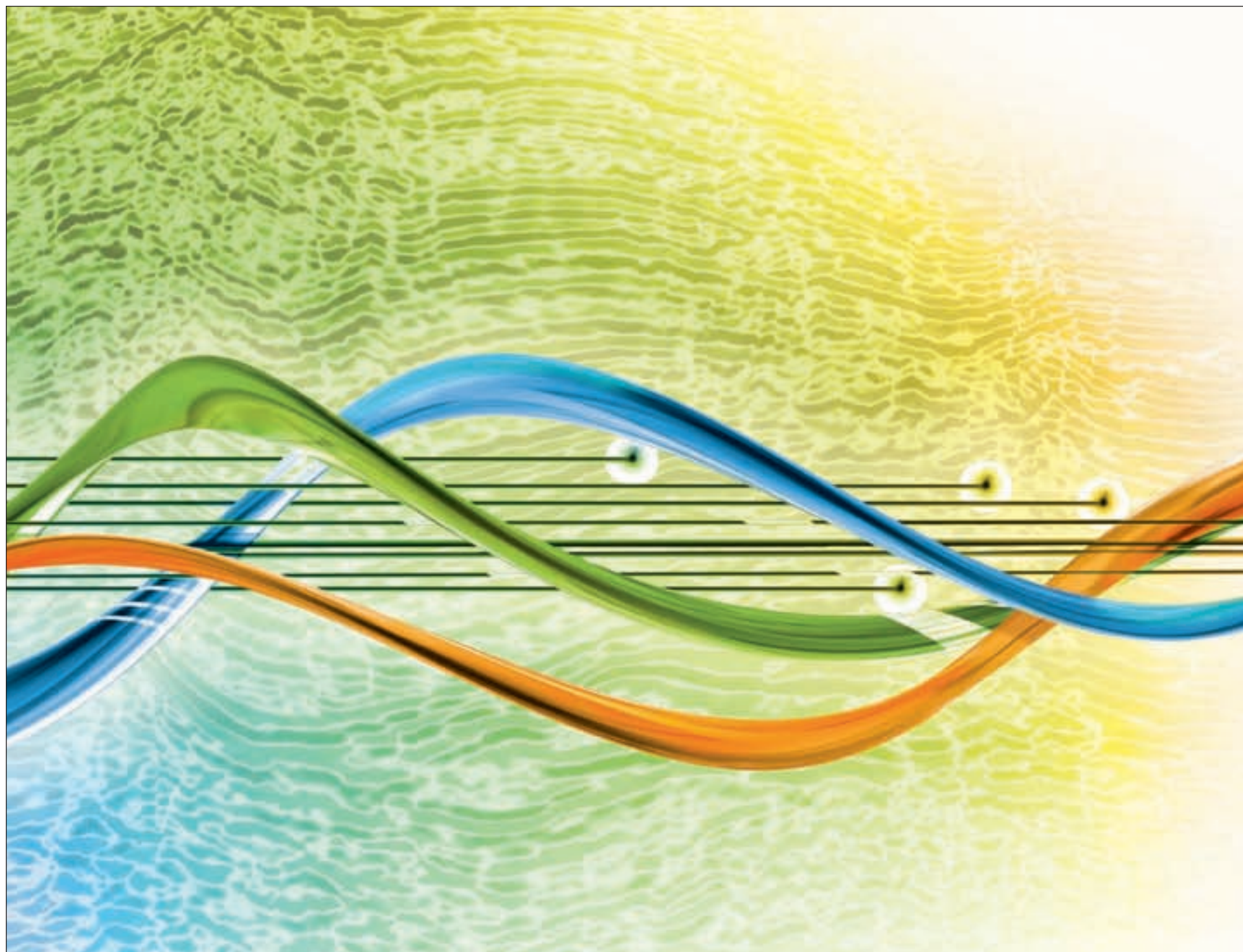


Northern Exposure

See page 6



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On the cover: The awesome beauty of Alaska – and for explorers, the delicious dynamics of its geologic history – are on full display this month thanks to AAPG member David Houseknecht, who took this photo and will be offering talks on Alaskan potential at the upcoming AAPG Annual Convention in Long Beach, Calif. See page 6. Specifically, the cover photo captures the thrust fault ramp in Carboniferous Lisburne Group carbonates at Brooks Range mountain front, Akmagolik Creek, north-central Alaska. How awesome is it? Use the blue helicopter (see it in the center of the photo?) for scale. The scene is about 150 miles southwest of Prudhoe Bay.

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Ability-to-Pay Graduated Dues Structure (proposed fee schedule)

Gross Personal Income	Dues	Products	Options
Level 1 >\$50,000	\$80	EXPLORER hardcopy/optional BULLETIN	
Level 2 \$50-25,000	\$40	EXPLORER hardcopy/digital BULLETIN	\$30 BULLETIN hardcopy fee
Level 3 <\$25,000	\$20	Digital only	\$20 EXPLORER hardcopy fee and \$30 BULLETIN hardcopy fee

Note: Figures do not include postal surcharge for non-U.S. mailing.

PRESIDENT'S COLUMN

Dues You Can Use; A Step to the Future

By LEE T. BILLINGSLEY

After reviewing next year's financial projections and expansion of AAPG services, the Executive Committee voted to set next year's dues at \$80 for Active and Associate and \$40 for New Associate and Emeritus members.

To put next year's top dues of \$80 in perspective:

✓ It is about the same as the top dues for SPE and SEG.

✓ It is a 6.7 percent increase after six years of no change.

✓ Based on AAPG's annual salary survey, the average member will need to work less than two hours per year to pay for dues.

✓ Dues will cost less than that of one cup of Starbucks' coffee per week for a year.

As you can see from the above rationale, AAPG dues are relatively inexpensive for our "average" members. However, some current members and many prospective members currently earn considerably less than the average. AAPG dues, even the half rate for New Associates, are a deterrent for both retention and recruitment of some members.

In many parts of the world AAPG actually competes for members with SPE and SEG. Even though each organization offers different content to its members, prospective members are faced with a choice of joining only one organization.

Currently, both SPE and SEG offer graduated dues structures, and their dues are reduced from their top rate based on a member's geographic location, years of experience or combinations thereof. Thus, some geologists are joining SPE or SEG but not AAPG simply based on the cost structure of dues.

AAPG does not have to imitate other organizations, just for the sake of following their lead. But SPE's and SEG's increasing memberships and AAPG's flat to declining membership have certainly gotten the attention of your elected leadership for the past couple of years.

This situation reminds me of a quote from Charles Darwin: "It is not the

strongest of the species that survives, nor the most intelligent, but the one most responsive to change."

* * *

Should AAPG members be concerned?

If AAPG were like a commercial bank, we could envision



Billingsley

members making "deposits" to AAPG in the form of new technical data and interpretations, attendance at conventions, purchasing books, etc. AAPG depends on its members to continually replenish and expand its technical database. Like commercial banks, AAPG must actively market itself to new account holders, even though most new members may only make small deposits at first. However, as new depositors mature and remain loyal, some will make major deposits or contributions.

If AAPG cannot attract these new members we will suffer the consequences of a stagnating membership, much like a bank without new accounts.

AAPG clearly needs a graduated dues structure to be competitive on a global scale. Several committees and groups within AAPG, including the Executive Committee, Advisory Council, Ad Hoc Graduated Dues Committee and Membership Committee collaborated and conferred for the past year to recommend a graduated dues structure that would best fit our membership.

AAPG's House of Delegates' (HoD) leadership took the recommendation, modified it slightly and has now placed a Bylaw amendment on the agenda for the

See **President**, next page

Candidates' Bios, Responses Online

Biographies, pictures and statements from all candidates for AAPG office are now available for viewing on the AAPG Web site, www.aapg.org.

The candidates were given the opportunity to respond briefly to the subject: "Why I Accepted the Invitation to be a Candidate for an AAPG Office." Responses and biographical

information were provided by each candidate and edited only for grammar, spelling and format.

This information, which will remain online through the election period, also appeared as a hardcopy insert in the January EXPLORER.

Online balloting will be made available in the spring of 2007. Ballots will be counted on May 16.

AAPG Honors Teacher

Ryan Henry, currently a seventh grade earth sciences teacher at Graland Country Day School in Denver, has been named AAPG's National Earth Science Teacher of the Year.

Henry is receiving the honor for his efforts while teaching at Street School in Tulsa, where he taught all science classes offered including: physical science, biology, earth science and geology. He was nominated by the Tulsa Geological Society.

The award of \$5,000, funded by the AAPG Foundation, will be split with \$2,500 designated for educational use at Street School under Henry's supervision,



Henry

and the other half for his personal use.

He also receives an all-expense paid trip to the AAPG Annual Convention in Long Beach, Calif., April 1-4, where he will be presented with his award at the All-Convention Luncheon.

Henry, who received both his bachelor's degree in earth science and master's degree in secondary science from the University of Arkansas, said he believes "true knowledge is attained by scientific inquiry and first hand experience."

An interview with Henry will be featured in a future EXPLORER. □

President

from previous page

HoD meeting in Long Beach, Calif. on April 1.

* * *

The proposed amendment can be summarized as follows:

✓ Member dues levels are created according to personal gross income in U.S. dollars. Level 1 – income greater than \$50,000; Level 2 – \$25,000-\$50,000; and Level 3 – \$25,000 or less. Each member is on their honor to correctly choose their dues class.

✓ Level 1 pays full dues, which next year will be \$80. Level 2 pays one-half of Level 1, or \$40 next year. Level 3 pays

one-fourth of Level 1, or \$20 next year.

✓ Dues based on any income level cannot be less than \$20.

At first glance, Level 1 appears to subsidize the lower levels. However, as shown on the accompanying table, Level 2 and Level 3 dues payers will receive fewer hardcopy products. These products and their delivery are a significant expense, so the reduction in dues revenue is at least partially offset by a reduction in expense.

Level 2 and 3 dues payers can still elect to receive hardcopy products by paying an extra fee. These additional fees may be adjusted in future years depending on costs.

The proposed graduated dues structure was termed "Ability-to-pay" model, but it could also be termed "You get what you pay for."

* * *

Student membership dues will remain unchanged, and New Associates and Emeritus members can still pay one-half dues rate, according to their income level. But non-student dues cannot be less than \$20.

The proposed dues structure has the following characteristics:

✓ **Minimal short-term financial impact on AAPG** – Dues account for only about 13 percent of revenue, and an estimated 90 percent of current members are in Level 1 category. Also, Level 2 or 3 dues categories will have lower associated costs with digital EXPLORERS and/or BULLETINS.

✓ **Positive long-term financial impact on AAPG** – Assuming some geologists have not joined AAPG because of the current dues structure, an increase in membership, even in Levels 2 and 3, will still boost AAPG net income in future years.

✓ **Independent of geography** – Lower dues available to retired geologists, under-employed geologists, young academics in the United States, professionals in low-income international areas, etc.

✓ **It is optional** – If gross personal income is within Level 2 or 3, members may choose reduced dues; default is Level 1.

✓ **Support from leadership** – Both HoD leadership and the Executive Committee endorse it, and it was recommended by Membership and Graduated Dues (ad hoc) committees.

* * *

Before the proposed graduated dues structure can take effect it must be approved by the HoD at its meeting in Long Beach on April 1. But I want all members to understand the proposal, so you can address your questions or comments to the delegates from your local society.

These proposed changes may sound complicated; but I recommend them because I believe the proposed dues structure will help propel AAPG membership growth in the future. The tendency will be to focus on the details of the dues, but dues revenue is only about 13 percent of AAPG's current budget. Much more important is the enrichment the organization will receive from new, contributing members that join because they can now afford the reduced dues.

I close with an American proverb, "You cannot leap a 20-foot-wide chasm in two 10-foot jumps." It is now time to take this important step for the future of AAPG.

'Til next month,

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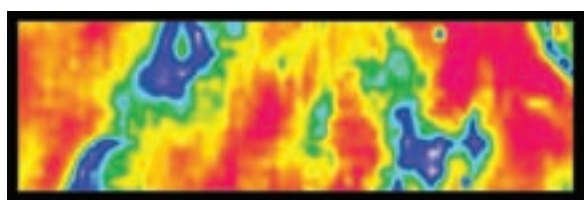
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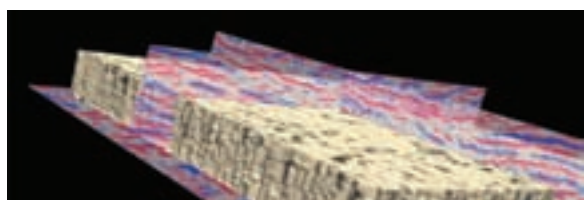
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Conglomerates and sandstones in the Lower Cretaceous Fortress Mountain Formation exposed on the northern flank of an anticline near the Siksikpuk River, north-central Alaska. Mountain in the distance is Castle Mountain, a syncline composed of Fortress Mountain Formation. The scene is about 130 miles southwest of Prudhoe Bay.

Petroleum Systems Offer New Targets

Source Ideas Boost Arctic Promise

By LOUISE S. DURHAM
EXPLORER Correspondent

Call it a case of seeing something old in a new and excitingly different light.

Arctic Alaska is a recognized world-class petroleum province with plenty of potential for future discoveries, according to David Houseknecht, research geologist at the U.S. Geological Survey in Reston, Va.

But the wells of the future likely won't produce hydrocarbons sourced from the same-old, same-old, i.e., the Triassic Shublik formation and the Cretaceous-Tertiary Hue Shale.

"There's been a lot of exploration in Arctic Alaska focused on these source rocks," Houseknecht noted. "As exploration expands into frontier parts of the Arctic, these source rock systems probably aren't going to work because either they're not present or the hydrocarbons have been destroyed by high temperature related to deep burial."

So, you ask, what's left to lure the explorers?

The good news is there are at least three other candidate source rocks of high quality oil that either have been proven already or else probable to be widespread – not only around Arctic Alaska, but perhaps more broadly around the entire Arctic Basin.

The Kingak's Importance

In the middle 1990s, a drillstem test in a wildcat well not far from Prudhoe Bay recovered oil that for the first time was typed unequivocally to the Kingak Shale of early Jurassic age.

"It was a gassy, high gravity and low sulfur oil," Houseknecht said. "No one had been able to find an accumulation that was exclusively Kingak oil until Alpine Field was discovered."

The discovery well was drilled in 1994 but not announced until 1996.

Besides discovering the first economic volumes of oil that could be typed specifically to the Kingak as a source rock, the Alpine discovery was notable for first tapping into the previously unknown Alpine sandstone and trap type, Houseknecht noted: It's a stratigraphic trap with beach sands deposited in incised accommodation space.

The Kingak-sourced hydrocarbons became a focus of attention because they are high gravity, low sulfur oils. Many of the reservoirs there are relatively fine-grained,



Photos by David Houseknecht

Geologist on oil-stained turbidites in Lower Cretaceous Torok Formation along Siksikpuk River, north-central Alaska. Extraction and geochemical analysis of residual hydrocarbons from these samples provide data for interpreting the provenance of the oil. Location is about 130 miles southwest of Prudhoe Bay.

David Houseknecht will present the paper "Oil and Gas Resources of the Arctic Petroleum Province" at the AAPG Annual Convention in Long Beach, Calif.

His talk will be part of a special session on "Results from the Hedberg Conference: Understanding World Oil Resources," which will be held Tuesday, April 3, from 8-11:45 a.m.

Houseknecht also will present the paper "Petroleum Systems of Emerging and Future Importance in the Arctic Alaska Petroleum Province" at the convention at 9:05 a.m. on Monday, April 2. That talk is part of a session on Arctic Basins and Hydrocarbon Systems. His co-authors are Kenneth J. Bird, U.S. Geological Survey, Menlo Park, Calif.; and Jonathan Bujak, Bujak Research International, Blackpool, England.

so high gravity oil moves more readily and is easier to produce.

Additional discoveries of what is believed to be Kingak-sourced oil have occurred in the National Petroleum Reserve-Alaska, where ConocoPhillips and Anadarko have announced several discovery wells that have recovered oil, condensate and gas.

Test results released indicate hydrocarbon phases that are consistent with the Alpine oil and probably an extension of the oil system generated from Kingak Shale, according to Houseknecht.

"The importance of that to exploration both onshore and perhaps offshore in the Chukchi Sea," he said, "is that there is an additional source rock that could represent an active petroleum system that would make prospects viable that had previously not been considered so because of source problems."

"I consider the Kingak source rock to already be a proved system," Houseknecht added, "because Alpine represents the biggest onshore discovery in the last quarter-century in North America – greater than 500 million barrels recoverable – and additional discoveries have been made. So I think it's fair to say that a number of companies exploring Arctic Alaska, both on- and offshore, are incorporating the Kingak petroleum system into their thinking as they look toward additional exploration."

See **Alaska**, page 8

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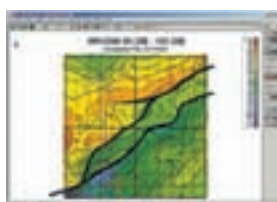
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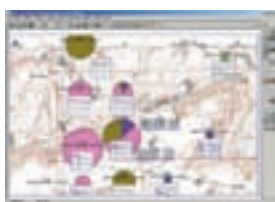
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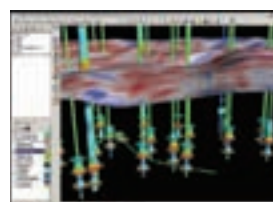
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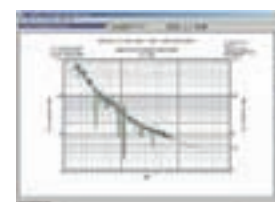
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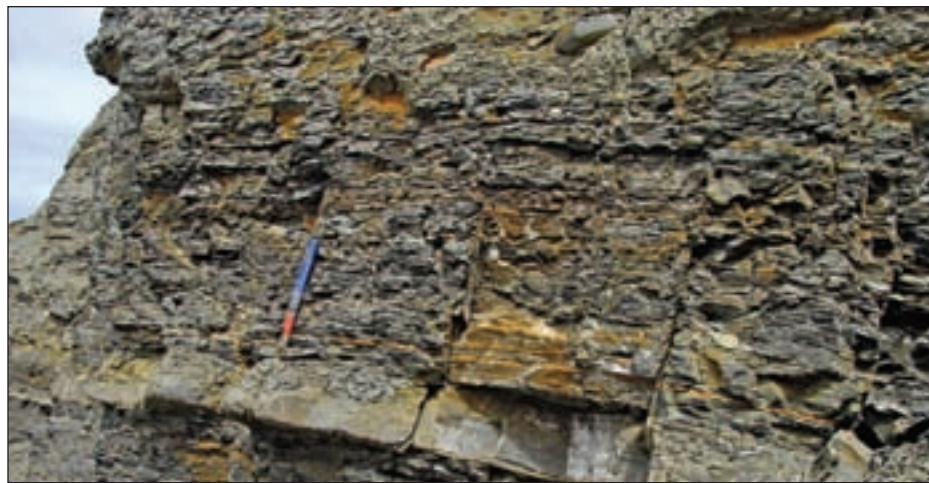
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Oil-prone source rocks in Upper Triassic Otuk Formation on headwaters of Autumn Creek, north-central Alaska. Geochemistry of many oil-stained outcrop samples suggest that oil was sourced from the Otuk across a broad region of northern Alaska. Note red helicopter for scale; location is about 150 miles southwest of Prudhoe Bay.



Immature, oil-prone source rocks in the Upper Cretaceous Seabee Formation on Umiat Mountain along the Colville River; the dark gray, organic-rich shale is interbedded with lighter gray, yellow-weathering volcanic ash beds, including the thick bed on which hammer is resting. Location about 100 miles southwest of Prudhoe Bay.

Alaska

from page 6

Oil Prone

The Turonian lower Seabee formation long has been recognized as an oil-prone source rock that is immature or eroded beneath much of the western North Slope. It was distributed above flooding surfaces that originally were present across all of the North Slope, and probably across the entire Chukchi Sea.

"The lower part of the Seabee has not entered in to exploration thinking in the past," Houseknecht said, "because onshore, where it's present both in outcrop and where penetrated by exploration wells, it's immature, as it wasn't heated enough to generate oil."

It's not even present across much of

the western North Slope, he added, because it's been eroded beneath an unconformity.

"But seismic stratigraphy indicates the flooding surface beneath the source interval is more regional than previously recognized, extending across the northern Chukchi shelf," Houseknecht continued. "Turonian source rocks may be buried into – and locally through – the petroleum window in Tertiary sub-basins offshore."

"It's definitely a source rock that's oil prone that could generate probably high gravity, low sulfur oil in the right situations."

In fact, USGS research conducted on the lower Seabee indicates it's a rich source rock, e.g., 3-6 percent TOC is common, and the hydrogen index can be greater than 400 in samples of the unit.

An Emerging Concept

An emerging concept in the Arctic

entails Tertiary age source rocks, which have generated oil discovered in the Mackenzie Delta of Canada. At least three discoveries just offshore from the Arctic National Wildlife Refuge on the Alaska side of the border also have Tertiary oils in them. The source rock, however, has not been penetrated by drilling.

In 2004, a scientific expedition that was part of the deep sea Integrated Ocean Drilling Program (IODP) recovered almost 400 meters of core from Lomonosov Ridge, which is a high-standing, narrow sliver of European continental crust that rifted away from the rest of Europe during the early Tertiary. The core contains a significant organic-rich condensed section of mostly Paleocene and early Eocene age.

"The important part of this is there is a thick, condensed section of fine-grained sediment that has TOC that is typically 2-5 percent and ranges as high as 14 percent," Houseknecht noted. "There are

intervals within that section with hydrocarbon index values in excess of 300.

"The Azolla horizon is one very unique highly organic layer within this larger condensed section," he said. "The Azolla is important because, overall, the condensed section was deposited mostly during a greenhouse earth when the global temperature was significantly higher than now."

Included in the greenhouse earth interval are deposits that have been correlated to what is called the Paleocene Eocene Thermal Maximum (PETM). One of the published papers related to the IODP expedition indicates the surface temperature of the water near the North Pole during the PETM was perhaps as high as 73 to 75 degrees F.

