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EXPLORER

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On the cover: There's more to attending an annual meeting than attending technical sessions. When you're visiting Texas, some fascinating and often spectacular geology is often nearby. For example, consider El Capitán, the showcase of the Guadalupe Mountains in western Texas. Our cover photo is taken from the surface of the Salt Flat Bench, an intra-slope mini-basin formed by slope failure and filled by subsequent turbidity flows – good examples of "sheet" style turbidite deposition in a confined basinal setting. Photo by AAPG member Lisa Goggin of ChevronTexaco in New Orleans.

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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
Susan Eaton
Diane Freeman
Ken Milam
Kathy Shirley

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



Photo courtesy of the Dallas Convention and Visitors Bureau

AAPG is heading deep into the heart of Texas for this year's annual meeting, which will be held April 18-21 at the Dallas Convention Center. Complete pre-meeting coverage begins on page 20.

PRESIDENT'S COLUMN

AAPG Has a Code You Can Live By

By STEVE SONNENBERG

Ethics – or the lack thereof – is a hot topic in the media these days.

People are in trouble for insider trading, corporate malfeasance, etc. You can generally pick up a news periodical and read about how someone has violated some rules or standards or laws.

Ethics has been debated for centuries so it is not surprising that the debate continues today. What perhaps is surprising is that basic ethical problems keep reoccurring.

* * *

The term "ethics" is derived from the ancient Greek word "ethos," meaning moral character. The first use of the term is credited to Aristotle.

The modern definition of ethics is dealing with what is good and bad, right and wrong, with moral duty and obligation or a set of moral principles or values. Ethics is often referred to as moral philosophy. The words "ethics" and "morals" are often used interchangeably. Ethics is a term for a standard that establishes what is good or bad, both for the individual and for society. It is the study of voluntary human actions in respect to their being right or wrong, good or bad.

One of humanity's special traits is our ability for reflective analysis of our voluntary actions. Generally we have moral principles that guide our actions.

Ethics and religious convictions often overlap. The major religions along with the ancient Greeks gave us the virtues of prudence, temperance, courage, justice,

love, mercy, self-sacrifice, kindness, non-violence, etc. The Ten Commandments are an example of the role religious beliefs have had in shaping public and private morality (i.e., establishing ethical standards and codes to live by).

All of us have or will eventually encounter an ethical dilemma in the workplace or in private life. Some

situations are clear-cut and others fall into the gray zone (between right and wrong or good and bad). The "code that you live by" guides you through many issues. That code is most likely a combination of your parents' attitudes, religious beliefs and life experience. For those situations that fall into the gray zone, you may also want to have a trusted group of friends ("your kitchen cabinet") to bounce ideas off.

In other words, don't trust your gut reaction in every situation.

Here are some questions you can ask yourself to guide you in ethical situations:

- ✓ Is it legal?
- ✓ How would you feel if your actions were reported on the front page of a newspaper?

See **President**, page 7



Sonnenberg

HOD to Elect Officers in Dallas

Members of the AAPG House of Delegates will be electing officers for the 2004-05 term during their meeting Sunday, April 18, in Dallas before the AAPG Annual Meeting.

Those elected will take office July 1, with the chairman-elect becoming chairman for the 2005-06 term.

This year's candidates are:

Chairman-Elect
 Donald D. Clarke, City of Long

Beach Department of Oil Properties, Long Beach, Calif.

Gerald M. Friedman, Brooklyn College (CUNY), Northeastern Science Center, Troy, N.Y.

Secretary-Editor
 Ronald L. Grubbs, independent, Dallas.

Carroll L. Kinney, Davis Engineering, Edmond, Okla.

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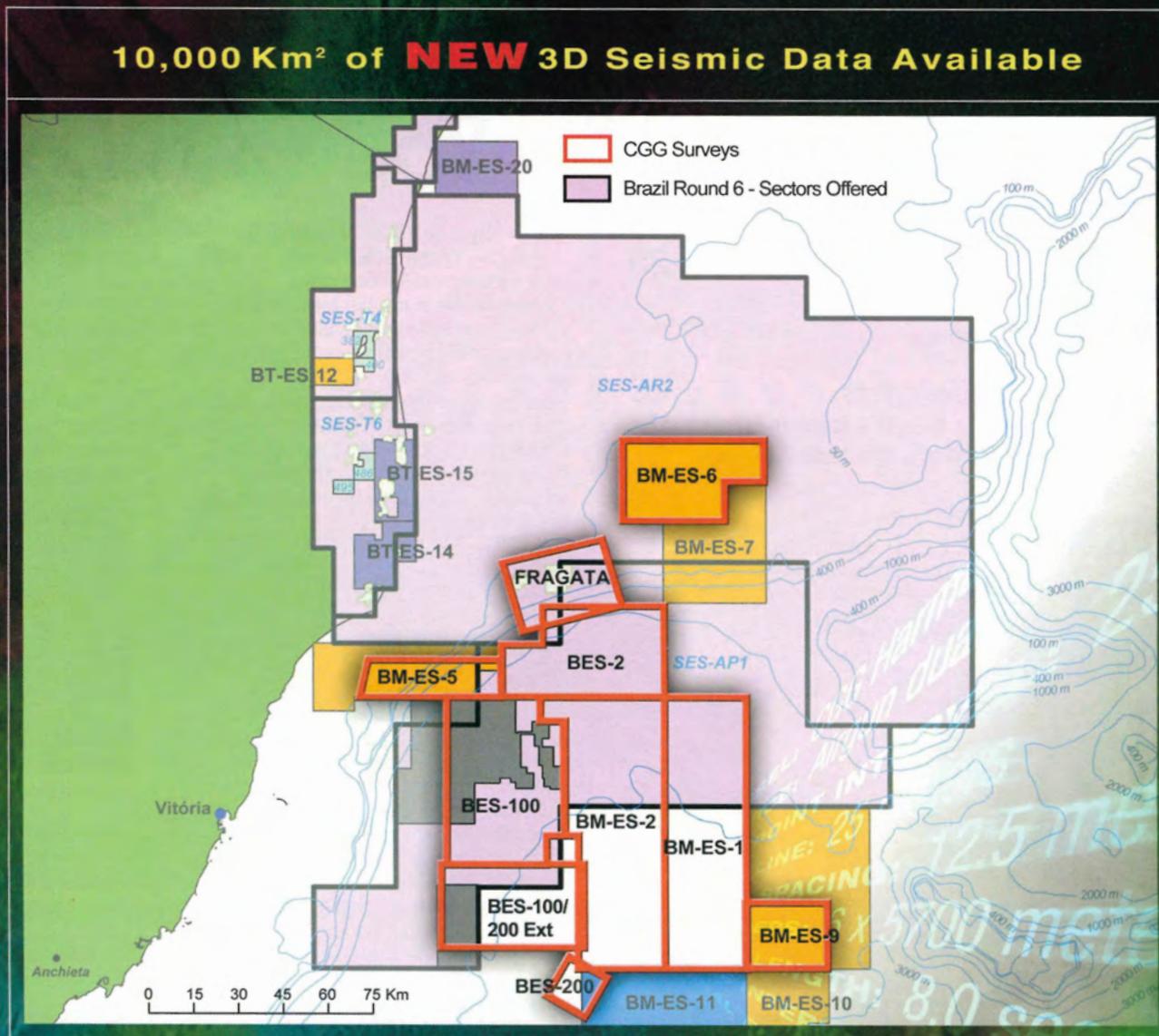
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CONTACT INFORMATION

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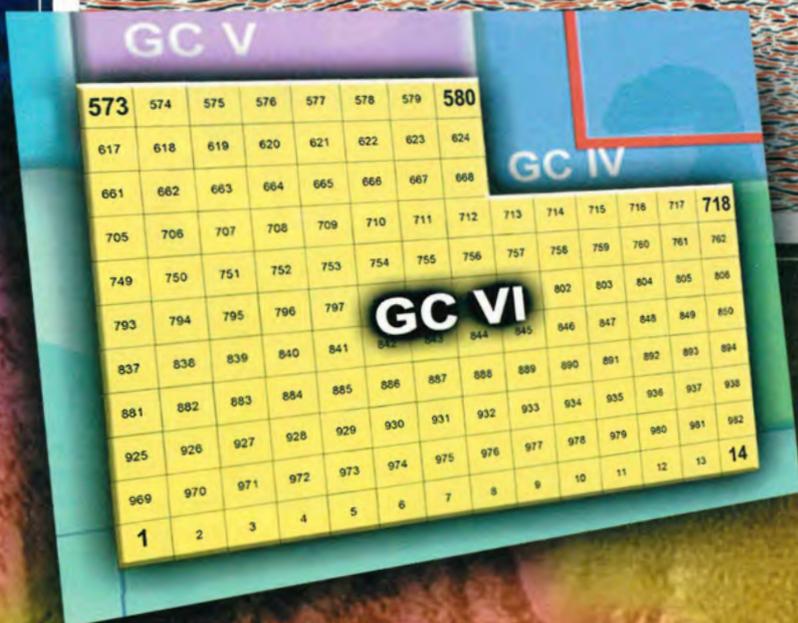
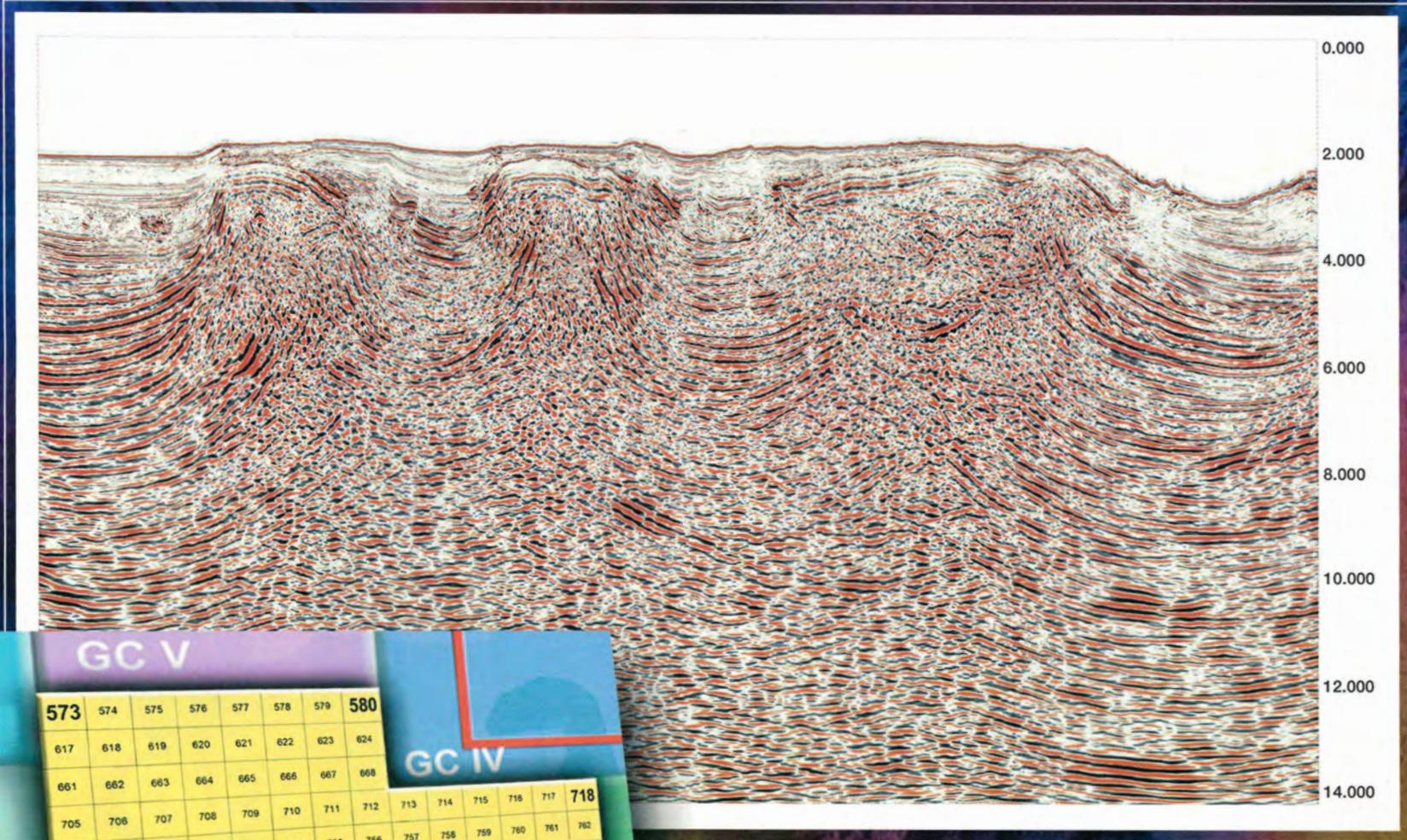
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2003 GEOLOGICAL SALARY SURVEY

YEARS EXPERIENCE	HIGH	AVERAGE	LOW
0-2	\$ 80,000	\$ 65,600	\$ 60,000
3-5	71,000	67,700	65,000
6-9	85,000	75,700	69,000
10-14	102,500	91,900	78,000
15-19	120,000	102,500	59,000
20+	170,000	118,100	84,000

AVERAGE SALARY BY DEGREE

YEARS EXPERIENCE	B.S.	M.S.	Ph.D.
0-2	\$ 60,000	\$ 65,000	\$ 80,000
3-5	n/a	67,000	70,700
6-9	n/a	77,500	73,600
10-14	n/a	90,800	95,000
15-19	84,300	109,300	100,000
20+	114,600	119,400	129,500

No Increases Overall

Uncertainty Again Dampens Salaries

The uncertainty that put a damper on salaries in 2003 lingered into 2004 as manpower numbers continued to erode over the past year.

The 2004 annual EXPLORER Salary Survey shows no increases in overall salaries – and small decreases in some experience ranges.

The survey, conducted by Mike Ayling of MLA Resources in Tulsa, said the results “reflect a lack of hiring – indeed, some downsizing by majors last year.”

Perhaps more importantly, Ayling said, “the survey significantly reflects the demographic trends in the industry – very few data points for individuals with fewer than 15 years experience.”

“The survey significantly reflects the demographic trends in the industry – very few data points for individuals with fewer than 15 years experience.”

Ayling said the sparse data points for the under-15-year experience groups are alarming and indicate the effect of the boom-and-bust hiring practices over the past decade-and-a-half.

He said there were no hires reported

in 2004 for geologists with bachelor's-only degrees under 10 years of experience.

Entry-level salaries with experience levels two years or less was the only category that showed an increase in salary, from an average of \$65,000 to

\$65,500. All other experience groups showed pay drops or no change.

However, Ayling noted that there is a trend in some companies to give substantial bonuses, not included in the survey's base statistics, in lieu of salary to reflect individual and company performance but keeping overhead off the company's books.

The EXPLORER survey is based in U.S. dollars on employed, salaried geoscientists and does not include any additional benefits, such as consulting fees, retainers, overrides, automobiles or other perquisites. The geologists

continued on next page

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HISTORICAL AVERAGES

YEARS EXPER.	AVERAGE SALARY									
	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03
0-2	\$42,500	\$46,500	\$48,400	\$51,300	\$50,100	\$53,600	\$59,700	\$64,000	\$65,000	\$65,600
3-5	53,800	55,200	56,600	57,400	57,000	61,400	66,000	67,500	71,200	67,700
6-9	63,100	59,600	65,700	69,900	67,500	78,400	74,200	74,500	78,300	75,700
10-14	69,100	70,500	76,600	78,800	77,100	83,400	89,400	95,000	96,600	91,900
15-19	75,300	82,400	84,700	90,200	89,800	94,900	100,600	99,400	102,500	102,500
20+	100,700	104,700	99,800	108,500	106,200	106,600	114,100	117,200	118,900	118,100

continued from previous page

contacted may work on non-U.S. ventures but are based in the United States.

The worldwide marketplace is not included in the survey.

Ayling has conducted the survey since 1982.

The survey's purpose is to provide a yardstick for those in assessing their compensation. Ayling reiterated that he strongly feels compensation is often a secondary consideration when evaluating overall job satisfaction.



President

from page 3

- ✓ Do your actions get the "raised eyebrow" response from your friends or co-workers?
- ✓ Can you sleep comfortably with your actions?
- ✓ How does your conscience react?
(An appropriate quote from Harvey MacKay goes something like "conscience is like a baby; it has to go to sleep before you do.")
- ✓ What would a child think if they were on your shoulder observing your actions?
- ✓ Do you want your friends or relatives to know about something you did?
- ✓ Do your actions hurt another person?
- ✓ How would you feel if someone did the same thing to you (the Golden Rule test)?

* * *

Professional ethics are the codes by which professions set standards for conduct and actions of members. A fundamental aspect of a professional society is to have a code of conduct or ethics – codes that you must adhere to and practice.

An organization that does not have a code of conduct or ethics is probably not in the true sense a "professional" society or organization. They may be simply a scientific organization.

The AAPG Code of Ethics has general principles of conduct for its members and standards for the relations of members to other members, the public, employers, clients and to the AAPG. The Code is an important guide for your work actions.

As a member of the AAPG, you have agreed to follow the Code.

The AAPG Bylaws also has provisions to deal with members who have violated the Code. If you haven't read the Code recently, please do so. It can easily be reviewed online at the AAPG Web site (www.aapg.org).

Mark Twain was quoted as saying, "The fact that man knows right from wrong proves his intellectual superiority to the other creatures; but the fact that he can do wrong proves his moral inferiority to any creature that cannot."

When asked about ethics, Abraham Lincoln quoted an older gentleman: "When I do good, I feel good. When I do bad, I feel bad. That is my religion."

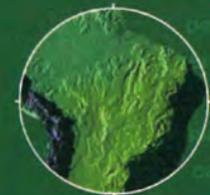
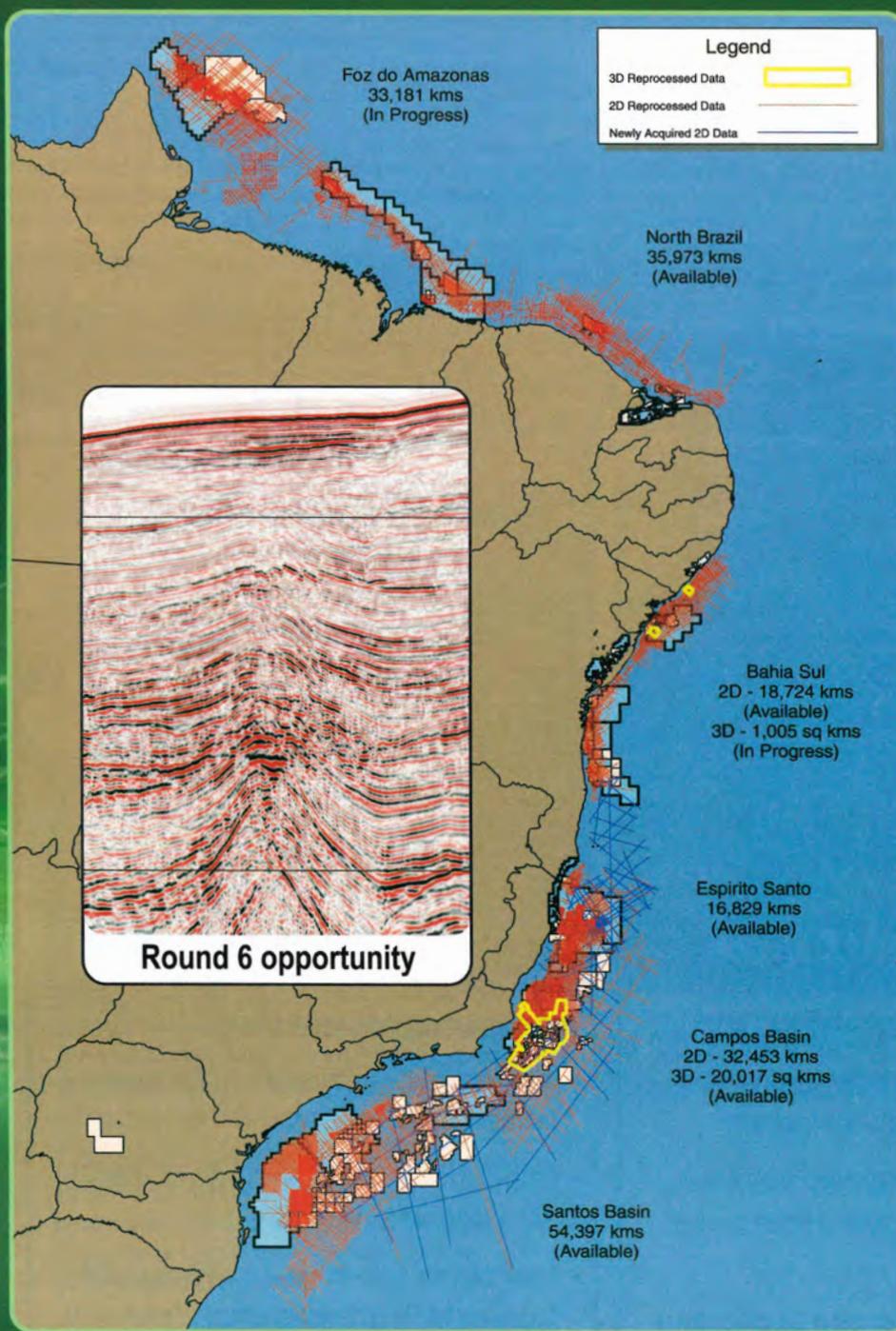
Strive to do good things.

If you have good ethics, nothing else matters. If you don't have good ethics, nothing else matters.

Stephen G. Sonnenberg

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Mr Evando Bartholazzi
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E: j.ostby@fugromcs.com.au
www.fugromcs.com.au



Lots of Students in Pacific Rim

Manpower? It's a Western Problem

By LOUISE S. DURHAM
EXPLORER Correspondent

There's been considerable hand-wringing over the graying work force in the oil and gas industry.

What's gone unnoticed for the most part, however, is that this is largely an American phenomenon.

Indeed, the average age of industry professionals in the United States is higher than the rest of the Western world – and much higher than the developing countries.

This was one of a slew of findings revealed in a recent forum held by Worldwide Worker in Houston. The organization, which is dedicated to providing professional staff to the oil and gas industry, presented the results of its second annual recruiting trends to an audience of 51 attendees from 36 companies involved not only in E&P but also E&C (engineering and construction).

Data acquired during the survey revealed a greater gap and deficit in available professionals in E&P than E&C. In fact, E&C harbors a possible talent pool to pull from for E&P engineering jobs, which could be filled by such people as facilities and design-type engineers, according to Mauricio Arce, business manager at Worldwide Worker.

A look at the top 10 most demanded E&P positions, however, indicates this is but one small part of any potential solution to the personnel problems facing the mature domestic segment of

“(Human resource) professionals see where this is headed, but the problem is the executives aren't listening to them.”

the industry, where infrastructure builder demand is low and exploration demand high.

“Of the top 10 most needed E&P jobs in North America,” Arce, said, “the top five consists of reservoir and petroleum engineers, geologists and geophysicists and drilling engineers.”

In an industry where the declining knowledge base is colliding head-on with more complex drilling requirements, there are some specific requirements in terms of experience. The most desirable candidates in the United States are those with three to six years or six to 10 years, Arce said, noting that these demographics aren't clustered on domestic soil.

To tap into this experience range, companies might have to increasingly look to the Eastern Hemisphere and Third World countries, where there are more available candidates at the three- to five-year and six- to 10-year experience levels, according to Arce.

“This is a very sobering statistic, especially for those companies hiring

only from Western backgrounds or Western universities,” he said, “as well as for those looking to hire in those years of experience but not willing to sponsor visas. Because it's so difficult to find top talent in these brackets, the companies are either filling positions with people having more years of experience or not filling them at all.”

Rather than training professionals to step up to the plate to replace soon-to-retire workers in a structured succession planning program, companies without training programs opt to poach from their competitors who may have traditional in-house training, thus creating a vicious cycle.

Third World Factors

The recent survey undertaken by Worldwide Worker concluded the industry needs to provide more exciting jobs and opportunities to the “under 30” or less experienced people to help solve the demographic problem.

Salary trends revealed by the survey

showed downstream salaries to be constant while salaries are on the increase for upstream positions. Because of the hire-and-fire culture, staff salaries for experienced hires are moving toward a supply-and-demand mode, much like consultants.

Despite respectable salaries and heightened demand for E&P professionals, there has been no significant influx of students into American universities.

Universities in other parts of the world, however, are pumping out increasing numbers of graduates, particularly in Far East Asia. These future professionals have a whole different agenda spurring them onward, according to Arce.

Western-cultured students for the most part are turned off by the cyclical, unstable nature of the oil and gas industry, he noted, and see it as a lifestyle they find unacceptable.

On the contrary, their peers in developing countries look at the industry and see vast opportunities for the work ethic of a Third World country professional accustomed to working in non-benign, hostile, poor-paying environments.

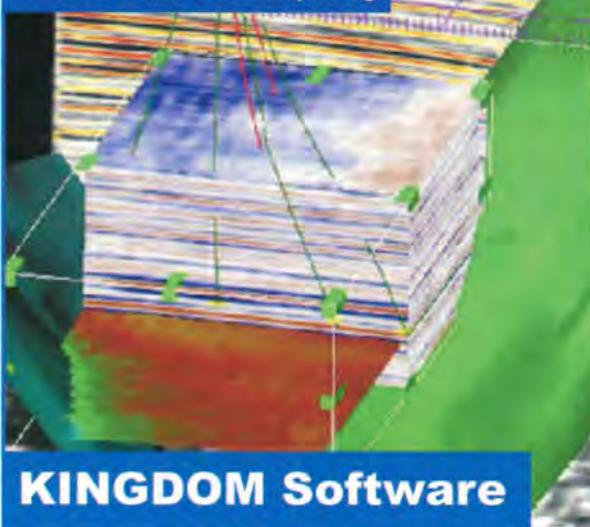
Their take on the industry is it can provide the chance to enjoy a better lifestyle and to make more money, even though it might be considerably less than their Western counterpart, who may

See **Trends**, page 10

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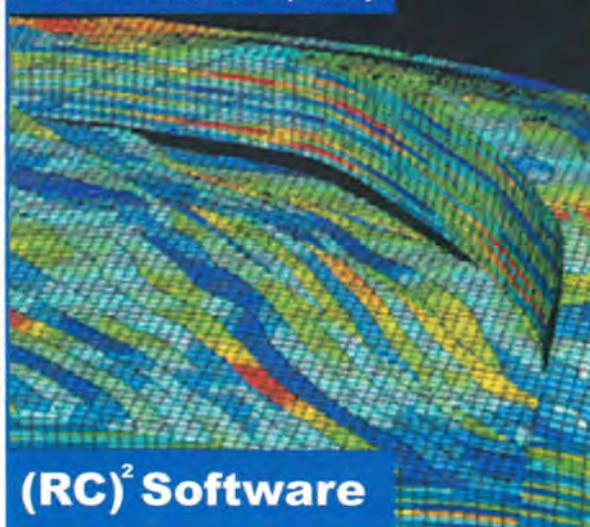


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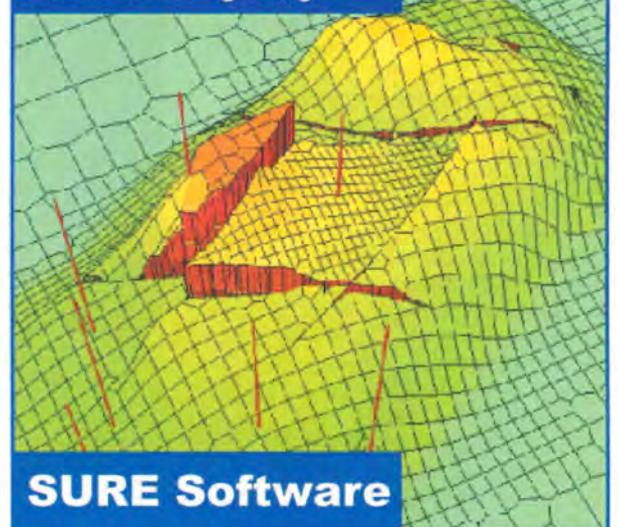


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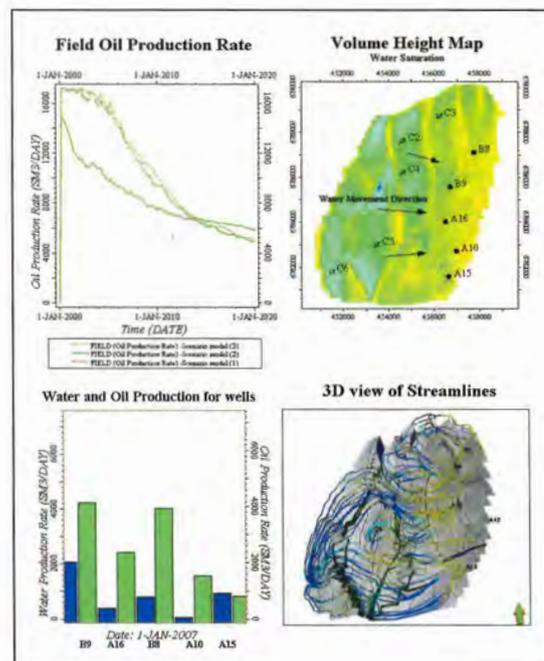
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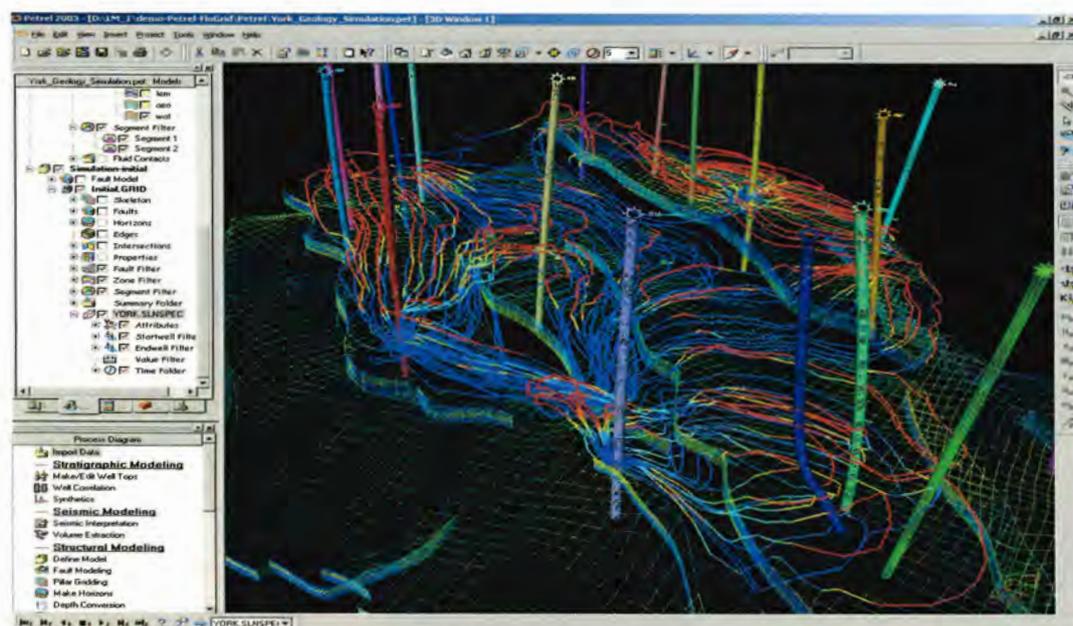
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Membership Drive Adds Representatives, Results

We asked for your help and you are responding – the 2004 AAPG membership drive is progressing smartly, with numbers more than three times higher than the same time frame for the previous year.

