

AAPG AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, AN INTERNATIONAL ORGANIZATION

EXPLORER

SEPTEMBER 2004

GULF COAST
2004

**Destination:
Thunder
Horse**



Environmental integrity.



Meeting the challenge everyday, everywhere.

Throughout the world Veritas operates with a cultural awareness of environmental sensitivity. The use of solid streamer vessels offshore and low impact procedures on land are just two of the many ways we meet the daily challenges of maintaining environmental integrity.

Excellence in Health, Safety, and Environmental practices and performance.

www.veritasdgc.com

the competitive advantage



On the cover: The 59,500 metric ton semisubmersible Thunder Horse platform in August began its 60-day journey from South Korea, around Africa en route to Corpus Christi, Texas. In 2005 it will be moved to the Thunder Horse Field about 190 kilometers south of New Orleans. Both the platform and the transport vessel are the largest of their kind ever built – appropriate, because the Thunder Horse discovery is the big reason why the deep water play now dominates Gulf activity. See related stories on pages 6, 12 and 14. Photo by Marc Morrison, courtesy of BP America.

CONTENTS

Now, this is deep: A new MMS report officially establishes the **deepwater** regions as the big gorilla in the **Gulf of Mexico**. **6**

They see a good thing going: **Louisiana** officials are making an all-out effort to encourage increased oil industry activity in their state. **10**

A new study of **sunken vessels** in the Gulf of Mexico has ramifications for the oil industry – and it asks the question, can man-made reefs be beneficial in the deep water, too? **14**

Continued success in the deepwater Gulf of Mexico – especially involving the **subsalt plays** – may depend on how geologists “see” the situation. **18**

AAPG’s Visiting Geologist Program is ready for a new school year. **20**

Speakers are now picked and preparing for this year’s **AAPG Distinguished Lecture** slate of talks, both in the United States and around the world. **22**

The **challenge of exploration** isn’t always about understanding what’s in the ground. Sometimes, the challenge is getting enough **funding** to get to the ground. **24**

APPEX – AAPG’s fourth annual Prospect and Property Expo, set this month in Houston – is proving to be a serious place for serious buyers. **39**

REGULAR DEPARTMENTS

International Bulletin Board	30	Membership and Certification	42
www.update	34	Spotlight on Education	43
Geophysical Corner	36	Readers’ Forum	44
Looking Back	37	Classified Ads	45
Professional News Briefs	38	Director’s Corner	47
Foundation Update	40	DEG Column	47
In Memory	41		

STAFF

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

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

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

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

Correspondents
David Brown
Louise S. Durham
Diane Freeman
Barry Friedman
Kathy Shirley

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

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

Vol. 25, No. 9

The AAPG EXPLORER (ISSN 0195-2986) is published monthly for members. Published at AAPG headquarters, 1444 S. Boulder Ave., P.O. Box 979, Tulsa, Okla. 74101, (918) 584-2555. e-mail address: postmaster@aapg.org
Periodicals postage paid at Tulsa, Okla., and at additional mailing offices. Printed in the U.S.A.
Note to members: \$6 of annual dues pays for one year’s subscription to the EXPLORER. Airmail service for members: \$45. Subscription rates for non-members: \$63 for 12 issues; add \$67 for airmail service. Advertising rates: Contact Brenda Merideth, AAPG headquarters. Subscriptions: Contact Veta McCoy, AAPG headquarters. Unsolicited manuscripts, photographs and videos must be accompanied by a stamped, self-addressed envelope to ensure return.

The American Association of Petroleum Geologists (AAPG) does not endorse or recommend any products or services that may be cited, used or discussed in AAPG publications or in presentations at events associated with AAPG.

Copyright 2004 by the American Association of Petroleum Geologists. All rights reserved.

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



Are you ready for Cancun?
The AAPG International Conference and Exhibition will be held Oct. 24-27 in the culturally rich setting of Cancun, Mexico. But the important date to remember right now is this:
Sept. 23, which is the meeting’s pre-registration deadline.
See story on page 31.

PRESIDENT’S COLUMN

Remember? My, How Times Have Changed

By PATRICK J.F. GRATTON

There was a time (and not that long ago) when many oil companies didn’t allow geologists to talk to geophysicists – and never to engineers or landmen! The prevailing management concept was that such interaction might compromise the integrity of developing prospects.

Would an embryonic, geologically-based prospect “migrate” toward a geophysical anomaly or nearby company-leased acreage? Would unusually good production in the area act as a magnet on that geologically not-quite-pinned-down lead?

Our Association’s conventions and publications reflected that commercial or industry practice. So, geophysics, engineering and lease/land practices along with general business then had little place in our meetings, papers and related activities.

This channeled approach to exploration and production began to change in the 1960s and 1970s. Some ascribe the softening of geoprofessional boundaries to the arrival of variable-area recording (VAR) of seismic data. Suddenly, geologists could (sometimes also read “thought they could”) interpret seis. Other technological advances such as acoustic, neutron and density logs allowed geologists to act like petrophysicists!

It all proved to be not quite that simple, but barriers were coming down.

Explaining the change, other industry professionals pointed to the coincident explosion of independent oil companies with the oil price spikes of 1970s and early 1980s. Many of our members learned how to wear several hats as petro-professionals in small companies. AAPGers commonly took leases, reviewed seis, picked locations and perforations, completed wells and operated production.

All this was a great learning experience – and closer contact with other disciplines became important. This trend manifested itself inside large companies with the formation of multidisciplinary teams focused on exploration/production objectives.

Your Association led some of these changes. In late 1970 AAPG President Bill Curry (assisted by DPA President Jim Lewis) and SIPES President Carroll R. Pope negotiated a conditional reciprocity agreement for members of DPA and SIPES. This was a landmark recognition that our Association’s interests were



Gratton

expanding with those of our members. This historic agreement strengthened DPA and SIPES.

Other combinations, or relationships, developed:
✓ Our fledgling group insurance program expanded its partnership with other societies, eventually including

AAPL, EEGS, GSW, AEG, AIPG, SEPM, SEG and SPE!

✓ Recently our sections developed joint conventions with SPE, GSA, COGA and other industry organizations. (Economic analysis, however, doesn’t support joint annual meetings for the Association at this time.)

Recognizing the needs of our members, your Association has initiated many commercial and professional contacts. Our three divisions cover a very wide range of professional and scientific interests. We participate in joint committees and task forces with AAPL, SIPES, SPE, SPEE, SEG and others, addressing the interrelated needs of our members.

Are we missing something in this effort? If you have suggestions, please contact me at pjfginc@aol.com.

Let’s make AAPG even better!

Houston ‘Perfecting the Search’

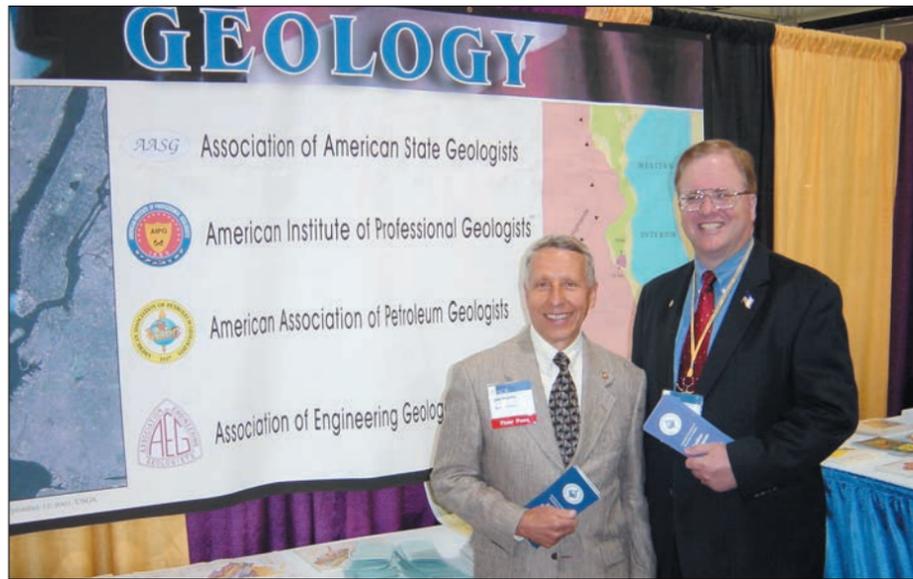
Do you have a good idea for a technical session at the AAPG Annual Convention?

The 2006 Technical Program Committee for the meeting in Houston wants your ideas. Committee members are seeking session suggestions for the theme “Perfecting the Search.”

Session topics and chairs for both oral and poster sessions sponsored by AAPG, SEPM, EMD, DEG and DPA are needed.

The committee is “particularly interested” in sessions that involve discoveries, dry hole analysis, management vision and strategic business strategies, lessons learned, prospect and play analysis, integrated case studies, etc.

Suggestions should go to Bob Merrill, technical program coordinator, at rmerrill@samson.com. The suggestions deadline is Dec. 15.



Jim Drahovzal, left, and Clint Moore man the booth at NCSL.

Third Year of Involvement

State Solons Hear AAPG's Message

"Are you concerned about America's National Energy Policy?"

Division of Professional Affairs' Governmental Affairs Committee member Jim Drahovzal and AAPG Treasurer Clint Moore asked this question of U.S. state legislators during the three-day National Conference of State Legislatures meeting in Salt Lake City in late July.

NCSL said about 4,000 attended the conference, including about 1,000 state legislators. Others in attendance included

legislative staff members, lobbyists and special interest group representatives.

Drahovzal and Moore offered to those interested a GAC flier that showed what an incredibly good value oil and gas resources are, and how important petroleum geologists are in assuring the world's future supply of oil and gas. They also passed out DPA's brochure on AAPG position papers on key petroleum exploration issues.

"This was the third year that AAPG has been involved in this important mission of letting state legislators know what we as explorationists think are the important energy issues related to petroleum geology," Drahovzal said.

In addition to AAPG, booth sponsors included the American Institute of Professional Geologists, the American Association of State Geologists and the Association of Engineering Geologists.

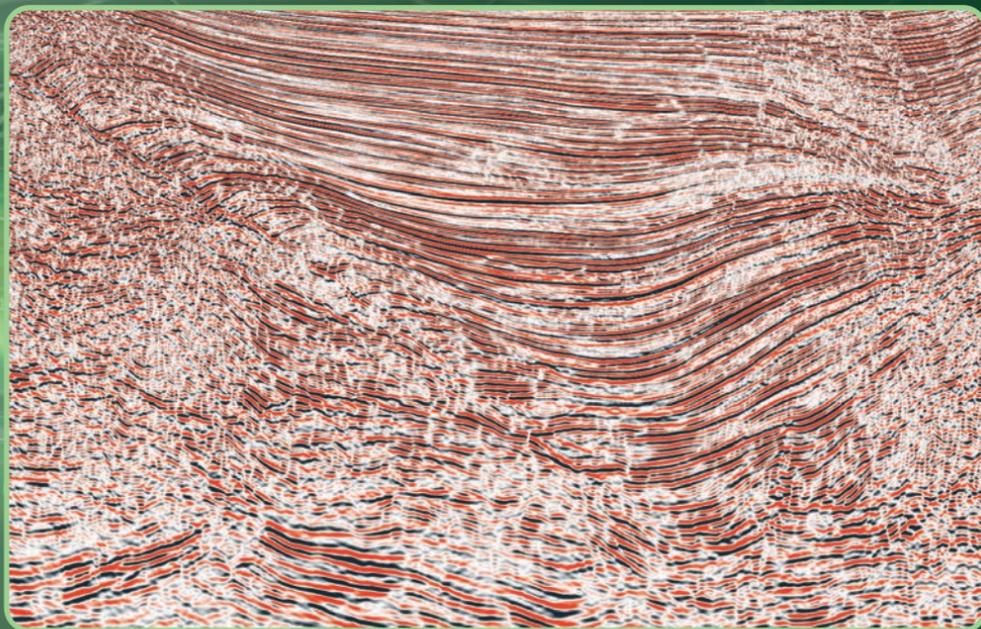
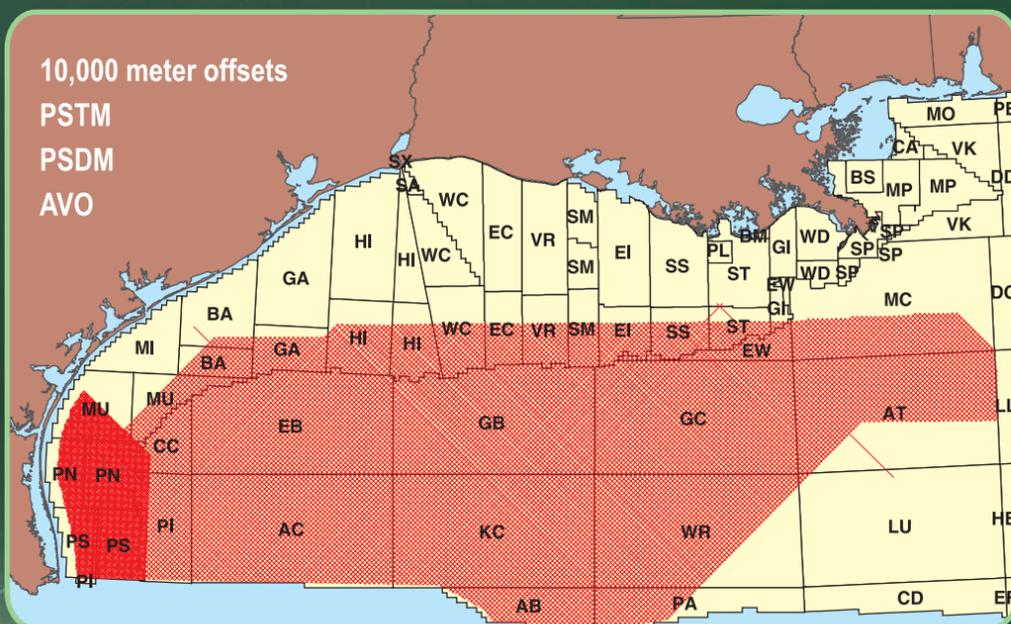
This year the NCSL Standing Committee on Energy and Electric Utilities failed to approve language that would have specifically encouraged drilling in ANWR. However, the committee's approved statement endorsed overall exploration and enhanced recovery of domestic oil and gas.

"We believe that our continued participation at NCSL, as well as our greater commitment to our broad governmental affairs effort, constitute an important role for AAPG and DPA to play, by effectively representing the interests of our membership as advocates for policies that enhance our profession through petroleum exploration and development worldwide," Moore said.

"To not participate in shaping governmental energy policy at all levels is to turn over our profession's future to governmental leaders that would make public policy without our profession's essential input, knowledge and experience," he added. "Our profession provides a critically important service to our global society, and we all need to be involved in governmental affairs wherever our profession's expertise is needed." □

Deep Focus...

A new long offset regional survey in the Gulf of Mexico



Texas Shelf - delivering now

For additional details on this program, please contact:

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

Brian Anderson
 Fugro-LCT Gravity & Magnetics
 Tel: +1 713 369 6140
 Email: banderson@fugro.com

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



AAPG Candidate Slate Announced

Nominating Committee chairman Marlan W. Downey has announced the following slate of candidates, who will stand for AAPG election for 2005-06.

Biographical information and statements from all candidates will appear in the January EXPLORER.

The candidates are:

President-Elect

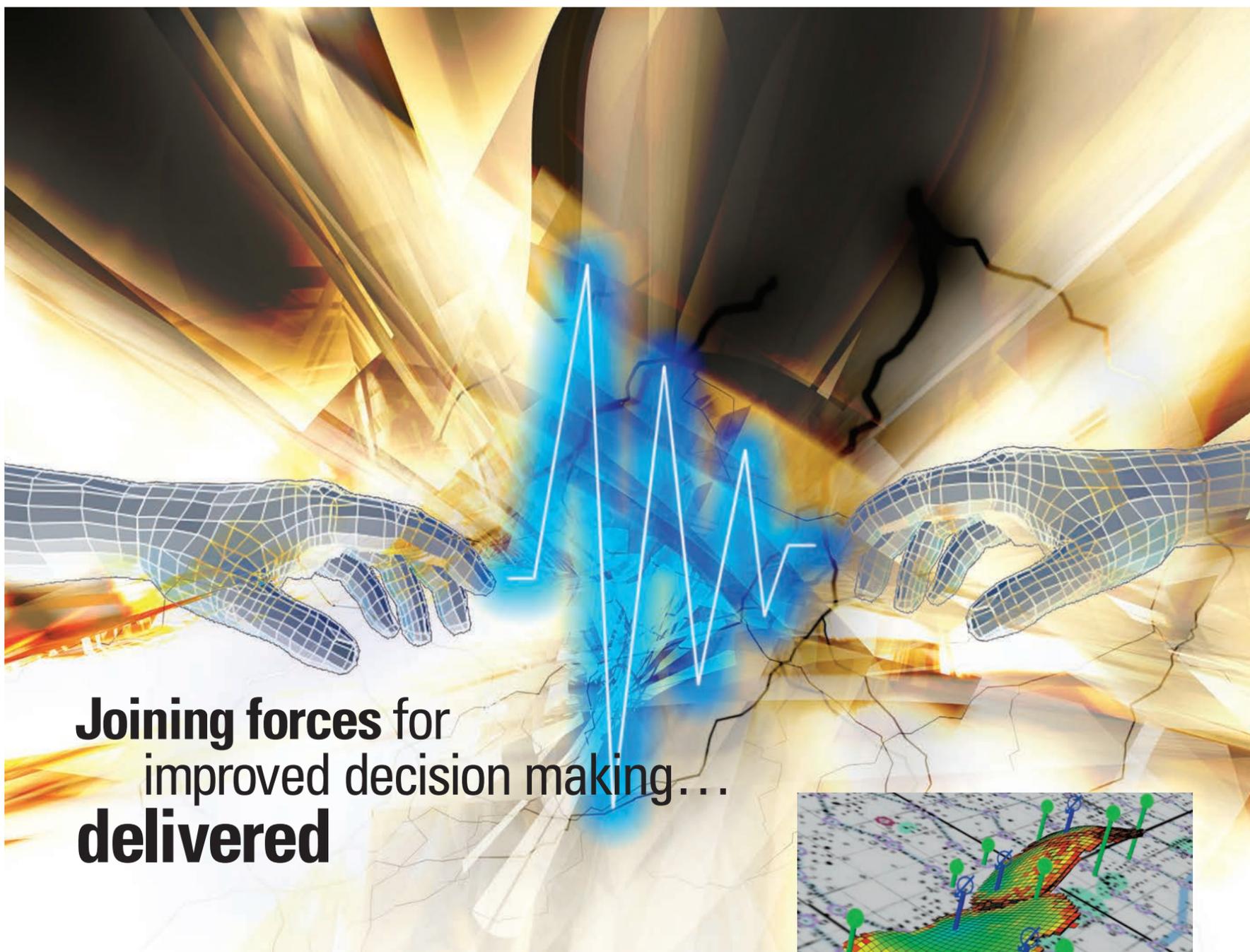
- Thomas Ahlbrandt, U.S. Geological Survey, Denver.
- Lee Billingsley, Abraxas Petroleum, San Antonio.

