

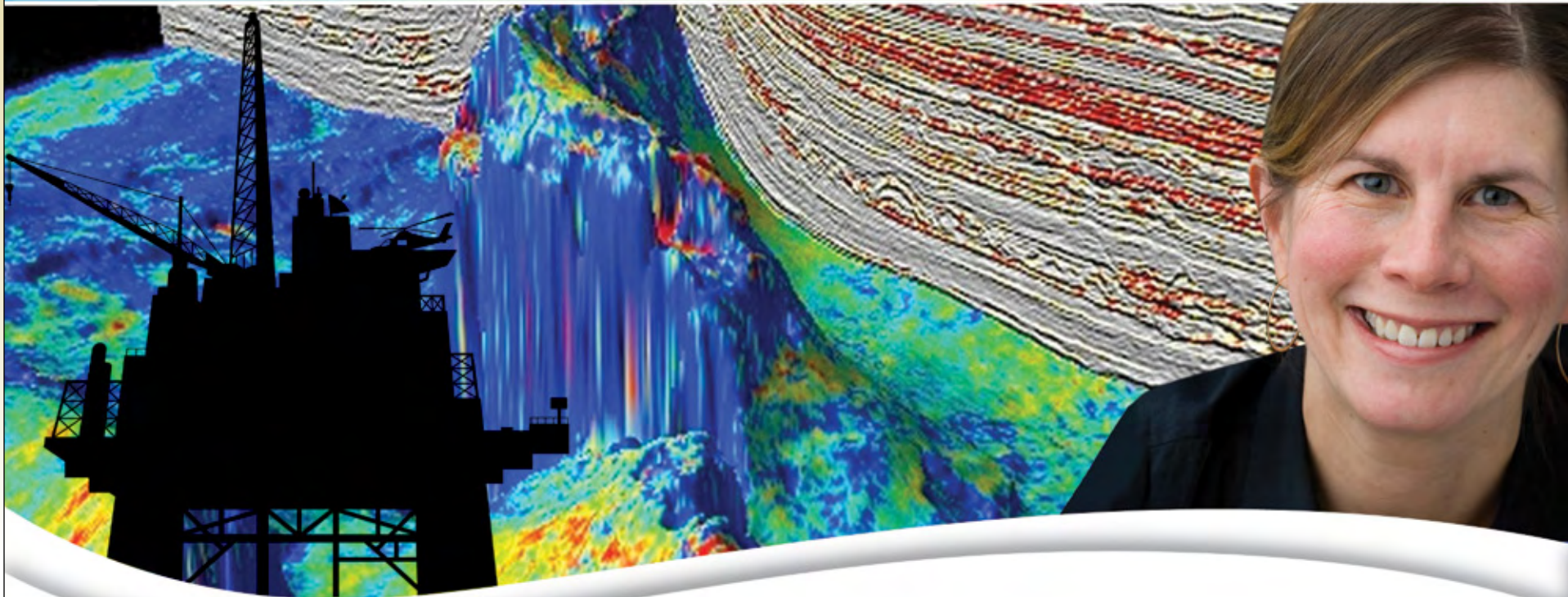
AAPG

EXPLORER

FEBRUARY 2012

Dangerous Beauty Geology and ancient secrets at the Strait of Hormuz

See page 12



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PRESIDENT'S COLUMN

A Column for You(th): Part Deux

By PAUL WEIMER

My September 2011 column was written specifically for Student and Young Professional members of AAPG. We received so much feedback that we're revisiting this topic for February's column – this time with co-authors Nick Lagrilliere and Richard Ball, chairpersons, respectively, of the AAPG Young Professional and Student Chapter committees.



A geologic call to arms! ...
Here is an open invitation to engage in AAPG activities.

In my September column I discussed why professional societies are important to your future career, and why Students and Young Professionals should consider joining AAPG in particular. This topic seemed to strike a nerve. This column is a reply to the many comments that we received.

As previously mentioned, the adjacent graph shows the distribution of membership by age. The large peak associated with Students and Young Professionals (YPs, ages 21-30) signifies the long-term critical aspect of AAPG's future success, namely recruiting and retaining you as new members, and welcoming you into the Association.

To set the stage, consider these two stark realities: First, as of 2011, the current retention of Student Members after graduation is less than 9 percent. When these numbers are projected into the future, AAPG's membership is static to slowly declining – a topic that I will examine in greater detail in a future column. Second, HQ has a hard time locating students once they have graduated.

The feedback from my September column fell into two categories:

1. Students/YPs don't join AAPG because they don't perceive its value. For example, they may mistakenly believe they can get all their career

"mojo" – technical information and career guidance – from the web or from their employers. Or, in some cases, students and YPs may not feel a personal

connection to any AAPG members; nobody has enticed them to participate in professional or social events.

2. Students/YPs perceive value in the AAPG, but feel they cannot afford the dues. Or, they may simply be overwhelmed, and feel they don't have time to engage.

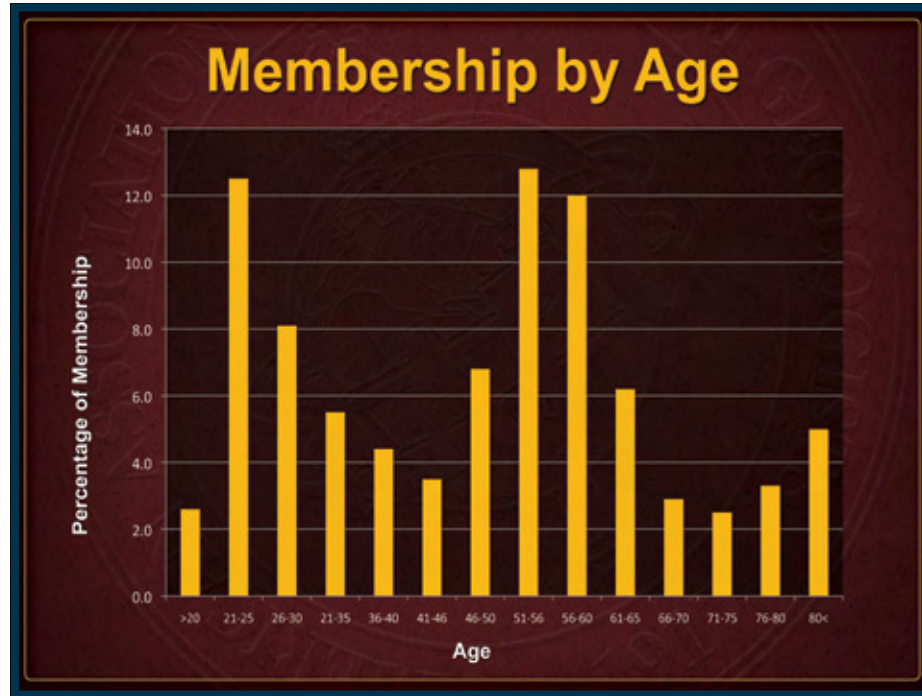
All of these are legitimate concerns.

We'll address these concerns, while also reviewing three programs that are designed to transition Students and Young Professionals into the AAPG.

► First, the Student sponsorship pays for 100 percent of AAPG for their memberships, which makes membership "free" for students. Student corporate sponsorship began in 2003, initially sponsored by Halliburton and, most recently, by Chevron. This program pays the membership fees (\$10/year) for all Students. In addition, last spring, the House of Delegates voted to extend Student dues rates up to 24 months after their graduation to help ease their transition into the professional working world. Chevron, through Bobby Ryan's leadership on the Corporate Advisory Board, is to be commended for its sponsorship, which has had significant global impact in our membership. The evidence shows that this program is effective. In 2002, before this program was initiated, there were 2,173 Student members. By contrast, as of June 2011, we now have 6,928 Student members.

► Second, the Student Chapter

[See President, next page](#)



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12 Rocky road to success: AAPG member **Simon Donato** found adventure – and much more – when he accepted the personal challenge of finding archaeological sites in the rugged and dangerous mountains overlooking the Strait of Hormuz.

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38 **Howard Johnson** left a successful 15-year career with a major oil company to become a teacher – and that step led to a role in the creation of the wildly successful **Imperial Barrel Award**.

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ON THE COVER:

AAPG member Simon Donato stands atop a cliff on Oman's Musandam Peninsula, which juts into the high-profile Strait of Hormuz. Donato, an "adventure scientist," was there on a quest to find the remains of an ancient village – and on a bit of a personal dare. See story on page 12. Photo by Jim Mandelli. Left: One of the many signal towers that dotted the high-points and ridge lines overlooking the many bays of the Peninsula.



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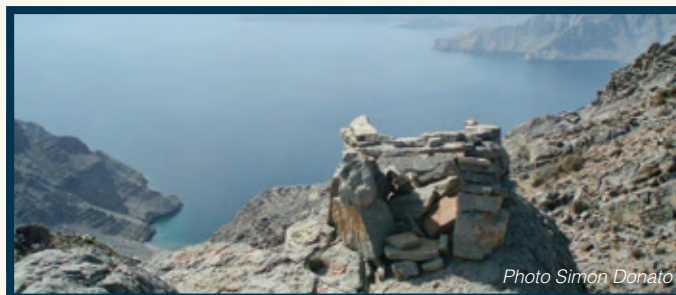


Photo Simon Donato

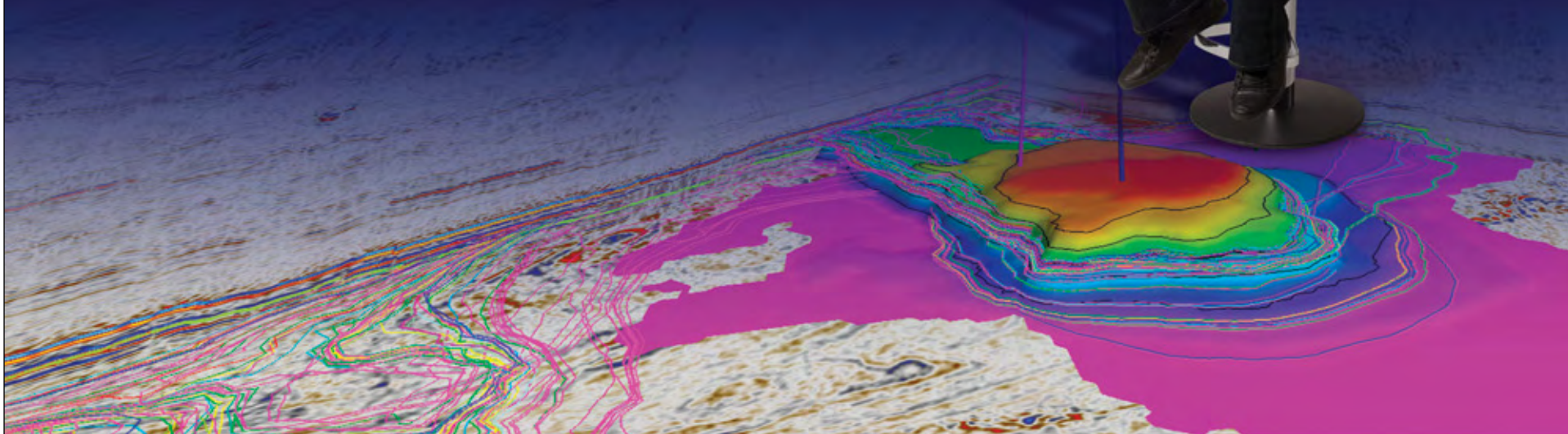
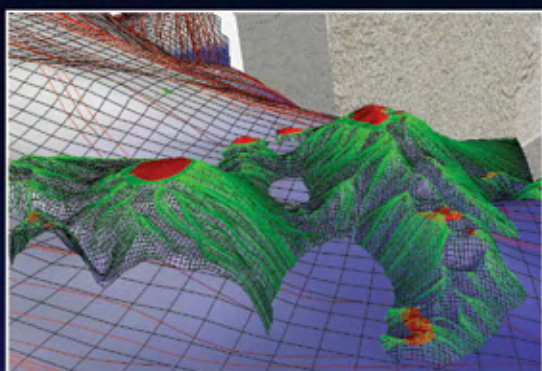
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Numbers don't indicate energy independence

Study Cautions Overenthusiasm on Shale Capacity

By LOUISE S. DURHAM, EXPLORER Correspondent

Talk abounds that unconventional hydrocarbon production – from shale formations for the most part – is setting the stage for energy independence for the United States, along with a significant increase in product supply for much of the world.



BISHOP

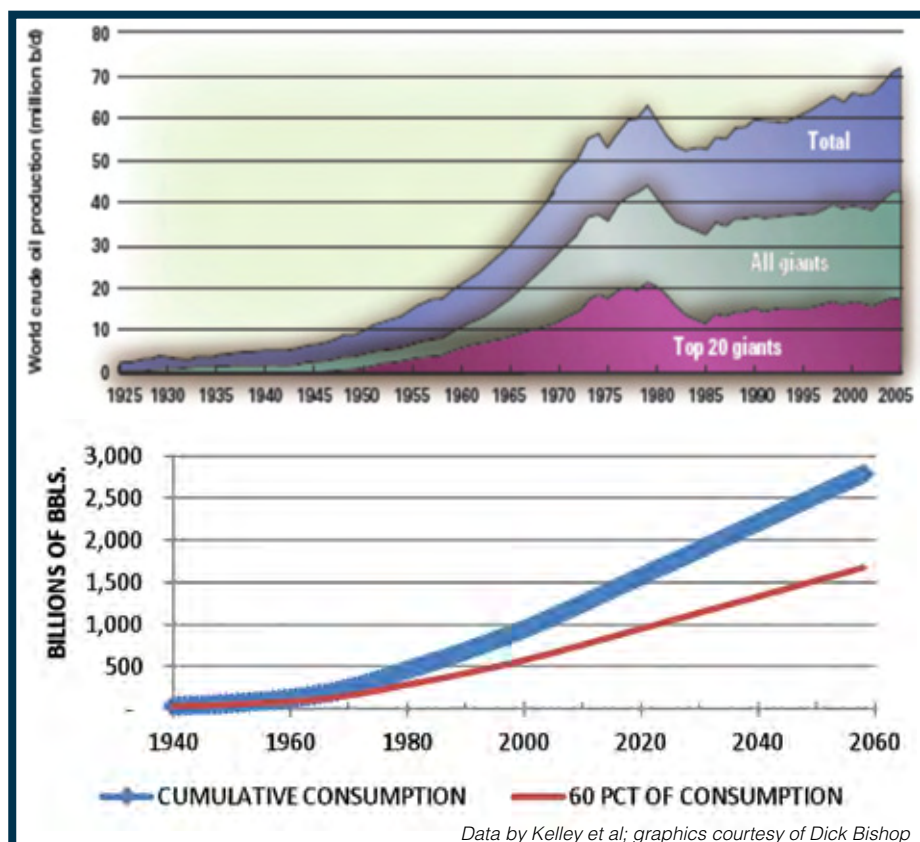
The persistent scramble to get in on the shale action is underscored by the entry of some of the majors who essentially abandoned the onshore U.S. not so very long ago.

Additionally, overseas companies continue to arrive on the domestic scene to cut deals – a stark contrast to times past.

One of the latest transactions was struck between Devon and China Petrochemical Corp., aka Sinopec. Indeed, the New Year arrived in style for Devon when the Chinese entity agreed to fork over \$2.5 billion to join Devon in developing several of its shale fields.

Almost simultaneously, France's Total SA became an investor in Chesapeake Energy's shale holdings when it agreed to invest \$2.3 billion to explore the Utica shale in Ohio.

Despite such big deals, however, there are plenty of potential investors who remain cautious. Many maintain the ongoing shale "boom" ultimately will prove to be a here



Some predict U.S. energy independence, but past experience may suggest otherwise. Above, giants produce 60 percent of our daily oil supply (top); total consumption vs. 60 percent from giants.

today, gone tomorrow phenomenon.

It wouldn't be a first for this industry, where today's new big thing can (and has)

quickly become tomorrow's has-been. Not surprisingly, many veteran players continue to look back over their collective shoulders.

Nonetheless, there are high expectations among the optimists, which include the substitution of now-plentiful domestic natural gas for imported oil, large increases in the use of domestic gas as a cleaner/safer alternative for coal/nuclear-generated electricity, and the addition of gas exports.

For the United States, there are many predictions of production rates to create energy "independence."

Sounds good, huh?

Reminders of Realism

This sounds good because all enjoy the optimism of a new discovery – and today, with over 2,300 source rocks identified around the world, the potential seems unlimited.

But according to past AAPG president Dick Bishop, limits are inevitable.

Any prediction about production rate inevitably has a physical link to the length of time it will last and the total reserve, he says – and that "time the production will last" is lacking form virtually all such predictions of energy independence in the press.

This is the cautionary message being espoused by Bishop and his colleagues at Houston-based RSK, where he and RSK colleagues Wayne Kelley and Rick Baggot decided to test the predictions.

"We looked at what the United States could produce and how long the volumes

See **Unconventionals**, page 8



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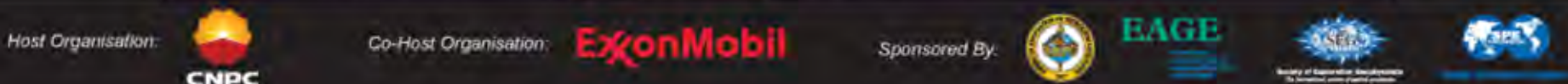
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Unconventionals from page 6

would last," Bishop said. "People talk about rates, but this is not good science unless you include the time those rates can last.

Importantly, Bishop adds, this was not asked casually, but was the result of several years studying the economic controls on global energy supply rates (not volumes). The basic approach was, given today's technology, well rates and resource volumes, what might the production rates be – and for how long?

Bishop outlined the straightforward RSK computational model:

- ▶ Assume representative well production profiles, i.e., decline curves.
- ▶ Assume drilling effort, i.e., number of rigs and wells drilled per rig per month.
- ▶ Sum individual well production per

month assuming 100 percent chance of success for each well.

▶ Limit the production by estimated ultimate return (EUR), area of the resource, or years to drill the resource.

▶ Calculate project and well economics using standard models.

Bishop offered a succinct summary of conclusions based on their models:

▶ Shale gas can significantly reduce the negative economic impact of imported oil – but not in the near term, owing to slow market growth.

▶ Shale gas will displace some coal and nuclear use but probably will not completely replace them due to the large, long-term energy needs of the nation.

▶ Shale oil will help to maintain and to increase U.S. production modestly, but its current EUR probably isn't large enough to provide oil economic independence, let alone actual oil independence.

How It Will Work

Where we've been says a lot about where we're headed.

"Sixty percent of daily oil consumption has come from the giant fields," Bishop said. "For many decades, we've been consuming about 2 percent of the resource volume, but over the next 20 years we'll see significant increases in percentage consumption from these fields.

"This says the world doesn't have the spare capacity we used to have," Bishop said.

The novice likely would say, so just drill more wells. After all, the Middle East used to punch wellbores down that would kick out 10,000 to 20,000 bopd at a production cost of perhaps a nickel a barrel.

"We're in a different era now and can't add capacity at will like we could in past

decades," Bishop said. "The percentage of consumption from the giants continues to go up, and that means upward pressure on oil prices.

"That says shale oil will be developed in the United States," he noted.

It's a different world in the natural gas sector, where operators have essentially slammed on the brakes in some areas. Soaring shale gas production volumes over the past few years have kicked prices into the basement – making the commodity a victim of its own success.

Even now, during the annual "high season" for gas prices, the cost reportedly fell below \$3/MM Btu on Dec. 30 for the first time in more than two years (1,020,000 Btu = 1Mcf of gas).

Bishop predicts LNG will be the major price competitor to a lot of natural gas, noting that LNG will be like cheap Middle East crude in the 1960s.

It's moving to a global commodity today.

Where Are the Facts?

A study recently released by the National Petroleum Council concluded that "America could have enough oil resources to meet today's oil demand levels in the future for decades without importing from unfriendly foreign countries."

Among the report's highlights is a comment attributed to Goldman Sachs, which indicated that it expects the United States to take the top spot as the largest oil producer by 2017.

When mentioning this to Bishop, the comment elicited a wry chuckle, and he noted the RSK models don't support that kind of production increase. While perhaps physically possible, the brief duration could never be justified financially.

Equally as mystifying are predictions of \$1.50 gasoline in the United States announced publicly by a financial house representative as well as a long-term politician hoping to have the opportunity to compete in the next presidential election.

"We don't know the basis for their decisions for their forecasts, so we don't see where these numbers are coming from," Bishop said.

"Our models aren't perfect," he noted. "We're using public data and trying to show what these things look like given the state of knowledge today.

"The technology and state of knowledge are going to change in the future, and the models are going to change," he emphasized. "But this is a way you can get at communicating both the rate and the duration over which you can maintain that rate."

Then there's the issue of expanding the infrastructure as well as added refining capacity to handle the dramatic production volume increase being predicted in some quarters.

"A real kicker is the transportation infrastructure to refineries," Bishop said. "If this is possible, then show us. Convince us what is the basis for it.

"As an industry, we need to become better communicators to build our credibility with both the public and the government – we can no longer afford to make widespread, wild unsupported claims to the production," he declared.

