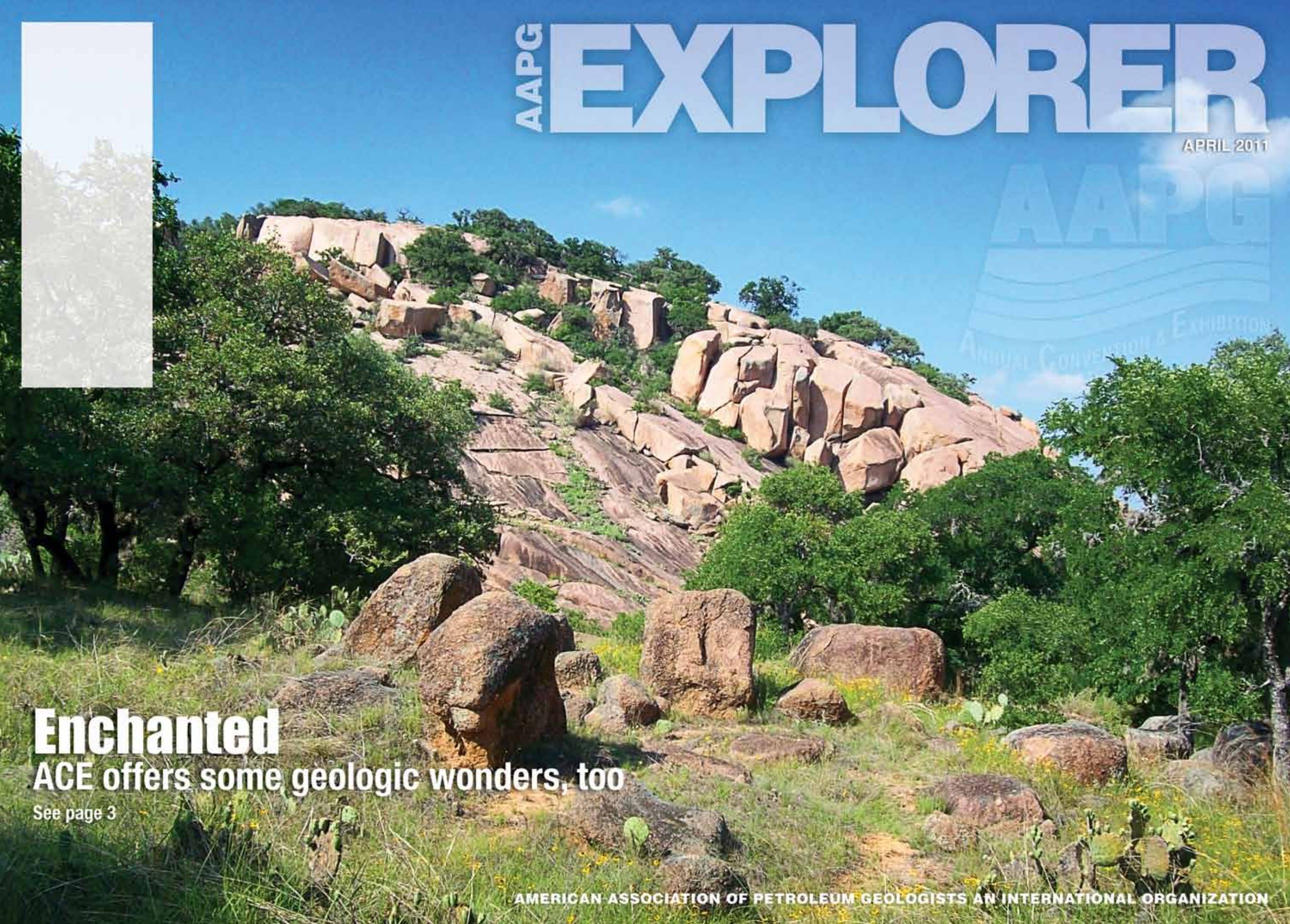
AAPG EXPLORER

APRIL 2011



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See page 3

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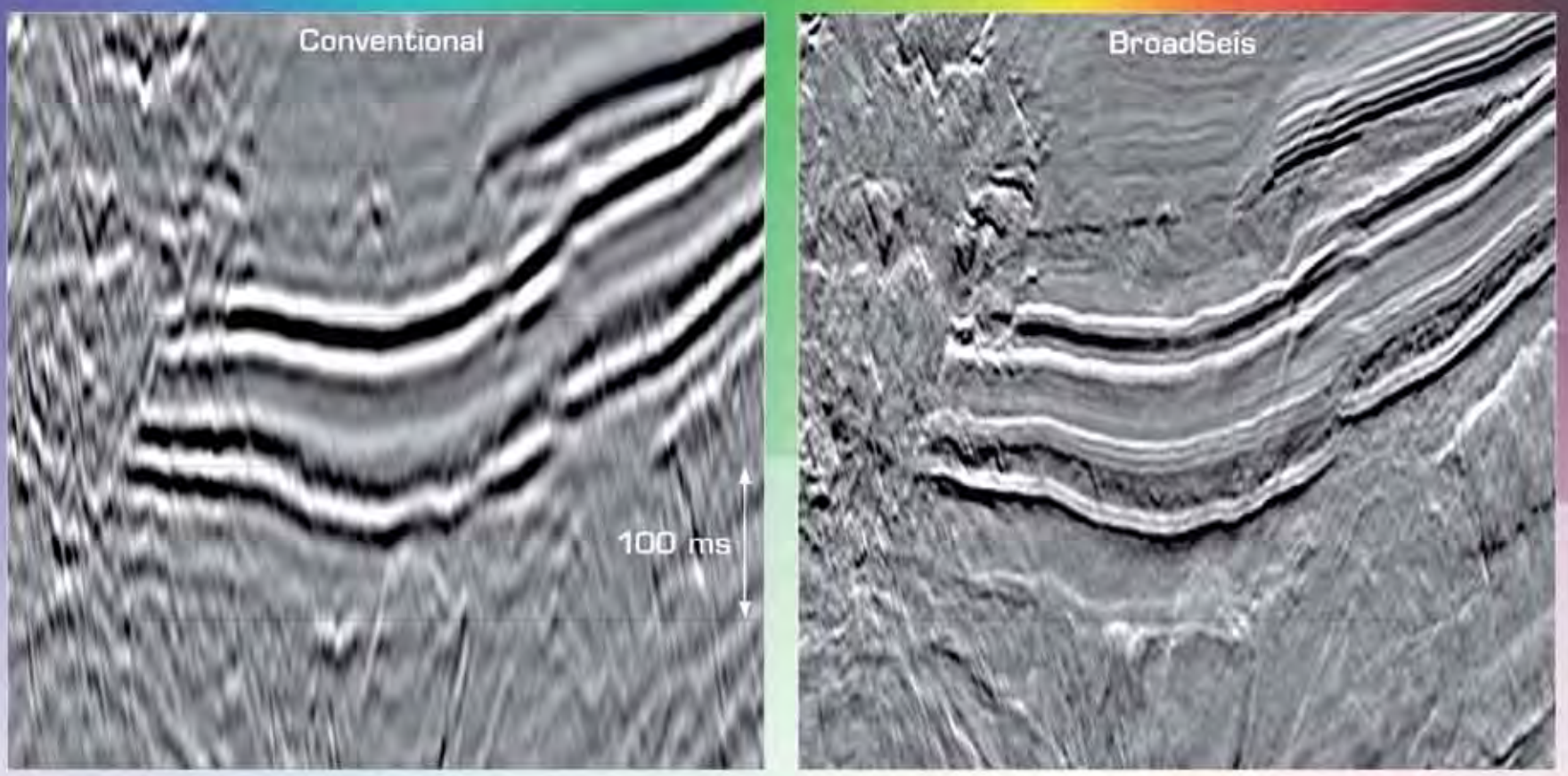

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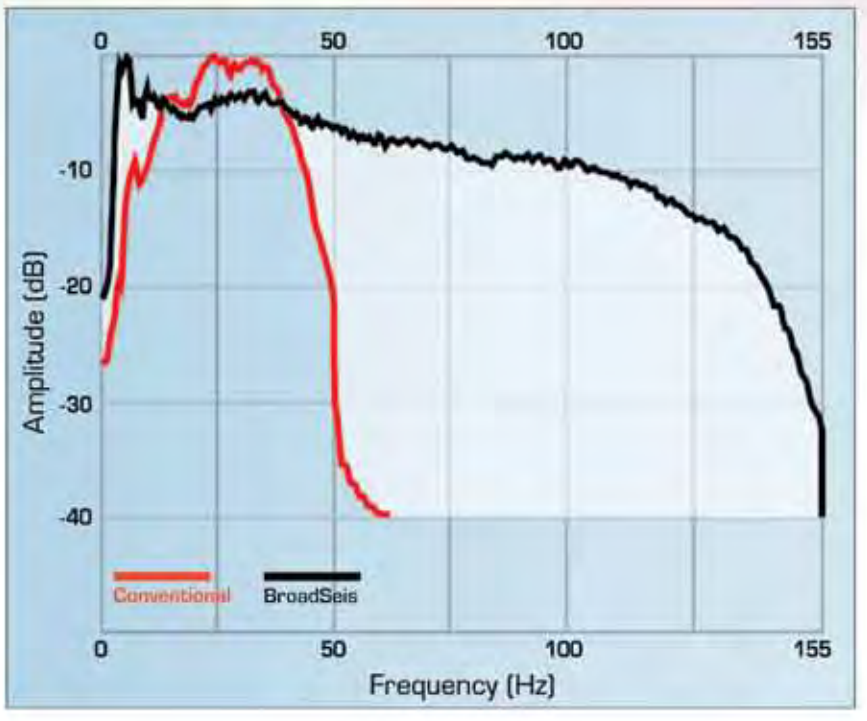

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Vol. 32, No. 4
APRIL 2011

AAPG EXPLORER

PRESIDENT'S COLUMN

Upon Reflection, Some Things Haven't Changed

By DAVID G. RENSINK

Clearly old guys should not reflect on their careers in public; it apparently is not a pretty sight.

I was standing on the exhibit floor of the George R. Brown Convention Center at NAPE (North American Prospect Exposition) in mid-February considering the fact that we will be standing there this month at the AAPG Annual Convention and Exhibition, and reflecting on the path that has taken me to this point in my career. I apparently had a funny look on my face, because one of our members asked if I was feeling all right.


RENSINK

Fortunately, melancholy is not a fatal condition.

* * *

NAPE, as the name implies, is a venue to buy and sell prospects (see related story, page 60). It also is a place to network and re-establish connections with former colleagues. Many companies, which may not have prospects to sell or have no current interest in acquiring prospects, exhibit at NAPE merely to keep their names visible to the industry.

Success in this industry can depend on whom you know as much as on what you know.

During my visit to NAPE I stopped by a few booths simply to watch the geologists as they attempted to sell their prospects to prospective investors. As much as the technology has advanced since I started in this industry, the mechanics of selling a drilling prospect has not changed much. It still involves – at a minimum – a map demonstrating the structure and trapping configuration, a log that characterizes the reservoir, well information that sets up the prospect and a seismic line that ties it all together.


NAPE 2011 once again was a popular venue to buy and sell prospects.

Granted, more data than that went into the generation of the prospect, but those displays are all that are needed to generate an interest in the prospect.

It was true 40 years ago and it is still true today, that the judicious use of color sells prospects. It draws attention to and keeps the focus on the area of interest. There is no better way to see subtle variations – and that is particularly true on seismic data.

Do people really buy deals on the exhibit floor of NAPE based on the strength of that sort of presentation?

The answer is a qualified yes – qualified, because commitments are made subject to a due diligence examination of all the data pertaining to the prospect and the execution of mutually acceptable agreements.

A high level of trust is extended by both parties in such a handshake agreement. The buyer trusts that the prospect is as portrayed, but will still verify it through a thorough examination of all available data. The seller trusts the buyer will honor the financial commitments, but will verify it through the execution of a suitable operating agreement.

As I noted in this column last month, professional ethics are as integral to the practice of geology as is the science.

* * *

You have no doubt heard that AAPG Executive Director Rick Fritz is leaving AAPG after the annual meeting to return to the industry (see related story, page 6). We all reach a point in our careers when it is time to make a change, and for Rick that point is now.

I want to thank Rick for all of the hard work and the long hours he has expended as executive director of AAPG. I also want to congratulate him for the many successes he has enjoyed and made possible in that position. AAPG has benefited greatly under his stewardship.

Rick, you will be missed.

* * *

I also want to thank Steve Levine, the general chair of our upcoming AAPG Annual Convention and Exhibition, and his entire Convention Organizing Committee for the work and dedication involved in staging what looks to be another terrific conference when we meet April 10-13.

The fact that the culmination of my year as your president will be held in my adopted hometown is truly awesome.

I hope you will join me in Houston.

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REGULAR DEPARTMENTS

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Photo courtesy of GRBCC

ON THE COVER:

The centerpiece of the Enchanted Rock State Natural Area is a giant granite dome, rising a few hundred feet above the Texas Hill Country just west of Houston – and the destination of one of the field trips offered during this year's AAPG Annual Convention and Exhibition. The popular area offers several miles of hiking trails, rock climbing areas and a chance to experience the geologic history of central Texas. Left, Houston's George R. Brown Convention Center. Cover photo courtesy of Matthew Lee High.

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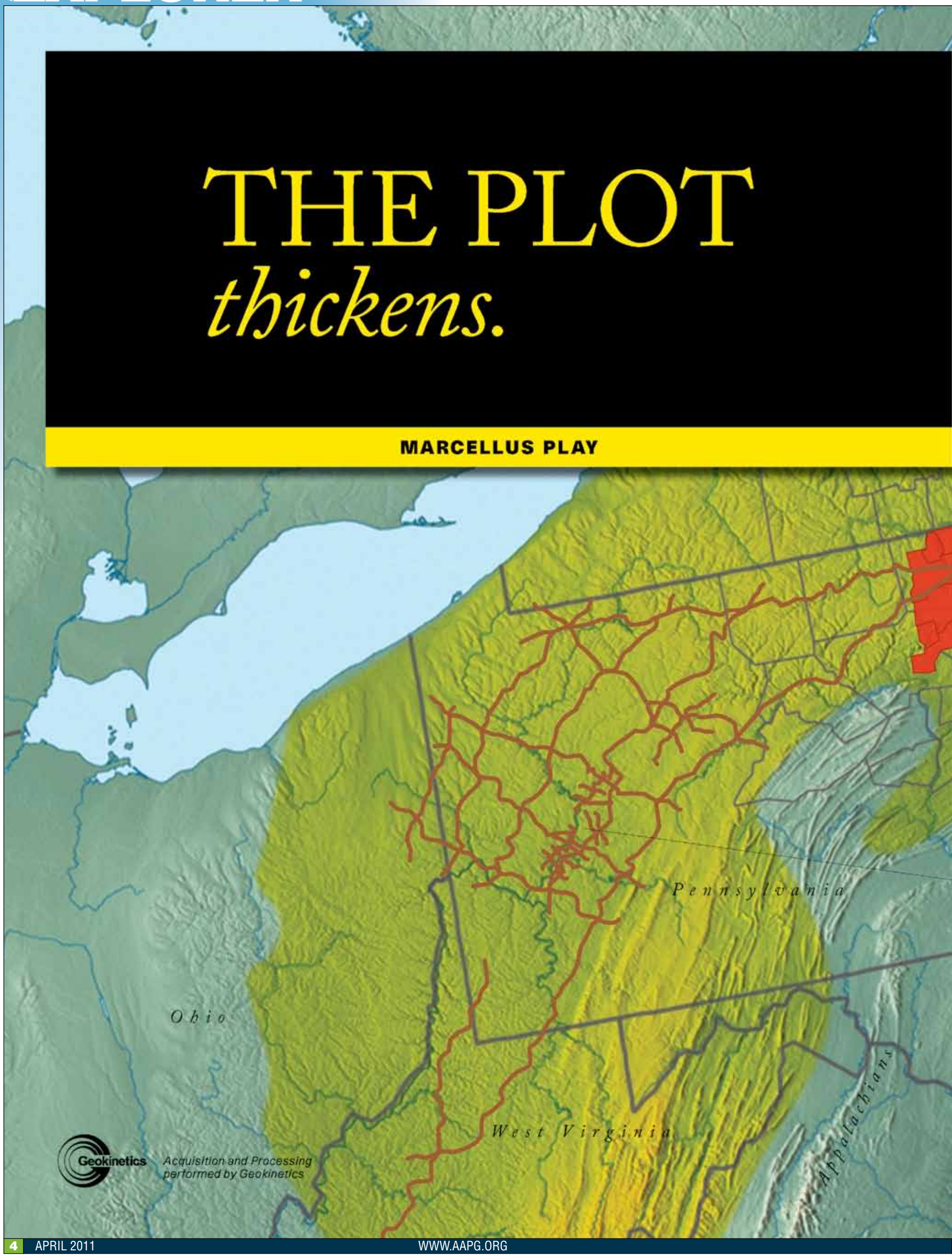
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Heading back to geology

Rick Fritz Steps Down as AAPG Director

By LARRY NATION, AAPG Communications Director

AAPG Executive Director Rick Fritz has announced his resignation after almost 12 years at the helm of the Association.

In mid-April, following the AAPG Annual Convention and Exhibition in Houston, Fritz will join the Tulsa exploration staff of SM Energy Co. (formerly St. Mary Land & Exploration), which has headquarters in Denver.

The search for a new executive director is under way.

AAPG President Dave Rensink has formed an *ad hoc* search committee comprising members of the Executive Committee and the AAPG Foundation.

In the interim between Rick's departure and the selection of a new executive director, David Lange, AAPG's chief financial officer, is handling executive director duties.

Prior to assuming the AAPG post, Fritz was president of Masera Corp., Tulsa. He is a native Oklahoman and holds both bachelor's and master's degrees from Oklahoma State University.

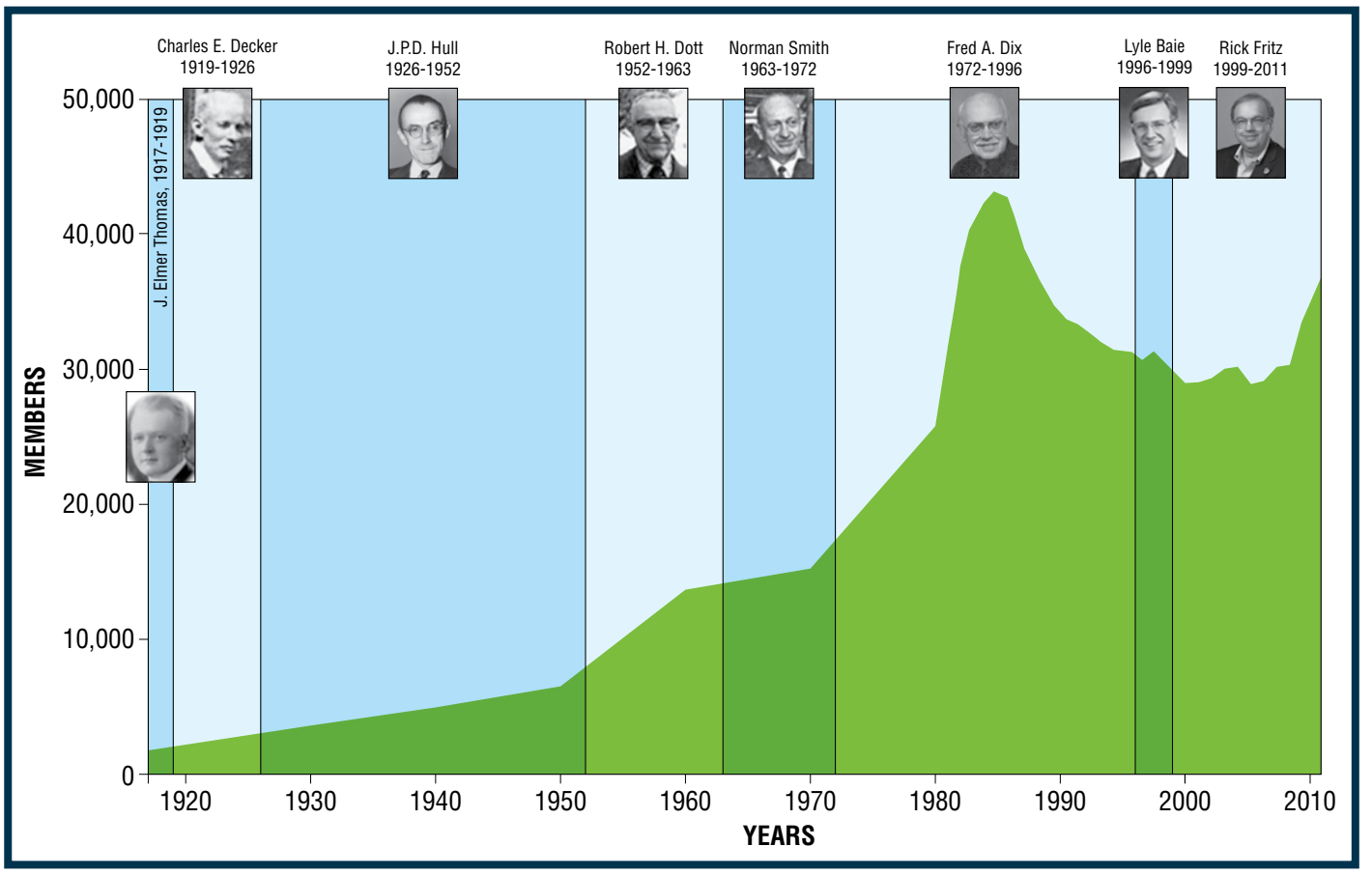
He joined AAPG in 1984 and is a member of the Division of Environmental Geosciences and the Division of Professional Affairs.

Fritz served as the eighth executive director in the Association's 94-year history. A statement issued by the AAPG Executive Committee following the announcement of the move read:

"The Executive Committee thanks Rick for his strong leadership of AAPG for the past 12 years. Rick has served AAPG with distinction, and we have enjoyed considerable success under his direction.

"AAPG now offers twice as many programs as we did when he began in his position (with same number of staff), and is on a strong financial footing. He can also be justly proud of the success of the AAPG Foundation's capital campaign.

"We wish him every success in the future."



Work force continues to 'mature'

GeoSalaries Rise Almost 8 Percent

By LARRY NATION, AAPG Communications Director

As crude prices came out of the doldrums in 2010-11, so have the pay hikes for petroleum geologists.

Over the past year, salaries for petroleum geologists for the year showed a weighted average increase of 7.9 percent, according to the annual AAPG Salary Survey.


AYLING

This compares with a 5 percent overall increase in 2009-10 and a 2 percent increase the previous year.

Mike Ayling, of MLA Resources, who has conducted the annual salary survey for AAPG since 1981, said the largest pay increases came in the "high demand" groups with 10-14 and 25-plus years experience, with increases between 10 and 12 percent.

"These demographic groups entered the work force at times when demand for geologists was not as high (mid-1980s and mid-1990s) – but now they are at the point in their careers where they can be key players," Ayling said. "And, they are getting paid for it because the companies are wanting to keep them."

The industry has a two-generation history of hiring and paying a premium for new talent in the good times – and during bad times, not so much. This has given the industry curious gaps in the age and experience levels in the work force.

2010 Geological Salary Survey

YEARS EXPER	HIGH	AVERAGE	LOW
0-2	$ 110,800	$ 93,000	$ 60,000
3-5	122,900	102,300	90,000
6-9	180,000	127,800	100,000
10-14	195,000	139,100	109,000
15-19	215,000	151,100	120,000
20-24	270,000	191,000	135,000
25+	600,000	206,300	148,000

Average Salary By Degree

YEARS EXPER	B.S.	M.S.	Ph.D.
0-2	$ 74,000	$ 96,000	$ 107,500
3-5	90,000	95,000	122,000
6-9	112,900	114,000	157,500
10-14	113,500	149,900	137,800
15-19	121,000	157,200	----------
20-24	162,900	183,300	270,000
25+	194,000	224,100	206,300

Historical Averages Salary

YEARS EXPER	2002	2003	2004	2005	2006	2007	2008	2009	2010
0-2	$ 65,000	$ 65,600	$ 67,800	$ 74,400	$ 82,200	$ 82,800	$ 83,600	$ 87,600	$ 93,000
3-5	71,200	67,700	75,600	81,300	89,600	107,800	108,000	105,600	102,300
6-9	78,300	75,700	78,800	95,400	98,500	121,100	118,400	121,700	127,800
10-14	96,600	91,900	107,500	114,400	111,500	119,800	121,900	123,500	139,100
15-19	102,500	102,500	116,000	119,600	141,000	151,600	139,400	150,800	151,000
20-24	113,900	118,100	112,800	139,000	155,000	167,400	176,800	180,300	191,000
25+	126,900	125,100	128,300	134,100	149,900	162,800	171,700	186,800	206,300

In fact, Ayling noted that nearly 44 percent of the respondents to the 2010-11 AAPG survey had over 25 years experience, indicating the extent of the aging of the work force.

Ayling continued there are other factors at work with the numbers, including reluctance on the part of smaller and mid-size companies to staff-up at the entry levels, "because they can't spare the mature geologist the time to mentor the new geologist."

Also, at the senior levels, there is not much movement from job-to-job due to "golden handcuffs" of accruing bonuses and retirement programs – as well as uncertainties in the economy causing individuals to be hesitant to make a move.

Ayling also noted the economic insecurity has caused companies to be slow in their hiring decisions.

The survey found that the 0-2 year experience levels showed a small increase, up 6.2 percent, but recently graduated bachelor level geologists had a difficult time finding work – and the few that did worked for lower salaries, depressing the overall average.

The 3-5 year and 15-19 year geologist groups showed little change, but these groups contained few individuals, Ayling said.

The 6-9 year and 20-24 year groups had between a 5 and 6 percent increase.

Ayling also noted the number of people in the demographic age groups can have a big bearing on both the marketplace and the salaries they are paid due to the supply and demand for their level of experience and expertise.

See **Survey**, page 10

AAPG's Next 'Giant Leap' Will Be At the ACE in Houston

By VERN STEFANIC, EXPLORER Managing Editor

AAPG is returning to a familiar setting for this year's Annual Convention and Exhibition – but the meeting's theme and "feel" are going to offer members something completely new.

The 2011 ACE will be held April 10-13 at the George R. Brown Convention Center in Houston – the twelfth time AAPG has headed to Houston for the annual event.

This year's theme is "Making the Next Giant Leap in Geosciences" – a nod to the 50th anniversary of President John F. Kennedy's famous speech challenging U.S. citizens to put a man on the moon before the end of the decade.

A similar challenge now faces the geoscience profession, according to ACE general chair Steve Levine – and organizers have shaped a program around the question: How does the global industry make the next giant leap?

"We hope this convention will inspire geoscientists to succeed despite added competition, more restricted land access, deeper water, larger capital investments, expanded environmental pressures, global unrest and other hardships as we supply the vast majority of the world's energy needs," he said.

"The oral talks and posters, special speakers and forums are sure to enrich the attendees with fresh technical ideas to incorporate in their workplace," he added.

Specifically, the Houston ACE will offer 795 paper and poster presentations


LEVINE

– including eight special forums – plus 150 e-posters, various luncheons, the Michel T. Halbouty Lecture (this year featuring David Lawrence, executive vice president of Shell Upstream Americas, talking about "The Next Generation of Exploration") and more than 210 exhibitors who will be displaying the latest in industry cutting-edge technology.

"Geoscientists play a critical part in satisfying the demand for energy, most of which is supplied by petroleum," Levine said. "Staying on top of new science and technology helps us do this important job more effectively.

"The technical committee has worked very had to build a diversified and relevant program of themes, speakers and posters," he said. "We are absolutely sure you will stay engaged with the multiple industry-focused talks and posters throughout the week.

