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AAPG EXPLORER

On the cover: Who said going to school had to be dull? These "students" were participating in an AAPG field seminar taught by Chuck Kluth and Ron Nelson on "Application of Structural Geology in Prospecting in Thrusted and Extended Terrains," held recently in Jackson Hole, Wyo.; the photo was taken in Grand Teton National Park by Debbi Boonstra, with the AAPG education department. AAPG offers a variety of exciting educational opportunities. For more information, see page 42, or go to the AAPG Web site at www.aapg.org.

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PRESIDENT'S COLUMN

It's the Time Of the Season …

By LEE T. BILLINGSLEY

As the calendar turns to September I am struck by the similarity between the agricultural significance of this time of year and the careers for all "50-somethings," which would include the largest single age group of AAPG members.

September for those in the Northern Hemisphere (or in Rio Linda) is harvest time; you finally get to reap what you have sown and nurtured during the spring and summer. So for 50-somethings, at this stage of our careers we have geologists younger than us – and if we still have bosses, they actually depend on us. We initiate projects and manage people. Our decisions influence others in our companies.

In agriculture, harvest is no time to rest but rather a time to maximize opportunities. Similarly, now is the time in both my profession as a petroleum geologist and as president of AAPG that all these years of preparation can really bear fruit.

All you 50-somethings thinking about early retirement, come join us in active service to your profession.

* * *

Your Executive Committee has some ambitious goals for this year, and fall is the time for the busy meeting schedule.

First, we will attend the Gulf Coast Section meeting in Lafayette, La., Sept. 25-27, followed by the Eastern Section meeting in Buffalo, N.Y. Oct. 8-11.

Our last meeting of the calendar year will be the AAPG International Conference and Exhibition in Perth, Australia, Nov. 5-8.

* * *

In the past several months much media coverage has been dedicated to human influence on global climate. I am not an expert in climate change, although I have read enough on the topic to consider myself "informed." The AAPG Members' Only section of the association's Web site offers numerous opinions on global climate change within the debate on a proposed climate change card. Global media coverage and political discourse are focused on a link between CO_2 emissions from fossil fuels and global climate change. The resulting debate eventually settles into two main questions:


Billingsley

✓ *How much influence do CO_2 emissions have on global climate?*

If your answer is "little or none," no need to answer question number two. But if you fall somewhere between "Inconvenient Truth" and "I am not sure," then the next question is:

✓ *How much are we willing to pay for reduced CO_2 emissions?*

Answering this with a global consensus will be difficult, but no one wants to leave a perceived mess for future generations. Most global climate models predict conditions to about the year 2100, but even models using reduced CO_2 emissions are not sure what the effect on climate will be by then.

Fortunately, some CO_2 reduction strategies, such as conservation, higher fuel mileage standards for U.S. vehicles, fuel switching and some CO_2 capture techniques do not require large costs. Others, such as increased taxes and subsidies for alternative energy sources, would have direct economic cost.

As recent global demand for fossil fuels has outstripped global deliverability, prices have risen. Even though fossil fuels are still the most abundant and cost efficient forms of energy (I am omitting nuclear), alternative fuels (whatever they might be) are becoming more cost competitive.

According to Edwards' 2006 graph

See **President**, next page

Abstracts Deadline Looming For Long Beach Convention

An important deadline is looming for those who want to submit an abstract for the next AAPG Annual Convention.

Abstracts can be submitted through Sept. 27 for the AAPG Annual Convention, to be held April 1-4 in Long Beach, Calif.

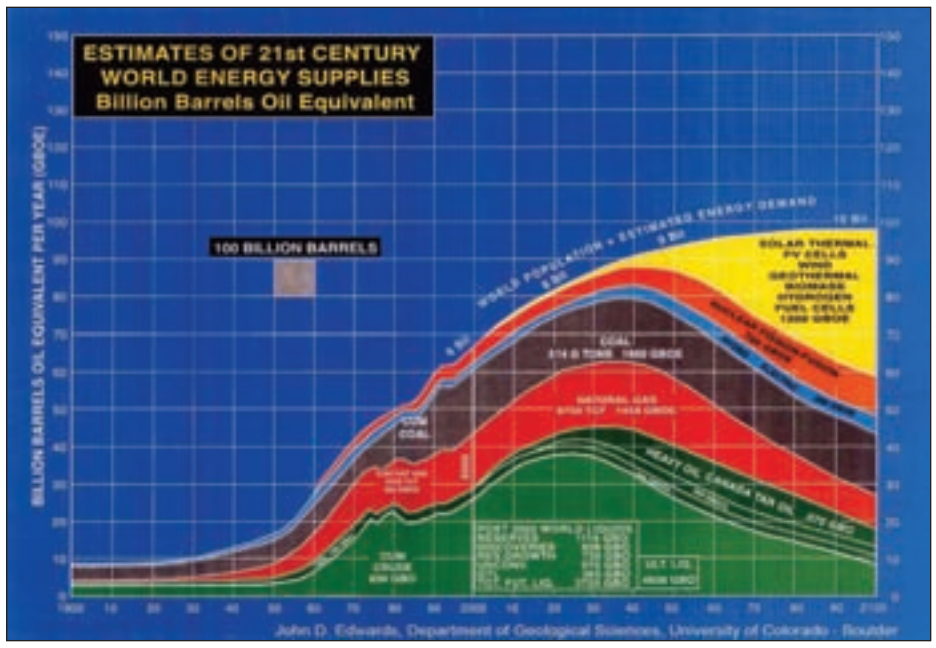
The theme is "Understanding Earth Systems – Pursuing the Checkered Flag."

The Long Beach technical program's themes are:

✓ Deepwater Reservoirs.
✓ Stratigraphy and Sedimentology.
✓ Structural Innovations and Applications.
✓ Global Exploration Portfolio.
✓ Maximizing Our Potential: Reservoir Characterization and Modeling.
✓ Geoscience Tools.
✓ Unconventional Reservoirs and Resources.
✓ Hydrocarbon Systems and Basin Analysis.
✓ The New Oil Business.
✓ Astrogeology and the "Bigger" Picture.
✓ Geoscience and Public Policy.
✓ Student Sessions.

AAPG ANNUAL CONVENTION & EXHIBITION

More information on the meeting and technical program – including instructions for submitting abstracts – can be found on the AAPG Web site, at www.aapg.org. ❑



President

from previous page

(left), fossil fuels should plateau in about 2050 at about 70 percent of global energy supplies, and decline by 2100 to about 30 percent. Alternative energy must comprise about 60 percent by 2100.

The point is that fossil fuel use will decline due to purely economic considerations – or the public may choose to shorten the fossil fuel energy cycle by raising taxes.

I did not really intend to get in the middle of the climate change debate, but my fear is that students will wrongly view geology as a profession that contributes to global warming. Thus, they will avoid studying geology in general and petroleum geology in particular.

To students and faculty: **Geologists are vital catalysts to providing global energy supplies, and if projections on the enclosed chart are correct they will be needed well into the next century.**

And beyond fuel use, in the United States about one-third of oil and natural gas is used for non-fuel purposes. Humans have found hydrocarbons to be extremely useful molecules, and they are all-natural, certified organic and biodegradable.

AAPG has a mission to inform students and their faculty about the need for geologists, especially petroleum geologists. Our variety of student-focused committees and programs attempt to accomplish this goal. The committees include:

- ✓ Academic Liaison.
- ✓ Grants-in-Aid.
- ✓ Student Chapters.
- ✓ Student Expo.
- ✓ Visiting Geologist Program.

To our academic members, I sincerely appreciate your dedication and service. We need more of you involved in AAPG. Global citizens are depending on you to train and influence our next generation of energy suppliers, and we need you to be active in the best worldwide organization for petroleum geologists. Your constituency has done well in Association elections, because this year's Executive Committee has two faculty members: Ernest Mancini (editor), of the University of Alabama, and Randi Martinson (treasurer), of the University of Wyoming.

Please recruit more faculty members.

* * *

Even though I wrote about harvesting in the fall, it is not too late for all members to sow some seeds by asking geologists to become AAPG members. Your esteemed Executive Committee has committed to recruiting 10 new members each and a total of 100.

By this writing our new online application process should be ready. I got a head start by recruiting my niece at San Diego State. Welcome, Angela.

'Til next month …

NOGS Donation To Aid Students

The New Orleans Geological Society has donated $8,000 for Katrina student relief at the Department of Earth and Environmental Sciences, University of New Orleans.

The money will be used to assist students, who need to replace items such as books and field gear while also coping with the higher costs of housing and transportation.

"The NOGS Board views our donation as an obligation, a mandate, to give back to UNO for all that UNO has given to NOGS, New Orleans and the petroleum industry. We are pleased that we are able to help local students to this extent, and hope that our example will spur additional donations on a local, regional and national basis," said Michael N. Fein, NOGS president.

"We share a common interest in the restoration, as soon as possible, of the Department of Earth and Environmental Sciences," Fein added. "It is gratifying that UNO will keep petroleum geology as a significant focus in its curriculum." ❑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Make a difference

Photos courtesy of WesternGeco (left), Quantum Geophysical

Whether offshore – like the Western Neptune, above left, acquiring a wide-azimuth seismic survey in the Gulf of Mexico – or deep in undeveloped territory, the seismic industry is having no trouble finding work to keep them busy.

Across-the-Board Action

For Seismic, It's a World of Activity

By LOUISE S. DURHAM
EXPLORER Correspondent

Members of the geophysical community have ample reason to pop the champagne corks these days – but they're too busy to indulge.

When you're hot, you're hot – sizzling, in fact.

"It's a very exciting time in the industry," said Jonathan Miller, CEO at CGG Americas, "as exciting as I've witnessed in the last 26 years in the business."

When it comes to action in the marine environment, the old reliable Gulf of Mexico continues to dominate.

"The Gulf of Mexico is still king," Miller said. "The market will be very robust as long as the volume of lease sale turnover is robust, which is the case for the next several years.

"The political and economic environment surrounding this market is still very favorable," Miller noted.

"It's not only the super majors but the independents and even smaller players venturing further offshore to deeper water."

Opposites Attract (Activity)

Indeed, most any discussion about the industry's marine activity usually kicks off with the GOM.

"In the Gulf of Mexico, you hear repeatedly about all the lease expirations occurring in the deep water," said John Adamick, vice president of business development worldwide at TGS-Nopec. "There's a lot of seismic activity going on in the deep water.

"It's activity in the form of sales of data we already have," Adamick said, "and new projects going on to acquire new data. This is anticipated to be an active area for at least the next two years because of all the leases expiring out there."

The action in the GOM deep gas shelf trend continues to be robust as well, Adamick noted. Operators are looking at everything from the ultra-deep – think ExxonMobil Blackbeard still drilling away after more than a year in the quest to max out at 33,000 feet, give or take – to the relatively shallow depths of 15,000 feet.

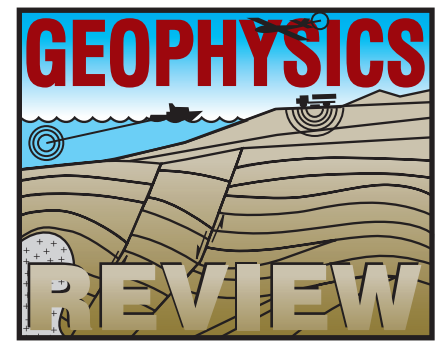
At the opposite end of the continent, the hot spot for marine seismic today is Alaska, according to Chip Gill, president of the Houston-based International Association of Geophysical Contractors (IAGC). He qualified that it's hot in terms of industry activity occurring in a place that hasn't seen any action in quite some time.

Gill noted at least four seismic surveys kicked off this summer in the Chuckchi Sea: Shell Oil (two proprietary shoots), ConocoPhillips (one proprietary) and a 2-D multi-client survey conducted by GX Technology Corp. This activity precedes the Chuckchi lease sale, which is scheduled for 2007 by the Minerals Management Service (MMS).

Additionally, Shell plans to acquire data on lease areas from the 2005 Beaufort Sea lease sale conducted by the MMS.

Changing Concepts

In the international arena, Brazil remains an active market, along with Africa, according to Miller. He noted there's a very robust market for onshore seismic data acquisition in the Middle East, which is not surprising given that's where the largest reservoirs are located.



"This is the second year a lot of the bigger oil companies have ramped up for frontier exploration," Adamick said. "Three years ago, they weren't exploring in these frontier areas.

"We're seeing very good activity in Greenland, and Madagascar is another hot area right now," he noted. "Neither of these areas have commercial hydrocarbons today, but people believe there can be good discoveries made there.

"We've had good activity in the North Sea this year," Adamick added, "and Russia continues to be quite active.

Although Russia hasn't offered scheduled licensing rounds and often appears indecisive when it comes to encouraging foreign oil company investment, there's a high interest level on the part of these companies, Adamick noted.

Seismic activity on the domestic scene also is going gangbusters, according to Jim White, president of Quantum Geophysical.

The company has seven crews running full tilt in the United States and one in Canada, which will be supplemented with some seasonal crews as the fall season approaches.

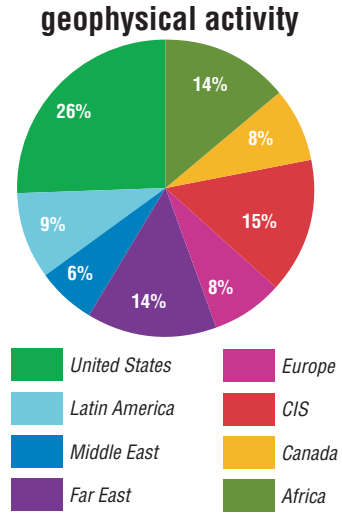
"The limiting factor now is permitting and drilling," said White, who noted the need to drill in areas where explosives must be used.

"What might take five months to permit may only take two months to acquire, but seismic drills are a serious issue at this time," he said. "The iron is there, but the people running the iron are not, so there's a limited capacity of drills available to the industry."

It's noteworthy there's a movement away from the usual turnkey arrangements and back to hourly or term contracts, which were standard a numbers of years ago.

"About 25 percent of all contracts now are hourly, or term, contracts," White said. "The oil companies are realizing the supply (of crews) is limited, so to ensure having a crew at their disposal they're tying it up with long-term hourly contracts." ❑

World share of geophysical activity



Regional seismic crew counts

	Seismic 1 July 2006			Working Month ago	Working Year ago
	Work	Avail	Total		
Africa	36	5	41	41	28
Canada	20	18	38	16	11
CIS	38	8	46	38	19
Europe	20	8	28	11	12
Far East*	36	17	53	35	47
Middle East	16	12	28	15	17
Latin America	24	12	36	23	25
United States	65	6	71	58	54
Totals	255	86	341	237	213

** Far East now includes Australia and China. China has stopped sending updates on crews in this region.*

Data courtesy of World Geophysical News – IHS

Processing, Permitting, People Pose Challenges

Bustle Creates Stress for Solutions

By LOUISE S. DURHAM
EXPLORER Correspondent

The demands of the E&P marketplace are growing – and with the upstream spread thin, some needs and challenges are being exposed.

Much of the excitement in the geophysical industry today stems from the need for, and development of, new technologies and approaches to meet new challenges. Indeed, ordinary 3-D seismic has become just so, well, *ordinary* in many cases.

The new demands facing the industry can be grouped into three main areas, according to Jonathan Miller, CEO at CGG Americas:

✓ Exploration is occurring in more challenging environments with complex geology.

Whether it's subsalt with the need for better illumination, deep reservoirs, tight gas, etc., past solutions are running out of steam to some extent and new ones are coming on board.

✓ Field appraisal and development present a new growth area for seismic application.

This looms as a potentially huge market, which could increase the overall size of the seismic industry, Miller noted.

✓ In the case of production, E&P companies are under intense pressure to improve recovery, and seismic is poised to assist in meeting these challenges. For example, in the realm of improved repeatability for time-lapse seismic to better monitor and manage reservoirs, some folks anticipate nodal seismic technology is the way of the future, particularly in deep water (see related story, page 14).

"The days when single solutions like 3-D, towed streamer or others (sufficed), I think are past. You have to bring solutions that are much more adapted to a particular region ... "

The broad challenges in these three areas will require a large palette of solutions, according to Miller.

"The days when single solutions like 3-D, towed streamer or others (sufficed), I think are past," he said. "You have to bring solutions that are much more adapted to a particular reservoir rather than a standard package of solutions.

"We're entering an era where you have to work much more closely with the client to develop fit-for-purpose solutions," Miller noted.

Finding the Benefits

While devising new solutions to wrest more hydrocarbons from the reservoirs at increasingly higher rates and for less cost looms as a major issue, the challenges to the industry don't stop there.

One of the major bugaboos facing the companies involves security for the crews. Among other issues, there's the problem of who manages the security and determines how secure operations are for the employees.

"We would not be in a place unless asked to be by a client," said Chip Gill, president of the International Association of Geophysical Contractors, "and a security threat represents an exploration risk we can't manage or predict necessarily.

"We're the ones on the ground with our employees at risk," Gill noted, "and we may decide it's unsafe and shut down and get out. But what if the oil company says 'we don't agree it's not safe, and you don't have the authority to do that, and we won't pay the demobilization fee or for work you did?'

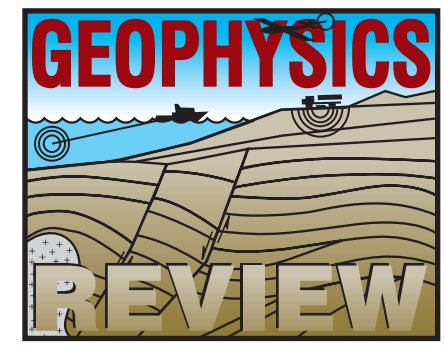
"That's a big problem," Gill commented.

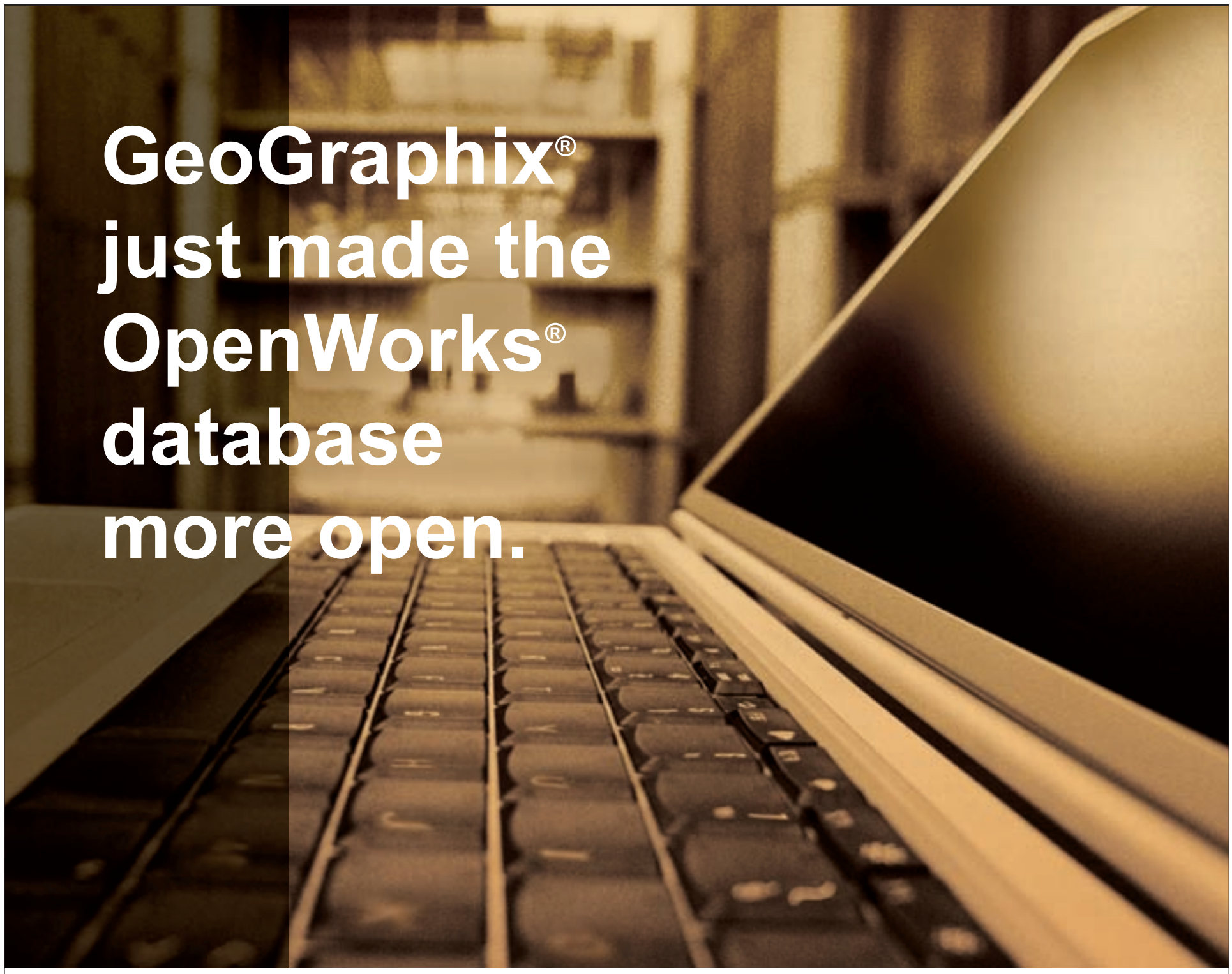
With activity heating up on western U.S. lands as the E&P companies scramble to stake out claims for coalbed methane, shale gas and such, the IAGC is in the midst of much wrangling with the Bureau of Land Management (BLM) regarding the seismic permitting process.