Vice President

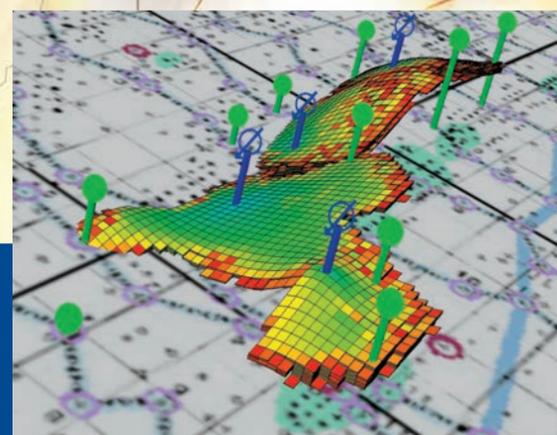
- Douglas G. Patchen, West Virginia Geological Survey, Morgantown, W.Va.
- Steven L. Veal, DCX Resources, Denver.

Secretary

- John R. Hogg, EnCana Corp., Calgary, Canada.
- J. Michael Party, Wagner & Brown Ltd., Midland, Texas.



**Joining forces for
improved decision making...
delivered**



Petrel Reservoir Engineering

Eliminate the boundaries between geology, geophysics, and reservoir engineering.

Petrel™ workflow tools enable you to prepare, run, and analyze results from any ECLIPSE® family simulator to better understand the uncertainties and opportunities in your reservoirs.

Build simulation models directly from geological models; add fluid properties, well completion, production history, and event scheduling. Organize geological realizations, simulation runs, and development scenarios into cases. Select and launch the appropriate ECLIPSE simulator and analyze the results—all with the usability of Petrel.

Reliable and timely reservoir decisions demand a robust and accurate simulator, the ability to investigate the impact of uncertainty, and a consistent, up-to-date reservoir model—reveal the possibilities through the integration of Petrel and ECLIPSE.

Petrel and ECLIPSE: Leading the novice. Empowering the expert.

For more information about
Petrel Reservoir Engineering,
contact your local Schlumberger
Information Solutions office or email:
sisinfo@slb.com

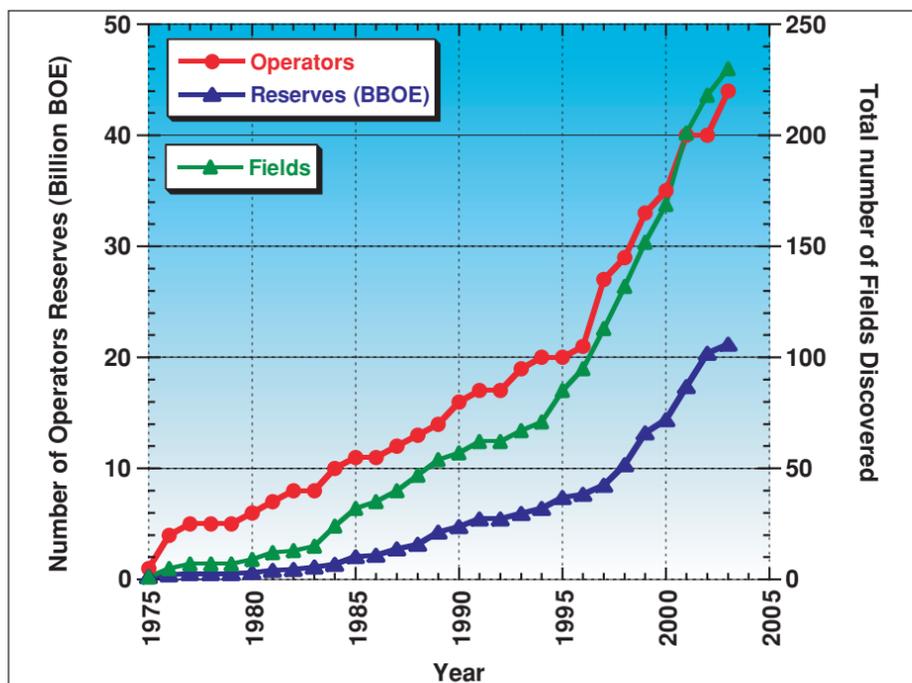


www.sis.slb.com

Learn more about SIS reservoir engineering technology by registering for the **SIS Global Forum**, Sept. 14-16, Paris, France, at www.sis.slb.com/forum or visit the Schlumberger booth at the **SPE Conference**, Sept. 26-29, Houston, Texas.

Schlumberger

© 2004 Schlumberger Information Solutions. All rights reserved. Petrel is a trademark of Schlumberger. ECLIPSE is a registered trademark of Schlumberger. The i enabled and design is a service mark of Schlumberger. 04-IS-307



Data courtesy of Steve Cossey

Figure 1 – Cumulative plot of the number of fields, operators and reserves discovered from 1975-2003 in the deepwater Gulf of Mexico. Note the change in slope of all the graphs around 1995 when the Royalty Relief Act was passed.

Prospect Name	Operator	Area/Block	Water Depth (ft.)	Year Lease Issued	Ownership
Tobago	Unocal	AC 859	9627	12-1-98	Unocal 40.01% Shell Offshore, Inc. 30.00% Nexen Petroleum Offshore 13.34% BP Exploration & Production 16.65%
San Jacinto	Dominion E&P	DC 618	7850	2-1-02	Dominion E&P 66.6% Spinnaker Exploration 33.3%
Dawson Deep	Kerr-McGee	GB 625	2900	1-1-96	Chevron U.S.A. Inc. 100%
Ticonderoga	Kerr-McGee	GC 768	5250	6-1-00	Noble Energy Inc. 100%
Puma	BP E&P Inc.	GC 823	4130	8-1-96	Unocal 15.0% BHP Billiton 33.3% BP Exploration & Production 51.6%
Atlas N W	Anadarko	LL 005	8810	3-1-02	Anadarko Petroleum 100%
Thunder Hawk	Dominion E&P	MC 734	5724	6-1-00	Dominion E&P 37.50% Spinnaker Exploration 25.00% Murphy E&P 37.50%
Goldfinger	Dominion E&P	MC 771	5423	6-1-02	Dominion E&P 75% Pioneer Natural Resources 25%

Data courtesy of the Minerals Management Service

Table 1 – This year's deepwater Gulf of Mexico discoveries, through June 1.

GOM Field Sizes Make the Difference

Deep Output Overtakes Shallow

By KATHY SHIRLEY
EXPLORER Correspondent

It's now official: In the Gulf of Mexico, deepwater exploration is THE name of the big game.

Recognition of the shift can be tracked to early 2000, when more oil was first produced from the deepwater Gulf than from the shallow water margins. Deepwater production continued to grow, and today is fast approaching the all-time shallow water Gulf record set in 1971.

Deepwater drilling also has dramatically expanded in recent years, and deepwater fields today account for some of the largest hydrocarbon accumulations ever found in the prolific Gulf. MMS defines "deepwater" as wells drilled in 1,000 feet or more of water. Its status is official, however, because of the recent Minerals Management Service report titled "Deepwater Gulf of Mexico 2004: America's Expanding Frontier," which outlines the play's last decade of growth – and its role in the future.

According to the report, deepwater reserves today far out-pace the shelf, and the deepwater field sizes are much more significant than the shallow water. During the last 10 years the average shallow-water field added about five million barrels of oil equivalent of proved and unproved reserves, while the average deepwater field added over 86 million barrels of proved and unproved reserves.

In 2002 deepwater oil production accounted for approximately 61 percent of the overall Gulf of Mexico production – and operators are continually expanding the footprint of deepwater exploration.

Gulf deepwater production began in 1979 at Shell's Cognac Field, although it took another five years before the second deepwater field, Exxon's Lena Field, came on line. Despite that early activity, it wasn't until the 1990s that deepwater activity exploded:

✓ Today, 54 percent of the approximately 7,800 active leases in the Gulf are in deep water, up from 27 percent of the approximately 5,600 total active leases in 1992.

✓ On average, there were 29 rigs operating in deep water last year, compared to only three rigs in 1992.

✓ Deepwater oil production rose over 840 percent, and deepwater gas production rose about 1,600 percent from 1992 to 2002.

✓ In February 1997 there were only 17 producing deepwater projects in the Gulf, up from just six at the end of 1992. By the end of 2003 there were 86 producing projects in the deepwater Gulf – a 51 percent increase in just two years.

✓ Deepwater production rates have risen by over 100,000 barrels of oil and 400 million cubic feet of gas per day since 1997.

Signs of Progress

Seismic activity is often a harbinger of exploration activity in the deep water, and today the 3-D seismic footprint is vast. Seismic acquisition has stepped into progressively deeper waters since 1992 and today blankets most of the deepwater region, even beyond the Sigsbee Escarpment.

Pre-stack depth migration of seismic data also has greatly enhanced the interpretation capabilities in deep water, particularly for areas below salt canopies. Once used sparingly, pre-stack depth migration surveys now are numerous – and widespread use of the technology is pushing exploration, as evidenced by subsalt discoveries like Mad Dog, Thunder Horse, Atlantis and Tahiti.

Going forward, time-lapse seismic



surveys will be an important advancement in deep water. According to the MMS the high cost of drilling deepwater wells and challenges associated with re-entry of deepwater wells may promote the use of 4-D technology in the deepwater Gulf.

Leasing is another indicator of activity. Deepwater leasing activity slowly increased from 1992-95, but immediately following the Deep Water Royalty Relief Act, deepwater leasing exploded.

Other factors contributed to this activity, of course – including improved 3-D seismic data coverage and several key deepwater discoveries – but the royalty relief certainly had an impact. In 1992 leases in water depths greater than 2,625 feet, where the greatest royalty relief was available, only accounted for 3 percent of leases; by the end of 1998 that figure had grown to almost 70 percent. In 1999 the number of active

deepwater leases surpassed that of shallow-water leases.

The Gulf experienced a lull in leasing activities in 1999 – almost a four-fold decrease compared with 1998 levels – but interest rekindled in late 1999 through 2003. The major oil companies dominated deepwater leasing in 1992-93, but by 1996 non-majors began acquiring significant lease holdings, a trend that continued through last year.

Non-major companies are poised to play a leading role in the future of the deepwater Gulf, according to the MMS.

Looking ahead, 10-year deepwater lease expirations will significantly impact deepwater activity, the report said, as the availability of expiring blocks is expected to dramatically increase in 2006 as a result of the 1996-98 leasing boom.

The lease expiration projections, according to the report, will pressure leaseholders to drill and evaluate their holdings and will provide opportunities for other companies to enter an active play by acquiring leases as they expire or by obtaining farm-outs from companies with untested acreage, the agency indicates.

Deeper Still

The number of deepwater wells drilled generally increased from 1992 through 2001. Activity declined in 2002 and 2003, but considerable drilling activity occurred in water depths greater than 7,500 feet.

The first well in over 10,000 feet of water began drilling late last year at ChevronTexaco's Toledo prospect in Alaminos Canyon block 951.

There are multiple exploration trends that will continue to enhance the importance of the deepwater province. Exploration drilling in the deepwater Gulf of Mexico in 2002 and 2003 found over two billion barrels of oil equivalent.

Traditional deepwater mini-basin plays are still providing many exploration opportunities, the MMS report notes, but recent discoveries in new deepwater plays continue to expand the deepwater's exploration potential.

Although not a geologic play, the Gulf's ultra-deepwater areas also can be considered frontier territory, according to

Paleogene Takes Gulf Stage As Latest Production Player

Ninety-nine percent of total Gulf of Mexico production is from Neogene-age reservoirs (Pleistocene, Pliocene and Miocene), but several recently announced deepwater discoveries encountered large potential reservoirs in Paleogene-age sands (Oligocene, Eocene and Paleocene).

This older portion of the geologic section has been very lightly tested in the Gulf, and these recent discoveries may open wide areas of the Gulf to further drilling, according to the MMS report.

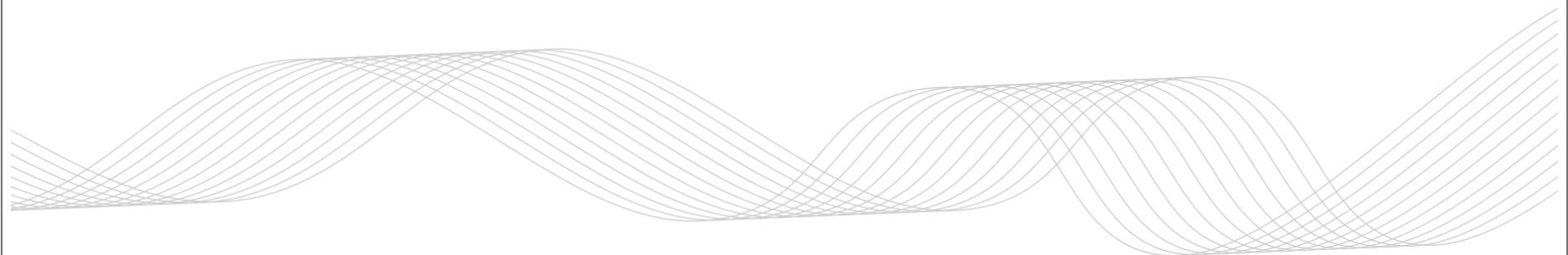
The Mississippi Fan and the Perdido foldbelts include reservoirs of Paleogene age. Announced discoveries at Trident and Great White in the Alaminos Canyon area and at St. Malo, Cascade and Chinook in the Walker Ridge area provide evidence of productive Paleogene reservoirs in a wide area of the deepwater Gulf of Mexico.

Key questions remain to be answered regarding the extent and reducibility of these older reservoirs, according to the report. □

See **Deepwater Gulf**, page 8



Introducing
TGS IMAGING™
Formerly NuTec Energy Services



TGS Imaging™ remains the smart choice for high-end seismic processing and imaging services. We are expanding capacity with increased investment in technology and manpower, while continuously adding new features to our PRIMA™ software. If that wasn't enough, we'll be working on our own data as well - redefining again the value and service you can expect from your seismic company.

TGS Imaging™: **A Knowledge of Depth, A Depth of Knowledge.**

www.tgsnopec.com

TGS NOPEC
G E O P H Y S I C A L C O M P A N Y

NuTec
Energy Services

Deepwater Gulf from page 6

the MMS. During the last three years there have been 11 industry announced discoveries in more than 7,000 feet of water with volumes of more than 1.75 billion barrels of oil equivalent.

Trident, discovered in 2001 in over 9,800 feet of water, is the deepest of these discoveries, and was found in 2001.

Other Findings

Recent drilling results indicate very significant production volumes in the near future from the deepwater Gulf. According to the MMS report, the deepwater region is still an immature exploration province with many large fields awaiting discovery.

The 2000 assessment report indicated the deep water is expected to have ultimate reserves of approximately 71 billion barrels of oil equivalent, of which 56.4 billion barrels remain to be discovered. This compares to shallow water ultimate reserves of about 65 billion barrels of oil, of which 15.2 billion remain to be discovered.

Shallow water oil production has steadily declined since 1997, and by the end of 2002 was at its lowest level since 1967. In contrast, deepwater Gulf production is dramatically increasing today – similar to the trend seen in the shallow water Gulf during the 1960s – and some predict this production surge has not yet peaked, the MMS report indicated.

Other findings include:

- ✓ In 2002 deepwater oil production accounted for about 61 percent of overall Gulf oil production.

- ✓ Shallow water gas production rose sharply in the 1960s and '70s, then leveled off for the next 15 years before declining steadily since 1996.

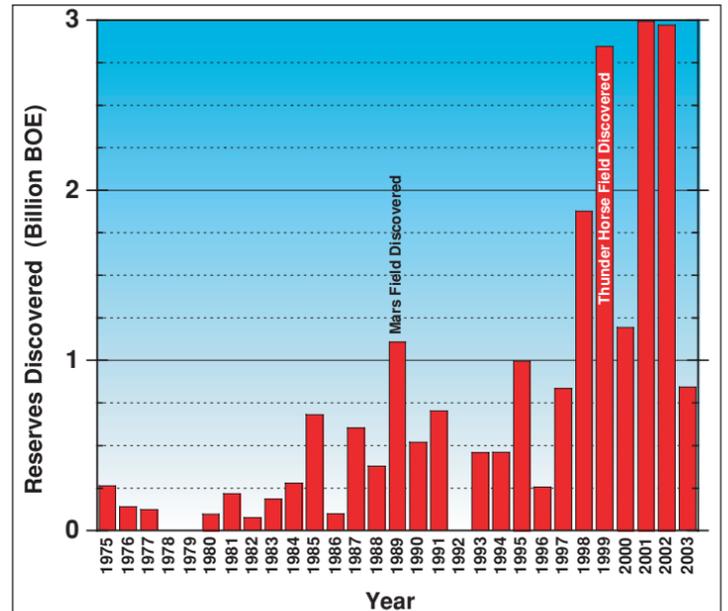
(While deepwater gas production has not seen the same dramatic jump as oil production, a steady increase has offset the shallow water decline.)

- ✓ Recent subsea completion technology has driven new deepwater developments, helping to increase production from the region. Approximately 300,000 barrels of oil and two billion cubic feet of gas per day come from deepwater subsea completions, according to the MMS, accounting for about 30 percent of deepwater oil production and about 50 percent of deepwater gas production.

- ✓ Deepwater gas production from subsea completions began in early 1993, and by mid-1994 they accounted for over 40 percent of the total deepwater gas figures.

- ✓ Subsea gas completions increased from 1996 through 1999, remained constant in 2000, and again increased rapidly after 2000. □

Figure 2 – Reserves in the Gulf of Mexico, discovered by year. Note that no reserves were added during the years 1979, 1980 and 1992. The two largest fields in the deep water, Mars and Thunder Horse, were discovered in 1989 and 1999.



Wells to Test GOM Hydrates

Gas hydrates are another future resource in the deepwater Gulf of Mexico; these resources may be 30 to 300 times greater than conventional oil and gas reserves, the MMS report indicates.

In an effort to learn more about hydrates, the MMS, the Department of Energy and seven service companies plan to kick off a joint venture this year. About eight 1,000- to 2,000-foot deep wells will be drilled, logged and cored through bedded hydrates near seafloor hydrate mounds in Atwater Valley and Keathley Canyon. The project hopes to calibrate the geophysical data for characterizing buried gas hydrates.

The MMS is developing a gas

hydrates assessment model, and will complete an initial inventory of recoverable hydrates in 2005.

Gas hydrates in the Gulf occur in water depths greater than 1,450 feet, and each cubic foot of hydrate yields about 160 feet of gas at standard temperature and pressure.

Piston cores have sampled about 100 sites that contain both thermogenic and biogenic gas hydrates:

- ✓ Thermogenic gas hydrates, derived from deeply buried, organic-rich sediments or existing gas reservoirs and containing a mixture of complex hydrocarbon gases, are known only in the Gulf of Mexico.

- ✓ Biogenic gas hydrates, generated

at shallow depths by bacterial decomposition of organic matter and yielding primarily methane gas, are found in other marine settings around the world.

The MMS report notes there are many unanswered questions about the distribution, concentration, reservoir properties and stability of hydrates. Conventional drilling operations do not allow for sampling of the upper 3,000 feet of sediment where hydrates occur.