"Of course," he added, "we anticipate an excellent turnout of professionals at this year's meeting, thus offering attendees a terrific networking opportunity."

Voting Continues

Balloting for AAPG officer candidates for the 2011-12 term continues to be available online through May 15 at 11:59 p.m. CDT.

While electronic balloting is available to all members a paper ballot also will be sent – however, Survey and Ballot Systems' coded system allows only one ballot per person, with the paper ballot taking precedence if both are submitted.

The president-elect will serve in that capacity for one year and will be AAPG president in 2012-13. The vice president-Regions and secretary serve two-year terms.

Complete election campaign rules also are available online.

The slate is:

President-Elect

❒ Edward A. "Ted" Beaumont, independent consultant, Tulsa.

❒ John C. Dolson, DSP Geosciences and Associates, Coconut Grove, Fla.

Vice President-Regions

❒ David C. Blanchard, El Paso Egypt Production, Lasilky, Maadi, Egypt,

❒ Stuart D. Harker, Circle Oil Plc, Finchampstead, U.K.

Secretary

❒ Charles A. "Chuck" Caughey, ConocoPhillips, Houston.

❒ Denise M. Cox, Storm Energy, Panama City, Fla.

Survey
from page 8

The annual salary survey is based on employed, salaried geoscientists and is based on salaries alone. It does not include bonuses, employee benefits, autos or other perquisites.

It does not attempt to include anyone whose compensation is in the form of consulting fees, retainers or overrides.

The survey also is based on U.S. salaries only, considered the "gold standard" for the industry. The measurement for international salaries for explorationists is virtually on a country-by-country, case-by-case basis, Ayling said, which makes statistical averaging non-productive beyond the boundaries of any specific country.

Ayling added that many ex-pats are paid U.S.-based salaries, while the national oil companies opt to pay compatriots on a different, lower scale.

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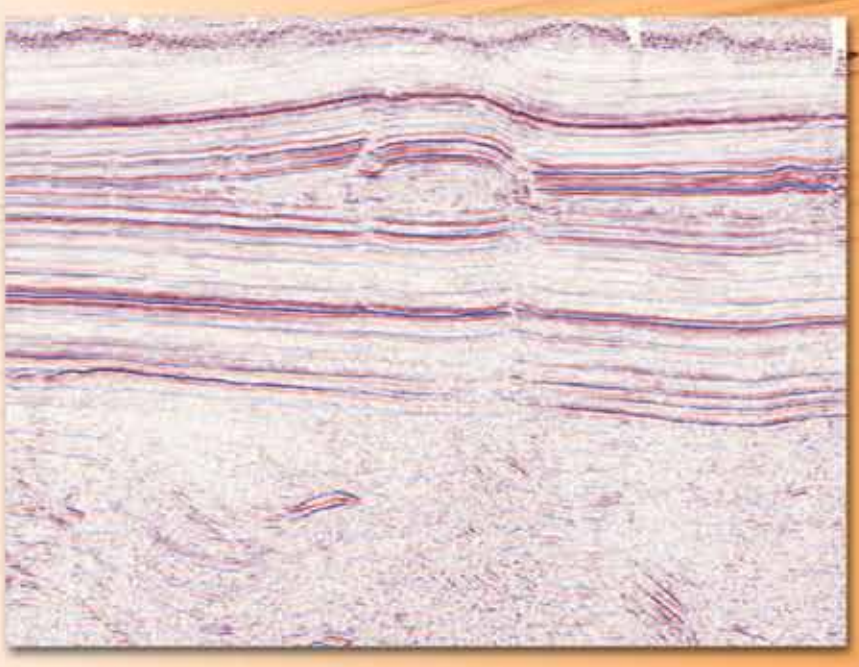

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Israel joins ME producers

A Gas Find of Leviathan Proportions

By LOUISE S. DURHAM, EXPLORER Correspondent

The Biblical land of milk and honey, aka Israel, has long been considered a kind of enigma in the oil-rich Middle East.


CUNNINGHAM

With the exception of a few small oil and gas finds made by Israeli explorers over the years, the country appeared to be lacking the bountiful hydrocarbon deposits common to this part of the world.

No more.

Today, headlines abound in both the mainstream media and the trade press touting the humongous supplies of natural gas recently discovered by Noble Energy just offshore Israel in the Levant Basin in the eastern Mediterranean Sea.

We're talking supplies that could turn Israel into a natural gas exporter after historically depending on fuel imports to meet its needs.

The lid has been popped right off the richly endowed hydrocarbon deposits long lying in wait for the drill bit in the Levant.

Noble's recently announced giant find, christened Leviathan, is said to harbor 16 Tcf of natural gas, which positions it as the world's largest deepwater gas find in a decade.

Noble operates Leviathan with a 39.66 percent working interest. Other interest owners are Delek Drilling (22.67 percent), Avner Oil Exploration (22.67 percent) and Ratio Oil Exploration (15 percent).


Photo provided courtesy of Noble Energy

Atwood Hunter rig drilling for Noble Energy at Tamar discovery.

Leviathan comes on the heels of other Levant Basin discoveries by Noble, including the nearby giant Tamar field, where gross mean resources of 8.4 Tcf have been determined.

A Geologic Perspective

Noble, which first became interested in the region in 1998 when the company then was known as Noble Affiliates, joined a consortium of Israeli companies called the Yam Tethis Joint Venture group to act as operator to explore the waters offshore Israel, according to AAPG member Susan Cunningham, senior vice president of exploration at Noble Energy.

"Within the first two years, Noble via subsidiary Samedan had made two discoveries, Noa and Mari-B," she noted.

See **Tamar**, page 34

Susan Cunningham, senior vice president of exploration for Noble Energy, will present the paper "Tamar – The Opening of a Frontier Basin in the Eastern Mediterranean" at 2 p.m. Monday, April 11, during the AAPG Annual Convention and Exhibition in Houston.

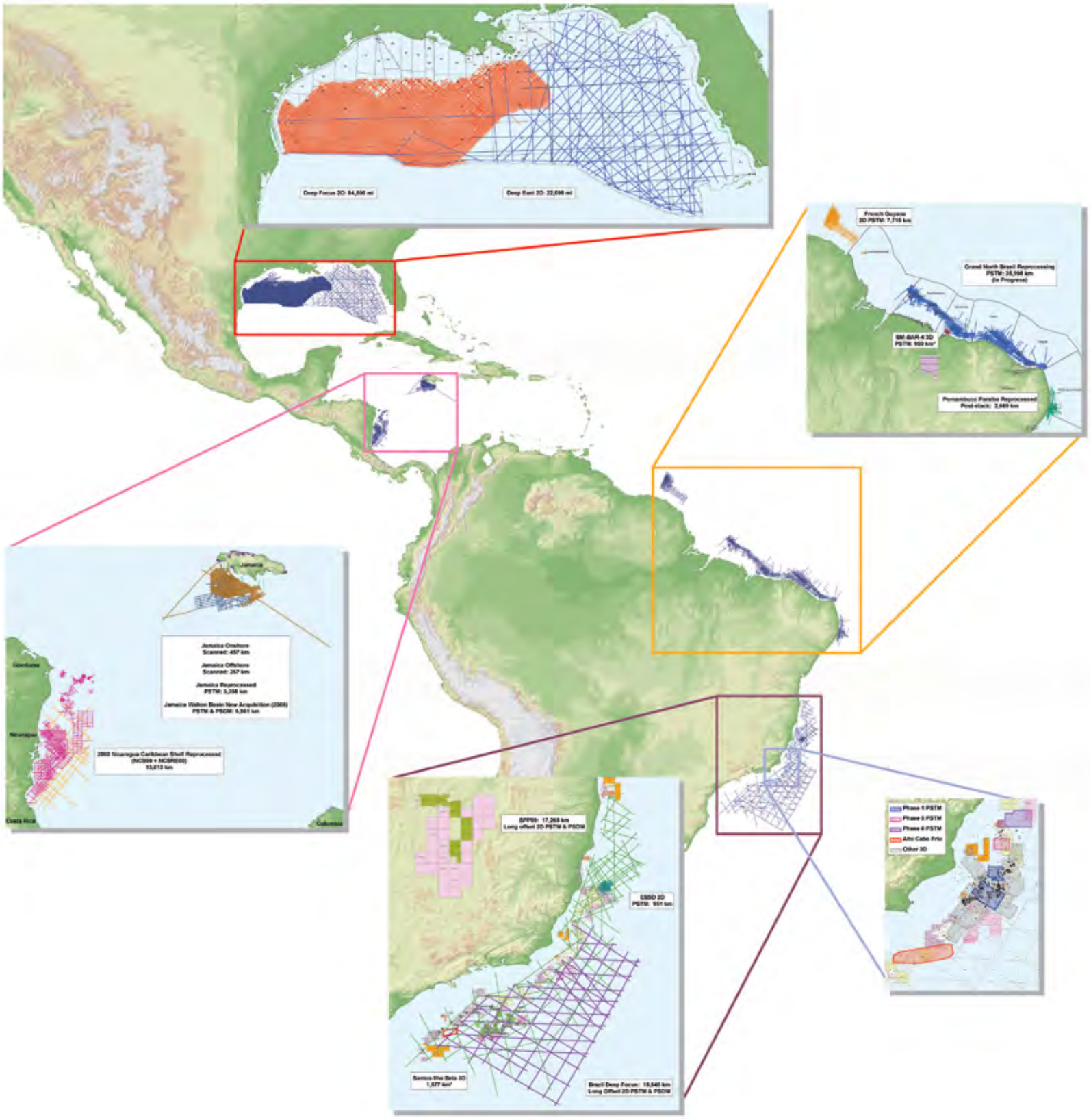
The paper is part of this year's Discovery Thinking Forum, the fourth installment of the AAPG 100th Anniversary Committee's program recognizing "100 Who Made a Difference."

The forum starts at 1:15 p.m. at the George R. Brown Convention Center.

Other forum presentations are:

- "Jack and Other Discoveries Open the Lower Tertiary Trend in the Gulf of Mexico," by James Cearley, general manager of exploration, Chevron.
- "Hidden Beneath Desert Sands – The Discovery of the Barmer Basin in Rajasthan and Its Giant Oil Fields," by Stuart Burley, head of geosciences, Cairn.
- "Exploration of the Tano Basin and Discovery of the Jubilee Field, Ghana," by Paul Dailly, senior vice president of exploration, Kosmos Energy.
- "Northern Mozambique True Wildcat Exploration in East Africa," by Carol Law, exploration manager, Anadarko (see related story, page 32).

WHEN **QUALITY** COUNTS...



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Shelton tops awardee list

AAPG's 'Best' Will Be Honored in Houston

By VERN STEFANIC, EXPLORER Managing Editor


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SMITH


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COUNTRYMAN


KATZ


RAY


STERNBACH


VEAL


STRICKLAND


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BARTOLINI


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DWAN

Professor, researcher and visionary geologist John W. Shelton will receive the 2011 Sidney Powers Medal, AAPG's highest honor, during the opening session of the AAPG Annual Convention and Exhibition in Houston.

Joining Shelton at the top of this year's awardees list is **Dan L. Smith**, exploration vice president for Sandalwood Oil and Gas and independent geologist in Houston, who will receive the Michel T. Halbouty Outstanding Leadership Award.

The one-hour opening session will begin at 4 p.m. Sunday, April 10, at the George R. Brown Convention Center. A pre-show multi-media presentation spotlighting the profession, the industry and AAPG will begin at 3:30 p.m.

In addition to honoring the awardees, the session also will feature the official welcome from ACE general chair Steve Levine, and the presidential address from AAPG President David Rensink.

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

Also to be honored is Houston independent oilman **Jack C. Threet**, the recipient of this year's L. Austin Weeks Memorial Medal; and AAPG member **Robert H. Dott Jr.**, will be presented with AGI's Matrcus Milling Medal.

The Weeks Medal is presented annually by the AAPG Foundation in recognition of extraordinary philanthropy and service in advancing the mission of the AAPG Foundation.

It is the Foundation's highest honor.

Among Shelton's achievements over his career is his foresight in the early 1990s to plan and implement AAPG Datapages, the Association's digital library and publishing program. His leadership continued the growth in the digital library, and an award is in his name that recognizes the best contribution to the *Search and Discovery* website over the year.

Shelton was an early developer of the concepts and application of sedimentary petrology and depositional environments to petroleum exploration, and at Shell Research was among the pioneers in applying depositional environments to prospect definition.

He had a 20-year career as a professor at Oklahoma State University, mentoring many of his master's students to distinguished careers.

Working with ERICO and later Masera, Shelton also was a pioneer in the concept of multi-client studies and took lead roles as both director and contributor on major projects in the North Sea, North Africa, the Mediterranean, Africa and China.

Smith is the fifth recipient of the Halbouty Outstanding Leadership Award, given in recognition of outstanding and exceptional leadership in the petroleum geosciences.

Interviews with both Shelton (page 22) and Smith (page 24) are included in this EXPLORER, and biographies and citations of all award winners will be included in a future BULLETIN.

Award winners who will be honored along with Shelton, Smith and Threet in Houston are:

Honorary Member Award

❒ **Robert L. Countryman**, Bakersfield, Calif.

❒ **Barry J. Katz**, Chevron, Houston.

❒ **R. Randy Ray**, R-3 Exploration, Lakewood, Colo.

❒ **Charles A. Sternbach**, Star Creek Energy, Houston.

❒ **Steven L. Veal**, DCX Resources, London, England.

Outstanding Explorer Award

❒ **Douglas K. Strickland**, Jayden Consulting, Oklahoma City.

Strickland is the principle discoverer of the Covenant Field in Sevier County, Utah, the initial discovery within the central Utah Overthrust Belt.

Robert R. Berg Outstanding Research Award

❒ **Ole Jacob Martinsen**, Statoil ASA, Bergen, Norway.

Martinsen, the head of exploration research at StatoilHydro, is one of the key geoscientists in northwest Europe.

Distinguished Service Award

❒ **Deborah E. Ajakaiye**, Abuja, Nigeria.

❒ **Herman Darman**, Shell International E&P, Rijswijk, Netherlands.

❒ **Rick L. Ericksen**, Mississippi State Board of Registered Professional Geologists, Jackson, Miss.

❒ **Gretchen M. Gillis**, Aramco Services

❒ **Gina B. Godfrey**, PetroWeb, Denver.

❒ **Sigrunn Johnsen**, RWE Dea Norge AS, Oslo, Norway.

❒ **Walter C. "Rusty" Riese**, BP Alternative Energy, Houston.

Grover E. Murray Distinguished Educator Award

Presented for distinguished and outstanding contributions to geological education, both at the university level and toward education of the general public.

❒ **Lawrence D. Meckel**, L.D. Meckel and Company, Denver, honored for a long teaching and training career for both companies and schools, largely at the Colorado School of Mines.

❒ **Ronald J. Steel**, University of Texas at Austin, Austin, Texas.

Steel is both professor and David Centennial Chair at the University of Texas at Austin, and Sixth-Century Chair of Sedimentary Geology at the University of Aberdeen, Scotland.

Special Award

Presented to individuals and organizations whose area of work may not qualify for one of the existing awards, but is worthy of Association recognition.

❒ **Anthony Doré**, Statoil, Houston,

See **Awardees**, page 18

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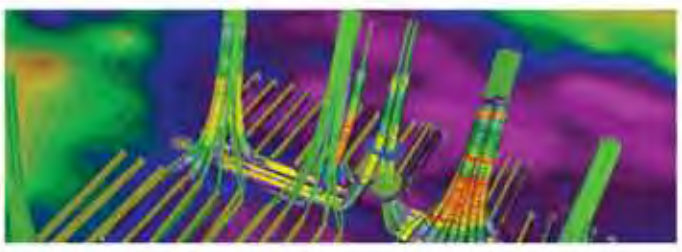

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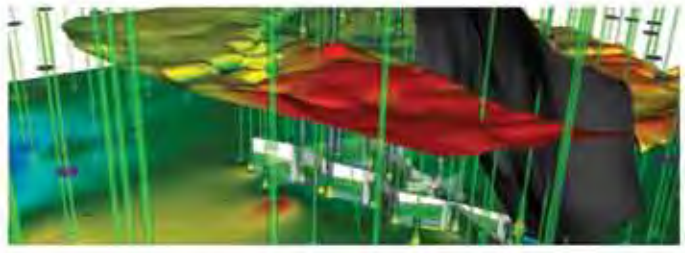

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Awardees
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honored for his published contributions and analysis on the tectonic history, geology and petroleum systems, of the northeast Atlantic margin; for his "influential" leadership in working to bridge industry and academia; and for being "an enlightened" senior manager who has influenced his company to embrace new geological play concepts and technology.

❒ **Myron K. "Mike" Horn**, M.K. Horn and Associates, Tulsa.

Horn, an AAPG Honorary Member, has developed four global databases that are significant parts of the GIS-UDRIL project.

Public Service Award

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

❒ **Mark J. Doelger**, Barlow and Haun, Casper, Wyo., for his efforts since the late 1960s to "accurately communicate" the story of oil and gas exploration to the general public. He has played an on-going role in speaking to state and federal regulators, government agencies, environmental and industry trade groups and various commerce and civic associations. He also has played a prominent role in helping with Wyoming legislation regarding the role of the Wyoming Pipeline Authority.

Pioneer Award

Presented to long-standing members who have contributed to the Association and who have made meaningful contributions to the science of geology.

❒ **J. Myles Bowen**, retired (Shell), Newton Abbot, England.

Bowen had a long and successful career as the leader of exploration teams, working (and scoring discoveries) in Venezuela, Nigeria, the North Sea (as leader of Shell Expro) and Italy, among other ventures (See February EXPLORER).

❒ **John Wold**, Wold Oil and Gas, Casper, Wyo.

Wold, who previously received AAPG's Public Service Award, has had a long and successful career as a geologist and leader in Wyoming. Also, in 1969 he became the first professional geologist to serve in the U.S. House of Representatives. (See story, page 56.)

Wallace E. Pratt Memorial Award

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

❒ **William A. Ambrose**, **Tucker F. Hentz**, **Florence Bonnaffe**, **Robert G. Loucks**, **L. Frank Brown Jr.**, **Fred P. Wang** and **Eric C. Potter**, for "Sequence-Stratigraphic Controls on Complex Reservoir Architecture of Highstand Fluvial-Dominated Deltaic Lowstand Valley-Fill Deposits in the Upper Cretaceous (Cenomanian) Woodbine Group, East Texas Field: Regional and Local Perspectives," which appeared in the February 2009 BULLETIN.

All are with Bureau of Economic Geology at the University of Texas at Austin, Austin, Texas.

Robert H. Dott Sr. Memorial Award

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

❒ **Claudio Bartolini** and **Juan Rogelio Román Ramos**, for Memoir 90, *Petroleum Systems in the Southern Gulf of Mexico.*

Bartolini is with Repsol, Madrid, Spain, and Ramos is with Pemex, Mexico City.

J.C. "Cam" Sproule Memorial Award

Presented to recognize and reward younger authors of papers applicable to petroleum geology.

❒ **David M. Dutton**, for the paper "Four-Dimensional Analysis of the Sembo Relay System, Offshore Angola: Implications for Fault Growth in Salt-Detached Settings."

Dutton is with Nexen Petroleum, Woking, England.

John W. Shelton Search and Discovery Award

Presented to honor and reward the author(s) of the best contribution to the *Search and Discovery* website in the past year.

See **Honors**, page 20

Student Volunteers Needed at ACE

Student volunteers are being sought to help in a variety of areas during the AAPG Annual Convention and Exhibition this month in Houston.

Volunteers are needed to help:

- In the judges room.
- With logistics for the opening session.
- Helping at specific oral and poster sessions.
- In the registration area.

Volunteer for at least four hours and receive:

- $25 for every four to six hours worked.
- Attendee amenity.
- Program book.
- An abstract volume and CD-ROM of abstracts.

By registering online you can select the day(s) and time(s) you are available, as well as the location(s) you prefer.

If you are unable to register online, select "I want to be a student volunteer" on your completed registration form and you will be contacted for your preferences.

Volunteers must be either students or recent (2009-10) graduates.

For more information contact Bonnie Milne-Andrews, Volunteer chair, at bonniemilne@gmail.com.

Honors
from page 18

❒ Dwight M. "Clint" Moore and Robert O. Brooks, for the article "The Evolving Exploration of the Subsalt Play in the Offshore Gulf of Mexico."

Moore is with ION Geophysical, Houston; Brooks, formerly with TGS, Garland, Texas, is deceased.

George C. Matson Award

Presented to honor and reward the best oral presentation at the 2010 AAPG Annual Convention and Exhibition in New Orleans.

❒ Satinder Chopra, for the paper "Detecting Stratigraphic Features via Cross-Plotting of Seismic Discontinuity Attributes and Their Volume Visualization."

Chopra is with Arcis, Calgary, Canada. His co-author is Kurt J. Marfurt, with the ConocoPhillips School of Geology and Geophysics at the University of Oklahoma, Norman, Okla.

Jules Braunstein Memorial Award

Presented to honor and reward the best poster presentation at the 2010 AAPG Annual Convention and Exhibition in New Orleans.

❒ Eddy Lee, Craig Shipp, Willem Hack, J. Larry Gibson and Fa Dwan, for the poster "Quantifying th Probability of Occurrence of Shallow Gas as a Geohazard."

AAPG members Lee, Shipp and Gibson are with Shell International E&P, Houston. AAPG member Dwan is with Shell E&P Technology, Houston. Hack is with Shell International E&P, Houston.

Gabriel Dengo Memorial Award

Presented to honor and reward the best oral presentation at the 2010 AAPG International Conference and Exhibition in Calgary, Canada.

❒ Jennifer Scott, for the paper "Petroleum Systems of the Northern Red Sea."

AAPG member Scott is with Hess Corp., London, England. Her co-authors were AAPG members Benn Hansen, Niall McCormack and Laura Lawton, all with Hess Corp. in London, England, and members John Guthrie, Steve Crews, Andy Pepper and Caroline Burke, all with Hess Corp. in Houston.

Other co-authors were Graeme Gordon, Dean Griffin, Rod Graham and Tim Grow.

Ziad Beydoun Memorial Award

Presented to honor and reward the best poster presentation at the 2010 AAPG International Conference and Exhibition in Calgary, Canada.

❒ Kathryn Hoffmeister and Diane Kamola, for the poster "Forebulge Influence on Deposition of the Cretaceous Castlegate Sandstone, Book Cliffs, Utah, USA."

Hoffmeister is a Student member and Kamola is a professor, both at the University of Kansas, Lawrence, Kan.

Geosciences in the Media 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. Granting of this award in any year is discretionary.

❒ Ronald C. Blakey, for the significant contribution to his website. Blakey is professor of geology at Northern Arizona University, Flagstaff, Ariz.

❒ Tom Zoellner, for his book "Uranium." Zoellner is a professional journalist and lives in Hanover, N.H.

House of Delegates Honorary Member

The AAPG House of Delegates' highest award.

❒ John R. Hogg, a past HoD chairman, honored for the "global vision (that) led to the formation of AAPG's Regional structure, and for "continuous dedicated service to the HoD for the past 25 years."

House of Delegates Distinguished Member

❒ James S. McGhay, exploitation vice president and chief geologist of Mid-Con Energy, Tulsa, current treasurer of AAPG and a member of the HoD since 1992.

❒ Stephen A. Sonnenberg, professor of geology and the Charles Boettcher Distinguished Chair in Petroleum Geology at the Colorado School of Mines, he is an AAPG Honorary Member, a past president of AAPG and DPA, and a past chair of the HoD.

Also a visionary, insightful, incisive thinker

Medalist Shelton a 'Persistent Expediter'

By MARY FRITZ, EXPLORER Correspondent


SHELTON

It is unlikely that anyone who knows John Shelton, the 2011 recipient of AAPG's highest honor, the prestigious Sidney Powers Award, could think of him as an "accidental geologist."

He recalls, however, that in his first year at Baylor he declared a major in math because he always had been pretty good at it. A tough course in differential equations convinced him he should look for other work.

"I worked hard, but I made a B," he said. "It seemed pretty clear to me that I was going to have to do something else."

It was his sister, Virginia, who suggested he try a geology course, because it was available and, in her opinion, easy. He went for it.

"I didn't have any long-range career plan at the time," he said in a recent interview. "Actually, I never have had one. The only long-range plan I had in college was to get out of school and marry Doris."

As it turned out, that was a great plan – one that undoubtedly has been essential to the successes that have followed. The marriage has been a truly complementary partnership for 61 years.

Although he didn't realize it at the time, that casual decision to take his sister's advice was pivotal not only to his own life, but to countless others as well. It set Shelton on a career path that, in the words of AAPG Treasurer, former Shelton student and citationist Jim McGhay, led to "a lifetime of innovative research, exploration leadership and collaborative achievement in all aspects of petroleum geosciences.


Photo courtesy of John Shelton

Doing his homework: Sidney Powers medalist John Shelton in the field, early in his career, gathering more data and perspective. "He always challenged the conventional exploration wisdom."

"His vision of a digital future for AAPG and his personal contributions to the education and careers of many students and professionals," he continued, "have helped ensure that AAPG will remain vital and dynamic throughout the 21st century and beyond."

Shelton is recognized as a brilliant scientist, inspiring teacher, prolific author, dedicated researcher and the driving force behind the creation of Datapages, AAPG's digital library, and *Search and Discovery*, its petroleum industry information website.

Shelton, however, refuses to take credit for the long list of accomplishments ascribed to him by others. He insists that the Sidney Powers Medal should be regarded as a group award this year.

"I've had the extreme good fortune to be associated with outstanding people throughout my career," he said. "I see myself as more of an expediter than anything else. That's been my role – the persistent expediter. I can finish a job. That's my best thing."

Colleagues say there is more to him than that. Visionary, insightful, an incisive thinker – these are words used to describe Shelton repeatedly by those who have worked with him.

His professional history began in 1953 with Shell Oil Co. in Denver. Leaving Shell in 1963 he moved to Oklahoma State University where he was a professor of geology for 17 years. In 1980 he joined Paul McDaniel at ERICO and later Masera in Tulsa. When Masera closed in 2000, he officially retired, but actually spent the next 10 years as a full-time volunteer at AAPG headquarters, supervising the launch of *Search and Discovery*.

He officially retired again in 2010, but to no one's surprise, continues to work as a consultant.

A Competitive Spirit

Self-discipline, clear thinking and a desire to excel were integral to Shelton's upbringing in Bellmead, Texas, near Waco. Born in 1928, his early years were steeped

See **Shelton**, page 24

Shelton
from page 22

in the make-do and can-do spirit of the Great Depression and World War II eras.

"My father was the school superintendent and mother taught elementary school," he said. "During the war he was usually the only man on staff. He did everything, from administration to coaching to building maintenance. He set a very high standard for behavior. There was no smoking, no dancing. He was more strict than the Baptist pastor.

"The thing is, he had to be self-disciplined," Shelton continued. "He was 28 years old when he graduated from Baylor, because he could only take classes one semester a year. He'd go a semester, then work and save for six months or a year so he could take another semester.

"My mother was one of six girls and two boys born to a farmer, but somehow they all went to college. My parents knew what it was to persist to get an education."

"John became what he is because of his parents and siblings," Doris Shelton agreed. "He is one of four children with two brothers and one sister – the middle son. They were the offspring of two professional educators who instilled the value of education in them. Each tried to out-do the other three, but they've always cheered each other on as well."

"It was more of a sibling competition than a rivalry," Shelton said. "We played a lot of sports and games, and like any kid, I wanted to win.

"I loved sports and I wanted to get good grades – those were my main interests," he added. "I was good at math, so when it was time for college that's what I chose to study."

