraad Weber, a pioneer researcher in hydrocarbon recovery and internationally recognized distinguished educator, is the recipient of this year's Sidney Powers Memorial Award, AAPG's highest honor.

Weber is joined at the top of this year's AAPG awardees list by Robbie Rice Gries, president and CEO of Priority Oil & Gas LLC in Denver, who has been named the winner of this year's Michel T. Halbouty Outstanding Leadership Award.

Weber and Gries, both AAPG Honorary members, are among the 34 award winners who have been announced by AAPG and who will be recognized at the opening session of the 2012 AAPG Annual Convention and Exhibition, set April 22-25 in Long Beach, Calif.

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

Weber, who received Honorary membership in 2004, served a lengthy career as production geologist with Royal Dutch Shell while simultaneously teaching as professor of production geology at the Mining and Petroleum Engineering faculty at Delft University of Technology, Netherlands.

With Shell he worked both onshore and offshore fields (oil and gas) spanning five continents, having the fortunate opportunity of being involved with projects involving the Niger Delta, the Venezuelan Bolivar coastal fields and the Leman Bank field in the North Sea – to name a few.


WEBER


GRIES

Weber also has written many papers and been a sought-after keynote speaker for many conferences in a global capacity.

Gries, who received Honorary membership in 1998, has been involved in AAPG leadership roles on dozens of occasions. She served two times on the AAPG Executive Committee, as secretary from 1995-97, and as president-elect/president from 2000-02.

She is the sixth recipient of the Halbouty Outstanding Leadership Award, given in recognition of outstanding and exceptional leadership in the petroleum geosciences.

Interviews with both Weber and Gries will be published in a future EXPLORER. Biographies and citations of all award winners will be included in a future BULLETIN.

Two annual awards have new names this year:

▸ The Outstanding Explorer Award, now in its tenth year of existence, is now the Norman H. Foster Oustanding Explorer Award, named in honor of the late Norman Foster, a past AAPG president and the 1999 Sidney Powers Award winner.

▸ The "Special Award," presented to honor people and accomplishments beyond the scope of other AAPG awards, is now named the Harrison Schmitt Award, in honor of AAPG Honorary Member and former NASA Apollo astronaut Harrison Schmitt. Coincidentally, in 1973 Schmitt was the very first "Special Award" recipient, honored for his lunar exploration.

Award winners announced by AAPG and who will be honored in Long Beach are:

Honorary Member Award

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

❒ **Adekunle A. Adesida**, independent consultant, Lagos, Nigeria

❒ **Ibrahim A. Al-Jallal**, Sandroses Geological Consultancies, Khobar, Saudi Arabia.

❒ **Lee T. Billingsley**, Abraxas Petroleum, San Antonio, Texas.

❒ **Dudley W. Bolyard**, Bolyard Land & Exploration, Centennial, Colo.

❒ **Paul M. Harris**, Chevron Energy Technology, San Ramon, Calif.

❒ **Phillip H. Stark**, IHS Energy Group, Englewood, Colo.

Norman H. Foster Outstanding Explorer Award

Presented in recognition of distinguished and outstanding achievement in exploration for petroleum or mineral resources.

❒ **Dan A. Hughes**, Beeville, Texas.

Robert R. Berg Outstanding Research Award

❒ **Henry W. Posamentier**, Chevron, Houston.

Distinguished Service Award

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

❒ **Edith C. Allison**, consultant, Rockville, Md.

❒ **Susan M. Cunningham**, Noble Energy, Houston.

❒ **David A. Dolph**, Nexen Petroleum International, Calgary, Canada.

❒ **Paul F. Hoffman**, Allen-Hoffman Exploration, Houston.

❒ **Alain-Yves Huc**, Institut Français du Pétrole, Rueil-Malmaison, France.

❒ **William A. Morgan**, ConocoPhillips, Houston.

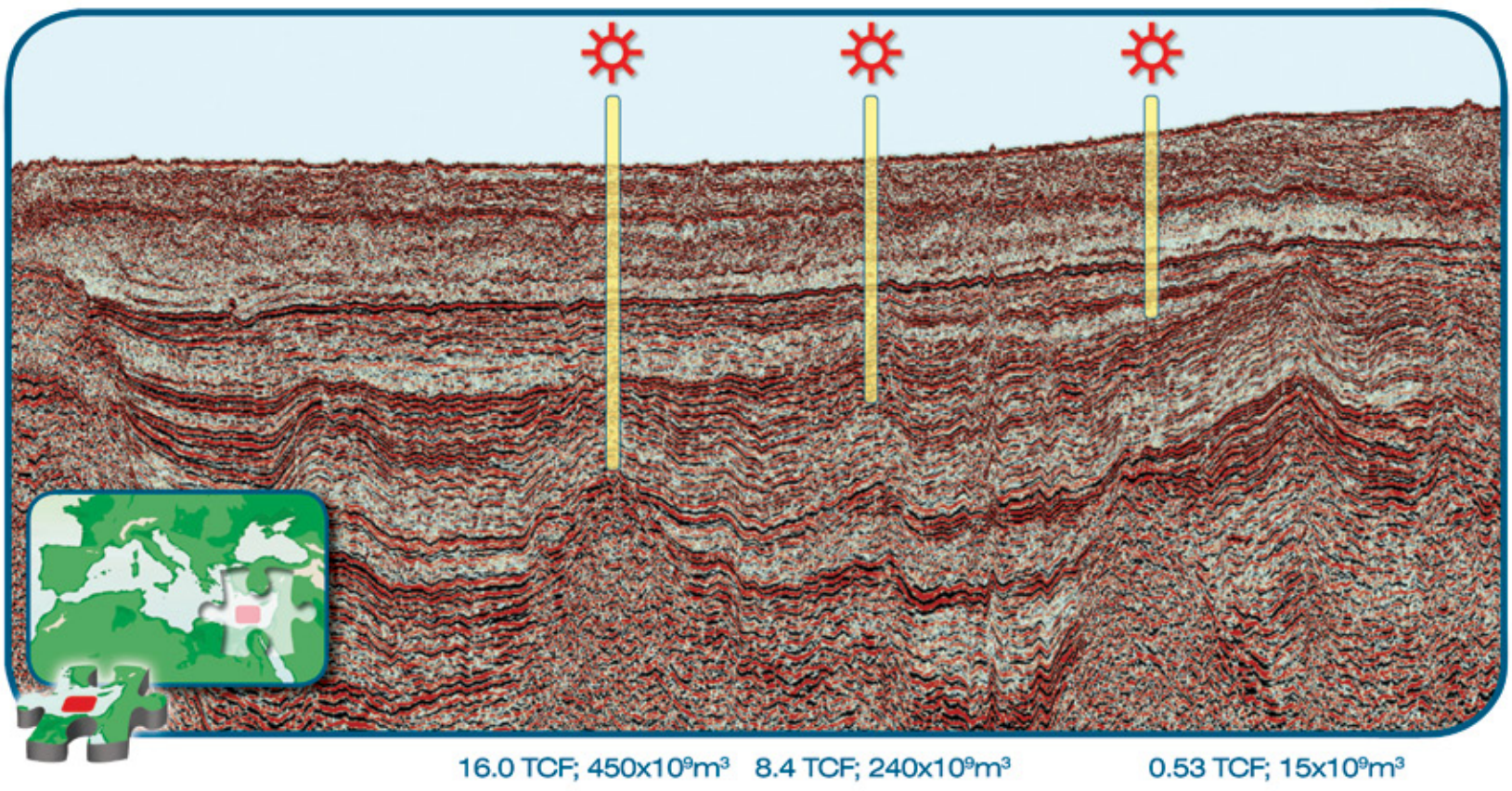
❒ **Adedoja R. Ojelabi**, Chevron Nigeria, San Ramon, Calif.

❒ **Victor H. Vega**, Equion Energia, Bogota, Colombia.

See **Awards**, page 10

Solved: The exploration puzzle in the East Mediterranean...

...three world class gas discoveries.



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Awards
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❒ Mark L. Wilson, Santa Maria Pacific Holdings, Bakersfield, Calif.

Grover E. Murray Memorial Distinguished Educator Award

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

❒ Andrew Hurst, University of Aberdeen, Aberdeen, Scotland.

❒ Howard D. Johnson, Imperial College, London, England.

Harrison Schmitt Award

(Previously "Special Award")

Presented in recognition of outstanding accomplishment that is beyond the scope of other AAPG awards.

❒ Jill Stevens, ExxonMobil, Melbourne, Australia.

Pioneer Award

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

❒ Tim T. Schowalter, independent, Granby, Colo.

Wallace E. Pratt Memorial Award

Presented to honor and reward the author(s) of the best AAPG BULLETIN article published each calendar year.

❒ Robert H. Lander and Linda M. Bonnell, for "A Model For Fibrous Illite Nucleation and Growth In Sandstones," which appeared in the August 2010 BULLETIN.

Both are with Geocosm, Austin, Texas.

Robert H. Dott Sr. Memorial Award

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

❒ Michael Pöppelreiter, Carmen García-Carballido and Martin Kraaijveld, for AAPG Memoir 92: *Dipmeter and Borehole Image Log Technology*.

Pöppelreiter is with Shell Kuwait, Kuwait City, Kuwait, García-Carballido is with Kiethfield Smithy, Aberdeenshire, Scotland, and Kraaijveld is from Rotterdam, Netherlands.

J.C. "Cam" Sproule Memorial Award

Presented to recognize and reward younger authors of papers applicable to petroleum geology.

❒ Alexei V. Milkov, for "Methanogenic Biodegradation of Petroleum in the West Siberian Basin (Russia): Significance for Formation of Giant Cenomanian Gas Pools," which appeared in the October 2010 BULLETIN.

Milkov is with BP Russia, Houston.

John W. Shelton Search and Discovery Award

Presented to honor and reward the author(s) of the best contribution to the Search and Discovery website in the past year.

❒ Katherine Giles, for the article "Tracking the Migration of Salt Diapirs Using Halokinetic Sequence Stratigraphy."

Giles is with New Mexico State University, Las Cruces, N.M.

George C. Matson Award

Presented to honor and reward the best oral presentation at the 2011 AAPG Annual Convention and Exhibition in Houston.

❒ Lars Wensaas, for the paper "Source Rock Prediction From Seismic Part I: Links Between Rock Properties and Seismic Attributes."

His co-authors were Marita Gading, Helge Loseth and Michael Springer.

Wensaas is with Statoil, Trondheim, Norway.

Jules Braunstein Memorial Award

Presented to honor and reward the best poster presentation at the 2011 AAPG Annual Convention and Exhibition in Houston.

❒ Roger M. Slatt and Younane Abousleiman (non-member), for the poster "Multi-Scale, Brittle-Ductile Couplets in Unconventional Gas Shales: Merging Sequence Stratigraphy and Geomechanics."

Slatt, an AAPG Honorary Member, is with the University of Oklahoma, Norman, Okla.

Geosciences in the Media Award

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

❒ Nick Eyles, professor of geology at University of Toronto in Canada and an award winning writer, has authored more than 150 publications on ice age geology and environmental geology.

Lorenz Wins RMS Levorsen

Past AAPG president John C. Lorenz has been named the winner of the A.I. Levorsen Award for the best paper presented at this year's Rocky Mountain Section meeting in Cheyenne, Wyo.

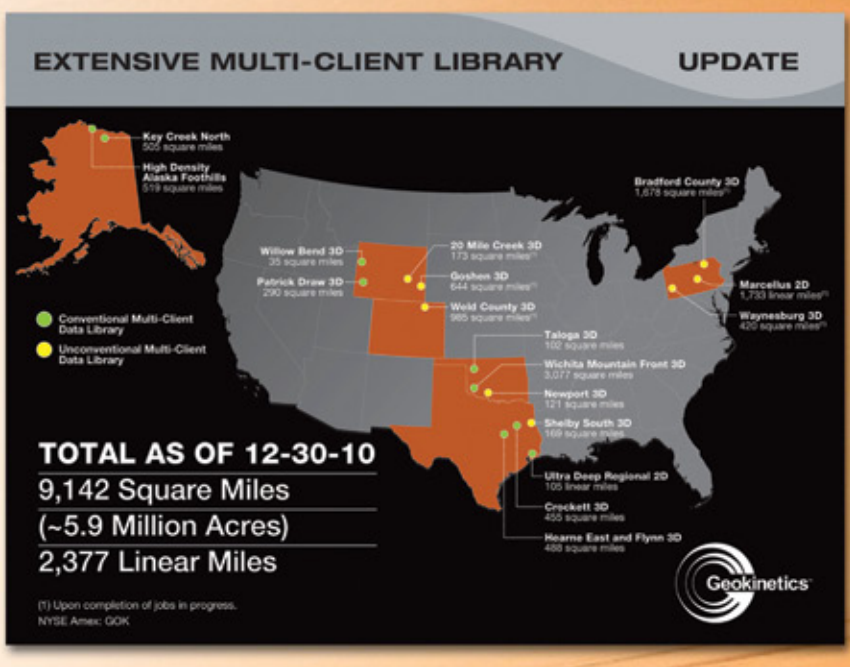
Lorenz' paper was titled "Fracture Patterns Within the Tensleep Formation Over a Spectrum of Laramide-Age Thrust Structures, Wyoming."

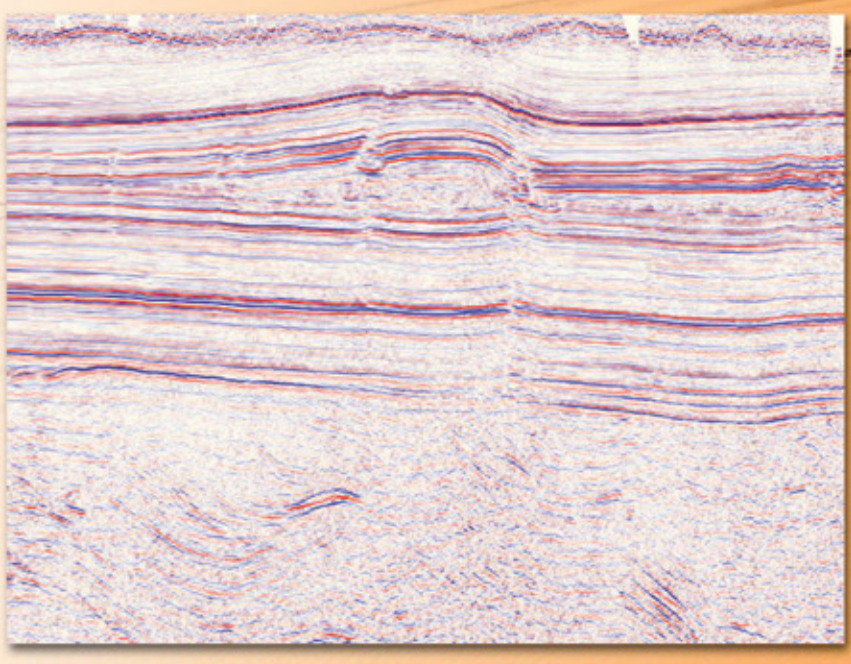
His co-author was Scott P. Cooper, of Cooper Geological Consulting, Tijeras, N.M.

This is the second time Lorenz has won a Rocky Mountain Section Levorsen Award, the first being for a paper presented at the 1990 meeting.

Lorenz, who is with Geoflight LLC., in Edgewood, N.M., will receive his award at the next Rocky Mountain annual meeting, set Sept. 9-12 in Grand Junction, Colo.

KNOWLEDGE





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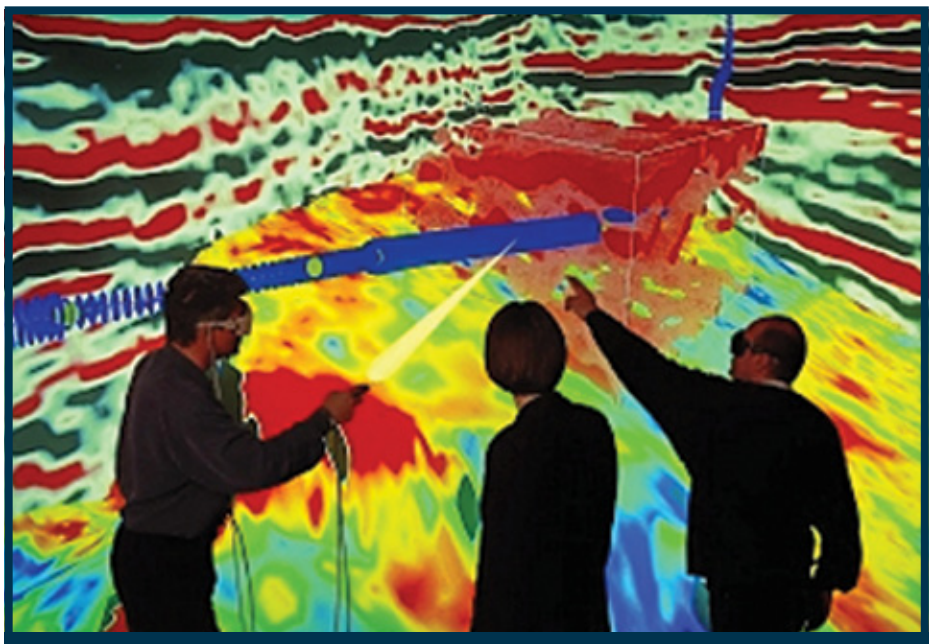

An old fashioned industry? New generations of geoscientists – especially those who readily embrace techniques like 4-D seismic data – are making high-tech development a priority.

Does the public know?

Industry Boasts High-Tech Capability

By DAVID BROWN, EXPLORER Correspondent

Technology drives the oil and gas industry like never before. So when some of the sharpest minds in the business discuss important technologies for exploration, you definitely want to listen.

And you can have that chance at AAPG's International Conference and Exhibition in Milan, in the forum "New Technology Directions in Exploration and Production."

The forum speakers will offer insights from a wide range of technical, operational and geographical perspectives.

Invited panelists are:

- **Jean-Jacques Biteau**, vice president exploration, Total.
- **Anelise Lara**, reservoir subsalt manager, Petrobras.
- **Khalid Nouh**, president-Middle East, Baker Hughes.
- **Mark Pospisil**, senior vice president-geology and Geophysics, XTO Energy.
- **Cindy Yeilding**, vice president exploration-Gulf of Mexico, BP.

As a preview, three of the speakers agreed to share their views on current and emerging E&P technology.

> A special 90-minute technology-focused forum, "New Technology Directions in Exploration and Production," will begin at 11:10 a.m. Tuesday, Oct. 25, at the upcoming AAPG International Conference and Exhibition in Milan, Italy.
>
> The forum speakers will offer insights from a wide range of technical, operational and geographical perspectives.

A 'High-Tech Industry'

According to the forum organizers, the industry's challenge today "is to develop cost-effective technologies that reduce the environmental footprint of their utilization and tackle such issues as global climate change."

The oil and gas business also is undergoing rapid growth that demands new technology solutions, especially in unconventional resource development and in ultra-deepwater exploration.

Not surprisingly, advances in geophysics tended to dominate the initial look at technology direction.

Biteau sees a variety of technology tools assisting the explorationist, including some esoteric aids like advanced light-detection-and-ranging systems, commonly called "lidar."

He identified non-seismic methods, outcrop descriptions using high-resolution lidar, fine-tuned geochemistry and seismic imagery enhancement as important developments.

"In petroleum geology, better understanding of complex, stratigraphic composed traps. And GIS for sure, with data management enhancement," Biteau added.

Yeilding singled out the importance of new technology developments and improvements in geophysics that have led to better reservoir understanding.

"The geophysics is illuminating the geology in ways we haven't seen before," Yeilding observed.

"A lot of what I see is really good geology being advanced by imaging. People continue to be able to describe reservoirs primarily using seismic and core data," she said.

Lara also emphasized the effect of new technologies on seismic imaging, and especially on the industry's ability to model reservoirs.

"For Petrobras, the new technologies that are most important nowadays are related to deep offshore exploration and production," she noted.

Today, technology is so important to the oil and gas industry that exploration has become a high-tech field, according to Yeilding. That should enable the industry to work with tech researchers,

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High-Tech

from page 14

technology companies and others to develop new applications.

"The most important thing, and I've even said this to members of Congress, is that we're a high-tech industry," Yeilding commented. "I keep saying that, hoping it will stick.

"If people really understand what we do, they may see us as true collaborators."

Going Deeper

New technologies and new techniques are combining to push exploration into deeper water and farther frontiers.

The oil industry has preferred target formations below limestone instead of below salt, thinking that targets below salt were subsalt and difficult to image, while targets below limestone were sublime.

But improvements in technology for seismic data acquisition, combined with advances in processing and interpretation, have led to a much better picture of subsalt prospects offshore Brazil, in the Gulf of Mexico and elsewhere.

YEILDING

> **"There's an amazing amount of new acquisition technology that's being tried and applied, very quickly."**

In addition to technologies for better seismic imaging, Lara said other developments now enable the industry:

- To enhance carbonate reservoir characterization and modeling,
- To obtain real-time reservoir monitoring (4-D seismic, intelligent completion, downhole sensors).
- To enhance well productivity (new well geometries) or to create less expensive wells.
- To de-bottleneck offshore facilities (water-oil subsea separation, raw water injection).
- To reduce processing facilities' footprints (compact oil-water separators, etc.).

Frontier exploration demands its own technological developments. As the industry moves into little-explored areas, new technologies will be needed to meet E&P challenges.