"We've hired counsel to address some of the issues we have about trying to conduct geophysical operations on federal land in this region," Gill said. "But the clients don't want us to push too hard with BLM because they don't want to alienate the same guys they're getting drilling permits from.

"Geophysical operations are temporary and transient and should be viewed as the environmentally-preferred way to conduct oil and gas operations,"

See **Industry**, page 12





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Data Gatherers Meet the Beetles

Acquiring all the necessary permits from various governmental agencies to conduct a seismic data acquisition program can be a particularly time consuming, expensive and tedious process.

Once the permits are in hand, considerably more time and money is expended in implementing the appropriate procedures in the field – particularly when it comes to protecting any endangered species that reside (or are thought to reside) in the area to be surveyed.

Perhaps one of the most unusual examples of this sort of activity comes from Oklahoma and involves the American Burying Beetle (ABB), which is on the endangered species list.

The ABB is an annual species, so population levels depend solely on the reproductive success of the previous year.

To protect the ABB during a seismic survey, contractors must implement a kind of beetle relocation program.

"You have to get a biologist to look at the survey area, and if it's a habitat important to these beetles to procreate, then you can't disturb the top six inches of soil," said John Schneider, manager of prospect planning and permitting for USA operations at Global Geophysical. "If you want to bulldoze, then you have to bait them away."

The bait? Dead chicken carcasses.

Here's the way it works:

Traps are set out in the evening and loaded with the bait to attract the nocturnal beetles. According to the U.S. Fish & Wildlife Service Oklahoma Ecological Services Field Office, unskinned chicken is the bait-of-choice for surveyors because it is inexpensive and remains moist longer than other baits, because most of its fat is in the skin. The birds are, however, plucked.

But these aren't just any chicken carcasses.

The bait must be rotten and emit a truly pungent odor to attract the ABBs – fresh meat is a total turnoff.

Traps are checked in the morning, and the captured ABBs should be released along the transect where they were captured or within roughly 500 feet from the transect, according to the Service. They need to be released a minimum of about 100 feet from vehicular or foot traffic and outside the pathway of vehicular and foot traffic.

Any ABBs that appear to be dead must be collected and monitored for at least 20 minutes. For the ABBs who don't make it, an accidental mortality form must be completed and submitted to the Service.

– LOUISE S. DURHAM

Industry

from page 10

Gill noted. "We have near-zero surface impact and eliminate unnecessary wells, yet federal managers don't treat geophysical operations as a preferred environmental tool.

"How to permit geophysical operations is being delegated to specialists, especially conservation specialists (e.g., archaeological, wildlife)," Gill said, "and their interest is preserving rather than facilitating."

Despite the oil companies' current attraction to this region, particularly the Rockies, some seismic contractors prefer to avoid the hassle.

"We have a backlog that allows us to work in other areas," said Jim White, president of Quantum Geophysical, "so we don't do as much work in that area as our competitors do.

"It's a tough area to work because of government restrictions with federal lands and all the environmental groups that throw these injunctions on you," White noted. "If you plan to go to a particular job and at the last minute it's not there and you have nowhere to go, you erode your margins very quickly. We don't want to get burned in those situations."

Gill emphasized yet another significant challenge facing the industry: talent – or rather the pilfering of talent as the supply of skilled personnel shrinks even further.

"The oil companies are hiring our talent away at an increasing pace," Gill noted. "They're getting more and more aggressive."

"We see it often," Miller said. "We've lost good people to the client community, yet we carry on work for those same clients. It's difficult to reconcile, but it's a reality; there's great pressure on top talent, and we see no end to the trend in the near future."

Today's pricey, near-frenetic seismic scene clearly isn't perfect, but it's nudging up against nirvana at a clip not even imagined only a few years ago, when feelings of gloom and doom permeated a then-near-decimated industry.

"Things are pretty darn good," said TGS-Nopec's John Adamick. "There's a lot of exploration going on, and that's a big driver for seismic. All seismic companies are benefiting whether they shoot proprietary seismic or multi-client.

"When exploration ramps up, we all benefit." ❑

Long-term Surveillance Possibilities

Node Survey Passes Deep Test

By LOUISE S. DURHAM
EXPLORER Correspondent

There's nothing quite like a successful field project to demonstrate the commercial viability of a particular technology.

So chalk one up for the recently completed wide-azimuth OBS (ocean bottom sensor) node survey over the BP-operated Atlantis field in the challenging deepwater Gulf of Mexico.

Atlantis was a first for deepwater nodal seismic surveys, and the successful outcome could spur demand for a host of such projects – and other type applications.

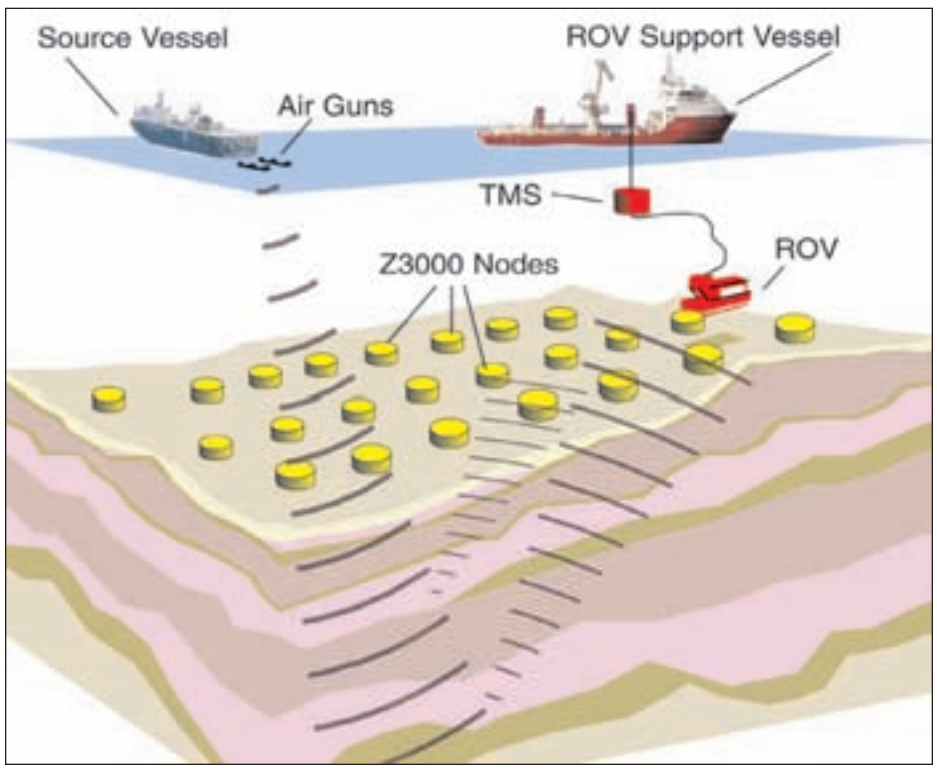
The "at-scale" Atlantis field trial deployed – and retrieved – nodes coupled to the seabed at 1,628 locations spread out over 240 square kilometers, at water depths between 1,400 and 2,200 meters.

This was an unprecedented nodal implementation both in scope and water depth.

"There's no doubt 3,000 meters is a frontier," said Rodney Calvert, chief scientist in geophysics at Shell, "and this system is the only proven technique at the moment to that depth."

The purpose of the Atlantis project was to acquire a new class of seismic data using Fairfield Industries' 3,000-meter-rated node system – wide azimuth data – to overcome imaging problems related to illumination of the subsalt structures.

BP is preparing to reveal the first images acquired from in-house processing.



Graphic and photos courtesy of Fairfield Industries

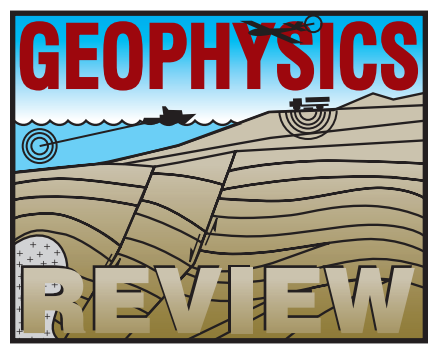
Nodal layout, retrieval, data extraction and recharging are handled by the ROV vessel.

An Added Dimension

Deepwater node technology is about much more than subsalt.

Indeed, deepwater-capable nodes are anticipated to be in demand for a range of applications, including 4-D, or time lapse, surveys to manage and monitor reservoir performance.

The individual nodes, which are self-contained sensors with a battery and a clock, are positioned on the seabed and retrieved by the familiar Remotely Operated Vehicles (ROVs). Ambient noise is low compared to streamer acquisition, and the seafloor coupling makes for enhanced signal levels.



"Every node survey as a by-product is a 4-D survey because of positional accuracy and repeatability," said Steve Mitchell, vice president and division manager at Fairfield Industries. "Normal positional accuracy is always going to be better than five meters automatically; that alone makes it 4-D capable."

High quality 4-D surveys require repeatable sources and receivers, according to Calvert, who noted the key to repeatable 4-D is to have repeatable geometry. The source issue is relatively easy to resolve.

"We can repeat sources pretty effectively with such things as GPS," said Jerry Beaudoin, project manager of OBS

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technology at BP. "The issue has been – especially with streamers – repeatability, and the industry has struggled with this for quite some time.

"At Atlantis, we looked at the difference between the ROV's estimate of position when the nodes were put down," Beaudoin said, "and the ROV's estimate of position when we picked them up.

"For three-fourths of the nodes, we had differences of five meters or less," he said. "That's pretty good in water depths almost to 2,200 meters. That's a real world test of how effective this subsea positioning system really is.

"We looked at each other, and said 'we're there; we've demonstrated the receiver repeatability that's a necessary prerequisite for quality 4-D surveys,'" Beaudoin said. "It's not the only one, but an important one."

Repeat Business

It's becoming S-O-P to think about the need for time-lapse seismic early on as operators ponder what sort of life cycle is needed for seismic in a field. Discussion is ongoing about not only what will be needed within a year but what kind of seismic technology might be needed five years out.

Time lapse is always part of the discussion (at BP), according to Beaudoin.

"It's important to think about 4-D up front," Calvert commented. "Often, at the start of a 3-D survey campaign you may not be sure how many 4-D surveys you're going to need.

"Both nodes and OBC can sit on the seabed, and you have fixed geometry," Calvert said. "But if you're going to invest in permanently-placed OBC, which entails a huge up-front capital investment, you must reckon you'll have four or five repeats to make it pay for itself."

However, an operator may be able to determine what's needed with only one repeat survey.

"If you're not certain how many surveys you'll need," Calvert said, "nodes could be a way in because you don't invest in seabed equipment – you just rent it."

Seeing Into the Future

In looking ahead to managing and monitoring some of its larger fields that are in deep water, BP is mulling what role nodes might play, Beaudoin said.

He noted there's a world of difference in deploying cables in 70 meters of water at a field like Valhall (in Norway) and trying to do it in, say, 1,500 meters.

"The logistics of putting cable down – permanent or otherwise – in these water depths is intimidating," he said. "The cable must be strong enough to hold together as it's being dangled in a couple of miles of water."

It's widely recognized there's an array of infrastructure on the heavily drilled shallow water shelf in the Gulf of Mexico. It is noteworthy that the seabed also gets quite cluttered – often over the heart of the field – in the more sparsely-drilled deepwater. Even the surface can pose obstacles in the form of floating production, storage and offloading facilities (FPSOs), tankers, etc.

The combo of infrastructure and cables make lots of folks nervous.

Indeed, the laying of cables across expensive and sensitive seafloor facilities can cause heartburn even for the most seasoned facilities engineer. Conversely, installation of new flow lines and the like can tear up an OBC.

Aside from the iron factor, there's sometimes a need to circumvent critter-type infrastructure that may be present in the deep water, e.g., chemosynthetic colonies (see related story, page 18).

Nodes can be placed around and beside any and all of the above, enabling less risk and increased flexibility on a complex seabed. An added plus is the use of the familiar ROVs, which provide a comfort factor for the facilities people who view this equipment as a normal part of operations.

In the event the cost for permanently-placed cables drops dramatically and deployment becomes easier – think fiber-optic cables – this conceivably could become the "next" be-all, end-all approach to deepwater 4-D seismic acquisition. For now, however, Beaudoin envisions nodes to be the future for deepwater time-lapse seismic.

Think about the possibilities: An operator could have several deepwater fields that will require surveillance for maybe 10 years. A nodal system could be purchased or leased for the long-term and moved from field to field to field as needed. This would be a much better use of the capital investment, which would not have to be justified on the back of one field.

The ROV sits on the sea bed, ready to retrieve a node prior to lifting to the back deck for charging and retrieval of data.

See **Nodal**, next page

Nodal

from previous page

Such a moveable reservoir surveillance system would allow inclusion of satellite areas where there are subsea tiebacks and the like.

"A modular system like this, which is ROV-deployed, could open up a new business model for reservoir surveillance of these fields in deep water," Beaudoin said.

Other Needs

The growing need for infill seismic data is another area ripe for node technology application.

"When a company develops a field, platform locations are strategically placed over the reservoir level," said Roger Entralgo, vice president of seabed business development at CGG. "When you come in with a streamer or OBC survey, the obstruction creates a void, or area with no data," he said, "which happens to be probably the primary area of interest for oil companies because it's over the reservoir level."

Think nodes.

"We see a natural marriage of streamers and nodes," said Mike Spradley, acquisitions marketing manager at Fairfield. "One of the markets we envision with nodes is working with streamer operations, so while they acquire streamer data they also would be acquiring data from nodes placed in the area that's inaccessible to streamers.

"They would acquire a seamless data set," Spradley added, "which would be merged in processing so the field becomes geophysically transparent."

The nodes are positioned in their cradles for easy loading and unloading from the ROV, seen here on deck.

Global Expansion

Demand for this particular node application is picking up worldwide, according to Entralgo. Many fields are at a stage where operators have to make critical production and drilling decisions, and they're missing data in these areas and wanting to acquire data to ensure they're making the right decisions.

In many parts of the world, such as Malaysia and West Africa, there are prolifically productive deepwater fields where gas clouds make it difficult to illuminate the geology via conventional seismic acquisition techniques, according to Mitchell.

Gas is spongy to P waves, causing attenuation and scattering, according to Calvert, whereas shear waves don't see this. Multi-component, or 4-C, technology is a must.

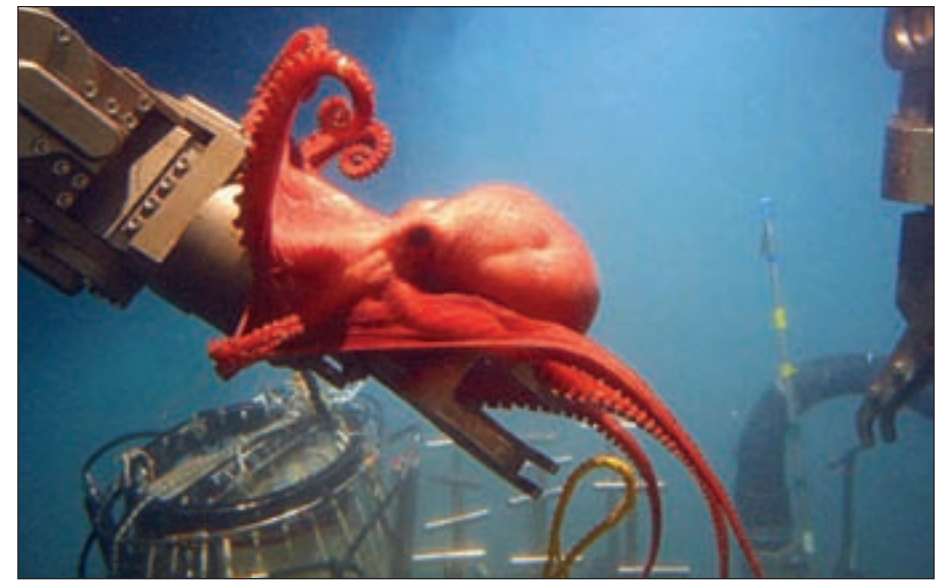
While OBC has a good track record of success in seeing around and beneath gas clouds, there's always room for something new.

"With nodes, we acquire multi-component as a matter of course," Beaudoin said, "so they could be considered for that application in deep water.

"Deep water is the headline," he noted. "The fact that it records multi-component data would be the next bullet under that. We record wide azimuth data as a natural by-product of the way we do this.

"These are really the characteristics of node acquisition," Beaudoin said. "But it starts with the deep water – that's where nodes have the advantage.

"Anything you do in deepwater is expensive." ❑



Photos courtesy of Gavin Eppard, WHOI (left); Bruce Strickrott

The Alvin submersible begins its descent to 1,200 meters (left); above right, this stunning octopod seemed quite interested in Alvin's port manipulator arm. Those inside the sub were surprised by the octopod's inquisitive behavior.

Scientists Get First Hand View

'Deep Seep' Communities Visited

By BARRY FRIEDMAN
EXPLORER Correspondent

To borrow a baseball term, recently the Minerals Management Service (MMS), along with the NOAA Ocean Exploration, went deep.

How deep? About seven times farther than the longest of Barry Bonds' blasts – 3,280 feet (1,000 meters) – to the floor of the Gulf of Mexico.

Specifically, the project, "Expedition to the Deep Slope," used manned submersibles in May-June to explore and survey for the first time the hard bottom habitats and seeps located on the lower continental slope of the Gulf.

The intent was to learn more about the chemosynthetic communities that are commonly associated with near surface or surface gas hydrates, which have been suggested as a clean-burning fuel for the future.

And while the Gulf was the region targeted, the team involved in studying a resource that could eventually have global significance was truly international: "Deep Slope" attracted scientists from as far away as France, Germany and Russia.

AAPG member Harry Roberts, co-chief scientist at Louisiana State University (where he teaches and advises graduate students in the Department of Oceanography and Coastal Sciences; see related story, page 36), said the project was unique not just because of *what* they were looking for, but *how* they went looking for it.

"Very little direct observation and sampling using a manned submersible had been done" in past expeditions of this type, said Roberts, who was on the trip. "The objectives were to study the communities and surface geology and geochemistry of natural hydrocarbon seeps and vents."