> He always challenged the conventional exploration wisdom, even the high-powered managers.

Incisive and Practical

Graduating from Baylor in 1949 with a bachelor's in math and a minor in geology, he quickly met his first and only long-range goal by marrying Doris Smith, the hometown girl he had fallen for on their first date three years earlier. Never one to waste time, he packed up his bride and left Texas on their wedding day, heading for the University of Illinois to begin work on a master's degree in geology.

In 1952 he received the Shell Fellowship and accepted a position with Shell in 1953.

"I couldn't have made it without Doris," he said. "She kept me going. When I started work on my doctorate she was my lab assistant, and when I went to do my field work she was right there with me."

"That summer of 1952 was the worst ever," she said. "We'd get up very early in the morning and have vanilla wafers and orange juice for breakfast, pack whatever we had for lunch and then work all day until dark – six days a week. It was so hot, regularly 108 degrees in the afternoons."

The payoff came the following year when Shell offered him a position, initially working subsurface geology from their Denver office. They moved often in those early years as Shelton rotated through various departments of the legendary "Shell University."

They built their family along the way. Their daughter, Maura, was born in Denver and their son, Kyle, while they were in Billings, Mont.

In 1956 they were back in Houston, where he worked under Bob Nanz studying sandstones.

Colorado School of Mines professor Larry Meckel (another 2011 AAPG awardee) was a graduate student summer hire at the Shell lab while Shelton was there.

"I was just the kid making coffee and delivering it to these guys, but I paid attention to their conversations about the work," he said recently. "The thing that impressed me about John was he was very data driven, very rigorous, very thorough in his interpretation of data.

"He always challenged the conventional exploration wisdom, even the high-powered managers. He'd ask, 'What makes you think that? Is that idea supported by the data?' I thought, this guy is really gutsy. The thing was, he had an extraordinary ability to quickly extrapolate data and take it to its logical conclusion.

"Years later when I was consulting for Masera I had the opportunity to observe him in an administrative role, pointing the way for others," Meckel said. "He still had that way of being able to look at a data set, clearly understand its relevance and understand what additional work was needed to prove it, especially if it supported new concepts in exploration.

"His thinking is incisive," he added, "and absolutely practical."

His Vision

Shelton remembers his years at Shell with gratitude for the opportunity to work with so many world-class scientists, including at least eight who have preceded him as Powers Medal honorees.

"I believe I learned more during that 1956-57 assignment than during any other comparable period in my career," he said. The decade at Shell was exciting and busy. It was the place where he became an expert on growth faults and their related sedimentology.

In 1963, however, Shelton decided to take on a new challenge – teaching petroleum geology at Oklahoma State. Gradually he and fellow faculty members Gary Stewart, Zuhair Al-Shaieb, Tommy Thompson and Nowell Donovan, along with their students, formed an informal research group.

"Many of these former students went on to have distinguished careers," he said, "and I couldn't be more pleased if they were my own."

It was while at OSU that he met alumnus

See **Powers Winner**, page 45

Halbouty awardee

Smith: Leading With Fairness, Integrity

By LOUISE S. DURHAM, EXPLORER Correspondent

Former AAPG president Daniel L. Smith has been a formidable presence in the Association since he became an Active member in 1958.

He has served as chair and member of 16 standing or ad hoc committees of AAPG and has been a Foundation Trustee Associate since 1999. Numerous honors/awards have been heaped upon this talented petroleum geologist and hardworking, committed volunteer.

In addition to being an AAPG Honorary Member, Smith's extensive list of accolades includes being a Distinguished Member of the AAPG House of Delegates, an AAPG Certificate of Merit, a DPA best paper award and the Houston Geological Society's (HGS) Gerald A. Cooley Award for "service above and beyond the call of duty over many years."

Smith is a past president of HGS and has also contributed his time and leadership skills to SIPES, GCAGS, AIPG, NOGS and LGS.

For all those reasons – and more – it likely surprises no one that Smith has been selected to receive the prestigious Michel T. Halbouty Outstanding Leadership award for 2011, which will be presented at the upcoming AAPG Annual Convention and Exhibition in Houston.

SMITH

> "... Leaders who exhibit qualities such as integrity and fairness, persistence and patience – their people want to do the best they can."

Role Models

When asked when he first became aware that he possessed leadership skills, Smith said it occurred early on.

How early? He was, for example, a dedicated member of the Boy Scouts, where he assumed a leadership role in each of his various endeavors in this organization.

Smith was raised in a close-knit family and said there was never any doubt that he would attend college.

But why geology?

He related that his best buddy from high school was an avid mineral collector who dragged him along to the geology department during freshman orientation at University of Texas so they could listen to the faculty talk up geology.

"One guy especially nailed the idea of geology for me," Smith said. "He was with Exxon in the summer doing mineral exploration in Brazil in the Amazon jungle, where he lived for months.

"I was always an outdoor person, and I said I want to do what this guy is doing," Smith recounted. "But I never made it to the Amazon jungle."

Maybe not, but he's been a highly successful oil and gas explorer – particularly in south Louisiana, where he has discovered many oil and gas fields. As executive vice president of Sandalwood Oil & Gas, Smith continues to work this area, while mentoring younger geoscientists at the company and those he encounters via professional society committees.

Smith's views on leadership were honed over time by various experiences, including a stint in the U.S. Air Force.

"My first job was with Pan American Petroleum, which became Amoco," he said. "I was there nine years and transferred six times and had 40 different supervisors in that nine years.

"I got a first-hand look at leadership," he said, "how you run an organization, lead people, whatever – and I saw what didn't work.

"I saw that those who ruled with a heavy hand, ruled through fear, had no sense of fairness, that people working for them didn't want to come to work," Smith said. "With other types of leaders, who exhibit qualities such as integrity and fairness, persistence and patience, their people want to do the best they can."

Making a Difference

When asked to name a favorite among his immense array of volunteer jobs over the years, Smith chose his current role as chairman of the Geosciences Board of the AAPG office in Washington, D.C.

"We make trips twice a year and give presentations to committees and individual congressmen and women," he said. "It's not just fun but also fulfilling, because there's such a great need to bring science to the policy making process – and I see we're making some good headway."

Smith is praised by many of his peers for his leadership of AAPG's strategic planning effort, which is predicted to have far-reaching impact for many years to come.

Pat Gratton, himself a past AAPG president and last year's recipient of the Halbouty Leadership Award, summed his thoughts on Smith's ability to lead:

"Dan's leadership has been so exemplary that the benefits have not been restricted to issues with which he dealt," Gratton said.

"Dan's example of how to formulate, explain, convince and rally support for necessary change led others to emulate him," he remarked. "That's outstanding leadership!"

Classic GOM producer still going strong

Mars Gets Mid-Life Boost

By LOUISE S. DURHAM, EXPLORER Correspondent

When it comes to big finds in the deepwater Gulf of Mexico, the Mars field, in 3,000 feet of water in the Mississippi Canyon Protraction Area, is a true giant.

The field was discovered by Shell Oil Company in 1989 and is owned by operator Shell (71.5 percent) and BP (28.5 percent). In-place volume estimates tally more than four billion BOE.

Mars has produced more than 700 MMBOE to date after first going on production in 1996, and it's still going strong.

"Mars is sort of a unique basin," said AAPG member Mike Harris, senior geologist at Shell. "It's a classic deepwater salt withdrawal mini-basin with 70 individual reservoirs in our plan now, stacked in a 10,000-foot sequence.

"They come from in excess of 50 mapped horizons out here, and what makes Mars so rich is we have this tremendous amount of stacked sands," Harris noted. "It's a Plio-Miocene basin, and the majority of that is late Miocene, so we had an incredible accommodation setting here. The hydrocarbons presently reside between 10,000 and 21,000 feet subsea, and they obviously had access to charge.

"All the way down to the deep reservoirs at West Boreas to the shallowest reservoirs at Mars, it represents a sequence that records the history of the development and the fill of the classic deepwater GOM salt withdrawal basin," he said.

Harris emphasized that one of the absolute unique aspects of Mars is the lack of structural complexity, noting there's very little faulting in the basin.

Ready for Plan B

The initial development at Mars occurred via the 24-well Tension Leg Platform dubbed Mars A, which garnered some major press when it debuted, boasting production capability of approximately 130,000 BOEPD.

However, production performance exceeded the limits of the TLP, and throughput capacity was doubled.

Mars A has pretty much reached its peak relative to buoyancy and well slot availability given that production surpassed original predictions, and three subsea tiebacks were added along with gas lift and waterflooding capabilities.

Help is on the way.

A whole new 24-well Tension Leg Platform dubbed the Olympus TLP, aka Mars B, is being readied to team with Mars A to provide a combined 48 well slots and over 350,000 BOEPD processing facilities to optimize recovery from the Mars field beyond 2050.

"All of the major contracts have been awarded for the Olympus TLP, which is in the construction phase now," said Derek Newberry, Mars B business opportunity manager at Shell. "We are targeting first oil from the Mars B in 2015."

This undertaking is no simple task.

"There are challenges when you try to add infrastructure to a brownfield," Newberry noted. "You're immediately challenged with a number of things, such as depleted drilling environments as well as diminished rates because of depletion.

"When we put this development plan together, we had to extract value from the undeveloped reservoirs as well as developed reservoirs in the field," Newberry said.

"With the advent of the Olympus TLP, which includes 24 slots and a number of additional years of field life, we are including a number of reservoirs that could not be developed from Mars A, and we're enhancing recovery in the developed reservoirs," he said.

"We had two to three years of focused effort on understanding these reservoirs and came to the realization that justification is the sum total of everything," Harris commented.

Newberry noted that another component of adding the additional infrastructure to the basin entails going out to do subsea tieback of some recent exploration discoveries, e.g., West Boreas and South Deimos.

"We matured those discoveries on an accelerated pace with the TLP and have gone from discovery of these fields in 2009 and 2010, respectively, such that we can execute that subsea tieback and bring on production with Mars B in 2015," Newberry said.

"Mars B is a significant investment," he added, "and verifies Shell's commitment and confidence to activity in the Gulf of Mexico." E

Mike Harris will present the paper "Mars Life Cycle Field Development – Maximizing Recovery from a Deepwater Giant" at Evaluation of the Offshore Florida Play Types using Seismic Reflection Data" at 1:20 p.m. Monday, April 11, at the AAPG Annual Convention and Exhibition in Houston.

Co-authors are K. Lambert and Derek Newberry. All are with Shell Oil in New Orleans.

The talk is part of a session titled "E&P in the Americas," a nine-paper program that also includes:

- "Fluid Properties Indicated by Natural Gas Isotopes in Gulf of Mexico."
- "New Explorations Tramps in the Espino Graben, Eastern Venezuela Basin."
- "Geological Setting and Petroleum Potential of the Paleozoic Hudson Platform, Northern Canada."
- "The Importance of Upwelling Along the Californian Margin with Links to Sequence Stratigraphy and Petroleum Significance."

A shale gas-type approach

Bakken Tricks Work on Three Forks

By DAVID BROWN, EXPLORER Correspondent

A better understanding of the Three Forks Formation is enhancing shale oil prospects in the Bakken Shale play area.


SONNENBERG

As in, up to another two billion barrels of oil.

The Three Forks is "part of the Bakken petroleum system, and all of a sudden this year we're seeing a lot more activity," said Steve Sonnenberg, professor of petroleum geology at the Colorado School of Mines in Golden, Colo.

Sonnenberg heads the school's Bakken Research Consortium, with 20 member companies and a grant from the National Energy Technology Laboratory.

Explorers have targeted the Bakken system for oil and gas for many years.

The contemporary Bakken story began in Montana in 2000, when horizontal drilling started to open up the shale oil play.

In 2006, discovery of the Parshall Field in Mountrail County, North Dakota, created a second front of intense drilling activity.

Both the Bakken and the Three Forks have long been known as productive oil targets, but with mostly hit-and-miss economics – until the advent of a new approach to unconventional reservoirs.

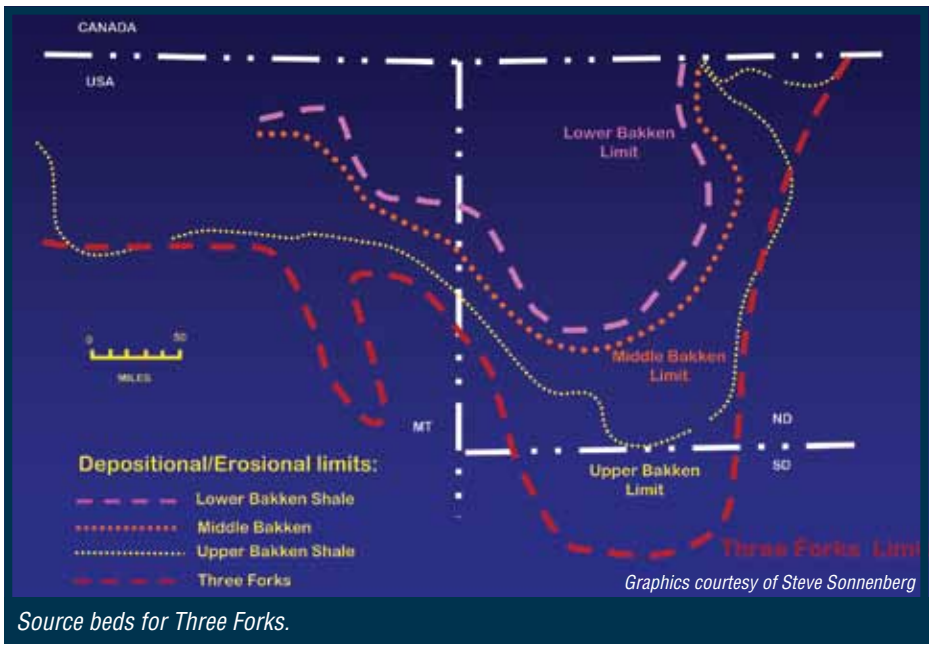
"Some of the earlier attempts to get it out met with success, and some with not so much success," Sonnenberg noted.

Operators needed both geology and luck on their side for success in the Bakken, even after the introduction of hydraulic fracturing to the play area in the 1960s.

It took long-lateral drilling and multi-stage fracks to tap the full potential of shale-oil production, first in the Bakken Shale, now in the Three Forks.

"It's interesting because the Three Forks is some of the oldest production in the Williston Basin – it goes back to the 1950s," Sonnenberg said.

"It has taken 50 years for the technology to catch up with this reservoir."



Source beds for Three Forks.

Geologic Details

Current thinking puts recoverable oil from the Bakken Shale at just over two billion barrels, and from the Three Forks Formation at just under two billion.

The U.S. Geological earlier estimated mean, technically recoverable, undiscovered volumes in the Bakken system of 3.65 billion barrels of oil, 1.85 trillion cubic feet of associated/dissolved natural gas and 148 million barrels of natural gas liquids.

Sonnenberg said the main source rock for the upper Three Forks is the lower Bakken Shale, although where the lower and middle Bakken thin in the southern Williston Basin, the upper Bakken is the main source.

The Three Forks underlies the Bakken, separated by the Sanish Formation.

"The Sanish is a very thin dolomitic sandstone that occurs right on the very top of the Three Forks," he said. "There are some people who want to include that as part of the Bakken – it's very thin, and it's not present everywhere."

Three main facies can be found in the upper Three Forks, according to Sonnenberg:

- Massive to chaotic bedded dolostone.
- Interbedded dolostone with green mudstones.
- Bioturbated dolostone to sandstone (the Sanish).

Reservoir quality is poor, he noted, with porosities generally less than 8 percent and permeabilities less than 0.1 millidarcys.

That dictates a shale-gas-type approach to oil development in Three Forks wells, with the learning curve continuing.

"They're being drilled with 10,000-foot laterals, most of them, and with the same orientation," Sonnenberg said. "Generally that's in a northwest-southeast direction."

Success Stories

Whiting Petroleum Corp. of Denver drills both Bakken and Three Forks wells in the Sanish Field in Mountrail County.

(The term Sanish is used in several different contexts in North Dakota. Confusion over the name led one local geologist to declare, "The Sanish should vanish," Sonnenberg said.)

Last year, Whiting completed 65 operated Bakken wells and seven operated Three Forks wells in the Sanish Field. The company said initial production for the Three Forks wells completed in 2010 averaged 1,302 barrels of oil equivalent per day

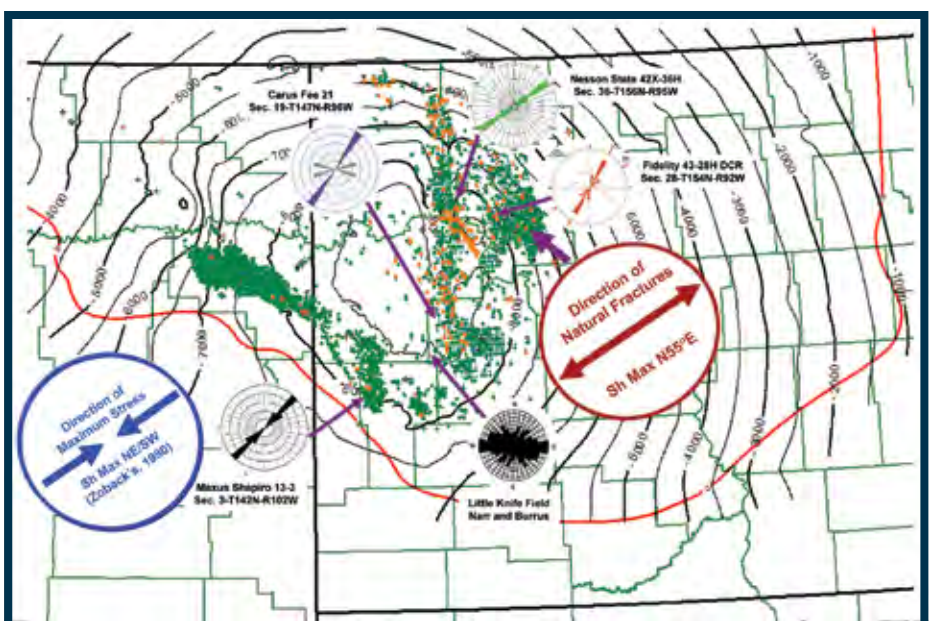
In 2011, Whiting intends to drill 95 operated wells (54 net) in the field, with 70 planned Three Forks wells, 15 cross-unit Bakken wells, seven Bakken infill wells and three wing wells, at a capital expenditure of $352 million.

A decision to drill three Three Forks wells per 1,280-acre unit instead of two has added 80 potential gross well locations in the Sanish Field, Whiting said.

The company estimated that total completed well costs in the field will come in below $5.5 million per well for recently completed wells.

Its recent wells reached a total measured depth of about 20,000 feet, including 10,000 feet of lateral, in an average of 22 days – with a company record from spud-to-total depth of just under 14 days.

Adding frack stages and using more proppant and frack fluid have proved key to increased production for Whiting.



Regional fractures for the Three Forks Formation play.

APG Honorary Member and past president Steve Sonnenberg will present the paper "Petroleum Potential of the Upper Three Forks Formation, Williston Basin, USA" at 4:40 p.m. Tuesday, April 12 at the AAPG Annual Convention and Exhibition in Houston.

His co-authors are AAPG members Rick Sarg, an AAPG Levorsen Award winner, and Allaudin Gantyno. All are at the Colorado School of Mines in Golden, Colo.

Sonnenberg's paper is part of the session titled "U.S. Active and Emerging Plays – Paleozoic Basins and Cretaceous of Rockies." Other titles in the nine-paper session include:

- Unlocking Value in an Unconventional Gas Shale Play by Returning to Conventional Basics: Regional Analysis of the Woodford Shale, Arkoma Basin.
- An Overview of Some Key Factors Controlling Well Productivity in Core Areas of the Appalachian Basin Marcellus Shale Play.
- Potential Paleozoic Shale Gas Resources in Utah.
- The Barnett Shale Oil Model of North Texas.

Before last year, its wells in the Sanish field were fracked in 10 stages. In 2010, Whiting fracture stimulated its wells with 15 to 30 separate fracks, averaging 21 frack stages per well.

The company also began using 30,000-45,000 barrels of frack fluid and 2.4 million to 3.3 million pounds of sand for a 30-stage frack. And Whiting has run a sliding sleeve assembly in a Sanish Field well for a planned 40-stage frack.

Test Patterns

Production from both the Bakken and the Three Forks at the same place isn't unusual, according to Sonnenberg.

The formations are present in much of the same area, with the Three Forks extending farther to the south in North Dakota.

Both the Bakken and Three Forks extend north over the Canadian border, primarily in Saskatchewan, although Manitoba also has a Three Forks play.

"The source beds are thought to be more mature in Canada, so you are dealing more with migrated hydrocarbons, while the thermal area, or 'cooking pot,' is in the United States," Sonnenberg said.

Shale gas plays tend to develop a core area or fairway of best production, but it isn't clear if shale oil plays will follow the same pattern.

"It's early in the development process. We're seeing some very good wells along the Nesson Anticline and in the Parshall Field area," Sonnenberg said. "It's early to say where all the sweet spots are."

As more exploration extends into the Three Forks and Bakken, those development efforts could become a pattern for shale oil and tight-oil drilling elsewhere.

"The model one develops from looking at this is going to be the classic tight-oil system for the world," Sonnenberg said.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Discoveries continue for offshore basin

Mozambique Offers New Opportunities

By LOUISE S. DURHAM, EXPLORER Correspondent

The Rovuma Basin off the coast of Mozambique is not on the radar screen of a whole lot of folks.

It's a big deal at Anadarko Petroleum Corp., however, which continues to rack up major natural gas discoveries there (January EXPLORER).

The company announced its fourth and latest deepwater find in Offshore Area 1 of the Rovuma Basin early in February. The Tubarao discovery well tapped into more than 110 net feet of natural gas pay – and no water – in what Anadarko called a high quality Eocene age reservoir that is separate and distinct from the hydrocarbon accumulations in its three earlier discoveries in Offshore Area 1.


LAW

The Tubarao prospect discovery reportedly opens a completely new play style, which has additional opportunities in Mozambique's Offshore Area 1.

The Tubarao prospect discovery reportedly opens a completely new play style, which has additional opportunities in Mozambique's Offshore Area 1, according to AAPG member Bob Daniels, Anadarko senior vice president for worldwide exploration.

Things have moved quickly since the company originally staked a claim in this region.

"The Rovuma Basin in the northern Mozambique area was very under explored when Anadarko signed the original license in December 2006 for deepwater acreage," said Carol Law, exploration manager for East Africa and the Caribbean at Anadarko. "There was one well in the entire northern region of Mozambique, and that was an onshore Exxon well drilled in the '80s.

"There was very little 2-D seismic data, and this was very much rank wildcat territory," Law said. "The amount of seismic data that was available showed that there was a significant Tertiary basin there with basically a well-developed fold and thrust belt structural setting, and that's what attracted Anadarko to the acreage initially.

"From there began four years of rather

See **Tubarao**, page 34

Discovery Forum Has Global Scope

Carol Law, exploration manager for East Africa and the Caribbean for Anadarko Petroleum, will present the paper "Northern Mozambique: True Wildcat Exploration in East Africa," at 4:20 p.m. Monday, April 11, during the AAPG Annual Convention and Exhibition in Houston.

The paper is part of this year's Discovery Thinking Forum, the fourth installment of the AAPG 100th Anniversary Committee's program recognizing "100 Who Made a Difference."

The forum will start at 1:15 p.m. in General Assembly C of the George R. Brown Convention Center, and will end at 5 p.m. for the Michel T. Halbouty Lecture.

This year's program focuses on insights derived from hard-won experience in play-opening Gulf Coast discoveries as well as the story behind some of the hottest international plays.

Other forum presentations are:

- "Jack and Other Discoveries Open the Lower Tertiary Trend in the Gulf of Mexico," by James Cearley, general manager of exploration, Chevron.
- "Tamar – The Opening of a Frontier Basin in the Eastern Mediterranean," by Susan Cunningham, senior vice president of exploration for Noble Energy (see related story, page 14).
- "Hidden Beneath Desert Sands – The Discovery of the Barmer Basin in Rajasthan and Its Giant Oil Fields," by Stuart Burley, head of geosciences, Cairn.
- "Exploration of the Tano Basin and Discovery of the Jubilee Field, Ghana: A New Deepwater Game-Changing Hydrocarbon Play in the Transform Margin of West Africa," by Paul Dailly, senior vice president of exploration, Kosmos Energy.

Tamar
from page 14

"Then in July 2006, Noble farmed into what would become the Tamar and Dalit discoveries and picked up the Leviathan acreage in a licensing round in 2008.

"The Tamar natural gas discovery was the largest conventional gas discovery in the world in 2009," Cunningham emphasized.

These discoveries are notable in many ways, including the drilling environment. Water depths are in the 5,500-foot range, with target reservoirs a few miles subsea.

Cunningham provided a brief look at the geology.

"The Levant Basin is a deep, long-standing basin initiated at the time of Mesozoic rifting and infilled by post-rift Tertiary sedimentation," she said. "The Oligo-Miocene reservoir rocks at Tamar/Dalit/Leviathan are deep basin floor turbidite fan sandstones sealed by shales of mid- to late Miocene age and Messinian age salt.

"The traps are structurally closed," Cunningham added.

The Oligo-Miocene clastics at Tamar occur at depths of almost 15,000 feet sebsea. Until the Tamar discovery, these reservoirs had never been tapped into by the drill bit.

Cunningham noted the Tamar well encountered more than 600 feet of net pay in three high quality reservoirs; the gas reportedly is essentially pure methane. An appraisal well has been drilled on the flank of the structure.

First production at the Tamar field is expected to occur by the end of 2012.

Now What?

Meanwhile, the drill bit continues to turn in the almost-17,000-foot Leviathan-1 well, which kicked off in October 2010 and is slated to go down to 23,000 feet. This is not necessarily with the intent to find additional reservoirs but to learn more about this large basin.

Noble and its partners at Leviathan intend to drill two field appraisal wells with the first one planned to spud eight miles northeast of the discovery well early in 2011. The Leviathan Field is estimated to cover 125 square miles.

Even before the hubbub over the recent eye-popping discoveries, the U.S. Geological Survey had taken the hydrocarbon potential of the Levant Basin seriously enough to conduct a resource assessment. The study was released in March 2010, reportedly estimating that the zone harbors 1.7 Bbo and 122 Tcf of natural gas.

The huge discoveries in the basin thus far inarguably are plenty impressive. However, there's the thorny issue of how to make use of this bountiful supply of natural gas.

Noble has had a team evaluating market possibilities for more than a year, which includes various pipeline and LNG options, according to company president and COO David Stover. He noted they believe the natural gas resources at Leviathan are sufficient to support one or more of the options being studied.

Additional discoveries are a distinct possibility.

Cunningham noted that Noble holds other licenses in the Levant Basin.

Tubarao
from page 32

aggressive exploration, shooting 3-D and acquiring more 2-D," Law said, "and we farmed into the adjacent onshore acreage position and subsequently took over operatorship of that.

"We now have about six million acres," she said, "from the onshore extensional basin all the way to out in front of the fold and thrust belt in the deepwater."

Success – and Potential for More

Anadarko's seismic imaging reportedly indicates that Tubarao's areal extent could cover about 15,000 acres that will be further defined via appraisal drilling.

In a nod to procedural and drilling efficiency, Tubarao was drilled in half the time of the initial explorations wells.

The well reached approximately 13,900 feet TD in water about 2,950 feet deep, about 18 miles off the coast of Mozambique. The partnership plans to preserve the wellbore at Tubarao for potential utilization in further testing.

Following Anadarko's earlier Lagosta prospect discovery 17.5 miles northeast of Tubarao, which was announced late November 2010, Daniels noted that even though additional appraisal drilling would be needed, the company believed that the three Area 1 discoveries announced up to that time already exceeded the resource size threshold needed to support an LNG development.