Although conventional 3-D seismic are not specifically designed to detect hydrate deposits, interpretive techniques have been used to delineate possible hydrates.

– KATHY SHIRLEY



Easy and Secure Information Access?

TOGETHER WE CAN.

Working with Landmark, you have access to the broadest and most reliable choice for E&P **information management**. From prospect generation to production operations, Landmark provides open technology and flexible services to support your information management needs. Together, we can implement secure, customized solutions for easy and rapid access to your information assets, across your entire enterprise.

Take the first step toward better information management. Contact us at innovations@lgc.com.

PROSPECT GENERATION

FIELD DEVELOPMENT

DRILLING & COMPLETIONS

PRODUCTION OPERATIONS

Landmark 
A Halliburton Company

www.lgc.com

**INNOVATING TO OPTIMIZE
YOUR PERFORMANCE.**

It's Been Awhile Since They've Gone Courting

Louisiana Pitches Woo to Industry

By LOUISE S. DURHAM
EXPLORER Correspondent

As crude oil prices continue to soar and natural gas tags along, there's increased rhetoric about making the country "energy independent."

The multitude of proposed solutions to accomplish this feat include pouring money into new technology and alternative fuels, bringing more hybrid vehicles to market, etc.

The powers-that-be in Louisiana have a different take on this issue.

Recognizing that oil and gas drilling provides not only much-needed

hydrocarbons but also creates jobs and provides revenue to fund services and benefits for the citizenry, Gov. Kathleen Blanco is making an all-out effort to encourage increased industry activity in the state. It's part of her administration's emphasis on encouraging greater economic development in Louisiana.

Blanco received sizeable press coverage recently for being the first Louisiana governor in many years to attend the Offshore Technology Conference in Houston, where she interacted with numerous oil and gas execs and hosted a luncheon for dozens



of industry representatives.

In courting the energy folks, the state is working diligently to dispel the image it has acquired as a tough place to do business because of the onerous regulatory climate and other issues.

After just seven months in office, the governor is getting high marks from energy industry participants.

"She's already done several things," said Larry Wall, public relations coordinator at Louisiana Mid-Continent Oil & Gas Association. "She spearheaded legislation to phase out the corporate franchise tax on debt and the tax on manufacturing equipment, and she instructed the heads at departments of natural resources (DNR), environmental quality (DEQ) and wildlife and fisheries (DWL&F) to work together to expedite permits."

It is noteworthy that an array of the state's conservation office folks attended the recent LIOGA-sponsored Gulf Coast Prospect Expo in Lafayette, where the leaders of DEQ, DNR and DWL&F were included on the speaker roster at an invitation-only executive night.

Significant Benefits

Besides encouraging E&P activity, Blanco also is a staunch supporter of liquefied natural gas projects, which are being spurned by most other states.

With its vast array of pipelines and other infrastructure, the Louisiana coastal zone is ideally suited for LNG terminals, which would go far to help meet both state and national energy needs.

The LNG push *du jour* centers on Cheniere Energy's Sabine Pass LNG receiving terminal in Cameron Parish. With support from local communities near the site, Blanco is encouraging state agencies and the federal government to expedite the project. If given the green light, the terminal reportedly will be the country's largest receiving terminal with a plan to import LNG volumes exceeding 2.5 billion cubic feet per day.

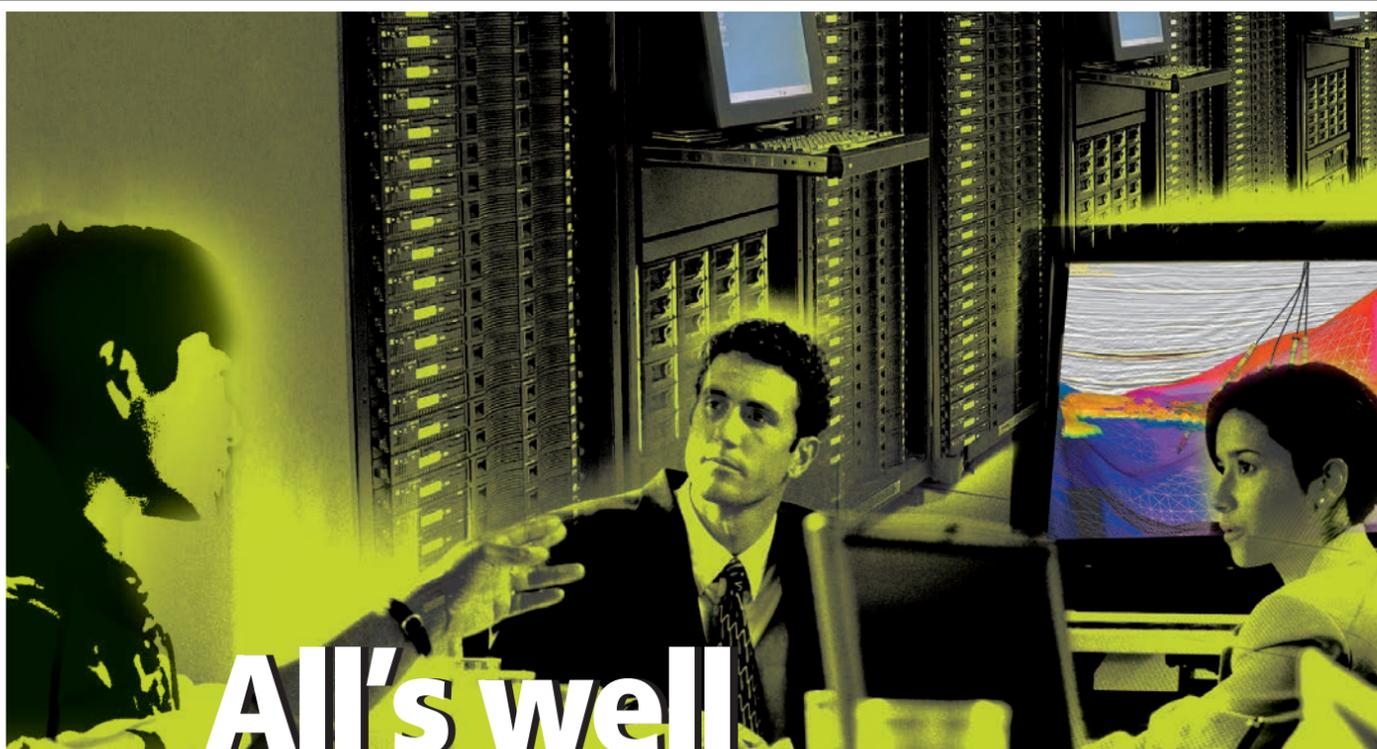
The Trunkline LNG facility at Lake Charles currently is the only LNG terminal in the state and is the largest of the four existing terminals in the United States. Sempra Energy has received approval for a terminal south of Lake Charles.

According to David Dismukes, associate professor at the Louisiana State University Center for Energy Studies (CES), the development of an LNG infrastructure in Louisiana has the potential to provide significant benefits, including:

- ✓ Increasing gas export volumes through the existing pipeline system by more than 237 percent over the annual average.
- ✓ Providing \$398 million in annual gas expenditure savings by 2005 under a high LNG development scenario.
- ✓ Creating 13,800 jobs.
- ✓ Injecting more than \$2.2 billion into the state economy.

The overall LNG impact is detailed in a recent CES report "Economic Opportunities for LNG Development in Louisiana," which was co-authored by Dismukes.

"We're excited about the LNG projects," Welsh said. "We're also excited about the new deep plays offshore south Louisiana – that's what will carry us into the future." □



All's well
that ends well
in a

And that's particularly true when discussing oil and gas exploration and production, where sizable investments depend on the successful exploitation of wells.

Only one company combines the depth of technology innovation, professional expertise, global presence, 100% in-house geoscience knowledge and computing power to offer the most advanced geophysical services, all under one roof.

Paradigm.

With imaging solutions for large-scale 2D, 3D and 4D projects, and the most experienced geoscience professionals in the business, Paradigm is proud to provide customers around the world with on-time delivery, cost-efficient workflows and highest-quality results.

Please visit us at SEG
Booth #741, Hall C
October 10-15, 2004
Denver, CO

 **Paradigm**[™]
THE GEOSCIENCE KNOWLEDGE COMPANY

Solutions that aim high. Services that run deep.

www.paradigmgeo.com

Want to know more about Paradigm integrated services? Contact services@paradigmgeo.com

USA +1 713 393 4800	Canada +1 403 750 3535	Mexico +52 993 3520 734	South America +55 21 3084 3898	Europe/Africa/Middle East +44 1483 758 000	CIS/Russia +7 095 933 4440	Asia Pacific +91 22 5691 9300	China +86 10 6465 4870
------------------------	---------------------------	----------------------------	-----------------------------------	---	-------------------------------	----------------------------------	---------------------------

PARADIGM SOFTWARE & SERVICE SOLUTIONS:

Data Processing and Imaging

Visualization, Interpretation
and Earth Modeling

Reservoir Characterization
and Petrophysics

Well Planning and Drilling

Petroleum Engineering

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

www.aapg.org



EXCLUSIVELY AVAILABLE FROM FAIRFIELD INDUSTRIES

NEW

SPICESM

NEW

A Stratigraphic Transform



SPICESM = **SP**ectral **I**maging of **C**orrelative **E**vents

Get more stratigraphic detail
from your seismic data!

A process which shows:

- Structure
- Stratigraphy
- Bed-form Boundaries



What can SPICE do for you? Contact us for a full technical briefing.

Houston Denver www.fairfield.com (800) 231-9809 (281) 275-7500 dataprocessing@fairfield.com

Deep GOM Discoveries Toasted Over 30 Years

Celebrations Began With Cognac

By STEPHEN P.J. COSSEY

Next July will mark the 30th anniversary of the first field discovered in the deepwater Gulf of Mexico province, defined here as water depth of greater than 600 feet (183 meters).

Since 1975, when the first commercial field (Cognac) was discovered by Shell, over 21.2 billion barrels of oil equivalent have been discovered in the province and approximately 9.2 TCFG and 2,200 MMBO have been produced between 1979 and the end of 2002.

There have been approximately 232 commercial fields discovered during the period from 1975 to the end of 2003.

The current mean size of these discoveries is 94.3 MMBOE. The two largest fields found to date are Mars (750 MMBOE) and Thunder Horse (1,000 MMBOE).

And, a statistic to remember: Initial well flow rates in the deepwater province did not exceed 10,000 BOPD until 1995 – 20 years after the discovery of Cognac field in 1975.

Only three short years later, individual well rates at Ram Powell and Troika exceeded 20,000 BOPD.

Exploration

There have been three major exploration plays in the deepwater province: the Flex Trend play, the Mini-Basin play and the Fold Belt play (see figure above).

In addition, the “subsalt play” is simply any of these plays obscured by salt.

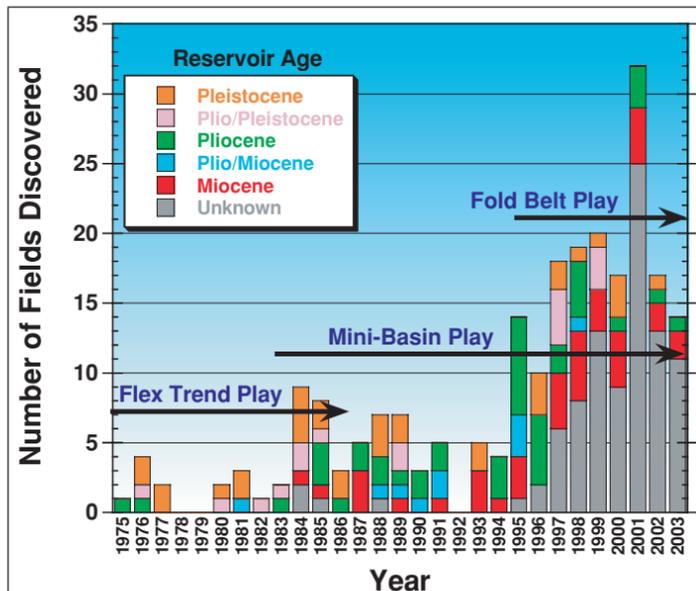


Figure 1 – The number of discoveries in the deepwater Gulf of Mexico for the years 1975-2003, showing reservoir age. Note the large increase from 1995 onward, after the passing of the Royalty Relief Act. There were no discoveries in 1978, 1979 and 1992.



line (Bullwinkle in 1989, Auger in 1994) produced at much higher than expected rates, had better than expected aquifer support and needed fewer wells to develop them. Many of the early production ended up being facilities constrained.

□ The Flex Trend play began in the early 1970s with the discovery of Cognac field. It was developed just beyond the present-day shelf edge where there is a “flex” in the sea floor profile.

Some of the larger flex trend discoveries were Lena, Zinc, Pompano and Green Canyon 18. Wells generally targeted “bright spots” on 2-D seismic. Most discoveries in the play were fields with small reserves, discontinuous sands and wells with fairly low flow rates.

Needless to say, this was not a very encouraging start to exploration in the deepwater province.

□ The Mini-Basin play began in 1983 with the discovery of Bullwinkle. This play targeted the flanks of structural intraslope basins where reservoir sands pinched out and formed a combination structural/stratigraphic traps.

Some of the larger mini-basin fields discovered are Auger, Mars, Diana, Genesis, Troika and Europa. Ram Powell was discovered in 1985 and is a very large, stratigraphic trap developed in a more unrestricted mini-basin.

(Larger mini-basins also may have turtle structures developed in their centers.)

The first mini-basin fields brought on-

□ There are at least three fold belt trends: the Mississippi Fan, the Perdido and the Port Isabel fold belt.

The Fold Belt play began in 1995 with the discovery of Neptune in Atwater Valley 575 in the Mississippi Fan fold belt.

BAHA was the first discovery in the Perdido fold belt in 1996. To date, there has not been a discovery in the Port Isabel fold belt.

The largest field discovered to date (Thunder Horse) was not discovered until 1999, a full 24 years after the first discovery in the flex trend play (Cognac).

continued on next page

decisions
conclusions

model as simple as possible,
not simpler

POWERED BY
GOCAD

www.earthdecision.com

- base module
- seismic interpretation
- velocity modeling
- geologic interpretation
- reservoir production
- reservoir modeling
- drilling planner

earth
decision
sciences

Drawing the right conclusions

continued from previous page

There have been consistently more than 10 discoveries per year in the period after 1995 when the Royalty Relief Act was established, which allowed producers to postpone paying royalties until most of the exploration and development costs are recovered.

Exploration success rates in the deepwater Gulf have been estimated to be about 1 in 4.

During the first nine years of exploration in the deepwater Gulf of Mexico, 15 fields were discovered, all with reservoirs of either Pliocene and/or Pleistocene age. More Pleistocene reservoirs were discovered in 1984 than in any other year, and the most Pliocene reservoirs were discovered in 1995. The first Miocene reservoirs were not discovered until 1984 at Tahoe, although these were gas-bearing, thin-bedded (laminated) reservoirs.

Other Miocene reservoirs were later discovered at Ram Powell in 1985, Mensa, Kepler and Coulomb in 1987, Mars in 1989, Mickey and Pompano in 1990, and Crosby in 1991.

More recently, Paleogene age reservoirs have been discovered in the Fold Belt play.

Fewer than 10 companies were operating discoveries in the deepwater in the first 13 years of exploration; in 2003, there were approximately 44 companies operating discoveries in the deep water. Shell has been by far the most successful operator, with approximately 52 discoveries through early 2004.

ExxonMobil is the second most successful operator with approximately 17 discoveries.

Reserves and Production

Approximately 21.2 billion barrels of oil equivalent have been discovered in the deepwater Gulf of Mexico. The most reserves were added in 2001, when 32 fields were discovered.

Large additions of reserves greater than 1,000 MMBOE per year were added in 1989, and during the period 1998-2002. During the period of exploration from 1975-2003, reserves in excess of 500 MMBOE have been added in 13 of the 29 years.

No discoveries were made, and no reserves were added, during the years of 1978, 1979 and 1992.

Mars (750 MMBOE), discovered in 1989, was often thought to be the largest field in the province until Thunder Horse (1000 MMBOE) was discovered in 1999. The sizes of these fields suggest that there is still a possibility that several fields in the range of 750 MMBOE to 1,000 MMBOE still wait to be discovered.

The first oil field to start production in the province was Cognac, in 1979. This was followed in 1980 by the first gas field (GB 236).

It was not until 1984 that the third field (Lena) started production, almost 10 years after the first commercial discovery.

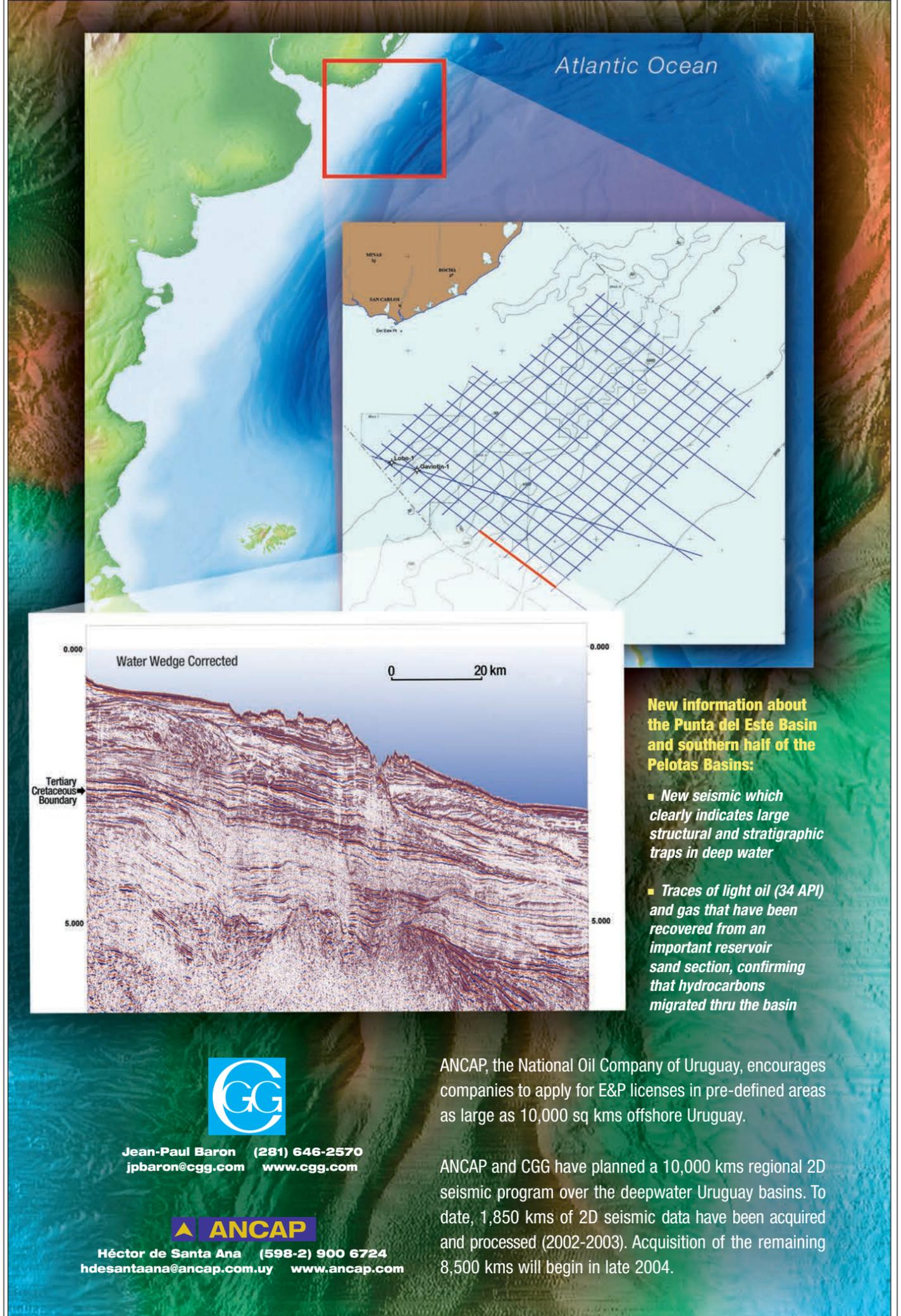
The first 24 fields to start production in the deep water either produced from Pleistocene or Pliocene reservoirs.

