



# AAPG **EXPLORER**

MAY 2010

## **Treasure of Sierra Madre**

Finding clues in understanding  
Gulf of Mexico petroleum systems

See page 10





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**PRESIDENT'S COLUMN**

# Jobs for the World's Future Oil Finders

By JOHN C. LORENZ

A common theme emerged recently in the course of talking to groups of enthusiastic and energetic AAPG student members at Imperial College, Aberdeen University, and the Imperial Barrel Award competition in Bahrain: "We're graduating soon. Will there be jobs in the industry for us?" This concern derives from the uncomfortable contrast between the last few years when most graduating students had been snapped up quickly, and hiring this year, which has been slow due to the economic downturn.

Although it's not an immediate comfort to this year's graduating student, several converging trends demand that inevitably there will be jobs. Population growth, per capita oil consumption, the remaining global oil resources, and the average age of geologists now in the industry will intersect to make things "interesting," and to provide opportunities for new graduates, probably sooner than later.

► Global predictions show the world's population is growing exponentially, which will drive up the demand for energy because, as Bobby Ryan, chair of the AAPG Corporate Advisory Board notes in his lectures, "They're all going to be energy consumers." The problems created by the world's mushrooming population will probably be more important, immediate, and intractable than any worries about climate change, but that's another discussion.

► Take any expert's projected global oil-consumption curve, and while they differ in detail they all agree that consumption will increase as long as



LORENZ

Job openings for geologists are inevitable because the demand for fossil fuel can only increase in the next few decades, and because the pool of geologists is diminishing.

there's production capacity to support it. U.S. demand may have diminished slightly in the last year but this decrease is temporary, and globally demand has essentially diminished only in its rate of increase. Not only is each new person

going to be an energy consumer, there will also be an increasing per capita demand for energy.

► Now take any estimate you care to use for the world's fossil-energy

reserves. Even if you double the largest estimate it's still finite, and alternative energy sources are still in their infancy. Geologists will be needed to locate the increasingly small and difficult-to-find hydrocarbon reservoirs.

► Finally, use any of the demographic measures of the present age distribution for geologists in the work force; they all show a large population of gray-haired geologists nearing retirement.

Job openings for geologists are inevitable because the demand for fossil fuel can only increase in the next few decades, and because the pool of geologists is diminishing.

Unfortunately the job opportunities needed by students and which will ultimately benefit the industry itself are not in evidence at the moment. The oil and gas industry is driven by the economy and by near-term financial returns, and today's short-term outlook doesn't support employing large groups of geoscientists. Most companies do not employ geologists unless they plan to keep them very busy, even at the risk of not having enough geologists when the next active cycle occurs.

But the industry's own long-term health should also be a concern to that industry, and even though, as noted by AAPG European Region president Dave Cook, computerization has made geologists individually more productive\*, long-term industry health requires a stable, experienced work force, and



Frank Brown's acceptance of the Sidney Powers Award was among the highlights of the recent AAPG Annual Convention and Exhibition in New Orleans. More than 5,900 attended the April meeting. A full report will be included in the June EXPLORER.

See President, next page

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Photo by Chris Heine

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## ON THE COVER:

Los Muertos isoclinal anticline cored by Upper Jurassic evaporites (right out of the photo), as seen in this dramatic view of the northern limb formed by Cretaceous carbonates, Sierra Madre Oriental fold-and-thrust belt, northeast Mexico. The locale is not just spectacularly beautiful, it's also an important clue to understanding petroleum systems in the Gulf of Mexico – a topic explored in a new AAPG memoir. See related story on page 10. Photograph by Mario Aranda.

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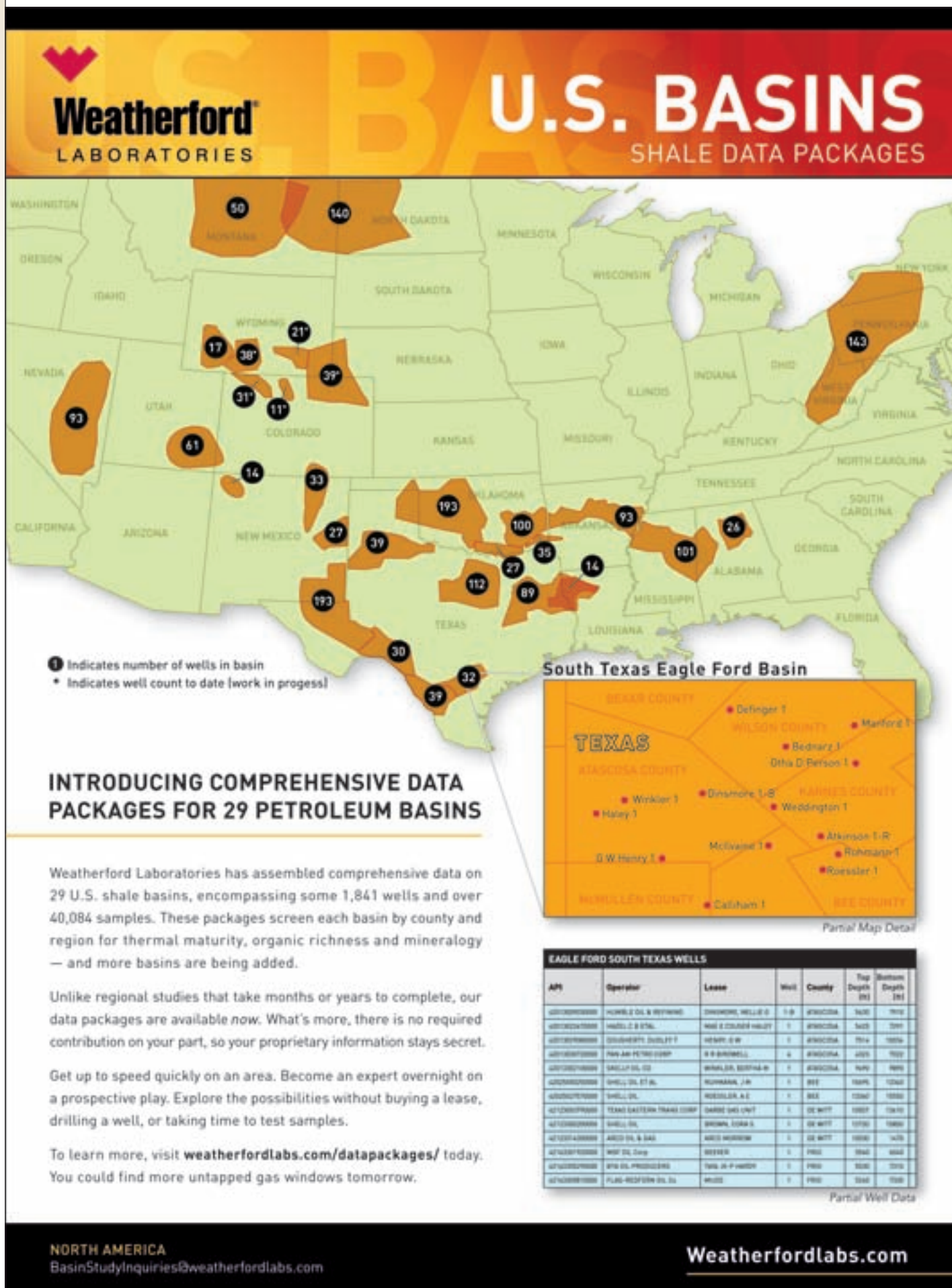
# AAPG, NSF Sign MOU for Funding

The MOU will be in force from July 1 to July 1, 2015, at which time it may be renewed.

**President**  
from previous page

I am confident the jobs will be there before long because of the realities of population growth, energy demand, and energy supply, and because of the industry's own self interests. **Students:** Be optimistic, but be patient and persistent. Face-to-face networking is crucial, so get to meetings, give talks, and make a point of meeting potential employers. Posting resumes online is important but it isn't enough. AAPG offers a variety of student and regular programs that help get you started. **Employers:** Look to the longer-term future and start building tomorrow's work force of experienced geologists with jobs today.

John Greig





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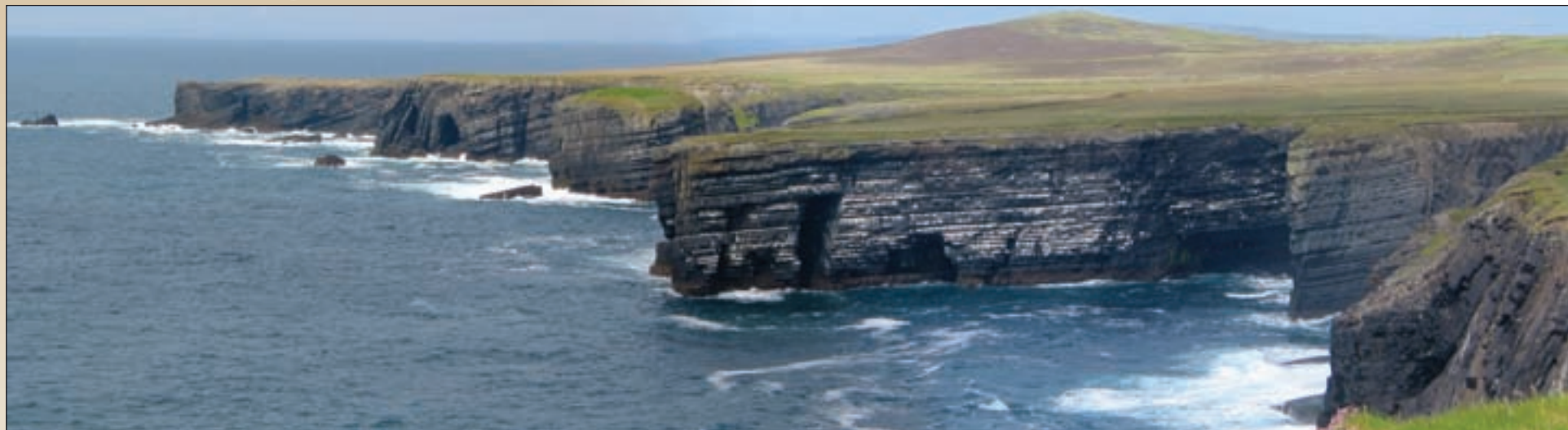
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# Presentation Awards Pile Up for Pyles

BY BARRY FRIEDMAN, EXPLORER Correspondent

In tennis or golf, it would be something like winning the Grand Slam – garnering four prestigious awards in a one-year span.

All right, it's taken David R. Pyles, technical research manager, Chevron Center of Research and Excellence, two years to win two J.C. “Cam” Sproule awards, a Wallace E. Pratt Memorial Award and SEPM Best Poster Presentation award.

Then again, Tiger hasn't won all four majors in a calendar year, either.

But considering Pyles is not yet 35 and once didn't even care for the profession for which he now works and writes award-winning papers, let's not quibble over a few months.

“The only reason I took a geology course,” he says, thinking back to his days at California's Riverside Community College, “was to fulfill the science requirement.

“The college offered a car mechanic certification program (his first love),” he said. “In the process of pursuing certification, I took a few additional classes so I could get an associate's degree.”

Needless to say, Pyles, who is now research professor in the Department of Geology and Geological Engineering at the Colorado School of Mines, petroleum geology was ultimately more interesting than rebuilding a 2.2L short block.

But it wasn't just the science itself that fascinated him; it was the communication of that science to others.

“It was the special relationship between the geology itself and the writing or reports and papers.

“My work in academia has given me the perspective that it is my responsibility to report research to the community through publication and presentations at annual meetings,” he said.

“My Ph.D adviser, James Syvitski, taught me that ‘publication is the currency of our trade,’ meaning that in the academic sector, publication means everything in route to credibility.”

## The Write Stuff

And Pyles knows how to trade in that currency.

Since 2000, Pyles has been awarded 10 times for his papers and presentations, including an A.I. Levorsen Award and numerous oral and poster presentations.

“Writing is one of the most important parts of the research process. In order to



PYLES

“These mentors ... taught me that you must be a critical reader before you can become a successful writer.”

secure grant money to do field work, one must construct a well-written proposal.”

He should know.

In the last six years, his work as principal investigator for Chevron's Center of Research Excellence and as principal investigator for Laser Assisted Analogs for Siliciclastic Reservoirs at the Bureau of Economic Geology has resulted in more than \$4 million in grants.

Pyles says it's not just a matter of knowing the material, but knowing how to sell it.

“The data and conclusions arising from the ensuing fieldwork must necessarily be communicated in as effective a fashion as possible to be published,” he said.

Pyles' talent may be in understanding that the work of a geologist is not just the work done when his head is facing down.

“A great degree of one's credibility lies not only in what one produces but in how one is able to communicate,” he said.

“To that end, writing about fieldwork is arguably nearly as important as fieldwork itself.”

## One Great Machine

So how did this come about – especially for one whose favorite course in high school was wood and metal shop?

“In the four years following high school I worked full-time in warehouses, construction and retail,” he recalled, but it was in that lone geology class he learned that the things he enjoyed about being a car mechanic were essentially the same as those associated with being a geologist.

To him, that meant looking at the earth as if it were a machine.

“To be a good car mechanic you must have an intuition for physics and math and how automobiles work,” Pyles said. “The same is true for a geologist;

however, your knowledge is of the earth.

“It was during that class that I abandoned my goal to be a car mechanic and I decided to pursue geology – a decision I have never regretted.”

Specifically, the J.C. “Cam” Sproule Award, which Pyles has now won two years in a row (and only one other person has done that in the award's 36-year history; see next page related story, page 8), is given to an AAPG member, 35-years of age or younger, whose paper is sufficiently outstanding and judged to be the best contribution to petroleum geology.

Pyles, whose research topics include stratigraphy, sedimentology, clastic facies analysis, tectonics and sedimentation, won this year's award for his paper on “Multiscale Stratigraphic Analysis of a Structurally Confined Submarine Fan: Carboniferous Ross Sandstone, Ireland.”

## Inspirations – and Instructions

Pyles, a research professor at the Colorado School of Mines, obviously, loves to teach, but he reserves a special place for the profession.

“There are many great benefits to a career in academia,” he says, “however, because of limited resources, there is little recognition for achievement. Awards from associations like AAPG are very special because they provide high-visibility recognition for exceptional performance.”

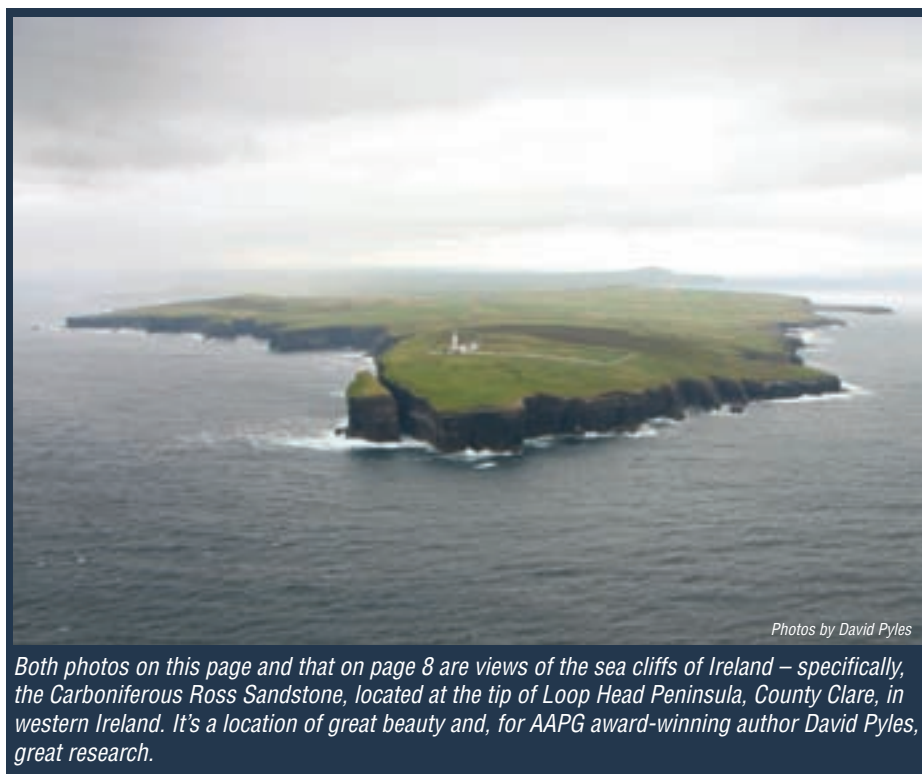
The skills, he says, didn't always come so naturally.

“During my experience as a geology student, I had the opportunity to study with master teachers and scientists who inspired me to constantly examine my research practice,” he said. “These mentors gave me many gifts, but the most important one was to access my critical and creative potential. They taught me that you must be a critical reader before you can become a successful writer.

“Since then, my writing skills have been honed through the peer-review process,” he continued. “The reviewers of my articles played an important role in improving readability and impact.”

But there's just so much you can learn from within the profession.

“Also,” he says, “my wife is an English teacher who's been busily schooling me in the writing skills I was supposed to learn 20 years ago.”



Photos by David Pyles

*Both photos on this page and that on page 8 are views of the sea cliffs of Ireland – specifically, the Carboniferous Ross Sandstone, located at the tip of Loop Head Peninsula, County Clare, in western Ireland. It's a location of great beauty and, for AAPG award-winning author David Pyles, great research.*



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# Pyles' Current Research Looks at Ireland Analogs

BY VERN STEFANIC, EXPLORER Managing Editor

**W**alking across a stage to receive an honor for his work wasn't a new experience for AAPG award winner David Pyles.

That's because Pyles, this year's J.C. "Cam" Sproule Memorial Award winner, was also last year's J.C. "Cam" Sproule Award winner.

What is special about this year's award is that Pyles' work also was honored with the Wallace E. Pratt Memorial Award.

The Sproule award goes to the author of the best paper by a member who is 35 or younger; the Pratt award honors the year's best paper in the BULLETIN by a person of any age.

"When I learned that I won the Pratt and Sproule awards for 2010 I was shocked and very proud – I could not believe that I won two awards for one article!" Pyles said. "This is an honor that I will remember for the rest of my life."

Pyles' multiple award-winning paper appeared in the May 2008 BULLETIN, titled "Multiscale Stratigraphic Analysis of a Structurally Confined Submarine Fan: Carboniferous Ross Sandstone, Ireland."

"The Ross (sandstone) contains some of the most laterally continuous exposures of turbidites in the world and is an excellent outcrop analog for hydrocarbon reservoirs in sand-rich, distributary submarine fans

deposited in structurally confined basins," Pyles explained. "This article uses measurements of stratigraphic architecture from these exceptional exposures and younger strata in the basin-fill succession to interpret that each formation in the shallowing-upward succession reflects its own depositional system related to an evolving landscape, and each was sourced from a different direction."

The study also quantifies vertical trends in stratigraphic architecture of the Ross Sandstone and analyzes them in a statistical manner against regional stacking patterns to test the significance of external controls on reservoir heterogeneity.

"The analysis reveals that sediment supply, source area and depositional area are statistically related to local stratigraphic architecture of submarine-fan strata including diversity of architectural elements and percent sandstone," he said.

The results, Pyles added, are interpreted to suggest that large fans have more architectural diversity and have more reservoir heterogeneity than their smaller counter parts.

"Several physical similarities exist between submarine fan strata in the Ross Sandstone and ponded strata in northern Gulf of Mexico minibasins," he said. "They include size and shape of architectural elements, percent sandstone, regional stacking patterns and size and shape of the overall submarine fan."

"Based on these similarities," he concluded, "the Ross Sandstone is interpreted as an excellent outcrop analog for ponded strata in structurally confined submarine fans including those in northern Gulf of Mexico."



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Pyles currently is working with his graduate students and colleagues at Chevron on outcrops of fluvial through deepwater strata in many different basins around the world. Current field areas besides the Clare Basin in Ireland include:


- Morillo, Guaso, Sobrarbe and Escanilla Formations in the Ainsa basin-fill succession in Spain.

- The Lewis Shale, Fox Hills Sandstone and Lance Formations in Wyoming's Greater Green River Basin.

- The Pt. Loma Formation, Capistrano Formation, Scripps, Ardath, Modelo and Towsley formations in southern California.

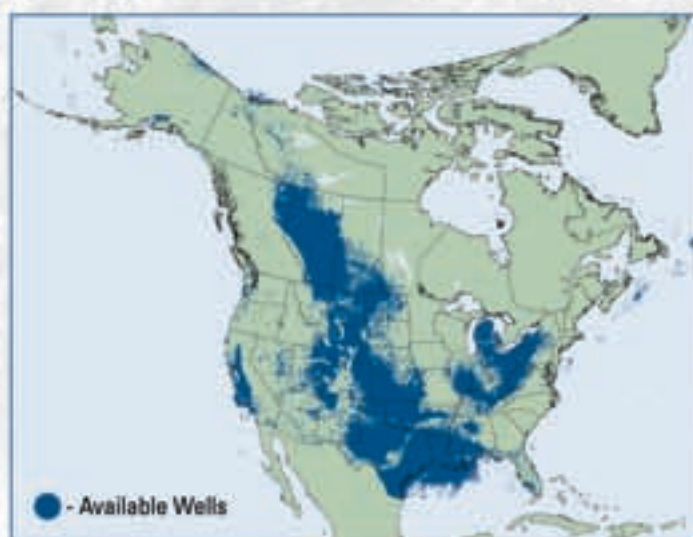
"My research goal is to use outcrop analogs to improve the understanding of structure/stratigraphy interactions in depositional settings," he said. "Quantitative outcrop characterization allows us to develop empirical rules that can help our industry colleagues reduce uncertainty in the interpretation of subsurface data."

Pyles is the second person in AAPG history to win both the Sproule and Pratt awards in the same year. The first occurred in 1988, by Shanker Mitra, who holds the Monnett Chair and Professorship in Energy Resources at the University of Oklahoma, and conducts an active research program on the application of structural geology to hydrocarbon exploration and production.