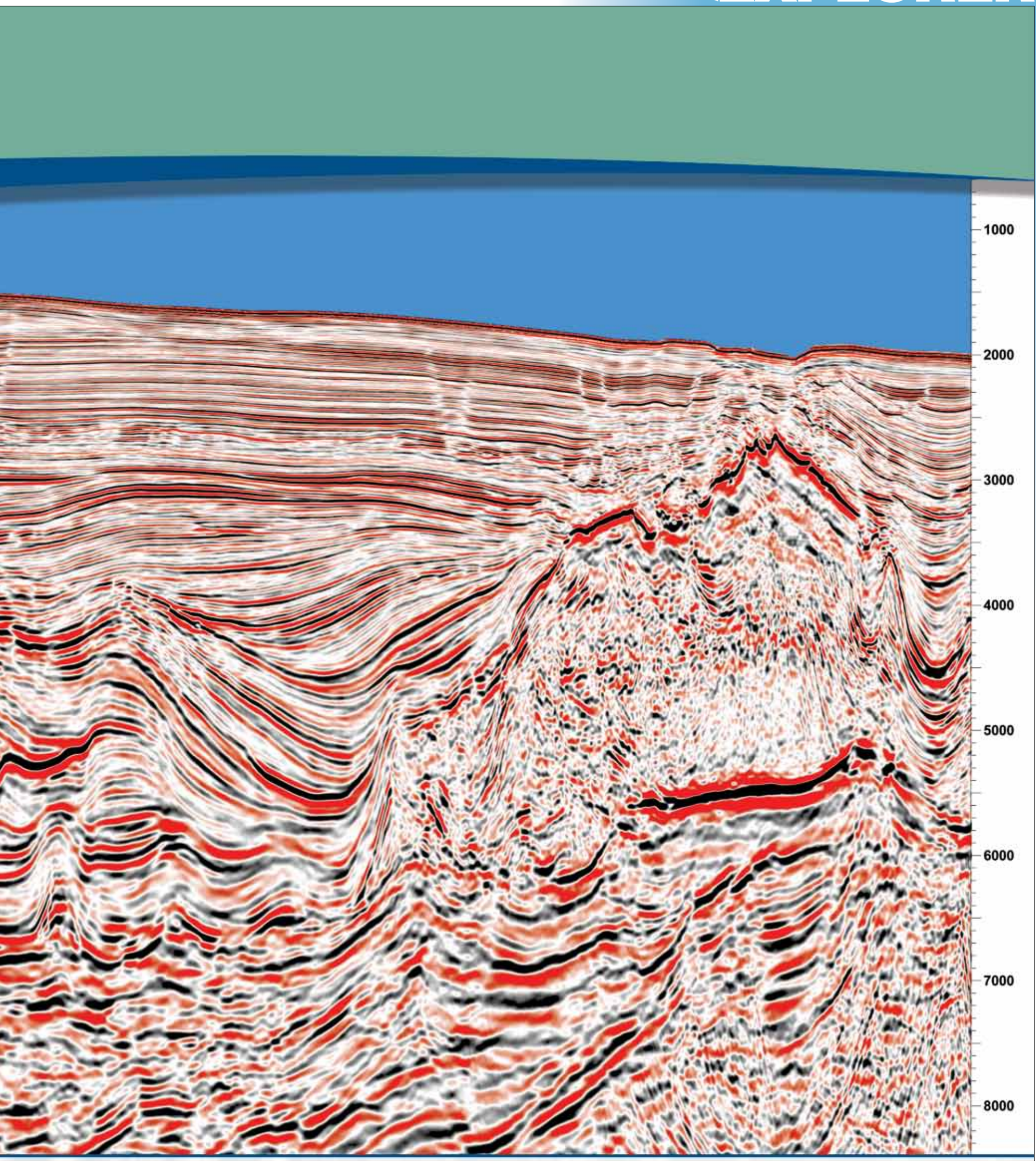
He emphasized that given the global LNG trade and its indexing to the global crude market, the resource can provide great economic value for the Mozambique people, the government and the partnership.

Anadarko is the operator of Offshore Area 1, which encompasses 2.6 million acres. The company has a 36.5 percent working interest and is joined by a number of co-owners.

AAPG Conventions Have History in Houston

This year marks the twelfth time AAPG will be holding its annual convention in Houston – tying the city with Dallas as the most-visited stop for the event.

AAPG's first Houston convention was in 1924; more recently, the ACE has been at Houston's George R. Brown Convention Center in 2006 (total attendance, 8,223) and 2002 (7,665).



Not everyone agrees

What is the Cost of Shale Gas Play?

By DAVID BROWN, EXPLORER Correspondent

Shale gas: Huge bonanza for the industry?

Or over-hyped money loser?

You'll probably hear both views during the forum and panel discussion "Shale Plays: Technical Examination of Today's Reality and Tomorrow's Future," at the AAPG Annual Convention and Exhibition in Houston.

You'll also hear other opinions between those extremes, and a look at where shale gas and shale oil may be headed in the coming years.

While shale gas producers continue to tout their production prowess, a few voices are starting to question the underlying economics of shale gas development.

He may or may not be alone in Houston; One of those belongs to AAPG member Art Berman, a geological consultant and director of Labyrinth Consulting in Houston, who will be a member of the panel.

Others on the forum panel were contacted for comments, but did not respond.

"When somebody tells me they can make a good profit at $3.50, the question I always ask is, 'What costs are you excluding?'" Berman said.

He criticized what he called "foggy economics" put out by shale gas producers. Some operators claim a profit at $4/Mcf gas when required financial filings can reveal their costs are closer to $7/Mcf, he said.

Those companies sometimes exclude the cost of leasing or other expenditures directly related to their shale gas operations, according to Berman.

BERMAN

Berman wants full-cycle accounting for shale plays and foresees a possible return to pay-as-you-go shale drilling.

"People will say, and they are sincere about it, 'Those are fixed costs or sunk costs, and we don't include those in our economics,'" he observed.

Bottom Line Factors

Scrutiny of shale gas economics increased as NYMEX gas futures began to drop below $4/Mcf.

The price makes a substantial difference for gas producers – and not just in calculated profit.

Chesapeake Energy Corp. of Oklahoma City, which once trumpeted itself as the world's best shale gas investment, now says it will reduce drilling of gas wells in 2011 except for those paid for by drilling carries or needed for held-by-production leasehold.

According to a Chesapeake Energy analysis at the end of 2010, the difference between NYMEX $7/Mcf gas and $4/Mcf gas is a $57.2 billion drop in Chesapeake's theoretical shareholder value.

Under-reporting of costs by shale gas producers makes the situation even worse, Berman said.

"The truth is, the shareholders are the losers in all of this," he noted.

Berman wants full-cycle accounting for shale plays and foresees a possible return to pay-as-you-go shale drilling.

"Where the capital markets are going is, they want people to start drilling on cash flow," he said.

Producers that boast of high initial production and return rates should disclose all of their related expenses, Berman said. When operators are talking about all-out production revenues, they also need to talk about all-in costs.

"Why do we get a pass on shale plays? Why don't we have to do full-cycle economics? The reason is, because then shale plays wouldn't make any sense," he said.

In a related argument, Berman doubted long-term estimates of U.S. gas supplies, some of them foreseeing 100 years of secure production.

"A lot of people outside our business don't understand there is a difference between a resource and a reserve," he said.

"At most we have 20 years of natural gas, if you believe the Potential Gas Committee. And 20 years is a far cry from 100 years," he added.

Price also is a factor in reserve estimates, Berman noted.

"A lot of companies are booking undeveloped reserves that may never be developed, unless gas moves to a much higher price level," he said.

Industry reports provide some figures that back Berman's views.

Canadian explorer Talisman Energy Inc. of Calgary is active in the Marcellus and Eagle Ford shales in the United States and the Utica and Montney shales in Canada.

The company's recent economic analysis shows a steady decline in its shale gas development breakeven price over recent years, from $8.50/Mcf in 2008, to $6.50 in 2009, to $4.50 in 2010, to a projected $3-$4 in 2011.

At $3-$4/Mcf gas, that would be just breaking even.

Needed: An 'Old School' Approach

With tight economics, shale gas plays can come down to a desirable core

See **Shale Gas**, page 40

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Shale Gas Forum

An EMD-sponsored forum titled "Shale Plays: Technical Examination of Today's Reality and Tomorrow's Future," will be presented at 1:15 p.m. Wednesday, April 13, at the AAPG Annual Convention and Exhibition in Houston.

Shale plays now dominate the North American exploration and production arena, and are growing presences internationally – especially in Europe. But opinions differ, even among experts, as to whether or not shale plays will "change the way the game is played" or prove to be more challenging and elusive than expected.

Five panel members representing various perspectives will be given a chance to give a short presentation, followed by a Q&A session between the members and with audience participation.

Panelists include:

- Art Berman, director and geological consultant, Labyrinth Consulting.
- Robert Clarke, manager, unconventional gas service, Wood Mackenzie.
- Steven Dixon, executive vice president and COO, Chesapeake Energy Group.
- Melvyn Giles, global theme leader unconventional gas, Shell Exploration & Development.
- William Von Gonten Jr., founder and president, W.D. Von Gonten & Company.

Shale Gas

from page 38

area, Berman observed. He believes the industry has been inefficient in identifying the lucrative areas, the sweet spots for production and economics.

"I think it's really wasteful to find the core area by the Braille method," he said. "You drill 12,000 wells and then say, 'Oh, there it is.'"

In his view, the solution depends largely on old-school geology work. No one has exempted shale gas plays from the requirements of good geoscience.

"The very first thing that has to happen is, you need to make a really good structure map," he said.

Then shale plays should be evaluated using the same, traditional methods employed everywhere else.

"The tools are well logs and geophysics, seismic mostly. You have to think about what makes a shale well a good well as opposed to a poor well," Berman noted.

Shale gas opportunities are being looked at around the world, but plenty of barriers exist to spreading shale development to other countries, he said.

"The shale phenomenon is not going to be universal because of both geology and land use," Berman predicted.

"You're dealing with population densities in Europe where you are looking at limits to what represents viable land use," he said.

Some countries have much stricter environmental and industrial regulation than the United States, Berman noted.

"Another big issue is cost. If you want to drill a well in Poland, it's a really expensive proposition," he said.

Shale gas players in the United States face a growing environmental backlash, mostly over hydraulic fracturing, water use and water disposal.

"The environmental concerns, real or imagined, have to be addressed," Berman said.

It's another case of the industry not being able to avoid stepping all over itself.

"Look at how long it's taken for companies to disclose what's in these fracture treatments. The industry needs a better approach to communication with the public that doesn't upset environmentalists," Berman observed.

"If you let people organize against you because you won't disclose what's going into the ground, they will never go away," he said.

Back to Reality

Does Berman have any optimism for shale gas?

Some.

"One thing we're seeing is the majors are getting more involved in these plays. They are going to do a different level of science than the independents involved," he said.

"I'm not saying nobody is doing any science," he added, but the majors can bring a full set of tools to shale play evaluation and development.

Also, he sees the industry improving in its efforts, although "the future is, we need to do this a little bit better," he noted.

"Industry has already made many of its mistakes. In the Haynesville area, I think the core is being determined more quickly and efficiently. And that's what we want," he said.

And at some point in the future, real-world economics might actually come back into shale gas development.

"When all of this silliness of over-drilling is over, we've got to go back to the actual costs of gas production," Berman said. EE

Voting Begins for DPA Candidates

Officer candidates have been announced by the Division of Professional Affairs for the 2011-12 term.

Voting is online, and like AAPG officer candidate voting will be open until May 15.

The winner of the president-elect race will be DPA president in 2012-13.

The DPA candidates are:

President-Elect
(President 2012-13)

❒ **Peter MacKenzie**, Eastern Section, MacKenzie Land & Exploration, Worthington, Ohio.

❒ **Charles A. Sternbach**, Gulf Coast Section, Star Creek Energy, Houston.

Vice President
(One-year term)

❒ **Richard L. Nagy**, Gulf Coast Section, consultant, Houston.

❒ **James M. Hill Sr.**, Pacific Section, BNK Petroleum (US) Inc., Camarillo, Calif.

Secretary
(Two-year term)

❒ **Mark J. Gallagher**, Southwest Section, Encana, Dallas.

❒ **Jason G. Blake**, Rocky Mountain Section, Titan Energy Resources Corp., Park City, Utah.

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'Plan-Averse' political system a root issue

Living a 'Love-Hate Relationship'

By LOUISE S. DURHAM, EXPLORER Correspondent

John Hofmeister is the founder of the non-profit Citizens for Affordable Energy and is author of the book "Why We Hate the Oil Companies." He travels the country in a grassroots campaign providing an insider's view of what's behind the energy companies' posturing and how politicians use energy misinformation and lack of information to get elected and, once in office, to stay there.

Hofmeister joined Royal Dutch Shell in 1997 and served as president of Shell Oil from 2005-08. Prior to his Shell affiliation, he held high-level positions at major energy consuming companies rather than producers, such as GE, Nortel and Allied Signal.


HOFMEISTER

The challenge to hydrocarbons going forward is coping with the politics of energy, particularly the politics of oil and gas.

Hofmeister is a world apart from the stereotypical "awl man" who sometimes may not see beyond the confines of the industry. He packs degrees in political science rather than the expected petroleum geology and/or engineering sheepskins, and arrived at Shell more an outsider than an insider in the business of hydrocarbons.

With his acquired vast insight into the industry, his strong global business and strategic leadership experience and his knowledge of the political process, Hofmeister is a formidable spokesman for America's energy needs, supplies and the path to the future. He speaks with candor and is a straight-shooter, as evidenced in the introduction to his book, where he states:

"Americans have long had a love-hate relationship with the oil industry. Myself included."

During a conversation with Hofmeister, he offered the EXPLORER an overview of his thoughts on America's energy situation. His responses and observations, in his own words, are printed here:

Oil versus politics – and the winner is?

HOFMEISTER: The challenge to hydrocarbons going forward is coping with the politics of energy, particularly the politics of oil and gas.

Politics is the death of hydrocarbon energy. It's unwarranted, unfair and unnecessary.

In part it's because the hydrocarbon industry does as bad a job explaining itself to its stakeholder community as any industry in the world. By not explaining itself, ignorance is the enemy, and ignorance is winning.

In a democracy that is predicated on informed voters, the industry must accept its responsibility for educating those voters on the importance of what it does and the necessity of its products. What we've seen in the last several decades from the industry is not encouraging – that it cares or understands how important it is to explain itself.

In the meantime, elected officials, especially those who are funded by opponents to hydrocarbons, have "open season" on attacking, diminishing and debilitating the hydrocarbon industry.

The Number One challenge to resume drilling in the Gulf of Mexico, for example, is 100 percent political.

Without good information, the industry stands to lose at the hands of anti-industry advocates and the politicians who agree with them and also take their money.

When it comes to the Strategic Petroleum Reserve (SPR), politicians still don't get it.

HOFMEISTER: Ever since the Strategic Petroleum Reserve was created, there has been a knee-jerk reaction by populist-oriented politicians to utilize the SPR for what it was never intended to do.

It exists to support national security in the event of extreme emergence.

It is not a hedge on fuel prices.

Is it hopeless?

HOFMEISTER: It has to be better than hopeless – we have to live another day.

The industry and those who care about America's future, because oil and gas are very much in our future, have to turn the

Continued on next page

Hofmeister Set for EMD Luncheon

John Hofmeister, founder of Citizens for Affordable Energy, a former top-ranking executive in the energy industry and author of the book, "Why We Hate the Oil Companies: Straight Talk From An Energy Insider," will be the speaker for the EMD luncheon at the AAPG Annual Convention and Exhibition in Houston.

The EMD luncheon is set for 11:30 a.m. Tuesday, April 12, at the George R. Brown Convention Center.

Hofmeister's talk is titled "Hydrocarbon Opportunities Must Trump Their Challenges."

Hofmeister has said that the federal government, led by short-term-thinking elected or appointed officials, has failed to adequately govern energy through its three branches. In his view, the executive, legislative and judicial branches each attempt to govern energy and the environment, and they have grown their structures and processes beyond what can effectively or efficiently decide what is in the nation's best interests.

Hofmeister's talk will share his vision for a different governance model to ensure that energy and the environment are managed in the best interests of the nation's security, economic competitiveness, environmental sustainability and life style freedoms of choice.

Tickets for the event are $45.

His book will be available for sale and Hoffmeister will be signing copies at the AAPG Bookstore following his luncheon presentation.

Continued from previous page

negative to the positive. That's not hard to do, it just needs to be done – it must be done.

It's an absolute essential for the survival and success of the American model. We can have aspirations of a different kind of energy system over the course of time, but the only way aspirations can become a reality is if we move forward with a plan – a short-term, medium-term, long-term plan.

The political process in our political system is plan-averse. That's the issue we have to deal with. The adversity to a 'planful' set of solutions is where the industry could add great value to itself and to society by helping to develop such a plan.

It also could help itself and the political challenges hydrocarbons face by explicitly pointing out the negative effects of political choices that make energy more expensive than it needs to be.

For example, we have more oil than we will ever need in this country – but we're not allowed to produce it, but forced instead to import it. By importing two-thirds of our oil, we're at the mercy of the global oil trading system, which is volatile and tends toward ever-higher prices – which causes consumers and companies to pay more than they need to for a basic commodity like oil.

We have to overcome resistance to producing domestic resources in order to assure affordability of our energy future. That's an example of addressing a practical reality that is held back by political unreality.

In today's *USA Today* on the editorial page, Daniel Weiss of the Center for American Progress puts forward the completely misleading statement of the Obama administration that the United States only has 2 percent of the world's reserves and therefore can't drill its domestic oil to promote lower prices.

That is a gross misuse of the technical SEC definitions of "proven reserves" to mislead the American consumer, because proven reserves is a small fraction of probable reserves and the natural resource base of this country.

Mr. Weiss knows better, but he prefers to mislead the American public for political purposes rather than offer solutions to the instability of global trading markets. He would rather send the American people into despondency over high prices than to explain the truth of our natural resource base for his own narrow self-interested political objectives.

He's attempting to promote a new energy system, and that's fine. I support, and my book describes, a new energy system of the 21st century. The new energy system needs to be tempered by today's reality, and it's not here yet, which requires the existing system to carry us forward to the new system.

We don't have the possibility to achieve a new system if we're priced out of the energy marketplace and destroy American competitiveness and empty Americans' pocketbooks for overpriced oil.

The American people deserve the best of the old system while we build the new system – it's not either/or.

That's kind of my story.

The "Four Mores"

HOFMEISTER: I have a solutions proposal on our website outlined as the "Four Mores:"

- More energy from all sources.
- More technology for efficiency.
- More environmental protection.
- More infrastructure.

EMD Officer Candidates Announced; Online Voting Deadline May 15

Officer candidates have been announced by the Energy Minerals Division for the 2011-12 term.

Voting is online, and like AAPG officer candidate voting will be open until May 15.

The winner of the president-elect race will be EMD president in 2012-13.

The EMD candidates are:

President-Elect
(President 2012-13)

❒ **Jack Pashin**, Alabama Geological Survey, Tuscaloosa, Ala.

❒ **Andrea Reynolds**, Shell, Pittsburgh, Pa.

Vice President
(One-year term)

❒ **Richard Erdlac**, Erdlac Energy Consulting, Midland, Texas.

❒ **Dale Fritz**, Devon Energy, Oklahoma City.

Treasurer
(Two-year term)

❒ **David Tabet**, Utah Geological Survey, Salt Lake City.

❒ **William Van Wie**, consultant, Houston.

David Curtiss, head of AAPG's Geoscience and Energy Office in Washington, D.C., can be contacted at dcurtiss@aapg.org; or by telephone at 1-202-684-8225.

WASHINGTONWATCH

Budget Games: R&D, Tax Breaks in Play

By DAVID CURTISS, GEO-DC Director

"Winning the future," is how President Barack Obama characterized the challenge facing the United States in his State of the Union address. And while his goal lacked the specificity of President John F. Kennedy's charge to put a man on the moon, Obama clearly wanted to mobilize the country.

"We need to out-innovate, out-educate, and out-build the rest of the world," he said.

One area where the president wants to do this is energy – specifically, clean energy. He has crisscrossed the country calling for innovation and extolling the wealth- and job-creating benefits of these technologies.

CURTISS

There's an annual game played in Washington, where the White House proposes cuts or reductions to programs to gain political advantage – look at all the cuts we've offered! – knowing that Congress will restore them.

"We need to get behind this innovation," the president told Congress. "And to help pay for it, I'm asking Congress to eliminate the billions in taxpayer dollars we currently give to oil companies … I don't know if you've noticed, but they're doing just fine on their own. So instead of subsidizing yesterday's energy, let's invest in tomorrow's."

* * *

The president's fiscal year (FY) 2012 budget proposal – titled "Winning the Future" – seeks to do just that. In it he asks Congress to repeal eight oil and gas tax preferences currently in the tax code, including intangible drilling cost expensing, the passive loss limitations exception and the domestic manufacturing deduction. The projected savings to the federal treasury are just under $3.5 billion for the FY.

For scale, that's 0.32 percent of the projected $1.1 trillion deficit.

Research and development (R&D) programs for oil and natural gas are slated for elimination in the FY2012 budget. This includes the Natural Gas Technologies ($17.3 million in FY2010) and the Unconventional Fossil Energy Technologies ($19.4 million) programs at the Department of Energy (DOE).

In addition, the president asked Congress to terminate the Section 999 program authorized by the Energy Policy Act of 2005. This $50 million program funded annually is divided between the National Energy Technology Laboratory and R&D programs managed by the non-profit Research Partnership to Secure Energy for America, focused on ultra-deepwater and unconventional resources.

The justification for both the repeal of the tax preferences and cutting oil and natural gas R&D is a pledge to "end fossil fuel subsidies" agreed by leaders of the G-20 nations, the world's largest developed and developing economies, at a 2009 summit in Pittsburgh.

In total the DOE fossil energy program faces a 45 percent cut in the FY2012 budget. R&D sees a 31 percent reduction and is refocused exclusively on clean coal technologies, ranging from combustion research to carbon capture and storage.

Carbon storage is the biggest applied geology R&D activity in the federal R&D portfolio. It would decline from $154 million appropriated in FY2010 to a request for $115 million in FY2012.

One notable increase in the president's budget is the requested 135 percent bump for DOE's geothermal technologies R&D program. If fully funded the program would be just under $102 million and further expand and diversify the geothermal program to include low-temperature and co-produced resources and enhanced (or engineered) geothermal systems.

As an aside, the potential for oil and natural gas developers to harness geothermal energy alongside petroleum resources is of great interest to DOE, and is the subject of an Energy Minerals Division short course titled "An Overview of Geothermal Energy," which will be offered at the AAPG Annual Convention and Exhibition in Houston this month.

Over at the U.S. Geological Survey (USGS), funding for the energy program is flat at $27 million. Distressingly, the budget eliminates $1 million the federal government has been spending annually on preservation of geological and geophysical data.

The USGS minerals program faces an 18 percent cut to $44 million. According to the budget justification the cuts would come

Continued on next page

Powers Winner
from page 24

Paul McDaniel, who was visiting campus with Marathon's recruiting team, and in 1974 he began working part time on research projects during summers for ERICO, McDaniel's newly formed company. The stratigraphic projects in the North Sea and Mediterranean regions presented a fresh challenge and an ever-widening network of colleagues.

ERICO eventually was bought out by Petroleum Information, but Shelton, McDaniel and others from the original company regrouped to form Masera, a Tulsa-based company that specialized in in-depth regional geological studies.

The sheer volume of data utilized in these studies underscored the need for digitization across the industry, and Shelton, always an active participant in AAPG affairs (serving as AAPG elected editor 1975-89), saw the need to bring AAPG into the digital age.

As his Sidney Powers citation reads, "John Shelton had the vision to see the importance of digital publications to AAPG's future. He launched and nurtured AAPG's digital program to the benefit of AAPG members worldwide ..."

Shelton credits Dave Jenkins of Conoco with the original idea to digitize AAPG publications back in the early 1990s – but according to AAPG Executive Director Rick Fritz it was Shelton's insight, creative problem-solving and persistence that carried the idea to reality.

"It's an amazing accomplishment, because, first of all, John is not a computer geek," Fritz said. "But he had the vision to understand its potential value, and then the willingness to take on the challenge of a really monumental task, to seek out and coordinate the technical, financial and professional support necessary to make it happen.

"Because of his work, his enthusiasm and commitment, AAPG was the first professional society to provide this type of service to its members."

A Standard of Excellence

While Shelton never has been one to shy away from a challenge, neither has he been reluctant to challenge others, Fritz said. As one of the many geology students who studied under Shelton during his 20 years as a professor at Oklahoma State University, he has firsthand experience.

"I think he really inspired his students in that way," Fritz said. "He taught us how to take on a challenge, because if you took one of his classes you were definitely challenged. His classes were hard, but if you received a good grade you knew you had accomplished something worthwhile."

With the exception of his wife, the colleague who best understands what makes John Shelton a remarkable scientist and exceptional man is former OSU professor Gary Stewart. He said there is far more to the man than his professional expertise and achievements.

"I would rather speak of his character," Steward said. "This year is the fortieth year that John and I have worked together. The endeavors have been of many kinds. Some required much effort and long days. We disagreed only a few times – but each time openly, and invariably about geology. I recall not one single word spoken in anger.

"John never asked me – or other colleagues – for more time or effort than he was willing to expend," he said. "He kept his word, and otherwise held to his own high standards of personal and professional behavior.

"He has assisted many people inconspicuously, generously, and graciously – evidence of old-fashioned values that are now of lamentable scarcity. Forty years ago, I regarded John Shelton as a gentleman and a superb geologist. I still do."

Continued from previous page

from eliminating lowest priority research and assessments and delay completion of the National Mineral Resource Assessment.

Hold on a minute.

For the past several years the country has been talking about critical minerals and the importance of rare earth elements for clean energy technologies – a key component of the president's agenda – and we're trimming the USGS minerals program budget, the only source of this information in the federal government?

Well, there's an annual game played in Washington, where the White House proposes cuts or reductions to programs to gain political advantage – look at all the cuts we've offered! – knowing that Congress will restore them.

A similar dynamic is at work with the proposed oil and gas tax changes. Conventional wisdom in Washington is that Congress doesn't have the appetite to remove the oil and gas tax preferences from the tax code.

But that could change quickly: Deficit reduction is one possible driver, and potential "wind fall" profits due to high oil prices is another.

* * *

"So instead of subsidizing yesterday's energy, let's invest in tomorrow's," the president said.

It is snappy political rhetoric, but it's not the whole story. The problem with President Obama's budget and his administration's energy policy is that it is based on a false choice.

Petroleum transformed our world in the 20th century. To that extent it is yesterday's energy. But make no mistake, it is also today's energy, and tomorrow's, and next week's and next year's – and will be for decades to come.

Oil and natural gas makes up more than 60 percent of the U.S. energy portfolio today. In 2035 it still will be more than 50 percent, according to projections by the Energy Information Administration. It is the foundation of the global economic system.

There is no choice between "yesterday's energy" and "tomorrow's energy." There is only the reality of ensuring the affordable availability of the energy Americans use today, and how we diversify that portfolio of energy sources for tomorrow and coming decades.

The president is right to focus on innovation and competitiveness.

But even as we invest in new and alternative energy sources, we must harness innovation and competitiveness to maintain the robust foundation of fossil energy sources that keep the lights on and the wheels of commerce turning. We need policies that encourage resource development, support scientific and technological advancements and ensure greater energy security.

The future will be won by the decisions we make today.