To date we have received 238 applications for new membership or transfer to Active status.

Dan Smith, chairman of the Membership Enhancement and Development Committee, continues to add representatives from the Affiliated societies.

Section and Region representatives are:

- Eastern – Doug G. Patchen
- Gulf Coast – Jeannie Mallick
- Mid-Continent – Bob Cowdery

- Pacific – Don Clarke
- Rocky Mountain – Ed Dolly
- Southwest – Mike Party
- Africa – Adekunle Adesida
- Asia/Pacific – Kalyanbrata Datta
- Canada – Ken Carruthers
- Europe – Ernst Kiefer
- Middle East – Mohammad Omar Alamoudi
- Latin America – Nilo Azambuja Filho

It is important to note that, even though the current contest ends May 30, the program does not. Plans are to continue the work of this committee in either another contest or an on-going recognition program.

This is why you should contact your area representative now and be a part of

this effort. Growing the number of members in our societies, sections, regions and AAPG benefits all and strengthens the profession.

Are you a member of SEG and/or SPE as well as AAPG? In the spirit of inter-societal cooperation, you can pay dues for these organizations with one check or one charge. You will find the form on our Web site (www.aapg.org).

The three organizations also offer a cooperative membership option: Active members of AAPG, SEG or SPE may become Associate members in each organization with a minimum of paperwork. Requests for this type of membership can be made from the Web site or by contacting any one of the three headquarters.

Trends

from page 8

balk at tough tours of duty overseas without significant added financial compensation from an employer.

The Third World hire not only has the education and language skills but also the work ethic to work most anywhere needed.

"Companies are starting to hire Third World country professionals educated in their own country or in Western universities," Arce said, "and this is creating a lot of competition for the Western-cultured student.

"He's sitting next to a Third World student who will take maybe a thousand (dollars) less per month, so the American student decides to go into another industry that's not as global, (meaning) less competition.

"This is what the oil and gas industry and the universities are dealing with," Arce said. "We found this was one of the compelling reasons why the Eastern universities are graduating more engineers and G&G students than in the Western Hemisphere."

In Need of a Bridge

The Worldwide Worker survey revealed some noteworthy statistics about the supply of professionals worldwide by 2008. For instance, the number of white collar oil and gas workers in the Middle East will increase by 6,000 over today and by 12,000 in the FSU. In contrast, there will be a deficit of 14,000 white collar professionals in the United States.

Arce reviewed one of the fundamental problems within the industry as seen from the HR standpoint:

"The argument that a lot of HR people have in the oil and gas industry is that a lot of HR departments have none or little budget," he said, "and little say-so in succession planning, staffing and development.

"Throw that mix in with a diminished talent pool, increasing demand for a range of talent in the three- to five-year and six- to 10-year range and a diminished number of graduates in Western universities, and it's a quagmire."

He noted HR is getting little support on these issues from executive management, which makes decisions affecting staffing solutions based on the economy, consumption and oil and gas demand.

"That's a fundamental problem within companies," Arce said. "HR professionals see where this is headed, but the problem is the executives aren't listening to them.

"There must be a bridge there," he said. "The executives must give more power to HR management to implement the tools and solutions they know will work to solve the problems.

"Companies need to find a way to retain, motivate and train the people they have," Arce said. "If they can't, then they will have to hire more internationals."

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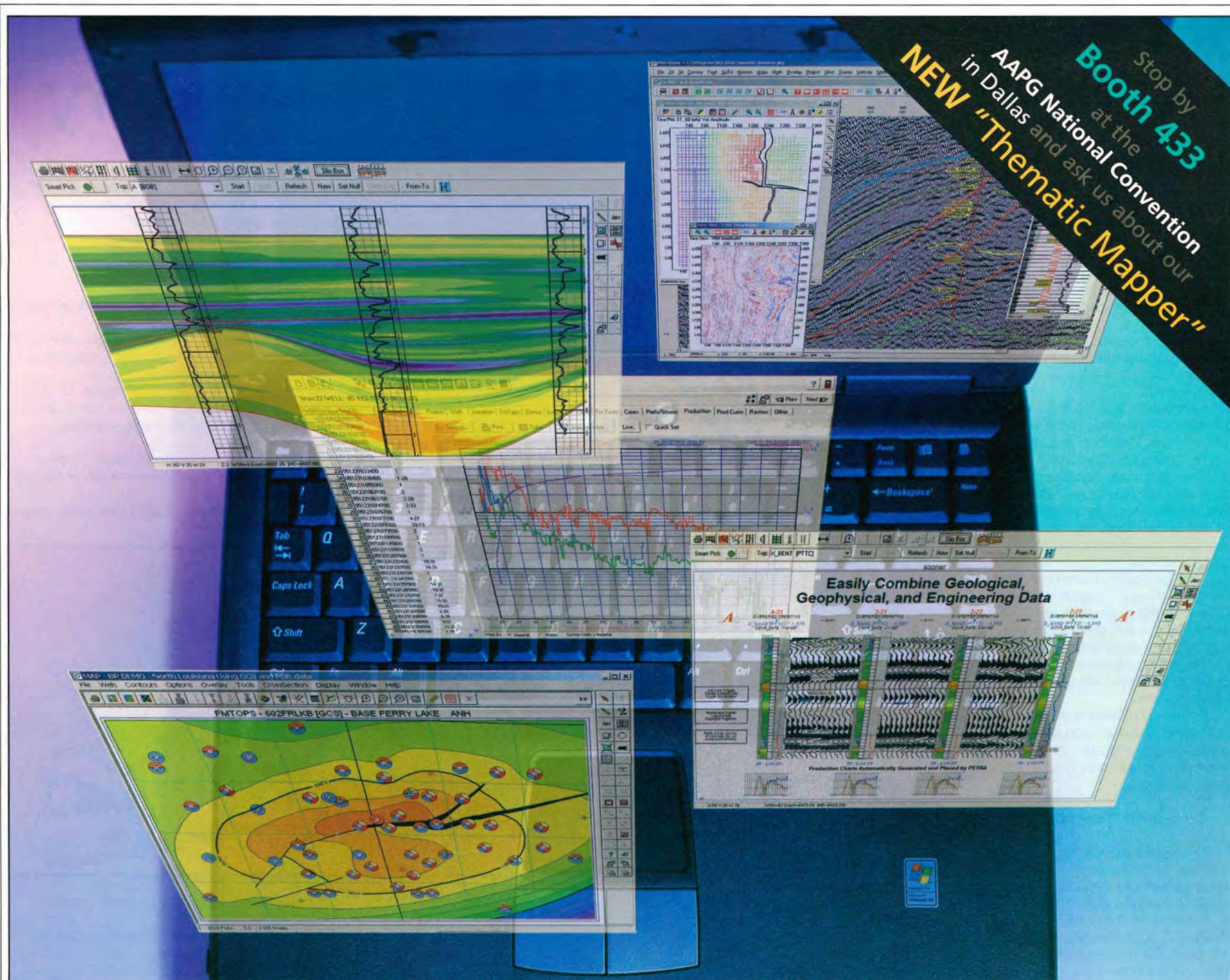
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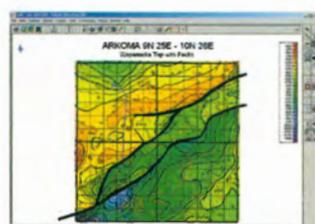
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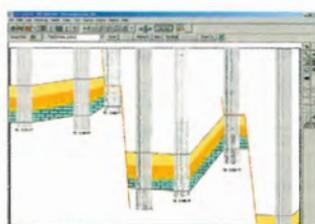
Previous AAPG annual meetings in Dallas were in 1919, 1920, 1926, 1934, 1944, 1959, 1969, 1975, 1983, 1991 and 1997.



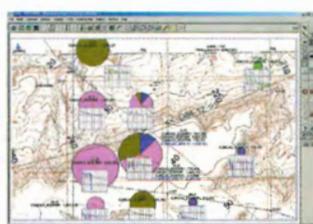
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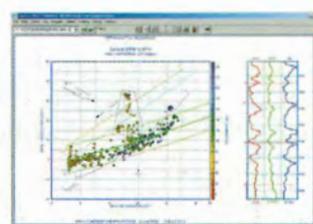
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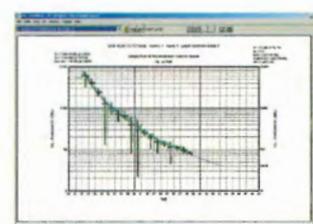
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Theories Evolving Again

K-T Study a Mass Murder Mystery

By DAVID BROWN
EXPLORER Correspondent

Enjoy a good mystery story?

The geologic record provides five of the best.

Mass extinction events brought much of the world's existing life to an untimely end in the late Ordovician, Devonian, Permian, Triassic and Cretaceous periods.

Now science sleuths are taking a new look at global extinctions – with findings that could change the way we see life on Earth today.

Kenneth G. MacLeod is an assistant professor of geology at the University of Missouri-Columbia, and co-editor of the Geological Society of America's special paper volume, *Catastrophic Events and Mass Extinctions: Impacts and Beyond*.

He understands the allure of extinction events for paleontology puzzle-solvers.

"The geologic column is based on these things," MacLeod noted. "The nice thing about mass extinctions is that they're a huge signal. They really stand out."

There's no mystery why geologists appreciate all this detective work.

Research related to mass extinctions pays a huge bonus in advancing stratigraphy and improving knowledge of geochronology.

On Second Thought ...

Investigations into the sudden, widespread disappearance of species took a new turn in the early 1990s.

Based on the theories of Walter and Luis Alvarez, and the fieldwork and research of Alan Hildebrand, the Chicxulub impact crater in Mexico's Yucatan Peninsula became linked to the mass extinction at the Cretaceous-Tertiary (K-T) boundary.

As evidence for this link accumulated through the decade, more and more scientists accepted that a major impact by an asteroid or comet had produced a global K-T catastrophe.

The impact theory caught the public imagination, since it implied a fiery and dramatic end for the last of the world's dinosaurs.

For scientists, the Chicxulub strike offered a novel but viable explanation for sudden extinction.

"Catastrophic explanations aren't a last resort now. They are a legitimate alternative hypothesis," MacLeod said.

Researchers began searching in earnest for impacts coeval with other extinctions, although they could still dip into a grab-bag of potential culprits. Those include:

Global cooling, global warming, carbon dioxide, sulfuric acid,

atmospheric changes, eutrophication, euxinic conditions, anoxia, eustasy, flood basalt, volcanoes, earthquakes, orogenies and other major tectonic shifts.

To name a few.

As work progressed, evidence seemed to point away from impact-driven catastrophic events outside the K-T extinctions.

True believers insisted that the tell-tale craters hadn't been discovered yet.

Other researchers looked to new theories.

And with so much talk going on about global warming, some began to focus on ancient atmospheric and climatic changes.

Read, "greenhouse effect."

Today, that approach "has replaced asteroid impacts as the

"K-T may be unique," he said. "As we get better precision going back in time, we realize there can be really big changes in temperature."

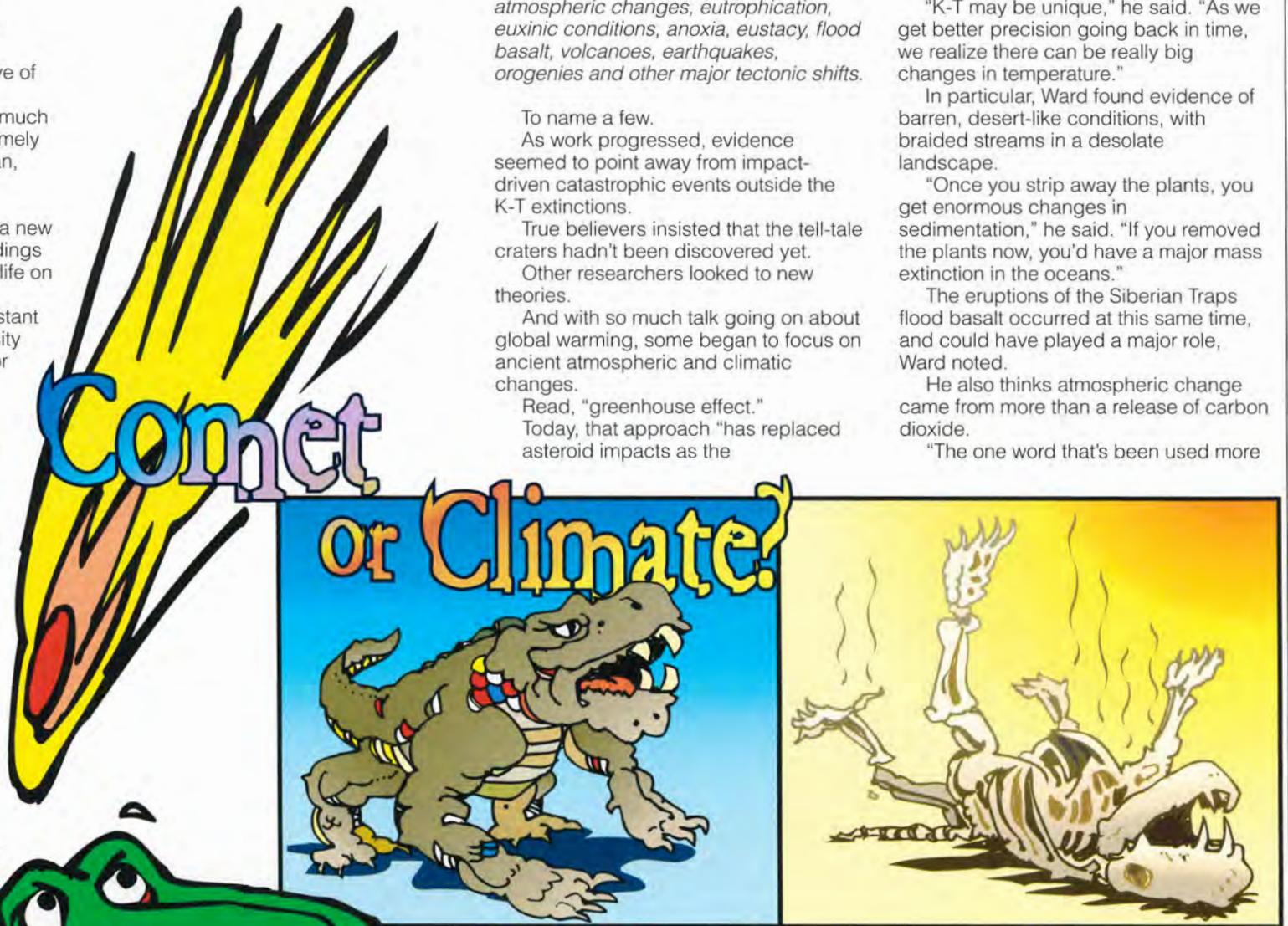
In particular, Ward found evidence of barren, desert-like conditions, with braided streams in a desolate landscape.

"Once you strip away the plants, you get enormous changes in sedimentation," he said. "If you removed the plants now, you'd have a major mass extinction in the oceans."

The eruptions of the Siberian Traps flood basalt occurred at this same time, and could have played a major role, Ward noted.

He also thinks atmospheric change came from more than a release of carbon dioxide.

"The one word that's been used more



sexiest explanation invoked" for mass extinctions, MacLeod said.

Hot Stuff

Peter Ward spent years in South Africa looking into possible extinction causes, his latest work involving the massive die-out at the end of the Permian.

The Permian catastrophe brought the Paleozoic era to a screeching halt and may have wiped out more than 90 percent of then-existing life, the largest extinction known.

"I went there fully expecting to find evidence of an impact," he said. "But it didn't look that way."

Ward, professor of biology and earth and space science at the University of Washington, has written extensively about mass extinctions.

His latest book, published in January, is *Gorgon: Paleontology, Obsession and the Greatest Catastrophe in Earth's History*.

It combines a memoir of Ward's experiences with an account of his research into the Permian extinction.

That event's victims included the Gorgon, a fearsome, mammal-like, lizard predator.

Ward said growing evidence for the K-T impact intrigued him in the 1990s. Like many other researchers, though, he began to doubt that the impact explanation could be applied universally. "We've had a paradigm change.

About 2000, things sort of turned around again," he recalled.

For other extinctions, theories began to shift from instantaneous catastrophe to sudden but slower change, from meteor strikes to climate spikes.

and more during the past five years is 'methane,'" he said.

"It looks like sudden global warming where, when the planet got hot, it got a lot hotter," Ward explained.

"It's not sudden a-day-to-a-month, and it's not over millions of years. It's a 10,000-year type of thing," he added.

If ocean levels fell and hydrocarbon gas from clathrates began to enter the atmosphere, the Permian would have ended in "a positive feedback loop causing ever-increasing temperatures," according to Ward.

"The Permian was a runaway greenhouse effect," he said. "We didn't become Venus, but we got real hot."

War of the Words

As researchers moved beyond meteor strikes in explaining other extinctions, a new debate evolved over the Chicxulub impact.

Gerta Keller, a professor of geosciences at Princeton University, led a group of researchers who came to challenge the accepted theory.

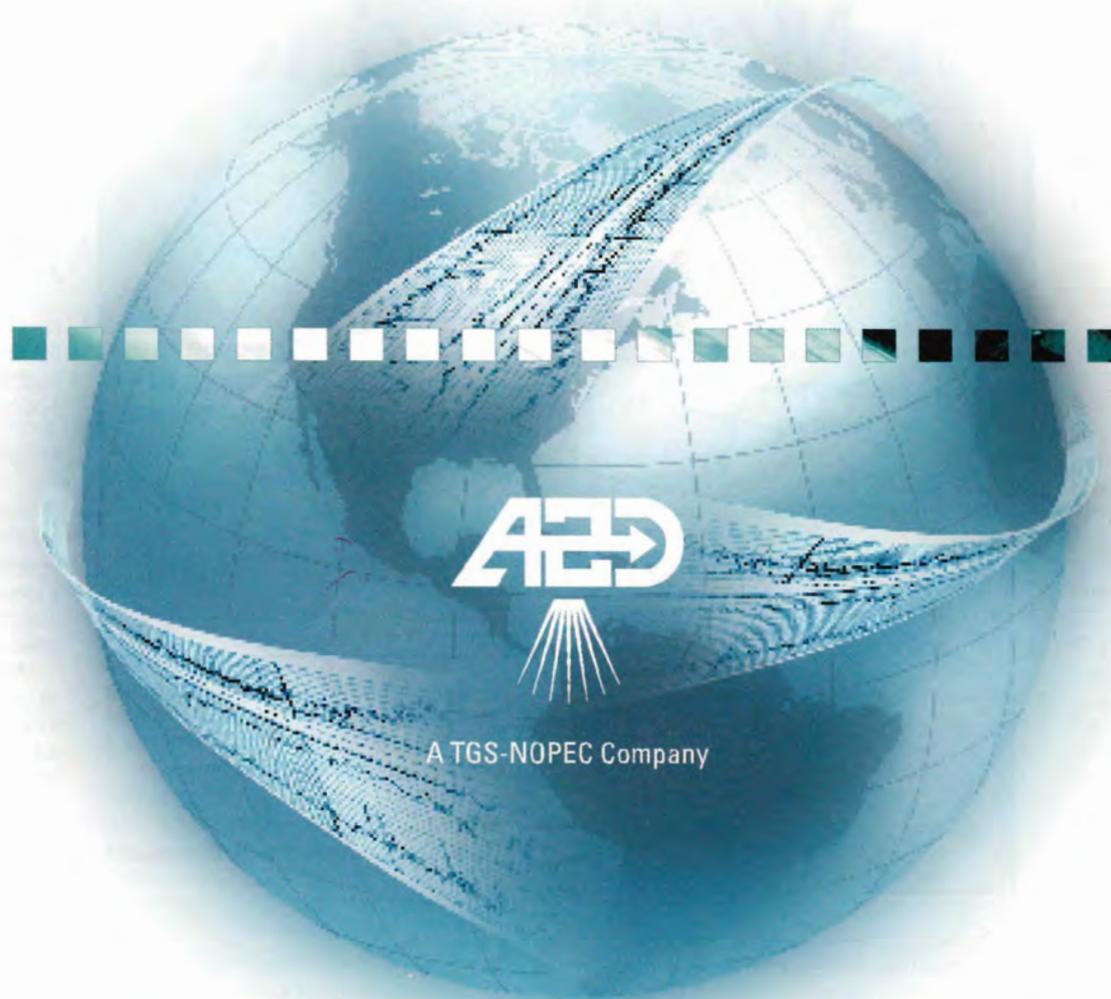
Those researchers included Wolfgang Stinnesbeck and Doris Stuben of Karlsruhe University, Germany, and Thierry Adatte of the University of Neuchatel, Switzerland.

"Let's start with where we agree," Keller said. "We agree there was a major impact and it coincides with major extinctions at the K-T boundary. Where we don't agree is that this major impact was Chicxulub."

In fact, Keller places the Chicxulub impact about 300,000 years before the final K-T extinction.

She sees evidence for several large

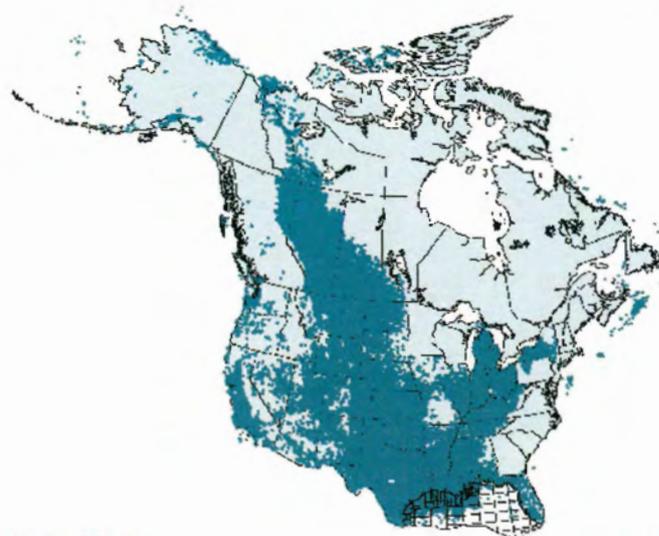
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Hydrothermal Dolomite Ideas Sparks Play

Zebra Hunt May Lead to Elephants

(Editor's note: This is the final report on a three-part series that examines Canadian activity in the prolific Trenton-Black River Trend.)

By **SUSAN EATON**
EXPLORER Correspondent

In Canada, this play is all about the rocks.

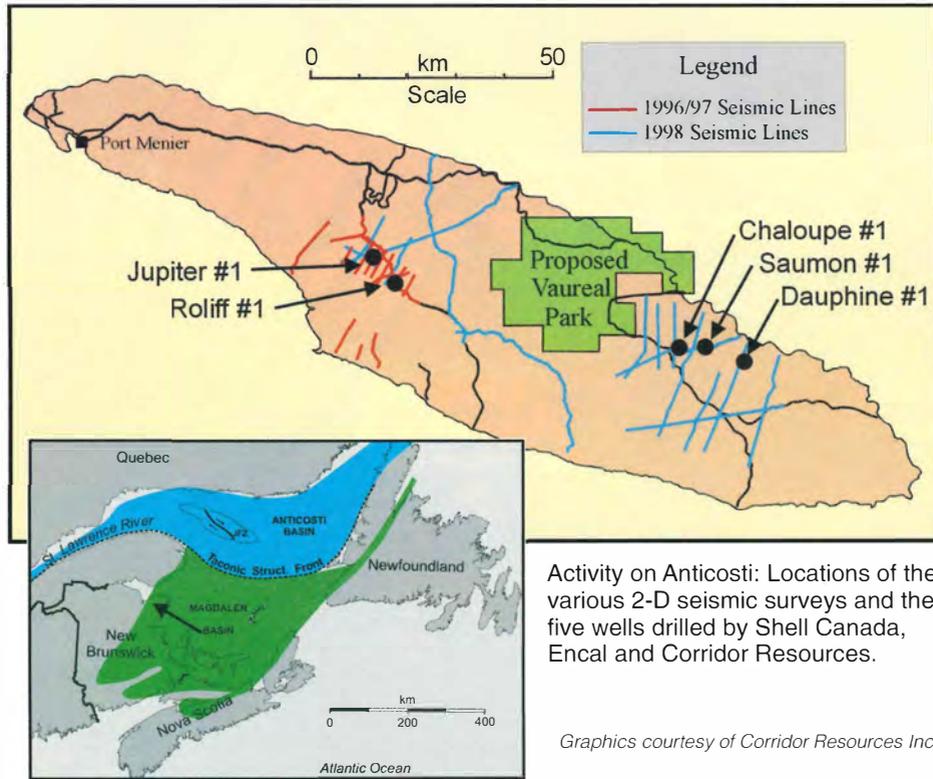
Some geologists refer to it as "HTD," or hydrothermal dolomite. Others call it thermobaric or zebra dolomite.

Claude Morin, a senior petroleum geologist with Hydro-Québec, uses the French terms "dolomite hydrothermale" and "dolomite baroque" to describe its ribbon-like fabric.

Whatever the descriptor, this rock is characterized by coarsely crystalline, high temperature saddle dolomite and forms the prolific reservoir trends of the Trenton-Black River that stretch across continental North America. The Trenton-Black River fairway – containing the world class Albion-Scipio and Lima-Indiana oil fields – crosses into Canada where it is virtually unexplored to date.

Morin, an AAPG member, is part of Hydro-Québec's recently formed oil and gas division, Hydro-Québec Pétrole et Gaz. Two years ago, Hydro-Québec – North America's giant in hydroelectricity generation – entered the oil and gas exploration game with a commitment to invest \$C 330 million by 2010.

Morin's mandate is to explore for oil and natural gas in Eastern Québec – namely the Gaspé Peninsula and the Gulf of St. Lawrence.



Activity on Anticosti: Locations of the various 2-D seismic surveys and the five wells drilled by Shell Canada, Encal and Corridor Resources.

Graphics courtesy of Corridor Resources Inc.

Fueled by a new understanding of the mechanisms that create hydrothermal dolomites – and the critical role that wrench faults play as conduits for high pressure, high temperature dolomitizing fluids – Morin is re-evaluating geological and geophysical data bases for Trenton-Black River potential in the Appalachian front of

Eastern Canada.

He's hunting for an Albion-Scipio look-alike that could be lurking, undetected, in his own backyard.

Morin is keying off the historical natural gas production from Ordovician age carbonates in the St. Lawrence Lowlands in southern Québec (close to the New York state border) and recent oil

production tests from Ordovician age dolomite reservoirs on the Port au Port Peninsula in Western Newfoundland.

Lying between these two endpoints – nestled in the Gulf of St. Lawrence – is Anticosti Island.

"Oil discoveries in Western Newfoundland at the Port au Port Peninsula, unequivocally demonstrate that the oil system works well east of the Anticosti platform," Morin said

Anticosti Island, Québec

Anticosti Island is remote, accessible only by ferry for oil and gas field operations. Approximately 8,000 square kilometers in size, the island is home to 300 people and 200,000 white-tailed deer.

Anticosti is situated in a favorable structural position, on an inflection point – or a transform zone – at the leading edge of the Appalachian thrust front. The island is bisected by the Jupiter Fault Zone, a right lateral, strike-slip feature similar to the Bowling Green Fault Zone of the Lima-Indiana Field that has 500 million barrels of oil and 2 tcf of gas.

During the late 1990s, Shell Canada and Encal Energy (now Calpine Corp.) farmed into Halifax-based Corridor Resources' acreage position, acquiring 400 kilometers of 2-D seismic data and an aeromagnetic survey.

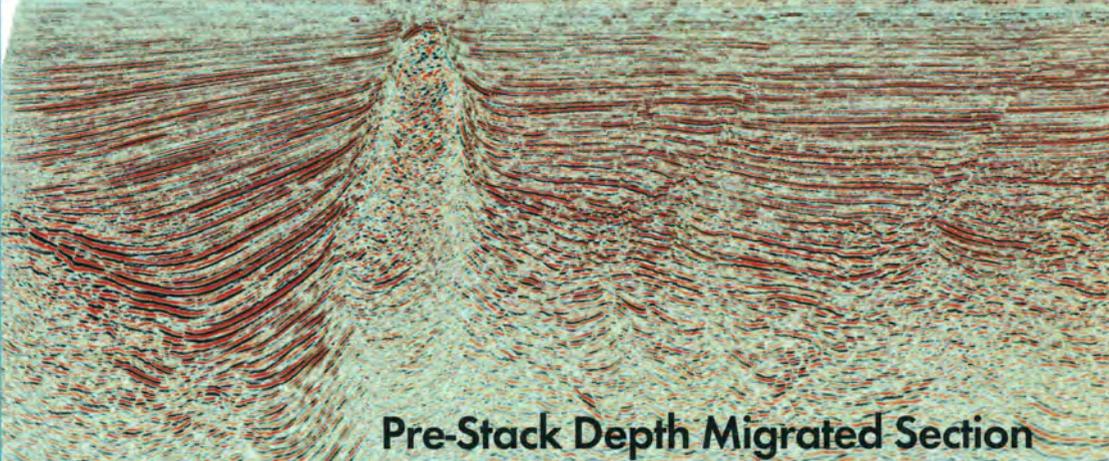
As operator, Shell followed up by

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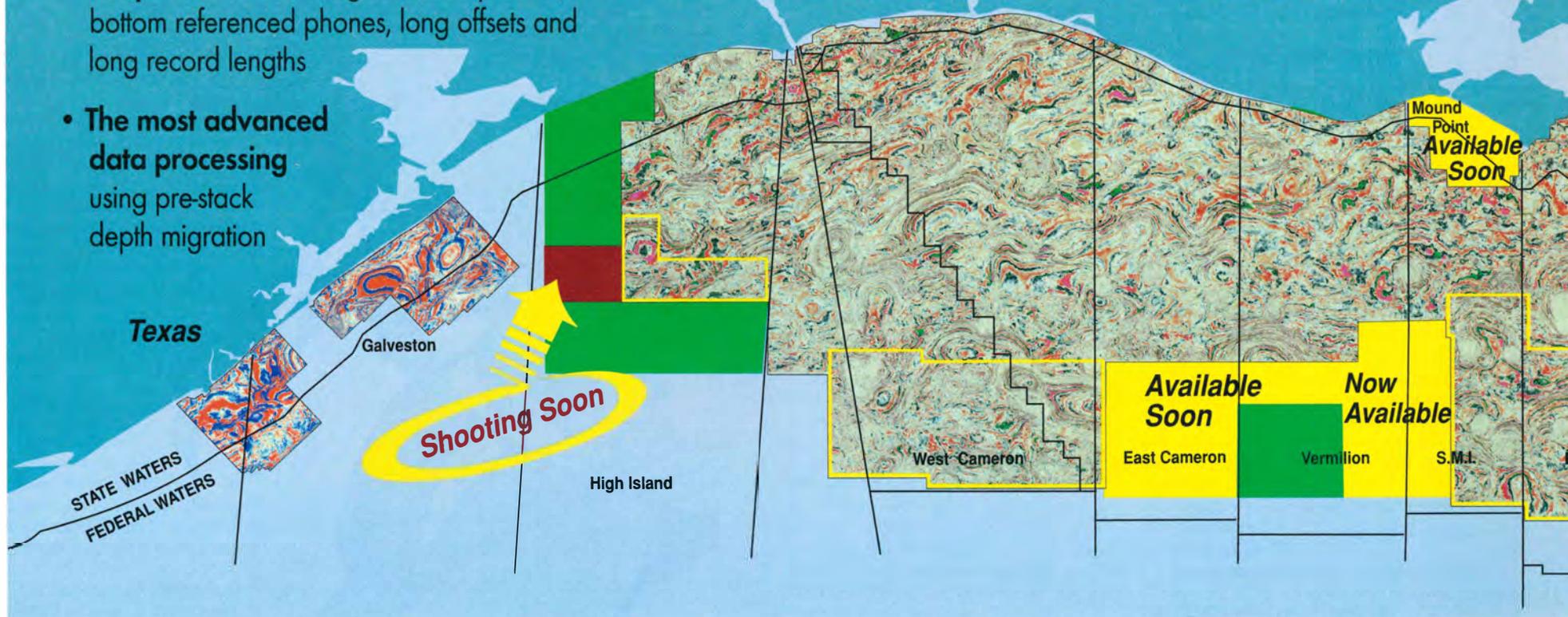
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continued from previous page

drilling five wells over a two-year period from 1998-99; the wells were abandoned, but provided useful data points for calibration. Shell and Calpine relinquished their holdings on Anticosti in late 2002.