The Arctic, especially, will require new thinking and new advances in technology – and because of its resource potential, the work appears well worthwhile.

"I believe there's a significant exploration prize waiting in the Arctic," Yeilding said.

The forum also will address current and potential new technology for the production of shale gas, shale oil and other unconventional resources. Shale gas development already has produced a string of technology improvements.

Even more may be on the way, as research continues and the largest companies begin their own campaigns in the unconventional resources arena.

"It's interesting seeing that people are starting to get into the fundamental geology of the shales," Yeilding said. "That's starting to lead to some real breakthroughs."

She noted that many oil and gas plays now require thinking that's outside the box and beyond the conventional, even if they don't involve unconventional resources.

"In some of the reservoirs offshore, like in Brazil, people are continuing stratigraphic plays with success," she said. "I think the industry is seeing success not only in unconventional plays, but also in these less-conventional plays."

Faster! Faster!

Predicting the next breakthroughs in E&P technology isn't easy, because advances are happening in so many areas. Nanotechnology is often mentioned as a promising front, and so are intelligent devices for the oilfield and new applications for lasers.

It's startling to think how many new directions there are for technology to follow. Lara listed several areas where the industry can look for coming advances in E&P technology.

"In terms of emerging technologies, we can consider integrated reservoir geomonitoring and production systems, 'plug-and-play' FPSOs, nanoparticles for reservoir characterization, laser drilling and subsea processing," she said.

The pace of technological change has accelerated, with improvement sometimes apparent on a month-to-month basis.

"A lot of the imaging technology has progressed rapidly. There's an amazing amount of new acquisition technology that's being tried and applied, very quickly," Yeilding observed.

And when a new technology development arrives it quickly spreads through the industry, which has learned to adapt with speed.

"Technology moves around the world. It's kind of a continuous improvement loop. They will strip out what's best and try it in other places," Yeilding noted.

"The whole concept is continuous improvement," she said. "People see an idea and then build on it, and it's just great to watch."

Overcoming the regulatory maze

Collaboration Addresses Frontier Risks

By LOUISE S. DURHAM, EXPLORER Correspondent

A newly inaugurated major research project dubbed the Research Center for Environmental Protection at Hydrocarbon Energy Frontiers (REEF) is under way to address the complex problems of tapping into oil and gas under increasingly difficult situations.

REEF is a partnership between the Energy Institute at the University of Texas at Austin and the MIT Energy Initiative at MIT – it will be co-located at the two institutions – designed to provide critical policy, science and technology solutions to the production, environmental and safety challenges of developing oil and gas in frontier regions.

GROAT

> **"We're hoping the industry will look on the universities as a value-added partner in adding to their capabilities."**

The International Energy Agency predicts a 40 percent increase in global energy demand by 2030 – hence the vital need for a project such as REEF.

The program currently has evolved to the stage where the focus now is to secure the needed funding, which is estimated to tally tens of millions of dollars.

"The only way to support something like this is to have industry partners who think it's worth investing that kind of money," said AAPG Honorary Member Chip Groat, director of UT-Austin's Center for International Energy and Environmental Policy and REEF steering committee member.

"This would be an openly collaborative program with industry," Groat said. "It's more a plan to work together and use university talents to work with industry and the people they're working with, which includes regulatory agencies.

"We're hoping the industry will look on the universities as a value-added partner in adding to their capabilities," he said. "For instance, thinking about what the regulatory picture should look like for the next 20 years, what we need to be thinking about for the next 15 to 20 years in the sense of response to problems that can happen."

'Positive Partnering'

Industry and the universities have a long history of working together in the technology area, but REEF is a different proposition.

"The biggest challenge is the policy/regulatory piece," Groat emphasized. "It's rare that industry government relations groups and business policy groups have expressed an interest in partnering with universities to think about things like that.

"To me, this is the biggest new piece of what REEF is all about.

"In the frontier hydrocarbon part and some of the environmental planning things, it would be more with, say, engineering groups – more traditional," he noted. "In the area of societal context and policy where we're thinking how we get more science into the policy d.der relationship with industry than in the past, which was mainly technical."

Groat readily admits that working with industry on such matters as policy has the potential to raise issues of credibility. This is a far more delicate area than hard engineering or science input, where facts are facts and systems are systems.

Even so, Groat is optimistic that donations can be made with arms-length legal provisions to prevent donors from influencing research outcomes.

"It will be tedious to make it work," he noted. "But if REEF doesn't get any further than opening dialogue to find out what we can do comfortably for them and us with industry in that area will be a step forward – at least we'll know.

REEF has a strong foundation in that it involves two major, highly respected universities with compatible interests and capabilities along with a history of working with industry, adding their strengths to the projects at hand.

"The program will tap experts from both schools in fields ranging from engineering and geosciences to law and public policy," he emphasized.

A full version of this story can be found online at aapg.org/EXPLORER.

Bakuriani, Georgia

Photo courtesy of Southwestern Energy Co.

Looking for success in the Brown Dense play – here, along the Arkansas-Louisana state line, where it is 300-550 feet thick at 8,000-11,000 feet in depth over a large area.

A significant oil source rock

Smackover's 'Brown Dense' to Get Tested

By LOUISE S. DURHAM, EXPLORER Correspondent

The highly publicized Haynesville shale gas play, which is concentrated principally in northwest Louisiana, may soon be overshadowed by a whole new unconventional play.

This one's the hydrocarbon flavor *du jour* – oil.

It's the Brown Dense lime, which is the lower section of the Upper Jurassic Smackover formation, a thick carbonate that immediately underlies the Haynesville in the region. Geographically, the fledgling play is concentrated in southern Arkansas, parts of northern Louisiana and the river counties in extreme west-central Mississippi and extreme eastern Louisiana.

The Smackover formation per se has been drilled extensively since oil was first discovered in a test well drilled in the shallow Smackover Field in Union County, Arkansas, in 1937. It rapidly became the darling of Gulf Coast operators, and over the years numerous wells have successfully completed in the higher sections of the formation, in both carbonate and sandstone facies.

In most areas, the Lower Smackover lacks the reservoir qualities to produce commercially via conventional technologies, according to AAPG member Steve Walkinshaw, president of Madison, Miss.-based Vision Exploration LLC.

It may be a tough nut to crack production-wise, but it's loaded with hydrocarbons.

"The lower unit of the Smackover is aptly named the Brown Dense," Walkinshaw said, "and it's the most prolific source rock in the Gulf Coast."

AAPG member Randy Ponder, vice president of New Ventures at Southwestern Energy Company in Houston concurs.

"The organic-rich Brown Dense zone extends from Mexico to the Florida panhandle and on to offshore Florida, extending into the offshore of the Gulf of Mexico basin, where it's the source rock for some of the fields on the GOM shelf as well as many of the deepwater fields," Ponder said.

"It truly is the most prolific source rock in the Gulf Coast."

In essence, limestone is a bit of a misnomer for the zone.

"In most areas, it's an organic-rich mudstone, a very muddy carbonate," Walkinshaw said. "The brittle micritic limestone is remarkably uniform, with only rare developments of significant porosity.

"In many areas it's fractured," he added, "and wells drilled there typically encounter a lot of good oil and gas shows."

Entering the Play

The Brown Dense has fed significant volumes of hydrocarbons to other reservoirs, but it has never been exploited with horizontal drilling technology – until now.

That's changing somewhat quickly, as some laterals already have been drilled into it by a handful of smaller companies. However, a completion indicative of commercial potential has remained elusive.

Enter Southwestern, which is poised to determine if this can be realized.

The company has accumulated 460,000 net acres prospective for oil in the Brown Dense along the Arkansas-Louisiana state line. It has invested $150 million in undeveloped acreage where the Brown Dense is 300-550 feet thick at 8,000-11,000 feet in depth over a considerable area.

"We extensively reviewed the Brown Dense across the region and have indications that the right mix of reservoir depth, thickness, porosity, matrix permeability, sealing formations, thermal maturity and oil characteristics are found in the area of southern Arkansas and northern Louisiana," Ponder emphasized.

He mentioned also that the principal differences between the Brown Dense in Louisiana-Arkansas compared to Mississippi are hydrocarbon type and depth, which is greater in Mississippi.

Ponder noted that Southwestern received the permit approval for its first horizontal well August 23. The well is planned to spud late in the third quarter of

See **Brown Dense**, page 22

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Brown Dense

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2011 with a scheduled TVD of 8,950 feet, including a 3,500-foot lateral. It will be drilled east of the Dorcheat-Macedonia oilfield in Columbia County, Arkansas.

This is the field where Brammer Engineering drilled and completed a well in the Brown Dense in 2010. The well reportedly produced a paltry 49 bopd and 137 mcf of natural gas for a time and was shut-in.

It also was reported that the well encountered 2 percent H_2S in the gas; this impacts profitability of a well, because it must be removed.

However, as with any yet unproven play, mum's the word for the most part relative to critical information the already-drilled wells have revealed to the operators.

> **"As with all resource plays at this stage, we have very little data to help us model the performance. Only drilling will tell us."**

Southwestern plans to drill a second horizontal well in the play this year in Claiborne Parish, Louisiana. It is scheduled to have a 6,000-foot lateral and a TVD of 10,700 feet.

Eight more wells are planned for 2012.

Increasing Activity

Unconventional Barnett shale play kingpin Devon Energy announced early in August it's hopping into the Brown Dense action, with its first horizontal well scheduled for September.

The company holds about 40,000 net acres prospective in the play. The drill site for the initial well is in Morehouse Parish, Louisiana, and proposed TD is 9,000 feet.

Vision Exploration has opted to focus its efforts in the Brown Dense condensate window, which ranges in depth from 12,000 to 15,000 feet in Mississippi and is rich in Btu content.

Walkinshaw noted that commercial production of gas and condensate doesn't require the advanced levels of porosity and permeability as oil production.

His take on the Brown Dense is that like other oily resource plays, storage is key – and microfracturing created in the source rock via in-situ hydrocarbon generation is insufficient for oil production in commercial volumes at current prices and technology. He emphasized the need for additional matrix porosity and permeability, e.g., interbedded sandstone facies, to provide ancillary storage.

In the areas that appeal to Vision, certain clay constituents preserved above-average porosity and permeability by preventing the subsequent formation of diagenetic quartz overgrowths. Walkinshaw said such reservoirs can contain excessively rich gas and condensate at moderate depths with essentially no hydrogen sulfide and little carbon dioxide.

He theorizes the occurrence of hematite and other iron constituents within the sandstone lenses of the Brown Dense served to "scrub" a significant amount of hydrogen sulfide from those reservoirs as soon as they were charged.

Walkinshaw emphasized the modest lease bonus and royalty terms of the area, along with the potentially rich liquids yield, enable the play to make good economic sense, even at $4 per MMBtu gas.

Still, resource plays are resource plays, with all of the baggage that entails.

"Economics ultimately will drive the success of this play," Ponder said. "As with all resource plays at this stage, we have very little data to help us model the performance.

"Only drilling will tell us," he emphasized.

Ponder said they noticed that leasing activity picked up following Southwestern's announcement July 28 about entering the play.

"It's obvious from broker activity observed in the local courthouses," he commented, "that other people are getting into the play."

GCAGS Annual Meeting Canceled

The GCAGS annual meeting planned Oct. 16-19 in Veracruz, Mexico, has been canceled due to tragic drug cartel-related violence there.

On Sept. 20, the bound, tortured and semi-nude bodies of 35 people, including 12 women and two minors, were dumped on a busy avenue during rush hour in the vicinity of the World Trade Center Veracruz, where the GCAGS meeting was to be held.

The victims were linked to the Zetas drug cartel, which is involved in bloody disputes with other organized crime gangs.

The GCAGS board met the next evening following the incident and notified the Gulf Coast membership the event had been canceled.

The GCAGS meeting website noted that "safety and security of all participants – presenters, attendees and exhibitors – are of paramount importance."

At press time the GCAGS board was contacting members with details regarding refunds and other arrangements caused by the cancellation.

Photo courtesy of Terry Engelder

The Marcellus Shale: The play is all about the fractures in the rock and how you tap into them.

Migration creates 'gas halo'

With Marcellus, It's All About the Fractures

By LOUISE S. DURHAM, EXPLORER Correspondent

When veteran Marcellus shale player Range Resources issued a December 2007 press release revealing results of its pilot horizontal well program in the shale, it served to verify the rock's significant productive potential.

Indeed, it jump-started the now-famous Marcellus shale play, which has been a headline maker ever since.

The Marcellus shale member of the Devonian black shales spans a distance of approximately 400 miles, trending northeastward from West Virginia and into New York. Its proximity to the gas-hungry eastern markets is fortuitous.

"This is an unconventional play with a huge area to it," said AAPG member Terry Engelder, a Pennsylvania State University geosciences professor who has studied the Devonian black shales in the Appalachian Basin for 30 years.

"The size of this continuous shale," he added, "makes this a very unique resource in terms of potential."

ENGELDER

All About the Fractures

An acknowledged Marcellus shale expert, Engelder authored a paper in 1985 predicting the Appalachian Basin could contain a well developed set of natural hydraulic fractures. Later, natural hydraulic fracturing in the basin was confirmed in a series of papers by Engelder and various co-authors.

"The play is all about the fractures in the rock and how you tap into them," he said. "The Marcellus has two sets of vertical fractures, or joints – the J1 and the J2.

"The east-northeast trending J1s are more dense, more closely spaced and are cross-cut by the less well-developed, northwest-trending J2 joints," he noted.

Once the play kicked off, Engelder quickly became an in-demand interviewee for the mainstream media as well as the go-to guy for numerous players and wannabes who virtually lined up to pick his brain, so to speak.

He recently gave the EXPLORER a quick look at what's going on in the subsurface of this exciting play.

In His Own Words

ENGELDER: Petroleum and natural gas are both generated in the organic rich source rock, and they have to break out of, or somehow move out of, the source rock to the reservoir rock in the process called migration. There has been long-term questioning about the exact details of this migration – and especially the role that larger scale fracturing plays in all of this.

It was more than 20 years ago when my students and I started looking directly at the source rocks with the idea in mind they might be reservoir rocks also; this, in effect, is what a gas shale is. Gary Lash (see September Explorer) joined in the hunt with me about 10 years ago.

The generating capacity of these source rocks can be large, which means a lot of hydrocarbons could have moved out of the source rock and yet the gas left behind is economic gas.

The question is what is the evidence for early migration out of these source rocks. Some of them, especially the Marcellus in the northeast part of the play, contain more than one joint set that can be related to the generation by natural hydraulic fracturing (NHF) under high gas pressure.

The question remains why some gas shales are more heavily fractured than others. The answer is, we don't exactly know. One thing that's clear, though, is the presence of fracturing in gas shale allows for much higher productivity of gas.

In the Marcellus, the most productive wells in terms of initial production are in the northeast part of the Marcellus fairway, e.g. Susquehanna, Bradford and Tioga counties.

See **Marcellus**, page 30

AAPG member Terry Engelder will present "The Correlation Between Natural Fracturing and Gas Shales" at the upcoming AAPG International Conference and Exhibition in Milan.

Engelder's paper will be given at 2:05 p.m. Monday, Oct. 24, as part of the AAPG/EMD technical session on "Shale Dynamics: Rock Properties to Hydrocarbon Generation."

Unconventionals causing need for new look

Europe Resources Get New Assessment

By LOUISE S. DURHAM, EXPLORER Correspondent

Development of continuous-type, i.e. unconventional, hydrocarbon accumulations inarguably has transformed the energy outlook of Canada and the United States.

Now, the future of European and global energy markets may be determined by the extent to which these type accumulations can be developed outside North America, according to AAPG member Don Gautier, a U.S. Geological Survey research geologist in Menlo Park, Calif.

The USGS is hard at work to nail down an estimate.


GAUTIER

AAPG member Don Gautier will present the paper "USGS Strategy for Assessment of European Gas Shales" at the upcoming AAPG International Conference and Exhibition in Milan, Italy.

Gautier's talk, part of an AAPG/EMD session titled "Shale Oil and Gas Case Studies: The Toolbox Assets," will be presented at 9:50 a.m. Wednesday, Oct. 26.

In cooperation with European geoscience organizations, the agency kicked off a program in October 2010 to assess potential additions to reserves from continuous-type gas and oil accumulations in fine-grained rocks of Europe.

The initiative is part of the World Petroleum Project funded by the United States for a number of years via an Act of Congress. The entity provides information/advice to the president, Congress, DOI and the public at large about global resource potential.

"It's seen as in our political interest to have somebody commenting objectively and scientifically about future resources that might be available," said Gautier, who serves as principal investigator for the World Petroleum Project.

Examples of the agency's efforts include a world petroleum assessment published in 2000, and a study of the Circum-Arctic resource potential were published two years ago.

"Our point of view is that one of the most important things we should be working on now is trying to form a solid scientific opinion about the potential for additions to reserves worldwide from unconventional, or continuous-type, resources," Gautier emphasized. "One of the most important and urgent of those is global shale gas and also the tight gas sands and coalbed methane.

"Part of that global study of unconventional resources is this assessment of shale gas," he noted, "and, in particular, our strategy for assessment of potential additional reserves from unconventional resources in Europe."

Targeting Europe

The planned strategy for the current project entails the use of North American analogs, attempting to use results of drilling and exploration development of these types of resources in the United States and Canada.

The USGS is seeking the best local geological expertise available within the collaborating European geoscience organizations that would have the most advanced information locally. The agency is optimistic the groups will think it is in their best interests to use the methodology and analogs from North America along with their local geological expertise to help define plays to be used in the assessment.

Drawing on the geological circumstances and well performance observed in analogous North American gas shales, the USGS has developed a probabilistic, geology-based methodology to evaluate the potential for technically recoverable hydrocarbons in continuous accumulations in Europe, according to Gautier.

He noted that instead of calculating in-place resources and estimating recovery efficiencies, the current USGS methodology is performance-based.

"Candidate formations are screened for particular geological criteria, and geologically defined assessment units (AUs) are specified," Gautier said. "Potential additions to reserves in each AU are evaluated using four input distributions:

- Play level risk.
- Volumes of potentially productive formations within the AU.
- Optimal well density.
- Estimated ultimate recovery per well.

"The important thing is using our methodology and North American experience to make a scientifically, geologically based consistent set of estimates for potential for shale gas and other unconventional resources in Europe and elsewhere in the world," Gautier commented.

"That's the essence of it."

A full version of this story can be found online at aapg.org/EXPLORER.

To understand the prediction and distribution of resources it can be useful to turn the principals of uniformitarianism on their head. Imagine if you could restore geological data and interpretations to their palinspastic position and see their geological context at the time of deposition. Imagine if you could identify prospective trends in this context and then restore them to their present day configuration…

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Don't presume to know the answer before you start

Global Shale Hunters Have Insights to Share

By LOUISE S. DURHAM, EXPLORER Correspondent

Falcon Oil and Gas, a Canadian company based in Denver, is a prime example that you don't have to be a super-size company to play the international scene.

In fact, being the first to an area can help a smaller independent capture some potentially big prizes awaiting the drillbit.

A large part of it is having the right staff that thinks big and scouts far-flung opportunities ahead of its competitors, which is the case with Falcon.

Toss in a big dose of moxie, the ability to move quickly and the usual requisite greenbacks, and it can happen.

Falcon has focused on the exploration for new resource, or unconventional, oil and gas plays throughout the world for the past five years. Already, it has drilled wells in Hungary's Mako Trough and Australia's Beetaloo Basin and has acquired a large acreage position in the Karoo Basin in South Africa.

The three unconventional plays host hydrocarbons within shale source rocks and low permeability sandstones. They range in age from Cenozoic (Hungary) to Paleozoic (South Africa) to Mesoproterozoic (Australia).

The company was formed in Denver in 2005 by individuals looking at resource plays in North America. With international exploration experience, it didn't take long to determine the company's future.

"There was no one doing unconventional in the international forum at that time," said AAPG member Rod Wallis, chief operating officer at Falcon.

Photo courtesy of Falcon Oil and Gas

Outcrops of Bessie Creek and Abner Sandstones in Australia's Beetaloo Basin.

"Our view was to go out in the world, find potential basins and get good acreage positions on those before everyone else started catching up," Wallis said.

"Someone in Boulder had access to the licenses on a particular play in Hungary," he noted. "This was the first play we could get licenses for and start exploring the unconventional play."

Wells from Falcon's 245,000-acre production license there in the central Pannonian Basin have tested hydrocarbons from each formation present. These resources are a mere five kilometers from gas processing facilities that are seeking new supplies.

Going Global

Meanwhile, the Falcon staff and others were studying various other locales and identified the Beetaloo Basin in Australia's Northern Territory as their next target area following the acquisition in Hungary.

As a result, company subsidiary Falcon Australia licensed the entire Beetaloo Basin of more than seven million acres. Ryder Scott estimates 18 billion barrels of oil and 64 Tcf of natural gas here from both unconventional shales and conventional structures.

"We saw early on that this area has enormous potential," said AAPG member Tom Ahlbrandt, Falcon Exploration's recently retired VP of exploration.

Ahlbrandt, a past chair of the AAPG House of Delegates, has conducted an extensive study of the Beetaloo's terrain, seismic and data from 11 wells drilled by a subsidiary of mining company Rio Tinto between 1985 and 1994. The wells encountered kilometers of organic rich shale and cored much of it.

"While this is a small number of wells considering the sheer size of the area, it's sufficient to identify that the Beetaloo Basin is hydrocarbon-charged across a massive area," he emphasized.