AAPG EXPLORER

GEOPHYSICAL CORNER

The Geophysical Corner is a regular column in the EXPLORER, edited by Bob A. Hardage, senior research scientist at the Bureau of Economic Geology, the University of Texas at Austin. This month's column is the first in a five-part series dealing with S waves and fractures.

S Waves Prove Their Worth With Fractures

By BOB HARDAGE

When a shear (S) wave propagates through a rock unit that has vertical fractures oriented at a reasonably consistent azimuth, it splits into two S waves that propagate with distinct velocities.

- One of these S waves is a fast-velocity mode called S_1, which is polarized in the same direction as the fracture orientation.
- The other is a slow-velocity mode called S_2, which is polarized in a direction orthogonal to the fracture planes.


HARDAGE

The S_1 mode has approximately the same velocity as an S wave that propagates in the rock when fractures are absent. In contrast to this S-wave physics, a compressional (P) wave does not split into fast and slow modes when it encounters a fractured interval.

When fracturing causes significant differences in elastic moduli parallel and perpendicular to fractures, P-wave velocity can vary when measured parallel to and perpendicular to oriented fractures, as does S-wave velocity – but differences in P-wave velocity are not as dramatic as those in S-wave velocity.

Thus, S waves are preferred over P waves for seismic-based evaluations of fractured rocks.

* * *

S-wave splitting phenomenon is illustrated on figure 1, where an S wave illuminates a zone of well-aligned vertical fractures.

The incident S wave is polarized so that its particle-displacement vector is oriented at an angle Φ relative to the azimuth of the vertical fractures. S_1 and S_2 modes exit the base of the fracture zone at different times because they propagate with different velocities inside the fracture space (S_1 = fast; S_2 = slow).

As expected, the S_1 mode is polarized parallel to the fracture planes, and the S_2 mode is polarized perpendicular to the fracture planes.

S_1 and S_2 modes also reflect from the fracture zone, but are not shown.

A laboratory test that documents the S-wave physics described by this model was published by Sondergeld and Rai (1992). Their test procedure is illustrated on figure 2.

In this test, a piezoceramic element was secured to one end of a cylindrical volume of laminated shale to serve as an S-wave source. A similar piezoceramic element was positioned at the opposite end of the cylinder as an S-wave sensor.

This layered propagation medium, and the fact that the source-receiver geometry causes S-waves to propagate parallel to the embedded interfaces of the rock sample, are a good simulation of S-wave propagation through a system of vertical fractures.

In one test, the source remained in a fixed orientation relative to the plane of the simulated fractures and the receiver element was rotated at azimuth increments of 10 degrees to determine the azimuth dependence of S-wave propagation through the sample.

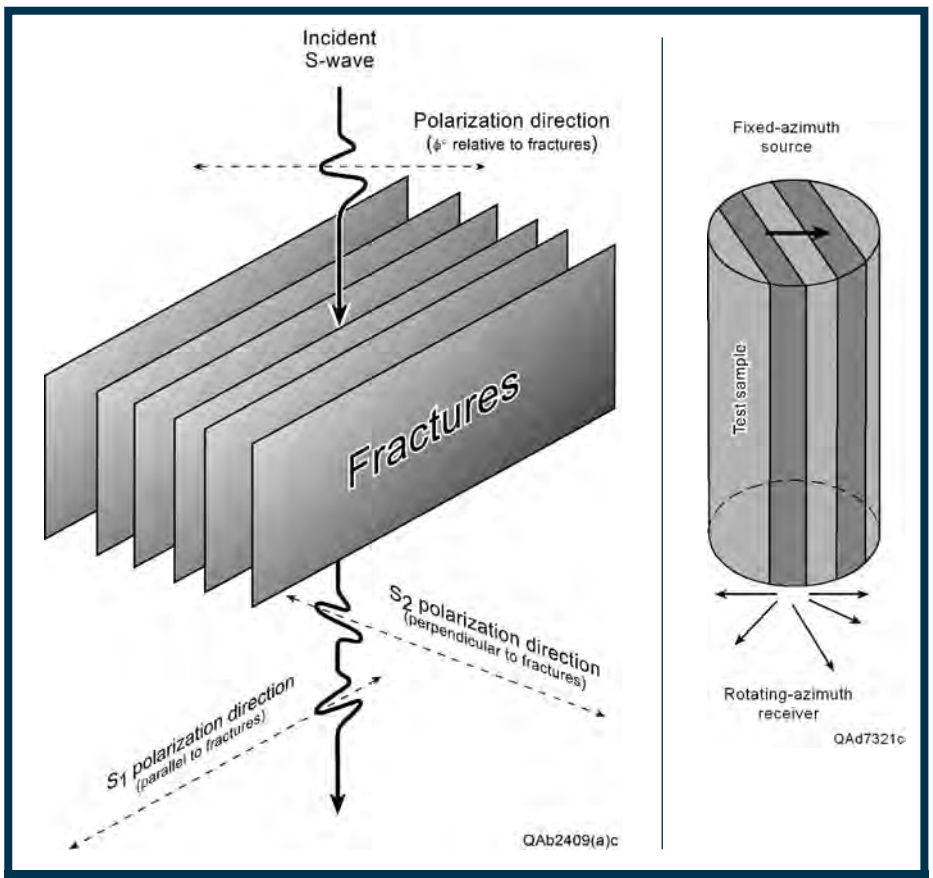

Figure 1 – Principles of S-wave splitting in a fractured rock. The incident S wave splits into two components – S1 and S2 – that transmit through a fracture zone and reflect individually from fracture-bounding interfaces. S1 is the fast-S mode, and its particle-displacement vector is oriented parallel to the fracture planes. S2 is the slow-S mode, and its particle-displacement vector is oriented perpendicular to the fracture planes. Reflected modes are not shown.

Figure 2 – Laboratory measurements of S-wave propagation through a simulated fracture medium.

The test results are illustrated on figure 3 as an end-on view of the test sample from the source end; the objective was to simulate the propagation of a fast-S (or S_1) mode, where the source displacement vector is parallel to the fracture planes (figure 3a), and then to simulate the propagation of a slow-S (or S_2) mode in which the displacement vector is perpendicular to the fracture planes (figure 3b).

Note how much longer it takes for the S_2 wavelet to propagate through the test sample than the S_1 wavelet – a confirmation that S_2 velocity is slower than S_1 velocity.

The positive-polarity end of the source is oriented in the direction indicated by the arrowhead on the source vector. For response A, the positive-polarity of the receiver is oriented the same as the source. For response C, the receiver has been rotated so that its positive-polarity end points in an opposing direction. Thus the polarity of wavelet B is opposite to the polarity of wavelet A.

In actual seismic fieldwork with S-wave sources and receivers, the positive polarities of all receivers are oriented in the same direction across a data-acquisition template so that wavelet polarities are identical in all quadrants around a source station. At receiver orientations B and D, the receiver is orthogonal to the source vector, which produces zero-amplitude responses.

* * *

The translation of these experimental results into exploration practice means that seismic prospecting across fracture prospects should involve the acquisition of S-wave data – and further, the data-acquisition geometry should allow S-wave velocity to be measured as a function of azimuth.

When an azimuth direction is found in which S velocity across the depth interval of a fracture system has its maximum velocity, then the orientation direction of the dominant vertical fracture in that interval is defined as that maximum-velocity azimuth.

Next month: The behavior of seismic S waves as they propagate through a fractured interval, with emphasis on laboratory data of real S waves propagating through fractured real-earth media.

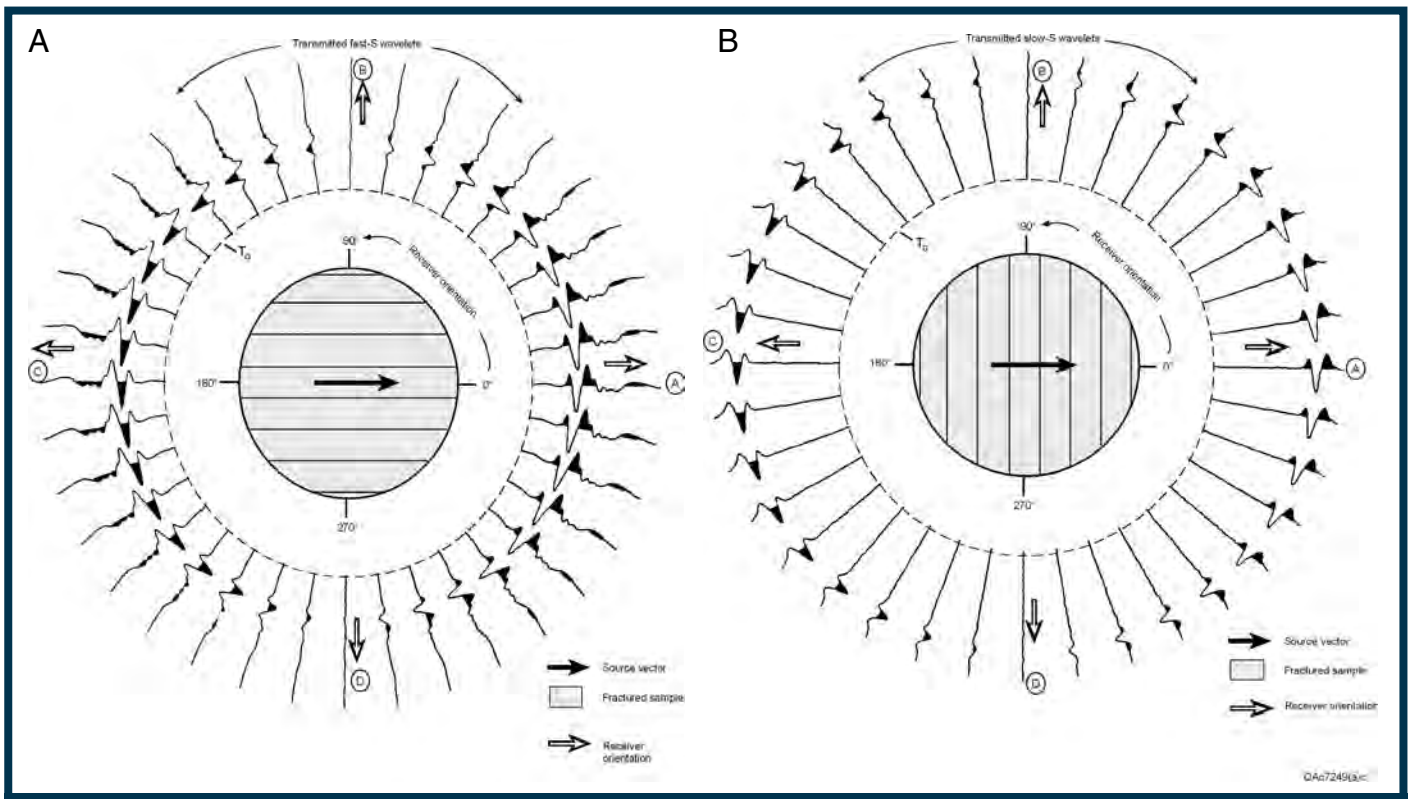

Figure 3 – Data acquired using the test arrangement illustrated on figure 2 to simulate S-wave propagation through a fractured medium. (a) The illuminating S-wave displacement vector is parallel to the test-sample fractures to simulate fast-S propagation. As the source stays fixed on one end of the sample, the receiver at the opposite end of the sample is rotated at angular increments of 10 degrees relative to the positive-polarity orientation of the source displacement vector. Every transmitted response is a fast-S wavelet. The dashed circle labeled T0 defines time zero. Arrowheads define the positive-polarity ends of the source and receiver elements. (b) The same test repeated with the illuminating S-wave displacement vector oriented perpendicular to fractures to simulate the propagation of a slow-S mode. Every transmitted response is a slow-S wavelet. Note how much longer the travel times are for wavelets polarized normal to fractures than they are for the wavelets polarized in 3a that are polarized parallel to fractures.

Four proposals on agenda

Delegates to Consider Bylaws Changes

By DAVID H. HAWK, Chairman, House of Delegates

The 41st annual meeting of the AAPG House of Delegates will be held Sunday, April 10, in Houston. All are invited to attend, though only your delegates may vote.

When we started our terms last year, HoD chairman-elect Jeff Lund, secretary-editor Patrick Gooding and I set several goals for our work and that of the HoD committee chairs and their members.

First, I believe we populated the committees with people from all Sections, Regions and age ranges who were eager and willing to share their judgment and problem solving skills.

We wanted to continue and expand the policy of transparent actions and decisions that our predecessors had implemented. While certainly not being perfect, we have listened with open minds to suggestions for changes to the Bylaws and Rules and Procedures and have tried to communicate in a timely fashion with all who commented.

We have broadened the issues of the Delegates Voice with columns explaining the role of the HoD, the work of its committees, why geoscientists belong to AAPG and the need to begin planning now for the future of our Association.

One of our goals was to give visibility to the proposals of the AAPG membership committees, which they believe will encourage growth and provide more flexibility to students moving to Active membership when they fully meet the qualifications.

We have worked diligently through the Resolutions Committee to ensure that every affiliated society and all the Regions had their full complement of delegate representation in Houston and throughout the next year.

The Nominations Committee has brought an excellent slate of well-prepared and ready-to-serve candidates for chair-elect and secretary (see box below). The Honors and Awards Committee did an excellent job in selecting well-qualified current and former delegates who have distinguished themselves, AAPG and the House. These are individuals who through their work and dedication they have made noteworthy, meaningful contributions to the House.

* * *

Delegates in Houston will consider four items suggested by the **C&B Committee** and approved for HoD consideration by the HoD Executive Committee:

- Legislation is proposed that expands membership classifications and redefines the term "member," adding Certified as a member classification.
- Student membership will be extended to 24 months following termination of academic enrollment.
- The limitations on AAPG Honors and Awards relating to officers, candidates and division presidents have been clarified.
- Gender neutral language for these documents is proposed.

The House **Rules and Procedures Committee** has proposed changes that:

- Set a protocol for filling delegate appointments when an Affiliated Society has failed to act.
- Propose gender neutral language.
- Clarifies eligibility for House honors and awards has been clarified.
- Allow HoD past chairs (whether serving as a current delegate or not) to serve at the Chair's request as a non-voting member of an HoD Committee.

This year, three past HoD chairs served on an ad hoc committee sharing experiences and judgment with the EC and the committees; we were better for their participation. Thank you to Ed Heath, Larry Jones and George Bole.

My thanks, too, go to the HoD committees for their quality work on behalf of all – and particularly a thank you to the staff at AAPG, especially Regina Gill and Donna Riggs, whose organization and direction are invaluable.

HoD Candidates

Nominees for House of Delegates offices for 2011-12 have been announced.

Voting will be held at the 2011 HoD meeting at the AAPG Annual Convention and Exhibition in Houston.

Those elected will assume office on June 1. The chair-elect will assume the House gavel as president for 2012.

The candidates are:

Chairman-Elect

❒ **Sigrunn Johnsen**, senior staff geologist, RWE Dea AS, Oslo, Norway.

❒ **Robert Randy Ray**, independent geological/geophysical consultant, R3 Exploration, Denver.

Secretary/Editor

❒ **David Cook**, retired ExxonMobil, Maldon, England.

❒ **Jewel Wellborn**, president, Hydrocarbon Exploration and Development Inc., Littleton, Colo.

Today's scientists face daunting task

New Tools Give Fresh Look at Lunar Data

By BARRY FRIEDMAN, EXPLORER Correspondent

Most Americans old enough to remember still have memories – vivid, if fading – of where they were when Apollo 11 touched down on the lunar surface on July 20, 1969.

At least one Japanese geologist does, too.

"When Neil Armstrong became the first human to land on the moon, I was only a six-year-old boy living in Japan."

That's AAPG member Seiichi Nagihara, an assistant professor at the Department of Geosciences at Texas Tech University in Lubbock, and he's talking not only about the memories but the treasure trove of data that resulted.

NAGIHARA

But it's what's left – what hasn't been analyzed from that haul – that's the basis of "Revisiting the Apollo Lunar Surface Geophysical Experiments," a paper he'll present in Houston at the upcoming AAPG Annual Convention and Exhibition.

You may be wondering why a Japanese geoscientist with no real expertise is even involved.

You're not alone – there was a time Nagihara thought so, too.

"About four years ago," Nagihara said, "I became involved in a lunar research project being carried out at NASA's Goddard Space Flight Center almost by accident. Scientists there needed someone with my kind of expertise (measuring and analyzing geothermal heat flow)."

"In most of my academic life I have worked on geophysical research projects on earth," he said, "but now I'm one of the leaders in the efforts for fully restoring and re-analyzing the data from the geophysical experiments conducted by the Apollo astronauts."

The Time is Right – Now

But why now – and why wasn't all the data analyzed when it was first collected 40 years ago?

"The biggest reason," Nagihara says of the lack of analysis, "is that the Apollo era scientists did not have opportunities and tools for thoroughly analyzing the data."

And even if they had, another problem soon developed: lack of interest.

"Back on earth," he said, after Apollo was ended, "NASA, having beaten the Soviet Union to the moon, was eager to move on to other new challenges."

And once it did, funding for Apollo data analysis dried up, and some of the data transmitted from the ALSEP (Apollo Lunar Surface Experiments Packages) instruments were left unprocessed.

Making matters worse: Technology that was available for processing – in the 1970s, at least – was inadequate anyway. The first set of instruments on Apollo was powered by solar array and lasted a mere 20 days. The rest, powered by radioisotope thermal generators, were turned off in the late 1970s.

Data that was collected was recorded on open-reel magnetic tapes, but Nagihara estimates that more than 5,000 such data tapes were needed to store the entire ALSEP instrument data.

Moreover, over the last 40 years, most of the people who were directly involved in the Apollo missions and data recovery retired.

After so much time and inattention, some of that information, like old photo albums last seen in the attic, were forgotten or lost. Things began to change about 10 years ago, according to Nagihara, when President Bush decided to send humans back to the moon.

"Scientists of the developed nations suddenly became interested in the original Apollo data," he said. "The European Union, Japan, the United States, India and China sent robotic probes to orbit the moon."

Continued on next page

Astrogeology Set For Houston

Seiichi Nagihara, an assistant professor at the geosciences department at Texas Tech University in Lubbock, Texas, will present the paper "Revisiting the Apollo Lunar Surface Geophysical Experiments," at the AAPG Annual Convention and Exhibition in Houston.

Nagihara's paper, part of a four-paper session titled "Astrogeology," will be given at 4:25 p.m. on Monday, April 11.

The Astrogeology session co-chairs are William Ambrose and former NASA astronaut Harrison Schmitt. The session begins at 3:40 p.m.

Other papers are:

- Lunar Helium-3 Value Chain: Investment and Funding.
- The Near Earth Asteroids as the First Step on the Way to Mars.
- Origin of Oil and Hydrocarbon Gases Within Our Solar System – Biogenic and Abiogenic?

Continued from previous page

Nagihara said in order for the modern scientists to make sense of these newly collected remotely sensed data, they need to compare them with data collected on the ground" from the 1970s.

With more powerful computers and more sophisticated analytical methodologies, "modern lunar scientists can squeeze a lot more juice out of the data than the Apollo era scientists could," he said. "Also, the modern scientists, as they learn more about the moon from the new data, are able to examine the ALSEP data from totally different perspectives from the Apollo era scientists."

So what does he hope the unexplored data will show?

"For almost everything we know about the interior of the moon (the rocks that make up the moon and how they are structured), we owe it to the data and the rock samples obtained during the Apollo missions," he said. "The ALSEP dataset represents the only direct, long-term geophysical observations carried out on the surface of an extra-terrestrial body. It was true 40 years ago, and it is true now.

> 'I will never forget what I saw ... This was no science fiction movie. This was way cooler than that. This was real.'

"The robotic probes orbiting around the moon can tell you a lot about what is on the surface of the moon," he added, "but when it comes to the subsurface, without the Apollo data we would know very little."

It's worth remembering that the Apollo astronauts (from all the flights that went to the moon: 11, 12, 14, 15, 16 and 17) landed at only six locations. At each landing site, Nagihara said, an ALSEP or ALSEP-like instrument package was deployed, consisting of two to seven instruments.

Nagihara makes no claims as to which one of those sites holds the most promise for new information, but says he is focusing on the geothermal heat flow measurements conducted on the Apollo 15 and 17 missions, as those concern geothermal heat flow measurements – his area of specialization.

Co-authors of Nagihara's paper are Yosi Nakamura, department of geosciences, University of Texas, Austin; and retired geophysicist L. Lewis.

Like most scientists, Nagihara says the chance to do this work, to re-analyze the data of such historic importance, is daunting.

"I will never forget what I saw on the TV at home, the image of the astronauts standing by the American flag and the lunar landing module," he said. "This was no science fiction movie. This was way cooler than that. This was real."

And it's why now, when he pursues the study of this seminal moment, he feels honored, as an academician, "to be involved in the current efforts for fully restoring and re-analyzing the data of such historic importance."

There is something else, too.

"It's when I go back to being the six-year-old boy in Japan again."

Astronauts at the pinnacle of scientific efforts

Space Summoned 'Elite Scientists'

By BARRY FRIEDMAN, EXPLORER Correspondent

"There are just so many astronauts in the whole world and … I'm one of them! It's a big part of me."

That was how the character of Garrett Breedlove, played by Jack Nicholson, explained what it meant in the Academy Award-winning film "Terms of Endearment."

AAPG member James F. Reilly, a former NASA astronaut who logged over 853 hours in space (about 35 days), knows as well as anyone how unique this club is, for only 505 people from 38 different countries have ever done what he has.

"I feel like I have been very lucky to have been part of a very select team," he said. "I imagine it is a lot like the feeling players have when they go to the World Series or to the Super Bowl – awe, wonderment, ecstatic joy at just being there."

He knows there is a certain amount of luck and circumstance, too – and that dynamic, plus a lot of other thoughts, memories and insights about his experiences is what he'll be talking about as one of four NASA astronauts to speak at the All Convention Luncheon at the AAPG Annual Convention and Exhibition in Houston.

The topic is "Taking Geoscience to Greater Heights – American Geoscientists in Space."

The cliché calls out: You can take the scientist out of space but you can't take space out of the geoscientist.


REILLY

> **"I can only hope that we as astronauts can be the unintentional mentors that spark an interest in our successors."**

"I do miss the experience of being there," says Reilly, who over a 14-year span flew on Space Shuttles Endeavor and Atlantis (twice) – but he doesn't miss the rigors of the preparation.

"I found that three was my magic number," Reilly says. "I had done everything I could have in my career path of a spacewalker and I would have likely been doing things over again. I had gotten to a point where I had done enough and it was time to step away to let others experience this incredible event."

Some of those "others" will be joining him as speakers at the luncheon represent three other distinct eras of NASA exploration stages:

- AAPG Honorary Member Harrison H. "Jack" Schmitt (Apollo 15, when he became the only geologist to have walked on the moon).
- Geoscientist Kathryn D. Sullivan (Challenger, Discovery and Atlantis – and in 1984 she became the first woman to walk in space).
- Andrew J. Feustel (a former ExxonMobil geophysicist who flew on Atlantis and is set for the upcoming Endeavor mission).

Reilly, who has a doctorate in geology from University of Texas-Dallas, has participated in similar-type events before and knows first-hand that the mutual respect among the different era astronauts is cross-generational – he expected that.

One moment he didn't expect, however.

"The one thing that did surprise me was meeting one of the Apollo guys, and I expressed my admiration and how I would have loved to have been able to do what they did," Reilly said. "His response was classic: He wished that he would have had the opportunity to fly the Shuttle."

Thinking about it, Reilly admits, "The Gemini and Apollo guys did have it a lot tougher than we did."

Today's 'Huge Challenge'

The former astronauts are getting together, not to just reminisce like comedians at a back table at the Carnegie Deli, but in part to be honored on the 50th anniversary of John F. Kennedy's "Man on the Moon" speech – and, perhaps most importantly, to talk about the future of science, which, Reilly knows, means the future of science education.

"We have a huge challenge in front of us," says Reilly, who is now dean of the School of Science and Technology for the American Public University System. "The currency of the future will be the knowledge we gain from staying on the frontiers.

"For the last 50 years, we have challenged three generations of engineers and scientists to do things that have never been done before and in ways that we had to invent," he said. "That knowledge filtered out into almost every aspect of our lives and helped build the technological lifestyle that we are so dependent on."

Reilly believes there is an education chasm today that is affecting all the sciences, not just his.

"We have to stay on the frontiers, not only in space, but in the oceans, in Antarctica, in information technology and, most critically, in the investments that drive the advances in our knowledge," he said. "We also have to keep it relevant – it has to be

See **Reilly**, page 54

Astronauts Will Discuss The Final Frontier

Former and current NASA astronauts Harrison H. "Jack" Schmitt, Kathryn D. Sullivan, James F. Reilly II and Andrew J. Feustel are slated to speak at this year's All Convention Luncheon at the AAPG Annual Convention and Exhibition in Houston.

The luncheon, "Taking Geoscience to Greater Heights – American Geoscientists in Space," will be held at 11:30 a.m. Monday, April 11, in the George R. Brown Convention Center.

These scientists together represent a near-uninterrupted timeline of the entire NASA manned space program, initiating in 1965 with Apollo training to the latest space shuttle mission scheduled for later this year.

Each will tell his or her own compelling story of an early interest in geoscience, astronaut selection and training, mission accomplishments, post-mission experiences and ventures.

The common thread for all will be a look at what benefits the space program has provided in the past, what it will provide in the future and the role of geologists in the story.

Feustel, who was a geophysicist for ExxonMobil Exploration before joining the NASA program, is a member of the upcoming STS-134 Endeavour; as such, his status for the luncheon was unknown at press time. If unable to attend, his remarks may be prerecorded.

Tickets to the luncheon are $50.


Jim Reilly


Harrison Schmitt


Kathryn Sullivan


Andrew Feustel

PROWESS has a message to share

Female Progress in Industry Work Force Noted

By COURTNEY CHADNEY, EXPLORER Correspondent

The Professional Women in Earth Sciences, popularly known as PROWESS, has a message for women geoscientists:

Women geologists have done great things in the past, great opportunities are waiting in the future, and the paths to future success are available to them today.

That will be the basis for "You've Come a Long Way Baby – Evolution of the Work Environment in the Oil and Gas Industry," a PROWESS panel discussion set for 1:15 p.m. Tuesday, April 12, at the AAPG Annual Convention and Exhibition.

The panel will feature six women geoscientists – ranging in industry experience from 10 to 30-plus years – who will talk about challenges, advances and expectations that women have and will continue to face as geoscientists.

The panel includes:

- **Susan Longacre**, Chevron Fellow Emeritus, retired, and a past elected Editor of AAPG.
- **Gillian Apps**, sedimentologist-stratigrapher in global technology R&D team, unconventional gas resources, BP.
- **Joyce Thomas**, vice president of operations, U.S. land, Baker Hughes.
- **Thuy Rocque**, chief petrophysicist, Anadarko Petroleum.
- **Andrea Reynolds**, staff geologist, Shell.
- **Michelle Warner**, senior geologist, ENI U.S. Operating Co.

Moderators of the seminar, AAPG members Evelyn Medvin and Sunday Shepherd, are excited about what this year's discussion has to offer.

"It (the panel) highlights the careers of successful women in our industry," Medvin said, "helping younger women see that they too have a place within what had traditionally been a man's world.

"We were a minority, often excluded from opportunities, because there weren't 'woman friendly' facilities," she added.

"Yes, the top ranks are still predominantly male and it's tough to balance a career and raise a family, too," Shepherd added. "But, our industry has come a long way."

Shepherd referenced a few women who contributed to breaking into this traditionally male-dominated field.

"Women like (AAPG members) Susan Longacre, Robbie Gries and Martha Lou Broussard faced discrimination and adversity head-on by demonstrating technical excellence and professionalism," Shepherd said. "These ladies had it tough, but stuck it out because they were passionate about earth science."