Corridor Resources operates eight exploration licenses on the south and central part of Anticosti, totaling just over 400,000 acres. Through a partnership with Hydro-Québec, Corridor has varying interests in an additional 1.1 million acres of exploration land in the northern and southern part of the island; the land comprises 19 leases and five permits with mixed operatorship.

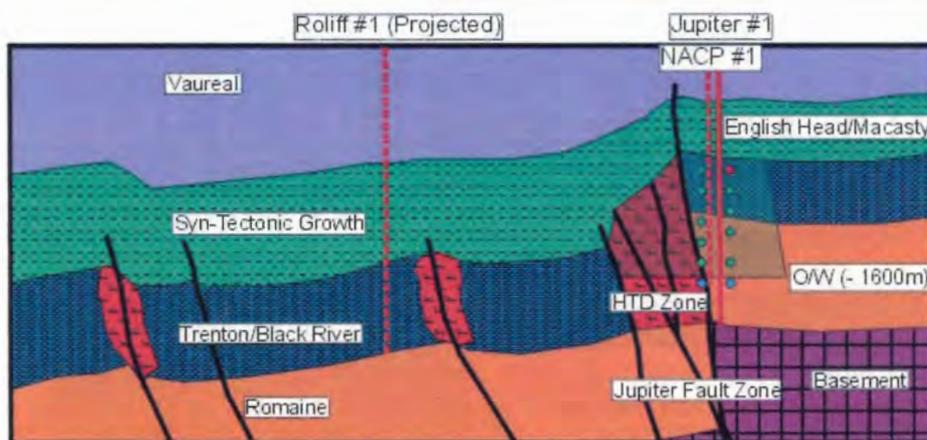
AAPG member Tom Martel, Corridor's chief geologist, described his company's recent shift in exploration thinking at Anticosti:

"Everybody, including us, had been looking for the Romaine formation (the Lower Ordovician, Beekmantown equivalent that produced gas on the Quebec mainland)," he said. "It wasn't until we drilled our third well, Chaloupe #1, that we realized the Middle Ordovician Trenton-Black River formation might be prospective."

While drilling Chaloupe #1 they lost 3,000 barrels per day of mud into the Trenton-Black River formation. The well encountered 70 meters of porosity and fractures in the Trenton-Black River and Romaine formations. Methane shows were recorded while drilling through the Romaine formation.

According to Martel, only two wells on Anticosti can be considered adequate tests of the Trenton-Black River, which occurs at depths between 800 to 2,000 meters.

Using sidewall cores, the Geological Survey of Canada completed fluid



Graphic, interpretation courtesy of Corridor Resources

It's all about the rocks: An Anticosti Island 2-D seismic line, illustrating new Hydrothermal Dolomite (HTD) interpretation.

inclusion studies in the Chaloupe #1 well, demonstrating several episodes of high temperature, hydrothermal dolomitization in the Trenton-Black River and Romaine formations.

Three wells drilled near the Jupiter Fault Zone (JFZ) show thick hydrocarbon columns, according to Martel. Examination of the chip samples from Chaloupe #1 indicates 41 degree API live oil.

The NACP #1 well was drilled in 1963 adjacent to the JFZ. The well contained HTD with live oil-filled vugs, and was highly fractured in the Trenton-Black River and underlying Romaine

formations – while drilling through the Trenton-Black River and Romaine formations with a continuous coring rig, the operator lost 28,000 barrels of fresh water into the formations.

Martel can't over-emphasize the importance of the seven-kilometer-wide JFZ to the future success of the HTD play. The aeromagnetic survey, he said, illustrates different types of basement rock straddling the JFZ, suggesting significant strike-slip movement.

Based upon seismic interpretation, Martel believes that the JFZ was active during the Middle Ordovician. He describes how the trans-tensional

movement on the strike-slip fault results in a void or space, creating the mechanism to "suck up the hydrothermal fluids in a very rapid manner."

"The mechanism," Martel said, "works like a pump, creating a vacuum."

It's a New Game

Last summer, "newcomer" Hydro-Québec shipped five vibrator trucks to Anticosti for the acquisition of a \$C 4.8 million, 325-kilometer 2-D seismic program.

According to Morin, infrastructure for roads is "mostly non-existent."

In areas where the vibroseis trucks couldn't go cross-country, a dynamite source was used for seismic data acquisition. Just under half of the program was acquired with dynamite source.

Hydro-Québec also acquired a magneto-telluric survey to assist in identifying faulting, karsting and voids – telltale features that point to the existence of hydrothermal dolomite rocks in the subsurface.

"We see classic collapse features like the Albion-Scipio Field," Morin said of his geophysical interpretation. "We're very excited – it's a new game ... We have a lot of examples (analog) of how this play can work."

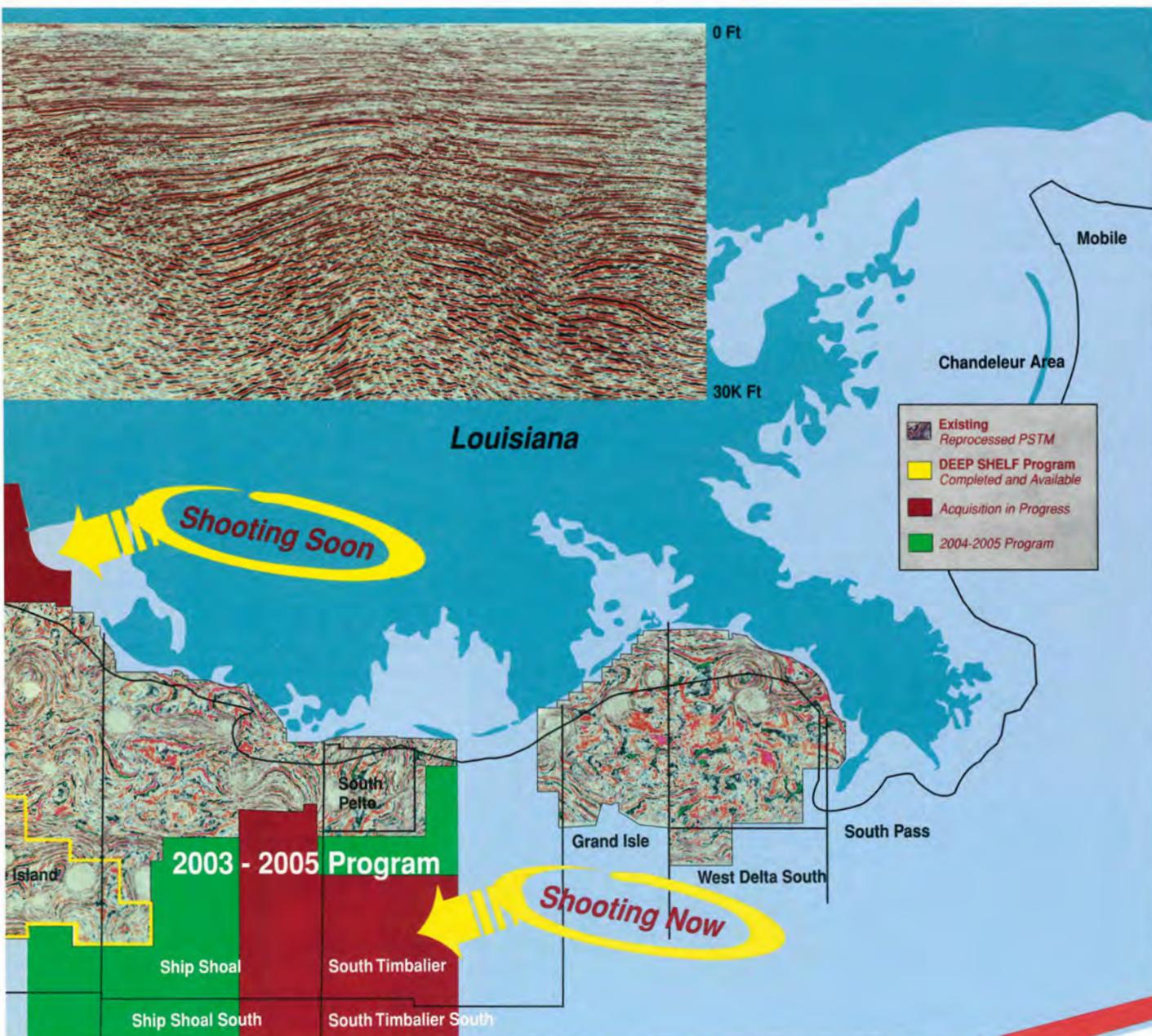
Corridor and Hydro-Québec – jointly and separately – plan to drill three wells this summer, back-to-back, thus sharing the costs of mobilizing a rig to Anticosti. The drilling program will target the JFZ, testing a related sag feature with a seismic dim zone characteristic of HTD development.

The Chaloupe #1 well also will be redrilled, this time targeting the Trenton-Black River formation. □

Two SEPM sessions titled "Hydrothermally Altered Carbonate Reservoirs: Models and Case Studies" will be presented during the AAPG Annual Meeting in Dallas.

An oral session will begin at 8 a.m. Monday, April 19, and a poster session will be held Tuesday afternoon, April 20.

Papers and posters will investigate HTD reservoirs from Appalachia, the Western Canadian Sedimentary Basin, the North Sea, offshore Nova Scotia and onshore Ireland.



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Extinctions

from page 12

impacts during the end of the Cretaceous, building her extinction case on multiple meteor strikes, Deccan volcanism and a K-T greenhouse effect.

"The greenhouse warming that occurred between about 200,000-400,000 years before the K-T boundary had a profound effect on marine plankton and other life forms, and resulted in severe biotic stress that caused species dwarfing, reduced populations and reduced species diversity," she said.

Keller served as lead author for the paper "Multiple Impacts Across the Cretaceous-Tertiary Boundary," published last September in *Earth-Science Reviews*.

The authors followed with a paper on

"It has opened the door to time scales ... People are looking at the boundaries with a new sense of detail."

K-T spherule deposits, published in the *Journal of the Geological Society*, and an article, "The Non-Smoking Gun," in *Geoscientist* magazine.

This led to an online debate of comments, queries and ripostes on the Geological Society's Web site, a Chicxulub discussion that extended from November 2003 through January 2004.

Keller's case rests largely on examination of deposits between the Chicxulub ejecta layer and the identified K-T boundary layer.

She and her associates claim to find

planktic foraminifera in these lithological units indicative of the last 300,000 years of the Maastrichtian, as well as fossil burrows.

They also claim to identify multiple glass spherule layers, as well as zeolite-enriched zones associated with smectite.

Special attention was given to greenish layers that might have been glass altered to clay, according to Keller.

But an independent expert "found that, lo and behold, it was not (altered) glass. It was glauconite – glauconitic clay with burrows in it," she said.

"We found more evidence of bioturbation, which indicates there was repeated colonization of the ocean floor by invertebrates in the interval after the impact ejecta was deposited and prior to the K-T boundary.

"Whether in northeastern Mexico or the Chicxulub crater, the bioturbated and glauconitic sediments therefore indicate the impact occurred well before the K-T boundary and was followed by a long period of normal marine sedimentation," she added.

Keller's revisionist bait drew few nibbles in the online discussion.

The primary counter-argument came from Dutch paleontologist Jan Smit of Free University in Amsterdam, who cited tsunami-wave deposits or tsunami-triggered deposition, altered by slumping.

"A lot of people are surprised that we have not heard from the very large support community that Chicxulub has. I expected to be inundated with attacks," Keller said.

Researchers now are studying core samples obtained at the crater site in early 2002, providing an opportunity for new interpretations of the event.

The final word on Chicxulub remains to be written.

A study recently published in *Geology* found little charcoal in K-T layers, casting doubt on a global firestorm theory.

A Fine Line

New expertise is pushing stratigraphic resolution to finer levels than anyone imagined, according to MacLeod.

"It has opened the door to time scales that were not considered before," he said. "People are looking at the boundaries with a new sense of detail."

In the future, extinction research may benefit from techniques that provide even better resolution.

MacLeod talked about analyzing stratigraphy on less than a 1,000-year timescale.

"Is the stratigraphic record well enough preserved so you can pull that out? It's really pretty amazing that we all think we can," he commented.

Future research also will draw on better integration among fields, with "a whole range of experts brought to bear," MacLeod predicted.

And he foresees a focus on boundaries that have gotten less attention, like the Ordovician and Frasnian-Fammanian extinction events.

Greater and lesser extinctions pepper geologic history. Researchers tend to concentrate on one or two of them, leaving plenty of room for other investigators to join the game.

"There aren't many people who work up and down the column on mass extinctions," MacLeod noted.

Given the possibilities, the potential and the publicity, research into extinction events – with attendant controversies – seems certain to continue undiminished.

"We are always fascinated by death," Ward said. "Look at how interested we are in serial killers. Death writ large is even more intriguing."

Natural cataclysms have threatened the existence of life before, and "it's our own, deep-seated nightmare that we'll do the same thing," he observed.

For Keller, extinction research opens a window into the world's past.

"I'm interested in seeing what happened in the history of the Earth," she said. "I'm basically a historian."

Then there's the drive to sort out an ancient puzzle, to play detective on a grand scale, to read the final chapter in one of Earth's great murder mysteries.

"Probably," MacLeod said, "most people are driven by curiosity more than anything else." □

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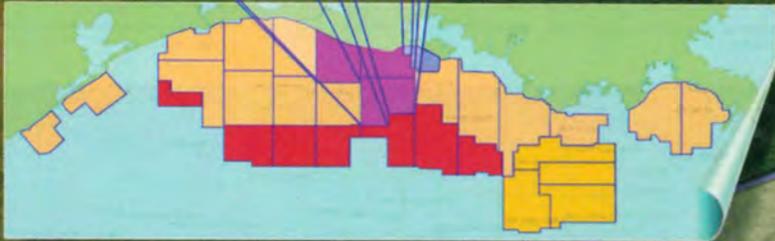
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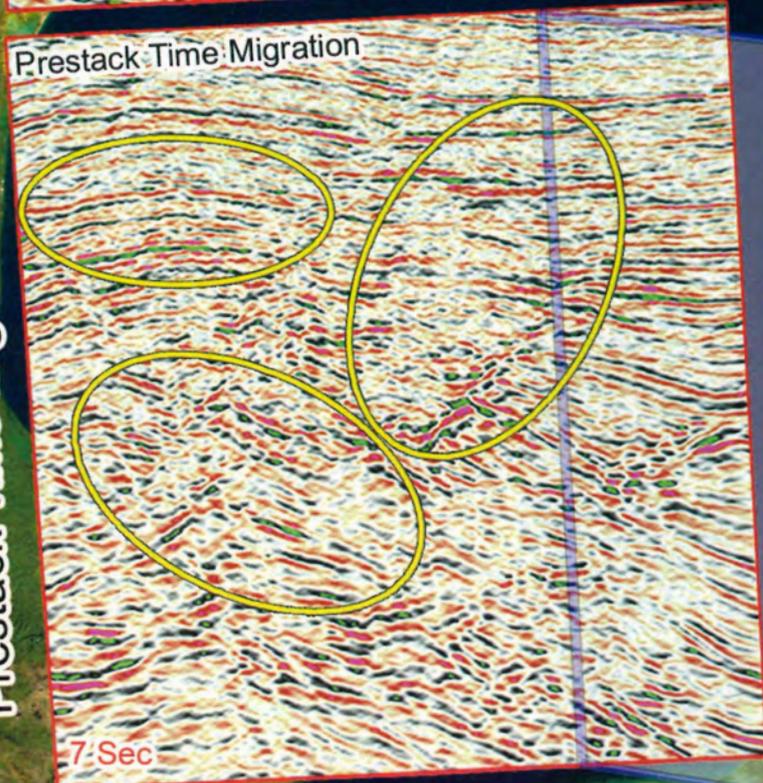
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How Did the Tight Gas Get Here?

Debate Taps Petroleum Systems

By KATHY SHIRLEY

EXPLORER Correspondent

It started last spring at the AAPG annual meeting in Salt Lake City: a new Great Debate.

Three independent Denver geologists gave a presentation challenging the conventional wisdom of basin-centered gas accumulations, and on what controls production from gas fields like the giant Jonah Field in Wyoming's Greater Green River Basin.

The controversy is more than academic. Potentially billions of cubic feet of gas could be at stake depending on which theory is championed.

The debate continued last fall at a Rocky Mountain Association of Geologists' symposium on "Petroleum Systems and Reservoirs in Southwest Wyoming."

For years the three authors have discussed the concept of basin-centered gas – and have struggled with how it can be applied to exploration models, risk assessment and resource assessment, according to Keith Shanley, Littleton, Colo.

His co-authors are John Robinson, with North Ranch Resources in Littleton, and Robert Cluff, president of the Discovery Group in Denver.

"We just didn't understand the mechanisms ... so it became a topic of conversation among us as to how petroleum systems function and how traps are formed in areas of low permeability reservoirs," Shanley said. "What were the controlling factors?"

Over several years they developed a new concept for low-permeability reservoirs like those in the Greater Green River Basin, and determined that most fields are not part of a continuous-type gas accumulation or a basin center gas system in which productivity is dependent on the development of "sweet spots." Rather, most gas fields there occur in low-permeability, poor-quality reservoir rocks in conventional structural, stratigraphic or combination traps ("sweet spots").

They believe the basin is neither regionally gas-saturated nor near irreducible water saturation, and that water production is both common and widespread.

"Understanding field occurrence as well as reservoir and well performance in these low-permeability gas systems requires an understanding of multi-phase, effective permeability to gas at varying degrees of water saturation under conditions of overburden stress," they wrote. "Understanding low-permeability gas systems such as those found in the Greater Green River Basin does not require a paradigm shift in terms of hydrocarbon systems."

"We conclude that low-permeability gas systems should be evaluated in a manner similar to and consistent with conventional hydrocarbon systems."

Successful exploitation of resources within low permeability gas systems requires a focused, deliberate effort that fully understands the unique petrophysical nature of these reservoirs and is able to integrate that information with all elements of petroleum systems analysis, particularly an understanding of trap-related elements, they wrote.

The three concluded that all of the larger fields in the Green River Basin are controlled by conventional trapping mechanisms and produce down dip water.

Survey geologist who was instrumental in developing the basin-centered gas model, does not agree.

Law remembered that a 1979 AAPG publication by John Masters on the Elmore Field in Canada (Memoir 38) coined the term "deep basin gas." At about the same time the USGS, with funding from the Energy Research and Development Administration, began studying western tight gas sands.

"Chuck Spencer and myself at the USGS observed similar accumulations in southwest Wyoming, but not on the regional scale Masters had discussed,"

Law recalled. "However, through additional study we determined these accumulations were regional in extent.

"Over the years these initial ideas have evolved," he added, "but the basic premise of that early work has remained intact."

Law said there are four criteria that define basin-centered gas accumulations, including low permeability, abnormal pressure, gas saturated reservoirs and no down dip water leg.

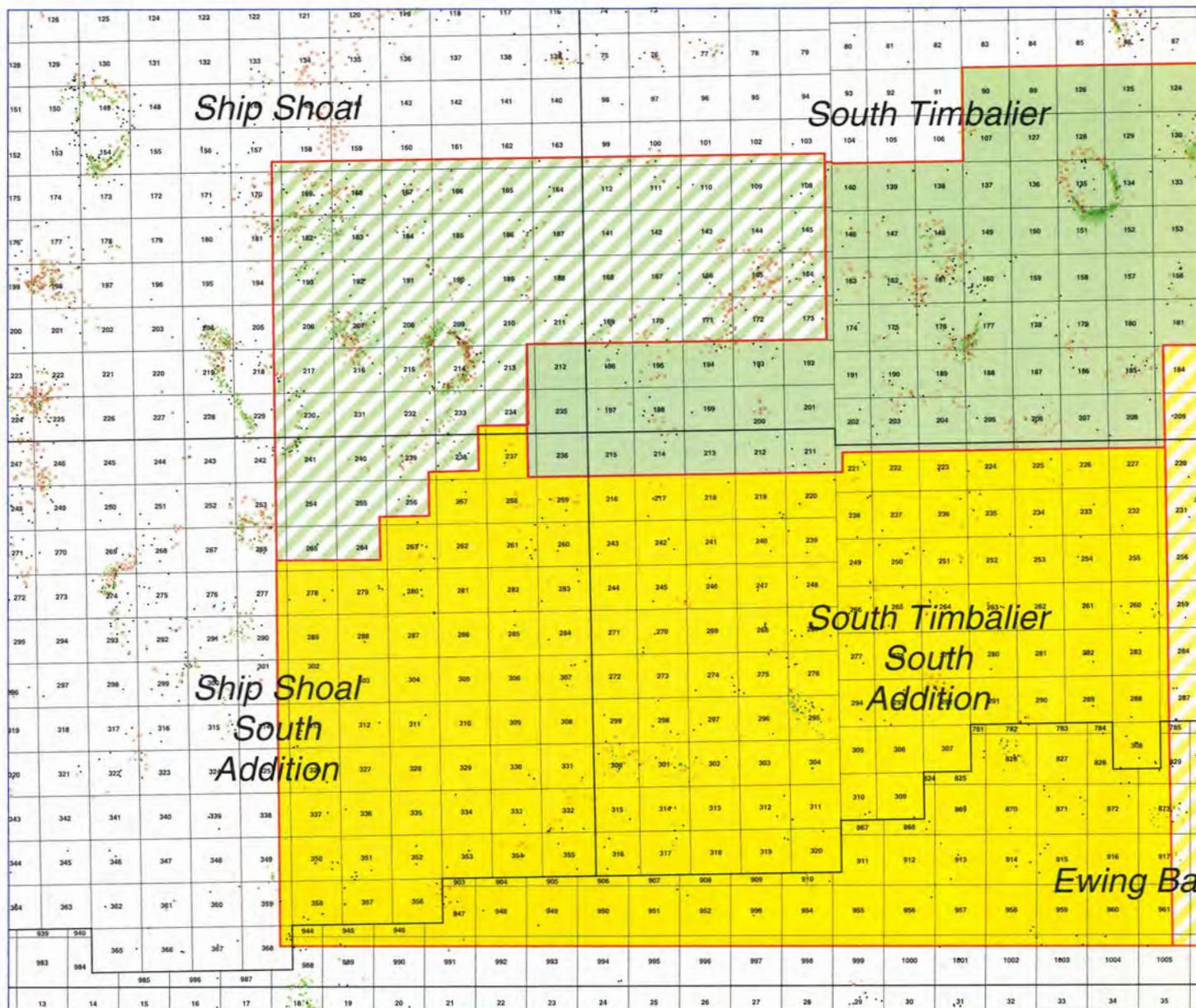
"In our research we found, as did Masters, that there is no down dip water leg in these accumulations, unlike

conventional buoyancy driven accumulations that always have a down dip water leg," he said. "Also, we were able to determine that these accumulations without exception are abnormally pressured – either over- or under-pressured – and the pressure mechanism has to be hydrocarbon generated, not rapid burial or other means.

"These are the four defining elements," he said. "Without these four you don't

continued on next page

DEEP RESOLVE LONG-OFFSET 3D SURVEY



On the Other Hand

Ben Law, a retired U.S. Geological

continued from previous page

have a basin-centered gas accumulation." Law said nothing through the years has altered his opinion, although the initial concepts have evolved somewhat.

"It is quite possible – and appears more common than we used to think – that within the gas saturated basin-centered accumulations there are water bearing reservoirs as well as interbedded conventional reservoirs," Law said. "This is something we did not emphasize in the early literature, but it became clear early on that there were interbedded conventional and unconventional reservoirs."

"I think people have assumed without reading the literature carefully that there are not any conventional structural or stratigraphic accumulations within a basin-centered gas setting."

Challenging the Tenet

According to Shanley, Robinson and Cluff, this traditional view of basin-centered reservoir behavior led people to think that the tight part of the basin was gas saturated – that the water had somehow been driven out and pore spaces filled with gas.

"Within that framework, if you were to drill a well in these areas and encounter a better than average rock or a series of fractures you would expect to produce gas," Shanley said. "Resource extraction then is simply a matter of drilling and completion technology as well as gas prices."

"We don't believe that tenet is true," he continued, "although there may be some minor gas present – much of the gas can not be produced under virtually any economic scenario."

The critical difference between the

"We were unable to find one significant field that we felt fit the conventional definition of basin-centered gas accumulations."

group's model and conventional wisdom is that, although these are gas rich areas and a lot of gas indeed has moved through the system, productive areas are distinguished by having high gas saturation, resulting in high effective permeability to gas.

The high gas saturations reflect a buoyancy-driven system.

"The only places we find that build up to sufficiently high gas saturations are in traditional traps," Cluff said. "In every case it turns out that the conventional

paradigms of petroleum geology explain the areas where gas has built up to moveable saturations."

The three studied 44 fields in the Greater Green River Basin, each with over 50 billion cubic feet of estimated ultimately recoverable reserves, and found that 100 percent of those fields were in conventional traps, according to Shanley.

"We were unable to find one significant field that we felt fit the standard definition of basin-centered gas accumulations," Shanley said. "Importantly, all the fields with greater than 50 billion cubic feet of estimated ultimately recoverable reserves make up 92 percent of all the gas in the basin, so it is a statistically significant number."

Cluff added, "Everywhere we had sufficient data to draw the maps we found a structural or stratigraphic trap."

Much Ado About ... ?

While reactions to the new model have varied from both extremes, there are some geologists who wonder what all the fuss is about.

"They seem to be making the point that you can't just drill anywhere in the center of a basin and get gas. We've known that for the last 20 years," said Larry McPeck, a geologist with Thomasson Partner Associates, Denver.

"You need some reason to have a sweet spot, and that sweet spot may be controlled by structural and stratigraphic changes," he said. "The two views don't have to be mutually exclusive."

"My only concern is that some might take away from this discussion a negative outlook on basin centers as hydrocarbon hunting grounds," he continued. "That would be unfortunate, because there is a tremendous amount of oil and gas in basin centers because it is the cooking pot, and if you have any sort of trap it is apt to be filled."

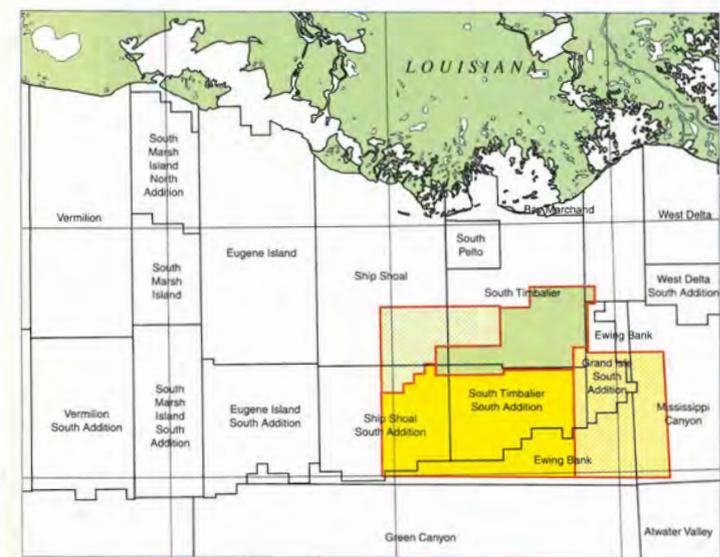
Shanley emphasized that the group is in no way detracting from the prospectivity of these basins or basin centers.

"We want to be perfectly clear i that we think there are substantial gas resources in these basins," he said. "These are gas-charged, hydrocarbon-rich basins that have a multitude of trap styles. They are complex, and in that complexity lies opportunity – but it is not the low risk hunting ground many believe it to be."

"We simply cannot pray to the gods of fracture stimulation, drilling fluids and strong prices to make gas come out of the ground," he added. "So, we feel the industry needs to think in terms of the risk process by evaluating source, reservoir, seal and trap, just as companies do in other regions."

The group's concepts have generated such a strong reaction because the resource numbers are so large in these basins, according to Shanley.

"It is part of the nation's energy trust, and the implications of challenging the paradigm that underlies all that potential resource are significant," he said. "There is a great deal at stake for people at all different parts of the value chain – explorers, investors and pipeline companies just to name a few." □



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Celebrations and Challenges

AAPG Is Back in the Big D Saddle

By VERN STEFANIC
EXPLORER Managing Editor

AAPG returns to a familiar locale this month for an event that proudly recalls a century of success as it bravely charts a path toward tomorrow.

The 89th AAPG Annual Meeting, with SEPM, will be held April 18-21 at the Dallas Convention Center, and more than 870 technical presentations are ready to present a comprehensive portrait of the profession, the industry and the science of petroleum geology.

"Embrace the Future – Celebrate the Past" is the meeting theme, and members of the hosting Dallas Geological Society have crafted an innovative technical and social program to explore the topic.

Planners in Dallas have been most aware of the industry's and profession's current environment of change.

"The (meeting's) well-balanced technical program and the diversity of topical content will enable participants to examine subjects unfamiliar to them," said meeting general chair Terence G. O'Hare.

"The program is extremely comprehensive," he added, "providing something of interest for numerous geologic specializations."

Included in the technical program are nine special forums – believed to be the most ever for an AAPG meeting – that include:

- ✓ The History of Geology: Lessons Learned from Failures (see story, page 34).
- ✓ Delivering on Our Promises – Managing E&P in the 21 Century (starts at 8:20 a.m. Monday, April 19).
- ✓ Technical, Business and Ethical Challenges for Independents and Consultants (at 1:25 p.m. Monday, April 19).
- ✓ Petroleum Asset Risk Management (at 3:15 p.m. Monday, April 19).
- ✓ Teaching Earth Sciences, K-12 and Public Outreach (see story, page 32).