"If you want to make claim to a large amount of productive capacity, then support this with models like we have," he said. "You can say whatever you want, but back it up with models to show how it works." ■

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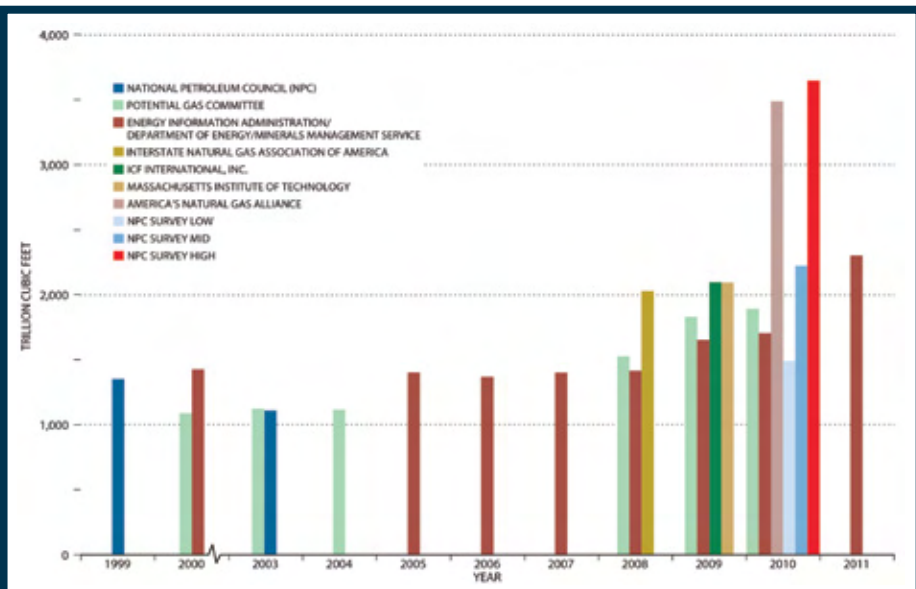


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An NPC report says U.S. natural gas technically recoverable resources are increasing.

Longer leases in frontier areas backed Shales Give Basis for Rosy NPC Resource Report

By LOUISE S. DURHAM, EXPLORER Correspondent

Do you catch yourself sometimes feeling antsy over the possibility of inadequate supplies of domestic fuel now and into the future?

Results of a recent study by the National Petroleum Council (NPC) may calm you.

According to the Institute of Energy Research's overview of the NPC study's findings, America could have enough oil

resources to meet today's oil demand levels for decades – without imports from certain countries who really don't like us much, if at all.

There's also a predicted decades-long supply of "homemade" natural gas, mainly from factoring in the vast shale gas resource.

Just as with shale gas, the study notes that hydraulic fracturing will open up huge shale oil resources for development as well – an occurrence we're already seeing.

But before you relax and toss your Valium supply, keep in mind that the jury is still out over the continuing implementation of hydraulic fracturing in a number of key areas.

Among other issues, hard core opponents appear to be convinced that many people, particularly in the vicinity of disposal wells receiving fracturing wastewater, will soon reach their demise from fresh water supplies supposedly contaminated by this common, decades-long oilfield practice.

Then there are those pesky little earthquakes that are becoming relatively commonplace, principally in the vicinity of hydraulic fracturing/disposal operations.

But that's a whole other story for another day.

Study Highlights

A few of the highlights presented in the oil segment of the NPC study are:

- ▶ The United States is the world's third largest oil producer, after Russia and Saudi Arabia. In fact, Goldman Sachs noted it expects the United States to take the top spot as the largest oil producer by 2017 (see related story, page 6).

- ▶ The United States and Canada combined produce 4 percent more oil than largest global oil producer Russia.

- ▶ Domestic sources of oil in the United States include tight oil e.g., the Bakken and Eagle Ford formations, offshore Gulf of Mexico and Atlantic and Pacific coasts, the Arctic, and shale oil deposits in Colorado, Utah and Wyoming.

Developing these resources will necessitate assistance from the federal government through their inclusion in the 2012-17 leasing program.

- ▶ Two scenarios were evaluated: Constrained, or limited (assumed limited resource access, constrained technology development, greater regulatory barriers); and unconstrained (assumed more access and substantial technology advances).

- ▶ Oil from shale formations could produce as much as three million bopd by 2035.

- ▶ Together, the United States and Canada could produce up to 22.5 million bopd, which is today's demand volume. With increased demand, some imports still would be necessary.

See NPC, page 22



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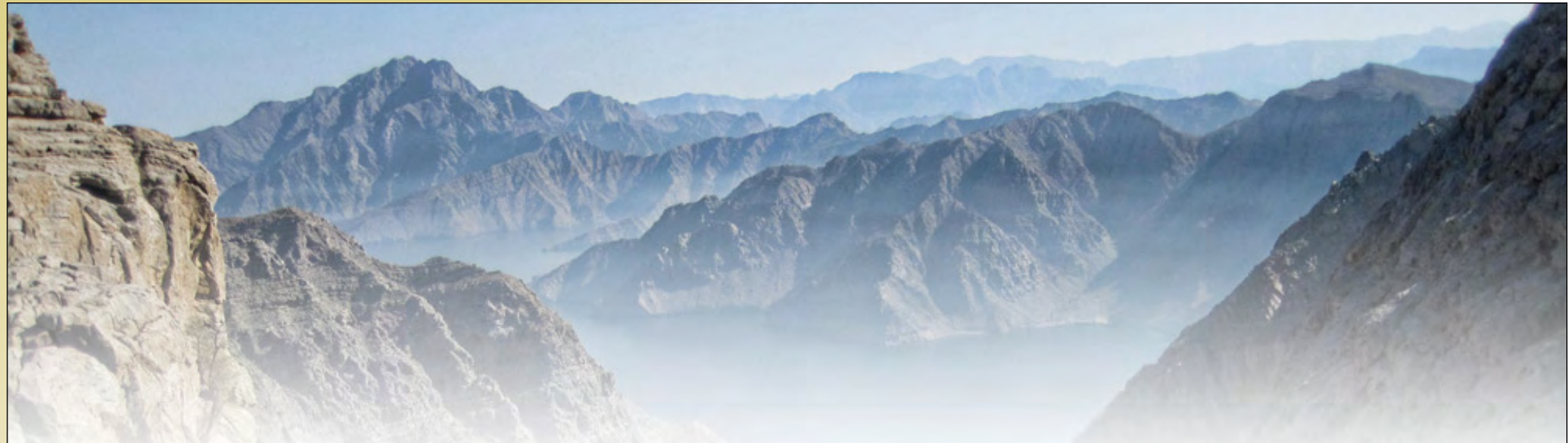
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Oman's Musandam Peninsula offered challenges

'Adventure Scientists' Explore Remote Regions

By SUSAN R. EATON, EXPLORER Correspondent

A APG member Simon Donato and his adventure science colleague freely admit they got “cliffed out” while inching along a limestone precipice – encrusted with goat poop and strewn with loose rocks – that measured 24 inches at its widest and eight inches at its narrowest.

Falling was not an option. The rugged limestone mountains of Oman's Musandam Peninsula plunge 500 meters to the waters of the Persian Gulf. Carnivorous in nature, the fossiliferous Cretaceous age limestones shred hands, skin, even running shoes, on contact.

The Musandam Peninsula juts out into the Strait of Hormuz, a strategic body of

water that stretches 55 kilometers from Oman to Iran.

Yes, the same Strait of Hormuz where earlier this year Iran's navy flexed its muscles, threatening to block the passage of oil tankers carrying a significant portion of the world's oil supply.

In the end, Donato and his colleague turned around, leaving the goat trail to the goats. They retreated to the peninsula's ridge line, with its commanding views of the Persian Gulf, traveling along barely discernable trails left by people who had likely vanished centuries ago.

It all occurred last March, as Donato and two team members mounted an “adventure

science” expedition to the Musandam Peninsula – their mission was to investigate undocumented archaeological sites and to explore for evidence of paleotsunami deposits.

What, you might very well ask, is “adventure science?”

The concept was developed by Donato to solve and explore nature's mysteries.

“Adventure science is about getting outside, exploring the world, and understanding nature in a scientific way,” said Donato, a Calgary-based geologist with Imperial Oil Resources who holds a doctorate from McMaster University.

Donato treads lightly, with a low carbon

footprint, relying upon manpower to access and explore remote regions of the planet.

“Being a field scientist is not about being able to do math in your head – it's about observational skills,” Donato said. “We're a resource for data collection in poorly studied areas, primarily because they're tough to get to.”

Adventure scientists, he continued, trade hiking boots for nimble trail running shoes, and can cover tens of kilometers in a day. Skilled at quickly conducting regional reconnaissance, adventure scientists pass their field notes, GPS locations and digital photographs to experts who determine, in the field or at a later date, whether follow-up scientific or archaeological investigations are warranted.

“The athletes bring mental and physical toughness, endurance, durability and speed,” he said. “And the experts coach the athletes to look for specific attributes or indicators.”

A Daring Challenge

A man on the run, Donato, 35, is a tall and lean endurance athlete. Last year, he bowed out of a 330-kilometer-long, non-stop mountain race in Courmayeur, Italy, after he sprained an ankle at the 150-kilometer mark. In fact, he pushed onward, to the 172-kilometer mark, before stopping to avoid long-term physiological damage.

Donato also is a man who runs toward a challenge: While reviewing a geological report by R.L. Falcon, detailing a 1971 expedition sponsored by the Royal Geographic Society of London to map the oil and gas potential of the Musandam Peninsula, Donato was struck by one of Falcon's sentences:

“We were told of archaeological sites in the interior, but the terrain was far too mountainous to explore; therefore, we did not visit them.”

See Expedition, page 14

A – The view east from “Macchu Pichu” is nothing but open ocean; this is the last piece of land before a mariner would enter the Gulf of Oman and Indian Ocean.

B – Donato makes his way down the steep and loose rock wadi (“380 meters of terror”) after getting “cliffed-out” crossing the isthmus.

C – A large graveyard preserved on one of the interior plateaus near one of the ancient villages. There were several hundred graves.



Photos courtesy of Jim Mandelli





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Formerly irrigated fields (water transported along muddied stone walls visible) next to ruined structures on a plateau bounded by a vertical drop of several hundred meters. Cloud-capped mountains in the distance belong to the isthmus connecting our starting point to the peninsula.



Rothaus and Donato resting at Camp 2, and drying wet gear. The adventure scientists were surprised to discover that the uninhabited beaches were covered in plastic bottles and other flotsam discarded at sea by mariners.

Expedition from page 12

Unknowingly, Falcon had thrown down the gauntlet; 40 years later, Donato accepted the challenge. The Musandam Peninsula, a formidable natural fortress of rock with no roads and few inhabitants, was a perfect candidate for an adventure science expedition.

Donato, a Fellow with the New York-based Explorers Club, led "Beyond Roads: The Musandam Peninsula Oman Expedition" from March 5-20, 2011. The three-man expedition carried the Explorers Club Flag #71 to Oman.

The team arrived during the Arab Spring uprisings, and tensions had spilled into Oman. The initial meeting with the Omani boat captain went badly, and he warned the team: "Foreigners are not allowed to travel there – it's patrolled from the air."

The boat captain's parting words – before he quit – were: "If somebody finds you, it's bad for you, and it's bad for me."

Luckily, the team found a replacement who ferried them, their gear and 80 liters of water to the remote tip of the Musandam Peninsula.

High Way to the Danger Zone

Apart from falling, health risks on the trip included sunburn, dehydration and bites from venomous vipers, scorpions and camel spiders. The team carried a satellite phone for emergency communications.

Richard Rothaus was one of Donato's team members. Rothaus, president and principal archaeologist of Trefoil Cultural and Environmental LLC in Sauk Rapids, Minn., confirmed that he's not an endurance athlete – nor was he the colleague stuck on the goat ledge with Donato.

After an arduous day of shuttling 50-liter backpacks full of supplies and water – and climbing 200 meters with no trails to speak of, in 30-degree C temperatures – Rothaus elected to camp at lower elevations, acting as the resident archaeology expert while Donato and the third team member, Jim Mandelli, an engineer and elite athlete from Vancouver, British Columbia, conducted 50 kilometers of reconnaissance in 10 days.

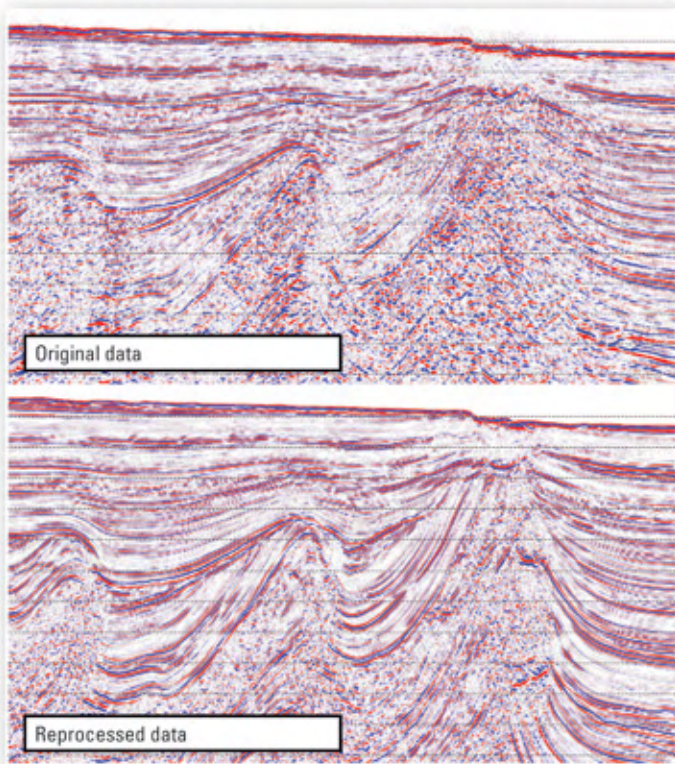
Daily rations, per person, consisted of 2,500 calories, placing team members in a caloric deficit based upon their exertion levels. Each man had a daily allocation of three liters of water, which included cooking water.

Due to the area's remoteness and a nagging concern that the boat captain

See *Adventure Science*, page 16

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Final day of the trip: AAPG member Simon Donato walking northward along a ledge, several hundred meters above the wadi bottom. This ancient trail led to the isolated town of Kumzar, which is the most northerly inhabited spot on the Peninsula.

Adventure Science from page 14

might not return – the team was exploring a militarily strategic area without any official permits – water was rationed, at one point during the expedition, to 1.5 liters a day.

Arm Chair Archaeology

Using Google Earth, modern-day expedition planning involved “arm chair archaeology.” Honing in from space, Donato and his team scoured the area for geometric shapes – evidence of human habitation – discovering the existence of circular and rectangular buildings, stone retaining walls and long-since abandoned agricultural settlements connected by a network of foot trails on the high plateaus of the Musandam Peninsula.

One site, in particular, captured Donato’s curiosity: a circular stone structure and retaining walls, which Donato dubbed “the Machu Picchu of Oman.”

The view from space enabled the team to select barely visible foot trails criss-crossing the rocky, sand blown terrain, which Donato described as “pretty damn gnarly.”

“Good luck with finding a 500-year-old trail, on the ground, in an environment like that,” he said.

“Google Earth has changed everything,” Rothaus said. “It’s now the number one place to start for mission planning.”

In the absence of any recent topographic maps, the group relied upon Google Earth, as well as some old Russian maps and the 1971 geological maps produced by British geologists.

“Going in, we had absolutely no idea whether someone had built the stone walls 4,000 years ago or 50 years ago,” Rothaus explained. “There was no soil development, which led to an amazing level of preserved material.”

Rothaus has worked with geologists for more than 20 years, and has benefitted immensely from the “cross-pollination of skill sets.” Archaeology and geology, he said, rely upon the same tools to perform “responsible documentation in the field.”

Archaeologists investigating coastal archaeological sites, he said, need to understand the complex impacts of seismic events, climate change, sea level rise, sediment deposition, subsidence and ablation.

Forgotten Outpost

Oman’s “Machu Picchu” was the first of 20 sites – including several large villages – the team documented. A lost outpost in Omani history, the site consisted of a large circular rock structure measuring 40 meters in diameter.

Several hundred meters uphill, Donato and Mandelli discovered a grouping of 20 large rectangular buildings, most with walls intact and massive limestone lintels still perched above the doors. According to Rothaus, the majority of the sites investigated were built between the 15th and 19th centuries, and the pottery pointed to both Portuguese and Asian influences.

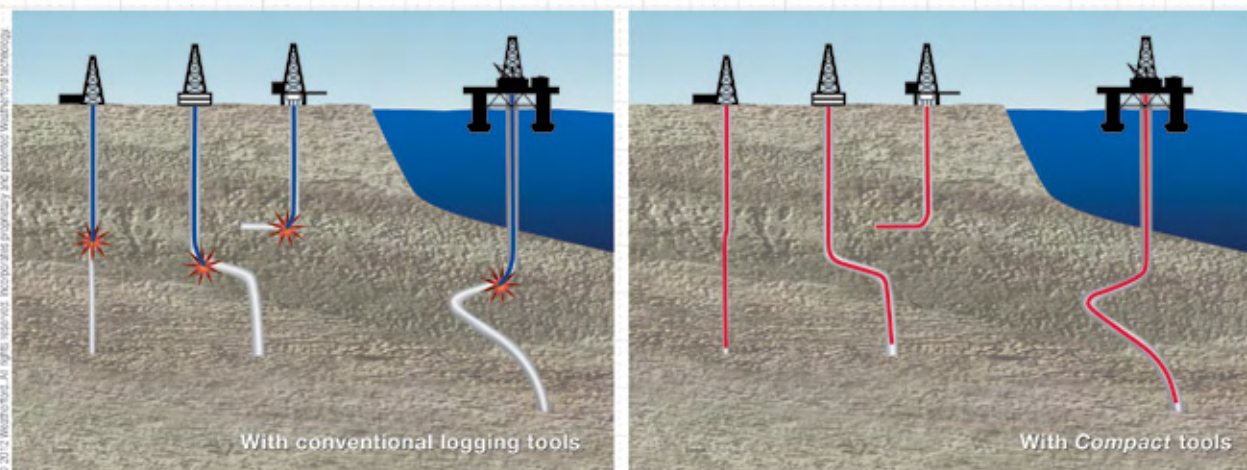
Several of the villages contained buildings with large pottery vessels in pristine condition. The team also documented cemeteries, cliff shelters, cisterns, agricultural sites, lookouts, signal towers and various walls and fortifications.

No ground was broken at any of the sites, and Rothaus believes there’s potential for significant discoveries through proper

See **Danger Zone**, page 18

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HoD to Consider Membership Classifications

Delegates will consider three proposals at the House of Delegates meeting at the AAPG Annual Convention and Exhibition in Long Beach, Calif.

Two of the proposals deal with change of membership classifications.

House Chair Jeff Lund said the proposals were generated from the HoD Constitution and Bylaws Committee, chaired by Dave Entzminger.

The membership classification proposals are:

- ▶ Membership Simplification Proposal.
- ▶ Membership Class Solution Proposal.
- ▶ Delegates also will consider a

Strategic Plan Amendment proposing "any recommendations to the Executive Committee involving potential amendments to the Constitution and Bylaws shall also be forwarded to the House of Delegates for review and comment."

Both of the membership classification proposals address the present member classifications of the Association (Active, Emeritus, Honorary, Student and Associate) with the aim of simplifying and clarifying the classification scheme.

The C&BLC voted unanimously at its meeting to present both proposals at the Long Beach meeting for delegate discussion of both proposals.


Both proposals are forwarded without

endorsement from the C&BLC.

After discussion on the House floor, an informal vote could be solicited from the delegates to establish which proposal or parts of the proposals, if any, the House would endorse.

The C&BLC would then rewrite the appropriate sections of the bylaws needed to follow the House's endorsement and bring it to a formal vote in 2013.

The proposals have been sent to delegates and are published online. The specific proposals and a discussion area are accessible from the AAPG website front.

Member comments are invited. 

Danger Zone from page 16

archaeological excavations, which could include carbon dating.

"There was such a unique ecological niche on the plateaus," Rothaus said, "because habitation only worked when the climate was wetter and cooler than today." The presence of cisterns and irrigation systems, he said, indicated that although life was tough, people farmed on the Musandam Peninsula before the climate changed.

According to Rothaus, it's always good to have a dual-purpose expedition. The peninsula's rocky coastlines – and a corresponding lack of readily accessible beach sediments – prevented the team from investigating evidence of paleotsunami deposits.

No stranger to Oman's geology, Donato's doctorate work involved three field seasons of studying paleotsunami deposits in the Sur Lagoon located 200 kilometers south of Muscat, Oman's capital city.

"In the world of tsunamis," 'paleo' refers to anything that's buried and that we don't have historical records for," Donato said.

In the mid-2000s, Donato, his doctorate thesis adviser and Rothaus worked on a Vibracore project, searching for sediments of "tsunamigenic" origin. The team mapped a laterally extensive shell horizon, greater than one square kilometer in size, which extended deep into the lagoon.

The five- to 25-centimeter-thick horizon contained numerous sub-tidal and offshore bivalve species, including many articulated shells.

The bivalve horizon they mapped correlated with an 8.1 magnitude earthquake on Nov. 28, 1945, which was focused in the eastern portion of the Makran Subduction Zone of the Arabian Sea. The earthquake generated a powerful tsunami, causing destruction in Pakistan, Iran, India and the city of Muscat.

Donato's doctorate work demonstrated how low cost, geological investigations can be used – for risk assessment purposes – in coastal areas with a history of seismic activity but no documented paleotsunami record.

Your Own Back Yard

In order to protect the settlements from looting, Donato and his team haven't published the coordinates of their study area.

(A full report of Beyond Roads: The Musandam Peninsula Oman Expedition can be found on the New York Explorers Club website, under the Flag Report section:

http://www.explorers.org/pdf/Flag_71_-_Simon_V_Donato_Flag_Report_7-19-11.pdf.)