Indications are the Arctic Ocean at this

See **Arctic Basin**, page 14

Midland Valley



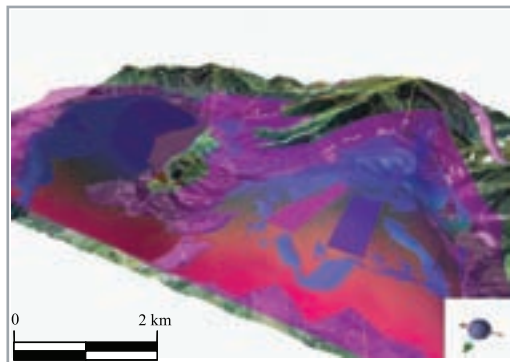
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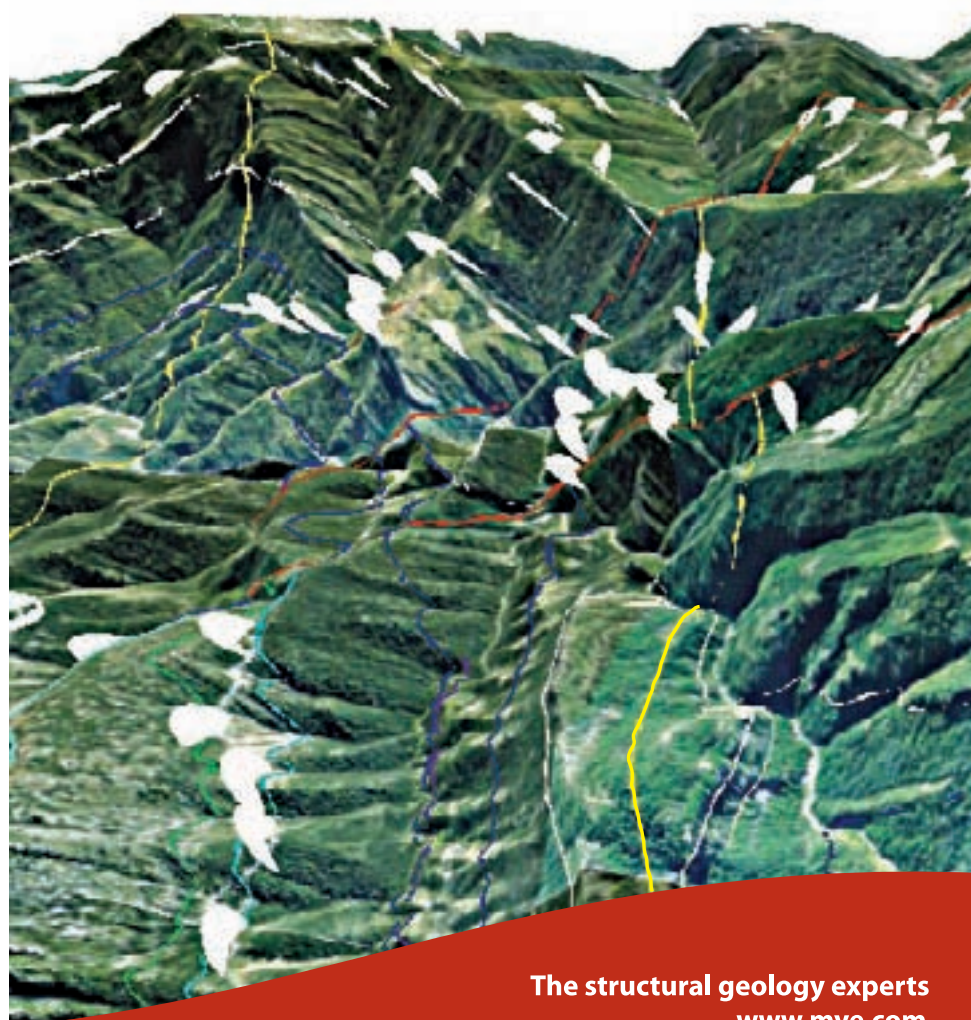
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Data courtesy of the Universitat de Barcelona

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Hey, How Old Is That Rock?

Canyon Subject of Grand Fussing

By DAVID BROWN

EXPLORER Correspondent

How big is the chasm between geoscience and Creationism?

Right now, the size of the Grand Canyon.

Things got deep at the beginning of 2007 after the group Public Employees for Environmental Responsibility (PEER) issued a breathy press release critical of the U.S. National Park Service.

PEER claimed:

✓ Grand Canyon National Park is not permitted to give an official estimate of the canyon's age.

✓ Park interpretive rangers cannot honestly answer questions about the geologic age of the canyon.

✓ The Park Service has failed to conduct a promised assessment of a Creationist-themed book sold at Grand Canyon outlets.

Those charges brought a huffy response from the government agency.

"The National Park Service uses the latest National Academy of Sciences explanation for the geologic formation of the Grand Canyon," said a statement issued by David Barna, NPS chief of public affairs.

"We do not use the Creationist text in our teaching nor do we endorse its content. However, neither do we censor alternative beliefs," the statement added.

They Said, They Said

Before long, holes started to appear on both sides of the story.

NPS defenders claimed the agency has

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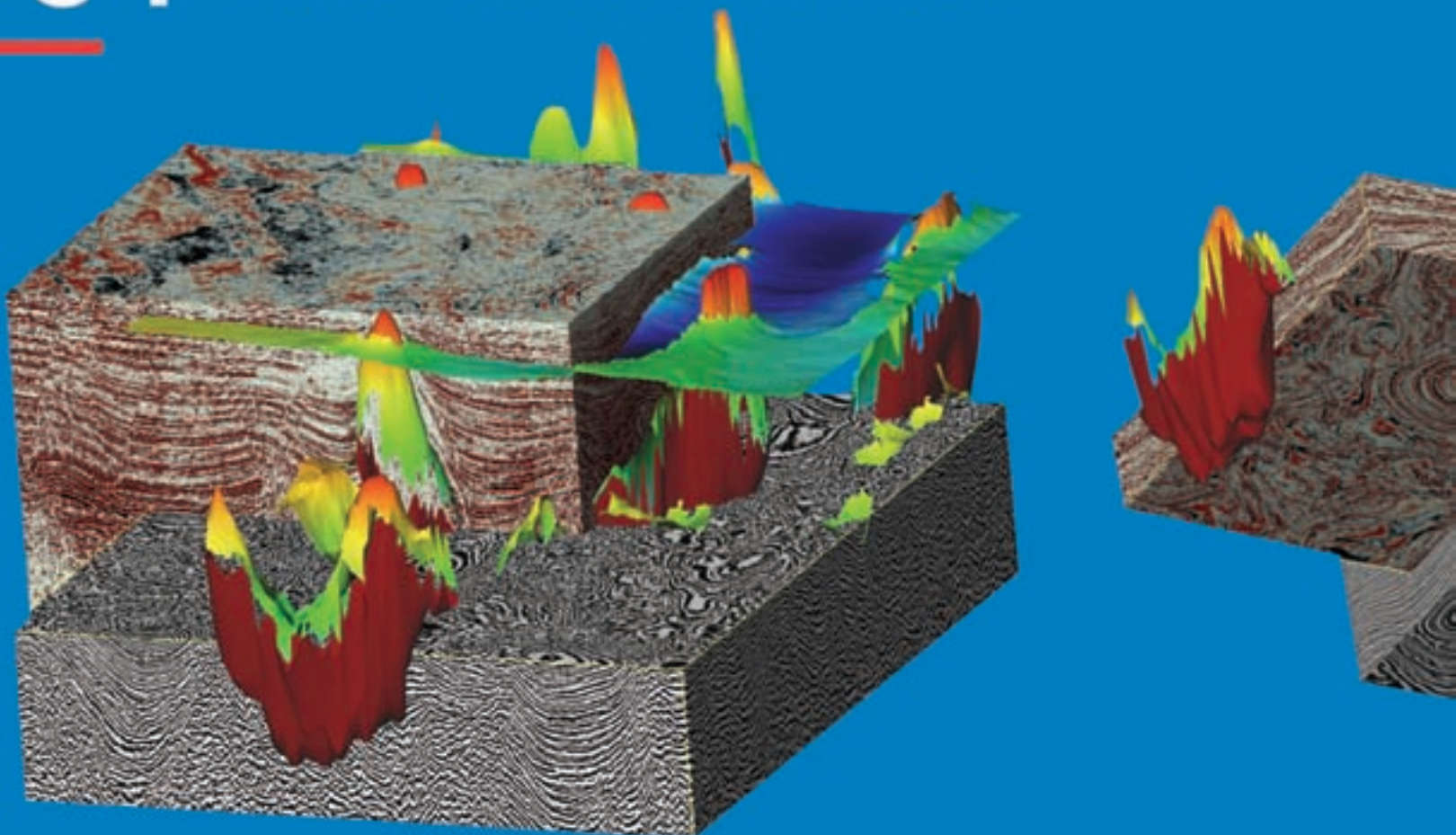


Photo courtesy U.S. Geological Survey

The Grand Canyon: Some see a thing of beauty, some see the history of the earth, some see a reason to argue.

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never been coy about the age of the Grand Canyon or its geologic setting.

The Park Service's Web site describing the canyon contains this sentence:

"Geologic formations such as gneiss and schist found at the bottom of the canyon date back 1,800 million years."

And supporters said park rangers are not stifled when talking about the canyon's age and history. This from Barna's statement:

"If asked the age of the Grand Canyon, our rangers use the following answer.

"The principal consensus among geologists is that the Colorado River basin has developed in the past 40 million years and that the Grand Canyon itself is probably less than five to six million years old. The result of all this erosion is one of the most complete geologic columns on the planet.

"The major geologic exposures in the Grand Canyon range in age from the 1.7 billion-year-old Vishnu Schist at the bottom of the Inner Gorge to the 270 million-year-old Kaibab Limestone on the Rim."

Adding poignancy to the response was the fact that Barna himself has a degree in geology from Virginia Tech.

Barna said he worked as a geologist/physical scientist from 1975-90 for the Atomic Energy Commission, the Nuclear Regulatory Commission, the U.S. Department of Energy and the U.S. Bureau of Mines.

When he signed the statement, Barna identified himself as a registered professional geologist with AIPG and a licensed geologist in North Carolina.

The Book

At the center of the controversy is a book titled *Grand Canyon: A Different*

Will There Be a Gift Shop?

Some Native Americans consider the Grand Canyon a sacred religious site, with an origin described in tribal lore.

Traditionalists of the Hualapai tribe, which inhabits land along the West Grand Canyon, believe their earliest ancestors emerged from the canyon's depths.

The Hualapai hold the western canyon so holy they are building a \$30 million Skywalk to attract tourists to the area.

Scheduled to open in March, the

Skywalk will extend 70 feet past the canyon's rim, almost 4,000 feet above the canyon bottom. Visitors can pay to view the canyon through a glass floor and sides.

After the tribe's casino failed in the 1990s, possibly because it was too close to Las Vegas, the Skywalk emerged as an economic development scheme.

It reportedly was financed by a Las Vegas promoter who will split revenues with the Hualapai for the next 25 years.

— DAVID BROWN

View, by Tom Vail.

Vail, a Creationist author and speaker, founded Canyon Ministries and frequently leads rafting trips through the Grand Canyon.

His book offers a Creationist view of the canyon and identifies its origin as a relatively recent, global Great Flood.

Shops at the canyon park do have the book available for sale.

"This book is sold in the inspirational section of the bookstore. In this section there are photographic texts, poetry books and Native American books (that also give an alternative view of the canyon's origin)," said Barna's statement.

Critics quickly responded that only the park's largest bookstore has an "Inspirational" section, and that Vail's book has appeared beside science texts in other park shops.

They also complained that a text offering a Creationist canyon origin as science is much different from books of poetry or Native American myths.

Also, Vail's Web site (www.canyonministries.com) carries a blurb for the Grand Canyon book with a

notation, "A contribution to support Creation-based ministries is made for every book purchased."

Who Knows?

For geologists, the full geologic history of the Grand Canyon area remains far from certain.

"It's a heck of a conundrum, the history of the thing and how it got started," said John Warme, who has led several Geotours of the canyon for AAPG.

Warme is a professor in the department of geology and geological engineering at the Colorado School of Mines.

He said the Grand Canyon Association published a book of proceedings from a symposium in 2000 on the geologic evolution of the Colorado Plateau and the Colorado River during Cenozoic time, *Colorado River: Origin and Evolution*.

At least two books on the Grand Canyon followed the symposium.

Warme described *Carving Grand Canyon: Evidence, Theories and Mystery*, by Wayne Ranney, as a highly readable

book appropriate for the scientific layman.

He said a more scholarly look is presented in *Grand Canyon: Solving Earth's Grandest Puzzle*, by James Lawrence Powell.

Warme, who plans to take his 40th river trip down the canyon in August, also noted that some popular overview books about the Grand Canyon can be less than accurate from a scientific viewpoint.

"I belong to the Grand Canyon Association. They have a general book on the canyon, and when I flip through the thing, the guy who wrote it was not an expert," he said.

"There's some misinformation in there, but it is a useful book."

Does Paul Bunyan Know This?

Is the Park Service breaking its own rules by allowing the sale of a Creationist-themed book at the Grand Canyon?

PEER thinks so.

It quotes from a 2005 NPS director's order on interpretation:

"The interpretive and educational treatment used to explain the natural processes and history of the Earth must be based on the best scientific evidence available, as found in scholarly sources that have stood the test of scientific peer review and criticism ...

"Interpretive and educational programs must refrain from appearing to endorse religious beliefs explaining natural processes."

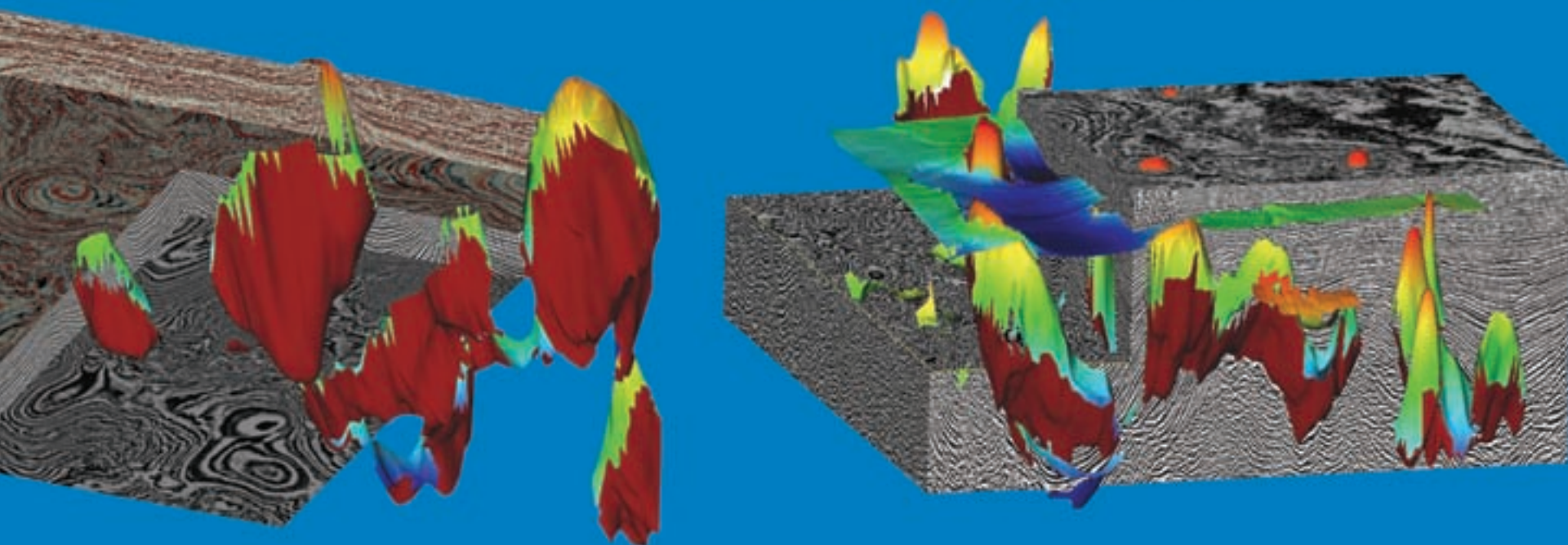
But the NPS Web site has displayed an alternative explanation of the canyon's origin, quoting John Hance, an early Grand Canyon guide and storyteller:

"It was hard work, took a long time, but I dug it myself.

"If you want to know what I done with the dirt, just look south through a clearin' in the trees at what they call the San Francisco Peaks." □

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Technological versatility is an increasingly important need for today's seismic crews, as contracts include work along peaceful country roads or in quiet neighborhoods.

Right Tool Matched With Right Jobs

Industry Always Enjoys Good Vibes

By LOUISE S. DURHAM
EXPLORER Correspondent

It's a given there's a whole lotta shakin' going on in the oil and gas industry these days – but the shaking takes on a whole different meaning in the geophysical business.

There, the rumbling is about surface vibroseis methods for land seismic acquisition, which continue to increase in popularity.

Simply stated, vibroseis technology uses vehicle-mounted vibrators (commonly called "vibes") to impart coded seismic energy into the ground. The seismic waves are recorded via geophones and subsequently subjected to processing applications.

The methodology was invented by a group of scientists at the former Continental Oil Company. The initial patent was awarded in 1954.

Today, the contractors have their pick of sophisticated vibrator systems – mini-vibes, truck mount vibes and buggy mount vibes – to provide the best possible solutions to meet clients' specific seismic program needs.

Certain contractors find that one particular type of unit meets their requirements, while others opt to latch on to the whole array.

Smaller Footprints

Conquest Seismic Services, for instance, chose to acquire an inventory of all three systems for operation by the nine crews it currently deploys in Canada and the United States.

A particularly intriguing type of machine in the Conquest fleet is the relatively small Enviro Vibe EV, which is designed for high production and high resolution seismic prospecting in an environmentally sensitive manner.

"It's highly useful to reduce seismic source gaps between houses, pipelines and other culture," said Paul Crilly, president Norex Exploration Services (Conquest's parent company).

It sweeps up to 300 Hz and has a maximum peak force of 15,000 pounds, and as Crilly said, it "can operate on narrower cut lines and has a smaller environmental footprint."

Company officials say the system is ideal for use in the currently hot Canadian oil sands play.

"The Enviro Vibe works very well in applications where high resolution 3-D seismic is required," Crilly said. "It's

particularly useful for our customers in the oil sands who are focusing on reserves in place, looking to delineate them with this high resolution 3-D – that's been a focus of ours over the last couple of years."

Indeed, the EV makes up a significant portion of the company's activity level.

"The oil sands are a shallow target, so we have less force going into the ground," said Gary James, Conquest's marketing and business development director, "but we can run at higher frequencies. With vibroseis, we can get higher resolution data because we have the source points closer together than with subsurface source explosives such as dynamite."

"Shallow targets will return higher frequencies," he added, "so our ability to put higher frequencies into the ground is useful."

He noted the earth is essentially "a great big filter, always trying to steal information."

Urban Street Smarts

Tom Fleure, vice president of geophysical technology at Global Geophysical, concurs.

"On deep targets, you would use lower frequencies because the earth is eating higher frequencies, so they don't come back," Fleure said. "But if you're only working a few thousand feet down, you may be very interested in using high frequencies."

Large, truck mount vibrators, such as the Hemi-44, are ideally suited for use in cultured environs such as the northeast United States, where Conquest has a strong presence in the Appalachian

region, among other domestic locales.

"With truck mounted vibroseis, you're taking what would be a normal vibrator and putting it on a truck, so it's licensed to drive on the roads," Crilly said, "and there's a lot of infrastructure in the way of roads in New York and Pennsylvania."

Once the crews need to veer off the beaten path and venture into the countryside, the acquisition program can be supplemented with dynamite.

"This is less intrusive than removing trees to get a large vibrator down the source line," Crilly noted.

Truck mount vibrators also have proven highly useful at Plano-based Tidelands Geophysical Corp. (TGC), which conducts seismic surveys in an array of locales, including its "backyard" – aka, the Barnett Shale.

Seismic acquisition in the Barnett often entails working in urban environments, particularly in the core area of the play around Fort Worth.

"The trucks are well suited for urban areas," said Danny Winn, president at TGC. "It's easy to get around on the city streets without doing any damage."

When close to structures, water wells, etc., vibration monitoring can be used to ensure that the particle motion of these and other vibrator systems doesn't exceed tolerable limits.

The Workhorse

If an award were to be designated for seismic industry workhorse in the vibroseis domain, the I-O AHV-IV all-terrain buggy mount vibe likely would win hands-down, according to Conquest.

These popular systems generate a peak force of 62,000 pounds and have a broad bandwidth up to 250 Hz. Equipped with wide tires that kind of "float" across the ground, buggy mounts have less environmental impact than the narrow tire truck mount systems. They're ideally suited for deeper target projects in open areas as well as ice-covered terrain.

The downside: They must be transported via truck and then driven out into the field.

The allure of the buggy mount vibrator systems is apparent at Global Geophysical, which currently boasts an entire fleet of 53 of these workhorse machines.

It's a Blast

Despite the many advantages of vibroseis seismic technology, don't look for dynamite-based seismic programs to disappear.

In fact, Global's planned upcoming seismic acquisition program in Peru will be a dynamite shoot.

"In terms of vibroseis versus dynamite, it's important to have both skill sets," Crilly noted, "in order to provide seismic solutions to best fit the program you're trying to accomplish to best serve your clients' needs."

Vibroseis is typically less expensive than dynamite. There's no need to bring drills into the acquisition program area and drill holes as much as 80-feet deep, load them with dynamite and then return later to

See **Shaking**, page 14

Getting there is half the fun: large trucks are often used to transport vibroseis trucks to their exploration targets.



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Shaking from page 12

clean up the tailings, which adds to the intrusion factor.

It is noteworthy that vibroseis is a controlled energy source, whereas dynamite is a full spectrum of frequencies. Because the earth absorbs frequencies, the acquisition process is highly area dependent.

"In some areas where the near surface geology is more unconsolidated, you have to drill down through that to get the signal going, so you have to drill deeper with dynamite in these areas," James said. "Because of the loose type of near surface geology, a lot of the energy will actually go sideways."

"Using dynamite to, say, create a 160 Hz signal when the earth never gives you

160 Hz back is kind of nonsensical," he said.

Advantages

The ability to determine a source signature using vibroseis is a big plus for the method, according to Fleure.

"We instrument the base plate and the reaction mass on the vibrator so we can compute, in real time, the force that's imparted to the ground, called the Ground Force," Fleure said. "In vibroseis acquisition, Ground Force is usually considered to be the best estimate of our input seismic signal, or more generally referred to as the source signature."

"It's not unlike in the marine environment where you have an air gun signature," Fleure noted. "That's one of the reasons marine seismic works real well – because the air gun signature is very repeatable in water. We know exactly what

signal we put in the water, so we know what signal traveled into the subsurface."

"If you know the source signature you put in the earth," Fleure said, "it enables some fairly advanced signal processing."

"The problem with dynamite is you drill the hole and put the charge in, but you can't measure the amplitude of the signal at the charge," Fleure added. "In hard rock, the energy transfer function might be one thing, and maybe another in soft rock. You really don't know the source signature, whereas with vibroseis you can measure it as you're putting it into the ground."

Be aware that Plan A rules when kicking off a dynamite source survey.

Once you select the source density, pre-drill the holes and place the dynamite in them, changing your mind is not really an option – the greenbacks already have been spent. Besides, a "re-do" also entails still more trips into the area, which has environmental implications.

With vibroseis, however, source points can be added rather easily in order to enhance data quality when necessary. Instead of moving 400 feet to the next source point, the crew simply has to move the system perhaps half that distance.

