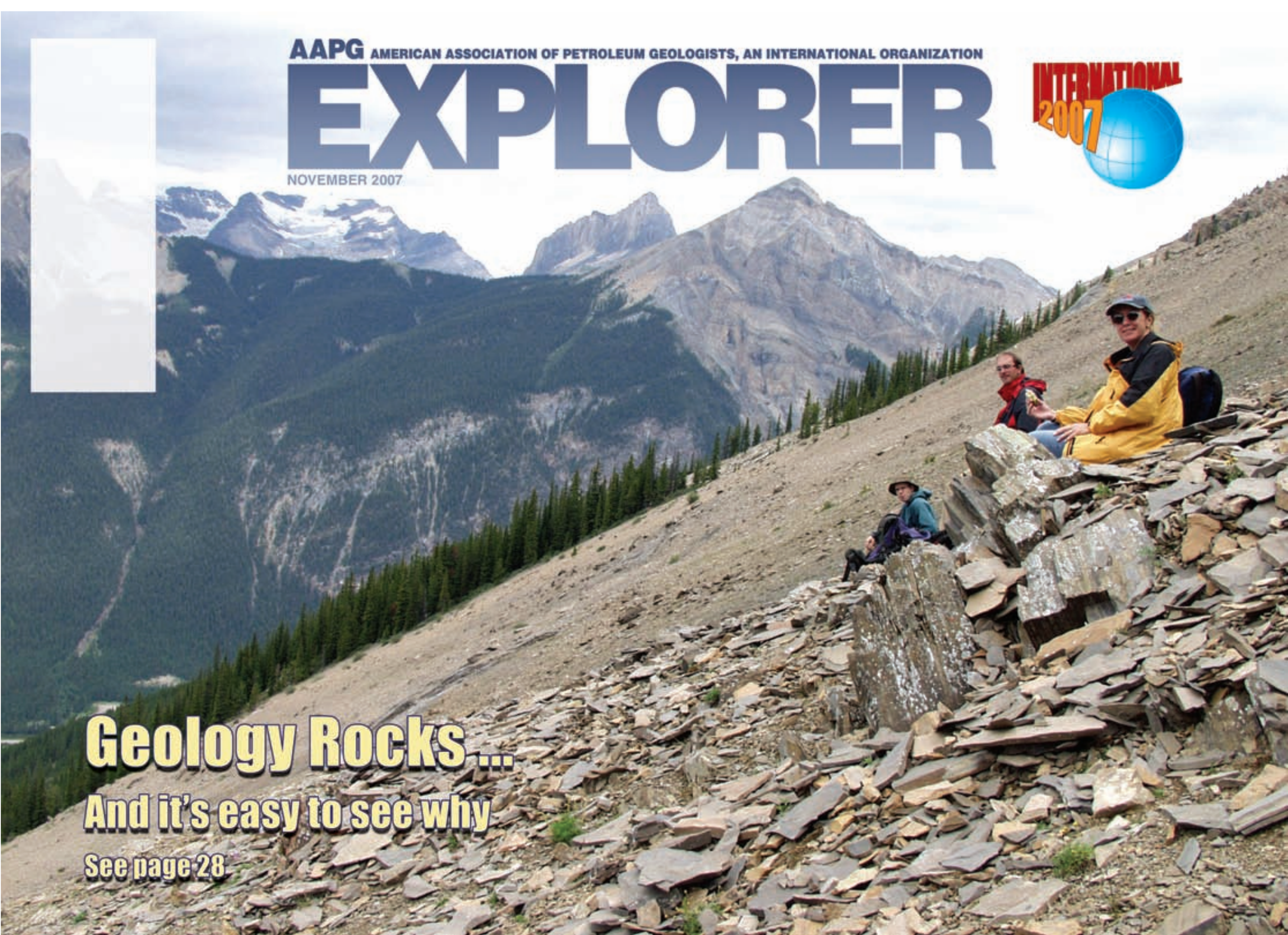
AAPG AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, AN INTERNATIONAL ORGANIZATION

EXPLORER

NOVEMBER 2007

INTERNATIONAL 2007



Geology Rocks ...

And it's easy to see why

See page 28

Vol. 28, No. 11
November 2007

AAPG EXPLORER

On the cover: Call it magnificent. Call it inspiring. But mainly, call it geology – and after you realize the connection, the world is never quite the same. That's something that these explorers probably discovered while visiting the famous Burgess Shale, on the flanks of Mount Stephen above Field, British Columbia. That's also the mindset behind a new book that encourages the public to notice, embrace and celebrate the geology and rocks of Canada. See story on page 28. Photo courtesy of Andrew Miall.

CONTENTS

REGULAR DEPARTMENTS

STAFF

AAPG Headquarters – 1-800-364-2274 (U.S. & Canada only), others 1-918-584-2555

Communications Director
Larry Nation
e-mail: lnation@aapg.org

Managing Editor
Vern Stefanic
e-mail: vstefan@aapg.org

Editorial Assistant
Susie Moore
e-mail: smoore@aapg.org

Correspondents
David Brown
Louise S. Durham
Barry Friedman
Ken Milam

Graphics/Production
Rusty Johnson
e-mail: rjohnson@aapg.org

Advertising Coordinator
Brenda Merideth
P.O. Box 979
Tulsa, Okla. 74101
telephone: (918) 560-2647
(U.S. and Canada only: 1-800-288-7636)
(Note: The above number is for advertising purposes only.)
fax: (918) 560-2636
e-mail: bmer@aapg.org

Vol. 28, No. 11
The AAPG EXPLORER (ISSN 0195-2986) is published monthly for members. Published at AAPG headquarters, 1444 S. Boulder Ave., P.O. Box 979, Tulsa, Okla. 74101, (918) 584-2555. e-mail address: postmaster@aapg.org
Periodicals postage paid at Tulsa, Okla., and at additional mailing offices. Printed in the U.S.A.
Note to members: $6 of annual dues pays for one year's subscription to the EXPLORER. Airmail service for members: $45. Subscription rates for non-members: $63 for 12 issues; add $67 for airmail service. Advertising rates: Contact Brenda Merideth, AAPG headquarters. Subscriptions: Contact Veta McCoy, AAPG headquarters. Unsolicited manuscripts, photographs and videos must be accompanied by a stamped, self-addressed envelope to ensure return.

POSTMASTER: Please send address changes to AAPG EXPLORER, P.O. Box 979, Tulsa, Okla. 74101.
Canada Publication Number 40046336.
Canadian returns to: Station A, P.O. Box 54, Windsor, Ontario N9A 6J5
e-mail: returnsIL@imex.pb.com

PRESIDENT'S COLUMN

AAPG Begins New Journey With PTTC

By WILLARD "WILL" GREEN

In early August, Executive Director Rick Fritz asked whether I realized I was "about to be sucked into the vortex" – meaning that the heavy meeting schedule with attendant travel was about to begin.

I responded that I was well aware, and that was the reason I began the organizational planning process – especially identifying members to chair committees and populate related boards – in mid-April, six weeks before taking office.

Since mid-August we have had the annual Leadership Conference and two Executive Committee meetings, both held in conjunction with annual AAPG Section meetings – the Mid-Continent meeting in Wichita, Kan., and the Eastern Section meeting in Lexington, Ky.

Both Section meetings were successful, with possible record high attendance (over 400 in Wichita and 500 in Lexington) and excellent technical programs. I congratulate the convention chairs (Ernie Morrison-Wichita and Dave Harris-Lexington) and their committees for jobs well done.

The field trip to the Underground Salt Mine Museum near Hutchison, Kan., and the trip to the Red Mile Track in Lexington to watch the Harness Races were interesting and enjoyable.

Petroleum Technology Transfer Council

One of the important goals adopted by the Executive Committee on July 1 for the 2007-08 year was to "complete efforts to develop a new partnership to enable the continuation of the work of the Petroleum Technology Transfer Council (PTTC) under a new organizational structure."

These efforts began in early spring 2007, when AAPG leadership became aware that Department of Energy (DOE) funding for PTTC would be phased out by October 1, 2008.

We are pleased that on Sept. 27 the PTTC board approved a proposal by AAPG to assume leadership of PTTC, an organization that has had perhaps the most successful fossil fuel program, developed by oil and gas producers with the support of DOE – it was originally designed to provide producers with low cost workshops and information on engineering, geology, geophysics and oil and gas operations. (See Director's Corner, page 62)

The technology was gathered and transferred under contract by **regional lead organizations** (RLOs), managed through universities and state surveys or bureaus. Each RLO was counseled by **producer advisory groups** (PAGs), comprising local producers and others involved in the oil and gas exploration and production industry.


Green

The EC considers the program important for our members and the industry.

Under the new organizational structure AAPG will have a majority of members on the new PTTC board and will likely bring in a minority partner or partners to help ensure the program's success.

Partial funding from DOE will considerably reduce the financial risk for the first year of operation. Workshop fees will be increased but will be competitive with the marketplace. Additional support will be solicited from industry and foundations.

AAPG staff spent countless hours preparing the business plan for the new PTTC with conservative, most likely and optimistic financial scenarios – and then prepared multiple revisions to help the EC find the best plan to present to the PTTC board.

Jim Blankenship, director of the AAPG Geosciences Department, was our lead staff person for the project, and I congratulate him, Rick Fritz and all other staff and AAPG members who contributed their professional expertise.

Global Climate Change Solutions

The Global Climate Change Solutions Committee is now in place with Priscilla Grew at the University of Nebraska and member of the Division of Environmental Geosciences as chair of the committee (see page 40).

I am pleased that all 12 members who were asked to serve on the committee accepted the invitation. They represent a balance of backgrounds and views on the climate issues, so we are anticipating a variety of topics on the Web forum.

Technical programs at AAPG meetings and articles for the DEG Journal likely will follow.

Ya'-mas!

Will Green

Candidates' Profiles Now Online

Biographies and individual information for the 2008-09 slate of AAPG officer candidates are available online at the AAPG Web site.

The same biographical information also will be inserted in an upcoming EXPLORER.

The president-elect winner will serve as AAPG president in 2009-10. The terms for both vice president-Sections and treasurer are two years.

Ballots will be available in spring 2008.

AAPG rules and guidelines governing the campaign can be found online at http://www.aapg.org/business/candidates/rules.cfm.

The candidate slate is:

President-Elect

❒ **John C. Lorenz**, Geoflight LLC, Edgewood, N.M.

❒ **Ronald A. Nelson**, Broken N Consulting, Cat Spring, Texas.

Vice President-Sections

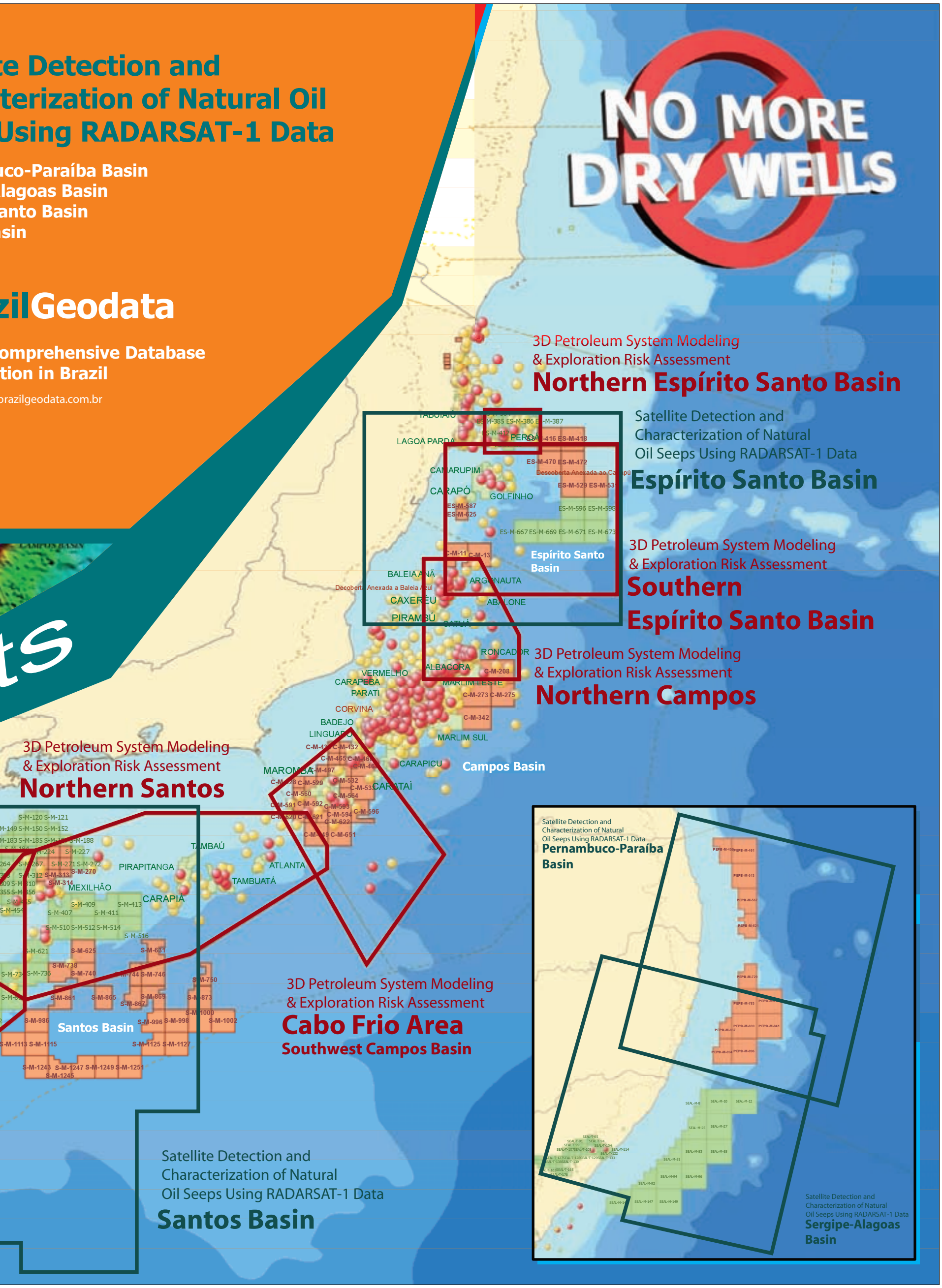
❒ **David H. Hawk**, Energy Analysis and Answers/Consultant, Boise, Idaho.

❒ **W.C. "Rusty" Riese**, BP Americas, Katy, Texas.

Treasurer

❒ **Edith C. Allison**, U.S. Department of Energy, Washington, D.C.

❒ **Kay L. Pitts**, Aera Energy LLC, Bakersfield, Calif. ❑



But Has the Oil Price Cycle Been Repealed?

International Trends Look Positive

BY DAVID BROWN
EXPLORER Correspondent

You can summarize the outlook for the international oil and gas industry in three words:

"It all depends."

Identifying trends in the industry isn't a problem. Forecasters have no trouble following the major international developments and issues.

Industry experts mention several others that might have an effect.

While the near-term future of exploration looks solid, there's still enough uncertainty to make the long-term outlook a question mark.

Ongoing international trends include:

✓ The spread of offshore exploration into deeper waters around the world.

✓ Increased energy demand from growing economies, especially in China and India.

✓ Improvements in exploration and production technology and the use of advanced seismic tools.

✓ Continued consolidation of both large and small petroleum companies.

✓ The opening up of unconventional resources in both oil and gas.

Other international issues indicate a less predictable future:

✓ Geopolitical uncertainty in Latin America, the Middle East, Russia and Africa.

✓ The unknown ability of companies and countries to replace declining crude production from large, older fields.

✓ Changing relationships between international oil companies and national oil companies.

✓ Global development and uptake of alternative energy-delivery sources, including LNG and GTL.

✓ The possibility of legislated restrictions on carbon emissions and the emergence of a worldwide carbon-credits trading system.

World Unconventional Liquids Production by Region and Country, High Oil Price Case, 1990-2030
(Million Barrels per Day)

Region/Country	History (Estimates)			Projections					Average Annual Percent Change, 2004-2030
	1990	2004	2005	2010	2015	2020	2025	2030	
World									
Biofuels	0.2	0.3	0.6	1.3	1.8	2.1	2.3	2.4	7.7
Oil Sands/Bitumen	0.4	1.1	1.1	1.9	2.7	3.3	3.9	4.4	5.5
Ultra-Heavy Oil	0.0	0.6	0.6	0.9	1.1	1.4	1.8	2.0	5.0
Coal-to-Liquids	0.1	0.1	0.1	0.3	0.7	1.8	2.9	3.9	15.9
Gas-to-Liquids	0.0	0.3	0.0	0.2	0.6	1.0	1.2	1.5	6.3
Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.2
World Total	**0.6**	**2.6**	**2.4**	**4.6**	**6.9**	**9.7**	**12.2**	**14.3**	**6.8**
Selected Country Highlights									
Biofuels									
Brazil	0.1	0.2	0.2	0.3	0.5	0.7	0.8	0.8	6.5
China	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.3	—
India	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	—
United States	0.0	0.1	0.2	0.5	0.5	0.5	0.6	0.6	5.8
Coal-to-Liquids									
Australia and New Zealand	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	—
China	0.0	0.0	0.0	0.1	0.3	0.8	1.2	1.6	—
Germany	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	23.5
India	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	—
South Africa	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	4.9
United States	0.0	0.0	0.0	0.0	0.1	0.6	1.2	1.6	—
Gas-to-Liquids									
Qatar	0.0	0.0	0.0	0.1	0.5	0.9	1.0	1.3	—
South Africa	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	—

Sources: **History:** Energy Information Administration (EIA), Office of Energy Markets and End Use.
Projections: EIA, System for the Analysis of Global Energy Markets, run 2007March21a (2007).

An overarching issue for the international oil industry involves access to promising exploration areas at realistic terms.

"The environment is very tough from an explorationist's point of view," said Edward Chow, senior fellow for the Center for Strategic and International Studies in Washington, D.C.

Right now, the world is seeing "a complete mismatch of expectations" between oil companies willing to invest in exploration and countries wanting to set terms based on $70-$80 a barrel oil, he said.

"At a minimum, governments are

continued on next page

Chow

Fryklund

Lewis

continued from previous page

able to drive much harder bargains now," Chow observed.

"Access is clearly a problem for companies wanting to explore," he added. "The most prospective areas have been explored and now you're moving into more difficult areas."

Quiet Interest

In addition, many other trends and issues could influence the international oil and gas picture, including:

✓ Industry activity in West and East Africa and in northern and southern Iraq.

✓ Addition of unconventional supplies to worldwide liquids production.

✓ Exploration for and production of natural gas in the Middle East.

✓ Acquisition and development of second-tier heavy oil deposits.

✓ Changes in the world's economic outlook.

Africa has drawn increasing interest from the international exploration community, according to AAPG member Bob Fryklund, vice president of industry relations for IHS Inc. in Houston.

"East Africa is really the thing people are looking hard at right now," Fryklund said.

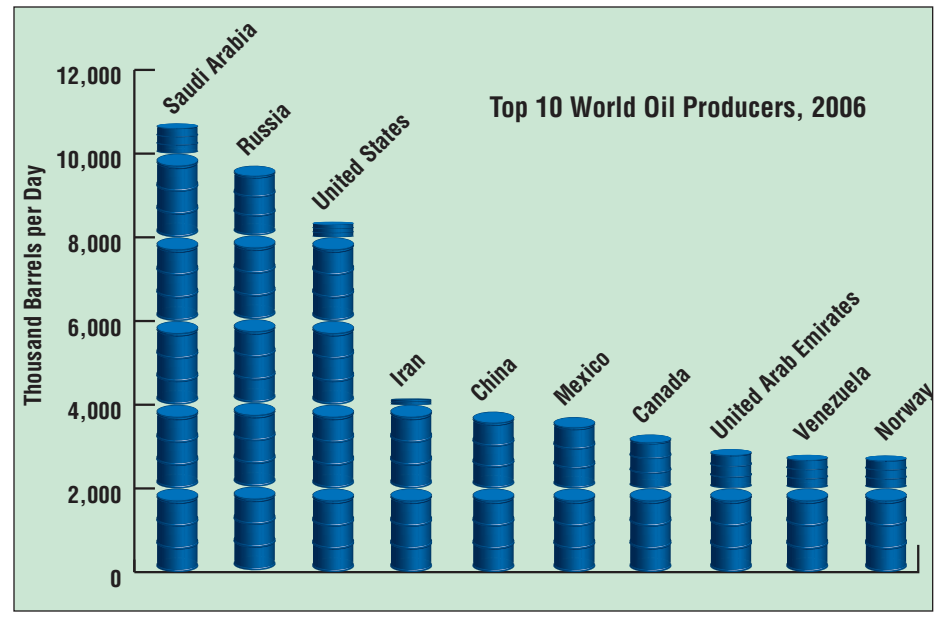
"There is still a little bit of the West Africa component, but it's moving out of the Golden Triangle," he said. "The biggest thing on the West Africa side will be pushing that Cretaceous play further north, into Ghana."

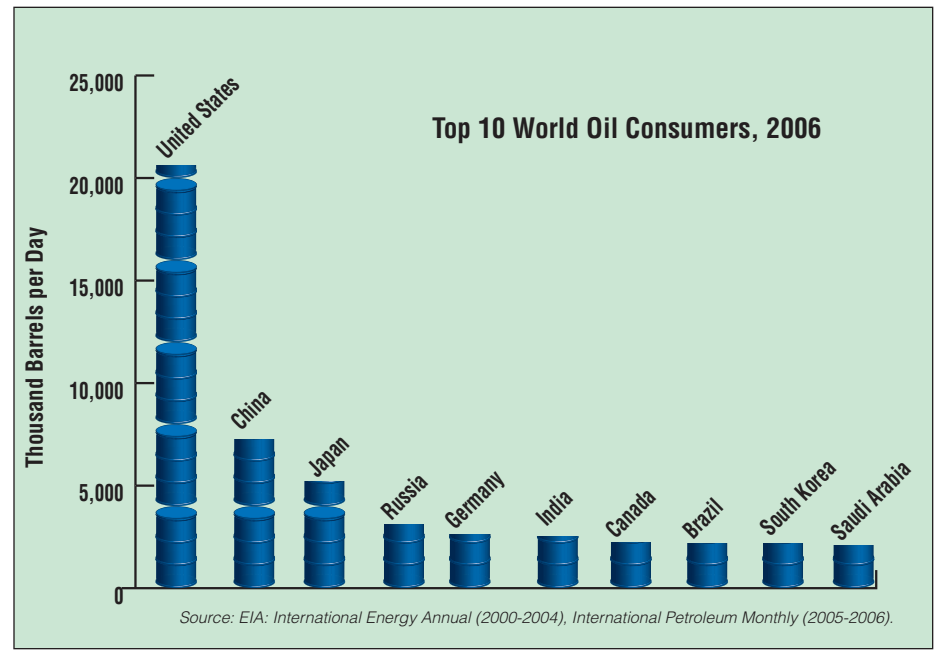
While the industry has already found Golden Triangle riches offshore West Africa, it's "still searching for the gold mine" in East Africa, Fryklund observed.