Mitra also received the 2007 Pratt award. 



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*Petroleum systems emphasized***Memoir Explores Southern GOM Geology**

By LOUISE S. DURHAM, EXPLORER Correspondent

**A**fter being derided as the Dead Sea a decade ago, the Gulf of Mexico has experienced what inarguably can be best described as an awesome turnaround in the realm of exploration and production.

Today, it's one of the single largest suppliers of oil and gas to the U.S. markets, according to the MMS.

Some of the ongoing action is kind of mind boggling considering there not only are big finds being tapped but they can be in such disparate areas of this big body of water.

For instance, Shell reportedly is beginning production from the deepwater Lower Tertiary Trend at its Perdido project, which was 10 years in the making. The Perdido complex will handle production from three deepwater fields. It's said to be the first project to achieve commercial production of oil and natural gas from this frontier play area in the ultra-deep environs of the GOM.

Almost simultaneously, McMoRan Exploration has hit what appears to be a Big One on the shallow water shelf with its approximately five-mile deep Davy Jones discovery, which some analysts estimate may hold between two and six Tcf of reserves.

But the GOM is a mighty big area, and there's still a lot more to learn – and explore.

**Indispensible Information**

Technical meetings, books and papers are indispensable to help get up to speed on a locale, and if the southern Gulf is what turns you on, AAPG Memoir 90 is a must-have.

The newly published book – *Petroleum Systems in the Southern Gulf of Mexico* – is the result of a cooperative agreement between Spanish oil company Repsol and Mexico's national oil company, Pemex, according to Repsol senior geologist and AAPG member Claudio Bartolini.

Additional funding support for the book was provided by the AAPG Foundation.

Bartolini and Pemex senior geologist Juan R. Roman Ramos co-edited Memoir 90.

"This is the first international book comprised of papers from geoscientists in Pemex and the Mexican Petroleum Institute," Bartolini said. "The book focuses on the southern Gulf of Mexico prolific onshore and offshore basins with an emphasis on the petroleum systems."

He emphasized that it's a multi-disciplinary book that presents a wide range of topics. The lengthy list includes:

- ▶ Organic geochemistry.
- ▶ Petroleum systems analysis.
- ▶ Salt tectonics.
- ▶ Petroleum prospectivity evaluations.
- ▶ Geophysical interpretation.
- ▶ Basin modeling.
- ▶ Petrophysics.
- ▶ Stratigraphy and sedimentology.
- ▶ Structural geology and tectonics.
- ▶ Biostratigraphy and paleontology.
- ▶ Sediment provenance studies.
- ▶ Potential fields.

But why such emphasis on the southern Gulf, you ask?

Bartolini explained succinctly.



BARTOLINI

**"Until now, there was little information available on the geology and petroleum potential on the Mexican side of the Gulf."**



Photo by Claudio Bartolini

*San Julian Anticlinorium in northern Zacatecas State, central Mexico. Vertical ridge-forming limestones of Oxfordian Zuloaga Formation are well-exposed along the area. Thin section of redbeds – possibly La Joya Formation (Middle Jurassic?) – underlie Zuloaga (left side of picture next to cliff), and the rest of the outcrops in the left (including the slope) are terrestrial volcanic-sedimentary sequences of the latest Triassic-Early Jurassic Nazas Formation. The Nazas sequences record two deformational events: a) in mid-Jurassic time, and b) latest Cretaceous-early Tertiary time (Laramide Orogeny).*



Photo by Juan R. Román Ramos

*Jackup platform drilling Carpa Field, Cretaceous Golden Lane, Tampico-Misantla Basin, Mexico.*



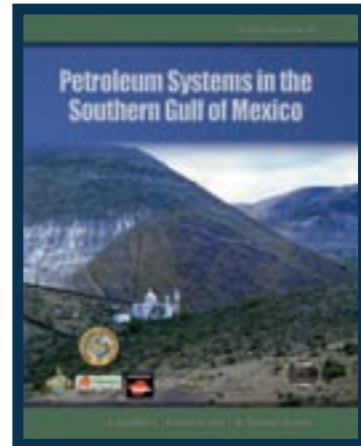
Photo by Juan R. Román Ramos

*Fixed production platform at Mesozoic Akal Field, Campeche Shelf, southern Gulf of Mexico.*



Photo by Claudio Bartolini

*Outcrops along the Sierra Madre Oriental fold-and-thrust belt in northeast Mexico (Nuevo Leon State). Lower red hills on the right side of picture are Early-Middle Jurassic redbeds (rift stage) of La Joya Formation, which are overlain by white evaporite layers (transitional stage) of Early Oxfordian age (Minas Viejas Formation), and capped by marine gray limestones (drift stage) of Oxfordian Zuloaga Formation (Smackover Formation equivalent). Dips against hill.*



"The oil industry in the U.S.A. has long been exploring the northern part of the Gulf of Mexico, including exploration in deep waters near the border with Mexico," he noted. "Unfortunately, until now, there was little information available on the geology and petroleum potential on the Mexican side of the Gulf."

**Distribution and Diversity**

Memoir 90 is very much an information turning point.

Bartolini emphasized the book addresses critical aspects of the GOM regional geology, especially the structural geology and structural styles of Mesozoic and Cenozoic successions and their influence on oil and gas accumulations offshore the southern part of the Gulf.

"Salt and shale tectonics are for the first time analyzed in a petroleum exploration context," he said. "Offshore Salina and Isthmus basins in the southern Gulf have great petroleum potential associated with shale diapirism and allochthonous salt."


Memoir 90 includes an overall analysis, description and distribution of the principal petroleum systems in the southern Gulf of Mexico. This is complemented by geological modeling and geochemistry studies of selected areas with the intent to understand the evolution of petroleum systems through time.

"Distribution, type and generative potential of the different source rocks are analyzed," Bartolini said. "Also, distribution of oil families and their correlation to the prolific areas offshore are presented."

The bulk of the contributed articles address diverse geologic aspects associated with oil and gas exploration, including play analysis, sediment provenance analysis and biostratigraphy of offshore and onshore wells not previously published.

The practical information-packed book even goes into detail about the palynology of Lower Middle Jurassic redbeds and the paleontology of Jurassic source rocks.

Once you have a copy in your possession, it no doubt will become a permanent addition to your library.

"This book is a must for exploration geologists and geophysicists, research scientists, faculty and students who want to learn about the new exploratory knowledge on the petroleum geology of the Mexican Gulf of Mexico," Bartolini emphasized. 

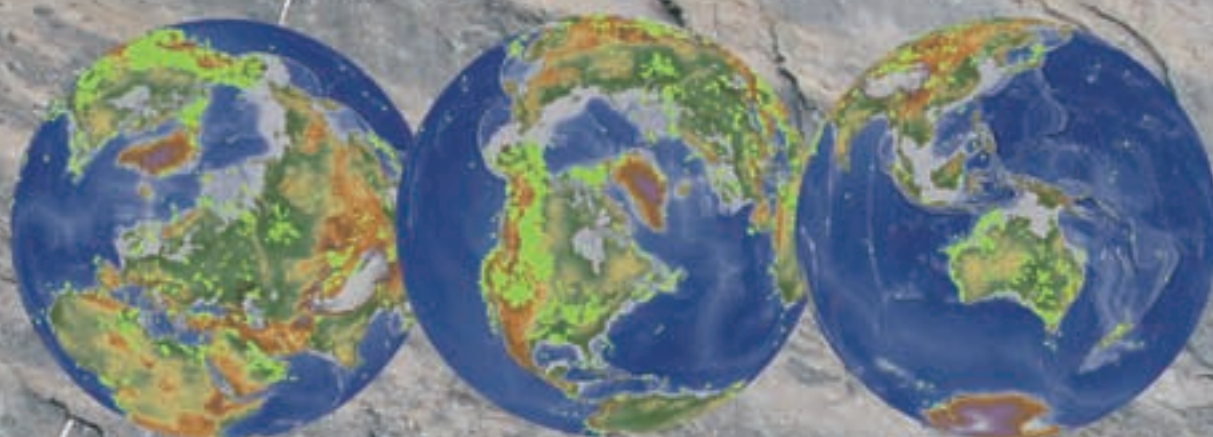


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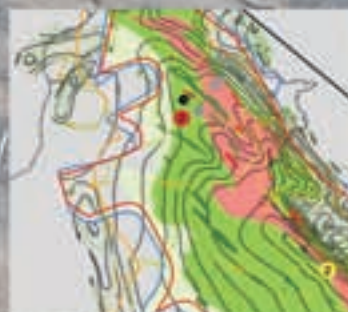
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# Regions Feel Cautious E&P Optimism

By VERN STEFANIC, EXPLORER Managing Editor

**D**eepwater plays, oil shale projects and a possibly overlooked potential of heavy oil in a surprising location are among the dynamics that are bringing a cautious optimism to exploration activities in three very key parts of the world.

Leaders and industry officials cite many challenges, too, but the overall potential of three very large and very important international regions remains solid – and, in some cases, strong enough to bring a smile among veteran observers.

That's the word for this second EXPLORER look at the good, the bad and the sometime ugly side of exploration in three of AAPG's global regions.

As reported in the February issue, the EXPLORER will be taking periodic, specific looks at the general state of exploration and other professional-related activity around the world, mainly through contacts with AAPG's Region leadership.

After all, in addition to being important strategic bodies for Association activities and structure – plus key tactical communication channels for internal AAPG operations and promotion – Region leaders by definition speak to members throughout their spheres of interest. And they listen.

They're also uniquely wired to the latest industry developments. They know where the seismic crews are heading. They know about the latest technological creations – and where they're being used. They know the latest breakthroughs in scientific thoughts and understandings.



AAPG Regions

They know who is doing what, where.

This month, the focus was on activities in the Canadian and Asia-Pacific Regions, using as our sources:

□ **David A. Dolph**, completing his second year as the Canada Region president. He is with Nexen Petroleum International, Calgary.

□ **Joseph J. Lambiase**, serving his second term as the Asia Pacific Region president. He is with Chulalongkorn University, Bangkok, Thailand.

Various sources familiar with Middle East activities provided information for regional reports found on pages 14 and 28.

The presidents and other sources were asked the same questions regarding exploration activities, developments and potential in their respective Region.

The intent was to raise the profile of AAPG's Region leadership while providing a valuable glimpse into the international arena. Their answers are below.

## Canada Region

An overriding theme for the Canada Region always has been its close ties with the United States, especially in regards to providing a secure, stable supply of energy to them from a friendly neighbor to the north, Region president David Dolph said.

This relationship is becoming increasingly important in today's volatile political and uncertain financial arenas – but it is being tempered by increasing environmental constraints, both within Canada and the United States, largely focused on Canada's oil

sands developments, he added.

Dolph, who talked with several CR delegates as well as various industry personnel across Canada, sees the industry experiencing a gradual return to “normal” after the serious recession in 2009.

“There is a cautious optimism about recovery, but due to recent mergers and previous work force reductions there are a large number of geoscientists looking for work, with new graduates having a particularly tough time finding permanent positions,” he said. “This applies both in the western provinces as well as the East Coast of Canada.

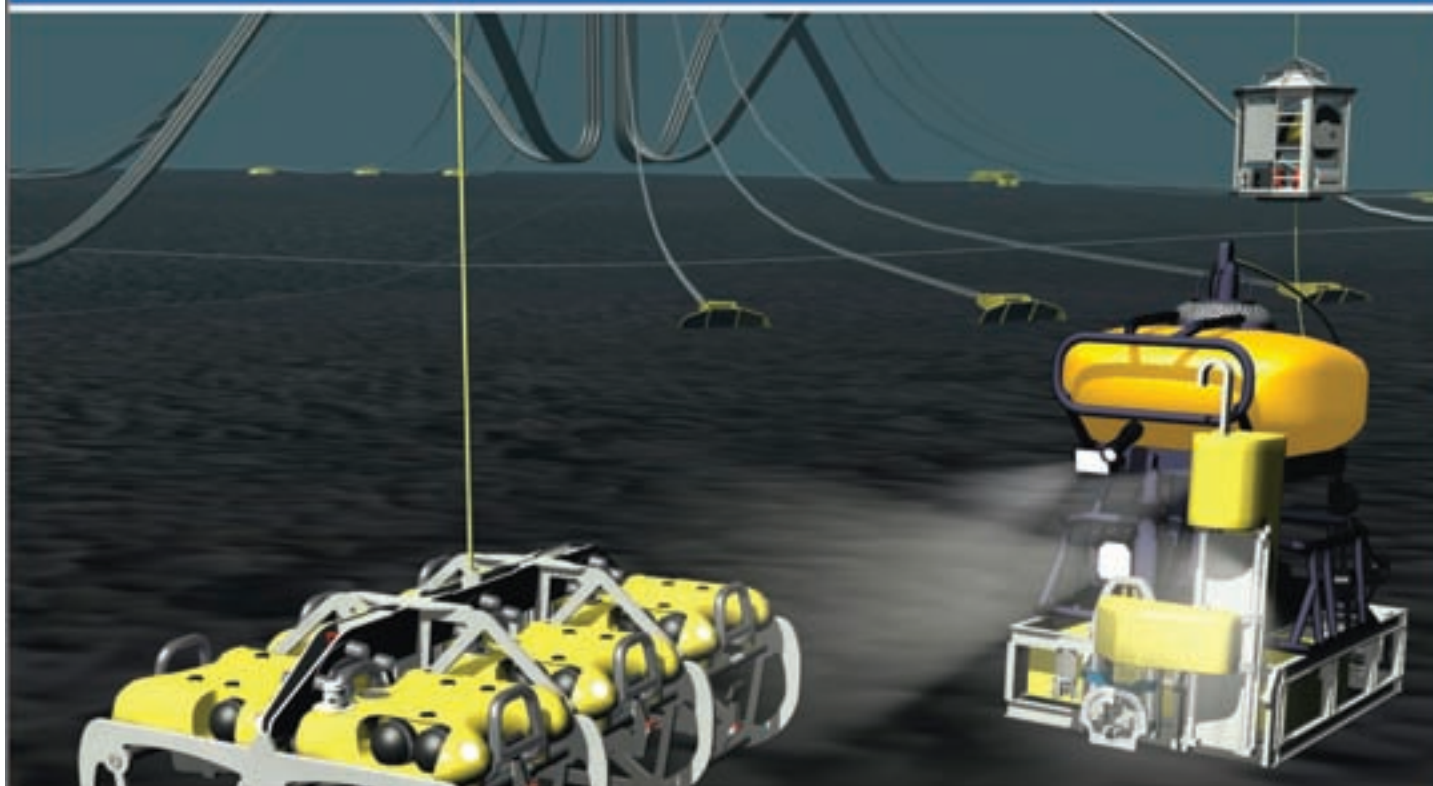
“In regards to new graduates, this will have a negative effect in regards to lower enrollment in the next few years, but a positive opportunity for AAPG to become more involved in building student chapters and providing support for these students, who will see the value of developing close ties with the AAPG and other geoscientific associations,” he said.

As for the industry itself:

- ▶ Oil sands are seeing acceleration in project announcements.
- ▶ Alberta gas activity, such as conventional and coal bed methane, is depressed – as are gas prices.
- ▶ British Columbia shale gas projects continue to attract investments with royalty regimes being a big factor in attracting investments, with British Columbia and

See **Regions**, page 29

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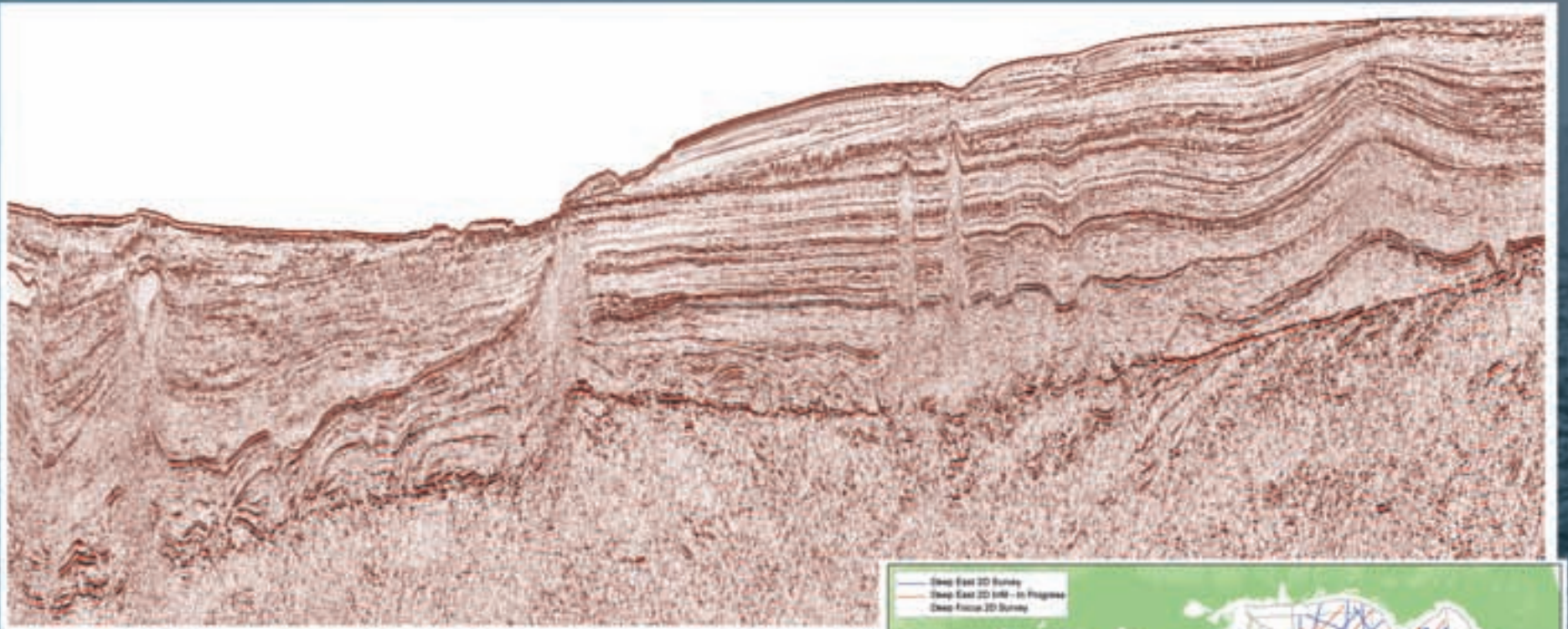
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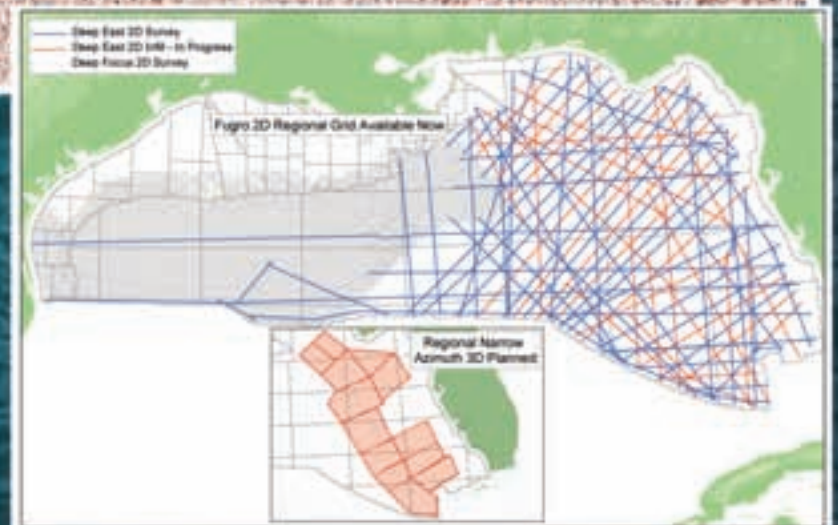
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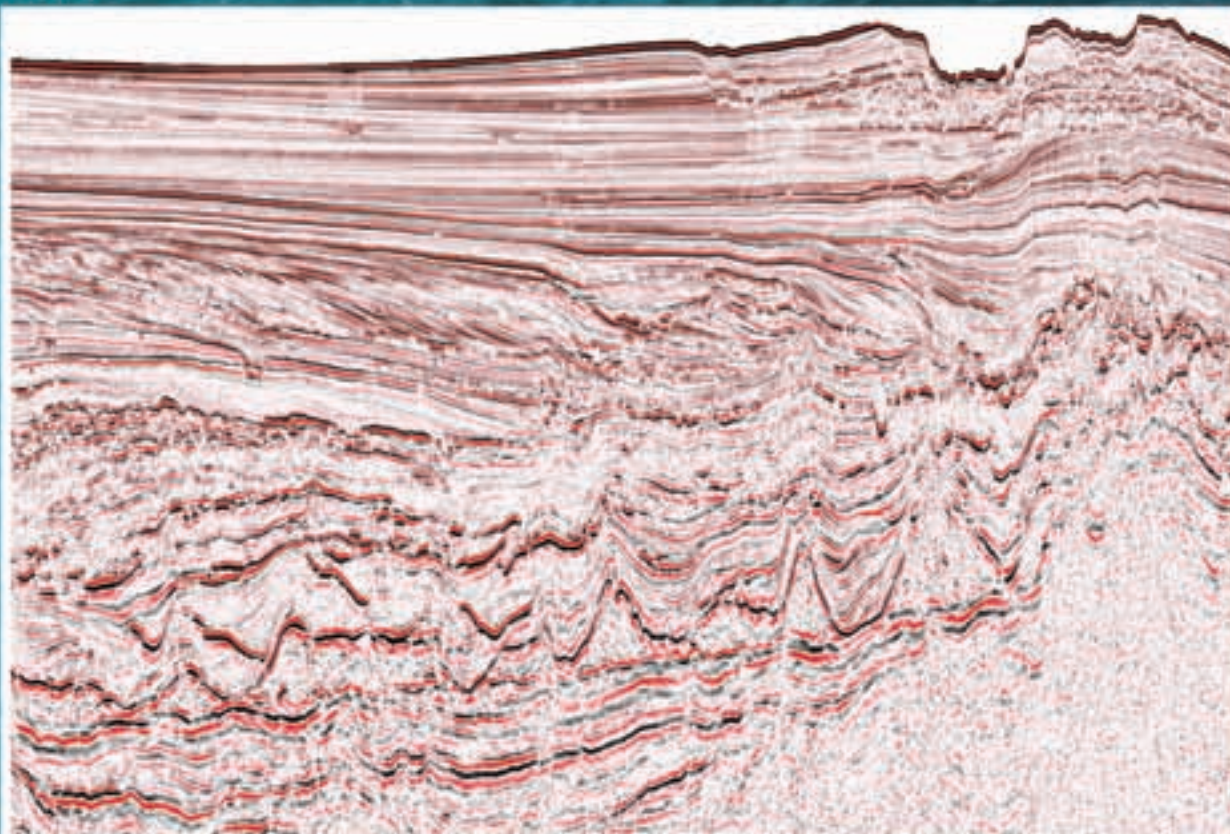
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*Fuel of the future?*

# Heavy Oil Rises in Middle East Mix

By LOUISE S. DURHAM, EXPLORER Correspondent

It's a given that the many giant oil fields in the Middle East harbor immense volumes of crude oil – principally the highly prized light, sweet kind.