The Dallas Convention Center, site of the 89th AAPG Annual Meeting, to be held April 18-21.



Photo courtesy of the Dallas Convention and Visitors Bureau

- ✓ Recent Discovery and Development Case Histories (see story, page 39).
 - ✓ Business Strategies for Exploration Evaluation – Onshore North America (at 10 a.m. Tuesday, April 20).
 - ✓ The Future of Global Energy – Technical, Environmental, Economic and Policy Issues (see story, page 38).
 - ✓ Climate Change – Sense and Nonsense in Our Great Geophysical Experiment (see story, page 36).
- Another special presentation will be the annual Michel T. Halbouty Lecture, which this year will be offered at 5 p.m. Monday, April 19. Veteran international oil explorer Brian Maxted will discuss "Exploration Perspectives and Paradigms – Finding Oil in the Future."

Complementing the technical program, of course, is the huge exhibits hall showcase – the Dallas Convention Center is the largest in Texas – site of Sunday's Icebreaker (and Tuesday's "mini-breaker" reception). This year's display will offer more than 250 exhibitors, offering the latest in cutting-edge technology and information, and including the popular International Pavilion and Virtual Café.

As usual, pre-meeting events – various short courses, field trips and social activities – will be held for early arrivers, including an expanded Teacher Program (begins Saturday, April 17) and Career Seminar (at 8:30 a.m. Sunday, April 18, at the Hyatt Regency Hotel).

The meeting begins in earnest at 4 p.m. Sunday with the opening session and awards ceremony, followed by the traditional Icebreaker in the exhibits hall. Technical sessions begin at 8 a.m. Monday, April 19.

This year also marks a record setting twelfth time Dallas has been host for an AAPG annual meeting – the most for any city. Dallas also is the only city to host an annual meeting in each decade of AAPG's existence. □

Middle East Expert Heads List of Dallas Luncheon Speakers

The Middle East dominates the world's energy scene, the world's politics, the world's media focus – and in Dallas, the Middle East will again be in the spotlight.

Amy Myers Jaffe, well-known oil specialist and Wallace Wilson Fellow for Energy Studies at the James A. Baker

III Institute for Public Policy at Rice University, will discuss the challenges facing OPEC in the coming years during her address to the All-Convention Luncheon.

The luncheon will begin at 11:30 a.m. Monday, April 19, at the Dallas Convention Center.

The luncheon also provides the setting for recognition of Mike Fillipow as AAPG's Earth Sciences Teacher of the Year (see related story, page 37).

Jaffe was principal author of the Baker Institute's first eight energy studies that covered energy policy and trends in the Middle East, Caspian

Basin, China and Japan, as well as emerging technologies in the nuclear and natural gas sectors.

The All-Convention kicks off the annual meeting's slate of division luncheons, all of which will be held at the Dallas Convention Center. (See stories below.)

DPA: You Do the Math

The dilemma: The world's population is growing at a rate of 1.3 percent each year, and the earth's supplies of natural resources are declining rapidly.

The question: What are you going to do about it? Albert Bartlett, Harvard-educated physics professor emeritus at the University of Colorado in Boulder, will try to answer the question – or, at least, spark a discussion – during his talk "Arithmetic, Population and Energy," to be presented at the Division of Professional Affairs luncheon on Tuesday, April 20, at the Dallas Convention Center.

Bartlett likes to point out that throughout most of history, population growth was flat – but by 1960 it grew to about a 2 percent increase each year.

Now it's growing at 1.3 percent, a growth that "continues to put pressure on oil, natural gas, coal and other fuels," he said.

Bartlett believes that world oil will peak this year, and once "at the peak you're halfway through."

"There will always be some oil left in the ground," he said, "but then production goes downhill from then on."

Other scholars agree with Bartlett – more or less – with some predicting that world oil will peak before 2010. Others still put the peak in the late 2020s – at the latest, he said.

Bartlett's basis centers on the statistic that the total amount of all oil on the earth amounted to 2,000 billion barrels. Assuming a 7 percent growth in oil production up to 1970, that entire amount would have been used up by now – however, that hypothesis assumes steady growth, he noted.

According to mathematical principles, 7 percent growth doubles every 10 years.

See **DPA**, page 40

DEG: Cool, Clear Water

Far below the dusty, rugged landscape of the Texas Panhandle lies a resource vital to the future growth and prosperity of the Lone Star State.

That valuable resource isn't oil. It isn't natural gas. It's water.

In recent years a growing number of landowners in Roberts County have recognized the value and importance of the water rights beneath their land and have taken steps to market those rights.

This move has been spearheaded by the most famous rancher in the county, AAPG member T. Boone Pickens.

In 1997 the Canadian River Municipal Water Authority bought 43,000 acres of water rights in Roberts County from the old Southwest Public Service Co. for \$349 per acre. Based on that sale many landowners realized their water rights are a substantial commodity, and in the ensuing years they have positioned themselves to sell those rights to a Texas municipality.

Pickens said a sale could come as early as this year.

"There is no question that Texas is going to have a serious water problem in the not too distant future," Pickens said. "The population in Texas is estimated to double by 2050, and that one statistic alone illustrates why steps must be taken now to plan for the water needs of the future population."

"We feel these water rights in the Panhandle represent an excellent source of water for a growing Texas city," he added.

Oilman and entrepreneur Pickens will address

See **DEG**, page 41

EMD: Down to the Crossroad

The energy industry is at a crossroads – petroleum is in the rearview mirror and a methane-based economy is squarely ahead.

What will this fundamental change in the energy mix mean for public policy, the environment and earth sciences?

Many of the answers to those questions rest with the U.S. Geological Survey.

"I think our role over the next 20 years will be identifying, assessing and determining the availability of the world's remaining energy resources," said Patrick Leahy, USGS associate director for geology.

Leahy, who said his agency's job is to "develop accurate assessments of the resources ... and try to understand the environmental and economic aspects that may accompany those resources in terms of their development," will be the keynote speaker at the Energy Minerals Division luncheon Wednesday, April 21, at the Dallas Convention Center.

His talk is titled "The USGS Role in Preparing for the Energy Mix of the Future."

Leahy quickly addressed an immediate concern: "I think there is no question that fossil fuels will be in our future for a long time," Leahy said. "Although other sources are certainly attractive, the demand for energy is very high, and at least in the short term – the next 25 years – we will be very dependent on fossil fuels, particularly natural gas."

But to prepare for the future, science must continue – and in the arena of resource assessment, scientific investigations on a global scale will become increasingly important.

See **EMD**, page 40



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*Geology Trumping Workstation***Risk? Mindset Change Required**

Brian Maxted, a founder of international exploration company Kosmos Energy LLC, will present this year's Michel T. Halbouty Lecture at the AAPG Annual Meeting in Dallas.

"Exploration Perspectives and Paradigms - Finding Oil in the Future," a one-hour session, will be presented at 5 p.m. Monday, April 19, in Ballroom C3/C4 of the Dallas Convention Center.

Maxted previously has worked in a variety of upper management exploration positions for Amerada Hess Corp. and Triton Energy Ltd.

By LOUISE S. DURHAM
EXPLORER Correspondent

Thanks to stubbornly-high commodity prices, record profits are being rung up at a host of oil and gas firms. For the most part they're using the accruing volumes of cash to pay down debt and spruce up their financial standing in general.

Like most businesses, however, these companies can't go on forever selling what's on hand. At some point, they must replenish the inventory, i.e., get busy exploring for hydrocarbons once again.

Finding the skilled folks to do the oil finding looms as a thorny problem to be addressed.

"Going forward, one, if not the, critical issue facing the industry is the availability of skilled explorers," said Brian Maxted, founding partner of Dallas-based Kosmos Energy LLC. "The companies are now thinking about exploring again, but there are no people to go out and explore."

This issue will be a principle theme of the Michel T. Halbouty Lecture presentation "Exploration Perspectives and Paradigms - Finding Oil in the Future," which Maxted will present at the 2004 AAPG Annual Meeting in Dallas.

The current lack of skilled explorationists can be attributed to a number of culprits. There are a couple at the top of the list:

✓ With all the mergers, companies are going through growing pains and not taking new graduates in like they used to, creating a dearth of skilled younger workers.

✓ Cutbacks in exploration have hindered older workers from honing their exploration skills.

"One of the things I've seen in recent years is that you can still become trained formally in different aspects of oil and gas exploration through a structural geology, geophysical, geochemistry course," Maxted said. "But there's no course in the end that's 'How to Find Oil,' no course puts it all together.

"It's not just technology skills and abilities you need, but some of that mental side of finding oil," he said. "A lot is about perception, approach and appetite for risk.

"I want to try to explore this with my presentation and use my experience of past successes and failures to see if I can put some kind of lessons learned together that can benefit a wider audience."

Needed: Regional Expertise

Maxted noted that such lessons learned, both positive and negative, are a vital part of oil finding that's missing both within companies and between companies in the industry.

The issue of risk must be re-evaluated, given that risk aversion is prevalent in most companies today.

"The companies are now thinking about exploring again, but there are no people to go out and explore."

Much of the blame for this phenomenon can be attributed to 3-D seismic.

As workstations developed alongside evolving 3-D technology, the focus turned to finding oil on a workstation. This became a powerful visualization tool, creating an image to use either pro

or con to convince management in decision-making, especially if a brite spot was related to a prospect.

"These were typically lower risk," Maxted said, "and what happened is,

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AAPG Center, New 'Member Benefit Forum' Offered in Dallas

As usual, AAPG member services and concerns will be emphasized and available in a variety of settings during the annual meeting in Dallas.

Much of that information will be available at the popular and comprehensive AAPG Center in the exhibits hall, which is the place to go for the latest information about AAPG and Division services activities.

But also scheduled at the Dallas Convention Center is something new: A Member Benefits Forum, slated for operation from 9 a.m.-3 p.m. in the center's lower lobby C on Monday and Tuesday, April 19-20.

The Forum has been created specifically to provide information

related to AAPG member benefits and programs, offered by headquarters staff members and AAPG representatives.

Session topics include presentations on AAPG's online services, including "how to" instructions on locating and retrieving BULLETIN archives and *Search & Discovery* articles, plus information on AAPG's GeoVest and GeoCare programs.

These sessions will offer a good opportunity for members to learn more about the benefits of AAPG membership – and to obtain information and ask questions regarding programs, course offerings, educational courses and just about everything else that AAPG does for you.

The final program is still being completed – but you can watch the AAPG Web site (www.aapg.org), for the latest information. To date, the schedule of events there include:

Monday, April 19

- ☐ 9 a.m. – Using AAPG Online Services.
- ☐ 10 a.m. – GeoVest Retirement Plan.
- ☐ 11 a.m. – GeoCare Benefits Insurance Program.
- ☐ 1 p.m. – Using AAPG Datapages.
- ☐ 2 p.m. – TBA
- ☐ 3 p.m. – Long Term Care Insurance.

Tuesday, April 20

- ☐ 9 a.m. – AAPG Online Services.
- ☐ 10 a.m. – Long Term Care Insurance.
- ☐ 11 a.m. – Upcoming AAPG Publications.
- ☐ 1 p.m. – GeoCare Benefits Program.
- ☐ 2 p.m. – Educational Services discussion.
- ☐ 3 p.m. – TBA

The AAPG Center will be available during the normal exhibits hall hours. There you can find information on all AAPG services, programs, benefits, publications and meetings.

continued from previous page

where reservoirs with oil were seen on 3-D, there was a significant migration, especially with the majors, to relatively low-risk exploration in various parts of the world, including the Gulf of Mexico.

"The industry is now to the point where most 3-D seismic signature-type features have been drilled," Maxted said. "So they're saying, where do we go next?"

Perhaps, Maxted suggests, it's time for a return to prominence of the regional geologist who reigned as kingpin in the industry once upon a time.

"Over the last 10-15 years, the geophysicist became much smarter and the geologist took a back seat," Maxted said. "It was only when we started seeing multiple failures with 3-D that the geologist became important again."

"Now that many of the seismic signature areas are drilled up, the regional geologists are an important part of the exploration puzzle to understand source rocks, reservoirs and traps," Maxted noted. "But that's an area that's suffered most over the last 10-15 years because of lack of training, so there's a dearth of this critical skill."

The industry will be highly challenged as it segues from the successful, low-risk cycle of 3-D, geophysics, workstations and such to a higher risk cycle of more frontier-type plays without abundant resources to pursue these plays.

"This will be interesting to watch, since there will be more losers than winners in this cycle," Maxted said. "The key is what will differentiate and distinguish between those that are going to find oil in the future and those that aren't. I want to try to explore this in the paper, try to look for factors that determine success over failed exploration."

The successful company of the future is one that will be:

- ✓ Primarily technically driven from a basin and petroleum system standpoint.
- ✓ Able to put geological models together that support geophysical interpretations.

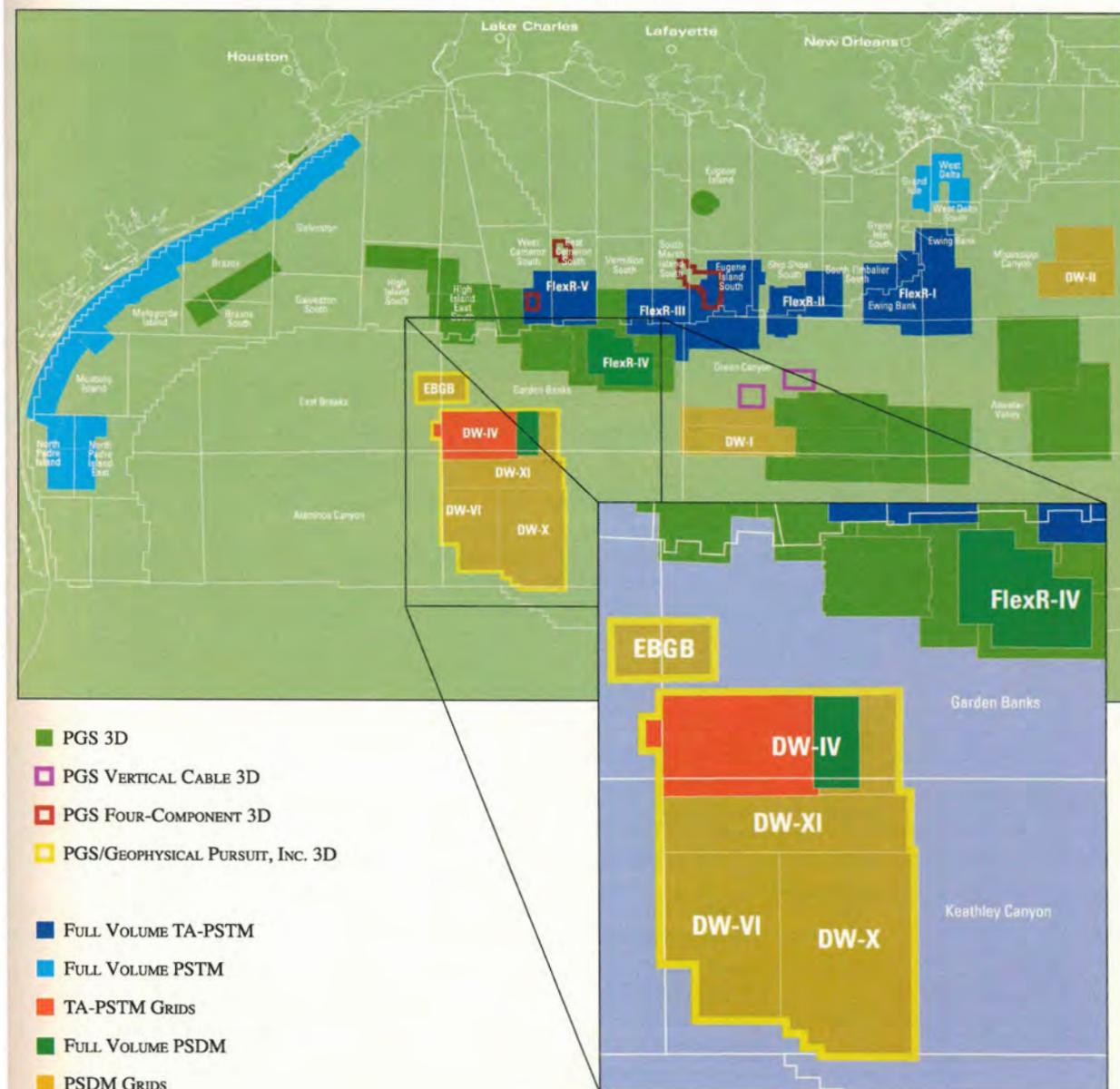
"Many of the geophysical plays have been drilled out, and if you can't image and see things with seismic, they are perceived to be high risk," Maxted said. "There is no technical tool that lets you see oil in a seismic section in some of these areas, so it will require a mindset change from a risk standpoint."

"Companies will have to go back out and take risks," Maxted said.

Wall Street demands it.

"The market today does not reward for simply growing bigger," Maxted said. "It rewards for creating value for the shareholders. Buying reserves and production doesn't increase shareholder value." ☐

THE GULF OF MEXICO



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*Ceremonies Set in Dallas***38 to Receive Association Honors**

Lawrence W. Funkhouser, one of the world's leading geologists – whether the subject is the industry, the profession or the Association – will be honored in Dallas along with 37 others who will receive honors and awards during the opening session of the AAPG annual meeting.

Funkhouser, retired vice president of exploration and production for Chevron Corp. and a past president of AAPG and chairman of the AAPG Foundation will receive the Sidney Powers Memorial Award, AAPG's highest honor.

The awards ceremony is part of the opening session of the AAPG annual meeting, which will take place at 4 p.m. Sunday, April 18, at the Dallas Convention Center.

The session will include a multi-media look at Dallas and its place in the petroleum industry's history, welcoming remarks from general chairman Terrence G. O'Hare and the presidential address from AAPG President Steve Sonnenberg.

Immediately following the awards ceremony will be the Icebreaker reception in the nearby exhibits hall.

AAPG awards, approved by the Executive Committee, are presented annually to recognize individuals for service to the profession, the science, the Association and the public.

Two of the award winners, Stewart Chuber of Schulenberg, Texas, and Royce P. Carr, of Mount Pleasant, Texas,



Funkhouser



Broussard



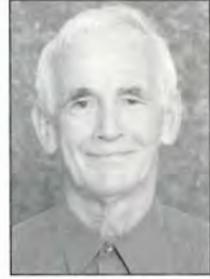
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See **Awards**, page 26

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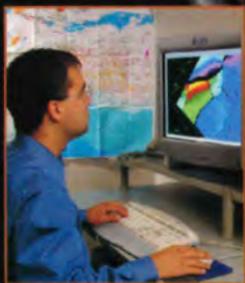
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- 3-7 Applied Subsurface Geological Mapping
Calgary, Alberta
- 3-7 Geophysics for Geologists and Engineers
Houston, TX
- 10-14 Petro. Geol. of Deepwater (Turbidite) Depositional Systems
Houston, TX
- 17-21 Applied Subsurface Geological Mapping
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- 24-25 AVO, Rock Physics and Inversion
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- 26-28 Basics of the Petroleum Industry
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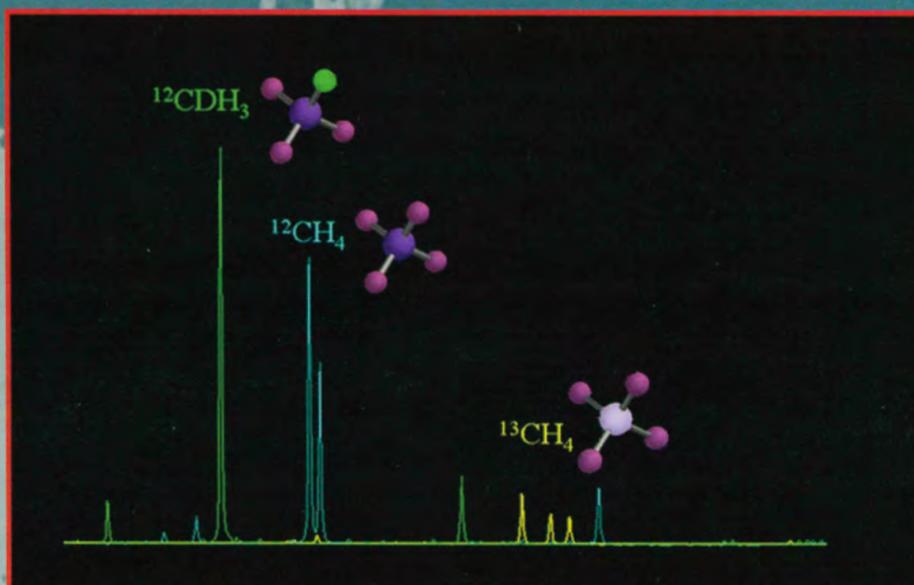
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Awards

from page 24

will receive two awards in Dallas: Chuber will receive AAPG Honorary Membership and a House of Delegates Distinguished Member award, and Carr will receive both an AAPG Distinguished Service Award and HoD Honorary Membership.

For Funkhouser, noted by nominators as a "geologist's geologist," the Powers Medal caps a long career filled with superlatives. (See related story, page 28.)

Full biographies and citations of all award winners will be included in a future BULLETIN.

Those award winners who will be honored along with Funkhouser in Dallas are:

Honorary Membership Award

Presented to members who have distinguished themselves by their accomplishments and through their service to the profession of petroleum geology and to AAPG. This year's honorees are:

- ☐ Martha Lou Broussard, Rice University, Houston.
- ☐ Stewart Chuber, Fayette Exploration Co., Schulenburg, Texas.
- ☐ Douglas G. Patchen, West Virginia Geological Survey, Morgantown, W.Va.
- ☐ Koenraad Weber, retired from Shell, The Hague, Netherlands.

Michel T. Halbouty Human Needs Award

Honors an individual for the outstanding application of geology to the benefit of human needs, recognizing scientific excellence.

Hugh Davies, University of Papua New Guinea.

Outstanding Explorer Award

Presented to members in recognition of distinguished and outstanding achievement in exploration for petroleum or mineral resources, with an

intended emphasis on recent discovery. Clayton H. Riddell, Paramount Resources, Calgary, Canada.

Grover E. Murray Memorial Distinguished Educator Award

For distinguished and outstanding contributions to geological education, both at the university level and toward education of the general public. This year's honorees are:

- ☐ Knut O. Bjorlykke, University of Oslo, Oslo, Norway.
- ☐ William E. Galloway, University of Texas at Austin, Austin, Texas.
- ☐ Andrew D. Miall, University of Toronto, Toronto, Canada.
- ☐ Edward C. Roy Jr., Trinity University, San Antonio, Texas.

Special Award

For those whose area of work may not qualify for one of the existing awards, but is worthy of the Association's recognition.

Dietrich H. Welte, IES Integrated Exploration Systems, Aachen, Germany.

Public Service Award

To recognize contributions of AAPG members to public affairs – and intended to encourage such activities.

John C. Dolson, BP Amoco, Houston.

Distinguished Service Award

To those who have distinguished themselves in singular and beneficial long-term service to AAPG. This year's honorees are:

- ☐ Royce P. Carr, Pentad Oil & Gas, Mount Pleasant, Texas.
- ☐ Pete G. Gray, independent geologist, Lafayette, La.
- ☐ Jeanne E. Harris, G&H Production Co., Denver.
- ☐ Barry J. Katz, ChevronTexaco, Bellaire, Texas.
- ☐ Lowell K. Lischer, consultant, San Antonio, Texas.
- ☐ Deborah K. Sacrey, Auburn Energy, Houston.

See **Honorees**, page 30

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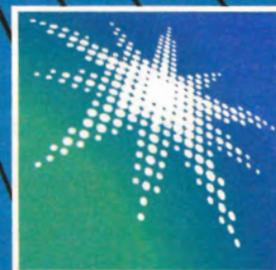
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Funkhouser to Receive Powers Medal

Recurring Themes of Superlatives

By LARRY NATION

AAPG Communications Director

Oil finder John Masters had this to say about Lawrence W. Funkhouser, the 2004 Sidney Powers Medalist:

"A geologist's geologist, a man of vision and imagination and a leader characterized by both decisiveness, aggressiveness and good judgment."

Master's words were joined by a host of fellow nominators who nominated and supported Funkhouser for consideration as the recipient of AAPG's highest honor.

The words "a geologist's geologist" appear at least a half-dozen times from the individual nominators.

Another recurring theme among the nominations was, as Robert Hackler wrote, "Larry created within Chevron an atmosphere very conducive to successful oil and gas exploration throughout the world."

In becoming a lion of the profession, Funkhouser got the start of an internationally recognized career by taking heed of the advice given by other lions – and he credits AAPG for much of his success.

Funkhouser will receive the Powers Medal on April 18 during the Opening Session at the AAPG Annual Meeting in Dallas.

The Gift of Guidance

His interest in the science began when his older brother (by six years) Harold would bring home fossils and maps from the University of Miami (Ohio) and talk about his studies when Larry was still in high school.

Harold, after graduating with a master's and launching an also-impressive career, immediately went to work for Gulf Oil in Venezuela for renowned geologist Hollis Hedberg.

"Hollis would come by the house and visit the family," Funkhouser recalled. "He took personal interest in the people who worked for him."

Funkhouser, interest piqued, graduated with a degree in geology from Oberlin College, where he met his future wife Jean, whom he married after three years service in the U.S. Air Force.

While in the Air Force, Funkhouser knew he wanted to proceed with a career in the science he loved and in the profession with which he was enamored. He wrote to Hedberg, still his brother's boss, and asked for guidance.

"There is only one place to go," Hedberg wrote. "Stanford. The dean is A.I. Levorsen, and he is the best petroleum geologist in the world."

He went to Stanford.

"Levorsen was an exceptional man – he was one of the most exciting lecturers I've ever heard," Funkhouser said. "He was intuitive, upbeat, optimistic and always challenging us to do better."

(Note: These are the same phrases nominators also used to describe Funkhouser).

Nearing graduation from Stanford and considering his options, he again asked for the advice of a lion of the profession – this time, Levorsen.

Levorsen gave specific counsel: Go with the Standard Oil of California, but with the California Co., its Gulf Coast subsidiary.

Levorsen thought it to be the best place in that company to be because of its aggressive exploration attitude, Funkhouser recalled, and because it was populated with geologists who were

"He encouraged Chevron geologists to seek long-range exploratory opportunities that could lead to field discoveries."

making their mark in the profession – including vice president Ken Crandall, who himself later became a Powers Medalist and president of AAPG.

Funkhouser was starting his career with the California Co. in New Orleans when he met and became friends with

another lion – Michel T. Halbouty.

"Mike was always looking for farm-outs, and he'd wrestle prospects out of me," Funkhouser laughed. "It was Halbouty who pushed me forward to get more involved with AAPG."

He joined AAPG in 1954.

"He put me on some committees and I got to know a lot of people," Funkhouser said. "Then I knew only one or two Powers medalists. After a while I knew about 20 others."

And his career went into overdrive.

Making a Difference

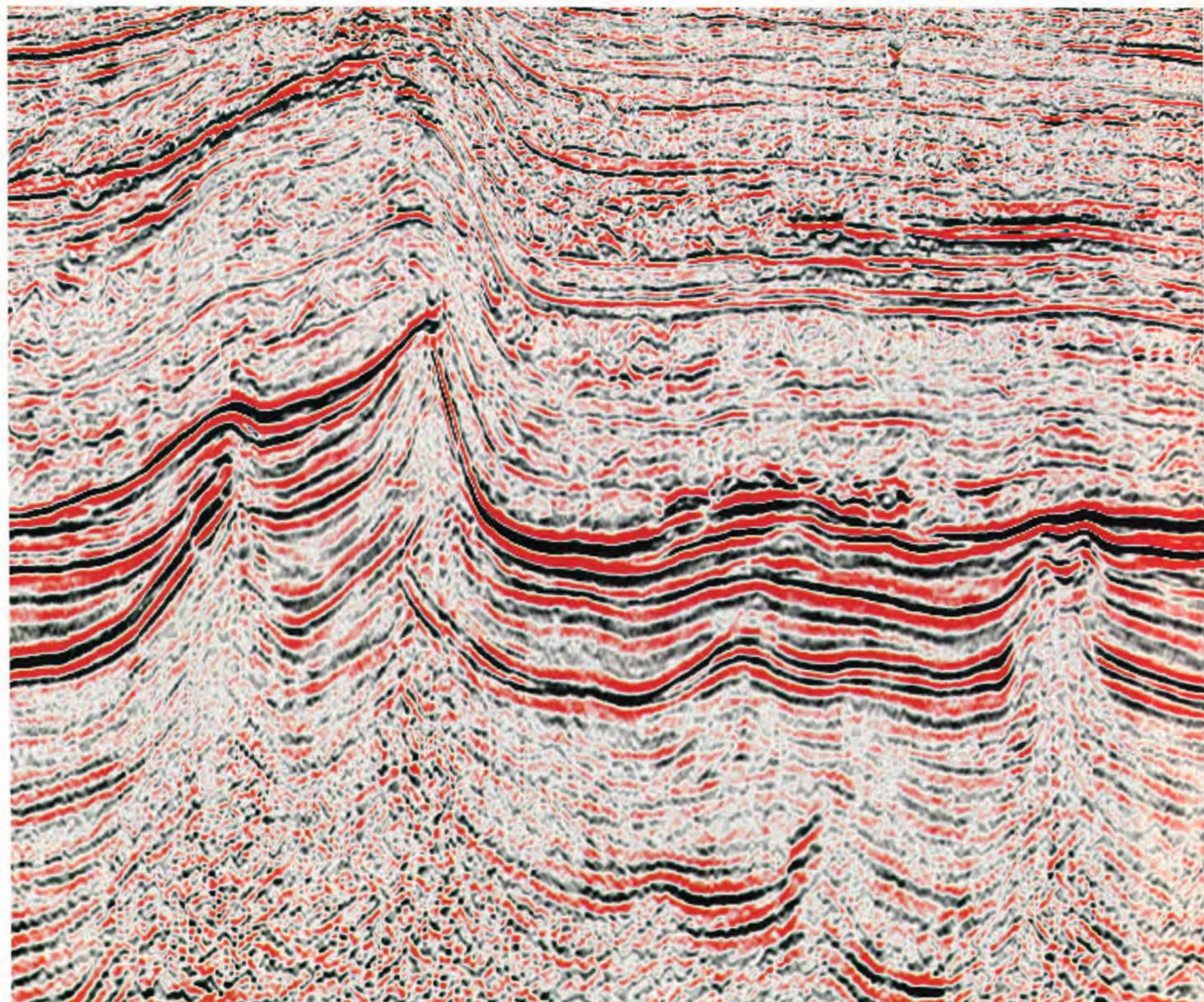
In 1963, he was appointed vice president-exploration for Standard Oil Co. of Texas in Houston.