The Australian deal was enhanced when Hess jumped into a joint venture with Falcon, covering two full exploration permits and a majority of the third. Hess is a leading explorer in the Bakken shale play and will bring years of experience to the Beetaloo area, according to Wallis.

In August 2009, Falcon latched on to

See **International**, page 30

AAPG member Rod Wallis will give the key note talk for a session on shale oil and gas case studies at the AAPG International Conference and Exhibition, set this month in Milan, Italy.

Wallis' talk, "Unconventional Insights From International Exploration of Resource Plays" will be presented at 9 a.m. Wednesday, Oct. 26, at the Milano Convention Centre.

Marcellus
from page 24

The fractures developed as a consequence of high pressure methane found not only in the gas shale itself, but fracturing has occurred in a plume above the gas shale.

The reason we believe this is there are two major joint sets in the Marcellus.

The J1 joint set appears to be unique to gas shales. The J2 set appears to break out of the gas shales and populate the rock above those gas shales. This second joint set may appear about 1,000 feet or even as much as 4,000 feet above the gas shale.

We interpret this to mean that a large enough volume of gas was generated so the section above the gas shale became over-pressured to the extent it also was hydraulically fractured. So the section above the gas shale became charged with high-pressure gas as well.

There appears to be a strong correlation between fracturing above the gas shales by NHF and the productivity of the source rock. The correlation indicates a gas column above the gas shale that could have extended maybe 3,000 to 4,000 feet above the Marcellus – although it's usually not that much. This is what we call the gas halo.

Of course, much of the gas in the halo has bled back to hydrostatic during exhumation, leaving only the Marcellus over-pressured.

One measure of productivity, then, of a gas shale may well be the extent to which fracturing occurs – not only in the gas shale itself, but in the halo or gas plume that occurs over the top of the gas shale.

Regional development is limited ... The most productive wells in the area are found where the largest and most well-developed gas plumes are, as indicated by natural fractures of the rock seen in outcrop.

In Other Words …

ENGELDER: Here's the bottom line: The early joint set, the J1, was generated as a result of high-pressure gas in the black shale. The volume of high-pressure gas was relatively modest and insufficient for cracking outside the gas shale itself. As the gas shale continued to mature, enough gas became present to crack outside the gas shale into the overlying rocks (the J2 set).

In some instances two of my graduate students, AAPG Student member Yunhui Tan and Tom Johnson, have mapped the J2 set, cutting up through the section as much as maybe 7,000 feet. This is unusual and confined today to the Marcellus area, where gas production is the most dramatic in the northeast Marcellus fairway.

It is no coincidence that the operators are having so much trouble with stray methane in northeast Pennsylvania as well.

During initial maturation, petroleum is the primary product, with natural gas being secondary, so there's not a large volume of natural gas under these circumstances. If hydraulic fracturing occurs, it's limited to the gas shales themselves, as in the case of J1 joints.

As maturation continues, more and more gas evolves, and the volume during the latter phase is sufficient to charge the gas shale and the rocks immediately above – and will cause fractured rocks right above the gas shale.

International
from page 28

a competitive acreage position in South Africa's Karoo Basin when it acquired a technical cooperation permit covering an area of 7.5 million acres in what Wallis dubbed "the most geographically strategic and geologically advantageous part of the basin."

At the time, it appeared to the group that no one else was looking at the Karoo.

As it turned out, the acquisition apparently happened in the nick of time for Falcon.

Within months of the deal, Shell plus a joint venture between Statoil, Chesapeake and South African petrochemicals giant Sasol and others applied for similar permits in the Karoo. Each entity requested large permit areas neighboring or surrounding Falcon's permit area.

Lessons Learned

Wallis summarized some of the facts and insights gained from Falcon's three acquired areas:

- The unconventional plays in Hungary provided lessons on kerogen kinetics and extreme overpressuring.

- The South Africa natural gas resource play has source rocks of very high thermal maturity yet has significant natural gas shows and potential.

- The Australian play is in one of the oldest – perhaps the oldest – petroleum systems in the world, with rocks dating 1.4 billion years. The petroleum systems here are challenging both in terms of age, kinetics (they're pre-vitrinite) and different mineralogy compared to Phanerozoic systems.

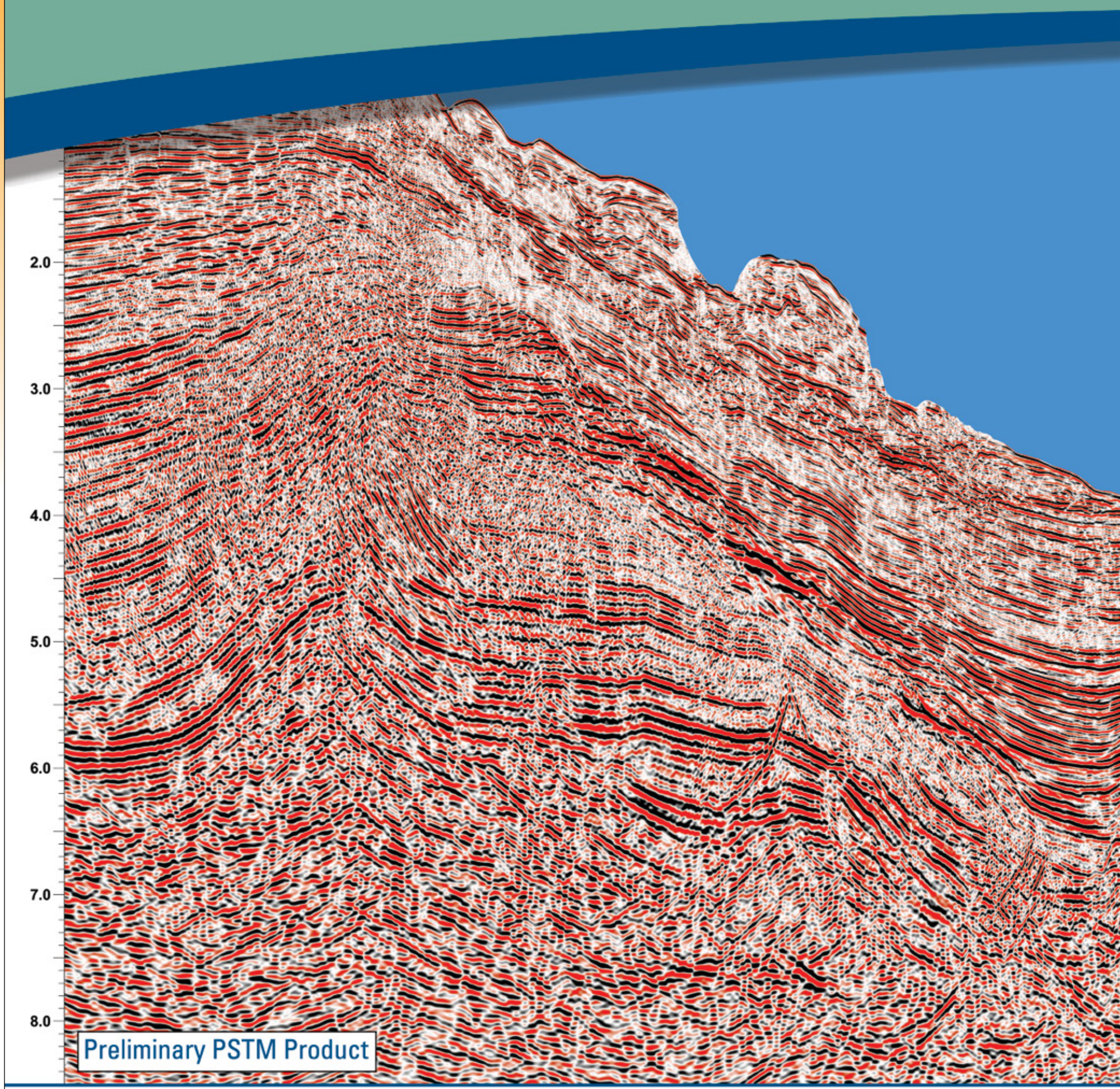
"Each play has unique mineralogies, lithologies and source rock attributes that defy standard maturation tables," Wallis said. "Insights from these three areas are each unique and challenge many of the concepts of what is a 'conventional' unconventional play and the parameters by which they are evaluated.

"We know the hydrocarbons are in these systems but face many hurdles in understanding analogs and commerciality to deliver the prize," he emphasized.

Wallis noted that so far, some things have gone right, and some haven't.

"The main thing is," he commented wryly, "don't presume to know what the answer is before you start."

Northwest Africa Atlantic Margin



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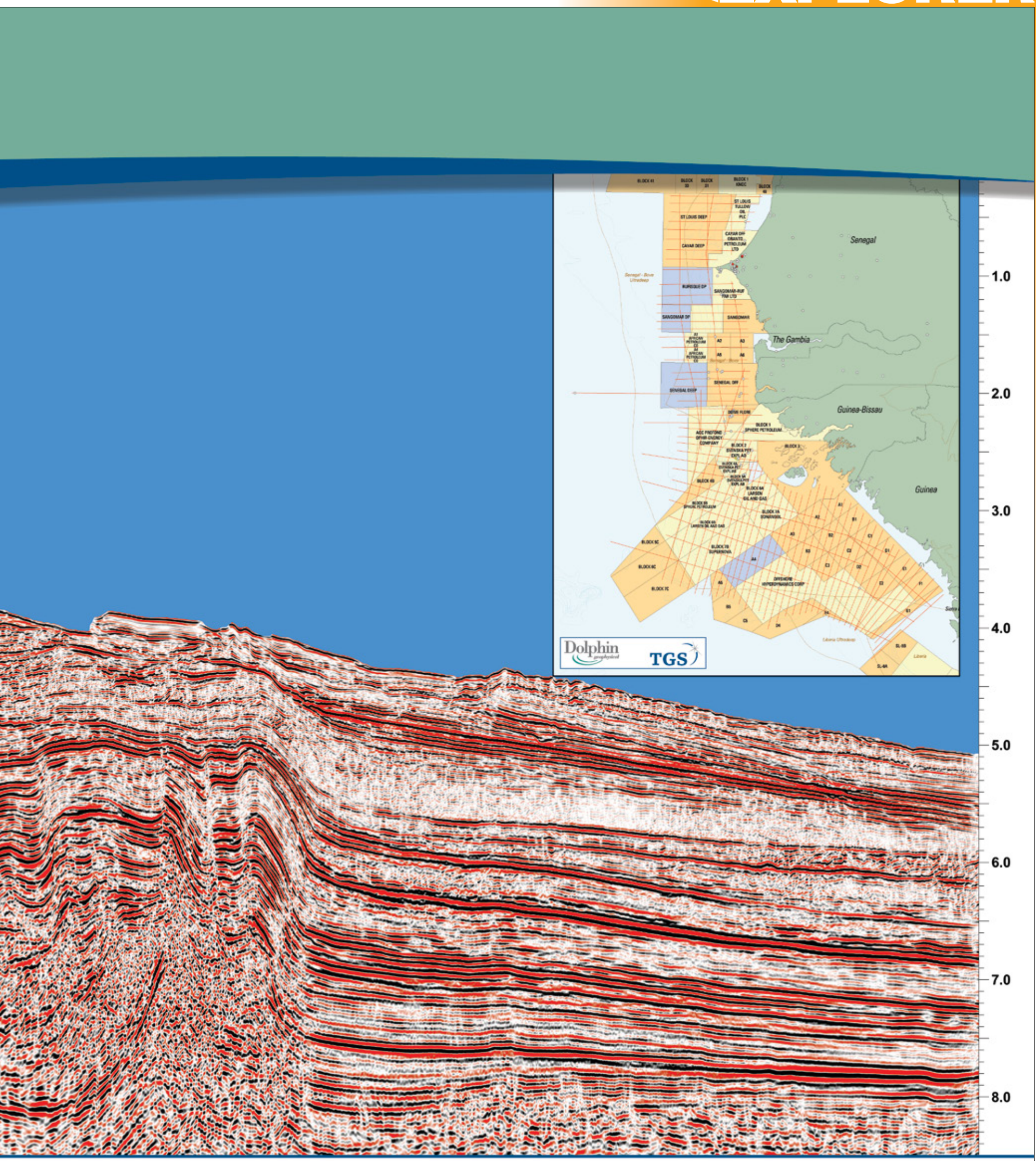


Outcrops tell the tale of conjugate margins

Researchers Retrace Giant's 'Stepping Stones'

By SUSAN R. EATON, EXPLORER Correspondent

According to Celtic mythology, third century Irish warrior Fionn mac Cumhaill – intent upon defeating Benandonner, his Scottish nemesis – built a causeway of 40,000 interlocking, hexagonal-shaped stepping stones from Ireland to Scotland. Battle was averted when mac Cumhaill tricked Benandonner into believing that he was a giant amongst men, and the Scot beat a hasty retreat across the causeway.

Today, these hexagonal-shaped stepping stones of the Giant's Causeway – in reality, Tertiary age basaltic columnar lava flows – are protected as a UNESCO World Heritage Site.

Equally legendary to geologists, these basaltic lava flows tell the story of the opening of the North Atlantic Ocean, some 55 million years ago.

Next August, attendees of the Third Central and North Conjugate Margins Conference at Trinity College, Dublin, will have the opportunity to travel to the land of giants – County Antrim, Northern Ireland – to study these classical textbook columns, the tallest of which measure almost 40 feet.

"Not many people get the chance to see such amazing geology, and, at the same time, to experience such a unique place," said Alastair Ruffell, geologist, geophysicist and leader of the pre-conference field trip to the Giant's Causeway.

"Within a half an hour we'll travel from 55-million-year-old igneous rocks to 600-million-year-old metamorphic rocks, with almost every Phanerozoic episode of the Earth in between," said Ruffell, director of education at Queen's University's School of Geography, Archaeology and Palaeoecology in Belfast.

"It doesn't get much more diverse than this!"

Photos by P.M. Shannon

Up close and personal: Geoscientists study Ireland's County Clare cliff area, which will be a part of the next Conjugate Margins conference.

Continuing the Story

Following on the heels of two successful conjugate margins conferences – Halifax 2008 and Lisbon 2010 – Dublin's Trinity College will host the third in a series of conferences to focus on the evolution of the north and central Atlantic's conjugate margins and the exploration potential of their petroleum systems.

Conference keynote speakers will discuss their latest research in a range of disciplines, including plate reconstruction, state-of-the-art assessments of petroleum systems and recent exploration and production initiatives.

DAVIES

Titled "Conjugate Margins – Combining the Knowledge," the conference will feature pre- and post-conference geology field trips, core workshops, technical courses and oral and poster presentations spanning three days (Aug. 22-24) and grouped into four thematic sessions:

- Atlantic Margin Evolution and Development.
- Atlantic Ocean Plate Reconstruction .
- Atlantic Basin Petroleum Systems.
- Atlantic Margins Exploration and Production.

Growth fault in delta front mouth bar sandstones at Foohagh Point, south of Kilkee. The lighter colored sandstone beds thicken into the listric fault; the dipping mouth bar sandstones and the growth fault are truncated toward the cliff's top by dark-colored sheet-like rippled sandstones.

Martin Davies is a project coordinator with PIP-ISPG, the Petroleum Infrastructure Programme-Irish Shelf Petroleum Studies Group (www.pip.ie). Davies, a petroleum geologist, is coordinating the conference planning on behalf of its joint hosts, PIP-ISPG and the Irish Department of Communications, Energy and Natural Resources – Petroleum Affairs Division (www.pad.ie).

To date, other committed sponsors include AAPG, ExxonMobil, Statoil, TGS-NOPEC, the Petroleum Exploration Society of Great Britain, the Petroleum Group of the Geological Society of London, the European Federation of Geologists, Trinity College, Dublin and Fáilte Ireland, the country's tourist board.

Davies is capitalizing on the momentum – and excitement – generated by the predecessor conjugate margin conferences.

"We're building on what's gone before," Davies said. "It's clear from Halifax and Lisbon that there's a great deal of interest. The conference provides a great opportunity to listen to a wide range of ideas and themes."

The organizing committee includes AAPG members David Brown, co-chair of Halifax 2008, and Nuno Pimentel, co-chair of Lisbon 2010.

"We created a recipe book," said Brown, a senior geologist with the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB). "Nuno expanded it with knowledge from Lisbon 2010, and we've provided everything to our Irish

See **Margins**, page 36

Conjugate Margins Conference at Classic Site

The third Central and North Conjugate Margins Conference venue, Trinity College, is a beautiful historic university located in the heart of Dublin – a city steeped in geological history and tradition.

Trinity College's department of geology is one of the oldest in the world – its Chair of Geology and Mineralogy was established in 1843.

For conference goers and their companions alike, Dublin offers a wide range of attractions, including museums and art galleries; tours of Trinity College and Dublin Castle; and scenic tours of the region and the Boyne Valley (including Newgrange, one of Europe's most famous archaeological sites). The River Boyne, en route from Dublin to the Giant's Causeway, is famous for the victory of King William of Orange over King James of Scotland in 1690.

In addition to visiting the Giant's Causeway and the Causeway Coast, Dublin 2012 offers a number of other equally exciting pre- and post-conference geology field trips, including the world-famous Cliffs of Moher in County Clare, Ireland, and the Jurassic coast cliff sections of Dorset and Devon, southern England.

During Lisbon 2010, the field trip to the northern and central part of the Lusitanian Basin was over-subscribed, leaving many disappointed geologists. For Dublin 2012, Pimentel and his Lisbon 2010 co-chair, AAPG member Rui Pena dos Reis, will offer a post-conference excursion that's a continuation of the original field trip. This new trip will traverse three closely related basins in Southern Portugal: the Algarve and Alentejo basins, and the Lusitanian Basin in the Arrabida Alpine Chain. Participants will visit spectacular outcrops along beautiful beaches with nearby fishing villages and vineyards as a cultural backdrop.

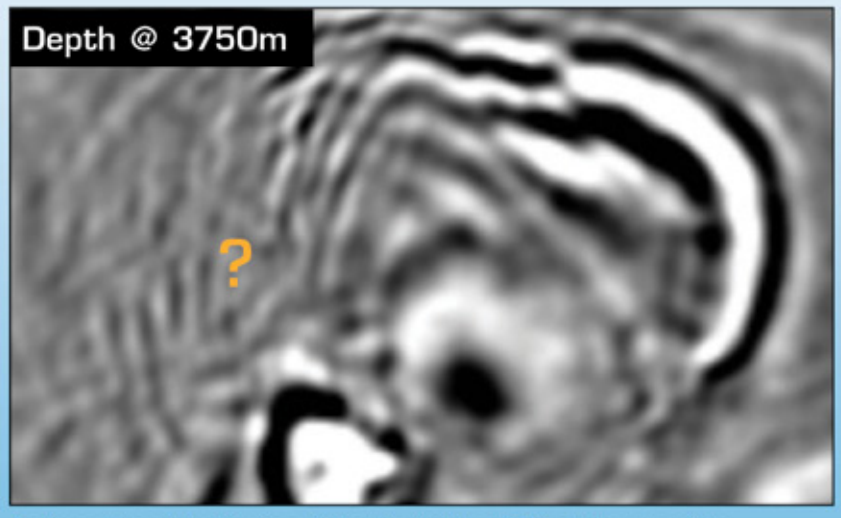
Spouses are welcome to participate in the field trips.

"It's wonderful for them (spouses) to have a greater appreciation of what we do," Brown said, "and to experience the host country's spectacular scenery and amazing hospitality."