In fact, this region might best be dubbed the light oil capital of the world.

Perhaps this accounts for the fact that the heavy oil resource there has been overlooked in large part.

Estimates of this resource base vary considerably.

For example, Schlumberger and the U.S. Geological Survey estimate heavy oil resources to be 500 Bbo and 971 Bbo, respectively,



BUZA

according to AAPG member John Buza, senior advisory geologist at Chevron Corp.

He noted, however, that both available

**“People wouldn’t give you the time of day 10 years ago if you were trying to peddle this heavy stuff – but today, we’re running lean on the easy-to-get kind.”**

proprietary databases and published data for certain fields suggest a much lower stock tank original-oil-in-place resource

base of perhaps 120 Bbo.

Buza presented a paper titled “An Overview of Heavy Oil Carbonate Reservoirs in the Middle East” at the recent AAPG Annual Convention and Exhibition in New Orleans.

Relatively little heavy oil is being produced currently in this region, but the resource has the potential to replace or increase production overall to some extent should the global demand/supply situation justify this scenario. Ultimate recovery from the heavy oil fields depends on oil viscosity and the ability to lower it.

The copious quantities of light oil in the Middle East are found in carbonate reservoirs for the most part. Heavy oil is no exception.

Buza, commenting prior to the New Orleans convention, noted heavy oil carbonate fields in the region produce via two different mechanisms. The more dominant is low matrix permeability, fracture dependent production, found in producing fields such as Qarn Alam in Oman and Issaran and Bakr-Amer in Egypt.

These type reservoirs can cause operators to quaff their daily max of headache meds.

“Owing to their low matrix porosity and permeability and complex distribution of fractures, fractured heavy oil reservoirs are one of the most difficult and heterogeneous reservoir types to develop,” Buza said.

“Reservoir quality and heterogeneity vary from one reservoir type to another,” he noted. “The highly variable porosity distribution and uncertainty in fracture density and quality make definition and delineation of net reservoir thickness nearly impossible.”

## The Bottom Line

The other category of heavy oil carbonate field production is matrix permeability-dependent production.

The Wafra heavy oil field in the Partitioned Neutral Zone of Kuwait and Saudi Arabia is a significant example of a field having sufficient matrix permeability to enable economic cold production – i.e., no heat injected into the reservoir – without substantial fracture enhancement.

Steam injection pilot studies are ongoing at Wafra, which produces in the neighborhood of 86 thousand barrels a day (TBD) of heavy oil. This provides more than half of the approximately 150 TBD of current heavy oil production from carbonate rocks in the Middle East, which accounts for 0.5 percent of total oil production in the region.

Both steam and CO<sub>2</sub> EOR projects have been implemented in various heavy oil reservoirs in this part of the world.

“These have both proved effective in increasing EUR,” Buza said. “But it’s met with varying degrees of success, depending on rock fabric and even more importantly on the initial viscosity of the oil and the capability to lower it.

“Actually, bona fide heavy oil carbonate reservoirs (<22 degree API gravity) represent modest future production for the Middle East region compared to the current production and substantial EUR from conventional light oil reservoirs,” Buza emphasized.

“The whole theme of why people are looking at this resource is that obviously the light oil, the cheap oil is becoming scarce everywhere,” he said. “That’s the bottom line why this is going on.

“People wouldn’t give you the time of day 10 years ago if you were trying to peddle this heavy stuff,” Buza emphasized. “But today, we’re running lean on the easy-to-get kind.”



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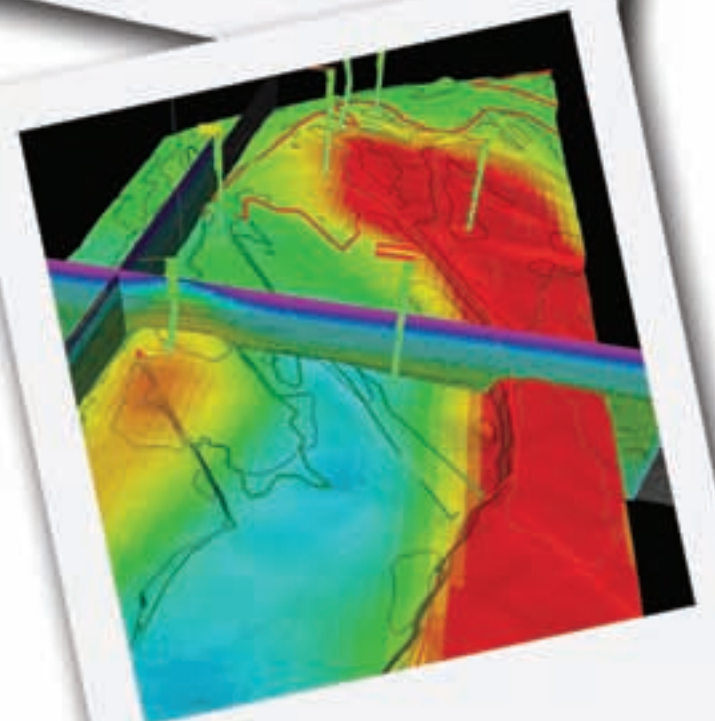
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*Matson: A name associated with success*

# Oilfinders' Scion Carries On Oilfinding Tradition

By DAVID BROWN, EXPLORER Correspondent

**W**hen Shane Matson was in college he received a collection of geological studies.

The books had sentimental value in his family, but they were a little overwhelming for a student with limited living space.

"It was 15 boxes of books, and when you're in college you're thinking, 'What am I going to do with this? These are maps of Osage County. That will never be relevant,'" recalled Matson, now an AAPG member and a geologist with Spyglass Energy Group in Tulsa.

The collection of studies was compiled by his great-grandfather, George C. Matson, a famed petroleum geologist. George Matson served as the fifth president of AAPG, following the estimable (and near-legendary) Wallace Pratt.

Shane Matson earned his degrees in geology from the University of Arkansas and joined Tulsa-based Ceja Corp. in 2003, initially working with Ceja's seismic crew as a juggie and eventually getting an assignment to work a horizontal Mississippi chat play in – where else? – Osage County, Oklahoma.

George Matson had made his fortune there. He acquired a lease in an area that turned out to be the heart of the Burbank Field, a super giant major mid-continent oil discovery that ultimately produced more than 120,000 barrels per day.

By fall of 2003, Shane Matson was



*Thomas Matson (above), in 1962 near Hennessey, Okla., working for Jerod Street of Chatanooga, Tenn.*

*George C. Matson (below, on the right), on the job in Columbia, South America, in 1916 – hired by the Mellon family, he was there overseeing the work of several geologists.*



*Photos courtesy of Shane Matson*

working on a horizontal well play in the Osage County tripolitic chert, "just a township away from where my great-grandfather bought a lease that changed his life," he said.

"It was probably the opportunity of a lifetime for me. The only horizontal wells of real importance in Oklahoma at that time were coalbed methane," he noted.

Ceja's vice president of exploration, AAPG member Ron Snyder, allowed Matson and two colleagues (engineer

Dan Jacobs and AAPG member Ron Haveman) the chance to run with a development project in the Osage County chat.

They were not exactly familiar with the concept.

"I had never heard of the words 'tripolitic chert' before," Matson recalled.

"Welcome to one of the most complex reservoirs in the country," Matson recalled friend, fellow AAPG member and managing partner of Spyglass Energy

Group Charles Wickstrom as saying.

The first challenge for the three was, "none of us had ever drilled a Mississippian chat well," he said. "Collectively, we had five years' experience among us – we had drilled three or four horizontal wells in the Mississippi chat before we drilled our first vertical!"

"It was a great experience," he added. "'Geosteering' was not even coined as a word, so far as we knew, but the three of us managed to put together a methodology that allowed us to learn as we went along – and learn what we did."

## Giants of the Profession

George Matson had a different career path. He left the family farm and went to college to become a doctor, but decided to pursue geology instead.

"He was a very interesting person, like a lot of these explorers who were born in the late 1860s and the 1870s," Shane Matson said. "He was born in Nebraska in a sod hut and was raised, I think, with eight sisters."

After earning a master's degree in geology from Cornell University, George Matson went to the University of Chicago to study for a doctorate.

His son – and Shane Matson's grandfather – Tom Matson, a retired

See [Matson](#), page 18



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## Matson

from page 16

petroleum geologist living in Tulsa, who also has an oil finding legacy, picks up the story:

"Dad had finished his academic work in 1910, but they wouldn't give him his degree unless he appeared in person to accept it. He wasn't about to come back from abroad just to do that," Tom Matson said.

By that time, George Matson had been recruited by the Mellon family, chief financiers of Gulf Oil, and sent to Colombia to study the possibility of acquiring an oil and gas concession.

"They'd go on Mellon's private yacht to South America. They took three geologists – another one of them was



SHANE MATSON

Shorty Wilson," Tom Matson recalled.

George Matson was recruited into the oil business at the University of Chicago and asked to name his starting salary.

"Dad asked for a couple of thousand dollars a year," a significant amount of money in those days, Tom Matson said.

Later, George Matson asked the recruiter how much he'd been prepared to pay. The answer was, "You'd be sick if

"The three of us had known the project was successful, but we were going so fast and furious we never had the chance to look back and see what happened."

I told you," his son recalled.

At about the same time, the noted petroleum geologist Arville Irving (A.I.) Levorsen was beginning his career in Texas and Oklahoma; in the 1920s he lived across the street from George Matson.

In a eulogy, Pratt later said:

"Levorsen's genius for teaching enabled him so to express his ideas on

the occurrence of oil, on the nature of oil fields and on the art of oil-finding as to make them intelligible to all men. As a result, his presence as a speaker at their annual conventions was sought just as eagerly by the independent oil-producers as by his fellow geologists."

### August: Osage County

It was summer in Oklahoma, and Shane Matson initially wasn't sure about the wisdom of taking on the horizontal well project or his own choice of career path.

"It was a questionable move, going to Osage County in August," he said. "The ticks and chiggers are just terrible."

And maybe there is something about August in Osage County, but by June 2005 the company had drilled 17 successful horizontal Mississippian tripolitic chert exploitation wells there.

Shane Matson said "a lot of buzz" developed around Mississippian exploration in northern Oklahoma.

"There is a lot of interest in the Mississippian," he said. "The problem there is, it's very hard to get your hands on what's happening and who is doing what. Within our own companies it is hard to know what is happening."

So he and his colleagues decided to write a paper about their experience in the Oklahoma Mississippian tripolitic chert, with the idea, "Now that the dust has settled, how did things work out?"

"The three of us had known the project was successful, but we were going so fast and furious we never had the chance to look back and see what happened," he said. "We would drill a couple of wells, get them online, then drill another two."

"We rarely looked at the production profiles of each well."

### 'On Top of the World'

George Matson and his wife were expecting a child in 1917. The Mellons sent their yacht to bring the couple back to Tulsa.

"Dad went to work for Gulf and he took the streetcar, which went right up Main Street. He was chief geologist for (Gulf's) Gypsy Oil Company," Tom Matson said.

Gulf started Gypsy Oil to handle its Oklahoma production operations. Gypsy's offices in Tulsa were in a brick building at Cameron Street and North Cincinnati Avenue, now home to the Gypsy Coffee House.

"George left Gypsy in the mid '20s and went to work for J.B. Schermerhorn, where he worked until 1929," he recalled. "He had made a bunch of money in the Burbank and he eventually retired. He found a nice little oil field for Schermerhorn in the 1920s, right by the town of Garnett, Kansas."

That field had the unusual distinction of paying out all of its discovery costs in one week, he said.

In the late 1920s the United States was entering a period of economic decline, leading to vocal criticism of the nation's treasury secretary. That happened to be A.W. Mellon, who had sent the recruiter to Chicago who brought George Matson into the family's oil business.

By that time, George Matson had sold out his leasehold in the Burbank field and was independently wealthy.

"That was the lease that really allowed my great-grandfather to do what he loved, which was the science," Shane

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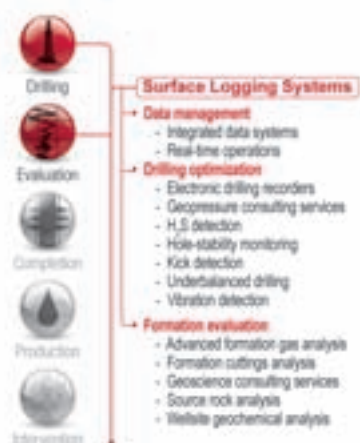
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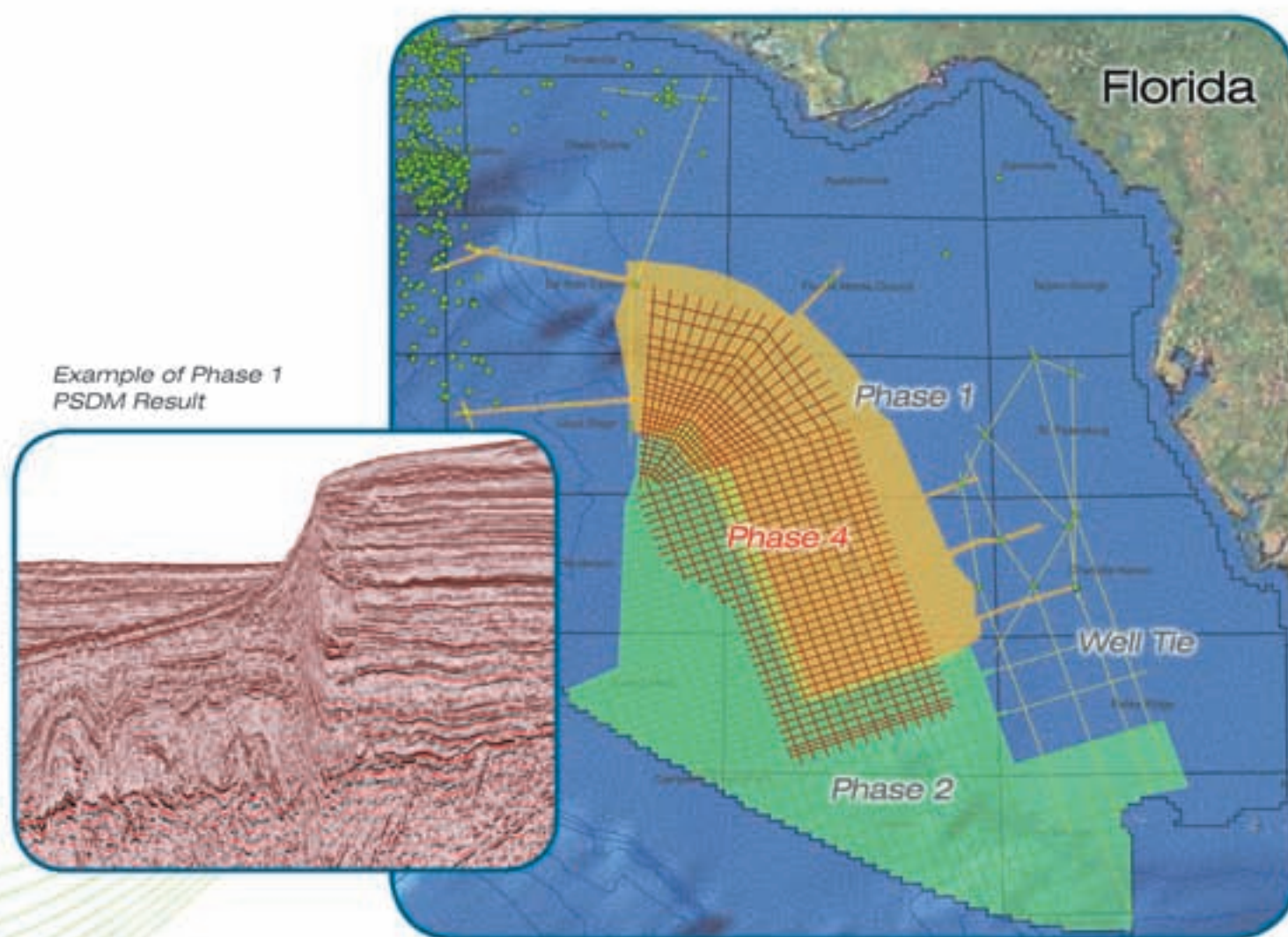
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## Legacy from page 18

Matson said.

"With the Depression hitting, dad was sitting on top of the world," recalled Tom Matson.

### Full Circle

During the next two decades AAPG built up a strong meetings program, high on attendance and collegiality – but lacking in the area of presentations. The skilled delivery of someone like Levorsen was a rare exception.

"They were having a hell of a time with the society," Tom Matson said. "The

talks were lousy and they were terribly delivered. They were just dreadful."

AAPG's leadership decided to institute an award for the best paper presented at the annual meeting, to encourage improvements.


On behalf of AAPG's convention department, the Matson family was approached by the distinguished geologist Elmer W. Ellsworth.

"Lefty Ellsworth promoted me for some money, and I said, 'Sure, we'd be glad to.' We just gave them a bundle of money," Tom Matson said.

That established the George C. Matson Memorial Award, given each year at AAPG's annual convention in recognition of the best AAPG paper presented at the convention the previous year.

A separate award was established for the best papers presented at AAPG section meetings. The A.I. Levorsen Memorial Award recognizes the best paper presented at each of those meetings, with particular emphasis on creative thinking toward new ideas in exploration.

The award is perpetuated by the Levorsen Memorial Award Fund, established in 1966 by Levorsen's friends to create a lasting memorial to him.

At the AAPG Mid-Continent Section meeting in October 2009, Shane Matson and his co-authors Ron Haveman and Dan Jacobs received the Levorsen Award for their paper, "Exploitation of the Mississippi Chat Using Horizontal Well Bores in Osage County, Oklahoma." 

# Cooperation In Oilfield Brings Value

By DIANE FREEMAN, EXPLORER Correspondent

**I**t's a new world for today's geophysical operations – and the new world seems a lot more cooperative than the old.

Energy officials who traditionally relied on in-house groups to drive research and development are finding themselves much more willing – and ready – to partner with other entities to build innovative technologies, says a Houston energy company executive.

"Today's digitized, globalized world requires companies to embrace multiple new models to sustain their innovation engines and remain competitive," said Bob Peebler, chief executive officer of ION Geophysical Corp.



PEEBLER

Peebler was the keynote speaker in March at the 16th annual 3-D Seismic Symposium, a one-day conference in Denver sponsored by the Rocky Mountain Association of Geologists and Denver Geophysical Society.

Speaking to a group of about 700 attendees, Peebler said the boundaries in R&D between independent oil and gas companies, state-owned national oil companies and oil field service and equipment companies continue to blur.

In the past, R&D was viewed as proprietary, while information sharing was frowned upon, he said.

But today various entities now compete and cooperate, "often forming technology development partnerships to address asset development challenges that none of them are well suited to do on their own," Peebler said.

Before the 2008 economic downturn, the energy industry was just buying and selling capacity, he said. There was no real need to invest in new technology when oil prices were increasing.

But now that the country is moving past the financial crisis, "new technology will be much more important, particularly in North America," he said. "It will become increasingly important to not drill marginal wells. There are tremendous challenges now to apply technology."

Back in the 1999-2000 period, ION (formerly known as Input/Output) "was ... total vertical integration" regarding R&D, he said.