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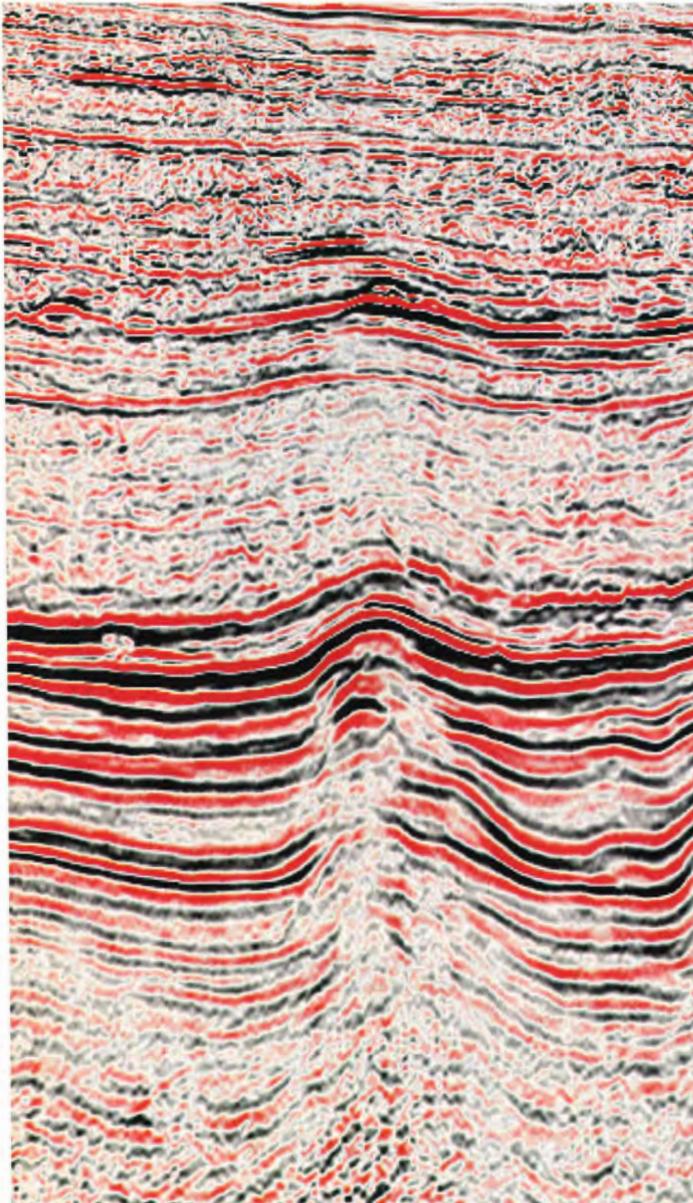


Larry Funkhouser, a "geologist's geologist," a lifetime of success and this year's Sidney Powers Medalist.

292	291	290	289	288	287	286	285	284	283	282	281	280	279	278	277	276	275	274	273	272	271	270	269	268	267	266	265	264	263	262	261	260	259	258	257	256	255	254	253	252	251	250	249	248	247	246	245	244	243	242	241	240	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225	224	223	222	221	220	219	218	217	216	215	214	213	212	211	210	209	208	207	206	205	204	203	202	201	200	199	198	197	196	195	194	193	192	191	190	189	188	187	186	185	184	183	182	181	180	179	178	177	176	175	174	173	172	171	170	169	168	167	166	165	164	163	162	161	160	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144	143	142	141	140	139	138	137	136	135	134	133	132	131	130	129	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
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continued from previous page

In 1966, Funkhouser was appointed vice president-exploration for Western Operations Inc., Chevron's West Coast operating subsidiary, in San Francisco. He assumed the position of corporate vice president-exploration in 1968 and was elected a director of Standard Oil Co. of California in 1973.

He was named director and vice president-exploration and production, for Chevron Corp. in 1976, where he guided Chevron's worldwide upstream activities until his retirement. Funkhouser was responsible for the multi-million-dollar commitments and manpower deployment that makes a major oil company a major oil company.

W.E. Crain, Al Martini and Jim Baroffio, a trio of Chevron superstar explorationists, had this to say about their boss:

"He encouraged Chevron geologists to seek long-range exploratory opportunities that could lead to field discoveries. From this program Chevron discovered and opened up the Overthrust trend in Wyoming, Deep Tuscaloosa trend of Louisiana, Deep Norphlet trend offshore Mississippi, the giant Hibernia field and Pembina Fields of Canada and the numerous oil field discoveries of the Sudan."

Add to that list the Point Arguello Field off California (see EXPLORER A Century Special Issue).

It was not only his colleagues who wrote nominations. It was also his competitors.

"When I was vice president of Shell in the Gulf Coast, we were in leasing competition with Larry's company," fellow Powers medalist and past AAPG president James E. Wilson wrote. "I think the greatest compliment that I can give Larry is that he was an extremely able but honorable competitor."

To underscore that sentiment, following retirement, Jack C. Threet, now chairman of the AAPG Foundation, wrote "Funkhouser was the consummate competitor against my alma mater, Shell Oil Company," where Threet was executive vice president of exploration.

In fact, after retirement, Funkhouser and some former EVPs of exploration, all past competitors, formed an exploration company. While the company has ceased, they still are known to "do deals" together.

Funkhouser retired from Chevron in 1986 – and became AAPG president in 1987-88.

'Get Involved With AAPG'

Funkhouser credits AAPG for a lot of

See **Funkhouser**, page 41



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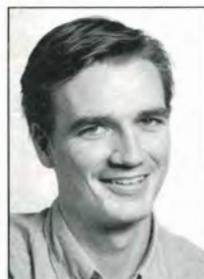


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Honorees

from page 26

Wallace E. Pratt Memorial Award

To honor and reward the author(s) of the best AAPG BULLETIN article published each calendar year.

Donald S. Stone, for "Morphology of the Casper Mountain Uplift and Related, Subsidiary Structures, Central Wyoming: Implications for Laramide Kinematics, Dynamics and Crustal Inheritance," which appeared in the August 2002 BULLETIN.

Robert H. Dott Sr. Memorial Award

To honor and reward the author/editor of the best special publication dealing with geology published by the Association.

Alan R. Huffman and Glenn L. Bowers, for "Pressure Regimes in Sedimentary Basins and Their Prediction."

J.C. "Cam" Sproule Memorial Award

To honor and reward the best paper published by AAPG or by an affiliated society, division or Section in 2002, by a member 35 years of age or younger.

Tobias H.D. Payenberg, for "Evidence of First Order Tectonic Control and Point Load Migration in the Upper Cretaceous Milk River - Basal Belly River Interval in the Alberta Foreland Basin."

George C. Matson Award

To honor and reward the best oral presentation at the AAPG Annual Meeting in Salt Lake City.

Frank J. Peel, with BHP Billiton Petroleum, Houston, for "Styles, Mechanisms and Hydrocarbon Implications of Syndepositional Folds in Deepwater Fold Belts; Examples from Angola and the Gulf of Mexico."

Jules Braunstein Memorial Award

To honor and reward the best poster presentation at the AAPG Annual Meeting in Salt Lake City.

Alan P. Byrnes, Evan K. Franseen, W. Lynn Watney and Martin K. Dubois, all with the petroleum research section of the Kansas Geological Survey, Lawrence, Kan., for the poster "The Role of Moldic Porosity in Paleozoic Kansas Reservoirs and the Association of Original Depositional Facies and Early Diagenesis With Reservoir Properties."

Journalism Award

Presented for notable journalistic achievement, in any medium, which contributes to public understanding of geology, energy resources or the technology of oil and gas exploration. This year's honorees are:

□ Halfdan Carstens, Janobsli, Norway, for his geological magazine "GEO" and his Internet newspaper "GEO Aktuelt."

□ Halka Chronic, for her "Roadside Geology" series books.

Gabriel Dengo Memorial Award

To honor and reward the best paper from the AAPG international meeting in Barcelona, Spain.

Roy C. Davies, department of earth sciences, University of Liverpool, Liverpool, U.K., for the paper "Ultra High Resolution Correlation Using Coal Seam Micro-Stratigraphy."

His co-authors were John A. Howell, of the Geologisk Institut, University of Bergen, Bergen, Norway; Stephen S. Flint, also of the University of Liverpool; and Claus Diessel and Ron Boyd, both of the school of environmental and life sciences, University of Newcastle, Callaghan, Australia.

Ziad Beydoun Memorial Award

To honor and reward the international best poster at the AAPG international meeting in Barcelona.

Tore M. Loseth, John Thurmond, Kristian Soegaard, Jan C. Rivenaes and Ole Martinsen, for "Visualization and Utilization of 3-D Outcrop Data."

Loseth, Soegaard, Rivenaes and Martinsen are all with the Norsk Hydro Research Center, Bergen, Norway. Thurmond is with the department of geosciences, University of Texas at Dallas.

House of Delegates Honorary Membership Award

The House's highest honor, presented in recognition of consistent, dedicated and exemplary service to the HoD.

Royce P. Carr, Pentad Oil & Gas, Mount Pleasant, Texas.

House of Delegates Distinguished Member Award

Presented to honor unique or exemplary service to the House through committee work.

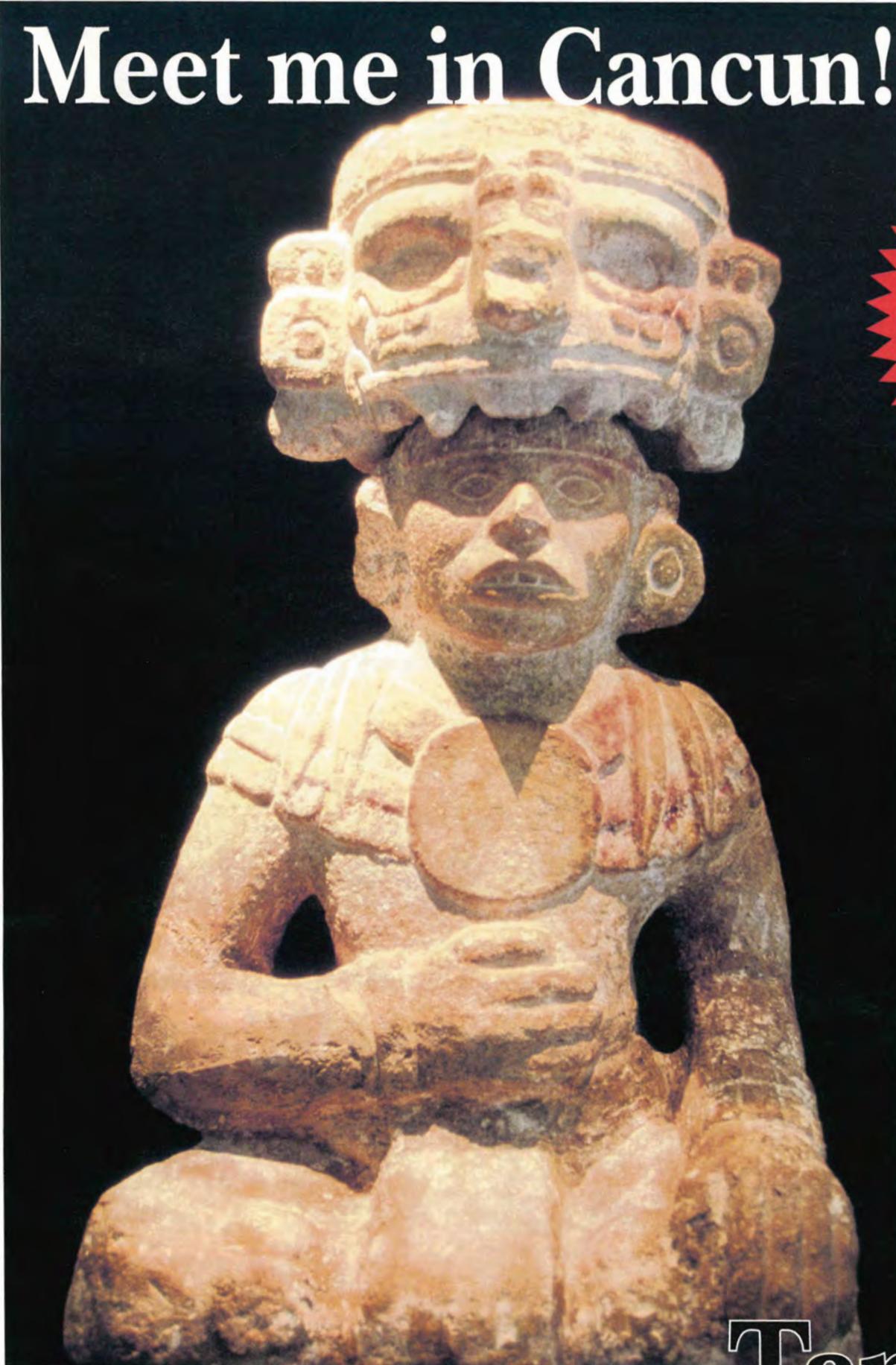
□ Stewart Chuber, Fayette Exploration Co., Schulenburg, Texas.

□ John R. Hogg, EnCana Corp., Calgary, Canada.

□ Donald W. Lewis, consultant, Lafayette, Calif. □

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For more information or to obtain recruiter kits contact the AAPG membership department at:
1-800-364-2274 (US and Canada) or 1-918-584-2555 (others) or email: driggs@aapg.org

*Not a Mickey Mouse Project***Animation Brings Geology to Life**

The paper "Computer Animations in Public Outreach: Geologic Animations in Visitor Centers of National Parks," will be presented by Ryan Crow at 4:15 p.m. on Monday, April 19, during the AAPG Annual Meeting in Dallas.

It is part of a nine-paper afternoon forum on "Teaching Earth Sciences, K-12 and Public Outreach," which also will include three panel discussion sessions.

By KATHY SHIRLEY

EXPLORER Correspondent

If a picture's worth a thousand words, what's the value of creative computer animation?

When it comes to letting the world know about the geologic processes that created our planet, a group of geoscientists at the University of Colorado believes it can be – no pun intended – earth shattering.

Geologic animation and public information: Call this a marriage made in heaven – and it all started with a family vacation.

Paul Weimer, a professor of geology with the department of geological sciences at the University of Colorado, was traveling with his family through the spectacular geology of the Western U.S. national parks when the idea was born:

What if the parks had short animations to illustrate the geologic evolution of various parks where geology plays a key role in visitors' experiences?

He took that idea back to some like-minded friends and peers at CU, who were looking for a way to take geology to "the people."

Everyone began having a common vision.

"We had done a variety of animations of different things at different scales," Weimer said, "but we felt we could have the greatest impact at the national parks."

Weimer and his colleagues formed the Interactive Geology Project and got busy generating funding sources and making contact with various national parks to determine the level of interest in such a venture.

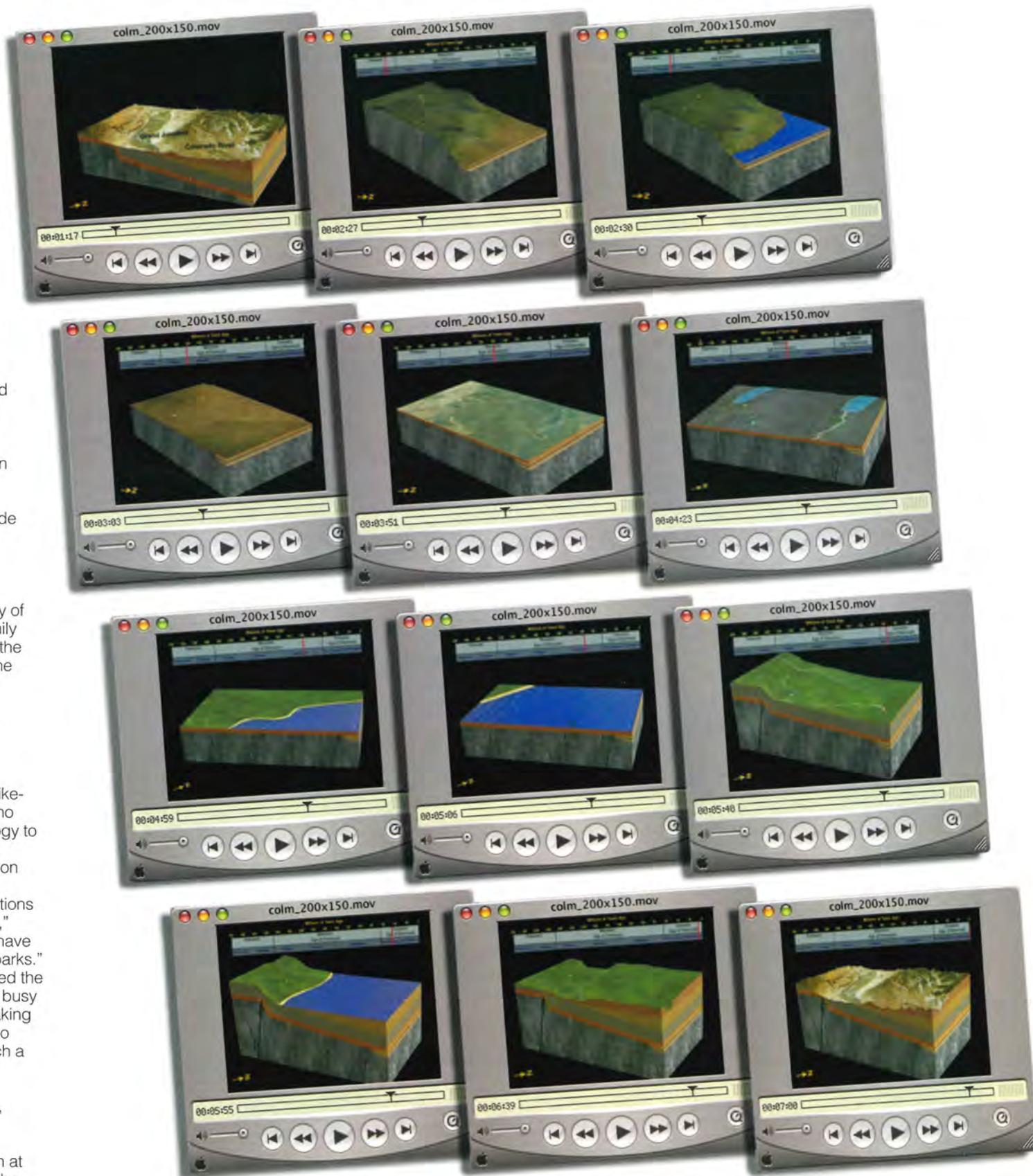
The first project, which is almost complete after about a year of work, centers on the Colorado National Monument in western Colorado.

"Geology is the focus of research at Colorado National Monument, with the goal of teaching visitors about the geology of the area," said team member Ryan Crow. "We worked with William Hood, a national park service geological volunteer, to summarize the last 300 million years of the area's history."

Crow will be presenting a paper titled "Computer Animations in Public Outreach: Geologic Animations in Visitor Centers of National Parks" at the AAPG annual meeting this month.

Co-authors include Weimer (who also is AAPG's current treasurer), John Roesink, Jay Austin, Richard Couture and Byron Boyle with the University of Colorado; William Hood, a Grand Junction, Colo., consultant; and Laura Crossey and Karl Karlstrom with the University of New Mexico.

Also, project team members will be showing the completed animations during the meeting in the BP Visualization Center booth in the exhibits hall.

**Telling the Story**

Early on in the project, the geologists set four basic goals:

- ✓ To educate the public about geologic processes and evolution of landscapes. The best places to begin such a program, they concluded, are the U.S. national parks.
- ✓ To use existing computer technology to develop geologically accurate animations that illustrate the geologic evolution of national parks.
- ✓ To make the experience at national parks potentially more meaningful with brief visual displays in visitor centers and accompanying books.
- ✓ To make these modules available for use at multiple educational levels.

Traditional geologic displays use static 3-D dioramas and 2-D diagrams, but the

group decided to use computer animation for this project. Based on their years of teaching and lecturing, they concluded that the public often has difficulty grasping the vast global context over which geologic changes occur.

Geologic time scales and the violent nature of some geologic processes are challenges, too, they said.

"However, cognitive psychologists have demonstrated that if motion is involved with learning, then there is a significant increase in retention and comprehension with most subjects," Crow said. "Our goal, then, is to design a system where motion is used to increase the public's grasp of geologic processes."

The animations will include such geologic processes as:

- ✓ Continuous climate change.
- ✓ Continuous landscape changes.
- ✓ Continuous change in the processes

that affect the landscape like rivers, lakes, sand dunes and oceans.

- ✓ Continuous change in the tectonic forces affecting the formation of the park both locally and regionally.
- ✓ Continuous change in the life forms.
- ✓ Significant portions of geologic history missing between various rock layers.

✓ The fairly recent phenomenon of the current landscape.

✓ Linking geologic time and the evolution of all these changing factors.

The high quality animations are five to 10 minutes long and will be displayed in the parks' visitor centers. They will include a narration – in laymen's language – summarizing the geology being shown.

The project plans to combine the animations with a series of interactive

continued on next page

continued from previous page

displays for the parks that will allow the user to display different kinds of surfaces and explore the current geography and geology of the area.

The display also will have 3-D visualization software that allows users to control a fly-over of the national park, where different kinds of map displays are draped over a digital terrain model. These maps include Landsat images, shaded topography and geologic maps with geologic cross sections that can be brought into the area.

The team also plans to construct a stand-alone program that will integrate the animations with additional materials. This will allow users to move between animation, paleogeographic maps, photographs and additional explanatory materials.

This program will be downloadable and available for sale as a CD-ROM.

It's All About Change

Of course, all of this is just a first step – project leaders hope to eventually construct a series of animations of each major geologic period of North America.

Their intent is to illustrate the geologic evolution of North America with an accuracy of two to three million years, from a viewpoint of 50 kilometers in space. These, too, will be used to place each national park into a broader regional context, and illustrate to the viewer the continent's constantly changing nature.

Crow said the team attempts to focus on all but the most sophisticated research of a national park.

"We try not to concern ourselves with Ph.D level arguments, but rather base our research on the literature and local experts, to determine exactly which major points should be shown," Crow said. "We combine that research with the interpretive needs of each park – what do they want to show, what do visitors have an interest in seeing – and compile that into one display."

Weimer added that the team also talked to children.

"Our ultimate goal is to try and change the way geology is taught in public schools, from grade school all the way through the collegiate level," Weimer said. "I've always had the philosophy that if you can show geology through animation, it will hold people's interest."

"Geologists have long used 3-D visualization as a tool for problem solving," he continued, "and we think it is a great way to help the general public understand geologic processes as well."

The initial animation of the Colorado National Monument is almost complete and should be on display at the park by this summer. The animation shows:

- ✓ How the Colorado National Monument has evolved over the last 300 million years.
- ✓ The deposition of the rock units in the area.
- ✓ The formation of the monocline in the park.
- ✓ The recent downcutting of the Colorado River that has produced the current topography.

The team has had discussions with other national parks and currently is in the process of trying to get additional projects under way and secure additional funding, according to Weimer. The second animation will likely focus on the Grand Canyon National Park, where project scientists have already begun research and a working model for the animation.

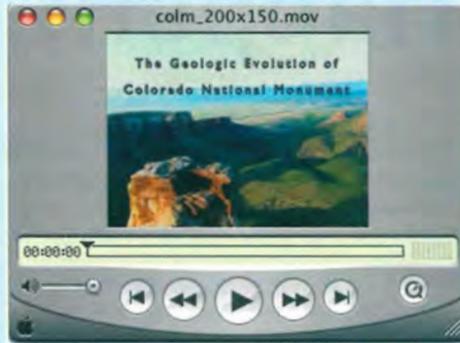
"We ultimately would like to do a series on half a dozen different parks and custom tailor each display for the needs and resources of each park," Weimer said, and they'll target the national parks with significant visitor numbers – 300,000 to 500,000 per year – and spectacular geology. □

Trial Runs Indicated a Winning Project

The Interactive Geology Project members evaluated the impact of its Colorado National Monument animation by showing it to various visitor groups at the Denver Natural History Museum.

"The response was quite good," said team member Ryan Crow. "People seemed to understand it and get into the 'story.'"

"We also presented the animation at Bear Creek Elementary in Boulder (Colo.), and the children were captivated," he said. "About 80 percent of the children and visitors at the Denver Natural History Museum said they would make a concerted effort to see a similar display at a park they were visiting."



Project member Paul Weimer points out that while the program already is drawing critical support, financial support will be necessary.

"We are really still in the tire-kicking

mode with this project," Weimer said. "We are doing a lot of talking and there is significant interest, but nobody has bought the whole car as of yet."

"We have enough funds to operate through the end of this year, but we will have to start bringing in additional funds to make this entire project work."

To date the IGP has received contributions from the University of Colorado at Boulder, the National Park Service, the American Geological Institute, the National Science Foundation. The Colorado National Monument project also received support from Paul M. Rady, The Rady Family Foundation, Bruce Benson and Westport Resources.

– KATHY SHIRLEY

Data Determines Direction.

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Hold the Railings or Get Off the Rig

Disasters Happen; Why Invite Them?

"No force on earth can get everything to stay in balance all the time. To insist on perfection is to shut the whole thing off."
— James R. Chiles, from "Inviting Disaster"

By DAVID BROWN
EXPLORER Correspondent

Things go wrong. And they always will, so mistakes can be crucial lessons.

This year, the History of Petroleum Geology Forum at the AAPG Annual Meeting in Dallas will explore "Lessons Learned from Failure."

The forum packs a one-two wallop,

The History of Geology Forum: "Lessons Learned from Failures," will be held from 1:30-3:30 p.m. Sunday, April 18, right before the opening session of the AAPG Annual Meeting in Dallas.

The forum will be presented in Room C146 of the Dallas Convention Center.

starting with a panel discussion of "Bypassed Pays: Opportunities for Large Reserve Additions."

That presentation includes Sidney



**AAPG ANNUAL MEETING
APRIL 18-21, 2004**

Powers medalist and AAPG honorary member Robert M. Sneider, with Larry D. Meckel of L.D. Meckel and Co. in Denver, and David G. Smith from Burlington Resources in Calgary.

Then James R. Chiles will describe "Human Factors and System Fractures: Lessons from Oil & Gas Industrial Disasters."

Chiles is author of the book "Inviting Disaster: Lessons from the Edge of Technology," published in 2001.

Robert Ginsburg and Marlan Downey will preside at the forum. Its failure topic followed naturally from a previous session, said Ginsburg, professor of marine geology at the University of Miami.

"In that one, we had done lessons from successes," he said. "We were casting around for an idea and we thought, 'What about the mistakes?'"

Recipes for Disaster

Ginsburg sees company culture as an important part of the failure story.

"People might say, 'That kind of sand is always tight,' or 'Never look in chalk,'" he noted.

He said Chiles can bring an abundance of detail and a unique perspective to that aspect of lessons-from-mistakes.

"In 'Inviting Disaster,' he included a whole series of examples that were attributed to judgment or culture, which I thought was the most interesting part of the book," Ginsburg said.

Chiles investigated dozens and dozens of disasters, large and small, in his research.

All mistakes offer lessons, but with true disasters "the learning is deepest," he said. "That's one requirement – visibility, memorability."

He still maintains a Web site of updates on disasters and subsequent investigations, encouraging additions and comments at www.invitingdisaster.com.

Chiles' book opens on the morning of Feb. 14, 1982, on the offshore drilling rig Ocean Ranger.

There's no surprise ending to the story. The \$100 million Ocean Ranger sank in a heavy storm in the North Atlantic on that Valentine's Day, killing its crew.

"I've heard it described as equivalent in Canada to our loss of the (space shuttle) Challenger," Chiles noted.

Later in the book, he also examines the fate of the Piper Alpha rig in the North Sea, the world's worst offshore disaster.

"Part of my reason for opening the book with (the Ocean Ranger) is that Americans didn't get the full message," he explained – mainly because the United States never had an offshore rig collapse of similar scale.

"Fortunately for the workers in the offshore drilling industry, a lot of the Canadian and UK directives did filter through the whole industry worldwide," he added.

Chiles explores both the human and mechanical problems that resulted in the failure of the Ocean Ranger.

"One specific concern that came up again and again was the problem of split authority on the rig and onshore.

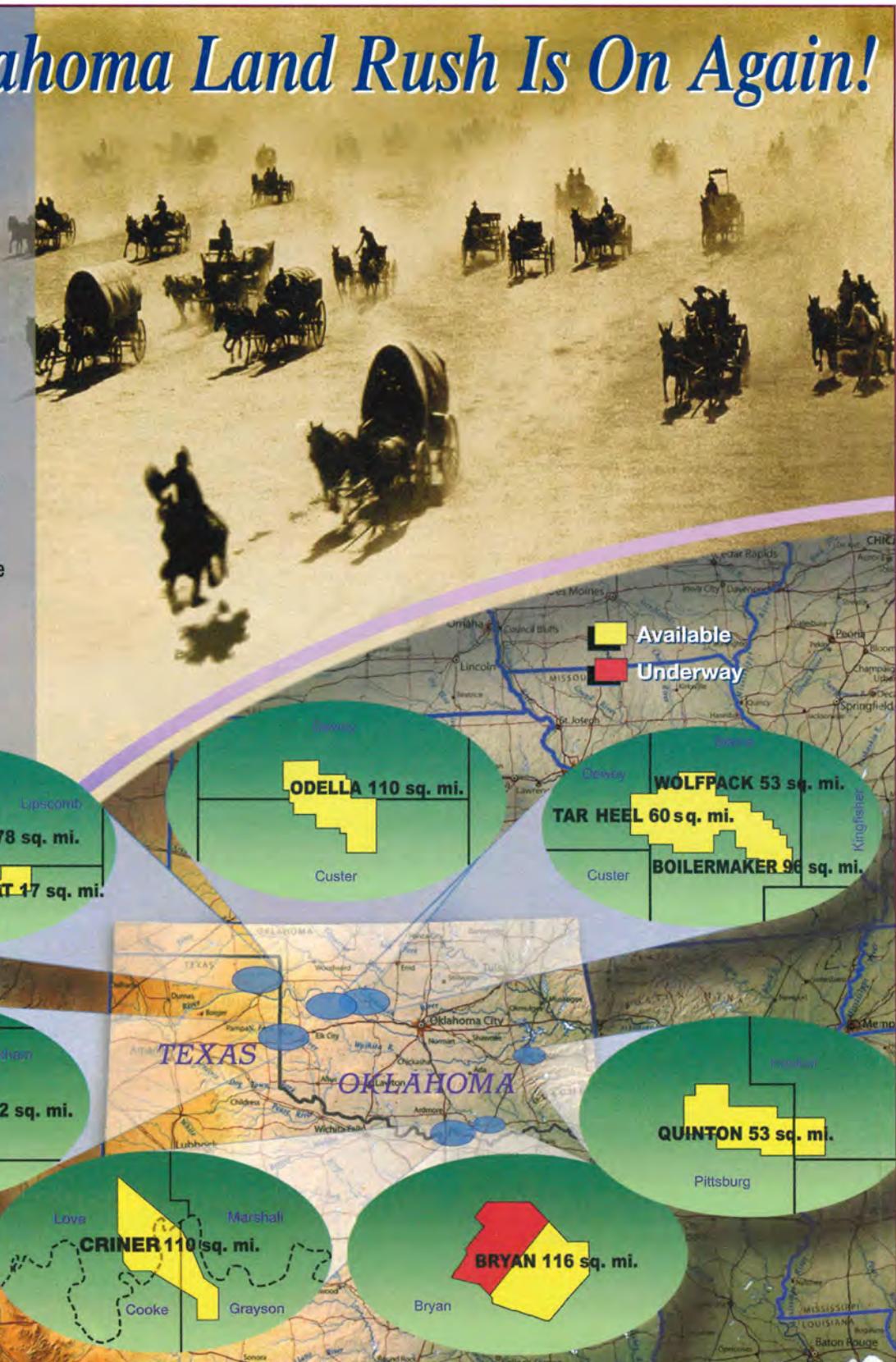
"At a minimum, you had three bosses," he said.