An Informed Public

Global positioning systems (GPS) often play a key role in placement of these land seismic sources. The GPS positions can be loaded into the vibrators so only one trip into the shooting area is required, according to James. The systems can be used to plan shothole locations as well.

GPS technology is also important as a QC tool, according to Winn at TGC.

"You can use it to be sure the shothole is drilled in the correct location," Winn said, "or to be sure the vibrators vibrated at a point they say they did."

TGC is active in Louisiana where dynamite has long been – and continues to be – the norm for seismic data acquisition. Maneuvering heavy equipment around in heavily treed and frequently wet areas – think marshy southern Louisiana – is ordinarily out of the question. And the safety of the familiar dynamite approach was proven long ago.

In the locally populated areas, vibrator systems can be used to supplement the dynamite program efficiently and cost effectively.

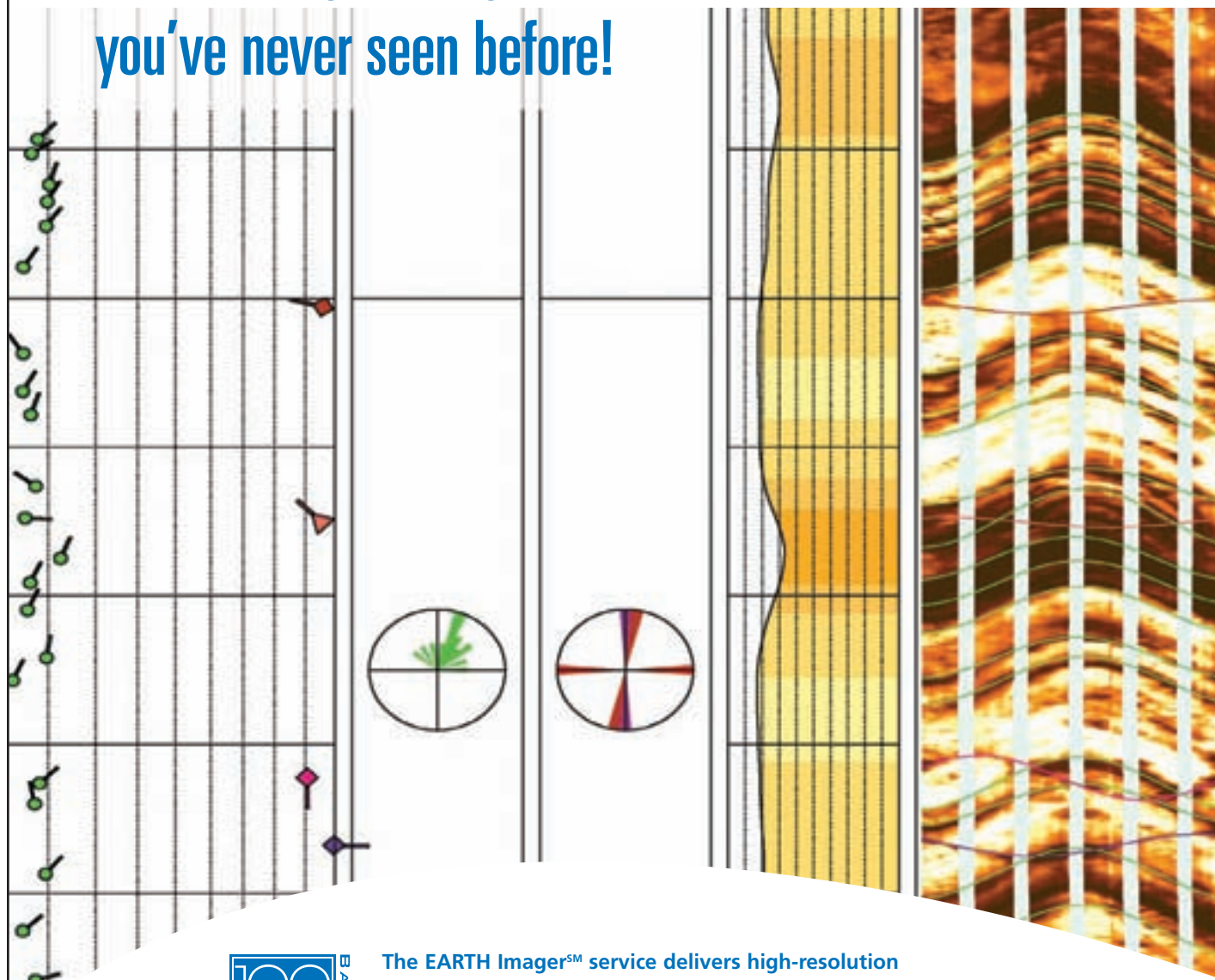
Despite their relatively benign operations, these big machines sometimes appear more daunting to the populace than the commonplace dynamite. To assuage any concerns in that regard, companies sometimes resort to public demonstrations prior to operations.

In fact, PGS took such an approach in Chalmette, La., using a 47,000-pound vibroseis buggy to demonstrate the noise level and vibrations incurred during the data acquisition process. Two light bulbs and two raw eggs were buried eight inches under the vibrating pads. Following the demo, the eggs were retrieved unbroken and the light bulbs still worked – to the amazement of the crowd of onlookers, including elected officials.

Landowners ordinarily are satisfied with verbal reassurance prior to operations.

"The permit agents' personal approach to landowners gives them advance notice of the vibrations they may feel," James noted. "Having knowledge of the source, they're not taken by surprise and readily tolerate the vibration level, which may be comparable to kids roughhousing indoors." □

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Arctic Basin from page 8

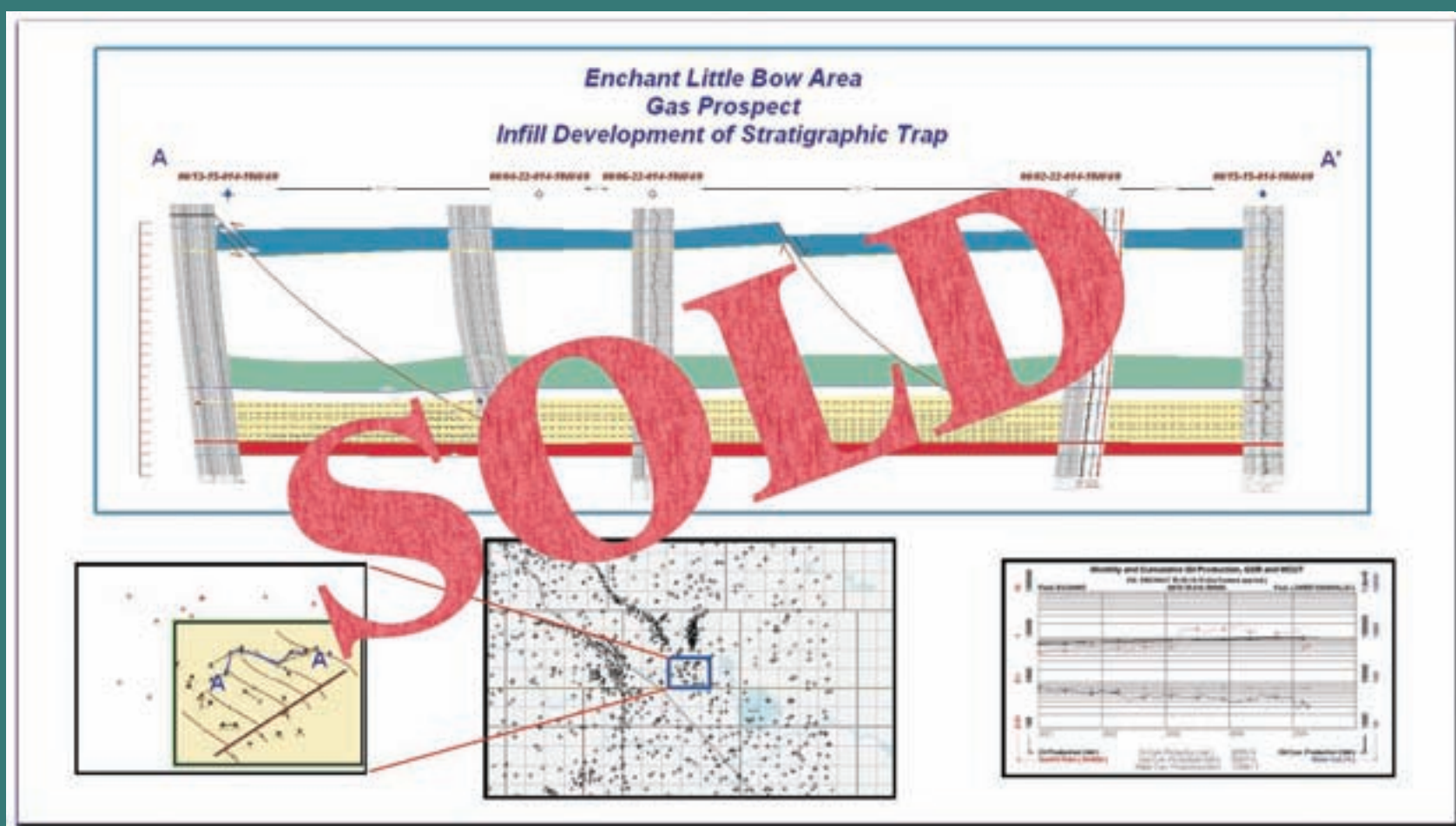
time was not only very warm but was mostly isolated from world ocean circulation as well, according to Houseknecht.

"The implication of the IODP core drilling to petroleum geology of the Arctic," he said, "is that evidence suggests the whole Arctic Ocean may have been a very highly organic productive basin characterized by anoxic conditions during much of the late Paleocene and early Eocene."

This suggests the potential for widespread, highly organic potential source rock across the entire Arctic Basin, including along the margins of all continents that border the Arctic.

"The Azolla is very unique because it suggests fresh water conditions – at least in surface waters – during its deposition," Houseknecht noted. "It's also important because it's been found all around the Arctic in a number of related basins, linked by narrow straits to the Arctic Ocean." □

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*Caused by Drill Rig?***Mud Volcano Oozes Destruction**

By BARRY FRIEDMAN
EXPLORER Correspondent

In a country where earthquakes, volcanoes and tsunamis are constant threats, the last thing it needed was a mud bath.

It is getting one anyway.

It began in the Indonesian city of Sidoarjo last May, when mud began flowing after an accident at a gas exploration site.

And kept flowing ... and flowing ... and continues to flow.

According to a World Health Organization report, since the explosion 10 people have died, 13 have been injured and three were reported missing. Most of the dead are police and soldiers who were securing the site.

The latest damage estimates indicate the mud flood has engulfed 1,810 houses as well as 18 schools, two government offices, 20 factories and 15 mosques. Recently the flow reached 126,000 cubic meters a day, or about 1.7 million cubic feet.

As of mid-January, an estimated 3,000 families, or about 10,000 people, had been displaced.

(If matters were not bad enough, late last November a gas pipe buried under the relief well exploded, spilling an additional two to three meters of mud onto a toll road.)

The main source of mud, though, originated and is coming from a reservoir more than 3 1/2 miles underground that is being fueled by tectonic activity and/or by the accumulation of hydrocarbon gases.

"What they are attempting to do is like stopping the Nile from running toward the ocean. It is completely impossible."

To date, the mud has covered some 210 hectares of land in Sidoarjo and is threatening main thoroughfares and railway lines between Surabaya to Jakarta (Indonesia's two largest cities).

At first, who was to blame for the catastrophe wasn't as important as what to do about it.

Over the past few months that might have changed.

Digging a Hole

The company at the center of the storm, PT Lapindo Brantas, which operated the well and is linked to the country's welfare minister, billionaire Aburizal Bakrie, at first refused to take responsibility but recently was ordered to pay the equivalent of \$420 million to victims and for efforts to stop the toxic flow.

In one of the stranger twists to the story, Brantas recently employed a unique publicity campaign: it's funding a soap opera called "Digging a Hole, Filling a Hole." Set amidst the misery of the mud slide, "Digging ..." is a love story that reportedly shows the virtues of patience – something in short supply these days.

Exactly how and what happened is still

being discussed, but the general consensus is that the accident occurred when Brantas drilled thousands of feet to tap natural gas without installing casings around the wells to protect seepage.

Company officials initially maintained the mud slide was caused by the seismic activity in the area – a claim not wholly dismissed by geologists – and not because of malfeasance or incompetence. (An earthquake struck Yogyakarta on May 27, the day before the well erupted.)

Even so, local police in Surabaya filed criminal charges against Brantas, alleging its drilling activities caused the torrent and that its response was inadequate.

Whatever the case, on that first day, residents began seeing mud shooting from the earth 180 meters from the drilling rig.

According to news reports, Brantas officials assured local citizens it was nothing to worry about.

An environmentalist told the *New York Times* that the problems began when the company's drilling reached 9,000 feet, but actually started at 6,000 feet when the wells started leaking. At that time, the company inserted plugs into the well hole. The pressured mud then sought other

escapes, eventually breaking through the earth, which then caused the bath that now affects the region.

The puddle became a pond, which became a lake, which became a river. By continuing to drill, critics say, Brantas exacerbated the situation.

According to a report in *Der Spiegel*, in June, the volcano spit out an average of 5,000 cubic meters of mud per day. In September, that figure had increased to 125,000 cubic meters.

No Easy Answers

Many believe had the proper casings been in place, the mud would not have entered the well and would not have then had to find other avenues to the surface.

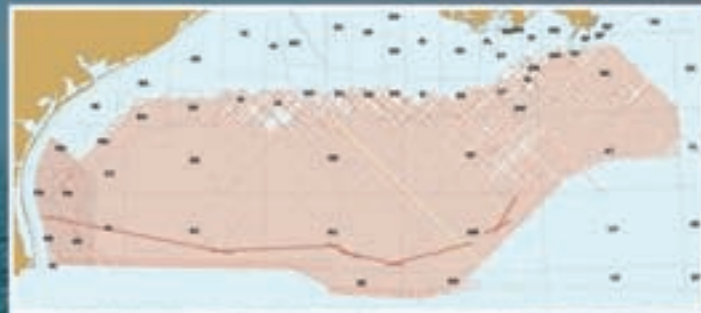
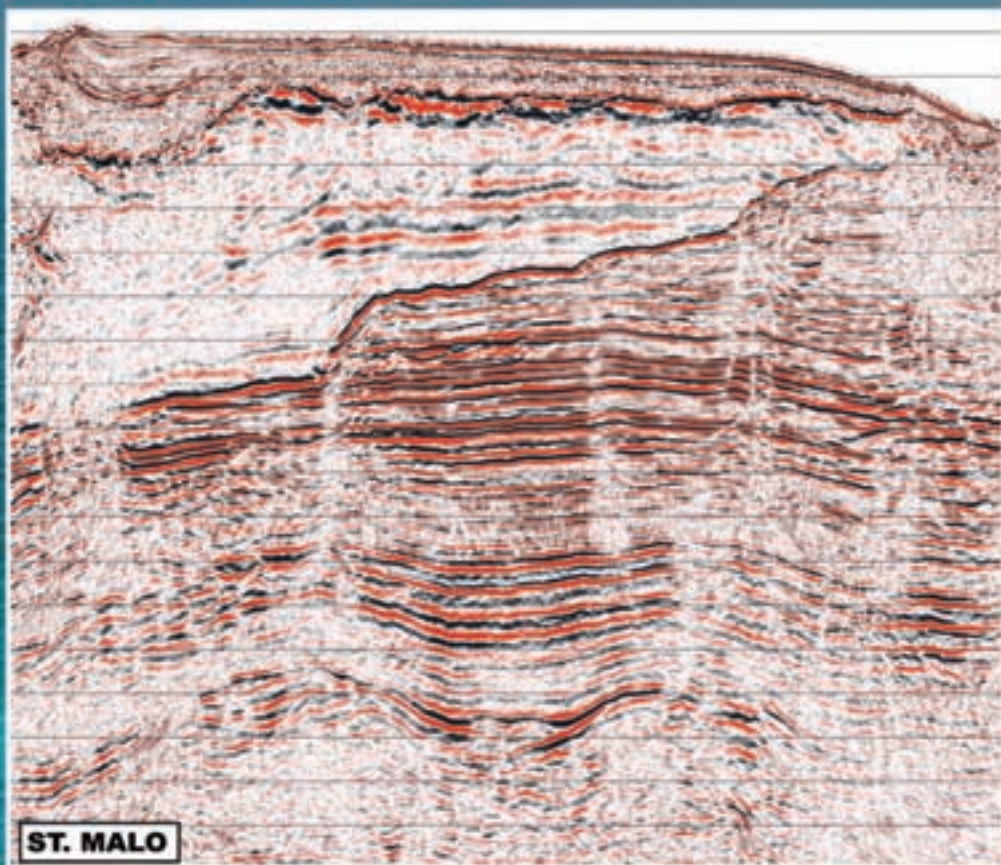
David Howell, with the U.S. Geological Survey and chairman of the Circum-Pacific Council, isn't completely sold on that theory, even though he admits that man may have had a hand in this disaster.

"Nothing is ever simple and most things have a complex web of causes," he said. "How different is it from a large-scale flooding event involving a muddy river? In any case it's not a pretty picture."

Geologist Adriano Mazzini of the University of Oslo, after returning from the site, goes even further, remarking that the slide is the result of natural geological processes that has been going on for thousands of years.

Mazzini believes Brantas officials may have accelerated the event, but the

See **Mud Flow**, page 18

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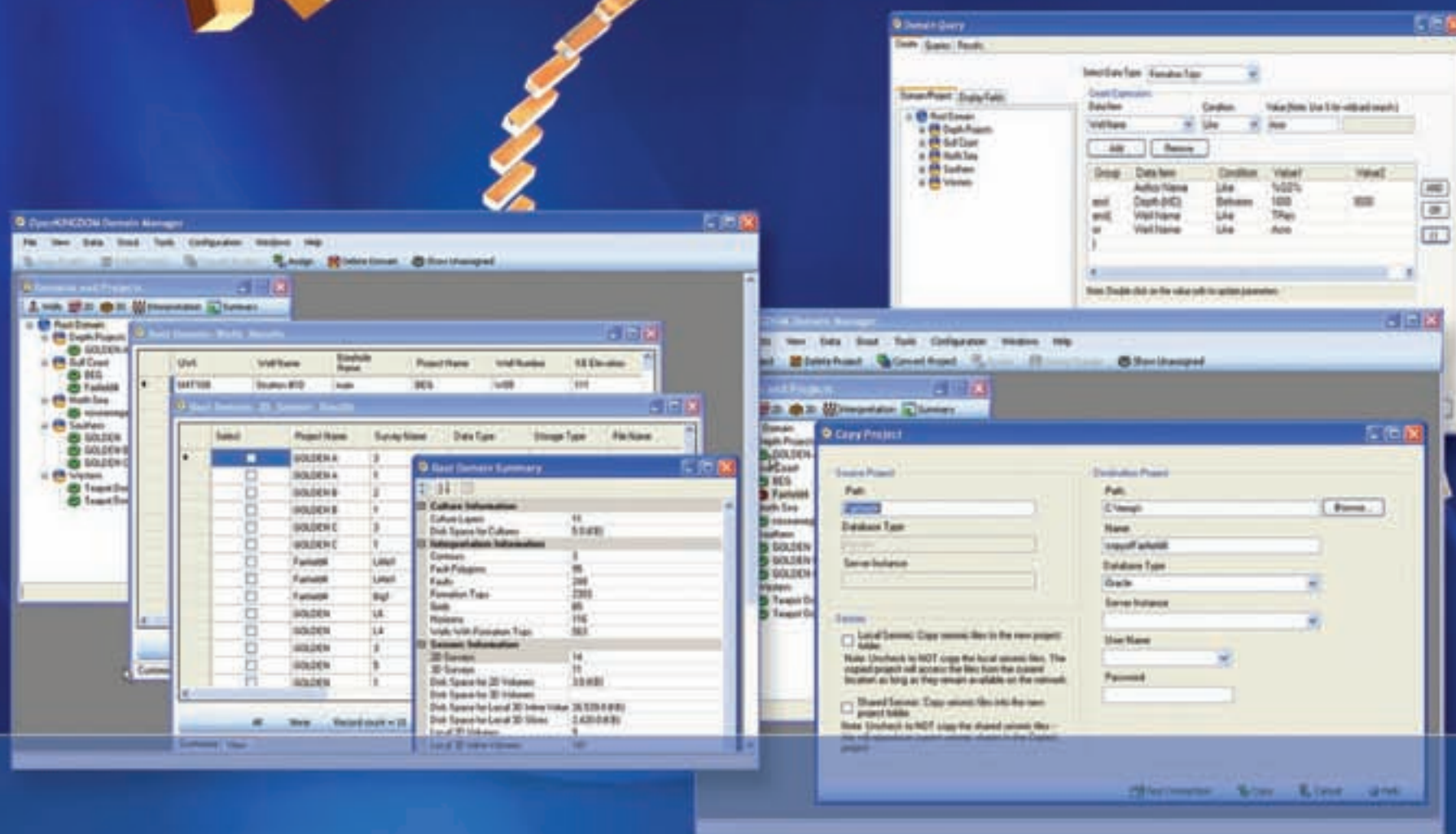
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Save \$\$\$ – Register Now for Long Beach

Planning on a trip to the AAPG Annual Convention in Long Beach, Calif., this April?

If so, an important deadline date is looming this month:

Feb. 7 is the meeting's first pre-registration deadline; register by that date and you'll save up to \$135 on your registration fees.

February also is a good time to get a guaranteed reservation in the AAPG block of hotel rooms, all of which are located conveniently close to the meeting site at the Long Beach Convention Center.

This year's annual convention and exhibition will be held April 1-4, built on the versatile theme "Understanding Earth Systems – Pursuing the

Checkered Flag."

It's the first time AAPG has held its national meeting in California since the 1996 convention in San Diego, and organizers expect a large attendance.

While registration will be open throughout the meeting, those attending can save money by signing up now.

For example, AAPG members who register by Feb. 7 can do so for \$295; after that, the fee goes to \$350 until March 22, and \$430 after that.

For Emeritus members registration fees are \$148 by Feb. 7, \$175 by March 22 and \$215 after that. For non-members, the tiered fees for the same deadlines are \$395, \$450 and \$530.

Online registration (using a credit card) is available at

www.aapg.org/longbeach.

The same Web address will get you to the housing reservation area, where you can secure your hotel room in the AAPG block of hotels.

Specifics also are available for the All-Convention Luncheon, featuring Michael J. Economides' talk on "Energy Geopolitics," and on the large exhibition featuring the latest in industry technology and information.

(A reminder: Exhibit space contracts remain available on a first-come, first-serve basis, at www.aapg.org.)

Updated information on the meeting and technical program – including instructions for registration and housing options – can be found on the AAPG Web site, at www.aapg.org.

Mud Flow

from page 16

eruption was bound to happen.