MMS, part of the Department of the Interior, oversees the production of about 23 percent of the natural gas and 30 percent of the oil produced in the United States, and is generally responsible for the management of offshore energy and minerals on the 1.76 billion acres of the Outer Continental Shelf. It spent more than $3 million on this expedition trying to find

See **Deep Study**, page 20

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Factoids

Here are some facts about the Gulf of Mexico, courtesy of the Minerals Management Service:

❒ 50 percent of leased acreage in the Gulf of Mexico OCS is in deep water (greater than 1,000 feet).

❒ As of this past May there were 3,900 oil and gas platforms in the Gulf of Mexico, essentially making it the largest defacto artificial reef system in the world.

❒ The deepwater OCS accounts for over 60 percent of the total Gulf of Mexico OCS oil production and 24 percent of the total Gulf of Mexico OCS natural gas production.

❒ 3.9 seconds of OCS production fuel a car to travel around the earth at its equator (25,000 miles).

❒ America uses almost 20 million barrels of oil per day.

❒ The first exploratory well in over 10,000 feet of water has been drilled in the Gulf of Mexico (world water-depth record). ❑

Deep Study

from page 18

"essential" information on "the ecology and biodiversity of these deep-sea communities," said Penn State professor Chuck Fisher, another of the project scientists.

The Gulf's northern and northwestern continental slope are the most mature deepwater oil and gas provinces in today's oceans – and clearly, the Gulf is prolific. But naturally occurring fluid and gas expulsion processes not only produce unusual chemosynthetic communities, they also can cause geohazards. As such, federal law requires oil and gas companies to both avoid and protect the chemosynthetic communities.

It's not unlike the warnings given by your local utility company: Call before you dig.

"It is to everyone's benefit," says Roberts, who believes that good working relationships between the groups are essential, "to follow the rules currently on the books that protect the environment, but to also allow for aggressive exploration and production to move forward into even deeper water of the Gulf."

A Complex Environment

Adding to the urgency of understanding what's down below is the fact that seven of the top 20 oil fields in the United States (ranked by liquids proved reserves) are now located in federal deepwater areas.

According to MMS, deepwater fields in the Gulf of Mexico contribute 1 to 1.6 million barrels of oil a day produced in federal waters in the Gulf of Mexico.

Two teams – consisting of 25 scientists, including microbiologists, physiologists, ecologists and a middle school science teacher – used an *R/V Atlantis* and the *Alvin* submersible to dive on sites, as Roberts mentioned, never visited "in person" before. A professional crew based at Woods Hole Oceanographic Institution maintained and operated the *Alvin*.

Once there, the collection of scientists tried to answer the following:

✓ Where are chemosynthetic habitats located?

✓ What is the diversity of animals living in these exotic communities?

✓ How do these species interact with each other and with their environment?

✓ How are chemosynthetic communities in different parts of the world's ocean connected?

✓ How do physical and biological processes facilitate or hamper these connections?

Currently, there are 15 structures operating in water depths greater than 1,000 feet, and Roberts says most of the work in the last decade has concentrated on the upper slope, above that height.

"We really didn't know if chemosynthetic communities would be plentiful below this depth," he said. "They are!"

Specifically, he says, "The diversity of animals was greater than we expected. Many new deepwater life forms are now in the process of being described and entered into the scientific literature."

Some of the areas explored are those that will soon be drilled for oil and gas by energy companies, Roberts said.

Efficient Effort

Roberts said this trip was not only a success, but efficient.

"Little time was wasted traveling over featureless mud bottom," he said, as all sites selected had seepage and chemosynthetic communities.

Both cross-slope and along-slope variability in chemosynthetic communities, as well as geologic characteristics, were tested, and the results emphasized the dynamic geologic framework of the northern Gulf's continental slope, where the interplay of salt that deforms when loaded with sediment has created many "leak points for oil and gas to reach the modern seafloor."

Roberts, whose work specializes in developing a detailed understanding of both the geologic and biologic impacts of fluid and gas expulsion on the modern sea floor, said these sites support unusual biologic communities as well as exotic surficial geology such as mud volcanoes, rocky mounds and hardgrounds, and brine streams and lakes.

Data will now be studied, but already the enthusiasm is evident for the project's next step.

"Many of the organisms were new species," he said. "We will go back next year." ❑

Educators Optimistic

Students Wired For the Future

By DAVID BROWN
EXPLORER Correspondent

It's a new school year for universities, with a new kind of student.

Geoscience professors have seen the desktop-computer generation, the super-processor generation and the laptop generation.

Now they're welcoming the cell-phone/iPod/Xbox/Blackberry/digital-revolution generation.

As a first in human history, students in this generation feel completely comfortable using technology as an extension of themselves.

"A lot of that you can take for granted. Many kids entering university now practically have that in their pores," said Andrew Miall, professor of geology at the University of Toronto.

These future geoscience professionals seem highly capable and talented, according to their professors.

The word they use most often to describe today's college students:

Savvy.

Here are some general observations from earth science educators – all of whom are AAPG members:

✓ Students come into university with excellent technology knowledge and good basic skills.

✓ The oil and gas industry might be sending the wrong signals to these gifted students, in terms of career opportunities.

✓ University education is not a chalkboard world anymore. Professors have to adapt to digital forms of instruction.

✓ Earth Sciences education now includes much more than the classical geosciences.

✓ Students today tend to be skilled at making presentations, but less adept in language skills.

✓ Even now, few students get much exposure to geology as a science in K-12 or pre-college studies.

Digits Dominate

You can't talk about the current generation of college students without talking about digital technology.

"That's the biggest change to me – we give away our notes on PDFs. It's a much more digital world," said Paul Weimer, professor of geology and director of the Energy and Minerals Applied Research Center at the University of Colorado.

"I think they're more astute than some of us professors in terms of computing skills," noted Larry Lines, professor and department head in the Department of Geology and Geophysics at the University of Calgary.

That new way of interacting through technology has challenged professors to adopt digital teaching methods.

"Faculty members need to stay up with that (new technology) as much as they can. If you stick with the chalkboard, you might lose them," said Stephan Graham, professor of geology and associate dean of the School of Earth Sciences at Stanford University.

Wayne Ahr is a professor of geology at Texas A&M University with a joint appointment in petroleum engineering.

Ahr said this year he's requested budget money for a SmartScreen®, a digital device that can be linked to a computer projector and acts like a computer touch screen.

But Ahr also thinks students can lean too much on technology.

He sees students who are very capable at using available software but don't know how to describe rock properties.

"They have to learn to do mapping by hand instead of letting the computer do it, for instance," he said. "The computer doesn't have any imagination."

Universities, in general, do a good job of providing computer, software and digital resources.

"Things that were a struggle to get your arms around 10 years ago are now routine," Graham observed. "Students now download PDFs in many cases instead of going to the library."

Industry's Sway

Some professors worry that the petroleum industry does not provide enough support for earth science education or encouragement for students to pursue geoscience careers.

"I think the industry did itself damage when it laid off a lot of people and closed down its research facilities," Miall said.

"Generally, I think they've sent a message of strong discouragement for people to go into the industry," he added.

Weimer noted "companies have been dropping their support of university research programs while trying to recruit more students. This has been a problem for two decades."

Ahr wondered if educators "aren't doing a good job explaining how good education can help solve these problems we have today."

Academics also have to reach out to industry, he said.

"It's a two-way street," Ahr commented. "We have an industry advisory panel here ... That really helps with money, with recruiting, with feedback from the industry."

He's more worried about university support for practical geoscience work and petroleum geology education.

"This is the time universities should be saying, 'We need to get our best minds together to find out what we can do about the situation we're in,' with oil over $70 a barrel and so on," Ahr said.

That level of commitment seems to be lacking, and "I'm seeing some people leave universities and go back to industry because of it," he added.

Others worry that current industry involvement won't be enough to attract geoscience students in the numbers needed.

"Most of the good ones have several job offers," Lines observed. "The demand is exceeding the supply. That's a problem."

Next Stop …

But petroleum industry jobs still attract interest, especially now, and the University of Calgary may end up doubling the size of its geoscience teaching faculty, according to Lines.

Students who do choose earth science majors appear ready to make geoscience a career commitment.

"We still see a lot of people who are

continued on next page

continued from previous page

curiosity-driven, and we see those who are career-driven. I don't think you can doubt that a certain number of people are driven by career opportunities," Graham said.

What's changed is the belief in a fixed career path and in spending a career at just one company.

"Students 10 years ago realized that if they got into geology they might be changing careers. I think they're all pretty savvy about it," Weimer said.

"They know they'll have to put their own 401K in. They'll have to know how to move money around," he added.

Students today are more likely to view their expertise and career tenure as portable instead of tied to one place. They expect to change their employment addresses, Lines noted.

"You're basically just getting off at a different train stop and working for a different company," he said.

Geoscience education today covers much more territory than in the past, according to university professors.

"Probably the chief thing that varies for us over the past 20 years is the breadth of things covered under the rubric of earth sciences," Graham said.

"One of the things I hear often these days is the balance between 'classical' geosciences and nontraditional geosciences," he added.

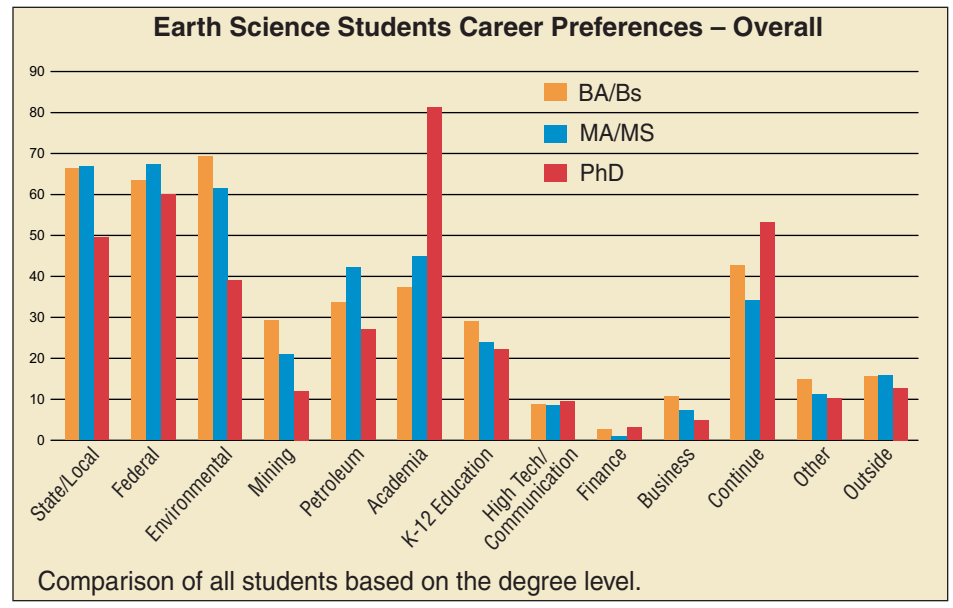
Part of the broader scope comes from a growing interest in environmental geoscience.

It's also inclusive of astrogeology, climatology, meteorology, biology and sociology.

"There's an increasing awareness of all that in a systems mode," Graham said.

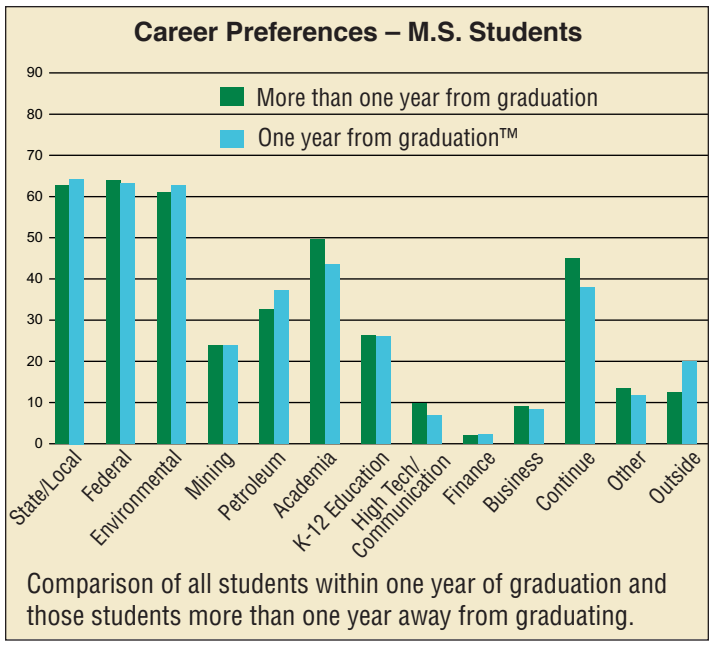
"That's not a pejorative, because a lot

See **Campus Life**, next page

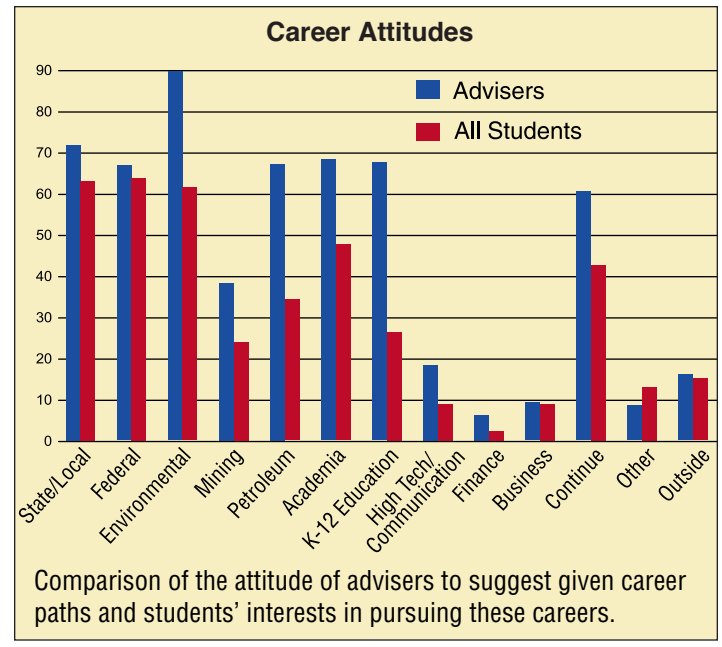


Comparison of all students based on the degree level.

Graphics data courtesy of AGI 2006 Student/Adviser Survey



Comparison of all students within one year of graduation and those students more than one year away from graduating.



Comparison of the attitude of advisers to suggest given career paths and students' interests in pursuing these careers.

Campus Life

from previous page

of exciting things are happening in those fields."

The Wonder Years (?)

In many universities, petroleum geoscience suffered from the industry layoffs of the 1980s, Miall said.

"Earth science has gone through a change since the mid- to late-1980s, when employment for geology students went into a big decline," he noted.

Lines said his own department has beefed up its environmental and groundwater expertise. And he doesn't think that's a bad idea.

"Water will be almost as big as oil in the coming years," he predicted.

Students entering universities today probably have little past exposure to the geosciences as science.

"In general, earth sciences are not widely taught in high schools across the country. And in a lot of cases, it's taught to the kind of kids who don't get into AP physics, for example," Graham noted.

"I've never understood why geology is not presented in high school the same way as the other sciences," Weimer said.

Whatever the reason, earth science continues to rank near the bottom of the heap in pre-college instruction.

"One of our problems is the public outreach of the geosciences in the high schools and (information about) geoscience careers available," Lines said.

Lessons to Learn

At the university level, educators can teach more than the basics.

What are they teaching?

"One thing I try to emphasize is that the courses you're taking are going to give you a competitive advantage for about a year and a half. Then everyone will catch up with you," Weimer said.

"I'd tell them what I was told: Your scientific half-life is about eight years. That's a pretty good rule of thumb," he noted.

Graham tries to teach students to use their digital expertise for learning breakthroughs.

"I'm mostly trying to get people into a frame of mind where they can use the training they have and the technology they have to think creatively, and to think independently," he said.

Students today face any number of distractions in the digital world. And the cost of getting a first-class education keeps rising.

"The demands on their time and the financial stress seem to be greater. Many of them are working at part-time jobs when they're at university," Lines said.

Beyond that, students have to cope with new social and workplace changes as their education continues.

"There's several revolutions rolled into one," Miall observed.

Tomorrow is Today

So, in the end, it's nice to know that educators are uniformly optimistic about this savvy group of students.

"It actually is kind of a rosy future in terms of what will come out of the education these students are getting," Graham said.

For the petroleum industry, these realities should deliver a message about the digital-revolution generation:

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'Unconventional' Gets Attention

Universities Critical to Research

By KEN MILAM
EXPLORER Correspondent

To some, the academic world of colleges and universities represents Ivory Towers, detached from reality. To the U.S. Department of Energy, they represent a crucial – and practical – research potential.

Over the past academic year 13 projects designed to improve efforts to develop large unconventional gas and oil resources have been under way at various schools, all thanks to the DOE and various industry investment.

The 13 DOE grants totaled $10.7 million to 13 such projects. Another $5.6 million was added by industry and academic partners.

The projects also emphasize ways to minimize the environmental impacts of drilling and producing.

Most of the projects focus on boosting recovery of unconventional natural gas, which can be found in coal seams, low-permeability or "tight" sandstones and ultra-deep natural gas resources found more than 15,000 feet underground.

Combined, those sources of unconventional natural gas are estimated to be approximately 700 trillion cubic feet, compared to an industry estimate of 190 Tcf in conventional natural gas reserves.

Presently, unconventional natural gas accounts for nearly one quarter of total domestic supply, a share that will rise with future technological advancements such as those being investigated by the funded projects.

Six of the projects are intended to improve the efficiency of drilling, appraising and production of low-permeability formations by collecting, analyzing and publicizing a variety of critical data. This will enable operators to generate less waste and extract more gas from fewer wells.

Combined, those sources of unconventional natural gas are estimated to be approximately 700 trillion cubic feet, compared to an industry estimate of 190 Tcf in conventional natural gas reserves.

The Energy Department also is researching the difficult environments encountered while drilling ultra-deep gas wells – another untapped resource for additional natural gas. Three projects will focus on "smart" drilling systems that will withstand the extreme temperatures, pressures and corrosive conditions of deep reservoirs. Two other projects will perfect drilling techniques to lessen environmental impact and lower costs.

DOE spokesperson Megan Bennett said the department is attempting to develop a "road map" for research and development projects. DOE is monitoring the projects and will determine if further research or funding is warranted.

A full list of projects is available from DOE, at www.doe.gov. Some of the academic projects include:

✓ University of Kansas Center for Research Inc. (Lawrence, Kan.) – Researchers will evaluate and publish data concerning reservoir and rock formation properties, which will assist operators in efficient drilling of tight gas sandstones (TGS).

The study will analyze five Rocky Mountain basins that represent the biggest part of the total Rocky Mountain TGS resource, which in turn is 70 percent of the nation's TGS resource base. (DOE share: $411,030; project duration: 24 months).

✓ New Mexico Institute of Mining and Technology (Socorro, N.M.) – Researchers will collect, integrate and analyze a variety of well and reservoir-rock physics data related to two tight gas reservoirs, the Mesa Verde and Dakota formations in the San Juan Basin. (DOE share: $516,000; 36 months).

✓ West Virginia University Research Corp. (Morgantown, W.Va.) – Researchers will simplify, accelerate and digitize the data collection process for independent producers interested in developing tight gas reservoirs in the Appalachian Basin. Data will cover five significant areas in the basin (DOE share: $566,729; 36 months).

✓ University of Texas (Austin, Texas) – Researchers will enhance 3-D hydraulic fracture models to help operators design and optimize energized fracture treatments in a systematic way. (DOE share: $985,796; 36 months).

✓ Oklahoma State University (Stillwater, Okla.) – Researchers will design and build a downhole microcomputer system with peripherals that can operate at 275 degrees Celsius, allowing operators to take critical downhole measurements and better steer the drill bit. (DOE share: $578,391; 18 months).