Initial per well production rates were disappointing during the first few years of production from the early producing fields. Peak well rates at Lena, which started production in 1984, were only 500 to 2,200 BOPD. It was clear from these early producing fields that higher per well flow rates had to be achieved if the deepwater province was to be economically viable.

Fields that started production in the late 1980s achieved slightly higher per well rates. The Green Canyon 18 A-8 well flowed at 7,400 BOPD during January 1989, but that rate was short-lived. Rates of 3,000-6,000 BOPD were achieved at

See **Deepwater History**, page 16

REGIONAL 2D Offshore Uruguay



New information about the Punta del Este Basin and southern half of the Pelotas Basins:

- New seismic which clearly indicates large structural and stratigraphic traps in deep water
- Traces of light oil (34 API) and gas that have been recovered from an important reservoir sand section, confirming that hydrocarbons migrated thru the basin



Jean-Paul Baron (281) 646-2570
jpbaron@cgg.com www.cgg.com



Héctor de Santa Ana (598-2) 900 6724
hdesantaana@ancap.com.uy www.ancap.com

ANCAP, the National Oil Company of Uruguay, encourages companies to apply for E&P licenses in pre-defined areas as large as 10,000 sq kms offshore Uruguay.

ANCAP and CGG have planned a 10,000 kms regional 2D seismic program over the deepwater Uruguay basins. To date, 1,850 kms of 2D seismic data have been acquired and processed (2002-2003). Acquisition of the remaining 8,500 kms will begin in late 2004.



THE ART OF ACQUISITION REDEFINED

Worldwide Seismic Data Acquisition
Land • Transition Zone • Shallow Marine (OBC)



GRANT
G E O P H Y S I C A L

www.grantgeo.com

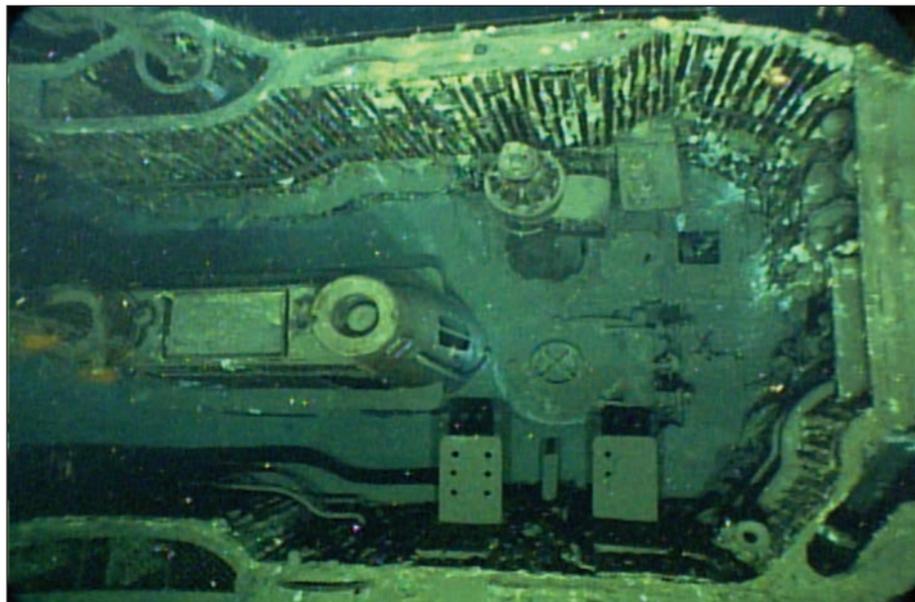


Photo courtesy of the Minerals Management Service

The *SS Robert E. Lee* met a tragic fate in the deepwater region of the Gulf of Mexico during World War II, sunk by a German U-boat that itself was later destroyed and now rests about a mile away. The two boats are the subjects of a collaborative study to assess the environmental impact that drilling in deep water may have on marine life.

Gulf Ecosystem Studied

Shipwrecks Tell Deep Reef Tales

By BARRY FRIEDMAN
EXPLORER Correspondent

Deep in the Gulf of Mexico off the Louisiana coast, the German U-Boat 166 lay buried in irony, split in half by depth charges, about a mile from the American freighter, the *SS Robert E. Lee* – the same *Robert E. Lee* torpedoed by the German sub a few days earlier (October 2001 *EXPLORER*).

Together, the sites of these two vessels in 5,000 feet of water, along with five other shipwrecks in the Gulf (all of which occurred between 1942 and 1943), are the focal point of a Deepwater Shipwreck Study, a collaborative effort to assess the environmental impact of drilling in deep water, specifically its effects on plant and marine life and the artificial reefs that may form.

The \$1.2 million, 18-day study (it started in late July), funded by the Minerals Management Service and a consortium of universities, governmental agencies and oil and gas explorers, was "the most comprehensive ever done," said Caryl Fagot, public affairs specialist for MMS.

Using rigs as artificial habitats for marine life is nothing new. The federal government has worked with coastal states and oil companies since the early 1980s to convert drilling platforms into artificial reefs once the rigs are removed. More than 200 rigs-to-reefs projects can be found in the Gulf's shallower waters.

The question is, can man-made reefs in the *deepwater* Gulf be effective?

Fagot said that scientists expect to issue a full report in a year – but until then, video and daily updates will be available online.

(It should be noted that researchers from Texas A&M University, the University of Texas, Louisiana State University and other schools are in the midst of a similar four-year, \$4.8-million study.)

"The wrecks are serving as laboratories," Fagot said, adding that while the oil and gas industry has plenty of information on drilling and man-made reefs in shallow water, deepwater ecosystems remains something of a mystery.

And since deepwater activity has



become the dominant exploration target in the Gulf, knowing more about the overall environment is more than just a luxury. For many, it's a necessity.

Deepwater Debates

The MMS, a bureau in the U.S. Department of the Interior, is the federal agency that manages the nation's natural gas, oil and other mineral resources on the outer continental shelf. The agency also collects, accounts for and distributes more than \$5 billion per year in revenues from federal offshore mineral leases.

It's only been in recent years that the question of the effectiveness of rigs as reefs in the deepwater Gulf was even considered.

The excitement over deepwater drilling first heated up in 1987 when Shell Oil discovered a deepwater field in the Gulf with reserves of some 220 million barrels of oil (see related story, page 6). The potential for large-scale success, obviously, was compelling.

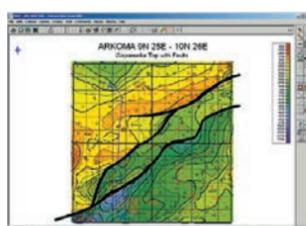
Still, with oil and gas prices depressed throughout the 1990s, deepwater development was slow to develop. Then, in 1995, the federal Deep Water Royalty Relief Act, a controversial piece of legislation that offered oil companies royalty-free production on the first 12 million barrels, was passed.

According to the Sierra Club, that legislation did more harm than good. In its June report, it concluded, "Offshore oil and gas revenues are diminishing, and

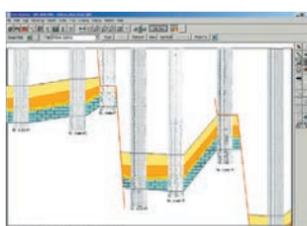
See **Deep Reefs**, page 16



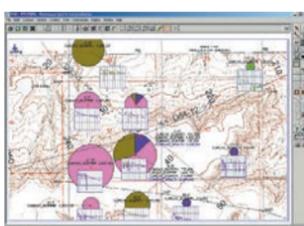
Ask us about our
NEW
"Thematic Mapper"



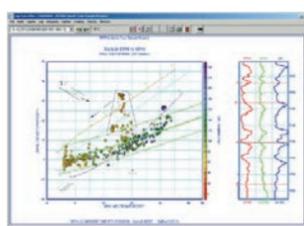
CONTOURING
Faulted contours
Isopachs
Volumetrics
Grid operations
New flexing options



CROSS SECTIONS
Digital and/or Raster
Geocolumn shading
Multiple rasters/well
Stratigraphic/Structural
Shade between crossover
Dipmeter data



MAPPING OPTIONS
Bubble maps
Production charts
Log curves
Posted data
Highlighted Symbols



CROSS PLOTS
Log crossplots
"Z" crossplots
Lithologies to facies
Pickett plots
Regression curves
User defined overlays



DECLINE CURVES
Compute EUR, RR, etc.
Hyperbolic or exp.
Rate/Time or Cum P/Z
User defined Econ. Limit
User defined Extrap. Time

PETRA® delivers the industry's only easy-to-use and affordable integrated solution for today's workflows. It provides multi-user access to large projects through geological, petrophysical and engineering analysis tools. The PetraSeis™ option extends PETRA® into 2D/3D seismic interpretation with practical tools such as RasterSeis™. [Download a trial version at www.geoplus.com](http://www.geoplus.com), or call us at 888-738-7265 (in Houston, call 713-862-9449) for more product information.



THERE IS A DIFFERENCE

PETRA®



GCAGS Annual Meeting Is Set For Oct. 9-12 in San Antonio

"Geologists on a Mission" is the theme for this year's annual meeting of the Gulf Coast Association of Geological Societies, which will be held Oct. 9-12 at the San Antonio Convention Center.

The meeting will feature a comprehensive technical program, entertainment events and an exhibit hall that operates on a new Sunday-Tuesday schedule.

Also offered is an All-Convention Luncheon on Monday, Oct. 11, featuring Victor R. Baker, professor of planetary sciences at the University of Arizona, who will discuss "Recent Discoveries Concerning the Geology of Mars."

Although activities begin on Saturday,

Oct. 9, the meeting's official opening session and awards ceremony will begin at 5 p.m. Sunday, Oct. 10, followed by the Icebreaker reception in the exhibits hall.

The technical program is built on the "mission" theme, with specific sessions on:

- ✓ The Deep Gulf of Mexico.
- ✓ South Texas.
- ✓ The Gulf Coast.
- ✓ Mexico.
- ✓ The Balcones.
- ✓ A general session, "Mission to Explore."

Registration and other meeting information is available online at www.aapg.org. □

Deep Reefs

from page 14

are continually eroded by royalty relief for deepwater drilling and other new and expensive drilling techniques."

Industry watchers, like the Business Communications Group, counter by saying that by 2006, the overall global market for deep water will reach \$100 billion.

For its part, the EPA says that as of 2001, more than 3,900 leases, or 52 percent of the total active leases in the Gulf, were in areas that require deepwater drilling and development. Water more than 1,000 feet deep is considered deep water, and almost 3,000 of the active leases involve water over 3,000 feet deep. Though environmentalists were not

mollified, the MMS, in a 2001 (#2001-11) study, found that only two chemicals involved in deepwater drilling and production, zinc bromide and ammonium chloride, had the potential for adverse environmental impact.

(Studies continue, however, on storage and offloading systems, large tanker type vessels that would process and store oil from nearby wells moored to the sea floor.)

So far, the MMS has approved no such system for the Gulf.

Answers May Surface

For the oil and gas industry, there are other obstacles, most notably the cost of implementing and maintaining high specification rigs needed for deepwater drilling that are capable of maintaining station and suppressing vortex induced vibration – costs that can exceed \$300,000 per day.

While not dismissing the historical, archaeological, economic and ethical considerations, Fagot underscores that the main focus of this latest study will be "the impact that deep water and microbes are having on the structures" and the concurrent impact of the structures on those ecosystems.

"The wrecks will provide us with some of those answers," she said.

Fagot promises that the sites will not be disturbed, and that the inspection will be non-invasive, as a Remote Operated Vehicle will be used to determine the marine habitat around them.

"Industry cannot impact the shipwrecks," she said.

Not surprisingly, she added, whatever the final results of the study, the oil and gas industry will be sensitive to the environmental impact of drilling in any water depth.

"Nobody would know the true location of the U-166," she said, by way of proof, "if not for oil and gas exploration," alluding to its discovery by BP Amoco and Shell while the companies were surveying the area for a planned underwater pipeline from the Mississippi River.

"MMS regulations require companies to leave the sea floor the way they found it," she said, adding that the pipeline, in fact, was redirected away from the wrecked U-166 once it was discovered.

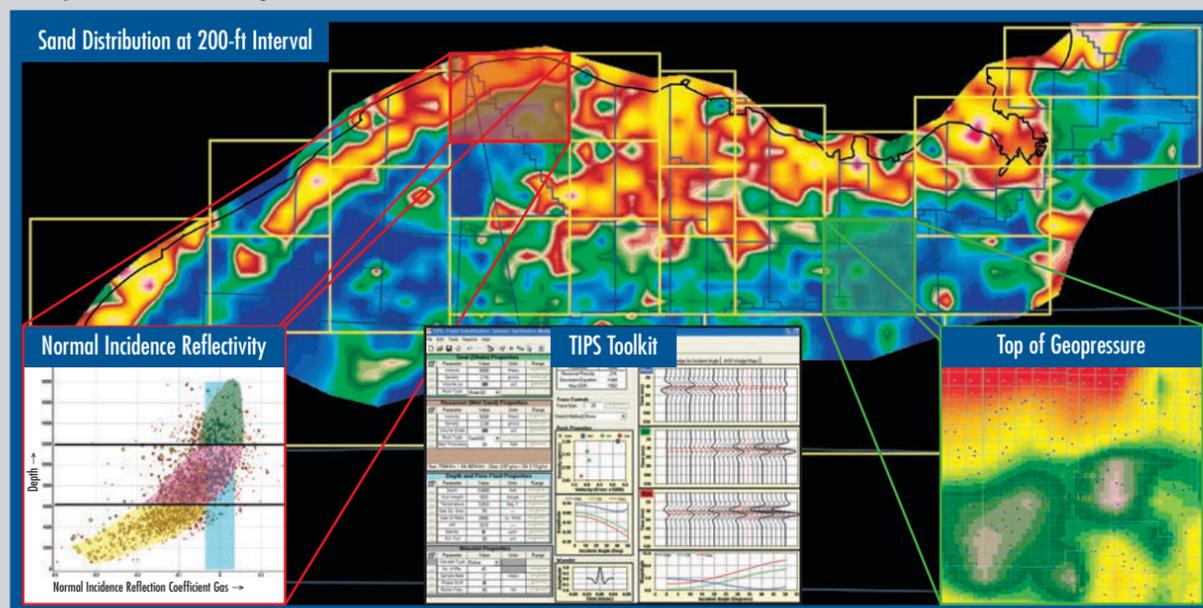
"The German government still has jurisdiction over the U-166, because it's a grave site," she said – a site that may be surrounded by man-made reefs, and the nautical ghosts of its own 52 buried crewmen. □

Gain a Competitive Advantage in the Gulf of Mexico with GDC Tiles™

Now you can interactively access the industry's most comprehensive database of rock properties to drive prospect generation and analysis. Here are some of the GDC Tiles features that make that possible.

- TIPS™ interactive AVO modeling toolkit
 - Developed by Dr. Fred Hilterman
 - Generation of AVO models derived from real data
 - PC based
- Executive summary report for each Tile
- AVO class distribution
 - Explorer's AVO Class definition
 - Regional AVO Top Class 2 map
- Rock properties database
 - 5,500-plus wells across the Gulf of Mexico
 - Over 70 properties for each well at 200-ft depth intervals
 - Attributes for shale and sand (wet, gas, and oil)
- Top geopressure distribution
- Key well analysis
 - AVO attribute calculation
 - Fluid substitution
 - Near- and far-angle stack responses

Twenty-seven Tiles covering the Gulf of Mexico



Please come see us in Booth 1470 at the SEG Annual Meeting.

USA
One Riverway, Suite 2100
Houston, Texas 77056
Phone: 713-782-1234, ext. 257
Fax: 713-782-1829

GDC
GEOPHYSICAL DEVELOPMENT CORPORATION
www.geodev.com

UK
2 Westminster Court
Hiple Street, Old Woking
Surrey GU22 9LG
Phone: 44 1483 776277

ACQUISITION

PROCESSING

INTERPRETATION

Deepwater History

from page 13

Bullwinkle, but these rates were reached years after the startup of the field.

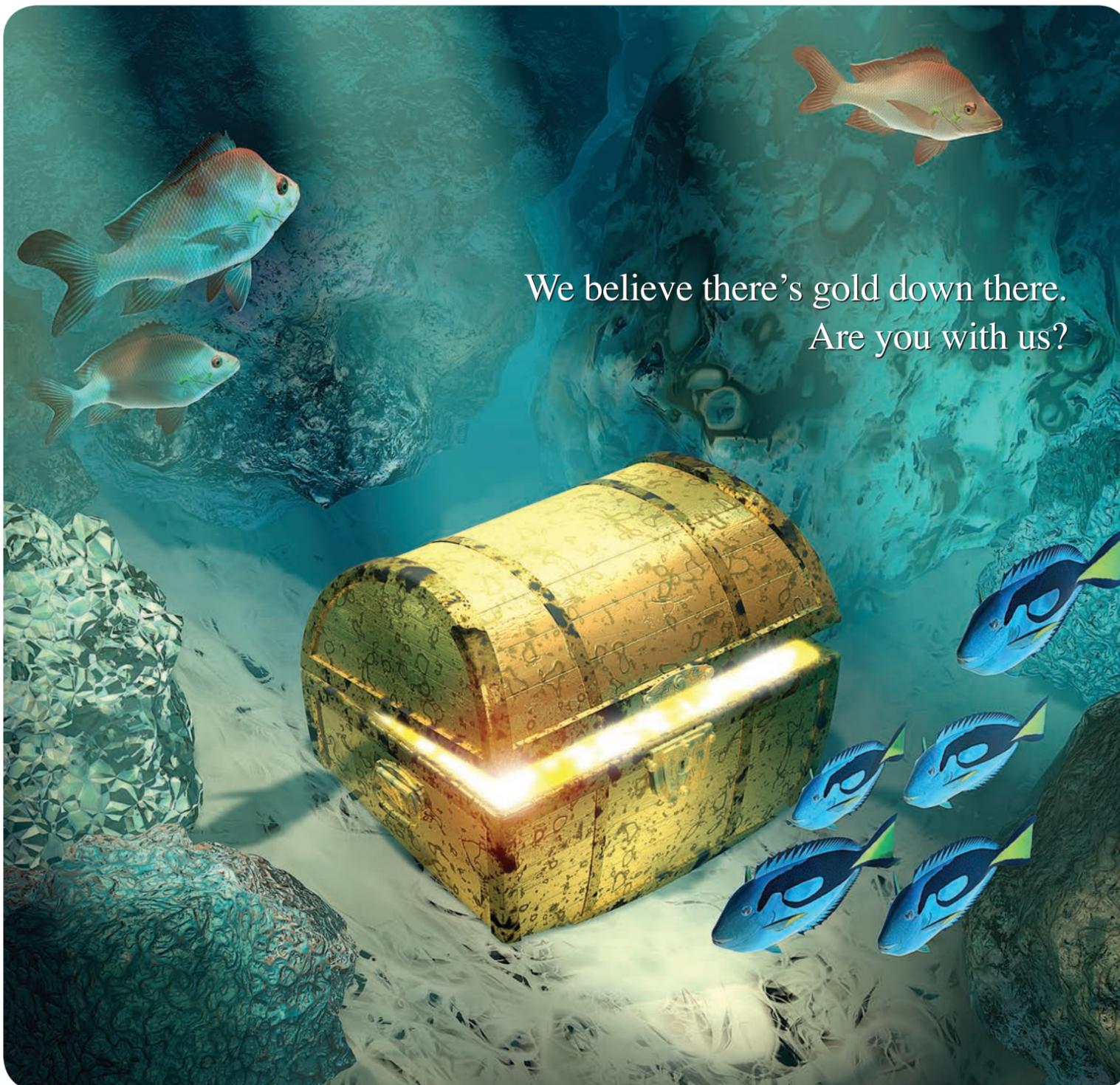
The first Miocene reservoirs started producing in 1994, almost 20 years after the first discovery in the province. It was not until 1994 that the first Miocene and early Pliocene reservoirs were brought into production at Tahoe and Auger.