Presently, there are more than 1,000 mud volcanoes worldwide, from molehill-sized formations found in places like Trinidad to powerful ones in places like Azerbaijan that emit methane gas. Some, in fact, are – and have been – on fire for years.

Relentless Speed

What made the situation in Indonesia so threatening was the speed and relentlessness of the slide.

It has already taken the shape of a volcano and has grown to a height of 14 meters (46 feet), making it taller than any of the surrounding structures and has now submerged trees and buildings. While the mud deposit has been increasing, the land has been sinking at a rate of three centimeters a month since the catastrophe began.

And there is still no indication that the mud volcano has reached its maximum output, nor has it shown any sign of subsiding.

To help stem the flood, Brantas has constructed a network of earthen dams to contain the mud, but most believe these dams will overflow during the upcoming rainy season, putting the area right back in the same mess.

Against the advice of environmentalists, Indonesian officials are planning to pump the mud into the sea, even though most believe that action will suffocate most marine life.

At first, the Indonesian minister for the environment, Rachmat Witoelar, said, "I reject and will not allow the mud to be dumped into the sea," adding that the chemicals in the mud would pollute the marine environment – but last month he changed his position and now welcomes the dumping, adding that the mud would not be toxic to birds or fish.

It apparently is inhospitable to humans.

After the country's president, Susilo Bambang Yudhoyono, said the area "was no longer fit for human habitation," the government agreed to resettle 3,000 families whose houses have been swamped by mud.

To assess how bad the situation is, an Indonesian official, whose own second floor office was flooded with mud, was reported to have said, "People panicked as if a tsunami was coming."

For the moment, nobody knows how long the mud will continue to flow, how bad it will be or how to stop it.

Efforts have ranged from the sublime to the ridiculous. One such idea, offered by the government, was to pour concrete into a channel around the city, thus choking it off.

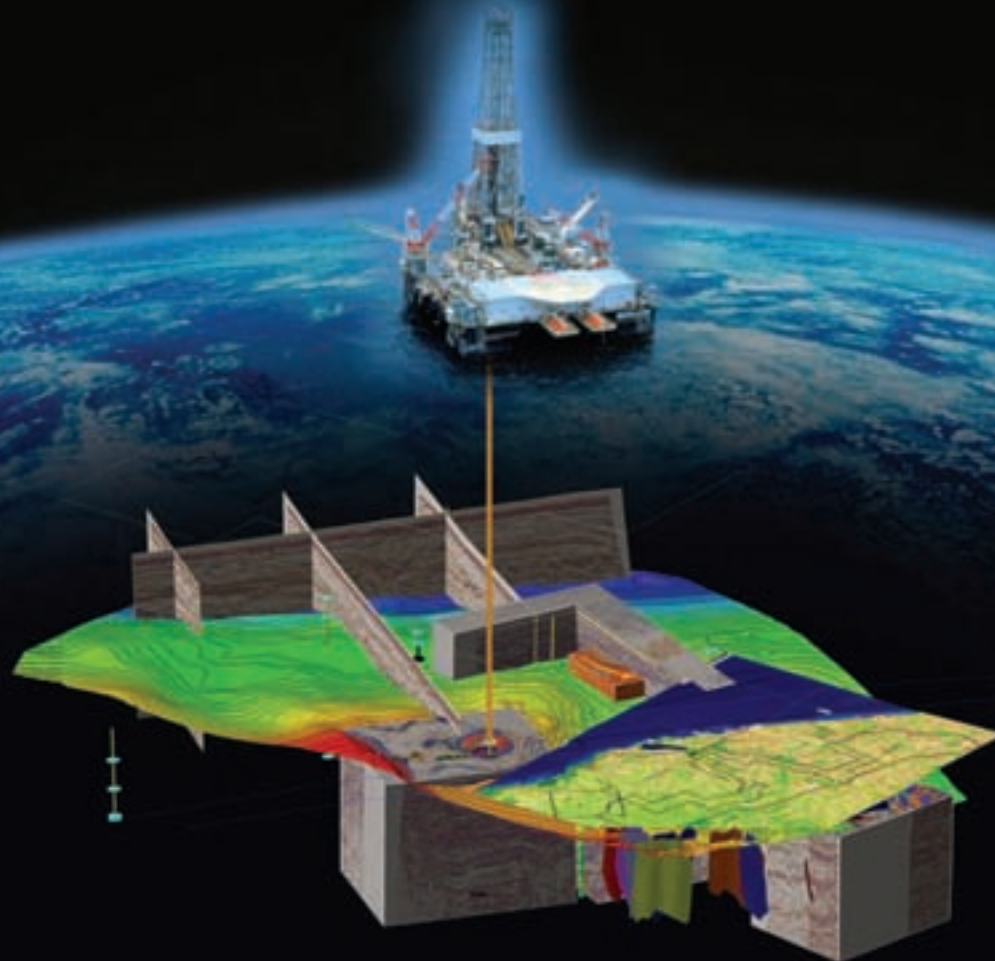
"What they are attempting to do," said Norwegian scientist Martin Hovland, "is like stopping the Nile from running toward the ocean. It is completely impossible."

While government officials and geologists were discussing the merits of dumping, damming and drying up the mud, a local community leader called on more than 100 magicians, shamans and witches to cast their spells on the man-made volcano. One was an elderly woman who presented herself to the mud as the "Queen of Bali" and ordered it to stop flowing immediately.

The Queen, too, was unsuccessful. □

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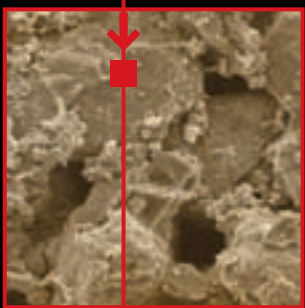
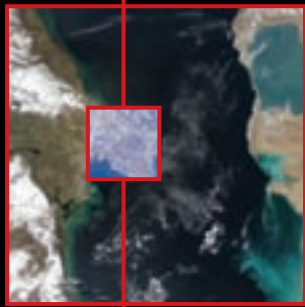
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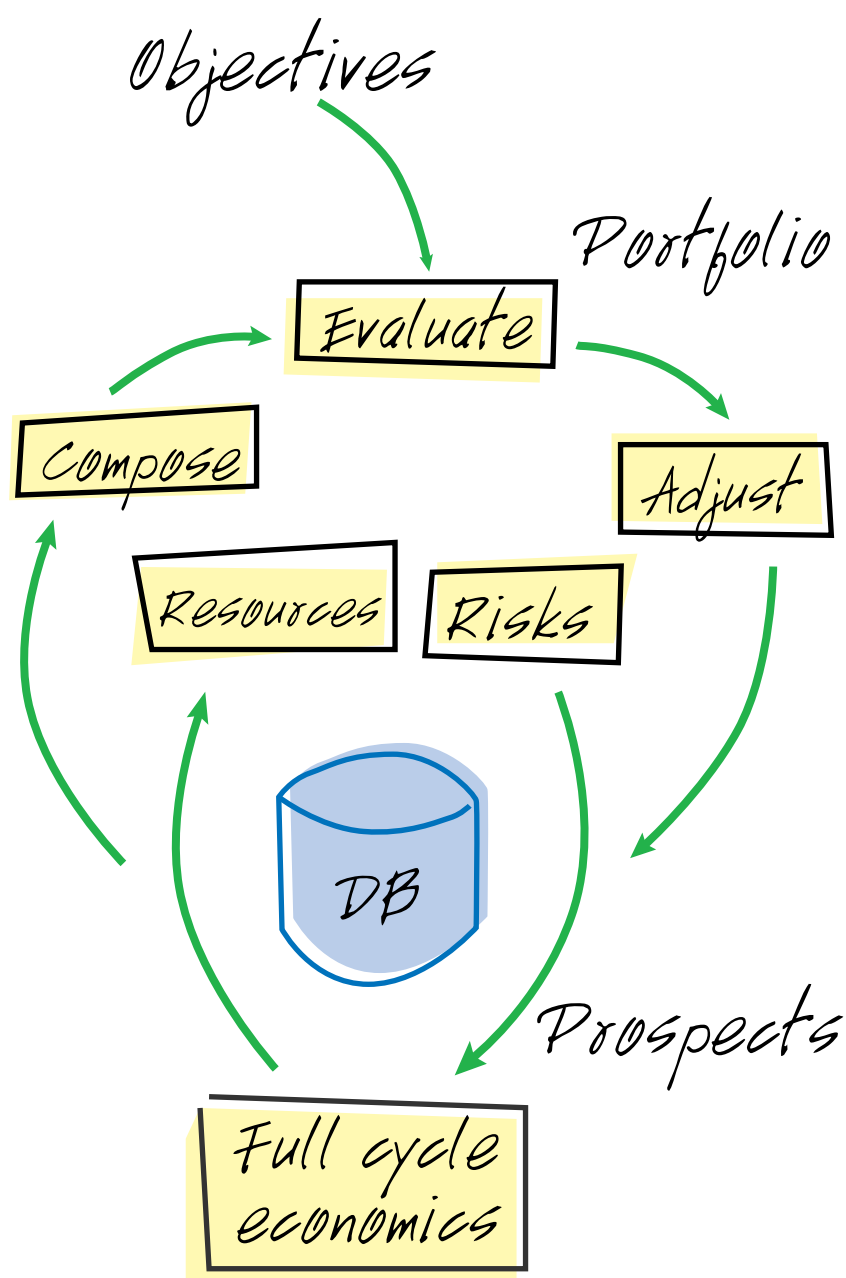
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Geology Trumps 'Gadgets' Strategies Glean New Prospects

By DAVID BROWN
EXPLORER Correspondent

The oil and gas industry and petroleum geology face three major challenges today: First, finding high-potential and accessible frontier targets for exploration. Second, using technology to optimize production while maximizing field life. Third, developing viable new prospects in known or mature areas.

Of the three, the last may have the greatest effect on near-term world energy supply.

Successful frontier exploration is the industry champagne and caviar that grabs media headlines, but generating new prospects in known areas remains the

concepts, it considers gaps in knowledge – what isn't known about a focal basin or petroleum system, Hamilton said.

"In our experience, new plays grow best in areas of intellectual white space, or even technical white space where you don't have sufficient data," he explained.

That includes taking a big-picture look at the existing technical understanding of a working petroleum system in a basin.

"One idea that we try to use is looking at petroleum system analogs and not just play analogs," Hamilton said.

"Another way to do this is to look at well-drilled petroleum systems and compare them to petroleum systems where you don't have that entropy," he added.

A Forensic Approach

Shell's empiric approach questions the specific unknowns in a system and searches for overlooked possibilities.

"You don't just cookie-cutter your way around the planet looking at petroleum systems," Hamilton said. "It's a way to force yourself to ask questions."

He said certain "prompts" help seed new play ideas for Shell.

"One is literally, Go Deep. What's there? What is the limitation?" he said.

"You're somewhat model-driven as you go deeper and your information gets skinnier," he added.

Go Shallow and Go Lateral are other possibilities. As part of the evaluation process, Shell compares an area of interest to production in similar settings.

"Almost by definition, there are some plays that have worked well in those settings and you say, 'Why not here?'" Hamilton explained.

"It's in a way a more forensic, first-principles approach," he continued. "For instance, if you're in a deltaic situation, what's the maximum depth of the commercial porosity?"

Not every play turns into an instant success, so Shell aims for speedy evaluation of generated prospects.

"When you're in the new play realm it would be glorious to hit the home run, whether that's with your first well or the first test of the concept. What's important here is to evaluate the play as quickly as possible," Hamilton said. "There's a speed and efficiency issue."

Understanding the Geology

In Long Beach, AAPG's George C. Matson Award for best oral presentation at the 2006 annual meeting will be presented to Steve Brachman, division geologist for Pogo Producing Co. in Houston and current president of the Houston Geological Society.

Brachman's presentation described the discovery of new pay zones in northern Lafourche Parish, La., a 600 Bcf mature producing area.

"Between Pogo and its partners, we generated 13 to 15 prospects, out of which nine or 10 were drilled with pretty good success," he said.

To generate prospects in a known area, Brachman begins with an understanding of regional and subsurface geology, using well data, logs, 2-D seismic and other resources.

"My criteria (for a potential prospect

The paper "Identifying New Material Hydrocarbon Plays: The Challenge and an Approach," will be presented by Robin Hamilton at 1:20 p.m.

Wednesday, April 4, at the AAPG Annual Convention in Long Beach, Calif.

Hamilton's co-authors are David Steele, Colin Grant, Pedro Restrepo-Pace and Larry Garnezy, all, like Hamilton, with Shell International.

The paper is part of a session on "Next 'Best' Chances in Global Exploration: Concepts for Play Development."

industry's bread and butter for exploration, said Robin Hamilton, regional framework studies team leader for Shell International E&P in Houston.

"The happy hunting ground for new plays," Hamilton said, "is not as romantic as the undrilled basin."

'Intellectual White Space'

AAPG's upcoming Annual Convention in Long Beach, Calif., will offer a rare look into Shell International's play methodology.

Hamilton and four of his colleagues have prepared the presentation "Identifying New Material Hydrocarbon Plays: The Challenge and an Approach," describing Shell's prospect-generation process.

That approach includes similarities to the methods used by smaller independents in mature producing areas.

There's at least one big surprise in the common approach to generating new plays. It's not a gadget-driven, 3-D-seismic, high-tech pursuit.

"People are running to it as the silver bullet in so many cases, but over-reliance on technology, I think, has stifled our abilities," Hamilton said.

At one point, Shell examined a large number of successful plays that had each found 500 MBoe or more, according to Hamilton.

"We took 80 plays we knew of and sat down and said, 'Okay, of the material plays we know about, what's been the initiator in getting these plays up and running?'" he said. "What was the critical success factor?"

New technology didn't make the top of the list.

"By far the predominant factor across the board was the development of a new geological model," Hamilton said.

And the second was serendipity – plain luck, he noted.

When Shell International's basin framework group develops new play

continued on next page

continued from previous page

area) are a good deal of structural or stratigraphic complexity and potential reservoirs at multiple levels," he said.

The geologic complexity provides a reason to shoot 3-D seismic, a near-final step in Brachman's approach. And multiple potential reservoirs give Brachman additional chances for production.

A third consideration compares known production and projected potential recovery to the cost of a drilling project.

"Looking at the production in the area, the kind of prospects that we developed had to justify shooting the 3-D seismic and drilling some pretty expensive wells," Brachman explained.

"The most important thing is that it has to make economic sense – to do a 3-D project requires a tremendous capital outlay prior to going out and looking for partners," he said. "You have to convince your management that your prospect is economic enough."

Pogo Producing had acquired 2-D seismic in the Louisiana prospect area, and Brachman said that was crucial to the program's success.

"Interestingly enough, none of our 2-D leads panned out in the 3-D," he noted.

"But without having done the subsurface and the 2-D, we would not have been able to generate many of the prospects. Understanding the 2-D was absolutely critical to understanding what the 3-D was telling us," he said.

In Brachman's approach, acquiring 3-D seismic is a late evaluation step prior to drilling, one that can contradict 2-D-based interpretation.

"My biggest fear," he said, "is shooting a dry 3-D."

In Their Footsteps

According to Brachman, it can take three years from the start of the prospect-generation process before shooting 3-D, and four to four-and-a-half years before drilling.

"Another type of project is buying existing 3-D off the shelf in areas that have been worked by others," he added, "in many cases where 20 companies may have generated prospects."

Blue Moon Exploration Co., another south Louisiana player, uses that approach to generate prospects in a known area.

"We generally don't initiate a program to shoot data. Just about everything we do, we're following somebody else," said company president Michel Bechtel.

"We're not afraid to follow anybody, even on data sets that have been out there for 10 years," he added.

Bechtel considers an understanding of subsurface geology the key to successful prospecting, combined with geologists capable of seismic and engineering evaluation.

"The approach we take is more the old-fashioned geology," he said. "All the guys here were mentored the same way. We're just as comfortable doing the engineering and reserve estimation as doing the geologizing."

By utilizing existing seismic data Bechtel avoids the expense of funding an acquisition program, which can be daunting for prospect generators.

"With all the dollars on the front end, if you only come out with one sellable idea, you've got a lot of money in the front of that thing that one idea isn't going to support," he said.

Instead of starting with seismic data, his geologists start with well control and a knowledge of the subsurface, then extrapolate into interpretation.

"We're trained as geologists but we're very comfortable looking at data. We're not so theoretical, and we're not as high-tech as other shops, I imagine," Bechtel said.

"By far the predominant factor across the board was the development of a new geological model."

"We don't just look at the geophysics. We look at the wells first, then try to fit the seismic into it," he explained.

Like most good prospectors, Bechtel won't let an old exploration idea go to waste. He said his company monitors lease sales on a monthly basis, looking for any known area of opportunity.

"If we've got some old ideas in that area, we'll jump in there and see what we can do," he said.

"Another thing I think is real important is being able to run down data on old wells," Bechtel commented.

"We can track down the guy who

logged a well and might have some information that could have been lost," he said. "If you've got a lot of contacts, you can track down a lot of ideas like that."

On a typical deal, Bechtel said, Blue Moon takes a quarter back-in after payout, "which we've done forever."

"We don't deal with unsophisticated investors – just about all the people who drill with us are sophisticated geologists, geophysicists or other industry people," he said.

And like many prospect generators, Bechtel prefers to maintain focus and stay close to home when evaluating

plays. He bent that rule somewhat by reaching from south Louisiana all the way into far eastern Texas.

"We went international – we crossed the Sabine River," Bechtel joked. "In fact, we're drilling a well right now in Orange County, Texas."

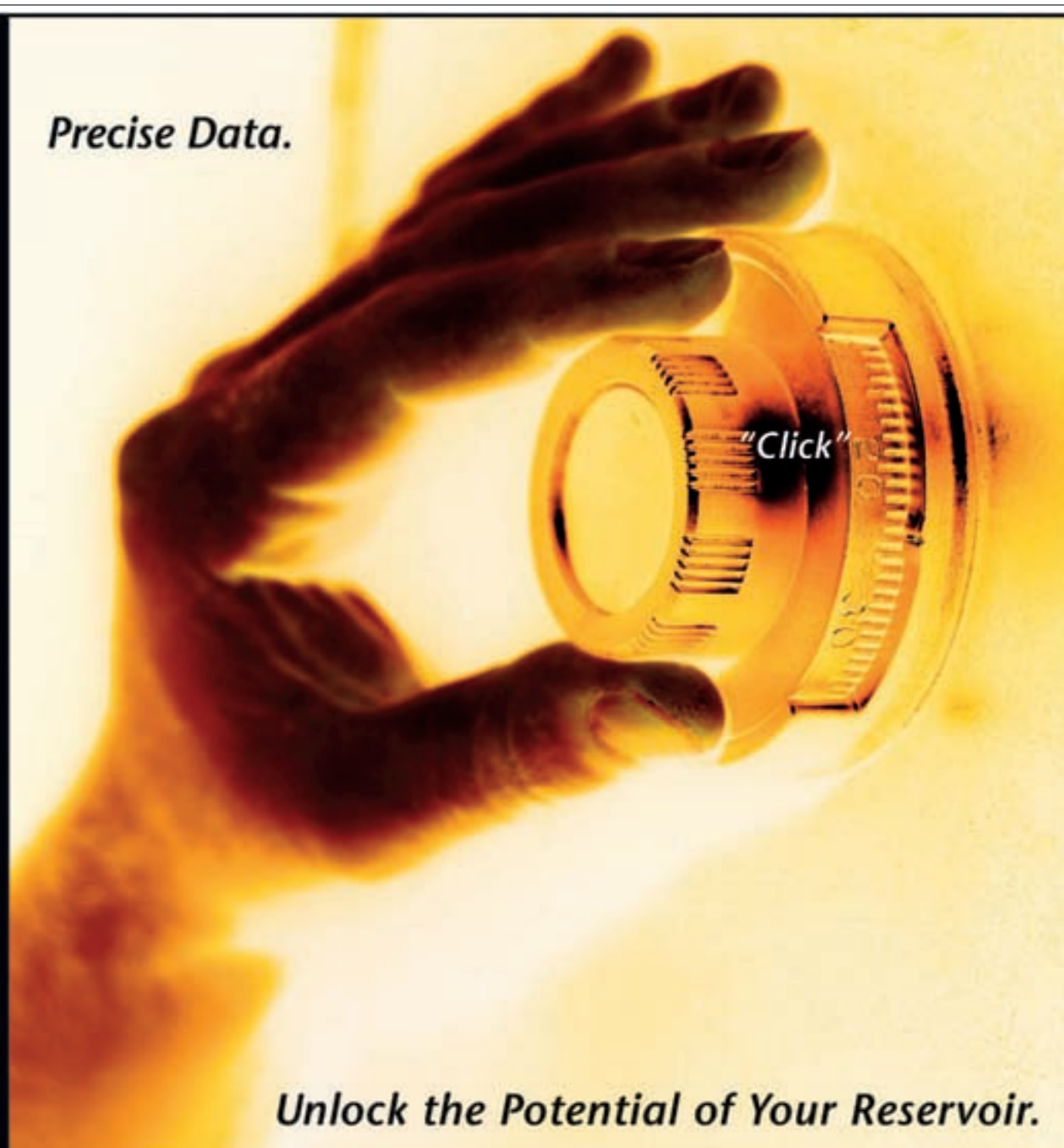
It's a Puzzlement

These companies generating prospects in known areas have reached a common conclusion:

The ability to devise successful, new geologic models trumps the use of 3-D seismic and high-tech approaches.

"In my career, the geologist was always the lead guy," Bechtel said. "The geophysicist and engineer and landman were the secondary guys. Now I see it switched in a lot of big companies where the geophysicist is the top dog."