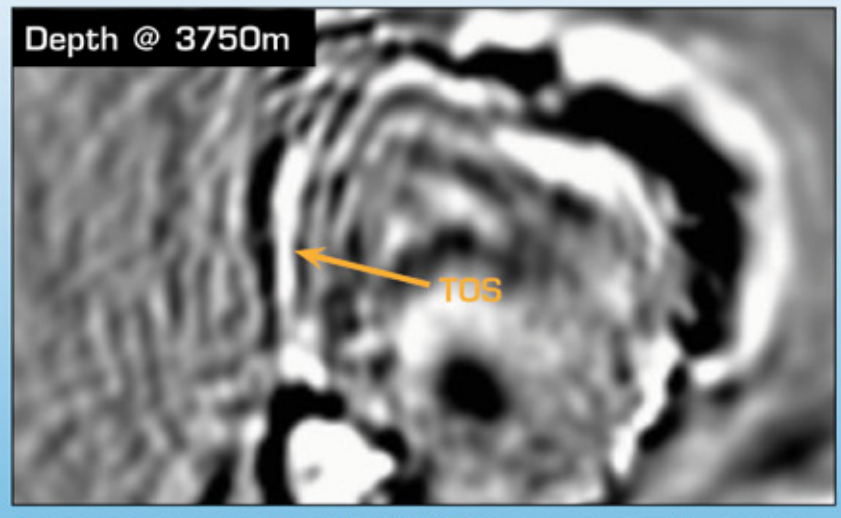
– SUSAN R. EATON

Dual Flood RTM

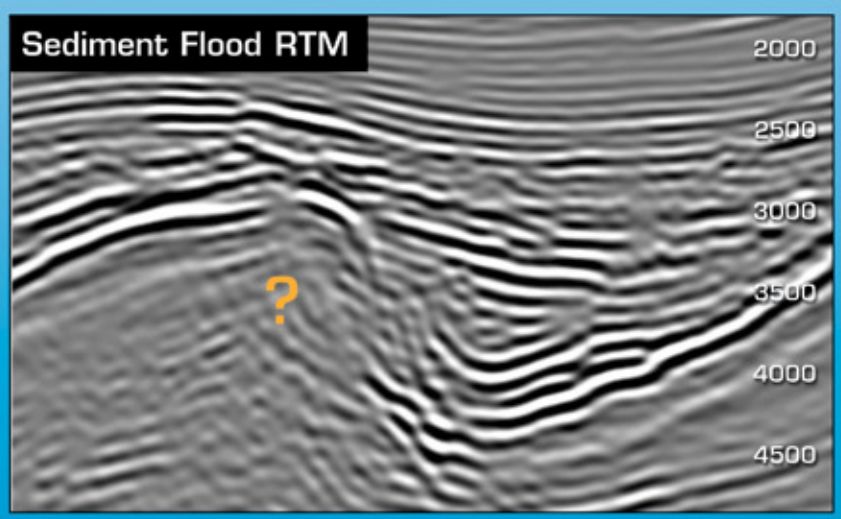
For Prismatic Wave Imaging



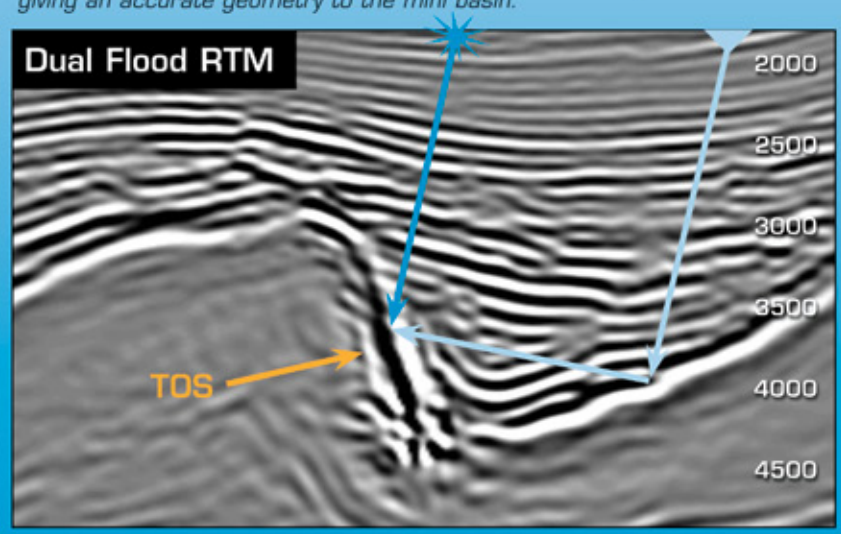
Sediment flood depth slice. Note the "hidden" TOS at the rim of the mini basin.



Same depth slice after Dual Flood RTM. Prism waves image the salt flank, giving an accurate geometry to the mini basin.



Sediment flood crossline through the mini basin.



Same crossline after Dual Flood RTM. Better imaging results in more accurate interpretation of the salt geometry.

CHALLENGE: Time-Lapse Field Monitoring | Unconventional Resources | **Subsalt Imaging** | Reservoir Characterization | Multicomponent Processing

Accurate salt geometry is critical for imaging subsalt structures, but obtaining an accurate geometry is challenging in narrow mini-basins with surrounding salt bodies. Wavefields undergo strong distortion when they propagate through the top of salt and become more complex due to multiple bounces at the sediment/salt interfaces.

Although RTM is the natural way to image the prismatic (i.e. double-bounce) waves, conventional top-down approaches to imaging the salt surfaces around narrow mini-basin areas are inadequate. The CGGVeritas salt delineation workflow, called Dual Flood RTM, takes advantage of prism waves to image salt flanks around narrow mini-basins. The result is an accurate salt geometry and clarity in the subsalt region.

Unparalleled Customer Service:

"Our clients are excited by the improved imaging of subsalt regions made possible by our Dual Flood RTM technique which helps us precisely interpret the top of salt."

- Yogesh Agnihotri,
CGGVeritas Senior Project Leader

CGGVERITAS

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cggveritas.com/subsalt

Abstracts Sought for Margins Conference

Oral and poster abstract submissions for the third Central and North Conjugate Margins Conference are now being accepted online, with a March 21 deadline.

The AAPG co-sponsored event has as its theme "Conjugate Margins – Combining the Knowledge," and will be held Aug. 21-24 at Trinity College, Dublin, Ireland.

The conference, in addition to the oral and poster sessions, will feature keynote speakers discussing the latest research in a range of disciplines, including plate reconstruction and petroleum systems assessment.

Also being planned are a number of field trips to the well-known cliff exposures.

For further details on abstract submission, please view the Call for Papers section of the website www.conjugatemargins.ie

Photo courtesy of Andrew Bratton

A view from below the Giant's Causeway, in Northern Ireland, comprising the basaltic lava flows associated with the opening of the Atlantic 55 million years ago. The columnar basalts formed by rapid cooling as they spread onto wet, water-lain areas of weathered lava.

Margins

from page 34

friends."

"Halifax 2008 was the kick-off of an idea," said Pimentel, professor of geology at Lisbon University. "Lisbon 2010 was the continuation – it was truly a conjugate margins event because it brought people together from both sides of the Atlantic."

Making an Impact

A cross-pollination of ideas emerged at the first two conjugate margins conferences, according to Pimentel, expanding the E&P industry's knowledge – and opportunities – in these passive margin basins.

"The conjugate margins series has its own momentum now," Brown added. "There's a nexus of people coming together, a cadre of researchers and scientists – it's becoming a family and everyone is welcome, especially students."

Brown's thoughts on building a global community of conjugate margins experts, in turn, are echoed by Pimentel.

"We're not just passing the ball – we're building up a core committee with experience," Pimentel said. "And I think that it's important for our sponsors to see continuity."

Each of the last two conjugate conferences have attracted around 225 participants from 18 countries, distributed evenly between academia, industry (E&P and service sector companies) and governmental organizations.

Halifax 2008, "Sharing Ideas and Embracing Opportunities," was co-hosted by Dalhousie University, the CNSOPB, and the Nova Scotia Department of Energy. Lisbon 2010's tag was "Rediscovering the Atlantic: New Winds for an Old Sea," and was hosted by Coimbra University and Lisbon University.

According to Brown and Pimentel, the university setting creates a collegial atmosphere for these gatherings of global experts. Concurrent presentations – everyone is together in the same room for three days – and the small group size facilitate spontaneous interactions and networking opportunities.

The two-year hiatus between conferences, they concurred, enables investigators to produce new bodies of work for presentation at the next conference.

Open to All

"Although the conference focuses on the conjugate margins of the North and Central Atlantic, we won't be prescriptive about how far down the Atlantic we go," Davies said. "We'd like to attract anyone working on conjugate margins, particularly those people working on plate reconstructions, comparative studies from one side to the other and petroleum systems."

"One of Lisbon 2010's objectives was to get more European participation," Davies said. "We're going to try to improve on that while continuing to attract North American and Latin American participants, including Brazilians.

"We're very keen on attracting students from outside of Europe – from West Africa, North Africa, the Caribbean and South America," he continued. "And we'd encourage companies not just to send their experts but to send their junior staff, as well as foreign nationals from the countries in which they operate."

"To date, everyone has been awed by the research that the students are doing," Brown said, citing opportunities for student funding and mentorship. "The attendance price for students is low, and they're strongly encouraged to interact and meet industry members." E

AAPG EXPLORER

The Geophysical Corner is a regular column in the EXPLORER, edited by Bob A. Hardage, senior research scientist at the Bureau of Economic Geology, the University of Texas at Austin. This month's column deals with volume co-rendering of seismic attributes.

GEOPHYSICALCORNER

Blended Data Renders Visual Value

By SATINDER CHOPRA and KURT J. MARFURT

To co-render seismic attributes means to blend two or more seismic attributes into a single, unified data display.

As a result of efforts to demonstrate the value of volumetric interpretation of seismic data, most modern software allows interpretation on time or horizon slices, together with geobody detection and multi-volume and multi-attribute co-rendering.

Advanced display technology and visualization systems accelerate the interpretation process, create expanded insights into prospects and provide new means of communicating these insights to co-workers, management, partners and investors.


CHOPRA


MARFURT

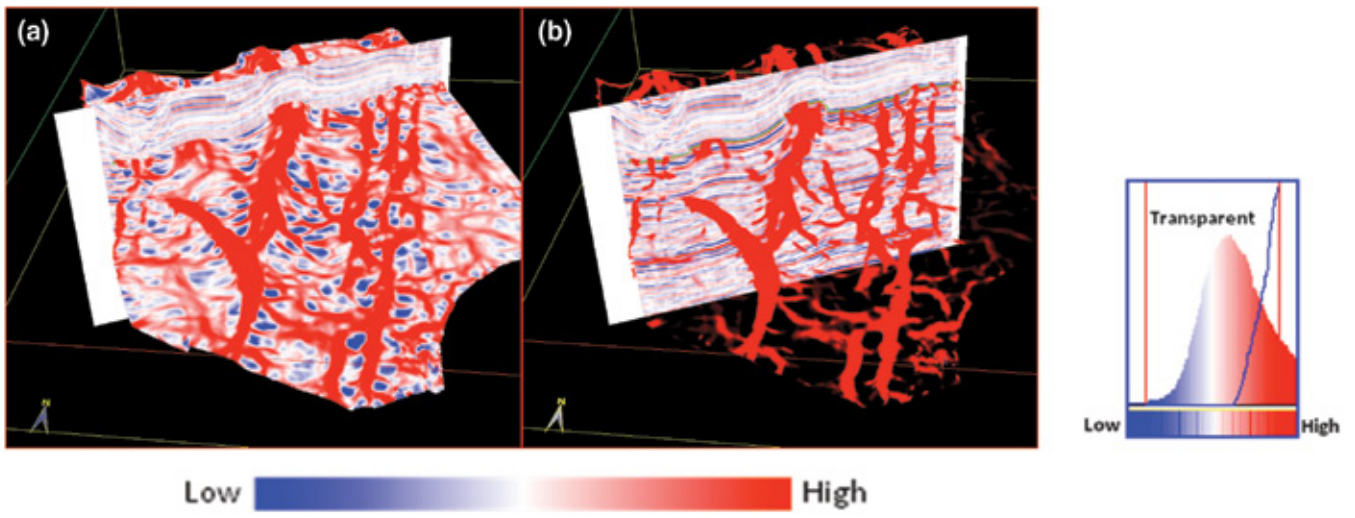


Figure 1 – (a) Chair display of a vertical slice through a seismic amplitude volume and a strata slice extracted from a most-positive principal curvature volume; (b) the same chair display when curvature transparency retains only the highest positive values. The transparency function is defined on the far right.

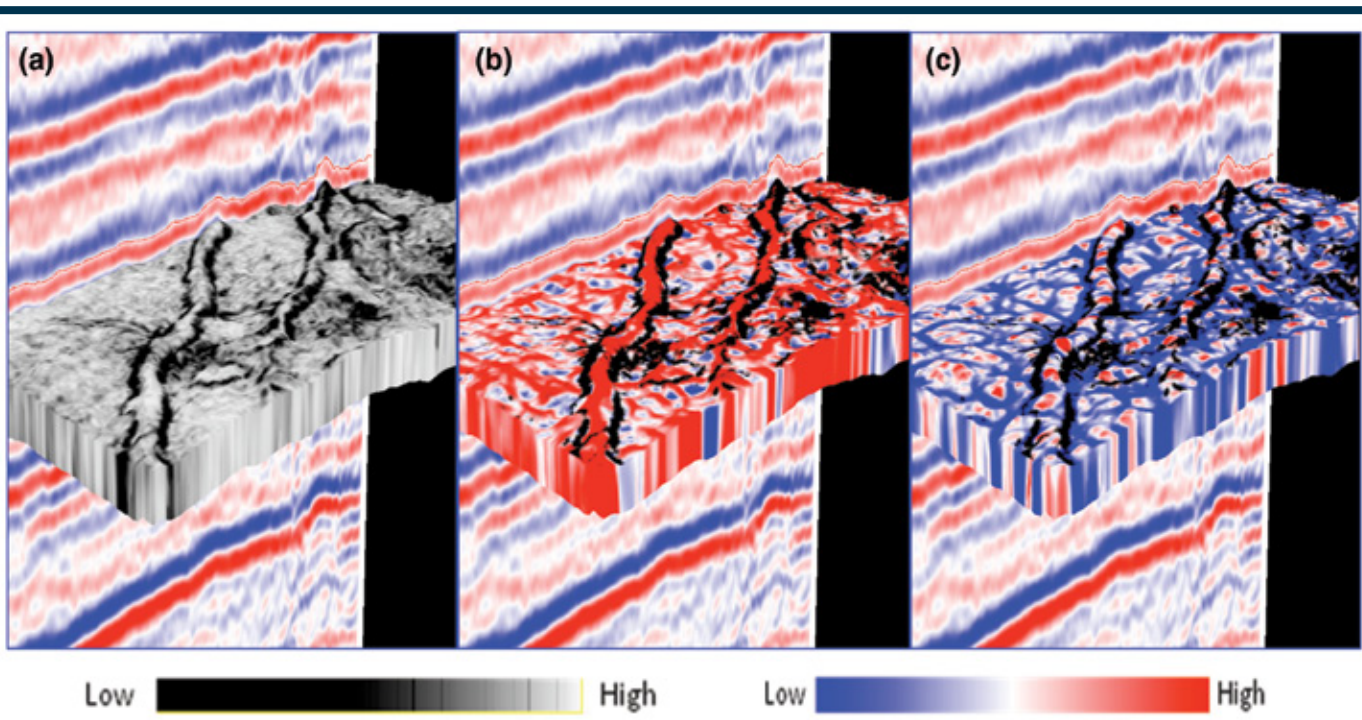


Figure 2 – 3-D chair view display with a strat cube extracted from (a) coherence, (b) most-positive principal curvature attribute co-rendered with coherence and (c) most-negative principal curvature attribute co-rendered with coherence.

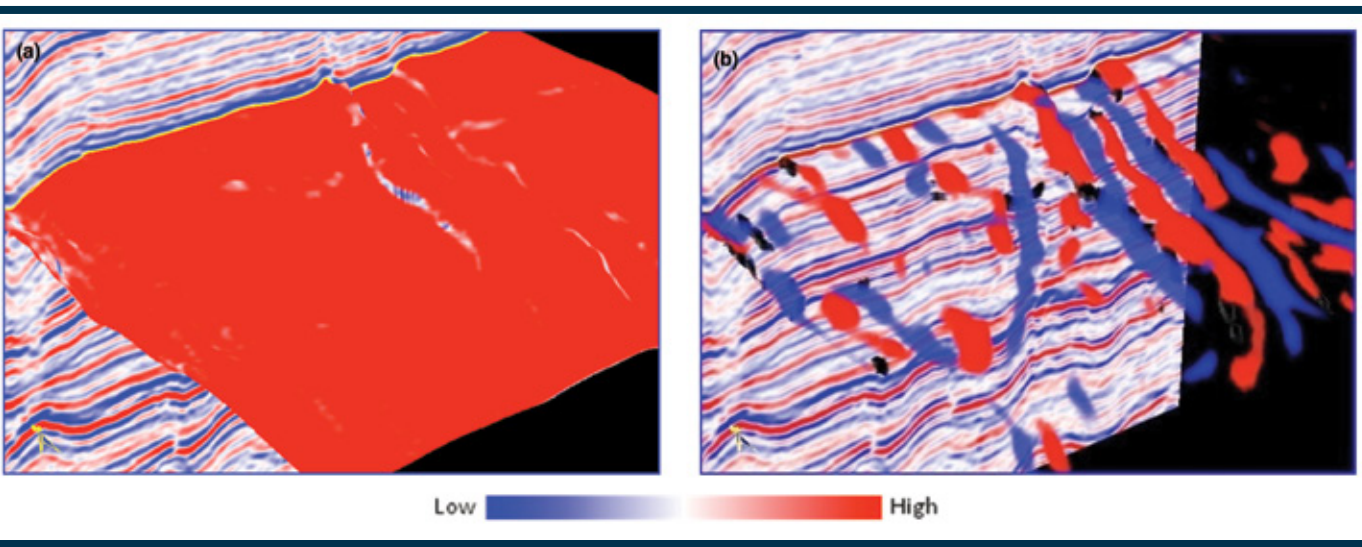


Figure 3 – Vertical slice of seismic amplitude and stratal slices through (a) seismic amplitude and (b) a merging of coherence (black), most-positive principal curvature (red), and principal most-negative principal curvature (blue) volumes. Transparency has been used to retain only very low coherence values, very high positive curvature and very low negative curvature.

Merged Volumes Using Color

A false-color technique used to co-render seismic attributes plots three discrete attribute ranges using red, green and blue (RGB) colors:

- Features imaged with higher values may be displayed in blue.
- Geology described by intermediate values are shown in green.
- Lower values are in red.

From experiences of mixing paints, most people know how these three colors blend, which makes this RGB technique a powerful data-integration and communication tool.

(The procedure has limited value, of course, for people who suffer from color blindness.)

Volume Co-Rendering

In the simplest implementation of RGB co-rendering, each voxel in 3-D space is assigned an RGB triplet, or color.

When an interpreter displays a number of vertical and horizontal slices, or displays one or more 3-D seismic volumes, only data nearest the interpreter are seen. By extending this three-component color model to a four-component RGB-alpha color model, where alpha is opacity (or transparency), each voxel can be assigned a reflective or transmissive property of specific strength.

Volume rendering consists of controlling the color and opacity of each voxel and projecting these properties onto an image plane. Such volume rendering allows interpreters to see and interact with features inside the 3-D volumes in their true 3-D perspective.

By using opacity as a function of the value of a given attribute, an interpreter can highlight features of interest within a sub-volume of 3-D seismic data and facilitate the understanding of spatial relationships between features of interest.

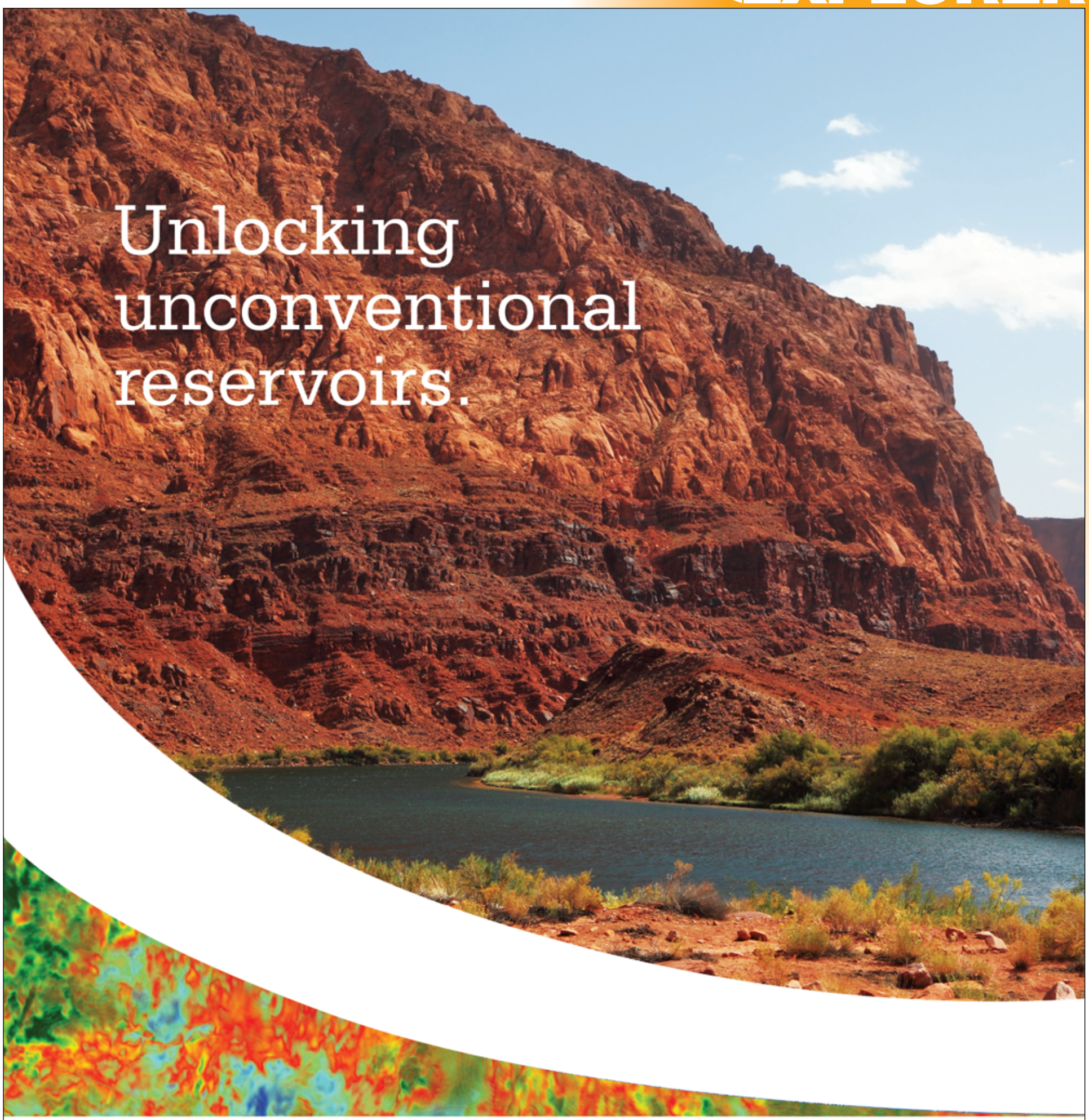
- In figure 1a we show a strat-cube sculpted from a most-positive principal curvature volume correlated with a vertical slice through a seismic amplitude volume. Note how lineaments of most-positive curvature correlate with anticline features seen on the vertical seismic slice.