Also, "at least twice, the Ocean Ranger had imbalance problems," the latest only eight days before the rig's collapse, he observed.

Disasters would be even worse if their

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continued from previous page

lessons go unheeded, a point Chiles makes in his book.

"You have to be willing to learn, and you have to have a willingness to change. I think the deepsea drilling industry has been willing to change," he said.

Elmworth: What Went Wrong?

Sneider will draw on specific examples to illustrate possibilities from bypassed pays.

The best known example might be the Elmworth Field in Canada's Alberta Basin, where 61 dry or uneconomic wells were drilled into Lower Cretaceous clastics.

As it turned out, those attempts missed 10 principal reservoir units that now have more than 2,000 producing wells.

What went wrong?

Not a lack of information.

"When you look at the data, all the data's there to make the right decision," Sneider said.

Part of the problem stems from the nature of department jurisdictions, he noted.

"People usually don't put all the pieces together," Sneider said.

"They work in a large enough organization – and it doesn't have to be very large – that they don't tie together all the pieces, which include both engineering and petrophysics," he added.

Another mistake comes from failure to examine the entire exploration picture, beyond geology.

"We're dealing with rocks and fluids," he said. "We do a good job with the rocks, but we don't take a very good look at the fluids."

Part of the solution comes from involving the right technical expertise.

And involvement of managers?

Not a help, according to Sneider.

"The more managers on an evaluation team, the more data doesn't get integrated into the wildcat wells," he said.

In discussing overlooked pays, Sneider will talk less about the pays, and more about the "overlooking."

"It's not a complicated problem," he said. "It's an organizational problem."

Costly, But Crucial

When many people think of disasters from internal organization problems, they think of NASA.

Chiles looked into several of the space agency's failures.

"NASA really was safety conscious leading up to the Columbia disaster," he said, "but it had put itself in a narrow view of what to worry about."

Because NASA engineers saw themselves as dealing with constrained resources, they concentrated on the "big things" that might go wrong, according to Chiles.

"The downside of that was that things that didn't fall into the red zone were managed by downgrading the potential risk," he said.

In evaluating disasters, Chiles could usually find precursors that indicated the later failure.

The usefulness of those precursors, however, is open to debate, he admitted.

"People say, 'It was just a precursor afterward.' The criticism is, it was just a precursor in retrospect. If it was one of a thousand things that happened, it might just be noise," Chiles said.

Now he favors building up benchmarks to compare incidents.

Armed with a concrete set of readings, tolerances and specific requirements, a safety auditor can point out any deviations, he said.

Chiles can identify a number of barriers to safety and reliability, including the attitude that "testing is such a bother."

Testing and training should reflect the

real stresses of on-the-job performance, he said.

Sometimes that doesn't happen because it's harder to justify a failure that occurs during testing, or to defend an accident that occurs during training.

"I try to make the point in the book that life-and-death training can have a terrible price to it, but it's necessary to do it," he said.

Be Very Careful

Industrial insurers don't know how to give credit for training programs and prefer to reward companies for installing protective hardware, Chiles noted.

But training is so important that insurers need to find a way to reward a company for properly training its personnel, he said.

Avoiding failure always involves, and often begins with, the human factor.

"A lot of it is empowered and alert workers – 'alert' in the sense that they know when something needs to be done," Chiles said.

"An aware crew is a lot safer than one that is blissfully ignorant," he added. "They know when they are pushing the envelope."

He'd like to see workers trained to stop disasters in their tracks, to become what he calls "crack-stoppers."

"It is really the notion of 'system fracture.' I've been told that this concept is a helpful addition to what's already a rich literature," he said.

Systems fail "in a step-by-step way analogous to how metal cracks under stress," according to Chiles.

"If there's a crack-stopping barrier, it will stop short of that culminating event," he said.

In almost any disaster, Chiles observed, "the question remains until the

end: Will somebody stop it in time?"

In some cases, preventative measures are ignored even when they're readily available – people don't take time to grab a hard hat, or they don't want to look stupid wearing a pair of safety goggles when they mow the lawn.

Chiles recalled touring an offshore platform, where he was instructed in safety measures as soon as he arrived.

During the tour, he failed to hold a handrail on a steep flight of steps. He was told to hold the railings, or leave the rig.

Chiles said he thought about the warning.

He realized the only thing that would look more foolish than clutching a handrail would be falling downstairs and breaking his neck.

"That would be a stupid mistake to make," Chiles said.

"Ever since then on a flight of stairs, I always hold the handrail." □



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UNDERSTAND YOUR AMPLITUDES

Done Deal Or the Jury Still Out?

Making Sense of the Climate Debate

By KEN MILAM

EXPLORER Correspondent

Mention global warming to a group of scientists and you're almost sure to get, well ... a heated debate.

Sorting facts from emotional arguments can be a challenge, and one that will be addressed in a panel forum at the AAPG Annual Meeting on Wednesday, April 21.

"Climate Change – Sense and Nonsense in Our Great Geophysical Experiment," will be chaired by Julio Friedmann with the University of Maryland and ExxonMobil upstream operations in Baltimore.

Friedmann has recruited four panelists from industry and academia to discuss a topic he calls "controversial, important and timely." He said he wanted to present the forum at AAPG because members are active on many levels – as scientists in their communities and schools, and in business.

"They care a great deal about the environment and also the realities of business," Friedmann said. "They often find themselves between two constituencies."

As a result, he said, "these people can absorb an awful lot of knowledge and act quickly."

To him, the subject of climate change stirs passions because the stakes are so high.

"There is significant evidence to suggest that global warming is real, and it's bad – it's too big to ignore," he said. "On the other hand, energy is the biggest industry on the planet. People want and

Among many academics, global warming "is a done deal," while for many industry scientists "the jury is still out."

need affordable energy.

"We are proud of that role," he said. "We're not bad guys."

Among many academics, global warming "is a done deal," while for many industry scientists "the jury is still out," Friedmann said. "They want more data."

Indeed, much new data has become available in recent years, he added, and it's time to revisit the topic.

Panelist Tom Wigley, a physicist trained in meteorology with the National Center for Atmospheric Research, said he hopes to add to the knowledge base that AAPG members take away from the meeting.

"I'm not passionate about it; it's facts," Wigley said. "That's all I deal with."

"When something impinges on humanity and the environment, you move a little beyond science, into attitudes and social context," Wigley said.

"I try very hard – and my colleagues do, too – to present as balanced a view as we possibly can. We should focus on what we're experts in," he said.

If the debate stirs emotions, the cause "is a single word, and that's money," Wigley said. "If you think some possible new policy is going to cost you money – even if you're wrong – you're going to be concerned."

"The good thing is that, as a scientist, money doesn't enter into it for me," he added.

Wigley said there appears to be no doubt that humans are changing the climate. Fossil fuels "do cause global warming," he said, "but there are other natural processes that complicate the issue."

"It's a difficult issue," he continued. "The United States has huge reserves of coal. The real challenge is not to throw away that resource, but use it in a way that's not damaging to the environment. It's not impossible, but it's a big issue."

Wigley said he is disappointed by the current administration's lack of response to the issue.

"It's a serious problem. It shouldn't cause us to panic, but it requires long-term effort," he said. "It's like we're driving this Hummer toward a cliff – it's quite a long way off, but the brakes aren't so good."

Paleoclimatologist Dana Royer, a research scientist at Penn State, says the past may help point to future solutions.

Royer said his research shows a "pretty good positive correlation" between elevated carbon dioxide levels and warmer temperatures over the past 500



million years.

While some researchers "found the opposite" based on temperature records, "they didn't generate their own CO₂ data," Royer said.

The information from a deeper time record than that available from tree ring studies or more modern instruments "is useful because we can see how the earth was operating at that time, say 100 million years ago, and that can shed some light on what we can expect in the near future," Royer said.

To him, the research lends credence to current global warming theories.

"Wherever the data comes out, let it lie and try not to take it personally," he said.

"There are opportunities there if we, as a society, decide to address this potential problem," Royer said.

Other panelists will include Haroon Kheshti, climate researcher with ExxonMobil, and Dag Nummedal with the University of Wyoming Institute of Energy Research. □

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Drawing the right conclusions

Geology Students Play the 'Oil Game'

He Made Science a Reality

By KEN MILAM

EXPLORER Correspondent

Mike Fillipow is one of those fortunate people whose passion and occupation are a perfect fit.

Fillipow's passion for geology led him to create a course in the science at Long Beach (Calif.) Polytechnic High School.

That first step, filled with enthusiasm and innovation, put him on a path that has brought geology into the lives of his teenage students – results that led AAPG to honor him as the 2004 Earth Sciences Teacher of the Year.

The award, bestowed annually for excellence in the teaching of natural resources in the earth sciences, includes \$2,500 to Fillipow's school and \$2,500 for his own use. It follows a similar \$250 award as Teacher of the Year from the Los Angeles Basin Geological Society.

Fillipow launched his geology class four years ago, drawing 25 students the first year. It has grown to two classes with 30-35 students in each, he said.

It was, amazingly, a pioneering effort into new territory for his community.

"Our district doesn't have any true geology classes," Fillipow said. "That's what I really want to teach, so with the help of the local university and geologists I put it together and got it approved."

Long Beach city geologist and AAPG member Don Clarke was aware of Fillipow's efforts and suggested he apply for the teaching award.

In letters accompanying the nomination, colleagues had high praise for Fillipow, who gained his National Board Certification last year.

"Dedicated, insightful, creative and energetic" were words used by fellow teacher Michelle Aberle.

"Mike Fillipow is a top quality teacher," school principal Shawn Ashley wrote.

Ashley said Fillipow's popularity among the students is a major reason for the growth in the number of young people taking the elective geology course.

"Without a doubt, the most valuable of the many lessons that Mike has developed is a cross-curricular unit on the petroleum industry, where his science students become the owner-operators of imaginary oil companies and must decide where and when to drill for oil based on the geology and economy of a specific region," Ashley said.

"He teaches his students by personal example how they can appreciate and help guard the earth's resources," Ashley continued. "He demonstrates what life-long learning really is – he is constantly sharing his efforts with other teachers."

Fillipow said he was excited about receiving the AAPG honor because it could help give the class more exposure and lead to more funding.

"It helps with field trips, which are one of the first things to get cut" in a budget crunch, he said.

His class field trips have included sessions at the Los Angeles Museum of Natural History, which has the most extensive collection of rocks and minerals on the West Coast, and to Palos Verde to study structural geology.

The year's third outing is a petroleum field trip.

"Obviously, living in the Los Angeles Basin, there's lots to see there," Fillipow said.

And that's a surprise to a lot of his students.

"These are inner city kids who live virtually on top of a huge oil reserve and don't even know it," Fillipow said. "We're

California high school teacher Mike Fillipow will be honored as AAPG's Earth Sciences Teacher of the Year at the annual meeting's All-Convention Luncheon on Monday, April 19, in the Dallas Convention Center.

living, working and going to school right on top of it."

Students, he believes, take the course for a variety of reasons.

"Some have had me before in other science classes, others had a glimpse of geology and want to learn more, others get dropped in by a counselor and have no idea what they're getting into. It's quite a mix," he said.

But he knows what to do with them

once he has them.

"My goal is that when they leave they will have an appreciation for the earth and its resources," Fillipow said. "Also, if they take geology in college it will be one of the easiest courses they ever had."

Fillipow's classes emphasize activities and experiments rather than lectures – and are aimed at helping students

See **Teacher**, page 43



Fillipow

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This Generation Will be a Gas

Methane a Step Toward the Future

By KATHY SHIRLEY
EXPLORER Correspondent

Are you ready for the world of methane?

Well, get ready.

William Fisher, director of the Jackson School of Geosciences at the University of Texas at Austin, called methane a major part of the energy mix that is evolving right now – and it will continue to be a dominant force for the first half of this century.

"Methane won't be our only fuel source, but it will be the most important as a percentage of the total energy mix," Fisher said. "The methane economy will

"The methane economy ... will be pushed by the development of hydrogen fuel cells."

last through the first half of this century and it will be pushed by the development of hydrogen fuel cells.

"Methane will be both a source of fossil fuel and hydrogen for fuel cells," he said.

Fisher is one of several speakers who will participate in a forum at the AAPG Annual Meeting on "The Future of Global Energy – Technical, Environmental, Economic and Policy Issues."

The forum, which will cover primarily the U.S. perspective on the future of global energy, is chaired by Scott Tinker, director of the Bureau of Economic Geology in Austin, Texas, and Pinar Yilmaz, with ExxonMobil, Houston.

Fisher will discuss decarbonization – the concept of moving from solid fuels to liquid fuels to natural gas, and eventually to hydrogen.

Tinker said he asked Fisher to particularly address the impact of the decarbonization trend on the economy and environment.

Fisher will approach the subject from two separate tracks:

✓ He plans to look at the issue of carbon containment or sequestration, which is currently being considered and researched, as a means to reduce CO₂ emissions by the industrial world where fossil fuels are heavily used.

✓ He'll discuss the historic progression in global energy use.

"We went from wood, which is very high in carbon, to coal, then transitioned to oil and now we are in the process of transitioning to natural gas," Fisher said. "That is an almost straight line progression that has been under way for over 100 years.

"Today the implications are that we are on the threshold of what some call the methane economy," he said.

And what does this transition to a methane economy mean for natural gas demand?

"Global demand for natural gas over the first half of this century could be 20 to 25 percent times higher than all global gas demand historically," he said. "In the United States the major increase in demand will focus more attention on how much of our needs can be met domestically, and how much will have to be LNG imports."

The current threshold of natural gas prices and the long-term outlook for strong gas prices, according to Fisher, means more attention has been turned to LNG and moving natural gas resources globally.

"The exact price at which LNG becomes economically viable is open for debate," he said, "but today's prices of \$4 to \$5 per MCF are making LNG projects attractive.

"However, the longer term view of natural gas prices is the real key," he continued. "Before a company goes out and makes a multi-billion dollar investment in a LNG plant there must be some assurance that long-term gas prices can support the project."

Fisher said most experts believe that following natural gas the global economy will be fueled by hydrogen.

"This change will happen gradually and may not be a real force until mid-century, but some projections indicate we will be significantly into hydrogen fuel cell technology for transportation within 20 to 25 years," he said. "In fact, in some areas of the world – like China, where there are relatively few automobiles today – they may leapfrog over combustible engines right to hydrogen fuel cell transportation.

"One may argue the timing of these trends in decarbonization," Fisher said, "but unquestionably, in my judgment, these are the directions we will go."

Other panel members include:

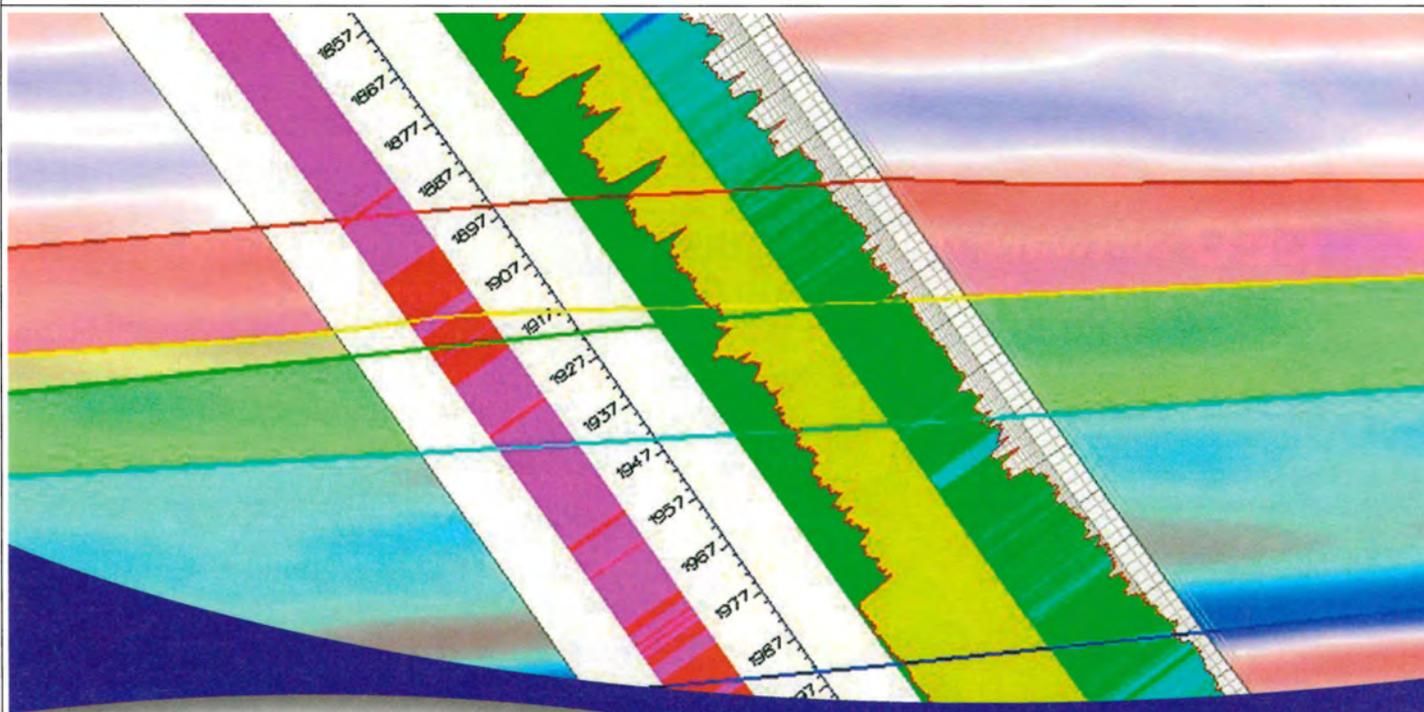
□ Keynote speaker C. Michael Smith, assistant secretary of fossil energy with the Department of Energy.

□ James Farnsworth, vice president of worldwide exploration for BP.

□ Rusty Riese, with BP, representing the recently released National Petroleum Council report to the secretary of energy.

□ Julio Friedman, with Lawrence Livermore Laboratory, and Susan Hovorka, a BEG research scientist, discussing carbon sequestration and enhanced recovery potential.

□ Vello Kuuskraa, president of Advanced Resources International, discussing the future of natural gas supply, demand and technology. □



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Against the Trend

Exploration Picture Causing Concerns

By KATHY SHIRLEY
EXPLORER Correspondent

To know where you're going, sometimes you have to know where you are.

Pete Stark, vice president of industry relations with IHS Energy, will offer a picture of recent and current exploration successes, plus examine some of the critical issues impacting future exploration activity when he kicks-off the "Recent Discovery and Development Case Histories" forum at the AAPG Annual Meeting in Dallas.

The forum will be held from 8-9:45 a.m. Tuesday, April 20.

Stark's talk is intended to provide the context for a bigger question that hangs over the industry: Is it time for companies to start re-investing heavily in exploration, or will access to large, undeveloped reserves in various countries continue to command prime attention?

Several factors – to be discussed in detail during the talk – "contribute to supply and price uncertainty and volatility, which hampers companies interested in investing substantial funds in exploration," Stark said.

"On the other hand, we see a growing number of companies who feel acquisitions and mergers have become more expensive – and some firms, particularly large independents, are growing through investment in exploration," he added.

"All of these factors, both negative and positive, add up to a cloudy future for exploration."

According to Stark, IHS Energy has tallied about 30 discoveries since January 2000 – fairly widely distributed – that exceed 500 million barrels of oil equivalent, totaling approximately 73.4 billion barrels of oil equivalent. The top ones are:

- ✓ Kazakhstan recorded the most giant new finds, accounting for almost 14 billion barrels of oil equivalent.
- ✓ China, about seven billion barrels of oil equivalent.
- ✓ Australia, about six billion barrels of oil equivalent.
- ✓ Brazil, about five billion.
- ✓ Angola, just under five billion.
- ✓ Nigeria, almost four billion.
- ✓ Indonesia and Iran, both more than three billion.

"Interestingly, the U.S. Gulf of Mexico ranked ninth in the world during this period with over three billion barrels of oil equivalent," Stark said.

Examined in total, there are significant clusters of discoveries, he said, to be found in the northern Caspian Sea region, which includes both Kazakhstan and Russia; the Middle East in Iran and Saudi Arabia; the northwest shelf of Australia (primarily gas condensate); and the Niger Delta and offshore Angola.

"In the Western Hemisphere Brazil recorded a series of giant discoveries, all of which were credited to Petrobras," he said. "During 2000-01 Trinidad and Tobago recorded several big discoveries, and, of course, Thunder Horse is still the most significant discovery recorded to date in the U.S. Gulf of Mexico."

Looking more long-term, in the last decade ending in 2002, 426 discoveries with 100 million barrels of oil equivalent or more were found in 52 countries, with 108 different companies involved in the finds.

While all this might seem like good news, Stark indicated there are reasons to be concerned about the state of exploration.

"When you look at global discoveries in five year increments, through 1980 every five year period except one right after World War II added more resources than were brought on stream," he said. "That trend turned around in 1980 ... The trend for years has been away from pure exploration and coaxing more oil from older fields or already discovered but undeveloped fields to offset consumption."

At some point, exploration must once again contribute a larger share of new reserve additions. □

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from page 20

"We are working to refine our global assessments," he said. "For example, our results (from a 2000 global study) indicate that 25 percent of the remaining endowment of oil occurs in the arctic – not only in the United States but in Norway, Russia and Canada. In the coming years we will place a lot of emphasis on research and assessment activities to refine those estimates, and to look at what the geology can tell us about what this heavy emphasis on arctic resources means from an environmental and economic standpoint."

Refining global assessments will be driven by partnerships with other governments to share and exchange

data and methodologies.

"Domestically, I think there will be an increasing demand for clean, reliable and affordable energy that will drive development of the nation's resources," he said. "As a result, the country's future energy supplies will come increasingly from natural gas deposits."

Leahy believes that this drive will put new demands on federal lands – and land use issues in coming years.

"The USGS will be charged with providing unbiased science so that policymakers can make wise decisions based on the best available assessments or knowledge of frontier energy sources," he said.

"We are in a transition time when we should begin addressing and studying resources outside the traditional fossil fuels," he continued. "If you look at the energy mix historically, one thing is

certain – what we have used as fuels has changed over time, and it will change in the future. We are witnessing that change today from oil to natural gas. It is important that we begin to experiment with and study additional energy alternatives for the future, be they gas hydrates, nuclear or wind and assess how these sources will factor into the overall energy mix of the 21st century.

"Science is a key to understanding these energy sources," he said, "and that is the direction the USGS must go."

Resource assessment efforts likely will expand in coming years to resources not currently on the radar screen, Leahy said. While fossil fuels will remain the key element in the energy mix for years to come, a growing percentage of the overall energy supply will come from unconventional sources such as coalbed methane and gas hydrates.

Those sources also may include:

✓ Liquefied natural gas.

Leahy said that if natural gas prices remain high, LNG will be more competitive.

✓ Geothermal energy.

The last national geothermal energy assessment was published in 1979, "so after 30 years we feel like a modern assessment is absolutely critical to accurately assess this resource base."

✓ Nuclear energy.

A "wildcard," he said.

✓ Offshore wind energy – another wildcard that Leahy said will be a small percentage of the future energy mix, but has some growth potential.

– KATHY SHIRLEY

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Committed to development and support

Following completion of the Petcom purchase, Fugro-Jason has been aggressively addressing both short- and long-term plans for the future development and support of **PowerLog**.

The **PowerLog** development work will be driven by the following priorities:

- Positioning the software as a tool for both **generalist** and **specialist** petrophysicists and geologists
- Continuing and **expanding support** for **PowerLog**'s current user community
- Advancing direct data links to third-party software such as Openworks, Geoframe and Petra
- Making **PowerLog** available on both Windows® and Linux/Unix platforms
- Including Fugro-Jason's **Rock Physics** functionality (**Largo**) necessary for advanced reservoir characterization.

Mike Barnett and Doug Schmidt (Petcom's founders and principals) will continue to manage the Dallas-based development team. They will be supported in general by Fugro-Jason's Rotterdam research and development group and specifically by the Rock Physics team.

In addition to expanding software functionality, **PowerLog** users will benefit from the Fugro-Jason support network of petrophysicists based in the Fugro-Jason offices around the world. Fugro-Jason has been using **PowerLog** and **Largo** in its consultancy services business since 2001.

Find out more at www.fugro-jason.com

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DPA

from page 20

"This means that a 7 percent investment will double every 10 years," he said. "With just modest growth rates, you can see a rate of 7 percent. By taking natural resources out of the ground, it will expire quickly."

Like oil reserves, natural gas is in big trouble, too, he said. Reports have indicated that natural gas reserves in North America are in a terminal decline, he added.

There have been about 20,000 natural wells drilled in the United States and 18,000 in Canada – "but they can't bring new gas on fast enough to match the decline of other natural gas wells," he said.

Bartlett believes there will be no relief until six to eight years from now, when liquefied gas from Indonesia and other Islamic countries can be transported here.

Until that time, "prices for natural gas will go up rapidly," he said.

"When you think of how much our lives are governed by low-cost petroleum, this will be a major dislocation," he said. "The impact will be felt far and wide."

He recalled how during the OPEC oil crisis in the 1970s, Montana farmers could not get diesel fuel for their tractors to do spring planting.

"That should have been a wake-up call," Bartlett said. "We woke up briefly and then went back to sleep."

In the 1990s, total energy consumption in the United States grew at 13.1 percent while the country's population also grew at 13.1 percent.

"So the per capita consumption was steady," he said. "It was due solely to population growth."

With growing demand and a steady population growth worldwide, some natural resources will be depleted in coming years, he said.

"We're not likely to find something we can mine and dig up," Bartlett said. "What we're left with is solar power and wind power – but these are trivial. Wind power is an infinitesimal amount of what is used on the power grids."

Although it's true that there is enough U.S. coal for the next 500 years, that is accurate only if 100 percent of the coal is mined and there is zero growth of coal production over 500 years, he said.

"The reality is we've had 2.8 percent coal production in the last 20 years. That means coal would last just another 70 years," he said. "I remember being astounded when I calculated that and found it such a short time."

Bartlett has presented his talk in 49 states.

– DIANE FREEMAN

Funkhouser

from page 29

Chevron's successes.

AAPG Executive Director Emeritus Fred A. Dix recalls that "when John Kilkenny was coming in as president (1975-76), he was in Tulsa working on committee appointments and we were reviewing committee chairmen.

"We suddenly realized that about eight were with Chevron," Dix said, "including the general chair for the next annual meeting. Fearing that Larry might feel that this was too much of a burden on the company, John and I called him.

"His response was refreshing," Dix continued: "That's no problem," Funkhouser said. "I'm just glad to see our people rise to the top like that!"

Funkhouser's counsel to young geologists remains the same as to the others he has mentored and led over the years: "Get involved with AAPG, learn about other's successes, attend meetings, keep learning. Use AAPG as your base. AAPG is the place to get started and to continue your education and expand your horizons."

Funkhouser said, "Early in my career I had some excellent role models. They were all AAPG members."

Funkhouser remains active in the AAPG Foundation, having served as its chairman from 1991-01. He received Honorary Membership in 1984.

He also remains active at the meetings. John Masters also wrote in his nomination, "You can find Funkhouser at a meeting by the crowd around him. It reminds me of (legendary geologist) Wallace Pratt."

Indeed, Funkhouser remains a lion in the science and the profession of petroleum geology.

Even at the annual meeting in Houston during his AAPG presidency, he was politely insistent there be some time left vacant in his over-packed schedule, for a good reason:

"There are some papers I want to catch." □

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DEG

from page 20

Texas' water supply issues and the unique opportunity for Panhandle landowners as the keynote speaker at the Division of Environmental Geosciences luncheon on Tuesday, April 20, at the Dallas Convention Center. His talk is titled "Texas Water: Oil of the 21st Century."

Pickens, who founded Mesa Petroleum in 1956, is today president of Mesa Water in Dallas. In 1996 he founded BP Capital, a fund management company, and one year later launched BP Capital Commodities Fund, which began with \$37 million and has generated cumulative profits of over \$1 billion.

The DEG luncheon begins at 11:30 a.m. DEG awards will be presented prior to Pickens' talk.

— KATHY SHIRLEY

Judges, Student Volunteers Still Needed In Dallas

Wanted: Member volunteers to help judge papers and posters at the AAPG Annual Meeting in Dallas, and student volunteers to help in a variety of duties during the meeting.

Judges help by evaluating one oral or poster session, which helps determine the winners of various technical awards.

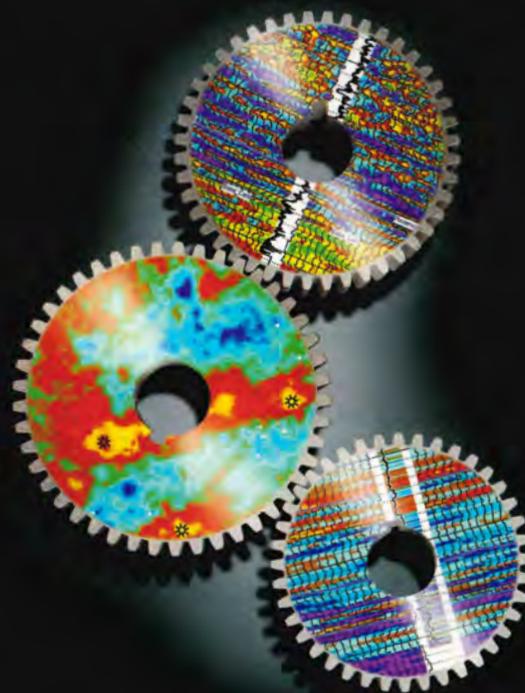
Judges also are invited to attend the free judges' continental breakfast on Monday, April 19, for materials and final instructions.

Students who volunteer receive \$25 for each day worked; a convention bag and program book; a lunch voucher; and free registration.

Volunteering as a judge is easy – simply mark your registration form.

Student volunteers should contact J. Sirman Hollabaugh, (214) 691-2397; or e-mail at 2004vol@aapg.org.

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GEOPHYSICAL CORNER

A Demystifying of Deconvolution

(The Geophysical Corner is a regular column in the EXPLORER, edited by Dallas consulting reservoir geophysicist Alistair R. Brown. This month's column is titled "What is Deconvolution?")

By ROBERT E. SHERIFF

Deconvolution is a process universally applied to seismic data, but is one that is mysterious to many geoscientists.