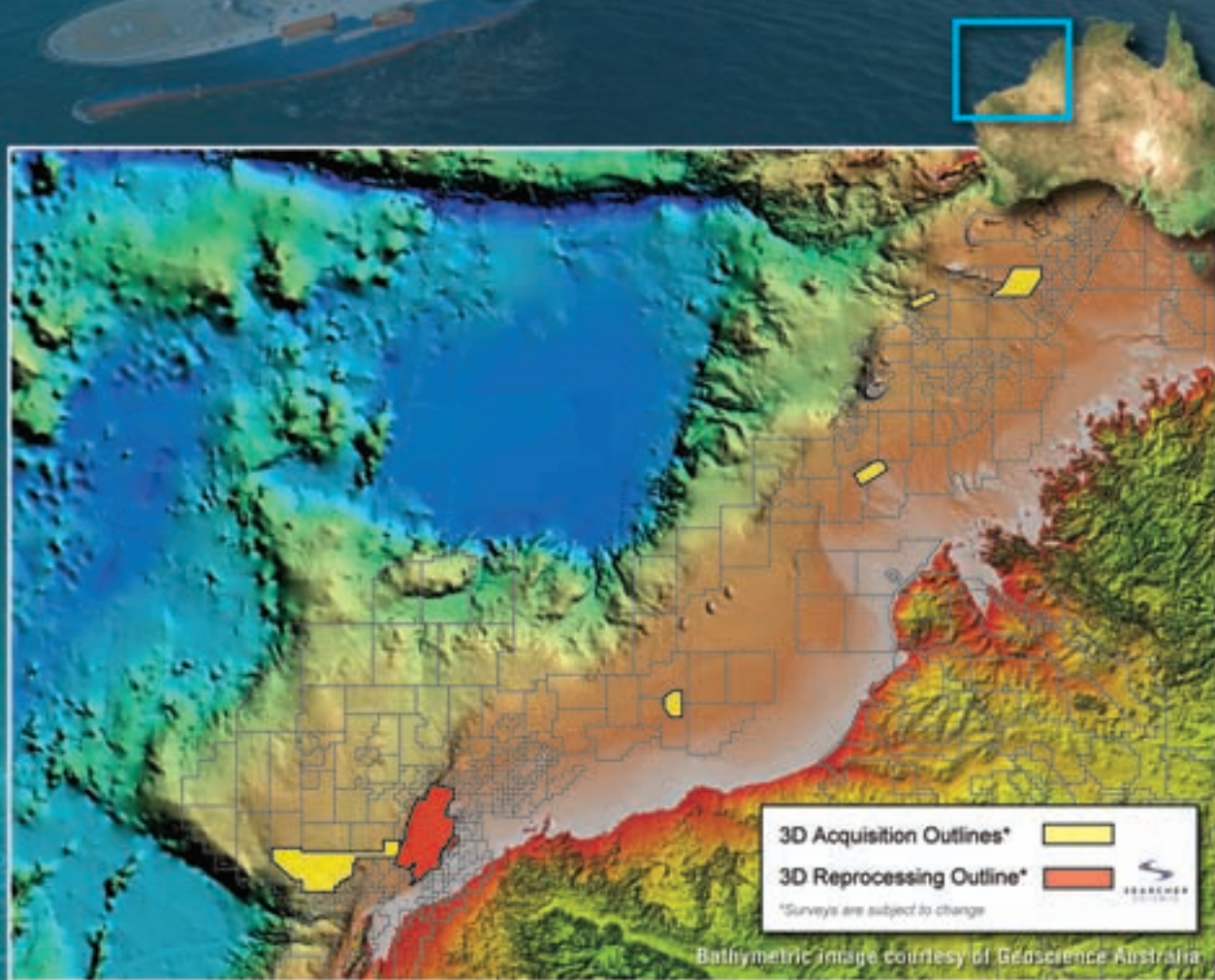
But by the end of this fiscal year the company will spend about \$50 million a year, or 7-10 percent of its revenues, on R&D, and much of that will include outside partners for corporate ventures, trans-border joint ventures, E&P company partnerships and collaboration with universities, he said.

"We're building systems now, not individual products," Peebler said. "It's very seldom that you have the solution yourself. You need partners."

For example, ION worked on the problem of shooting seismic surveys during the extremely short season in the Arctic. "How can you tow streamers under the ice?" Peebler said.

ION partnered with another company to

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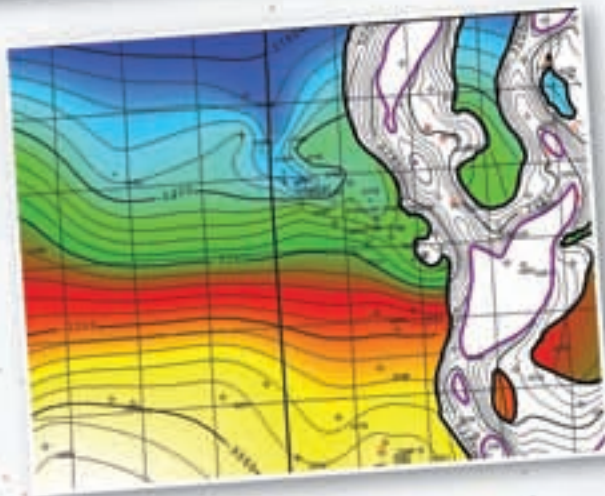
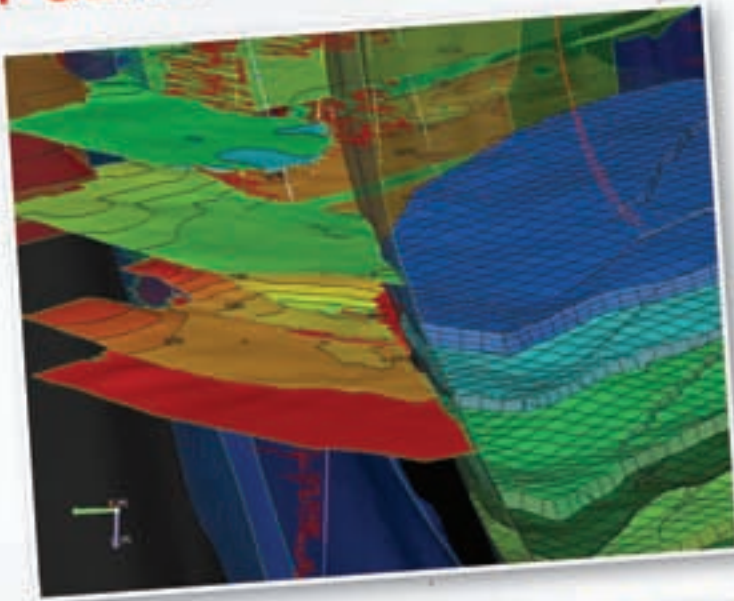
- Eendracht 3D - currently acquiring ~8,000 km<sup>2</sup> in the Carnarvon Basin
- Cartier and Cartier West - acquiring ~3,500 km<sup>2</sup> in the Timor Sea
- Zeemeermin 3D - recent acquisition of ~ 1,160 km<sup>2</sup> in the Browse Basin
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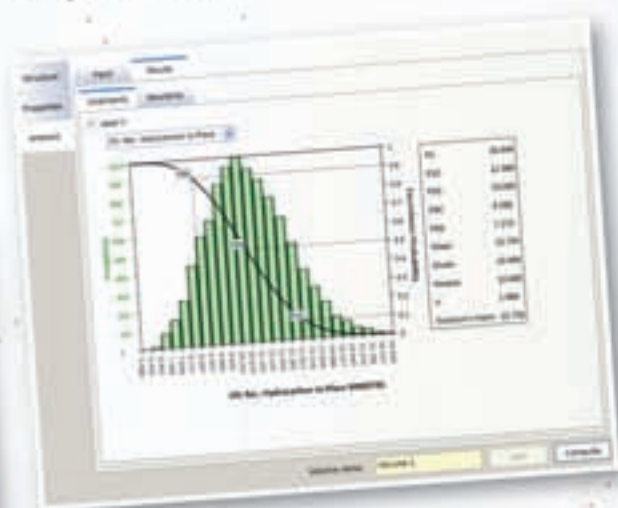
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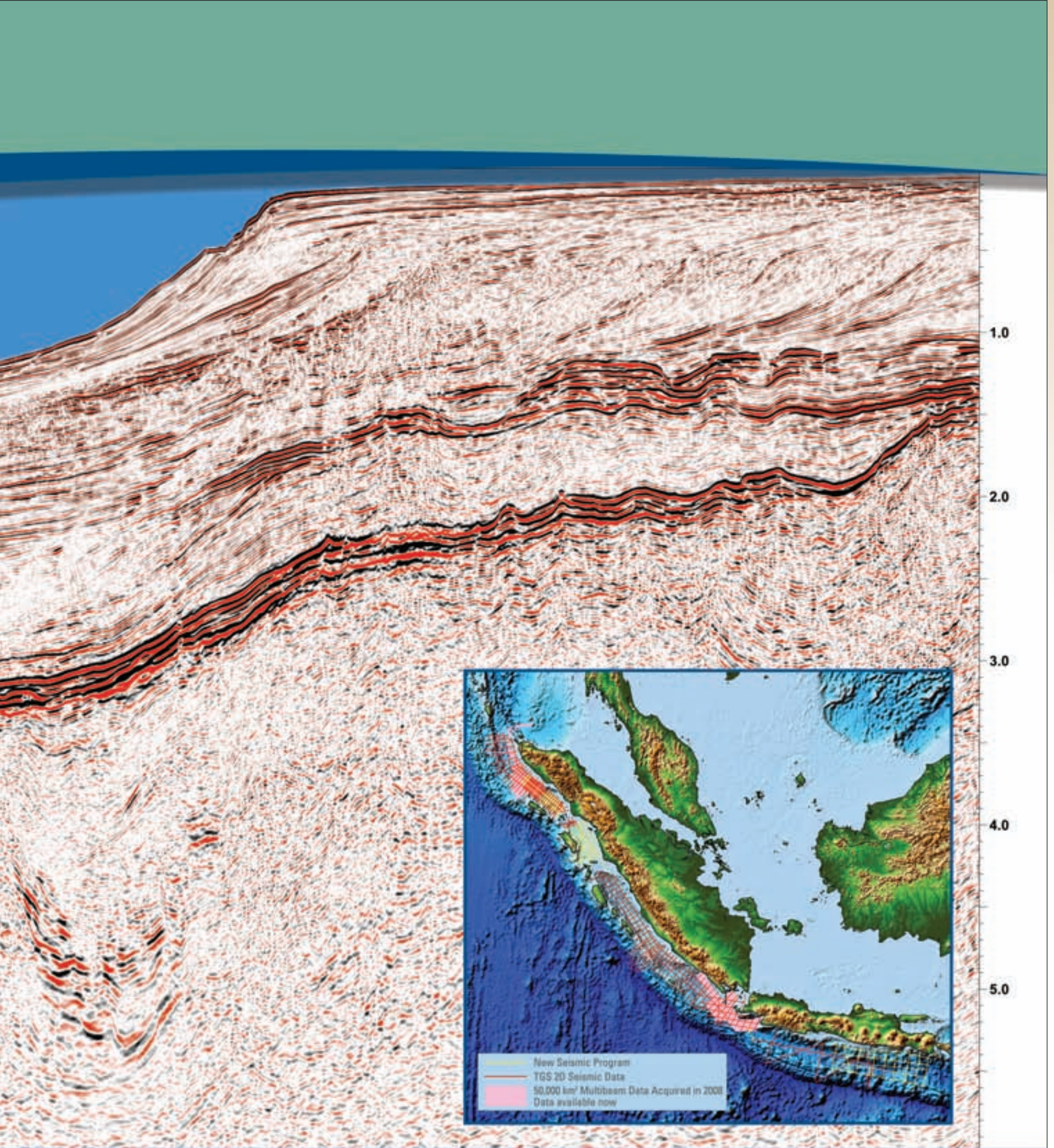
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TGS has acquired 19,000 km of new 2D seismic data, 50,000 km<sup>2</sup> of multibeam data and seven heatflow measurements and has analysed 307 geochemical samples in the Sundaland Margin, which includes North and South Sumatra, Sunda and South Java. Interpretations of Sundaland Margin seismic surveys have shown





the presence of Neogene wrench basins together with earlier Eocene-Oligocene and possible Miocene rift basins. The IDD Sunda core sample program recovered seep-derived oil with a geochemical signature typical of Eocene-Oligocene synrift sediments seen elsewhere in Sundaland.

For more information, please contact below.

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# Looking High and Low for References

By BOB HARDAGE

The fundamental criteria required of a seismic reflection event that is to be used as a reference surface for interpreting thin-bed geology are that the seismic reflection should:

- ▶ Extend across the entire seismic image space and have a good signal-to-noise character.
- ▶ Be reasonably close (vertically) to the geology that is to be interpreted.
- ▶ Be conformable to the strata that need to be analyzed.

Criterion 3 is probably the most important requirement on this list.

\* \* \*

Figure 1 shows a data window from a vertical slice through a 3-D seismic volume that is centered on a channel system that is to be interpreted.

The seismic reflection event labeled "reference surface" was selected as an appropriate conformable reflection for interpreting the thin-bed channel system identified on figure 1a. The reference surface in this case follows the peak of the seismic reflection event on which it is positioned.

Four horizon surfaces labeled A, B, C and D, each conformable to the reference surface, pass through the targeted channel system on figure 1b.

Each of these horizon surfaces can tentatively be assumed to be a reasonable approximation of a stratal surface that intersects the channel system because each horizon is conformable to the selected reference reflection event, and a fundamental thesis of seismic stratigraphy is that seismic reflection events are chronostratigraphic by definition.

Figure 2a shows reflection amplitude behavior on horizon surface B. This horizon surface does a reasonable job of defining the targeted channel system (channel 1) across the lower right quadrant of the display and also depicts a second channel system (channel 2) at the top of the image display.

The image on figure 2a is a horizon-based image, meaning that the seismic attribute that is displayed is limited to a data

window that vertically spans only one data point.

\* \* \*

In challenging interpretation problems, it is important to try to define two seismic reference surfaces that bracket the geological interval that is to be interpreted – one reference surface being below the geological target and the other being above the target. An interpreter can then extend conformable surfaces across a targeted interval from two directions (from above and from below).

Sometimes one set of conformable surfaces will be more valuable as stratal surfaces than the other at the level of a targeted thin bed.

To illustrate the advantage of this opposite-direction convergence of seismic horizon surfaces, a second reference surface was interpreted above the targeted channel system and was placed closer to the target interval. This second reference surface followed the apex of the reflection troughs immediately above the channel system. The two bracketing reference surfaces are shown on figure 3.


The reflection amplitude response on a horizon surface conformable to reference surface 2 and positioned 26 milliseconds below that reference surface is displayed on figure 2b. This image is again a one-point-thick attribute display (i.e. a horizon-based attribute).

The channel systems are a bit crisper in appearance and their geometries are more definitive on this second imaging attempt than they were on the first effort (figure 2a).

\* \* \*

This dual-direction approach to constructing horizon surfaces that traverse thin-bed targets is a concept that often will provide valuable results. An even better approach would be to calculate stratal slices through a bracketed data window – a concept discussed and illustrated in the article published June 2006.

Unfortunately, not all interpretation software provides a stratal slicing option.

In those cases, a dual-direction approach strategy such as described here can be valuable for constructing horizon slices that approximate stratal slices. 

Chinese personnel who speak Mandarin.

"How to shape and make it work is a challenge – we're dealing with cultural differences," he said. "Engineering styles vary across cultures more than you would expect."

ION also has formed co-development and co-deployment partnerships with exploration and production operators. In its FireFly cableless acquisition system, the company is partnering to build a new generation of seismic technologies through a cableless recording system.

"We faced a dilemma of building 10,000 stations in this experiment," Peebler said. Because the cost was so exorbitant, the company invited other energy businesses to invest in this experimental prototype.

When the FireFly cableless system started five years ago, it totaled 8,288 recording points, he said. Now it has expanded to China, Mexico and the United States – and has 89,379 recording points. 

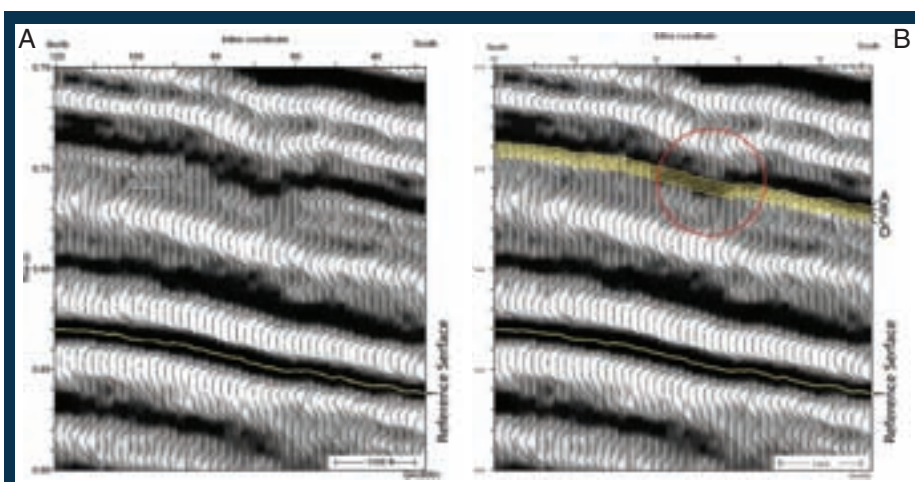


Figure 1 – Vertical slices through a 3-D seismic volume showing a targeted channel system (a) and horizon slices A, B, C and D, which cut through the channel window (b). These four horizon surfaces are approximations to stratal surfaces because they are conformable to the indicated reference surface, which is a chronostratigraphic reflection event. This profile is labeled 200 on figure 2.

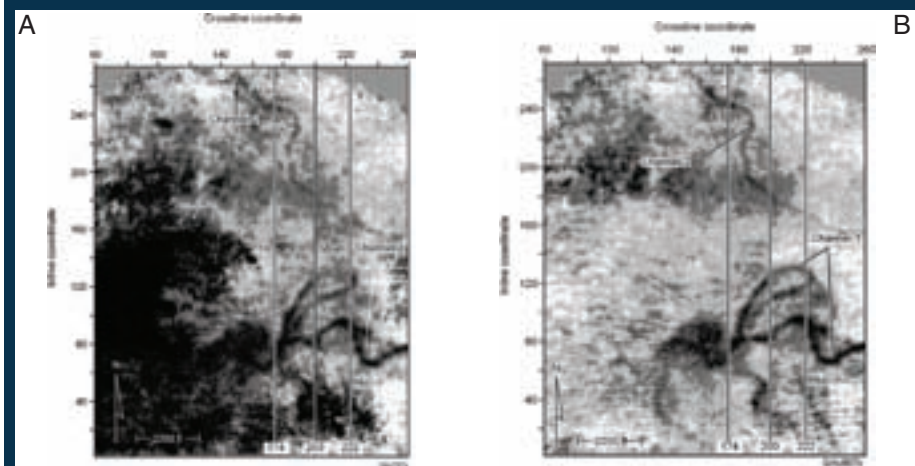


Figure 2 – (a) Reflection amplitude across seismic image space on horizon B (figure 1b); (b) Reflection amplitude across seismic image space on a horizon 26 meters below reference surface 2 (figure 3, below).

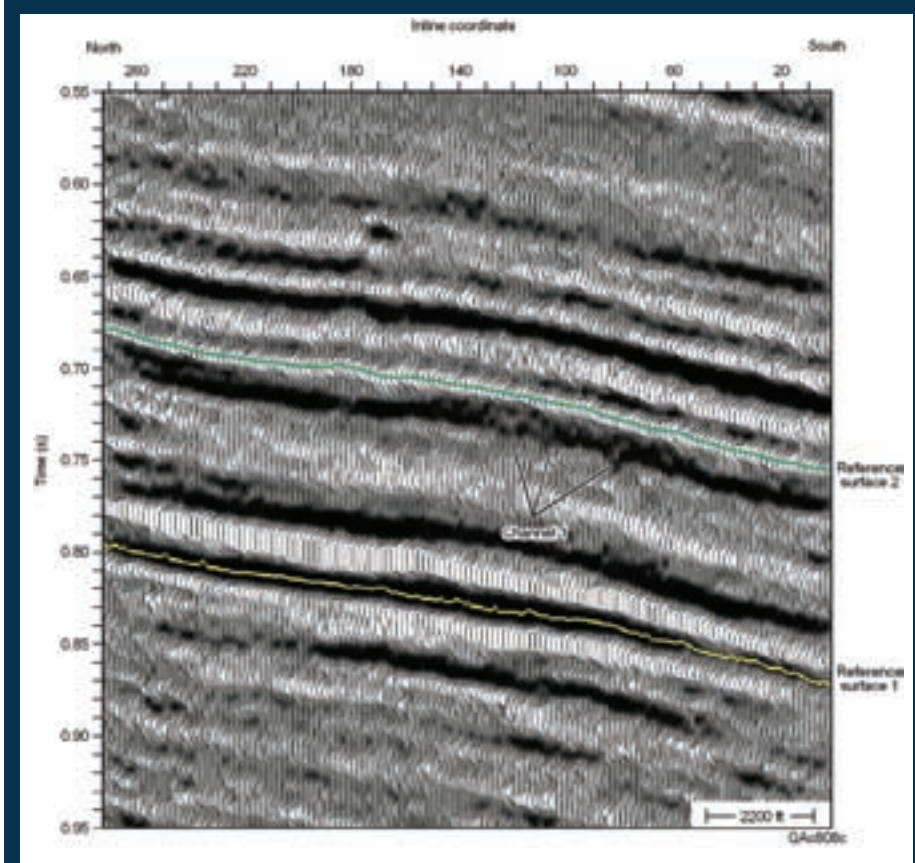


Figure 3 – Seismic profile 222 shown on figure 2. Reference surface 1 is the surface defined on profile 200 (figure 1) below the channel target. Reference surface 2 is a second choice for a reference surface located above the channel that can be used to construct horizon slices that cut through the targeted channel complex.

## Cooperation

from page 20

create a streamer technology that has been implemented in Greenland.

"The next step will be to go from 2-D under the ice to 3-D," he said.

Along with corporate partners, ION also has collaborated with academic partners, including work with the University of Texas on next generation land sources.

It also has developed a virtual trade fair and product development lab to connect with the global customer in cyberspace.

"There's more merger of the virtual world and the physical world," he said. "These are in the experimental stage."

In the arena of trans-border joint ventures, ION is working with a state-owned oil company in China; Peebler said they often use e-mail and video conferencing from its Houston office to confer with





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# Process Begins to Open OCS to Exploration

BY DAVID CURTISS, GEO-DC Director

The media had been buzzing all morning with news that the administration was planning to open additional areas of the outer continental shelf (OCS) to exploration and production as part of a new energy plan.