Medvin hopes that "the work force of the future will be a global conglomeration, with gender and ethnic differences adding value to the challenges of fueling a growing population in an environmentally respectable manner."

Finding the Balance

Gillian Apps will open the panel discussion this year, with a talk titled "Reservoirs and Sand Castles: One Woman's Perspective on Managing Complexity," which will center on the benefits of being flexible in one's life in order to achieve balance between family and career.

"Provisions for working mothers were non-existent 30 years ago," Apps said.

With two high school daughters to take care of and a husband in a demanding career as well, Apps experiences everyday the struggle to balance her life – and that a lot of women geoscientists over the years were unsatisfied with having just career success.

"Many of us who had spent a long time building qualifications and experience realized we needed to acknowledge our human side and raise a family," she said, "so we fought for parental rights – not just women's rights – in these family-related matters."

Time also has seemed to encourage positive progression for women in the areas of career advancement and working partnerships. Now, Apps believes "all the major companies have a good range of career path opportunities for women," and "many companies also have husband and wife pairs who are both highly successful."

Such companies have HR policies that allow flexible working hours, leaves of absences and other important amenities for family women and men.

Apps explained that although larger companies like BP have tried to create a culture of diversion and inclusion for minorities, there are many others who still have not.

"In other companies the Dark Ages seem alive and well," she said.

In the 2008 AAPG PROWESS work force retention survey, 49 percent of the nearly 1,700 respondents said the

See **PROWESS**, page 54

Reilly
from page 50

understandable and not cloaked in the 'high priest' language that so often turns our kids off to science and math.

"Space is a lot like geosciences," he continued, "in that it is a 'relational' subject. It contains a little physics, biology, chemistry and certainly a lot of math."

Reilly says his colleagues at the luncheon, and others like him, have a special advantage in teaching the disciplines.

"Fortunately, when those of us who have been to space talk about the experience, we 'sneak' the science and math into the message," he said. "I can only hope that we as astronauts can be the unintentional mentors that spark an interest in our successors."

A Great Bargain

The competing interests of politics and science education – and the land-mine of how much or how little religion will be included in science curriculum – is something Reilly is aware will take some negotiating in the classroom.

"As a practicing Christian, I have no issues with my religious beliefs coexisting with my life as a scientist," he said. "To say, all we need to know about the universe is contained in the Bible, the Torah or the Koran just isn't feasible – and it is my personal opinion that God gave us reason so that we could progress in our knowledge.

"Nothing in science is taken on 'faith,'" he said. "Creationism, as I understand it, requires that we take a great deal on faith. So, to say 'creationism' is a credible scientific model just doesn't make sense."

But Reilly also believes the divide may, in fact, not be that great.

"Now, all that being said, I tend to follow the spirit of the statement made by John Paul II, when he said that God is truth and pure science is the search for truth and, as such, they are not in conflict," Reilly said. "My personal position is that the more we understand the world around us, the greater and stronger is my faith."

NASA is in a unique position to strengthen that knowledge and differentiate fact from faith – and Reilly wishes taxpayers knew what a bargain it was.

"At something less than $20 billion to fund aeronautics research, computational research, robotic missions, human missions, earth observation missions and developing new engineering methods, NASA is one of the best bargains we have going in the national budget," he said. "In terms of the total cost of the budget at $3.55 trillion, this is less than 1 percent of the federal outlays."

That comes out to about $90 per share for Americans, or, as Reilly puts it, "a nice meal out or what we spend on New Year's Eve celebrations."

When measured against the future of knowledge and discovery, he concludes, "It seems like a pretty small investment with a lot of benefit to me … but then I readily admit to a bias."

It's a bias shared by at least 504 others.

PROWESS
from page 52

biggest challenges they faced were work climate issues. Those issues included:

- A lack of advancement opportunity.
- Female mentors.
- Professional networks.

Forty-three percent said their biggest challenge was achieving a work family balance.

"Dark Age" companies are not the only ones to blame for unequal gender success in the science field. Apps says all companies deal with the issue of retention.

Although, the numbers of women in the industry seems to have increased, these numbers fluctuate constantly. This deters progression for women in the field.

"From my own perspective," Apps said, "I still see women faced with old guard behaviors. In times of economic recession, these behaviors and attitudes have a tendency to resurface."

Apps said she hopes her talk ultimately will inspire longtime geologists to share their experiences; women need to share what they have learned, she said, so that women can continue to make an increasingly larger impact in the industry.

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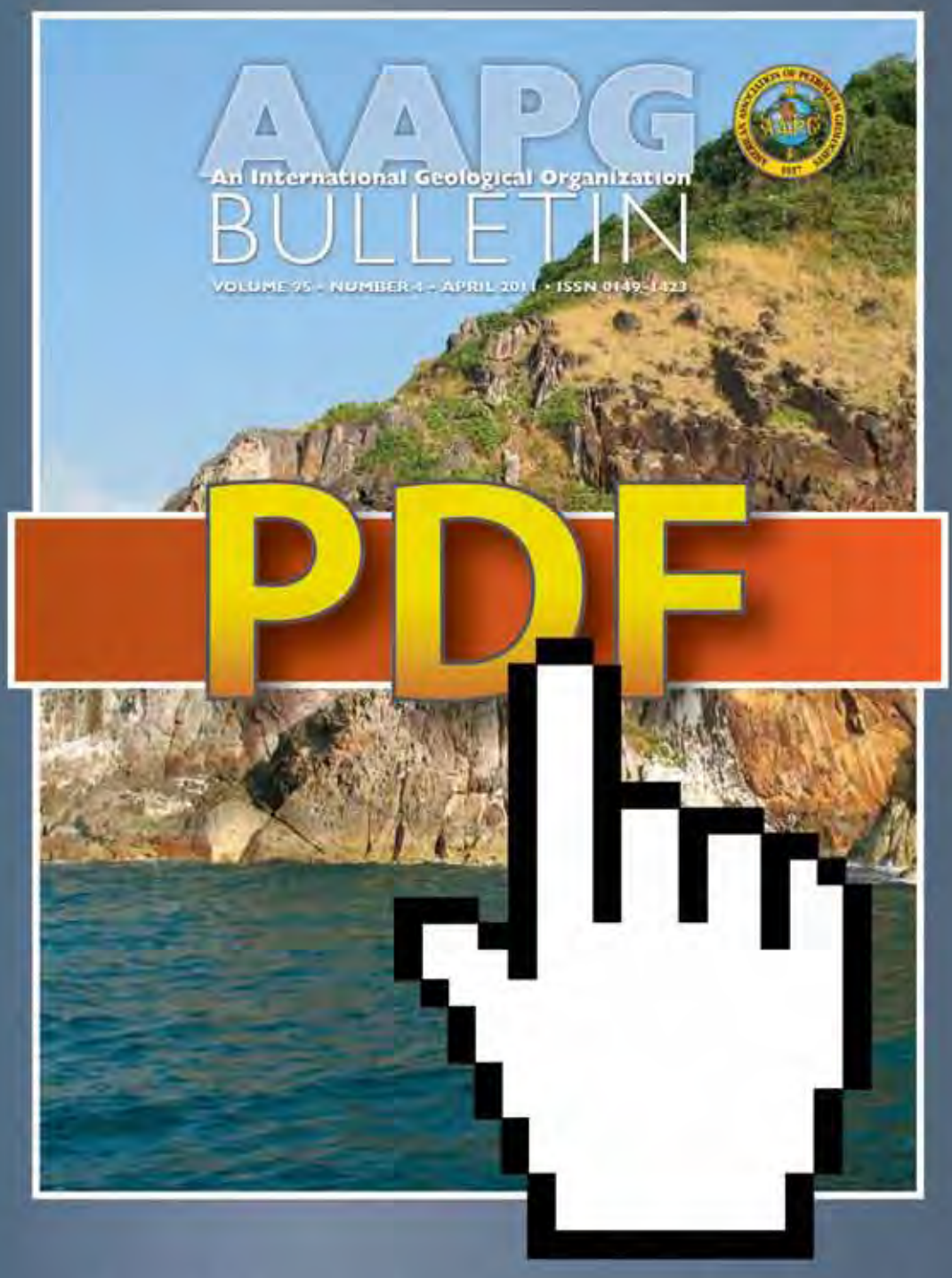

The AAPG Bulletin is a technical journal that is recognized in the industry as the leading peer-reviewed publication for information on geoscience and the associated technology of the energy industry.

The link below takes you to the Members Only login page where, with a few key strokes, you can click on a link for the Bulletin Online, the current issue, or for the Bulletin Archives, all issues of the Bulletin to date. Online as searchable html and .pdf files, the current issue is always available by the first of every month.

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Also submit your next paper for consideration in the Bulletin.

Article highlights include:

A new untested play is proposed

Henrik I. Petersen, Anders Mathiesen, Michael B. W. Fyhn, Nguyen T. Dau, Jørgen A. Bojesen-Koefoed, Lars H. Nielsen, and Hans P. Nytoft

Two-dimensional modeling of source rock maturation and hydrocarbon generation histories was conducted in the Gulf of Thailand and South China Sea. A geologically based interpretation of seismic facies variations in the synrift successions allowed a geological model of the synrift lithologies to be developed.

Drill bit metamorphism

Sverre Ekrene Ohm and Helen Haneferd

Care should be taken with fluid inclusion studies. It is important to make sure that the inclusions have been formed by natural geological processes since frequent changes of drilling bits due to penetration rates or anamously high vitrinite reflectance values could indicate bit-induced alterations.

Stand-alone exploration targets?

Christopher A-L. Jackson, Mads Huuse, and Gillian P. Barber

Three-dimensional seismic is a powerful tool in understanding the 3-D geometry of wing-like clastic injection complexes. Because the geometry of these features may be more complex than previously documented, this study has implications for reservoir geometries and hydrocarbon exploitation.

Braided fluvial reservoirs

Richard Labourdette

This paper defines a regional stratigraphic framework for the Escanilla Formation, Spain, using terrestrial LIDAR, 3-D aerial photographs, and field measurements. The control of channel evolution and distribution on the creation of stratigraphic connectivity in reservoirs is discussed.

SPOTLIGHT ON ...

Wold: A Pioneer With Sights on Tomorrow

By COURTNEY CHADNEY, EXPLORER Correspondent

You've heard that one man's trash is another man's treasure?

John S. Wold, this year's AAPG Pioneer Award recipient, admits that his life-long love of geology started as a boy digging through a dumpster.

It's a memory that still brings a smile – how young John, when walking to public grade school from Union College where his father was head of the chemistry department, would pass by the college dump.

"In the dump were the geological deposits – used mineral samples from all over the world!" Wold recalled. "I would go in there and pick out the ones I liked. That got me interested in minerals."

Since first digging his hands into geology, literally, Wold has accomplished and achieved more than most, politically and scientifically.

In fact, there's a plethora of reasons why he'll be honored in Houston – in areas as diverse as government policy, oil, gas, uranium, coal and soda ash – with the Pioneer Award.

Some of his accomplishments include:

- Being chosen by the Associated Press and United Press International as "Wyoming Man of the Year" in 1968, "Wyoming Mineral Man of the Year" in 1978, "Oil/Gas and Mineral Man of the 20th Century" by the American Heritage Foundation of the University of Wyoming in 1999, and in 2001 being awarded AAPG's Public Service Award.
- Serving two-terms as Wyoming Republican state chairman, Republican state finance chairman and member of the Republican National Committee.
- On a national political level, he was the first professional geologist to ever serve in the U.S. Congress (in the House of Representatives, 1969-71).
- He also was the author and sponsor of the National Mining and Minerals Policy Act of 1970, which emphasized the need to strengthen national security by establishing a strong, domestic, free-enterprise mineral industry.
- He introduced Exxon, Mobil, Sun, Mapco and other major players to the coal resources of the Rocky Mountains in the early 1970s.
- In 1973, he founded the Wold Nuclear Company that discovered the Highland Uranium Mine, which became the largest uranium solution mine in the world.
- He developed soda ash technologies that have shown the potential to revolutionize Green River operations, through his Wold Trona Company at Hazen Research and Colorado School of Mines Research Institute of Golden, Colo.

WOLD

> "My motivation comes from doing something interesting in geology that can be financially rewarding, so that I can take care of some of these other crazy ideas that I have."

Wold, still active at 94, is the chairman and CEO of GasTech Inc., associated with British Petroleum Co. and Linc Energy of Australia, which are working on deep underground coal energy extraction technology.

He also is CEO of American Talc Company in Van Horn, Texas, which operates what is considered the largest and most efficient talc mine in North America.

Furthermore, he is a past director of K-N Energy; Empire State Oil Company; Midland Energy Company; National Association of Manufacturers; past chairman and CEO of Nuclear Exploration & Development Company, director of Sierra Madre Foundation for Geological Research, recent director of Plains Petroleum Company and of Coca Mines and chairman of the Wyoming Natural Gas Pipeline Authority.

"I've been very fortunate," Wold said. "I'm a dreamer, and I have been involved in some cutting edge activities in respect to mineral extractions."

A Passion for Education

When asked what his motivation to continue on at 94 years old, and after having achieved so much already, Wold answered, "My motivation comes from doing something interesting in geology that can be financially rewarding, so that I can take care of some of these other crazy ideas that I have."

One of his "crazy ideas" includes a mission to improve the state of the United State's public schools.

"I'm very worried about the future of my country," Wold said. "Between a quarter and a half of our high school students in America today never graduate – we're dumping millions of uneducated kids into the labor force.

"And we're going to pay for it in the years ahead," he said, "unless we can get our public schools back in shape and competitive with what we're facing abroad.

He believes there are two keys to improving education in America: improving parenting skills, and reforming the teacher unions.

"I think if I were in Congress, I would be very forceful in my thoughts with respect to public school education," he added.

But, obviously, he's no longer in Congress, so Wold continues to fight the battle to improve American public education by giving generously to many different schools and programs.

See **Wold**, page 58

UPCOMING EDUCATION SCHEDULE

SHORT COURSES

Seismic Interpretation in Fold and Thrust Belts Using Fault-Related Folding Techniques **Massachusetts**	**August 15-18**

FIELD SEMINARS

Modern Terrigenous Clastic Depositional Systems **South Carolina**	**September 6-13**
Sedimentology and Sequence Stratigraphic Response of Paralic Deposits to Changes in Accommodation: Predicting Reservoir Architecture **Utah**	**September 22-29**
Fundamentals of Wrench Tectonics Applied to the Anatolian Plate **Nevada**	**September 26-Oct. 1**

EDUCATION CONFERENCES

Summer Education Conference **Ft. Worth, TX**	**June 6 -10**
Fall Education Conference **Houston, TX**	**September 12-16**

LAST CHANCE

Modern Terrigenous Clastic Depositional Systems **South Carolina**	**April 27-May 4**
Clastic Reservoir Facies and Sequence Stratigraphic Analysis of Alluvial-Plain, Shoreface, Deltaic, and Shelf Depositional Systems **Utah**	**April 30-May 6**
Complex Carbonate Reservoirs **Italy**	**May 8-14**
Play concepts and Controls on Porosity **Spain**	**May 15-20**

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Editor's note: Ben Kessel and Frank Graf both are geologists with Anadarko Petroleum in Denver, and William Drake is a geologist with Pioneer Natural Resources in Denver.

YPs Plan Houston Gathering

By BEN KESSEL, FRANK GRAF and WILLIAM DRAKE

One of the more important charges of the AAPG's Young Professionals (YP) Committee is helping guide Student members along their path toward Associate and full membership, while also offering early-career advice and a networking start.

The annual Student and Professional Meet 'n' Greet, held on the first day of the AAPG Annual Convention and Exhibition, is a unique opportunity for the YP Committee to fulfill that goal.

This year's Meet 'n' Greet will begin at 2 p.m. Sunday, April 10 – right before the opening session and awards ceremony – in conference room 310 (near the Grand Ballroom) at the George R. Brown Convention Center in Houston.

The event is designed to assist students and newcomers in professional networking, foster career-long contacts and facilitate meeting other students with similar career goals.

In this setting, professionals of all experience levels have real face-to-face time with those new to the ACE experience – the ACE can be as overwhelming as it is exciting, but the YPs will be there to help by grouping students and professionals before the opening session.

Students have the chance to gain an insider's perspective on petroleum industry career topics while attending the opening session, the exhibition and the Icebreaker.

Those who participate can expect:

- Pre-opening session networking.
- To experience the opening session and awards ceremony accompanied by petroleum industry professionals.
- Connecting students and professionals to walk the exhibition floor during the Icebreaker event.
- Prizes for the first 40 attendees.
- Drawings for cash prizes.
- A fun scavenger hunt geared toward meeting AAPG members (details at the Meet 'n' Greet).
- The chance to individually meet and talk with AAPG leadership.
- YPs and other AAPG leadership answering questions and guiding newcomers through the ACE experience.

We strongly encourage pre-registering for this event, at aapg.org/houston2011/meetngreet.cfm.

Check the box on your registration materials to be included at the Meet 'n' Greet. Short of that, simply show up – all walk-ups are welcome.

And feel free to check the YP website for the latest updates, at aapg.org/youngpros/, and check out our Facebook page at facebook.com/group.php?gid=6868451006.

See you in Houston at the YP Meet 'n' Greet!

Wold

from page 56

Particularly, he has contributed greatly by setting up chairs of science and religion at the University of Wyoming, Cornell and at Union College. He also recently funded a building at Union College that will house a program that brings engineering, art and social studies together.

"So many technical people have so little education in the arts and sciences of arts – and very few art people have understanding of science," he said. "This program is designed to cover that shortage of educational background for scientists and for social studies majors."

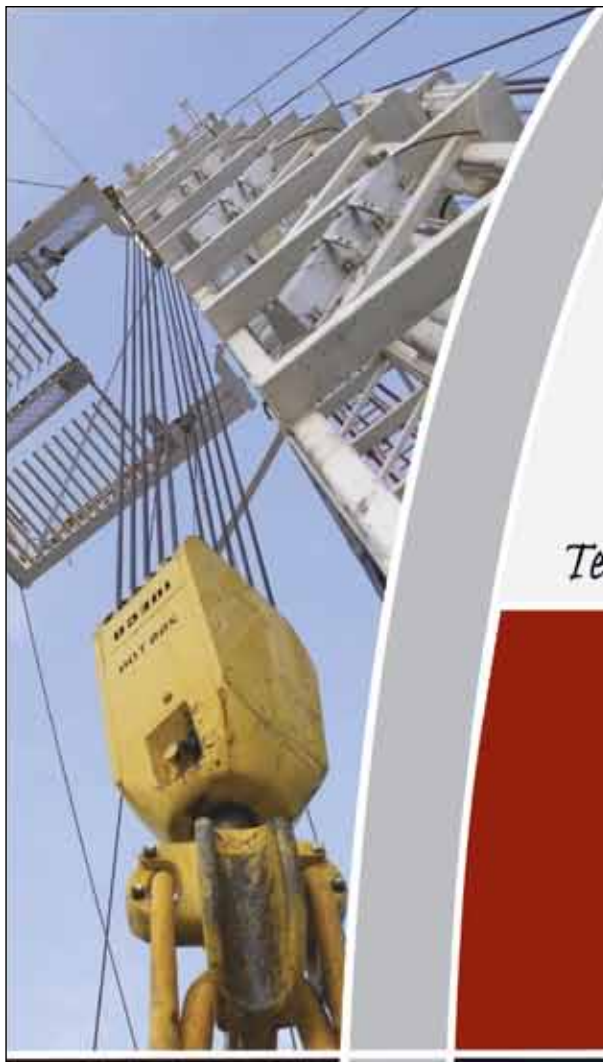
Besides education, Wold still holds passionate opinions on the state of America's energy future – and has hope the industry will find a way to provide what's needed.

He provided an example of how if an American company wanted to drill on federal land it would take two years to get permits, but if the Chinese wanted to drill on their land it would take only three days.

"That's why most of the major drilling has to be done overseas where we can get permits, and we can do it in a quarter of the time," he said. "That's the difference."

And so the man honored for pioneering efforts still has sights on the future.

"We usually don't reach the ultimate goal we've dreamed of," he concluded. "But ... in any event, you've made some difference, you think – and that's what counts."



Terry Hollrah, General Chair

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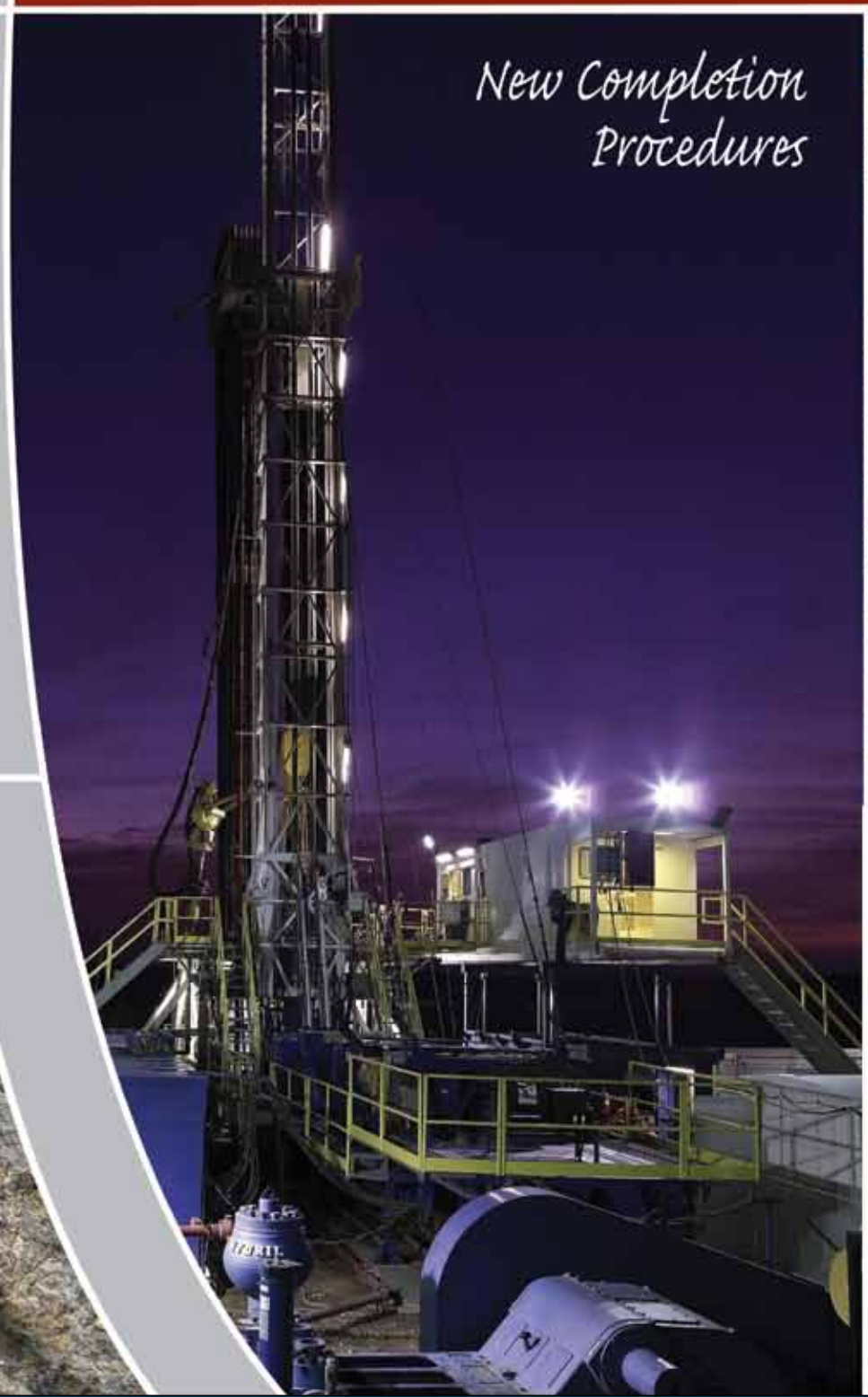

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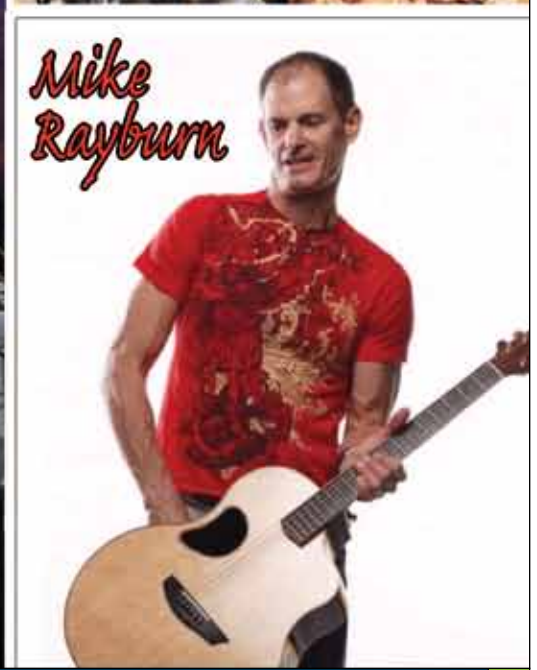
Woodford Shale



Mike Rayburn

NAPE says thank you to an American Hero: Sgt. Michael Ryan, with his wife, Cary (left), and country music artist LeAnn Rimes.

Deals made, too

Good Deeds at NAPE

By LOUISE S. DURHAM, EXPLORER Correspondent

If attendee numbers define success, the recent Winter 2011 NAPE Expo in Houston was successful indeed.

A just-about record breaking crowd of approximately 15,500 attended various special events and walked the crowded exhibition area to review the array of prospects being promoted.

But this annual confab is about far more than looking for the next big deal.

A highlight of Winter NAPE for the past few years is the American Heroes Luncheon, which honors severely wounded military veterans.

It's a part of the NAPE American Heroes initiative, which was conceived by NAPE executive vice president and AAPG member Robin Forté in 2004.

The first fund-raising event for the soldiers was held at the 2007 Winter NAPE and raised $275,000. This year's affair brought in approximately $350,000.

Since 2007, the American Heroes organization and its participants have donated more than $1.3 million to severely wounded soldiers.

The American Heroes Fund was established in 2009 to identify deserving organizations and to oversee the distribution of the contributions. The fund is a 501(c)(3), and contributions are tax deductible to the fullest extent of the law, according to Forté. One hundred percent of donations go directly to soldiers.

Forté noted the recent beneficiaries of the fund:

- **Operation Homefront** provides financial assistance to wounded veterans and temporary housing during rehabilitation.
- **Bay Area Builders Association's Operation Finally Home** builds and provides paid-for homes with clear titles to wounded veterans.
- **Canine Companions for Independence** (CCI) trains and provides assistance dogs to disabled veterans. The fund has partnered with CCI to provide four matches of assistance dogs and disabled veterans. Breeding, training of the dog and the veteran and lifetime support services for each pair tallies $50,000. In August 2010, the fund announced a $50,000 contribution for the training and placement of a facility dog to be placed in the rehabilitation unit in the Center for the Intrepid at Brooke Army Medical Center.

In December, the fund partnered with Extreme Makeover Home Edition, the Texas Builders Association and Operation Finally Home to build a home for the most severely wounded victim of the Fort Hood shootings.

"These guys are coming back pretty shattered from something they volunteered to do on behalf of all of us," Forté said. "It's a huge blessing to help them rebuild their lives.

"Whether it's homes or dogs, these guys will all tell you this stuff is incredibly important to them in their recovery," Forté emphasized. "We're fortunate to have the platform at NAPE to reach out to the oil business to gather up some of the oil money.

"After the luncheon, someone came up and said he wanted to match Shell's $25,000 donation," Forté added.