Higher per well rates were first achieved at Auger field – four came on-line in 1994 – but it was not until 1995 that the first well at Auger achieved a rate in excess of 10,000 BOPD. It was then realized that high per well rates from the Deepwater Province were possible.

Just three years later, well rates at Troika and Ram Powell exceeded rates of 20,000 BOPD.

At the end of 2003 there were 136 fields producing in the Deepwater Province. Sixteen fields started production in 2003.

(Editor's note: Cossey, an AAPG member, is with Cossey and Associates, Durango, Colo.) □



We believe there's gold down there.
Are you with us?

It's not too late to join the quest for the next big deep discovery in the Gulf of Mexico.
Go to www.pgs.com/link/gold for the latest secrets.

PGS GOLD PROGRAM: **THE QUEST IS ON**

PGS GEOPHYSICAL

10550 RICHMOND AVENUE • HOUSTON, TX 77042 • TEL: 713-781-4000 • FAX: 713-266-0455



It's an Image Thing

Subsalt Remains Deep Challenge

By LOUISE S. DURHAM
EXPLORER Correspondent

Prices are rising, demand is soaring, supplies are tight – and iffy, depending on the geographic location – and many promising U.S. drilling locales continue to be off-limits.

Not surprisingly, many are looking to the industry's Old Faithful, aka the Gulf of Mexico, as the still-bright hope for increased domestic production. Indeed, it's the only readily accessible region harboring some frontier-type plays – the still-new shallow water deep gas play and the ultra-deep water – despite its lengthy producing history.

The lure of potential new finds in the GOM was underscored in the most recent Central Lease Sale 190 held by the MMS, which garnered the highest number of bids of any Central Sale in the last six years. Sixty percent of the bids were on the shelf, apparently reflecting interest in the shallow water deep gas, according to Johnnie Burton, MMS director.

The sale also indicated continuing interest in the deep water (see related stories, pages 6 and 12), and Burton said the large number of tracts receiving bids in the ultra-deep water was particularly noteworthy.

As of March 2003 there had been 24 deep gas completions, with 17 discoveries, according to Debra Winbush at the MMS, who noted 100 wells were permitted in 2003 and 40 in 2004. The agency reported there have been 11 industry-announced discoveries in water depths greater than 7,000 feet and noted these ultra-deep water discoveries have the potential to open up entirely new geologic frontiers.

But the deep Gulf is salt country, meaning there are obstacles to overcome, and not just in terms of iron.

It's an image thing.

"The imaging challenge pretty much applies to everything," said Chad Harding, team leader seismic imaging group at BHP Billiton. "There are two fronts – acquisition and processing – on which we'll need to advance to improve seismic imaging for subsalt exploration in the Gulf.

"Probably the most critical thing is in the area of acquisition," he added. "We need to learn how to acquire data sets that better illuminate subsalt targets. We believe – and there's a lot of evidence now – that multi-azimuth acquisition is the way to do that."

Harding noted that this is in contrast to what might be called single or narrow azimuth acquisition, which is what you normally have with conventional marine streamer equipment.

"To image the subsurface salt-related formations in the Gulf, you have to record reflections," said Marty Brandt, contractor acquisition and processing team leader ChevronTexaco Energy Technology Co. "You need those long offset, large apertures to do that.

"The acquisition of long offset information is a challenge," he continued, "along with the subsequent impact it has on processing to deal with anisotropy, tilted anisotropy and depth migration."

Harding said the industry must continue to take advantage of declining computing costs and improve the ability to build seismic velocity models.

"That is a key to better sub-salt

images," Harding said. "My view is that velocity model building is a core technical competency for oil companies. Better migration algorithms go hand in hand with velocity model building, and the package of those two things along with better seismic data to start with are what I think will get us where we want to go."

Different Approaches

It all begins with the data acquisition, and Harding noted there are different approaches that afford the



capability to acquire the needed wide-azimuth data: ocean bottom sensor (OBS) nodes, ocean bottom cable (OBC) and surface methods using streamers.

Streamers and cables both are widely-used, proven technologies in conventional marine seismic data acquisition, depending on the environment and the survey objective.

On the downside, streamers can become unwieldy around platforms

continued on next page



Employment opportunities in the State

RASGAS COMPANY LIMITED is owned by Qatar Petroleum and ExxonMobil and was formed to engage in the business of production and sale of Liquefied Natural Gas and related hydrocarbon products. At present the Company operates a Three-train Onshore Facility at Ras Laffan, which is about 80 km north of the capital city, Doha, in the State of Qatar. The Company, as part of its expansion program, is currently building further production facilities both Onshore and Offshore and is seeking highly skilled personnel to fill the following positions.

PRODUCTION ENGINEERING MANAGER (Ref – TSS 001/04)

Applies technical expertise to plan, optimize and manage all Petroleum Operations, during drilling, production and work-over activities to ensure sustainable production rates are available to meet Company objectives and contract deliverables over the 25 year contract period. Adherence to all EHS standards will be observed. Supervises and controls the activities of assigned personnel in Production Engineering including offshore specialist contractors who are responsible for resource definition, characterization of rock and fluid properties, determination of well completion objectives and field development planning.

Candidate must have a minimum of a Bachelor of Science degree in Petroleum/Chemical Engineering with a minimum of 15 years petroleum operations experience in an international oil/gas industry, of which, a minimum of 5 years in a senior position. Must be proficient with English (verbal and written), have thorough knowledge of petroleum, production, drilling and work-over operations (includes an understanding of petrophysics, geology, production, drilling and petroleum operations practice), experience leading a multidiscipline team in a multicultural environment, knowledge of fundamental business practices and strong interpersonal skills.

PETROLEUM ENGINEERING ADVISOR (Ref – TSS002/04)

Responsible for supervising, controlling, interpreting and evaluating all well testing operations and sampling in the field (onshore and offshore wells). Requires recent experience of supervising offshore and onshore rig operations, electric line logging (perforating/PLT/MDT), well testing, test analysis, and acidization. Provides guidance on well production testing, sampling, associated equipment specifications, technical and risk assessment input into future development projects. Will be required to mentor and train National Graduate Engineers.

Candidate must have a minimum of a Bachelor of Science degree in Petroleum/Chemical Engineering with at least 15 years post qualification experience, including 5 years recent offshore operations supervisory experience of electric line logging, well testing and test analysis, acidization, 5 years recent onshore operations support experience, which includes detailed understanding of well operations, engineering and production engineering, 3 years new field development, 3 years recent working experience with gas reservoirs and 5 years working in a multidiscipline team. Proven experience in mentoring National Graduate Engineers is required. Must be computer literate with familiarity in industry standard computer program (WEM & PROSPER etc), proficient with English (verbal and written), knowledge of fundamental business practices, strong interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

PETROLEUM ENGINEERING SPECIALIST (Ref-TSS 003/04)

Responsible for supervising, controlling, interpreting and evaluating all well testing operations and sampling in the field (onshore and offshore wells). Requires recent experience of supervising offshore and onshore rig operations, electric line logging (perforating/PLT/MDT), well testing, test analysis, and acidization. Provides guidance on well production testing, sampling, associated equipment specifications, technical and risk assessment input into future development projects. Will be required to mentor and train National Graduate Engineers.

Candidate must have a minimum of a Bachelor of Science degree in Petroleum/Chemical Engineering with at least 10 years post qualification experience including 3+ years of recent gas field experience, 3+ years new field development experience, detailed understanding of well operations, reservoir engineering and production engineering in an international oil/gas environment. Proven experience in mentoring National Graduate Engineers is required. Must be computer literate with familiarity in industry standard computer program (WEM & PROSPER etc), proficient with English (verbal and written), knowledge of fundamental business practices, strong interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

PETROLEUM ENGINEER (Ref – TSS 004/04)

Responsible for supervising, controlling, interpreting and evaluating all well testing operations and sampling in the field (onshore and offshore wells). Requires recent experience of supervising offshore and onshore rig operations, electric line logging (perforating/PLT/MDT), well testing, test analysis, and

acidization. Provides guidance on well production testing, sampling, associated equipment specifications, technical and risk assessment input into future development projects. Will be required to mentor and train National Graduate Engineers.

Candidate must have a minimum of a Bachelor of Science degree in Petroleum/Chemical Engineering with at least 8 years post qualification experience, including 3 years recent offshore operations supervisory experience of electric line logging, well testing and test analysis, acidization, 3 years recent onshore operations support experience, which includes detailed understanding of well operations, engineering and production engineering, 2 years new field development, 1 year recent working experience with gas reservoirs and 3 years working in a multidiscipline team. Proven experience in mentoring National Graduate Engineers is required. Must be computer literate with familiarity in industry standard computer program (WEM & PROSPER etc), proficient with English (verbal and written), knowledge of fundamental business practices, strong interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

RESERVOIR ENGINEERING SPECIALIST (Ref – TSS005/04)

Responsible for undertaking a variety of general reservoir engineering activities including analysis, evaluation and application of the reservoir data from logs, cores, fluid samples, well tests and well production for reservoir characterization and input to the numerical simulator. Candidate should perform reservoir simulation activities for application to field development planning and monitoring. Duties involve normal reservoir surveillance activities (i.e. reviewing well completion data, daily production reports, periodic well tests/PLT results and fluid composition data to ensure well performance is within expectation). Candidate should be able to identify actions to enhance well performance and design optimum PLT, modified isochronal and PLT programs, participate in the planning and design phases of well completion, perforation and stimulation programs.

Candidate must have a minimum of a Bachelor of Science degree in Petroleum Engineering or equivalent engineering discipline with at least 10 years post qualification experience positioning reservoir engineering applications, including 3+ years of recent gas field experience and 3+ years new field development experience. Proven experience in mentoring National Graduate Engineers is required. Must have very good experience in PC and reservoir / production engineering application software (Nodal, decline curve, PVT and simulation), proficient with English (verbal and written), knowledge of fundamental business practices, strong interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

PETROPHYSICAL ADVISOR (Ref – TSS 006/04)

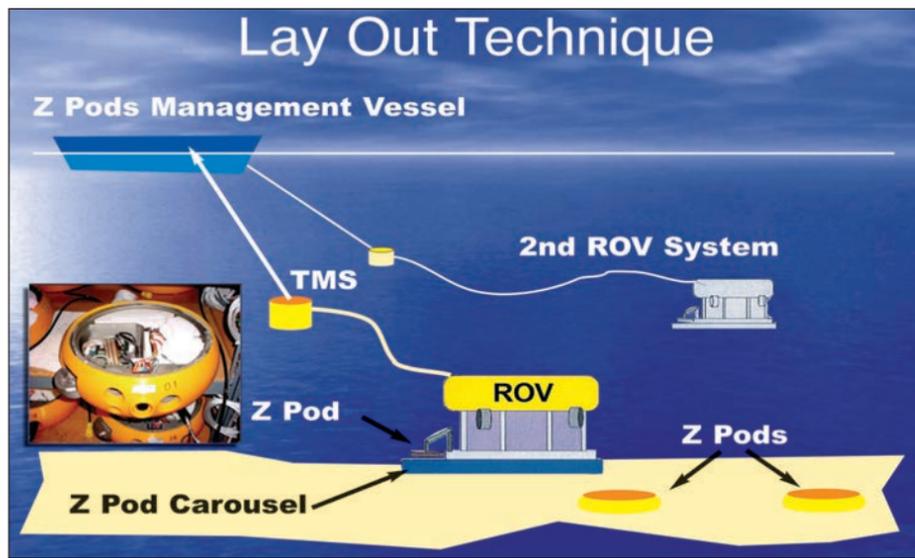
Responsible for performing petrophysical activities associated with active field development (i.e. formation evaluation planning, selection and supervision of contract petrophysical support personnel, on-site supervision and QC of offshore and onshore wireline logging activities (open and cased hole), log analysis, perforation recommendation, maintenance of petrophysical database, tendering for contract petrophysical services, and incorporation of log analysis results in the geologic interpretation).

Candidate must have a minimum of a Bachelor of Science degree in Petrophysics, Geoscience, or Engineering from a recognized university. Candidate must have a minimum 15 years applicable work experience, including at least 5 years experience with carbonate reservoirs, gas reservoirs, new field development, mentoring, using a workstation and software to generate petrophysical interpretations and familiarity with offshore operations and safety. Must be proficient with English (verbal and written), have experience working in a multidiscipline team, knowledge of fundamental business practices, strong interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

PETROPHYSICIST (Ref – TSS 007/04)

Responsible for performing petrophysical activities associated with active field development (i.e. formation evaluation planning, selection and supervision of contract petrophysical support personnel, on-site supervision and QC of offshore and onshore wireline logging activities (open and cased hole), log analysis, perforation recommendation, maintenance of petrophysical database, tendering for contract petrophysical services, and incorporation of log analysis results in the geologic interpretation).

Candidate must have a minimum of a Bachelor of Science degree in Petrophysics, Geoscience, or Engineering from a recognized university. Candidate must have a minimum 8 years applicable work experience, including at least 2 years experience with carbonate reservoirs, gas reservoirs, new field development, using a workstation and software to generate petrophysical interpretations and familiarity with offshore operations and safety. Must be proficient with English (verbal and written), have experience working in a multidiscipline team, knowledge of fundamental business practices, strong



Graphic, photo courtesy of Fairfield Industries

Technology such as the "Z pod" seismometer is helping deepwater Gulf exploration.

continued from previous page

and infrastructure, and placing cables on the seafloor is a high cost undertaking. Cable length and connector integrity are added potential issues of concern in deeper water.

"The ultra-deep is where a lot of new discoveries will be," said Jerry Beaudoin with the BP E&P Technology Group, "and the challenge for cable will be overwhelming because of things like soil hardness, topography, sedimentary features on the surface. Nodes would come into their own there."

Beaudoin, who has co-authored a paper discussing the results of an effort to analyze the relative merits of cables and nodes (also known as autonomous seafloor seismographs) to gather wide azimuth deepwater ocean bottom seismic data, offered his

analysis, which was based on three requirements:

- ✓ Wide-azimuth shot coverage is necessary to illuminate a structurally-complex subsurface such as found with irregular salt masses.

- ✓ Dense surface shooting into sparse receivers provides adequate wavefield sampling.

- ✓ Shots within each receiver gather provide full-azimuth coverage with adequate offsets

According to his paper, autonomous ocean bottom nodes are more efficient than OBC technology to acquire deepwater wide-azimuth seismic data for the purpose of properly illuminating complex subsurface structures. The project participants observed that hundreds of nodes can cover a much greater area in a single shooting effort than the most productive OBC crews.

The academic community has a history of using autonomous seismographs for various applications, and ocean bottom sensors have been used successfully to acquire data in the shallow water where they send the data to buoys at the surface.

Deep Waters

Still, the consensus among the E&P folks is that nodal technology is only in its infancy from an equipment and operational perspective, particularly in recording deepwater seismic data.

Companies, however, are scrambling to move nodal applications into the realm of the tried and true.

Fairfield Industries' Deep Z seismic data acquisition system for deep water, for example, is being readied for use in early 2005. Depth-rated to 9,800 feet, the system has advanced to the stage of successfully completing a deepwater data acquisition pilot project in 7,000 feet of water, according to Steve Mitchell, vice president operations at Fairfield.

Each Z pod, or autonomous seismometer, is a self-contained sensor with batteries and a highly accurate clock. Cable-free, they're laid out in a grid in the deep water by an ROV, which later retrieves them to download the data and re-charge the batteries prior to re-deployment.

Even though the pods are placed about 1,300 feet apart, the shot density on the surface is enough to yield a high-fold, wide azimuth survey.

Nodal technology may have an added appeal to engineers and asset managers, Mitchell noted, because it employs ROVs, which they use routinely.

The Z pods are placed using the Sonsub Innovator ROV, which is a large, heavy work-class vehicle.

"They're best suited for this technology," said Wayne Abadie, sales manager at Sonsub, "and limited only by the length of the umbilical. Right now the maximum is 4,000 meters, but we could design for deeper; it's just a matter of getting a larger winch and more cable."

"The Innovator loads one carousel with several nodes and places them in predetermined locations," Abadie said, "and it can continuously deploy maybe several hundred nodes during the course of the survey."

"Also, the vehicle can rapidly change locations on the seafloor if you decide you want a different view of the reservoir," he noted. □

in a major energy company of Qatar



interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

GEOSCIENCE ADVISOR (Ref - TSS 008/04)

Responsible for performing geological/geophysical activities associated with active field development (includes tendering for contract geoscience services, well location selection, well planning, recommending and planning seismic acquisition, selection and supervision of contract geoscience support personnel, on-site supervision and QC of offshore and onshore drilling rig geoscience and seismic acquisition activities (i.e. mudlogging, wireline logging, coring, casing seat hunts, wellbore and regional seismic acquisition, etc.) analysis of new data, generation of geologic interpretations incorporating new data, mentoring and maintenance of geologic databases).