Flash bulbs popped as President Obama strode to the podium to announce his new energy initiative at Andrews Air Force base in Maryland on March 31. In his remarks, he acknowledged the decision to open additional offshore acreage to leasing was difficult.

"But the bottom line is this," the president said: "Given our energy needs, in order to sustain economic growth and produce jobs, and keep our businesses competitive, we are going to need to harness traditional sources of fuel even as we ramp up production of new sources of renewable, homegrown energy."

The president's plan combined a bit of old and new business. First, it responded to legal concerns raised about the current 2007-12 five-year program and outlines the administration's plans for a new 2012-17 five-year program. The five-year programs are the formal process the Minerals Management Service uses to plan and conduct oil and gas lease sales on the nation's OCS.

It also announced aggressive new fuel standards for cars and light trucks; that the federal government was expanding its fleet of hybrid vehicles and plug-in electric hybrid vehicles; and that the



CURTISS

**"But no single energy source is enough, Oil. Gas. Coal. Nuclear. Sun. Wind. Geothermal. Biofuels. Hydropower. They all need to be on the table."**

Department of Defense was looking at opportunities to diversify away from fossil fuels.

In announcing the Administration's strategy for the OCS, Interior Secretary Ken Salazar framed it in the context of "finally cutting America's dependence on foreign oil, building a clean energy economy that is more secure and prosperous, and protecting our children from the dangers of pollution."

"But no single energy source is enough," the secretary continued. "Oil. Gas. Coal. Nuclear. Sun. Wind. Geothermal. Biofuels. Hydropower. They all need to be on the table."

The Department of Interior announced a preliminary revised program for the current 2007-12 five-year program that responded to the concerns raised by the District of Columbia Circuit of the U.S. Court of Appeals about the environmental analysis that had gone into inclusion of Alaska and Arctic regions in the original program (Washington Watch September 2009).

Interior conducted additional environmental sensitivity analysis to develop the revised proposal, looking specifically at the "the sensitivity to oil spills and other factors, such as sound and physical disturbance, and increased sensitivity due to climate change and ocean acidification."

As a result of this analysis, the secretary made the following determinations:

- ▶ Existing leases in the Chukchi and Beaufort will be honored, as will awards made in the 2008 Chukchi Sea lease sale. However, the secretary removed future lease sales in this region during the current five-year program.

- ▶ The Cook Inlet sale in 2009 was cancelled for lack of interest, but a future lease sale will remain on the schedule.

- ▶ The Bristol Bay area will not have a lease sale, and President Obama signed an executive order withdrawing Bristol Bay from future consideration during the term of his presidency.

- ▶ Lease sales in Virginia and the central and eastern Gulf of Mexico will proceed according to plan, subject to standard reviews of environmental and military activity impact. The secretary plans to make a final decision on the Virginia lease sale by late 2011 or early 2012.

Interior opened a 30-day public comment period on the revised 2007-12 five-year program. After review of those comments, the secretary would issue the final program and the department would then work expeditiously with the D.C. district court to conclude the matter.

The newly proposed 2012-17 five-year program is the administration's response to an extensive review of the OCS leasing program Secretary Salazar launched shortly after being confirmed. This review was prompted by an accelerated five-year program launched by the Bush administration in its final months in office, and which Salazar elected not to continue.

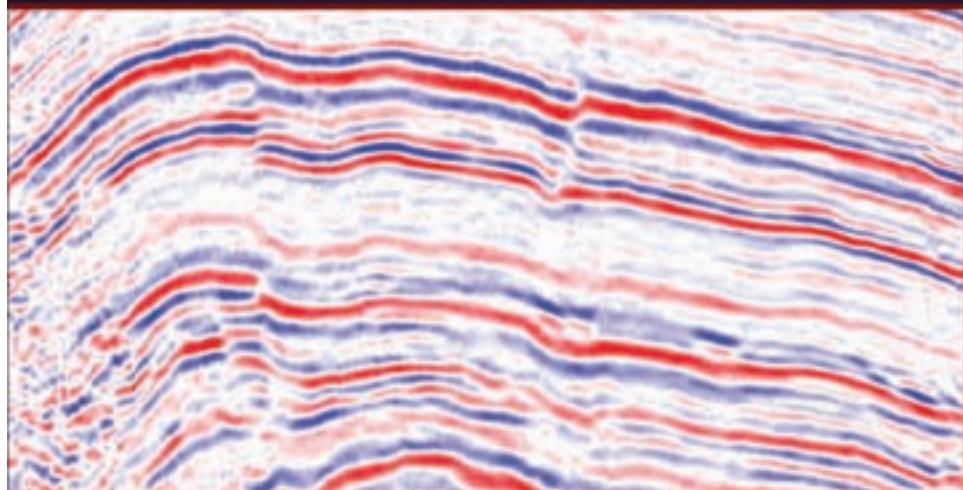
Instead, in its 2012-2017 program the administration will:

- ▶ Open the mid- and south Atlantic areas. The North Atlantic remains closed.

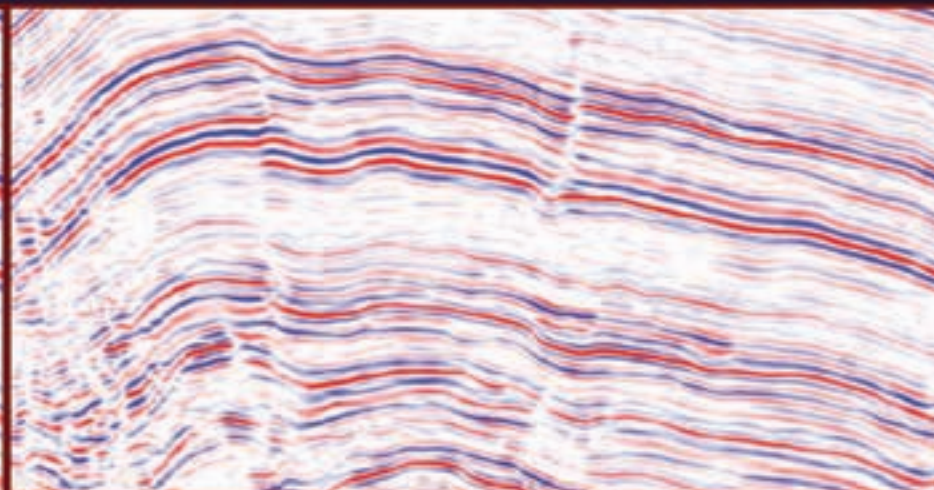
- ▶ Open a portion of the eastern Gulf of Mexico, subject to Congress lifting a moratorium on oil and gas activity in that part of the Gulf. The portion under

**Continued on next page**

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**SPOTLIGHT ON**



*Presidential treatment: Participants in Bob Allen's recent field trip to the Arbuckle Mountains in Oklahoma included some big names in AAPG history; from left, Allen, past president Jim Gibbs, current president John Lorenz and past president Marlan Downey.*

## He Likes to Rock: Allen Makes His Trips 'Special'


BY LARRY NATION, AAPG Communications Director

**L**eading field trips in southern Oklahoma is nothing new for Robert W. "Bob" Allen of the Ardmore Geological Society. He has done it for years, taking students and others to outcrops over the region, sharing his knowledge and love for geology to hundreds of people.

In early spring, Allen led another field trip, this time including the president of AAPG and two past presidents. One of the stops in the Arbuckle Mountains south of Davis, Okla., was at the Goddard Youth Camp where the group saw first-hand some results of Allen's outreach efforts.

During the trip the group stopped by a cross-section on a wall at the camp that Allen, with the help of the late R.P. "Lux" Wilkinson, helped design and build. The section is made with some of the actual rocks from the local outcrops.

This, along with other educational materials Allen has helped the camp acquire, are visual aids to explain the basic principles and the geology of Southern Oklahoma to students attending the camp along with their instruction in Native American culture and surrounding ecology.

For this and other efforts by Allen, he was awarded the AAPG Special Award at the AAPG Annual Convention in New Orleans. 

### Continued from previous page

consideration is 125 miles off Florida's western coast, and according to the Interior department contains two-thirds of the area's undiscovered, economically recoverable resource.

► The Chukchi and Beaufort seas are open, with the administration expecting results and insights developed during the exploration and development of current leases to help inform the decision to proceed with future lease sales in these areas.

► The Pacific Coast of the contiguous 48 states remains closed.

The inclusion of these areas in the announcement of the 2012-17 five-year program does not guarantee there will be lease sales, exploration or production in all of these areas. They still must clear the scoping hearings, environmental and other reviews.

But that process can now begin. 

## Officer Voting Deadline Arrives May 15

Balloting for AAPG officer candidates for the 2010-11 term continues to be available online but will close May 15 at 11:59 p.m. CDT.

While electronic balloting is available to all members a paper ballot also will be sent.

Survey and Ballot Systems, which handles the AAPG election, has a coded system where only one ballot per person is counted, with the paper ballot taking precedent if both are submitted.

Candidate biographies and individual information continue to be available at [www.aapg.org](http://www.aapg.org).

This year's slate involves candidates for four positions:

### President-Elect

☐ Ernest A. Mancini, Texas A&M, College Station, Texas.

☐ Paul Weimer, University of Colorado, Boulder, Colo.

### Vice President-Sections

☐ Marvin D. Brittenham, EnCana Oil & Gas (USA), Denver.

☐ Charles A. Stembach, Star Creek Energy, Houston.

### Treasurer

☐ James S. McGhay, Mid-Con Energy, Tulsa.

☐ James W. Tucker, Saudi Aramco, Dhahran, Saudi Arabia.

### Editor

☐ Ashton F. Embry, GSC, Calgary, Canada.

☐ Stephen E. Laubach, Bureau of Economic Geology, University of Texas at Austin.

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The Mada'in Saleh, which in 2008 became Saudi Arabia's first UNESCO World Heritage Site.

Photo courtesy of Chris Heine

*Technology may open doors*

## Middle East Region – A New Frontier?

By LOUISE S. DURHAM, EXPLORER Correspondent

If you're inclined to think the Middle East is drilled up for the most part, and it's only a matter of time before the conglomeration of mega-productive fields run out of gas, so to speak, think again.

Many of the giant fields harbor reservoirs that have not received so much as a nod because the long-producing horizons continue to kick out the oil full speed ahead.

The stage is set for much more action in the Middle East, particularly since the recent attention-grabbing bid rounds in Iraq, which included some of the largest fields in the world.

"They not only offered some of the super giants, they offered some smaller fields in the 'paltry' 1 to 3 billion barrel range," said one veteran geologist who has worked the region, is familiar with its trends and potential and who sees "lots of promise."

He added that "there were not just the super majors there who bid, there were some below super major and also the national oil companies."

In Iraq itself there have been discoveries

by smaller companies working with the Kurdistan regional government (in the north) with very impressive initial flows and first estimates of reserves.

"We all know you need more than one well to tell you what's in a field," he said, "yet in this land of giants they probably are really nice fields."

In fact, the U.S. Geological Survey's most recent study of Iraq came up with hundreds and hundreds of prospects.

Kuwait, Saudi Arabia and others may be at a more mature level of exploration, yet they still haven't gone through the kinds of filters used in the United States. Consequently, most people feel there's more to do there as well.

"My friends at Saudi Aramco see lots of work remaining in Saudi Arabia," one veteran geologist there noted.

The recent Tamar natural gas discovery offshore Israel is a Big Deal in the Middle East region, triggering even more interest and enthusiasm. Operator Noble Energy announced the Tamar discovery potential is

five Tcf based on initial flow testing.

While the Iraqis generally get kudos for their geological, geophysical and engineering expertise, their technology is 20 to 30 years behind the times – there's lots to be done to get up to speed, but that's easier today thanks to the various service companies.

Learning how to use it appropriately is a whole other deal that requires the knowledge available in companies who have dealt successfully with particular situations in the field.

For example, handling all of the hydrogen sulfide in a very sour gas field requires a specific expertise that transcends having the proper equipment.

In general, an oil company needs to stay in the host country only as long as it continues to be critical to field development by developing new technologies and new ways of doing things.

Besides the sometimes thorny challenges of politics and remote locations, the region's geology adds to the complexity of the scene

overall. Fractured and often high-pressure reservoirs are common, as well as heavy crude, sour crude and sour gas.

Some of the fields put up in the second bid round in Iraq have heavy oil in them, according to sources familiar with the region – up to a billion barrels haven't been produced effectively because they haven't been subjected to all the new heavy oil technology.

"There's heavy oil throughout the Middle East," one source said, "so that's seen as a frontier to be exploited." (See related story, page 14.)

Activity currently is robust throughout the region. Experts expect action in Iraq, in particular, to expand dramatically especially with the political climate improving.

There are concerns: Where will the drilling rigs come from – to say nothing of the needed pipelines and other infrastructure. And, hey, where are all the roughnecks?

Still, as one expert said, "There's a whole lot more to be done in the Middle East." ■

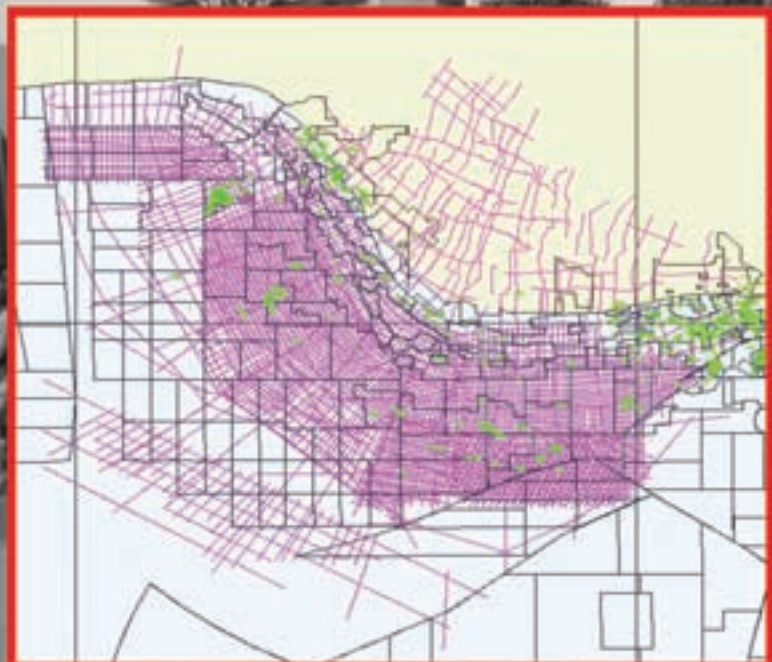
## "Nigerian Bid Round slated for 2010"

Emmanuel Egbogah, special adviser to the President  
of Nigeria on petroleum matters

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## Regions

from page 12

Saskatchewan leading the way.

Certainly, there are good signs to be found.

"(The industry is) overall generally promising with an outlook to improved fiscal terms in Alberta," Dolph said. "Oil shale projects are showing a strong interest and there is some recovery in gas prices – but the recovery of prices may be slow at best."

Exploration in the Western Canada Sedimentary Basin (WCSB) has had a strong focus on "resource plays," he said, as companies look for lower risk exposure. Conventional exploration has suffered as a result.

"In eastern Canada onshore exploration is continuing with acquisition of 2-D and 3-D seismic data, with drilling expected in 2010," he said. "There have been several company consolidations and farm-in activity has been active. Offshore exploration has improved slightly with the awards of several deepwater slope and shallow shelf licenses."

What's hot in Canada?

"Resource plays, both oil and gas, unconventional and/or low permeability plays," Dolph said.

Add to that Northeast British Columbia tight shale gas plays, South Saskatchewan tight oil plays and "tight" oil plays, or zones of poor permeability, around existing conventionally developed oil fields.

"In eastern Canada, onshore shale and tight gas plays in Carboniferous basins, particularly the Moncton and Windsor/Kennetcook sub-basins" are hot, he added.

"Coalbed methane exploration activity has dropped off for the time being," he said. "Offshore, shallow water, undrilled prospects surrounding producing fields in the Sable sub-basin have been the recent focus."

Exploration "hot" zones to watch in the coming year is an example of Canada's diversity.

"In the western provinces it will be more about development than true exploration in the mature basins," Dolph said, adding that "identification and proving up new resource plays such as marginal reservoir quality rocks surrounding conventionally developed oil pools and characterizing producible resource 'soft' shales in east-central Alberta" also is on the list.

Expect conventional exploration offshore East Coast Canada, he said – in particular the untested Laurentian Subbasin.

The biggest challenges for Canada have a familiar ring for many parts of the world: Low gas prices and access to material resource.

But Dolph also sees unique challenges for his Region, such as finding jobs for new graduates in a time when companies remain cautious despite facing a deluge of imminent retirements.

"The recession helps to delay retirement of this expertise," he said.

The Region's business side of geology also suffers from:

- ▶ "Deskilling," caused by repetitive, compliance-based resource play work.
- ▶ A lack of understanding of economic geology – that plays must be supply-cost and operating-cost competitive.
- ▶ Too much effort spent on uneconomic, non-material plays

A challenge unique to onshore eastern Canada is the availability of drilling rigs. For offshore, the challenges are:

- ▶ Real and imagined costs of drilling.
- ▶ Regulatory compliance.
- ▶ Limited prospectivity.
- ▶ Understanding the petroleum systems.
- ▶ Ending the George's Bank moratorium.
- ▶ Aligning U.S. and Canadian regulatory policies on the North American eastern



DOLPH



LAMBIASE

seaboard.

There are several developments that Dolph and others he spoke with anticipate in 2010, including:

▶ A new royalties and incentives package in Alberta, which will favorably increase E&P investment – particularly in gas developments.

▶ Concerns over the impact of fracing tight wells to shallow aquifers as drilling activities continue.

▶ Continued growth in new oil sands projects.

▶ Continued corporate mergers and acquisitions.

▶ Internationalization of Western Canada Sedimentary Basin (WCSB) expertise to resource plays globally.

▶ Potential non-renewal of the exploration moratorium of the Canadian side of the Georges Bank, which will initiate renewed exploration interest in the area. There has been no new data acquired in the area since 1984.

"What I'd like to see happen is more proactive communication by industry associations on the socio-economic benefits of E&P activity," he said, "and the increase and stabilization of commodity prices."

### Asia Pacific Region

The state of the industry in the Asia Pacific Region, at this point of the year, remains "relatively active – and hopeful that activity levels will remain stable," Region president Joe Lambiase said.

"The profession is still doing OK – there are still jobs available," he said. "Maybe not as much as in mid-2008, but at a healthy level."

Exploration activity in the region during the past year, he said, "is difficult to categorize."

"There was a fair amount of activity, but a lot of it was the result of commitments made one or two years earlier," Lambiase said. "Acreage acquisitions were down, but not dead."

The Region didn't have any one focused "hot area" as do many other locations, Lambiase said – although, in general, large and small companies drilled a lot of deepwater and syn-rift targets, respectively.

"I look for the same play trends to be pursued by the same types of companies over diverse geographic areas" in the coming year, he added.

The Asia Pacific Region officials, like others, see the fulfillment of stable oil prices and budgets as leading challenges to overcome in 2010.

"There are adequate prospects and development projects," Lambiase said, "if there is money to drill them."

But there is some potential trouble on the Region's horizon.

"Some of the small companies could be in financial trouble if their upcoming wells are unsuccessful and they cannot raise more money," Lambiase warned. "This could lead to a number of them going out of business in one way or another, which could have a knock-on effect for employment if it happens to enough companies."

The remedy?

"I'd like to see a stable economic environment," he said, "so that companies and professionals alike can adjust to stable activity levels." ■

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Photos courtesy of Gregory Kallenberg

Talking to experts where they live, filming crews where they work; documenting the story of the Haynesville Shale play in Louisiana requires an eye and an ear for the dramatic.

## Discovery earns documentary treatment

# Haynesville Shale Gets a Starring Role

By LOUISE S. DURHAM, EXPLORER Correspondent

**T**he high-profile Haynesville shale gas action continues as hot as ever, spurring some folks to dub it the sexiest play in the industry for now.

Sexy enough that it's become the focus of an entire movie.

Calm down.

It's not that kind of movie.

It's a documentary about myriad aspects of the Haynesville, and it's creating considerable buzz following screenings near and far, including a showing at the recent Climate Summit in Copenhagen, Denmark.

It all began when American documentary

filmmaker Gregory Kallenberg paid a chance visit to a coffee shop in Shreveport, La., which is kind of the geographic hub of the Haynesville shale gas play.

"I was listening to the community talk about this almost gold rush type situation, where they were all talking about huge wells being found and what this was doing to the community and how it was changing things," said Kallenberg, a former newspaper reporter and cable television writer.

He soon found himself immersed in documenting this story that became larger than he initially envisioned, owing to added

insight garnered early on.

"The film started out as a focus on personal lives and the impact of the Haynesville shale on those lives," he said. "We looked on the northwest Louisiana area as a boomtown."

"It wasn't until I found this was an incredible real discovery with vast energy reserves that we realized it was going to have national impact," Kallenberg noted. "We went back to the idea and the script and built this in, where we say all this energy has been found under people's feet and what does it mean to the nation's energy future."

"That's when the film went from a small exploration of people's lives," he said, "to a big transcendent piece about how we can get to a cleaner energy future."

### Leading the Charge

The project was financed entirely by Kallenberg. He noted he used his personal funds and also went to friends and family members and "begged."

There was an all-out determination to

See **Documentary**, page 34



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The goal of this AAPG GTW is to gain knowledge to improve understanding of reservoirs where pore pressure and natural fracturing play important roles. Participants will examine and discuss how pore pressure and fracturing impact the understanding of reservoirs, reservoir fluids, and reservoir characterization.