However, they've provided all of the expedition's findings to the Omani government.

"The good news," Rothaus said, "is that the area is remote and it's not under immediate threat."

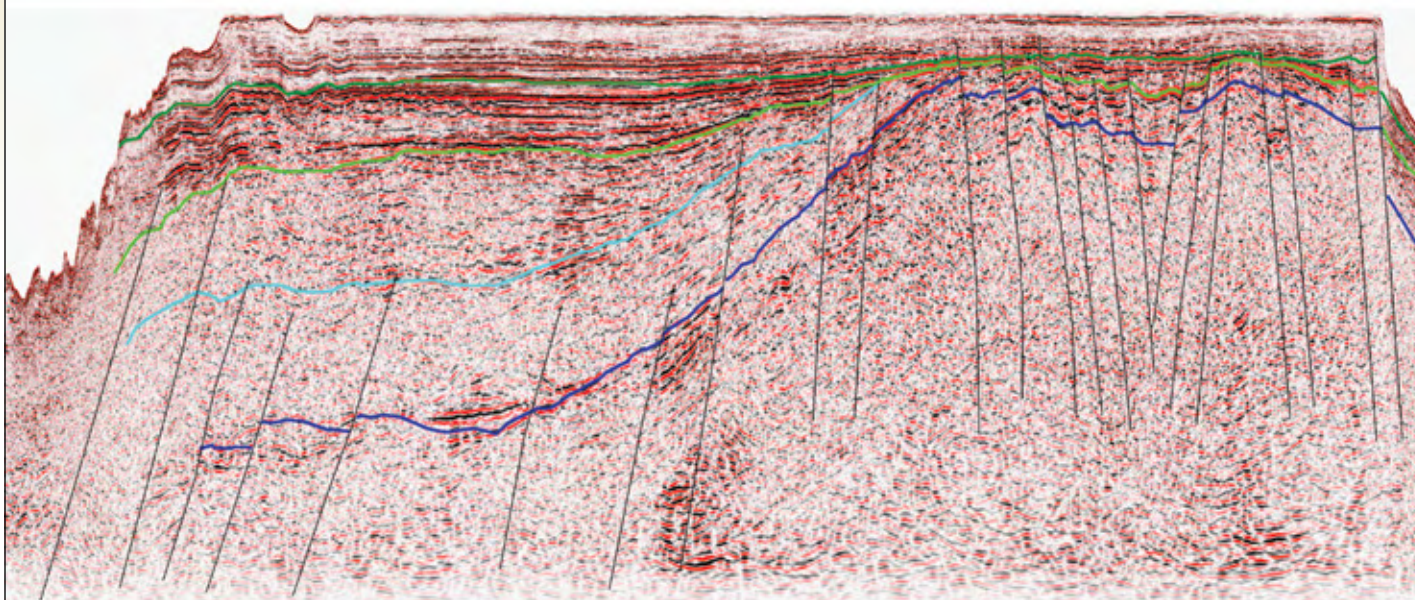
Donato has replaced his trail runners, which, by the end of the Omani expedition, were held together by medical tape and surgical glue.

He challenged fellow geoscientists to lace up their running shoes, to practice their art of field observations and to make new discoveries in their own back yards or in the most remote regions of the planet.

"Geologists are a rare breed, and they make good adventure scientists," he said.

"We have an appreciation for the natural world and for landscapes, and we're endowed with a sense of curiosity." 

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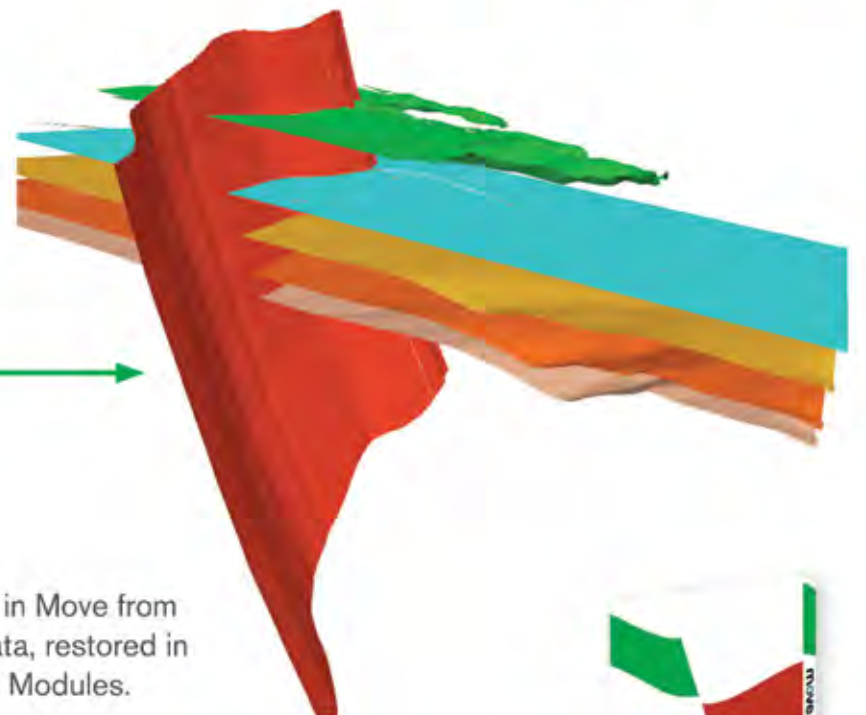
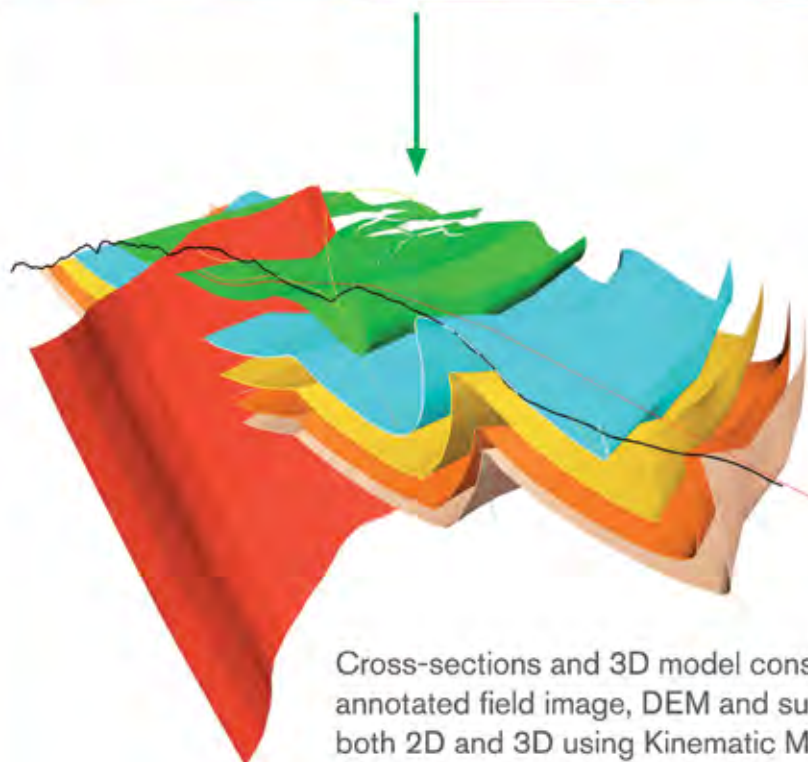
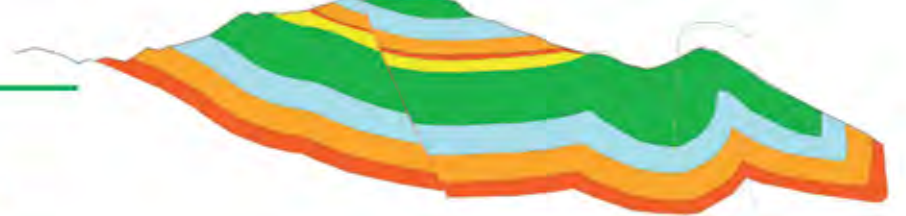
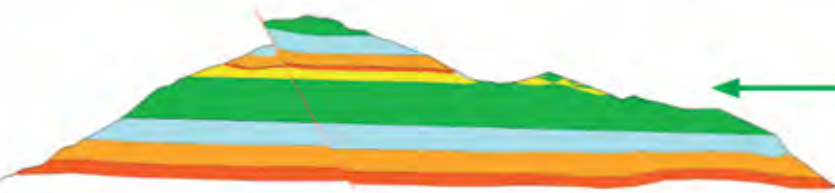
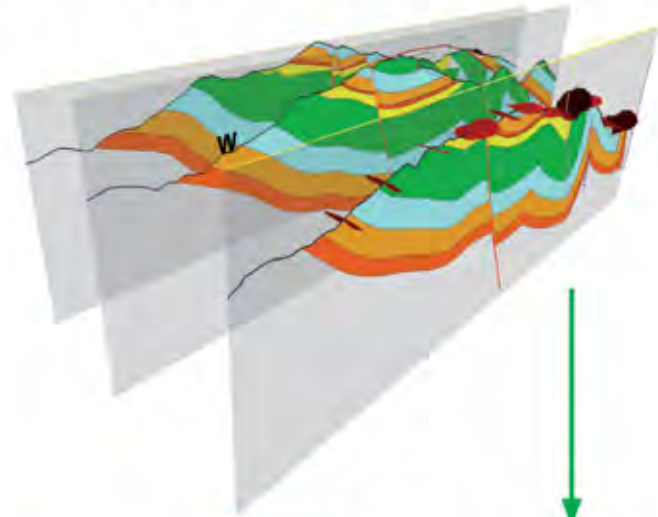
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*Bond, C.E, Lunn, R.J., Shipton, Z.K., Lunn, A.D., 2012, What makes an expert effective at interpreting seismic images?: Geology, 2012;40;75-78. [http://doi: 10.1130/G32375.1](http://doi:10.1130/G32375.1)
Mt. Lykaion dataset provided by Research Associate, Professor George H. Davis, University of Arizona.

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Angola Field Trips Are Geology – And More

By BARRY FRIEDMAN, EXPLORER Correspondent

A APG award-winning geologist Tako Koning doesn't need to be schlepping through the oil seeps, dotted with abandoned land mines, in the Barra do Dane and Libongos regions of Angola, leading a group of shaking and frightened tourists, students and geoscientists on a geological tour – many wondering if it's safe to use the nearby bushes for a bathroom break.

In case you're going, make a note: It's not.

"So why do I lead these field trips?"

Koning has a way of anticipating the questions.

It must be for the passion, for it's certainly not for the paycheck.

"I lead the trips on a volunteer basis – no one pays me to do this."

So, this time, I ask the question.

"I like to share my knowledge of the fascinating geology of this area," he says, simply.

"This area" is Angola.

For him, it's a long way from home.

Except for him, it now is home.

Koning, who received AAPG's Public Service Award in 2010 after a lifetime of mixing humanitarian aid with his science on a global basis, was born in Holland, but raised in Canada. It was



KONING



Photo courtesy of Angola Field Group

Angola's Dande River, a popular picnic site for field trip groups: Rest, food and geology.

there, at 21, he started a 40-plus-year career by working for Texaco. He also has published more than 100 papers and abstracts, received awards, and been acknowledged in journals and magazines.

Over that span, he's had positions in Indonesia, Nigeria and, lastly, Angola.

He retired about 10 years ago ... for about a half hour.

He's now in his second career, and still in Angola, where he worked as a consultant for Tullow Oil and now holds a similar position in Luanda with Gaffney, Cline and Associates.

But what has him passionate these days, really for the last eight at the time of the interview, has been the field trips that he has been leading in Angola – trips he calls "Geology Field Trips with a Difference."

They have been designed and planned so visitors and natives can experience the geologic wonders of a country he has come to love – and along the way, experience a few of its heartaches, as well.

As he says, "It provides people the opportunity to visit, as part of a group, a beautiful area of Angola."

War and Peace

Koning has led approximately 20 trips over the past eight years, which means close to 800 people have seen from a geologic perspective this war-torn, yet often pristine place.

Specifically, he shows his group outcrops that are lovely to view and, for explorationists, important clues to the subsurface.

"I also show them interesting and historically significant oil seeps that have formed rich asphalt deposits," he said.

He then talks about the wonders of having lunch at an outcrop consisting of fractured Precambrian granites.

"The attendees are provided the opportunity to see rocks as young as Miocene sandstones to as old as 2.5-billion-year-old granite," he said. "Not bad for a one day field trip."

It's not just about the rocks, though.

See **Angola Treks**, page 22

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We will start by defining the Eagle Ford through its geochemical, geological, and geophysical profiles. We will then take a look at the geological framework, including basin analysis to gain an understanding of the depositional environment, and the regimes that influence structure and stratigraphy.

The presentations will include a discussion of determining where to drill using old and new seismic (including full azimuth seismic), how to determine sweet spots, and which well logs to run and how to reevaluate old ones.

Reservoir characterization as it applies to case studies and field development will be examined, and there will be presentations on how to optimize drilling and completion operations, including considerations of drilling fluids, geosteering, hydraulic fracturing, proppant selection, frac fluid selection, and geomechanical considerations. We will conclude by examining future directions, with a view to field development, refracing operations, enhanced oil recovery, and stimulation.

Hydraulic Fracturing

21- 23 May 2012 • Golden, Colorado

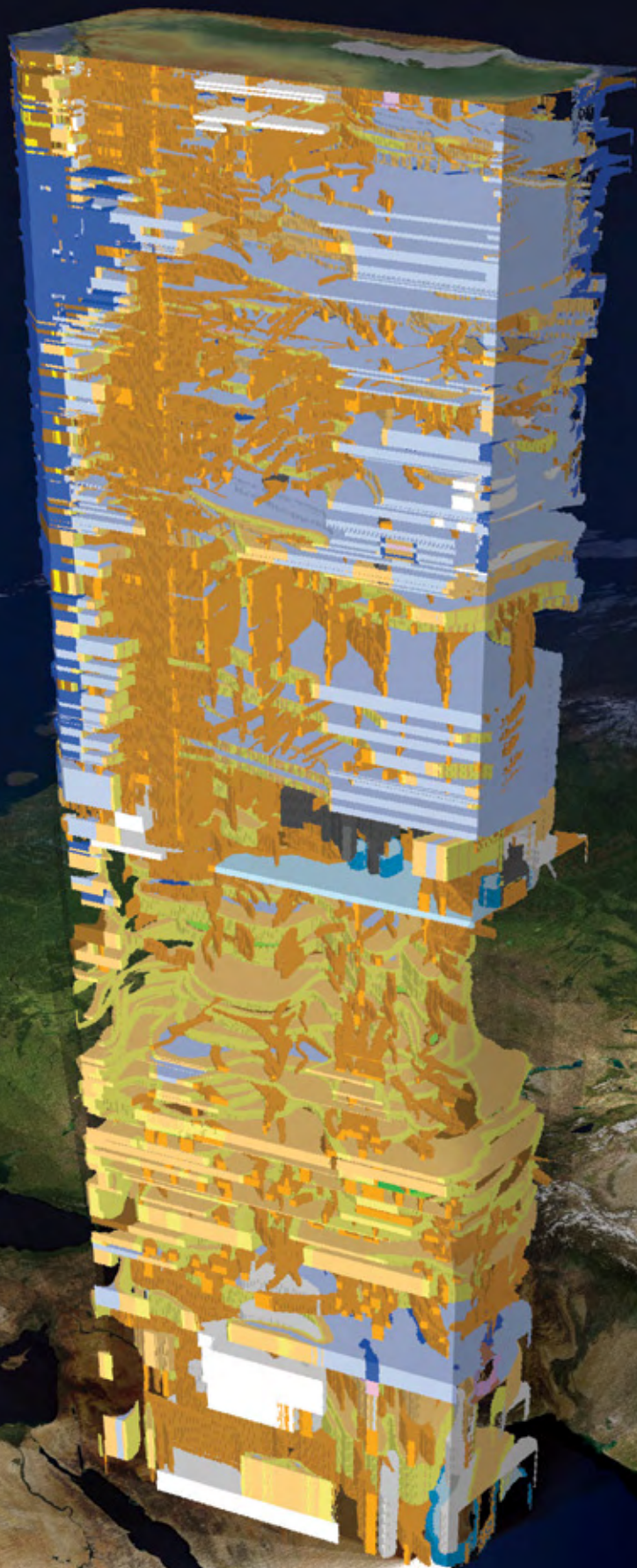
Hydraulic fracturing for both conventional and unconventional oil and gas development and production has become a hot button issue for the public and regulators in most of the United States and Canada where this technology is being used or might be used in the near future. Concern and regulation of hydraulic fracturing also is growing in other areas of the world, especially in Europe. There is a disconnect in most places between how the technology is applied and the real and perceived hazards to aquifers and surface owners (including induced-earthquake hazards) that have led to the contentious state of affairs.

This Geoscience Technology Workshop is intended to bring together technology developers and users with environmental specialists, regulators, and policy makers to find common ground and open channels of discussion and understanding. This should lead to more technology-based and less emotional development of policies and regulations on O&G activities, as well as improve the understanding by the O&G industry of how to avoid confrontation and improve hydraulic fracturing practices to eliminate any potential hazards to the public and surface owners.

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* A mark of Schlumberger [photo credit: NASA]

NPC

from page 10

Step on the Gas

Regarding the natural gas scene, the NPC study results noted:

- ▶ The United States is the largest producer of natural gas worldwide. In combination with Canada, the two produce 25 percent of the world's natural gas supply.
- ▶ Hydraulic fracturing and horizontal drilling triggered a reassessment of the natural gas resource base, showing significantly higher levels than only a few years back.
- ▶ The natural gas resource base could supply more than 100 years of demand at current consumption levels,

and more than five decades at much expanded levels.

The classification of natural gas as a clean fuel for purposes of clean energy standards is included among the NPC's list of recommendations.


One recommendation stands out in particular: Allow longer lease times for frontier areas, such as ultra-deep water and the Arctic, which are especially challenging both in the planning stage and the actual operations.

Additionally, the NPC advocated:

- ▶ Inclusion of environmental footprints and full fuel cycle impacts when comparing different energy sources and technologies.
- ▶ Assembling industry-led, regional "councils of excellence" to ensure that best practices for safe natural gas development are shared among all

companies.

▶ Devising government regulations that balance prescriptive and performance-based regulations.

▶ Maintaining tailored royalty relief programs that serve to encourage expedited development and production. 

(Editor's note: The NPC is an advisory group comprised of industry, academic, government and other officials who provide advice on oil and natural gas issues as requested by the DOE Secretary of Energy. Secretary Steven Chu in 2009 tasked the group with evaluating oil and natural gas resources based on the four concepts of economic prosperity, environmental sustainability, energy security and prudent development, with the final report outlining the results.)

Angola Treks

from page 20

"It is more than that," Koning said. "The area which we traverse is beautiful with rolling hills along the coastline and semi-rain forest in parts of the trip."

He doesn't go alone, often being joined by his wife, Henriette; the Angolan Field Group, which she started; military deminers; and members of the Society of Petrophysicists and Well Log Analysts.

"What makes these field trips a little different from geologic field trips in places like the USA, Canada or Europe is that the area we traverse was affected by military conflict," Koning said. "There is a real and present danger of land mines in the area."

Though Angola's 37-year civil war ended in 2002, one can still find many of these land mines – as well as an abandoned Russian tank.

Still, peace and progress have now introduced a new kind of danger that goes beyond discarded weapons of war.

"In actual fact, the biggest rush on the field trips is not land mines," Koning said, "but the possibility of traffic accidents."

And that is because Angola, thanks largely to increased oil production, is experiencing boom times. The country's population has increased from 0.5 million in 1975 to more than five million today. Oil production is up to almost two million barrels per day for this southern African nation.

(According to the CIA World Factbook, the country ranks 16th internationally in oil production – more than Libya.)

Talk About Geology

But with growth comes ... traffic. It's a mess.

"I highlight the importance of defensive driving [and carpools are the mode of transportation to the sites]," he said, "but I must confess that I am always relieved when everyone returns safely back to Luanda."

Everyone ... including people who already live there.

"The trips are not only for expatriates," he said, "but many Angolans."

He says having Angolans join him is special. While the geoscientists on tour have wanted to explore the countryside for years, the people of Angola have been afraid to.


"During the civil war, Angolans did not leave their homes in Luanda (the capital) and venture into the countryside," he explained, "so many of the Angolans on my field trips have not been to the areas which we visit."

"For me, it is very satisfying to be standing at a battle site near the Bengo River and explain to them the geology of the area and then discuss the battle that took place there in 1975 – a time just prior to the country's independence from Portugal," he added.

What's most satisfying, he says, is what happens to his participants when the trip is over.

"Everyone benefits from information-sharing," he says, equating this type of give-and-take with what occurs at any AAPG annual convention.

"From a broader view point," he continued, "my opinion is that if people shared more information and communicated openly and effectively, the world would see much less conflict and there would be better standards of living."

And fewer tanks and land mines. 