The opacity settings in figure 1b create a skeletonized image of the larger flexures, which can be used to tie vertical slices through the seismic amplitude volume.

- In figure 2a we show a chair view of a vertical slice through a seismic amplitude and a strat-cube extracted from the corresponding coherence volume.

Note that two channel features are clearly seen in the middle of the strat-cube. These channels exhibit differential compactions, and the edges of the channels are well defined by low reflector coherence (black).

See **Seismic Data**, page 40



AAPG Returns to Europe for Milan ICE

By VERN STEFANIC, EXPLORER Managing Editor

Italy will be in the AAPG spotlight in October as it becomes, for the first time ever, the host country for the AAPG International Conference and Exhibition.

This year's ICE will be held Oct. 23-26 in Milan, at the Milano Convention Centre, crafted on the theme "Following Da Vinci's Footsteps to Future Energy Resources: Innovations From Outcrops to Assets."

The Milan ICE, in addition to offering more than 500 paper and poster presentations, also will feature a large exhibition hall, a featured luncheon talk by former BP executive Tony Hayward, a plenary session that touches the da Vinci theme from a professional and industry perspective, plus special forums that focus on:

- The Business of Energy – Keys to Profitability.
- New Technology Directions in Exploration and Production.
- Professional Issues for Professional Geologists.

ICE general chair Jonathan Craig said the meeting will celebrate and aspire to the creative vision and spirit of innovation historically associated with Milan and the region – and the technical program is specifically designed for international audiences.

"Our committee has assembled an exceptional program covering advances in all the hot topics of petroleum geoscience," Craig said.

Milan's geological setting is an added bonus, he said.

"Milan is located at the foot of the Alps, where spectacular carbonate outcrops provide analogs for many of the world's most prolific carbonate reservoirs," he said.

"It is most appropriate," he said, "that the theme of 'Carbonate Reservoirs – From Pores to Productions,' together with a special focus on exploration and production in the Alpine-Himalaya Fold Belt and Foreland Basins from Europe and North Africa to South Asia, will make this conference a landmark event."

Technical program co-chair Pablo Flores, points specifically to a session on Europe, North Africa and the Balkans as being "particularly relevant" for European petroleum geology, and cited papers on the Levant Basin, one of the Region's current hot areas of exploration, as well as a number of presentations dealing with unconventional resources.

Other "highly anticipated presentations," according to Flores and co-chair Keith Gerdes, include:

- Papers on the Brazilian and West African subsalt reservoirs and rifted margin exploration.
- A special focus on east Africa geology and exploration.
- Updates and new looks at the Middle East.

Online registration and details of the technical program and ICE events remains open, at aapg.org/milan2011.

Seismic Data

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Next we show the equivalent chair view, but with most-positive principal curvature (figure 2b) and most-negative principal curvature (figure 2c) co-rendered with coherence. Only very low values of coherence have been retained. High and intermediate coherence values have been made transparent.

Note that the edges of the channels are again well-defined on the coherence surface. The channels appear as trends in which most-positive curvatures have their maximum positive values.

Our tentative interpretation is that these are two sand-prone channels incised in a shale matrix that has undergone differential compaction.

Consistent with this interpretation, the most-negative curvature anomalies define the edges of the channels (figure 2c).

- In figure 3a we show an inline vertical slice and a phantom horizon slice 8 ms below an interpreted zero crossing. In figure 3b we show an equivalent chair view where the phantom horizon slice is correlated with most-positive and most-negative curvature volumes.

Using transparency, we have retained only the higher positive values of most-positive curvature and the lowest negative values of most-negative curvatures.

This co-rendered display shows red lineaments associated with the upthrown sides of the faults and blue lineaments associated with downthrown sides. Such displays convey more information than do strat cube displays made from seismic attribute or curvature attribute volumes.

Conclusions

✓ Seismic attributes need to be visualized in such a way that they add maximum value to a seismic interpretation.

✓ Three-D visualization capability can be a powerful tool to integrate different types of data.

✓ Well log curves, VSP data or microseismic data also can be brought together in 3-D views to provide visual corroboration of data information and to build higher levels of confidence in interpretations.

(Editor's note: AAPG member Satinder Chopra is with Arcis Corp., Calgary, Canada, and AAPG member Kurt J. Marfurt is with the University of Oklahoma, Norman, Okla. Chopra also was the winner of the 2010 AAPG George C. Matson Award.)

WASHINGTONWATCH

GEO-DC Office Still Doing Business

By PETER MacKENZIE, Chair, GEO-DC Governance Board

AAPG's presence in Washington, D.C., the Geoscience and Energy Office, or GEO-DC, was established by the DPA and AAPG in 2005 – it is fast approaching a six-year anniversary.

It was created because we saw a niche need for energy geoscientists' input to policy, a voice to inform policy-making with science by taking action:

- To advise and educate government officials and science and energy policy organizations.
- To communicate to AAPG members timely information on relevant legislative and regulatory actions.
- To create opportunities for AAPG members to engage with and impart expertise directly into the policy making process.

Early this summer I assumed the role of chair of the GEO-DC Governance Board, whose job it is to provide strategic oversight and direction for GEO-DC activities, taking over for the venerable former AAPG President Dan Smith – and within weeks our GEO-DC director left for a new job. How's that for an introduction?


MacKENZIE

Fortunately, David Curtiss left the GEO-DC office for a new challenge in filling Rick Fritz's shoes (and they are BIG shoes to fill) as the new executive director of AAPG (see September EXPLORER).

Speaking for the Governance Board, as David's previous supervisory body, we are confident that he will serve the AAPG membership well in his new position. We are proud, you might say.

Now, with the help of the Executive Committee, the Governmental Affairs Committee, the DPA leadership, the Advisory Council and David, we will seek out a suitable replacement in order to maintain the organizational momentum we have been building in Washington.

The momentum has been building, and the office is a "go-to" source of quick information and referrals from and to numerous agencies, lawmakers and their staffers. The importance and value to our membership of having a representative there, on the ground in Washington, cannot be understated.

In short, if we want to be a part of the conversation we can't sit around and wait for a call, because they won't call – and there are other, less knowledgeable sources of information who are all-to-happy to dialog.

You might think politicians, institutions, lobbyists or dynasties hold power in Washington. The real power is in the people, the constituencies – and the power that a constituent holds is immense. A constituent is a voter (or should be), and to a politician, a vote is more valuable than a dollar (votes are what they spend dollars for). A constituent has instant credibility (it's potentially a vote).

* * *

One of my goals (other than help find a replacement for David) over the next few years is to help the GEO-DC office develop strategies and support materials to assist the membership in engaging their representatives on a more regular and meaningful basis.

As geoscientists, we are uniquely qualified to be a part of the conversation of a plethora of public issues. Science, education, energy, environment and the economy are important to us. Find ways to share that knowledge with your community and its leaders.

Science education (geosciences in particular), for example, needs your attention as a constituent.

State Geologic Surveys virtually across the nation are on the budget ropes, and they also need your attention as a constituent.

The value of a vocal constituent is they represent the 1,000 or more others that do not take the time out of their personal lives to contact their representatives, at virtually all levels of government.

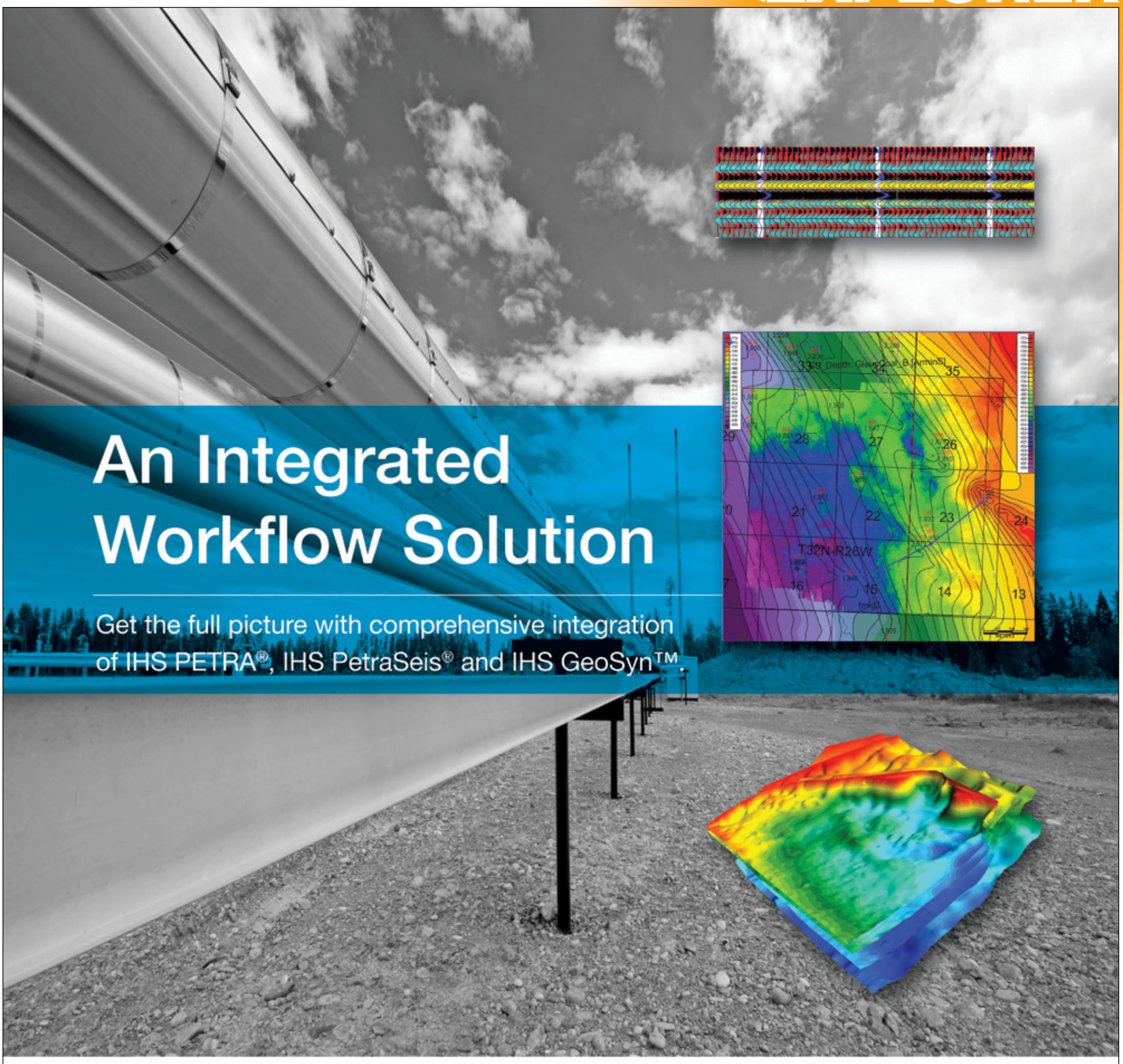
So, in a manner of speaking, you are no longer a single vote if you become engaged.

One way GEO-DC is facilitating connections is the organized Congressional Visits Day. We have, for the last four years, participated – with other geoscience organizations at first, and later, on our own – in organized visits, where members meet with congressional committee members, administration department personnel such as the U.S. Department of Energy and Department of the Interior, congressmen, senators and their staff, and discuss the role of science in the decision-making process.

Through these repeated visits, the GEO-DC office has established credibility as a go-to resource for geoscience and energy related issues among Inside-the-Beltway circles.

These same methods are being applied at state and local levels, and can even be used in other countries, wherever AAPG members have an interest to become involved.

The ultimate goal is to bring geoscience into the decision-making process – and, conversely, to benefit our profession through sound, scientific reasoning.



When these three solutions seamlessly connect, geological and seismic workflows are streamlined with easy-to-interpret data and modeling tools. This integrated bundle allows you to access, view and manipulate information within the same project; create multidimensional seismic models and synthetics; improve workflow collaboration; and deliver comprehensive proposals for new prospects. Get to the field faster with seismic, well, production, log and economic data at your fingertips.

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Art, writings show scientific foundation

Da Vinci Knew His Geology

By BARRY FRIEDMAN, EXPLORER Correspondent

"Every branch of science developed so far owes something to Leonardo da Vinci. He was the master of every priority."

That's Gian Battista Vai, an expert on da Vinci and the opening speaker for this year's plenary session at the AAPG International Conference and Exhibition in Milan – an event dedicated, appropriately enough, to not only the spirit and genius of da Vinci, but to his early effect and *imprimatur* on many disciplines, including geology.


VAI

As proof of Leonardo's importance to the profession, Vai first talks of Nicolaus Steno, commonly accepted as the founding father of geology (he conceived its three basic principles in 1669).

"He [Steno] did not know that Leonardo, born in the same Tuscany and North Apennine area where Steno had been inspired, had written the same principles," Vai said.

What's astonishing is not that da Vinci had written them, but that he did so more than 160 years before Steno.

Vai, who is a professor at the University of Bologna, author of *The Origins of Geology in Italy* and *Anatomy of an Orogen*, points out that Leonardo already had focused on strata, their original horizontality, their original continuity, their superposition and their tilting and consequent angular unconformities.

"More than Steno, Leonardo illustrated the folding and faulting of strata remarkable geological profiles and paintings," Vai said. "Leonardo was perfectly aware of the origin and meanings of fossils in mountain beds more than15 decades before Steno."

The da Vinci Code

Vai, who teaches stratigraphic principles and procedures, is astonished at the breadth of Leonardo's writing – even though more than 90 percent of those writings, by his and most experts' calculations, have yet to be uncovered.

Vai jokes that it's quiet a treasure trove if:

a) You could find it.
b) You're a geologist.
c) You speak Italian.

Vai, who is equipped with two of the above, says short of that, one can see Leonardo's contributions to geology by carefully combining a study of da Vinci's notebooks – those that we have – with a careful scrutiny of his drawings and paintings.

"Following this approach, I realized that there is still a great deal to discover as regards Leonardo's geology," he said, "in spite of there being thousands of titles from Leonardo on science and hundreds from Leonardo on geology."

One such work that reveals the link is "The Virgin and Child with Saint Anne," which Leonardo painted in 1510. Vai says he discovered its mysteries on a "sunny, light-filled, wintery day" in the Grande Salle at the Louvre.

"The few visitors and the unusual clear light made it possible to capture my visual attention to the dark and darkened basement of the famous Saint Anne," he said.

Vai was attracted by the sublime mountain landscape in the background – but when concentrating on the dark foreground, Vai noticed a bedded rhythmic alternation of brown sandy and blue marly layers is shown.

"On top of the fractured sequence, pebbles are being formed by in-situ weathering and small-scale water transport, as often described in Leonardo's notebooks relating to the Apennine creeks," he said.

"The sandy-marly rhythmites resemble the Miocene turbidites that are very common in the Northern Apennines between Florence and the Romagna cities of Imola, Faenza, Cesena and Cesenatico, where Leonardo travelled often to in the first decade of the 16th century," he said.

Vai says the resemblance is uncanny.

"I recognize a striking similarity between what Leonardo depicted and the large and thick turbidite body known as the Marnoso Arenacea Formation (mid-to-late Miocene), whose common sedimentary structure is a wavy lamination, a lamination clearly recorded by Leonardo," he said.

"This is not surprising, given Leonardo's skill in depicting varied types of fluid mechanics especially vertical flows developed in media such as water, clouds, rocks, sediments."

Treasure Hunt

While not as transcendent personally, Vai believes Leonardo's "The Baptism of Christ" (housed at the Uffizi Gallery in France), further reveals such code.

Painted circa 1470, and not entirely by Leonardo himself (the main work was done by Verrocchio, his master at the time), Vai says the feet of the depicted angel, which Leonardo did create, are light and clear.

Here, too, Vai says the painting reveals stages of weathering.

"Compared with Saint Anne, the young Leonardo of the Baptism was

Continued on next page

Gian Battista Vai will present the first talk in the opening plenary session at the upcoming AAPG International Conference and Exhibition in Milan, Italy.

The session, titled "Following da Vinci's Footsteps to Future Energy Resources: Innovations From Outcrops to Assets," will begin at 8:55 a.m. Monday, Oct. 24, at the Milano Convention Centre.

Vai, an expert on da Vinci, is a professor at the University of Bologna and author of *The Origins of Geology in Italy* and *Anatomy of an Orogen.*

The plenary session is designed to address innovations ranging from exploring and producing hydrocarbons more effectively, to using them more efficiently and with a lower impact, to improving existing alternative sources of energy, to developing new options.

Other speakers scheduled for the plenary session include:

- Mario Carminatti, exploration executive manager, Petrobras.
- Mohammad al-Qahtani, vice president-engineering and development, Saudi Aramco.
- Giuseppe Tannoia, senior vice president-research and technological innovation, eni e&p.
- Martijn Minderhoud, senior vice president, Global Energy Strategy; Royal Dutch Shell.

Historic, and relevant

Exhibit Features His Genius

Among the unique features of this year's AAPG International Conference and Exhibition (ICE) in Milan will be the working models of Leonardo da Vinci's own creations on display.

The da Vinci Exhibit of Machines, in keeping with the ICE theme of "Following da Vinci's Footsteps to Future Energy Resources: Innovations from Outcrops to Assets," is designed to illustrate the fundamental and lasting contribution of Leonardo's genius to the development of modern geological concepts and to state-of-the-art oil and gas industry technologies.

As many may know, da Vinci's 15th-16th century inventions resulted in advances in the manufacturing, entertainment, civil engineering, agriculture and mining industries – advances that were both conceptual (wings, gliders, parachutes, military devices) as well as those that actually worked and made the execution of these disciplines more efficient and productive.

The exhibit is the result of sponsorship of eni e&p, and will be located at the eni booth in the exhibits hall throughout the entire conference. It is free for all attendees.

Designed in tandem between a passionate artisan in Florence (Gabriele Niccolai) and a world famous scholar (Carlo Pedretti), the exhibit features a unique collection of accurate, large-scale working and static models of many of Leonardo's most innovative machines, including war, flying, nautical and hydraulic machines, as well as those illustrating the principles of mechanics.

Making the exhibit even more unique, the models have been built using only the limited materials and techniques that were available in the 16th century.

The entire da Vinci Exhibit of Machines, more than 50 pieces in all, is housed in the Museum of Leonardo da Vinci in Florence, Italy – each floor dedicated to another of the disciplines he inspired. At times, the museum tours around the world with select objects – which is how and why it made its way to Milan and this year's ICE.

What ICE attendees will experience is but a small part of the collection – but the pieces on display, in addition to showcasing da Vinci's genius, can be freely accessed, handled and, in some cases, even operated by the conference attendees.

Accompanied by concise, scientifically rigorous and informative supporting text and displays, participants will get a hands-on experience of da Vinci's particular relevance and importance to geologists and engineers.

– BARRY FRIEDMAN

Working models of Leonardo da Vinci's own machine inventions will be on display during the AAPG International Conference and Exhibition.

Continued from previous page

already mature in his understanding of geomorphology, especially erosion and depositional processes; however, he had not yet recognized turbidites and wavy intra-bed millimeter-sized laminations.

"Instead, he had no difficulty in drawing fine parallel intra-bed lamination and helicoidal-vertical structures (hairs)."

Vai, overall, believes there is a through-line between da Vinci's art, his writings and scientific foundation – and while it may not always be obvious, insists that Leonardo's drawings, these two in particular, show that connection.

"They are a superb 3-D representation of a highly folded sedimentary or metamorphic area Leonardo could have seen in the Northern Apennines (fold hinges in the Apuane core complex; thrust zone of the Tertiary turbidites) or in the Lombardy to Venetian area (Southern Alps turbidites).

One thing Vai regrets – as do most who study and are in awe of da Vinci – is the amount of work that can't be found and, therefore, can't be studied.

"Only 10 percent of his notebooks and drawings have survived," Vai said.

And it is here that Vai offers the following, almost wistful hope:

"I believe there is a chance to find one of those many misplaced notebooks. Let us wish each other good luck looking for Leonardo's first geological map!"

Target: Italy's Campi Flegrei

Borehole to Probe Volcano

By BARRY FRIEDMAN, EXPLORER Correspondent

Italy's Campi Flegrei, located just west of Naples, may be home to the most dangerous volcanoes on earth – which is saying something considering Mount Vesuvius is a mere 30 kilometers away.

You'd have to be crazy to drill into the middle of it.

Geology professors Juergen Thurow and Christopher Kilburn may be just that crazy.

They're on a mission: The area has undergone two episodes of uplift since the late 1960s (1968-72 and 1982-84), and the two University College, London professors want to know why.

THUROW

KILBURN

In both occasions, according to Kilburn, a circular area about 10 kilometers across bulged upwards. As a result, the port of Pozzuoli, at the center of the bulge, now stands about three meters higher out of the water than it did in 1968.

Here's the concern: The uplifts are the first to have occurred since 1538.

Juergen Thurow, geological sciences professor at University College in London, England, will present a special lunchtime lecture on the Campi Flegrei drilling project during the AAPG International Conference and Exhibition in Milan.