Among the planned session topics are: Rock physics and geomechanics in reservoir modeling; Quantifying and predicting naturally fractured reservoir behavior with continuous fracture models; Attempts to predict fracture permeability in a basement reservoir from advanced seismic processing & geomechanical analysis; How does seismic data quality influence pore pressure estimation and interpretation? Applications and Challenges of Predicting Pore Pressure from 3D Seismic Data; Predicting Pore Pressure in an Overpressured But Low-Porosity Reservoir in a Frontier Exploration Context; and more!

There are many carbon capture and sequestration events, but very few where practitioners and scientists have an opportunity to discuss real cases, issues, and experiences.

There will be two tracks, theoretical and applied. Session topics include storage, geological characterization, geomechanics, enhanced oil recovery, geomechanics, physical processes, geochemical processes, modeling, and lessons learned.

How are new ways to look at old data resulting in new pay zones, increased production, and even new regional plays? How can you find and determine the best way to produce oil that's been "left behind?"

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Session topics include new analytical techniques for reviewing geological, geophysical, petrophysical, and geochemical data; new technologies to use in old fields or overlooked zones.

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Location: Calgary, AB, Canada, with the AAPG International Conference & Exhibition  
Instructor: Laird Thompson

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11

### Writing for the Bulletin – A Primer in Scientific Writing for Refereed Geoscience Journals

Location: Calgary, AB, Canada, with the AAPG International Conference & Exhibition  
Instructor: Gretchen Gillis

SEPT  
16-19

### Folds, Faults and Hydrocarbons in the Southern Canadian Cordillera – Principles and Practices Combination Short Course/Field Trip

Location: Calgary, AB, Canada, with the AAPG International Conference & Exhibition  
Instructor: Peter Jones

NEW!

OCT  
4-8

### FALL EDUCATION CONFERENCE 2010 – Theme: Unconventional Resources

Location: Houston, Texas  
Instructor: Multiple experts!

NOV  
8-12

### Application of Structural Geology in Prospecting in Thrusted and Extensional Terrain

Location: Las Vegas, NV  
Instructors: Chuck Kluth and Wayne Narr

## Field Seminars:

NEW!

JUNE  
21-25

### Fractures and Tectonics of the Northern Appalachian Basin

Location: New York  
Leader: Robert Jacob

SEPT  
23-30

### Sedimentology and Sequence Stratigraphic Response of Paralic Deposits to Changes in Accommodation: Predicting Reservoir Architecture, Book Cliffs, Utah

Location: Colorado/Utah  
Leaders: Keith Shanley, Michael Boyles

OCT  
2-9

### Modern Terrigenous Clastic Depositional Systems

Location: South Carolina  
Leader: Walter Sexton

OCT  
10-13

### Applied Stratigraphy of Paleozoic Carbonate Platforms: Facies, Cycles, Sequences, Reefs, Reservoirs

Location: Nevada  
Leader: John Warme

## Online Courses:

LAUNCH DATE  
JUN 1

### Renewable & Non-Renewable Resources – Overview & Integration: A Renewable Energy Certificate Course

Instructor: Theresa Coffman

SEPT 13-  
DEC 17

### Introduction to Geological Reservoir Characterization

Instructor: Roger Slatt

## Last Chance:

MAY  
11-13

### Essentials of Subsurface Mapping – Short Course

Location: Houston, TX  
Instructor: Richard Banks

MAY  
16-21

### Play Concepts and Controls on Porosity in Carbonate Reservoir Analogs – Field Seminar

Location: Almeria, Spain  
Leaders: Evan K. Franseen, Robert H. Goldstein, Mateu Esteban

MAY  
17-18

### Reservoir Engineering for Petroleum Geologists – Short Course

Location: Houston, TX  
Instructor: Richard Green

MAY  
19-21

### Fundamentals of Petroleum Geology – Short Course

Location: Houston, TX  
Instructor: Stephen Bend

MAY 30-  
JUNE 5

### Complex Carbonates Reservoirs: The Role of Fracturing, Facies and Tectonics – Field Seminar

Location: Naples – Rome, Italy  
Leaders: Raffaele Di Cuia, Davide Casabianca, Claudio Turini

JUNE  
7-9

### Exploring for Bypassed Pay in Old Wells – Short Course

Location: Wichita, KS  
Leader: Hugh Reid

JUNE  
7-11

### Folding, Thrusting and Syntectonic Sedimentation: Perspectives from Classic Localities of the Central Pyrenees – Field Seminar

Location: Barcelona, Spain  
Leaders: Antonio Teixell, Antonio Barnolas

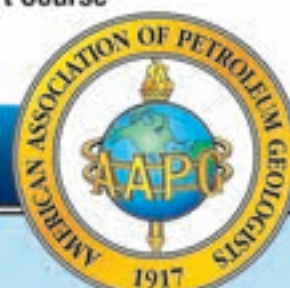
JUNE  
9-10

### The Petroleum Industry: Upstream & Downstream – Short Course

Location: Dallas, TX  
Instructor: Stephen Bend

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The paper "Gravity Gradiometry and Seismic Data Integration: A New Technology Being Used to Develop Emerging and Mature Plays in the Gulf of Mexico" was presented at the AAPG Annual Convention and Exhibition in New Orleans. Peter Nuttall, director of geophysics integrated services at IONGEO, was one of the authors. The paper was part of the session titled "Evolving Technology."

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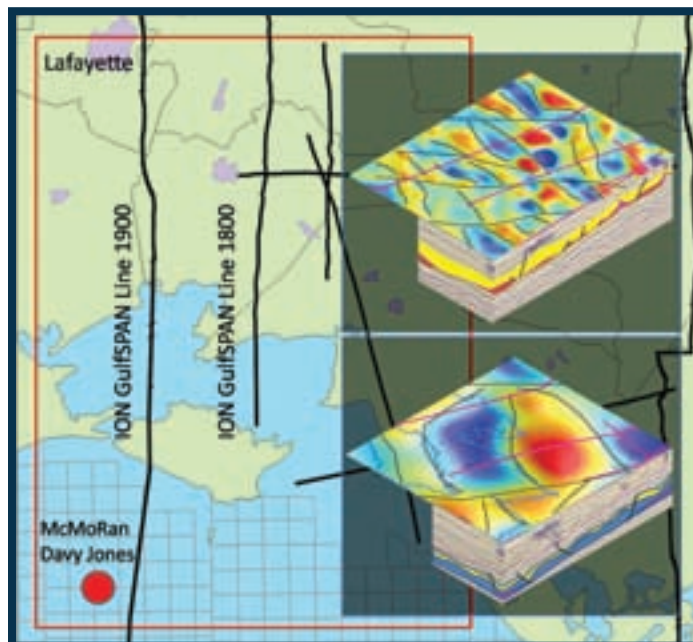
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A new technology being tested in the Gulf Coast transition zone combines seismic data and gravity gradiometry. This figure shows 3,100 square miles of gravity gradient data (red outline) integrated with GulfSPAN seismic data, which produced multi-disciplinary 3-D interpretation of Gulf Coast geology.

Graphic courtesy of ARKeX Inc.

### GGI no longer classified

## 'New' Gravity Can Give 2-D a 3-D Look

By LOUISE S. DURHAM, EXPLORER Correspondent

**D**o you need to evaluate a subsurface area but lack adequate seismic data?

If so, a new technology being tested in a Gulf Coast transition zone locale may soon become your favorite must-have tool.

The other good news is you won't have to bother with the challenges and expense of acquiring new seismic data until you have de-risked and high graded areas of potential interest.

In essence, you can kind of have 3-D without having 3-D.

The test project is being implemented by IONGEO and ARKeX, and it entails the integration of multiple geophysical measurements using both seismic data and gravity gradiometry (GG). The project was close to being wrapped up in February, with the final report scheduled to be complete by the end of March.

This multi-disciplinary approach to evaluation is designed to provide enhanced geologic understanding in areas that are either too difficult or too costly to acquire new 3-D seismic data, according to Peter Nuttall, director of geophysics integrated services at IONGEO.

Many areas of interest to operators, including a number of Gulf Coast locales, lack 3-D data. Instead, they may have legacy 2-D data, which are not optimized for today's exploration objectives.

Acquiring new 2-D is not the answer as the data still are two-dimensional, and removing the uncertainties associated with these data requires 3-D information.

"Airborne gravity gradiometry can solve some of these issues by providing a 3-D measurement of the earth's gravitational field," Nuttall said. "These data act as an intelligent geologic interpolator among existing 2-D seismic data, plus update and validate the velocity field and aid seismic processing."

#### Getting Critical Information

Gravity gradiometry imaging (GGI) was derived from a classified military technology. The initial 3-D full tensor gradiometer trial for commercial use took place in the Gulf of Mexico in 1994. Since that time, several systems have been deployed, and ARKeX operates three of these for airborne and marine use.



BATE

The technique has considerable advantages over conventional gravity.

"While a conventional gravity survey records a single component of the three-component gravitational force, usually in the vertical

plane, full tensor gravity gradiometry measures the derivative of all three components in all three directions," said Duncan Bate, senior sales geophysicist at ARKeX.

"The method measures the variation of each component of the gravitational force – vertical and horizontal – in the vertical direction and in two horizontal directions," Bate said. "It also provides higher resolution and increased bandwidth."

"The 3-D nature of the gravity gradiometer measurements means that the integration with 2-D seismic data can provide critical information leading to a much improved 3-D interpretation," Bate added.

In the test project area in the Gulf Coast transition zone, there's a gap between existing, vintage onshore data and newly acquired offshore data. The 3-D data collected by ARKeX using its FTG is being jointly integrated and interpreted with 2-D seismic data from ION's GulfSPAN program to provide 3-D infill between GulfSPAN 2-D regional datasets.

Nuttall emphasized there are three key components to the project:

- ▶ Two-D seismic data.
- ▶ Good well coverage.
- ▶ Three-D gradiometry.

"The combination of all those lets you calibrate seismic with gradiometry and identify features such as specific fault trends, as well as highs and lows in gravity that may be introduced by density variations at depth," Nuttall said.

"It doesn't matter if you have new or old seismic data," he said. "Modern processing and imaging techniques employed by IONGEO can uplift legacy seismic data, and the GulfSPAN data provide new insight into the Gulf Coast region."

See Gravity, page 34



# Download Your NEW May 2010 Bulletin Now!



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## Article highlights include:

### It's important to recognize stepovers

*Haakon Fossen, Richard A. Schultz, Egil Rundhovde, Atle Rotevatn, and Simon J. Buckley*



Graben transfer zones or stepovers are typically positive relief, and they can accumulate hydrocarbons while the source rock is still maturing. Since sealing faults often lose their properties in these zones, hydrocarbons easily flow from stepovers into shallower flanking structures.

### A useful exploration and development tool

*Dallas B. Dunlap, Leslie J. Wood, Chad Weisenberger, and Haddou Jabour*



Three-dimensional seismic data over the east margin of offshore Morocco is used to better explain the area's deepwater stratigraphic succession, historical processes, structural history, and evolution. Salt mobilization continually affected sediment distribution, causing a range of depositional flow styles.

### Ethiopian oil shales

*Ahmed Wolela*



This paper interprets the depositional environments of the oil-shale-bearing sedimentary successions of the Yayu basin, assesses their petroleum generation potential, and identifies their composition and thermal maturation. A billion metric tons of oil shale reserve may be present in this basin.

### Understanding the Amerasia Basin

*E. L. Miller, G. E. Gehrels, V. Pease, and S. Sokolov*



Upper Paleozoic platform carbonates and shales on Wrangel appear to match those on the North Slope of Alaska while Rangel's Triassic basinal turbidites do not. Understanding the geology of Wrangel Island, Russia, is crucial for constraining Arctic paleogeography and plate reconstructions.



## Gravity from page 32

"Gradiometry allows you to integrate the components into a 3-D image, so now you have a much better understanding of where the shallow salt is, the deep salt is, where the fault fracture zones are," Nuttall said. "Then you can high grade areas that look interesting."

"Using existing seismic data and new gradiometry data," he said, "can make this affordable."

### Tough Targets

The pilot study is all about areas that are difficult and expensive to access, according to Nuttall. The study's specific

challenges of transition zone, onshore and offshore provided a combination of what the team wanted to investigate.

Because seismic data can be exceptionally expensive to acquire, particularly in the onshore Gulf Coast, the integration of GG and seismic has the potential to add value in areas other than the transition zone. Piecing together the fabric from onshore to offshore in the transition zone, however, can have exceptional impact for explorationists going after plays there, where the original seismic data may be as much as 20 years old.

Meanwhile, the trial project team is pleased with the outcome of the program.

"The initial plan for how the project should go in an ideal situation has been achieved at this stage," Bate said. "So

everyone is happy from that point of view.

"I think everyone has been encouraged," he continued, "and we hope to do more similar projects both in the Gulf of Mexico and the rest of the world."

Adding a bit of intrigue, the new high-profile McMoRan Exploration Davy Jones discovery that's creating such a buzz is in the area of the GG survey.

"We can see what we believe is a significant influence on the gradiometry in the area," Nuttall said. "The McMoRan well shows up as a gravity feature because you have salt down there that's creating a structure," he said.

"The well is below the canopy salt but above the Louann salt." ■

## Documentary from page 30

steer clear of industry assistance/input in order to create a film that achieved the delicate balance between an industry piece and non-industry. Kallenberg recognized this was crucial to be able to present a methodical argument to show what's wrong with the current energy picture, e.g., too much use of coal, and how to transition to any kind of significant renewable source – such as solar and wind – which likely will take decades.

Kallenberg said he came to realize that fossil fuels are the way forward, with natural gas being the obvious choice.

"It fell back on me to create a very convincing argument – first to myself – that natural gas could indeed do what I think it could do," he said.

"Haynesville" uses no industry people to speak as experts. Instead, academics, pundits and environmentalists express their views. The consensus among all is that natural gas is the fuel-of-choice to enable the transition to a cleaner energy future.

Besides Copenhagen, "Haynesville" has been screened in England, New York, Tulane Energy Institute in New Orleans and Rice University in Houston. Screenings at additional venues are in the planning stage.

Kallenberg noted he initially expected audiences to want to discuss the film's personal stories during the Q&A following the screenings. Instead they want to talk about energy and natural gas and how they were unaware of the facts presented.

"I want my film to be a joiner," Kallenberg said. "I want it to lead that charge and start that discussion between all people that were polar opposites and get us going to achieve some good. "I want a million people to see this from the president down to the guy making eight dollars an hour," he said. "If a discussion of our energy future can be borne out of this film, then I'll think it's a great success."

### Needed: Better Self-Promotion

Criticizing the oil and gas industry has long been the kind of "in" thing to do on the part of numerous organized groups, as well as much of the general populace as well.

Kallenberg voiced some criticism also – the constructive kind.

"Self-promotion of the energy industry is abysmal," he said. "It needs to do better to tout what it's doing right instead of getting hammered for what it's doing wrong. The industry gets knocked and then gets quiet and lets everyone roll over them."

"If they handled this right, they could take the lead in this discussion and help create an energy future rather than be on the sidelines or be what they're against," Kallenberg commented. "They need to take the lead and charge on doing this and doing it right – they need to want to help themselves."

"I think there's a new breed of energy industry (people) out there that thinks they need to be progressive to do business in this environment," he noted. "Part of that is there's a lot of money at stake, and when this is the case people do really cool innovative things to get things done."

"This has been an industry that I at first when filming didn't think was flexible or cared about a community or an environment," Kallenberg said, "but in the end it does."

"If they continue trying and really work on the right ways they're trying to get at this gas," he said, "then I think everyone wins." ■

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## Central & North Atlantic Conjugate Margins | Lisbon 2010

### LISBON 2010 - Rediscovering the Atlantic: New Ideas for an Old Sea.

As the world's oldest ocean, this was where our knowledge of plate tectonics first evolved and developed, and experienced the first serious efforts for offshore exploration. Other global basins have since beckoned but new ideas for this old sea have resulted in industry returning to the Atlantic with renewed interest. Through the collaborative interaction between fellow geoscientists from industry, academia and governments, we believe that LISBON - 2010 will be beneficial to all delegates and organizations, through opportunities to share and being exposed to new ideas and possible collaborative opportunities.

### THEMATIC SESSIONS

EVOLUTION OF ATLANTIC MARGINS  
ATLANTIC PETROLEUM SYSTEMS  
ATLANTIC MARGINS E & P

### SHORT-COURSES (27<sup>th</sup>-28<sup>th</sup> Sept.)

Sequence Stratigraphy – O. Catuneanu (Canada)  
Carbonate Reservoirs – Mateu Estebán (Spain)  
Core Workshop – DPEP/National Oil Agency

### KEYNOTE SPEAKERS

**G. MANATSCHAL** - The lesson from Iberia-Newfoundland rifted margins: how applicable is it to other rifted margins?  
**S. CLOETINGH** - Thermo-mechanical models for rifted basin (de)formation: an integrated approach.  
**O. CATUNEANU** - Sequence Stratigraphy: state-of-the art and applications to hydrocarbon exploration.  
**M. ENACHESCU** - Upper Jurassic source-rock highways in the North Atlantic.  
**J. SKOGSEID** - The Opening of the Central & North Atlantic.

### FIELD TRIPS

PORTUGAL – Lusitanian Basin (26<sup>th</sup>-28<sup>th</sup> Sept.)  
MOROCCO – Agadir Basin (2<sup>nd</sup>-4<sup>th</sup> October)



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# Earth Science Returns to Texas High Schools

By CAROL MCGOWEN, Regions and Sections Manager

For as long as anyone can remember, earth science was taught throughout elementary, middle and high schools (K-12) in Texas. One would think that teaching about earth processes including the formation of hydrocarbons would be considered fundamental and essential knowledge for all students growing up in an oil-rich state like Texas.

But as recently as 1998, the Texas Legislature removed all teachings of earth science from the school curriculum statewide.

By 2001 prominent earth scientists joined forces to reverse the decision and formed the Texas Education Agency Task Force,

which began to lobby the Legislature in an effort to restore science to the high school curriculum.

"The task force idea was first suggested in early 2000 by Marcus Milling, then AGI executive director (now deceased)," said AAPG Honorary Member Stan Pittman, of Ellison Miles Geotechnology Institute at Brookhaven College in Dallas.

AAPG members were quick to support AGI's idea. Other AAPG members who joined Pittman on the task force included the late Ed Roy, another AAPG Honorary Member and then-chairman of Trinity University, and David Dunn, University of Texas at Dallas. Over the following year,

the task force made multiple trips around the state to meet with teacher groups and identify the needs in Texas public schools.

This same task force then enlisted the support of other influential AAPG members including W.H. Hunt, Petro-Hunt; James F. Reilly, then a NASA astronaut; Scott Tinker, director of the Texas Bureau of Economic Geology; and Diane Brownlee, EMGI's director.

It was this group that testified before the Texas School Board and Legislature on behalf of implementing four years of science as a requirement for high school graduation – including the science elective of earth and space science.

## Solving New Challenges

The efforts of these AAPG members and many others paid off, when on July 16, 2004, the school board agreed to require four years of science for high school graduation and to accept an elective course in earth science as the third or fourth year high school science credit.

In fact, beginning this September, "Earth and Space Science" classes will be taught in Texas schools with course credit applied to fulfill the high school science graduation requirement.

While the return of science to the high school curriculum is indeed a victory, new challenges have surfaced. But with assistance from EMGI, the North Texas Geological Society, AAPG member Rebecca Dodge and many others, a collaboration of earth science professionals will guarantee that more educators are trained to teach and more students are prepared for careers in geoscience.

Challenges and solutions include:

► The Texas school board's agreement to the TEA Task Force plan came with a financially exorbitant provision – namely, that every high school in Texas build a geological lab to support the Earth and Space Science course.

To offset costs for equipping high school geology labs, the North Texas Geological Society has taken the lead to supplement teacher training by purchasing teaching materials valued at over \$500 per school for Texas high school classrooms and laboratories.

► Adequately trained teachers in sufficient numbers were scarce. With the multi-year hiatus in teaching earth science at the secondary school level, many earth science educators are no longer in demand, changed their subject matter focus to chemistry or, for some, quit teaching altogether.

To meet the rising demand for adequately trained science EMGI will offer multiple opportunities and methodologies for teacher training, including:

✓ A one-week workshop in Dallas on pedagogy and earth science content for high school teachers on August 9-13.

✓ A five-week online course written specifically for high school teachers wanting to teach earth and space science is under development. Rebecca Dodge will provide the content for the new online teacher tutorial. An independent vendor will develop the software and Web interface for the course.

While other universities and educators offer online courses in physical geology, this five-week course is designed specifically around the skill standards required by law in Texas, known as "Texas Essential Knowledge and Skills."

"The online course is similar to an undergraduate physical geology course, plus some additional physical geography content," Dodge said. "It's designed to prepare any secondary or high school teacher to teach earth sciences."

► The EMGI summer 2010 institute will teach elementary-level to high school-level teachers geo-spatial technology using Google Earth, and will include hands-on work at an area fossil field.

Earth and space science is only one

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See R&S, page 41



# UK Student Chapters Hold First Meeting

By BEN KILHAMS

**A**fter traveling to student chapter leadership meetings in Prague and Tulsa it struck me how informative, interesting and exciting these meetings can be. An excellent example of this is the establishment of the joint field program between Aberdeen, Amsterdam and Lisbon student chapters, which was developed through an idea at the 2009 Prague meeting.

With that in mind – and knowing that two of AAPG's most important goals are education and networking – the first UK Student Chapter Leadership meeting was held March 18-20 in Manchester, England.

\* \* \*

The number of student chapters in the UK has been steadily growing over the past 10 years, with six chapters existing within a few hundred miles of each other. Increased investment in research programs by the oil and gas industry also has seen a rise in the number of universities where potential new chapters might form.

Despite this, there had never been a UK student chapter leadership meeting. It was felt that the level of interest and potential benefits of such a venture would be high enough to submit an application to the European Region for financial support. This was forthcoming and the organizers are very grateful to the committee for backing this idea and to the Manchester chapter for their help with the organization.