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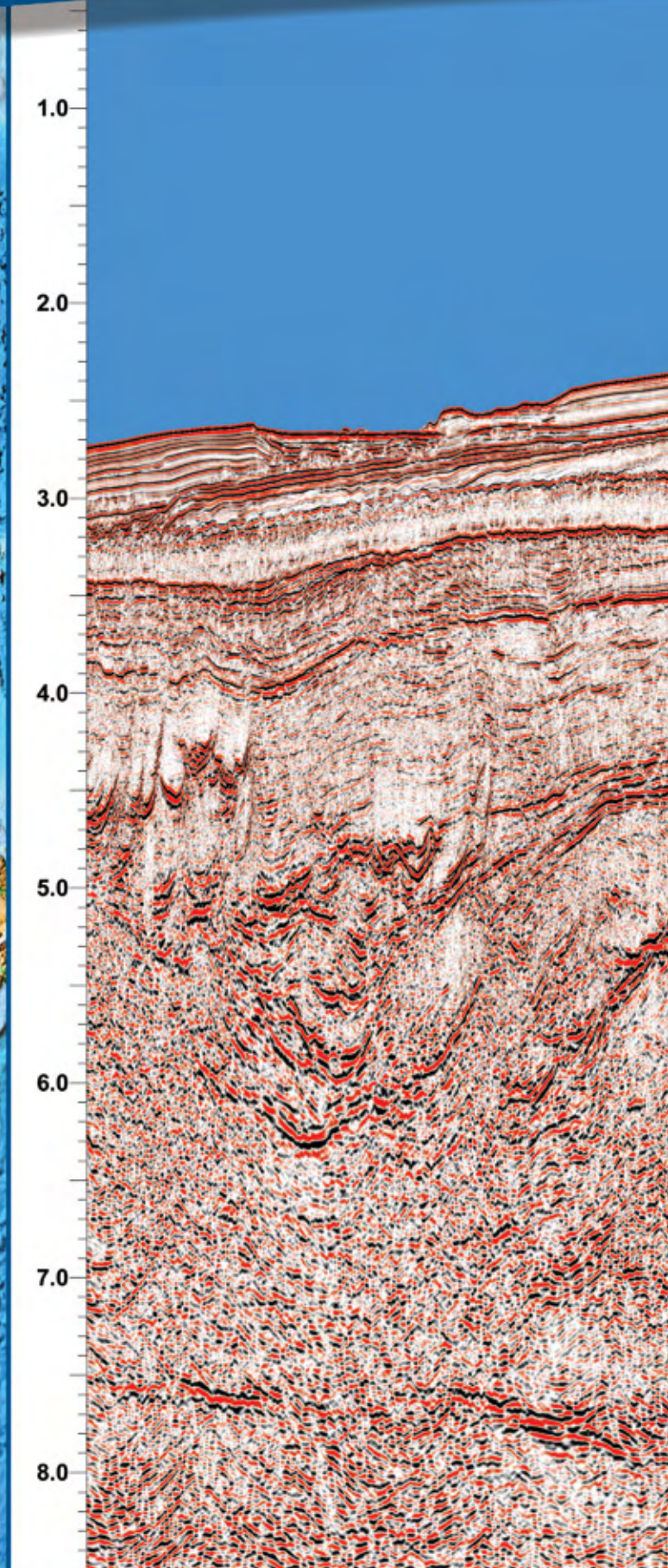
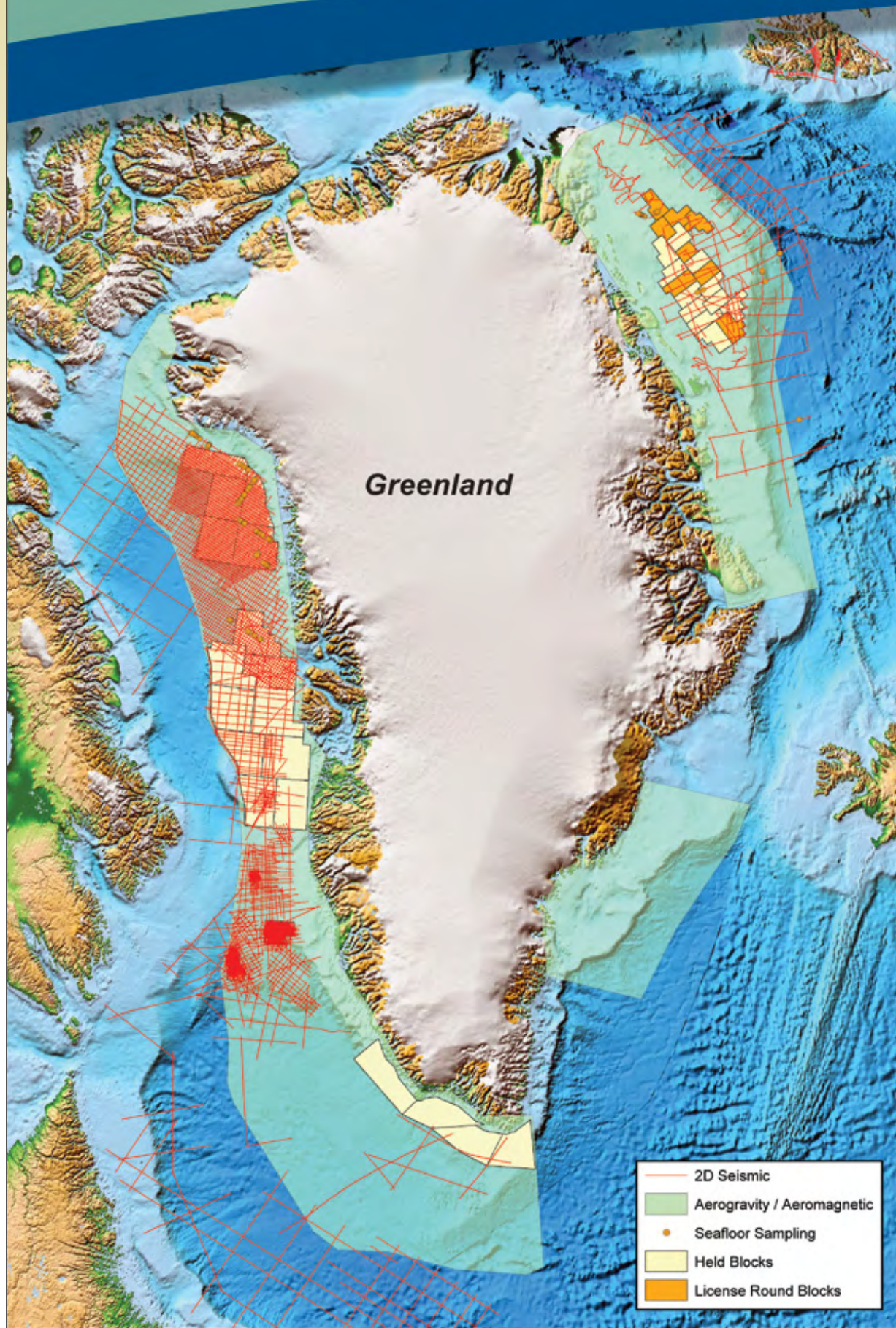
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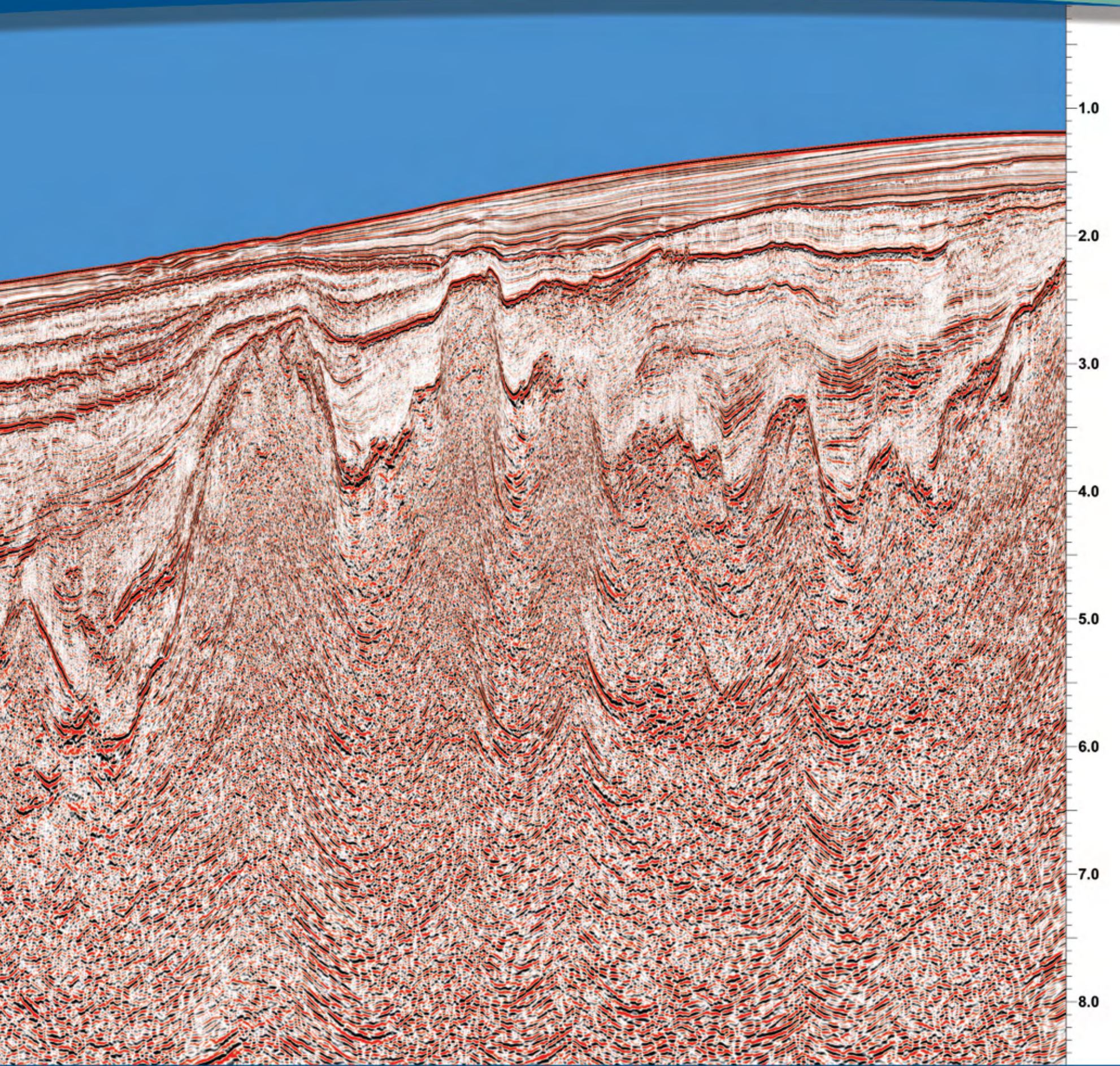


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Recruiters Look to Shape Future of Industry

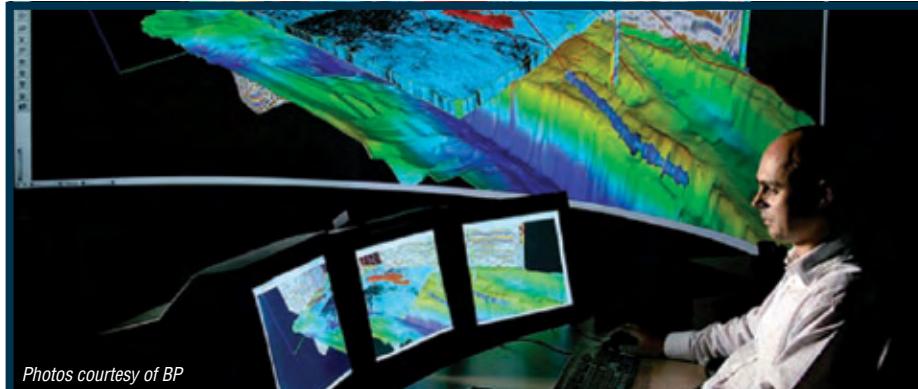
By COURTNEY CHADNEY, EXPLORER Correspondent

Oil giant BP, whose image took a hit with the 2010 Macondo oil spill in the Gulf of Mexico, has a big resolution for 2012: To add talent to its team by recruiting the next generations' leading geoscientists.



YEILDING

Not an easy task, you may think, considering a recent history that was dominated by what some see as public relations missteps.



Photos courtesy of BP

BP's Highly Immersive Visual Environment, or HIVE, is a high-tech draw for young professionals.



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But company officials already have begun implementing their strategy with gusto – and they say the new focus on entry-level opportunities could do much to undo the company's old image.

Indeed, Simon Drysdale, head of BP's Human Resources Department-Upstream, says its recruiting strategy is not about portraying a particular image, but rather opening a window for future generations to see BP and "the scale, global reach and breadth of our business, and the tremendous career opportunities that represents."

"Since the Macondo incident, we have made a number of investments in our recruitment capability," he said, "but these have been driven by the need to attract talent to fill the new jobs being created by our increased investment and success in exploration, our strong project portfolio and our success in recovering more from existing fields."

Drysdale said BP has seen a spike in interest in careers at BP, both through inquiries and web traffic to bp.com/careers – and he believes this indicates that potential recruits have been impressed by BP's response to the Gulf of Mexico incident.

According to him, recruiting the new generation is essential, because "the entry-level geoscientists that we hire today are the innovators that will keep BP at the forefront of the industry and the coaches and mentors of future generations."

And helping him bring in the talent is a name familiar to AAPG: Cindy Yeilding, a current member of AAPG's PROWESS Committee, a previous AAPG Distinguished Lecturer and an explorationist who was featured in DPA's special publication, "Heritage of the Petroleum Geologist."

According to Yeilding, who is BP's vice president of exploration and appraisal for the Gulf of Mexico, "BP is looking for minds that don't just accept the norms of doing things, but challenge the dogma and create new ways of thinking."

"We're also looking for people with the desire and appetite to learn and develop," she added, "both themselves and others."

Enter the Young

Yeilding said that her company, like others, looks for candidates with a strong academic record and a good degree in geosciences, geophysics, geology, natural sciences, earth sciences, mathematic or physics. It equally emphasizes the importance of applicants having strong knowledge of the first principles of geosciences, and being able to apply those concepts to practical applications.

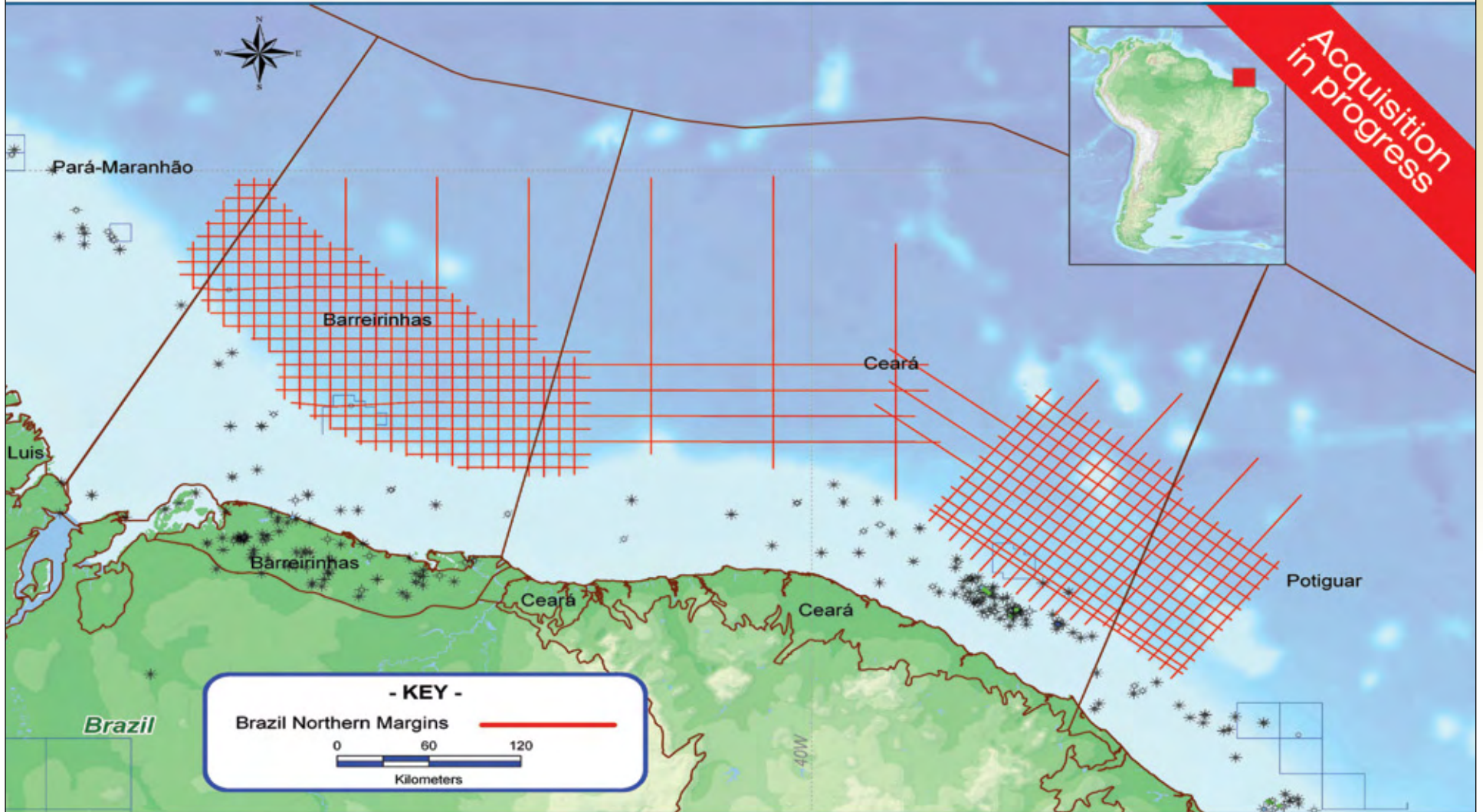
To recruit these types, BP is setting up at universities at many different locations – but the company's recruiting actually starts even before university level.

In hopes of recruiting future students to not just BP but the industry as a whole, "we take part in high school outreach programs where we bring in science and engineering students to spend the day here to learn about our careers," Yeilding said. "We also sponsor 'Take Your Child to Work Day,' where elementary through high school students join us at BP for a day to

See **Careers**, page 28

Offshore Brazil

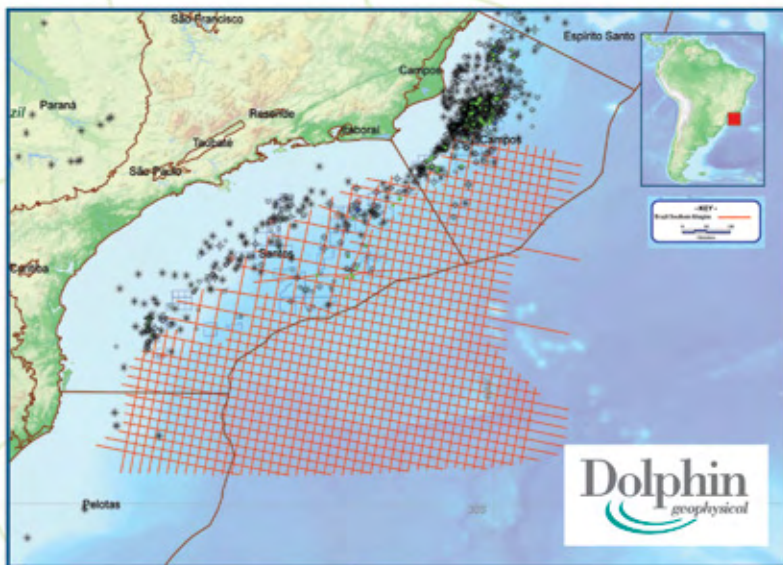
New Multi-Client Acquisition, Campos Santos, Northern Equatorial Margins



Northern Margins - planned Spectrum Multi-Client coverage

Spectrum has begun acquisition of a new 2D Multi-Client seismic survey in the Northern Equatorial Margins Offshore Brazil. Phase 1 of the program is 12,000 kilometers of high-quality seismic data from the Barreirinhas and Ceara basins with additional regional tie lines. The program will provide oil companies with a competitive advantage in the upcoming Licensing Round 11.

In addition, Spectrum and Dolphin Geophysical are set to commence an extensive, long-offset 2D Multi-Client survey over the Santos/Campos basins. These Multi-Client surveys will be acquired by Dolphin Geophysical and processed by Spectrum with the aim to better define the exploration prospectivity. The data will be available ahead of the expected pre-salt bid round anticipated in the 2012-2013 timeframe.



Campos Santos - planned survey coverage

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-Jerry Namy

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-Terry Mather

The AAPG has meant a lot to me personally. I consider it an honor to be a member for well over 50 years.

-G.W. Brock



Having been an AAPG member for 34 years, conducted numerous field trips, served on several committees and having been an AAPG distinguished lecturer, I enthusiastically wish to see the lecture program flourish. My membership and the annual conventions have instilled a continuing source of pride.

-E.A. (Gene) Shinn

"I donate to assist and support continuing education in geology as well as the growth and enhancement of petroleum geology. I am a firm believer that 'the present is the key to the past' and as such, the field seminars sponsored by the AAPG are a wonderful teaching/learning tool and extremely valuable. I have benefitted immensely by participating in numerous AAPG field seminars."

-John Maxwell



To give to the AAPG Foundation, go online to <http://foundation.aapg.org/donate.cfm> or mail to P.O. Box 979, Tulsa, OK 74101. Questions? Call 1-888-945-2274 Ext. 644.

YPs invited

Creating Community

By NICK LAGRILLIERE, Chair, AAPG Young Professionals Committee

Key initiatives for AAPG's Young Professionals for the coming year were discussed at last year's Young Professionals Leadership Summit in Boulder, Colo., where a number of breakout sessions involving AAPG leadership produced valuable results.