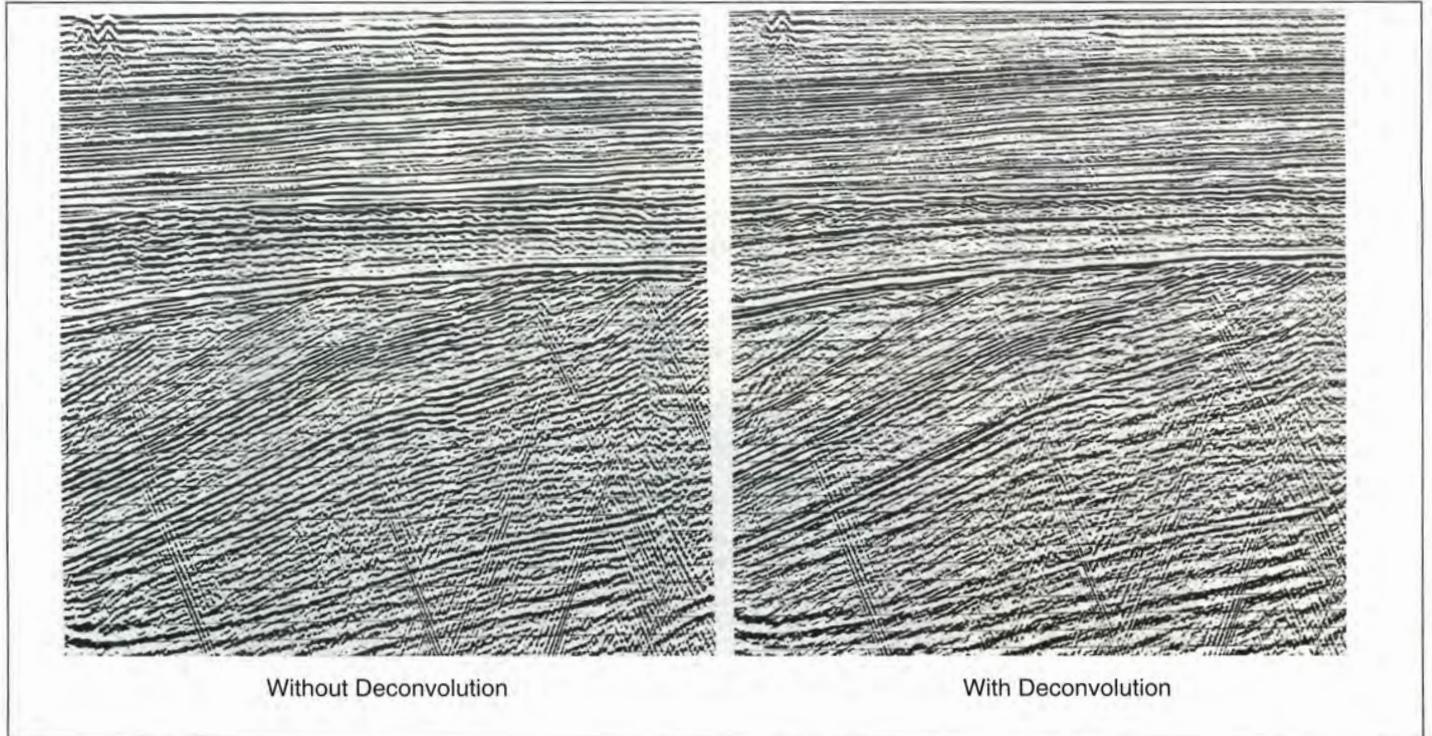
Deconvolution compresses the basic wavelet in the recorded seismogram and attenuates reverberations and short-period multiples. Hence it increases resolution and yields a more interpretable seismic section.

Note the differences in the illustration (right). The quality of modern seismic data owes a great deal to the success of deconvolution. Seismic processing often involves several stages of deconvolution, each of a different type and with a different objective.

Deconvolution usually involves convolution with an inverse filter. The idea is that this will undo the effects of a previous filter, such as the earth or the recording system. The difficulty in designing an inverse filter is that we hardly ever know the properties of the filter whose effects we are trying to remove.

Different kinds of deconvolution are generally described by the different adjectives. They usually designate the type of assumptions made in the process.

Deterministic deconvolution can be used to remove the effects of the recording system, if the system



characteristics are known. This type also can be used to remove the ringing that results from waves undergoing multiple bounces in the water layer, if the travel time in the water layer and the reflectivity of the seafloor are known.

In the case of the earth, the previous filtering that was applied is not known, and thus the deconvolution takes on a statistical nature. In this situation the

needed information comes from an autocorrelation of the seismic trace. Because the embedded wavelet from the source is repeated at each reflecting interface, this repetition is captured by the autocorrelation and used to design the inverse filter.

The embedded wavelet ordinarily dominates the early part of an autocorrelation, whereas multiples

dominate the later part. Hence different parts of the autocorrelation are used to determine different filters for different types of deconvolution.

The embedded wavelet then can be recovered from the early part of the autocorrelation, but, because the

continued on next page

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Call for Papers A Field Symposium STRATIGRAPHIC AND STRUCTURAL EVOLUTION OF THE OUACHITA MOUNTAINS AND ARKOMA BASIN: APPLICATIONS TO PETROLEUM EXPLORATION



OCTOBER 21-23, 2004
Robert S. Kerr Conference Center
Poteau, Oklahoma



Conveners

Neil H. Suneson Oklahoma Geological Survey Roger M. Slatt University of Oklahoma Ibrahim Çemen Oklahoma State University

The Field Symposium will consist of two morning sessions of presentations and posters with two afternoons and a full third day of field trips. Registration fee will be approximately \$300.

OF PARTICULAR INTEREST ARE PAPERS ON:

Stratigraphy Sedimentology
Structure Paleontology
Subsurface Geology

OF THE ARKOMA BASIN AND OUACHITA MOUNTAINS AS APPLIED TO THE SEARCH FOR AND DEVELOPMENT OF PETROLEUM RESOURCES.

A 250-word abstract (electronic preferred) for presentation and/or poster must be submitted to Roger Slatt (rslatt@ou.edu) by August 1, 2004. Symposium papers are due January 15, 2005, and will be published by the OGS as a Symposium Volume. For Symposium information, please contact Neil Suneson (nsuneson@ou.edu) or (405)325-3031 or (800)330-3996.



No state funds were used in the funding or distribution of this ad.

Teacher

from page 37

develop additional learning tools.

✓ During the oil "game," for example, one student checked the market price of oil on that day, and said, "I'm holding on to my oil until the price goes up."

"That's perfect economics," Fillipow said. "I started calling him 'OPEC' from then on."

✓ In a "cookie mining" project, students "mine" nuts, raisins and other "resources" without destroying the cookie. "It teaches an environmental aspect," he said.

✓ In another exercise, oil is spilled into a pie pan landscaped with water, rocks and a sandy beach area.

"They try to keep the spill from spreading, and when it gets onto the rocks and beach, they have to clean it up," he said.

Fillipow said he hopes eventually to get his class approved as an advanced placement course, after which students can take a test in the subject and receive college credit.

Fillipow, a career teacher, received his bachelor of science in engineering geology from the University of California at Los Angeles in 1986.

He coaches swimming and cross country and teaches other sciences, but makes his first teaching love clear:

"Geology is what I've always wanted to teach, so I had to get the course approved," he said.

"It's definitely the highlight of my teaching. I wish I had all geology every day." □

continued from previous page

autocorrelation contains amplitude information only, an assumption about phase is required. Minimum phase in the recorded data is usually assumed and normally this is a good assumption. The output of the deconvolution, however, is normally zero phase. The enormous interpretive benefits of zero phase data have been discussed in previous Geophysical Corner columns ("Seismic/Geology Links Critical," November 1996 and "Zero Phase Can Aid Interpretation," April 1997).

Autocorrelations may be calculated over several time windows in an attempt to allow for changes in the shape of the embedded wavelet as it travels through the earth. This is called adaptive deconvolution.

Spiking deconvolution shortens the embedded wavelet and attempts to make it as close as possible to a spike. The frequency bandwidth of the data limits the extent to which this is possible. This is also called whitening deconvolution, because it attempts to achieve a flat, or white, spectrum.

This kind of deconvolution may result in increased noise, particularly at high frequencies.

Predictive deconvolution uses the later portions of the autocorrelation to remove the effects of some multiples. Predictability means that the arrival of an event can be predicted from knowledge of earlier events. Different formulations are used, including maximum and minimum entropy, a measure of disorder.

Sparse-spike deconvolution attempts to minimize the number of reflections, thus emphasizing large amplitudes.

(Editor's note: Robert Sheriff is a professor at the University of Houston.)

LOOKINGBACK

Army Taught Basic Lessons

By MARLAN W. DOWNEY

Lessons from history:
Exactly 50 years ago I was mustered out of the U.S. Army, completing my tour of overseas duty in the Philippines and Korea.

I returned to graduate school a profoundly changed person. I had greatly disliked the Army and was scornful of any future usefulness from my Army experience.

Now, looking backwards ... perhaps I learned more from my Army service than from my university education?

The Army may have taught me little about chemistry or geology, but I learned

a great deal about working with other people.

I learned that common sense is as rare as a 160 IQ, and probably more valuable.

I learned that real merit does not depend on a college degree, family fortune, athletic ability or personal beauty.

I learned that progress toward important objectives is made by motivating EVERYONE in the unit, not just the leadership.

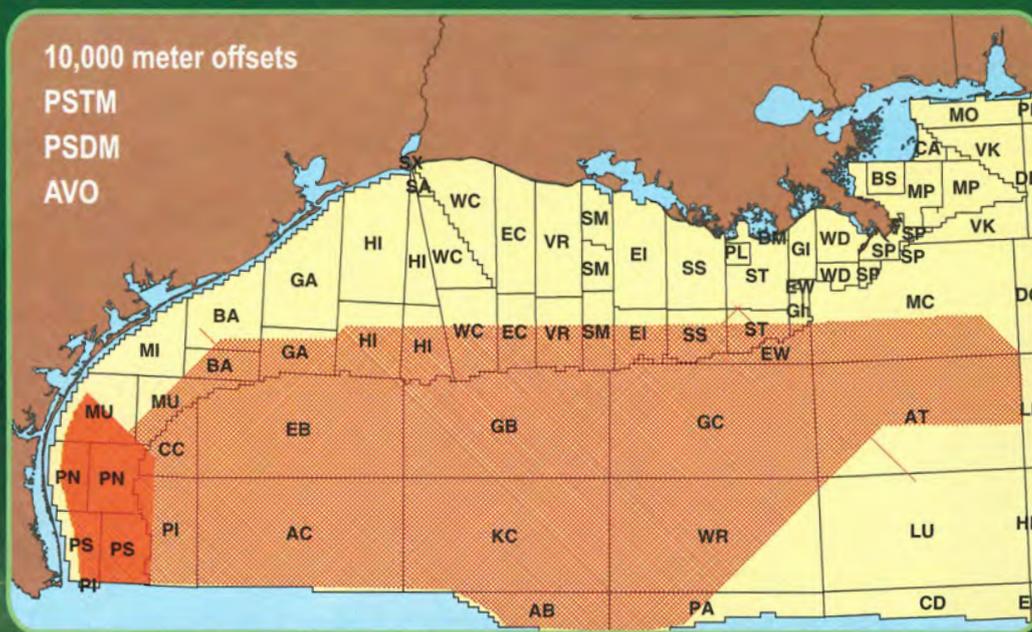
As wisdom is a rare and valuable extract of history and life experiences, I wonder if our readers could share with the EXPLORER some defining moments, a key insight and some wisdom from their careers? (Contact Larry Nation at lnation@aapg.org.)

When I left Inchon, the Army gave me (sort of) a recommendation. It said: "This will certify that Cpl. Marlan Downey is free of vermin and infectious diseases."

I've been wary of recommendations ever since. □

Deep Focus...

A new long offset regional survey in the Gulf of Mexico



For additional details on this program, please contact:

Kenneth Mohn
Fugro Multi Client Services
Tel: +1 713 369 5859
Email: kmohn@fugro.com

Brian Anderson
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When it's a question of understanding... Ask Fugro

INTERNATIONAL BULLETIN BOARD

(Editor's note: This column is for international items of note to the AAPG. News items, press releases and other information should be submitted to the EXPLORER/International Bulletin Board, P.O. Box 979, Tulsa, Okla. 74101; telephone – 918-560-2616; fax – 918-560-2684; or e-mail – dfree@aapg.org.)

By BRENDA CUNNINGHAM
AAPG Global Development Director
Since you're reading this article, it's likely that you're an AAPG member. You've joined the Association for your own reasons – and no matter whether you're a student or a 30-year industry professional, something that the AAPG provides through your membership is worth the price of your annual dues. That's called value.

How is that value generated? For the Association, it's created when its members and staff work together to conceive and execute in a sound business manner a product or service that advances the geosciences and the professional well-being of its members.

The upcoming AAPG International Conference and Exhibition in Cancun, Mexico, is a perfect example.

The efforts of about 30 volunteer professionals, working together with headquarters' meeting planners, publication and abstract coordinators and other support, will implement a conference in October that delivers value to its attendees and the geoscience community. For example:

☐ Conference registrants will receive professional value through the

conference's technical sessions and exhibition, short courses and field trips, and abundant networking opportunities.

☐ The conference's host society, AMGP, will add value to its organization by using its share of the conference proceeds to further its own objectives.

☐ AAPG, after expenses, will utilize any of the conference's surplus to enhance the value of benefits it offers its members worldwide.

The moral of this story?
Value through volunteering!

* * *

AAPG members have many opportunities to volunteer, wherever you are. In this age of technology, volunteerism truly has no boundaries:

- ✓ Volunteer to assist the European Region in the development of its very own conference in Prague.
- ✓ If you're a student, volunteer to

assist with various duties at AAPG's annual meeting or international conference and exhibition.

✓ Volunteer to stand for election to AAPG's House of Delegates or your regional or sectional board and help

shape our collective future.
✓ It's even possible to create your own volunteer job description – just forward your ideas to the appropriate leadership, and see what happens.

* * *

Some of my best industry consulting geology began by volunteering to work on an AAPG event. My employment with Atlantic Richfield, for example, was a direct result of being introduced to an Arco geologist at an AAPG annual meeting who, two years later, recommended me for a staff position there.

In volunteering, I added value to my career and to my bank account as well. Take the time to volunteer – you and your profession will be better for it.

Who knows just what value you'll receive? ☐



Iraq Ministry Uses APPEX London as Forum

The Iraq Oil Ministry took the opportunity of the stage provided by AAPG's APPEX London meeting in early March to make a major announcement of their plans for the future.

Abdullah Kasim Al-Amir, adviser to the Iraq Minister of Oil, told attendees that the country plans to increase oil production from 3.35 million bod in year 2005 to six million bod in 2014, along with increasing associated gas

production of 2,000 mm cfgd to 5,200 mm cfgd.

Al-Amir, speaking at the IHS Global Perspectives Forum portion of the meeting, said that the four million barrel-a-day level can be reached independently, but the additional production target is to "be established with major international companies, through financial investment of about \$6.25 billion" plus an additional \$5 billion for

pumping and pipeline projects.

He also noted the Iraq oil industry "has been greatly harmed during the past two decades," and that major reconstruction already has been successfully achieved. He noted there are great opportunities for the industry in Iraq, and production-sharing and service contracts are open.

The APPEX meeting drew over 300 top-level explorers and included 30 exhibiting companies. ☐



OTC . 04

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3-6 May 2004 Reliant Center Houston, Texas, USA

This is OTC's 35th anniversary and we will have G&G-relevant sessions every day of OTC.

Here's the schedule of the top G&G-relevant sessions, but you can see the schedule of all 49 sessions and technical luncheons at the OTC web site: <http://www.otcnet.org/2004/>

- **Petrotechnical Visualization** (all day session!!!) – NOT PowerPoint slide presentations, these talks will be done with live visualizations!
- **Mass Transport Complexes** (all day session!!!) – how do sediments move around in the deepwater? Come find out!
- **Agbami Ekoli** – ChevronTexaco's giant Nigerian oil field: all you ever wanted to know: from discovery to production.
- **Rock Physics and Seismic Inversion** – with leading rock physicists showing how to find the good stuff!
- **Seismic Inversion for Shallow Geohazards** – it's just as important to avoid some things as to find others!
- **Digital Energy Panel** – top executives from the major oil companies explain what digital will do for their organizations.
- **Natural Hydrates and Production Issues** – is this the future of gas production?

Here are some of the highlights of some of the sessions:

The Significance of Mass Transport Complexes in Deepwater Environments – a summary from session organizer Craig Shipp, co-chairs Bob Bruce and Larry Gibson

- The increasing relevance of mass transport complexes (MTCs) in many aspects of the deepwater E&P business led to the organization of these special sessions.
- MTCs are defined as mostly deepwater features or stratigraphic intervals that have been resedimented (moved) since their time of original deposition. In large part due to confusing terminology, MTCs include slumps, slides, mass gravity flows, debris flows, slope failure complexes, and a host of other confusing terms. The papers in these sessions will involve technical discussions on classification, geomorphology, depositional environment, geotechnical / petrophysical / geophysical properties, and geodynamics.
- The MTC symposium will include two half-day technical sessions on Tuesday. The first session would be dedicated to a more general theme of definition, morphology, stratigraphy, and distribution of MTCs in global deepwater basins. The intent of the first session is to better understand the diversity and terminology used to characterize

MTCs. The second session is focused on modeling/geodynamics and case studies involving MTCs. The purpose of this session is to reveal some of the physical processes associated with MTCs and to illustrate examples where their presence has impacted deepwater operations and subsea development.

Petrotechnical Visualization – a summary from session organizer/cochair James Thomson, co-chair Manuel Poupon

Each author will offer a dynamic, interactive presentation such as a live fly-through of marine data sets. The common themes throughout the session are:

- Integration of multiple data types for greater understanding of offshore technical challenges,
- Positive impact of visualization techniques on business performance. Authors from large and small operating companies, academia, and industry will present topics covering upstream geoscience and engineering from pre-exploration seabed surveys through drilling, reservoir visualization, in-field facilities layout and export pipeline planning and installation. Geographically, the talks will feature case

studies from several basins (West Africa, Columbus-Trinidad, Lake Maracaibo-Venezuela, and Gulf of Mexico), where 3-D visualization techniques have played a key role in successful E&P projects.

The morning section highlights presentations concerning geohazards and seafloor visualization, plus other petrotechnical areas. Specific topics include visualization of multibeam sonar data, reducing risk from seafloor hazards, integration of autonomous underwater vehicle (AUV) data sets, assessment of shallow drilling hazards, and visualization used in analysis of a deepwater pipelay with incidental discovery of a historical shipwreck.

Following the morning presentations focused on drilling/geohazards and pipeline routing, the second session on "Petrotechnical Visualization" will illustrate how 3-D visualization tools have been allied to state-of-the-art technologies (e.g. neural-network seismic classification and tomography-based pore pressure prediction).

Overall, the presentations will cover the complete range of the E&P cycle from new play development, mature field exploitation, pore pressure prediction, well planning to subsea installation and offer a panorama of the strengths (and limitations) of 3-D visualization techniques via fully interactive "live" presentations.



www.update

Online Balloting Proving Popular

By JANET BRISTER
Web Site Editor

Excitement and intrigue are two components I enjoy in the stories I view and read. If it happens in real life – and I'm keen enough to recognize it – it's a bonus.

Well, in a nerdy sort of way, excitement and intrigue are unfolding on the AAPG Web site through the online balloting system.

In the first week of electronic voting 2,451 votes were cast. Of those, 1,426 were handled electronically – that's 58 percent of the vote. By March 1, 737 Active members had cast their vote for the 2004-05 officers.

Just think about it! Never before have AAPG members been able to vote in this manner.

Will convenience lead to increased member involvement in the election process?

Already we've received inquiries at headquarters from members who ask, "Why can't I vote?" The answer: Because the questions come from Associate members, and Associate members are ineligible for voting in the general election.

How many Associate members will be inspired to become Active members because they want to have the opportunity to vote?

Clearly, electronic voting has the potential to make a significant impact on AAPG beyond convenience.

The Question Is ...

To the Active members:

Have you voted yet?

Have you even received your ballot?

If you answered "no" to either of these questions, then here's a treat!

Today – right now – you, as an Active member of AAPG, may follow the blue "ballot box" on the AAPG Web site to the virtual voting booth for AAPG officer elections.

No More Excuses

If you're feeling uninformed about the candidates, don't worry: Biographies on all candidates are provided, as well as the duties and expectations of each office.

Have you yet to receive your paper ballot in the mail? You can still vote today. There's a place in the ballot area to request the necessary log-in details to permit you to cast your vote.

Received your ballot, forgot you voted online and sent it anyway?

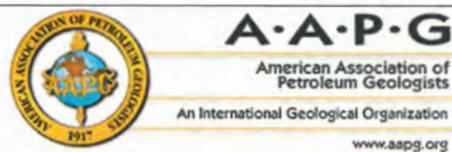
Not to worry. Your paper ballot will override your electronic vote, so you will have still only cast one vote.

By now all members with e-mail have been notified and all paper ballots have been sent. There are no more obstacles preventing members from voting. The "snail mail" factor has been removed.

Now it's a simple matter of motivation. So ... do it!

You want to upgrade your status from Associate to Active? Contact AAPG Member Services at 1-800-364-AAPG (2274) or 1-918-584-2555 and discuss how you may obtain Active status.

Good browsing! ☐



American Association of Petroleum Geologists - 2004 Election

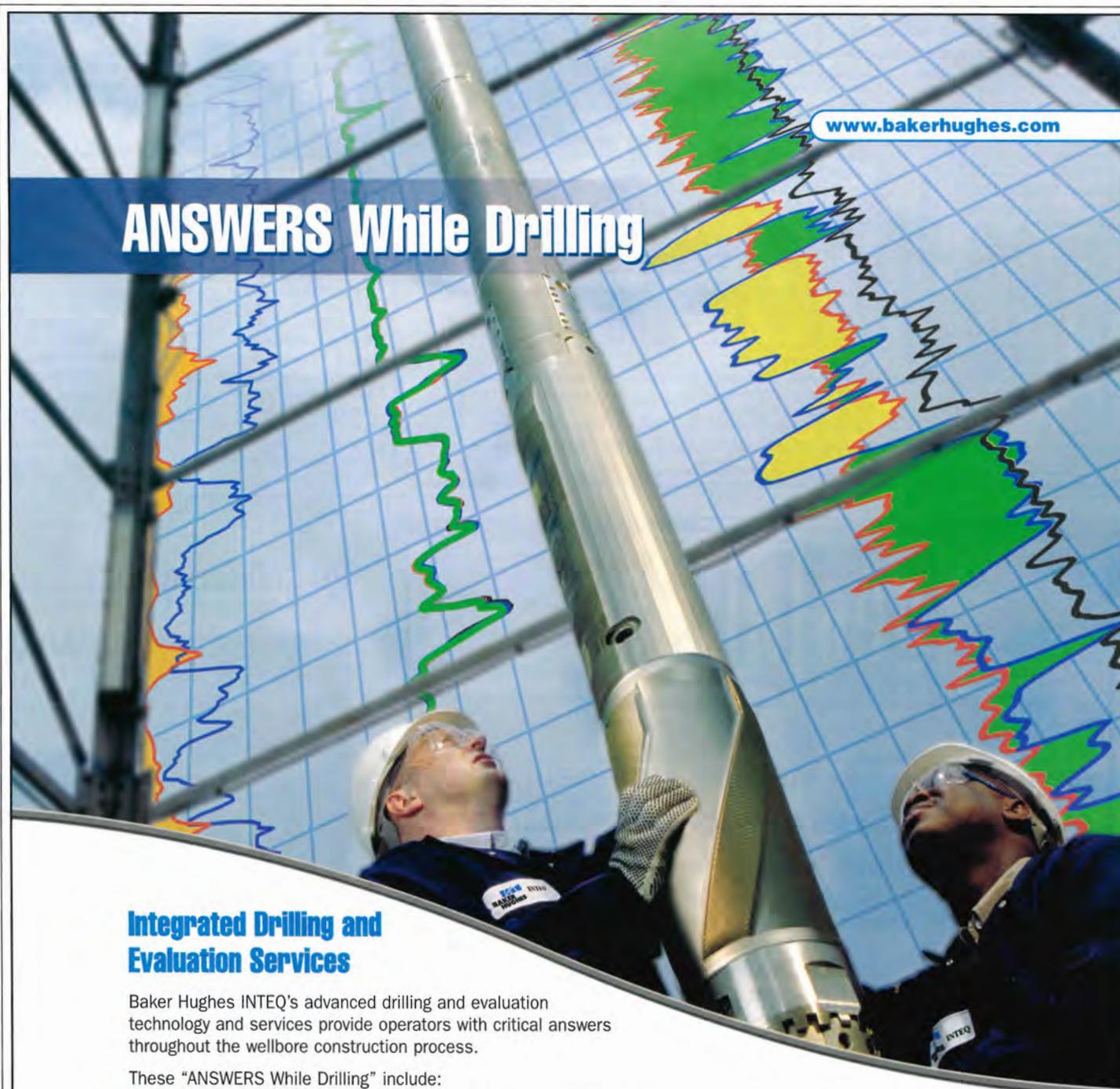
Please enter your login information, which consists of your AAPG Member Number and E-signature for this election sent to you on the e-mail invitation or paper ballot:

You may request your login credentials via the email address on file for you by clicking [e-mail my login credentials to me](#).

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 Jack Hilbert Christiansen
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 page 51

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PROFESSIONAL NEWS BRIEFS

Brian S. Brister, Paul A. Catacosinos and P.R. (Bob) Grant have been elected to the board of the newly formed New Mexico Geological Society Foundation. Brister is with the New Mexico Bureau of Geology and Mineral Resources, Socorro, N.M.; Catacosinos is retired in Albuquerque; and Grant is a consultant in Albuquerque.

James L. Coleman Jr., to associate chief scientist, eastern energy resources team, U.S. Geological Survey, Reston, Va. Previously senior geological associate (retired), BP, Houston.

John P. Cunniff, to principal consultant, Acadiana Consultants/Y2 Marketing, Lafayette, La. Previously alliance coordinator, Schlumberger, Lafayette.

Matthew Duke, to manager-strategic planning, Unocal Thailand, Bangkok, Thailand. Previously coordinator-development planning, Unocal Thailand, Bangkok.

Manny N. Fernandez, to team lead, global geological operations network, Integrated Geological Analysis Group, ConocoPhillips, Houston. Previously team lead-deepwater Gulf of Mexico, ConocoPhillips, Houston.

Brantly Goodwin, to sales associate, John Daugherty Realtors, Houston. Previously business development, Schlumberger Information Solutions, Houston.

Stephen A. Hermeston, senior geologist-Caribbean team, Repsol-YPF, The Woodlands, Texas. Previously geological adviser-Brazil team, Kerr-McGee Oil & Gas, Houston.

Bernard L. "Bernie" Hill has been appointed to the Soniat Canal Drainage Basin Citizens Advisory Board, representing District 2, in Louisiana. Hill is retired and resides in River Ridge, La.

Kirk D. Kiloh, to senior geologist, Forest Oil Corp., Denver. Previously consulting geologist, Lafayette, La.

Louis Liro, to senior exploration adviser, Maxus (U.S.) Exploration, The Woodlands, Texas. Previously principal consultant-geology, Veritas DGC, Houston.

John A. Lopez, to project manager-Coastal Restoration, U.S. Army Corps of Engineers, New Orleans. He recently graduated with a doctorate from the University of New Orleans.

Patrick R. McDonald, chairman and CEO, Nyttis Exploration, Calgary, Canada. Previously CEO, Carbon Energy Corp.-Calgary, Denver.

David J.W. Mitchell, to president and general manager, Canadian Nexen

Petroleum East Al Hajr, Sana'a, Republic of Yemen. Previously vice president-business development, Nexen Petroleum International, Houston.

Phil Moser, to senior geologist, Cimarex Energy, Tulsa. Previously geologist, BP America, Houston.

Bill Mueller, to general partner, Antlers Exploration, Midland, Texas. Previously explorationist, Pure Resources, Midland.

Dan Newman, to exploration manager, Nippon Oil Exploration USA, Houston. Previously manager-geology, Nippon Oil Exploration USA, Houston.

Fadipe Saidi Olaniyi, to M.Sc student in environmental management, University of Wolverhampton, United Kingdom. Previously post graduate student in exploration geophysics, University of Lagos, Nigeria.

Paul Ostendorf, to staff geophysicist-West Africa exploration, ConocoPhillips, Houston. Previously exploration geophysicist, ConocoPhillips Norge, Stavanger, Norway.

Don Page, to general partner, Antlers Exploration, Lafayette, La. Previously owner, Orient Energy Services, Lafayette.

Dwight E. "Skip" Roberts, to vice president-exploration, acquisitions and development, Reef Exploration, Richardson, Texas. Previously manager-geology and geophysics, Prize Energy Corp., Dallas.

Jim Sargent, to manager-exploitation, Nippon Oil Exploration USA, Houston. Previously principal geologist, El Paso Production, Houston.

Robert J. Spang, to advanced geologist, Unocal, Sugar Land, Texas. Previously geoscientist, ChevronTexaco, Bellaire, Texas.

Ione L. Taylor, to deputy regional director-eastern region, U.S. Geological Survey, Reston, Va. Previously chief scientist-eastern energy resources team, USGS, Reston.

James V. White, to exploration geologist, Esso Australia, Melbourne, Australia. Previously geology and geophysicist development specialist, Mobil Cepu, Jakarta, Indonesia.

(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, smoores@aapg.org; or submit directly from the AAPG Web site, www.aapg.org/explorer/pnb_forms.cfm.)

SPOTLIGHT ON EDUCATION

Two AAPG Distinguished Lecturers will speak at various U.S. and Canadian locations in April.

✓ Richard Behl, associate professor, California State University, Long Beach, will be on tour April 5-16, speaking in San Ramon, Calif.; Tulsa; Calgary, Canada; Midland, Texas; Laramie, Wyo.; Billings, Mont.; Bakersfield, Calif.; and Reno, Nev.

He has two lectures: "Methane Hydrates and Climate Change: The Clathrate Gun Hypothesis," and

"Miocene Monterey Formation of California: Plankton to Petroleum, Source to Reservoir."

✓ Anthony Sprague, with ExxonMobil Upstream Research, Houston, will tour April 26-29, speaking in Columbia, S.C.; Pittsburgh; Halifax, Canada; and Milwaukee.

His lecture is "Physical Stratigraphy of Clastic Strata: A Hierarchical Approach to the Analysis of Genetically Related Stratigraphic Elements for Improved Reservoir Prediction."

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MEMBERSHIP AND CERTIFICATION

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

For Active Membership**Alaska**

Anderson, Paul Curtis, Petrotechnical Reservoirs Alaska, Anchorage (reinstatement)

Arizona

Moore, William D., U.S. Army, Hereford

(reinstatement); Nations, Jack D., Nations Geological Consulting, Tucson (W.G. Wellendorf, S.L. Rauzi, C.A. Ferguson)

California

Gray, Robert Stephen, Santa Barbara City College, Santa Barbara (D.S. Kunitomi, D.W. Reynolds, R.O. Beringer); Kanu, Kanu (K-Kay) A., Chevron Nigerian, Ramon (A.O. Akinpelu, B.J. Katz, K. Dempster); Stanley, Richard Graham, U.S. Geological Survey, Menlo Park (H.E. Cook III, K.J. Bird, L.B. Magoon III); Warters, Harry Roderick, consultant, San Rafael (C.A. Sternbach, E.D. Dolly, F.F. Meissner)

Colorado

Conner, John L., retired, Aurora (V.G. Smith, C.W. Campbell, L.J. Amateis); Eschner, Terence Brent, Sarlan Resources, Englewood (S.P. Cumella, S. Eschner, E.K. Beacom); Fontana, John Vincent, Direct Geochemical, Golden (L.A. McCarley, B.C. Crooks, J.E.