"The Iraq story is a two-fold one. The supermajors are looking at the supergiant fields and development in the south. The independents are looking at the north. That's an exploration play," he said.

New exploration interest targets in the Kurdistan Region of northern Iraq, Fryklund noted. He cited recent results from the region's Taq Taq oilfield, which

See **Trends**, next page





New Hybrid IOCs on the Scene

Quick: What company bought BP's E&P assets in the Netherlands, Talisman Energy's Brae assets in the North Sea, the Canadian subsidiary of Pioneer Natural Resources and PrimeWest Energy Trust in Calgary?

If you said TAQA, the Abu Dhabi national energy company, you'd be right.

You also would be remarkably well informed, because this new type of international oil company (IOC) is just starting to show up on the industry's radar.

"One of the emerging trends in the Middle East region is the emergence of these smaller new entities, which tend to be formed in the Emirates," said AAPG member Stuart Lewis, director-Middle East for IHS Inc.

TAQA provides more than 85 percent of Abu Dhabi's water and power. It's now expanding rapidly in the international petroleum business through acquisitions.

The company reportedly plans to invest $60 billion in the energy sector, up to $20 billion of that in Canada. TAQA was set up as a public joint sector stock company – PJSC – and its public shares trade on the Abu Dhabi stock exchange.

Lewis also follows Aabar Petroleum Investments Co., another Abu Dhabi-based PJSC that operates in part through its Pearl Energy Ltd. subsidiary in Singapore.

"Last year they purchased Pearl Energy so they've got exploration success building upon success in South Asia," he said.

The company recently announced plans to change its name to Aabar Energy and to sell off its Dalma drilling division, to focus solely on exploration and production operations.

Lewis said these companies "behave like IOCs" and are well-positioned to expand their international petroleum activities.

"You could call it a recycling of petrodollars, but I think that's a little simplistic," he noted. "Because these companies are set up around IPOs, there's this culture of share ownership that's emerging."

– DAVID BROWN

Trends

from previous page

could hold more than two billion barrels of oil.

Independents from around the world are showing a very interested "and mostly very quiet" approach to exploration in Iraq.

"Because of the political situation, a lot of people aren't advertising what they're doing there," Fryklund said.

Unconventionals' Role

In its current International Energy Outlook, the U.S. Energy Information Agency (EIA) projects world liquids production to increase by 14 million barrels per day up to the year 2015.

It then forecasts a liquids production increase of an additional 20 million barrels per day from 2015 to 2030.

No nod to the concept of Peak Oil there, as the EIA sees unconventional resources adding a significant boost to the world's oil supply.

"We do have a lot of unconventionals coming in. By 2030, we have them accounting for 9 percent of the total liquids supply," said Linda Doman, senior international energy analyst for the EIA in Washington.

"Clearly, the oil markets are critically important," she added. "How fast will unconventionals come online? How much can OPEC continue to manage the supply side?"

Price also drives production, and the current EIA outlook takes into account higher oil prices in recent years for each of its three forecast scenarios.

"Our low price scenario is significantly higher than it has been earlier," Doman said. "If you pick up an outlook from 2004 or even 2005, you'll see that the low price scenario was less than $20 (per barrel)."

It's the Gas, Gas, Gas

A surge of exploration has begun in the Middle East, but it's because of natural gas and not oil, said AAPG member Stuart Lewis, IHS director-Middle East in Tetbury, England.

"The return to gas exploration in the Middle East is a big story. The whole issue of gas is affecting everything," Lewis said.

"You have a number of gas-rich and gas-poor countries, some of which happen to be major oil producers," he added. "Really, it's a return to exploration after many years for some countries."

In part, this interest in gas production comes from the possibility of converting gas to LNG for export. Lewis noted Qatar's goal of increasing LNG production to 77 million tons per year.

It also reflects a desire to use gas for domestic energy needs while maximizing the amount of oil available for export.

"If you look at the figures for the liquids that are consumed in the OPEC countries, the preference is to use the gas and monetize the liquids," Lewis said.

"Pricing will be key, because from a historical perspective there's never been a market for gas" in the region, he added.

Fryklund said the industry has started eyeing heavy-oil accumulations in Colombia, Peru and other Latin American countries outside Venezuela.

See **What's Next?** page 10

What's Next?

from page 8

"Companies are continuing to position themselves there just as they have in Venezuela and Canada," he said.

Other tar sands accumulations in Madagascar and the Volga-Ural basin also are attracting attention, he said.

Most of these second-tier, heavy-oil/tar prospects fall in the range of five billion to 10 billion barrels in place with a projected recovery rate of 10 percent, according to Fryklund.

'Most Reasonable Track'

The chance of gaining 500 million to one billion barrels of production from a prospect can't be overlooked by the industry, he said.

The EIA's reference case for its international outlook represents the "most reasonable track" going forward, Doman said. As such, it's essentially a status-quo projection to 2030.

"In a general sense we think there will be efficiency gains during this period but we don't predict any specific breakthroughs in our forecast," Doman acknowledged.

"We're not projecting wars," she said. "We're not predicting weather disasters. We're not even looking at some great technology coming in."

The biggest unknown that could make a major difference to the oil and gas industry, she said, is a shift in the world economy.

A world recession could sink oil prices, and even a broad slowdown might change energy markets significantly.

"What happens with China is huge," Doman said.

"To think that the tremendous growth we're seeing there today will continue for 30 years is difficult," she added.

Chow also singled out economic change as a potential issue for the global petroleum business.

"I don't have any reason to believe that the oil-price cycle has been repealed in any fundamental way," Chow said.

"The question is whether there's going to be a game-changer somewhere down the road," he added. "That's hard to see right now."

For Chow, a game-changer would be a trend big enough to alter the current direction of the industry, like the price of oil falling to $50 a barrel or less.

"If we have a recession in the U.S., I can easily see $50 a barrel oil. It's not like the world is running out of oil," Chow observed.

"When the market turns again," he said, "it will probably surprise people." ❑

World Proved Reserves of Oil and Natural Gas, Most Recent Estimates

	BP Statistical Review Year-end 2005		Oil & Gas Journal January 1, 2007		World Oil Year-end 2005		CEDIGAZ* Jan.1, 2006
	Oil bbls	Natural Gas tcf	Oil bbls	Natural Gas tcf	Oil bbls	Natural Gas tcf	Natural Gas tcf
North America	60.092	274.879	213.319	276.888	46.135	278.042	274.909
Central & South America	103.502	247.786	102.798	240.745	76.497	246.866	245.439
Europe	17.646	200.541	15.8	180.301	15.98	182.761	234.421
Eurasia	122.888	2,058.347	98.886	2,014.800	123.223	2,040.742	2,020.866
Middle East	742.711	2,546.05	2,566.04	739.205	2,532.56	711.644	2,578.56
Africa	114.268	507.826	114.073	484.433	109.759	490.882	508.819
Asia & Oceania	40.22	523.746	33.366	419.487	36.378	455.698	517.612
World Total	**1,201.33**	**6,359.17**	**1,317.45**	**6,182.69**	**1,119.62**	**6,226.56**	**6,380.63**

**Centre International d'Information sur le Gaz Naturel et tous Hydrocarbures Gazeux*

World Production of Crude Oil, NGPL and Other Liquids – Most Recent Annual Estimates

	2000	2001	2002	2003	2004	2005	2006
North America	15,267.34	15,339.52	15,542.97	15,714.72	15,683.51	15,197.60	15,365.48
Central & South America	7,326.01	7,222.00	6,931.17	6,699.61	7,042.60	7,273.45	7,361.14
Europe	7,145.16	7,208.18	7,139.77	6,917.99	6,567.22	6,093.83	5,680.08
Eurasia	8,191.03	8,777.16	9,429.24	10,425.59	11,345.86	11,771.84	12,156.47
Middle East	23,479.69	22,777.64	21,540.83	22,900.58	24,651.15	25,559.13	25,216.81
Africa	8,039.50	8,072.87	8,098.67	8,724.46	9,452.22	10,282.60	10,405.40
Asia & Oceania	8,313.38	8,286.65	8312.33	8,232.47	8,381.71	8,437.04	8,446.76
World Total	**77,762.11**	**77,684.02**	**76,994.98**	**79,615.43**	**83,124.28**	**84,615.48**	**84,632.13**

Data: Energy Information Administration

Texas Independent Hits 13 of 15

Black Sea Primps for Spotlight

By LOUISE S. DURHAM
EXPLORER Correspondent

The talk among in-the-know industry players is that the Black Sea is on the brink of becoming one of the world's hot spots for oil and gas drilling.

Big sums of money already are being earmarked for E&P action in this inland sea, which is an important conduit for the passage of energy to Europe from Russia and western Asia.

Turkey has announced it is poised to spend as much as $8 billion over the next decade to develop oil and gas deposits in the Black Sea.

Successful drilling programs could have considerable impact on the half-dozen countries surrounding this water body, which currently must import most of the oil and gas required to meet the needs of their fast-growing economies.

Opportunity clearly is knocking – and one company that answered the door early on was at least one group of … Texans.

"We started drilling offshore Turkey in 2004 and have drilled 15 wells so far, with 13 of these being successes," said AAPG member Mike FitzGerald, executive vice president of exploration and production at Dallas-headquartered Toreador Resources Corp. "We had our first gas sales from the offshore area on May 21."

He noted that prior to 2004, there had been only six wells drilled in the Turkish Black Sea – four in the far western area and two in the west central area.

Photos courtesy of Mike FitzGerald

It's off to work they go: The Southern Cross begins the journey to its Black Sea target, cruising past Istanbul's Rumeli Fortress, built by Mehmet the Conqueror in 1452.

The Black Sea region will have a high profile at the AAPG-AAPG European Energy Conference and Exhibition in Athens, with nearly 20 presentations dealing with the region.

Included in that group:

✓ An all-day poster session on Monday, Nov. 19, on "International Hot Spots – The Black Sea."

✓ An all-day paper session on Wednesday, Nov. 21, on "International Hot Spots – The Black Sea."

✓ Mike FitzGerald, of Toreador Resources in Dallas, will give the paper "South Akcakoca Gas: A Black Sea Discovery 30 Years in the Making," at 2 p.m. on Nov. 21. His co-authors are Ed Ramirez, William Moulton and Al Garcia. ❑

"In fact, there are very few wells on a per acre basis in the Black Sea overall," he added, "meaning it's virtually undrilled.

"It's becoming a hot thing."

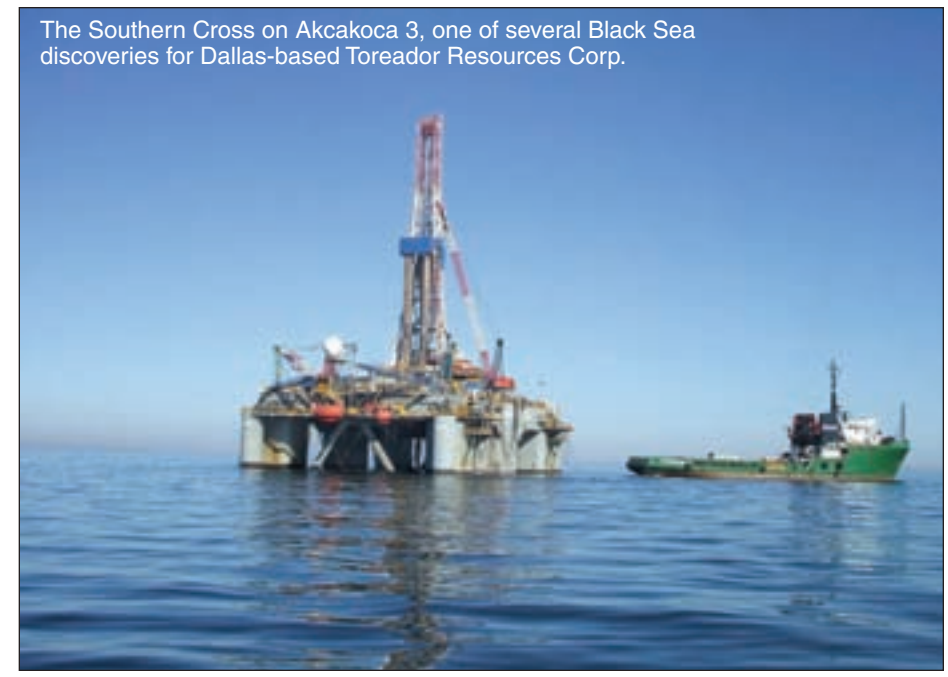
International Experience

Toreador's success in the region no doubt can be attributed in large part to the prior overseas experience of a number of the participants, who were formerly employed with internationally focused Triton Exploration in Dallas.

In the early 1990s, some of the Triton folks exited to form other entities, and FitzGerald hooked up with a couple of guys to create Madison Oil, an international exploration company.

"In 1999, we did a reverse merger

See **Black Sea**, page 14



The Southern Cross on Akcakoca 3, one of several Black Sea discoveries for Dallas-based Toreador Resources Corp.

Black Sea

from page 12

with a little Canadian company, which had a small subsidiary in Turkey," FitzGerald said. "We realized Turkey fit the country criteria for what we had been looking at in countries we went into."

These criteria included:

✓ Being an energy importer.

✓ Oil and gas already having been discovered.

✓ Hydrocarbon deposits not being pursued by the majors for the most part.

✓ Stable government, good fiscal system.

When looking for production to purchase, Madison talked to BP, which was intending to sell Arco Turkey with its inventory of close to a million acres in the Black Sea.

"During the evaluation, we noticed the two wells drilled earlier in the '70s by the state oil company (Turkiye Petrolleri AO) to test Mesozoic and Cenozoic sediments," FitzGerald said, "and there was some scattered regional seismic out there which showed structuring.

"We talked to BP quite frankly and said it looks like some prospectivity out there," he added. "They said their internal studies showed the pay was only about one TCF of gas, which they said was too small for them.

"So we purchased Arco Turkey at a good price, and it paid out in 10 months to us; shortly after, Madison merged with Toreador."

The Kick Off

The company initiated a 1,200-kilometer 2-D survey in the area to tie to one of the wells drilled in the 1970s.

"The structures became very apparent, and we did some AVO work and could see the gas zones encountered in the initial well," FitzGerald said.

But that well was in water too deep to drill with a jackup, and that was all that was available. In addition, Toreador had a time limit to drill the first well.

"We hopped one fault trend closer to shore from the original well and drilled the Ayazli #1 well for the same objective section but shallower formation-wise and water depth-wise," he said.

"We found the same section, which was gas-bearing and tested 12-plus million a day from four Eocene age sands, and that kicked off our drilling program."

Success Story

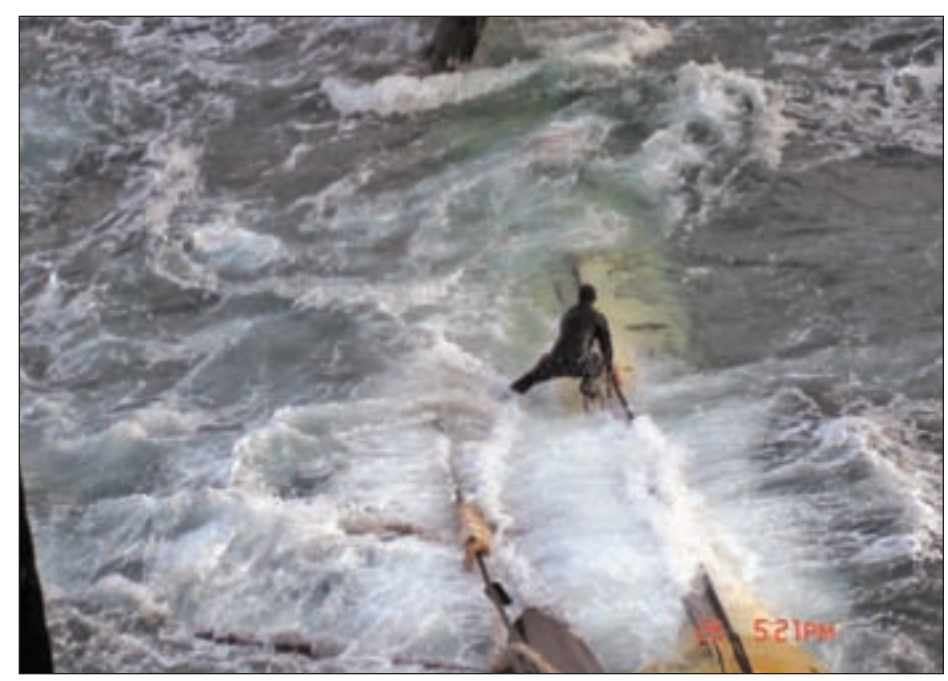
Toreador has focused its efforts thus far on a 50,000-acre patch out of the almost one million acres it originally purchased. This particular patch has been shot with 2-D and 3-D as well as another high-resolution 2-D survey.

It is noteworthy that every well drilled in the immediate area of the fault trend where there are AVO anomalies has been successful. The real kicker is that Toreador has only drilled about 40 percent of the anomalies thus far.

"Just in this 50,000 acres, we see

See **Results**, page 16

Hang ten? Workers were challenged during installation of the Dogu Ayazli platform.



Offshore discoveries are meaningful only when those onshore are served: In Turkey, pipelines must negotiate challenging terrains to give value to Black Sea reserves.

Results

from page 14

more potential than what we've already found," FitzGerald noted.

Out beyond the relatively shallow coastal waters, the scene changes rather dramatically in the deep water where the hydrocarbon regime and the geology become especially intriguing.

Nearshore, the current Toreador producers are kicking out gas that is basically 98 percent methane, and FitzGerald noted the generally accepted conventional wisdom is that the accumulation is basically biogenic.

Further to the north in deeper water, however, there are excellent source rocks at a depth that should make them mature – and they're organically rich.

"In the deeper water area, you should be in an oil and gas province that's more thermogenic as opposed to biogenic," FitzGerald said, "so if you go into deeper water, then you have a chance of both gas and oil.

"There are some fairly large structures well known in the industry to exist out in the deeper water area," he added. Maximum depth is about 2,200 meters.

C'mon In

A big welcome mat adds to the allure of the virtually unexplored Black Sea.

"Any of the countries that are major importers of oil and gas are very encouraging to outside contractors to explore and develop," FitzGerald said. "Right now a large part of the natural gas comes from either Iran or Russia, and this dependence is not in the best long-term interest.

"We have a good relationship with the Turkish state oil company," FitzGerald noted, "and working in Turkey has been a very positive experience for us – personally, professionally, technically and financially."

To put the potential for Black Sea production into better perspective, FitzGerald noted that someone who looked at their data several years ago commented that it was reminiscent of the Gulf of Mexico in the 1950s, i.e., huge potential waiting to be tapped.

If the nearshore Turkish Black Sea area sounds like your thing, be prepared to wait your turn – or switch your sights to other somewhat active hydrocarbon locales nearby, such as Romania or Bulgaria.

"There's no open acreage along the Turkish coastline," FitzGerald said. "It's almost like federal waters versus state waters in the U.S. In the equivalent of state waters, there's not an acre available." ❑

MAKINGaDIFFERENCE

Can Water Flow Peace in Sudan?

By BARRY FRIEDMAN
EXPLORER Correspondent

NASA astronaut Alfred Worden was orbiting the moon aboard Apollo 15, approximately 238,863 miles from a giant dry lake in northern Sudan, when he told Mission Control, "After the King's training, I feel like I've been here before."

Worden was not thanking Elvis, but rather AAPG member Farouk El-Baz, the man who helped him prepare for the mission.

El-Baz laughs when reminded of the story, saying the nickname comes from Egyptian King Farouk, as he kidded the astronauts, "I am the King, but I had to thin out in hard times!"

Farouk El-Baz, an internationally recognized award-winning geologist and humanitarian, is also a research professor, an adviser to presidents and prime ministers and even the namesake of a shuttlecraft on Star Trek (see accompanying box, page 20).

The King's objectives now: Bringing peace to Darfur.

How? His idea is deceptively simple and can be summed in one word: water.

El-Baz believes that the provision of water to all who need it, in addition to resources that can be used for economic (agriculture and agro-industries) purposes, can ease the pressures that are contributing to a brutally violent war there and provide stability to the entire country.

Restoring peace and repairing the cultural, political and tribal dysfunction in Sudan may seem a long way from – and perhaps more difficult than – conquering the moon's landscape, but Farouk El-Baz is an optimist with a peculiar enthusiasm for the power of science.

"The environment of doing so changes in time and place," he said, "but the objectives must remain the same."

His plan is to dig 1,000 wells in the ancient Megalake in the northern Darfur region, which he hopes will bring life-sustaining water to the people of Sudan and in the process maybe – just maybe – establish peace and economic security in the region.

The problems in the Darfur region of Sudan may be an insurmountable, incomprehensible quagmire, but El-Baz believes this initiative – called "1,000 Wells for Darfur" – is where to start.