"I just don't get it," he admitted. □



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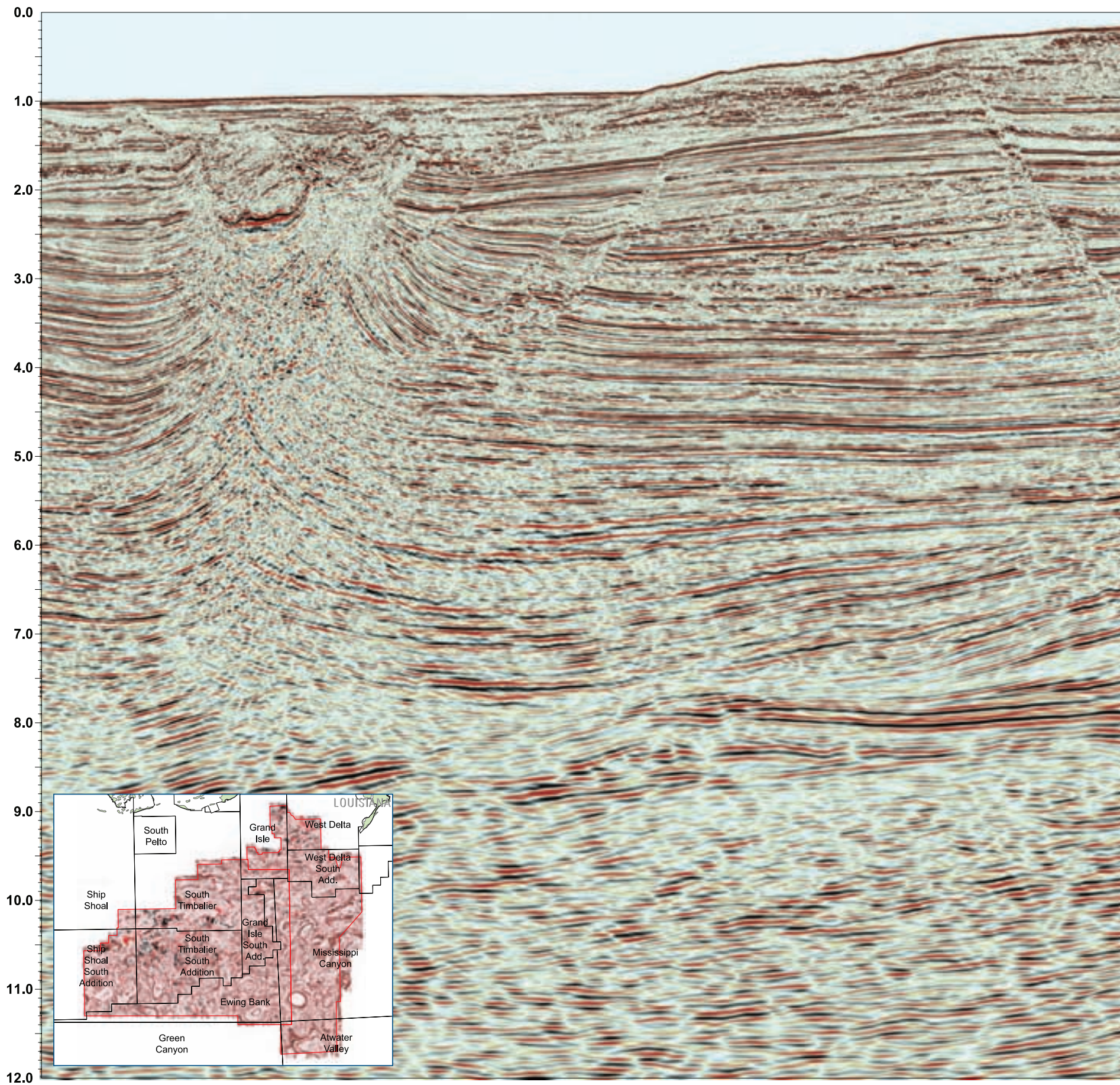
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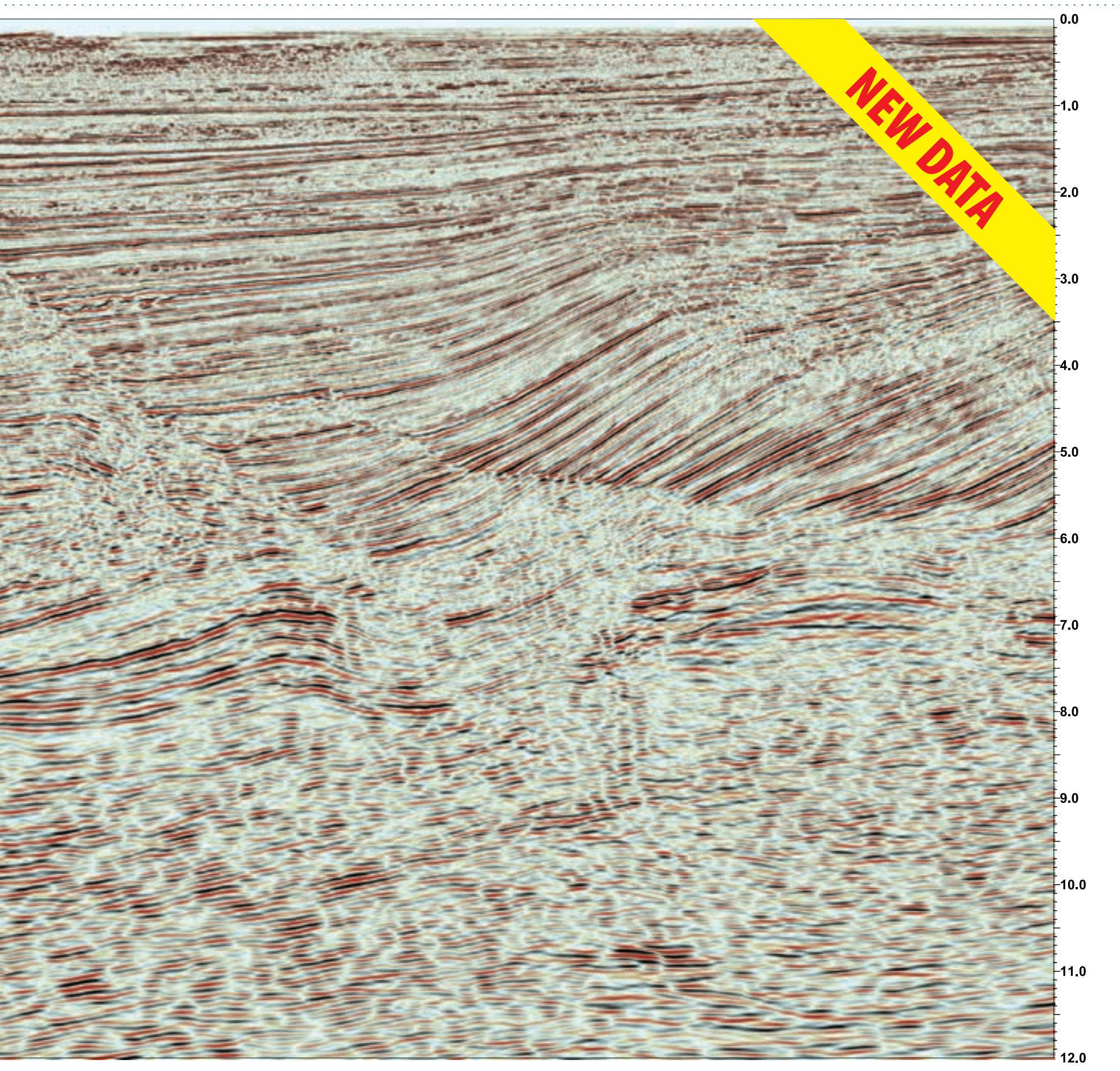
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Shelton

AAPG's Search & Discovery Online Journal Booming

By SUSIE MOORE
EXPLORER Staff Writer

AAPG's online journal, *Search and Discovery*, has been striving to provide the latest geoscientific information for the past six years.

Anyone can access the online library and no password is needed.

All articles are posted in two format versions: HTML and PDF for ease of use.

According to John Shelton, adviser to Datapages, no major changes have been made to *Search and Discovery* since its inception in 2000.



Shelton, who was elected editor for the AAPG BULLETIN 1975-79, recipient of AAPG's Distinguished Service Award in 1980, Honorary Membership in 1990 and was AAPG vice president 1988-89, said what has changed about the program is the need for AAPG to post more articles per year to the online library.

"We're hoping to post more articles than we have in the past," Shelton said, "And, we'd like to post one per working day."

"And there are reasons to do this," he added. "AAPG's probably publishing fewer than 250 articles per year." But the number of potential articles that could come from presentations given at the annual and international meetings is greater.

"We're hopeful that at the various meetings we'll be able to get, routinely, a number of presentations – both posters and oral," he said.

Calling All Authors

This is an appealing offer for the author that wants to get their presentation out there now. The process for getting an article posted on *Search and Discovery* is less complicated for the author than the process for getting an article approved for presentation at a meeting.

"We want to make it easy on the author because we understand the people who are doing the best work, generally their time is limited," said Shelton, "And they're usually not being promoted on the basis of how many articles they post."

Shelton along with Mike Horn, Doug Peter, Ron Hart and Ted Beaumont make up the editorial board that seeks, solicits and approves new articles to be posted online.

"The advantage of *Search and Discovery* is that we can put things up soon after they (authors) send it," Shelton said. "We try to make it so that the author doesn't have to do anything. He's already made his presentation; give it to us, we'll post it," he added.

Contact

It does take some time to get the articles and images posted, Shelton said.

Larry Gerken, *Search and Discovery* webmaster, is the primary source for loading articles and images to the site. And because Shelton believes geologists are visual scientists, they will add color or animation to images and link to any references, if available.

So if you missed that awe-inspiring presentation on the Covenant Field at the annual meeting in Calgary, or you know a colleague who presented a paper recently on a play of interest to you; and you want more details, log on to *Search and Discovery* at searchanddiscovery.net.

If you have a scientific presentation that you think would make a good addition to *Search and Discovery*, call John Shelton at 1-918-560-2640, or e-mail your article to him at jws@aapg.org.

Shelton is optimistic about the future of *Search and Discovery*.

"The more articles we can put up, the better we are disseminating scientific information," he said. □

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*Obstacles Consume Money, Time***'Twins' Face Political Challenges**

By KEN MILAM
EXPLORER Correspondent

While Africa and South America pulse with opportunities for geologic exploration, the most daunting challenges may be above ground.

Philip H. Stark and Andrew Hayman, both of Houston-based IHS, are prone to talk about two specific examples of this – “Gondwana’s enigmatic twins,” they call them, referring to the challenges facing Africa and Latin America.

Stark and Hayman, who presented their thoughts in a paper at the recent AAPG International Conference and Exhibition in Perth, note that the “twins” had great success from 1996 to 2004, with the oil and gas discoveries totaling 59 Bbo and 214 Tcf.

Deepwater discoveries off both continents and higher prices are stimulating frontier basin exploration.

But all the petrodollars flowing into the regions haven’t always benefited the population at large.

“There is extreme difficulty on both continents in converting abundant resources to wealth and prosperity for the people,” Stark said in a recent interview.

Political and Social Obstacles

Shifting political tides and civil unrest have kept standards of living stagnant for both Africa and South America, despite huge revenues flowing into central governments, Stark said.

In addition, corruption costs Africa an

“There is extreme difficulty on both continents in converting abundant resources to wealth and prosperity for the people.”

estimated \$148 billion annually, including lost tax revenue and deterred investment, according to *Time* magazine (Nov. 6, 2006).

The expanding role of national oil companies (NOCs) in the international arena, he added, further complicates the competitive landscape.

Keith Skipper, who co-chaired the session in Perth on “Exploration Potential of Africa and Its Margins,” agreed, saying some NOCs tie political aid and debt forgiveness to access.

Such political and economic obstacles consume up to 50 percent of management’s time, Stark said.

Investment flowed into both continents as they dramatically opened access in the last decade, he said.

Now other factors – such as close elections in South American countries – might foreshadow a shift to more Socialistic systems, making investors wary, he said.

The reasons may differ, but similar patterns emerge on both continents.

Dictatorships in countries like Venezuela and civil unrest in places like Chad have kept the focus on political

concerns, he said, while the countries’ economies and infrastructure have fallen into disarray.

External Dynamics

Another factor is the rise of Chinese and Indian NOCs.

Driven to secure more resources, they have moved heavily into northern Africa, replacing older relationships, Stark said.

The Asian NOCs outbid competitors, but often bring their own crews and gear, cutting locals out of the revenue loop.

“How about employing low-cost laborers in the host countries?” Stark said.

Lack of infrastructure is a major obstacle.

“In Chad, billion-barrel discoveries sat for 20 years waiting for pipe,” Stark said.

“Across 80 percent of both continents, there is no good gas network,” he said.

So the challenge becomes a priority: converting a rich endowment of natural resources into supplies, then into higher

standards of living.

“Extremes of wealth and poverty are a driver of political unrest and strife,” Stark said.

Bridging the Prosperity Gap

One way to help bridge the prosperity gap is to balance exports and regional needs as the local economies grow.

Natural resource industries must take an active role in steering production wealth into local needs of business and manufacturing, he said.

Stark highlighted a project by Artemus in Tanzania as a healthy example.

The company reopened an old well, producing enough gas for a plant and pipeline to power local businesses.

Such projects remain relatively rare, he said. One reason is that competition for resources, in the long run, is powered by countries’ need for energy security.

Plans for regional pipelines are underway, however.

They include piping gas from Mozambique to Johannesburg, South Africa; offshore gas to Cape Town, S.A.; and the trans-Sahara pipeline.

Skipper said the central policy challenge for the oil exporting countries is managing booming revenues.

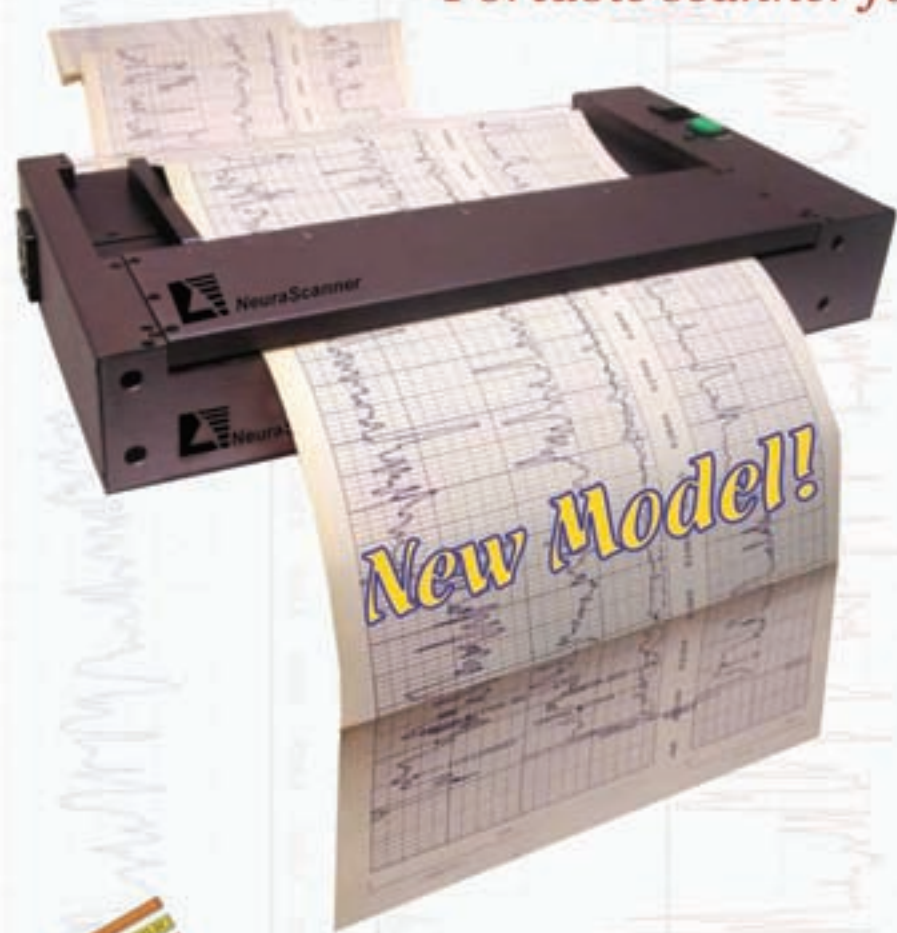
Improved transparency that would help ensure benefits are spread widely among the population, he said.

Implementing the Extraction

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London Calling: Time to Plan for APPEX 2007

Companies interested in exhibiting are encouraged to register immediately for APPEX London 2007, an exhibition and forum that annually attracts the industry's top decision makers.

APPEX 2007 will be held March 20-22 at London's Royal Lancaster Hotel on the north edge of Hyde Park – a new location for the event, with easy access from Heathrow Airport via the London Underground to Lancaster Gate or Paddington Station.

The popular event offers prospect exhibits and upstream activity presentations that span the world.

"I attended APPEX 2006 and found it an excellent form in which to network with people that are key executives and decision makers in both major and

smaller independent companies," said Graham Heard, exploration manager for Northern Petroleum.

"APPEX gets it right by providing a forum that concentrates on deals for both buyers and sellers," he added. "It only takes one right contact to make a deal, and this is bound to happen at APPEX."

The addition this year of the AAPG International Pavilion means that exhibit space will be limited – hence, the urgency for exhibition registration.

Exhibition spaces come fully catered, and all exhibitor registrations include a presentation slot in the technical program to present their prospects.

Confirmed forum presentations include:

- ✓ ABN-AMRO-sponsored Finance Forum (five talks detailing financing of upstream exploration).
- ✓ Management of E&P Risk Analysis short course (presented by Peter Rose).
- ✓ European Basin Ranking Review (Tom Albrandt).
- ✓ Pannonian Basin Potential (Hungary).
- ✓ Norway – The Growing Opportunity (Andrew Armour, Revus Energy).
- ✓ International Deal Flow (Joe Staffurth, JSI Services).
- ✓ Colombia – An Update and the Opportunities (M. Weibe, Solana).
- ✓ Present and Future Opportunity in Russia (John Dolson, TNK-BP).
- ✓ Future of Offshore Gas-Australia

(Ian Longley, Woodside).

- ✓ Pakistan – Past, Present and Future (Bernhard Krainer, OMV Exploration).
- ✓ Sub Saharan Africa (Bruno-Pierre Soulhol, Total).
- ✓ Deepwater Africa for the Independents (Alan Stein, OPHIR Energy).
- ✓ East Africa: Opportunity in Tanzania and Madagascar (M. Rego, Aminex).

For more information, or to register to attend or reserve one of the limited number of exhibition booths, go online to <http://appex.aapg.org>; or contact Peggy Pryor, AAPG meetings manager, at 918 584-2555; ppryor@AAPG.org. □

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Industries Transparency Initiative (EITI) in producing African countries should be a priority, he said. While it wouldn't imply greater geological prospectivity, it would make the investment climate more suitable, he said.

The EITI supports improved governance in resource-rich countries through full publication and verification of company payments and government revenues from oil, gas and mining.

Some 20 countries have either endorsed or actively implemented EITI Principles, Skipper said.

Skipper noted with enthusiasm Kenya's attendance at an EITI conference in Norway in late October.

Africa's Geologic Challenges

Africa also poses numerous geological challenges, including:

✓ The concentration of the bulk of the resources and potential resources in a few selected geologically constrained areas – predominately North Africa and in the "armpit of Africa."

✓ New geological concepts include toe thrust plays in the Niger Delta, offshore Kenya; more sub-salt in Angola; and the potential for oil discoveries on the East African margin, traditionally thought to be mainly gas prone.

✓ Apparent prolific potential for ultra-deepwater prospectivity – but who will/can discriminate and rank prospects in these frontier areas?

✓ All the usual pre-drill evaluation culprits of (world-class) source, timing of maturation and expulsion, entrapment, product type, geothermics, crustal dynamics, paleoclimates and paleogeomorphology, seismic and other imaging, etc.

✓ Narrow shallow coastal margins, i.e. offshore basins and geology, may not reflect deepwater potential but may reflect continent scale paleohydraulics.

Africa has the world's fourth largest proven oil reserves and third largest gas reserves.

"Africa offers something for all levels of players," Skipper said.

"The answer lies in a diverse scale of players, geological prospectivity and individual companies' capabilities," he said.

Transforming resource wealth into general prosperity is not only a moral issue but one of self-interest to countries hoping to lessen dependence on Middle Eastern sources, Stark said.

"If the world doesn't solve the 'great divide,' it will fuel more turmoil," he said.

AAPG can help spread that awareness, he said.

"One company can only do so much," he said. □



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GEOPHYSICALCORNER

Hello, This Is Your Geophone Calling

(The Geophysical Corner is a regular column in the EXPLORER, edited by Bob A. Hardage, senior research scientist at the Bureau of Economic Geology, the University of Texas at Austin.)

By BOB A. HARDAGE

We all know how cellular wireless telephones have spread around the world. "Cell" phones are in every nook and cranny of the earth and are used by people of all ages, nationalities and professions.

This same cellular wireless technology has now entered the onshore seismic data-acquisition world.

Just as a distant friend using a cell phone can cause a system of radio-tower relays to reach your cell phone and leave a message or transmit a graphic image, a small cellular wireless unit attached to a geophone can transmit the data recorded by that geophone through a system of radio antennae to a central data-storage unit.

* * *

A system that acquires seismic data using cellular wireless technology is similar to a cellular telephone system in a large city.

Inside the hypothetical city limits shown in figure 1a, several radio towers create overlapping reception/broadcast areas that combine to cover the city. Through a connection of radio towers, a cell-phone user at A can talk to, or transmit digital information to, a second cell-phone user at B.

The diagram implies that A and B exchange information via pass-along communication links 1, 2, 3 and 4, which span many miles.

In wireless seismic data acquisition, a geophone is connected directly to a small, wireless, remote acquisition unit (RAU) that functions essentially the same as a common cell phone (figure 2).

The RAU has an accurate internal clock that is synchronized with the internal clocks in all other RAUs across the seismic spread. Each RAU also has an internal GPS receiver that adds precise earth coordinates to all data acquired by its assigned geophone.

The seismic signal from the

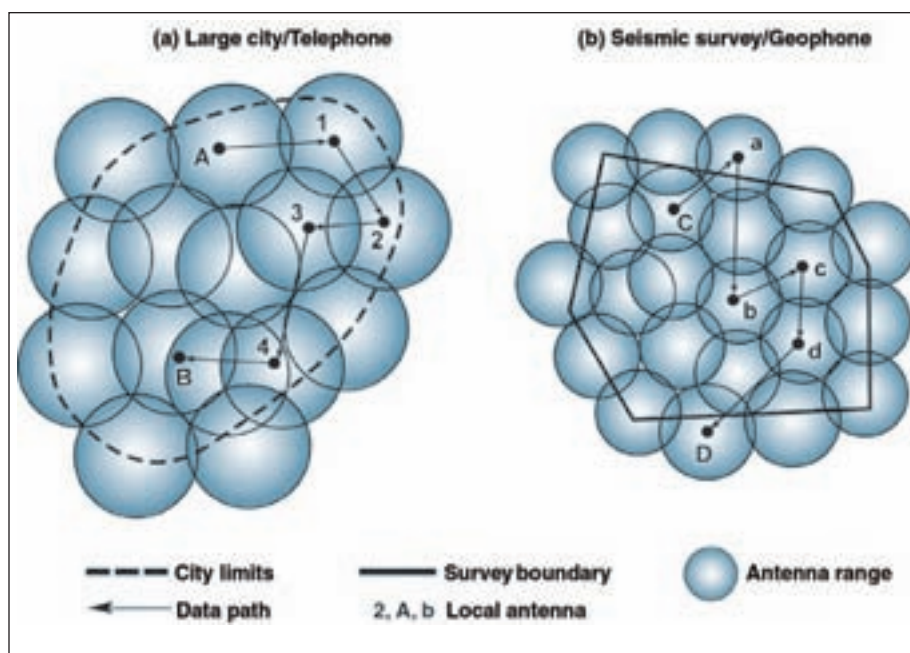


Figure 1 – Comparison between a cellular wireless telephone system spanning a city (a) and the same technology used to acquire seismic data (b).