Thurow's talk, "Drilling Into the Heart of a Volcano: Campi Flegrei, Southern Italy," will be offered during the lunch hour on Wednesday, Oct. 26.

His is one of two special lectures that day – the other, by author Michael Welland, is titled "Granular Matters" – that will be offered along with a complimentary lunch for attendees in the Milano Convention Centre's exhibition hall.

"Hence," says Kilburn, a research fellow in the Department of Geological Sciences at the college, "the resumption of uplift may indicate that the volcano is gradually preparing for another eruption. We can't be sure, but we must be prudent."

And that means drilling must commence to analyze the patterns of uplift and of fracturing of the crust (detected as small earthquakes) to better understand what has been causing the uplifts – and when, if at all possible, to predict when another one might occur.

Which is the main, but not only, reason for doing this.

"There are two aspects, scientifically speaking," says Thurow, a geological sciences professor at the school.

"Obviously, the first has to do with another eruption and if the area is under any immediate danger," he said, "but also, because it gives the scientific community the opportunity to show off the advancement in drilling technique."

And why that's important, he says, is because Campi Flegrei is such a large area – 12 kilometers wide, meaning it can be an amazing canvas for geologists to understand "how rocks behave."

The Bigger Picture

It is that first part, though – the predictive element – that is the sexiest and the one that makes headlines. And to that extent, both want to temper the anticipation.

"There is not going to be a large

See **Volcano**, page 48

PROTRACKS

Milan to Host Young Pros

By COURTNEY CHADNEY, EXPLORER Correspondent

A career-building tool for young professionals that is a proven success at AAPG annual conventions is about to have its European premiere.

AAPG's Young Professionals Committee will be the hosts for the "Meet and Greet" event at the upcoming AAPG International Conference and Exhibition in Milan.

It will be the first time that the event has been held on European soil; the initial international "Meet and Greet" debuted at the 2010 ICE in Calgary, Canada.

The event itself, which pairs young professionals with more experienced professionals, has been an increasingly popular addition to AAPG annual convention opening sessions since 2009, when it was first offered as a program designed specifically for early-career geoscientists.


PUNCH

"The Meet and Greet starts out with students being paired up with willing professionals, who then take an informal tour of the convention and exhibition floor," says Sonya Punch, YP committee member and chair of the Milan YP experience.

"The mentors or experienced professionals are also encouraged to introduce the students to their colleagues," Punch continued, "as well as attend the opening ceremony with the students."

And after the opening ceremony, more bonding opportunities emerge at the traditional icebreaker reception in the exhibition hall.

The Milan "Meet and Greet" will begin at the Milano Convention Centre on Sunday, Oct. 23, one hour before the start of the opening ceremony.

It promises to be bigger, better and more successful than those before it, Punch said – in addition to having the chance to meet and network with experienced professionals, the "Meet and Greet" will include a "Network Challenge" competition, which will result in cash prizes.

But mainly, it's about the connections.

"This (event) is the ultimate glue that links the present and the past to the future generations of geoscientists," Punch said. "It benefits all that choose to attend and participate for the simple reason that it expands one's professional network."

The Set-Up

The Young Professionals specifically designed this event to combat what could be a very intimidating environment. Placing the shy student or young professional in small groups with more experienced convention-goers allows the professional to lead discussion – as well as introduce the new geoscientist to those with more experience.

Punch is in a good position to organize and lead the plans for the event – she has seven years industry experience in the United States and currently is based in Milan. Helping with the plans were a team of veteran M&G organizers – Nick Lagrilliere, current chair of the Global YP Committee, past Global YP chair Natasha Rigg, Florentina Enea, chair of the European YP Committee, and Andrei Panaiotu, YP Committee member.

As always, participation in the "Meet and Greet" is free and open to all ICE registered attendees.

And an international meet and greet is particularly special, she said, as it brings geologists from all over the world who are faced with similar technical challenges together under one roof.

"Diversity is the essence of creativity," Punch said.

Past participants have praised it as a great way for first timers to learn how to navigate the convention, meet professionals and widen their social and professional networks.

And, really, it's not just for young professionals.

"The mentors or experienced professionals are also encouraged to introduce the students to their colleagues," she said, "as well as attend the opening ceremony with the students."

Also, the event is intended to provide a setting for the exchange of ideas between those all over the world, young and old.

Although the professional is set up to lead, Punch recommends the students to be curious and ask questions, like:

- What are you currently working on?
- Where are you from?
- Which company are you working for?
- Why did you choose to work for this company?

Other tips she has for those new to conventions are to walk around with business cards, relax, be positive and listen to everything.

However, her most important advice is to realize that everyone in attendance, students and professionals alike, are passionate about geosciences.

"When all else fails," Punch said, "speak about what you know and love – your research, your project, your career hopes, your hobbies or your family."

Industry Continuity

This year's event is particularly important to the future of the industry in general, as it faces the looming challenge of losing a large number of the work force to retirement in the near future.

The "Great Crew Change" is about to occur.

"The 'Meet and Greet' can serve to connect the old guard with the new," is the way Lagrilliere and Rigg have characterized the event, "helping to ensure that valuable knowledge is maintained, resulting in a smoother transition."

Ultimately, Punch said, the Young Professionals hope that the event provides each participant, young or experienced, the chance to meet at least five new professionals, learn something new in doing so, and thus, create a larger professional network for themselves and the larger geosciences' community on an international level.

"It will be difficult for the first timers," Punch admits, "but as the conference continues, new faces will become familiar faces – some might even become friends or colleagues."

Those interested in participating – either as a young professional or as one of the "experienced" geologists who provide the network opening, go to the AAPG website at www.aapg.org/milan2011/MeetnGreet.cfm.

Volcano
from page 46

interruption" anytime soon, Kilburn says, emphatically.

And this is a serious point for both Kilburn and Thurow, as the disinformation and irrational fear of erupting volcanoes and thousands of people fleeing city streets under a volcanic ash cloud, while the most dramatic angle, is not something they want to lend credence to – or even talk about very much.

"We are not saying something will happen next Friday," Thurow says. "We are drilling there as it will give us a unique chance of understanding a bigger picture."

The bigger picture is this: Bordering to the west of Naples in southern Italy, Camp Flegrei ("Burning Fields") is dominated structurally by a giant caldera, 12-15 kilometers, and has been the site of volcanic activity for at least 50,000 years. The eruptions, 56 in all, have included one that was only slightly smaller than the eruption at Vesuvius, which leveled Pompeii and Herculaneum.

These episodes of uplift do indicate the approach to an eruption, according to Thurow and Kilburn, but the outburst is expected to remain within the range of sizes shown by the 56 previous events.

What makes it important now is that eruptions are usually separated by centuries, not years.

Something, it appears, is happening.

Kilburn and Thurow talk about Campi Flegrei with a degree of pride, especially with Vesuvius being so close. Listening to them talk about the two sites is like listening to a debate over whether Mickey Mantle or Willie Mays was the better baseball player.

They note that Campi Flegrei and the region immediately to the north, in aggregate, have had super-eruptions through the centuries 100 times that of the A.D. 79 eruption of Vesuvius. The last of these super-eruptions occurred 39,000 years ago and produced the Campanian Ignimbrite.

Looking for Answers

There's much to be learned.

When the drilling begins – a smaller borehole later this year, a larger one before next April – deposits from some or all these eruptions will be collected so as to provide new information on their extent, evolution and potential environmental and climatic impact. This needs to be done, says Kilburn, because material from these eruptions is poorly exposed on land.

"To interpret patterns of uplift, we need to know the physical properties of the rocks that are being deformed," Kilburn said.

Although there is information at the surface, there is no direct data about how they behave under pressure – at depths of kilometers below the surface – and at the higher temperatures (of 300-400 C) that might prevail at such depths.

The boreholes will allow them to:

- Obtain samples of the rocks at depth, at which point their physical properties will be measured in a laboratory under appropriate pressures and temperatures.
- Measure the state of stress in the crust with depth and also its permeability and porosity.

"The measurements," Kilburn said, "will improve our knowledge of how easily fluids (e.g., meteoric water) can circulate through the crust. These data can be used to assess the potential of developing geothermal energy systems in Campi Flegrei."

The drilling was postponed due to political concerns involving a local mayoral election, but they're somewhat reluctant to get into it.

"There were questions about safety," Kilburn said, "even though the risk analysts had been done."

And here, both scientists, reminisce about the frustration of dealing with elected officials whose concerns were more political than scientific (Sound familiar?). They decided the best recourse was to put a hold on the project until after the election, which they did.

Things have calmed down since, in part because they moved the drilling site.

"The change in location was made but only for expedience," Thurow said.

"Nobody is interested in the land where we will now drill," Kilburn says, adding, "by pure coincidence, it will be a better location."

And while this is not the first continental drilling into a volcano, it is nonetheless dangerous, exciting and, in many ways, unchartered territory.

For Kilburn and Thurow – for many, actually – Campi Flegrei is the stuff of legend.

According to Greek mythology, Hephaestus, the god of fire (Vulcan is the counterpart in Roman mythology), made his home in the general region and where a battle of epic proportions took place between the Titans and the world's most powerful deities that shook the earth. Myth also has it that the entrance to Hades was also here, hidden beneath a serene lake.

"It's an extremely exciting area," Thurow said. "The Romans were active there. It's a little old port."

And then, perhaps thinking about the location so close to the romance of Naples, he laughs.

"It's better than drilling in Greenland."

Pausé Wins SW Levorsen Award

Paul H. Pausé has been named the winner of the A.I. Levorsen Award for the best paper presented at this year's Southwest Section meeting in Ruidoso, N.M.

Pausé's paper was titled "Fire From Ice: Methane Hydrate Petroleum Systems and Resources."

Pause, an independent in Midland, Texas, is a past president of the West Texas Geological Society. He will receive his award at the next Southwest Section annual meeting, set May 19-23 in Fort Worth, Texas.

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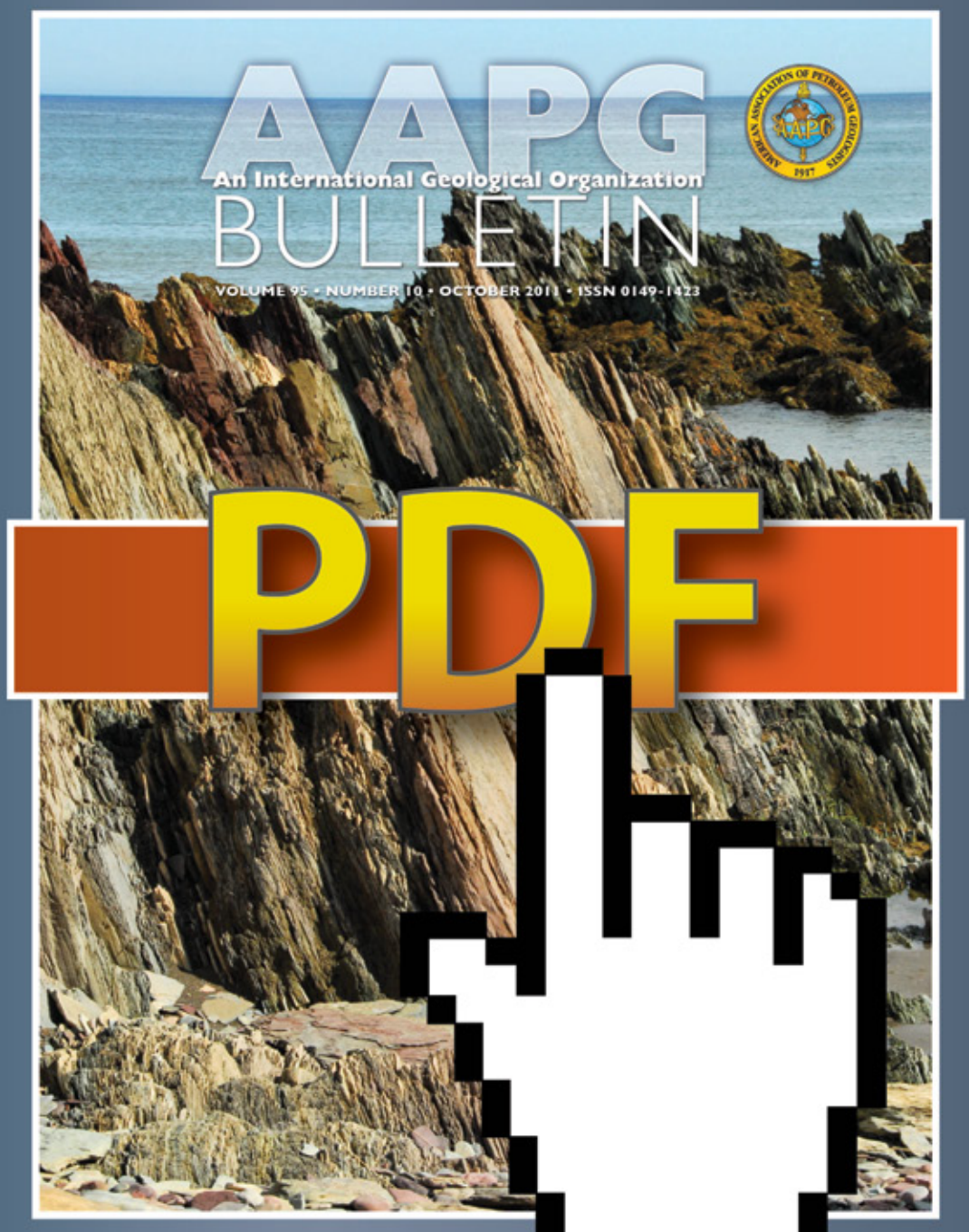

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Article highlights include:

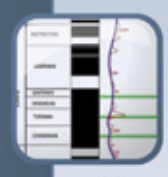
A prolific shale-gas play

Ursula Hammes, H. Scott Hamlin, and Thomas E. Ewing

The structural setting, stratigraphy, depositional environment, fracturing, and production challenges of the Haynesville shale-gas play are addressed. It has estimated play resources of several hundred trillion cubic feet and spans more than 16 counties of eastern Texas and western Louisiana.

A possible deepwater petroleum province

Hugo Matias, Pedro Kress, Pedro Terrinha, Webster Mohriak, Paulo T. L. Menezes, Luis Matias, Fernando Santos, and Frode Sandnes



Salt units in the western Gulf of Cadiz supplied salt for an eastern domain with a conspicuous allochthonous salt nappe, a central domain dominated by salt diapers, and a southwestern domain where present-day tectonics have caused salt deformation. These regions have hydrocarbon potential.

A new hypothesis

Agus M. Ramdhan and Neil R. Goulty

Overpressure generation due to compaction of Miocene mudrocks is shown in a sharp transition zone in the shelfal area of the Lower Kutai Basin. It appears that porosity reduction is controlled by chemical compaction, and that cementation has caused overcompaction.

Dolomite raceways cause heterogeneous oil

Arthur H. Saller and John A. (Tony) D. Dickson

Dolomite in the Reinecke Field, west Texas, formed diagenetically late and precipitated during deep burial. These rocks have lower porosity but much higher permeability than most nearby Permian dolomites that formed in evaporated seawater during shallow burial.

SPOTLIGHTON

Rocks, Joy of Sharing Leads Back to Classroom

By BARRY FRIEDMAN, EXPLORER Correspondent

"Rocks."

You ask a geologist why he or she loves geology, you hope for an answer like that.

And with Lawrence D. Meckel, a past winner of Grover E. Murray Memorial Distinguished Educator Award, that's exactly how he answered when asked what it is about geology that so fascinates him.

It's been a long love affair – the rocks got him early in life and wouldn't let go.

"This occurred during junior high and high school," he remembered.

And it's still occurring, for Meckel still enjoys the classroom and still enjoys going back to school – either to teach or to learn.

In fact, for more than 40 years Meckel has enjoyed standing in front of a room full of students as much as he's enjoyed standing in front of cliffs of pebble conglomerate.

After graduating from both Rice University and Johns Hopkins University, Meckel took a job with Shell Development; then, he was a partner in the firm of Sneider and Meckel and Associates before forming his own firm, L.D. Meckel and Company.

But there was something about the classroom that kept bringing him back. He taught classes at Shell, was part of AAPG's Visiting Geology program, has been a mentor and for the past 20 years an adjunct professor at the Colorado School of Mines, where he teaches Unconventional Petroleum Systems and Seismic Signatures of Reservoir Systems.

The vastness of his career – both in terms of longevity and or the people he's taught – is reason enough for the AAPG educator honor.

MECKEL

> His lessons and insights are received by both rookies and rock stars.

But numbers alone don't tell the story: Why does an exploration geologist with over 40 years of industry experience keep going back to the classroom?

"The excitement," he says, "of passing on to students and professionals."

Interestingly, his "classrooms" draw from both the university student pool as well as the professional arena, which means that his lessons and insights are received by both rookies and rock stars.

And the passion that drives his career comes from understanding that the information he imparts will be useful in geology's holy grail – "The search for, and the development of, new fields."

He believes university students are aware of the prize and of the potential enormous rewards, but they want to know if the "buzz" is for real – and how it will impact their careers.

"I try to focus on the efficient way to assemble and interpret data to reach those critical decision points," he said.

He holds himself to a high standard, and wonders and worries if his methodology, as he puts it, connects the dots.

"One of the continuing rewards for me," he said, "is to have experienced professionals say that the course material was practical and hard-hitting."

Listen to the Rocks!

Meckel, who worked in more than a dozen fields – including Canada's famed Elmworth field discovery, located in west-central Alberta and adjacent British Columbia – says the road between academia and industry is a two-way street.

"It is very definitely useful to bridge the two worlds – business and academia," Meckel said. "I feel my extensive subsurface experience allows me to put the course material into a practical and useful context. Equally important, my association with experts and talented students in many various fields at the Colorado School of Mines is a valuable learning experience, which definitely translates back into a better understanding of the subsurface."

Of Elmworth, Meckel said his work on the famous Canadian field was "fun" and a team effort.

Perhaps he is being modest.

In "The Hunters," by AAPG Honorary Member John Masters, a book about the search for oil and gas in western Canada, Elmworth was described as a "hundred million acres of time."

"After about a year of work," he said, "we started seeing the key fingerprints of what could be a huge new field – similar to the large Wattenburg and San Juan basinal fields in the United States. This was exciting.

"The discovery of Elmworth to confirm those concepts occurred in 1976."

He has a warning, of sorts, for those in the profession.

"One concept that I hold absolutely essential for understanding the subsurface: the use of rock data (be it outcrops, cores or cuttings) to calibrate the three main data bases we use in exploration and production. These are logs, seismic and test data.

"Somehow as we move into the digital age, where we tend to work at the computer, we have also moved away from our basic obligation as geologists," he said. "What do the rocks tell us?"

Now as we address a whole variety of unconventional petroleum systems that are very complex and new, it is even more critical than ever that we look carefully at the rocks to calibrate those three critical tools we rely on."

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Tips for applicants

GIA Requests Sought

By ANDY KLEIN, AAPG Grants-in-Aid Committee

Every year, hundreds of ambitious grad students apply for AAPG Foundation Grants-in-Aid to help offset the costs of their university research. The funds are used to cover fieldwork, lab work and purchased services such as sample preparation and analysis. Every penny is put to good use.

The AAPG Foundation raised the maximum annual award to $3,000 in 2009; since then the competition for funding has only gotten more intense. In 2011, 82 grants were awarded to an original applicant pool of 414 students – roughly 20 percent of applications received funding.

With such a low acceptance rate, the awardees really work to stand out. Being able to do so takes a combination of a suitable project and a well-written application that displays financial need. (I don't know about you, but when I was in grad school, financial need was a given!)

With an average award in 2011 of over $2,100, standing out can pay off.

A "Suitable" Project

The AAPG Grants-in-Aid program is intended to "foster research in the geosciences." Ideally, a fundable project should involve "the search for and development of petroleum and energy-mineral resources, and/or to related environmental geology issues."

It's usually easy to relate one's research to fit the above criteria in a general way. For example, a paleobotanical study of climate change in the Green River basin fits the general criteria, given that the basin is a prolific oil and gas producer.

However, the key to standing out – to being ultimately suitable – lies in making that strong connection to energy.

Denise Cox, AAPG secretary and Grants-in-Aid committee member (and former chair) since 1995, suggests, "Every applicant should do a web search on their research topic with respect to oil and gas or energy minerals."

Relevancy is a key item that reviewers like to see in an application.

"This is an opportunity to think big," said committee member and former chair Pete MacKenzie. Show us "the potential impact your work (and our dollars) may have as a contribution to the greater body of science."

The question every applicant should address is: How does my work fit into the big energy picture?

An outcrop sequence stratigraphic study is suitable, but it becomes ultimately suitable when applied as an analog for predicting subsurface reservoir distribution in similar geologic settings.

Another example: The climate change study described above becomes more suitable when related to the effect of climate change on vertical source rock stacking.

"The GIA funds are for scientific research as it pertains to the energy industry," Cox said. "Many good research proposals do not score well because the student did not make that connection.

"I can almost always make the tie to the energy industry simply by thinking through petroleum basics," she added. "Migration, reservoir, trap and seal."

Why Writing Matters

It's easy to spot the difference between well-written proposals and a paragraph that has been hastily dashed out and never looked at again – the best-written applications clearly have had a lot of time spent on them.

"Complete sentences, proper spelling, paragraphs that support and close on a topic – these things demonstrate pride in work, which often translates into quality data and meaningful research," MacKenzie said.