This year's annual American Heroes luncheon featured noted singer LeAnn Rimes, who provided entertainment and initially autographed two guitars for auction at the get-together. The high bid for one topped out at $9,000, while the other brought in $5,000.

"There was actually a third one after the show that went for $8,000," Forté said.

The real showstopper at these luncheons is the presentation of cost-free homes to one or two of the wounded veterans. This year's recipient was Sgt. Michael Ryan and his wife, Cary, along with their assistance dog, Kingsley, who also was present. The beaming couple noted the home was a complete surprise.

Wait – there was more.

The winning bidder for the $9,000 guitar presented it to the couple as a gift.

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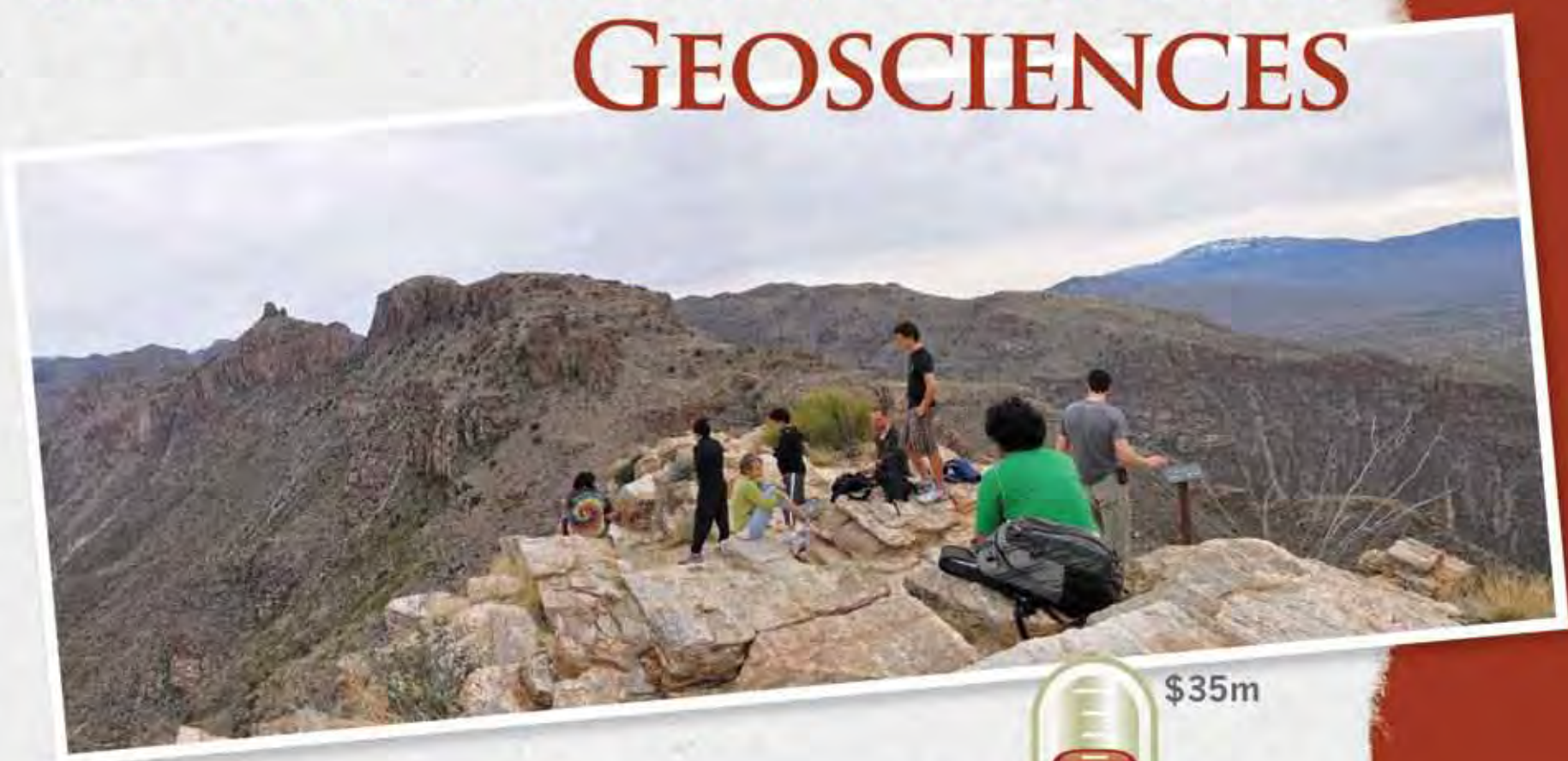

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WWWUPDATE

Members Warming Up to Social Media

By JANET BRISTER, AAPG Website Editor

In November the AAPG EXPLORER introduced the QR Code, which you can find in each issue on page 3. Since then several others have been introduced and they are starting to pop up just about everywhere.

We are rolling out a new QR code to help you stay connected to AAPG. It includes links to our LinkedIn groups, Facebook pages, Twitter feeds, YouTube channels and the blogs and beginning points of AAPG's primary websites.

Social Media on Demand

At last year's AAPG annual meeting in New Orleans I attended the Young Professionals Committee meeting, where a poll was taken to find out their social media habits.

At the time we were starting to focus our efforts on building a social media tool within the AAPG domain. However, the feedback from that meeting was that Facebook was the social tool of choice. LinkedIn was the professional tool preferred and Twitter was, well, nonsense.

The preference from that group was to provide more information from aapg.org to the mobile phones.

That made our priorities pretty easy, and we began implementing smartphone-optimized content for our site.

First to be developed was the web-EXPLORER's mobile styles. Then came the deadlines, news and a test run with a special site designed for smartphone use exclusively for AAPG Leadership Days last August.

All were well received.

Wait! There's More

We still wanted to be part of the conversation among our membership, so we began hunting for them in the social media services.

In LinkedIn, the Asia Pacific Region had started an AAPG group and leaders there were gracious enough to involve AAPG staff in its administration.

Last year we began tracking how many people were involved with the AAPG social media services. We discovered LinkedIn has the largest collection of geoscientists gathered within a social media tool.

A partnership is beginning to evolve from the LinkedIn group. The AAPG members are focused on content, discussions and participation, while the AAPG staff is taking a closer look at those who are joining the group.

Staff determines who are members of AAPG – and we are contacting those non-members to suggest how an AAPG membership would be an enhancement to their careers.

The group now has close to 2,500 members and is growing at a rate of about 40 to 50 weekly.

Our Facebook group just tipped over the 2,000 marker, compared to January 2010, when there were only 1,130 people who participated there.

The 226 followers of Twitter last year has grown to 1,082. Maybe fewer are considering Twitter to be "nonsense" now.

So What?

Well, we want to be a part of the conversations taking place through smartphones, browsers and other social media services. We want to spread the word about opportunities, good research or white papers – and we want the members to stay connected.

As a result we are rolling out AAPG.org/stayconnected.

Come by the Communications booth in the AAPG Center at the AAPG annual meeting in Houston to learn more. We'll show you the StayConnected area and how you can use it.

Not coming to the annual meeting in Houston? Just scan the QR code pictured here to experience the new feature.

Good browsing!

Program Readied for Milan ICE

Finalization of the technical program for the AAPG 2011 International Conference and Exhibition is nearly complete, and authors will be notified of acceptance in April.

This year's ICE will be held Oct. 23-26 in Milan, Italy, with the theme "Following Da Vinci's Footsteps to Future Energy Resources: Innovations from Outcrops to Assets," centered on seven technical areas:

- Carbonate Reservoirs.
- Where Africa Meets Eurasia.
- Rifts and Deltas.
- Advances in Integrated Geoscience Applications.
- Reservoir Management: From Outcrops to Assets.
- Dynamic World of "Uncooperative Reservoirs:" The Geoscience of Unconventional Resources.
- Leading-Edge Technologies and the Future of E&P.

The entire technical program and registration announcement will be mailed with the June EXPLORER. Updates to the website, including housing information, will be made as conference information is finalized.

Datapages Offers Single User Discounts

By RON HART, AAPG Datapages Manager

"Datapages is a tremendous digital library; it can be a key asset for any geologist, geophysicist or engineer."

AAPG Executive Director Rick Fritz said it concisely in his January EXPLORER column, adding that "the growing importance of the Datapages archive has made it nearly indispensible to the working E&P geologist."

AAPG recently announced it was offering a group member discount to the Datapages archives through the AAPG Members Only program, so all members would have affordable subscription access to the entire database.

(For details, or to subscribe, go to www.aapg.org/members_only/.)

Individuals previously were able to subscribe to the archives, but at the smallest corporate price. With "Group Discount" pricing, an AAPG member can get a cost break – and his subscription can be managed through his Member Profile on the AAPG website.

Non-members still must subscribe through the corporate/institutional plan and pay the higher pricing.

"Managing a member's subscription through his Members Only profile saves us money," said Jim Blankenship, AAPG geoscience director, "and we can pass along the savings."

Since 2003 each AAPG member has been able to access the archives of the AAPG BULLETIN as part of their membership in the Association. But the BULLETIN files are only a part of the total Archives database.

More than 30 organizations now have their publications archives within the Datapages collection, and Datapages' long-term plan is to acquire and include publications of all AAPG-affiliated societies as well as any publisher in the upstream E&P community.

The original goal of the Datapages program when it began in 1990 was to have everything in the database – any published document that might help a geologist find oil or gas.

We still have a long way to go, but having all this extra material only adds depth to the value of a search through the Archives.

In addition to the Datapages Archives, AAPG also offers 12-month subscription plans for PTTC's "TECHPLACE," an archive of short course workbooks, newsletters and executive reports. TECHPLACE access can be combined with Archives access under a single, simultaneous search.

A 12-month subscription to "TECHPLACE" is $125 through AAPG Members Only.

AAPG's GIS archive, "GIS-UDRIL," currently is not available through Members Only, but plans are to include that database later this year. Pricing has not been set for GIS-UDRIL.

The Value Is ...

Whether a member finds value in a Single User subscription depends on circumstances. Blankenship pointed out this is designed as a one-person product. Where more than two-three geologists or geotechs work in the same place it probably will be cheaper to buy a Corporate/Institutional subscription (which are priced and discounted according to the number of users in a group).

"An individual geologist can consider this his 'library card' – a subscription certainly saves you time and money," said Nancy Mueller, Datapages marketing coordinator. "A subscription almost certainly will save you that much in gasoline, parking and time away from the office."

Up to now, most single users have gone to our transactional (pay-per-view) website (payperview.datapages.com), and many infrequent users will still find that to be the best value because the user only pays for the few articles he wants.

The Members Asked for It

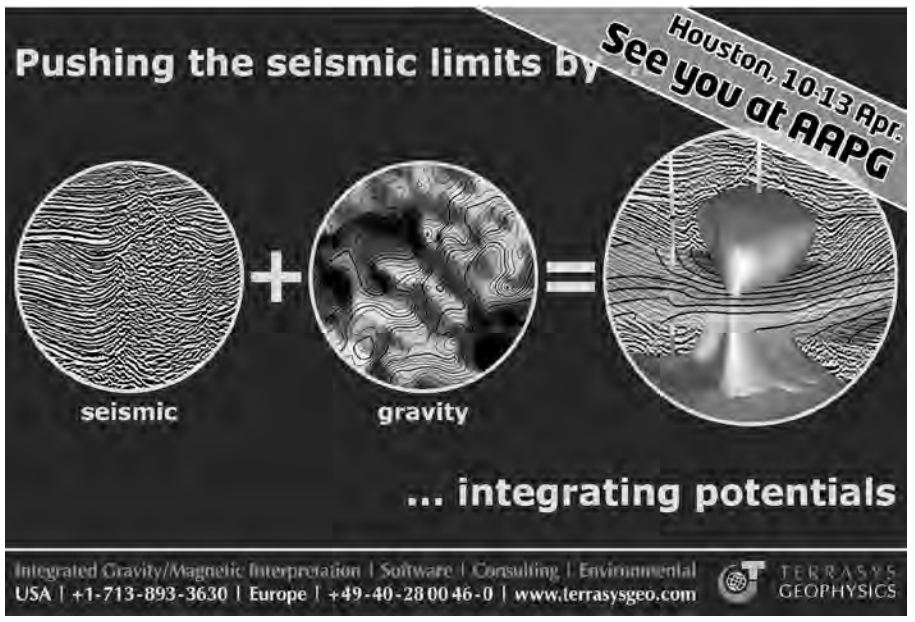
According to AAPG President Dave Rensink, "AAPG is first and foremost about the science of petroleum geology. We disseminate it through our publications and we archive it in Datapages, GIS-UDRIL and SearchandDiscovery.com.

"Nearly one-third of all AAPG members are self-employed and work as independents or consultants. Most in this group do not have a library staff or IT support, so it is important for AAPG to assume this role to the extent we can," he added.

Subscribing is easy. Go to Members Only on the AAPG home page and log on, using your ID and password. Look for "Datapages Archives" at the bottom of the (red) right-hand column for access to a subscription form.

AAPG accepts most credit cards. Access to this database is sold as a single-user product. Sharing your password is discouraged, and a password can be used by only one person at a time.

Not sure if you will use this database? Try the same Datapages Archives (without a subscription) at payperview.datapages.com.



MAKINGaDIFFERENCE

Delivering the 'Goods'

By BARRY FRIEDMAN, EXPLORER Correspondent

"In college, I avoided math classes like the plague, and only took science classes with no math prerequisites."

Nothing earth-shattering about the quote, except, perhaps, that it comes from a person who actually enjoys science.

But Sharon Milito, this year's AAPG Teacher of the Year in Natural Resources and Earth Sciences, believes the problem wasn't with the math and science, per se.

It was the delivery system.

And that may be why she's such a good teacher – she knows how easy it is for students to be turned off from the subject.

"Students need to do science," says Milito, who teaches fourth grade in Colorado Springs, Colo. "No matter the number of hands-on samples, terrariums and aquariums, if children do not see things in their natural setting they will not fully comprehend the science concepts."

The natural setting of which she speaks does not entail expensive field trips to the Mojave or the Grand Canyon. Often, it's right outside the school door.

What's next is in the DNA of every child: play.

"That is when kids discover how things work," Milito says. And she means all kids.

"The unstructured time is very much as important as structured time playing outside," she believes, adding it's during play that kids discover perhaps the first lesson of any good science curriculum:

"It is when students learn that science is often, literally, beneath their feet."

Milito says that students "discover when you roll things down a slide, some things go further. Students create their own experiments based on their observations. They learn that bugs live under rocks and that ladybugs hide under the bark of trees."

It is at this point, she says, where her work comes in.

"If a teacher can take some of these natural discoveries and guide them a bit, kids can gain even more understanding."

The Second Time Around

Simply put: Kids find things to do, they make discoveries. And it was a discovery she, herself, made while teaching that changed her life.

"As a teacher," she said, "I got so involved with teaching literacy skills that I almost totally forgot about science."

At the time, Colorado College was offering scholarships for master of art degrees in "Teaching Integrated Natural Science." She entered the program.

TOTY Sharon Milito, bringing science alive for her students in Colorado Springs.

And for someone who was introduced to rocks at an early age by her grandfather (who was an amateur geologist) and, as a child, enjoyed the weekend excursions to her family's cabin in the Rocky Mountains, it was like falling in love with an ex.

"I suddenly rediscovered, first of all, science, and second, the earth!" she said. "It was like getting back together with an old friend – only this time I got to know my friend much more intimately.

"I learned that the earth has kept a diary," she said, "and I found that I could read it! I found out that every rock tells a story. It was fascinating to me."

She says sharing that fascination with her fourth grade students is a team effort.

"My principal has been very supportive in my passion toward science and has allowed our fourth grade team to alter the order of the selections in our reading instruction series – to integrate those stories to match our science and social studies instruction schedule," she said.

Continued on next page

TOTY Winners Through the Years

Sharon Milito, a fourth grade teacher at Patrick Henry Elementary School in Colorado Springs, Colo., will be honored as the 2011 AAPG Earth Science Teacher of the Year at the upcoming AAPG Annual Convention and Exhibition.

She'll receive her award at the All Convention Luncheon on Monday, April 11.

AAPG's TOTY award, funded annually by the AAPG Foundation, is a $5,000 prize that will be split into two parts: half is designated for Milito's personal use, and half goes to Patrick Henry Elementary for educational use under Milito's supervision.

She is the 14th TOTY recipient. Previous winners are:

- 2010 – L. Stef Paramour (Canyon Middle School, New Braunfels, Texas)
- 2009 – Ty Robinson (Provo High School, Provo, Utah)
- 2008 – Mary Fitts (Sierra Middle School, Parker, Colo.)
- 2007 – Ryan Henry (Street School, Tulsa)
- 2006 – James G. Schulz (Helena High School, Helena, Mt.)
- 2005 – Marilyn Bachman (Montecito Union School, Santa Barbara, Calif.)
- 2004 – Michael Fillipow (Polytechnic High School, Long Beach, Calif.)
- 2003 – Amy John (TseBitAi Middle School, Shiprock, N.M.)
- 2002 – Kevin Leineweber (McCutcheon High School, Lafayette, Ind.)
- 2001 – John McKinney (Castle Rock Middle School, Castle Rock, Colo.)
- 2000 – Peggy Lubchenco (La Colina Junior High School, Santa Barbara, Calif.)
- 1999 – Herbert L. Turner (Waynesville Middle School, Waynesville, Mo.)
- 1998, 1997 – No recipient
- 1996 – Jane Justus Frazier (Natomas High School, Sacramento, Calif.)

FOUNDATIONUPDATE

Activities Set for ACE

By NATALIE ADAMS, AAPG Foundation Manager

The AAPG Foundation will have a high profile at the upcoming AAPG Annual Convention and Exhibition in Houston.

In addition to publically honoring this year's Foundation awardees (see March EXPLORER), we will host an amazing event celebrating the success of our $35 million "Meeting Challenges … Assuring Success" financial campaign, which has raised $32,271,026.72 in gifts and pledges since 2005.

The celebration gala will be held Monday night, April 11, at the George R. Brown Convention Center – it will be combined with the traditional President's Reception – and several notable individuals will be present to help us celebrate our "closing-of-the-gap" on this historic endeavor.

Also in Houston:

- Several Foundation-related committees will meet at ACE this year, including the Corporate Advisory Board, the Financial Campaign Committee, the Members of the Corporation and the Foundation Trustees.

Many thanks to so many who serve on various boards and committees – all for the purpose of furthering the geosciences through the Foundation's many programs and services.

- The Foundation will have a special area within the AAPG Center in the Exhibit Hall, where you can get all of our latest information – or just stop by to talk to Foundation personnel, who will be there greeting visitors throughout the meeting.

* * *

The AAPG Foundation Legacy Society continues to grow as more people indicate a desire to leave a gift to the Foundation in their will.

The Foundation's Legacy Society was established in 2008 by the Board of Trustees to honor and recognize donors who have advised the Foundation of their creation of a legacy gift to the Foundation through their estate plans.

If you are committed to supporting the Foundation's mission through a bequest or other planned gift, please contact the Foundation office at foundation@aapg.org, or call 1-888-945-2274, ext. 644.

* * *

The Foundation Trustees welcomes two new members:

- **James Painter**, Cobalt International Energy, Houston.
- **David Rensink**, a consulting geologist in Houston and the current president of AAPG.

For more information on joining the Trustee Associates, visit foundation.aapg.org/trusteeassociates.cfm.

* * *

Finally, many thanks to all of the wonderful donors listed below. Without your support, the many programs and services that the Foundation provides would not be possible.

Please make a contribution to help the AAPG Foundation reach the goal. Give online at foundation.aapg.org/donate.cfm, or mail to AAPG Foundation, P.O. Box 979, Tulsa, Okla. 74101.

Credit card donations can be made by calling 1-888-945-2274, ext. 644.

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Donation for BULLETIN 10-159, authored by Phillip Nelson

Continued from previous paget

"That way our students get a double dose of science – by reading about the same things they are investigating in science as they are getting the reading instruction they need."

The Real World

There is something else in her favor: she is always with her students.

"As an elementary teacher, I am fortunate that I have my students all day long, for all subjects," Milito said. "It is easy for me to tie things together and integrate what I am teaching."

One could argue that in middle or high school, due to the way classes are configured, that type of instruction is impossible.

But Milito would tell you the commitment to the reality of science in students' lives is the point, even if they are attending five, six different classes per day with just as many different instructors.

"I think it is very important for students of all ages to have real-world experiences."

More play time, more contact with the world than the inside of a classroom.

That goes for her, too.

Milito has earned basic and field certifications in paleontology at the Denver Museum of Nature and Science, and has acted as project paleontologist for two cooperative projects between the city of Colorado Springs and the museum. Her field studies have provided information for the master plans for two Colorado Springs open spaces.

Clearly, she no longer is afflicted by the plague of science and math instruction. She now wants to make sure others have the antidote, as well.

And she knows who should get the first dose.

"Most adults have truly lost touch with the earth," she said. "My goal, now, is to reintroduce everyone I know to the miracles we walk past everyday."

So far, it's working.

"We had an older, out-of-state visitor stay at our house one time," she said. "I took him on several excursions in our area. As he was leaving, his comment was, 'Thank you for reintroducing me to the earth!'"

Regions and Sections is a regular column in the EXPLORER offering news for and about AAPG's six international Regions and six domestic Sections. This month's column highlights activities in the Middle East Region, and was written by Mahdi AbuAli, with Saudi Aramco, and Marek Kacewicz, with Chevron, the co-chairs of AAPG's first Middle East GTW.

Inaugural ME Workshop to Yield Publication

BY MAHDI ABU ALI and MAREK KACEWICZ


ALI

The Middle East Region's first GTW covered a wide variety of case studies and current technologies – plus technologies that have been useful elsewhere but are still not sufficiently utilized in the region.


KACEWICZ

The first Geoscience Technology Workshop ever held in the Middle East Region proved to be an enormous success and a remarkable accomplishment for the geosciences community in the area.

As such, the purpose of this article is twofold:

- First, we want to educate the general reader on the increasing importance of petroleum system modeling (PSM) in hydrocarbon exploration.
- Second, we want to let everyone know some of the details of this successful event.

The GTW, held in Dubai, UAE, was titled "Basin and Petroleum System Modeling in the Middle East: Applications and Case Studies," and complete details of the workshop will be part of a special publication summarizing and highlighting recommendations discussed during the three-day event.

Because it was the first workshop solely devoted to the Middle East region, conveners decided to cover a wide variety of case studies and technologies currently being applied in the Middle East as well as technologies that have been useful elsewhere but are still not sufficiently utilized in the region.

The main goals were to identify gaps in our understanding of petroleum system modeling, discuss key sources of uncertainty in PSM and evaluate potential new play concepts in the region.

A complete, detailed report on the speakers, findings and recommendations can be found online at the Middle East Region website. Below is a summary of the proceedings.

* * *

There were five main sessions, all followed by a breakout session. Key findings and recommendations from each breakout session include:

- **Basin Evolution, Geodynamics and Heat Flow Mechanisms.**

This session dealt with crustal and lithosphere architecture and dynamics, tectonic evolution and paleogeography, heat flow mechanisms and their assessment.

Recommendations from the breakout session included:

✓ Data store and geopolitics – There is a need for building a large ArcGIS project integrating all public domain data from the region – probably by an academic institution that is able to reach across geopolitical boundaries.

✓ Tectonic aspect – Imaging the Moho was identified as a top priority; there is a need for a new regional stress map that can explain deep petroleum systems in the Middle East by linking structural deformation to working petroleum systems; it is critical to generate regional erosion maps; it is important to understand how large Paleozoic basins in the Middle East region were formed; participants emphasized the influence of the ice cap (~2,000 meters) on basin formation; and heat flow modeling requires a good understanding of the internal composition of the basement and the structure of the crust (structural control, radiogenic heat, etc.).

✓ Thermometers/calibration – More thermometers are required to provide more accurate data for calibration.

✓ Salt – The impact of salt evolution on heat flow history and hydrocarbon maturation needs to be accounted for and accurately modeled in all petroleum system models.

- **Source Rocks – Properties, Processes and Modeling of Hydrocarbon Generation and Expulsion.**

This session focused on depositional characteristics and preservation processes of key source rocks in the region and included variations from basin to basin, in source rock properties, maturation,

Continued on next page

GTW Program Committee Members

The program committee for the Middle East Region Geoscience Technology Workshop, co-chaired by Mahdi AbuAli (Saudi Aramco) and Marek Kacewicz (Chevron), included:

- Abid Bhullar (Saudi Aramco).
- Pierre Van Laer (Abu Dhabi Company for Onshore Oil Operations, ADCO).
- Rolando di Primio (Deutsches GeoForschungs Zentrum, GFZ-Potsdam).
- Volker Diekmann (Shell).
- Awatif Al-Khamiss (Kuwait Oil Company, KOC).
- Michael Hertle (Maersk).

Joint Core Workshop a Hit

A collaboration between PESA and AAPG resulted in a two-day core workshop being run in Perth, West Australia, on the Giant Fields of the North West Shelf, Australia.

The workshop, which was held in early March, was a fully subscribed course that saw 40 registrants being guided by four experts through suites of cores in half-day intervals.

This course focused on 1,200 meters of core from Triassic and Jurassic reservoirs, from fluvial, coastal-deltaic and shelf depositional systems (Mungaroo, Brigadier, Legendre and Plover Formations).

Presenters were Robert Seggie (Woodside), Simon Lang (Woodside), Peter McCabe (CSIRO) and Bruce Ainsworth (Australian School of Petroleum, University of Adelaide), specialists in palynology, ichnology, sedimentology, petrology and reservoir modeling.

Continued from previous page

expulsion and hydrocarbon migration and oil-oil and oil-source correlations.

Key emphasis was on quantifying the above processes in petroleum system models.

Gap areas identified by the participants included:

✓ A general requirement of good natural samples for the identification of processes and effects of secondary cracking.

✓ The need for ground proofing laboratory predictions for better assessment of source rock properties and secondary cracking mechanisms.

✓ Case studies are required to study detailed source rock properties and secondary cracking processes – for which Kuwait and Barnett petroleum systems were proposed as two candidates.

✓ A better understanding of the main products of secondary cracking.

✓ A variety of experimental methods and analytical approaches should be tested to evaluate the best way forward.

▸ Petroleum Systems Evaluation from Regional to Reservoir Scale.

This session addressed flow/seal properties of host and fault rocks; approaches that combine basin modeling with seismic methods; pre-drill pressure prediction; resource assessment; and case studies demonstrating integrated approaches for both low and high resolution basin models.

The breakout session concluded with general recommendations that included:

✓ PSM software needs to include the processes occurring at the reservoir scale. It can be achieved using local grid refinement and requires advanced up-scaling techniques.

✓ R&D is needed to address rock properties, especially carbonates.

✓ More integration with geochemistry is desirable and will be very helpful.

✓ New quantitative and geochemical diagnostic tools are required to better understand PSM's involving carbonate rocks.

▸ Uncertainty and Risk Analysis in Petroleum Systems Analysis.

The papers in this session covered example applications of existing uncertainty-oriented methods and addressed different aspects of petroleum systems including structural and tectonic evolution, heat flow variation, rock properties, hydrocarbon generation and expulsion, hydrocarbon migration efficiency and volume of hydrocarbons left behind vs. delivered to traps, maturation and pressure implications of poor imaging, time-depth conversion, and others.

Key findings of the breakout session included:

✓ Although many companies have a process for assigning risk, standardization of this process was recommended to ensure consistency.

✓ Key PSM risks are related to charge, fluid properties and seal integrity.

✓ Uncertainty analysis in frontier basins attempts to address basic aspects of PS such as oil vs. gas.

✓ Uncertainty analysis in mature basins addresses high-resolution HC products, migration patterns, hydrocarbons left behind and complexity of rocks.