Candidate must have a minimum of a Bachelor of Science degree in Geoscience from a recognized university. Candidate must have a minimum 15 years applicable work experience, including at least 5 years experience with carbonate reservoirs, gas reservoirs, new field development, mentoring, using a workstation and software to generate geological interpretations and familiarity with offshore operations and safety. Must be proficient with English (verbal and written), have experience working in a multidiscipline team, knowledge of fundamental business practices, strong interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

GEOSCIENCE SPECIALIST (Ref - TSS 009/04)

Responsible for performing geological/geophysical activities associated with active field development (includes tendering for contract geoscience services, well location selection, well planning, recommending and planning seismic acquisition, selection and supervision of contract geoscience support personnel, on-site supervision and QC of offshore and onshore drilling rig geoscience and seismic acquisition activities (i.e. mudlogging, wireline logging, coring, casing seat hunts, wellbore and regional seismic acquisition, etc.) analysis of new data, generation of geologic interpretations incorporating new data, mentoring and maintenance of geologic databases).

Candidate must have a minimum of a Bachelor of Science degree in Geoscience from a recognized university. Candidate must have a minimum of 10 years applicable work experience, including at least 3 years experience with carbonate reservoirs, new field development, recent experience working with gas reservoirs, using a workstation and software to generate geological interpretations and familiarity with offshore operations and safety. Must be proficient with English (verbal and written), have experience working in a multidiscipline team, knowledge of fundamental business practices, strong interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

DRILLING & COMPLETION ENGINEERING SPECIALIST (Ref - TSS 010/04)

Responsible for providing fully qualified Drilling and Completions Engineering support for technically complex development projects, progress projects from planning and concept selection through to engineering design and safe operational execution, develop drilling and completions strategies, stimulation techniques, and optimize completion designs to maximize hydrocarbon recovery and to act as a focal point for continuous improvement by implementation of technology transfer and application of best practices. Must be competent in casing design, drilling fluids selection, cement formulations, bit evaluation, wellbore hydraulics, well control, and well surveillance.

Candidate must have a Bachelor Degree in Engineering and/or professional certificate with minimum 10 years experience in Drilling and Completions Engineering, minimum 2 years in H2S/CO2 environment. Must be computer literate with proficiency in verbal and written English Language. Knowledge of fundamental business practices, strong interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

DRILLING & COMPLETION ENGINEER (Ref - TSS 011/04)

Responsible for preparing and optimizing detailed engineering designs and coordinating all phases of planning and drilling of individual wells or entire drilling campaigns, ensuring the geological objectives of the well are met while assuring the highest standards of engineering integrity, safety and environmental protection are applied to the design and execution of the well, preparing technical specifications to be incorporated into tendering documents, participating in long and mid term field development planning, providing technical studies to help optimize the overall Field Development. Must be competent in casing design, drilling fluids selection, cement formulations, bit evaluation, wellbore hydraulics, well control, and well surveillance.

Candidate must have a Bachelor Degree in Engineering with minimum 5 years experience in offshore Drilling & Completion Engineering. Must be computer literate with proficiency in verbal and written English Language, knowledge of fundamental business practices, strong interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

WELLHEAD / TREE & DOWNHOLE ENGINEER (Ref - TSS012/04)

Responsible for providing engineering support for all RasGas Drilling Task Force (DTF) drilling and completion activities and projects focusing in wellhead/Christmas tree equipment and services; liner systems; SCSV systems; production packer systems; downhole drillstem testing equipment and services; surface well testing equipment and services; slickline equipment and services and other related drilling and completion materials and services. Candidate must have a Bachelor Degree in Engineering with minimum 5 years experience in offshore Drilling & Completion Engineering with competent knowledge of drilling and completion equipment services. Must be computer literate with proficiency in verbal and written English Language, knowledge of fundamental business practices, strong interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

DATA MANAGEMENT SPECIALIST (Ref - TSS 013/04)

Responsible for daily operations of the Data Management section of the Technical Subsurface Group. Contributes to development of long-term Data Management objectives and strategies. Establishes performance metrics and uses them to optimize process performance and data integrity. Develops and supervises the administration of systems and processes to support the Subsurface Team, including digital and non-digital technical data files and the Petroleum Engineering Technical Computing environment infrastructure.

Candidate must have a minimum of a Bachelor of Science degree in Engineering or in Business Management with a minimum 10 years post qualification experience in Data Management and at least 5 years working with subsurface oil/gas industry technical data. Must have expert knowledge of database management systems, especially, Oracle Rational Database Management systems, hands-on experience with UNIX operating systems, Sun Solaris and SGI IRIX preferred. Proficient with English (verbal and written), knowledge of fundamental business practices, strong interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

DATABASE ANALYST (Ref - TSS 014/04)

Responsible to establish and maintain effective data management systems for the Subsurface Team. Requires analysis and support of network and hardware systems, software systems, and data management systems. Provides user support in both Schlumberger (GeoQuest) and Landmark computing environments. Responsible for the delivery of high quality application and data support solutions to users in a timely manner.

Candidate must have a minimum of a Bachelor of Science degree in Engineering or in Business Management with minimum 5 years post qualification experience in Data Management working with subsurface oil/gas industry technical data. Must have expert knowledge of database management systems, especially Oracle Rational Database Management systems, hands-on experience with UNIX operating systems, Sun Solaris and SGI IRIX preferred. Proficient with English (verbal and written), knowledge of fundamental business practices, strong interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

DATABASE ADMINISTRATOR (Ref - TSS 015/04)

Responsible for data management system strategies and the administration of data management processes. Prepares and tracks the Data Management budget, administers vendor contracts, and interacts with internal and external stakeholders. Responsible to develop and administer processes and systems for the maintenance of the Petroleum Engineering Library.

Candidate must have a minimum of a Bachelor of Science degree in Engineering or in Business Management with a minimum 5 years post qualification experience in Data Management and/or data modeling working with subsurface oil/gas industry technical data. Familiarity with Solaris and IRIX Operating Systems, Oracle Databases and Landmark & GeoQuest applications. Proficient with English (verbal and written), knowledge of fundamental business practices, strong interpersonal skills and the ability to work in a multinational environment with wide exposure to various cultures and customs.

METHOD OF APPLICATION

To apply, candidate should send or e-mail a complete and up-to-date resume of work experience, personal data, salary history, including copies of passport, academic and technical qualifications and two recent passport photographs, specifying availability, full address and telephone number quoting appropriate position reference number to:

Senior Recruitment Supervisor
RasGas Company Limited
P. O. Box 24200
Doha, State of Qatar
email: Recruitment@RasGas.com.qa

*AAPG Hits the Campuses***It's Back to School Time for VGPer**

When it comes to the future of petroleum geology, AAPG's Visiting Geologists Program provides the troops that are on the front line.

Launched in 1974 by AAPG's Academic and Industrial Advisory committees, more than 200 colleges and universities have participated in the program, which continues to grow through the interest and efforts of AAPG and industry.

The program gives students a chance to meet practicing geologists and to discuss geological career options. Speakers usually give a

technical talk in their area of specialty, as well as a presentation on career options and the best way to plan a career path.

The speakers welcome an opportunity to discuss the changes that have taken place in the job market, as well as present information on the new technical challenges.

Last year, VGP Committee Chairman Bob Cowdery reported there were 79 visitations made; 48 were domestic and 31 were international. Cowdery said that while the number of visits were down, the

list of schools visited indicates that there has been some increase in requests from schools with lower enrollments.

"This would appear to be a good sign," he said.

Cowdery also said agreeing to be a speaker is the first step in joining the all-volunteer program. The more volunteers and topics available, the larger the smorgasbord for colleges and universities to choose from.

International speakers are becoming available in a number of countries.

To arrange a VGP visit, the AAPG Web site lists speakers available in a geographic area, topics and titles of their speeches.

For more information – whether to arrange a visit or to volunteer as a speaker – contact a VGP member or Mike Mlynek (students@aapg.org) at Tulsa headquarters.

Mlynek, who also handles student affairs, recently added VGP responsibilities to assist in streamlining AAPG's liaison with students and the academic community. □

Colorado Drill Rates Soaring

By DIANE FREEMAN
EXPLORER Correspondent

Capitalizing on vast improvements in drilling techniques in recent years, Colorado is on pace and expects to issue a record number of drilling permits this year, state regulators say.

Drilling permits are expected to hit a record 2,700 this year, substantially up from the 2,245 permits issued in 2003, said Brian Macke, acting director of the Colorado Oil and Gas Conservation Commission.

"That would be the highest since 1981," Macke said – and this pace is expected to continue for several years.

While there is some oil drilling and some coalbed methane exploration in the state, most of the energy activity is focused on natural gas plays, he said.

"It's primarily tight gas sand formations – there's been a dramatic improvement in well stimulation technology that has unlocked the tight rock formations in sandstone," he said.

"In recent years, the techniques for drilling and completing these wells have improved dramatically to the point where today it's economical to develop these resources," he said.

However, the availability of rigs has limited production locally and nationally.

The state's production of natural gas is projected to reach a trillion cubic feet of gas in 2004. Wellhead revenues are expected to be about \$4 billion, officials said.

Weld County in north central Colorado remains the most active drilling site in the state.

"Year in and year out, Weld County has seen a third of the permits," Macke said. "It's because it has been the subject of improvements in well deepening, well stimulation and directional drilling practices that goes back for the last eight years."

As of the first part of the summer, some 439 drilling permits had been issued there, mostly around Wattenberg Field, which is located between Denver and Greeley. Some 10,000 wells are active in Weld County, representing about 40 percent of the state's drilling activity, he said.

"The Mapping Guru"

Your First Name

Your Last Name

Once you harness the power and flexibility of the world's best mapping program, there's only one question: How well do you handle fame?

Extraordinary maps now come together incredibly fast. Because Petrosys simply works better. It's compatible with all the most popular software tools, including OpenWorks, GeoFrame, SMT, ArcSDE, Oracle and more. Works with WindowsXP, Linux, Solaris or Irix. And lets



you gather, share and interpret data to create presentation maps that not only look good enough to blow your audience away, but are undeniably thorough and precise. Give Petrosys a trial run on your next project. But don't let the simplicity fool you. It's the best there is.

©Petrosys Pty. Ltd. OpenWorks is a mark of Halliburton, Inc. GeoFrame is a mark of Schlumberger. SMT is a mark of Seismic Micro-Technology, Inc. ArcSDE is a mark of Environmental Systems Research Institute (ESRI). Oracle is a mark of Oracle Corp. WindowsXP is a mark of Microsoft. Linux is a mark of Linus Torvalds. Solaris is a mark of Sun Microsystems. Irix is a mark of Silicon Graphics Ltd.

Petrosys > Australia/Asia +61-8-8431-8022 > Americas 1-888-PETROSYS > Europe +44-1-292-282-209 > www.petrosys.com.au

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



Introducing the
newest member
of the **PAK**.

KINGDOM welcomes AVOPAK

AVOPAK 2d/3dPAK EarthPAK VuPAK SynPAK TracePAK ModPAK Rock Solid Attributes

- Interpret horizons on gathers and view amplitude response in crossplots
- Integrate the display and interpretation of AVO gathers into a conventional stacked data workflow
- Crossplot AVO attributes for dynamic display on seismic sections and maps
- Integrate horizon interpretation on stacked data and on AVO gathers
- Correlate logs, synthetics, and stacked data with AVO gathers
- Extract and display commonly used AVO attributes
- Load gathers into current project through an enhanced DataModel
- Visit our website for more information about AVOPAK
- Available November 2004

© 2004 ALL RIGHTS RESERVED. SEISMIC MICRO-TECHNOLOGY, INC.

SEG 2004
booth #1641



Seismic Micro-Technology, Inc.

www.seismicmicro.com

Houston +1 713 464 6188

Europe +44 20 8240 6524

Wide Range of Topics Offered

Lecturers Ready for New Season

Volatile global conditions continue to be a factor, but not a deterrent, for AAPG's Distinguished Lecture program, which this year will again sponsor 14 speakers on tours to both domestic and international groups.

This year's topics will be as specific as "Making Sense of Turbidite Reservoirs," to as big as "Global Energy – the Next Decade and Beyond," to as relevant as a look at Ghawar, the world's largest oil field, to as offbeat as "Feathered Dinosaurs and the Origin of Birds."

The DL program, funded in part by the AAPG Foundation, will offer nine domestic

and five international speakers this season.

Last season's slate of eight domestic and five international speakers made 153 visits to a total audience of nearly 9,000.

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

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

discipline lectures.

The AAPG-SEG Joint Distinguished Lecture speaker – fifth in the series – will be given by Heloise Lynn, an AAPG member with Lynn Inc., in Houston, who will talk on "The Winds of Change: Anisotropic Rocks – Their Preferred Direction of Fluid Flow and Their Associated Seismic Signatures."

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

And also as in past years, support for several tours comes directly from the

AAPG Foundation's Distinguished Lecture Fund. They are:

☐ The **Allan P. Bennison Distinguished Lecture** – An international lecturer who makes a U.S. tour, funded by contributions from longtime Tulsa geologist Allan Bennison, who died this past year at his home in California.

This year's Bennison lecturer will be **Rob Gawthorpe**, a professor of sedimentology and tectonics at the University of Manchester (UK). His topics are:

- ✓ "Sedimentary Response to Fault Evolution in Rift Basins: Insights from the Gulf of Suez, Greece and the North Sea."
- ✓ "Seismic Geomorphology and Modeling of Deepwater Slope Systems."

☐ The **J. Ben Carsey Distinguished Lecture** – A domestic tour, provided by contributions from J. Ben Carsey Jr., of Houston, to establish a named lecturer in memory of his father, who served as president of AAPG in 1967-68.

This year's J. Ben Carsey lecturer is **Arthur R. Green**, retired chief geoscientist with ExxonMobil, Houston. His topics will be:

- ✓ "Global Energy – The Next Decade and Beyond."
- ✓ "Dynamics of the Sun/Earth Climate System."

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

The Haas-Pratt lecture will be presented by **Jack C. Pashin**, manager of the energy and minerals unit for the Geological Survey of Alabama, Tuscaloosa, Ala. His lecture is "Geologic Heterogeneity in Coalbed Methane Reservoirs of the Black Warrior Basin: Implications for Gas Production and CO₂ Sequestration."

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

The Huffington speaker will be **Robert S. "Bo" Tye**, senior geological adviser for PetroTel Inc., Plano, Texas. His tour, scheduled to begin Sept. 20 and go through Oct. 15, will have stops in China, Southeast Asia, Indonesia and Australia. His talks are:

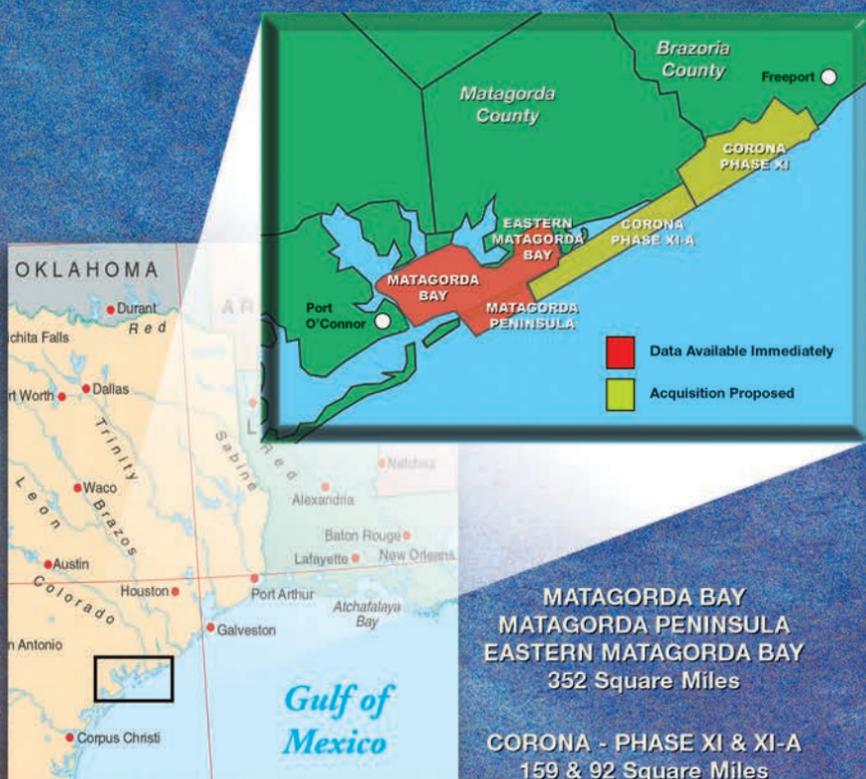
- ✓ "Alluvial Basin Filling Processes and Quantitative Determination of Channel and Channel-Belt Dimensions Using Cores and Logs."
- ✓ "Reservoir Description and Unique Horizontal-Well Designs Boost Primary and EOR Production From the Fluvio-Deltaic Prudhoe Bay Field, Alaska."

☐ The **Dean A. McGee International Distinguished Lecture** – Provided by contributions from Kerr-McGee, which annually supports international speaking tours.

This year's McGee lecturer is **Carlo Doglioni**, professor at the University of Roma La Sapeinza (Italy). He is scheduled to tour central Europe in November or December. His topic is "Global Tectonic Asymmetries and Applications to Europe."

See **Lecturers**, page 28

Transform non-exclusive data into exclusive ideas and prospects with the definitive dataset from JEBCO



You can quickly and aggressively capitalize on new opportunities with JEBCO's dedication to producing the highest quality non-exclusive seismic surveys - *anywhere*. Unlike large seismic contractors who operate their own equipment, we select from an extensive range of seismic alternatives based on demonstrated results for each specific geologic or technical problem. The result: more robust surveys, better processing, faster turnaround.

Call JEBCO for non-exclusive surveys worldwide, and let us help you with your next exclusive idea!