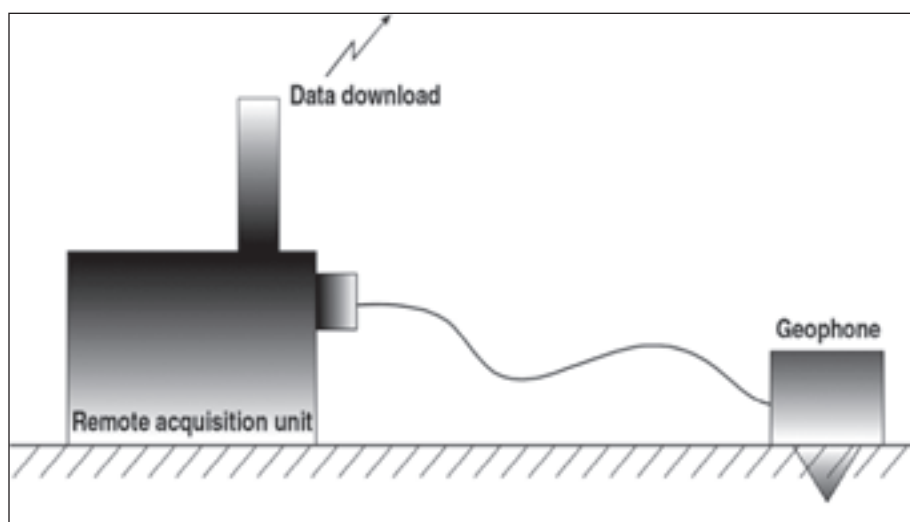


Figure 2 – The principle of seismic data acquisition using cellular wireless technology. The remote acquisition unit (RAU) is, in essence, a cellular telephone with a huge memory that is built to withstand harsh weather and rough treatment. The unit also has an accurate internal clock and a precise GPS receiver. An RAU connects directly to a geophone string. The geophone output signal is digitized by the RAU and then is downloaded via radio links to a central data unit, or it is retrieved by a visiting technician, who downloads the data at the geophone station, or the RAU is transported to a data-download station and then returned to the geophone station after emptying its data.

geophone is digitized by the RAU and then stored in flash memory – the same type of memory used in cell phones functioning as cameras that acquire, transmit and receive

photographs.

Wireless cellular seismic systems made by current manufacturers differ in how they handle the data received from geophones. In some systems,

each RAU transmits its data to a central data-storage unit via a system of overlapping radio-antennae patterns.

In figure 1b, the data transmission from geophone station C to data-storage unit D occurs via pass-along protocols between radio antennae a, b, c and d. In other systems, data stay in the RAU and are downloaded to a data-storage unit at appropriate time intervals.

In one option, each RAU is physically transported to a local data-storage device and then returned to its assigned geophone station. In yet other systems, a technician visits each RAU at selected times with a PC and uses a data wand to dump data from the RAU memory into the PC (shades of Harry Potter!).

* * *

The attraction of cellular wireless seismic data acquisition is that cables are eliminated. In some onshore 3-D seismic surveys, easily 200 to 600 miles of cable can be deployed to connect a large acquisition template of thousands of receiver stations. In terms of weight, volume and number of support vehicles and crew, cables are the major equipment component of a cable-based data-acquisition system.

In a cellular wireless system, the geophone connects directly to the RAU (figure 2). There are no cables to connect the RAUs to a central recorder or to connect a RAU to its assigned geophone.

Some think that this absence of cables is a weakness of wireless systems, not an asset, because cables ensure a high data-transmission rate. Both schools of thought have good arguing points.

* * *

Cable-based seismic data-acquisition systems have been used forever, are great technology and will continue to be used for years. However, the new kid on the block, cellular wireless data acquisition, looks bullish and will no doubt become popular with some seismic crews.

In the future, when you get a phone call, it may not be heavy breathing you hear; it may be your geophone calling. □

Hardage Heads List of Seismic Symposium Speakers

Bob Hardage, editor of the EXPLORER's Geophysical Corner column, will be the kickoff speaker for the 13th annual 3-D Seismic Symposium, set March 6 in Denver.

The popular event, sponsored by the Rocky Mountain Association of Geologists and the Denver Geophysical Society, offers a state-of-the-art look at the seismic industries.

Hardage, senior research scientist at the Bureau of Economic Geology in Austin, Texas, will speak on "Seismic for Independents Exploring for Unconventional Resources."

The keynote address will be given by Colin Bruce, BP North American Gas,

and Jim Hollis, EVP and COO I/O Inc., on "BP's World-Record Seismic Program near Wamsutter, Wyoming," where a large 3-D seismic program was completed in the Green River Basin using "firefly" wireless technology for speed with minimal environmental impact.

The one-day program features 10 other talks that cover the latest in 3-D technology and activities, including AAPG members:

✓ Vincent G. Rigatti ("Vermillion Basin Structural Style and Pore Pressure Prediction").

✓ Robert Kidney ("Integrated Fracture Analysis – 3-D Seismic



Hardage

Seismic Technologies in the Mature San Juan Basin, New Mexico").

✓ Charles Blumentritt (Fracture mapping in the Mississippian Barnett Shale, Fort Worth Basin).

Attributes, Natural Buttes Field, Utah").

✓ Susan Nissen ("3-D Attributes for Fracture Trends in Mid-Continent Mississippi Carbonate Reservoirs, Kansas").

✓ Rob Horine ("Modern 3-D

✓ Mike Ammerman (with Jamie Rich) ("Barnett Shale Fracture Illumination/Stress Orientation from 3-D Volumetric Curvature Analysis").

✓ Eric Johnson ("Cost-Effective 3-D Seismic for Shallow Gas Structures – North Central Montana").

✓ Satinder Chopra ("Fracture Lineaments Calibrated to Volumetric Curvature, Canadian Rockies Foothills, B.C., Canada").

✓ Tom Davis (with Murray Roth and Julie Shemeta) ("Renaissance at Rulison Field – Visualization of 9C/4-D Seismic with Borehole Microseismic Data").

For more information, see the RMAG Web site at www.rmag.org. □

WashingtonWATCH

'Realities' Create Opportunities

By DON JUCKETT

A Washington outsider once quipped, "Washington, D.C., is 100 square miles surrounded by reality." While there may be some merit in that observation, as a Beltway insider perspective it may be expressed by, "your reality and my reality are just different."

Many within the petroleum geosciences community will approach the next two years with great concern and apprehension; many are anticipating that the already stated agenda from the incoming House majority will gain traction and establish new priorities for the energy sector that will impact our industry and us as energy professionals.

A contrarian perspective, however, would reflect that this is an opportunity to expand the beachhead that AAPG has established in the last year and put forward even greater efforts to bring good science and education to the new Congress.

* * *

Looking a little deeper, there are 55 new congressmen and 10 new senators who began their tenure in Washington in January. On average, each new senator will have a budget that will permit him/her to hire 30-35 new staff members. Roughly two-thirds of the new staff will be located in Washington and one-third in the member's district.

In a similar manner the average House member will hire 15 new staff members, with the split between Washington and the member's home district in about the same proportion as in the Senate.

The party shift also means that committee staff assignments will have changed.

At the same time, many of the congressional staff that worked for members who are not returning to their seat in Congress will have moved into the private sector or other positions within the existing staff and committee structure. Many of these individuals will continue to be part of the network that constitutes the Washington political environment.

And many of these individuals will have spent the past 12 years as students of the process. As such they will have unique working knowledge of the intricacies of getting legislation introduced in Congress and will have strong information needs.

Therein is the opportunity! Because the rollback of provisions of the Energy Policy Act of 2005 and other energy-related matters are high on the House agenda, there will be a great need for information that will permit staffers to provide their member with sound policy input.

AAPG needs to be prepared to respond to those needs. The re-examination and updating of the Association's position papers by a panel of members is timely and is being executed with dispatch. They form the basis from which this office functions.

* * *

By the time this EXPLORER is published the "first 100 hours" of the new Congress will have passed and much of the associated House agenda will have been dealt with.

The Senate will be more deliberate in its consideration of House-passed legislation. This is one of those occasions when the public may benefit from the legendary resistance of the Senate to move with the same speed as the House.

For 2007, the issues that will remain on

the priority list are likely to include many of the same items that were worked since this office was inaugurated in late 2005: Geoscience education, geoscience research opportunities, access to prospective acreage presently held in moratoria and work force issues will continue to constitute the focus of GEO-DC activities.

In addition, there will be greater focus on providing greater access for AAPG leadership and members to the national policy process.

Congressional Visits Days (CVD) and an AAPG/SPE Multidisciplinary

Conference on Reserves (see January EXPLORER) will highlight the outreach activities with Congress and the Administration in the first half of the year. With the continuing support of AAPG leadership and members, CVD and a topical annual conference with energy policy-related implications will become a regular feature of the GEO-DC.

In anticipation of an active year for policy related issues:

✓ We will be making greater use of the Action Alert portion of the AAPG Web site to alert members to specific issues that will need their attention.

✓ We've added a feedback feature to the GEO-DC Web page titled "Results," to let you know what impact your involvement has had in the policy arena.

If you take a quick look at the Results from the last Action Alert you will see that your efforts had an impact!

I want to extend my sincere thanks to the membership for your support and involvement.


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



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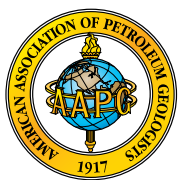
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Student chapter members at Stephen F. Austin State University have reason to smile.

REGIONS AND SECTIONS

Student Chapters Share More Success Stories

(Editor's note: Regions and Sections is a regular column in the EXPLORER offering news for and about AAPG's six international Regions and six domestic Sections.)

News items, press releases and other information should be submitted to the EXPLORER/Regions and Sections, P.O. Box 979, Tulsa, Okla. 74101.

Contact: Carol McGowen, AAPG's Regions and Sections manager, at 1-918-560-9403; or e-mail to cmcgowen@aapg.org.

This month's column is provided by McGowen.)

Last month we shared success stories from AAPG student chapters at the University of Texas-El Paso and the University of Bucharest.

This month three more outstanding student chapters share their experiences and advice for success, starting with one of the oldest – Stephen F. Austin State University, formed 25 years ago.

Stephen F. Austin State University

(Nacogdoches, Texas, U.S.A.; Student Chapter formed in 1982; adviser – LaRell Nielson, rnielson@sfasu.edu; current president – Joe McShane, mcschanejosep@titan.sfasu.edu.)

1. Describe the key factor essential to the success of your student chapter.

Essential to our success has been an accommodating geology department and adviser, and a core group of student officers committed to the success of the chapter. In addition to running the chapter for their term, student chapter officers need to keep the chapter's future in mind and plan for the years to come.

2. What information do you know now that you wish you had known when starting your student chapter?

We wish we would have known how beneficial interacting with other AAPG student chapters could have been.

3. What has been the greatest challenge for your student chapter – and how have you overcome that challenge?

Much like the entire energy industry, the greatest challenge has been adapting to changing interests in the fields of geology. In the last few years there has been a trend for more students to focus on other aspects of geology (i.e. environmental). We have overcome this

challenge to maintain membership by marketing ourselves to prospective members by emphasizing the environmental and mining divisions of AAPG.

4. Describe the most effective methods for increasing membership in your student chapter.

We increase membership by maintaining an active, tight-knit group. We keep busy throughout the year by organizing service projects, in-house lectures from industry geologists, and by sponsoring departmental social events.

5. Describe the activity or event hosted by your student chapter that attracts the largest attendance.

Every spring semester we try to make it a priority to have at least one speaker visit and conduct a presentation or short course.

6. Advice or best practice to share with other student chapters.

Your chapter will never grow or survive unless you do more than meet every few months and send one or two people to the national convention. You have to provide frequent events and activities for the members in order to maintain their interest.

Imperial College London

(Department of Earth Science and Engineering, London, England; student chapter formed 2000; adviser – Howard Johnson, h.d.johnson@ic.ac.uk; current president – Rachel Kieft, rachel.kieft@imperial.ac.uk.)

1. Describe the key factor essential to the success of your student chapter.

We benefit from more than 200 enthusiastic post-graduate students plus 200 undergraduates studying geology, geophysics and environmental geoscience. Together, they help maintain a solid, diverse membership of well-motivated students, interested in petroleum geology and the broader global energy challenge.

Our student chapter's connection with a strong department within a college such as Imperial helps us attract interesting speakers to discuss diverse topics. We maintain close links with the Society of

continued on next page

Levorsen Winners Announced

A.I. Levorsen award winners have been announced for last year's various AAPG Section meetings.

All will receive their honors at 2007 Section meetings. The winners are:

✓ Rocky Mountain Section – **Geoff D. Thyne**, Colorado School of Mines, Lakewood, Colo., for "Evaluation of Potential Impacts to Water Resources from Petroleum Drilling, Grand Mesa, Colorado."

✓ Mid-Century Section – **Raymond P. Sorenson**, Anadarko Petroleum, Houston, for "A Dynamic Model for the Permian Panhandle and Hugoton

Fields, Western Anadarko Basin."

✓ Gulf Coast Section – **Mary L. Barrett**, Centenary College of Louisiana, Shreveport, La., for "High-Resolution Foraminiferal Biostratigraphy of Cenomanian and Turonian Sandstones, Tyler County, Texas." (Co-author is John P. Goodson Jr., Ergon Exploration, Benton, La.)

✓ Eastern Section – **Frank R. Ettensohn**, University of Kentucky, Lexington, Ky., for "Black-Shale Source Rocks as Indicators of Paleozoic Tectonic History in the Appalachian Foreland Basin." □

continued from previous page

Petroleum Engineers Student Chapter, and organize talks of common interest and encourage early professional integration.

We are lucky to have a dedicated committee, prepared to devote time and effort into making the chapter a success.

But perhaps most important to our success has been the assistance received from Steve Veal, AAPG's European Office director. His enthusiasm, passion and support of our goals has been key.

2. What has been the greatest challenge for your student chapter – and how have you overcome that challenge?

Our biggest challenge was getting seven members of the AAPG Executive Committee in the same place, at the same time, talking on various petroleum-related topics, for a half-day seminar! It was hugely successful, with a great student attendance – and despite the challenges involved, we are planning something similar in 2007.

3. Describe the most effective methods for increasing membership in your student chapter.

During the first 30 minutes of a student's life at Imperial College, each masters of science in petroleum geoscience student is strongly advised by faculty to start supporting professional groups through active membership. We urge new students to join one local society, in our case the Petroleum Exploration Society of Great Britain, and the premier international society, the AAPG. During registration and enrollment, new students are given membership application forms for both societies!

Many geoscience students (bachelor's, master's and Ph.D. alike) come to Imperial College because they intend to pursue a career in the petroleum industry. The faculty here view AAPG membership as a natural first stepping-stone in developing the professional credentials of young petroleum geoscientists. This is further reinforced by existing students who advertise the chapter to each new intake of students, along with details about forthcoming talks. Recommendation to join AAPG by existing fellow students adds extra weight.

Many new students are already familiar with the AAPG, which definitely makes recruitment easier. Halliburton's and Chevron's global sponsorship of student membership fees is enormously helpful.

4. Advice or best practice to share with other student chapters.

Our advice to other chapters would be to use all the willing support from the AAPG, industry and other student chapters, like our own.

University of Nigeria, Nsukka

(Nsukka, Enugu, Nigeria, Africa; student chapter formed in 2003; adviser – Kalu Mosto Onnuoha, kmosto@hotmail.com; current president – Sunny C. Ezech, chisun55@yahoo.com.)

1. Describe the key factor essential to the success of your student chapter.

The factors that have guided our chapter this far are commitment, unity and collective contribution of ideas irrespective of our individual backgrounds.

2. What has been the greatest challenge for your student chapter – and how have you overcome that challenge?

Our greatest challenge has been trying to register all our members in AAPG and the renewal of membership due to inadequate funds by most students. However, the Halliburton and Chevron sponsorships have helped us overcome this challenge.

3. Describe the most effective methods for increasing membership in your student chapter.

Our annual membership drive campaign has been the most vital activity in sustaining our membership.

During this event the student chapter members, particularly the chapter executives, organize a campaign to enlighten the geoscience students within the university about the benefits that the student chapter offers.

By informing students that membership provides access to recent geologic findings, workshops and seminars on tropical geologic issues etc., they are encouraged to join.

4. Describe the activity or event hosted by your student chapter that attracts the largest attendance.

The most memorable and attended student chapter event is our annual NAPE/AAPG Day. During this event, experts from the Nigerian oil industry are invited to speak on topical issues. There are also student paper contests and field trips in which everybody is assured of participation at low or no cost.

The 2006 'NAPE/AAPG UNN - Schlumberger Day' was voted as the "best ever organized."

5. Advice or best practice to share with other student chapters.

We advise that unity, commitment and professionalism should be the driving goals. Also, no member should be disregarded due to racism, religion or ethnicity. Understanding of individual differences during meetings and the ability to make everyone feel important is very essential.

Indeed, leadership is all about service and human management, thus the leaders in each AAPG student chapter should take this into consideration. □



The Race Is On!

So put the pedal to the metal for the 2007 Annual Convention in Long Beach. Fees increase March 22.



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DPA: Online PDH Tracking Available

By JANET BRISTER
AAPG Web Site Editor

Are you Board Certified?

Wait! Let me rephrase that question ...

Are you a member of the Division of Professional Affairs, and have you upgraded to a Board Certified membership level?

It's easy – and it doesn't cost you anything but the time to complete the form(s). It's voluntary for membership, and it's the beginning of being registered/licensed in many states, as DPA works with the various state boards of professional registration/licensure for recognition as a reporting service.

At its mid-year meeting in November the DPA approved the Professional Development Hour (PDH) forms that DPA members may now complete to record the 20 hours of professional development required for Board Certification.

The PDH online tracking system includes a spreadsheet that summarizes DPA members' attendance at meetings, courses, field seminars and other functions that count toward the 20 hours required to reach Board Certified level.

Since most members already are attending meetings with their local society or going to Section or annual meetings, it won't take much to begin keeping track of these online.

To reach the PDH input area, log on to AAPG Members Only; DPA members will find "DPA Board Certification PDH Form," which takes you to the online entry form.

Since this is the beginning of this reporting process a PDF file is also provided for printout. This file may be completed and returned to AAPG, where the information will be entered into your

member record for you.

Data Display

After that, DPA members will be able to maintain their hours themselves. Also, they will be able to check their status for the year's requirements in order to ensure fulfillment of Board Certification through the DPA, as well as the requirement of a state board of registration/licensure of which one may be a member.

This is particularly useful if you also are a registrant/licensed with more than one state that has continuing education requirements; you'll be able to keep track of all your activities in one place that is customizable for different reporting periods.

There are three ways to display your PDH data:

- ✓ Calendar year.
- ✓ Birth year.
- ✓ Customized dates.

The calendar year display is based upon that year's January through December; the birth year selection will display data one year from your birthday for that year.

(If your birthday is not entered correctly into our database, you'll need to edit that by clicking on the "Add to this information" link.)

The customized dates accommodate a larger time frame. By clicking on the displayed information for current dates displayed you may select what month, day and year to start and finish.

So, all you active members of the DPA, now is the time to get your information turned in.

Good browsing! ☐

FOUNDATION UPDATE

A new AAPG Foundation-funded digital products university subscription has been established for the University of Utah by Marta S. Weeks.

Weeks' endowment was made in honor of Frank Brown, an AAPG member and dean of the University of Utah's College of Mines and Earth Sciences in Salt Lake City.

In other recent Foundation activity:

✓ Len Eisenberg, of Ashland, Ore., has provided funding for an AAPG digital subscription for San Diego State University in honor of his favorite professor, Don Ptacek.

✓ An anonymous donor has provided funding for an AAPG digital subscription

for the University of Southern California, Los Angeles.

Those donations mean that 26 universities now have received gifts of endowments through the Foundation's Digital Products subscription program. In it, a one-time gift of \$12,500 endows a subscription for geoscience students at your designated university – and at the same time honors the donor, an esteemed colleague, a family member or a favorite professor.

To include your alma mater with the gift of uninterrupted access to the entire AAPG digital library contact Rebecca Griffin, Foundation administration coordinator at 1-918-560-2644.

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SPOTLIGHT ON EDUCATION

AAPG has several education opportunities for you in the month of April.

✓ Now is the time to sign up for AAPG's short courses and field seminars offered in conjunction with our annual convention in Long Beach in early April. Log on to AAPG's Web site for a complete listing of courses and registration details for the convention at www.aapg.org/longbeach/toc.cfm.

✓ The always-popular "Modern Terrigenous Clastic Depositional Systems" field seminar will be held April 13-20 in South Carolina, beginning in Columbia and ending in Charleston. Taught by Walter Sexton, the complete course description is at www.aapg.org/education/fieldseminars/details.cfm?ID=6.

✓ Another favorite field seminar, "Clastic Reservoir Facies and Sequence Stratigraphic Analysis of Alluvial Plain, Shoreface, Deltaic and Shelf Depositional Systems," scheduled for April 22-28, begins and ends in Salt Lake City. Thomas Ryer is the leader – and he's been teaching for AAPG for over 15 years! Course details are at www.aapg.org/education/fieldseminars/details.cfm?ID=9.

✓ Due to demand, we've scheduled two offerings of our "Basic Well Log Analysis" short course, and the first will be held April 23-26, in Denver. This course is taught by industry experts George Asquith and Daniel Krygowski. The course description is at www.aapg.org/education/shortcourse/details.cfm?ID=109.

✓ If some of your support staff could benefit from a non-technical course that explains the language and processes of petroleum exploration, drilling and production, they can take advantage of the April 24-26 offering of Norman Hyne's course on "Basic Petroleum Geology for Non-Geologists." This course will be held in Houston, co-sponsored by AAPG and the University of Tulsa's Continuing Engineering and Science Education (CESE) Department. Find out more at www.aapg.org/education/shortcourse/details.cfm?ID=69.

Remember, complete course listings for our entire 2007 education program plus instructor biographies and special discounts can be found on the AAPG Web site at www.aapg.org/education/index.cfm.

Questions? Contact the AAPG Education Department at 1-888-338-3387 (USA only) or 918-560-2650; fax – 1-918-560-2678; e-mail – educate@AAPG.org.

We look forward to seeing you in a 2007 course. □

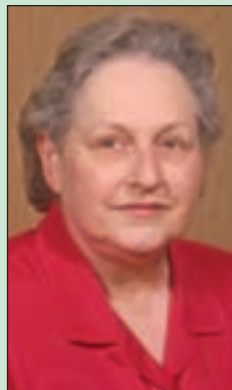
Donna Riggs Retiring After 38 Years

Donna Riggs, AAPG senior manager/special projects, is retiring after a total of 38 years with the Association.

During her tenure, Riggs has worked closely with Membership Department activities and the House of Delegates since it was inaugurated in 1970. She became one of the most-recognized AAPG staff members, attending in her words "well over a hundred" AAPG annual, international and Section meetings over her career, meeting face-to-face with thousands of AAPG members.