"The biggest mistake (students make) is not sitting down with their adviser and thoroughly discussing the research topic, methods and budget," Cox added. "A great idea will not get funded if it is apparent the student does not know how to go about the research or has a poorly thought-out budget."

The online application process, introduced several years ago, has made things mechanically easier for both the applicants and the reviewers. The applicants simply enter their information on a web-based form.

(There is a tendency to treat small text boxes on a computer screen like a Tweet or a Facebook status update – but remember this: The boxes may be small, but there's no limit on the amount of text that one can use.)

It is recommended that students compose a complete grant proposal outside of the web-based application form. This way, the proposal can be viewed in its entirety, as well as benefit from spell-check.

"It is also vital to have someone proof-read the application," Cox said.

Current Grants-in-Aid recipient Lauren Fortson, master's candidate at SUNY-Buffalo, followed a similar approach:

"I copied and pasted many of the essay questions into MS Word, where I was able to complete them as well as send them to my graduate adviser for advice and corrections," Fortson said. "I did not complete the application 'in one go' – it took me several weeks to edit and make corrections as needed."

Tracy Bank, Fortson's master's thesis adviser at SUNY-Buffalo, also uses successful student grants as an instructional tool.

"I recommended that Lauren read the grants written by my previous students so that she had an idea of how to write a proposal," Bank said. "I want to be absolutely sure that the grant writing is done by them and that they learn a good bit about sentence structure and actually writing statements that really reflect their research agenda."

Another good piece of advice: "Talk to students who have been awarded grants to get their input … have [them] read your application and suggest changes," says committee chair David Sivils.

"The biggest mistake students make is not taking advantage of peer review," MacKenzie added. "If you can't explain what you are doing to your peers or to another scientist, your application will not be successful."

Be Thorough – Naturally

The application process is not complicated, but it has a few key components to check and double check.

As with most projects, there is a budget – and over the years the budget worksheet

Continued on next page

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 website, www.aapg.org/explorer/pnb_forms.cfm.

PROFESSIONAL newsBRIEFS

Steve I. Appel, to senior geophysicist, Marathon Oil-North American gas asset team, Houston. Previously consulting geophysicist, ATP Oil and Gas-offshore Israel, Houston.

Marc Edwards, to president and geologist, Marc B. Edwards Consulting Geologists, Houston. Retired from leading geologist stratigraphy and sedimentology-deepwater Gulf of Mexico, Statoil, Houston.

Gerald Greer, to senior staff geologist, Breitburn Energy, Houston. Previously staff geologist, Kinder Morgan CO_2 Co., Houston.

Gerhart Hunter, to geophysical consultant, Trog Exploration and Production, Waller, Texas. Previously senior geologist, Phoenix Exploration, Houston.

Kevin Kveton, to manager-geology R&D unit, Chevron Energy Technology, San Ramon, Calif. Previously general manager-exploration, Chevron Indonesia, Jakarta, Indonesia.

Robert A. Lamarre has retired as vice president-exploration, Black Diamond Minerals, Denver. He resides in Denver.

Gordon MacMahon, to vice president-exploration, Bengal Energy, Calgary, Canada. Previously senior technical adviser, Zodiac Exploration, Calgary, Canada.

Timothy C. Maxwell, to exploration manager-Alberta/BC foothills district and reservoir geology-EOR, Canadian Natural Resources, Calgary, Canada. Previously manager-geology and geophysics-northern North Sea, CNR International, Aberdeen, Scotland.

Deborah Patterson, to vice president of environment, health and safety, Stanley Black & Decker, New Britain, Conn. Previously director of environment, health and safety, Stanley Works, New Britain, Conn.

Fred Ribeiro, to senior geologist-new ventures, Apache Egypt, Cairo, Egypt. Previously exploration manager, Sipetrol International SA-Egypt branch, Cairo, Egypt.

Continued from previous page

has been trimmed down to a single page.

"Yet it amazes me how often the budget is simply incomplete," Sivils said.

Following the instructions on the budget worksheet and providing details on budget items can go a long way toward scoring points.

Finally, Sivils is one of many committee members who like to see applications that highlight the student's contribution to the project.

"Creative and unique student-generated ideas" are relatively rare, he said, but show that the student is more than simply a passive laborer in the process.

Rewarding for Everyone

Though the focus of the Grants-in-Aid program is to offer financial benefits to deserving students, the benefits extend far beyond supporting research – it also provides perks to committee members.

"The GIA committee is one of the most diverse and fun [AAPG] committees on which to serve," Cox said. "I started my AAPG volunteer work with GIA and now have an extensive global network of friends and geoscientists."

Participation on the committee allows members to stay current on energy-related research trends. Companies also can "have an inside track on top students and schools for recruiting," she added. "Every company should have at least one person on the GIA committee."

Finally, sometimes it just feels good to give back. Many committee members, when they were graduate students, received research grants themselves. Or, as Cox said:

"I love GIA because it gave me a way to honor my family through the AAPG Foundation with the Mruk Family Grant."

The deadline for the 2012 grant applications is Jan. 31. E

Editor's note: Regions and Sections is a regular column in the EXPLORER offering news for and about AAPG's six international Regions and six domestic Sections. This month's column focuses on the Middle East Region. Contact: Abdulrahman S. Al-Sharhan, Middle East Region president, at sharhana@emirates.net.ae.

ME Region Priorities: Young Pros, Students

By ABDULRAHMAN S. AL-SHARHAN, President-AAPG Middle East Region

It is my pleasure to introduce myself as the new AAPG Middle East Region president (2011-13).

I spent the first 25 years of my career attending – but not actively participating in – AAPG annual meetings. However in the last six years, in addition to my academic and consulting work in the region, I have started professional duties within the AAPG with colleagues from Saudi Aramco who already are involved in this kind of professional activity.

These longtime friends first suggested I accept a position with the committee formed by AAPG for the Middle East region. Two ye ME Region Priorities: Young Pros, Students ars later I was nominated to serve as a member of the advisory council for two years. This provided me with the opportunity and great pleasure to participate as the AAPG Middle East representative and work with many talented people.

At the previous Middle East council election I emerged as president-elect (2009-11), thanks to the Middle Eastern members who voted for me.


AL-SHARHAN

Indeed, for me the most profound experience I have had in my long administrative and academic career has been to serve as president of Middle East Region for the AAPG. This caps my 32-year-career with experience in oil industry and academia, both as professor and dean of the College of Science at UAE University, which over the last 25 years enabled me to publish more than 90 scientific papers, over 100 abstracts and act as author and editor of eight books in the field of petroleum geology, water resources and environment – as well as work with our professional Association.

I joined AAPG in 1981 when I was a graduate student at University of South Carolina, and published my first paper in the BULLETIN (as single author). Over these years I found AAPG provided me with a great means to interact and reduce the gap between industry and university.

I have learned many skills and gained experience from AAPG publications, conferences, networking during the meeting, continuing education opportunities and field trips.

AAPG has given me the opportunity to develop and meet a large number of friends around the world, while maintaining contact with them and with my future professional activities. I have enjoyed all these professional interactions with all the geoscientists in the region.

And I would like to thank all those who took part in the election for Middle East Region Council.

* * *

The Middle East regional council is active, meeting each month (except in summer months), and we have achieved many of the goals and objectives of our association including:

- We have ensured that more students are a part of the Association while educating them on the benefits of becoming AAPG members.

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So far we have eight student chapters established in the region, demonstrating our understanding of the importance of geosciences students to the future of the oil industry.

▸ We have determined the Imperial Barrel Award (IBA) program and competition is something that should be offered each year in our Region. This has become an extremely successful means to aid senior and graduate students prepared to become professionals of the geosciences community.

▸ We have held a number of Geoscience Technology Workshops that cover a wide range of topics designed to review and discuss various resource assessment procedures.

The number of attendees reflects the importance and quality of these activities and shows our geoscientist commitment and involvement in skill development and the update of information.

▸ We have produced the first Middle East Newsletter in early 2011, naming it "The Discoverer." The intent of this document is to update our members in the Region as to the varied character of our scientific activities.

▸ We have expanded membership through the establishment of more student chapters in the Region, recognizing this as important for the future continuation and increased number of new members.

The Region has established more student chapters, recognizing this as an important way to increase the number of new members.

We have some 850 members that represent different categories of our membership.

The council has recognized the importance of having more Active members on the board. Our goal will continue to concentrate on promotion of members from the Associate to Active category, and managing the transition or upgrade from Student to Associate, and so on.

▸ We have encouraged and managed to have our Distinguished Lecturer from the Region, as well as internationally, while providing common interest in the subjects related to local case studies and problems and techniques applied in other part of the world.

Also, with these lecture tours we try to visit local universities as part of the outreach program to promote our educational services and expand relations with new members.

▸ We attend the AAPG annual leadership conferences as they occur.

For instance I was at the recent conference in Boulder, Colo., meeting with the AAPG officers, presidents of other regions, committees and representatives of student chapters and young professionals. We discussed many issues related to strategic plans, the future of the Association and international leadership development.

The meeting also concentrated on the importance of young professionals and students, fostering the future of the geosciences community as dependent on the students.

It also is our Region's number one priority: To develop students and young professional activities, including the IBA, Student Chapters and other programs and activities during Geo and ICE conferences and other technical events.

Do you have ideas, observations or suggestions on making our Region even better? I look forward to hearing from you.

Process accelerated

Applicant List Online

By VICKI BEIGHLE, AAPG Membership Manager

Looking for the list of AAPG membership applicants?

In the past you'd find them right here – but no more.

Applicant information is now found only online – easily accessible via the AAPG website – in an effort to shorten the application process time.

To see the list of applicants (and their sponsors), simply look for the applicant button ("Prospective Members") on the right side of our home page, just below the top graphic.

Click on the button and you'll go to information for each Active applicant – whether they are applying as a new member, transferring from Associate or applying for reinstatement.

The new system is the result of recent Executive Committee approval of a proposal submitted by the AAPG Membership Communication and Coordination Committee, chaired by Andrea Reynolds, to streamline the AAPG membership application process.

"The new approach will significantly shorten the application processing period for most applicants, because it will allow the 60-day review by membership to commence immediately after the application is deemed complete and sponsors pass check by headquarters staff," said EC member Jeff Lund, chair of the AAPG House of Delegates.

"This makes the AAPG Active membership application experience more welcoming to all qualified geoscientists," he said.

Previously, the print publishing in the EXPLORER added 30-60 days to the process because of logistics and various deadlines.

Provided all necessary documentation is received, the online availability should shorten the overall application review time by 60 to 90 days from approval to acceptance.

Certification

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

Petroleum Geologist

California
Michael P. Nelson, DCOR, Ventura (reinstatement)

Louisiana
Glen E. Kelly, Tensas Delta Exploration, Shreveport (W. Meaney, S. Singletary, S. Cowgill)

Tennessee
David Gilbert Draper Jr., CNX Gas Company, Knoxville (L. Cavallo, R. Goings, H.R. Beaver)

Texas
Valen D. Ott, Murex Petroleum Corp., Katy (reinstatement); **Muduka Bertram Ozumba**, Shell, Houston (G. Unoman, A. Adesida, K. Ladipo); **David Bruce Williamson**, Pioneer Natural Resources, Frisco (L. Brooks, L. Waite, L. Goldstein)

Hong Kong
Chi Seng Kong, K&C International Resources Ltd. (Geological Society of London)

WWW UPDATE

AAPG/Datapages Adds PTTC Workshop Data

By RON HART, AAPG/Datapages Manager

It's all about the reservoir.

Every development geologist knows once you find it, you have to produce it. And that sometimes presents some non-traditional challenges.

Since the early 1990s, the Petroleum Technology Transfer Council (PTTC) has bridged the gap between larger, technology-rich companies and the smaller operators who depend on partners and consultants for the latest technology. And PTTC has been a conduit for government-sponsored research to the independent companies who operate in areas with marginal economics.

In other words, PTTC was designed to bring help to the people who need it the most – and through a 20-year program of workshops, articles, newsletters and telephone services, PTTC has introduced thousands of "mom-and-pop" energy companies to new ideas for better production and best practices.

And now, all that is online.

TECHPLACE is a new online information resource provided by the PTTC and AAPG/Datapages. This cooperative effort captures and delivers technology insights from PTTC's historical activities that you can use to make important technology decisions that will positively affect your company's bottom line.

TECHPLACE allows users to access workshop summaries and workshop notebooks, browse past issues of the PTTC Network News plus see upcoming PTTC and other events of interest.

A 12-month subscription to TECHPLACE is $195 – less than the cost of a single workshop. And users can search-and-purchase single workshop summaries via a pay-per-view option, without a subscription.

The basic unit of the online service is the "workshop summary." More than 1,500 workshops have been produced since PTTC began, and most of the information is still relevant today.

More than 100 of these same workshop summaries have been condensed into Executive Summaries, which offer an overview of the same information in three-six pages. These also are available.

All workshops are categorized into four main topic areas:

- Exploration.
- Reservoir and Development.
- Operations and Production.
- Drilling and Completion.

TECHPLACE plans to grow by adding content, just like its older sibling, Datapages' Combined Publications Archives database.

Specializing in secondary and tertiary recovery, reservoir engineering and geological E&P subjects, TECHPLACE hopes to host a number of partner collections apart from the geoscience focus of Datapages' other offerings.

To check it out, go to techplace.datapages.com.

FOUNDATIONUPDATE

TAs Elect New Officers

By NATALIE ADAMS, AAPG Foundation Manager

Former longtime AAPG Foundation deputy executive director **Don O'Nesky** was elected chairman of the Foundation Trustee Associates at the group's recent annual meeting at Lake Tahoe, Calif.


O'NESKY

O'Nesky also served as a longtime deputy executive director of AAPG prior to retiring and moving to Venice, Fla., in 1999.

Also elected as Trustee officers for the coming year were **Stewart Henry**, who was named vice chairman of the group, and **David Worthington**, secretary/treasurer.

More than 60 Trustee Associates attended the meeting, which included a combination of business meetings, recreational activities and various tours. Meeting highlights included:

- Foundation Board Chairman Bill Fisher presented the Foundation Chairman's Award to **Bill Crain**.
- **Rick Fritz** was presented with a plaque for his 11-plus years of service as executive director of the AAPG Foundation.
- Newly named Foundation Executive Director **David Curtiss** was introduced and addressed the group for the first time.

* * *

A new member has joined the Foundation Trustee Associates – **Mark Shuster**, who is with Shell Exploration and Production in The Woodlands, Texas.

Shuster has been active in AAPG and the Foundation through various activities, including his participation on the Corporate Advisory Board.

* * *

Want to be twice as valuable to the Foundation?

A matching gift opportunity may exist within your company that could double your contribution to the AAPG Foundation. To find out if your company has a matching gift policy, visit our web page at foundation.aapg.org/donate/matchinggifts.cfm.

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Gbemisola A. Akinsulere
Stephen J. Anfort
Scott M. Ardeel
Hiroshi Arikawa
Larry M. Asbury
Richard W. Ball
In memory of Penni Caughey
David B. Bannan
Raymond F. Barrett
Kurt Bayer
Mitchell M. Bennett
Don G. Benson Jr.
Swapan K. Bhattacharjee
Eddy L. Biehl
Jeremy Boak
Charles J. Bopp
James C. Brenneke
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Bjorn K. Bryn
Tucker Burkhart
Agi Burra
Gregory L. Cane
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Matching gift for Richard Ball, William Houston, Rhonda Welch, Lauren Michel and Donald Medwedeff
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Richard E. Deery
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William D. DeMis
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Enrique Zurita
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Kevin J. Keogh
Alan O. Swarm
Michael T. Whalen

William E. and Jean Crain Named Grant
William E. Crain

Eddie David Named Grant
Ronald D. Riley
In honor of W.T. "Dub" Riley

Norman H. Foster Memorial Grant
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Gary W. Lauman

Robert K. Goldhammer Memorial Grant
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Kenneth Potma
Jason Rush

James E. Hooks Memorial Grant
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Harry and Joy Jamison Named Grant
Harrison C. Jamison

Michael S. Johnson Named Grant
Chris A. Oglesby

Raymond C. Moore Memorial Grant
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April L. Parsons

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Imperial Barrel Award Fund
Shell Exploration & Production Company
Enrique Zurita

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John F. Bookout
Weldon D. Carroll
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Steven D. Jones
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Ellen W. Nodwell
Lee R. Russell
Dennis B. Tower

Boone Pickens Digital Geology Fund
Borden R. Putnam III

Wallace Pratt BULLETIN Fund
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In memory of E.M. Ross Jr. and Nap M. Broughton

L. Austin Weeks Memorial Undergraduate Endowment Fund
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Best Student Paper and Poster Award
Weldon D. Carroll
Stephen G. Crumley

Geoscience in Media Award
Ellen W. Nodwell

Public Service Award
Weldon D. Carroll

Robert Berg Outstanding Research Award
Catherine O. Albert

Teacher of the Year Award
Weldon D. Carroll
Ellen W. Nodwell

Ziad Beydoun Memorial Award
Wafik B. Beydoun

Continuing Education Endowment Fund
Weldon D. Carroll
Richard M. Parker

Digital Products Fund
Weldon D. Carroll

Colorado School of Mines
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Oklahoma State University
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Texas A&M University
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James E. Powers

University of Oklahoma
Matthew T. Poole

Distinguished Lecture Fund
Catherine O. Albert
Matthew T. Poole

Allan P. Bennison Distinguished Lecture Fund
John A. French
Catherine O. Albert

2011 GIA recipients - **Maryam Peyravi, Madani Kivi, Muhammad Awais, Nicholas Holgate, Olena Prykhodchenko, Oluwaseun Fadipe, Rachael Ellen**

AAPG Foundation Awards
$179,000 to Graduate Students

Grants in Aid Application Do's and Don'ts

Do's

- ✓ *Make a connection to oil & gas exploration, production, remediation, energy minerals, coal or uranium - any connection at all.*
- ✓ *Avoid fancy formatting or bullets. These get lost in translation.*
- ✓ *Have a friend, colleague, mentor or professor read through your grant proposal. If they catch anything significant, be sure to make changes before submission. Ask a non-geoscientist (Mom? Roommate?) to read for clarity.*
- ✓ *Keep your proposal simple. You don't need funding for every aspect of your project, so focus only on those aspects that require funding.*
- ✓ *Be sure to frame your proposal within the broader topic under study. You're chipping away at a mountain – describe the mountain.*
- ✓ *Be specific about how the award will be spent. Put some thought into it; add some color. Write as if you've already received the funding and tell us what you're going to buy.*
- ✓ *In the budget: follow the instructions, be thorough and accurate and don't add padding. Please be forthcoming about any additional sources of funding and/or attempts at funding from other avenues. This shows a financial need and a willingness to pound the pavement, leaving no stone unturned.*
- ✓ *Do everything in your power to get an official transcript to AAPG Foundation, from every college or university you've attended the past two years. Do this step early to give your school time to process your request.*
- ✓ *Impress upon your advisor that a thorough, honest assessment of you and your project is in his/her best interest, too. Ask to see their assessment before they submit it. They may say "No," but it doesn't hurt to ask. Besides, if they are afraid to tell you what they think of you or your project, maybe you have the wrong adviser.*
- ✓ *Compose your text offline in a text editor that has a spell check function.*

Don'ts

- ✗ *Deadline not met for application.*
- ✗ *Research does not meet Grants-In-Aid objectives.*
- ✗ *Proposal lacks originality, imagination or potential to impact science.*
- ✗ *Proposal is incomplete or not clear (for example vague workplans, unclear deliverables).*
- ✗ *Scope of work and timetable are not realistic.*
- ✗ *Application guidelines are not followed.*
- ✗ *The quality of the writing is poor.*
- ✗ *Application contains mechanical errors (for example typos, missing words).*
- ✗ *The budget spreadsheet is incomplete or incorrect.*
- ✗ *Budget contains inappropriate items (ie: funds requested for capital goods).*

Apply now for 2012 Grants in Aid Program.
Deadline January 31st 2012
www.foundation.aapg.org/

2011 Grants in Aid winner, Meriem Grifi
El Teide volcano on Tenerife island of the Canary Islands

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.

READERS' FORUM

Red Sea Revisited

Regarding the story "Red Sea an Intriguing Frontier" (August EXPLORER): I am delighted to see the north Red Sea area has attracted the attention of such a highly professional team in attempt to technically solve the potentiality of such an intriguing province.

I had been involved in several G&G work programs in this area for a long time (while with Unocal Corp. in the 1970s and with British Gas between 1993-2009). I've always had faith and confidence that some day the Red Sea will reveal its secrets of the O&G treasures.

There are, however, some points that should be clearly understood before the wishful objectives can be achieved. These are:

- The absence of the pre-rift sequence in the offshore wells (Including the U. Cretaceous Brown limestone, which is the main source rock in the Gulf of Suez).
- The abnormally high geothermal gradient (high heat flow), which might have a certain impact on the HC system.
- Lack of clear subsurface imaging, together with the already-known complex geology (leading to misinterpretation and, consequently, to failure).
- Presence of thick salt section; although it may act as an effective seal, it also may impose some drilling problems.
- Unpredictable syn-tectonic sedimentation setting, which may result in variable strat columns within same area.

My best wishes are with the team for a successful exploration effort.

Maher Ayyad
Cairo, Egypt

(Editor's note: Ayyad is professor of petroleum geosciences at Cairo University.)