✓ Uncertainty analysis is not complete without keeping PS models well calibrated.

✓ Uncertainty analysis requires proper way of communicating results. They often serve as inputs for economic analysis.

✓ Uncertainty analysis in PS models should be mandatory.

▸ Petroleum System Analysis of Unconventional Gas – Basin Center, Shale and Sour Gas.

While petroleum system modeling of conventional resources is well established, the application to unconventional systems is still in its infancy. In particular, modeling of low-permeability reservoirs, shale gas potential and sour gas risk and its impact on fluid properties requires more attention and were represented in this session.

Recommendations from the **thermochemical sulfate reduction** breakout session included:

✓ Collect and analyze field data and reproduce observations.

✓ Understand the PVT of sour gas.

✓ Connect to reservoir geologists.

Recommendations from the **shale and sour gas** breakout session included:

✓ More education on technology needs is recommended; some companies tend to drill without a comprehensive integration of the petroleum systems modeling with the geology.

✓ Estimating gas in-place is an important issue – and not only in the Middle East.

✓ Hydrocarbon generation kinetics data is not well understood and requires more publications using well-known source rocks as real cases.

✓ More research is required to describe mechanical properties of rocks and their control on hydrocarbon migration.

Regarding **basin center gas**:

✓ The topic deserves more attention in the Middle East.

✓ More research should be devoted to the mechanisms of secondary migration in tight rock and to trapping.

* * *

This workshop was a natural follow up to the Hedberg Research Conferences on Basin and Petroleum Systems Modeling that were held in The Hague, the Netherlands (May 2007) and in Napa, Calif. (May 2009).

Future plans are to publish some of the key presentations given during the workshop.

Finally, special thanks are due to our generous sponsors, Saudi Aramco, ADCO, Shell and Jacobs University.

VISIT ANCHORAGE, ALASKA IN MAY: SEE AND LEARN ABOUT THE GEOLOGY OF THE "GREAT LAND" OR "LAST FRONTIER"

A JOINT MEETING OF THE PACIFIC SECTION OF THE AAPG AND WESTERN REGION OF THE SPE: OPENING SESSION AND TECHNICAL SESSIONS – MAY 8 THROUGH MAY 11, 2011

The program and events for the 2011 joint conference of the PS-AAPG and WR-SPE have been finalized and an exciting review of the geoscience and the petroleum geology of Alaska and contiguous regions is ready and waiting for your enjoyment and edification. The meeting is being held at the Anchorage Sheraton Hotel, with pre-conference field trips and short courses beginning on the 6th of May and post-conference trips and short courses offered from the 11th through 14th of May.

Registration and hotel reservations can be made online through either the PS-AAPG website (www.psaapg.org) or Alaska Geological Society website (www.alaskageology.org). The Deadline for early registration is April 15, 2011.

The geoscience portion or the technical program consists of approximately 60 oral and 30 poster presentations organized into 7 oral sessions and 3 day-long poster sessions.

The 2011 PS-AAPG Conference Technical Program

Symposium:

Geology and Hydrocarbon Potential of the North Slope, Offshore Beaufort and Chukchi Seas: in Honor of Ken Bird

Oral Sessions

- Geology and Hydrocarbon Potential of the North Slope, Offshore Beaufort and Chukchi Seas
- Tectonics, Sedimentation, and Energy Resource Potential of Southern Alaska
- Cook Inlet Oil and Gas Fields
- Recent Advances in Oil and Gas Development on the North Slope
- Reservoir Quality: Analysis and Prediction
- Technology and Alternative Energy; Processing the Future
- Petroleum Systems in Alaska and the Western Cordillera

Poster Sessions

- Geology and Hydrocarbon Potential of the North Slope, Offshore Beaufort and Chukchi Seas
- Tectonics, Sedimentation, and Energy Resource Potential of Southern Alaska
- Paleozoic-Mesozoic Geology of Alaska and Adjacent Regions

For more information on the technical program and the field trips and short courses visit www.psaapg.org or www.alaskageology.org/

This conference will provide a unique opportunity for many geoscientists and their guests to see Alaska in a way many visitors can only hope to attain. We look forward to the opportunity to show you our great state and a sampling of its geology and scenic grandeur.

MEMBERSHIP&CERTIFICATION

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

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

Information included here comes from the AAPG membership department.

(Names of sponsors are placed in parentheses. Reinstatements indicated do not require sponsors.)

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

For Active Membership

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Chesson, Robert H., Colorado Oil & Gas Conservation Commission, Denver (reinstate); **Nehring, Richard D.**, N R G Associates, Colorado Springs (W.L. Fisher, P.R. Rose, R.S. Bishop); **Olsen, Martin P.**, Aspect Energy, Denver (M.J. Kohn, S.G. Schulz, M.L. Peffer)

Florida
Cox, Kurt Michael, Storm Energy, Panama City (D.M. Cox, E.A. Mancini, R.D. Womble)

Oklahoma
Beckstrom, James, Evolve Energy Services, Stillwater (J.C. Dolson, J.B. Thomas, J.O.D. Byrd)

Texas
Carlock, Drew Ryan, BHP Billiton, Houston (G.C. Gaynor, C.J. Kaiser, J. Thomason); **Chastain, William**, Carrizo Oil & Gas Co., Spring (W.M. Wilson, S.A. Earle, D.R. Reid); **Demko, Timothy Michael**, ExxonMobil Upstream Research, Houston (Y. Chen, O.R. Lazar, C.R. Jones); **Grudem, Emily Kay**, Shell Oil, Houston (G.S. Steffens, S.E. Barker, F.H. Becker); **Lemaux, James W.**, Southwestern Energy, Houston (J.D. Jeffers, G.A. Bajgier, S.C. Kumbalek); **Mander, Joanna**, BP America, Houston (R.L. Brogdon, T.P. Cronin, B. Moon); **Mansoor, Nasser M.**, ExxonMobil, Houston (S.M. Matthews, E.D. Goodman, M.R. Poffenberger); **Miley, Monica Patricia**, Anadarko Petroleum, Houston (T.J. Bergstresser, J.E. Jordan, F. Rad); **Nino-Guiza, Christian Horacio**, Hess Corp., Houston (P.R. Mullin, S.G. Crews, O.R. Lopez-Gamundi); **Oko, Elizabeth Anne**, Shell Oil, Missouri City (A.G. Bray, B.E. Prather, D.C. Watso); **Palmer, Nathan**, Chevron, Houston (A.J. Lomando, J.P. Mueller, S.P. Evans); **Salem, Anthony**, Shell Exploration & Production, Houston (B.D. Hampton, M.F. Medeiros, V. Eikrem); **Waller, Troy Dale**, Hess Corp., Houston (J.R. Geary, J. Trude, S.M. Ehlinger); **Wheeler, Wayne A**, Seitel, Houston (D.M. Wheeler, R.E. Tubbs, S.T. Carroll); **Yue, Li-Fan**, Chevron/Energy Technology Company, Bellaire (D.F. Goff, G. Schoenborn, C. Rivero); **Zhang, Guoxiang**, Shell International E&P, Houston (S.S. Nash, A.S. Kornacki, L.P. Slagle)

Wyoming
Campbell-Stone, Erin, University of Wyoming, Laramie (R.S. Martinsen, R.M. Lynds, B.E. John)

Australia
Hoggart, Caitlyn Ross, ExxonMobil, Melbourne, Victoria (C.A. Paschke, C.C. Jenkins, M.A.V. Moore)

Canada
Cameron, Orrin Blair, Waldron Energy, Calgary (L. Byron, S.L. Bend, D.M.J. Kent); **Sarker, Humayoun K.**, Belloy Petroleum Consulting, Calgary (A.M. Shamsuddin, A.M. M. Ahmed, R.U. Ahmed); **Schneider, Matthew Roland**, Chevron, Calgary (S.B. Switzer, N.J. Kuhle, P.K. Papazis); **Sulejmani, Arjan**, Cenovus Energy, Calgary (P.A. Esslinger, J.M. Chameroy, W.B. Lathrop)

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India
Iyer, Balaji Chennakrishnan, Jubilant Energy, Noida (A.M. Chitrao, A. Hareendran, J. Nicholson); **Sahay, Vinay Kailashbihari**, Maheshwari Mining Pvt. LTD., India, New Delhi (H. Darman, M. Prasad, K.B. Trivedi)

Indonesia
Barkah, Rd. Rai Raya, Chevron Pacific Indonesia, Pekanbaru, Riau (M.J. Kisucky, H. Darman, H. Semimbar); **Utoro, Edi Suwandi**, Chevron, Pekanbaru, Riau (M.J. Kisucky, T.W. Dignes, H. Darman)

Netherlands
Forkner, Robert M., Shell, Leiden (S.L. Bachtel, T.E. Playton, C. Kerans)

Continued on next page

Certification

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

Petroleum Geologist

Colorado
Daniel R. Wheat, Noble Energy, Denver (T. Grealy, L. Amateis, T. Zeiner)

England
Taylor, Alan M., AT Energy, Reigate, (Geological Society of London)

Nigeria
Abinoye, Carim Akintunde, Nigerian AGIP Oil Company, Port Harcourt, (reinstatement)

Pakistan
Jamil, Muhammad Athar, Tullow Oil, Islamabad, (N.H. Ahmad, A. Waheed, M.R. Khan)

Bookstore, Membership Services Set for Houston AAPG Center

By VICKI BEIGHLE, AAPG Membership Manager

Will you be attending the AAPG Annual Convention and Exhibition in Houston?

If so, make it YOUR mission to visit the AAPG Bookstore, located in the AAPG Center in the exhibits hall of the George R. Brown Convention Center.

At the Bookstore you can browse through the latest AAPG publications – and remember, AAPG members receive up to 25 percent discount on the majority of our publications.

Also, this year we'll have for sale a large selection of deeply discounted books – another great savings opportunity.

Of course, that's not all you'll find at the AAPG Center:

- Members can pay dues, update member profiles and learn about member benefits.
- Non-members can submit applications with payment for dues – and receive immediate member discounts on publication purchases.
- See a genuine moon rock!
- Visit with representatives from all AAPG departments – education, science, website, meetings, communications and much more.
- Meet representatives from the three AAPG divisions.
- Students, come relax and network in your own Student Lounge area.
- Everyone can purchase AAPG apparel and souvenirs at the General Store – a large selection of dress shirts, golf shirts, t-shirts, hats and a wide variety of merchandise for children will be available.

And remember, proceeds from the General Store benefit the Student Chapters who will be volunteering to work in the Center.

Make your Houston convention experience complete; stop by the Bookstore and the AAPG Center.

Continued from previous page

Nigeria
Ajayi, Eunice Omozusi, Bio-Metrics Geo Consult, Abuja FCT (B. Pindar, E.O. Olopade, A.A. Adesida); **Amaechi, Christian Nlemchukwu**, Department of Petroleum Resources, Lagos (N. Omorodion, A.E. Guzman, H. Jabour); **Ewuga, Benjamin Akku**, Department of Petroleum Resources, Lagos (A.O. Lufadeju, D.E. Ajakaiye, C. Nwonye); **Ogagarue, Difference Odeyovwi**, Bulwark Services, Port Harcourt (Y.Y. Bubu, N. Omorodion, A.R. Ojelabi); **Ojuawo, Oluwafemi**, Geotrex Systems Limited, Lagos (M.L. Afe, A.O. Akingbade, E.O. Olopade); **Olowokere, Mary Taiwo**, Federal University of Technology, Akure, Ondo State (A.R. Ojelabi, I.O. Ogun, H. Jabour)

Norway
Badics, Balazs, Statoil ASA, Bergen (J.B. Thurmond, K. Wagner, O.J. Martinsen)

Oman
Gaghman, AbdulGhani Abdullah, Petroluem Development of Oman, Muscat (J. Amthor, K.W. Glennie, D. Gray)

Qatar
Negulescu, Ionica Carmen, Occidental Oil and Gas, Doha (R.A. Girbacea, M.J. Gayer, J. Rush)

Russia
Kosenkova, Nataliya, Gazpromneft NTC, Saint-Petersburg (S. Drachev, M.A. Abrams, V. Verzhbitsky); **Vasilyev, Victor**, Gazpromneft, Saint-Petersburg (J.C. Dolson, S.G. Pemberton, S. Khafizov)

Saudi Arabia
AlQahtani, Najm Hussain, Saudi Aramco, Dhahran (A.M. Al-Beaiji, A.Q. Hameda, E.A. Busbait); **AlYami, Ibrahim Mansour**, Saudi Aramco, Dhahran (H. Xiao, H.J. Sibon, A.K. Norton); **Jawad, Waleed Ahmed**, Schlumberger, Al-Khobar (S.H. Al-Radhi, A.M. Al-Beaiji, D.M. Cox)

South Korea
Hong, Myung Ho, LG International/Oil and Gas Division, Seoul (G.H. Lee, S.B. Kim, H. Lee)

INMEMORY

Past AAPG Officer Harry Miller Dies

Harry A. Miller Jr., AAPG Foundation Trustee Associate and AAPG Honorary Member, died March 1 in Austin, Texas. He was 92.


MILLER

The long-time Midland, Texas, independent geologist was chairman of the House of Delegates in 1977-78 and DPA president from 1983-84.

* * *

Robert Lawrence Blanton, 81
Raleigh, N.C., Jan. 21, 2011
Lester Morton Brooks Jr., 86
Canyon Lake, Texas, Jan. 1, 2011
James Elwood Bryant, 88
Fredericksburg, Texas
Jan. 9, 2011
Barry Charles Hepworth (AS 2000)
Helensburgh, Scotland
Meredith Stipp, 87
Midland, Texas, Feb. 10, 2011
* Harry A. Miller Jr., 92
Austin, Texas, March 1, 2011
Uko Suzuki, 63
Yokosuka City, Japan
Jan. 12, 2011

(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. Asterisk denotes AAPG Honorary Member.)

DPA
from page 71

a must for anyone working with resources or reserves.

❒ In June, the DPA heads to the **Rocky Mountain Section** meeting in Cheyenne, Wyo., with two DPA events slated for this conference:

- John Robitaille, vice president of the Petroleum Association of Wyoming, will provide an "Overview of Wyoming Oil and Gas."
- I'll be presenting a short course on "Petroleum Resources and Reserves: An Overview of Recommended Geological Practices" – my last official act as DPA president.

❒ At the **Mid-Continent Section** meeting, set Oct. 1-4 in Oklahoma City, the DPA is sponsoring a luncheon featuring Rayola Dougher, senior economic adviser for the American Petroleum Institute in Washington, D.C.

❒ And finally, it is off to **ICE** in Milan, Italy, in late October. The DPA is very excited about the sponsored events at ICE. Our featured luncheon speaker is former BP CEO Tony Hayward, who will be speaking about "The Energy Challenge – Threats and Opportunities."

The DPA also is sponsoring an exciting diverse forum including the following topics:

- Who Owns the Arctic – Lindsay Parsonn.
- Integration of Geophysical Data – Martin Sinha.
- Offshore Hydrocarbon Resources of the West Coast of the United States – Drew Mayerson.
- United Nations Framework Classification for Hydrocarbon and Mineral Resources – David MacDonald.

* * *

Finally, I wish again to thank everyone for supporting the DPA this year. I truly enjoyed working with so many great folks this past year. We had an aggressive business plan. I feel that we accomplished a lot.

I now look forward to handing the baton to Marty and stepping into the past president spot.

CLASSIFIEDADS

POSITION AVAILABLE

Petroleum Exploration Geologist
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Tulsa, OK

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

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

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

* *

DIRECTOR
NEW MEXICO BUREAU OF GEOLOGY
& MINERAL RESOURCES

The New Mexico Bureau of Geology and Mineral Resources is seeking a new director and state geologist. The bureau is a research and service division of the New Mexico Institute of Mining and Technology (New Mexico Tech), located in Socorro, New Mexico. With close to 60 employees, the bureau serves as the state geological survey, with a long-standing reputation for excellence in research, service, and outreach. Our mission includes research on the geologic framework of the state, with an emphasis on applied geosciences and the state's geologic resources; and the gathering, preservation, and dissemination of geologic information to the geoscience community, state and federal agencies, and the general public. The director manages the administrative, personnel, and financial affairs of the bureau, including direct supervision of a significant portion of the professional staff, and must be proactive in seeking additional, external funding to support new and ongoing programs. As a division of the university, the bureau works in collaboration with other divisions of the university. The director reports directly to the university president. As state geologist, the director serves on several state advisory commissions. Requirements include a Ph.D. in the geosciences, ten years of professional experience, and five years of administrative experience. Anticipated appointment date: July 1, 2011. Salary: Negotiable. Full details of the position and information regarding application procedures may be found at www.geoinfo.nmt.edu/DirectorSearch and at www.nmt.edu/hr-jobs-at-nmt. For more information about the application process, contact JoAnn Salome in Human Resources at 575-835-5955 (JSalome@admin.nmt.edu). For more information about the position itself, contact L. Greer Price, search committee chair, at 575-835-5752 (gprice@gis.nmt.edu). For full consideration, application materials must be received by May 15, 2011.

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DIRECTOR'SCORNER

GIS-UDRIL – A Useful Acronym

By RICK FRITZ, AAPG Executive Director

This is always a crazy time of year at AAPG – getting ready for the annual meeting and budget review. It is a crazy time for me personally, as well – getting ready for a new job and also working to complete projects before I leave (See page 6).

On top of that, I currently am coaching girls' indoor soccer and basketball, plus we are starting practice and games for outdoor soccer. Obviously, I have trouble saying "no."

My daughter, Zoe, age 11 now, is our goalie (with an attitude), and after one unusually rough game she asked me in the car on the way home, "Where do referees come from?"

I thought to myself, "Wow, that's a loaded question!"

I tactfully explained to her that referees were people, too, and they were interested in sports and usually were paid a small amount for their efforts.

"Paid!?" she replied disgustedly. "I thought they were doing community service … like those guys pickin' up trash along the highway!"

* * *

We sometimes do not understand certain things due to the lack of information.

Last year we conducted a few polls on AAPG programs and we realized that many members are not familiar with all of AAPG's digital programs. For example, AAPG has three primary digital information programs with Datapages – the Archives, *Search and Discovery* and GIS-UDRIL.


FRITZ

> **In the future it will be one of the key delivery systems from AAPG to its members and industry.**

Many of you probably just said, "GIS … what!?"

* * *

The GIS-UDRIL- project was started 10 years ago to capture much of the geo-referenced information in the Datapages library and other resources. GIS-UDRIL is an acronym for Geographic Information Systems – Upstream Digital Reference Information Library.

It is an expansive project that provides digital products and services to the upstream petroleum companies by preparation of GIS-linked databases and atlases of geo-references maps and other images. That's the official definition.

In other words, we are taking maps and datasets out of the BULLETIN, Special Publications and other society publications and placing them into an easy-to-use and easy-to-retrieve system like ArcGIS or Google Maps.

The following are a few examples of maps and datasets contained in GIS-UDRIL:

- Black Shales Atlas (390 maps).
- Salt Dome/Salt Structures Atlast (1,700 salt structures).
- Coalbed Methane Atlas (60 maps).
- South Atlantic Margins Atlas (204 maps).
- Gulf Coast/Gulf of Mexico Atlas (332 maps).
- State atlases – Montana, New Mexico, Oklahoma and Wyoming (146 maps).
- Western Canada Atlas (140 maps).
- Deep Water Deposits Atlas (112 case studies).
- Incised Valley Atlas (25 case studies).
- Arabian Plate Atlas (90 Maps).

There also are many detailed collections. For example, the GIS-UDRIL Oil and Gas Fields Database contains almost 2,000 global oil and gas fields with hyperlinks to illustrations, maps, images, discovery history plus an Excel database with drilling, completion, production, reservoirs and source rock data.

The GIS-UDRIL Seismic Atlas contains nearly 3,000 seismic lines from around the world.

Many new map projects are in development through the AAPG GIS Publications Committee. In addition, new collections are being developed through the AAPG-OSU Geoscience GIS Consortium, a partnership between AAPG and Oklahoma State University. This partnership was created in 2008 when the AAPG Foundation received a generous gift of nearly $10 million from Boone Pickens.

* * *

I carefully explained to Zoe that referees were not from a work-release program. She seemed satisfied and felt better about the situation once she knew the facts. I think she knew I was serious because I finally stopped laughing.

If you want more facts on GIS-UDRIL you can see it online at www.datapages.com/Services/GISUDRIL.aspx, or you can come by the headquarters/Datapages booth at the upcoming annual convention in Houston for a demo.

The GIS-UDRIL project has just scratched the surface of available geo-referenced data in AAPG, its affiliated/associated societies and in industry. In the future it will be one of the key delivery systems from AAPG to its members and industry.

"One cannot know everything," Horace once said – but now you know a little more about AAPG.

DIVISIONS'REPORT

DPA Backs Texas Board of Professional Geologists

By DANIEL J. TEARPOCK, DPA President

Texas Gov. Rick Perry gave his State of the State address Feb. 8, with the central theme being "Reform and the Streamlining of State Government." As with many states, Texas is facing red ink. The governor wants to balance the budget, and in order to do so one of his initiatives is to combine or suspend 40 boards.

The Texas Board of Professional Geologists (TBPG) is one of those requested to be suspended or merged.

Last year, the DPA assisted in a similar battle in California where the state proposed to merge the Board of Geologists and Geophysicists with the state's Board of Professional Engineers and Land Surveyors.

To refresh memories, the DPA, along with the AAPG Executive Committee, not only provided support in the form of letters but also provided financial support to assist in the required activities. Our efforts failed and the boards were merged. Former Gov. Schwarzenegger appointed an engineering geologist to the newly created geologist position on the board in his last days in office.

The Texas Board is now facing a similar crisis.

On Feb. 10, a task force composed of PGs from various geological societies and organizations was formed to review and discuss the governor's budget proposal. Two current members of the DPA Executive Committee are on the task force: Paul Britt, past president of DPA, and myself.

Considering the grave consequences of suspension or merger, it was agreed to obtain letters of support from as many geoscience societies and organizations as possible.


TEARPOCK

> **Considering the grave consequences of suspension or merger, it was agreed to obtain letters of support from as many geoscience societies and organizations as possible.**

The DPA State Registration and Licensing Committee drafted a letter of support. The DPA and AAPG Executive Committees both approved the letter, which defines the importance of the TBPG in matters that impact the health, safety and welfare of the public.

This letter, sent to the office of Gov. Perry, encourages the governor and the legislature to consider either retaining the board as it currently exists or establishing a self-directed semi-independent agency.

On Feb. 24, testimony was given before the Texas Senate Finance Committee regarding the budget and support of the TBPG. At the time this column is being written we do not know what will ultimately happen in the Texas State Legislature.

To review the letter of support by the DPA, please go to the DPA website at dpa.aapg.org.

* * *

The DPA, its Executive Committee, councilors, committees and other volunteers have worked very hard this year to make our Business Plan goals a reality. I thank everyone involved – including the AAPG staff, and in particular Divisions manager Norma Newby – for a job well done.

This will be my last column as president of the division. Marty Hewitt will be picking up the reigns as of July 1.

I wish Marty the best in 2011-12.

* * *

This year has been both challenging and rewarding. Even though there are only a few months left in this fiscal year, the planning for ongoing DPA events continues.

The DPA has a fantastic 2011 slate of luncheon talks, forums and short courses starting with AAPG Annual Convention and Exhibition (ACE) in Houston and continuing through the AAPG International Conference and Exhibition (ICE) in Milan, Italy.

❒ At **ACE** the DPA is sponsoring five separate events. These include:

- The "Discovery Thinking Session" on Monday afternoon (see related story, page 33.)
- A joint DPA/Prowess luncheon on Tuesday, April 14.
- A joint DPA/Prowess Forum on "Diversity, Professionalism and Ethics on Tuesday, April 14 (related story, page 52).
- Two short courses – "How To Be An Independent" Sunday, April 10, and "Petroleum Resources and Reserves: An Overview of Recommended Geological Practices," Thursday, April 14.

❒ For the **Pacific Section** meeting, set May 8-11 in Anchorage, Alaska, the DPA luncheon features Mark Myers presenting "The North Slope of Alaska 43 Years after Prudhoe Bay State No. 1."

The DPA short course will be presented by John Etherington, titled "Petroleum Resources Management System (PRMS)" –

See **DPA**, page 70

Advanced RTM Technology

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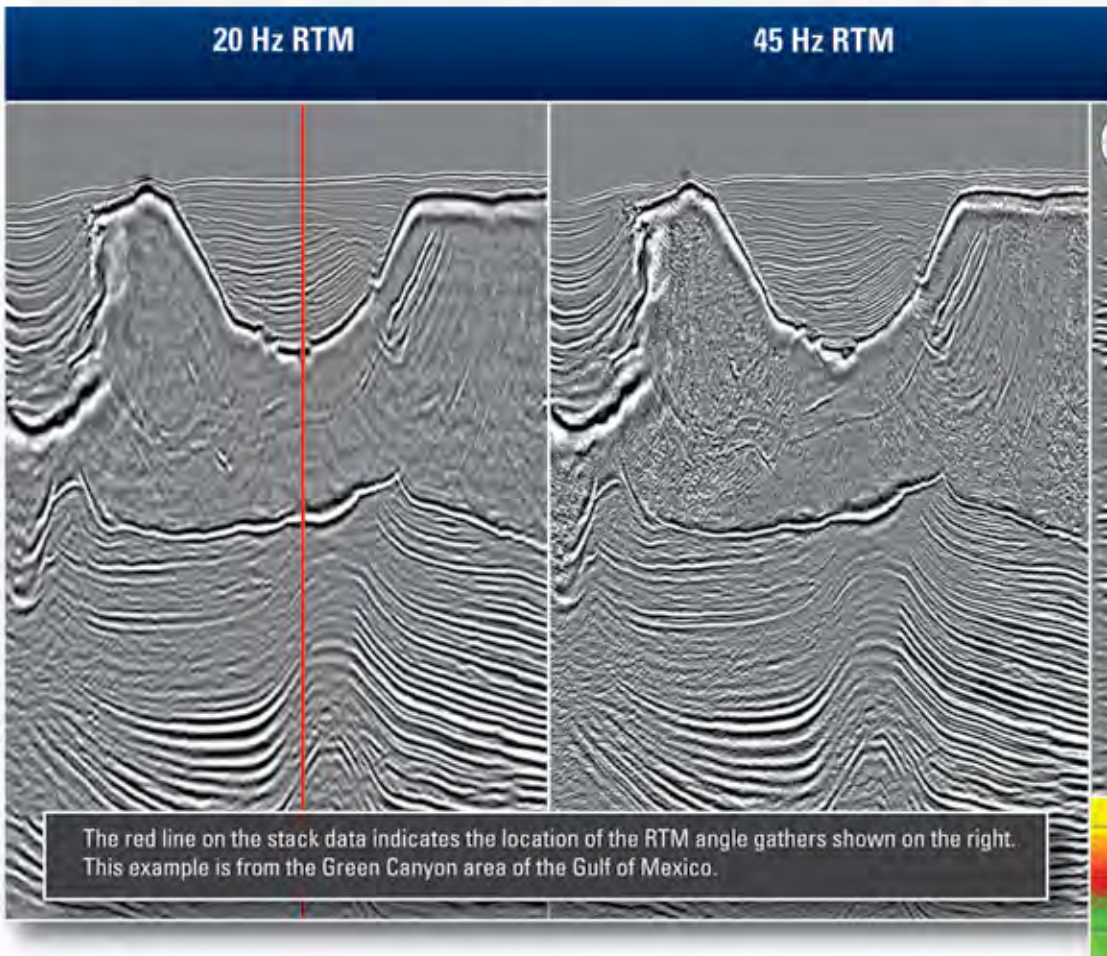

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