A Personal Calling

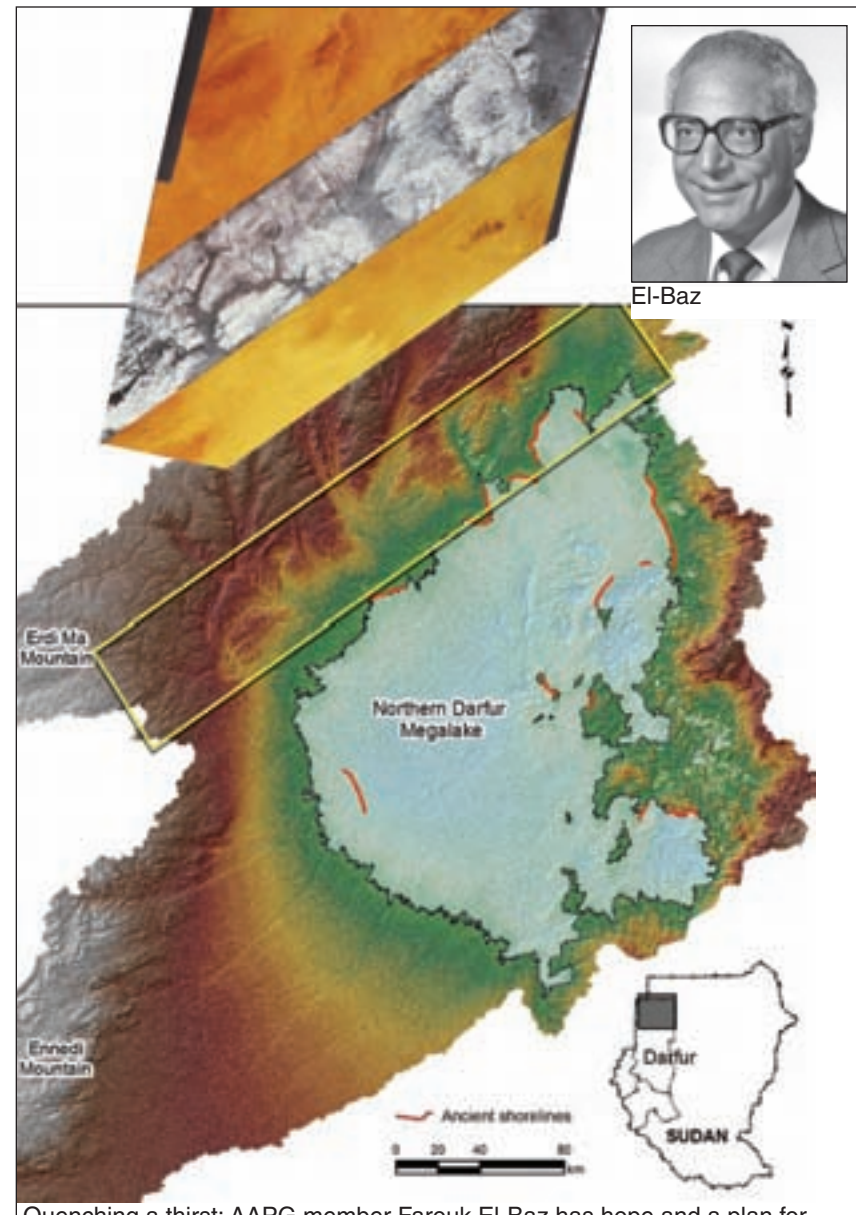
El-Baz, like millions around the world, has been deeply troubled by the tragedy in Darfur.

Unlike millions around the world, he has many Sudanese friends, so the desire to help isn't just philosophical, ideological or even only as a humanitarian. It is personal.

And so, "as a private citizen geologist," he looked for a way to help.

It's not the first time his training as a geologist went far beyond the parameters of his discipline.

See **Darfur**, page 20



Quenching a thirst: AAPG member Farouk El-Baz has hope and a plan for Darfur that involves 1,000 wells. Above, the radar image in relation to the edge of the dry lake (revealed by the Shuttle Radar Tomography mission).

Trek of Spacecraft El-Baz

Farouk El-Baz is a geologist who has had an impact not only on earth but in outer space as well.

His contributions of applying his geological training in a variety of areas – from archaeology to groundwater issues to lunar exploration – have made him a celebrated scientist and man of the world.

He was science adviser to the late President Anwar Sadat of Egypt, a veteran of NASA's Apollo program of lunar exploration and even featured on the HBO documentary "From the Earth to the Moon," produced by the Academy Award-winning actor Tom Hanks, in a segment called "The Brain of Farouk El-Baz."

Add to that list, cultural icon.

The year was 1972, and a film crew had come to the Johnson Space Center in Houston to experience a training session with Farouk El-Baz and Apollo 17 astronauts.

Included in the crew were camera, lighting and sound operators – the latter, El-Baz recalled, being a "pleasant young man who was very smart and fascinated by all lunar features.

"Every time we'd stop shooting, " El-Baz said, "he would come to me with a question about the shape of a crater or some other feature. I was delighted by his interest, and conveyed to him as much as I could."

At the end of the session El-Baz gave him a copy of his then new book, *The Moon as Viewed by Lunar Orbiter*.

Twenty years passed, during which time El-Baz has no contact with "the sound man."

As it turned out, the "pleasant young man" proved to be Rick Berman, who had worked his way up to becoming executive producer of "Star Trek: The Next Generation."

Next thing El-Baz knew was that a shuttlecraft named "El-Baz" beamed on the show.

"When I called to thank him, Berman said, 'I had lost track of you, and thought that this would get you out. Don't thank me – you made me a hero to my kids by that autographed book many years ago."

In retrospect, El-Baz thinks there's a lesson and reward for those so inquisitive.

"His boss used to holler at him for wasting time by his questions: 'Rick we have work to do here,' he would shout.

"But Rick's inquisitiveness and perseverance paid off handsomely!"

– BARRY FRIEDMAN

Darfur

from page 18

El-Baz, the 1996 Michel T. Halbouty Human Needs Award winner and director of the Boston University Center for Remote Sensing, is well known as a pioneer in the application of space-borne data to ground-water exploration.

He has successfully applied these methods in the arid lands of Egypt, Somalia, Oman and the U.A.E.

Those who know and have worked with him say one of his great appeals is his ability to simplify complex issues for discussion among non-scientists – something that may be crucial now that he has his sights on Sudan.

Citing the United Nations' Environment Program (UNEP) report "Sudan Post-Conflict Environmental Assessment" – published earlier this year, which concluded that chronically sparse rainfall over the past two decades there has fractured the century's old harmonious relationship forged between farmers and nomadic herdsmen – El-Baz believes the time is right for the initiative.

"Access to fresh water is essential for refugee survival, will help the peace process and provide the necessary resources for the much needed economic development in Darfur," he said.

"When our research resulted in unveiling boundaries of the ancient lake, I thought it was my duty to make that known in Sudan," he said.

"I came up with the notion of 1,000 wells to underscore the scale and importance of the find."

Hope for Darfur

He comes to the project with a lot of knowledge and experience: El-Baz has published or edited 12 books, written more than 200 articles and is a Fellow and Council member of the Academy of Sciences for the Developing World (TWAS). He represents the Academy at the Non-Governmental Unit of the Economic and Social Council of the United Nations and was appointed senior adviser to the World Bank/UN World Commission on Water for the 21st Century.

More specifically, he has worked in many Middle Eastern and African nations; he knows the land, literally and figuratively, and knows how to talk to leaders who don't always listen.

So when El-Baz put forth the initiative to Sudanese President Omar Ahmad al-Bashir, the reception wasn't surprising.

"After completion of our research and preparation of the results for publication, I elected to convey this to the Sudan government," he said. "Upon arrival in Khartoum, I met with the president (al-Bashir) and he had the minister of water and other officials in for the meeting. It was then that I suggested the initiative of '1,000 Wells For Darfur.'

"He embraced it and asked me to announce it during my lecture later that day."

El-Baz says the meeting was especially productive not only because of the cooperation of the Sudanese government, but because of the Egyptians' cooperation as well.

"When I returned through Cairo, I conveyed the results to the minister of water resources of Egypt (M. Abu-Zeid, a friend) and asked if the Egyptian government would pledge 10 wells as a gift from Egypt to the people of Darfur," he said.

That pledge soon became 20 wells.

Water Power

El-Baz believes the water issue in Sudan generally and the Darfur region specifically is not only the source of possible peace, it is one of the origins of the current conflict that has grabbed international headlines.

"The attacks on sedentary farmers by nomadic tribes were to shove them back

See **1,000 Wells**, page 22

Man of the world: El-Baz with Egyptian President Anwar Sadat (above), and meeting with HRH Shaikh Sultan Mohamed Al Qasimi, ruler of Sharjah, U.A.E.

1,000 Wells

from page 20

to whence they came ... farther south," El-Baz said, "the reason being their perception that they have rights to the water that was horded by the farmers.

"Thus, water rights became the political issue."

When asked if the wells, once completed, could really have an effect on the suffering in Darfur, El-Baz said: "Absolutely – and I stated that in both meetings with the president of Sudan and the secretary general of the UN. The idea is to drill all over the place for all in need of water."

And with UN involvement, El-Baz believes, "the world would have proper accountability of the funds."

Specifically, El-Baz says that research places the highest level of the Megalake in northern Darfur to be at 573 meters above sea level. Further, according to the researchers, the dry lake's surface, which is covered by wind-blown sand, occupies an area of 30,750 square kilometers (about the size of Lake Erie). During humid climate phases in the past, it would have contained approximately 2,530 km^3 of water when full. This mapping, by radar data, was done at Boston University's Center for Remote Sensing, which was established by El-Baz in 1986.

El-Baz believes there is no way of assuring whether, in fact, there is water, how deep it is or how much dissolved salts are in it until the drilling of exploration wells begins – but he adds that the water "probably" will be at about 100 meters depth.

"One thing is certain – much of the lake's water would have seeped through the sandstone substrate to accumulate as groundwater," he said. "As proven earlier in southwest Egypt, just northeast of Darfur, a similar former lake is underlain by vast amounts of groundwater at about 100 meters below the surface."

El-Baz previously identified the East Uweinat Basin in southwestern Egypt, where the groundwater rises to 25 meters below the surface. This resulted in the drilling of over 500 wells that can irrigate up to 150,000 acres of highly successful agricultural farms where wheat and other essential crops are grown.

The next step for "1,000 Wells for Darfur" is the identification of the best locations for the initial batch of wells.

"We plan to select the most appropriate sites through detailed analysis of space image data, geophysical surveys by local experts to confirm satellite image interpretations and on-the-ground field data collection to determine the needs of the local communities," he said.

While the initiative is still in the preliminary planning stage, El-Baz says he hopes to see contributions from both the United Nations and the United States. El-Baz said if he had to guess, the budget would not exceed $1 billion.

Aware that some might be dubious of the cooperation of the Sudanese government, El-Baz replied:

"From firsthand experience, and my personal meetings there, I am convinced that the government officials can be trusted to allow the project to go through, and to safeguard it once it does."

It is tough to be an optimist in a country like Sudan, but El-Baz talks about the smiles he saw when the initiative was first announced.

"To me, science is to search for the truth and to disseminate it among people."

First water, the King seems to be saying; then, maybe, peace.

"I actually hope that there will be much more than 1,000 wells in the final analysis." ❑

Scan, print, digitize, interpret and manage data with...

NeuraScanner

- Scans any length log, map, etc. up to 12" wide
- Color or B&W scanning up to 10" per second
- Image viewing and editing software included

NeuraLaser

- Prints any length raster or LAS log up to 14" wide
- B&W, full or halfscale up to 4" per second printing
- Image viewing and editing software included

NeuraLog

- Automated log digitizing and QC
- Depth calibrate logs for quick interpretation
- Interactive curve editing for analysis quality data

NeuraMap - NEW!

- Volumetrics, reserves and custom reports
- Automated digitizing of contours, shot points and more
- Interactive contour editing and QC

NeuraSection

- Makes quality structural or stratigraphic sections
- Works on logs, maps, sections and montages
- Reserve estimates, quickly and accurately

NeuraDB - NEW!

- Corporate repository of well data, logs and maps
- E&P managment system for raster and digital data
- Read from and write to industry standard applications

Neuralog

Turning Paper Into Petroleum

Call 1.281.240.2525 to get additional information. Or, visit our web site www.neuralog.com. You'll be glad you did.

Historic Joint Conference Starts Nov. 18

Athens Will Tout Europe's Top Plays

By VERN STEFANIC
EXPLORER Managing Editor

The hottest plays of the European Region – both established and emerging – will be in the spotlight in Athens this month as geologists from around the world gather for an historic conference.

The first-ever joint AAPG-AAPG European Region Energy Conference and Exhibition will take place Nov. 18-21 at the Megaron Athens International Conference Centre, featuring 228 oral papers in five concurrent sessions and 120 full-day posters.

The theme is "Challenge Our Myths," and the technical program is intended to produce not just comprehensive information but surprises and even some controversy.

It also will showcase Europe's and the Circum-Mediterranean's hottest activities, with entire sessions devoted to the geology, exploration and development of:

✓ West Africa deepwater activity.
✓ The Black Sea (see related story, page 12).
✓ Iraq.
✓ Egypt.
✓ The Caspian Sea.
✓ North Africa.
✓ Norwegian Barents Sea.
✓ Algeria.
✓ Libya.
✓ The North Sea.

You can add the host country to that list because Greece, while not a major player among the world's energy producers, still offers a setting of intriguing geology, exploration potential and current activity.

Greece, according to *Business Monitor International*, has a partly privatized energy sector operating under European Union guidelines. It has a small upstream oil and gas segment involving domestic and non-Greek companies. Downstream oil is dominated by partly state-owned Hellenic Petroleum, with some international oil company involvement.

The gas and power sectors are heavily state influenced.

Registration forms, meeting details and up-to-the minute information about the AAPG European Region Energy Conference and Exhibition in Athens, Greece, are available online at www.aapg.org/athens.

The meeting's theme, "Challenge Our Myths," will focus on three main areas: Regional, Technical and a Management Forum on "Energy Supply and Demand Perspective on Current Dynamics."

Among the meeting's highlights is the Featured Speaker Luncheon, which will be presented on Monday, Nov. 19, by John Underhill, an AAPG member (and past Distinguished Lecturer and Matson Award winner) who is an expert on Greek geology, geomorphology and culture.

A Greek Primer

Additional insight into Greece's activity will come in the several papers and posters planned for Athens, including Stefanos Xenopoulos' (with co-author Nikolas Roussos) paper "Status of Existing and Possible New Production in Greece."

Hydrocarbon production in Greece, according to Xenopoulos, takes place only in the North Aegean Sea, offshore Kavala, from three fields – two producing oil and one producing natural gas.

Two of these three fields, Prinos and South Kavala started production in 1981 and the third one, Prinos North, in 1996. In total around 120 million BOE have been produced in the area.

Exploration/delineation work in the same area has resulted in a fourth still undeveloped discovery. Other exploration in the Kavala Gulf produced oil signs but limited development.

Exploration work in other regions has resulted in two oil and gas discoveries – both in the 1980s by Hellenic Petroleum:

✓ In the West Katakolon discovery, oil and gas have been produced from two wells respectively drilled off West Peloponnesus in the Ionian Sea very close to shore.

✓ In the onshore Epanomi gas discovery, close to Thessaloniki in northern Greece, natural gas has been produced from two wells.

Despite the positive results there are no current plans for development.

Several other papers in Athens will deal with Greece's geology, activity and petroleum potential, including:

❒ Nickos Rigakis' paper "The Petroleum Generation Potential of Greece."

Greek geological provinces are separated into eastern post-orogenic basins with Tertiary clastic sediments and western thrust fold belts with Mesozoic carbonates, Rigakis and co-authors Konstantinos Nicolaou and Nikolas Roussos state in their abstract.

The most-explored eastern basins are W. Thrace, Prinos, Thermaikos and Grevena. Hydrocarbon source rocks have been identified within Miocene and Upper Eocene clastics, rich in TOC and organic matter. The expected hydrocarbons are both oil and gas.

In western Greece, four source horizons in the Mesozoic sequence of Ionian zone have been identified. The best source is the Posidonia beds, Lower Toarcian age rich in organic matter of marine origin. Very good source horizons have been identified within the Triassic sediments, while shales of Albian-Cenomanian age are potential sources in eastern Ionian. All these sources are capable of producing oil.

The oil window is "quite deep" in the

See **Athens**, page 52

Photo courtesy of Apache Corporation

The big story in Egypt lies in its gas-rich Western Desert.

Hot Setting, Hot Play

Western Desert Is Egypt's Treasure

By LOUISE S. DURHAM
EXPLORER Correspondent

There's an undeniable historical and cultural mystique about Egypt – but for geoscientists, the allure goes far deeper.

Egypt's oasis-dotted Western Desert, which covers about one million square miles, or two-thirds of the country, has become a destination not only for tourists but for oil and gas operators as well.

The whole of Egypt is comprised of three desert regions: the Western Desert and Eastern Desert – separated by the Nile – and the Sinai peninsula, which juts out into the Red Sea.

In the late 1990s, oil production in the Western Desert accounted for close to 16 percent of Egypt's total daily oil production, according to a study conducted at the University of Manchester. The region's gas fields kicked out about 30 percent of the country's total gas production.

Egypt's demand for natural gas as an energy source is growing right along with its expanding population. Consequently, the big story today is the increasing focus on the natural gas potential in the gas-rich Western Desert, according to AAPG member Fred Wehr, deputy exploration manager for Khalda Petroleum Company/Apache.

An Active Role

Apache recognized the region's hydrocarbon promise early on, establishing its role as an operator in Egypt in 1996.

"We're the largest producer of liquid hydrocarbons and natural gas in the Western Desert, which is our primary focus," said Bill Mintz, director of public and international affairs at Apache. "We're also the most active driller."

At the end of 2006, the company's Egypt portfolio included approximately 10.2 million gross acres in 19 separate concessions. Development leases within concessions generally have a 25-year life with extensions possible for added commercial discoveries.

During 2006, Apache completed 140 wells out of 163 drilled, and production tallied 34 MMboe, with estimated proved reserves pegged at 282 MMboe. Current daily production stands at 120,000 barrels of oil and condensate and 525 MMcfg.

Apache drilled the largest discovery in its history in 2005 at the Qasr Field on its Khalda Concession in the Western Desert. The discovery had gross proved reserves of two Tcf of gas and 65 MMbo of condensate.

Production from Qasr to date totals more than 115 Bcf and 6.3 MMbo of condensate from the Jurassic Lower Safa formation, which is a thick package of amalgamated braided fluvial sandstones having good to excellent reservoir characteristics, Wehr noted.

See **Western Desert**, page 38

Egypt's Western Desert will have a high profile at the AAPG-AAPG European Region's International Conference and Exhibition in Athens.

In addition to various papers and posters scattered throughout the three-day meeting, the session "Petroleum Geology, Exploration Success and Future Potential of Egypt" will be held as an all-day poster session on Tuesday, Nov. 20, and as a paper session Wednesday morning, Nov. 21.

Fred Wehr, deputy exploration manager for Khalda Petroleum Company/Apache Corp., will give the paper "Reservoir Geology and Hydrocarbon Occurrence in the Alam El Buieb Formation, Western Desert, Egypt," at 9:10 a.m. in the Wednesday session.

See how a single project-centric data store changes everything.

Greater data accuracy,
far less data management.

Building on the **OpenWorks®** system's reputation as the industry's leading G&G project database, the breakthrough OpenWorks R5000 version eliminates common database limitations and encourages better collaboration and data quality. With the new concept of interpretation projects, the result is greatly enhanced accuracy, security and efficiency. This, plus cartographic conversion-on-the-fly to minimize data duplication and reduce data management.

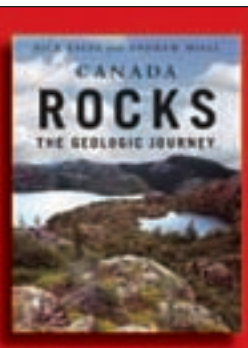
Seeing is believing. For more about the OpenWorks R5000 database, please visit us at www.halliburton.com/landmark.

Unleash the energy.™

Deeper knowledge. Broader understanding.™

Landmark

HALLIBURTON




The view from Gros Morne peak, Newfoundland.


Five Islands Provincial Park, Nova Scotia.


Folded mélange, southwest Newfoundland.


Moraine left by the retreating glaciers, Plain of the Six Glaciers, above Lake Louise, Alberta.


Athabasca Glacier, Jasper National Park.


A very recent "Roche Moutonee," with glacial striae, at the Athabasca Glacier.

A geologic (and scenic) tour of Canada, which was a big part of the purpose for a new book from an AAPG member that celebrates the role geology has played in the country's history. Enjoying the views are Charlene Miall, the authors' official "scale."

Canadian's Book Aimed at Public

Book Seeks to Cast Rockin' Image

By BARRY FRIEDMAN
EXPLORER Correspondent

"Why are we excited?"

AAPG member Andrew Miall thinks such a question is obvious, but he'll humor his interviewer just the same.

He then reads a section from Chapter 8 of his new book, written with Nick Eyles, called *Canada Rocks, The Geologic Journey*.

"During the 1950s, geologists discovered some unusual fossils near the town of Cache Creek in British Columbia. These were fusulinids of the Verbeekinidae family, a type of foraminifera living in the sea. They resembled a grain of wheat about the size of a small raisin, and are of Permian age (290-200 Ma).

"What is strange about these fossils is that they are of a tropical type common in Asia. One possibility is that they formed in the tropics on the western side of an ancient Pacific Ocean, but what is intriguing today is that they are now found more than 500 kilometers inland.

"Moreover, they occurred in limestone rocks comprising a belt running down the middle of British Columbia, a belt very different in character from neighboring rocks on either side.

"Geologists began to discover other far-traveled faunas such as the scallop-like mollusk also far inland. How could these marine rocks and their tropical Asian fossils have ended up so far from the modern coast of western Canada, and so far north of the equator?"

It's all about the plate-tectonics of terranes.

Miall, a professor in the geology department at the University of Toronto, Canada, has seemingly taught his lesson.

He doesn't say, but you can almost here him add: You understand now?

Start Spreading the News

The idea for *Canada Rocks*, Miall says, came from his colleague and co-author Nick Eyles.

"Several years ago Nick wrote *Ontario Rocks*, in which Nick developed the story of Ontario geology in a style and format, light on technicalities, that would be accessible to an educated but non-geological audience," he said. "The idea was to appeal to the average, well-educated citizen who is interested in his/her natural surroundings."

Canada Rocks, a book that pulls together the geologic story of the country's origins, is designed for a general audience as well, while giving the professional some new perspectives.

"A simple reason for doing the book," Miall said, "is that there is nothing else like it on the market."

More to the point, in the recent history of study on Canadian geology, Miall says some important findings have almost gone unnoticed.

"Projects such as COCORP (Consortium for Continental Reflection Profiling) in the United States and Lithoprobe in Canada have fundamentally altered our understanding of the deep architecture of the continent," he said. "In Canada, for example, a seismic section across the Appalachian orogen in Newfoundland and a synthesis of the seismic data across the southern Cordillera of British Columbia show the allochthonous nature of these orogens and provide essential clues about how the orogens were constructed.

"These data have revolutionized our knowledge of the basic geology," he added, "and profoundly changed the way in which we teach and research the subject."

What's fascinating to Miall is that "none of this has been brought to the attention of a general audience."

Public Access

As for the book, Miall said it has taken a number of years for all of this new information to be assimilated, and years more to be interpreted by the professional geoscience community.

Eyles and Miall went to Nova Scotia, Newfoundland, the Prairies and British Columbia – and Miall's wife, Charlene, a professor in sociology at McMaster University, accompanied them on the trips as "the Scale," which was her role for many of the book's pictures.