✓ Texas A&M University (College Station, Texas) – Researchers are working on three projects involving natural gas recovery. They involve developing new methods for creating conductive hydraulic fractures in unconventional tight gas reservoirs; developing efficient tools for improved oil reservoir characterization and modeling; and incorporating current and emerging technologies into a clean, environmentally friendly drilling system. Officials say all are progressing well. ❑

For more information on this subject, visit the AAPG Web site.

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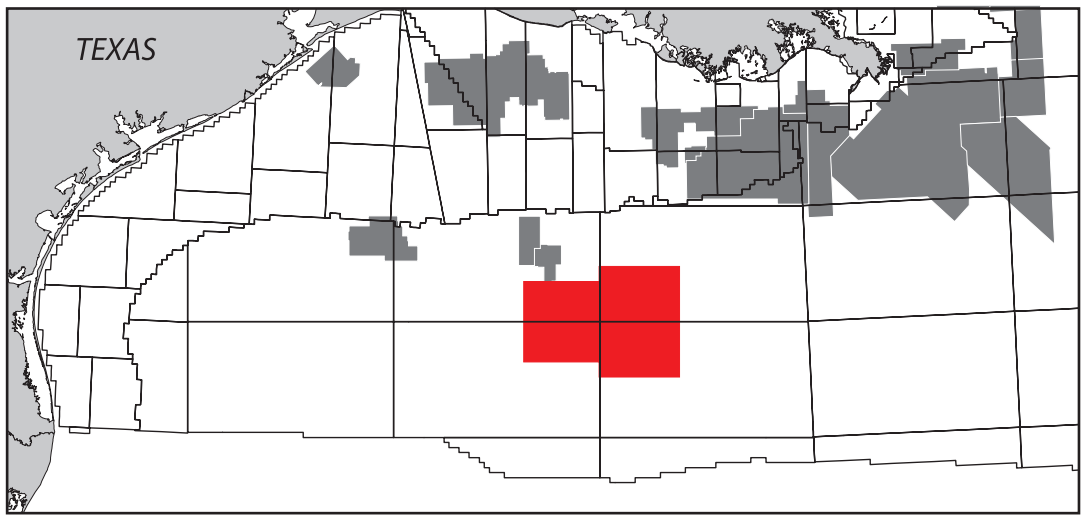

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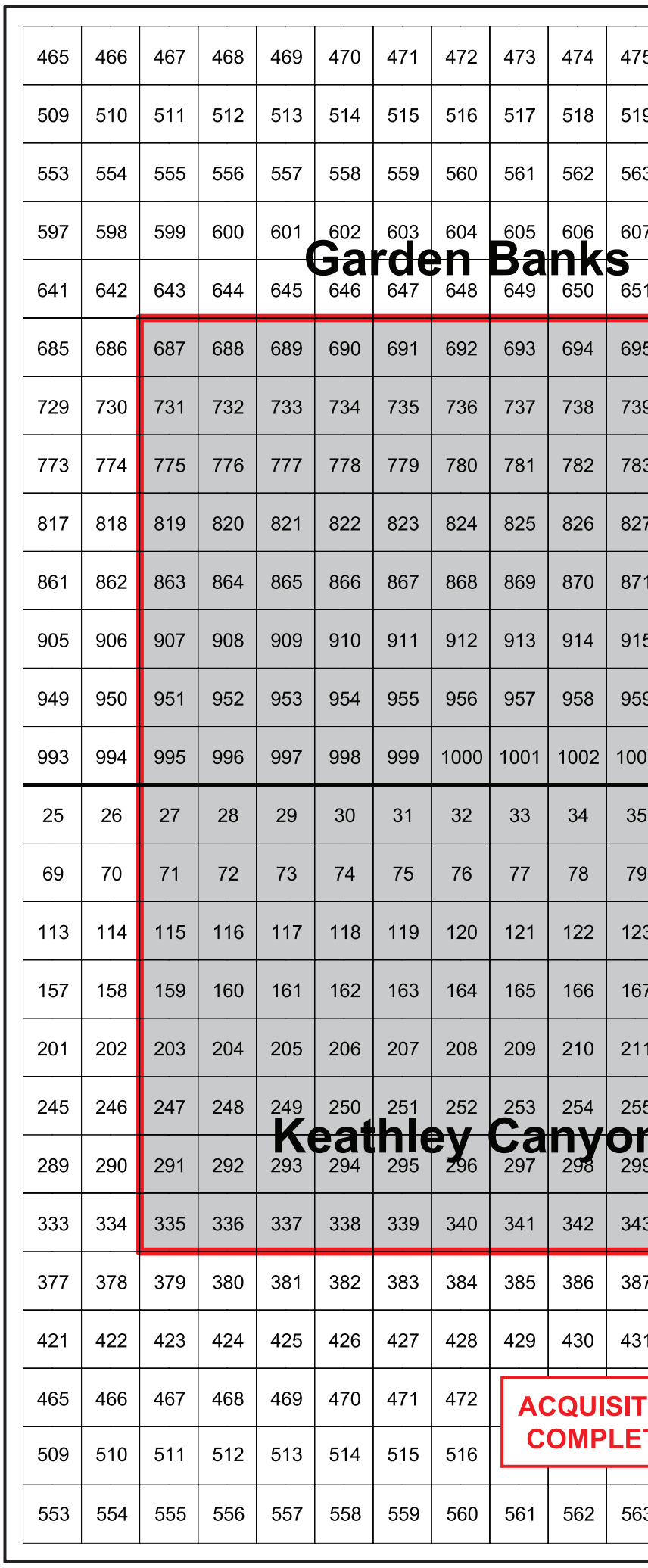

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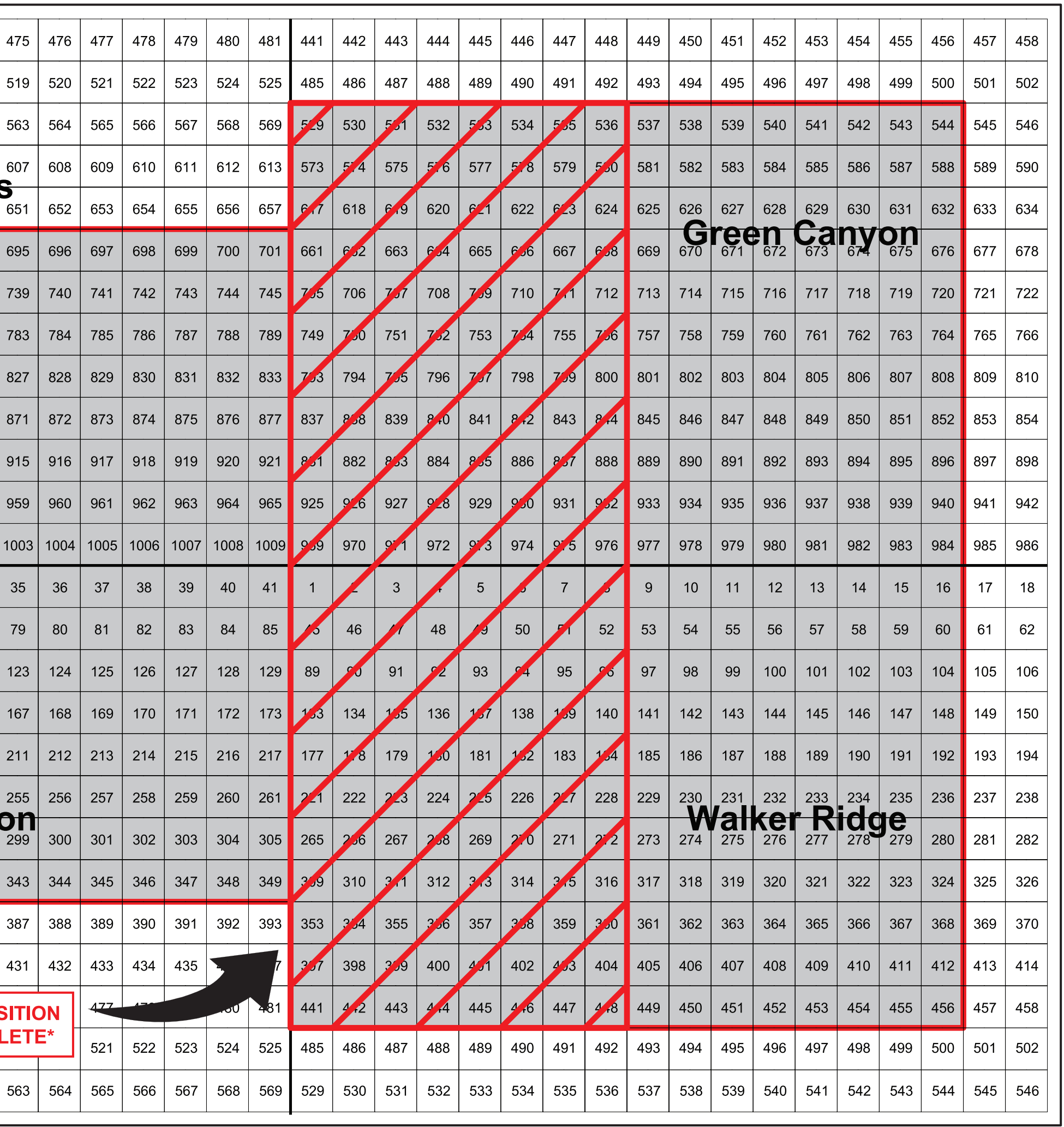


Patience and Flexibility Required

Deals Can Take a Circuitous Route

By LOUISE S. DURHAM
EXPLORER Correspondent

Editor's note: Being a professional petroleum geologist involves more than knowing and understanding the earth, or even where to find oil and gas. Being a professional means knowing how to put together a deal.

A forum at the AAPG Annual Convention in Houston was devoted to doing just that. "Show Me the Money – How Wall Street Logic, NYMEX Traders and Capital Markets Impact You," offered experts and examples of the business side of geology.

Here's one example that was included in a presentation – an "anatomy of a deal" that may hold some lessons and insight for all.

Cymraec Resources, nee Cymraec Exploration, was for the most part a typical startup company in 2000 when it was founded by Mike Looney, Mike Graham and Steve Zeboski as a prospect generation shop.

Cymraec (pronounced "karomak") initially was a partnership with a couple of operators and a group of partners who funded projects from the standpoint of paying to reprocess the seismic data.

In a departure from most typical start-ups, this wasn't just any seismic data.

"We acquired a significant amount of 2-D seismic data from Exxon in Louisiana, where we're acquiring 3-D data now," said company CEO Looney. "We struck a deal with Exxon, which allowed us to acquire license rights to their proprietary seismic data base not only in Louisiana but also Texas and a large portion of the continental U.S. This was a very big deal for us."

Still, the founding trio recognized early on that this was only one step toward ultimately becoming a full-fledged E&P company.

"We had partners and two operators, but one operator was always out of money and filed for bankruptcy in 2004," Looney said. "The other operator was good but risk averse.

"Even though we had generated about 400 prospects and leads from data we had over about a three-and-a-half-year period, we couldn't get the wells drilled fast enough," Looney said. "The partnership was dysfunctional with different agendas."

Opportunity knocked when the prospect-rich Cymraec team encountered G. Warfield "Skip" Hobbs of Ammonite Capital Resources. Hobbs entered the picture to do due diligence on Cymraec, representing a potential partner.

Hobbs liked what he saw and gave his client a thumbs-up.

"We stayed in touch with Skip from 2001 onward and finally, after seeing the struggles we had gone through," Looney said, "he convinced us when we talked at NAPE 2005 we had to get rid of the partners.

"He said the only way to do this was to go raise money and buy them out," Looney noted. "By mid-February of '05 we had signed a contract with Ammonite to help us raise the money."

The Money Game

Enter Andy Evans, vice president of the E&P group at ARC Financial in Calgary.

During the same NAPE event, the Cymraec team met with Evans to engage in preliminary discussions about becoming an equity funder.

The Cymraec folks quickly got busy assembling an information brochure and the documentation necessary to raise capital. Then the group hit the streets at the end of June with Ammonite's assistance.

Ultimately, they had meetings with close to 15 different equity funders. And they resumed the earlier contact with ARC, which came in with multiple people to review the company.

"Our experience in evaluating and supporting early stage exploration companies in Canada led us to consider Cymraec an attractive investment," Evans said.

"ARC stepped forward and said, 'We want to do the deal'," Looney said. "But they said 'since this is our first venture outside Canada we want to make sure we have a U.S.-based equity funder with us.'

"So we then brought in Cadent Energy Partners, and they liked what they saw and elected to participate as an equity funder," Looney said. "Also, the Energy Special Situations Fund in Houston and an individual investor from Austin elected to put money in."

When all was said and done, the company raised $42 million during the process, rendering them able to buy out the people they needed to buy out and much more. ARC's part of the deal tallied $17.5 million, or close to 40 percent.

The transaction closed at the end of October 2005, and Cymraec has since moved into new offices and staffed up from the original six people to 15 – in large part due to relationships established by Looney over the past 30-plus years in the industry. The company operates in Texas and has filed for operatorship in Louisiana.

Warning: Potholes Ahead

The funding process sounds straightforward, but if you're preparing to chase after the big money, beware – the road taken to get to here from there had its share of potholes.

"It took a great deal of patience and perseverance to get through the transaction process," Looney noted. "At times, you think 'why am I doing this,' but that's just part of it."

Evans concurred.

"Patience and flexibility were required on both sides to close financing," he noted.

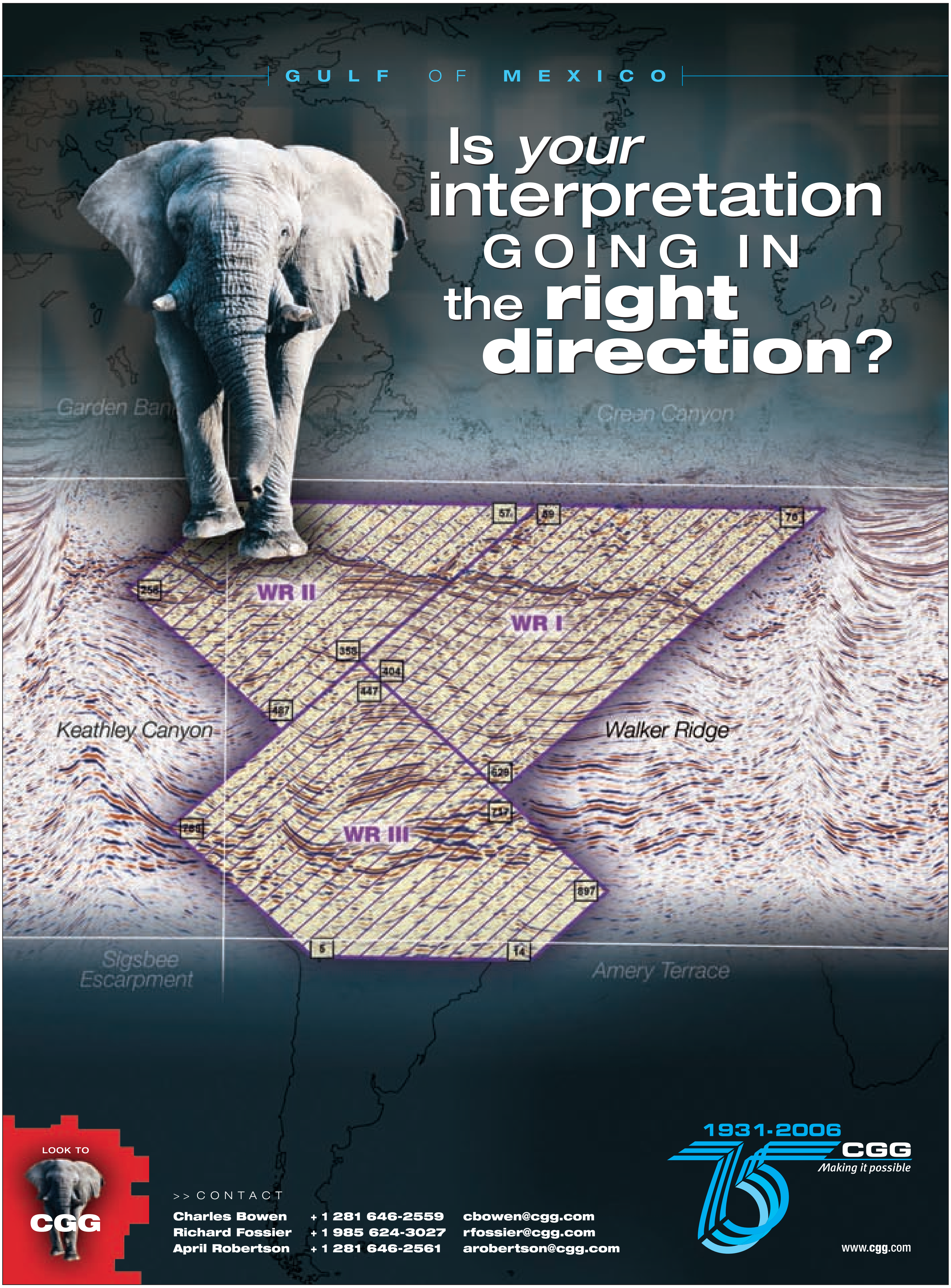
"There's a whole lot of give and take on all sides, and at the end of the day you put aside any hard feelings that have developed," Looney said. "It was a difficult and complex transaction to get done because it had a lot of parts, and many times it was very frustrating for all parties involved.

It helped that Cymraec management and investors shared a common vision for the path forward to value creation, which Evans summarized:

✓ Consolidating partnerships.
✓ Operating.
✓ Focus on drilling a risk balanced exploration portfolio.

The bottom line: Everybody's pleased with the outcome.

"We have great partners," Looney said, "and we're very happy." ❑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GEOPHYSICAL CORNER

Reflections Have a 'Tipper Point'

(The Geophysical Corner is a regular column in the EXPLORER, edited by Bob A. Hardage, senior research scientist at the Bureau of Economic Geology, the University of Texas at Austin. This month's column is about "Chronostratigraphic Surfaces and Seismic Reflections.")

By BOB A. HARDAGE
RANDY L. REMINGTON
and PAUL E. MURRAY

A fundamental premise of seismic stratigraphy is that seismic reflections follow chronostratigraphic surfaces, not lithostratigraphic surfaces.

In 1993, Tipper published an intriguing paper (*Geology*, v. 130, no. 1, p. 47-55) in which the following question was posed: "Do seismic reflection events necessarily follow chronostratigraphic surfaces?" Simple earth models and forward seismic modeling were used to illustrate basic and important interpretation principles.

The editor of this monthly column (Hardage) has observed increased interest in seismic interpretation among graduate students when they have been asked to analyze this Tipper paper, so repeating some of its concepts here seems appropriate.

* * *

We use the stratigraphic model in Figure 1 as a demonstration. This model shows five units deposited at five different geologic times – T1 through T5. These five chronostratigraphic bodies are shown in the top panels of figures 2 through 4 as stacked, overlapping targets that are to be imaged. This five-layer stack is then illuminated with seismic wavelets having varying resolution properties.

In these figures, the left column shows the illumination created by a high-resolution wavelet; the center column uses a moderate-resolution wavelet for the imaging; and the right column documents the image produced by a low-resolution wavelet. The illuminating wavelet is shown beside each five-layer model for easy comparison of wavelet length with bed thicknesses and bed spacings.

Modeling calculations are done in a dimensionless way in which all aspects of the model (bed thickness, bed spacing, bed overlap) are defined in terms of the dominant wavelength of the illuminating wavelet. This approach allows one person to think of the analysis as "the wavelet is the same in all cases, but the stratigraphic units have different thicknesses and spacings," while another person can view the picture as "the unit thicknesses and spacings are always the same, but the wavelet varies."

Either view is correct. Use the one that is less taxing to the brain.