For more information, contact: **JEBCO Seismic, L.P.**
10260 Westheimer, Suite 400 / Houston, Texas 77042
Phone: (713) 975-0202 Fax: (713) 975-9293 E-mail: jebco@jebcoseis.com



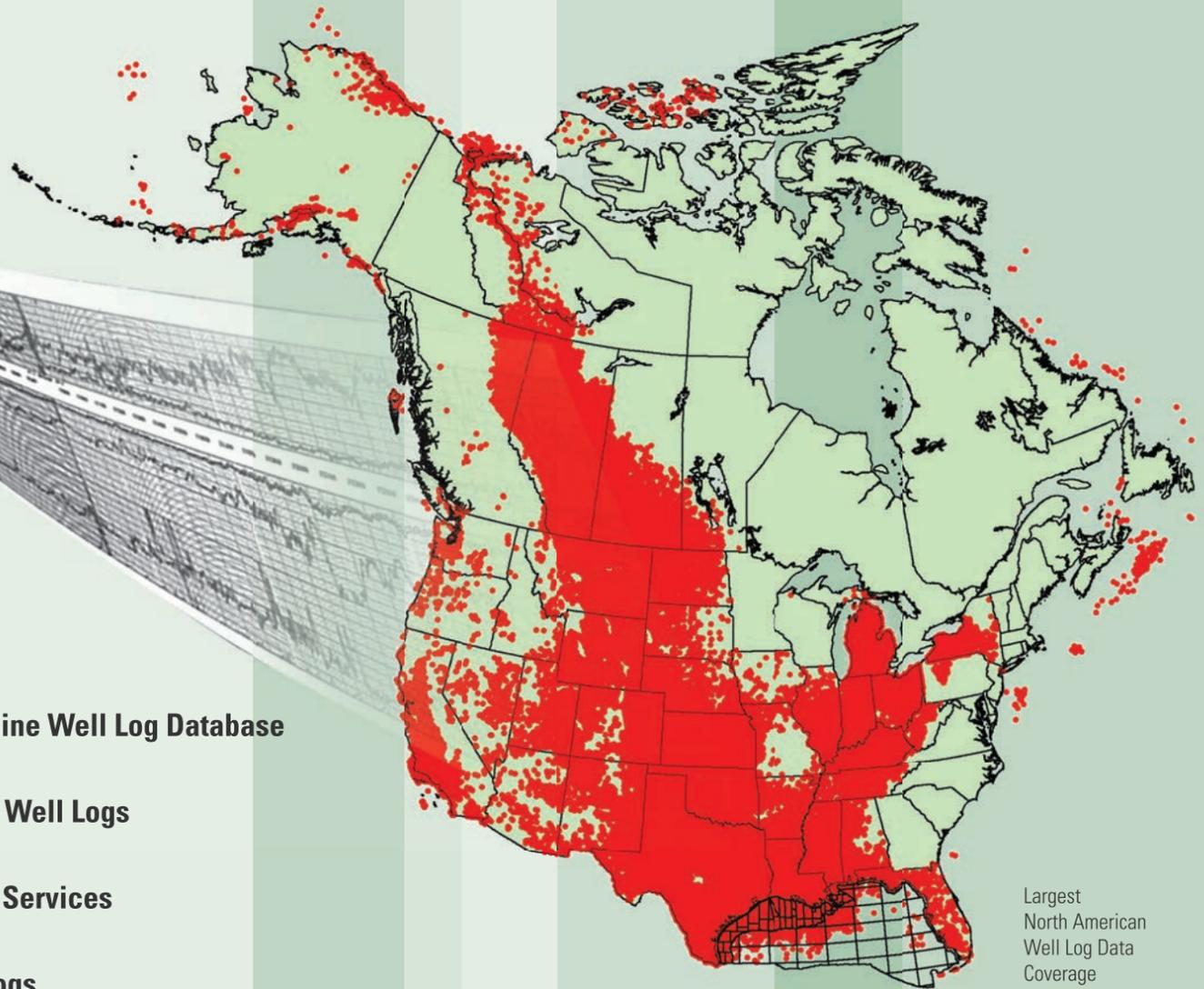
www.jebcoseis.com

New Ideas for New Frontiers

You Focus on the
Prospects,
Leave the
Well Log Data
to A2D

Coming Soon:
smartSECTION 5.0

- LOG-LINE Plus!® Online Well Log Database
- Digital and Hardcopy Well Logs
- Well Log Digitization Services
- Workstation Ready Logs
- Pore Pressure Analysis and Purified Logs
- Flexible ADVANTAGE Data Subscriptions
- smartSECTION® Geologic Software
- Data Management Services



A2D Technologies
888-LOG-LINE
www.a2d.com



A TGS-NOPEC Company

PTTC's 'Shoestring' Focuses on Independents

U.S. Oil Research Funding Clouded

By DAVID BROWN
EXPLORER Correspondent

Most of the American public thinks of oil and gas production as a low-tech activity.

Anyone with a connection to the industry knows that isn't true.

But a majority still equates Big Oil with big iron, with drilling rigs and drillbits and storage tanks, with rusted walking-beams seen from the highways.

So it's ironic that the future of exploration and production would depend so heavily on advanced technology.

Now the U.S. government plans to create a Strategic Center for Natural Gas and Oil (SCNGO), to manage federally funded E&P research projects.

Depending on the point of view, that move could be seen as shrewd, perfectly logical, almost meaningless or too little, too late.

The 'Enormous Challenge'

Federal funding for upstream research and technology transfer comes from the U.S. Department of Energy (DOE), with a current budget of \$23.3 billion.

A fraction of that money goes to the DOE's Office of Fossil Energy, which in turn funds the National Energy Technology Laboratory (NETL).

NETL, with a 2004 fiscal-year budget of \$572.7 million, includes the National Petroleum Technology Office (NPTO) in Tulsa and the Strategic Center for Natural Gas (SCNG) in Morgantown, W. Va., and

Pittsburgh. These two agencies would be combined into SCNGO.

A national "strategic center" for oil and gas sounds impressive, but the new agency's budget and impact may turn out to be trivial.

"The budgets they do have are at risk every year. This administration and the OMB (Office of Management and Budget) just don't think the fossil energy people spend their money very well," said Scott Tinker, director of the Bureau of Economic Geology at the University of Texas at Austin.

In fact, the White House once called the DOE's petroleum research subpar, and it only later began rating the DOE's overall efforts in building technologies as "adequate."

Almost all of DOE's money goes into programs that have nothing to do with oil and gas, including nuclear energy, clean-coal initiatives, renewable energy sources, fuel cells and national security-related efforts.

"Those are good things to think about, but at the same time there's a huge support for coal – about \$40 million for oil and gas and \$400 million for coal," Tinker noted.

DOE recently announced grants for six E&P-related projects:

✓ Microhole coiled-tubing drilling rig – \$1,836,423, Schlumberger IPC, Sugar Land, Texas.

✓ Microhole steering and measurement tools – \$986,084, Baker Hughes Inteq, Houston.

✓ Horizontal-well drillbit steering tool –

\$921,875, Stolar Research, Raton, N.M.

✓ Downhole tractor tool for horizontal wells – \$645,420, Western Well Tool, Anaheim, Calif.

✓ Slurry-jet drilling technique – \$592,000, Bandera Petroleum Exploration, Tulsa.

✓ Lift system for low-pressure reservoirs – \$210,000, Gas Production Specialties, Lafayette, La.

Those industry partners are expected to contribute more than \$1.4 million to the projects, part of an effort to reduce the environmental footprint of oil and gas operations.

Tinker agreed that government-sponsored research projects should be directed toward formal, national goals for energy use and development.

"The lack of a national energy plan or strategy – or, God forbid, a National Energy Policy – that's an enormous challenge," he said.

PTTC's Part

What does seem to work is the federal effort at technology transfer for independent producers through the Petroleum Technology Transfer Council (PTTC) in Houston.

PTTC observed its 10th anniversary of operation earlier this year.

Eddie David is president of David Petroleum Corp. in Roswell, N.M., and a former president of AAPG. He's also a member of the PTTC Board of Directors as AAPG's representative.

"I've been impressed with it," David

said. "They're doing a real good job in getting information out to independents on technology."

Don Duttlinger, PTTC's executive director, attributed part of this success to the agency's reach into oil and gas producing states. PTTC has 10 regional offices and two satellite offices.

"We're trying to get right to rural basins, right to where the primary production from these fields takes place," he said.

By national standards, PTTC operates on less than a shoestring. Duttlinger said PTTC received \$2.6 million in annual federal funding this year, through NPTO and SCNG (see figure, next page). Those funds are matched in time-and-effort contributions from its regional operatives.

PTTC probably is best known for its petroleum-related workshops. Lance Cole, national project manager for PTTC, said the agency will present or help sponsor 140 workshops this year, and has averaged over 100 workshops annually for several years.

Duttlinger quickly adds that PTTC maintains an information-rich series of Web pages, accessible through www.pttc.org. It also distributes case studies and posts regular columns in industry publications.

In a new direction, PTTC will begin analyzing technology applications and "proactively stimulating research," he said.

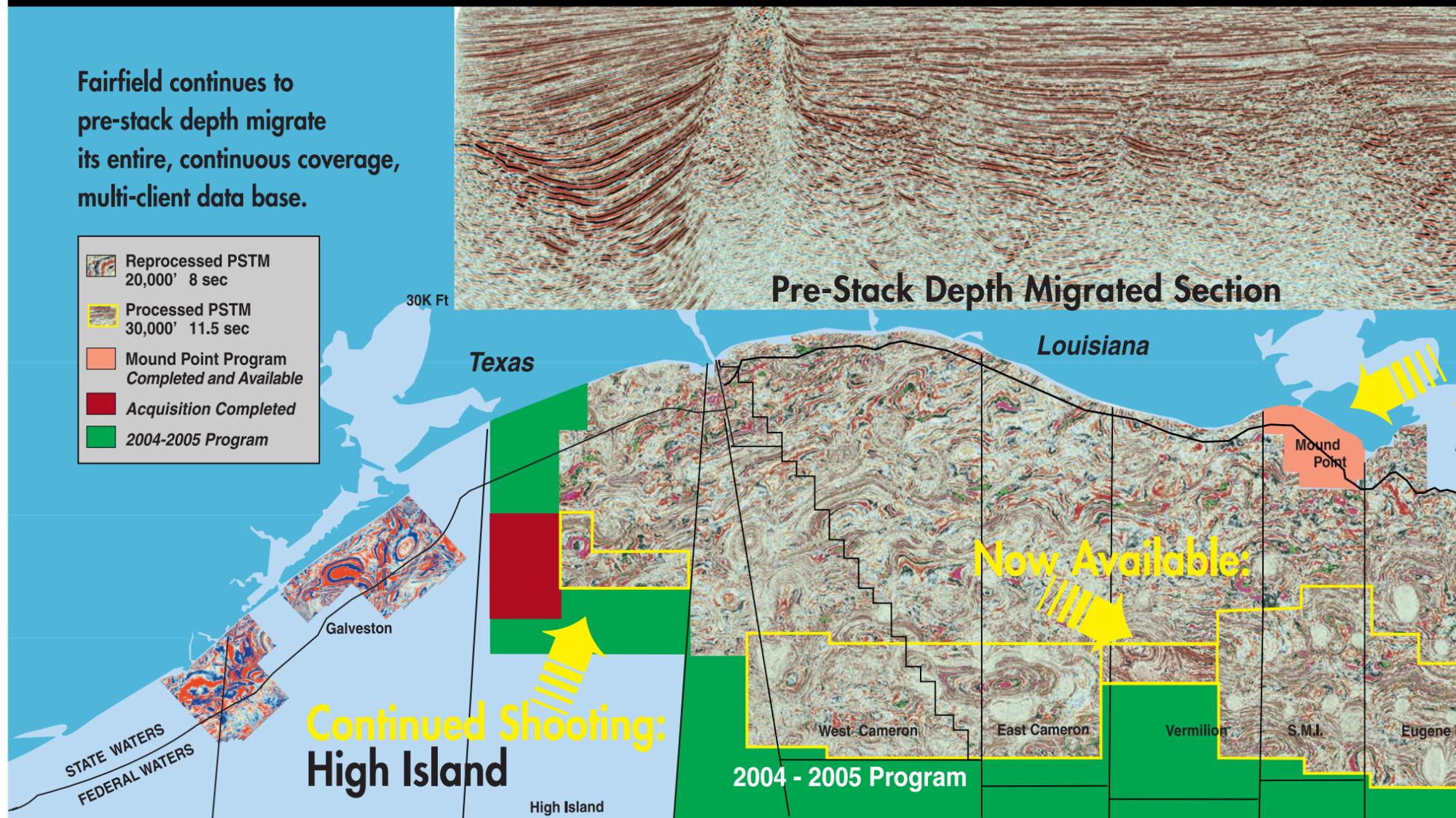
continued on next page



Seismic data you can depend on from a company you can depend on.

Fairfield continues to pre-stack depth migrate its entire, continuous coverage, multi-client data base.

-  Reprocessed PSTM
20,000' 8 sec
-  Processed PSTM
30,000' 11.5 sec
-  Mound Point Program
Completed and Available
-  Acquisition Completed
-  2004-2005 Program



continued from previous page

"We get a lot of ideas from what you might call 'garage inventors' all the way to substantial R&D departments outside the oil and gas industry," Duttlinger noted.

To examine those suggestions, and to help foster and pass along viable new technologies, PTTC has created a Technical Field Trial Committee, he said.

David also praised PTTC for bringing together and drawing on expertise from all sections of the United States and all parts of the industry, including majors and service and supply companies.

That gives PTTC an important human resource and allows it to keep in touch with the latest technology applications – what works, where it works and how it works, according to Cole.

"We're a lot more than just an information repository. We ourselves don't pretend to know all the answers, but we've got staff in all the regions and other experts we can call on," Cole said.

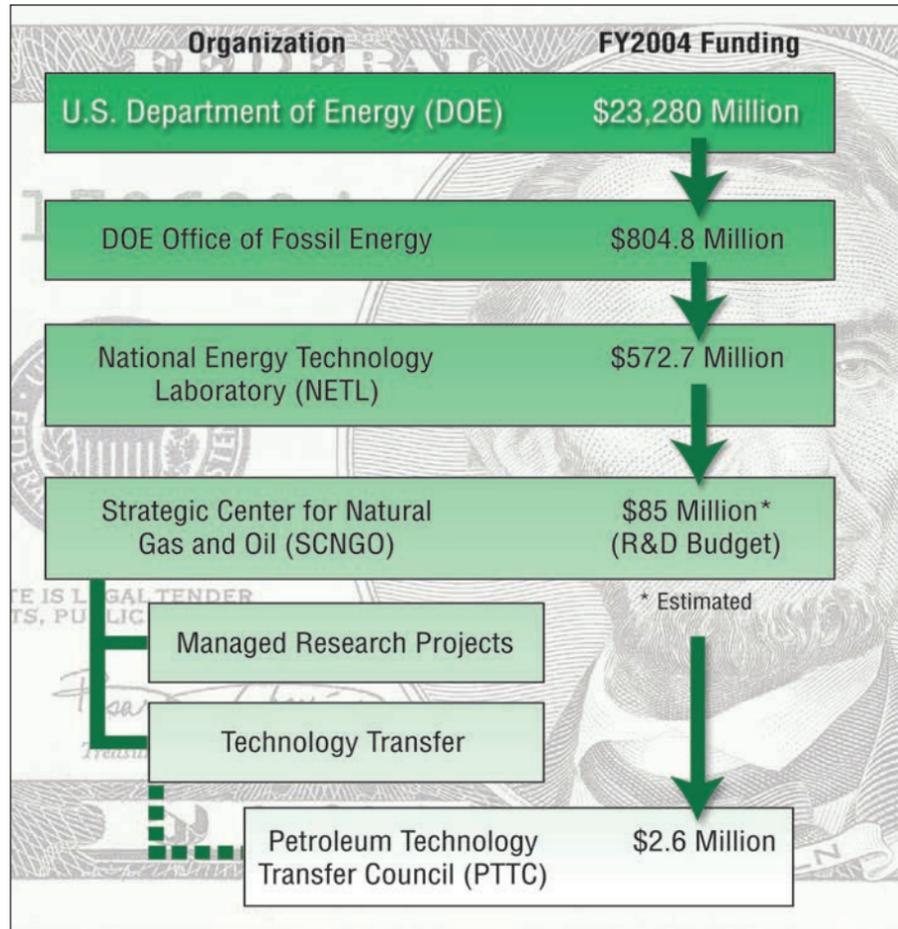
"When an independent asks us a question, we can have 25 to 30 knowledgeable people in the industry looking for an answer," he added.

Because of its structure and the way it operates, PTTC considers itself more of an industry effort than a federal agency.

"We're really not DOE," Cole emphasized. "We're a contractor to them but we're a separate, industry-led consortium working on this mission. We're not the government."

Give-and-Take Budgets

What happens to federal funding for E&P research and technology transfer next year depends on the annual budget dance in Washington, D.C., according to Tinker.



He said the administration has consistently tried to reduce funds for upstream research in the DOE budget, and Congress has regularly restored most of that funding.

For its fiscal-year 2005 Office of Fossil Energy budget, DOE requested \$26 million for natural gas technology research and \$15 million for oil technology research – a total of \$41 million.

In the budget process, the House of Representatives raised those levels to \$41.6 million for gas and \$34.7 million for oil, a total of \$76.3 million.

"They're unwilling to put more money back into it than there was before, and it's usually a little less. The problem with that is, it isn't even close. In the oil and gas business, \$40 million is nothing," Tinker said.

The Senate can suggest further

changes to budget entries, then a final House-Senate federal budget will go to the president for acceptance.

Tinker and Eugene Kim, BEG research associate, presented testimony to Congress in March about DOE's budget request for oil and gas research.

"Federal research budgets should be directed toward three critical time scales – the long-term, the mid-term and the near-term," they said.

In that light, "the proposed budget is dangerously out of balance in its underfunding of oil and gas research for the near- and mid-term," they stated.

Looking forward, Tinker holds out little hope for a workable National Energy Policy. Too many special interests demand attention and no federal agency or office wants to give up existing power, he explained.

"None will ever fit everybody's needs," Tinker said.

"The large oil companies still lobby against oil and gas R&D spending by the DOE," even though they have reduced their own research spending dramatically, he added.

But Tinker does think industry will support more spending for research in government labs and academia, eventually.

"I see the private sector rallying. They're going to have to. They are strategically hiring overseas, but they're going to need good education here in the U.S.," he said.

He's less hopeful about the response of government, in a nation where oil and gas drives much of the economy but receives relatively little federal funding for research.

"I would like to see the federal government acknowledge this, but they're driven by crises," he said, "and crisis-based policy is never the greatest policy." □

New Survey: Mississippi Sound Long Offset 3D

New Data Available: Mound Point

New Acquisition: So. Timbalier

SEI JV

- Chandeleur Program 20,000' 8 sec - Available
- Mississippi Sound 30,000' 12 sec - Fall 2004

SEI Joint Venture 3D Survey Acquisition begins late 2004

Data shot utilizing

- in-line acquisition,
- bottom referenced phones,
- 30,000' offsets and
- 12 sec record lengths

FAIRFIELD INDUSTRIES

Houston 281/275-7500
New Orleans 504/525-6400
www.fairfield.com

Proud to be an American company

Going Forward

Geoscience Torch Being Passed

(Editor's note: Retiring Geoscience Director Jack Thomas gives a report on the AAPG Geoscience Department's changes over the last 2 1/2 years.)

By J.B. (Jack) THOMAS
AAPG Geoscience Director

With conclusion of the Olympiad in Athens last month many of us watched the relay teams from many nations pass batons with practiced ease. The baton of the AAPG geoscience director will be passed to the next sprinter in the race soon. At this point, the selection process continues.

I am so very proud of my teammates at

headquarters and what we have accomplished since the spring of 2002!

Like all relay teams, there are many more people dedicated to helping the actual competitors improve performance. This involves time, funding, analyses of past performance and being willing to innovate when possible.

Neither the race nor the support structure work, however, if you don't know what the audience wants.

At AAPG we have listened and learned from the membership, our authors, our committee members and from the student membership who, we hope, will become the future geoscientists in our industry.

What have we accomplished over the past 30 months?

Since 2001 we have:

- ✓ Released 68 new titles as books or CDs.
- ✓ Relaunched the DEG's *Environmental Geosciences*.
- ✓ Lowered our average time from manuscript submission to publication in the BULLETIN from 28 months to less than 14 months.
- ✓ Reduced costs for production by emphasizing online reviewing of text.
- ✓ Added seven new online courses or modules.
- ✓ Added the Winter Education

Conference and Training Partners educational opportunities.

- ✓ Increased client contact on new publications.
- ✓ Established the AAPG Training Center at headquarters in Tulsa.
- ✓ Continued to work with global development, communications and member services departments to increase our contact with our membership.