The Summit efforts are complemented by the results of a recent survey of Young AAPG Professionals, which received over 700 replies, helping to further define key issues that needed YP Committee focus.



LAGRILLIERE

Our primary goal for the coming year is to continue to work on retaining Student members after their graduation by creating a YP community across the entire membership. We have set up YP Chapters in several cities out over most Sections and Regions and are working hard to expand that network.

To help ease the transition from Student to YP status we also are creating jointly with the Student Chapter Committee a concept for YP outreach to Student Chapters. Details are currently being discussed, but it envisages YPs adopting a Student Chapter.

Furthermore, we are collaborating with the DPA to formulate a "Member-in-Training" concept that would provide a track for YPs to follow to DPA certification.

It was clear from the survey that many YPs are unaware of the Young Professionals Committee, nor have visited our website or Facebook page, which we recently redesigned to increase visibility and improve communication.

The survey also showed that YPs feel they play no role in the decision making of the organization; we are tackling that issue through recruiting YPs to committees where we had identified vacancies.

We also are working with Jeff Lund, chair of the AAPG House of Delegates, and AAPG Section/Region leadership to encourage the placement of YPs on the ballot for the next HoD election. Ryan Lemiski was the first to be elected to the HoD (see November EXPLORER), and we hope there will be many more in the near future.

Finally, I would like to invite all YPs out there who want to contribute to what we are trying to achieve to get in touch with me or their Section/Region leads – and get involved!

Follow us online, on Facebook and in upcoming EXPLORER articles.

And of course we hope to see many of you at the ACE in Long Beach.

(Editor's note: Nick Lagrilliere, AAPG YP Committee chair, is with Maersk Oil in Copenhagen, Denmark, and can be reached at nick.lagrilliere@maerskoil.com.)

Careers from page 26



learn about the science and engineering we apply on the job."

Yeilding also spoke of the data the company has been releasing as another way they are not only recruiting but also educating others about the industry. She said BP just released to 14 U.S. universities access to more than 300 gigabytes of high-resolution geophysical data in the Gulf of Mexico.

"The data was originally gathered and developed for operational planning at four BP-operated deepwater fields," she said.

The files included multi-beam echosounder data for detailed bathymetric mapping, sidescan sonar for seabed imaging and sub-bottom profiler records for analysis of shallow marine sedimentary layers.

"This project provides data to universities to continue academic research and develop specialized expertise among students and researchers in the offshore, while giving BP the opportunity to strengthen relationships with and learn from geosciences researchers and potential recruits."

Team Work

Yeilding and Drysdale both spoke of the "great career environment" and opportunities for growth available at BP for the next generation of geoscientists.

They also cited two programs that help support geoscience professionals

beginning their careers with the company:

- ▶ The HIVE, or Highly Immersive Visual Environment, a collaborative work space that enables young professionals to image and integrate a wide range of data below the earth's surface.

- ▶ The Challenge Program, offering structured training and mentorship in their early career years.

"We get great feedback from our Challenge Program," Yeilding said. "My friends in the program value the structured training the Challenge Program offers, the responsibility that they get early in their careers and the fact that people always take the time to help them out and answer their questions."

Yeilding cited "technology, people and opportunity" as reasons why BP would be an attractive place for young geoscience professionals, but also added, "It's not just about the rocks and the high-tech equipment.

"A geoscientist at BP gets real responsibility, working with amazing people to deliver energy to the world," she said. "We work as one team to develop, test and challenge our ideas, creating an excellent environment for new industry entrants to develop their careers."



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WASHINGTON WATCH

Politics Puts Keystone XL Pipeline in Limbo

By DAVID K. CURTISS, AAPG Executive Director

I first wrote about the Keystone XL pipeline in this column back in September 2010. At the time, the project was nearing the end of a review by the U.S. Department of State for a Presidential Permit.

Fast forward nearly 1½-years later, and not only has the permit not been approved, but the project has become a rallying point for environmental groups opposed to oil development, particularly from Canada's oil sands.



CURTISS

The White House's denial of the proposal in mid-January did not scuttle the pipeline, and President Obama said, "This announcement is not a judgment on the merits of the pipeline but the arbitrary nature of a deadline ..."

While not dead, any timeline for the pipeline proposal is certainly muddled.

Meanwhile TransCanada's chief executive officer, said in a statement, "Plans are already under way on a number of fronts to largely maintain the construction schedule of the project."

Thus, the conversation continues.

First proposed by TransCanada in September 2008, the 36-inch diameter Keystone XL pipeline is designed to bring crude oil from Canada as well as U.S. producing regions to refineries along the Gulf coast. It is an expansion of the existing Keystone pipeline system. And after completion the entire system will carry 1.3 billion barrels of oil per day – more than double its current capacity.

Canada is the largest supplier of crude oil to the United States by a significant margin. This is a mutually beneficial relationship that underpins the world's largest trading partnership.

The Keystone XL project requires a Presidential Permit, because it crosses the U.S.-Canadian border. And part of the review involves preparing an environmental impact statement (EIS).

The EIS, released in April 2010, was criticized by the U.S. Environmental Protection Agency for being too narrowly

focused on the pipeline itself and not considering the potential impact of both the production and consumption of the crude oil in the pipeline. Of particular concern to EPA was the impact on greenhouse gas emissions.

This sentiment was echoed by congressional critics and environmental groups, and their collective efforts forced the postponement of a decision while the State Department gathered additional data.

After nearly one year of review and nine public meetings in Texas, Kansas, Montana, Nebraska, South Dakota, Oklahoma and

Canada is the largest supplier of crude oil to the United States by a significant margin.

Washington, D.C., the State Department announced last November that it needed yet more information before rendering a decision. It revised its target date to the first quarter of 2013.

The announcement drew howls of protest from Republicans and supporters of the pipeline project. They charged that the Obama administration was intentionally stalling to appease environmental groups, as well as avoid the issue until after the 2012 election.

* * *

Politics certainly played a role in the decision to delay the permit. That's not a criticism, but rather a characteristic of the policy-making process. And in this instance the president really does face a thorny political problem, with two important constituencies on opposite sides of the issue: labor unions support it and environmental groups oppose it.

But the core reason for the delay articulated by the State Department was growing concern in the state of

Continued on next page

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GEOPHYSICAL CORNER

Multicomponent Seismic Proves Its Value

By BOB HARDAGE

A fundamental thesis of elastic wavefield seismic stratigraphy (or multicomponent seismic stratigraphy) is that S-wave seismic data have equal value to P-wave data for geological interpretation.



HARDAGE

Seismic stratigraphy analyses, then, should be based on interpreting P and S data in combination (the full elastic wavefield) rather than restricting interpretation to only single-component P-wave data (traditional seismic stratigraphy).

An example illustrating differences between P-wave and S-wave definitions of reflecting interfaces and the rock physics

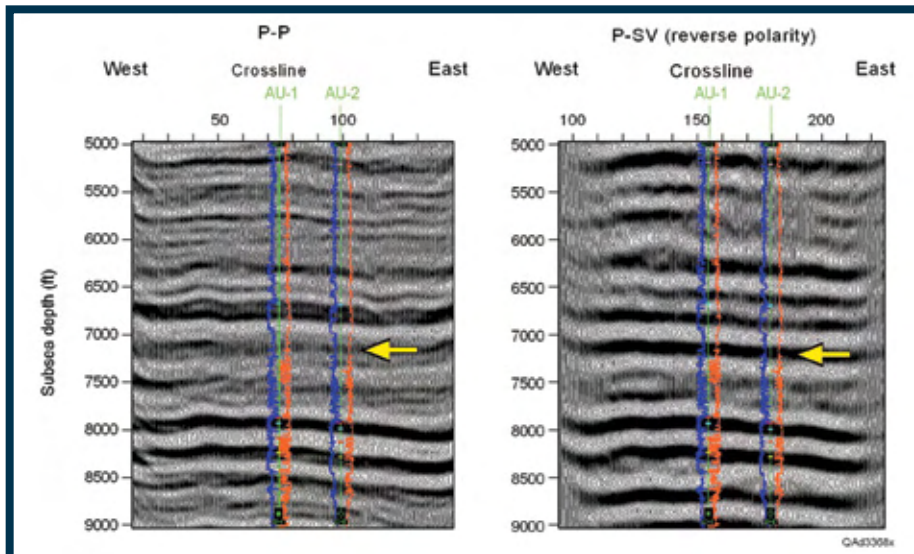


Figure 1 – P-P and P-SV images centered on the Wolfcamp (arrows). P-P data exhibit a low-amplitude seismic facies that is difficult to interpret; P-SV data produce a high-amplitude seismic facies. Data provided by Fasken Oil and Ranch.

principles that cause this behavior are discussed in this month's column.

The particular S-wave mode used in this example is the converted-shear (P-SV) mode.

* * *

Marked contrasts between compressional-wave (P-P) and P-SV seismic sequences and seismic facies occur across numerous stratigraphic intervals. The example chosen for this discussion is from west Texas (figure 1).

The arrows on the P-P and P-SV images of this figure identify a significant difference between P-P and P-SV reflectivities for a targeted reservoir interval – the Wolfcamp formation.

Well log data across the Wolfcamp interval local to this seismic profile are displayed on figure 2.

P-P and P-SV reflectivity behaviors are analyzed across the Wolfcamp interface, shown at a depth of approximately 10,300 feet, to demonstrate the geological reason for the difference in P-P and P-SV reflection amplitude strengths exhibited on figure 1.

Compressional-wave and shear-wave velocities and formation bulk density values were averaged across 300-foot intervals immediately above and below this internal Wolfcamp interface, and these average rock properties were used to calculate the reflectivity curves shown as figure 3.

These curves confirm that for this particular interface, P-SV reflectivity is greater than P-P reflectivity when both reflectivity curves are evaluated over a large range of incidence angles.

For example, P-P reflectivity exceeds 0.04 only for incidence angles between 0 and 15 degrees, but P-SV reflectivity has a magnitude greater than 0.04 for incidence angles between 15 degrees and 45 degrees – an angle range that is twice as large as that of the high-amplitude P-P response.

Because the multicomponent seismic data across this study area were acquired with a full range of incidence angles, the difference in P-P and P-SV amplitude behavior shown on figure 1 has a valid rock-physics basis.

P-P amplitudes should be weaker than P-SV amplitudes, and the data exhibit that behavior.

* * *

The principle documented by this example is that an elastic wavefield seismic stratigraphy interpretation based on both P-P and P-SV data can provide a different – and often a more valid – geological model of seismic sequence boundaries and seismic facies than can a single-mode seismic stratigraphy interpretation based on P-P data only.

Future applications of seismic stratigraphy probably will rely more and more on full-elastic wavefield seismic data than on only single-component seismic data.

(Editor's note: Bob A. Hardage is senior research scientist at the Bureau of Economic Geology, the University of Texas at Austin. He was the past editor of Geophysical Corner, and is currently serving as president of SEG.)

Continued from previous page

Nebraska about the pipeline running through the Sand Hills, which federal officials described as including "a high concentration of wetlands of special concern, a sensitive ecosystem, and extensive areas of very shallow groundwater."

This public concern was real. And the Nebraska legislature convened in special session to review the matter. It passed a law requiring the Nebraska Department of Environmental Quality to review and certify all pipeline projects to be built through the state. It also was clear from the debate that the pipeline would have to be rerouted away from the Sand Hills.

TransCanada publicly supported the legislature's action and indicated its desire to work cooperatively to find a suitable route for the pipeline.

* * *

Meanwhile, back in Washington, D.C., tempers were running short as policy makers labored to pass a payroll tax relief extension before leaving for Christmas. In an attempt to force the president's hand, congressional Republicans inserted a provision in the bill that required him to decide on the Keystone XL permit by Feb. 23.

If the president had granted the permit it would have delivered a victory to the project's supporters – but a political one, as opponents would have filed a blizzard of lawsuits claiming that the federal review process was short-circuited.

Denying the permit avoids that court battle, but provides the president's political opponents with a ready-made sound bite in an election year. And one that is particularly potent if oil prices spike.

And so, once again, the Keystone XL pipeline is in limbo.

But if you can tune out the clamor and din of the debate and see past the political posturing and point scoring, your focus is drawn to a pipeline project that generates jobs, economic activity and enhanced energy security. All of that wrapped up with a heightened sensitivity to prudent and necessary environmental safeguards.

It's time to get on with it.

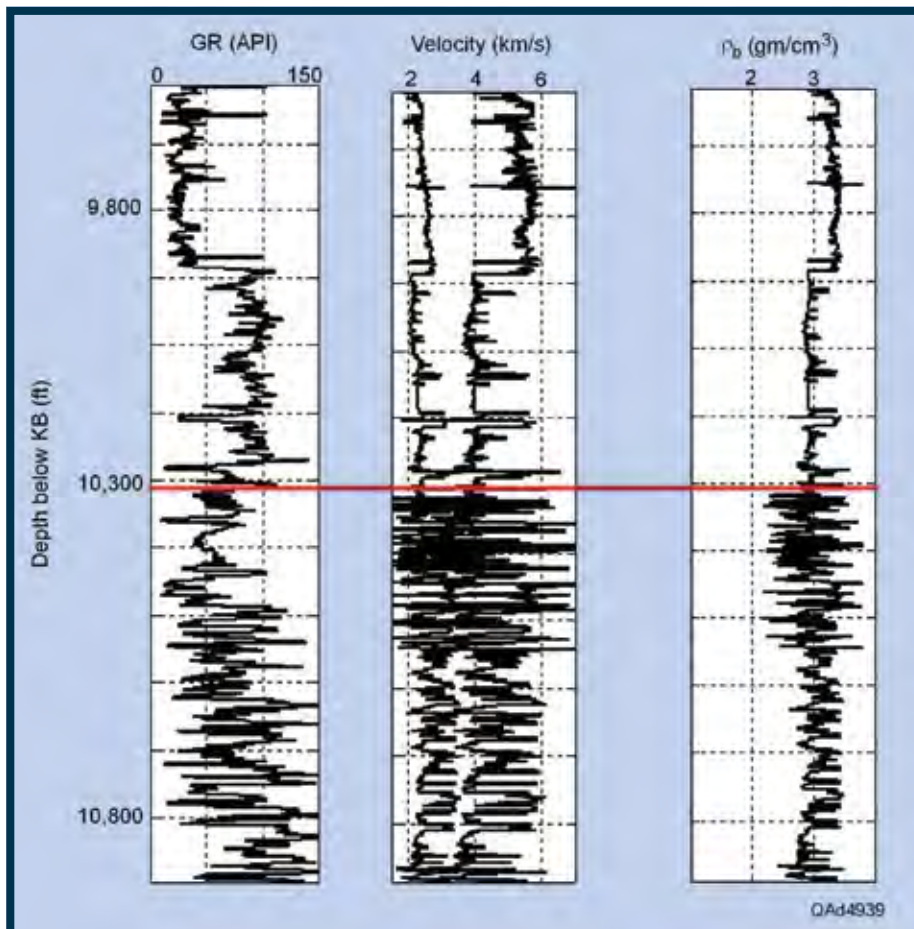


Figure 2 – Log data across the Wolfcamp interval (9,714 to 10,902 feet KB). The velocity curve on the left of the center panel is shear velocity, V_S . The curve on the right is compressional velocity V_P . Wolfcamp reflectivity was evaluated at the interface drawn at approximately 10,300 feet (3,149 meters).

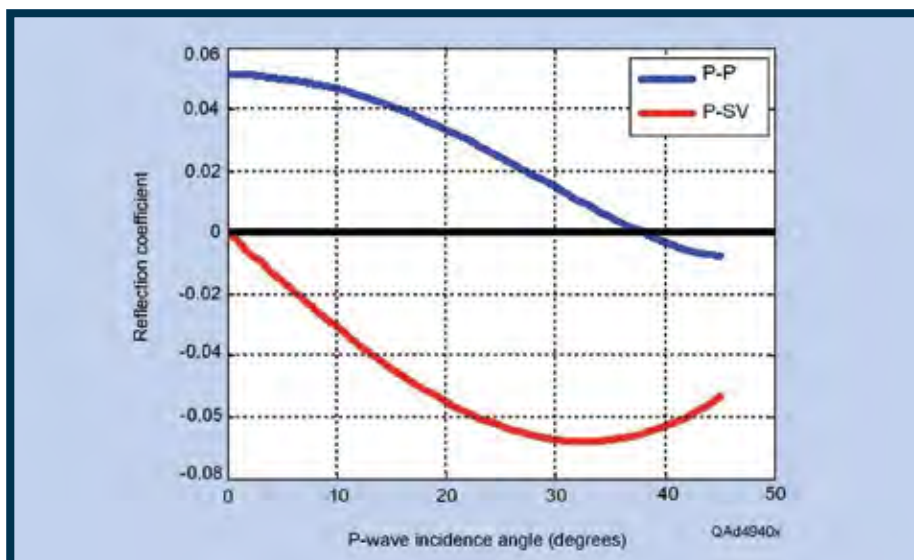


Figure 3 – P-P and P-SV reflectivities at the Wolfcamp interface, at approximately 10,300 feet (3,140 meters).

GTWs provide international platform

Shared Shale Experience is a Great Tool

By CAROL MCGOWEN, Regions and Sections Manager

Geoscientists and others working the booming plays of Latin America know experience is a great tool.

When it comes to unconventional plays, that means learning from the experience of their peers in North America.

That was obvious during the 2011 AAPG Geoscience Technology Workshops (GTWs) held in Buenos Aires in June and Bogota in December, when operators from Argentina, Chile, Colombia, Ecuador and Venezuela were eager to maximize their capital investment by learning from the experience

Latin American companies hope to benefit from both the successes and failures of North American experiences.

of U.S. and Canadian companies.

▶ First, in Buenos Aires, 155

geoscientists, engineers and geophysicists from 52 companies and eight countries

participated in GTW Argentina. The workshop was co-hosted by the AAPG Latin America Region and the Asociación Argentina de Geólogos y Geofísicos Petroleros.

▶ Then in Bogota, the Latin America Region and the Asociación Colombiana de Geólogos y Geofísicos del Petróleo collaborated to co-host GTW Colombia, where a new record for GTW attendance was set by 163 professionals from 56 companies and seven countries.

Unconventional play development is costly, and by escalating the learning curve, Latin American companies hope to benefit from both the successes and failures of North American experiences.

In 2011, companies across Latin America and North America invested in learning through AAPG GTWs.

Measures of Success

U.S. natural gas production rates in the 1970s were in a state of continuous decline – and as recently as 2007 it was believed that U.S. consumption demand could only be met by importing large volumes of liquefied natural gas (LNG).

Instead, recent shale gas production has more than doubled the size of known natural gas reserves in North America, and is expected to supply over 100 years of consumption at current rates.

Currently there are at least six competing shale gas plays in the United States, including the Barnett, Marcellus, Haynesville, Fayetteville, Woodford and Eagle Ford, as well as several producing shale plays in Canada. If fully developed, the Marcellus is estimated to become one of the largest natural gas fields in the world.

In its February 2010 study, "Fueling North America's Energy Future," IHS CERA estimated the recoverable gas resource base of the six major U.S. shale gas plays exceeded 1,100 trillion cubic feet (Tcf), or about 40 percent of the total estimated U.S. natural gas resource base at the time of the report.

As recently as last month, the U.S. Energy Information Agency reported "natural gas working inventories continue to set new record highs and ended December 2011 at an estimated 3.5 Tcf, about 12 percent above the same time last year."

Discoveries of abundant shale gas have not only reversed the nation's declining energy supplies, but also made significant economic impacts across the United States and Canada.

And enormous untapped potential remains, as indicated by a U.S. Geological Survey's Q3 2011 assessment of shale gas resources in the lower 48 states, which calculates "mean total shale gas resources of 336 Tcf of gas from yet undiscovered but technically recoverable resources" in nine basins.

The Learning Curve

Geoscientists have long known that vast volumes of natural gas and other forms of hydrocarbons are stored in low permeability rocks across North America. But only in the last few years – with improved methods and

See Latin America, page 34



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Maximum likelihood analysis

Surangi W. Punyasena, Carlos Jaramillo, Felipe de la Parra, and Yuelin Du



The probabilistic approach to correlating and dating of isolated paleontological samples by likelihood analysis results in sample age estimates with defined confidence intervals. Thus, all of the uncertainty inherent in age assessment is explicit in the results.

The importance of static connectivity

Jonathan E. Funk, Roger M. Slatt, and David R. Pyles



Margin connectivity and sand-on-sand connectivity are affected by architectural elements, stacking pattern of channel elements, setting on the slope to basin profile (confined, weakly confined, and unconfined), and sand content. Understanding these elements can help constrain reservoir models.

Curvature analysis

Annegret Burtscher, Marcel Frehner, and Bernhard Grasmann



A curvature analysis performed on the Permian anticline, northern Iraq, is used to classify the folded surface into geologically relevant shapes. Using the same digital elevation model, geomorphological-oriented studies as well as tectonic-oriented studies are feasible.

Gypsum can exist below 3500 feet

Faith O. Amadi, R. P. Major, and Lawrence R. Baria



The presence of gypsum in reservoir rocks can effect porosity calculations. It may form in preference to anhydrite depending on stratigraphic considerations. Its conversion to anhydrite depends on lithostatic pressure, local geothermal gradient, and pore brine fluid availability.

Latin America from page 32

the combined use of technologies like multi-stage hydraulic fracturing and horizontal drilling – have operators been able to extract significant commercial quantities of these unconventional resources.

With each new play, North American teams apply learnings from the previous play along with improved drilling and completion methods. This “continuous learning” approach has yielded an exponential increase in unconventional resources production.