Wellborn); Gardner, Michael H., Colorado School of Mines, Golden (N.F. Hurley, M.D. Sonnenfeld, J.B. Curtis); Wallace, John Robert, Delta Petroleum Corp., Denver (W.D. Armstrong, F.S. Walters, W.T. Brown Jr.)

Delaware

McKenna, Thomas E., Delaware Geological Survey, Newark (R.E. Martin, R.N. Benson, P.P. McLaughlin Jr.)

Florida

Boomgaard, Craig, Water Resource Solutions, Cape Coral (D.J. Acquaviva, L.D. Dungan, C.G. Dabbs)

Idaho

O'Sullivan, Paul Brian, Apatite to Zircon Inc., Moscow (L.B. Magoon III, M.B. Mickey, K.J. Bird)

Illinois

Pottorff, Douglas H., Booth Oil Co., Flora (J.E. Blumthal, R.L. Snyder Jr., J.R. Coffroth)

Indiana

Lemberger, Robin Hugh, consultant, Wabash (W.A. Zagorski, C.C. Moyer, P.R. Peron)

Iowa

Jacobson, Carl E., Iowa State University, Ames (C.F. Vondra, M.P. Cloos, W.L. Watney)

Kansas

Seeber, Dean Eugene, consultant, El Dorado (R.D. Cowdery, W.C. Bradley, D.E. Donner)

Louisiana

Broussard, Mary E., Stone Energy, Lafayette (T.L. Rynott, W.M. Cox, R.B. Brekke); Carlson, Douglas A., Louisiana Geological Survey, Baton Rouge (C.J. John, R.K. Zimmerman, F.C. Breland Jr.); Klibert, Reuben Joseph Jr., Diversified Well Logging, Metairie (G.C. Hingle, C.C. Christina, J.G. Butera); Mautz, Warren Alden, Shell Oil, Mandeville (J.T. Leftwich Jr., E.W. Cumming, J.V. Bikun); Sceroler, Craig J., consultant, Baton Rouge (E.G. Kavanaugh, J.B. Adams, A.J. Ross)

Michigan

Johnston, Matthew Allen, West Bay Exploration, Traverse City (M.M. Matson, P. MacKenzie, L.H. Wickstrom)

Nevada

Prothro, Lance Blanchard, Bechtel Nevada, Las Vegas (K.B. Rice, C.H. Schaftenaar, J.B. Hansen)

New Mexico

Ashley, Mark W., Yates Petroleum, Artesia (H.T. Miller, J.E. Amiet, S.G. Reid); Lawton, Timothy Frost, New Mexico State University, Las Cruces (M.G. Rowan, W.R. Dickinson, R.T. Buffler); Nowak, Henry Charles, Yates Petroleum, Artesia (J.E. Amiet, F.R. Scheubel, W.H. Alderman)

New York

Cranganu, Constantin, Brooklyn College, Brooklyn (D. Deming, C.J. Mankin, J.A. Nunn)

North Carolina

Young, Robert Steven, Western Carolina

University, Cullowhee (D.M. Bush, R.D. Perkins, S.D. Heron Jr.)

Ohio

Morgan, James C., Franklin Gas & Oil, Wooster (J.J. Hanlon, R.A. Riley, L.H. Wickstrom)

Oklahoma

Bond, Larry J., Special Energy Corp., Edmond (P.A. Bryden, J.O. Puckette, J.G. McCaskill Jr.); Cemen, Ibrahim, Oklahoma State University, Stillwater (G.F. Stewart, J.W. Shelton, Z.F. Al-Shaieb); Lowry, Jack K., Chesapeake Energy, Oklahoma City (reinstatement); Lynn, William Roger, Lamamco Drilling, Skiatook (D.H. Schroeder, D.A. Brierley, J.K. Hays); Neman, Robert Lynn, East Central University, Ada (R.W. Allen, M.D. Allison, T.W. Olsen); Potts, Mark C., Potts Exploration, Oklahoma City (R.H. Potts, R.L. Stephenson, M.S. Svoboda)

Pennsylvania

Alexandrowicz, Neal David, Equitable Production, Pittsburgh (P.D. Jerome, L.J. Morris, M.R. Canich Jr.)

Texas

Black, Cynthia E., Digital Prospectors, Midland (J. Wilson, T.E. Fekete, D.A. McMahon Jr.); Brandon, Mark Allen, Brandon Energy, Tyler (S.M. Burke, R.L. Woodward, E.L. Trice III); Dugan, Joseph Patrick Jr., consultant, Dallas (J.E. Cardoso-Neto, W.F. Wilson, J.A. Gibbs); Fishman, Noah, consultant, Midland (reinstatement); Glover, Michael Charles, consultant, Albany (D.F. Martineau, B.N. Shepherd, B.G. Salters); Hammes, Ursula, Bureau of Economic Geology, Austin (R.G. Loucks, C. Kerans, S.P. Dutton); Honeyman, Leslie Robert, Honeyman Exploration, Midland (A.T. Carleton Jr., L.J. Seright, G.D. Hinterlong); Jay, Jere B., INNEX Energy, Plano (L.S. Pittman, J.M. Doyle, S.A. Gordon); Jennings, James William Jr., University of Texas at Austin, Austin (F.J. Lucia, C. Kerans, S.C. Ruppel); King, Kevin C., ExxonMobil, Houston (reinstatement); Mills, Mark E., PGS, Houston (reinstatement); Lucas, Darran John, Nexen Petroleum, Houston (P.L. Horsfall, S. Gardiner, D.J.W. Mitchell); Mosley, Michael Alan, Trend Exploration, Midland (reinstatement); Nicholson, William Craig, independent, Abilene (R.N. Taylor, L.M. Thomas, A.D. Frizzell); Nwogbo, Nonyerem Charity, ExxonMobil, Spring (reinstatement); Shang, Zhucheng, Marathon Oil, Houston (M.C. Barnes, J.N. Dyess, J.V. Milliken); Whitsitt, Philip Mark, independent, Midland (D.T. Grace, A.H. Smith, S.L. Shaw)

Virginia

Saddington, Mary Jane, consultant, Poquason (reinstatement)

West Virginia

Wilson, James Keith, Cabot Oil & Gas, Charleston (P.E. Towey, S. Hirsch, T.S. Liberatore)

Wyoming

Dolan, John David, First Interstate Bank, Casper (G.R. George, R.E. Hudson, S.H. Hollis)

Greenland Licensing Round 2004 : 1 April – 1 October

The Licensing Round offshore West Greenland is open from 1. April and closes for application on 1. October 2004.

After 1 April the licensing material can be downloaded from the web-site of the Bureau of Minerals and Petroleum (BMP), Government of Greenland:

<http://www.bmp.gl> or can be mailed to you on request. New licences will be granted around New Year 2004/2005.

Four licensing areas with major prospects are open for applications between c. 62°N and 69°N offshore West Greenland. Each area covers possible 4-way dip closures larger than 100 km², mapped with all available modern seismic data (more than 50,000 km) - each closure capable of holding more than 5 billion barrels of oil in place. Much new data exists from the region, including seismic data and new oil containing sea-bed samples. Exploration news and links to the data owners are available through the GHEXIS newsletter for exploration in Greenland: www.geus.dk/ghexis

Visit the **GREENLAND** booth in the **AAPG International Pavilion 2004** in Dallas for more information. Further enquiries concerning the licensing round may be directed to Mr. Jørn Skov Nielsen, Assistant Deputy Minister, Bureau of Minerals and Petroleum, phone +299 34 68 06; e-mail: jsn@gh.gl.

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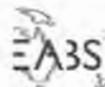
Adelaide, Australia, 19–22 September 2004

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Field Trips: Expanding coal seam methane production in the Sydney Basin - a commercial, geotechnical and operational perspective, and World-class mineral deposits of the Lachlan Orogen

www.aseg-pesa2004.org.au

Say G'DAY at the Australian booth, AAPG exhibition in Dallas, 18–21 April 2004

Certification

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

Petroleum Geologist

Louisiana

Frazier, David T., consultant, Monroe (reinstatement)

Texas

Dow, Wallace G., consultant, The Woodlands (R.R. Gries, N. Waechter, R.W. Sabaté); Sinclair, Steven W., Matador Resources, Dallas (V. Schulz, E. Frodesen, C. Goebel)

Nigeria

Agbuza, Monday Aidelojie, NNPC-NPDC, Benin, Edo (A.A. Carim, A.O. Akinpelu, A. Adesida)

Petroleum Geophysicist

Alaska

Shellenbaum, Diane P., ConocoPhillips Alaska, Anchorage (D. Dickey, M.J. Faust, B.M. Campbell)

Texas

Lian, Nina C., consultant, Houston (M.I. Ingram, M.A. Cocker, C.R. Bissell)

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Brazil

Rostirolla, Sidnei Pires, University Federal Do Parana, Curitiba (C.J.D. Abreu, R.N. Ayup-Zouain, N.C. Azambuja Filho)

Canada

Galant, Robert J., Nexen Canada, Calgary (D.A. Leckie, B.J. Hicks, R.K. Anderson)

Denmark

Lieberkind, Kirsten, Maersk Oil and Gas, Copenhagen (N. Westphal, D.W. Dorn-Lopez, L.N. Jorgensen)

India

Bansal, R.S., ONGC Ltd., New Delhi (P.M. Lloyd, J. Kaldi, K. Palakshi)

Indonesia

Kuswardhany, Theresia K., CNOOC, Jakarta (N. Guritno, W.A. Gajkowski, S. Syafar)

Mexico

Rocha-Legorreta, Francisco, Institute Mexicano del Petroleo, Mexico City (J.W. Harbaugh, I. Lerche, J.N. Kellogg)

Norway

Zwach, Christian Herbert, Norsk Hydro ASA, Sandvika (A. Wilhelms, T.M. Egebjerg, J. Efsthathiou)

Saudi Arabia

Alhomoud, Sohail Abdul Aziz, Saudi Aramco, Dhahran (T.H. Keith, A.M. Al-Afifi, I.A. Al-Ghamdi)

Thailand

Pambayuning, Sherry M.R., Unocal Thailand, Bangkok (C.A. Oglesby, G.A. Livesay, P.A. Dooley); Wanapisarn, Rucharee, Unocal Thailand, Bangkok (C.A. Oglesby, P.A. Dooley, A. Napattalooing)

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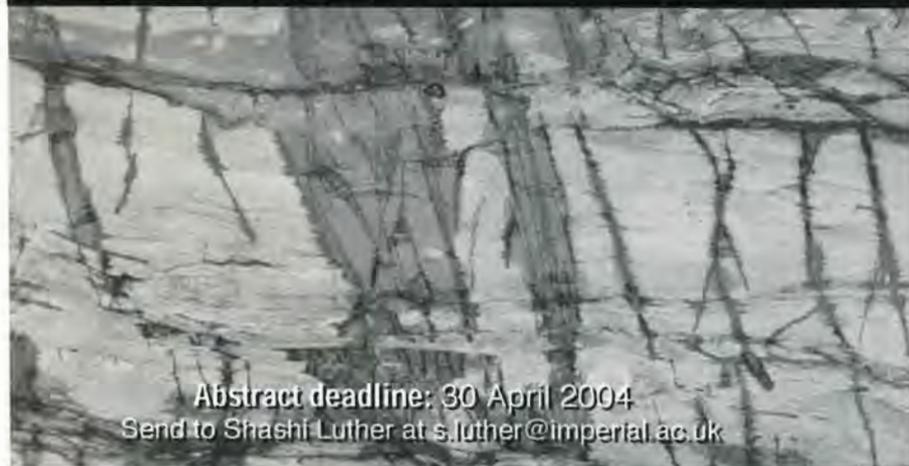


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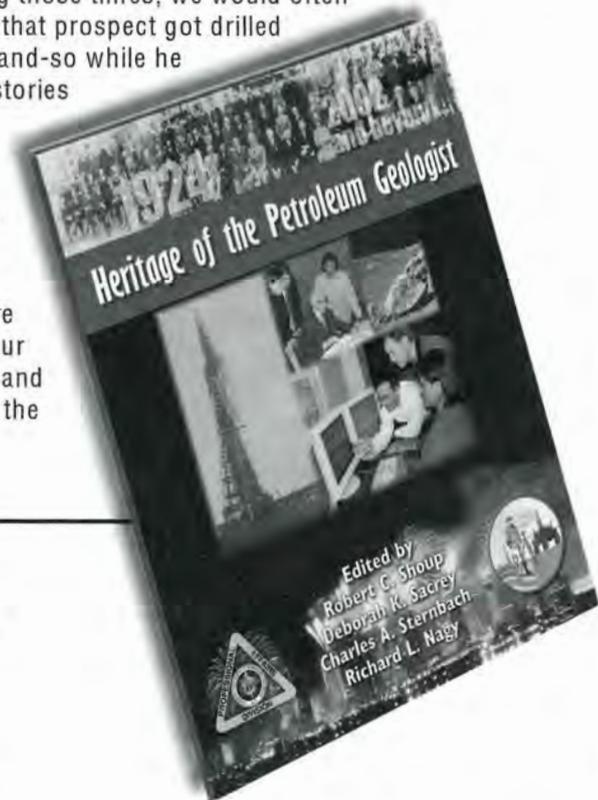
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READERS' FORUM**'Nuff Said**

Although the recent revival to get the AMERICAN out of the AAPG seems to have simmered down, I could not help but notice that the first listed sponsor of the upcoming Offshore Technology Conference in Houston in May is the American Association of Petroleum Geologists, followed by the American Institute of Chemical Engineers, the American Institute of Mining, Metallurgical and Petroleum Engineers, and the American Society of Mechanical Engineers - Petroleum Division.

On down the page, under the heading "Supporting," the first two named are the American Petroleum Institute and the Independent Petroleum Association of America.

'Nuff said.

Robey H. Clark
Amarillo, Texas

Language, the Occasional Barrier

As a Brit who finished his formal education in the United States 40 years ago I am quite happy to be a member of the American Association of Petroleum Geologists, and also a member of the European Association of Geoscientists and Engineers (31 percent of whose membership have non-European addresses).

However, one of the pitfalls of multinational membership is the differing usage of the English language.

The headline on page 4 (February EXPLORER) read "Proposed Bylaw Changes Slated." In England that means that they were criticized extremely harshly.

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.

The text suggests that was not what was meant.

George G. Leckie
Coulson, England

Giving Weeks Credit

The story of "Weeks Vision" (January EXPLORER) was very interesting to me - not only because of my very direct involvement in the Esso-BHP exploration in the Gippsland Basin, but also because of my personal contacts with Lewis Weeks, either individually or through my father, L.T. Barrow, who was heavily involved in the exploration effort of the former Humble Oil & Refining Co.

Unfortunately, I believe it contains some minor errors and fails to give Lewis full credit for some of his other important visions.

Broken Hill Proprietary (BHP) was not involved directly in some of the earlier unsuccessful efforts to find oil and gas in Australia. However, they must have observed the unsuccessful efforts of Stan-Vac, a jointly owned subsidiary of the Standard Oil of New Jersey, now Exxon, and the Vacuum Oil Co., a subsidiary of the Standard of New York, later to become Mobil.

As early as the mid-1950s, Stan-Vac approached me to help them with an exploration program in western New South Wales, which was to be based on the old mining town of Broken Hill. It sounded interesting, but based on my

modest attempt to evaluate the geology from the literature and the very negative reaction of my father, who was a close friend of Lewis Weeks, we turned this offer down. Hindsight clearly shows that this was the right decision.

Sometime subsequent to this, BHP hired Lewis Weeks (shortly after his retirement from Standard Oil Co. of New Jersey) as a consultant to help them find oil and gas in Australia. As the article indicated, this led to their acquiring a concession offshore Australia in the Gippsland Basin. He also advised them to limit their economic risk by farming the concession out to a major international oil company.

I have been told informally that both Shell and the Standard Oil Co. of New Jersey (Esso) were interested, and that Weeks strongly recommended that it be given to Esso.

Weeks' influence was strongly felt in many other areas. He had previously pointed out that basement rocks had been encountered at shallow depths around Bangkok, but thick Tertiary rocks outcropped in Sarawak that apparently had been deposited in a deltaic environment suggesting a Tertiary delta derived from the Himalayan Mountains probably existed in the Gulf of Thailand.

Weeks was right, and there was indeed a large basin filled with Tertiary sediments that have furnished both Thailand and Malaysia significant

resources. Our Malaysian concession added significantly to Esso's reserves in later years, but to my knowledge, he was never given the credit he deserved.

Thomas D. Barrow
Houston

Stress Reducer

In the January EXPLORER, Steve Sonnenberg listed a number of compelling business reasons to become involved in public outreach. Reversing declining enrollment in schools, regenerating the work force and improving our public image are significant challenges.

More often than not, however, I hear my fellow geoscientists lament, "I just don't have the time."

Having spent over 30 years in a number of public outreach efforts, I'd like to offer some other reasons to get involved. Surprisingly, perhaps, these reasons are all personal.

Like it or not, this is a stressful business. Mergers, acquisitions and a reduced domestic playing field have caused continual work force reductions. Rapid technological change has added additional stress. There seems to be no end in sight. Ours is, however, an enormously exciting field, with access to incredible technology and no shortage of problems to tackle.

People deal with stress in a variety of ways, the best of which is probably daily exercise and time spent with the family. Public outreach can also help. When I work with students, museum staff, run

continued on next page

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field trips or consult with organizations like UNESCO or the Egyptian Department of Antiquities, I return to my roots. I rediscover the reasons I chose to become a geologist.

My family shares in that rejuvenation. We have spent years combing for fossils for the Denver Museum of Nature and Science, jeeping through the Egyptian desert with archeologists, or helping run field trips at Dinosaur Ridge.

We meet new people sharing the same passion for volunteering. New friends always ask, "What do you do for a living?" As I answer, I once again marvel at the incredible opportunity I am given. I talk about going to work and unraveling the earth's history. I talk about

the risks and the rewards, the excitement of discovery and the depression of a dry hole.

I can feel their astonishment when they hear about the high costs, or sit next to me on a workstation and see the tools I use.

In return, they teach me. I have learned things about vertebrate paleontology, archeology, history, field biology and art that I could not have been exposed to in books ...

Volunteering reduces my stress and keeps me excited to be a geologist. It balances the pressures at work, puts tough business decisions in perspective and makes me grateful I have taken this career path.

John Dolson
Sunbury, England

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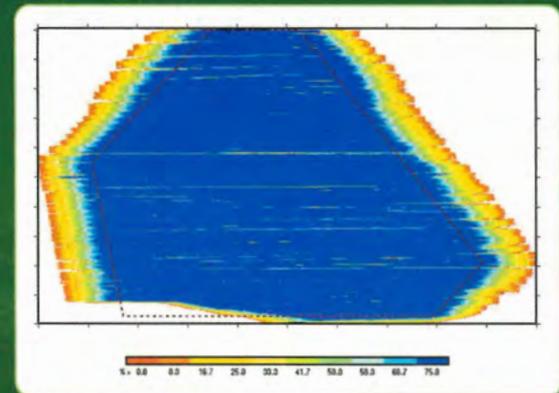
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(Editor's note: "In Memory" listings are based on information received from the AAPG membership department. Age at time of death, when known, is listed. When the member's date of death is unavailable, the person's membership classification and anniversary date are listed.)

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EXPRESSION OF INTEREST

The Petroleum Division of the Department of Petroleum and Energy is responsible for the planning, promotion and management of Papua New Guinea's petroleum resource development. To strengthen the capacity of the Petroleum Division in the management of the petroleum sector development, the Government of Papua New Guinea is implementing a World Bank-funded project called the Gas Development and Utilization Technical Assistance Project (Ln. No. 7019-PNG).

Under the Technical Assistance project, the Petroleum Division wishes to engage the services of an individual expert with extensive experience in the assessment and evaluation of discovered and undiscovered petroleum resources to assist its Exploration and Engineering staff in a major petroleum resource evaluation study of the country. The person should be suitably qualified and able to work proactively and interactively with the Exploration and Engineering staff for an initial period of three months. The expert should be able to provide guidance and responsible advice on petroleum resource evaluation to the staff concerned. Training is a vital and essential component of the service; hence it will be a requirement that the expert must be able to structure a training program for the staff at the outset of the engagement. Overall, these services should provide the basis for the staff to maintain and continue with this work in the longer term.

Expressions of interest are therefore invited from qualified and experienced individuals (not firms) with appropriate expertise. Minimum qualifications required are: a degree in petroleum geology, petroleum geophysics, petroleum engineering, or similar qualification from a recognized university; fifteen years work experience in the petroleum industry with a strong emphasis on petroleum resource assessment and evaluation; and prior resident employment experience in a developing country.

Interested persons should provide information indicating that they are qualified and capable of providing the required assistance by submission of their curriculum vitae and references together with description of similar assignments undertaken, experience in similar conditions, and appropriateness of skills. Further information may be obtained only on written request.

Expressions of Interest may be delivered by mail, fax or e-mail only to the address below by 30th April 2004.

Attn: Project Manager, [Ref: EXP 021]
Gas Development and Utilization Technical Assistance Project,
Department of Petroleum, Petroleum Division
P.O. Box 1993, Port Moresby
Papua New Guinea
Fax: (675) 322 4222 E-mail: GasTAPProcMgr@petroleum.gov.pg

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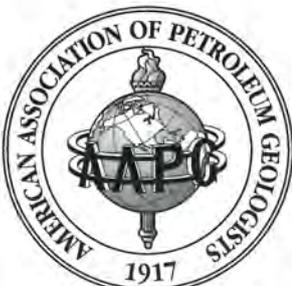
The American Association of Petroleum Geologists, a Tulsa, OK-based non-profit association with 30,000+ members worldwide, seeks replacement for the Geoscience Director.

The Geoscience Director is responsible for managing the initiation, implementation and marketing of the association's scientific publishing projects. The Geoscience Director will also be responsible for managing the development and transfer of digital technical information via AAPG Web site and other media.

The position directs the activities of the BULLETIN, Special Publications and DataPages and is liaison with appropriate AAPG Committees, including the Executive Committee.

The successful candidate must have an advanced geoscience degree and be an Active Member of AAPG. Candidate must have a strong working knowledge of petroleum geology with broad industry experience of a minimum of 15 years with management and personnel development experience as well as an up-to-date technical background.

Applicants should send a letter of application, and resume with complete employment and salary history. The applicant must include three business or professional references, including phone, fax, addresses and e-mail, who are familiar with the applicant's professional qualifications.



Send all applications to:
Richard D. Fritz, Executive Director
American Association of Petroleum Geologists
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The University of Oklahoma invites applications and nominations for a tenure-track 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 Assistant or Associate Professor level. The successful candidate should have an excellent demonstrated or developing research record and the vision to establish a strong research program in pure and/or applied structural geology/tectonics. The candidate must also be an excellent educator, with commitment to both 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.

Initial screening of applicants will begin in Spring of 2004. The position will be available as early as Fall 2004, and the search will remain open until the position is filled. Applicants are encouraged to submit a complete vita/resume, statement or 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. Shankar Mitra, Chair of the Structural Geology/Tectonics Search Committee, at (405) 325-4462, or smitra@ou.edu. Applications and nominations should be addressed to

Structural Geology Search Committee
School of Geology and Geophysics
University of Oklahoma
100 E. Boyd Street, Room 810
Norman, OK. 73019-1008

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DIRECTOR'S CORNER

AAPG Begins Software Changeover

By RICK FRITZ

Leo Tolstoy said that "everyone is trying to change the world, but no one ever thinks of trying to change themselves."

A few weeks ago, a very important decision was made to take an important step regarding changing "ourselves" for the future of AAPG. The Executive Committee approved the acquisition and implementation of two new important software packages that will be the cornerstone for future AAPG activities.

After a comprehensive review of software utilized by professional associations and societies, AAPG's IT subcommittee recommended iMIS for the association management software, and Great Plains, for the accounting functions.

Over the past 20 years, AAPG has had one of the top custom association software programs in the industry built on an AS400 platform.

But while AAPG's IT department has done a great job of keeping up with the needs and demands of AAPG members, new off-the-shelf association software packages have surpassed our in-house system and do not require the constant custom development and related expenses.

Great Plains is a Microsoft financial product with an excellent reputation in the not-for-profit industry. It will serve AAPG and the AAPG Foundation financial reporting requirements extremely well.

Great Plains is a Microsoft financial product with an excellent reputation in the not-for-profit industry.

iMIS-integrated Management Information Systems is one of the most widely used software for societies and associations. The software, developed over 10 years ago by ASI (Advanced Solutions International), is utilized by over 2,400 organizations. In the review process, iMIS kept coming up as the primary software being used by many societies, including several of our sister societies such as SEG and GSA.

The success of iMIS as association management software can be traced to four main areas:

- ☐ A complete, professionally packaged end-to-end business and e-business system, built to manage almost every aspect of AAPG.
- ☐ It should not become obsolete, because iMIS is always upgradeable.
- ☐ Advanced Solutions International, iMIS creator, has a goal and vision to increase user productivity while making the product easier to use.
- ☐ Includes specialized service and support that have won industry-wide recognition.

The cost associated with these choices was very carefully considered. The total cost for the software, implementation and new hardware is approximately \$500K. However, AAPG and the AAPG Foundation anticipates a payback for the new system in two to four years when considering cost savings and comparing the costs associated with upgrading and maintaining AAPG's current system.

The estimated time for completion of the implementation is the first week in July.

The primary benefits AAPG and its members will receive from the new iMIS and Great Plains software include:

- ✓ Cost effective Web-based solutions, which will allow for the Internet to become the central portal for conducting business and communicating with membership.
- ✓ Empowering AAPG members and staff to perform tasks and create reports and events on the Web without relying

on AAPG's IT department.

- ✓ Improved and streamlined efficiency in AAPG's business, membership and committee processes.
- ✓ Improved sales and marketing activities using technology to deliver strategic, personalized programs.
- ✓ Greater communication among multiple databases that requires back-and-forth integration between the management system and various Web and internal databases.

Members can currently register for the annual meeting in Dallas and pay dues online. The iMIS system will provide members with maximum Internet access to most of AAPG's services and products, including the ability for each member to check and update their membership files.

AAPG members live in a constantly changing world. AAPG is continually exploring ways to change with member needs and make AAPG products and services better, easier and less expensive to access.



(Note: Thanks to AAPG business director David Lange for co-writing this Director's Corner.)

Because of Our Past, We Have a Future

DPA Applauds Scientific Heritage

By BOB SHOUP
DPA President

What would you have done if, on the first day of your job, you were shown to your office and informed that your workstation was loaded and ready to go.

You turn on your workstation, and your boss comes in and says "the Waytoobig Oil Company just had a Siph davisii discovery six miles east of our lease. Take a look at it and tell me if we have anything like it on our acreage."

You can't simply push a few buttons on your workstation and have the answer. Technology has provided many great tools to help you, but none of them operate independently of you.

You need to know the section, the reservoir type and quality, the nature of the trap.

You need to put it all together – and understand it.

Fortunately for you:

Many past workers have developed a timetable based on foraminifera, so you can know immediately where in geologic time the discovery resides.

Other workers have developed sea level charts, so you can determine the likelihood that the reservoir was deposited in a deltaic or a turbidite setting.

Still more workers have developed an understanding of the reservoir distribution in those depositional settings.

In short, their review process qualifies them to be counted among the best of the best, the A-Team of the Association.

The combined contribution from these past workers is our heritage – and without that heritage, you could not even begin to answer your boss' question.

It was for the preservation of our heritage that a group of geologists met in Tulsa in 1917 and founded the AAPG. The industry at that time was still in its infancy, Spindletop had been found only 16 years earlier and the science of geology was beginning to be accepted in the burgeoning oil industry – although doodlebuggers and frauds were still in ample supply.

The founders listed several purposes they had for the Association, and among them were:

- ✓ To advance the science of geology, especially as it relates to petroleum, natural gas, other subsurface fluids and mineral resources.
- ✓ To disseminate information relating to the geology and the associated technology of petroleum, natural gas,

other subsurface fluids and mineral resources.

- ✓ To inspire and maintain a high standard of professional conduct on the part of its members.
- ✓ To provide the public with means to recognize adequately trained and professionally responsible geologists.

The second two of these purposes are the core reasons for the formation of the DPA. Those AAPG members who are certified have been through an intense peer review of their ethical and professional conduct, and have been found to meet the highest standards of professionalism.

In short, their review process qualifies them to be counted among the best of the best, the A-Team of the Association.

Those four purposes, taken together, meant that the heritage provided by those pioneers in the industry was based on the best science it could be – and that it would be preserved for those of us in the future.

The workstation and all of the other



technology we have at our fingertips is the future. Embrace it, for it will help you drill economic discoveries.

But let's not forget to celebrate our past, for without it, we could not find the next prospect.

It is in recognition of the importance of celebrating our past that the Division of Professional Affairs has named Michel T. Halbouty to be the first recipient of the DPA Heritage Award, which will be presented to Michel at the DPA Honors and Awards Banquet in Dallas.

Other DPA awardees this year are Pete Gray (Life Membership) and Rick Fritz (Distinguished Service). ☐

know it



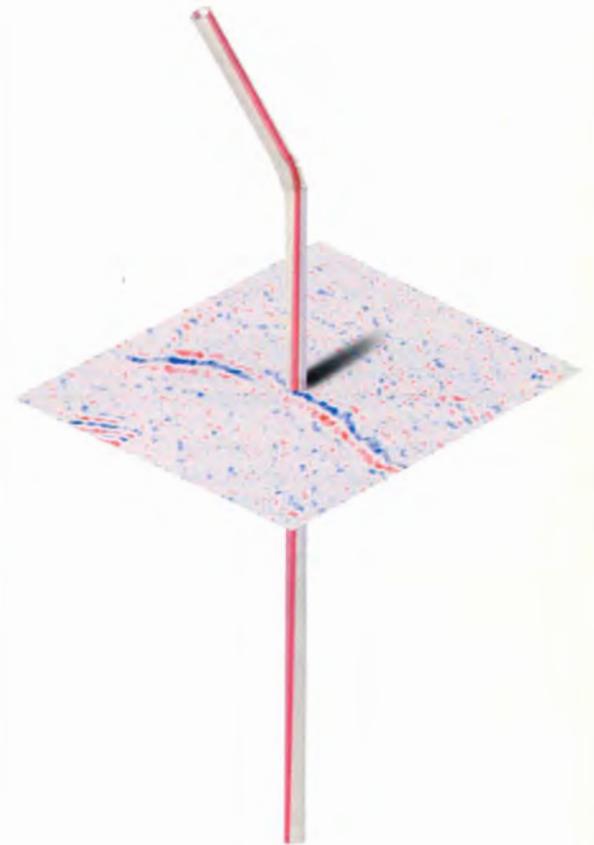
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