The Arkansas native attended a Tulsa business school and said one of

the reasons she was first hired by AAPG in 1964 was her experience working for an oil company as well as her international experience, including working in France and for the comptroller of the Eighth U.S. Army in Korea.



Riggs

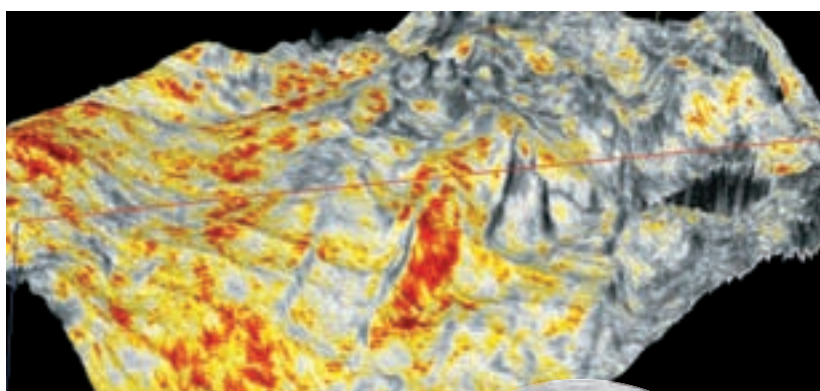
Riggs quickly became general office assistant as committee functions such as Visiting Geologists and Distinguished Lecture programs moved from committee administration to headquarters operations. She left five years later for the birth of a child but returned in 1973, working in the Membership Department.

She became department manager in 1980, and in 1999 was named director of the AAPG Service Center. She returned as department manager after a reorganization, and assumed her present position in 2005.

Riggs continues working with AAPG as a part-time consultant. □

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PROFESSIONAL NEWS BRIEFS

James Booth, to senior explorationist, Woodside Energy (USA), Covington, La. Previously senior regional geologist, Shell International E&P, Rijswijk, Netherlands.

Angel Callejon, to senior exploration geologist, ExxonMobil Exploration, Houston. Previously senior research specialist, ExxonMobil Upstream Research, Houston.

John Caprara, to manager-resource play development, Swift Energy, Carpentaria, Calif. Previously vice president-exploration, Royale Energy, San Diego.

George B. Davis, to geological manager, SandRidge Energy, Oklahoma

City. Previously exploration/exploitation supervisor, Devon Energy, Oklahoma City.

Joseph R. Davis, to vice president, Hyperion Resources, Dallas. Previously consultant, Dallas.

David DesAutels, to vice president-geosciences, Occidental Colombia, Bogotá, Colombia. Previously chief production geoscientist, Occidental Oil and Gas, Houston.

Wallace G. Dow, to chief geochemist, EOG Resources, Houston. Previously consultant, The Woodlands, Texas.

Richard G. Green, to president and CEO of Saxon Oil, Dallas. Previously

senior vice president, LaRoche Petroleum Consultants, Dallas.

Alexandra "Alex" Herger, to Gulf of Mexico exploration manager-new ventures, Shell E&P, Houston. Previously regional exploration consultant (the Americas), Shell E&P, Houston.

Tako Koning, to adviser-social projects and public relations, Tullow Oil, Luanda, Angola. Previously technical adviser, Tullow Oil, Luanda, Angola.

Julie Kupecz, to manager-SURE northern appraisal and field development, Shell E&P, Houston. Previously manager-geoscience technology, Anadarko Petroleum, The Woodlands, Texas.

Thomas M. Levy, to senior consultant, Decision Strategies, Houston. Previously retired as senior geological adviser, ExxonMobil Development, Houston.

Jeff Lobao, to exploration and new ventures manager-Asia Pacific, Lundin Petroleum, Singapore. Previously manager-exploration new business (Asia Pacific), Shell International E&P, Miri, Malaysia.

Andres Mantilla, to senior reservoir engineer, Marathon Oil, Houston. Previously senior reservoir engineer, BP, Bogotá, Colombia.

Dave Muller, to assurance geologist, BP America-North American gas, Houston. Previously exploration geologist, BP America-deepwater Gulf of Mexico, Houston.

Mark Pospisil, to senior vice president-geology and geophysics, XTO Energy, Fort Worth, Texas. Previously vice president-geology and geophysics, XTO Energy, Fort Worth, Texas.

Patrick Rasavage, to geophysicist, ConocoPhillips, Midland, Texas. Previously consulting geophysicist, Midland, Texas.

Arthur C. Saltmarsh, to senior petroleum geologist, Alaska Oil and Gas Conservation Commission, Anchorage, Alaska. Previously geologist, Alaska Department of Natural Resources Division of Mining, Land and Water, Anchorage, Alaska.

Dick Selley has been awarded Honorary Membership of the Petroleum Exploration Society of Great Britain. He is professor emeritus of petroleum geology and Senior Research Fellow, Department of Earth Science & Engineering, Royal School of Mines, Imperial College, London, England.

M.D. "Marty" Wittstrom, to manager-international exploration, Reliance Industries, Mumbai, India. Previously vice president development/chief geoscientist, The Information Store, Houston.

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

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

Membership applications are available at www.aapg.org, or by contacting headquarters in Tulsa.

Ghana

Apaalse, Lawrence Asangongo, Ghana National Petroleum Corp., Tema (J.K. Agbenorto, I.A. Botchway, C.K. Fordjor)

Iran

Safarkhanlou, Zeynalabedin, Schlumberger, East Azerbaijan (M. Akbar, R.E. Netherwood, A. Rezai)

Norway

Mohanty, Rohit, Schlumberger, Stavanger (G. Gillis, G.G. Shanor, P. Hodgson)

For Active Membership

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Bair, E. Scott, Ohio State University, Columbus (L. Wickstrom, P. MacKenzie, R. Riley)

Texas

Duncan, Thomas Michael, Tristone Capital, Houston (G.T. Smith, T.L. Davidson, H.D. Cowan); Gebhardt, Terry W., BHP Billiton, Houston (M.A. Catanzano, M.T. Ingram, D.F. Logue); Howell, Shane M., Netherland, Sewell and Associates, Houston (M.K. Norton, D.E. Nice, S.A. Burner); Yu, Yanqing, Shell, Houston (M.T. Cisar, C.J. Minero, D. Schumacher)

Algeria

Ben Amor, Faycal, Schlumberger, Algiers (P.R. Simon, S. El-Shazly, K.J. Yeats)

Angola

Salomao, Dondo Manuel, Chevron Overseas Petroleum, Luanda (V.A. Kienast, W.T. Combs, D.J. Fischer)

Canada

Maric, Robert, Waterloo Hydrogeologic, Waterloo (M.A. Jacobs, K.S. Hopson, R. Zapata); Wang, Norman Z., Provident Energy, Calgary (Q. Yang, M.T. Oliver, J. MacRae)

England

Oxford, Melissa, Neflex Petroleum Consultants, Oxfordshire (P. Sharland, R. Davies, D. Casey)

Certification

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

Petroleum Geologist

Colorado

Jones, Steven D., Lariat Exploration, Centennial (J. Armentrout, J. Harris, R. Groth); Suck, David Henry, Black Coral LLC, Centennial (J. Armentrout, J. Harris, R. Groth)

Petroleum Geophysicist

Texas

Walters, Robert Derek, Ryder Scott Co., Houston (J. Hodgkin, G. Presley, J. Broome)

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READERS' FORUM

Restore Paper

The January EXPLORER brought us tragic news of a historic AAPG policy retreat on the part of our current Executive Committee on the issue of our Climate Change Position Paper. Both in the President's Column and page 36 we learn that the EC "decided some topics, such as global climate change, are not appropriate for recommended government policies" and "we probably cannot reach a consensus on recommended policy options."

Both statements are an abdication of our responsibility to both our members and the world at large. The Climate Change Position Paper has stood since 1999, when it was first approved by that EC unanimously, after a broad-based creation process that spanned several years.

As Lee Gerhard (a former DEG president) articulately detailed on page 37 of the same issue, our AAPG Paper may well be the most sensible and reasonable in the policy debate today. We must, and have for seven years, taken a position on this critical issue that nearly everyone in the science community is weighing in on. It is our AAPG Constitutional duty to "advance the professional well-being of the membership," and our paper has always done that.

Also, of nearly 3,000 respondents last summer to the "All-Member" survey, over 64 percent answered "yes" to the question "Should AAPG adopt a science-based public stance on global change that is likely to generate controversy?" In fact, 80 percent of the members in the next question also want AAPG to "provide input on U.S. and global energy issues ..." That's a clear message that the membership does not simply want a "Fact Sheet" on any issue.

I call upon this EC, to continue to honor the will of the majority of the membership by restoring our Climate Change position paper and not succumb to the efforts of the policy's small but vocal group of critics.

Dwight M. "Clint" Moore
Houston

The Hot Topic (continued)

I write this letter as a 48-year member of AAPG; though retired from active exploration and development I maintain a sincere interest in the geologic profession and the AAPG, and have already registered a vehement NO vote to the issuance of the proposed climate card.

I do, however, want to call attention to the recent publication of "Estimates of 21st Century World Energy Supplies," John D. Edwards, Geological Dept. University of Colorado at Boulder, Colo., and reproduced on page 4 of the September 2006 AAPG EXPLORER. This may be the only comprehensive publication that gives accurate and up-to-date data on energy use, of all sources, from 1900 to 2004, and projects future energy consumption from all sources to 2100. It is also easy to extrapolate back several decades from reliable sources.

I can guarantee that any of you who plots Edwards' total energy curve and a world population curve (based on U.S. census data) using the same horizontal scale is in for an educational and informative experience.

For those so interested it is equally easy to acquire and plot temperature and CO₂ emissions data, again on the same horizontal scale, for additional enlightenment.

Granted, those four curves cannot

Editor's note: Letters to the editor should include your name and address and should be mailed to Readers' Forum, c/o AAPG EXPLORER, P.O. Box 979, Tulsa, Okla. 74101, or fax (918) 560-2636; or e-mail to forum@aapg.org. Letters may be edited or held due to space restrictions.

give the total answers to questions of global warming, and you may or may not change your mind about the proposed climate card – but you'll sure be able to think about climate change from a more informed position, rather than be stuck with only a not-very-well understood geologic history book to guide your opinions.

Further, you may also begin to see the appearance and evolution of Homo Sapiens as a geologic force of significant proportions, which may be exerting an anthropomorphic effect on climate, to the detriment of the species.

Surely those of us who can understand the six billion-year geologic time frame can also visualize the effects that six billion people might have on a planet with finite size and resources.

Let's invite more good scientists into the debate rather than rebuke them with the empirical proclamation that "climate change is beyond the control of human beings!"

You can't prove it – and I don't believe it – and besides, it may get awfully lonesome out there on that limb. (See *Geotimes* December 2006 pp. 6, 18 and 84.)

Albert L. Richardson
Bradenton, Fla.

Regarding the two "climate" articles by Lee Billingsley and Lee Gerhard (January EXPLORER) Apparently, the AAPG's past proposed Global Climate Change Card is intended to be morphed into some sort of "fact sheet."

The informed world public will assume that such a product (pocket-size card?) is AAPG's position and policy on global climate change – that is a fact. Our public tends to equate increased global warming and various organism stresses with increased global pollution.

Following, global pollution is seen as linked to human activities, in whatever degree of perceived influence. Correct or not, many radical weather changes reported worldwide are also viewed as indicators of detrimental climate change induced by humans.

Like so many, I believe that our human activities significantly contribute to global warming. However, the extent of this contribution is unknown to me. It is encouraging to note that AAPG's Executive Committee will "appoint a balanced committee to write AAPG's fact sheet on global climate change" (as per Lee Billingsley).

Indeed, this appointed committee will face a daunting task.

If AAPG, with a resulting fact sheet, chooses to refute commonly held public perceptions and to refute the investigations of various other scientific organizations, AAPG's supporting credible, worldwide, time-series data had better be there in spades. Thorough explanation of such data would be required for the overall public.

Ultimately, world publics will set the global warming policies of their respective open governments. AAPG's involvement should not be limited to

See **Forum**, page 38



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EOE.

Forum

from page 36

scientists fussing with other scientists.

It is questioned if sufficiently credible historical data are available to overwhelmingly defend AAPG's current position and direction on this matter, and in an understandable manner.

If a convincing argument is not achieved soon, the Fact Sheet project should be decisively scrapped.

Jack Steele Sanders
Dallas

Lee Gerhard and I debated climate change in the March 2006 BULLETIN. One point of agreement between us was the primacy of observational science, not least geological evidence.

In his letter to November's EXPLORER, Lee, writing with Bill Pollard and Ray Thomasson, again asserts the value of geological observations.

The writers then go on to base their arguments against human-induced climate change on climatological rather than geological data.

I suggest that we do not need to rely on computer-driven climatological models. Earth already has run for us the experiment we are conducting now; the famous 55 million year-old release of fossil carbon at the Paleocene-Eocene boundary happened long before we were around to light so much as a camp fire. This release was comparable in rate and scale to that for which *Homo sapiens* is now responsible (Norris and Rohl, 1999, *Nature*, v.401, p.775-78).

Thanks to the work of the late Nick Shackleton and colleagues, we can read the geological record of that 55 million-

year event with a definition of thousands rather than millions of years. We can see that it took the planet over 100,000 years to recover from rapid and major disturbance. It is not an event we would wish to repeat through our own agency.

I believe that the AAPG has a particular responsibility to help the oil industry come to terms with the risks involved in our main activity of transferring fossil carbon from the ground to the atmosphere. Rather than fighting last-ditch battles using data largely derived from other sciences, the leadership of AAPG should accept the message from the rocks. Of course the world continues to need oil and gas. It also needs our leadership in capturing fossil carbon after use and storing it safely, back where it came from, in the rocks we know so well.

Our industry is at a critical point in considering climate change. Are we

going to be defensive and moribund? Or constructive and vital?

Bryan Lovell
Cambridge, UK

I have followed the dialogue in AAPG on climate change with interest. As with others that have written letters regarding AAPG's initiative on developing a position on global warming, I think we geologists have an important role to play in providing evidence from the geologic record related to historical climate change and the role of CO₂.

However, I would first want to reach a clear consensus on the evidence before taking any firm position.

Forty years ago, my freshman course "Introductory to Geology" at the University of Missouri (Dr. Tom Freeman) featured engaging and controversial topics such as "continental drift" and the "greenhouse effect." Continental drift captured the imagination of earth scientists in the 1970s and, thanks to a great body of evidence from the geologic record compiled by creative earth scientists using new technologies and their imaginations, became accepted as plate tectonics. The greenhouse effect has not enjoyed such popularity in our discipline, until very recently.

The observations of a rapid increase in the CO₂ concentration in the atmosphere over the last 50 years and the concomitant increase in average global temperatures during the same period are convincing to most. Also, few doubt that there is some causal relationship between CO₂ concentration and global temperature, but the impact of unabated increases in CO₂ concentrations in the atmosphere and the potential buffers in the ecosystem are not as clear.

Most of the public's current perceptions of the "crisis" of global warming are based on extrapolation from complex atmospheric and oceanic computer models. The predictions of such models are not beyond question and should be evaluated in the framework of geologic climate history, as the Antarctic ice core work is now doing.

It's also possible that there are other consequences of CO₂ increases that have not been recognized yet.

Maybe AAPG's initial contribution would be to define the relevant questions that earth science is best suited to address. As a start, main questions for me are:

- ✓ What were the changes in CO₂ concentrations and average global temperatures over geologic time, and how did those changes effect paleoclimate, populations and species?
- ✓ What would the geologic record suggest for earth's future if CO₂ concentrations continue to grow unabated, and what processes/sinks likely acted to reduce CO₂ concentrations in the past?

Thomas W. Oglesby
Houston

INMEMORY.

Gregorio Mario Escalante, 74
San José, Cost Rica, Sept. 6, 2006
Charles Luther Severy, 87
Denver, Nov. 16, 2006
William Alton Skees, 85
Delia, Kan.
(Longtime of Midland, Texas)
Nov. 24, 2006

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

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Field
SeminarsClastic Reservoir Facies and Sequence Stratigraphic Analysis of
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Leader: Thomas A. Ryer, The ARIES Group, LLC, Katy, TX
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Professor Jef Caers
Department of Energy Resources Engineering
Green Earth Sciences Building, Room 65
Stanford University
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Centenary College of Louisiana invites applications for a two-year position at the assistant professor or instructor level in the Department of Geology, beginning August 2007. We are seeking candidates who are interested in teaching geology in a liberal arts environment and involving undergraduate students in research experiences. Recent Ph.D.'s and ABD's are encouraged to apply. The teaching responsibilities will depend on the background of the successful candidate but should involve some subset of Physical Geology, Environmental Geology, Historical Geology, and Sedimentary Geology; a special topics course in the successful candidate's field of interest is also a possibility. Centenary College (www.centenary.edu) is a selective liberal arts institution with a student/faculty ratio of 12 to 1 and is a member of the Associated Colleges of the South (www.acs.org). The college has a \$100 million endowment and is located in a metropolitan area with a population of more than 350,000. To apply, send a letter of application, statement of teaching philosophy, vita, copies of transcripts, and three letters of recommendation to: Dr. Scott Vetter, Chair, Department of Geology and Geography, Centenary College of Louisiana, P. O. Box 41188, Shreveport, LA 71134-1188. Review of applications will begin March 1. Centenary College of Louisiana recognizes that diversity is essential to its goal of providing an educational environment where students explore the unfamiliar, invent new approaches to understanding, and connect their work and lives to the world at large. We thus welcome applicants who would add to the college's diversity of ideas, beliefs, experiences, and cultural backgrounds. EOE

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DIRECTOR'S CORNER

Rising Costs Put Pressure on Dues

By RICK FRITZ

When I do my personal budget, it's kind of a conscience that doesn't keep me from spending but makes me feel guilty about it. Developing AAPG's budget is significantly different. It's more of a conscience that guides the leadership in providing the best products and services for the best price.

Last fall, in considering next year's AAPG budget, the AAPG Executive Committee – at the recommendation of staff and other AAPG leaders – recommended an increase in the dues from \$75 to \$80 for Active and Associate membership.

Historically, we always have been reluctant to raise our dues, and usually raise them several years after our sister societies; e.g. SEG and SPE raised their dues a couple of years ago.

* * *

As a member I always want to know why my dues increase. The basic answer is inflation.

Dues have increased only \$3 since the start of this decade, and this most recent increase amounts to a little over a 1.5 percent increase per year since the last increase. During the past 20 years our dues increases have essentially matched inflation.

As in your own budget, when you are behind or at the inflation rate you must find other income sources and savings to make budget. We have done both by increasing income from events – such as the North American Prospect Exhibition

Bylaws Proposals Available on Web

Proposed changes to the AAPG Bylaws are posted on the AAPG Web site. Comments by AAPG President Lee Billingsley and House of Delegates Chairman Larry Jones concerning the proposed graduated dues proposal are also available, as well as an area for member comments or questions. Visit www.aapg.org for details.

(NAPE) – and cutting costs in almost every area of our operations.

For example, seven years ago AAPG had a larger staff. Like most of our member's companies, we now have a smaller staff doing more. This has been accomplished by improved efficiency, outsourcing and, of course, continued improvements in technology.

For a society, communication is vital to success. The Internet has helped lower postage costs and significantly improved our efficiency in communications; however, it has not especially improved the quality of communications, i.e., I sometimes miss writing or receiving a well-written, well thought-out letter – but that discussion is for another time.

* * *

Another partial reason for an increase in dues is increased costs in some areas where costs traditionally have been low, or at least stable. Three good examples are legal, insurance and security costs.

✓ In the past our legal costs were related to basic operations and changes in the bylaws. More recently we have legal costs in new areas, such as protecting our (your) copyrights.

It is AAPG's mission to promote dissemination of our publications, but in the digital age sometimes publications are not used appropriately and our authors lose their recognition. AAPG will defend its copyright if we feel that the publications are used in a manner that is not best for the Association and its many authors.

Recently, we incurred legal costs in meeting with the U.S. Office of Foreign Asset Control to discuss the legality of publishing certain articles originating outside of the United States.

There are often unexpected legal costs associated with developing a meeting. We currently are taking legal action against a local hotel and service ground operator who clearly did not honor their contract.

As AAPG opens new offices (Washington, D.C., and London, England) we incur new costs, especially legal and insurance costs related to developing an entity outside of headquarters.

✓ Insurance is another example where costs have significantly increased.

AAPG is one of the last major vendors of field trips. Field trips are a crucial component of our education program. In the past, all of our field trips were covered under our general liability insurance policy. Now, each field trip is individually

reviewed by the underwriter to make sure it is insurable.

AAPG is doing everything possible to develop safe and insurable field trips for our members and the general public.

✓ Security is the third area of increasing costs. Since 9/11, AAPG's security costs – primarily for meetings – have more than doubled. AAPG is committed to making sure our conferences and exhibitions are safe for participants.

Other significantly increased costs since 9/11 include the cost of hotel rooms and rental of convention facilities. Owners of these facilities are passing the increased cost of security and insurance to their users.

* * *

Some say that the budget is a method of worrying *before* you spend instead of afterwards.

We are "worrying" about the budget compared to the future needs of AAPG members. We are committed to keeping costs as low as possible, and to raising the dues only when it is absolutely necessary.

This dues increase is necessary, and it is good for the continued health of the Association.



Convention Program Varied

EMD Sets 'Unconventional' Sessions

By WILLIAM A. AMROSE
and STEPHEN M. TESTA

The Energy Minerals Division is excited to present its technical program and luncheon for the AAPG Annual Convention in Long Beach, Calif., April 1-4.

EMD has a strong technical program this year, covering a variety of unconventional energy topics of current interest to both EMD and AAPG members. EMD-sponsored oral and poster sessions include:

✓ **Shale Gas** – Co-chaired by Dan Jarvie and Bill Coffey, oral and poster sessions will feature shale gas plays in the United States and Canada.

The oral session includes the Appalachian Basin (Marcellus and Utica shales), Barnett Shale in the Fort Worth Basin, Gulf Coast and Mid-continent shales, Cretaceous shales in the U.S. Rockies and the Triassic Doig and Montney shales in British Columbia, Canada. The session will open with discussion of gas supplies from unconventional resources and factors affecting flow rates.

The poster session is equally well-rounded, with additional details on the Barnett Shale as well as the Woodford, Floyd, Utica, Marcellus and Mancos shales. It also will include discussion of tight gas shale evaluation and exploration paradigms.

✓ **Heavy Oil Provinces of the World (Canada, Venezuela, California)** – Frances J. Hein and Alan Reed are co-chairs for oral and poster sessions that examine the geology of heavy oil and oil-sand deposits.

Heavy oil and oil-sand deposits are becoming attractive unconventional energy sources as the price of conventional oil continues to rise and as improved technologies reduce their recovery and production costs.