"When they asked if I would like to accompany (them) on their geologic adventures as 'scale,' I readily agreed," she said. "Anxious to see more of Canada, I soon discovered that my view of the country entailed countless moments gazing in apparent awe at outcrops of rock – some admittedly spectacular, some behind the garbage bins of the local motel.

"In all cases, my question became, 'What's my motivation here?' Although meant in jest, Nick and Andrew would offer explanations that have altered profoundly the way in which I look at my country."

You might think the discovery of significant geology must have been in remote locales, inaccessible by normal means of transportation,

Miall's answer is somewhat surprising.

"We kept to the highways, because this is what would limit our readers, too," he said, understanding that this book will also be used by tourists looking for an adventure across the world's second largest country.

See **Canada Rocks**, page 30

The authors, Nick Eyles (left) and Andrew Miall (right) at the famous fossil forest, Joggins, Nova Scotia.

Canada Rocks

from page 28

"In one case," he said, "we took a boat trip to a remote cove in Newfoundland to visit an exposure of oceanic crust and the mantle, but almost all our first-hand data was collected from the hard shoulder of the highway, or by short hikes into the hills."

What they collected will not only be valuable to Canada's scientific community as it stands today, but could help the future generation of Canadian scientists – that is, if there is to be one.

In that respect, he says, both Canada and the United States have similar problems.

"In the Canadian geoscience community, like that in the U.S., there is concern that earth sciences are not widely taught in the school system, so that there is a low level of knowledge or understanding about the science amongst the incoming university-level student population," he observed. "Nick and I were motivated partly by the thought that this book might help to raise the level of awareness of the subject."

Miall goes on to say that it isn't just the world of geologists and the students who may or may not replace them that could benefit from knowledge of the history that, literally, lies beneath their feet. Going in, they knew there was a need for the general public to have a greater understanding.

"Very few academics give this sort of non-specialist writing a high priority," Miall said. "In my case, since starting to teach a non-technical course for non-science students at the University of Toronto in 1999, I have realized the importance of educating the citizenry about important environmental issues.

"As I tell these students, my course is pretty well the only time during their university education when they will learn some useful information about non-renewable resources (oil, gas, coal, water), about natural hazards and about the natural processes that drive global change," he said. "We hope the book will do the same sort of thing."

I'm So Excited

It is that educational need where Miall thinks *Canada Rocks* can do the most good. Specifically, he talks of three areas most misunderstood.

✓ History: "I tell my students that Toronto's cottage country (the Muskoka district, a two-hour drive north of the city, on the edge of the Shield) was the site of a mountain range as big as the Himalayas a billion years ago, as a result of the Grenville collision and orogeny."

✓ Non-Renewable Resources: "The general public conception of the global supply of oil is based on the business model favored by economists, that the supply will rise as the price goes up. Up to a point, of course, this is true, but non-geologists do not realize that there is actually a finite limit to where oil can be found."

✓ Water: "Canadians in general seem to think that Canada is blessed with an unusual abundance of water, and are worried about the 'thirsty states' looking northward at the Great Lakes Basin. It has been shown, however, that western Canada is in a phase of increasing drought, and that that the spring runoff from the Rocky Mountains is diminishing and coming earlier in the season (as a result of the receding glaciers).

"Over-use and pollution of groundwater resources is a major issue."

Miall says there was another reason why the book may be needed – and for the profession and industry, this reason is perhaps the most important.

"The image of geology amongst the general public is that geologists are 'exploiters of the earth' because of our involvement with the oil and mining businesses," he said. "We get blamed for pollution, for greenhouse gases and so on – even though, of course, society needs these resources and would be helpless without them.

"This book may, therefore, serve to help reposition the discipline as one that has a strong environmental component."

As for the brilliance and simplicity of the title, *Canada Rocks* – and you have to love the double entendre – Miall is deferential to his co-author.

"Nick's idea," he said. "I confess I was looking for something more sober and serious.

"But Nick was right!" ❑

Diversity on Display at Summer NAPE

Prospect Strategies Flaunt Variety

By LOUISE S. DURHAM
EXPLORER Correspondent

The industry's ongoing infatuation with Canada's oil sands, the Rockies' tight gas sands and most any shale deposit anywhere might suggest the long-productive and mostly conventional Gulf Coast reservoirs have lost their allure.

Not the case.

It was indeed timely that a forum on the Gulf region's potential for continuing the supply leadership was held at the recent Summer NAPE event in Houston.

The offshore – particularly the deep water – continues to attract the operators, despite the fact that a few high profile names have exited the scene, according to AAPG member Bob Fryklund, vice president of industry relations at IHS Energy, which sponsored the forum.

Onshore, he said, many plays look to be struggling to stay in place from a reserves standpoint.

On the other hand, there are land plays that are doing quite well.

"There are some bright spots like the Cotton Valley play in Texas and Louisiana where the wells are still holding up nicely," Fryklund noted. "The overall gas is close to 700 million cubic feet a day out of the Cotton Valley play."

Photo courtesy of AAPL

Hungary for opportunity? This year's Summer NAPE went far beyond the Gulf Coast.

Aussie Action

In fact, continuing interest in the conventional onshore Gulf Coast reaches far and wide – much further than you might think.

A visit to the Pryme Oil and Gas booth at NAPE left no doubt that eyes from a whole other continent are focused on the region's potential.

Australia-based Pryme is going full-tilt in Louisiana, where it holds – and continues to acquire – considerable interests in myriad locales in the state, including LaSalle, Calcasieu, Lincoln, Avoyelles and East Baton Rouge parishes.

"Seven years ago, some of us invested in a U.S. company and learned a couple of lessons about how to drill for oil and gas, and how much things really cost," said Justin Pettett, managing director at Pryme. "We worked in the United States for close to five years, principally in Oklahoma and LaSalle Parish.

"We had the most success on a financial and geological basis in Louisiana," Pettett said. "The LaSalle project, now with 25 producing wells, continues to be a consistent, low maintenance income generator for Pryme."

When queried about such a distant base of operations versus staying at home, Pettett, who has a background in financial services and capital markets, said "The physical cost to do business in Australia is very high … Transportation and infrastructure cost can be two to three times the cost to drill a well.

"However, we have a niche in Australia as far as our capital markets," Pettett added, "and we wanted to make the opportunities we saw (in the United States) available to Australian investors."

In keeping with its plan, the company established relationships early on with geologists and geophysicists who have honed their expertise in Louisiana. This led to affiliations with prospect-generating Amelia Resources and Wave Exploration based in The Woodlands, north of Houston.

Pryme's current plans include drilling its high-impact deep Atocha exploration prospect in 2008 in central Louisiana's famed Tuscaloosa Trend play. The well is expected to be drilled to approximately 17,000 feet. In contrast, the company's recently drilled Spinks-Middlebrooks #11-1 well in Lincoln Parish reached TD at 10,900 feet, tested for a September completion in the Upper Jurassic Cotton Valley sands.

"As a company, we have diversified risk," Pettett noted. "We're keeping more of an interest in lower risk, lower capital cost projects and farming out higher risk, higher reward projects."

'Something for Everyone'

Even though all NAPE meetings typically include a host of Gulf Coast prospects, a "something for everyone" approach tends to characterize each expo.

In fact, Houston-based Benchmark Oil and Gas was ensconced in a booth next door to Pryme at the recent event, showing its Gulf Coast deals, located in Orange and Lavaca counties, Texas, alongside an Alaskan prospect at Cook Inlet.

See **Diversity**, page 38

A $70 Billion Impact

Oil a Big Rock in Louisiana's Pond

By LOUISE S. DURHAM
EXPLORER Correspondent

Aside from its history of headline-generating colorful politics, Louisiana is perhaps best known as home to an enormous energy industry.

The amount of money this dynamic industry pumps into the state coffers is also enormous, according to a recently completed study conducted by economist Loren Scott and commissioned by the Louisiana Mid-Continent Oil and Gas Association (LMOGA).

The LMOGA effort determined that the total economic impact on the state from oil, gas and refining exceeded $70 billion in 2005 via both direct and indirect means.

"If you think about Louisiana as a big economic pond, when you drop a rock called the energy sector into it, it's a very big rock that has a large multiplier effect," Scott said. "When the rock hits the pond, it creates very large waves and ripples.

"In the study, I tried to show people the size not only of the rock but of those ripples, too.

"I do five to ten economic impact studies a year in various industries," Scott said, "and I don't think I've ever had one that shows numbers as big as this one.

"This is not surprising considering that we're the number one producer of oil, if you include the offshore, and the number two producer of natural gas," he said. "These are high price items, and it takes a lot of money to extract them.

"We're also number two in the refining industry, which is a very capital intensive, high-wage industry."

In fact, refinery wages are 59 percent higher than average manufacturing wages, while exploration and production wages are 83 percent higher than average manufacturing wages, according to Scott.

"The energy industry is extremely important to Louisiana's budget – far more than any other industry," Scott noted. "In fact, the industry directly paid more than $1.4 billion in state taxes, royalties and fees during fiscal year 2006, or about 14.4 percent of total state taxes, licenses and fees collected.

"This does not include taxes paid to local governments."

Through both their direct and multiplier effects, the oil, gas and refining industries generated more than $12.7 billion in household earnings for Louisiana's citizens in 2005. This represented 15.4 percent of total earnings in the state for the year, which in turn yielded $890 million in taxes for the state and $560 million for local government bodies.

To put the household earnings into better perspective, Scott noted at least four countries listed in the Statistical Abstract of the United States have smaller gross domestic products.

Stormy Weather

The LMOGA report revealed the oil and gas industry paid $172.6 million in ad valorem taxes to local governments in 2005. The ad valorem taxes paid exceeded $1 million in 31 of the state's parishes and topped out over $5 million in 12 parishes.

Additionally, the industry paid 7.1 percent of all property taxes collected by local governments; the amount exceeded 10 percent of all local property tax collections in 21 parishes.

Another important finding in the report centers on the industry's value added benefit, i.e., the value added to a product through manufacturing, processing and enhancements. The value added benefit of the oil and gas extraction sector was estimated to be $47.5 billion, while the value added impact of the refining industry was pegged at $34.3 billion.

Given that the ferocious hurricanes Katrina and Rita both cut a swath through the hydrocarbon-rich Gulf of Mexico – with the former storm bearing down particularly hard on Louisiana's coastline – the LMOGA study took a look at the impact of these storms on the region's significant hydrocarbon production and the accompanying vast array of energy infrastructure.

Not surprisingly, the storms caused some production shut-ins, refinery outages owing to flooding and electrical problems, and damaged platforms and pipelines.

However, Scott emphasized that only 165 of the nearly 5,000 existing offshore platforms were destroyed or badly damaged. He noted this is particularly remarkable given that the Naval Research Lab measured some waves at 131 feet tall during these storms.

Perhaps one of the most important points made by the study has nothing to do with economics per se.

"One of the things we saw is that we had two Category 5 hurricanes move right through the heart of the offshore oil and gas industry, and there were virtually no significant spills offshore," Scott noted.

"To me, this should be a major signal to people on the East Coast, West Coast and the West Coast of Florida that we should open those areas for drilling," he said. "There are far more spills from offshore tankers from Saudi Arabia, Qatar than from offshore platforms.

"These storms proved we've got that under control.

"We're the only country on earth with restrictions on oil and gas exploration in some of its offshore area," Scott said, "which is a remarkably dumb economic policy." ❑

Western Desert

from page 26

Qasr has additional production from the shallower Cretaceous Alam el Buieb formation.

Seismic Coverage

Three-dimensional seismic data play a prominent role in Apache's operations.

In fact, the company has acquired 24,000 square kilometers of seismic over its Egyptian holdings.

"We've been very aggressive about getting 3-D seismic coverage across the desert," Mintz said. "There had been some earlier problems with 3-D imaging in the desert, but we kind of solved that mystery and opened up a lot of opportunities there."

But at the end of the day it's all about the geology.

"What's important about where we've been successful in Egypt is the geology is favorable," said AAPG member Rod Eichler, president of Apache Egypt Companies. "One of the criteria for finding an entry point into Egypt was finding ... favorable petroleum systems.

"In the Western Desert, the stratigraphy is a significant series of stacked sandstone sequences," Eichler noted.

"Predominantly, the reservoirs we look at are in the Cretaceous and Jurassic – the Jurassic is largely gas and gas condensate, very rich."

Still, there's no such thing as a slam-dunk when dealing with hydrocarbon reservoirs.

"In the Jurassic and especially the Cretaceous, you see a tidal influence through the section, and it makes the reservoir geometry when you get down to a development scale quite complicated," Wehr said. "You have a complex pattern of nested estuarine deposits that can be a challenge to produce.

"Most of our targets are multiple targets," he said, "and especially in the Cretaceous reservoirs this has allowed us to use the lower risk target as a kind of safety net and try some interesting and kind of risky things. You couldn't justify trying this with a single objective, and if these things work they can be used in other wells.

"We don't have seismic support for things like incised valley channels," Wehr added. "This is onshore and there aren't the impedance properties we need, so we tend to use a lot of well-based correlations to find by-passed pay in these fields.

"By being able to stack up targets, this is one of the ways over the last five years we really grew production in the Khalda Concession – going into existing fields and really jerking them hard with a lot of infill drilling."

Wehr noted the younger (Cretaceous) reservoirs typically are oil and require waterflood support in the youngest members due to lack of a strong aquifer.

"Overall the succession in the Western Desert is quite sandy, and the limiting factor on hydrocarbon accumulation is top seal," Wehr said. "A lot of times you're drilling through 500 feet of sand to find a 30-foot oil column, but you're not looking for a sand in a sea of shales; you're trying to find that one top seal juxtaposed with the sand right under the top seal.

"Typically what we're prospecting for in oil exploration and development are these top seals."

Apache clearly has high aspirations for its future in this region.

The company struck an MOU with the Egyptian government to double its production by year-end 2010, according to Mintz.

The program, which is referred to in-house as "two times production," or 2X, is focused on the company's existing concessions for the most part.

The five-year project involves about $3.2 billion in capital expenditures to be divvied up among gas processing and distribution facilities, exploitation (primarily waterflood activities) and high potential exploration activity.

In return for this ramped-up effort, Apache is asking the Egyptian government to help by streamlining the bureaucratic processes of procurement and permitting to enable the company to work at the pace required to accomplish its goal.

The effort has the potential to pump considerable sums of money into the Egyptian treasury in addition to providing jobs and energy resources to help develop the economy. ❑

Diversity

from page 34

"We also looked at the (nearby) Susitna area, but it's all wildlife refuge," said AAPG member Robert Pledger, president of Benchmark. "People are taking leases there, but they're years away from drilling because of environmental issues.

"After having drilled in California, we've been to that rodeo," Pledger noted. "At Benchmark, we only go where there's infrastructure, where everything's developed."

Summer NAPE exhibitor Hewitt Energy Group's specialty is bringing renewed life to old fields using new methodology.

Opportunities in Kansas – long a hot spot for improved recovery projects – figured prominently at Hewitt's NAPE display.

The company has become adept at ramping up production in abandoned and stripper wells using a methodology it pioneered in 1991, according to Douglas Hewitt, CEO and president. He noted they refer to the technique as "hydrostatic reduction, allowing for hydrocarbon expansion."

The process – similar to de-watering – entails production of large volumes of water to lower the pressure in the reservoir, enabling the hydrocarbons to expand and move to the wellbore, resulting in increased production. The application has proven to be successful in producing large amounts of oil in places thought to be depleted, according to Hewitt.

"We go to an area where a lot of oil and gas has been produced, determine essentially the original oil in place, deduct reported production and figure out what percent of the reservoir system has been produced," Hewitt said.

"Based on our methodology, we know we can recover 75 percent of reserves in place, but typically we say 40 to 50 percent."

Hewitt presented an example of what can be accomplished in a field using a large disposal well in combo with big mechanical pumps in the wellbore.

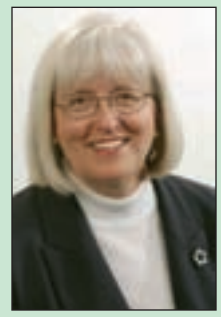
"We put a well on line in this field, and the first day we made 36 barrels of oil moving 4,700 barrels per day of water," he said. "That was two weeks ago, and today we're at 74 barrels of oil a day.

"By the time we're fully done with this field – and it could be three-to-five years from now – I suspect it probably will level out between 300 and 500 barrels of oil per day at a cost of two and a half-million dollars to us and be 100 percent successful." ❑

Climate Panel to Focus on Solutions

Appointments to the newly created Global Climate Change Solutions Committee have been announced by AAPG President Will Green, with Priscilla Grew of the University of Nebraska, Lincoln, Neb., as chair.

The committee was formed following Association discussions over the past three years concerning various aspects of AAPG's stance and public statements on the climate change issue.



Grew

The discussions resulted in several changes, including:

✓ Changes in the AAPG Statement process.

✓ A review of all AAPG position statements.

✓ Formation of the new Climate Change Solutions Committee.

Green said the Executive Committee recognizes that this topic is evolving rapidly and "members hold widely differing views on both anthropogenic and natural effects on climate change, and what resulting public policies should be instituted. However, some AAPG members have considerable expertise that relates to both climate and solutions, and the membership at-large and the public need for information.

"Most, if not all, of the committee are well versed in climate issues," he said, "and represent a wide range of thought on the subject."

The EC and each of the three AAPG divisions all named three members to the committee, with the chair coming from the Division of Environmental Geosciences (see accompanying box).

The committee's main charge is to promote and facilitate various fields of geologic study that relate to global climate change and potential solutions.

It is anticipated that a Web forum on climate change issues will be created and monitored by the committee, with topics for FAQs being discussed and ultimately disseminated.

The committee also will provide technical content and guidance for meetings, publications and DEG *Journal* articles. ❑

Climate Change Solutions Committee

Joining Priscilla Grew on the newly created Global Climate Change Solutions Committee are:

Division of Environmental Geosciences

❒ Eugene A. Shinn, University of South Florida, St. Petersburg, Fla.

❒ David Vance, Arcadis, Midland, Texas.

Energy Minerals Division

❒ Yousif Kharaka, U.S. Geological Survey, Menlo Park, Calif.

❒ Jeffrey R. Levine, WellDog, Laramie, Wyo.

❒ James A. Drahovzal, Kentucky Geological Survey, Lexington, Ky.

Division of Professional Affairs

❒ Jeffrey A. Jones, Van Operating and Southwest Section president, Albany, Texas.

❒ Robert A. "Bob" Shoup, Knowledge Reservoir, Bangkok, Thailand.

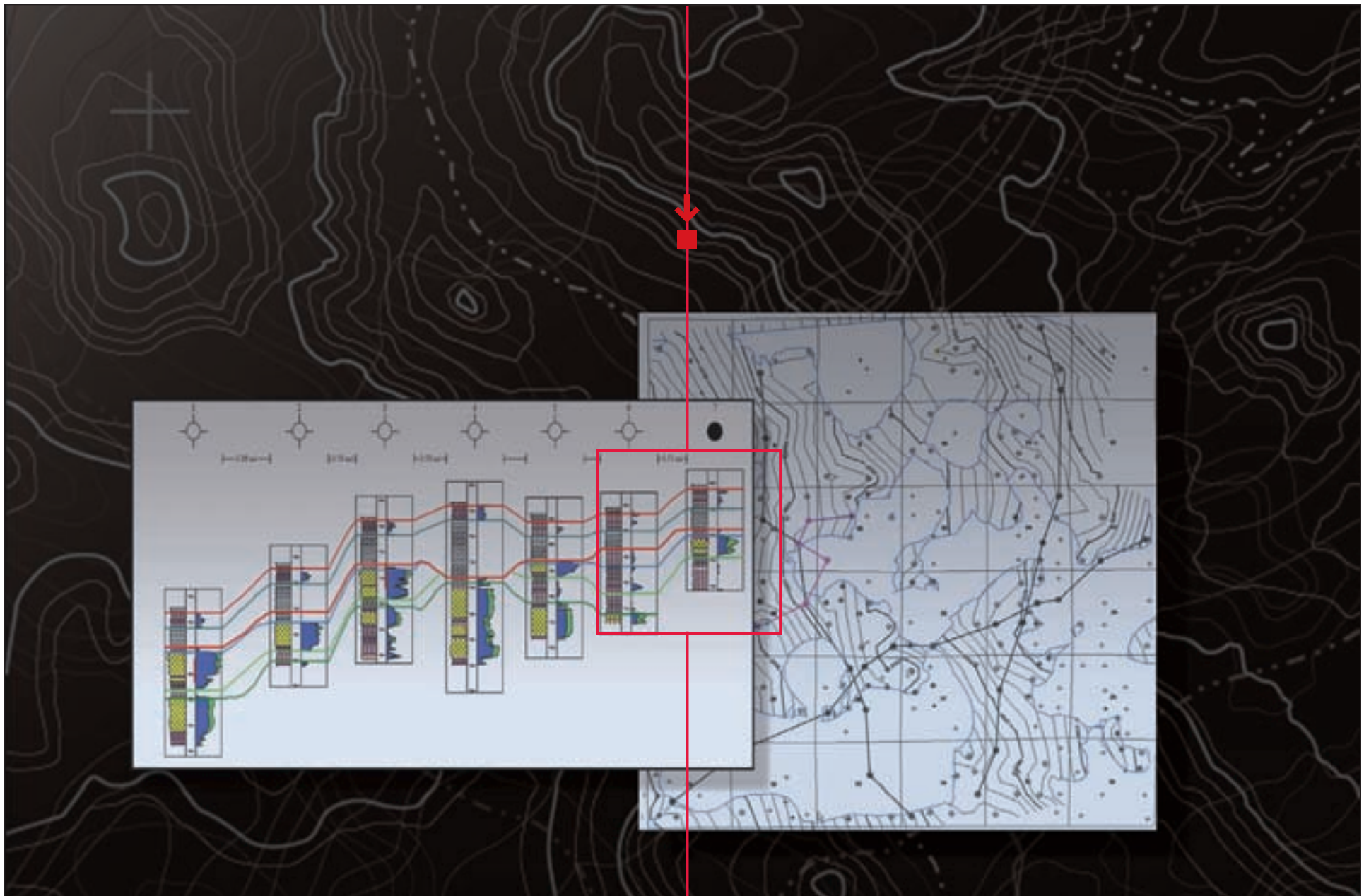
❒ Ray Thomasson, Thomasson Partners Associates and past AAPG president, Denver.

Executive Committee

❒ Allyson Anderson, staff, U.S. Senate Committee on Energy and Natural Resources, Washington, D.C.

❒ Eric Barron, dean of the Jackson School of Geosciences, University of Texas at Austin.

❒ David A.L. Jenkins, retired BP, Weybridge, Surrey, England. ❑



With GeoGraphix,® framing it all just got a whole lot easier.