For example:

▶ Natural gas production from the Barnett Shale was discovered in the early 1980s. Laterally expansive, the shale formation covers over 5,000 square miles

in North Texas. Production was steady but remained relatively flat until approximately 2001, when production increased dramatically and continued increasing to a rate of 1 Bcfd around 2004.

The production spike is attributed to substantial field development efforts induced by technological improvements in recovery methods and a favorable economic environment.

▶ The Fayetteville shale gas play covers 9,000 square miles across the Arkoma Basin. For practical purposes, development of the play began in 2005 with the introduction of horizontal drilling. Beginning in approximately 2006, production rates soared to the 1 Bcfd level within three years.

▶ The Marcellus Shale covers 54,000 square miles, running through Ohio, West Virginia, Pennsylvania and into New York. In 2002, the U.S. Geological Survey estimated the Marcellus Shale held 30.7 Tcf of natural

gas. Actual gas production from the Marcellus Shale jumped to 1 bcf between 2008 and 2010.

According to the most recent USGS assessment, the Marcellus is now estimated to contain about 84 Tcf of undiscovered, technically recoverable natural gas and 3.4 billion barrels of undiscovered, technically recoverable natural gas liquids.

“The increase in resource is due to new geologic information and engineering data,” according to the report, “as technological developments in producing unconventional resources have been significant in the last decade.”

Economic Impact of Unconventionals

Examples of the positive economic impacts of unconventional resource development are not hypothetical. Positive contributions to economic growth,

employment, government revenues and capital investment have been quantified across North America.

The shale gas industry alone contributes significantly to the U.S. economy both in terms of direct employment of workers and indirect employment of supplier industries.

The December 2011 IHS Global Insight report attributed economic benefits from unconventional resource production in terms of employment.

“In 2010, the shale gas industry supported over 600,000 jobs,” the report read. “By 2015, the total number of U.S. jobs supported by the shale gas industry is projected to increase by 45 percent to nearly 870,000 jobs.”

The IHS report further said that in addition to jobs creation and support in 2010, “shale gas production contributed \$18.6 billion in federal, state – and local tax revenues and federal royalty revenues.”

By 2015, total government tax revenues from the shale gas industry, government tax revenues – comprised of federal, state and local taxes – plus federal royalty payments are projected to increase by 54 percent to \$28.5 billion, according to IHS reported data.

A number of recent independent studies have assessed the economic impact of unconventional shale plays in the United States from the Barnett, Haynesville and Marcellus plays, among others. Without exception, communities, states and regions have benefitted from the shale gas industry’s contribution of jobs, infrastructure improvements and tax revenues.

Lower energy costs resulting from plentiful natural gas supplies also are attracting new industries. Similar economic benefits from production of shale gas and shale oil can also be cited for Canada.

A Perryman Group’s 2011 study of the Barnett Shale’s impact on business activity said, “Direct spending for exploration and production activity ... leads to multiplier effects through the economy, which, in turn, initiate a chain of spillover business stimulus through the area.”

Lessons for Latin America


What are the lessons learned from the North American experience that can be applied and will foster the development of unconventional resources in Latin America?

Because the unconventional oil and gas business is fundamentally different than conventional exploration and production, company and individual investment in learning is critically important. Over the last few years, technical expertise has been acquired to economically benefit producers of unconventional resources and communities in North America.

Clearly, AAPG GTWs are serving to facilitate knowledge transfer.

This year, AAPG will continue the trend by partnering with local affiliate societies to offer GTWs in Brazil and Peru.

In time, economic benefits similar to those derived in North America can also be realized in Latin America from development of unconventional resources. And as recent operations by companies in Argentina, Brazil, Colombia and Uruguay indicate, the understanding of unconventional reservoir systems gained in North America already is being applied as analogs for undrilled areas in Latin America.

And if the business environment is right, the high cost of producing unconventional resource plays will pay off in reduced reliance on imported oil or LNG for the producing country plus much needed economic activity in the form of jobs, tax revenues and infrastructure development. 

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LAST CHANCE

- The DW Geopressure Tolerance Window: Case Histories - An AAPG E-Symposium
Selim S. Shaker, Geopressure Analysis Services March 15, 2012
Houston
- Basic Well Log Analysis March 26-30, 2012
Austin, Texas
- Practical Salt Tectonics March 28-30, 2012
Austin, Texas

SHORT COURSES

- Basic Petroleum Geology for the Non-Geologist April 17-19, 2012
A joint course with AAPG and University of Tulsa Continuing Engineering and Science Education Department
Houston
- Shale Gas Reservoir Assessment April 21-22, 2012
Long Beach, California (with AAPG Annual Convention)

FIELD SEMINARS

- Field Safety Course for Field Trip Leaders March 28-29, 2012
Houston
- Deep-Water Siliciclastic Reservoirs, California April 27-May 2, 2012
Begins in Palo Alto and ends at the airport in San Francisco, California
- Clastic Reservoir Facies and Sequence Stratigraphic Analysis of Alluvial-Plain, Shoreface, Deltaic, and Shelf Depositional Systems April 28-May 2, 2012
Begins and ends in Salt Lake City, Utah
- Complex Carbonates Reservoirs: Sedimentation and Tectonic Processes. May 12-18, 2012
Begins in Naples and ends at Rome International Airport (Italy)
- Play Concepts and Controls on Porosity in Carbonate Reservoir Analogs May 13-18, 2012
Almeria Region, SE Spain, begins and ends in Las Negras, Spain. Fly from London/Barcelona/Madrid
- Modern Terrigenous Clastic Depositional Systems May 15-22, 2012
Begins in Columbia and ends in Charleston, South Carolina



**Registration and
Information:**



Toll-free (U.S. and Canada) (888) 338.3387, or (918) 560.2650 • Fax: (918) 560.2678 • email: educate@aapg.org
Download a registration form at <http://www.aapg.org/education/index.cfm>

Registration Savings Available Online for ACE

The technical program is in place and online registration is now open for this year's AAPG Annual Convention and Exhibition, which will be held April 22-25 in Long Beach, Calif.

The ACE theme is "Directing the Future of E&P: Starring Creative Ideas and New Technology," and more than 400 papers and 700 posters will be offered, covering the latest in science, exploration and industry trends from around the world.

Also featured will be five special forum events, including this year's presentation of the Discovery Thinking program – recognizing five more geologists who join the "100 Who Made A Difference" list – and the annual Michel T. Halbouty Lecture, this year featuring John Grotzinger, Jones Professor of Geology at the California



Institute of Technology and chief scientist for the Mars Science Laboratory, who will discuss the search for source rocks on Mars.

This year's technical program is set on 11 themes:

- ▶ Active Oil and Gas Fields – Development and Production.
- ▶ Emerging Frontiers.
- ▶ Siliciclastic Reservoirs – Exploration

and Characterization.

- ▶ Carbonates and Evaporites – Exploration and Characterization.
- ▶ Unconventional Resources.
- ▶ Basin Analysis and Petroleum Systems.
- ▶ Alternative Energy.
- ▶ Environmental and Energy Research.
- ▶ Structural Geology and Neotectonics.
- ▶ Geophysics and Seismology.
- ▶ Geoscience Principles and Applications.
- ▶ Student Poster Sessions.

As usual, registration fees are based on a tier structure – and registering by the first "early bird" deadline of Feb. 28 can mean savings of up to \$200.

To register and for more information, go to www.aapg.org/longbeach2012.

ACE can be a family affair

Child Care Service Offered In Long Beach

By EDITH ALLISON, PROWESS Co-Chair

You may have noticed parents with very small children in infant carriers at the Icebreaker reception and other AAPG Annual Convention and Exhibition (ACE) events over the years.

Have you ever wondered what happens to those children when they get old enough to walk and are not allowed in the exhibit hall?

They certainly are not "Home Alone."

However, for parents to attend an out-of-town meeting requires complex logistics and a supportive family – and for the growing number of dual-career households it is even more difficult to find professional and reliable child care while attending meetings away from home.

To answer this problem, AAPG is providing professional and fun child care at this year's AAPG Annual Convention April 22-25 in Long Beach, Calif.

This service has been initiated by AAPG's Professional Women in Earth Sciences Committee, after a survey of potential convention attendees showed that the availability of reliable childcare would persuade many parents to attend the ACE.

AAPG has selected KiddieCorp to provide licensed, professional child care at the Renaissance Long Beach Hotel, which is located next to the Long Beach Convention Center.

Parents can bring their children to Long Beach, participate in all the meeting events and then spend time with their children enjoying the many local attractions, such as the Aquarium of the Pacific, the Queen Mary and the Ferris wheel – and later in extending your visit to include a trip to nearby Disneyland or Universal Studios.

The service will be available:

- ▶ Sunday (April 22) – from 2:30 p.m. to 8:30 p.m.
- ▶ Monday – from 7:30 a.m. to 10:00 p.m.
- ▶ Tuesday – from 7:30 a.m. to 9:30 p.m.
- ▶ Wednesday – from 7:30 a.m. to 6:00 p.m.

KiddieCorp has provided high-quality child care at conventions and corporate events for over 25 years; the Geological Society of America has used KiddieCorp to provide child care at its annual conventions since 2005.

The service will be available in Long Beach for children aged six months through 12 years. The cost is \$8 per hour and a two-hour minimum is required.

To use the childcare service, submit your reservation at www.aapg.org/longbeach2012/Childcare.cfm before March 21, 2012.

Some companies may subsidize their employees' use of the service, so check with your manager or HR department to see if support is available.



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GeoCare Benefits Group Disability Income Insurance Plans, P.O. Box 9159, Phoenix, AZ 85068-9159, Email: geocarebenefits@agia.com. The Group Disability Income Plan is underwritten by New York Life Insurance Co. 51 Madison Ave., New York, NY 10010 under Policy G-29066/FACE, AR license #182374, CA license OC308R3. All coverage is subject to approval by New York Life.

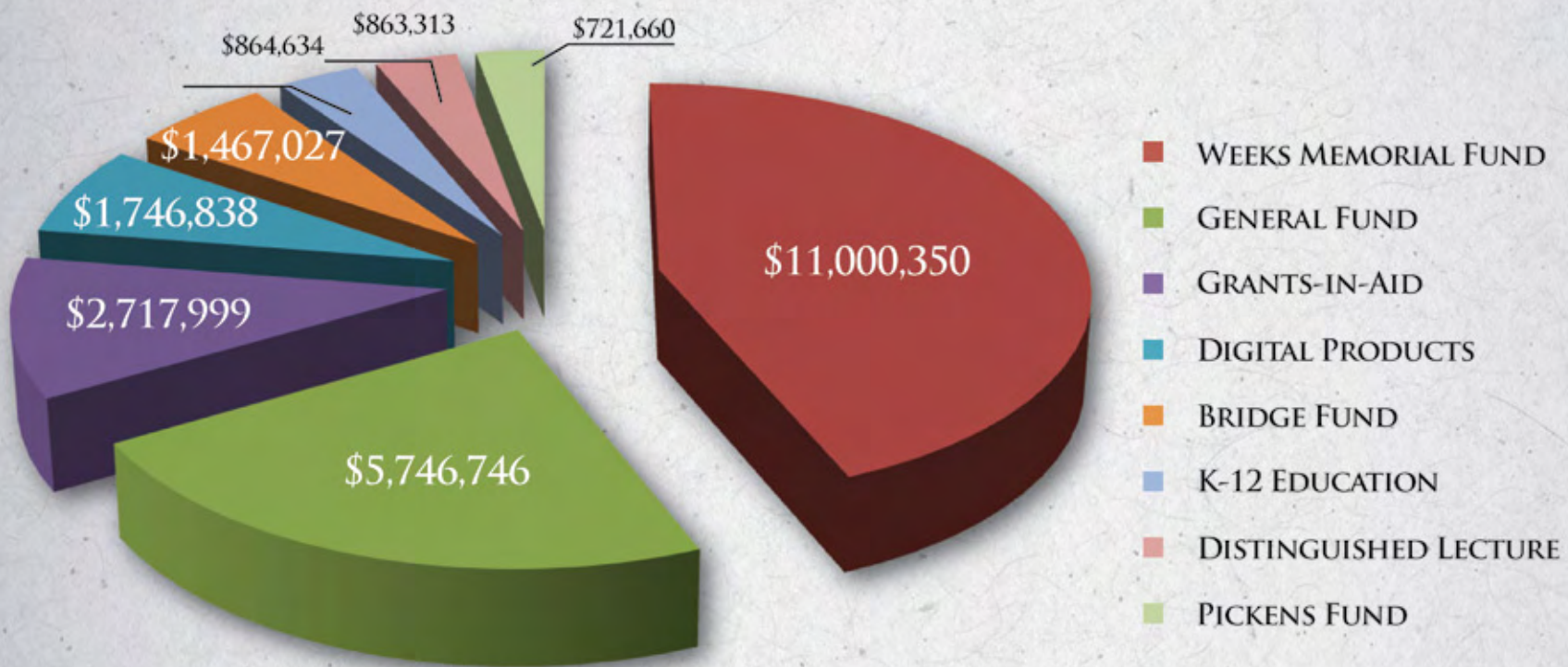
*www.disabilitycanhappen.org/research/consumer March 2010



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- HOLLAND AWARD - \$259,221
- IMPERIAL BARREL - \$527,114
- PROFESSIONAL AWARD/GRANT - \$242,355
- BULLETIN - \$489,497
- AWARDS - \$167,842
- STUDENT LEADERSHIP - \$349,095

FUNDS RECEIVING CONTRIBUTIONS FROM \$35,000 - \$65,000

- VISITING GEOSCIENTISTS - \$63,364
- SPECIAL PUBLICATIONS - \$54,554
- GIS DIGITAL PUBLICATION - \$60,545
- GLENPOOL FUND - \$47,890
- SCOUTING FUND - \$58,066
- NEWLY RELEASED PUBLICATIONS - \$39,750

FUNDS RECEIVING CONTRIBUTIONS FROM \$6,000 - \$30,000

- HALBOUTY AWARD - \$27,807
- UNIVERSITY RESEARCH - \$25,050
- CONTINUING EDUCATION - \$26,761
- LIBRARY FUND - \$18,245
- L. AUSTIN WEEKS AWARD - \$25,697
- HALBOUTY LECTURE FUND - \$6,660

To see details of the funds listed, or to contribute to the fund of your choice, visit foundation.aapg.org



For more information, go online to foundation.aapg.org, or call 1-888-945-2274 ext. 674.

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SPOTLIGHT ON

'Barrel' Founder Integrates Academe, Training

By BARRY FRIEDMAN, EXPLORER Correspondent

It says something that after spending 15 successful years as a geologist for a major oil company, Howard D. Johnson finally got a chance to fulfill one of his goals: To leave the company.

Why? Because he wanted to teach.

It's that kind of commitment that makes a teacher a great educator; it's the kind of commitment that gets one an AAPG Grover



JOHNSON

E. Murray Memorial Distinguished Educator Award.

"Teaching geology at whatever level," says Johnson, now the Shell Professor of Petroleum Geology at Imperial College in London, "must be one of the best jobs ever!"

For a man who has been around both the business (longtime at Shell Oil) and

academic worlds of petroleum, it's noteworthy that the excitement – including the exclamation point – is still there.

For Johnson, according to his colleagues, his success is that he never viewed academic and professional geology as being in competition with one another.

In fact, he thinks they're seamless.

"I had the good fortune to have been taught, and profoundly influenced by, some of the best geological teachers in the world, most notably my Ph.D. supervisor, Harold Reading at Oxford University."

He added that Reading, "a superlative Ph.D. supervisor and all around geological educator, is legendary."

(Incidentally, Reading won the Grover Murray Award in 1997, a fact Johnson knows, as he acted as his mentor's biographer.)

The success of the IBA was built on a simple concept, which fires the imagination equally of both the students involved and the industry panel assessors.

But Johnson believes great geology educators are not just found in the classroom – sometimes they're in the office down the hall.

"When I joined Shell in the late 1970s, I found that it was full of brilliant geologists, who were also extremely gifted teachers," he said, naming colleagues Koen Weber and the late Bob Sneider, both winners of the AAPG Sidney Powers Award, as two examples.

It seemed, though, that no matter how rewarding his Shell experience, the pull of the classroom kept calling him.

"I received an opportunity to join the staff at Imperial College London," which, he says, allowed him to embark, albeit belatedly, on a university career.

His goal then and his goal now are the same: "To share with students the joy and enthusiasm for pursuing geology and its many applications."

Birth of the IBA

Joy and enthusiasm – those are words not often associated with the teaching of development geology, reservoir characterizations and appraisals, and sedimentology. But Johnson's a unique kind of teacher, and a unique kind of educator and leader.

To that end, he was instrumental in two changes at Imperial College that changed

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Barrett, Davis Win Top Foundation Awards

Two influential, award-winning geologists who also have been longtime supporters of the AAPG Foundation have been named recipients of the Foundation's top awards for 2011.

▶ **William J. "Bill" Barrett** is this year's recipient of the L. Austin Weeks Memorial Medal, given in recognition of extraordinary philanthropy and service directed to advance the mission of the AAPG Foundation.

▶ **Herbert G. Davis** has been named the winner of the Chairman's Award, given to recognize those who have made extraordinary contributions – monetary or service – to the Foundation.

Barrett, who last year was named an

AAPG Foundation Corporation Member, is a past Foundation Trustee and has been Trustee Associate since 2002. Currently retired as CEO and chairman of Denver-based Bill Barrett Corp., Barrett

is considered one of the profession's top explorationists – he received the AAPG Norman H. Foster Outstanding Explorer Award in 2003, and in 2009 was named one of AAPG's "100 Who Made A Difference."



BARRETT



DAVIS

He has funded the William J. Barrett Family Named Grant, awarded annually to a deserving student at Kansas State University through the Foundation's Grants-in-Aid Program.

Davis, an AAPG Honorary Member and a past chairman of the AAPG House of Delegates, was a charter member of the Foundation Trustee Associates. He served as the group's chairman; was a Member of the Corporation; Trustee Associate

chairman; and a Trustee Emeritus. He received the AAPG Distinguished Service Award in 1982.

Davis and his wife, Shirley, established a Grants-in-Aid Named Grant with the AAPG Foundation in 2006 for geology students at Oklahoma State University.

Barrett will receive his award at the upcoming AAPG Annual Convention and Exhibition in Long Beach, Calif.; Davis will receive his award at this year's Trustee Associate meeting in Scottsdale, Ariz.

Continued from previous page

the department's dynamics – and, to his mind, made it a one-of-a-kind institution:

▶ The integration of three master's-level courses – petroleum geoscience, petroleum geophysics and petroleum engineering.

▶ The merging of the earth science and engineering departments into a single entity.

And while calling that second step "a rare combination," especially in the United Kingdom, Johnson says what made it work was the mindset of the professors.

"A vital key to this success," he said, "was that the whole teaching faculty embraced the new possibilities."

Johnson is perhaps most noted, though, for building a program that would come to exemplify that bridge between academia and professional geology – the Imperial Barrel Award competition, which has grown to become an AAPG global sensation involving hundreds of geoscience students each year.

Johnson said the IBA was actually an upgrade from a program already in existence at Imperial – one in which he's equally as proud.

"In (Imperial's) Field Development Project, we created around 20 integrated teams of geoscientists, geophysicists and petroleum engineers (six-seven students per team)," he said. "Each team is then given a subsurface dataset from an oil field, comprising 3-D seismic and five wells (with well logs, cores, well tests, fluid samples, pressures, etc.), which is used to mimic the appraisal/early development stage."

The teams then have three weeks to evaluate the data and present an initial field development plan, including STOIP and UR.

"This," says Johnson, "is extremely realistic, hard work and intellectually demanding."

The Barrel Award, which evolved about three years later, is similar – except in its case the data set is more regional in extent and the aim is to evaluate basin evolution, petroleum systems and hydrocarbon analysis.

"The teams are comprised of four-five geoscience students, who have five weeks to complete their evaluations," he said. "They present their results to an expert panel of senior oil industry professionals, who select the winning team (without any faculty influence)."

And for a number of years, Imperial's "profound manifestation of science and engineering teaching integration," as Johnson calls it, was for Imperial alone.

**Deadline to submit:
28 February 2012**

ABSTRACTS NOW ACCEPTED FOR ATC 2012

ATC 2012 will deliver a multidisciplinary program covering all aspects of Arctic activity. The program will be developed soliciting abstracts in these key topical areas:

- Geology and Geophysics
- Exploration and Production
- Physical Environment
- Logistics Marine Transport
- Regulatory Environment

See **Johnson**, page 44



For details visit

www.ArcticTechnologyConference.org

3-5 December 2012 /// Houston, Texas

Thank You! Foundation Tops \$35 Million Goal!

By NATALIE ADAMS, AAPG Foundation Manager

You did it! If you are one of the 2,141 donors who contributed to the AAPG Foundation in the last five years, you helped us exceed the \$35 million goal – by \$671,041!

That number may yet rise, as all contributions postmarked through Dec. 31 are not counted and the mail is still rolling in.

Thank you for allowing the AAPG Foundation to serve our industry and budding geologists in so many ways.

* * *

Over \$1.2 million of the total \$2.2 million received by the AAPG Foundation in contributions in 2011 went into endowment funds. See this story online for a chart showing the funds that benefitted from those gifts.