Relationships between wavelet length, bed thickness, and bed spacing are defined at the top of each column. The amount of unit-to-unit overlap decreases as modeling proceeds from figure 2 to figure 4.

What does this modeling exercise tell us?

With ◘ to represent the dominant wavelength of the illuminating wavelet, some key points are:

✓ When bed thickness is ◘/4 or greater and bed spacing is ◘/2 or more, there is an individual reflection event for each stratal surface T1 through T5 (left columns).

In this case, seismic reflections follow chronostratigraphic surfaces, and unit-to-unit relationships within the five-layer system can be interpreted from the seismic response.

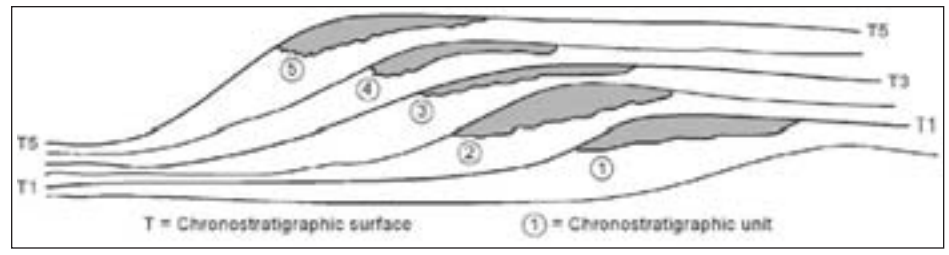

Figure 1 – Our Earth model: Five stratigraphic targets (bodies 1 through 5) deposited at five different geologic times, T1 through T5.

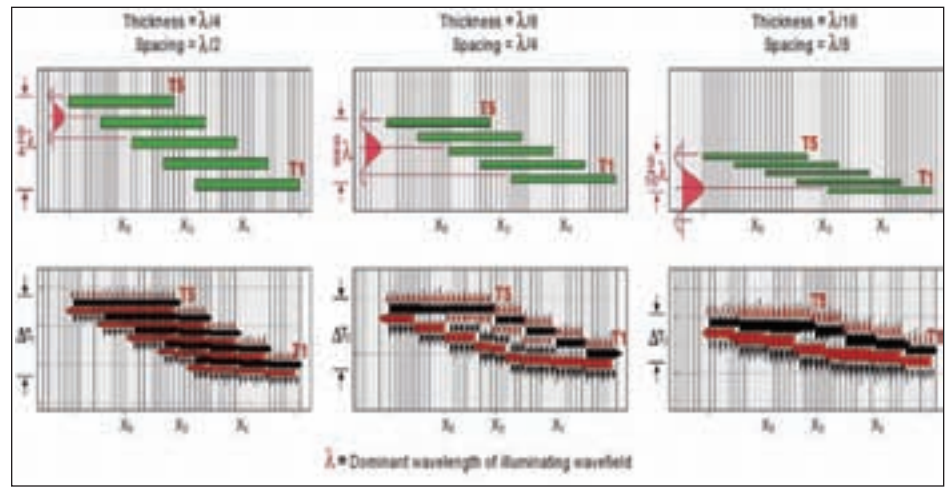

Figure 2 – Top row: synthetic models approximating the Earth model in figure 1. Bottom row: images produced by forward modeling using the wavelet shown in each model (top). Here the lateral overlap from unit to unit is seven dominant wavelengths (7◘). X_5 marks the center of depositional unit 5; X_3 the center of depositional unit 3, and X_1 the center of unit 1. Labels T1 through T5 show the positions of depositional times T1 through T5 as defined in figure 1.

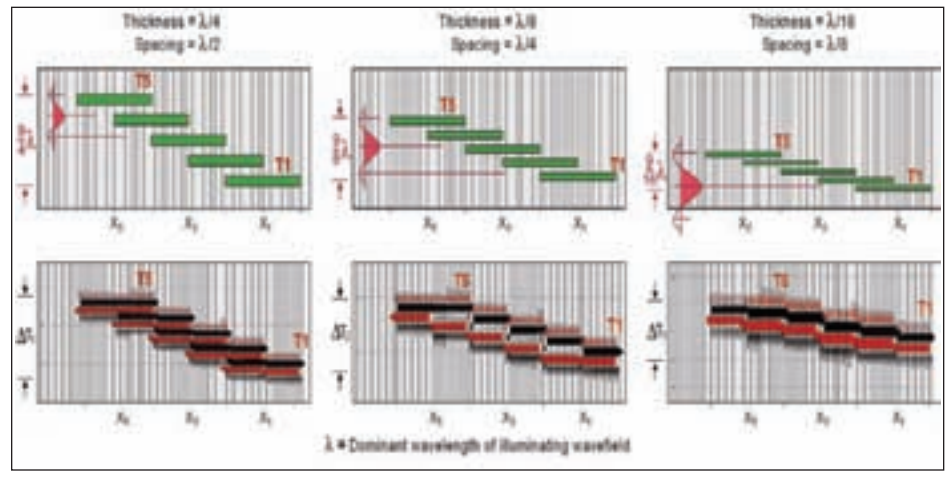

Figure 3 – Same modeling exercise described in figure 2, except the lateral overlap from unit to unit is decreased to five dominant wavelengths (5◘).

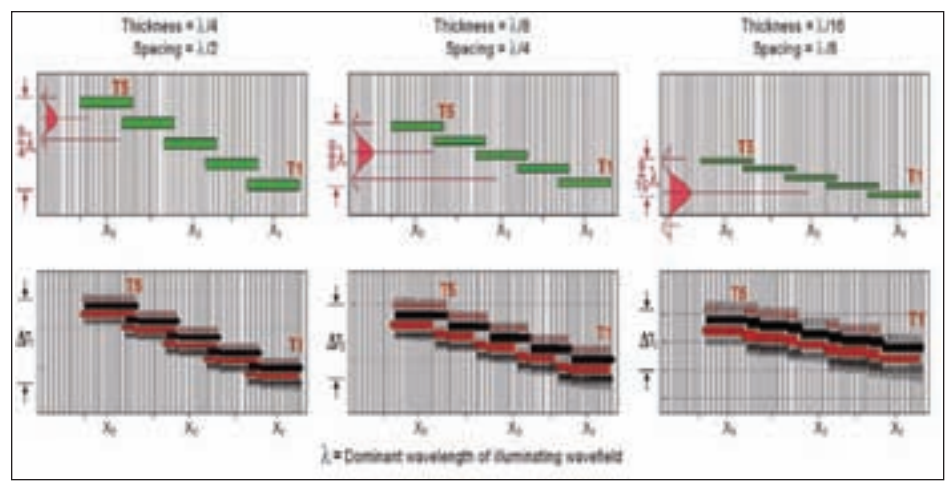

Figure 4 – Same modeling exercise described in figure 2 except the overlap of the units is decreased to two dominant wavelengths (2◘).

In this case, the seismic reflection response is a diachronous event, not a chronostratigraphic event. We lose the ability to analyze the internal architecture of the layered system, and seismic reflections no longer follow chronostratigraphic surfaces.

✓ When bed thickness is ◘/16 or thinner and bed spacing is ◘/8 or less (right columns), the five-layer system is represented by a single, slightly erratic peak/trough response that cuts across depositional time lines T1 through T5.

✓ Between these two imaging options is the situation in the center column, where imaging indicates that there is a separate unit positioned at each depositional time, T1 through T5, although no image shows the correct lateral dimensions of the depositional bodies. The part of each unit that is overlapped by a younger unit is not imaged.

Even though the imaging is not 100 percent correct, there is a reflection event for each chronostratigraphic surface. In this case, we can say that each image in the center columns consists of chronostratigraphic, but incomplete, seismic reflections.

Conclusion

Whether seismic reflections follow chronostratigraphic surfaces depends on:

✓ The relative magnitude of the dominant wavelength of the illuminating wavelet compared with the bed thickness deposited at each geologic time.

✓ The vertical spacing between successive chronostratigraphic surfaces.

✓ The amount by which younger beds overlap older beds.

Probably all reflection possibilities illustrated in these models occur within any single 3-D seismic volume. Our recommendation is that the premise that seismic reflections follow chronostratigraphic surfaces is sound and should be applied as a first principle of seismic interpretation.

However, in critical prospect areas, modeling similar to what is illustrated here should be done to determine whether the assumption that seismic reflections are chronostratigraphic needs to be abandoned in a few local areas, even though the concept is correct in a general sense.

Acknowledgment: Documenting principles of elastic-wavefield seismic stratigraphy such as this example has been funded by DOE/NETL.

(Editor's note: The authors are all with the Bureau of Economic Geology, Austin, Texas.) ❑

Geophysical Corner editor Bob A. Hardage has won a "President's Certificate for Excellence" from the Energy Minerals Division for a paper he presented at the AAPG Annual Convention in Houston.

Hardage's paper was "Seismic Estimation of Gas Hydrate Concentrations in Deepwater Environments: Assumptions and Limitations." His co-author was Diana Sava, who, like Hardage, is with the Bureau of Economic Geology in Austin, Texas.

Also receiving EMD certificates of excellence are:

✓ R. Marc Bustin, Daniel Ross and Gareth Chalmers, all with the University of British Columbia, Vancouver, Canada, for the paper "Rethinking Methodologies of Characterizing Gas in Place in Gas Shales."

✓ Julia F.W. Gale, Robert M. Reed and Robert H. Lander, for the poster "Synkinematic Carbonate Fracture Sealing Cements in Opening-Mode Fractures: Characteristics and Models."

Gale and Reed are with the University of Texas at Austin, Lander is with Geocosm, Austin, Texas.

GCAGS Meeting Set in Lafayette

The annual meeting of the Gulf Coast Association of Geological Societies, which will use a unique, high-tech site for its technical program, will be held Sept. 25-27 in Lafayette, La.

"Visualize the Possibilities" is the theme for the meeting, which will be held in conjunction with the Gulf Coast Prospect Expo, sponsored by the Louisiana Independent Oil and Gas Association.

Also involved is the International Geological Correlation Program (IGCP) 490, which studies Holocene geological disasters and their effect on ecosystems. It will join with GCAGS to evaluate the effects of hurricanes Katrina and Rita.

To highlight the "visualize" theme, some technical sessions will be held in a 3-D stereo immersive environment at the new Louisiana Immersive Technologies Enterprise (LITE) facility, just a short shuttle ride from Lafayette's Cajundome Convention Center.

The technical program features more than 125 oral and poster presentations, including one session dedicated to "The Geology of Mexico." The technical program will begin with a forum on "The Gulf of Mexico Oil and Gas Industry: The Road Ahead," which will feature six panelists representing different sectors of the industry.

Other sessions range from salt tectonics, to the effects of natural disasters to deepwater depositional environments.

Other meeting highlights include:

✓ The All-Convention Luncheon, set Tuesday, Sept. 26, featuring Michael Economides, professor at the University of Houston, who will discuss "Energy Geopolitics."

✓ The GCAGS-DPA Luncheon, set Wednesday, Sept. 27, featuring R. Brent Yantis, director of the Regional Application Center, University of Louisiana at Lafayette, whose talk is titled "Louisiana View: A Foundation for Sharing, Integrating and Using Data Easily and Consistently."

For more information go to the Web site at http://www.gcags2006.com/. ❑

Questions? VGPers Ready To Provide The Answers

By SUSIE MOORE
EXPLORER Staff Writer

Geoscience career students, listen up!

If you have real, practical questions about your future in the petroleum industry, such as:

✓ Are computers really useful in mapping?

✓ How difficult is it to communicate with an engineer?

✓ Can I really work a field in Colorado if I live in Texas?

✓ Will I make money in this business?

Well, the geologists who are part of the AAPG Visiting Geoscientist Program (VGP) have answers for you.

For more than 30 years the VGP has been sending qualified, professional geologists to colleges and universities around the world to speak about the future of petroleum geology – and the speakers are ready for another year in helping geoscience students prepare themselves for their next steps after graduation.

The program gives students a chance to meet practicing geoscientists and to discuss geoscience career options.

During the 2005-06 season Visiting Geoscientists made a total of 67 visits (19 in the United States; 48 in the international arena) to colleges and universities. And since then, several new speakers have been added to the program.

Last year was an important year for the program, as VGP committee chair Chuck Caughey actively tried to improve the program's visibility. His goals:

✓ Utilize alumni and AAPG Student Chapters to increase contacts on campus.

✓ Involve AAPG affiliated societies and international Regions to generate opportunities for VGP visits to universities in their areas.

✓ Increase VGP visits by adding Active members to the volunteer list.

✓ Broaden VGP visits to include major U.S. and international universities that may have been missed in previous visits.

✓ Coordinate with the Student Chapter, Student Expo, Student Focus and Grants-in-Aid committees to improve the effectiveness of AAPG student programs.

"There is no better way to present the advantages of AAPG to students than learning from the experiences of a fully professional AAPG member," Caughey said.

"VGP introduces the 'real world' of geoscience careers," he said.

At press time, 85 speakers were available to visit colleges and universities for the upcoming school year.

The key to making this program successful, of course, is to get the VGP speakers into the schools. "Students and universities need to go online to request a VG," said Mike Mlynek, AAPG student affairs coordinator.

So students, what are you waiting for?

It's easy. To request a speaker go online to www.aapg.org/education/vgp/request.cfm. When making your speaker selection, be sure to check the speaker's travel restrictions.

For those interested in becoming a VG, contact Mike Mlynek at students@aapg.org. ❑

LSU Weighs Coastal Studies Decision

Fate of Research Institute Uncertain

By LOUISE S. DURHAM
EXPLORER Correspondent

If it ain't broke, don't fix it.

This time-worn admonition appears to have been ignored by certain administrators at Louisiana State University (LSU), where there's an effort under way to phase out the venerable 54-year-old Coastal Studies Institute (CSI).

The irony of the timing is notable given that coastal issues are "front and center" in Louisiana following the devastation incurred by hurricanes Katrina and Rita in 2005.

The internationally-renowned CSI was formed in 1952 as a result of a letter of agreement with the geography programs, Office of Naval Research (ONR), to conduct national and international research in coastal regions.

Since that time, CSI has conducted research in coastal areas on every continent except Antarctica, and has received numerous honors and awards, according to Harry Roberts, former institute director.

Roberts only recently retired from the post of director of CSI and LSU's Department of Oceanography and Coastal Sciences (DOCS) after a 12-year stint.

Via its long-time internationally-recognized researchers – including AAPG members Roberts and James Coleman (both LSU Boyd professors), among others – and skilled support staff, CSI has gained particular acclaim in the realm of research and understanding of deltas worldwide.

The Road to Ruin

In essence, the seeds for the dismantlement of the organization were inadvertently planted some time back.

The group functioned independently on soft money, i.e., grants and contracts, until 1985, when institutional funding from the ONR ceased and then-director Coleman asked the university to pick up the salaries of the staff. Then, a couple of years ago, the dean of the School of the Coast & Environment (SC&E) transferred all CSI faculty under the canopy of the SC&E, where the institute and DOCS were housed.

"We became a sub-unit of DOCS, which took away our independence," Roberts said. "Even hiring someone now is a big committee decision."

But the real bombshell hit via a letter in mid-June from Edward Laws, dean of SC&E. He announced the intent to phase out an entire group of research institutes: Coastal Studies, Coastal Ecology, Coastal Fisheries and Wetland Biogeochemistry.

In his letter, Laws noted: "I have become convinced that DOCS will never reach its flagship potential as a research and educational unit until the faculty collaborate more effectively, and I believe that it will be impossible to effect the desired degree of collaboration as long as the research institutes … continue to act as separate administrative units."

Roberts wryly commented, "Decommissioning all the institutes supposedly would make us all one big happy family under the department."

It is noteworthy that CSI would be joining the "family" with $15 million in committed grant money still on the CSI books.

"One of the things that has slowed this thing down is CSI was formed by the board of supervisors," Roberts said. "To dissolve it you need the board's action, and I don't think they realized this."

But that's not all that has helped somewhat to put the brakes on this still-likely-to-happen academic train wreck.

Wordplay

Roberts et al decided to harness the power of the pen.

"We began a letter writing campaign to make the chancellor aware of what was going on," Roberts said. "When word got out to the coastal sciences community and sedimentology, people from all over the world started writing to the chancellor."

"Decommissioning all the institutes supposedly would make us all one big happy family under the department."

According to Roberts, the collective tone of the letters is "the science community can't believe you'd take a working and long-term productive unit like Coastal Studies and do away with it in hopes something more productive comes out of the demolition, without having a guarantee you'll get anything out of it".

Abby Sallenger, research oceanographer at the U.S. Geological Survey in St. Petersburg, Fla., concurs.

"The history is there," Sallenger said. "Coastal Studies has done many extremely important fundamental works on the basic understanding of our coasts, and they're still extremely active with what's going on.

"How you could justify doing anything to diminish that effort by doing something else seems to be a waste of time and good capability," Sallenger said. "In reorganizing an organization, there's a tendency to throw away the book and start from scratch. It's a terribly destructive way of operating."

Indeed, there is a pervasive fear among the CSI staff and others that its ability to function as a world class field support unit no doubt will be lost if the proposed reorganization is really severe.

Such an event would dismantle the intricate infrastructure that enabled the institute to make its contributions to coastal science, including geology,

See **CSI**, page 39

WashingtonWATCH

Access Issues Under Debate

By DON JUCKETT
GEO-DC Director

Ah! Summer in Washington – but what a summer this is shaping up to be.

This month the Senate will take up the bill addressing leasing the OCS Area 181 in the Eastern Gulf of Mexico. The expectation is that the Senate bill (S. 3711, called the "181 Bill"), if passed, will be the counterpart to H.R. 4761, the Deep Ocean Energy Resources Act passed by the House of Representatives on June 29.

Conference proceedings likely will begin shortly after Senate action and naming of conferees for both the House and Senate. Both houses are expected to move quickly to name conferees if the Senate passes its OCS legislation.

AAPG President Lee Billingsley sent letters to the leadership of the Senate Energy and Natural Resources Committee encouraging them to give favorable consideration to expanded OCS access. A copy of the letter is located on the GEO-DC Web site, which can be accessed from the AAPG home page. (A portion is included in the box below.)

At deadline, the Senate had not yet voted on S. 3711. Sentiment was running strong that they would vote on the measure before they adjourned for the August recess. The House recessed during the last week in July and mid-term election campaigns beckon.

If the House and Senate do not conference and pass an OCS bill before the end of this session, the 110th Congress will begin with a clean agenda, and the work of the 109th Congress to pass OCS access legislation will have to begin anew.

* * *

In a related topic, GEO-DC has learned the **final comment period** for the Minerals Management Service 2007-2012 OCS Leasing Plan (the process of nominating acreage) will open in early September.

AAPG members responded in significant numbers to the call to participate in the intermediate comment process that closed in early April during the AAPG Annual Convention in Houston. Many of you responded by going to the Consumers Energy Alliance booth in the exhibit hall, sending your comments in real time. Congratulations. You participated in a process that employed the same strategy used successfully by the opponents of OCS access to reverse a longstanding trend of their domination of the comment process!

GEO-DC, in cooperation with the Consumers Energy Alliance and other organizations, will be urging members to present comments to Congress on OCS legislation and to the MMS in the case of the Five-Year Plan.

Expanded OCS access is the underlying theme of three of the AAPG position papers covering the United States and Canada OCS as well as U.S. energy supply. Look for "Action Alerts" to provide members when the window for both events presents itself.

* * *

As scientists, we often find that we are not comfortable moving to the next logical step in reporting science to aiding non-scientists to understand the implications in a social or cultural perspective of what the science imports.

In the case of both the pending OCS legislation and the MMS five-year plan, that next step could very well mean that each member as an individual takes a stand that can potentially result in future employment (or lack of employment). Greater access to more of the OCS impacts us as individual petroleum professionals as well as the nation and the global energy markets.