The Discovery™ FrameBuilder™ module. As the industry's most advanced structural and stratigraphic interpretation and mapping solution, it streamlines prospect development.

The FrameBuilder™ module is a major addition to the GeoGraphix Discovery™ suite of advanced exploration and production technologies. Providing an exciting breakthrough in cross-sectional interpretation and mapping, this new subsurface interpretation model works with the Discovery smartSECTION® cross-section tool to leverage multisurface constraints and advanced surface topology in 3-D sequence stratigraphy and structural modeling.

For accelerating the speed and accuracy of prospect and resource assessments, it doesn't get more advanced than the GeoGraphix Discovery Framebuilder 3-D module. To learn more, visit us at www.geographix.com.

Unleash the energy.™

HALLIBURTON

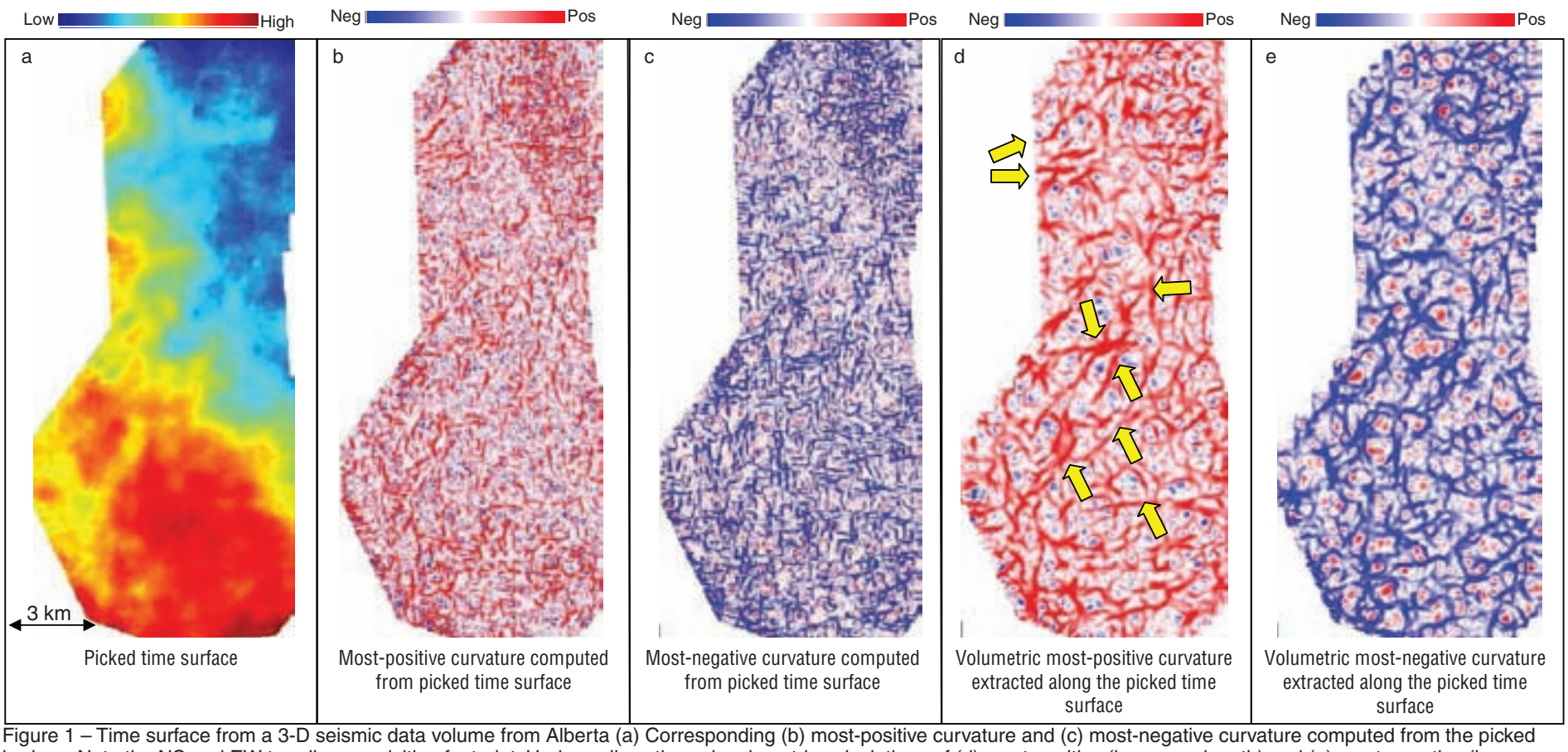


Figure 1 – Time surface from a 3-D seismic data volume from Alberta (a) Corresponding (b) most-positive curvature and (c) most-negative curvature computed from the picked horizon. Note the NS and EW trending acquisition footprint. Horizon slices through volumetric calculations of (d) most-positive (long-wavelength) and (e) most-negative (long-wavelength) curvature. Block arrows indicate broad geologic flexures seen in the vertical seismic while the footprint artifacts seen on the horizon-based displays are not seen.

Data courtesy of Arcis Corporation, Calgary

GEOPHYSICAL CORNER

Using Curvature to Map Faults, Fractures

(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, the first of a two-part series, deals with seismic curvature attributes: mapping faults and fractures.)

By SATINDER CHOPRA and KURT J. MARFURT

Curvature is a measure of the deviation of a surface from a plane. The more a surface is structurally flexed, folded or faulted, the larger its curvature.

Curvature can indicate domes and sags associated with salt and shale diapirism, differential compaction and diagenetic dissolution and collapse, as well as predict paleostress and areas favorable for natural fractures.

Curvature is usually computed from picked horizon surfaces interpreted on 3-D seismic data volumes. An interpreter defines surface patches of a given size, which appropriate software algorithms then fit with a mathematical quadratic surface.

Curvature measures computed from the coefficients of this quadratic surface include:

✓ Curvedness.
✓ Azimuth of minimum curvature.
✓ Shape index.
✓ Minimum, maximum, most-positive, most-negative.
✓ Dip.
✓ Strike curvatures.

We find the most-positive and most-negative curvatures to be the easiest measure to visually correlate to features of geologic interest.

* * *

Figure 1a shows a time-structure map at about 1850 ms, interpreted from a 3-D seismic volume acquired in Alberta, Canada. The horizon was manually picked across a grid of control lines to generate the horizon-based curvature images displayed in figures 1b and c.

Both of these displays are contaminated by strong NS and EW acquisition footprints. Whether due to limitations in the survey design, coherent noise or systematic errors in data processing, an acquisition footprint is related to the source and receiver geometry and has little correlation to the subsurface geology.

Horizons picked on noisy seismic data contaminated with acquisition footprint, or picked through regions where no consistent impedance contrast exists (such as channels, turbidites, mass transport complexes and karst), can lead to inferior curvature measures.

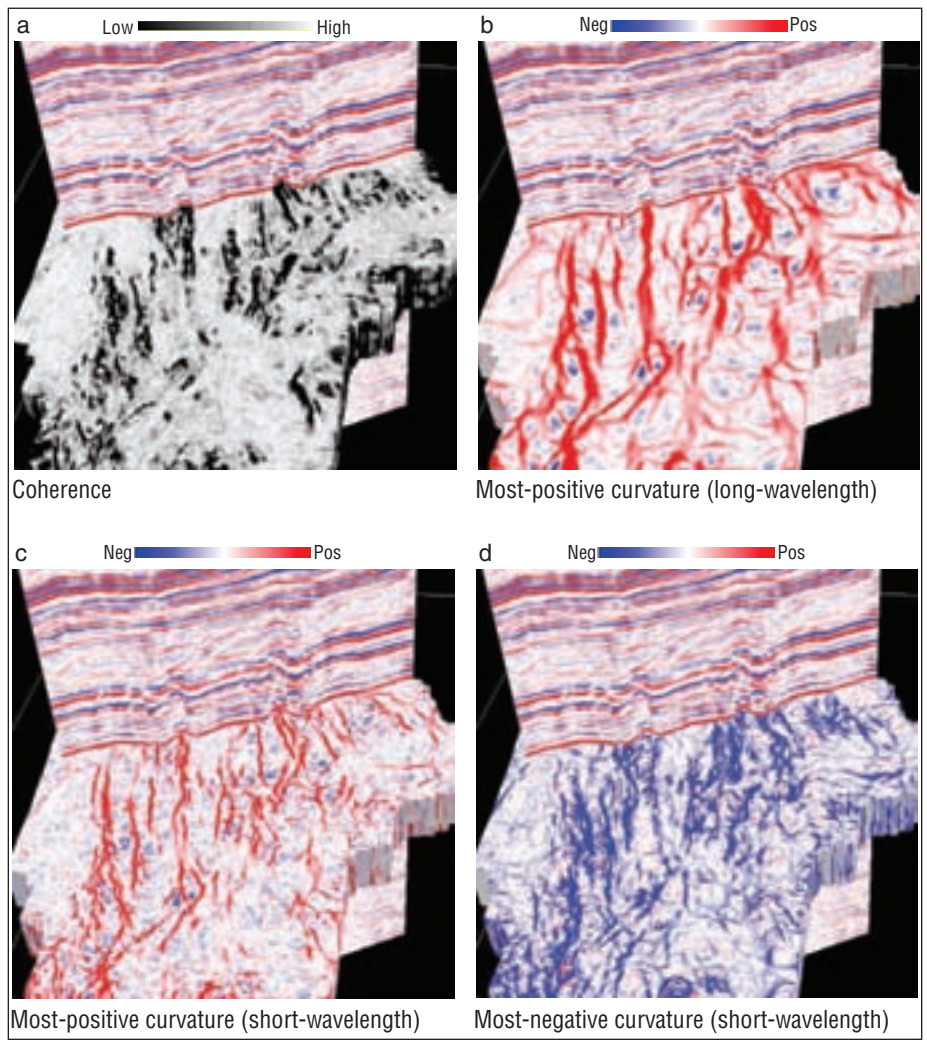


Figure 2 – Zoom of chair-displays where the vertical display is a dip line through the 3-D seismic volume and the horizontal displays are time slices from (a) coherence, (b) most-positive (long-wavelength), (c) most-positive (short-wavelength) and (d) most-negative (short-wavelength) curvature attribute volumes. The fault lineaments correlate with the upthrown and downthrown signatures on the seismic.

A significant advance in curvature analysis has been the volumetric estimation of curvature, which alleviates the need for picking horizons in regions through where no continuous surface exists.

Even when spatial filtering is used to minimize effects of an acquisition footprint, horizon-based curvature estimates may still suffer from footprint artifacts. In contrast, curvature attribute values extracted from volumetric curvature computations yield displays that are free of artifacts and make more geologic sense.

For example, figures 1d and e show the most-positive and most-negative volumetric curvature attributes extracted along the horizon surface in figure 1a.

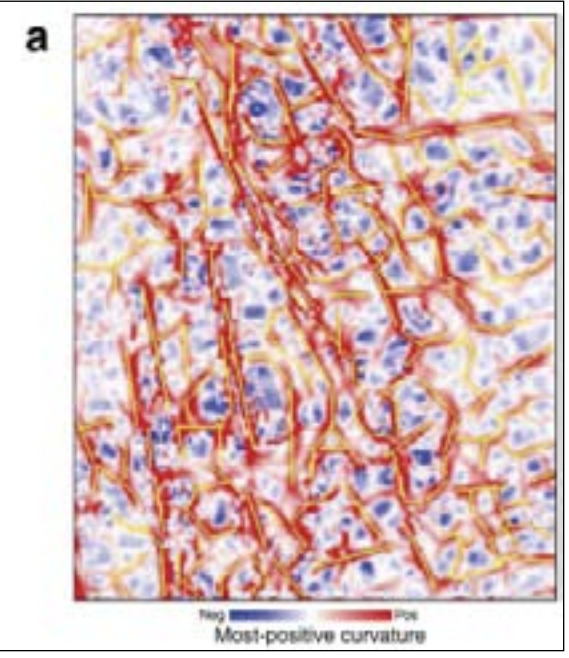
Notice that these displays are free of the NS and EW artifacts seen in figures 1b and c, and show arcuate folds indicated by yellow arrows.

The advantages of volumetric attributes are two-fold:

✓ As shown in figure 1, the images have a higher signal-to-noise ratio. Volumetric estimates of curvature are computed not from one picked data sample, but rather from a vertical window of seismic samples (in our case, 11 samples) and are statistically less sensitive to noise.

✓ Not every geologic feature that we wish to interpret falls along a horizon that can be interpreted. Often the target of interest falls above or below a strong, easily picked horizon.

continued on next page



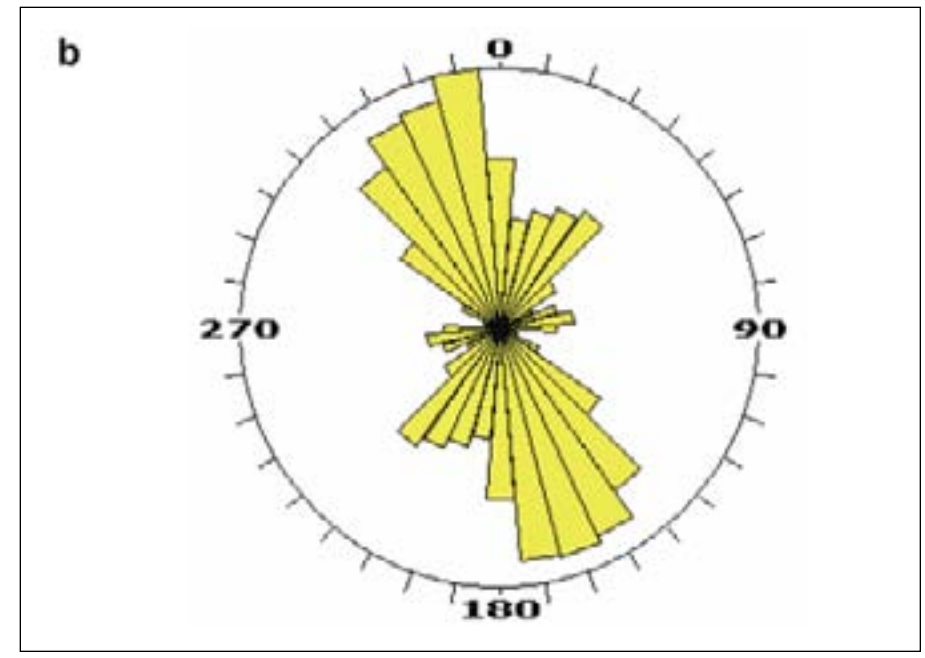


Figure 3 – Horizon slice (a) extracted from the most-positive (long-wavelength) curvature attribute with lineaments corresponding to the faults marked as yellow lines. Orientations of the marked lineaments (yellow) in (a) combined in the form of a Rose diagram (b).

continued from previous page

Curvature images having different spatial wavelengths provide different perspectives of the same geology. Tight (short-wavelength) curvature delineates small details, such as intense, highly localized fracture systems. Broad (long-wavelength) curvature enhances smooth, subtle flexures that are difficult to see in conventional seismic data, but which are often correlated to fracture zones that are below seismic resolution and to collapse features and diagenetic alterations.

* * *

Figure 2 shows displays of strat-cubes near 1620 ms from coherence, most-positive (both long-wavelength and short-wavelength) and from short-wavelength, most-negative curvature volumes that intersect a random line that cuts across the fault/fracture trends.

The red peaks (figures 2b and c) on the fault lineaments (running almost north-south) correlate with the upthrown signature on the seismic data.

The most-negative curvature strat-slice (figure 2d) shows the downthrown edges on both sides of the faults highlighted in blue.

* * *

Figure 3a shows the horizon slice extracted from the most-positive curvature volume at a zone of interest.

There are a number of fracture lineaments delineated by yellow picks. The density and orientations of these lineaments have been combined into the rose diagram shown in figure 3b, which retains the colors of the lineaments. This rose diagram can be compared with a similar diagram obtained from borehole image logs to gain confidence in the seismic-to-log calibration.

Once a favorable match is obtained, the interpretation of fault/fracture orientations and the intervals over which they dominate can then be trusted for a more quantitative analysis – which, in turn, is useful for optimal characterization of reservoirs.

* * *

Next month's column will illustrate the application of these attributes for mapping channels, levees and other stratigraphic features – particularly in older rocks that have undergone differential compaction. ❑

(Editor's note: Chopra is with Arcis Corp., Calgary, Canada; Marfurt is with the University of Oklahoma. Both are AAPG members.)

WashingtonWATCH

‘CR’ Apt to Keep Things Going

By DON JUCKETT
GEO-DC Director

In all likelihood the second session of the 110th Congress will not grapple with much of the legislation that could impact the petroleum sector.

Forecasting events in Washington has a probability function akin to forecasting energy prices; chances are very good that predictions will be incorrect.

However, here are some items to continue to watch that have potential import to AAPG members.

* * *

Congress probably will be in recess by the time this EXPLORER issue goes to press and the activities of the members who are up for re-election will begin to focus in earnest on their 2008 campaigns.

There is a great likelihood that the government 2008 fiscal year, which began October 1, will begin with none of the 12 appropriations bills passed in both houses of Congress and signed into law by the president. For the agencies, that will mean that they operate for at least a portion of the year under a condition known as “continuing resolution.”

Typically continuing resolution – or in Washington-speak, “CR” – permits agencies to operate for a designated period with a budget that includes no new program approval. Most frequently, the budget that is approved is abbreviated (weeks to a couple of months) with the anticipation that Congress will be able to reach closure on passing some or all of the appropriations bills that are required to fund the federal agencies.

Current projections are for a CR that will run to mid-November. Look for CR to continue into the 2008 calendar year.

What is the impact? Most would say that when the federal government doesn’t spend money or spends less than planned, that it is a good thing. However, CR is a very wasteful process, because CR usually is accompanied with provisions that preclude eliminating unwanted federal programs or starting new ones.

* * *

In all likelihood the second session of the 110th Congress will not grapple with much of the legislation that could impact the petroleum sector – except, just possibly, in a more positive fashion.

What kind of action are we likely to see?

First, the House and Senate will continue to hold hearings on climate and energy in general but with no substantive motion toward legislation. If onerous legislation should somehow make its way through both houses of Congress, the president is likely to exercise veto power.

There also are two areas of interest to members that may see some forward motion in the form of legislation or hearing:

✓ The depressed value of the U.S. dollar and the continued sensitivity of the supply and refining sectors have driven the price of oil to all time highs on the global markets. That likely will form the backdrop for congressional hearings on the factors that impact domestic and global markets.

Hearings in this environment provide an opportunity to bring new information to the policy makers.

AAPG and partners have endorsed a revised set of standards and definitions for petroleum reserves and resources. If U.S. and international policy makers and regulators move toward adoption of those standards, it will bring a better understanding of the endowment and availability of petroleum in the global marketplace.

AAPG can serve as a conduit to help explain these concepts and the scientific basis to Congress.

✓ The second opportunity means taking advantage of the prospect created by lawmakers who, while they may be timid about passing sweeping changes in law that impact constituents in an election year, are generally comfortable getting behind legislation that can benefit the constituents.

Having recently passed the America Competes Act of 2007, which authorizes funding for science education, the Congress may be receptive to the argument that America Competes left some gaps. While the Act provides a small measure of authorization for the geosciences – about $36 million over three years – it largely is silent on the state of the work force associated with the extractive energy and minerals sector of the economy.

AAPG’s Geoscience and Energy Office, together with a number of members, has contributed significant time and effort to preparation of material in support of a draft Energy and Minerals Schools Reinvestment Act that would fit well into the environment described above.

What will be needed is to rally individual Senate members as co-sponsors for this legislation when it is brought forward.

GEO-DC will be working with AAPG members and committees to attempt to build this support.

This is an opportunity for members to give something back to your profession by working to support the introduction of beneficial legislation that will help to guarantee the next generation of work force for these vital industries.

We look forward to working with you to build this support. ❑

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

Career Touched Major Finds

‘Rock’ Genes Part of Leaders Path

By KEN MILAM
EXPLORER Correspondent

In a case of nature *and* nurture, Thomas D. Barrow’s career choice seems almost inevitable. Born Dec. 27, 1924, he was the grandson of an early-day California gold miner and the son of geologist parents.

Maybe an appreciation for things geological was woven into his DNA. Certainly a passion for the science and practice of petroleum geology was fostered throughout his childhood.

“Mom took me to run well samples at the age of eight,” he recalled.

On car trips, his parents “would talk geology the whole time.”

His father, L.T. Barrow, was Humble’s chief geologist (1929) and later chairman of the board (1937), retiring in 1955.

“Dad’s favorite activity was to drive to the scene of the latest blowout and ask the people there how and why it happened,” Barrow said. “I got a real appreciation for high pressure.”

His mother took him to Europe, always pointing out geological facts and features during their travels.

With this head start, Barrow forged ahead, earning a bachelor’s degree in petroleum engineering and a master’s in geology from the University of Texas at Austin and his Ph.D. from Stanford University.

Honing his management skills, Barrow became a triple threat – scientist, engineer, businessman.

The stage was set, and over the next four decades Barrow would be a player in some of the century’s major discoveries – Prudhoe Bay, offshore California, North Sea, Malaysia and East Texas.

Shallow Thoughts

An early example of Barrow’s “outside the box” approach to problems came while exploring offshore Santa Barbara, Calif.

Seismic “was not real helpful,” he said. From the surface, Barrow could see outcrops in the shallow waters “if we could just get down there and map them.”

Barrow hit upon the idea of using divers. As fortune would have it, Barrow had some geologist friends who were trained aqualung divers. He hired them on their days off, flew them to the coast and spent Saturdays and Sundays mapping the sea floor.

Equipped with balloons and sample bags, the divers swam compass

continued on next page

A Career at the Top of the Ladder

As a young field geologist in the early 1950s, Thomas D. Barrow’s first “strike” wasn’t the kind hoped for.

Easing along the face of a California cliff, Barrow heard a buzzing rattle near his head. As he ducked instinctively, his hat flew off his head and tumbled about 50 feet downhill, a rattlesnake firmly entangled – or enfangled – in it.

“If I hadn’t ducked, it would have hit me right in the forehead,” Barrow said.

Beyond the occasional bit of excitement and the experience gained, Barrow’s early field work for Humble Oil “didn’t really pay off ... It was someone else’s idea,” he recalled.

Nonetheless, Barrow pursued the science and career he loved, working around the country and up the corporate ladder.