* * *

Five grants totaling more than \$121,000 were recently approved by the Foundation Trustees for cartographic projects to be completed through the AAPG-OSU Geoscience GIS Consortium. The funds will be used for "Stratigraphic Distribution of Hydrocarbon Production" from 19 counties in Abilene, Texas, Pennsylvania Digital Oil and Gas Mapping, Wilcox Group and Carrizo Sand in East Central Texas-Depositional Systems and Deep Basin Lignite,

Appalachian Shales and Tectonics of the Western Indian Ocean.

The Trustees also recently approved a proposal for funds to be applied toward the Publication Pipeline, which provides used geoscience books and periodicals at no cost to eligible libraries that request them.

In the program, geoscientists or company libraries donate the books, and the Foundation provides funding for

warehousing and shipping.

Also approved was funding for 10 framed, laminated U.S. Geological Survey "Tapestry of Time and Terrain" maps to be distributed at nine "More! Rocks in Your Head" workshops, and for rolled maps to be distributed to each program participant.

To date, 80 framed maps and 452 rolled maps have been distributed at 10 workshops in Odessa, Longview,

Conroe, Dallas (two), Mount Pleasant and Houston, Texas; Ruidoso, N.M.; Washington, D.C.; and Oklahoma City.

* * *

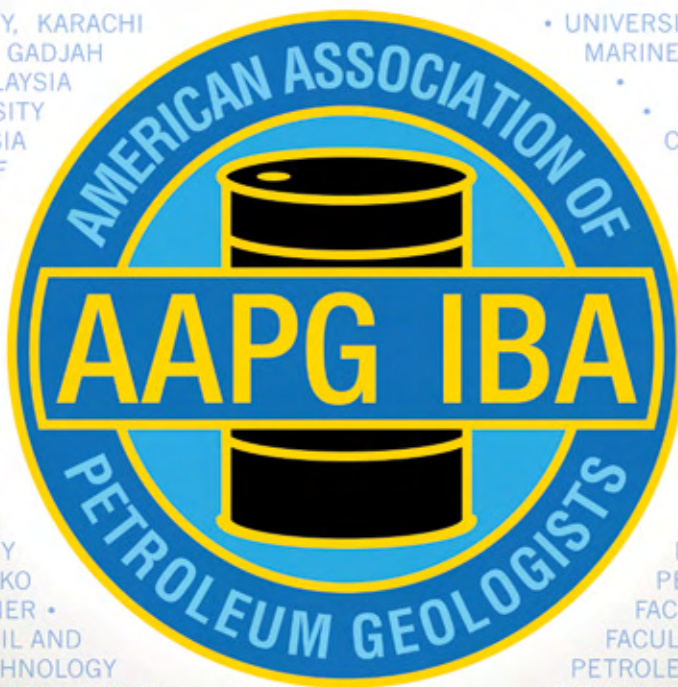
Several Foundation funds received major contributions recently:

Continued on next page

<p>Foundation (General) Natalie Adams Mia S. Alexander <i>In memory of John Kelly Cassell</i> Eugene Leroy Ames Jr. <i>In memory of George H. Coates</i> Anonymous Terry R. Barrett William J. Barrett Peter F.J. Beagle Lee T. Billingsley <i>In memory of Penni Caughey</i> Janet S. Brister Don F. Carlos <i>In memory of Theodoor S.M. "Ted" Ranneft</i> John A. Carver <i>In memory of Spence Fine</i> Kenneth W. Ciriacks Chevron Humankind <i>Matching gifts for Edward Graham and Jayne Sieverding</i> Henry C. Dean Jr. Byron F. Dyer Thomas E. Ewing James L. Eymann David R. Feineman <i>In memory of</i></p>	<p><i>Parke A. Dickey</i> David R. Grogan Paula A. Gural Hugh E. Hanagan David G. Hardy <i>In memory of Richard O. Donley Jr.</i> Sherod A. Harris David H. Hawk Kenji Hirabayashi John S. Isby William C. Kirkwood Irvin Kranzler David H. Lehman Walter S. Light Jr. Thomas M. Maher <i>In memory of Graham Dryden</i> Terry J. Mather <i>In memory of Rufus LeBlanc</i> John R. Maxwell <i>In honor of petroleum geologists</i> James S. McGay Harold N. Meaker <i>In memory of Uno Nummela</i> Richard A. Mills Steven D. Mitchell Sally M. Murray <i>In memory of Grover E. Murray</i> Larry Nation</p>	<p>Christopher S. Newton Leslie O. Niemi John T. Palmer <i>In memory of Robert P. Evans</i> H.W. Peace II <i>In memory of George Huffman</i> Elwin M. Peacock <i>In memory of David Rapp</i> Edward B. Picou Jr. <i>In memory of Gerald M. Friedman and Wayne Ahr</i> Jess P. Roach Michael A. Rogers Robert N. Ryan Jr. Richard H. Sams William R. Scheidecker Daniel L. Smith George T. Smith Dennis M. Sparks Philip H. Stark H. Leighton Steward Stephen M. Strachan Mark R. Teare Paul Thompson Frederic A. Tietz Donald F. Todd Charles B. Wheeler Ann O. Willis Dennis W. Wingrove Bashir M. Zakari</p>	<p>Amoruso Special Publications Fund John J. Amoruso</p> <p>Awards Fund <i>Robert Berg Outstanding Research Award</i> Josephine F. Berg <i>In memory of Robert Berg</i> Ernest A. Mancini</p> <p>Best Student Paper and Poster Award James S. Hnat</p> <p>Bridge Fund Encana Cares (USA) Foundation <i>Employee contribution and match for Peter Dea</i> Walter S. Light Jr.</p> <p>Daniel A. Busch Library Fund Anthony Reso</p> <p>Digital Products Fund <i>University of New Mexico</i> Walter P. Buckthal <i>In memory of Natalie Henkes Buckthal and honoring Natalie Heberling</i></p>	<p><i>Virginia Tech University</i> David R. Grogan</p> <p>Distinguished Lecture Fund Martha Lou Broussard <i>In memory of Gerald M. Friedman</i> Edwin R. Goter <i>In memory of Gerald M. Friedman</i> John C. Killinger Walter S. Light Jr. Eugene A. Shinn <i>In memory of Mike and Virginia Lloyd</i></p> <p>J. Ben Carsey Distinguished Lecture Fund Dorothy Carsey Sumner</p> <p>Grants-in-Aid Fund BHP Billiton Matching Giving Program <i>Matching gift for Richard B. Nagai</i> <i>In memory of Frank Bell</i> Chevron Humankind <i>Matching gift for Mike Unger</i> Richard J. Bottjer C. Scott Cameron <i>In memory of Erik Mason</i> Paul H. Dudley Jr.</p>
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Continued from previous page

▶ The Search and Discovery and Imperial Barrel Award funds each received a huge boost when Anadarko Petroleum contributed \$520,000 to fulfill a 10-year pledge to the AAPG Foundation.

▶ James A. Hartman, a longtime supporter of student leadership, recently contributed over \$300,000 to the Student Leadership Summit Fund, which has been named after him.

▶ True to his giving nature, Jack Threet donated \$150,000 "in honor of all who so generously support the AAPG Foundation." This gift went to the Jack C. and Catherine I. Threet Endowed Fund for the Advancement of Petroleum Geology.

▶ Jerry Namy contributed a \$10,000 gift, which will go to support the new Professorial Award Fund.

▶ John Silcox aided the Grants-in-Aid program this month by a \$12,000 increase to the John H. and Colleen Silcox Named Grant, as did Rosann Hooks by contributing to the James E. Hooks Memorial Grant, providing a scholarship to a student at either Florida State University or Texas A&M.

▶ Two new scholarships were established for the Universities of Missouri and Wisconsin, thanks to Merrill Shields in honor of her husband and AAPG Foundation Board Trustee, M. Ray Thomasson.

▶ The Amoruso Special Publications Fund was strengthened by a \$10,000 donation from John Amoruso. Bill Barrett gave an equal amount to the general fund, as did Jim Gibbs to the James A. Gibbs Family Fund.

The Foundation is exceedingly thankful for the generous gifts. ☑

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Oct. 22 – 25

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Calgary: April 23 – 27

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Houston: March 26 – 28
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PROFESSIONAL news BRIEFS

Laurel Alexander, to vice president-exploration, Pure Earth Resources, Seven Fields, Pa. Previously senior geologist, EXCO Resources, Warrendale, Pa.

Richard M. Ames, to president, Castine Consulting, Johns Island, S.C. Previously vice president and CIO, TNK-BP, Moscow, Russia.

John A. Bickley, to general manager, unconventional gas global expertise support, Shell, Houston. Previously development manager-Pinedale, Shell, Denver.

Steve Boljen, to senior geologist, BreitBurn Energy, Houston. Previously manager-oil and gas division, Norwest, Denver and Calgary, Canada.

Nancy E. Bowers, to senior geophysicist, Fugro Gravity and Magnetic Services, Houston. Previously geological and geophysical interpretation consultant, Subsurface Interpretation Services, Dripping Springs, Texas.

Nowell Briedis, to production geology consultant, Maersk Oil and Gas, Stavanger, Norway. Previously senior technical professional-adviser, ExxonMobil, Stavanger, Norway.

Tom Drea has been appointed director and state geologist, Wyoming State Geological Survey, Laramie, Wyo. Previously president, ConocoPhillips Iraq.

Mike Duhon, to vice president-exploration and development, TreadStone Energy Partners, Houston. Previously senior staff geologist, Southwestern Energy, Houston.

Terry Engelder was selected as one of Foreign Policy's "Top Global Thinkers of 2011." Engelder, who is closely associated with the Marcellus Shale play, is with Pennsylvania State University, University Park, Pa.

Dale A. Fritz, to district geological manager, Permian Texas district, Devon Energy, Oklahoma City. Previously district geological manager, north Fort Worth Basin district, Devon Energy, Oklahoma City.

Mike Henry, to E&P geological consultant, Capistrano Beach, Calif. Henry recently retired as manager of geology and subsidence-Wilmington Oil Field, Long Beach Oil and Gas, Long Beach, Calif.

William S. Houston, to geoscience manager, New Zealand Oil and Gas, Wellington, New Zealand. Previously senior staff geologist, New Zealand Oil and Gas, Wellington, New Zealand.

Jean Hsieh, to senior sedimentologist, Talisman Energy, Calgary, Canada. Previously team leader-carbonate stratigraphy, Chevron, Houston.

Edward D. LaFehr, to senior vice president, Talisman Energy, Calgary, Canada. Previously vice president, BP, Cairo, Egypt.

Peter MacKenzie, to vice president operations, Ohio Oil and Gas Association, Granville, Ohio. Previously consultant, MacKenzie Land and Exploration, Worthington, Ohio.

David McGee, to senior advising geologist, Apache, Houston. Previously principal geologist, ConocoPhillips, Houston.

Susan Riddell Rose has been named one of Canada's Top 100 "Most Powerful Women" by Canada's Financial Post business newspaper. She is CEO, president and director of Perpetual Energy, Calgary, Canada.

Will Satterfield, to chief operating officer, Solimar, Ventura, Calif. Previously manager

Continued on next page

Call For Papers

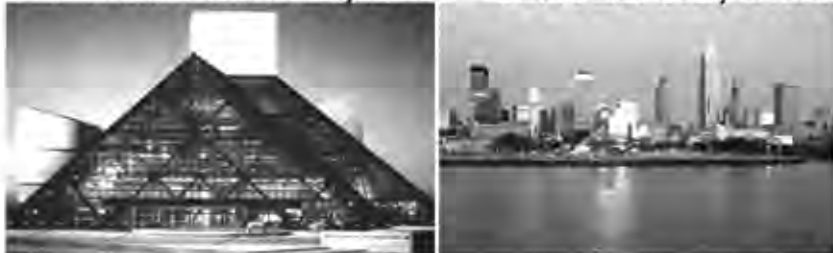
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Proposed Theme Sessions

- | | |
|--|--|
| - Source Rock Geochemistry, Petrophysics, and Thermal Maturity | - Secondary and Tertiary Recovery |
| - Hydrocarbon Exploration and Development from Eastern Shales | - Economics and Politics of Exploration and Development of Hydrocarbons |
| - Carbon Sequestration and Wastewater Disposal | - Case Studies and Current Research on Environmental Impacts from Hydraulic Fracturing |
| - Environmental Effects of Moderns Minerals Extraction | - Deep Exploration Potential in the Eastern USA |
| - Coal and Coalbed Methane, Nuclear, and Renewable Energy | - Horizontal Wells: Design, Drilling, Completion, and Hydraulic Fracturing Techniques |

Technical Program Chairs: John L. Wicks and Chris Perry at techprog@esaapg2012.org
General Meeting Inquiries at info@esaapg2012.org or online at <http://www.esaapg2012.org>

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Awardees Named for Milan ICE

The winners of the best paper and best poster awards have been announced for the 2011 AAPG International Conference and Exhibition, held last October in Milan, Italy.

The winners will be honored during the opening session at the upcoming AAPG Annual Convention and Exhibition in Long Beach, Calif., which will be held April 22-25.

The technical award winners are:

Gabriel Dengo Memorial Award (Best paper)

AAPG member Jonny Hesthammer, with Emergy Exploration AS in Bergen, Norway, will receive the award for his

paper "CSEM Efficiency – Evaluation of Recent Drilling Results."

His co-authors are Susanne Sperrevik, with RockSource in Bergen, Norway; and AAPG member Aristofanis Stafatos, also with RockSource, Bergen.

Ziad Beydoun Memorial Award

(Best poster)

AAPG members Stan Abele and Rocky Roden will receive the award for their poster "Fracture Detection Interpretation Beyond Conventional Seismic Approaches."

Both are with Seismic Micro-Technology, Houston.

Continued from previous page

and technical director, Hardy Oil and Gas (India), Chennai, India.

Fred W. Schroeder, to senior geological adviser, Noble Energy, Houston. Previously senior research associate, ExxonMobil Upstream Research, Houston.

Frank Sheppard, to senior geoscience adviser, Apache Corp., Houston. Previously senior geophysical adviser, Noble Energy, Houston.

Roger K. Soderberg, to senior geological adviser-central exploitation, Apache Corp., Tulsa. Previously chief geologist-north Louisiana conventional resources, Petrohawk Energy, Tulsa.

Stephen Twartz, to exploration manager,

Cooper Energy, Perth, Australia. Previously director-assets and technical, Cairn Energy, Bangladesh.

Gregory P. Wrightstone, to vice president-geology, Mountaineer Keystone, Pittsburgh. Previously director of geology, Texas Keystone, Pittsburgh.

Robert S. Yeats has been honored by his former students at Ohio University and Oregon State University by the establishment of an endowed professorship of geology in the college of earth, ocean and atmospheric sciences at Oregon State University. Yeats is emeritus professor of geology at Oregon State University.

Essam Zaghoul, to COO, Oman Oil Company Exploration and Production, Muscat, Oman. Previously COO and EVP, NOR Energy, Calgary, Canada.

"Leading The Stampede"





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Go To:

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*****Call for Papers*****

Abstract Deadline: March 1, 2012

- ✓ New Play Concepts
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- ✓ Unconventional Exploitation
- ✓ Reservoir Characterization
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Register now for AAPG's third Geosciences Technology Workshop that will discuss Unconventional hydrocarbon plays which have begun to gain significant attention and investment in Asia, representing the latest frontier for these disruptive technologies that have already changed the face of upstream oil and gas in North America. This GTW focuses on exploration for, and not marketing of, unconventional assets. The workshop will look into resource identification, play mapping and distribution, characterization, resource (volume) estimation and analysis, produceability, best practices and global analogues which can be tapped to significantly reduce the technical risks in these resources.

Technical experts on CBM, shale gas and tight oil plays in US and Australia have been enlisted to provide global analogues, together with experts working on frontier opportunities in China, India, Pakistan and Indonesia. Proposed sessions will cover shale plays, coal seam gas plays and other alternate hydrocarbon plays. There are still slots available to share your expertise.

- Presentations/Dynamic Discussions/Case Studies from experts in the industry, including Dr. Christopher Schenk of USGS / Dr. Zao Caineng of Petrochina / Arnout Everts of Leap Energy / Jason Pitcher, Halliburton-Sperry Drilling / Peter Cockcroft, Blue Energy / David Waldo, Gaffney-Cline & Associates, Li Jianzhong, Petrochina RIPED / Manoj Kumar Prabhakar and Prithiraj Chungkam of IHS
- The event will include an evening Icebreaker on 14 March and Group Dinner on 15 March

Who Should Attend

- Unconventional Resources Geoscientists
- Unconventional Resources Asset Managers
- Unconventional Resources Engineers
- Asian Regulators managing potential unconventional plays

Sponsorship Opportunities: Join us by being a sponsorship partner to enjoy the great benefits of exposure at this event. Contact Adrienne Pereira (apereira@aapg.org) to learn more about the different Corporate Sponsorship Packages Available.

Program and Registration details can be found at
<http://www.aapg.org/gtw/singapore2012/index.cfm>

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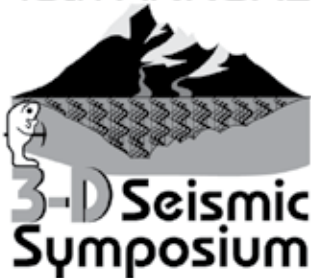
28th March 2012, Durham, UK

Hosted by Durham University and organized by the Institution of Gas Engineers and Managers and members of the N8 Research Partnership, this interdisciplinary meeting brings together policy makers, scientists, engineers and stakeholders with an interest in UK and European shale gas. It will be a unique opportunity to inform the future direction of shale gas regulation and research in the UK and Europe. The meeting has the twin aims of **informing new codes of practice** for UK shale gas exploitation, and of building **UK and European research networks** in shale gas and unconventional hydrocarbons.

Registration and further details, including the pre- and post-meeting technical workshops and field trips: www.dur.ac.uk/unconventionals/europeanshalegasconference



18th ANNUAL



Reflecting on Resources

Keynote Speaker

Steve Natali, WPX Energy
A Multi-TCF Gas Discovery, Mancos Shale Formation,
San Juan Basin, New Mexico

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- Woodford
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- Haynesville
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- Marcellus
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REQUESTS FOR FOUNDATION FUNDING

If you have a funding need that matches the priorities of the AAPG Foundation, please submit to Natalie Adams at nadams@aapg.org. For more information, go to foundation.aapg.org and click on the "Funding" tab.

All of the AAPG Foundation's funding decisions are made by a Board of Trustees that meets three times annually to review proposals. Applications for grants to projects and programs which fulfill its mission are welcome. Decisions are based on available funds.

TO CONTRIBUTE

If you would like to establish a fund or contribute to an existing fund, please go online (<https://www.aapg.org/eDonation/Core/eDonation.aspx>) or contact the Foundation staff by email (foundation@aapg.org), phone (888-945-2274, ext. 274) or mail to P.O. Box 979, Tulsa, OK 74101.



Reduced Registration Available Online for Upcoming APPEX

Current and future trends in international exploration, new oil and gas hot-spots and the chance to network with industry leaders from around the world will be offered at APPEX, AAPG's annual Prospect and Property Expo, March 6-8 in London, England.

Online registration is open at www.appexlondon.com – and reduced fees are available for those who register by Feb. 13.

More than 500 people are expected to attend this year's event, which will be held at London's Business Design Centre.

APPEX is designed to give principals, senior managers, business developers and new venture managers a chance to network and do business with NOCs, governments and other global deal-makers and decision makers.

This year's program also includes a comprehensive speakers program, offering experts who will talk about

current realities and future trends facing international exploration. Topics will include:

- ▶ The Future is Bright – Is It Really Unconventional?
 - ▶ Where Is Money Available for Upstream O&G – And for What?
 - ▶ The Future of Oil Shale vs. Shale Gas.
- Two short courses will be offered. They are:
- ▶ Risk Reduction for Plays and Prospects.
 - ▶ Petroleum Geology for Financial Professionals.

There also will be talks and forums that specifically target plays, prospects and the potential of Europe (general), the North Sea, India, Malaysia, Western Australia, Southeast Asia, Southeast Africa, the Falklands, Newfoundland, Iceland and South America.

This year's event will be held at London's Business Design Centre.

Deadline Near for Foundation's Inaugural Professorial Award

The deadline is fast approaching to submit applications for the inaugural AAPG Foundation's Professorial Award.

The \$1,000 award will go to a professor selected for excellence in the teaching of

natural resources in the earth sciences.

Information on the requirements can be found online at foundation.aapg.org/Professorial_Award.cfm.

All entries must be postmarked by March 1.

Johnson from page 39

Still Exciting!

Going Viral

But then, in 2006, a time when Johnson worked to help initiate AAPG's first international office in London, the Barrel Awards went viral.

"We invited (AAPG Honorary Member and London office director) Steve Veal to join the Barrel Award panel," Johnson said. "Steve saw the wider potential in a flash and we shared his enthusiasm; and so the AAPG's 'Imperial Barrel Award' was conceived there and then!"

Following "a fair degree of persuasion (by Steve)," Johnson said, the first AAPG IBA event took place at the following year's annual convention in Long Beach.

Looking back, it was a no-brainer.

Giving Veal much of the credit, Johnson said "the success of the IBA was built on a simple concept, which fires the imagination equally of both the students involved and the industry panel assessors. Both are vital ingredients, and hence this beautifully bridges academia and industry."

What separates the IBA from other awards, Johnson believes, is that it is endorsed by the senior petroleum industry professionals, who have a different worldview than academics – and thus, assign tougher tasks than normal university work assignments.

Having feet planted in both academia and the profession, he is and was comfortable in the territory.

"In some ways I'm not surprised by the success of the IBA," Johnson said, "because the concept is so elegant and effective in challenging young geologists to be creative in a petroleum exploration sense."