A quick reminder – your engagement on these issues, as in stating your position to your lawmakers, is a right and privilege guaranteed in the First

continued on next page

Access Urged

The American Association of Petroleum Geologists (AAPG) supports the full exploration, development and production of the petroleum resources of the Outer Continental Shelf and Slope of the United States and encourages the Senate to move forward with the greatest dispatch to pass legislation to expand access to the Outer Continental Shelf and Slope of the United States.

We believe that such legislation would have multiple benefits to the nation's economy, to our energy security and would send important signals to the world energy markets of our determination to act responsibly on our own behalf in satisfying domestic energy needs.

LEE BILLINGSLEY
AAPG President

Earth Science Week Materials Available

Planning continues for promotion of activities related to this year's Earth Science Week, designed to celebrate science by spreading earth science literacy.

With a theme of "Be A Citizen Scientist," Earth Science Week 2006 will be observed Oct. 8-14 – the international event's ninth year, sponsored by the American Geological Institute.

Each year, local groups, educators and interested individuals organize activities to discover the earth sciences and promote responsible stewardship of the earth.

The AAPG Foundation provides funding support for materials and promotion of the celebration.

An Earth Science Week poster was included in the August EXPLORER, intended for use in public locations so that teachers, students and others will know of the activities available.

AAPG local societies also are involved, and past events have been platforms for societies to hold public outreach activities.

To help in the celebration, Earth Science Week Toolkits are available, which include:

✓ A 12-month school-year activity calendar, suitable for hanging.

✓ The new Earth Science Week poster, including an activity.

✓ Up-to-date fact sheets and other materials from the U.S. Geological Survey.

✓ A park-views DVD from the National Park Service.

✓ A detailed climate change booklet from NOAA.

✓ An earth science education brochure and more from NASA.

✓ Posters from Scholastic, IRIS and EarthScope.

✓ A GeoCaching pamphlet from Geological Society of America.

✓ An Earth-science CD from ESRI.

✓ Materials for classroom and home use.

In addition, copies of the careers-oriented 2005 Toolkit ("Geoscientists Explore the Earth") and the natural hazards-focused 2004 Toolkit ("Living on a Restless Earth") are available for order.

Orders outside of the United States will incur additional shipping charges. For special shipping, bulk orders and more information, visit www.earthsciweek.org/materials/index.html. ❑

CSI

from page 36

physical oceanography, meteorology and remote sensing.

"This has all been because we're like a SWAT team," Roberts noted. "We're a small group but one that works well together with a highly efficient operations mode."

A Final Question

The jury is still out on the full impact of the letter writing campaign.

The letters clearly were not ignored given that Chancellor Sean O'Keefe tasked Chuck Wilson, vice provost academic affairs, with penning a response to be sent to all who wrote.

Wilson noted in his missive that the chancellor's office had not received a request to eliminate CSI. He stated "action to eliminate an institute … created by the board of supervisors would require chancellor, president and board of supervisors approval."

Wilson wrote also that a faculty committee will be assembled by Dean Laws to guide the debate surrounding his intent to restructure the academic and research groups with SC&E.

AAPG member Chacko John, director of the Louisiana Geological Survey, state geologist and LSU professor, succinctly puts the whole flap in perspective:

"Why mess with something that's working fine?" ❑

continued from previous page

Amendment of the Constitution.

GET ACTIVE!

* * *

On a more sobering note, the Senate Appropriations Committee finished its deliberations on DOE's fiscal year 2007-08 budget with total budget recommendations of about $27 million for oil and natural gas research. That is considerably lower than the current budget of $64 million.

While there is still some small hope for easing the restrictiveness of the budget language, the net result is that DOE indicates it is preparing to notify as many as 80 grant holders of interruption of funds.

While the implications are numerous, the most significant impact will be that 30-40 percent of all petroleum geoscience and engineering graduate students in the United States likely will have to seek financial support from other sources to finish their graduate programs.

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


Posamentier


Fahmy


Mallet


Creany


Warren


Shipp


Bachtel

Posamentier Returns to the List

Speakers Announced for DL Season

By VERN STEFANIC
EXPLORER Managing Editor

Eleven speakers have been announced for this year's Distinguished Lecture program, including one speaker who will be making a record-setting fourth turn as a DL speaker.

The DL program, funded in part by the AAPG Foundation, will offer seven domestic and four international speakers this season.

Last season's slate of seven domestic speakers visited 113 groups and a total audience of 5,715; international statistics brought the total audience to 6,015.

AAPG's Distinguished Lecture program was developed to expose students, young geologists, college faculty members and members of geological societies to current information, research and thinking.

This year's line-up includes **Henry W. Posamentier**, chief geologist and distinguished adviser for Anadarko Petroleum in Calgary, Canada, who in October will be making his fourth DL tour, this time to Europe and eastern Asia.

Posamentier, who also won the 2001 AAPG Matson Award for giving the best paper at the AAPG Annual Convention, previously toured as a DL in 1991-92 (United States), 1996-97 (Former Soviet Union) and 1998-99 (Middle East).

He is this year's Dean A. McGee Distinguished Lecturer and will be offering two talks this year:

✓ "Imaging Elements of Depositional Systems from Shelf to Deep Basin Using 3D Seismic Data: Implications for Exploration and Development."

✓ "Stratigraphy, Sedimentology and Geomorphology of Deepwater Deposits Based on Analysis of 3-D Seismic Data: Reducing the Risk of Lithology Prediction."

Remaining on track this year is the continuation of the intersociety lecturer effort — a cooperative program that presents an opportunity for cross-discipline lectures.

This year's AAPG-SEG Joint Inter-Society Distinguished Lecture – fifth in the series – will be given by AAPG member **William A. Fahmy**, geophysical adviser for ExxonMobil Exploration, Spring, Texas.

Fahmy's speaking tour began last month and will continue through January, making stops in South America, Mexico, the United States, China and Calgary. His topic is "DHI/AVO Best Practices Methodology and Applications."

In keeping with the alternating logistical responsibilities for the intersociety lecturer, Fahmy's tour will be coordinated by SEG.

And as also in past years, support for several specific tours comes directly from the AAPG Foundation's Distinguished Lecture Fund. They are:

❒ The Allan P. Bennison Distinguished Lecturer – An international lecturer who makes a U.S. tour, is funded by contributions from the late Allan Bennison, a long-time Tulsa geologist.

This year's Bennison lecturer will be **Jean-Laurent Mallet**, professor at the Ecole Nationale Supéieure de Géologie, Nancy, France. His topic is "Integrated Earth Modeling: From Seismic Interpretation to Flow Simulation in Reservoirs."

❒ The J. Ben Carsey Distinguished Lecturer – A domestic tour, provided by contributions from J. Ben Carsey Jr., of Houston, to establish a named lecturer in

continued on next page


Dixon


Hudec


Lowenstern


Estaban

continued from previous page

memory of his father, who served as president of AAPG in 1967-68.

This year's J. Ben Carsey lecturer is **Stephen Creaney**, regional geologist and supervisor of the regional studies team in business development, ExxonMobil Exploration, Houston. His topic is "Global Petroleum Evaluation – The Role of Integrated Regional Analysis."

❒ The Haas-Pratt Distinguished Lecturer – A domestic tour, provided by contributions from the late Merrill W. Haas, in honor of famed geologist (and Haas' mentor) Wallace Pratt. The funding is granted for emphasis on a specific case history application of geology in a discovery.

The Haas-Pratt lecture will be presented by **Marian Warren**, geologist, EnCana Corp., Calgary, Canada.

She offers two talks:

✓ "An Exploration Case History: How We Made a High-Impact Gas Discovery in a Maturing Basin (Western Canada)."

✓ "Extensional Faulting, Paleodrainage Patterns and Impact on Hydrocarbon Reservoir Quality and Distribution During Foreland Basin Subsidence: A Case Study from the Cretaceous of Alberta."

❒ The Roy M. Huffington Distinguished Lecturer – An international tour, provided by contributions from the Huffington family in honor of the oilman-geologist.

The Huffington speaker will be **R. Craig Shipp**, team leader, geohazards assessment team, Shell International E&P, Houston.

Shipp will offer two talks:

✓ "Significance and Recognition of Mass-Transport Deposits in Deepwater Environments."

✓ "Where Offshore Drilling Meets Shallow Geology: Impact of Near-Surface Depositional Systems on Deepwater Operations."

This year's list of domestic Distinguished Lecturers also includes:

❒ **Steven Bachtel**, carbonate reservoir specialist, ConocoPhillips, Houston. His topic is "Seismic Stratigraphy of the Miocene-Pliocene Segitiga Platform, East Natuna Sea Indonesia: The Origin, Growth and Demise of an Isolated Carbonate Platform."

❒ **Timothy H. Dixon**, professor, the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences. His topics are:

✓ "Hurricane Katrina and New Orleans: Subsidence Measurements from Space."

✓ "Crustal Deformation Near the San Andreas Fault: Estimating Elastic Parameters of the Upper Crust with Space Geodesy."

❒ **Michael Hudec**, research scientist, Bureau of Economic Geology, the University of Texas, Austin, Texas. His two topics are:

✓ "Advance Mechanisms of Allochthonous Salt Sheets: Implications for Predicting Subsalt Pore Pressure."

✓ "Evolution of Suprasalt Minibasins in the Deepwater Gulf of Mexico."

❒ **Jacob Lowenstern**, scientist-in-charge, Yellowstone Volcano Observatory, U.S. Geological Survey, Menlo Park, Calif. His talk is on "Intrusion, Deformation and Degassing at the Yellowstone Caldera."

This year's other international Distinguished Lecturer is:

❒ **Mateu Estaban**, external adviser-carbonate geology, REPSOL-YPF, Madrid, Spain. He will be speaking in Amersterdam on Sept. 13-14, and his talk will be "The Burial of Carbonate Reservoirs – The Rest of the Story."

For more information on the tours or the program contact Karen Dotts in the education department at AAPG headquarters; go to the AAPG Distinguished Lecturer Web pages, and watch for monthly updates in the EXPLORER. ❑

SPOTLIGHT ON EDUCATION

The AAPG 2007 Education Calendar is in the final production stages, and when it's delivered to you in an upcoming EXPLORER you'll see all of the exciting things being planned.

Meanwhile, some valuable training opportunities are available for you this fall as well.

❒ There is still time (but not much!) to sign up for a new field seminar on **Deepwater Siliciclastic Reservoirs**, set Sept. 17-22, beginning and ending in San Francisco.

This course provides an appreciation of the broad range of deepwater reservoir facies, the mechanisms by which they were deposited, predictive attributes, reservoir heterogeneity and stratigraphic architecture.

The course is taught by Stephan Graham and Don Lowe from Stanford University.

❒ The short course **Practical Mapping of Surfaces, Properties and Volumes for Reservoir Characterization**, held in conjunction with the SEG meeting in New Orleans is set Sept. 30-Oct. 1.

The course is intended for professionals wanting to understand more about the geostatistical methodology.

The instructor is Jeffrey Yarus.

❒ A course just added to our slate, set for Oct. 7 at the Eastern Section meeting in Buffalo, N.Y., is **Reservoir Engineering for Geologists**, taught by Rich Green.

This popular course offers a broad understanding of the factors that influence the production of oil and gas from reservoirs.

Bonus: This course will have a discounted tuition, and additional discounts are available for DPA members.

❒ Norm Hyne's **Basic Petroleum Geology for Non-Geologists** will be held Dec. 5-7 in Houston, co-sponsored by AAPG and the University of Tulsa's Continuing Engineering and Science Education Department.

❒ The fourth annual **Winter Education Conference** is just around the corner, offering perennial favorites and several new exciting courses. Check out the ad in this issue (page 49) for the list of courses included.

The conference will be held Feb. 12-16 in Houston, so start making plans now to attend!

For further information check the AAPG Web site at www.aapg.org/education/index.cfm; or call 918-560-2650; or e-mail educate@aapg.org. ❒

IN MEMORY

Clark

Robey H. Clark, president of AAPG in 1980-81, died July 23 at his home in Amarillo, Texas. He was 84.

A native of Louisiana, Clark earned a bachelor's degree from Louisiana State University, served in the U.S. Navy during World War II and worked for Magnolia Oil Co. before returning to the University of Wisconsin to earn a master's degree. He rejoined Magnolia, which later became Mobil Oil.

In 1971, he joined Diamond Shamrock, retiring to become a consultant in Amarillo in 1982. His work included the Gulf Coast, Mid-Continent, Rockies, Alaska, the North Sea, Australia and New Zealand.

Clark was on numerous AAPG committees, served as AAPG secretary from 1975-77 and received the Honorary Membership Award in 1985. Clark also was an AAPG Foundation Trustee Associate. ❒

Sanford

Robert Marne Sanford, international exploration consultant based in Irving, Texas, and recipient of the 2003 AAPG Pioneer Award, died July 22. He was 88.

The Iowa native began reporting and editing for the *Oil & Gas Journal* while earning a degree in geology at Texas Christian University. After serving as a pilot instructor in the U.S. Army Air Corps in World War II, he joined Standard Oil and worked in Peru, Saudi Arabia and Brazil. In 1962 Sanford joined Hunt International Petroleum and led wildcatting efforts in many areas, including New Zealand, offshore north Canada, the U.K. North Sea, Mozambique, South Africa and Argentina

He retired in 1983, becoming an independent world consultant. ❒

* * *

Edward Mackey Anderson, 86
Seattle, Wash., May 19, 2006
John K. Bellis, 46
Edwards, Colo., June 2006
Derek L. Brooks, 36
Roswell, N.M., June 2006
Robert Scott Butler, 52
Denver, Jan. 6, 2006
Robey H. Clark, 84
Amarillo, Texas, July 23, 2006
John Robert Dixon, 68
Sonora, Texas, June 30, 2006
Raymond Joseph Holasek, 79
West, Texas, June 24, 2006
Maurice E. Kaasa Jr., 63
Johnson City, N.Y., June 2, 2006
Lee Piekarski, 57
Spring, Texas, Dec. 29, 2005
Billy Walter Roberts, 79
Billings, Mont., June 20, 2006
Robert H. Stebbins, 81
Richmond, Va., Feb. 10, 2006
Robert Marne Sanford, 88
Irving, Texas, July 22, 2006

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

Register Now, Save $$$

Perth Meeting Flirting With History

There's still time to save money by registering early for the AAPG International Conference and Exhibition in Perth – but the deadline date is drawing closer.

AAPG and PESA members who register by Oct. 16 can save nearly $200; for non-members the savings can be $242.

This year's international meeting – AAPG's first international conference in Australia since the 1992 event in Sidney – will be held Nov. 5-8 at the new Perth Convention Exhibition Centre.

The theme is "Reunite Gondwana – Realize the Potential," and already the meeting is shaping up to be among the largest in AAPG history.

Registration for Perth to date is running nearly 80 percent above the pace set for the 1998 meeting in Rio de Janeiro, which drew 2,214, making it AAPG's largest-ever international event.

The Perth technical program is also of historic size, with 12 topics spread over 10 themes. The number of posters alone is one of the largest in AAPG's international experience.

One reason for the large number of posters, meeting organizers believe, is the Technical Program Committee's new approach for Perth that ties oral and poster sessions together – in effect, oral sessions are used to "preview" the more detailed complementary poster sessions.

The technical program themes are:

✓ Successful Management and Decision Making.

✓ Petroleum Systems Elements and Evaluation Techniques: Clastic and Carbonate Reservoir Systems (also Hydrocarbon Generation, Fluid Flow, Structural Controls and Seal Character and Quality).

✓ Gondwana Evolution and Petroleum Systems Elements.

✓ Exploring and Developing Southeast Asia's Petroleum Provinces (also Gondwana's Petroleum Provinces.)

✓ PESA Session: West Australia Basins.

✓ Southeast Asia Pacific LNG Resources and Development Plans.

✓ Maximizing Value from Mature Petroleum Assets.

✓ Integrating New and Emerging Technologies – Seismic Innovation.

✓ Integrating Petroleum Development with Environmental Issues.

REUNITE GONDWANA · REALIZE THE POTENTIAL · PERTH, AUSTRALIA
2006 AAPG International Conference and Exhibition
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✓ Non-Conventional Hydrocarbon/Energy Resources.

The meeting also offers a variety of exciting pre- and post-conference field trips, covering much of Australia but also to locales ranging from South Africa to Borneo to New Zealand – and they're filling up fast.

Other meeting highlights include:

✓ An opening session hosted by Perth general chair Agu Kanstler, Woodside's exploration director and chairman. An icebreaker reception follows.

✓ A "featured speaker luncheon," offering this year's AAPG Distinguished Lecture on "The 'I' in BusIness EthIcs."

✓ A students reception, featuring the chance for students to meet with representatives of companies that are AAPG students sponsors.

✓ The Melbourne Cup Luncheon. All of Australia comes to a halt for the annual Melbourne Cup horse race, which will be held Nov. 7 – and AAPG will join in the celebration with a longer-than-usual lunch break.

For more information or to register, go to the AAPG Web site at www.aapg.org/perth/index.cfm. ❑

FOUNDATION UPDATE

Digital Products

The newest endowment received by the AAPG Foundation provides the Colorado School of Mines with a Digital Products University Subscription, presented by alumnus Stephen Sonnenberg.

His gift provides over 500,000 pages of AAPG's digital library in perpetuity for CSM students.

Sonnenberg, a past AAPG president now with Kerr-McGee in Denver, made the gift in honor of another past AAPG president and Sidney Powers award winner, Robert J. Weimer, professor emeritus at CSM.

For more information about the Digital Products University Subscription program contact Rebecca Griffin of the AAPG Foundation at 1-888-945-2274, ext. 644; or e-mail to rgriffin@aapg.org.

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

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

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REGIONS AND SECTIONS

(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 U.S. 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, at 1-918-560-9403; or e-mail to cmcgowen@aapg.org.

This month's column is written by Peter MacKenzie, president of AAPG's Eastern Section.)

The AAPG Eastern Section was founded in 1977 in Washington, D.C., by a council of AAPG associated societies. The Section has been active ever since, holding society-hosted annual meetings at locales throughout the Section and eastern Canada.

The Section currently is home to 2,209 AAPG members (1,039 Active, 695 Associate, 298 Student, 163 Emeritus, 11 Honorary and three Life members).

The Eastern Section fosters the tradition of the petroleum geologist in many ways. We focus on the legacies of our predecessors and the accomplishments of our members as petroleum geology professionals and educators.

Petroleum geologists have been at work in the Eastern Section for nearly 150 years – yet new field discoveries are still being made in these, some of the oldest and most exploited basins in the world. On the other hand, with over 200,000 square miles (that's over 128 million acres) and with as much as 45,000 feet of sedimentary rock to work with, there is considerable room for refinement of old and new ideas.

While the traditional plays of the eastern United States continue to be developed and extended, the brain and brawn of petroleum geologists are busy exploiting the still relatively new Trenton-Black River play. A true "world class" exploration play, success requires an integrated approach using sound structural, diagenetic and geophysical models.

Although the massive section of Devonian black shale has been a long-time target in the East, the application of new exploration and production technologies is causing another frenzied surge of activity similar to the Barnett and Fayetteville.

The Eastern Section also is host to more colleges and universities than any other Section or Region. There are 17 AAPG Student Chapters dispersed within the Section (see accompanying box), and as time progresses, chapters such as these will become more valuable as a resource for research and a training ground for new petroleum geologists.

In support of prime geological research, this year the AAPG Foundation awarded 24 grants to students attending numerous colleges and universities within the Eastern Section (see accompanying box).

The award process is rigorous, and the grants carry a significant amount of prestige. Student applicants are very strong candidates, and the awardees are at the apex of their educational pursuits.

* * *

All of which pulls us back to the Section's principle purpose: to provide the forum for sharing of experience, science and opportunity. "New Ideas for Old Basins" is the theme for the 2006 Eastern Section AAPG annual meeting, which will be hosted by the New York State Geological Association Oct. 8-11 in Buffalo, N.Y.