At Humble, he moved up through exploration to become company president in 1970. In 1972, Barrow was named senior vice president of Exxon and elected to its board of directors, guiding its worldwide exploration and production activities and various other corporate dealings. He retired from Exxon in 1978 and was elected CEO and chairman of the board of Kennecott, a worldwide minerals business. Kennecott was acquired by Standard Oil of Ohio in 1981 and Barrow became Sohio’s vice chairman, guiding a variety of exploration, production, engineering and technical activities until 1985.

Barrow

Another retirement led to other opportunities.

Returning to the East Texas Basin, which was the subject of his 1953 doctoral thesis at Stanford University, Barrow helped find and develop major natural gas resources from Jurassic and Cretaceous strata in the basin’s western regions.

Approaching his 83rd birthday and residing in Houston, Barrow holds leadership titles in several companies and organizations, but said he leaves most of the work to others.

“My children came to me a few years ago and said, ‘Dad, you’re retired.’”

Between running errands for himself and Janice, his wife of more than 50 years, Barrow spoke by phone from his Houston home and offered a brief look back over a long and storied career. ❑

continued from previous page

traverses, noting the strike and dip of the outcrops and sending samples to the surface by balloon.

In a boat above, Barrow followed the divers' bubbles and noted the locations using his skills as a U.S. Navy navigator (active duty 1943-46 and naval reserve 1946-61).

As a result, Humble developed a "decent set of maps" from Ventura to Point Conception – a "major advantage in competing for bids," Barrow said. The area eventually produced one large field discovery and two smaller fields.

It was only one chapter in his very event-filled career.

✓ As vice president in charge of exploration for Exxon, Barrow said he "didn't think much of the idea" of exploring for oil in frigid Alaskan waters. But when coastal maps showed "a big nose plunging off to the left," Barrow revised his thinking.

"I recognized the possibilities," he said, and the result was the first successful well in Prudhoe Bay.

✓ As a vice president at Esso, Barrow picked a location in Australia's Bass Strait.

"It was too deep, they said."

Barrow said that instead of building a platform he could bring a ship to the site and drill the well from a floater. His determination in the face of naysayers produced another success.

✓ Bidding for Exxon on North Sea areas in partnership with Shell, "I liked one prospect and the Shell representative didn't. I finally said, 'I feel differently than you – can we bid on this alone?' The Shell rep said, 'Are you kidding?' I said I wouldn't say it if I wasn't serious."

His counterpart at Shell acquiesced to Barrow's determination, and the debated prospect produced the first successful well in the British North Sea.

Well ... nobody's perfect.

Asked about frustrations in his career, Barrow chuckled and said, "Give me a few minutes – You're asking a man to remember his failures!

"We chased some ideas in eastern Oregon and Washington for a time," he said. "We drilled one deep well; we got no shows."

Yesterday, Today …

Barrow today finds himself in the position of connecting the dots that comprise his climb in the science and industry.

"It's not the same as when I was growing up," Barrow said, although "looking at today's stock market, the industry seems pretty healthy.

"You can still make money ... (but) oil is going to be harder to find (and) you're going into more expensive environments," he said.

Advances in 3-D seismic and other techniques will aid the search, he said.

"Geology really hasn't changed much, but you have more control today."

If there's one special thing about Barrow's success, it is that he was never too specialized.

"I had a good background ... with an undergraduate degree in petroleum engineering," he said. "I could translate science into management and dollars.

"I understood minerals management," he said.

Kennecott "wouldn't give me stock options, so I went out and bought a lot of stock," he recalled. "I turned Kennecott around, and a few years later sold it to Sohio. I quadrupled my investment."

… and Tomorrow

Thomas and Janice Barrows have shared the fruits of their success along the way.

The School of Earth Science at Stanford bears his name, and a scholarship fund honors his mother.

The Barrow Conference Room at the University of Texas at Austin celebrates his father's career in name and photos.

Like his father, Barrow is a longtime supporter and contributor to AAPG and similar organizations.

"We have tried to spread our wealth in ways that make sense to us," he said.

"It's good to help the industry. We want to see that our knowledge – at least whatever isn't too confidential – gets spread around." ❑

JCORET OKs Training Process

The Joint Committee On Petroleum Reserves Evaluator Training (JCORET) has approved bylaws toward its purpose of developing or approving training courses for geoscientists and engineers concerned with reserves evaluation.

Eleven courses have been identified and one has been approved with several others under review, according to Daniel J. Tearpock, AAPG representative to JCORET. AAPG member Bill Kazmann, Dallas, also serves on the board.

JCORET was formed last year with representatives from AAPG, the Society of Petroleum Engineers, World Petroleum Council and the Society of Evaluation Engineers, in response to questions concerning reserve estimation reliability.

Tearpock said the estimates are important for public companies and the U.S. Securites and Exchange Commission as well as "to other international regulatory agencies, financial analysts and banks, as well as investors – all of whom want the assurance of reliable reserves and resources estimates.

"Whether someone wishes to invest in an exploration prospect, purchase interests in a producing field or determine the value of a company, the estimates of reserves and resources may be the most important factors in any decision," he said.

A full report on JCORET is available in the EXPLORER area of www.aapg.org. ❑

PROFESSIONAL NEWS BRIEFS

Randy J. Allmon, to vice president-chief geoscientist, Kraker & Martin Energy, The Woodlands, Texas. Previously principal geophysicist, ConocoPhillips, Houston.

Thomas Bard, to manager, exploration and new ventures-Eurasia, Chevron, San Ramon, Calif. Previously manager, exploration and new ventures-Nigeria and mid-Africa, Chevron, Houston.

John Bickley, to Pinedale development manager, Shell Rocky Mountain Production, Denver. Previously manager, tight gas task force manager, Shell E&P, Houston.

Stephen R. Brand, to senior vice president-technology, ConocoPhillips, Houston. Previously vice president-exploration and business development, ConocoPhillips E&P, Houston.

Thomas Buerkert, to senior geophysicist, Repsol Services, The Woodlands, Texas. Previously geophysical adviser, Hess Corp., Houston.

Paul Ching has been appointed to the board of directors, Meridian Resource Corp., Houston. He is vice president-technical, research and development, Shell International E&P, Netherlands.

William M. Colleary, to senior geologist, BTA Oil Producers, Denver. Previously senior project geologist, RSM Production & Gas Development (subsidiaries of Grynberg Petroleum), Greenwood Village, Colo.

Edward Custer, to chief geologist, Magnum Coal, Charleston, W.Va. Previously consulting geologist, The Rockdoktor, Barboursville, W.Va.

Richard B. Koepnick, to geological consultant, Blacksburg, Va. Previously senior geologist-gas development, Qatar Petroleum, Doha, Qatar.

G.M. "Byrd" Larberg has been appointed to the board of directors, Meridian Resource Corp., Houston. He is vice president of geosciences, Burlington Resources, Houston.

Matthew R. Martin, to geophysicist-deepwater Gulf of Mexico, Newfield Exploration, Houston. Previously chief geophysicist, Sterling Energy, Houston.

John A. McKosky, to vice president-chief geologist, Kraker & Martin Energy, The Woodlands, Texas. Previously principal geologist, ConocoPhillips, Houston.

Olugbenga Taiwo Odusote, to area services manager (West and South Africa), Roxar, Wimbledon, United Kingdom, and Lagos, Nigeria. Previously senior geoscientist, Ocean Energy (Devon Energy), Lagos Nigeria.

Brad Ritts, to basin analyst and reservoir stratigrapher, Chevron Energy Technology, San Ramon, Calif. Previously Robert Shrock Professor of Sedimentary Geology, Indiana University, Bloomington, Ind.

Kevin Schmidt, to south Texas operations coordinator, Pioneer Natural Resources, Irving, Texas. Previously senior staff petrophysicist, Pioneer Natural Resources, Anchorage, Alaska.

David Soubeyrand, to planning manager, Perenco, Port-Gentil, Gabon. Previously senior geoscientist, Gaffney, Cline and Associates, Singapore.

Jim Swartz, to asset development manager-Kern River Field, Chevron, Bakersfield, Calif. Previously asset team leader-Tombua Landana project, Chevron, Luanda, Angola.

John B. Thomas, to vice president, FO Oil & Gas, Canton, Ohio. Previously senior geologist, EnerVest Operating, Charleston, W.Va.

Patrick Tolson, to advanced senior geologist, Marathon Oil, Oklahoma City. Previously senior staff geologist-Rocky Mountain asset, Dominion E&P, Oklahoma City.

Paul Bentley Welch, to senior geologist, Comstock Resources, Frisco, Texas. Previously senior geologist, J-W Operating Co., Dallas. ❑

(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.)

That'll be the day: The Picks provided the punch for several of rock legend Buddy Holly's big hits. From left, AAPG member John Pickering, Bill Pickering and Bob Lapham.

SPOTLIGHTON...

'Rockin' Member To Enter Fame Hall! Rave On!

Oh, Boy!

Buddy Holly got the fame, but now AAPG member John W. Pickering, along with his late brother Bill and longtime friend Bob Lapham, known as the vocal trio "The Picks," will be inducted into the 2007 New Mexico Hall of Fame and Museum in Albuquerque, N.M.

The musical trio is being honored for its musical contribution as backup vocals for rock 'n' roll legend Buddy Holly.

Pickering, owner and president of Pickering Enterprises in Houston, began his singing career at age five and sang throughout his adolescence on local Texas radio with his parents and brother in a group known as the Pickering Family Quartet.

Coupling his love for singing with his passion for petroleum exploration, Pickering began his studies in petroleum geology at Texas Tech University in Lubbock, while continuing to sing alongside his brother in other professional quartets.

In 1957, just months away from receiving a bachelor's degree in petroleum geology, Pickering and his brother were asked by longtime friend and famed rock 'n' roll producer Norman Petty to recruit a third singer (Lapham) to create the backup vocals for Buddy Holly and his band, the Crickets, on what would become the number one pop hit, "That'll Be the Day."

Because the song was so popular Holly asked the trio to record several other songs with him including, "Oh Boy" and "Maybe Baby," which were *Billboard* hits as well.

"It was exciting for me and (The Picks trio)," Pickering said, "to be picked by Buddy Holly and Norman Petty to create a 'Crickets vocal group-sound' by adding backup harmonies."

Along with Pickering's geologic accomplishments, he has written and published two tribute songs to commemorate the life of Buddy Holly; has recorded numerous secular and gospel songs; and is in the process of writing a book about his musical experiences.

In comparing his double career Pickering had this to say:

"The two careers went along together because geologic prospecting, writing songs and producing records all come from the same desire to create something that is lasting and useful."

In other words, he's excelled in two ways that definitely will Not Fade Away.

– SUSIE MOORE

Those were the days: John Pickering, who also has enjoyed a successful career as an oil-finding geologist, holding memories of his musical career.

FOUNDATION UPDATE

Two new members recently joined the AAPG Foundation Trustee Associates – and in doing so, both made sure that one of the Foundation's newest and most popular programs would continue to reach students and faculty at the university level.

The new Associates are **David Lehman**, of Houston, and **Bill Ballard**, of Billings, Mont.

The addition of Lehman and Ballard raises the Foundation Trustees' membership to 265.

The program that will benefit is the Digital Products Fund, which provides subscriptions of AAPG material for donor-designated schools.

For Lehman, his support is for a Digital Products University Subscription at Franklin and Marshall College, in honor of the Geoscience Founders Society.

For Ballard, the subscription endowment is for the University of Oklahoma.

The same program also has received the support of AAPG Emeritus member and Foundation Corporation Member Robert Ardell and his wife, Lee, who have designated funding for a Digital Products Subscription for Monmouth College, in memory of professor Donald L. Willis.

The Datapages online university subscriptions provide designated schools with all AAPG publications from 1917 through present, including the AAPG BULLETIN, *Environmental Geosciences* and AAPG special publications.

The Ardells

For more information on the program contact Rebecca Griffin with the Foundation, at 918-560-2644.

* * *

Less than two months remain for donors over age 70½ to make a charitable gift through their IRAs.

The tax law that expires on Dec. 31 allows individuals at least 70½ years of age or older to support charities like the AAPG Foundation through a gift (up to $100,000) from their IRA without incurring taxable income (no tax deduction).

Distributions made under this law could satisfy the donor's minimum required distribution for that tax year – especially if they may not need the extra income and do not wish to pay tax on it.

If so, this could be a perfect occasion to increase your support or make a special gift to the AAPG Foundation.

Consult your tax adviser about your IRA, your 2007 gifts and the possibilities to either increase your support or make a special gift to the Foundation. ❑

Foundation (General)
Linda Beate Aasum
Mahmoud M. Abdul-Baqi
Patrick Adrian Allman Ward
Michael Millard Anderson
Sidney Bakken Anderson
Robert James Ardell
In memory of Rufus LeBlanc
Bruce J. Bilodeau
David C. Blanchard
Andrey A. Bohan
James Carl Brothers
Alex S. Broun
Michael C. Burkard
Charles Byrer
Susanna Sofia Calvo
James Ernest Catlin
Sanjib Chakraborti
David Wayne Childers
James C. Collins
Randel Thomas Cox
Paul Lloyd Decker
William D. DeMis
John Conrad Dolson
Mark Anthony Doyle
Marc T. Eckels
Jack Edwards
Rick Fritz
Takashi Fukuda
Johanne Kvaal Grevstad
William Roy Guffey
Talaat Hamid Hassan
Zhiyong He
Richard Herbert
Mary K.V. Hodges
Michael Sean Howell
Zelijko Ivkovic
Basil Iorbee Jev
Eric Henry Johnson
Rachel A. Johnson
Tony Jolly
Crandall Davis Jones
In memory of Charles L. Jones and Joe E. Pelline
Guy B. Kiker
James Stanley Kwasny
Luis Manuel Reis Leote
John Patterson Lockridge
John Nikolai Louie
Alberto R. Luna
Leroy Louis Manka
John Patrick Martin
Julian Mather
Cameron Robert McLain
Hugues Stanislas Monrose
James Clifton Musgrove
Johan Petter Nystuen
Francisco Olivares Perez
Jorge Alberto Perez Lopez
Carlos Pimez
Karen L. Plate-Sherlock
Bradford Eugene Prather
Michael Aaron Rosen
Luther Weidner Sappenfield
Catherine Sarah Schindler
John Fraser Shields
Allen G. Siemens
Richard Steinmetz
T. Chris Stiteler
Deborah T. Sycamore
Jack Thomas
In memory of Fred A. Dix
Linda Joyce Tollefson
Thomas Gerard Tyrell
Jose Varghese
Jaap Veldkamp
S. Paul Waddell
Paul Joseph Wagenhofer
Rhonda A. Welch
Adam Bennett Whitman Jr.

Awards Fund
Carmen Cecilia Contreras F.
Bernhard Krainer

Robert Berg Outstanding Research Award
Catherine O'Hara Albert
James Joseph Chodzko
Steven L. Dorobek

Best Student Paper and Poster Award
Ghaida Abdullah Al-Sahlan
Carl Fredrik Gyllenhammar
Ishrat Rahman

Ziad Beydoun Memorial Award
Edward Cox

A.I. Levorsen Memorial Award
Gbolagade Adenrele Olalere

Arthur A. Meyerhoff Memorial Grant
Brian Anthony Hampton

Daniel A. Busch Library Fund
Michael Louis Merritt

Digital Products Fund
Ellen West Hoveland
David Hershey Lehman
Regina N. Tempel

Colorado School of Mines
Bob Wikan H. Adibrata
Timothy Lee Hoops
Son Thanh Le

Franklin & Marshall College
David Hershey Lehman

Louisiana State University
Julitta Kirkova-Pourciau
Jennifer Kaye Whittington

San Diego State University
Robert C. Scheidemann Jr.

Texas Tech University
Nelson Brent Yoder

University of California, Berkeley
Michael R. Wisda
In honor of John and Colleen Silcox

Virginia Tech University
A. Curtis Huffman Jr.

Distinguished Lecture Fund
John Robert Kerns
In memory of John Traut
George Mark McAleenan

Glenn Pool Museum Fund
Thomas E. Matson
Tulsa Geological Society

Grants-in-Aid Fund
Catherine O'Hara Albert
Steven Clark Bergman
Gretchen M. Gillis

Gustavus E. Archie Memorial Grant
Ron Van Mourik

Herbert G. Davis and Shirley A. Davis Named Grant
Herbert G. Davis
In honor of Rick Fritz, T. Boone Pickens, Terry Hollrah and Gary Stewart

Norman H. Foster Memorial Grant
Noel B. Waechter

Robert K. Goldhammar Memorial Grant
Steven L. Dorobek
Arnout J.W. Everts
Jason Windrow Rush
Charles David Winker

Merrill W. Haas Memorial Grant
Paul H. Dudley Jr.
In memory of Dick Boebel

Weimer Family Named Grant
Chris A. Oglesby

James A. Hartman Student Fund
Tillman Webb Cooley Jr.

K-12 Fund
Catherine O'Hara Albert
BP Foundation
Matching Gift from Michael Follis
Richard Michael Parker
In memory of Jack G. Klatt
Edward Carl Roy Jr.
In memory of M.O. Turner

E.F. Reid Scouting Fund
Jeffrey William Smith

Teacher of the Year Award
Ghaida Abdullah Al-Sahlan
Carl William Kuhnen Jr.
Steven George Stancel
Daniel H. Vice

Visiting Geoscientist Fund
W. Clay Hunter

Plans for San Antonio

Sponsors Make Good Meetings Great

Planning continues for the 2008 AAPG Annual Convention in San Antonio, with the official meeting announcement and technical program due in January.

The meeting will be held April 20-23 at San Antonio's Henry D. Gonzalez Convention Center. The theme is "Deliver the Conventional; Pursue the Unconventional."

For now, meeting organizers are focusing on something that has become crucial to convention success stories: sponsorship opportunities.

Last year's meeting in Long Beach, Calif., attracted 65 sponsors who donated anywhere from $500 to more than $40,000 dollars apiece to help ensure the convention's success.

Already nearly 20 sponsors have pledged their support of the 2008 meeting, and San Antonio officials are hoping to at least match the Long Beach level of support.

Sponsors' importance to the meeting is perhaps obvious – but the benefits to the sponsors are just as significant.

"AAPG's Annual Convention is a proven gathering place for geologists and other petroleum professionals from around the world, and sponsorship is a great way to connect your company instantly with the global geosciences community," said Alan Wegener, director of the AAPG Convention Department.

"I think most sponsors recognize that they're ultimately supporting the entire industry by backing the activities of AAPG," Wegener said. "AAPG always has been focused on serving and growing opportunities for petroleum businesses and professionals.

"The value of sponsorship goes way beyond the annual meeting."

Those who have sponsored past meetings apparently feel the same way.

"My company's support of AAPG convention activities has been an excellent and heartwarming experience for me in recent years," said Dave Eby, owner and president of Eby Petrography and Consulting in Littleton, Colo.

Eby, an AAPG member, has attended every convention for the past 31 years.

"I own a small consulting company," he said, "(and) sponsorship of the AAPG conventions allows me to give back and support activities that I feel particularly close to."

For Eby, that often means finding a way to "encourage students and young professionals to come to the national AAPG meetings.

"I feel that I owe so much to this profession, to the AAPG and to many people," he added. "Sponsorship of activities is one of the ways I can give back to the organization and people who have been so important to me and my company."

There are seven financial levels of sponsorship opportunities being offered. Donors can contribute to the general fund, or request their money be used in specific purposes, such as in support of field trips, short courses, luncheons, publications or various other activities.

As Sponsorship Committee Chairman Harry Balling said, all gifts are "critical to the continuing success of AAPG and our shared geosciences community."

Details and e-submittal forms involving sponsorship and exhibitor marketing opportunities are available online at http://www.aapg.org/sanantonio/sponsorship.cfm. ❑

Athens

from page 24

central parts of the western basins and shallower in the east, due to higher geothermal gradient.

❒ Minas Kapnistos' paper "Hydrocarbon Exploration in Western Greece" (with Nicolaou, Evangelos Kamperis and Fedon Marnelis) is more specific about the region's four geological provinces:

✓ The external Hellenides thrust fold belt, which is both offshore and onshore. Expected reservoirs are the upper Cretaceous and Eocene fractured carbonates and breccias.

Subsalt plays have been identified under the Mesozoic series at depths ranging between four and five kilometers. These structures are undrilled, but considered promising exploration targets.

✓ The Apulia-Adriatic foreland, a frontier exploration region covering the deep waters in northwest Ionian Sea. Possible hydrocarbon plays are thought to be related with faulted block structures, slope deposits and reefal build-ups.

These plays, not yet explored, are analogous to several fields discovered offshore Italy, such as Rospo and Aquilla.

✓ The Neogene post-orogenic basins, located in the Ionian Sea, have promising hydrocarbon potential in Miocene clastic reservoirs.

Traps related with diapiric movements of the Triassic evaporites and strike-slip faults have been identified.

✓ The Hellenic continental margin, where studies indicate exploration potential within the Miocene turbidites and slope deposits. ❑

REGIONS AND SECTIONS

Preparation Begins For Cape Town

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

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

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

This month's column continues a topic first announced in detail last month: the 2008 AAPG International Conference and Exhibition in Cape Town, South Africa, written by members of the Cape Town Organizing Committee.)

By JEFF ALDRICH
JEAN MALAN
and JOHN SNEDDEN

It's never too soon to start planning for something special, and next year's AAPG International Conference and Exhibition Oct. 26-29 in Cape Town, Africa is going to be, in every way, a special event that you won't want to miss.

The theme is "African Energy – Global Impact," chosen because Africa is one of the largest hydrocarbon producers in the world, and its prominence is on the rise.

The call for papers deadline is Jan. 18.

We believe there are several excellent reasons to attend the conference, including:

✓ For those involved in deepwater sediments in exploration, production or research anywhere on the planet, realize this could be both the broadest and the most detailed conference of the decade on the subject.

The technical committee's goal is to present a deepwater program that will be at the cutting edge of the science.

✓ With our Regional Sessions on Pangean and Gondwanan petroleum systems, we already have technical leaders from AAPG's Latin American Region (South Atlantic and Oriente Basins); North America Region (GOM and Atlantic Margin); Europe Region (best of the Athens papers, North Sea); Middle East (advances and developments on the platform); and Asia Pacific Region (India, Pakistan and Australasia sessions).

✓ If you are involved in African oil and gas exploration or production or are substantially impacted by African hydrocarbon production this will be *the* technical conference to attend.

Our goal is for every African AAPG Society to be involved in this conference – and already we have support from many of Africa's largest NOCs.

In short, there is a regional event for almost everyone.

Cape Town, South Africa
October 26-29, 2008

AAPG International Conference and Exhibition

Host: Geological Society of South Africa

Fun Time

In addition, consider the amazing cultural and recreational opportunities:

✓ Cape Town is one of the top five tourist destinations of the world, boasting six of the top 10 South African attractions within an hour's drive from the city center.