Attending the meeting were representatives from five established chapters and three potential new chapters. European Region President David Cook was able to join us for an icebreaker meal and drinks and, even at this early stage, it was clear the participants were enthusiastic and open to new ideas.

The next day we enjoyed:

- ▶ A series of presentations on many aspects of AAPG, including the student chapter system, the benefits of student membership, the Imperial Barrel Award and how the organization works at a global and regional level.

- ▶ A personal message from AAPG President John Lorenz.

- ▶ A YouTube project that enabled a full introduction to AAPG to be delivered.

- ▶ A number of chapters gave presentations in order to share their ideas, experiences and problems, which generated a long discussion on continuity, events and membership.

The meeting ended with the agreement of action points for each chapter to complete over the next few months.

\* \* \*

To reiterate, the meeting's main purpose was educating people about the AAPG and networking.

So, was the meeting successful?

A feedback questionnaire suggests it was. Before the meeting 60 percent of the participants said they knew little or nothing about AAPG; afterwards 100 percent knew a lot about the organization. All of the participants suggested the meeting was useful for their chapter.

In the next couple of months three new chapters (Durham, Leeds and Liverpool) should be created, which also has enabled the development of intra-UK areas for multiple chapter events (for example Imperial College and Royal Holloway chapters are now planning a joint seminar). It also was possible to discuss ideas to integrate the

aims of organizations such as YES (Young Earth Scientists Network) into the remit of the UK chapters.

Most importantly, we now have a network of leaders in the UK that know each other and can ask each other for advice.

As with many organizations, AAPG will no doubt feel the pinch in a global economic downturn. However, it is my hope that events like these (that we hope to be annual or bi-annual) continue to be supported because of the clear benefits for the Student Chapter network and the long-term future of AAPG.

I would like to finish by thanking all those that made our first meeting a success, and hope you will continue to support our future efforts. **E**



Participants in the first AAPG UK Student Chapter Leadership meeting, in Manchester, England.



**CHALLENGES FOR TODAY.**      **OPPORTUNITIES FOR TOMORROW.**

**Be a part of the inaugural Arctic Technology Conference — submit an abstract today**

OTC'S new Arctic Technology Conference, 7-9 February 2011 at the George R. Brown Convention Center in Houston, Texas, will address the cutting-edge technologies and innovative practices needed for exploration and production in the Arctic.

**The program committee is now accepting abstracts in the following themes:**

**Resources**

- Basin Potential
- Frontier Basin Geology
- Seismic Data Acquisition

**Exploration Drilling**

- Offshore
  - Transition Zone
  - Shallow Water
  - Deep Water
  - Season Extension
- Onshore
  - Perma-frost
  - Gas Hydrates, Shallow Gas

**Production Drilling, Facilities and Export**

- Structures
- Pipeline
- Installation
- Operations
- Inspection, Repair, Maintenance
- Power Supply
- Winterization
- Special vessels, ALV, ROV

**Physical Environment**

- ICE
  - Ice Management
  - Ice Load Prediction and Modeling
  - Measurement of Ice Properties
- Met Ocean, Seismicity, Forecasting and Weather
- Climate Change

**Logistics and Marine Transport**

- Icebreakers and Iceworthy Vessels
- Ice Roads
- Logistics and Resupply Bases
- Offshore Terminals
- Arctic Navigation Aides
- Training Requirements for Arctic Logistics Operations

**Regulatory, Environment**

- EER
- Oil Spill Prevention and Response
- Codes and Standards
- Emissions and Discharges

**Mining and Other Issues**

**Abstracts due 6 June.**



**7-9 February 2011**  
**George R. Brown Convention Center**  
**Houston, Texas, USA**

[WWW.ARCTICTECHNOLOGYCONFERENCE.ORG](http://WWW.ARCTICTECHNOLOGYCONFERENCE.ORG)



## FOUNDATION UPDATE

AAPG Foundation Trustee Associates have provided five new endowment gifts for the AAPG Foundation Digital Products University Subscription Fund.

They are:

- ▶ **Thornton Anderson** – a subscription for Wichita State University.
- ▶ **Bruce Dice** – a subscription for Michigan State University.
- ▶ **Paul Dudley** – a subscription for Pomona College.
- ▶ **Bill Monroe** – a subscription for University of California, Davis.
- ▶ **William Marshall** – a subscription for Cornell University.

The Digital Products University Subscription Program allows alumni to provide a one-time gift of \$12,500, which allows the faculty and students at their designated university access to AAPG's digital library – currently over 600,000 pages

of archived geosciences information.

\* \* \*

Foundation Trustees also have made an impact on the Grants-in-Aid Program, as three members recently provided augmented funding for established Named Grant funds:

- ▶ **Bill Walker** donated additional endowment funds to supplement the Rodney A. Bernasek Memorial Grant, which he established in 2009. The grant will be awarded annually in the amount of a \$1,000 to a geosciences student at the University of Nebraska.
- ▶ **Marta S. Weeks-Wulf** contributed additional endowment funds to increase the Marta S. Weeks Named Grant to a \$3,000 annual grant.
- ▶ **Jon Withrow** contributed additional endowment funds to increase the Jon R.

Withrow Named Grant to a \$1,000 annual grant for a geosciences graduate student attending the University of Oklahoma.

Additional student support was received from Trustee Associate **Paul Strunk**, who provided a generous gift to support the Paul and Deana Strunk Geology Scholarship at his alma mater, Kansas State University.

\* \* \*

Two members recently joined the Trustee Associates, increasing the group membership to 273. They are:

- **Steve Bell**, Houston.
- **Mike Jobe**, Houston.

For information on Trustee Associate membership or other Foundation programs, contact Foundation manager Rebecca Griffin at 918-560-2644, or e-mail to [rgriffin@aapg.org](mailto:rgriffin@aapg.org).

## FOUNDATION CONTRIBUTIONS

## Foundation (General)

Richard Arthur Baile  
Michael William Barratt  
Fleur Bases  
Kenneth John Bird  
Erhard Ted Bornemann  
Paul Bovet  
William Thomas Box Jr.  
James Eugene Brown  
Leonard Elton Bryans  
John O.D. Byrd  
Jon Duckett Champeny  
Arthur Lawrence Champine  
Scott Alan Corsair  
Myrt E. Cribbs  
Alfred Roy Danforth  
Sven Olaf Egenhoff  
Gerald Glenn Forney  
Elliott Perry Ginger  
Catherine L. Hanks  
Tommie G. Holley

*In memory of Joe L. Carey*  
William D. Jackson  
Jacek Jaminski  
James Michael Jobe  
*In memory of Tom Jobe*  
Thomas L. Jones Jr.  
Roy C. Kepferle  
Mark Harry Koelmel  
Douglas M. Lorenz  
Duncan T. MacKenzie III  
James S. McGhay

*In memory of Allen S. Braumiller*  
Harry William Mueller III  
William Gerard Murray  
Joseph Alan Newhart  
Fritz W. Reuter  
Joseph L. Rogers  
Juan Rogelio Roman-Ramos  
Thomas Donald Sheffield  
Arthur Tremaine Smith  
Bruce D. Smith  
Terrell Blane Stroud  
Paul Milton Strunk  
Robert Edward Tehan  
John Robert Terwilliger  
Michael Anthony Wacker  
Andrew Craig Warford  
William Gorom Watson  
*In memory of Robert N. Watson*  
John Michael Widmier  
Michael R. Wisda  
*In memory of Bonnie Ashford*

## Awards Fund

*Teacher of the Year Award*  
Brooks B. Ellwood

Allan P. Bennison  
Distinguished Lecture Fund

Martin A. Perlmutter

## Bridge Fund

D'nese Joy Fly  
*In honor of Scott Tinker*

## Digital Products Fund

Harry William Mueller III

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William Allen Monroe

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John O.D. Byrd

*University of Wisconsin*  
Michael Ross Vandrey

*Wichita State University*  
Thornton E. Anderson  
*In honor of Walter A. Ver Wiebe*

## Grants-in-Aid

BP Foundation  
*Matching gift from John S. Isby*

*Rodney A. Bernasek Memorial Grant*  
William B. Walker Jr.

*Eddie David Named Grant*  
Thomas Edward Ewing  
*In honor of Eddie David*  
James Donald Haynes  
*In honor of Eddie David*

*Eastern Section Named Grant*  
Peter MacKenzie

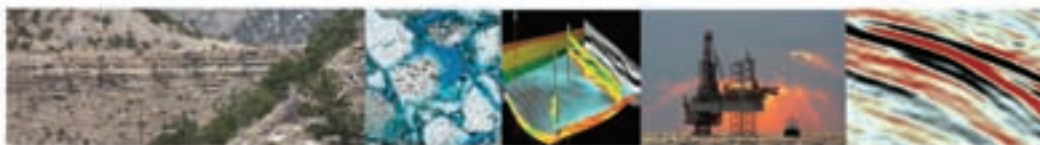
Continued on next page

PETEX 2010  
From Volatility to Value

## International Conference: CALL FOR ABSTRACTS

Petroleum Geoscience  
Research Collaboration Showcase  
23 - 24 November 2010

Earls Court, London



## ABSTRACT DEADLINE - MONDAY 31st MAY

The Petroleum Group, in conjunction with the PESBG and AAPG are re-launching this event as part of PETEX 2010 (23-25th Nov). This international conference showcases the business challenges addressed by research projects, enables researchers to demonstrate societal and economic benefits from research, and provides an early-stage forum for post-doctoral and postgraduate presentations. It is an excellent opportunity for industry and academia to meet, get inspired and to develop future collaborative research links. Graduates and potential future employers can also establish connections.

We strongly encourage and preference will be given to joint or sequential presentations by industrial sponsors (or academic supervisors) and student researchers. This "buddy system" is intended to frame the industrial problem before technical results are reported and/or to conclude by showing the applied, economic benefits of the research. We also welcome overview presentations from the principal investigators of major Joint Industry Projects.

## Suggested themes include but are not limited to:

- Reservoir geology, petrophysics, characterization, analogues and modelling
- Clastic and carbonate stratigraphy and sedimentology
- Structural geology and basin evolution
- Applications of geophysical imaging and interpretation in geological analysis
- Unconventional energy and carbon sequestration
- Case histories of joint industry-academia research and knowledge transfer

Prizes will be awarded for the best oral presentation and best poster, which includes the recipients attendance at the Petroleum Group's annual dinner at the Natural History Museum in 2011.

For further information and abstract submissions please contact Steve Whalley:  
+44 (0)20 7432 0980 or email: [steve.whalley@geolsoc.org.uk](mailto:steve.whalley@geolsoc.org.uk)

## Convenors:

**Stuart Archer**  
University of Aberdeen

**Mads Huuse**  
University of Manchester

**Bernie Vining**  
Royal Holloway/GCA

**Joyce Neilson**  
University of Aberdeen

**Jonathan Imber**  
University of Durham

**Steve Garrett**  
Chevron

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

**PROFESSIONAL NEWS BRIEFS**

<p><b>Nadeem Ahmad</b>, to exploration manager, PPL, Islamabad, Pakistan. Previously geological adviser, BG Group, Reading, England.</p> <p><b>David Allard</b>, to new ventures exploration manager-North America/Caribbean, Apache Corp., Houston. Previously central USA exploration manager, Apache Corp., Tulsa.</p> <p><b>Edith "Edie" Allison</b> has retired as acting program manager, U.S. Department of Energy. Allison will reside in Rockville, Md.</p> <p><b>Chris Armistead</b>, to senior geologist, Linn Energy, Tulsa. Previously geologist II, Linn Energy, Tulsa.</p> <p><b>Gregg H. Blake</b>, to chief geologist-international new ventures, Murphy Exploration and Production, Houston. Previously senior staff geologist, Murphy Exploration and Production, Houston.</p> <p><b>R. Gene Colgan</b>, to explorationist, Tri-C Resources, Houston. Previously geologic lead, Newfield Exploration, Houston.</p> <p><b>Karen Dean</b>, to geologic adviser-Rockies business unit, Noble Energy, Denver. Previously senior geologist, Petro-Canada Resources, Denver.</p> <p><b>John Decker</b>, to general manager, Niko Asia, Jakarta, Indonesia. Previously general manager, Black Gold Energy, Jakarta, Indonesia.</p>	<p><b>Stephen G. Franks</b>, to consulting geologist, RockFluid Systems, McKinney, Texas. Previously senior geological consultant, Saudi Aramco, Dhahran, Saudi Arabia.</p> <p><b>Gary Lee Griffith</b>, to Ironwood Oil &amp; Gas, Houston. Previously with El Paso Production, Houston.</p> <p><b>Joe Harrison</b>, to senior geologist, Penn Virginia Resources, Kingsport, Tenn. Previously Penn Virginia Resources, Kingsport, Tenn.</p> <p><b>William E. Knebusch</b>, to vice president-geology, Trail Ridge Energy Partners, Grapevine, Texas. Previously owner, Calvary Consulting, Amarillo, Texas.</p> <p><b>Mark G. Kittridge</b>, to manager petrophysical analysis and rock physics, ConocoPhillips, Houston. Previously regional discipline lead petrophysics and global principal technical expert-quantitative interpretation, Shell International E&amp;P, Houston.</p> <p><b>Adel R. Moustafa</b>, to science dean, Ain Shams University, Cairo, Egypt. Previously chairman of geology department, Ain Shams University, Cairo, Egypt.</p> <p><b>Snorre Olaussen</b>, to professor, The University Centre in Svalbard, Norway. Previously new venture team leader, Eni Norge, Stavanger, Norway.</p> <p><b>Jeffrey M. Rayner</b>, to vice president-equity investments, Prospectiuni, Romania and California. Previously consultant, Carpinteria, Calif.</p>	<p><b>Gary Rinehart</b>, to exploration manager, Buccaneer Resources, Houston. Previously senior geologist, Nexen USA, Dallas.</p> <p><b>Erin Smart</b>, to geologist-sedimentology group, Weatherford Laboratories, Houston. Previously geologist, Arkansas Geological Survey, Little Rock.</p> <p><b>Bernie Vining</b> has been appointed Visiting Professor of Petroleum Geosciences, Royal Holloway, University of London, England. Vining is with Gaffney, Cline &amp; Associates, Hampshire, England.</p> <p><b>Eric Weiss</b>, to senior reservoir geologist, Petrobras America, Houston. Previously senior development geologist, ConocoPhillips Vietnam, Saigon, Vietnam.</p>
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**Continued from previous page**

<p><i>Robert K. Goldhammer Memorial Grant</i> Alfred Roy Danforth David Lilburn Homan</p> <p><i>Grants-in-Aid Committee Named Grant</i> Peter MacKenzie</p> <p><i>Bernold M. "Bruno" Hanson Memorial Environmental Grant</i> James Eugene Brown</p> <p><i>Mruk Family Named Grant</i> Peter MacKenzie</p> <p><i>Gretchen Nakayama Memorial Grant</i> John O.D. Byrd</p> <p><i>Ohio Geological Society Named Grant</i> Peter Enderlin Peter MacKenzie</p> <p><i>Pittsburgh Association of Petroleum Geologists Named Grant</i> Pittsburgh Association of Petroleum Geologists</p> <p><i>Marta S. Weeks Named Grant</i> Marta S. Weeks</p> <p><b>Imperial Barrel Award</b> ConocoPhillips Saudi Arabian Oil Co. (Saudi Aramco) Schlumberger Technology Corp.</p> <p><b>K-12 Education Fund</b> Kim Robert Butler Chevron Employee Humankind Program <i>Matching gift for Robert L. Scamman</i> Kellam Colquitt Mark Lewis Hales</p> <p><b>Named Public Service Fund</b> James A. Gibbs <i>In memory of Jerry Nelms</i></p> <p><b>Pratt BULLETIN Endowment Fund</b> Harry William Mueller III</p> <p><b>E.F. Reid Scouting</b> Jeffrey M. Rayner</p> <p><b>Eugene F. Reid Dibblee Fund</b> Jeffrey M. Rayner</p>
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WWW.AAPG.ORG MAY 2010 **39**



UPCOMING

REGIONAL WORKSHOPS

MAY/JUNE 2010

5/10-11 **Central/Eastern Gulf:** 2nd Annual Louisiana Oil & Gas Symposium (Baton Rouge Geological Society) – Baton Rouge, LA.

5/11-12 **Eastern:** Completion and Stimulation(s) of Horizontal Wells in Tight and Unconventional Gas Reservoirs – Morgantown, WV.

5/18 **Texas/SE New Mexico:** Water/Gas Shut-off & Conformance Control – Midland, TX.

5/25-26 **West Coast Workshops:** Series of workshops preceding AAPG Pacific and SPE Western joint annual meeting - Anaheim, CA. (wkspfee \$100 for a.m. or p.m., \$200 for full day)

- Petroleum Geology for the Non-Geologist - Janice Gillespie, CSU Bakersfield - May 25 a.m.
- Petroleum Reserves and Economics Fundamentals - Richard Miller : Miller and Associates - May 25th a.m.
- Intro to Open Hole Logging - Janice Gillespie, CSU Bakersfield - May 25 p.m.
- Oil & Gas Permitting, CEQA and Environmental Issues, Sam Sarem, Improved Recovery Consultants, Grace Brandt, California Division of Oil and Gas & Pete E. Jonker, Environ Corp. - May 25 p.m.
- Thermal Recovery - Anthony R. Kovscek, Stanford University - May 26th all day
- Introduction to Petroleum Engineering - Mason Medizade: Professor, Cal Poly SLO - May 26th a.m.
- Facility Engineering Design - Lisa Denke:, DCCK Engineering - May 26 a.m.
- Streamline Sim. for Res. Surv.& Flood Mgmt.- Marco Thiele: Streamsim Technologies - May 26 p.m.
- Drilling Engineering 101- Val Lerma:, Orchard Petroleum - May 26 p.m.

5/26 **Texas/SE New Mexico:** Well Management & CO2 Operation – Houston, TX.

5/27 **Rocky Mountain:** Log Analysis with JLog Petrophysical Software – Golden, CO.

6/2 **Texas/SE New Mexico:** Tight Gas Earthquake Research – Houston, TX.

6/7-9 **Midcontinent:** Exploring for Bypassed Pay Using DST Data – Wichita, KS.

6/8 **Eastern:** Old-Style Elog Analysis and Analysis of Black (New Albany) Shale Logs, Grayville, IL.

6/11-13 **Eastern:** Marcellus Shale Core Workshop and Field Trip to Eastern West Virginia's Valley & Ridge.

6/13 **Rocky Mountain:** Source Rocks 101, What the Exploration Geologist, Geophysicist and Production Engineer Should Know About Petroleum Source Rocks (RMS-AAPG) – Durango, CO.

For further information, view PTTC's online calendar at [www.pttc.org/national\\_calendar.htm](http://www.pttc.org/national_calendar.htm)

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MEMBERSHIP

& CERTIFICATION

The following **candidates** have submitted applications for membership in the Association and, below, certification by the Division of Professional Affairs. This constitutes neither election nor certification, but places the names before the membership at large.

Any information bearing on the qualifications of these candidates should be sent promptly to the Executive Committee, P.O. Box 979, Tulsa, Okla. 74101.

Information included here comes from the AAPG membership department.

(Names of sponsors are placed in parentheses. Reinstatements indicated do not require sponsors.)

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

For Active Membership

California

McIntyre, Jana Lane, Vintage, Bakersfield (L.C. Knauer, S.A. Reid, J. Grippi); Pignatiello, Daniel, Halliburton, Bakersfield (S. Mazzoni, G.S. Sha, S. Wruck)

Colorado

Scheevel, Jay Roger, Scheevel Geo Technologies, Grand Junction (S.P. Cumella, L.T. Billingsley, C.F. Kluth)

Louisiana

Birdwell, Justin Edward, U.S. Geological Survey, Baton Rouge (M.D. Lewan, J. Boak, P.G. Lillis)

New Jersey

Maloo, Adam C., Princeton University, Princeton (J.P. Grotzinger, W.E. Bonini, R.N. Ginsburg)

Ohio

McCudden, Corey Benjamin, Northwood Energy, Columbus (P. MacKenzie, M.R. Shumway, L.H. Wickstrom)

Oklahoma

Couch-Friedman, Rachel Diane, Chesapeake Energy, Oklahoma City (J.K. Lowry, T.F. Lawton, T.P. Lannert)

Texas

Bunting, Craig Emil, Ellington & Associates, Houston (H.M.C. Danielli, M.R. Vining, W.E. Ellington Jr.); Clavaud, Jean-Baptiste, Chevron, Houston (F.W. Harris, P.M. Harris, M.D. Sullivan); Hayles, Kristin E., Hess Corp., Houston (D.M. Petty, R.L. Horine, T.W. Lenney); Hovorka, Susan D., Bureau of Economic Geology, Austin (S.W. Tinker, T. Meckel, W.A. Ambrose); Kennedy, W. David, Pathfinder Energy Services, Conroe (L.B. Thompson, Q.R. Passey, M.W. Bratovich); Li, Weiguo, BP America, Houston (J.P. Bhattacharya, B.J. Willis, B.R. Bracken); Meek, Gary Gene, Weatherford, Houston (A.M.