In addition to the traditional oral presentations and poster sessions, this meeting will include a plethora of other geologic activities covering cores, real rocks in the field, continuing education workshops and one famous old map. Slated are:

✓ Core blast – including examples from the Antrium, Bakken, Barnett, New Albany Shale, the Albion Scipio field, the NYS black shales of the Utica, Marcellus, Rhinestreet, and Middlesex, the NYS Theresa, Trenton, Dolgeville, Queenston, Silurian salt section, Oriskany, Onondaga Reef and more from Kentucky, Ohio and Pennsylvania.

✓ Thirteen pre-meeting field trips – in the height of fall seasonal colors, covering the gamut of geology, held in conjunction with the NYSGA and supported by NYSERDA.

✓ Four workshops: One pre-meeting ("Reservoir Engineering for Petroleum Geologist," led by Rich Green) and three post-meeting ("The Trenton/Black River," Graham Davies and Taury Smith; "Tectonic Development of the Appalachian Basin and Controls on Clastic Deposition – Primarily Sandstone," Gerald Smith and Bob Jacobi; and "Fractured Black Shale," Dan Jarvie).

✓ Historic display – an original William Smith's "The Map That Changed the World" (the map is held by the Buffalo and Erie County Library) will be on display at the Adam's Mark Buffalo Niagara Hotel, headquarters for the meeting.

✓ The Eastern Section Student Job Quest once again will be an integral part of the meeting – and employers wishing to participate should make plans now to attend.

You are invited. Those who have attended Eastern Section meetings can attest that the meeting and its associated affairs are some of the most professional, engaging and rewarding experiences they have had.

Additional information can be found at:

❒ Eastern Section meeting site: http://www.ubevents.org/event/aapg.

❒ NYSGA field trips: http://www.ubevents.org/event/nysga.

❒ Eastern Section Web site: http://karl.nrcce.wvu.edu/esaapg/index.html. ❑

The Eastern Section has more colleges and universities than any other AAPG Section or Region – and 17 AAPG Student Chapters are in the Section. They are:

❒ University of Akron.
❒ Auburn University.
❒ Bryn Mawr College.
❒ University of Cincinnati.
❒ Cornell University.
❒ Illinois State University.
❒ Western Kentucky University.
❒ Michigan Technological University.
❒ State University of New York-Buffalo.
❒ University of South Carolina.
❒ University of Tennessee at Knoxville.
❒ West Virginia University.
❒ Northern Illinois University.
❒ University of Maryland.
❒ Western Michigan University.
❒ Brooklyn College.
❒ University of West Georgia.

www.UPDATE

Member Survey, Climate Opinions Available Online

By JANET BRISTER
Web Site Editor

What do you think?

AAPG really wants to know your opinion – and we've made it easy for you to share them with us through the AAPG Web site.

Currently there are two places where you are being asked to speak up:

✓ The new online member survey.

✓ The global climate change card discussion forum.

The All-Member survey was last conducted in 2003. A lot has transpired in those three years. Oil prices are up. Job opportunities have improved. Being a member of AAPG makes good sense. So let's talk about it.

The member survey poses multiple questions about publications, educational and career enhancement opportunities, AAPG's role in geoscience and energy issues and the services AAPG offers to its members.

Here you have the opportunity to tell your leadership what aspects of your AAPG membership you value.

The survey is fairly extensive and should give a clear snapshot of how AAPG's membership values the organization. Tell us what is working – and what we can improve.

However it will have no merit if only a few members complete the survey. Every good scientist knows conclusions are only as good as the data collected. And the more data collected the more complete the answer.

So, why wait?

Why not do it now; go to the AAPG home page, click on the Online Member Survey box, type in the passcode "ux2yb" and begin completing the survey.

Hardcopy surveys were inserted in the August issue and also will be accepted through Sept. 30.

Climate Card

In the meantime, your AAPG leadership wants to represent you well, which is why we've created the climate change card discussion page (July EXPLORER).

The topic is the card that is being proposed for distribution to the public.

We want to know: Is the message correct, clear and concise? Is it something that you would want AAPG to publish?

So far over 50 AAPG members have shared their thoughts.

You have until Oct. 1 to make your comments.

Online Applications

Application for membership in AAPG has become a lot easier. The paper form has been "webalized" – it's online.

Interested persons simply click on "Apply Online" in the navigation bar on the left, or select "Join Online" from the dropdown shortcuts menu. The resulting application will step applicants through all the information requested and even allow their data to be edited before hitting the submit button.

Some enhanced features have been incorporated within the design to make the process easier for the person applying.

One such feature is the ability to upload a resume or document detailing one's education and work experience. Instead of taking the time to fill out dates, degrees, universities, workplaces and their respective addresses, applicants may simply upload their resume or CV with this information.

Finding sponsor names has been made easier as well. Often applicants are unsure if their sponsor is a member of AAPG – in the case of a student, they may not know their sponsor's first name.

The field through which that data collected automatically compares that information to AAPG's membership database. Quickly the entrant will have feedback about the person they are naming as a sponsor for membership.

At the end of the process the applicant pays his dues and immediately is able to capitalize on the privileges that AAPG membership brings, including member prices on publications, courses and meeting registrations.

A Word to Recruiters

There's nothing like word of mouth when it comes to building membership.

For those of you inviting your peers to join AAPG, simply direct them to www.aapg.org/join. Here they will find details on the benefits of being a member of AAPG, the online application and other information to assist them in joining.

Good browsing! ❑

PROFESSIONAL NEWS BRIEFS

Donna S. Anderson, to geological specialist, EOG Resources, Denver. Anderson is research assistant professor, department of geology and geological engineering, Colorado School of Mines, Golden, Colo.

Gerald R. Baum, to exploration manager, Lewis Energy Group, San Antonio. Previously program chief, Maryland Geological Survey, Baltimore.

Allan J. Baxter, to president, ExAlta Energy, Calgary, Canada. Previously vice president-exploration and development, ExAlta Energy, Calgary.

James Lee Bedford, to senior geologist, Chesapeake Energy, Oklahoma City. Previously president, Borero Enterprises, Tyler, Texas.

Fabrizio Bolondi, to exploration manager, NAE, Port Harcourt, Nigeria. Previously exploration manager, CACT, Shekou, China.

Magell Candelaria, to district geologist, Range Resources, Fort Worth. Previously senior geologist EnCana Oil & Gas (USA), Dallas.

Jim Demarest, to general manager-international exploration, Noble Energy, Houston. Previously general manager-international exploration, Burlington Resources, Houston.

Thomas A. Fago, to exploration manager, Lothian Oil, Midland, Texas. Previously geophysical adviser, Burlington Resources Oil and Gas, Midland, Texas.

Scott J. Friedman, to associate geologist, Chesapeake Energy, Oklahoma City. Previously graduate student, Utah State University, Logan, Utah.

Kevin M. Hartl, to associate geologist, Chesapeake Energy, Oklahoma City. Previously graduate student, University of Florida, Gainesville, Fla.

Val A. Kienast, to earth sciences mentor, Cabinda Gulf Oil, Luanda, Angola. Previously senior staff development geologist-Malongo asset team, Cabinda Gulf Oil, Luanda, Angola.

Bryant E. Korn, to exploration new ventures team leader, Chevron Indonesia, Jakarta, Indonesia. Previously deepwater gas subsurface team leader, Chevron Australia, Perth, Australia.

Janie Lambert, to associate geologist, Chesapeake Energy, Oklahoma City. Previously student, Oklahoma State University, Stillwater, Okla.

Sandra Mark, to geological adviser, Black Hills Exploration & Production, Golden, Colo. Previously director, PTTC Rocky Mountain Region, Colorado School of Mines, Golden, Colo.

Michael W. Maughan, to vice president-geosciences, Sproule Associates, Calgary, Canada. Previously manager-geosciences, Sproule Associates, Calgary.

Inge Riis McDonald, to new ventures manager, Pearl Exploration and Production, Calgary, Canada. Previously geological adviser, Nexen, Calgary, Canada.

Michael A. Oestmann, to vice president-exploration, Lothian Oil, Midland, Texas. Previously vice president-Permian exploration, Whiting Oil & Gas, Midland, Texas.

S. Frank Rabbio, to senior geologist, Cimarex Energy, Denver. Previously senior exploration geologist, Aspect Energy, Denver.

Keith Rasmussen, to senior geologist, Chesapeake Energy, Oklahoma City. Previously project geologist, EOG Resources, Oklahoma City.

Mark Reese, to vice president-environmental and safety, Pacific Energy Partners, Long Beach, Calif. Previously director-environmental and safety, Pacific Energy Partners, Long Beach, Calif.

Bill Riehl has retired from Landmark after a 34-year career in geology. Riehl resides in Aiken, S.C.

Arthur C. Saltmarsh, to mining geologist/inspector-Division of Mining, Land and Water, Alaska Department of Natural Resources, Anchorage, Alaska. Previously geologist, Forrest Oil, Anchorage, Alaska.

Carroll Shearer, to senior geophysicist, Chesapeake Energy, Oklahoma City. Previously staff geophysicist, Questar Exploration and Production, Oklahoma City.

David Sivils, to senior geologist, Wynn Crosby, Plano, Texas. Previously geologist, EnCana Oil & Gas (USA), Dallas.

Steve Slawson, director-international IT services, Eastern Hemisphere, Oxy, Houston. Previously manager-petrotechnical solutions, Occidental Oil and Gas, Houston.

Gregory O. Smith, to exploration-new ventures geologist, Chevron International Exploration and Production, Bangkok, Thailand. Previously asset development geologist, Chevron North America Exploration and Production, Bakersfield, Calif.

Ken Thies, to senior general manager, Maersk Oil, Houston. Previously vice president, Subsurface Consultants & Associates, Houston.

Gary L. Thompson, to geophysical manager, Lisle Gravity, Denver. Previously GIS manager, Buys and Associates, Littleton, Colo.

Jeffrey E. Walter, to vice president-Europe and Mediterranean business group, Noble Energy, London, England. Previously vice president Latin America and Asia, Noble Energy, 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.) ❑

MEMBERSHIP AND CERTIFICATION

The following **candidates** have submitted applications for membership in the Association. 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.

For Active Membership

Louisiana
de Groot, Michiel C., SEPCO, New Orleans (J.F. Houser, A.E. Bouma, E.W. Cumming); **Lenert, Steven Cody**, Marlin Exploration, Shreveport (C.R. Scurlock, D.G. Scurlock, J.R. White Jr.)

Michigan
Mullett, Douglas J., Conestoga-Rovers & Associates, Plymouth (reinstate)

New York
Sharma, Sanjay Prakash, Shaw Environmental & Infrastructure, Holbrook (R.K. Nigam, M.K. Chakrabarti, P. Seal)

Oklahoma
Krohn, Charles John, Windsor Energy, Alex (reinstate)

Texas
Akhtar, Saleem, Devon Energy, Houston (R.D. Fritz, J. Wyszynski, K.R. Ainsworth); **Cahoon, Frank Kell**, independent, Midland (W.R. Green, A.T. Carleton Jr., R.C. Leibrock); **Hogarth, Josh Wade**, Swift Energy, Dripping Springs (D.W. Harris, B.L. Milne-Andrews, M.H. Deming); **Jensen, Jerry L.**, Texas A&M University, College Station (C.L. Hanks, W.B. Ayers Jr., B.J. Willis); **Lynch, Damian P.**, EOG Resources, Corpus Christi (R.T. Alaniz, A.C. Mullenax, G.R. Lambert); **Nail, Robert Shawn**, Chevron, Midland (A.E. D'Agostino, F.H. Behnken, M. Styzen); **Tedesco, William Anthony**, Kerr-McGee Oil & Gas, Spring (R.P. Major, H.J. White, J.E Jordan Jr.)

Virginia
Enomoto, Catherine B., Virginia Division of Mineral Resources, Charlottesville (J.A. Stowe, D.L. Carpenter, M.E. Strickler)

Colombia
Rueda, Maria Cristina, Halliburton, Bogota (E. Kairuz, I.D. Olaya-Lopez, K. Bayer)

Ecuador
Burger, Dietlind, PetroEcuador, Quito (J.J. Faz, A. Powers, J.T. Eggert)

Egypt
El-Azhary, Amr, Shell Egypt N.V., Cairo (A.Ni. El-Barkooky, T.F. El-Azhary, M.M.H. Said)

France
Olagundoye, Olatunbosun O., Total S.A., Pau (K.A. Ojoh, O.O. Ogunkoya, R. Fainstein)

Germany
Kukla, Peter Alfred, RWTH Aachen University, Aachen (R. Littke, H. Stollhofen, J.K. Warren); **Rauer, Stephan**, RWE Dea AG, Hamburg (L.E. Vergara, D. Franken, J.D. Marsky)

Malaysia
Pye, Hla Mine, Petronas Carigali, Kuala Lumpur (M.A. Beg, A. Setiawan, Z. Kureshi)

Pakistan
Qayyum, Abdul, Oil and Gas Development Co., Islamabad (T.M. Jaswal, A.S.H. Zaman, M. Ahmad) ❑

Commentary

So, What's in (Changing) a Name?

By JOHN DOLSON

Embracing our differences through personal contact leads to common bonds that can endure political upheavals created by governments.

I've read with great interest recent letters in the EXPLORER debating if eliminating "American" from the AAPG name would facilitate growth internationally.

As any corporation knows, changing a name has serious potential consequences from a marketing standpoint. The BP/Amoco, Exxon/Mobil, Chevron/Texaco and other mergers are cases in point. Efforts are made to keep a brand profile as long as possible to avoid customer loss.

So what's in a name?

People associate names with values and reputations. Customer loyalty is ultimately controlled by the quality of the service provided. Brand names are only important when they are clearly tied to products and services people want to have.

I have lived and worked overseas for 12 years, including raising my family in Egypt before moving to London and now Moscow. During that time, I seldom found the name "AAPG" to be a significant barrier to new membership. On the contrary, our reputation for high quality publications and conferences brings great respect.

However, where we are unknown, the name is clearly tied to the U.S. government, or gives the impression we are only an organization for Americans. But is that the core issue?

I don't think so. In many international regions, we simply aren't "high on the radar screen." We do not currently provide the services that people want.

AAPG is much more than the EXPLORER, the BULLETIN and online literature retrieval. We are a global family.

Last year we asked Executive Committee and Advisory Council members why they joined AAPG. The nearly universal answer was, "I was told to by a friend or my company – it would be essential for my continued career growth."

We joined because of personal invitation. We stayed because it was fun.

The simplest way for AAPG to double its membership is by having each of our 30,000 members successfully recruit one new person this year. Imagine us as a 60,000 person society with resources all over the globe!

I always have gone to RMAG and AAPG meetings not just to learn new things, but to visit old friends and make new ones. Social events, local meetings and field trips are essential to develop and sustain growth. Volunteers ultimately work for an organization because it is fun and personally rewarding.

In the United States we've had nearly 100 years of local affiliate society growth that has created strong personal networks. That is not true overseas.

Personal engagement is a prerequisite for overcoming many fundamental cultural differences that add additional barriers to growth. In many international regions, little value is placed on cross-discipline integration or selfless exchange of scientific ideas. When we encourage affiliation, local societies often do not understand why AAPG requires no money to affiliate – and asks nothing in return but engaging in idea exchange.

In many cultures, society involvement is a way to get jobs directly, and the concept of freely sharing data and ideas is difficult to understand, i.e., "What's in it for me?" Only through positive personal experience can those attitudes be changed.

An example of the need for personal contact is our recent growth in membership in Egypt. The largest geological society in Egypt (EPEX) had no formal relationship to AAPG until the Cairo international conference in 2002. It also had almost no AAPG members. The joint expatriate and Egyptian committees required to develop that conference resulted in many new friendships and a personal view of the value of our organization. As a result, membership dramatically increased (now over 200).

So how do we get on the "radar screen?"

We must create those opportunities to serve and network. Internationally, we need to learn from the domestic societies how to have many more monthly activities.

SPE's growth in Russia is a great example. Four years ago, SPE had virtually no Russian members. A small group of dedicated leaders initiated monthly talks, followed by dinner and drinks. Sponsorship at $5,000 per evening with dual translation was obtained from local companies.

The results?

✓ SPE monthly meeting attendance has grown from a handful of curious attendees to hundreds of fully engaged professionals.

✓ SPE's annual award for membership growth has been won by Russia for at least three years in a row.

See **Commentary**, page 53

READERS' FORUM

Breaking Away

We must break away from the colonies if we are truly to become an international body of earth scientists; I'm referring to the recent announcement of the candidates for vice president (Regions) from Canada and Australia (August EXPLORER).

When the membership vote recently approved the new office it is unlikely the perception of a candidate from the commonwealth came to mind. I consider this another blunder like the Journalism Award nomination. I only hope the backlash from the other international regions is not harmful to future membership efforts.

In the event this is published in the EXPLORER I would look forward to a petition candidate to be placed on the ballot.

Michael A. Barnes
Sugar Land, Texas

The Petition Process

Re: the petition process (July EXPLORER):

✓ The financial cost of running and serving as an AAPG officer is high. I recall at a dinner one past president explained that if elected, one serves AAPG for somewhere between five to seven years, and only about one-third of candidate travel is covered. It became apparent that the financial commitment of serving as AAPG president was an estimated low to middle six-figure amount of personal funds.

Not many people can afford this, and therefore the pool shrinks. I'm sure for other officers the amount is less, but not trivial.

✓ Perhaps AAPG needs to increase travel allowances for candidates, and provide a respectable honorarium to long-serving officers (like presidents) to open up the candidate pool and overcome the current implied, but unstated, financial barrier (commitment).

✓ The AC appears to function like any nominating committee and slates will vary from year to year, depending on interest and availability. No changes in the current process are needed.

✓ If a person wants to run as a petition candidate, by all means let them. Their willingness to do so shows a strong commitment to AAPG. The ability to run as a petition candidate speaks to AAPG's openness as a professional society (a huge positive).

I recommend increasing the necessary signatures to at least 100 AAPG members from wherever a petition candidate wants to get them. I think it is both fruitless and petty to impugn any motives ranging from the suspicious to the bizarre, or to imply that a certain region feels neglected in the nomination process.

I also think it is pointless that candidates need to apply first to the Executive Committee and Advisory Council in order to become petition candidates. That eliminates the possibility of a petition candidate presenting themselves if by chance the Executive Committee and Advisory Council could not come up with a strong slate, despite their best efforts. Such a requirement reduces openness and transparency.

Remember, petition candidates still must carry a majority of the votes cast by AAPG, and no single region or area has enough members to do that. The only exception is the United States as a country, and past election of international candidates demonstrates that the U.S. AAPG members are fair and willing to consider accomplishment and ability rather than geography or nationality.

Finally, it seems to me that when a petition candidate was successfully elected to an AAPG office, they have served with outstanding distinction.

I think the raising of the petition candidate issue is minor compared to other needs AAPG should address.

George Devries Klein
Sugar Land, Texas

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.

What's In a Name (continued)

There has been a fair amount of discussion about how to deal with the issue of AAPG's name. I am a member of another group, APICS, that also faced this same issue in the early 1990s.

It was founded in 1957 as APICS, the American Production and Inventory Control Society. However, by the '90s a large portion of their membership was foreign, and most of the growth was overseas (sound familiar?). They chose to keep the term "APICS" both in recognition of the past, but also to avoid confusion and maintain continuity.

Then they used a descriptive line to reflect the group's new international identity: APICS, The Association for Operations Management (current iteration). They also have a tag line associated with the name to further define the organization.

So a possibility of a name change that might be appropriate: AAPG, The International Petroleum Geology Society.

I suspect there are better ideas out there, but the concept stays the same. Retain the AAPG as a tip of the hat to the organization's past and add a brief line to better describe and reflect its membership and orientation.

Craig F. Anderson
Houston

Seismic Resolution

Regarding the story on seismic activity in the Gulf of Mexico transition zone (August EXPLORER): We have to put more efforts into improving the resolution of seismic data.