✓ The conference will include a full program of culture, wine farms, wildlife parks, hiking, natural scenery with the unique Cape Fynbos vegetation and other activities.

✓ Table Mountain and Robben Island are world heritage sites and are within an hour's drive, along with:

✓ Victoria and Alfred Waterfront.

✓ The Cape Winelands.

✓ Cape Point.

✓ Kirstenbosch botanical gardens.

Through the AAPG links you can easily plan side trips to world famous sites like the Kruger Game Park, Okavango National Park, the Namibian Coastal Dunes, Kimberly Diamond mines, cage diving with great white sharks or five star golf and spa centers.

The committee's goal is for this to be the best AAPG international conference ever. Start planning now – and in the meantime, keep track of the latest news regarding Cape Town on the AAPG Web site at www.aapg.org. ❑

Region, Section Meetings of Note

Here's a list of AAPG annual, international and Section meetings for 2008.

April 20-23, AAPG Annual Convention, San Antonio.

Feb. 24-27, Southwest Section, AAPG, annual meeting, Abilene, Texas.

March 29-April 2, AAPG Pacific Section, annual meeting, Bakersfield, Calif.

July 9-11, AAPG Rocky Mountain Section, annual meeting, Denver.

Oct. 5-9, AAPG Gulf Coast Association of Affiliated Societies, annual meeting, Houston.

Oct. 11-15, AAPG Eastern Section, annual meeting, Pittsburgh.

Oct. 26-29, AAPG International Conference and Exhibition, Cape Town, South Africa. ❑

Photo by Tom Moore

Northern exposure: Alaska's Ivotuk Hills, about 100 miles southwest of Umiat at Lisburne well location, adjacent to southern NPRA. AAPG's 2008 field trip program will offer an encore presentation of the popular Alaska GeoTour, giving participants another opportunity to visit, view and study the impressive geology of Alaska. Details on this and all AAPG education department courses and trips are being compiled and will be available shortly to members.

SPOTLIGHT ON EDUCATION

Coming soon to your desk: Dozens of opportunities for you to become an even-better professional geologist.

The 2008 AAPG education calendar is in its final production stages and will be mailed shortly, offering a year's worth of classroom courses, field trips and online courses to help members maintain their technical and intellectual edge.

Among the season's highlights is the Winter Education Conference, set for February in Houston and offering six new courses – including three with a personal/business slant:

✓ Thinking on Your Feet.
✓ Creativity in Exploration.
✓ Principles of Career Success as a Professional Geologist.

Other new WEC courses are:

✓ Geologic Interpretation of Seismic Data.
✓ Formation Evaluation of Thinly-Bedded Reservoirs.
✓ Assessment of Unconventional Shale Resources Using Geochemistry.

That's only the start of a year of educational opportunities. Other offerings will include:

✓ The annual Fall Education Conference in September (Houston), built on the theme "Structural Geology."
✓ For the GeoTour program, a return of the popular Grand Canyon, Alaska and Lewis and Clark trips.
✓ Three new field seminars, on Deepwater Clastic Deposits; Applied Paleozoic Carbonate Platforms; and Submarine Canyons, Channels, Fans and Deepwater Sequence Stratigraphy.

Also new to the short course schedule are:

✓ Exploring for Stratigraphic Traps Using Pressure/Depth Plots & Salinities.
✓ Multi-Component Seismic Stratigraphy.
✓ Risk Analysis and Decision-Making in E&P: From Evaluating Plays and Prospects to Efficient Appraisal and Development.

Add those to the 28 or so returning favorites and you have a season that offers something that can help any and all members.

Remember, details for these and the complete 2008 program are on the way. For now, keep posted on education opportunities on the AAPG Web site at www.aapg.org. ❑

'09 Denver Ideas Sought

Organizers of the 2009 AAPG Annual Convention want members to have a say in the technical program's content.

That's right. This is your chance for input for shaping the program.

The 2009 meeting will be held in Denver June 7-10, with the theme "Image the Past – Imagine the Future."

To start preparations, the Organizing Committee is seeking member suggestions for oral and poster sessions, session chairs, short courses, field trips, instructors and trip leaders – and the committee is especially interested in receiving suggestions of a "global nature that will appeal to the vast majority of attendees."

Organizers said they want the technical program to cover a broad spectrum of geological interests, including:

✓ Global Deepwater E&P.
✓ Stratigraphy and Sedimentology.
✓ Structural Geology.
✓ Exploration and New Plays.
✓ Philosophy of Exploration.
✓ Resource Development & Reservoir Characterization.
✓ Tight Gas.
✓ Unconventional Reservoirs.
✓ Hydrocarbon Systems and Basin Analysis.
✓ New Opportunities and Technologies.
✓ Astrogeology.
✓ Petroleum Geology and Public Policy.
✓ Alternative and Renewable Energy.
✓ The Environment and Responsible Development.
✓ Geophysical Applications.

Organizers said they hope to link many of the sessions to recent advances in the exploration for conventional and unconventional emerging resources with global applicability.

Send suggestions via e-mail to general technical program chair Steve Sonnenberg at sasonnenbg@mines.edu and include contact information with your recommendations.

Note that submittal of a suggestion does not guarantee inclusion in the program.

The deadline for submitting suggestions is Dec. 15. ❑

MEMBERSHIP AND CERTIFICATION

The following **candidates** have submitted applications for membership in the Association and, below, certification by the Division of Professional Affairs. This does not constitute election nor certification, but places the names before the membership at large.

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

(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

California
Lee, Cathy Y., Chevron, San Ramon (N. Schoellkopf, B.J. Katz, R.L. Kaufman)

Colorado
Barcklay, Joshua M., Pason Systems USA Corp., Golden (J.R. Watson, W.R. Nagel, S.J. Mitchell); **D'Ambrosia, Lisa Maria**, Good Vibrations Geophysical Consulting, Lakewood (W.R. Cook III, D.A. Uhl, R. Opfer); **Differding, Paul Charles**, Delta Petroleum, Denver (G. Casteel, K. Allison, M. Seeber); **Henderson, Don K.**, Sage Petroleum, Ridgway (reinstate)

Montana
Link, Curtis Alvin, Montana Tech, Butte (H. Dresser, D.L. Hanneman, D.A. Lopez)

North Dakota
Anderson, Fred James, North Dakota Geological Survey, Bismarck (B. Juenker, J. LeFever, E. Murphy)

Pennsylvania
Sink, John E., Schlumberger, Coraopolis (B. Toelle, C.M. Boyer, K. Walker)

Texas
Bourgeois, Benjamin D., La Luna Production, Katy (D.W. Doughtie, R.M. Hedberg, B.J. Bahlinger); **Cornet, Walter Bruce**, American Eagle Energy, El Paso (reinstate); **Gomez, Leonel Augusto**, ExxonMobil Upstream Research, Houston (S. Agar, C.F. Kluth, J.F.W. Gale); **Melzer, Laurence Stephen**, Melzer Consulting, Midland (W.R. Green, R.C. Trentham, H. Smith); **Nguyen, Ha Dinh**, ConocoPhillips, Houston (P. Heppard, M. Maler, A. Lacazette)

Certification

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

Petroleum Geologists

Ohio
Mason, Gregory L., NGO Development Corp., Millersport (J.G. Henthorne, W.M. Rike, L. Wickstrom)

Oklahoma
Miceli, Morris Albert, consultant, Edmond (G.J. Howard, W.C. Stephens Jr., J.C. Woodson)

New Mexico
Fly, Sterling J. III, David Petroleum Corp., Roswell (reinstatement)

Texas
Kirsch, Donald F., PEC Minerals, Dallas (T.G. O'Hare, L.M. Petersen, J.C. Gentry)

Virginia
Leahy, P. Patrick, American Geological Institute, Alexandria (W.L. Fisher, C.G. Groat, S.W. Tinker)

Africa
Anuforoh, Raymond Uzoma, Bulwark Services, Port Harcourt (G.O. Oboh, T.O. Itiola, K. Levine)

Canada
Bencherif, Mohamed El Amin, Baker Hughes-Baker Atlas, Calgary (A. Madi, S.A. Lomas, P. Zarian)

Colombia
Valencia, Edwin Enrique, Geovensa, Bogota (J.M. Armentrout, D. Barrero, I. Olaya)

Nigeria
Ahmed, Saidu Buba, NNPC/NPDC, Benin (M.A. Agbuza, H.M. Aliyu, E.A. Gerald); **Asanga, Joseph Okon**, Global Energy, Lagos (D. Jarvie, A.L. Ekweogwu, O.A. Ojo); **Mshelia, Maryam A.**, NPDC-Nigerian National Petroleum, Benin City (G.E. Ajah, M.A. Agbuza, H.M. Aliyu); **Okogbue, Innocent Okechukwu**, Nigerian Petroleum Development, Benin City (A.A. Carim, A.E. Enemuoh, G.E. Ajah)

Norway
Tsikalas, Filippos, ENI Norge AS, Stavanger (S. Olaussen, K.O. Bjorlykke, J.S. Jahren)

South Africa
Malan, Jean, Petro SA, Parow (J.B. Aldrich, J.W. Snedden, N. Schneidermann) ❑

Student Expo Sets Attendance Record

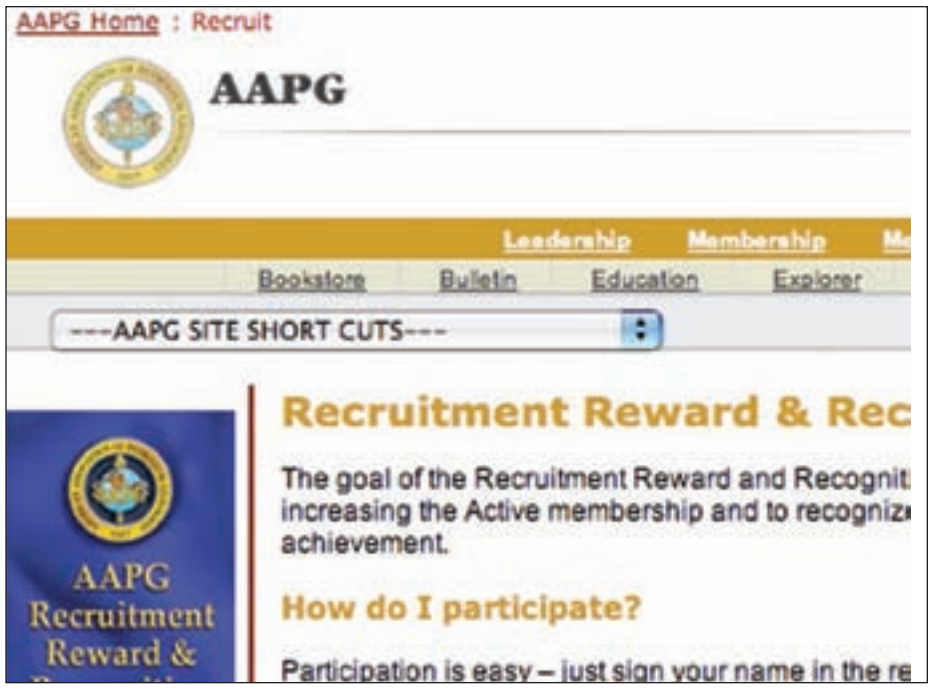
The 10th annual AAPG-SEG Student Expo, held Oct. 8-9 at the Westin Galleria in Houston, proved to be the largest student expo event to date.

The final numbers showed that 228 students from 70 schools participated in the Expo, in addition to representatives from 33 companies.

Activities included field trips, social events and a full day of poster presentations, interviews and networking.

A full report will be included in the December EXPLORER.

AAPG - SEG Student Expo



WWW.UPDATE

Web Site Records Recruiters' Points

By JANET BRISTER
Web Site Editor

Will you be the first to hit double digits this year?

Now, if that sounds like a contest … well, it's not. But double digits in this case is a good thing.

In reviewing the recruiting page on the AAPG Web site, there are two people very close to going into the double-digit count with their recruiting efforts.

AAPG President Will Green and John Dolson are tied with the largest number of recruits on the list.

You, too, can follow these numbers. We've set aside a special place on our site to assist and motivate AAPG members in signing on new members.

Are you on the list?

Getting past members to reinstate their membership counts, too.

At least, those are the quickest ways to build your recruiting total. You also can receive credit for any associate members who bump up their status to Active.

Drill Deeper

You can't just stop at the surface. Take a closer look at the recruiting area of the AAPG Web site.

First, it's an easy URL to remember: www.aapg.org/recruit/.

Next, it's easy to find how many points you have earned thus far. Simply click the "How many points do I have?" link, enter your member number and your accumulated points will display.

(The hardest part of that step is knowing your member number.)

It's easy to see how you measure up to others' efforts by simply looking at the list of recruiters listed behind the link "Recruiters." In that list are not only the names but their numbers as well.

Need a little help?

No problem. "Recruiting Tips" takes you to links and helps to give you ideas and assist you in your efforts. This includes the AAPG value pyramid, which illustrates all the benefits of membership.

And don't forget, AAPG would like to reward you for all your hard work and efforts at recruiting. You can redeem your accumulation of recruiting points at any point for either a beautiful fossil specimen or Bookstore credit.

All of these details are on the AAPG Web site for your review – just remember these two simple URLs:

✓ www.aapg.org/join – where people can sign up electronically.

✓ www.aapg.org/recruit – so you can watch your progress and keep an eye on the competition.

Good browsing! ❑

To be Honored Posthumously

Meissner Could 'Think Like Oil'

Fred F. Meissner, the 2008 recipient of the Sidney Powers Memorial Award, died at his home in the Denver area on September 18, just weeks after being notified of receiving the highest honor given by the Association. He was 75.

The honored exploration geologist, college professor and consultant, a pioneer of the concept that methane gas could be extracted from coalbeds, will be the second posthumous recipient of the Powers Award, the first being Meissner's friend and colleague, Norman H. Foster in 1999.

Meissner authored over 45 publications, papers and poster sessions focusing primarily on hydrocarbon generation, migration and accumulation.

He was widely known for his technical acumen and his teaching ability. In receiving the Grover Murray Distinguished Educator Award in 2005, Meissner said:

"I am neither an academic nor a professional educator. All of my professional life, I have simply been a practicing petroleum geologist."

Meissner

Career of Excellence

Born and raised in Denver, his connection to the Rocky Mountains was cemented with his earning a geological engineering degree in 1953 and a master's at the Colorado School of Mines, Golden, Colo., in 1954, the year he joined AAPG.

Following service with the U.S. Corps of Engineers in the Korean War, he began his professional career with Shell Oil Co., where for the next 17 years he worked with a number of leading petroleum explorationists and, notably, with M. King Hubbert, acknowledged by Meissner as his mentor.

Meissner told the story that while he was a graduate student he recognized Hubbert's hydrodynamic work as a key to certain aspects of petroleum migration and trapping. When at Shell, he was able to apply the concepts to the occurrence of oil accumulations in deepwater turbidite channels that he identified and mapped in the Delaware Basin of west Texas.

He took to management his idea that the presence and potential of tilted oil/water contacts in the turbidites would be highly productive. He said the idea was derided, that oil/water contacts could only be horizontal.

However, a new manager saw merit in the new idea and encouraged Meissner, who used the concept to develop several prospects, three of which found new oil fields.

As a result, Meissner was transferred to the Shell Research Lab, in Houston where he worked personally with Hubbert.

"I found him to be one of the best overall teachers that I have ever been exposed to," Meissner said of Hubbert in 2005. "I patterned many of the courses I have taught after the format that (Hubbert) used."

However, Meissner was not harsh in his approach to students, a trait of which Hubbert was notorious.

Mark Sonnenfeld and Fred Meissner (seated) on the recent "Mineral Belt Trail" field trip, which Fred led.

Go West, Young Man

As Meissner's reputation as a scientist grew his assignments became diverse and his undertakings included teaching in-house courses at the lab and at international offices.

Working in 1973 at Shell's Denver office, Meissner chose to answer the longtime lure of the Rockies when that office was closed and consolidated in Houston.

He joined Trend Exploration, which was formed by AAPG member Tom Jordan and included Norm Foster on the management team. There, Meissner worked on a number of important discoveries, including the giant Irian Jaya field in Indonesia.

He then worked with Trend's successor company, Filon Exploration, and later with Webb Resources and Bird Oil. In all the affiliations he was a principle, with titles ranging from exploration manager to vice president.

In 1978 he gave a landmark paper at the Montana Geological Society's Williston Basin Symposium, which incorporated the concept that source rock may be a frequently overlooked reservoir rock, and that the change in phase from solid organic matter to a liquid during hydrocarbon generation causes abnormally high pressure in source rocks – and this is a primary and significant cause of fracturing in both source and adjacent reservoir rocks.

His early recognition of the

continued on next page

IN MEMORY

AAPG member Paul B. Welch was wrongly included in the EXPLORER's October "In Memory" list, the result of false information provided by clerks at his previous employer.

Information on Welch's career can be found in the Professional News Briefs column on page 48.

Richard W. Boebel, 81
New Orleans, Sept. 1, 2007
Stephen Louis Leming, 57
Tulsa, June 10, 2007
Fred F. Meissner, 75
Littleton, Colo., Sept. 18, 2007
(See story, page 58.)
Henry Francis Nelson, 90
Cumming, Ga., June 29, 2007
Paul Danheim Nelson, 80
St. Louis, Sept. 10, 2007
Jack M. Reed, 77
New Orleans, Oct. 7, 2007
Richard Alvin Rogers, 80
Houston, Sept. 3, 2007
John David Traut, 80
Casper, Wyo., Aug. 21, 2007

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

READERS' FORUM

A Vote "Yes"

The new AAPG climate statement (August EXPLORER) looks pretty good to me.

As geologists, we understand past climate fluctuations, the extinctions they probably caused and glaciation effects – but we should leave current climate studies and predictions to climate scientists.

How would we feel if the climate scientists started making statements about geology?

Dennis Olmstead
Portland, Ore.

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.

continued from previous page

generation and potential production of gas from coalbeds and carbonaceous shales was published in a paper he co-authored in 1977 with Ed Dolly.

From 1986 to 2004 he was an adjunct professor at his alma mater, where he sat on thesis committees, taught a graduate course in advanced petroleum geology and was a guest lecturer.

In 1991 he began his consultancy where he worked basins worldwide as well as teaching short courses, including for the Rocky Mountain Section of the Petroleum Technology Transfer Council.

A Lasting Legacy

A contributor to the AAPG BULLETIN while still with Shell, Meissner's activities with the Association includes serving as an associate editor from 1981-83 and 1985-87, serving on the Education, Convention and Publications committees and as a Distinguished Lecturer in 1980-81.

Meisssner won the EMD Best Paper Award in 1984, and received AAPG Honorary Membership in 2001 and the Grover Murray Memorial Distinguished Educator Award in 2005.

Despite being weakened by his battle with esophageal cancer, on Sept. 1 – about two weeks prior to his death – Meissner led a field trip for about 30 members of the geology study group to which he belonged – "Geology and Mining History Along a Portion of the Mineral Belt Trail, Leadville, Colo."

Eulogists at his funeral included a past student and AAPG member Bob Raynolds; past Powers Medalist, past AAPG president and CSM colleague Robert Weimer; and Ray Thomasson, also a past AAPG president and Meissner's prospect partner in a well that is now drilling.

Thomasson told a story related by Meissner's Shell friend and protégé Larry Meckel that typified Meissner's philosophy and style of teaching:

"Fred said that petroleum geology is a science and the application of petroleum geology is an art form. Just as in fly-fishing, you have to start with the right equipment and you have to know how to use that equipment – that's the science. But to be successful you have to think like a fish – that's the art form.

"Translated by Fred, to be successful at finding oil and gas you have to think like a bubble of oil and gas. Where and how was it matured, how did it travel through the rocks and why and where was the logical place for it to end up."

Meissner's posthumous awarding of the Powers Medal is in the memory of a rare explorationist – not only could he find oil, he could teach others how to find it. He could think like a bubble of oil. ❑

UNIVERSITY OF WYOMING

ENERGY-RELATED GEOPHYSICS - OPEN RANK

The Department of Geology and Geophysics at the University of Wyoming invites applications for a faculty position in the Department and in the newly created School of Energy Resources (SER) at the University of Wyoming, an institute dedicated to energy-related teaching and research in support of State, national, and international energy-related activities. This appointment may be made at any rank. The position can begin as soon as January 1, 2008.

We seek an individual who will establish a well-recognized, externally funded research program in geophysics, with a preference toward reflection seismology, petrophysics, or potential fields as applied to energy-related research. Applicants should complement and/or expand on departmental strengths in geophysics, structure geology and tectonics, sedimentology, and/or crustal studies. We seek a person with the ability to cooperate productively with other SER faculty in geology and geophysics, mathematics, chemical and petroleum engineering, economics, and other energy-related fields. The successful candidate will be involved in the undergraduate and graduate teaching mission of the Department of Geology and Geophysics. The SER is an ambitious, state-funded institute that seeks innovative researchers working on new approaches at the forefront of the expanding fields in energy research. Information about the School of Energy Resources is available at uwyo.edu/SER. Additional information on the Department Geology and Geophysics can be obtained at http://home.gg.uwyo.edu/.

Applications should include a statement of research and teaching interests and accomplishments, curriculum vitae, and the names and contact information for three individuals who can provide letters of evaluation. Review of completed applications will begin October 1, 2007; however, applications will be accepted until the position is filled. Send an electronic copy of your application to: Ms. Carol Pribyl at cpribyl@uwyo.edu; if you have additional application materials to send, please direct them to the Geophysics Search Committee, Department of Geology and Geophysics, University of Wyoming, 1000 East University Avenue, Dept. 3006, Laramie, WY 82071-2000.

The University of Wyoming is an equal opportunity/affirmative action employer.

CLASSIFIEDADS

POSITION AVAILABLE

W.M. KECK PROFESSORSHIP IN GEOPHYSICS
DEPARTMENT OF GEOLOGY
BAYLOR UNIVERSITY

The Department of Geology at Baylor University invites applications for the W.M. Keck Professorship in Geophysics, beginning August 2008. A Ph.D. in Geophysics, Geology or a related field is required at the time of appointment. The Department currently consists of 13 geoscientists, including geologists, geophysicists and geographers (please see the Department website at: http://www.baylor.edu/Geology/ for further information).