Schwartz, M.L. Dixon, J.D. Schultz); Miller, Kate C., Texas A&M University, College Station (E.A. Mancini, W.M. Ahr, M.C. Pope); Spikes, Kyle T., UT-Austin, Austin (D.W. Steeples, S.A. Graham, A.W. Walton); White, Jonathan Derek, Nautilus Limited, Houston (reinstated)

Virginia

Neuzil, Sandra Gregory, U.S. Geological Survey, Reston (R.T. Ryder, E.L. Rowan, C.S. Sweezey)

Washington

Doughty, Paul Ted, PRISEM Geoscience Consulting, Spokane (P.B.V. Quartero, J.R. Nurkowski, L.H. Fairchild)

Canada

Reich, Matthew A., PetroBakken, Calgary (D. Keith, E.A. Schink, D. Holy); Yang, Jianli, Seneca Resources Corp., Calgary (C.P. Kuminecz, D.E. Pasquini, S.B. Gorham)

England

Paulson, Shira Pearl, BP, Sunbury (N. Piggott, T. Goodwin, R.G. Gibson)

Hungary

Gyof, Istvan, Aspect Energy International, Budapest (J.R.V. Brooks, G. Tari, I. Bérczi)

Indonesia

Moore, Tim Allen, Arrow Energy, Jakarta (P.D. Warwick, G.L. Twombly, J.C. Pashin); Tanos, Chrisna Asmiati, MedcoEnergi E&P Indonesia, Jakarta (C.A. Caughey, J. Boast, F. Usmani)

Kuwait

Chughtai, Amer Shahzad, LMKR, Ahmadi (M.S. Shahzad, A. Iqbal, S. Obaid)

Mexico

Escamilla Herrera, Arturo, Pemex Exploracion y Produccion, Carmen, Campeche (L.R. Goodoff, E.S. Pasternack, E. Guzman)

Nigeria

Fasanmi, Babatunde Abayomi, Ankor Pointe Integrated, Lagos (G.E. Omolaiye, A.A. Adesida, O.R. Ojo); Madu, Stanley Uzochi, Julius Berger Nigeria, Abuja (O. Ejayeriese, A.O. Akinpelu, E. Latus)

People's Republic of China

Zhang, Liqiang, China Petroleum University, Qingdao, Shangdong (S.J. Mazzullo, J.C. Gries, W. Yang)

Trinidad & Tobago

Haynes, Naila Aisha, Petrotrin, Santa Flora (C.L. Archie, C.K. Ramroop, T.A. Steele)

Wales

Roy Chowdhury, Priyanka, Fugro Robertson, Llandudno (O.C. Iwobi, A. Kumar, C. Watkins)

Certification

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

Petroleum Geologist

Louisiana

Michael J. Quinn, Plains Exploration & Production Company, Lafayette (J. Heppermann, T. Bennett, B. Sydboten Jr.)

Mississippi

Jeffrey Owen Lundy, Anabasis, Madison (reinstatement)

Texas

Richard J. Deakins, Anadarko Petroleum Corp., Houston (reinstatement)



## READERS' FORUM

### Climategate

Lee C. Gerhard (Commentary, March EXPLORER) believes, or would have us believe, that the case for anthropogenic global warming has fallen over as a result of the behavior of a few British scientists, and that governments have relied implicitly and only on the advice of these few scientists.

He writes that "the sum total of these dishonest acts is an indictment of the entire scientific process concerning climate change," and "the result has been the acceptance of the hypothesis by political and social policy entities as a reliable scientific theory, without scientific validation."

Strong words!

However, one of the good things about climate change is that there are thousands of good scientists involved in its study – and good scientists, as stated by Gerhard, continually test their data and hypotheses, so there has not been over reliance on the output of any one climate study center.

Here in Australia, for example, scientists have for decades been charting patterns of increasing temperature and decreasing rainfall over important food growing and population areas.

Gerhard quotes the interesting case of plate tectonics. In this case, even before scientists took up the cause and almost as soon as accurate maps became available, people noticed the good fit of some adjacent coastlines and theorized as to the reasons for this. In a similar way today, even non-scientists are observing the signs of global warming and wondering as to causes and consequences. Farmers may be noticing fewer frosts each winter, skiers changes

in snowfall quantities and times, travelers retreat of glaciers, naturalists changes in migratory times and habits of birds and animals, etc.

The observant amongst us, scientists or not, will be testing what climate scientists are telling us against personal observations and those of colleagues, friends and relations. In many cases we will be getting positive feedback. Our governments have no doubt been doing the same on a more formal basis.

Let us not inflate the importance of the so-called "climategate" to distract from the main discussion.

Andrew Nelson  
Chatswood West, Australia

For what it's worth, on March 30, 2010, the Science and Technology Committee of the British House of Commons concluded that while CRU could have handled the information requests much better, they found no evidence to support the charge that they misrepresented data.

Did they behave immaturely and unprofessionally in private e-mails to each other about those requesting information? No doubt about it. This fact alone is what, justifiably, prompted an investigation from the panel.

But, to reiterate, they did not find any evidence of any data fabrication or fraud as some have suggested and as the Commentary in the March EXPLORER implies.

However, these are the conclusions of just one panel; it would be beneficial for additional independent bodies to do a similar investigation.

Brian Romans  
San Ramon, Calif.

## HoD Officers Set for 2010-11

The AAPG House of Delegates passed the seven bylaws proposals on the agenda at the New Orleans AAPG Annual Convention and Exhibition (see April EXPLORER), with HoD Chairman Steve Sonnenberg at the gavel.

One hundred eighty seven of the 214 elected delegates attended the New Orleans meeting, where they also elected Jeffrey W. Lund as chairman-elect and Patrick J. Gooding as secretary/editor.



LUND



GOODING



HAWK

Lund is executive vice president with Corridor & Associates in Houston, and Gooding is research geologist/manager with the Kentucky Geological Survey.

They will assume office on July 1, and David H. Hawk, a Boise, Idaho, consultant, will assume the HoD chairmanship.

## R&S from page 36

option open to students who previously may not have been exposed to earth sciences, thereby potentially reducing the number of students who will enroll in the class to fulfill the new graduation requirement.

Since earth science was removed from secondary/high school curriculum, students in Texas were taught earth science only at the eighth grade or middle school level. For most students, when university and career-path decisions are being made four years later, awareness of earth science was only a distant memory.

► At least once each month EMGI

will teach Rocks In Your Head course for teachers somewhere in Texas or elsewhere in the United States.

Pittman worked with AAPG Foundation member Herbert Hunt to put the course together. Initially, RIYH was an AAPG initiative, and the program cost was underwritten by AAPG and the Foundation.

The program's impact yields exponential increases in the number of qualified educators prepared to teach earth sciences. According to EMGI, 750 teachers were trained last year – mostly from Texas and Louisiana.

RIYH, offered during the recent AAPG convention in New Orleans, also will be offered in May at the upcoming Pacific Section meeting in Anaheim, Calif., and in June at the Rocky Mountain Section meeting in Durango, Colo. **E**



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The PASSCAL facility based at New Mexico Tech ([www.passcal.nmt.edu](http://www.passcal.nmt.edu)) is managed by the IRIS Consortium and is funded primarily by the National Science Foundation. This facility provides access to a broad range of portable seismic instruments, field training and support, and data services to assist seismological research on earthquakes and Earth structure. The PASSCAL Program Manager provides leadership and technical advice in the development, operation and evolution of PASSCAL, including oversight of the subaward for facility operation at New Mexico Tech.

The successful candidate must demonstrate vision and an ability for sustained leadership, and be capable of managing in a challenging, dynamic and highly rewarding scientific and technical environment. Significant travel is required. The position will be located in Socorro, New Mexico or Washington, D.C.

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Please e-mail vitae with a cover letter including names of references and salary requirement, preferably by May 15, 2010, to: [HR@iris.edu](mailto:HR@iris.edu).



## EMD

from page 43

second hydrate drilling program in April.

A gas hydrate assessment released by the U.S. Minerals Management Service in 2008 determined a mean estimate of 6,710 Tcf occurring in sand reservoirs, and a 2009 assessment released by the U.S. Geological Survey determined a mean estimate of 85.4 Tcf technically recoverable from sand reservoirs on the North Slope of Alaska.

Methods for converting the solid hydrate to its component natural gas and water include depressurization, thermal stimulation and dissolution. All of these methods have technical and economic issues, along with safety and environmental concerns.

An intriguing additional concept for gas hydrate development is the possibility of CO<sub>2</sub> exchange as a means of production, with CO<sub>2</sub> injected into a methane hydrate reservoir, resulting in the production of methane gas and the long-term sequestration of the CO<sub>2</sub> as hydrate.

Short-term hydrate production tests were conducted in Canada and Alaska from 2002 through 2007 and have demonstrated that natural gas can, in fact, be produced from hydrate-bearing sands. These tests provided data for computer models on the response of hydrate-bearing sands to depressurization and thermal stimulation, but as designed could not produce natural gas at rates that would draw industry interest.



JOHNSON

The question remains: Can sustained natural gas production be achieved at commercial rates from hydrate-bearing sands?

Further, are there safety and environmental issues that need to be addressed before hydrate development can proceed?

Those questions will be addressed in early 2011 as BP Alaska Exploration and its partners on the North Slope undertake a long-term, industry-scale production test at Prudhoe Bay field. This program has substantial funding from the U.S. Department of Energy and has benefited from the technical support received from the USGS and numerous service companies and academic institutions.

With success from the Prudhoe Bay test, Japan plans an offshore hydrate production test as early as 2012. ConocoPhillips and the Department of Energy also are designing a field program for a test of the CO<sub>2</sub> exchange technology on Alaska's North Slope.

As gas hydrate moves toward commercial development, the Energy Minerals Division and its Gas Hydrate Committee are actively working to keep AAPG members informed of ongoing developments. AAPG Memoir 89, "Natural Gas Hydrates – Energy Resource Potential and Associated Geologic Hazards," containing 39 papers that include all aspects of gas hydrates in nature, was released in January and is available online at EMD's Gas Hydrates page ([emd.aapg.org/technical\\_areas/gas\\_hydrates/index.cfm](http://emd.aapg.org/technical_areas/gas_hydrates/index.cfm)) and at the AAPG Bookstore ([bookstore.aapg.org](http://bookstore.aapg.org)).

*(Editor's note: AAPG member Art Johnson, who was vice chair for EMD at the recent AAPG Annual Convention and Exhibition in New Orleans, is with Hydrate Energy International, Kenner, La.)*

## CLASSIFIED ADS

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## DIRECTOR'S CORNER

## AAPG 'Youth Movement' Shows Strength

By RICK FRITZ, AAPG Executive Director

My son Ian recently turned 18 and it has been interesting watching the development of his attitudes and forays in (and sometimes out) of maturity.

As a result many of our father-to-son talks have changed. For example, since he bought his car we have many more in depth discussions on finance.

\* \* \*

I just returned from the AAPG Annual Convention and Exhibition (ACE) in New Orleans, where I had the opportunity to spend time with several groups of students and young professionals.

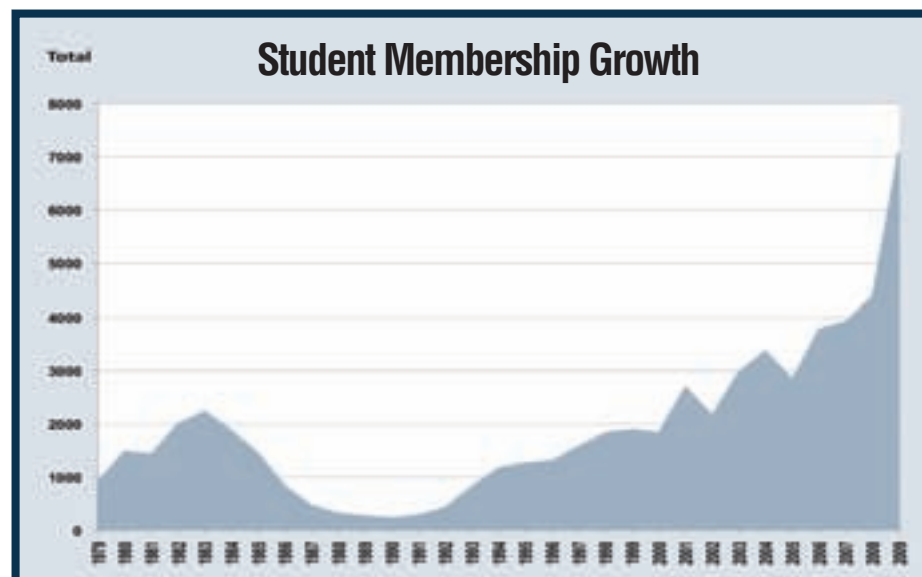
There is an old saying that "youth is wasted on the young," but in my opinion these young people have a lot going on. Several of them had just finished making presentations at the AAPG Imperial Barrel Award (IBA) contest, and I was impressed with their maturity and knowledge.

I also was amazed at how many students had worked in industry while getting their degrees. This was not the case when I was in school, but now through intern programs and summer hires many have experience in the industry.

I think this is a good trend for AAPG as a professional association. In the past, about 20 percent of student members joined AAPG immediately after school. Now more companies have hired young people out of school, and we are starting to see



FRITZ



an increase in the percentage of young professionals coming into the Association.

AAPG has a number of programs to support student and young professional development:

- ▶ The student sponsorship program, funded initially by Halliburton and for the last three years by Chevron, has increased student membership dramatically (see chart).

- ▶ The number of student chapters also is increasing with the increase in student membership.

- ▶ To support the students directly, the AAPG Foundation provides approximately \$200,000 each year in student grants-in-aid.

- ▶ The Imperial Barrel Award is now one of the premier student programs at AAPG. Steve Veal, chair of the IBA Committee,

said over 60 schools participated in the IBA program this year and more than 500 students are touched by the program in some manner.

When asked about the program, the most common student response is how important it was for them to learn to work as a team in integrating geology, geophysics and engineering into the project. This is a great program, and the announcement of the IBA teams and winners at the annual student reception at ACE is a truly electrifying event.

Also, this year I noticed an increase in young professionals active in committees. Particularly active is the Young Professionals Committee, led by chair Natasha Rigg.

The committee's mission is to help students transition to their professional

careers. In New Orleans the AAPG Executive Committee approved a proposal by the Young Professionals Committee to develop a Young Professionals Leadership Summit. The goals of the summit are to:

- ▶ Increase the number of young professionals in AAPG.
- ▶ Provide a template that can be applied to other young professional programs.
- ▶ Provide Section and Region chairs with new contacts.
- ▶ Develop a sustainable effective leadership structure.
- ▶ Facilitate a more structured AAPG Young Professional program.
- ▶ Allow for real-time sharing of best practices and lessons learned

A Young Professionals Leadership Summit is being considered for early FY 2011.

\* \* \*

In regards to a discussion on youth, American baseball legend Satchel Paige once mused, "How old would you be if you didn't know how old you was?"

My sentiments exactly!

No matter what your age, if you are interested in working with students and young professionals there are many great opportunities to develop new leadership and foster new science in AAPG.

Just send me a note if you are interested.

## DIVISIONS' REPORT

*Safe, clean, sustained production is goal*

## Hydrates Face Key Test on North Slope

By ART JOHNSON, Chair, EMD Gas Hydrates Committee

Gas hydrate, a crystalline compound of water and natural gas, has been touted as a vast potential energy resource for more than a decade – but realizing this potential has persistently remained beyond reach due to technical and economic hurdles.

A field program scheduled for 2011 on Alaska's North Slope represents a major step toward commercialization.

\* \* \*

Gas hydrate is a common component of sediments along continental margins and in Arctic regions where elevated pressures and low temperatures are present.

Hydrate concentrates natural gas so that the dissociation of a cubic foot of hydrate yields approximately 164 cubic feet of gas and 0.8 cubic foot of water. Hydrate may be present in either sands or shales, but hydrate-bearing sands are of particular industry interest as the hydrate is concentrated in the pore space of coarse sediments and thus has the best potential for commercial extraction.

While hydrate-bearing sands contain

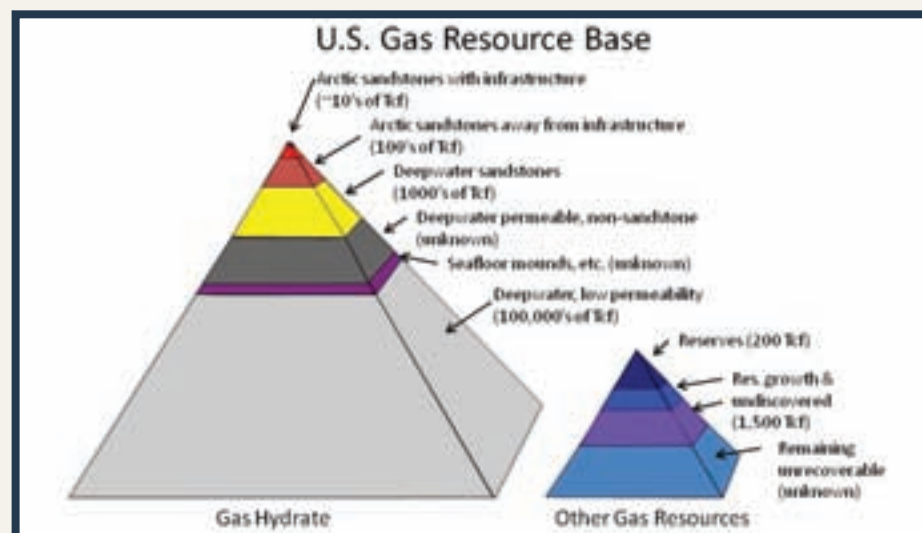


Figure 1 – The Gas Hydrate "Pyramid." Only a very small fraction of the gas hydrate present in sediment has any resource potential – but even that small percentage represents a huge potential in-place resource. Figure adapted from Boswell and Collett, 2006.

only a small fraction of the global hydrate volume, their resource potential is estimated to be in the many thousands of Tcf (figure 1).

Research programs undertaken in the Gulf of Mexico, the North Slope of Alaska, Canada, Japan and Korea have

confirmed the presence of hydrate-bearing sands and have validated predictive models for hydrate exploration. This was abundantly demonstrated with the results of a Gulf of Mexico drilling and logging program undertaken by a consortium led by Chevron and the U.S.



Department of Energy in April and May of 2009. The 21-day program drilled seven holes at three sites (Green Canyon 955, Walker Ridge 313 and Alaminos Canyon 21), representing a variety of geologic settings and a range of predicted hydrate saturations. LWD logging confirmed multiple hydrate accumulations and demonstrated the ability of direct detection techniques.

Additional field operations are being planned for the Gulf of Mexico, and South Korea was expected to conduct its

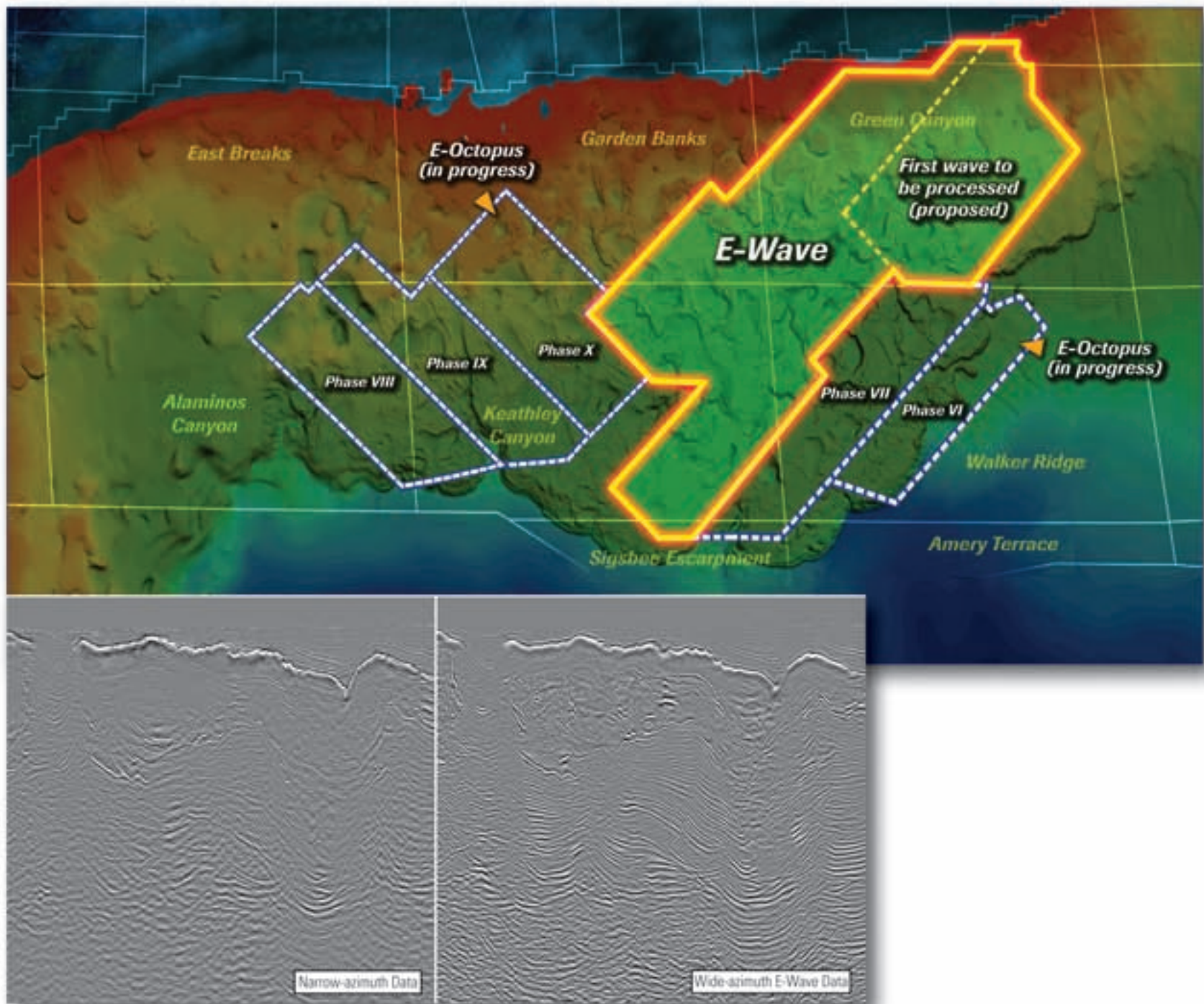
See EMD, page 42



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