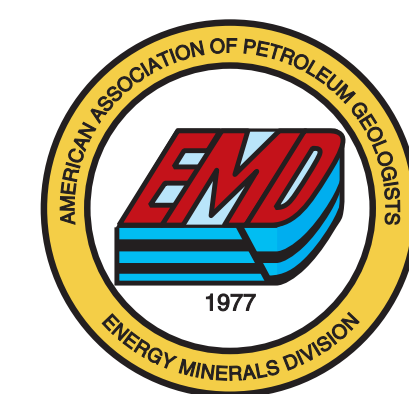
Over three-quarters of the world's heavy oil and oil-sand reserves occur in Venezuela and Canada, with at least 1.8 trillion barrels in the Orinoco heavy oil belt and 1.7 trillion barrels in Athabasca oil sands. This compares to an estimated 1.75 trillion barrels of conventional oil, mainly located in the Middle East.

There will be four oil-sand papers from the Alberta Basin and one from Utah. Heavy oil deposits presented include the Orinoco heavy oil belt and Lake Maracaibo, as well as California; the Llanos Basin in Colombia; and the North Sea graben offshore Norway and Britain.

✓ **Alternative Energy Sources: Promises and Pitfalls** (co-sponsored with the

The EMD Luncheon in Long Beach will be held Wednesday, April 4, featuring EMD division awards and guest speaker Vince Matthews, director of the Colorado Geological Survey, who will present "China and India's Ravenous Appetite for Natural Resources – Their Potential Impact on Colorado."

In it, Matthews will discuss the effects of China's and India's exploding economies on the world's mineral and energy mineral resources, emphasizing



Astrogeology Committee) – Co-chaired by Harrison H. Schmitt and William A. Ambrose, this session will explore the wide variety of alternative-energy sources that will be needed to satisfy the world's energy demand as it moves from hydrocarbon-based resources to alternative resources in the 21st century.

Colorado and the Rocky Mountains – resources that include natural gas and petroleum, precious metals and even cement.

Matthews, an AAPG member, has authored more than 60 technical articles and abstracts, and was senior editor of the award-winning publication, *Messages in Stone: Colorado's Colorful Geology*.

The abstract and Matthews' biography can be accessed at <http://emd.aapg.org/>.

The program will cover fuel cell technology, biofuels and geothermal energy, as well as more exotic potential sources of energy such as helium-3 on the moon. They will be compared and contrasted with unconventional, hydrocarbon-based energy sources such as gas hydrates, shale gas and heavy oil, which can be developed in the near-term as a bridge to these alternative-energy sources.

✓ **Coal: Energy Source, CO₂ Sink, Paleoenvironmental Archive** – Co-chairs Walter B. Ayers Jr. and Jack C. Pashin host this poster session, which reports results of selected domestic and international studies of coal and coalbed gas resources, enhanced coalbed gas recovery and CO₂ sequestration in coal beds.

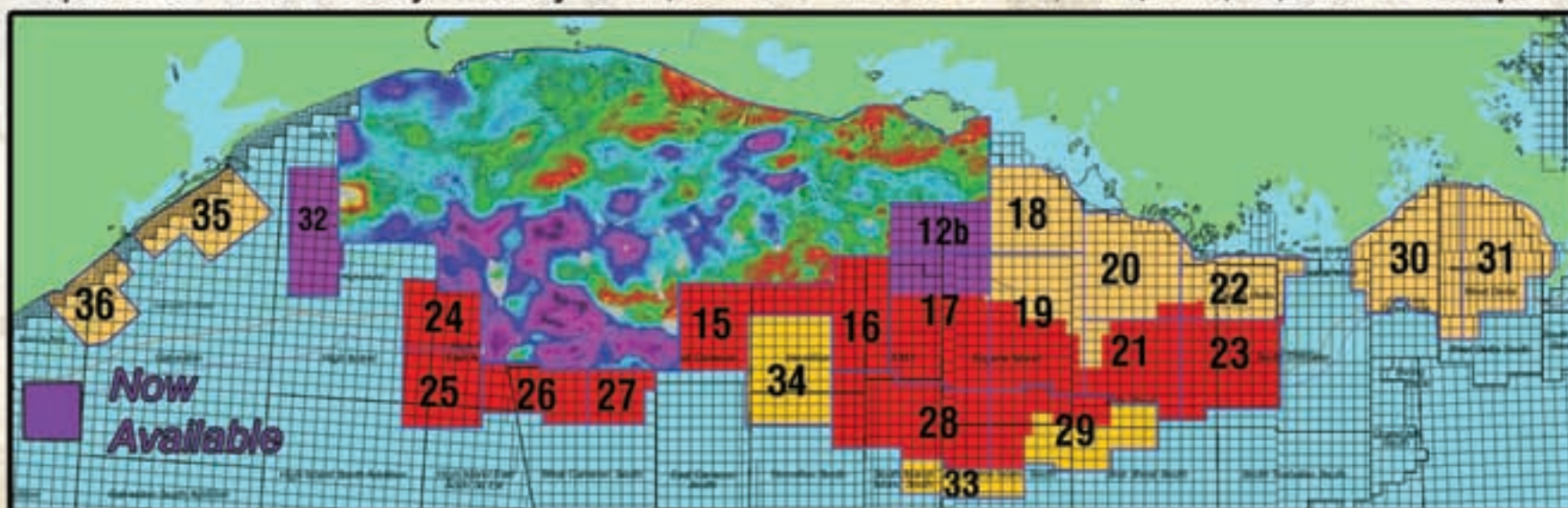
As conventional oil and gas reserves are depleted, the world's abundant coal resources and unconventional gas supplies, including coalbed methane, will assume increasingly important roles in meeting future hydrocarbon demands. This session focuses on characteristics of coal and coalbed gas resources, prospects for enhanced coalbed gas recovery and the potential of coals for geologic sequestration of CO₂.

We encourage all AAPG members to discover the "unconventional" aspects of EMD – and look forward to seeing you at the EMD sessions in Long Beach.

(Editor's note: William Ambrose is EMD president, and Stephen Testa is the EMD vice chair for this year's annual convention.)

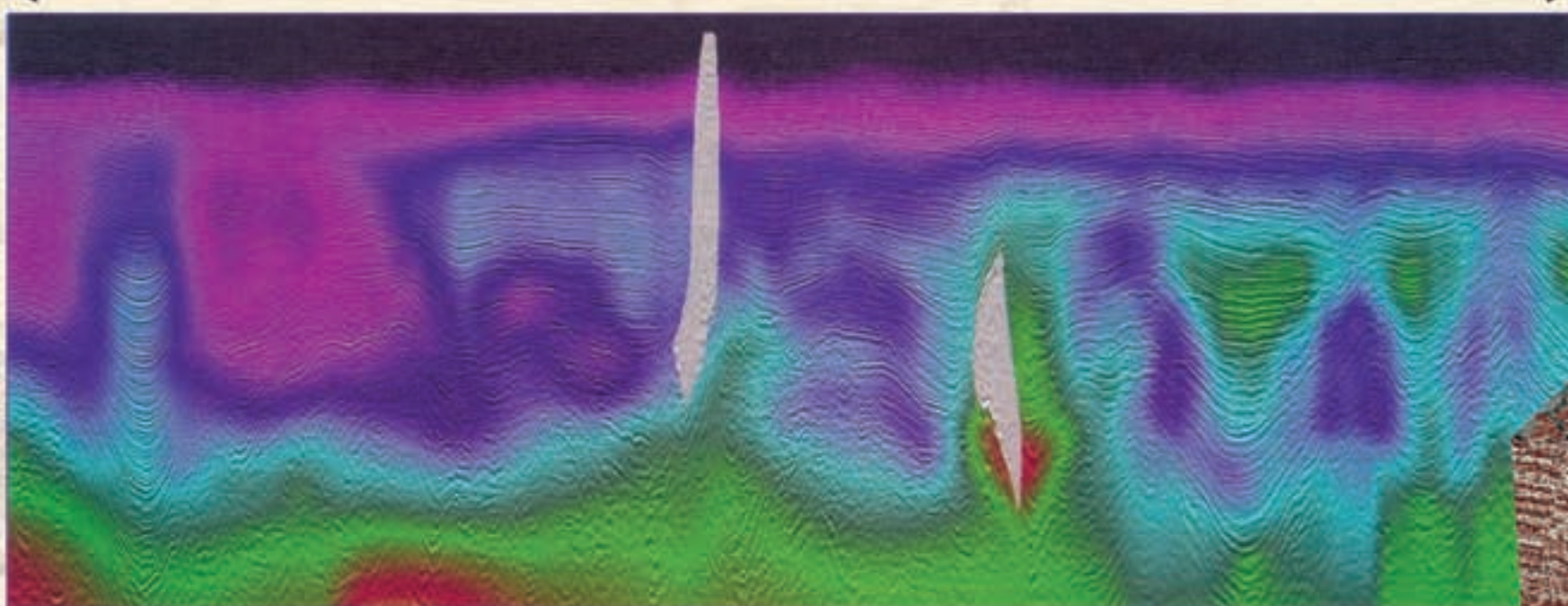
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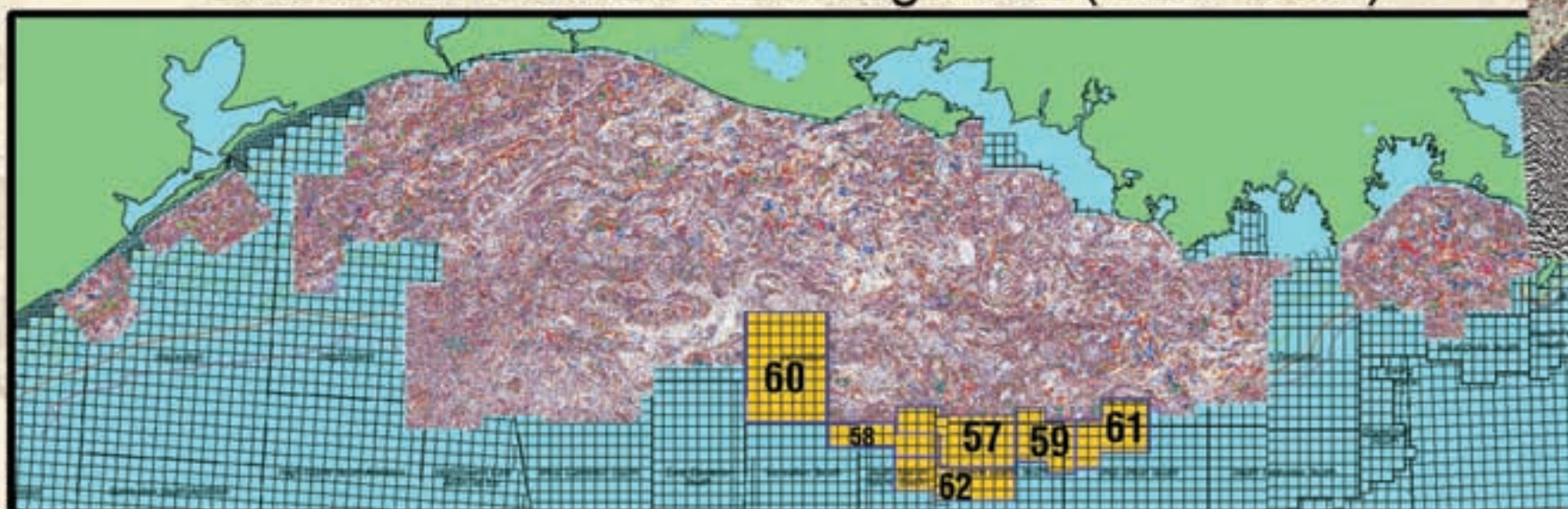


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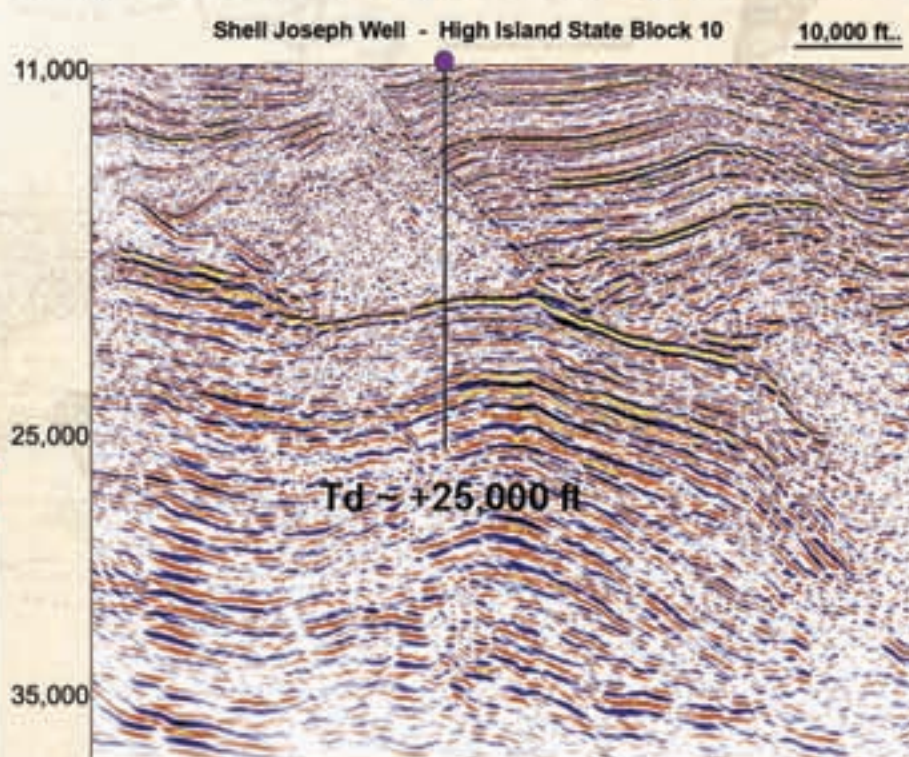
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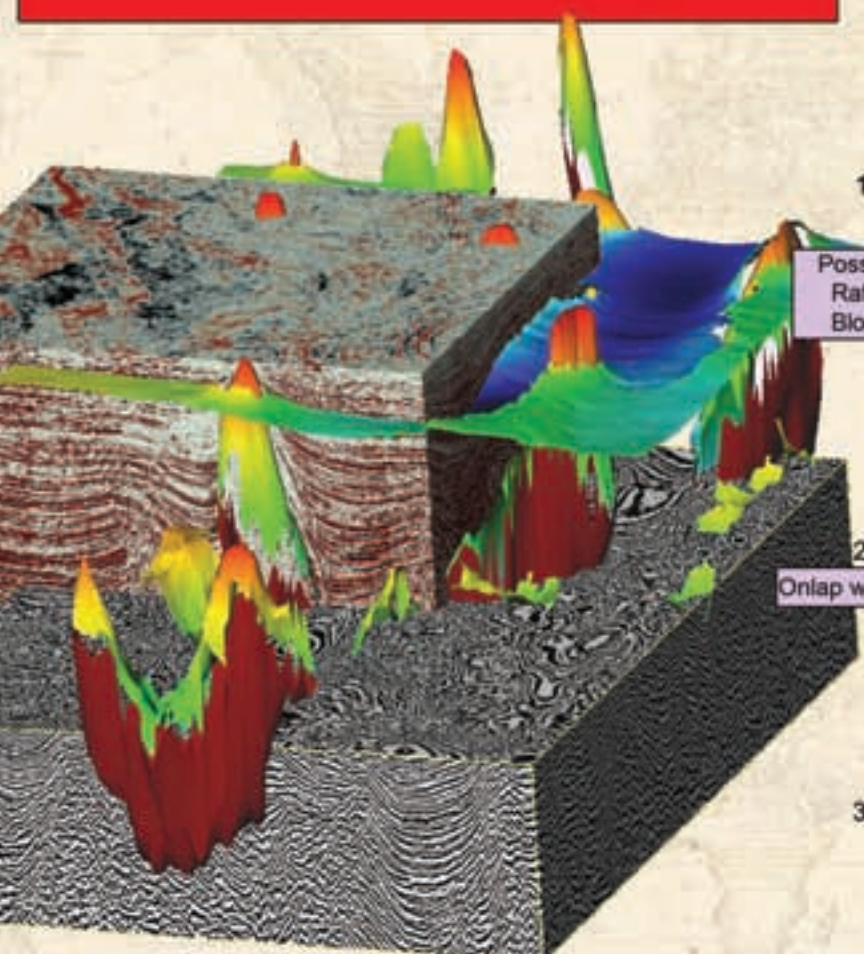
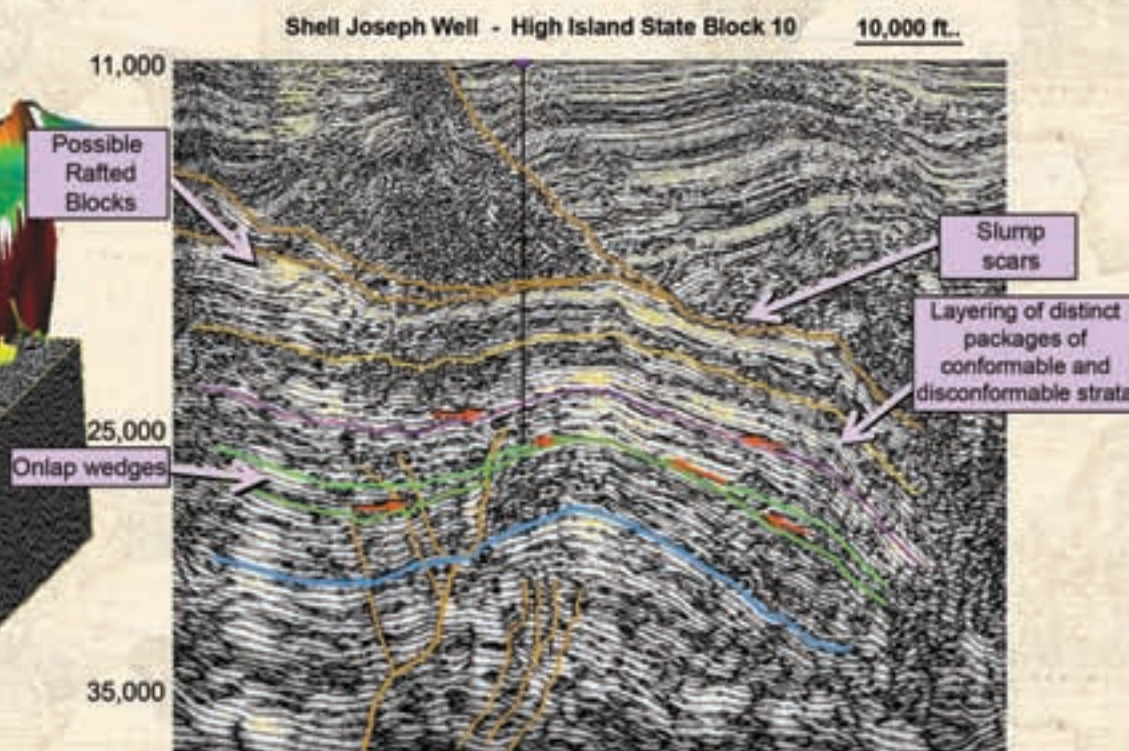
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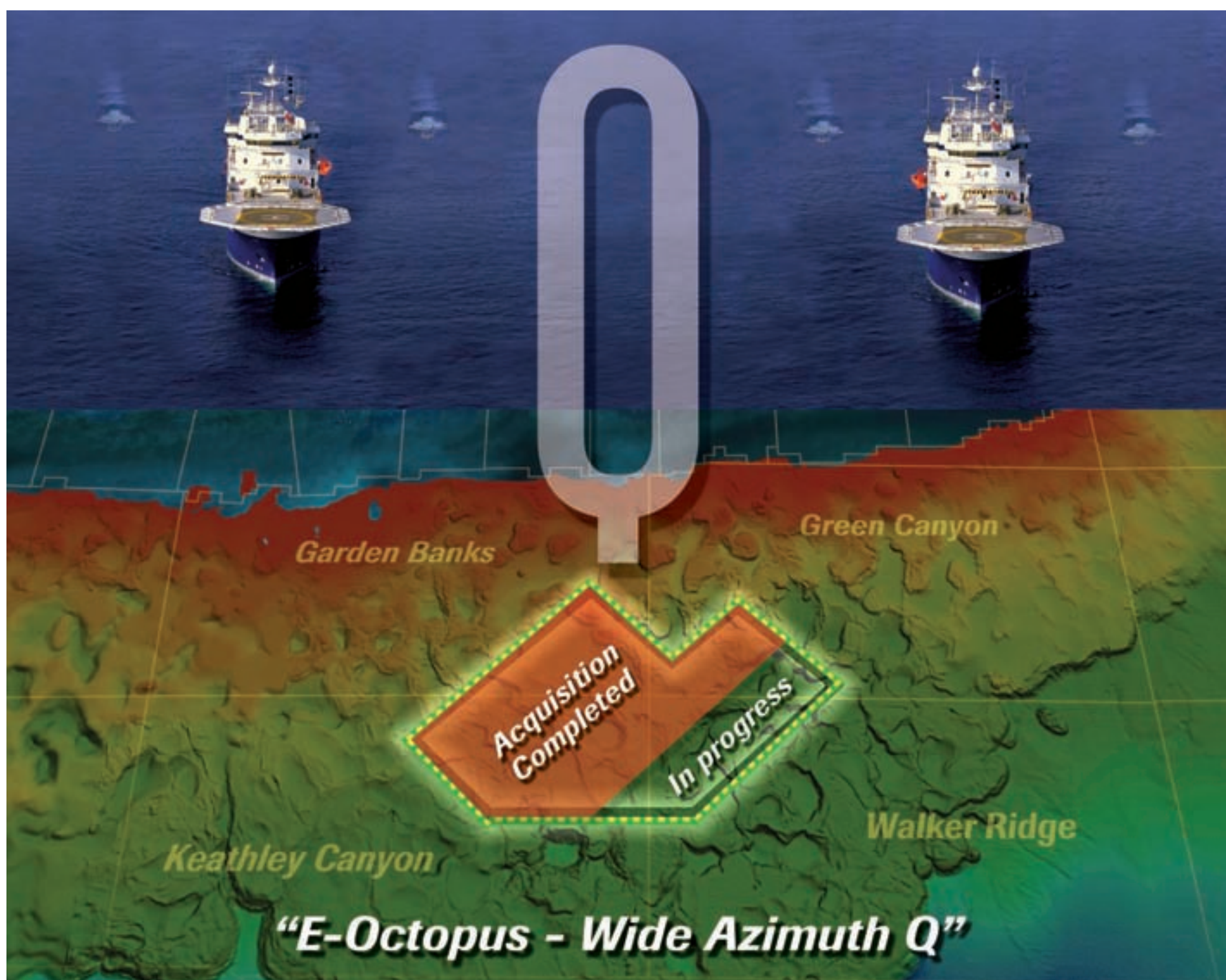
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