Many in the profession maintain that Johnson's contribution to the industry, as well as to students, cannot be understated.

AAPG Honorary Member John Brooks, past president of AAPG's Europe Region who also was made Commander of the Most Excellent Order of the British Empire (CBE) says, "Johnson's advocacy of the Barrel Award alone sets him apart from others in his field, since this has led to the introduction of the IBA in the Association."

As with most things in Johnson's career, though, it isn't just IBA that makes Johnson a deserving recipient of the Grover Murray award – it's his whole body of work.

In fact, according to Brooks, the only issue he has with Johnson receiving the award is that it didn't come soon enough.

"I find it hard to understand why he has not been put forward before, so significant are his achievements with students at Imperial College," Brooks said.

For Johnson, the bridge between academia and the profession is still palpable, still exciting – and while admitting it will take constant and careful nurturing, he says:

"But what a great challenge to have!"

There he goes again with those exclamation points.

IN MEMORY

Robert Allen Northcutt, 83
Oklahoma City, Dec. 2, 2011
Theodor Seth M. Ranneft, 87
Houston, Sept. 27, 2011

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

READERS' FORUM

Member Sponsors

It's recently come to our attention that the Executive Committee has eliminated the decades-long practice of requiring that sponsors of Active members know the applicant's experience and ethics for a reasonable period of time.

For many years, we recall the AAPG sponsor form included a statement requiring that the sponsor knew the applicant for at least one year. The specified time period of one year was modified a few years ago, and read "Sponsors should have known the applicant for a significant time and can attest to the applicant's experience and ethics."

Regrettably, we just learned the current Executive Committee voted

recently to eliminate this phrase altogether.

We believe this devalues the historic intent of the sponsorship requirement of our bylaws, and would ask that they add back the language, but with at least a three-month time requirement.

We thank them in advance for their reconsideration of their previous action.

Clint Moore, Houston
Pat Gratton, Dallas
Dan Smith, Houston

(Editor's note: For explanatory background see the President's Column, November EXPLORER.)

Pioneer Geologist Gets 'Googled'

The 374th birthday of a pioneer geologist and botanist – and later a Catholic bishop – was celebrated in Google's illustrated homepage logo on Jan. 11.

In keeping with the zany image Google presents its corporate culture, the logo on the search engine page of the technology giant includes various modifications and/or humorous features, such as cartoon modifications of their logo for use on holidays, birthdays of famous people and major events – and sometimes includes sound effects as well. The company calls the daily design a "doodle."



Nicolas Steno (1638-1686) was memorialized in the logo which featured "Google" with the letters illustrated with the earth's layers, with green plant life and animals sitting on the surface of sediment embedded with fossils, demonstrating his "principal of horizontality" and the lower strata noting his "law of superposition."

Born in Denmark, Steno first studied human anatomy. But it was his examination of shark teeth that led him to question science as the world knew it. He noticed that the teeth resembled shapes he had seen in rocks, and he concluded that those shapes were the remains of ancient animals.

He further theorized the fossil record was a chronology of different living creatures in different eras, a foundation for Charles Darwin's writings on evolution.

In "Principles of Stratigraphy," Michael Brookfield writes that Steno's revolutionary ideas still form the basis of stratigraphy: They were elaborated on in the 18th century and were a key factor in the cyclical theories of James Hutton.

Steno later converted to Catholicism, became a priest and later a bishop. In 1988 he was beatified – the stage before being declared a saint – by Pope John Paul II.



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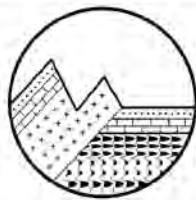
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Review of candidates will begin February 1, 2012, and continue until the position is filled. The anticipated starting date is August 15, 2012. Applicants are requested to submit a vita/resume, statement of research and teaching interests, and a list of five references who can be contacted, including names, phone numbers, email, and complete mailing addresses. Applications and nominations should be addressed to Petroleum Geology Search Committee, ConocoPhillips School of Geology and Geophysics, University of Oklahoma, 100 E. Boyd Street, Rm. 710, Norman, OK, 73019-1009.

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



The American Association of Petroleum Geologists is seeking a director of its Geoscience and Energy Office in Washington, D.C. area (GEO-DC).

Applicants must have industry experience; a geoscience degree is preferred along with a strong familiarity with the geoscience community through active society participation. In addition, demonstrated

outstanding written, verbal, and management skills are required.

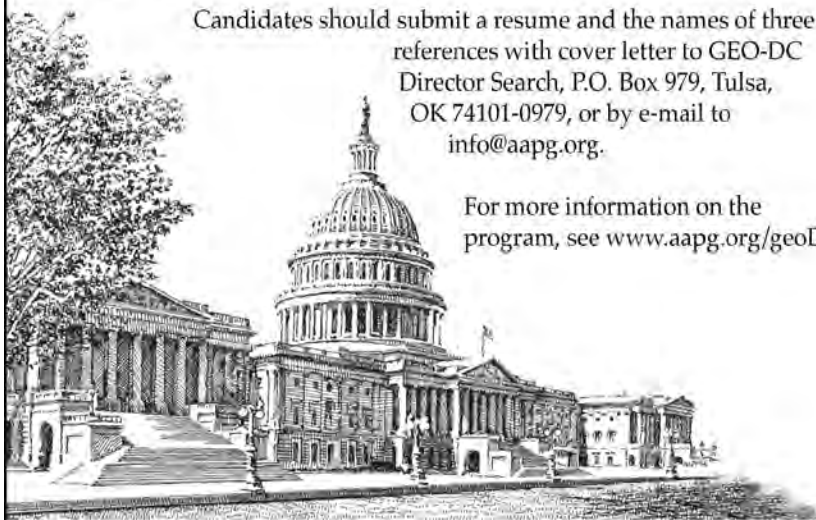
The GEO-DC office is the focus for AAPG's government affairs program, working actively with AAPG members, sister societies, Congress, and federal and international agencies to bring good science into the decision-making process of public policy.

The GEO-DC Director will monitor and analyze legislation and policy developments affecting the geosciences, and work with AAPG committees to develop congressional testimony and policy positions on national and international geoscience and energy issues. In addition, this position is responsible for key components of AAPG's development program to actively grow government and industry interest in geoscience and energy research for the benefit of AAPG members and the general public.

The office is located at the American Geological Institute in Alexandria, Virginia.

Candidates should submit a resume and the names of three references with cover letter to GEO-DC Director Search, P.O. Box 979, Tulsa, OK 74101-0979, or by e-mail to info@aapg.org.

For more information on the program, see www.aapg.org/geoDC.



EMD
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United States, technical sessions are now about revising our understanding of the processes under which organic-rich shales are deposited and subsequently evolve into prolific unconventional reservoirs.

And all these new and innovative ideas about shales have spawned a host of additional questions that are being addressed by bringing new technologies into the shale discussions. The use of advanced SEM imaging to view porosity in shales, sometimes the only means to view porosity, is just one example.

New terms also are being spawned. Understanding the nature and distribution of pore types in shales is evoking terms like "nanoporosity" and "organic porosity."

And even though the concept of unconventional such as gas shales are becoming more mainstream, understanding flow in shales is anything but conventional. Formulating new models focused on fluid flow in rocks characterized by low porosity and permeability remains challenging.

These topics, among many others, were the subject of much discussion and debate at a recent Hedberg Conference on shales, of which EMD was a co-sponsor.

As we move forward in what is a dynamic energy landscape, topics pertaining to unconventional resources are at a premium.

The organizing committee for both this year's ACE (April 22-25 in Long Beach, Calif.) and ICE (Sept. 16-19 in Singapore) is committed to incorporating presentations on shales and other unconventional reservoirs. Much is happening throughout the world in the area of unconventional resources.

For a comprehensive overview of current research and stages of development, check out "Unconventional Energy Resources: 2011 Review," published in *Natural Resources Research* (Volume 20, Number 4, December 2011, pages 279-327). This gem contains nine unconventional energy resource commodity summaries prepared by various committees of EMD.

In the meantime, EMD remains committed to bringing pertinent information to the AAPG membership about these so-called conventional unconventional.

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POSITION AVAILABLE

**Petroleum Exploration Geologist
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Tulsa, OK**

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

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

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

Chesapeake Energy, Geoscience Technology Group, Sequence Stratigraphy Team is currently seeking a Senior Geologist/Stratigrapher with a strong background in sequence stratigraphic concepts and significant core description/petrographic reservoir characterization. Successful candidates will work with multidisciplinary staff and operations groups involved in the analysis of unconventional gas and oil reservoirs and report to the Chief Stratigrapher/ Manager of Geology. Duties will involve describing, interpreting, and integrating core descriptions and petrography of mudstones, carbonates, and sandstones into sequence stratigraphic models; analyzing diverse datasets

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**Oil and Gas Research Center
Sultan Qaboos University
Sultanate of Oman**

The Oil and Gas Research Center is seeking a Research Associate in Petroleum Geology.

Applicants should have a PhD in Geological Sciences and a record of published research. Experience using reservoir modeling software is highly desirable.

An attractive package including tax-free salary, housing allowance, and paid annual travel to the home country is offered, dependent upon qualifications.

To apply, please send a CV listing publications and contact details of personal references to ogrc@squ.edu.om.

DIRECTOR'S CORNER

International Pavilion: Forum for Opportunities

By DAVID K. CURTISS, AAPG Executive Director

Attention global explorers! Are you a geologist who is continually scouring the planet for new exploration opportunities? Is your passion sifting through reams of data – old and new – coming up with new play concepts?

Have you developed prospects in far-flung parts of the world, and are looking for partners to test the idea?

If any of these describe you, then mark your calendar for Feb. 21-24 and plan to be in Houston to attend the brand new International Pavilion conference at the NAPE Expo.

International Pavilion LLC is an AAPG subsidiary company. Its purpose is to offer a global forum to promote today's petroleum investment opportunities. It brings together national oil companies and government ministries with international oil companies and individuals looking to invest in new areas. And it's been doing so for more than 17 years.

The International Pavilion got its start at the 1994 AAPG Annual Convention and Exhibition in Denver, with enthusiastic support from past AAPG president Robbie Gries, who was then the convention's general chair. Its popularity led it to become an annual event.

Fast forward to 2007, when the American Association of Petroleum Landmen approached the International Pavilion to create and manage a new international component for NAPE Expo. That successful collaboration has paved the way for this year's inaugural joint



CURTISS

Visiting the International Pavilion is like standing at the crossroad of the global E&P world.

International Pavilion and NAPE Expo in Houston.

The 2012 International Pavilion at NAPE will showcase the largest collection of international exploration and investment opportunities available today with more than 75 international exhibitors expected. The event will kick off with an opening Global Briefing of recent E&P activity.

Following the briefing, past AAPG president Scott Tinker will present a special screening of his new film, "Switch." Join Scott as he travels the world to explore the facts about the energy sources that underpin modern society today and into the future.

Up next is the exhibition kick-off, offering attendees the opportunity to review current and upcoming licensing rounds, evaluate acreage and farmout opportunities, connect with representatives from national oil companies, see investment opportunity overview presentations from exhibitors covering the globe at the International Pavilion Theater and network at the evening International Pavilion reception.

That all happens Tuesday and

Wednesday, Feb. 21-22, followed by the opening of NAPE Expo on Thursday and includes the International Pavilion exhibition through Friday.

As AAPG member Gina Godfrey, the International Pavilion's managing director, told me recently, "Visiting the International Pavilion is like standing at the crossroad of the global E&P world."

"And that doesn't end when the show ends," she continued. "The launch of Navisphere last year has transformed our ability to be a year-round source of information to the industry."

The International Pavilion continues to innovate. Navisphere is the International Pavilion's new product designed to make it easy for energy ministries, government agencies and national oil companies to utilize a GIS platform to promote current and new exploration and development activity and opportunities.

Navisphere is a subscription-based web browser product that enables users to efficiently review global exploration activity, from concession status to licensing rounds, as well as a host of ancillary information. It integrates petroleum activity information both from

government and industry sources and is updated on a continuous basis.

The International Pavilion at NAPE Expo in Houston kicks off the 2012 year, followed by APPEX London in March, the AAPG ACE in Long Beach in April and AAPG ICE in Singapore in September. At all other times of the year, you can visit www.internationalpavilion.com.

"Step into the International Pavilion," Godfrey said, "and you have access to exploration opportunities from around the globe."

I urge you to take that step and join us in Houston this month.

* * *

The International Pavilion is an essential part of AAPG's future, as we work to provide our members with products and services that help them do their jobs better – whether they work at an international oil company, a national oil company or a government agency.

As a subsidiary company it allows us to innovate and try new things that can ultimately benefit large sectors of our membership.

And its global scope reinforces the fact that, as past president Bruno Hansen observed, AAPG is an international geological organization.

DIVISIONS REPORT

When Is Unconventional Conventional?

By STEPHEN M. TESTA, EMD President

Have you noticed?

If you have a pulse and have been to an AAPG Annual Convention and Exhibition (ACE) over the past couple of years or so, or a recent AAPG International Convention and Exhibition (ICE) such as those held in Calgary or Milan, you would have noticed.

Standing room only crowds at sessions focused on gas shales have become the norm.

It's not limited to oral sessions, either – try finding a spot to view a poster or talk to the author(s). Overcrowding is a sign of the times.

And to add to what I perceive as good news, exploration for gas, oil and liquids in shale reservoirs is no longer restricted to the United States or even North America. These so-called unconventional reservoirs are now the focus of exploration on virtually every continent in the world.

It is not surprising that many AAPG members are actively involved in shale exploration or production, of which many are EMD members who have been instrumental in organizing technical sessions – and running short courses and field trips – at the ACE and ICE meetings, and in supporting Geosciences Technical Workshops (GTWs).



TESTA

Defining unconventional may not be as easy as one would think – and we are not alone in our metaphysical thoughts about what is conventional and what is not.

* * *

Defining unconventional may not be as easy as one would think – and we are not alone in our metaphysical thoughts about what is conventional and what is not.

The bank and loan industry, and medical and military strategists have these discussions all the time. Discussions as to what is conventional and unconventional have been an ongoing part of their respective dialogues.

Generally speaking, conventional things are of the ordinary while unconventional things would be out of the ordinary.

However, what you may think is ordinary could be completely different from my ordinary.

Natural gas enthusiasts divide unconventional gas into six main categories:

▶ Deep gas.

- ▶ Tight gas sands.
- ▶ Gas-containing shales.
- ▶ Coalbed methane.
- ▶ Geopressurized zones.
- ▶ Arctic and sub-sea hydrates.

Whether these gas deposits are unconventional or not changes over time, and from deposit to deposit, with economics dictating whether a particular deposit is unconventional or not.

If a natural gas deposit is too costly to extract, it is unconventional.

For those who prefer Wikipedia, unconventional oil is defined as petroleum produced or extracted using techniques other than the conventional oil well method.

The growing interest in unconventional is credited in large part to technological advances and innovative new processes – or a cheaper way of doing something. That is all that is needed to turn what was once deemed

unconventional to conventional.

Regardless, to make sure we all know what the chatter is about, unconventional from EMD's perspective are:

Those energy resources that do not occur in discrete oil and gas reservoirs held in structural or stratigraphic traps in sedimentary basins.

Think gas shales, shale oil, tight gas sands, oil (tar) sands, coalbed methane, oil shales, gas hydrates, etc.

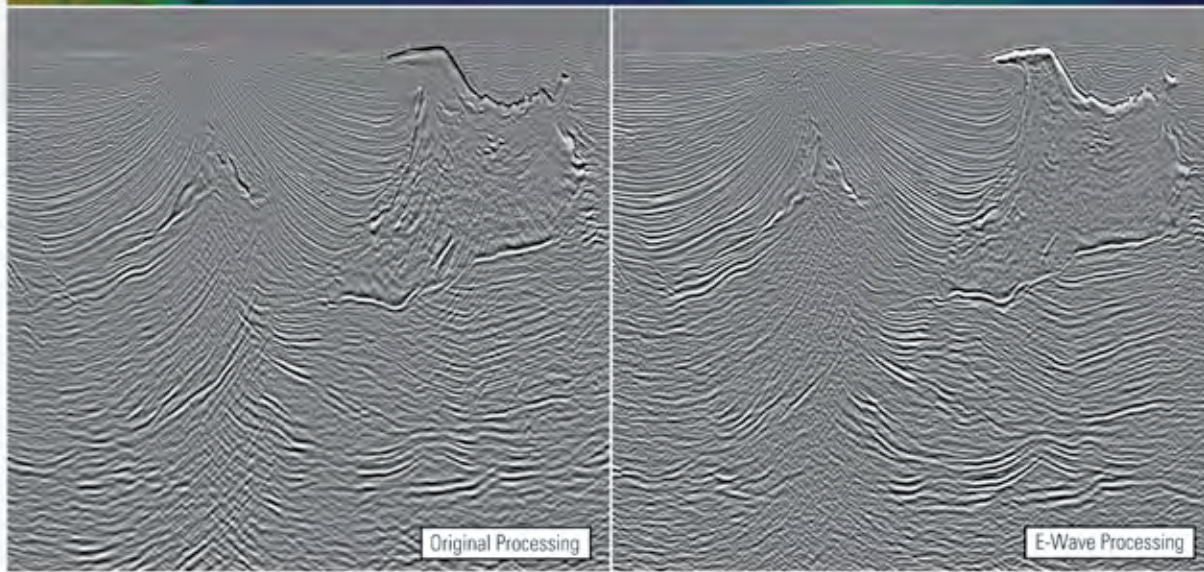
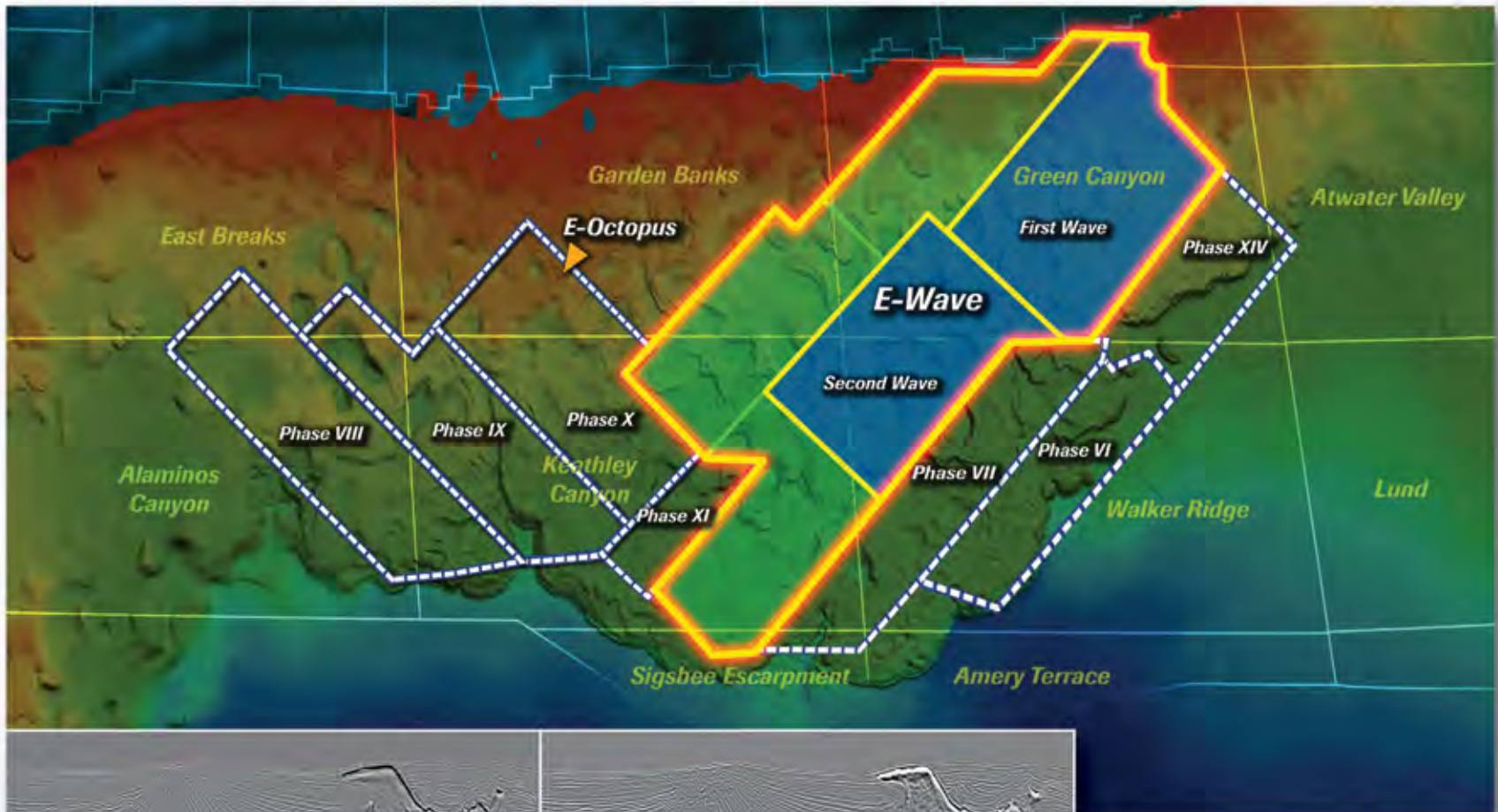
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Conversation about shale reservoirs – as demonstrated at the 2010 ACE in Houston and 2011 ICE in Milan – has evolved from that of just a few years ago. Instead of looking for a talk about the next "hot" shale prospect in the

See EMD, page 46

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