Step Right This Way

The spelling of the word "frack" received some criticism in the August EXPLORER; although this may be important to some people, it compelled me to write about an earlier article in the June EXPLORER ("Public is Going BANANAs"), where Karen Harbert's (president and chief executive officer, U.S. Chamber of Commerce's Institute for 21st Century Energy) use of the terms BANANAs, NIMBY and NOPE, were to me far more disconcerting.

Whilst most of the conclusions she presented in "The Cure" make sense, if not entirely new, the use of such pejorative terms as NIMBY above is worrying.

To label individuals or groups in this way – who may have legitimate concerns, certainly have freedom of speech and are testing their position against the rule of law – is concerning to say the least.

It amounts to an attempt to isolate and pressure those with differing opinions to step in line.

In the UK we have a huge debate about the value of wind farms (aerogeneration), and developers and pro-wind politicians alike have used the word NIMBY in this fashion against those who disagree with them. It suggests that normal constructive dialogue alone is not sufficient to prove their case.

Ian Woollen
Edinburgh, Scotland

A Call to Arms

Please tell your representatives and senators in Congress, and your neighbors:

- Over 90 percent of oil and gas wells in the United States are drilled by independents, thus creating our jobs and jobs for millions in related industries.
- The jobs generate taxes/revenues to school districts, fund college/university education, civic organizations like United Way, governments in counties, state and federal levels, etc.
- According to the Energy Information Administration, 77 percent of government incentives went to renewable energy sources, and the fossil fuels industry got merely 13 percent (2009 database).
- Oil and gas mix provides 49 percent of U.S. energy (and 33 percent comes from coal).

At stake today is more than $30 billion in investment money for U.S. oil and gas exploration ... today – due to tightening of capital markets, absence of clear public policies on affordable and secure energy and lack of adequate public incentives – capital inflow is decreasing at a higher speed, which in turn takes focus away from the high-risk exploration of newly identified plays in under-explored U.S. basins.

Kumar Bhattacharjee
Houston

IN MEMORY


MUEHLBERGER

AAPG Honorary Member William R. "Bill" Muehlberger, geology professor who taught geology to astronauts and author of the widely known AAPG Tectonic Map of North America, died Sept. 14. He was 87.

Born in New York, Muehlberger grew up in Hollywood, Calif., and received bachelor's, master's and doctoral degrees in geology from the California Institute of Technology. He taught at the University of Texas at Austin for nearly 40 years before retiring to emeritus in 1992.

NASA first asked Muehlberger in the mid-1960s to train Apollo astronauts in geology so they could identify and better understand features on the moon.

As a NASA consultant, Muehlberger led a staff that helped determine where astronauts would land to collect rock samples that might provide insight into the history and composition of the moon.

NASA named a moon rock after him. At nearly 26 pounds, "Big Muley" is the largest piece of the moon ever brought back to earth.

Muehlberger spent 15 years working on the AAPG TECNA project, which mapped the geologic and tectonic structures of North America. He received the AAPG Distinguished Educator Award in 2004 and was a past chair of the Astrogeology Committee.

* * *

Paul James Beaver, 86
Houston, Dec. 9, 2010

David Bruce Finnell, 65
Bakersfield, Calif., Aug. 16, 2011

John W. Hampton Jr., 80
Austin, Texas, Aug. 2, 2011

Jesse M. Kincheloe, 81
Campbellsville, Ky., Aug. 14, 2011

Jesse M. Kincheloe, 81
Campbellsville, Ky., Aug. 14, 2011

* **William R. Muehlberger**, 87
Austin, Texas, Sept. 14, 2011

Frank Donald Pruett, 76
Carmel, Ind., June 29, 2011

(Editor's note: "In Memory" listings are based on information received from the AAPG membership department. Asterisk denotes AAPG Honorary Member.)

CLASSIFIEDADS

POSITION AVAILABLE

Petroleum Exploration Geologist
Newfield Exploration
Tulsa, OK

Seeking Geologist, responsible for conducting detailed prospect analysis and play fairway assessments within the Mid-Continent Region plus the generation and presentation of prospect ideas and leads to management. This position would be located in Tulsa, OK.

The successful applicant will generate and update maps, logs, cross-sections and corporate databases with new tops, correlations, shows and other pertinent geological data. Develop regional, multi-county stratigraphic framework and subsurface correlations.

Minimum qualifications, ten years of experience, knowledge of Mid-Continent upstream oil and gas, experience with conventional and un-conventional plays, experience doing play-fairway analysis assessments. Send resume to klefler@newfield.com.

* * * * * * * * * * * * * * * * * * *

THE IRIS CONSORTIUM
OMO Project Manager

The Incorporated Research Institutions for Seismology (IRIS) is seeking a talented Project Manager for our newly established Ocean Bottom Seismograph Instrument Pool (OBSIP) Management Office (OMO). The Ocean Bottom Seismograph Instrument Pool is a multi-institutional facility that provides sensors and recording systems for long-term deployment in the deep ocean for use in research projects to explore earthquakes and deep Earth structure. The OMO will work with the National Science Foundation, the scientific community, and the instrument contributors from oceanographic institutions to coordinate the development, operation, maintenance and deployment of a pool of approximately 200 instruments and ensure maximum scientific benefit from the OBSIP.

This is a managerial position responsible for providing technical advice and leadership in the development and evolution of OMO. The Project Manager supervises a small OMO staff at IRIS headquarters in Washington DC, manages the awards to the instrument contributors, encourages teamwork among the contributors, principal investigators and NSF, schedules experiments, and represents OMO with national and international organizations. To learn more about this outstanding opportunity please visit http://www.iris.edu/hq/employment for a full job description.

The ideal candidate must have an advanced degree in engineering or science and 10 years of managerial and technical experience. Experience in geophysics and ocean engineering is preferred.

Based in Washington D.C., IRIS is a university research consortium dedicated to exploring the Earth's interior and understanding earthquakes through the collection and distribution of earthquake data. IRIS offers excellent compensation and benefits.

Interested applicants should email a cover letter, their CV and contact information for 3 references to hr@iris.edu. Review of applications will begin October 10.

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Senior Sedimentary Petrologist

At Shell our commitment is to satisfy the world's need for energy with economically, socially and environmentally responsible solutions. We seek a high standard of performance, and understand that great ideas can change the world. Currently we are looking for two (2) Senior Sedimentary Petrologists in Houston, TX.

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If you are interested in further pursuing this opportunity, please visit our website at www.shell.us/careers (position reference number: **U25815**)

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Just write out your ad and send it to us. We will call you with the word count and cost. You can then arrange prepayment. Ads received by the first of the month will appear in the subsequent edition.

Wold Family Professorship in Environmental Balance for Human Sustainability

Cornell University, located in Ithaca, New York, is an inclusive, dynamic, and innovative Ivy League university and New York's land-grant institution. Its staff, faculty, and students impart an uncommon sense of larger purpose and contribute creative ideas and best practices to further the university's mission of teaching, research, and outreach.

The Department of Earth and Atmospheric Sciences at Cornell University is searching for a visionary Earth scientist to fill the new Wold Professorship in Environmental Balance for Human Sustainability. We seek candidates with significant experience and a strong reputation in the energy and/or minerals industry who can lead innovative research and establish connections between industry and academia. The appointment is a part-time position on a 5-year term (renewable). The position is ideally suited for an individual seeking flexibility for external commitments.

Sustaining human well-being while meeting the continuing needs to supply energy and mineral resources will require effective communication and a wise balancing of natural availability, new technologies, environmental systems, and human needs. The Wold Professor will be expected to conduct scientific research that helps the academic community, industry and government develop a sustainable supply of natural resources. Through classes, research projects, and other activities the Wold Professor will help students understand the scientific challenges and insights that relate to and derive from resources so that they can become global leaders in this field. The successful candidate will also be able to contribute to or lead faculty research teams that tap the very large range of capabilities available at Cornell. A Ph.D. and at least 3 years of experience in the minerals, energy, or similar industries are required.

Applicants should submit a curriculum vita, a research statement, a statement summarizing teaching experience and goals, leadership efforts, contributions to diversity, and complete contact information for at least three references. An automated message will be sent. Applications will be accepted until the position is filled, with review beginning on October 1, 2011.

The Department of Earth & Atmospheric Sciences and the College of Engineering at Cornell embrace diversity and seek candidates who will create a climate that attracts faculty and students of all races, nationalities and genders. Cornell University seeks to meet the needs of dual career couples, has a Dual Career program, and is a member of the Upstate New York Higher Education Recruitment Consortium to assist with dual career searches. Visit **http://www.unyherc.org** to see positions available in higher education in the upstate New York area.

Cornell University
Cornell University is an affirmative action/equal opportunity employer and educator

To apply: Application materials must be submitted on-line at **https://academicjobsonline.org/ajo/jobs/840**

FACULTY POSITION IN GEOPHYSICS

ConocoPhillips SCHOOL OF GEOLOGY & GEOPHYSICS
The University of Oklahoma

The University of Oklahoma invites applications and nominations for a tenure-track or tenured faculty position in geophysics. The rank and salary are open but preference will be given to candidates at the Assistant or Associate Professor level. Exceptionally well-qualified applicants may be appointed to an endowed professorship. A Ph.D. degree in geophysics or a closely related field is required.

The successful candidate is expected to add significantly to the University's long-standing geophysics and geology education and research programs. The successful candidate must have an excellent, demonstrated research record in relevant areas such as exploration geophysics or crustal seismology, and is expected to establish and lead a strong multidisciplinary research program. The position includes many opportunities to work closely with geophysical, geological, and engineering colleagues within the Mewbourne College of Earth and Energy. Our preferred applicant will have demonstrated, hands-on expertise in one or more fields such as 3D seismic acquisition, processing, modeling, seismic imaging, array seismology, or seismic tomography. The candidate will be expected to supervise M.S. and Ph.D. students, be an excellent educator, and have a dual commitment to both undergraduate and graduate education.

The Mewbourne College of Earth & Energy possesses extensive industry-standard software and well-equipped and maintained computing labs for seismic reflection processing, analysis, and interpretation on both PC and LINUX platforms as well as seismic refraction data analysis and rock properties laboratory facilities. Excellent field equipment for seismic and potential studies is also available. Additional information about the College and the entities that it houses can be found at http://mcee.ou.edu.

Review of candidates will begin November 1st, 2011 and continue until the position is filled. The anticipated starting date is August 1st, 2012. Applicants are requested to submit a complete vita/resume, statement of research and teaching interests, and a list of five references who can be contacted, including names, phone numbers, e-mail addresses, and complete mailing addresses. Questions or requests for additional information and nominations may be addressed to Dr. G. Randy Keller at (405) 325-3821, or grkeller@ou.edu. Applications should be addressed to Dr. Keller at University of Oklahoma, Sarkeys Energy Center, 100 E. Boyd Street, Norman, OK. 73019-1008.

The University of Oklahoma is an Affirmative Action, Equal Opportunity Employer. Women and Minorities are encouraged to apply.

DIRECTOR'S CORNER

Accelerating Toward the Future

By DAVID CURTISS, AAPG Executive Director

AAPG manages and operates a multitude of diverse programs and services – but if you were to ask me to explain what we do, I'd say we have two important tasks:

- First, promoting and disseminating the science and technology needed to meet the world's growing energy needs, particularly for petroleum.
- Second, the Association has an essential role in ensuring the availability of a competent, professional and global geosciences work force to find and responsibly produce this energy.

These two tasks embody AAPG's core purpose, expressed in our strategic plan, "to advance the science and profession of energy-related geosciences worldwide." This purpose is as relevant today as when the Association was founded in 1917.

It is quite a responsibility and no small task.

* * *

As I was formally introduced to AAPG leaders and staff as the Association's ninth executive director in August, I spoke about three broad themes to guide our actions in achieving AAPG's purpose:

First, we need to **build and enhance AAPG's global brand**.

Our strategic plan envisages a future where petroleum geoscientists around the world see AAPG as not just relevant, but "indispensible" to their scientific and professional development.


CURTISS

I believe that AAPG's future is tied directly to its ability to respond quickly and creatively to these changes.

That means consistently enhancing the value that AAPG delivers to its members – and clearly communicating that value – to maintain and increase our membership from all sections and regions.

It also means explaining to a broad and diverse audience the role we play in society. It is our responsibility to explain to our families, friends, neighbors and politicians why what we do as AAPG members matters to them. AAPG is not simply a group of scientists who happen to work in petroleum. We are an association of professionals who discover, produce, regulate and research the energy resources that power the world.

The public needs to understand that.

Second, we must **focus on quality and excellence in programming**.

In an organization of 35,000 members there is no shortage of programmatic ideas worth considering – but having the human and financial resources needed to implement all of them is another matter. So, we have to make choices, be innovative, try new things and discard old things to meet the changing needs of our members and ensure the continued health and stability of the Association.

Excellence in our products and services is not optional. It is the essence of being indispensable. And we need to develop new products and services that help our current members do their jobs better, attract new members and enhance our global reputation.

Third, we must be ever **faster, nimbler and embrace change**.

Our focus at AAPG headquarters and in our regional offices must be on responsiveness to AAPG members, innovation in products and services and offering and embracing new ideas. The purpose is not change for its own sake, but rather to create a culture that enables us to nimbly and effectively respond to our members' evolving needs.

Every one of us on staff plays an important role in achieving this objective.

AAPG's Executive Committee, leaders and member volunteers work closely with the Association's staff to identify emerging opportunities and new realities. Our world is accelerating – and I believe that AAPG's future is tied directly to its ability to respond quickly and creatively to these changes.

This is the kind of organization we need to be. And the great news is that our Association is well on its way, thanks to the past and present contributions of AAPG's leaders and members around the world, and the diligent and dedicated work by our staff in Tulsa and the regional offices.

I look forward to working closely with David Lange in his new role as deputy executive director, the directors, managers and staff to support President Paul Weimer and the Executive Committee as they lead the Association.

And I look forward to meeting and working with you. Because AAPG is not a building in Tulsa, or a meeting you attend, or a publication you read. It's us – all 35,000 of us – working together to build a global association of professionals that we are proud to be a part of.

We've come a long way since 1917. And as we approach AAPG's second century it's time to hit the accelerator.

An exciting future awaits us.

DIVISIONS' REPORT

DPA Sets Objectives for the Year

By MARTY HEWITT, DPA President

As mentioned in my July EXPLORER column, the DPA continue to build on last year's business plan that was formulated by Dan Tearpock's Executive Committee – and to kick-off our 2011-12 term, our DPA EC held a half-day summit in early August along with key committee chairs to brainstorm our objectives for the term.

Our main themes are:

- International Presence – We now have councilors representing all of the AAPG's Regions with the exception of Latin America. DPA President-elect **Charles Sternbach** is actively recruiting councilor positions for the 2012-13 term for both the Regions and Sections.

I've asked Charles to explore ways to get our councilors more engaged in representing their Sections and Regions going forward.

- Membership – **Rick Fritz** is the new chair of our Membership Committee.

The DPA needs to build a compelling case for new members. What's the DPA value proposition? What is our current state and where do we want to be? What is our purpose and has that changed with time? Does our membership process need to be more welcoming?

What can we do to enhance our diversity – are we underrepresented in various categories?

A subcommittee including Charles Sternbach, Rick Fritz, **Dan Billman** and **Paul Britt** are exploring new "revenue growth engines" and will be reporting their findings at the DPA mid-year meeting on Nov. 5.


HEWITT

For years DPA has been the training ground for Association and industry leaders.

At Leadership Days in Boulder in mid-August, our Young Professionals showed tremendous interest in getting engaged with the DPA. A DPA "member-in-training" concept was discussed and will be explored by a subcommittee led by Dan Billman and a team from the Young Professionals Committee, who also will report at the November meeting.

- Gathering and Learning – Paul Britt is chair of our Conventions programming. Programs were planned for the recent Eastern Section meeting in Washington, D.C. (Energy Policy Forum), and are being planned for the upcoming Mid-Continent meeting in Oklahoma City (short course and luncheon), AAPG International Conference and Exhibition in Milan, Italy (panel and luncheon), Annual Convention and Exhibition in Long Beach, Calif. (panel – TBD – and luncheon with PROWESS). Unfortunately, no events have been planned for GCAGS due to budget restrictions.

The committee also is working on programs for the 2012 Southwest Section meeting in Fort Worth, Rocky Mountain Section meeting in Grand Junction, Eastern Section meeting in Cleveland, Gulf Coast Section meeting in Austin, ICE in Singapore and the 2013 ACE in Pittsburgh.

- Government Affairs – Our presence in Washington is more important than ever. The AAPG's Executive Committee re-authorized the GEO-DC office in their June meeting.

As you know, *David Curtiss* has recently been appointed as AAPG's new executive director (see above) – congratulations to David on his appointment! – but his departure from GEO-DC leaves a big gap in our Washington leadership.

In the interim, the GEO-DC Board of Governors will be responsible for the office until we find a replacement for David.

The GEO-DC office plays a valuable role for the AAPG membership, and our goal is to assure that its operating level of excellence persists.

* * *

Those of you who are Delegates will recall that at last year's HoD annual meeting in Houston legislation regarding the addition of a Certified member category was defeated, as the required 2/3 delegate vote was not achieved.

Through **Terry O'Hare**, the chair of the Survey Sub-Committee of the AAPG Membership Committee, we will be gathering data for the potential re-consideration of the "certified as a member class" Bylaw amendment proposal for the next HoD meeting in Long Beach.

* * *

DPA represents the professional leadership of AAPG, and for years has been the training ground for Association and industry leaders. In addition, we provide the best peer certification in the industry.

If you are a professional geoscientist then you should join DPA.

This will be great for your career!

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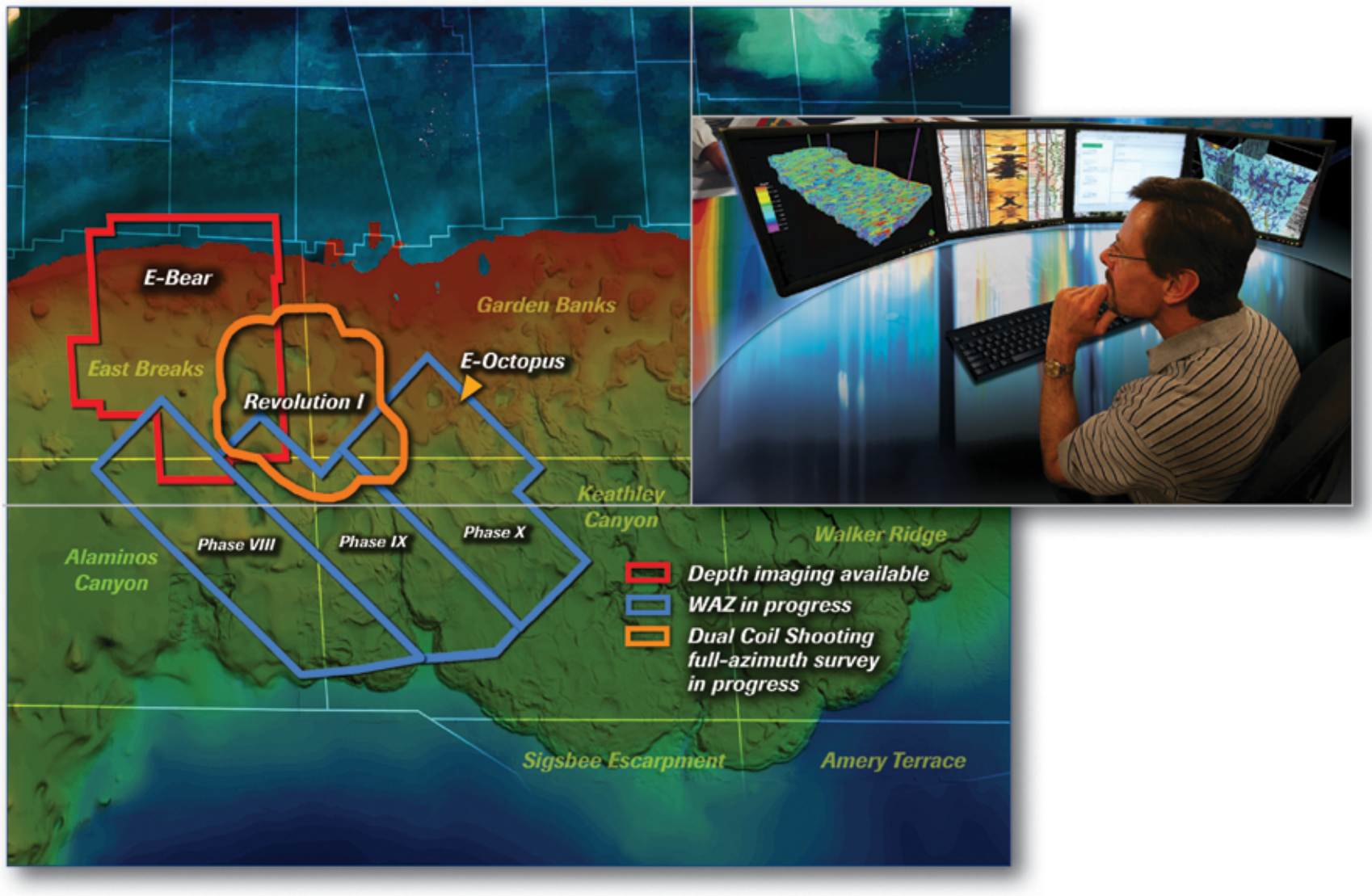

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