Research: The Department seeks a nationally recognized individual who has a strong research agenda in geophysics or the use of geophysical data. Potential areas of interest may include, but are not limited to, earthquake or reflection seismology, potential fields, geodynamics, or geophysically oriented aspects of petroleum geology. We encourage communication and collaboration with a subset of the Geology faculty members that are currently engaged in studies in the general areas of petroleum geology, stratigraphy, structural geology, hydrogeology, and environmental geology and geophysics, and the successful candidate is expected to carry out a vigorous research program that involves both undergraduates and graduates. Research space is available in the 500,000 ft² "state-of-the-art" Baylor Sciences Building.

Teaching: We seek an individual with a strong commitment to excellence in teaching, and require that he/she contribute significantly to both the undergraduate programs in Geology and Earth Science by teaching a freshman course, a senior-level course, as well as contribute to the graduate (M.S. and Ph.D.) programs in Geology by teaching graduate courses or seminars in his/her areas of specialization. A laboratory that includes high-performance computers and software, as well as two large plotters, is available for both instruction and research.

Application Process: Send letter of application, including statement of teaching and research interests, curriculum vitae, copies of transcripts, and the names and contact information for three references to: Dr. Stephen Dworkin, Geophysics Search Committee Chair, Department of Geology, Baylor University, One Bear Place #97354, Waco, TX 76798-7354 (Tel: 254-710-2361; e-mail: Steve_Dworkin@Baylor.edu). The review of applications will begin December 1, 2007 and applications will be accepted until the position is filled. To ensure full consideration, application must be completed by December 15, 2007. Baylor is a Baptist university affiliated with the Baptist General Convention of Texas. As an Affirmative Action/Equal Opportunity employer, Baylor encourages minorities, women, veterans and persons with disabilities to apply.

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

Assistant Professor
Stephen F. Austin State University

The Department of Geology invites applications for a tenure-track position at the assistant professor level in one or more of the following specialties: mineralogy, geochemistry, environmental geology, hydrology, stratigraphy, sedimentology, or carbonate petrology. Expertise in multiple disciplines, including GIS, would be an advantage, as would be an ability to contribute to a proposed Environmental Ph.D. program. Applicants should have a Ph.D. in geology, a strong commitment to excellence in teaching, and willingness to direct MS geology graduate students in research. Teaching responsibilities will include introductory courses, upper level and graduate courses in the applicant's specialty, and occasional weekend field trip courses. Other expectations include research, university service, and continuing professional development.

Applicants should send a letter of application, curriculum vita, statement of teaching and research interests and educational philosophy, copies of official transcripts, article reprints, and contact information for three references, to: Dr. R. LaRell Nielson, Chairman, Department of Geology, PO Box 13011, Stephen F. Austin State University, Nacogdoches, TX 75962. Review of applications will begin by Jan. 15, 2008; the position will start in Fall 2008. EOE; security-sensitive position; criminal history will be checked.

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

Stratigraphy, Cal State University Northridge

The Department of Geological Sciences invites applications for a tenure-track appointment at the assistant professor level in Stratigraphy. We seek an outstanding teacher and researcher who integrates field-based research in stratigraphy with quantitative and/or geophysical methods to join our growing dynamic department. Preference will be given to applicants with a demonstrated history of research funding, industry experience, and/or research interests that complement and enhance existing departmental strengths in tectonics, volcanology, sedimentology, paleontology, marine geology, and geophysics. Stratigraphic expertise of the candidate may include but is not limited to: dynamic stratigraphic modeling, seismic stratigraphy, sequence stratigraphy, paleo-environmental studies, cyclostratigraphy, and chemostratigraphy as applied to climate change. Requirements include a Ph.D. at the time of appointment. The successful candidate will supervise undergraduate and MS student research, as well as teach undergraduate courses in stratigraphy and stratigraphic field methods, graduate course(s) in their field of expertise and introductory courses for non-majors. To apply, mail a curriculum vitae, statements of teaching and research interests, names and addresses of at least three references, and copies of recent publications to Dr. Kathleen Marsaglia, Dept. of Geological Sciences, California State University, 18111 Nordhoff Street, Northridge, CA 91330-8266. Review of applications will begin 1 January 2008 and continue until position is filled. For additional information see: www.csun.edu/geology. The University is an EO/AA educator and employer. Candidates will be expected to provide effective instruction to students of diverse backgrounds in a multicultural setting.

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

Faculty Position in Geological Engineering

The **University of North Dakota Department of Geology & Geological Engineering** invites applications for a tenure-track faculty position in geological engineering at the assistant professor level. We seek an outstanding candidate that will develop a strong externally funded research program and contribute to the Department's graduate and undergraduate programs. Teaching responsibilities will include engineering geology, geomechanics, and graduate courses in area of expertise. Applicants are expected to have a B.S. in geological engineering and must have a Ph.D. in geological engineering, engineering geology, or a closely related science or engineering field. The successful candidate will be expected to work toward qualifications to become registered as a professional engineer.

The position is available August 16, 2008. Review of applications will begin as soon as a suitable pool of applicants is obtained. We will be interviewing candidates at the Denver GSA meeting.

More information about UND may be found at: http://www.und.edu. As an Equal Opportunity/Affirmative Action employer, the University of North Dakota encourages application from minorities and women. Applicants should submit a statement of teaching and research interests, curriculum vitae, and names and address of three professional references to:

Geology & Geological Engineering
Attn: Chair, Geological Engineering Search Committee
Leonard Hall Room 101
81 Cornell Stop 8358
Grand Forks ND 58202-8358

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

STRUCTURAL GEOLOGY/TECTONICS
SCHOOL OF GEOLOGY AND GEOPHYSICS
COLLEGE OF EARTH AND ENERGY
UNIVERSITY OF OKLAHOMA

The University of Oklahoma invites applications and nominations for a tenure-track or tenured faculty position in Structural Geology/Tectonics. The holder of this position is expected to (1) conduct research in structural analysis using any combination of theoretical, experimental, field and seismic approaches; and (2) educate students in the area of structural concepts and techniques.

The University is seeking to fill this position at the Professor level. The successful candidate should have a demonstrated excellent research record and the vision to establish a strong research program in pure and/or applied structural geology/tectonics. Research experience and expertise in the area of fracture and fault analysis is preferred. The candidate must also be an excellent educator, with commitment to both the undergraduate and graduate (M.S. and Ph.D.) education. A Ph.D. degree is required for this position. Salary and benefits will be competitive and commensurate with experience and future potential.

Screening of applicants will begin in late October 2007. Interviews will take place in November and December 2007. The position will be available at the beginning of academic year 2008 (Fall 2008 semester), and the search will remain open until the position is filled. Applicants are encouraged to submit a complete vita/resume, statement of research and teaching interests, and a list of five references, including names, phone numbers, e-mail addresses, and complete mailing addresses. Questions or requests for additional information may be addressed to Dr. Paul Philp, Chair of the Structural Geology/Tectonics Search Committee. Applications and nominations should be addressed to:

Structural Geology Search Committee
University of Oklahoma
Sarkeys Energy Center
100 E. Boyd Street, Room 810
Norman, OK 73019-1008

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

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

continued on next page

Natural Gas

from page 62

When we turn to questions of how the nation can meet carbon reduction goals, natural gas often is considered the default choice where, if anything in the nation's future toolkit stumbles (e.g. nuclear or renewables or carbon capture and sequestration), natural gas is required to make up the difference.

Insights into the feasible limits on the role of natural gas are vital to energy-environmental policy, and something for which the AAPG membership has unique qualifications – yet the track record for bringing industry insight into the public sector is not good.

With all eyes on natural gas, it is almost frightful to contemplate the array of paradigm-breaking developments that are soon to transform the market. Practically written in stone is a record surge in world liquefaction additions in 2008. Very likely are increases in U.S. imports, expanding at roughly two billion cubic feet per day each of the next three years (from an estimated two BCFD this year).

This and other major developments, such as Canada's changing supply-demand-export balance and the changing economics of the Barnett Shale and other unconventional sources, will be discussed in a forum on economics of natural gas and alternative fuels co-sponsored by the Energy Minerals Division at the next AAPG Annual Convention (set April 20-23 in San Antonio).

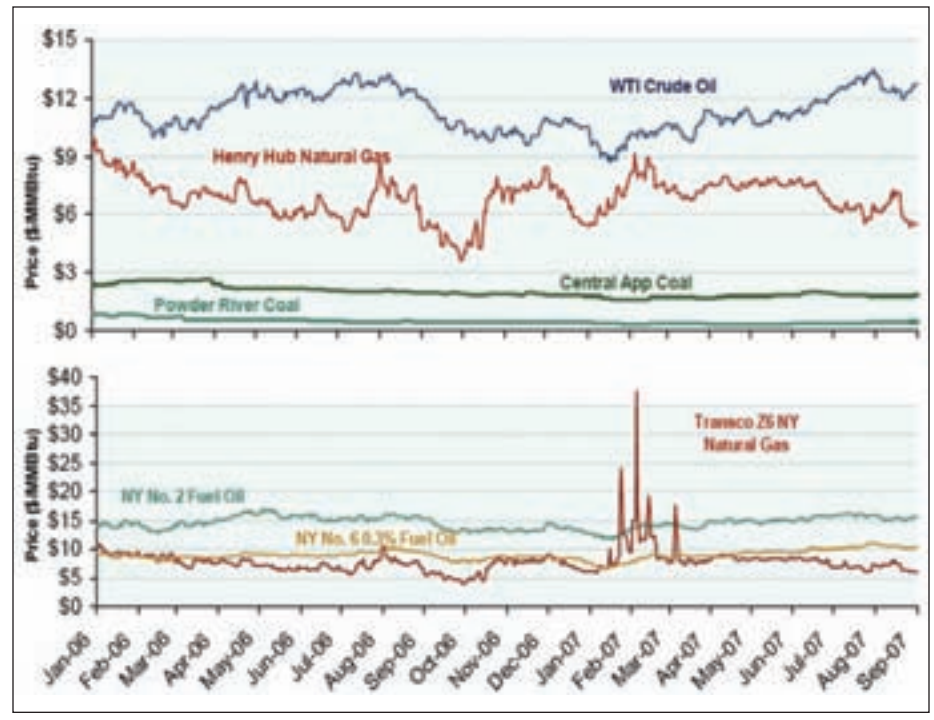


Figure 1

Here are some reading recommendations, in addition to Greenspan's previously mentioned book:

✓ For an engaging and informative glimpse into oil – *Oil on the Brain – Adventures from the Pump to the Pipeline*, 2007, Random House.

✓ For more details on some of the linkages between natural gas and the electric sector, consider "Issues in Energy Economics Led by Emerging Linkages Between the Natural Gas and Power Sectors," J.B. Platt, *Natural Resources Research*, Vol. 16, No. 3, September 2007.

* * *

Here's one more reading recommendation – a government study that sheds light on the inscrutable world of energy (natural gas) trading: "Excessive Speculation in the Natural Gas Market, Staff Report," Permanent Subcommittee on Investigations, Committee on Homeland Security and Governmental Affairs, U.S. Senate).

The trading activities are of Amaranth Advisors, a hedge fund whose incredibly huge position in the futures markets resulted in a loss of about $6 billion as the gas market collapsed in September 2006.

In the aftermath of this event, the subcommittee conducted a unique analysis of its positions on the New York Mercantile Exchange and the Intercontinental Exchange.

For all who sometimes wonder why the natural gas price, even factoring in fears of hurricanes and other imponderables, does not always move in a direction supported by common sense or fundamentals, this window into normally confidential information gives clues. ❑

(Editor's note: Jeremy Platt is manager of Power & Fuel Supply at the Electric Power Research Institute; past-president of the Energy Minerals Division; and current chair of EMD's Committee on Energy Economics and Technology).

continued from previous page

Sedimentary Geology

The Department of Earth and Planetary Sciences at McGill University invites applications for a tenure-track position in Sedimentary Geology at the level of Assistant Professor. Applicants with interdisciplinary research interests, including but not limited to paleoenvironments, basin analysis, and sedimentology, are particularly encouraged to apply. The appointee will establish an externally funded research program, mentor graduate students, and teach undergraduate and graduate courses in their field.

A Ph.D. is required at the time of appointment and post-doctoral experience is desirable. Salary will be commensurate with experience and standing in the community. Applicants should submit a letter of application, curriculum vitae, statement of research interests and teaching philosophy, and three confidential letters of recommendation sent under separate cover by the candidate's referees upon the request of the candidate. Applications should be sent to: Professor John Stix, Chair, Department of Earth and Planetary Sciences, McGill University, 3450 University Street, Montreal, Quebec H3A 2A7, Canada. The anticipated start date for the position is July 1st, 2008. Review of the applications will begin on December 15th, 2007 and continue until the position is filled. Information about the department can be found at http://www.eps.mcgill.ca.

McGill University is committed to equity in employment and diversity. It welcomes applications from indigenous peoples, visible minorities, ethnic minorities, persons with disabilities, women, persons of minority sexual orientations and gender identities and others who may contribute to further diversification. All qualified applicants are encouraged to apply; however, in accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada.

* *

Geologist Wanted

Wolverine Gas and Oil Corporation, an aggressive Michigan based independent, is seeking a geologist with 5-7 years of major oil company experience to fill a staff geologist position in its Grand Rapids, Michigan office. Applicants must be self-motivated with proven oil and gas finding capabilities. Proficient subsurface analysis, petrophysical and computer application skills are required. Broad exposure to continental US Basins a plus. Resumes with references may be sent to Wolverine Gas and Oil Corporation, 55 Campau NW, Grand Rapids, MI 49503, c/o JPV.

* *

Chevron's Reservoir and Seal Prediction Team has an immediate opening for an experienced **seal analyst** in its Houston office.

- The successful candidate will be skilled at applying top, lateral and/or fault seal analysis techniques to exploration, development, and production problems within an integrated basin analysis framework. He or she will conduct projects using skills that can include stratigraphic interpretation of mud-rich siliciclastic systems, petrophysical characterization of shales, structural interpretation and fault framework modeling as components of seal risking.
- The primary job function is to work with members of the Reservoir and Seal Prediction Team and explorationists in our operating units to provide pre-drill seal forecasts to evaluate risk for our worldwide exploration program.
- This position involves 1) independent project work and consulting with business unit personnel and 2) evaluation, promotion, and design of new technology solutions. Other responsibilities may include developing technical programs and teaching courses.

The candidate should have:

- A graduate degree in sedimentology, stratigraphy, structural geology or rock physics with a strong background in top and/or fault seal analysis.
- Petroleum industry experience.
- Computer skills related to seal analysis and specialty programs for office productivity.
- The ability to work individually and collaboratively with technical and operations teams.
- Strong presentation skills.

To apply or to learn more about this position, please go to http://www.chevron.apply2jobs.com/ and view Chevron job opportunities currently available. Applications are accepted online only. No phone, fax, or email inquiries, please, from candidates or external recruiters.
Chevron is an Equal Opportunity Employer

BUSINESS OPPORTUNITY

Oil & Gas Lease available in the Pinedale Anticline area of SW Wyoming. Approximately 1500 acres.
Contact Mack Olson at 713-871-1800 office, 512-422-6225 mobile or molson@scminc.com.

FOR SALE

Mudlogging units with easy to learn software. Very reliable, full featured, portable units. Contact Automated Mudlogging Systems
(303) 794-7470 www.mudlogger.com

* *

Rocky Mountains Field Trip Guidebooks, 1950's to 1970's, BGS, IAPG/UGA, NDGS, RMAG, WGA. Pay only shipping cost. (802) 479-4631

* *

BOOKS. Rare and out-of-print books and periodicals on geology and related sciences. Large stock on all phases of the oil industry, domestic and foreign covering geology, history, engineering, logging, geophysics, etc. Catalogs available. The Hannum Company. Box 1505-B, Ardmore, OK 73402. info@hannum.cc

MISCELLANEOUS

Want to purchase minerals and other oil/gas interests. Send details to: P.O. Box 13557, Denver, CO 80201.

SAMPLES TO RENT

International Sample Library @ Midland – formerly Midland Sample Library. Established in 1947. Have 164,000 wells with 1,183,000,000 well samples and cores stored in 17 buildings from 26 states, Mexico, Canada and offshore Australia. We also have a geological supply inventory.

Phone: (432) 682-2682 Fax: (432) 682-2718

DIRECTOR'S CORNER

PTTC Joins the AAPG Family

By RICK FRITZ

I have often heard that if you want to find a good opportunity then look for a big problem. Albert Einstein stated it best when he said, "In the middle of difficulty lies a big opportunity."

We were not necessarily looking for *opportunity* when we heard that the Federal Office of Management and Budget was no longer funding many of its programs for fossil fuels – in particular petroleum.

Cutting funding may seem a little strange considering the energy demands for the U.S. and world economies, but U.S. members will need to take that debate to their government representatives as we are doing through AAPG's GEO-DC office.

* * *

One of the key programs cut was the U.S. Department of Energy's (DOE) funding of the Petroleum Technology Transfer Council (PTTC) – one of the most, if not *the* most successful fossil fuel programs developed as a partnership among oil and gas producers, academia and the DOE.

PTTC successfully provided producers with low-cost workshops and information on engineering, geology and geophysics, and operations.

Please note that PTTC does not develop original research, but instead searches for petroleum-related technology for transfer through workshops and other means.

The workshops are developed by

Fritz

PTTC will generate up to 60 workshops per year on key geoscience and engineering issues for the industry.

Regional Lead Organizations (RLOs) managed through universities and state surveys or bureaus. Each RLO is advised by a regional Producer Advisory Group, comprising local producers and others involved in the E&P industry.

Initiated in the early 1990s, the PTTC program was designed for industry funding at the rate of US $2-4 million per year; however, industry funding did not materialize due to low product prices, so the DOE continued funding until recent cuts.

The DOE wanted to see this project continue and has provided PTTC with approximately US $1 million in transitional funding from its total of US $2.7 million in oil and gas funding from fiscal year 2006-07.

* * *

Sir Arthur Conan Doyle wrote, "There is nothing as deceptive as an obvious fact."

I realize I am stating the obvious, but there *is* a direct correlation between research and development of successful E&P programs.

The AAPG leadership considers the PTTC research transfer program important for its members and the domestic oil and gas industry.

As a result, AAPG's proposal to take direction and control of PTTC was accepted by the PTTC board effective October 1, 2007. AAPG has selected a new board (see AAPG homepage link to PTTC) and we are in the process of developing a new management team.

Tactical operations will be managed by AAPG via a service agreement and PTTC will be headquartered in Tulsa. The RLO boundaries have been roughly aligned to AAPG Section boundaries as to develop a strong bond between PTTC and the U.S. Sections.

The new PTTC is a separate 501c(3) corporation and will operate under a new "franchise" financial model that provides grants to the RLOs to develop workshops through government, industry and foundation funding. The PTTC will continue its emphasis on both engineering and geoscience.

This model is in part "self-funding" and will require each RLO to increase fees – or raise funds by other means – to develop workshops. Workshop fees will range from $100 to $150 per day, but could be less or more depending on the level of local funding.

The good news for AAPG members is that PTTC will generate up to 60 workshops per year on important geoscience and engineering issues.

Two years ago PTTC was sponsoring almost 150 workshops per year. In order to grow back to that number, AAPG is currently looking for another association to partner in the development of PTTC.

It is important to note that AAPG plans to transfer many of the concepts developed with PTTC into workshops around the world. Workshops outside of the United States will be developed by AAPG's Education Department.

AAPG also will work with PTTC to develop a new digital library from past and future workshops.

* * *

Also on opportunity, Oliver Wendell Holmes said, "I despise making the most of one's time. Half of the pleasures of life consist of the opportunities one has neglected."

He may have a point, but PTTC is one opportunity that AAPG will not neglect.

Welcome to the new PTTC – *powered by AAPG!*

Gas Important to Energy Economics

Price Beyond Supply and Demand

By JEREMY PLATT
EMD Committee Chair

For most, energy economics means the price of oil. Its price is enormously important to producers, refiners and consumers.

Among producers, the world landscape of oil production and pricing has changed forever with the strengthening hand of national oil companies whose governments require growing sums to support social programs, often at the expense of upstream reinvestment.

Alan Greenspan in his just-released biography (*The Age of Turbulence – Adventures in a New World*, 2007, The Penguin Press) provides a lucid description of this phenomenon and the market forces that attract non-traditional investors (speculators) to acquire inventories to support their positions in futures markets.

Rarely will physical stakeholders (producers, buyers) see the role of speculation portrayed in such a positive light.

Yet the expansion of inventories, Greenspan writes, is vital for flexibility when the underlying supply chain offers virtually no excess capacity.

The resulting wild escalation of oil prices, coupled with the fall of natural gas prices for the second year in a row, must finally put to rest notions of a law of parity between oil and natural gas prices whose schism has grown throughout the year.

Natural gas spot prices are now less than 50 percent those of oil.

Platt

With all eyes on natural gas, it is almost frightful to contemplate the array of paradigm-breaking developments that are soon to transform the market.

* * *

But these comments are not so much about oil as about natural gas, the linchpin energy commodity in today's energy economy due to its importance to so many kinds of investment decisions.

Why has the price of natural gas become so important?

For producers, prices and unconventional plays have driven drilling activity to new highs – the gas rig count has exceeded 14,000 since August 2006 (a doubling since 2002) and tipped 15,000 four weeks this summer, while the oil count hovers near 300 (up from about 135 since 2002).

Its 120 percent average wellhead price increase since 2002 (from $2.95 to $6.53/mmBtu over the first six months of 2007) has spurred this tremendous activity and other supply-side developments of astounding importance.

Yet high rig utilization and worldwide commodity cost escalation have rapidly driven up marginal E&P costs – by some estimates to $6/mmBtu or higher.

This makes developers wary, but they are not the only ones eyeing prices with awe and dread. The impacts on consumers are where the price effects truly multiply.

* * *

Demand growth in the industrial sector has been arrested through "demand destruction," much of which is permanent. Natural gas impacts in the electric sector also are profound, and far greater than most would expect. Natural gas is used in combustion turbines and combined cycle power plants to provide the last increments of electricity needed to meet fluctuating power loads in many regions – and especially during hours of high demand (e.g., weekdays and summertime), which then translate into the wholesale prices offered for electricity.

In this manner, its price influence is multiplied far beyond its physical role as a generation fuel.

Yet even without this multiplier, it has had a dramatic impact on power costs – accounting for 55 percent of all power sector fuel expenses by 2005, even though only 19 percent of generation was provided by gas-fired technologies.

* * *

The price of natural gas also is a key determinant in the economics of new technologies. This is partly because of its role in raising power prices, which improve – along with subsidies and tax breaks – the financial performance of non-traditional technologies (wind, biomass, solar).

Its price is also one of the critical assumptions (and uncertainties) in engineering-economic comparisons of, say, coal plants of various types with natural gas-fired combined cycle power plants.

See **Natural Gas**, page 61