Now the resolution is about 50 to 60 feet – a major constraint in lithology, prediction modeling, thin beds identification and demarcation of their geometry. With resolution improvement it is feasible to predict lithology from seismic line attributes modeling, which will help to find a thin bed, pinch type of reservoir.

I think bypassed oil is due to lack of precise demarcation of these type of features; well logging techniques do not have much horizontal resolution, and if wells are spaced wide apart then lithofacies, isopach mapping for delineating reservoir rock and reservoir boundaries will also have some constraints. High resolution data will improve deepwater prospecting and exploration many times by identifying and precisely demarcating the petroleum system – reducing chances of failure many fold.

While exploring in deep water we have to understand the depositional processes and their control in petroleum system generation and preservation; high resolution seismic sequence stratigraphy can play an effective role in complementing other techniques like basin modeling to evaluate the generation potential of deep water basins, location of drilling wells, etc.

Vinay K. Sahay
Bombay, India
❑

PETROLEUM GEOSCIENCES
THE PETROLEUM INSTITUTE
ABU DHABI, UNITED ARAB EMIRATES

Positions: The Petroleum Geosciences Program of The Petroleum Institute, Abu Dhabi, United Arab Emirates (UAE), is seeking outstanding candidates to begin January 2007 or August 2007 for several possible positions. Appointment at Assistant Professor, Associate Professor, Professor, and Distinguished Professor will be considered, depending on qualifications. Ph.D. from a first-rank university is required for all positions. Teaching experience and petroleum industry experience are desirable. Experience with carbonate rock systems is also advantageous.

Geoscience Educator: Successful candidate will be primarily responsible for coordinating multiple sections of introductory geoscience, teaching introductory and other undergraduate geoscience courses as needed, and supervising undergraduate laboratories. Research opportunities exist, but research will not be a main responsibility. Ph.D. in a relevant area of geoscience and several years of university-level teaching are required. Candidates must have strong interpersonal, communication, and organizational skills. Candidates must also have a commitment to excellent teaching and have demonstrated use of modern, innovative educational methods.

Reflection Seismology: Candidates must have expertise in seismic acquisition and processing, with skills in advanced processing, seismic inversion, seismic imaging, and multi-component analysis, or in seismic interpretation, including interpretation of seismic attributes. Successful applicants for the possible position will teach undergraduate and graduate courses, develop an active research program that impacts the UAE petroleum industry, and engage in institutional service work. Opportunities exist to work with PI industry stakeholders in research.

Petrophysics-Rock Physics: Petrophysicist with experience in carbonate well log interpretation and rock physics techniques is requested. Rock physics techniques must include fluid substitution, seismic/rock physics reservoir characterization, AVO, and monitoring of recovery processes. Candidates should have good IT, data management, rock laboratory, and teaching skills. Successful applicant will be working in a multidisciplinary department with oil industry projects and teach undergraduate and graduate courses.

The Petroleum Geosciences will consider additional applicants, particularly in the areas of organic geochemistry, stratigraphy and sedimentology, structural geology with experience in fractured reservoirs, quantitative geologic modeling, and petroleum geology, which would support the Program's educational goals.

Salary/Benefits: Salary is competitive and commensurate with qualifications and experience, with an excellent benefits package, including housing and furniture allowance, educational allowance for dependent children, annual air passages and medical care. The UAE levies no income taxes.

Institution: The Petroleum Institute was created in 2001 with aspirations to establish itself as a world-class institution in engineering in areas of significance to the oil and gas and the broader energy industries. The Petroleum Institute's sponsors and affiliates include major oil companies, including four of the five major oil companies in the world. The campus has modern instructional laboratories and classroom facilities and is now in the planning phase of three major research centers on its campus. The Petroleum Institute is an affiliate institute with Colorado School of Mines and in the process of signing working relationships and collaborations with other major universities and research institutions around the world to capitalize on joint collaborations and research areas of interest. For additional information, please refer to the PI website: www.pi.ac.ae.

To Apply: Application materials must include (1) a letter of interest, which addresses the applicant's qualifications for the position; (2) a current resume; and (3) the names, email and business address, and home and business telephone numbers of at least three references. Electronic Submission is greatly preferred, and should be sent to The Recruiting Coordinator at The Petroleum Institute (recruiting-coordinator@pi.ac.ae) and submission of materials as an MS Word/PDF attachment is strongly encouraged.

Candidates are encouraged to submit an application as soon as possible and no later than **15 November 2006**, although applications will be considered until vacant positions are filled.

CLASSIFIEDADS

POSITION AVAILABLE

Post-doctoral researcher-sequence stratigraphy
University of Colorado-Boulder

The Energy and Minerals Applied Research Center at the University of Colorado is seeking candidates to fill a post-doctoral research position in sequence stratigraphy. The position will last for 2 years, beginning in late 2006. The project will focus on the evolution of late Quaternary turbidite systems in slope basins in offshore, Nigeria. 3-D seismic data will be interpreted to study near-surface depositional systems, with the goal of developing analogs for deeper features. Candidate must have a strong background in sequence stratigraphy and seismic interpretation, and a working knowledge of UNIX systems. Specific experience in Nigeria is not a pre-requisite. Salary will be commensurate with experience. Interested candidates should send vitae, plus three names of references to Paul Weimer at: Department of Geological Sciences, University of Colorado, Boulder, CO 80309-0399 or paul.weimer@colorado.edu. Screening of applications will begin August 1 and will end when a successful candidate has been identified. The University of Colorado at Boulder is committed to diversity in equality and employment.

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ASSISTANT PROFESSOR IN NEAR-SURFACE GEOPHYSICS
DEPARTMENT OF GEOLOGY
UNIVERSITY AT BUFFALO

The University at Buffalo Department of Geology invites applications for a tenure-track assistant professor position in near-surface geophysics. We seek a scientist who will integrate with our existing departmental strength in geohazards (contaminant hydrogeology, volcanic hazards, climate change, and seismic hazards). Of particular interest are researchers with expertise in hydrogeophysics or inverse methods.

We expect faculty to develop, maintain and publish an innovative, extramurally funded research program. The successful applicant must have a Ph.D. degree at the time of appointment and demonstrated potential to perform teaching duties. Teaching duties will include undergraduate and graduate level courses in the candidates' specialties. More information about our department can be found at: http://www.geology.buffalo.edu.

Send applications to Dr. Matthew Becker, c/o Robyn Wagner by email rlwagner@buffalo.edu or post to Department of Geology, 876 Natural Sciences Complex, University at Buffalo, Buffalo, NY 14260. Applications should include, a CV, statement of research goals and teaching experience and interests, selected reprints, and contact information for at least three references. Applications should be complete by Nov. 1, 2006, when we will begin our review of candidates.

The University at Buffalo is an Equal Opportunity Employer/Recruiter.

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Geophysicist/Seismic Interpreter and Stratigrapher/Sedimentologist positions at the Jackson School of Geosciences (JSG)
Bureau of Economic Geology
The University of Texas at Austin, U.S.A.

The State of Texas Advanced Resource Recovery (STARR) program, an established research program within the Bureau of Economic Geology, JSG, is seeking **(1) a geophysicist/seismic interpreter and (2) a stratigrapher/sedimentologist**. Geophysical and geological investigations are carried out both in regional scale, onshore and offshore U.S., and in field scale. We are particularly interested in candidates with strengths in one or more of the following: seismic interpretation, sequence stratigraphy, clastic sedimentology, reservoir characterization, seismic modeling, and attribute analyses. Successful candidates will participate in scientific research, publish in peer-reviewed scientific articles, participate in national and international scientific forums, prepare technical reports and presentations, and liaise with industry partners. Candidates with an advanced university degree and some industry experience are preferred.

The JSG offers an excellent working environment with challenges and possibilities for professional development and advancement. Salary is negotiable depending on qualification. Please refer to the following website for further information regarding the particulars of the STARR program. (http://www.beg.utexas.edu/resprog/starr/index.htm). **For further information or to e-mail a resume, please contact Dr. Robert Loucks (bob.loucks@beg.utexas.edu) or Jenny Turner (jenny.turner@beg.utexas.edu).**

The University of Texas at Austin is an Equal Opportunity/Affirmative Action Employer. All positions are security-sensitive; conviction verification conducted on applicants selected.

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Research Petroleum Geologist
Indiana Geological Survey

The Indiana Geological Survey (IGS), a research institute of Indiana University, seeks applications for a position in petroleum geology to conduct applied research related to the oil and gas systems located within the state and region. Core responsibilities of the position include: interpreting subsurface geological and geophysical information, assessing the content and potential recoverability of energy resources in place, and processing, synthesizing, and publishing scientific results. Masters degree in geosciences, publications record, and 5 years petroleum experience required. Complete job posting is available on the IGS Website (igs.indiana.edu). Indiana University is an equal opportunity/affirmative action employer. Application deadline is October 15, 2006.

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U.S. Geological Survey Mendenhall Postdoctoral Research Fellowship Program

The U.S. Geological Survey (USGS) invites applications for the Mendenhall Postdoctoral Research Fellowship Program for Fiscal Year 2008. The Mendenhall Program provides opportunities to conduct research in association with selected members of the USGS professional staff. Through this Program the USGS will acquire current expertise in science to assist in implementation of the science strategy of its programs. Fiscal Year 2008 begins in October 2007.

Opportunities for research are available in a wide range of topics. The postdoctoral fellowships are 2-year appointments. The closing date for applications is November 15, 2006. Appointments will start October 2007 or later, depending on availability of funds. A description of the program, research opportunities, and the application process are available at http://geology.usgs.gov/postdoc. The U.S. Geological Survey is an equal opportunity employer.

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continued on next page

Commentary

from page 50

✓ This fall, SPE will host in Moscow the largest oil and gas conference in Russia's history.

Their robust membership is now fully engaged and rapidly expanding. It started with the vision and hard work of a small number of people.

* * *

AAPG is building upon this model. Six months ago, we joined with EAGE and SEG in hosting similar monthly Moscow meetings. Attendance is steadily increasing, and we are starting to get on the radar screen. Students and volunteers provide application forms and draw in new members during each talk. We frequently draw crowds of 100-200 people.

The European Region is opening its London office with similar goals in mind, including a newsletter and local meetings.

* * *

So what's in a name? It is the people behind it and the values and reputation they bring. We must champion diversity of thought, culture and the pursuit of scientific knowledge. Embracing our differences through personal contact leads to common bonds that can endure political upheavals created by governments.

I have watched in dismay as recent global events have challenged America's reputation. But as an AAPG member I continue to encounter fellow geoscientists in Nigeria, China, Russia, the Middle East, Europe and other countries who can look beyond politics and embrace our common desire to advance our profession. They do so because they have become friends and colleagues and part of a larger family. We trust one another.

Unquestionably, we must streamline our application process while still maintaining the ability to ensure a high degree of professionalism in new members.

We are studying sliding dues structures that would make us more affordable in countries where per capita income is low and dues prohibitively expensive. Both SEG and SPE long ago adopted that policy.

Corporate membership where companies purchase 50-200 annual paid memberships further facilitates payment and recruitment. PetroChina has just agreed to adopt a three-year corporate membership.

We must also consider opening local offices, which can become self-funded.

Changing our name is a distant secondary issue if all of us engage in drawing in new members through personal contact, joint projects and developing trust through new friendships. Meetings, field trips, newsletters and social events are the vehicle required to make this happen.

It takes personal involvement. Join an AAPG committee, work to provide local events and engage in strengthening your personal network of friends and colleagues.

(Editor's note: Dolson, exploration adviser for TNK-BP, Moscow, Russia, is vice president of AAPG.) ❑

Classified Ads

from previous page

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Illinois Basin Prospects Wanted

I am interested in oil prospects in the Illinois Basin. These drilling prospects can be leased or unleased. No partial interests. All contacts confidential. If you have any prospect, please contact us.

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ROCKY MOUNTAIN REAL ESTATE – Angel Fire Resort in northern New Mexico offers a lifestyle that most people just dream about. You can enjoy skiing, golf, tennis, hiking, fishing, biking, hunting and more. Contact Rex Daniels – rex@PruAngelFireRe.com - DanielsandDanielsRealEstate.com – cell 505-595-4222 – 800-873-5268.

CLASSIFIED ADS

You can reach about 30,000 petroleum geologists at the lowest per-reader cost in the world with a classified ad in the EXPLORER.

Ads are at the rate of $2.10 per word, minimum charge of $42. And, for an additional $50, your ad can appear on the **classified section on the AAPG web site**. Your ad can reach more people than ever before.

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

DIRECTOR'S CORNER

GeoStudents Face Diverse Choices

By RICK FRITZ

"Jobs" is a word that has been music to the geoscience professional's ears for the past couple of years. While I was writing about "work force" issues last month, I began to better understand the diversity of opportunities available to geologists, geophysicists, engineers, etc.

Of course, AAPG focuses on petroleum-related professional development. Almost everybody is busy today – from senior petroleum geologists to those just entering the job market. When asked about work, geologists often tell me that they "have more than they can shake a stick at!"

I don't know what that means, but I am sure it means that they have a lot to do.

* * *

Jobs in petroleum geology are available worldwide for conventional and non-conventional exploration and exploitation projects.

There is an increasing need for geologists who understand the development of unconventional reservoirs, such as exploitation of tight gas shales.

One of the most interesting aspects of work force studies is the number of new jobs opening for geoscientists in energy-related fields worldwide:

✓ Research and development jobs resulting from **clean-coal technologies** will be available as a component or supplying the increasing need for coal in power generation. AAPG's Energy Minerals Division provides information and opportunities for those professionals interested in energy-mineral resources.

✓ After a long absence, it appears that **nuclear power** plants are back in vogue. I remember the atomic "boom" back in the late 1960s and '70s, and even toured a uranium mine in New Mexico when I was a student. Disarmament between the "Super Powers" is providing some supply of processed fuel, however, the supply vs. demand question is, "How great will the need for geoscientists skilled in developing uranium assets be in the future?"

✓ Of course, **hydrogeology** and **environmental assessments** will continue to offer jobs for geoscientists. The Division of Environmental Geosciences is a great group to join and become involved in their programs (see below).

✓ Some of the new opportunities have a symbiotic relationship, such as **CO_2 sequestration and enhanced petroleum recovery** from proven oil and gas fields. Many companies are gearing up their sequestration plans and developing teams of geoscientists and engineers to evaluate CO_2 floods in existing fields. This is an interesting relationship between environmental issues and energy demands.

✓ Another new area of opportunity for geoscientists is in **solar**, **wind** and **wave power**.

In July, the EXPLORER reported on two geologists involved in developing wind power. At first I was puzzled by the fact that geologists were getting involved in developing this type of energy. Then I realized it involved two aspects that geologists are very familiar with – business deals and land usage.

Many geologists are good entrepreneurs, so it is natural to extend this talent to other developments in the energy sector.

✓ Finally, I am excited to hear more and more interest in petroleum geologists who look at **rocks**! Of course, this is more of a *job requirement* than a *new* job – but numerous company representatives have expressed the need for this skill in their employees. Understanding rocks is critical to understand the models we develop with new exploration and exploitation technologies.

* * *

✓ **Teaching** petroleum-related disciplines is an important need for our industry.

According to a survey this year of 262 colleges and universities by the American Geological Institute, the top six career pathways for geoscience master's degree students are:

1. State/local government (tie)
   Federal government (tie)
2. Environmental
3. Academia
4. Petroleum industry
5. Continuing education

Interestingly, 70 percent of the advisers said they would suggest students to pursue a career in the petroleum industry (89 percent would also suggest a career path in the environmental sector). Meanwhile, 42 percent of the students expressed an interest in pursuing a petroleum industry career. (See related story, page 22.)

As a professional association, it is important that we continue to develop interest by students in all of the energy-related fields to supply the need for jobs.

You can help. Please volunteer for AAPG student and job activities. Also, join your local society in developing their related programs.

Now is a great time to visit a school or university and talk about your job.

It's their future – and ours.

One Person Can Make a Difference

Getting Involved Easy Via DEG

By JANE S. McCOLLOCH
DEG President

As one of my colleagues and fellow DEG members recently pointed out, what the DEG has to offer its members should be much more than receiving the annual ballot, quarterly issues of DEG's journal *Environmental Geosciences* and the DEG Web site.

DEG should provide its members an opportunity for personal involvement and attachment.

Let's talk about opportunities!

The DEG is a snapshot of its current leadership, and the ideas and energy of one person can make a big difference. Make DEG yours by becoming more involved with its many activities. Some suggestions:

✓ Nominate deserving environmental geoscientists for DEG honors and awards.

The accomplishments of those individuals who have made significant contributions to the environmental geosciences or have provided exemplary service and/or leadership to the Division should be recognized. Some DEG awards do not require DEG or AAPG membership. Awards descriptions and the nomination form are available at the DEG Web site (http://deg.aapg.org).

Although nominations were due the first Thursday in August, it is never too late or too early to submit nominations.

✓ Submit an abstract and make an oral or poster presentation at your AAPG Section/Region meeting or the AAPG annual convention.

✓ Volunteer to chair or co-chair a DEG session at your AAPG Section/Region meeting or the AAPG annual convention.

DEG Advisory Board section representatives are responsible for ensuring a DEG presence at each AAPG Section meeting. Ideas, suggestions and offers of assistance are always appreciated.

Contact information for DEG section representatives is available at the DEG Web site.

✓ Submit a paper for publication in *Environmental Geosciences*.

Instructions for authors can be found in every issue of this journal and at the DEG Web site.

✓ Volunteer to judge a DEG oral or poster session at your AAPG Section/Region meeting or the AAPG annual convention.

It is an opportunity to learn something new and useful, and it assists in the process of providing recognition for outstanding technical presentations.

✓ Serve on a DEG committee. People who have enthusiasm and ideas are always welcome. DEG's Web site, Geohazards, Health and Safety, Research, Membership and Continuing Education committees all have opportunities available.

If you would like to become involved with one of these committees, please contact the committee chair and offer your services. Committee chair contact information is available at the DEG Web site.

Ideas for new committees also are a possibility.

✓ Mentor a geology student or a new geologist – it is a learning experience for both mentor and protégé.

Seeing the world through their eyes is often surprising. Having done this for a number of years, I am not sure who benefits the most.

While you are at it, introduce them to AAPG and DEG.

* * *

Some upcoming events and opportunities include:

✓ The 56th Gulf Coast Association of Geological Societies annual convention is Sept. 25-27, in Lafayette, La. About 40 percent of the approximately 130 oral and poster presentations on the meeting program are on environmental topics.

Environmental sessions include Gulf Coast Environmental I; Coastal Processes; Gulf Coast Environmental poster session; Geologic Record of Hurricanes; Louisiana Hurricane Impacts and Coast Processes; and Gulf Coast Environmental II.

Also, two GCAGS field trips of environmental interest are being offered: "Hydrogeology and Environmental Geology," on Sept. 25, "Hurricane Katrina – What Happened?" on Sept. 28.

More information is available at www.gcags2006.com.

✓ The 35th annual Eastern Section meeting is set Oct. 8-11 in Buffalo, N.Y., and environmental sessions will include: CO_2, Nitrogen and H_2S Production; Environmental Issues: Geology, Hydrology, and Geochemistry; CO_2 Sequestration; and E&P Environmental Issues and Best Management Practices.

✓ In conjunction with the Eastern Section meeting, the New York State Geological Association is offering 11 field trips, including an environmental field trip on Oct. 7 called "Famous Hazardous Waste Sites of Niagara Falls, N.Y. One field trip stop will be the infamous Love Canal.

The Eastern Section AAPG meeting Web site is www.ubevents.org/event/aapg.

* * *

Please contact me about any DEG issues, concerns or questions you may have during this year at 1 Mont Chateau Road, Morgantown, W.Va. 26508-8079, or at janemc@geosrv.wvnet.edu. ❑