We have not dropped our commitment to the Distinguished Lecture Program, Visiting Geologists Program or Hedberg Research Conferences, either! We are providing more service at the same or slightly reduced cost – and that's a success in this relay race!

Now you can expect more than eight new title releases in the next four months, a second Winter Education Conference, new educational offerings and continued improvement in our services.

* * *

Well, it is almost time to pass the baton to the next geoscience director, and I want to thank everyone reading this note – but especially my colleagues at AAPG.

All of us at headquarters realize that we are here to provide the "glue" for our geoscience professions. If we do not have a forum for discourse, a source of new knowledge, an opportunity to learn about new vendor products or the future of our industry, we have failed.

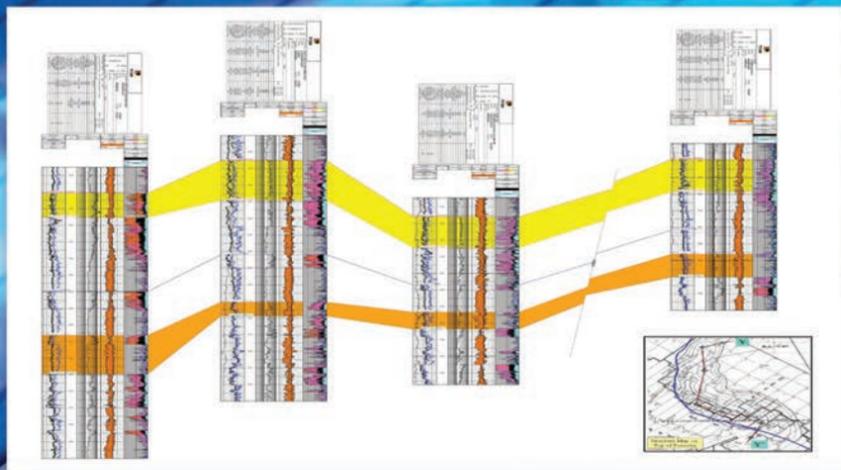
I have been a proud member of AAPG since 1964 and will continue to be an Active member for many years to come. While my last "official" day as geoscience director is October 1, plans are for me to actively continue my involvement in managing the Training Partners education program.

I'm passing the baton, but you have my word that if I can help you in the future, I will. Please do not hesitate to contact me.

This has been a great race, and it is going forward. □

PETCOM

The best way to optimize petrophysical productivity



Superior log data interpretation

Petcom's main product, **Powerlog™**, is the PC-based, market-leading, high-performance analytical software for petrophysical applications. This powerful, user-friendly package allows geoscientists to improve log data interpretation and presentation. **Powerlog** is available as a standalone software tool set and will soon be part of the Jason Geoscience Workbench®.

Committed to development and support

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

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

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

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

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

Find out more at www.fugro-jason.com

Copyright © 2004 Fugro-Jason. All rights reserved.



Plans Continue For AAPG/SEG Student Expo

A reminder: This fall's AAPG/SEG Student Expo will be held Oct. 17-18 at Houston's Westin Galleria Hotel – an event designed to give geoscience students a chance to showcase their talents and network with industry representatives.

This year's expo, the seventh annual fall event, features activities ranging from poster presentations to interview sessions and optional Sunday field trips.

Activities begin in earnest with the Sunday Icebreaker, followed by a full day of student poster presentations and industry booth exhibits, where students can ask questions and solicit interviews.

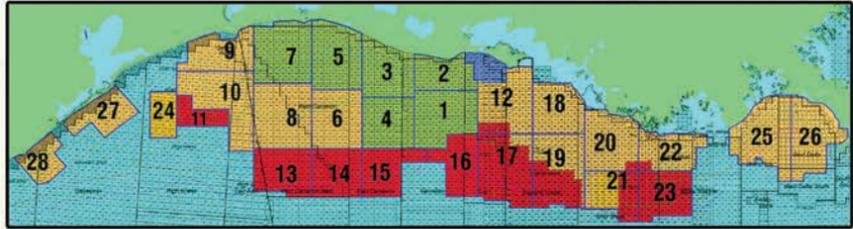
An informal reception and awards presentation early Monday evening closes the event.

The expo is completely funded by the sponsoring companies' sponsorship fees. Last year's event attracted more than 215 registered students from 68 universities.

Additional details are available at <http://www.studentexpo.info>.

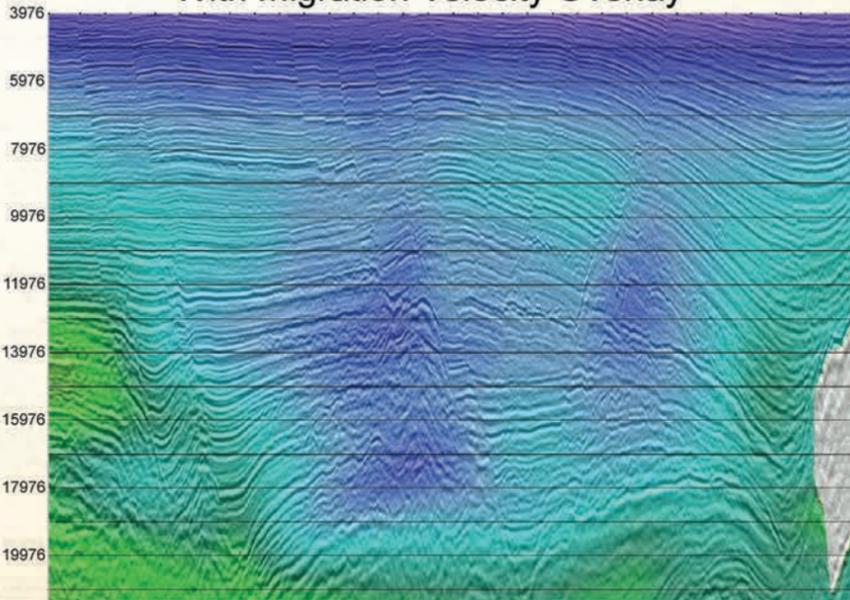
**EAST and WEST CAMERON
NOW
AVAILABLE**

PRESTACK DEPTH MIGRATION



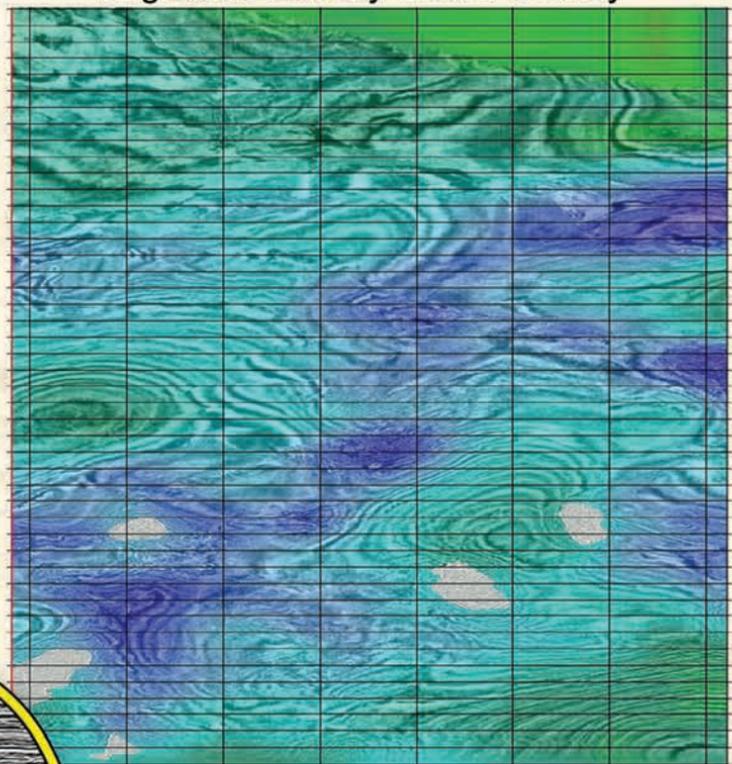
Areas 1-5, 7 complete.

E. CAMERON Area North-South PSDM
With Migration Velocity Overlay



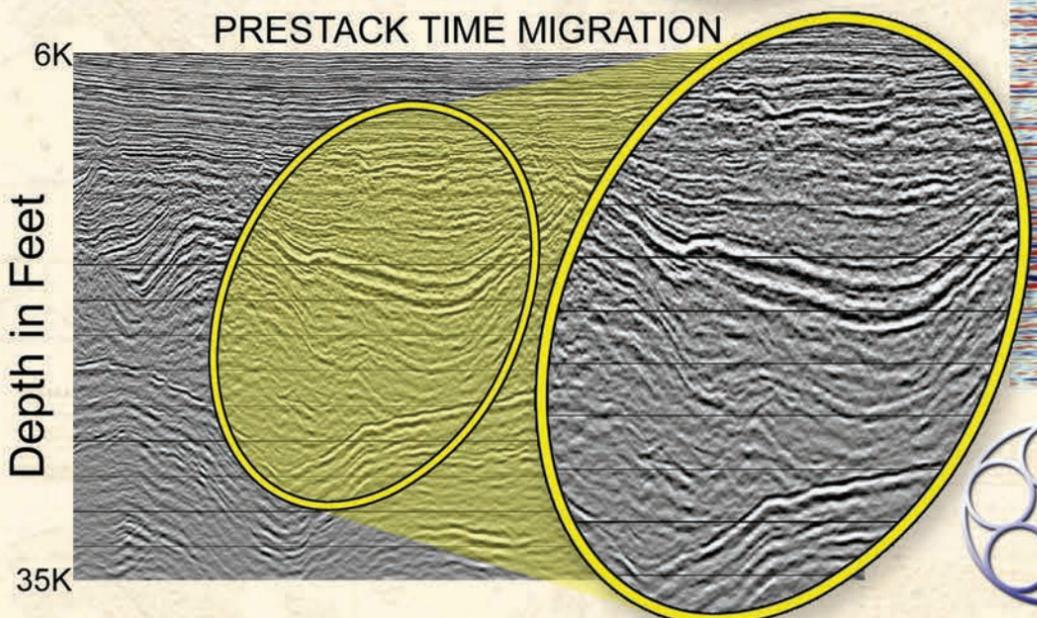
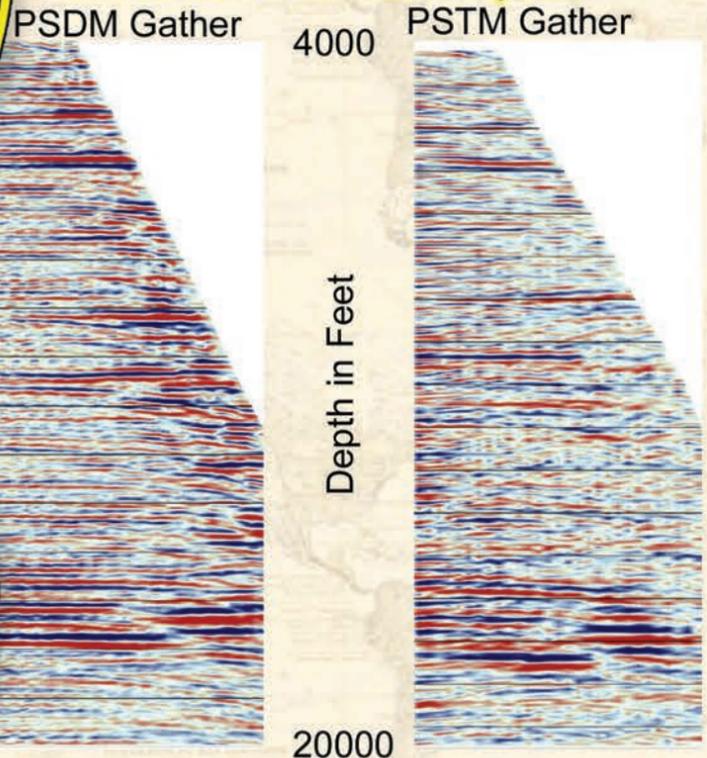
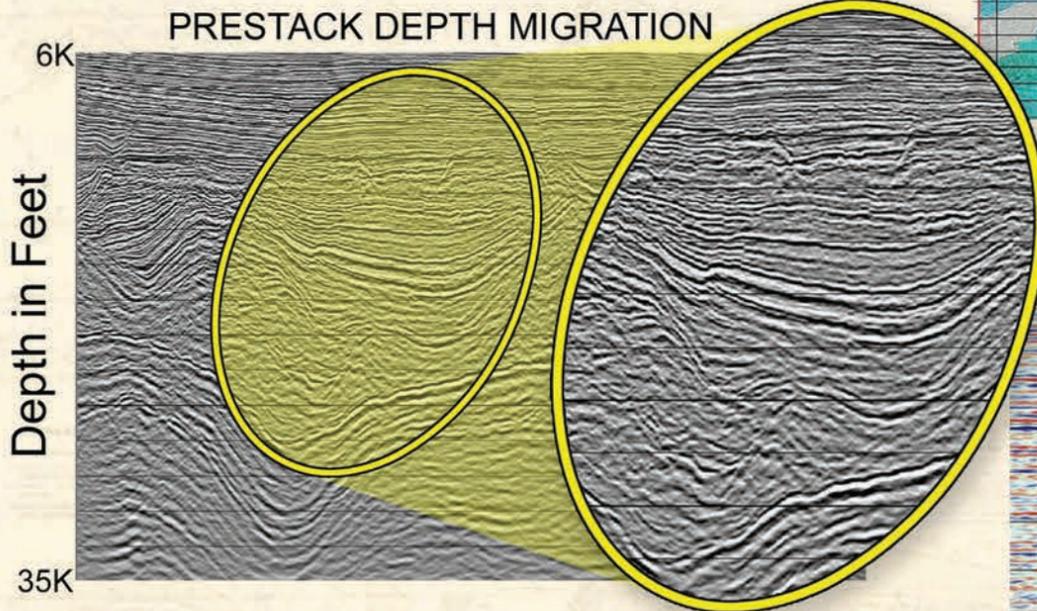
3D Depth Migration Velocity Analysis
Providing Great Detail Models

PSDM depth slice @ 11000' with
migration velocity model overlay



Approximately 135 blocks of data

Velocity & Ray Path Solution
Shows New Potential Prospects



Houston Denver www.fairfield.com (800) 231-9809 (281) 275-7500 dataprocessing@fairfield.com

AAPG Bookstore Lists Two New Memoirs

Did you know that AAPG publications are the foundation of the AAPG Value Pyramid?

Or that you can obtain a veritable pyramid of publications by accessing AAPG archives and the AAPG Bookstore via the Web?

This is no archeological mystery – it's all waiting for you at the click of your computer mouse.

The publications staff, elected editor and Publications Committee are eager to address your needs for timely, informative, cost-effective publications. Over the past few years, time to publication in the AAPG BULLETIN has decreased substantially, with turnaround

time from submission to publication averaging approximately 14 months. Streamlined procedures for special publications are producing new books and CD-ROM products in a matter of months instead of years.

The AAPG Publications Committee seeks your input about special publications. Do you know someone who's doing world-class work and willing to publish it? Do you have a topic you've always wanted to write about? Did you participate in a technical session at an AAPG conference that deserves a broader audience? Consider submitting a proposal for a special publication or a manuscript for the AAPG BULLETIN.

To do this, log on to www.aapg.org/pubs/, or contact Ernie Mancini, AAPG's elected editor, or Gretchen Gillis, Publications Committee chair.

While online, check out new offerings at the AAPG Bookstore (bookstore.aapg.org/). New releases include:

✓ *Integration of Outcrop and Modern Analogs in Reservoir Modeling*, by G. Michael Grammer, Paul M. (Mitch) Harris and Gregor P. Eberli.

✓ *Interpretation of Three-Dimensional Seismic Data, Sixth Edition*, by Alistair R. Brown, current editor of the EXPLORER's "Geophysical Corner." □

Lecturers

from page 22

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

□ **Philip J. Currie**, curator of dinosaurs at the Royal Tyrrell Museum of Paleontology, Drumheller, Canada. His topics are:

✓ "Feathered Dinosaurs and the Origins of Birds."

✓ "Late Cretaceous Dinosaurs from Mongolia."

✓ "A Pack of Giant Carnivorous Argentinean Dinosaurs."

□ **David C. Jennette**, research project manager, Bureau of Economic Geology, Austin, Texas. His topics are:

✓ "Making Sense of Turbidite Reservoirs: A Multi-Basin Perspective on What Drives Architecture and Rock Properties."

✓ "Merging Rocks and Lasers: Bringing 3-D Outcrop Geology to the Workstation."

□ **Tony Reynolds**, development geologist for BP, Chirag Field, Azerbaijan. His topics are:

✓ "Pressure Data in the Development of a Giant Oil Field: ACG Azerbaijan."

✓ "Paralic Oil and Gas Fields – What Makes Them Distinctive: From the Pore Scale to the Reservoir Scale."

□ **Ron Steel**, professor and Davis Chair, University of Texas, Austin, Texas. His topics are:

✓ "Shelf-Transiting Shoreline Systems and Generation of Stratigraphic Sequences in Shelf-Break vs. Ramp Basins."

✓ "Improving the Lowstand Component of the Sequence Stratigraphic Model."

□ **Lori L. Summa**, senior research geologist, ExxonMobil Upstream Research, Houston. Her topic is "Issues and Approaches for Integrated Hydrocarbon Systems Analysis in Tertiary Deltas – What We Have Learned: Examples from Deep Water Nigeria."

□ A special lecture tour of North America will be presented by **Abdulkader M. Afifi**, senior geological consultant-upstream ventures department, Saudi Aramco, Dhahran, Saudi Arabia. He will tour in the early fall this year, and his tour will be subsidized by Saudi Aramco and ExxonMobil. His topics are:

✓ "Ghawar: Anatomy of the "World's Largest Oil Field."

✓ "Paleozoic Hydrocarbon Habitat in the Arabian Plate."

This year's other international Distinguished Lecturers are:

□ **John Castagna**, school of geology and geophysics, University of Oklahoma, Norman, Okla. He will tour Latin America, on dates to be determined. His talk is titled "Using Spectral Decomposition to Increase Confidence in Direct Hydrocarbon Indicators."

□ **Richard Swarbrick**, professor at the University of Durham, UK. He will tour western Europe during the winter of 2005, and his talk is titled "Overpressure as a Primary Control on Fluid Flow in Sedimentary Basins."

For more information on the tours or the program contact Barb Davis (bdavis@AAPG.org) of the education department at AAPG headquarters; go to the AAPG Web site (www.aapg.org); and watch for updates in the EXPLORER. □

The perfect balance.

MOSS®

Geophysical Well Log Analysis
Synthetics and Pseudo-Wells
Seismic Attributes
Rock Physics
Well-Tie

modeling

inversion

MARC™

Q-Attenuation
Impedance and AVO
Rock Physics Calibration
ANN/K-SOM Classification
Multiple Seismic Attributes

ROCK PHYSICS

Rock Solid Images strikes a balance between reservoir geophysics and exploration geophysics to build the best possible picture of how the Earth stacks up underneath you.

Whatever seismic reservoir characterization method we choose — Impedance, AVO or Neural Network — with Rock Solid Images, you can be certain that all our results are grounded on a solid understanding of the relationships between seismic data, well-log data and reservoir properties, provided by in-depth rock physics analysis.

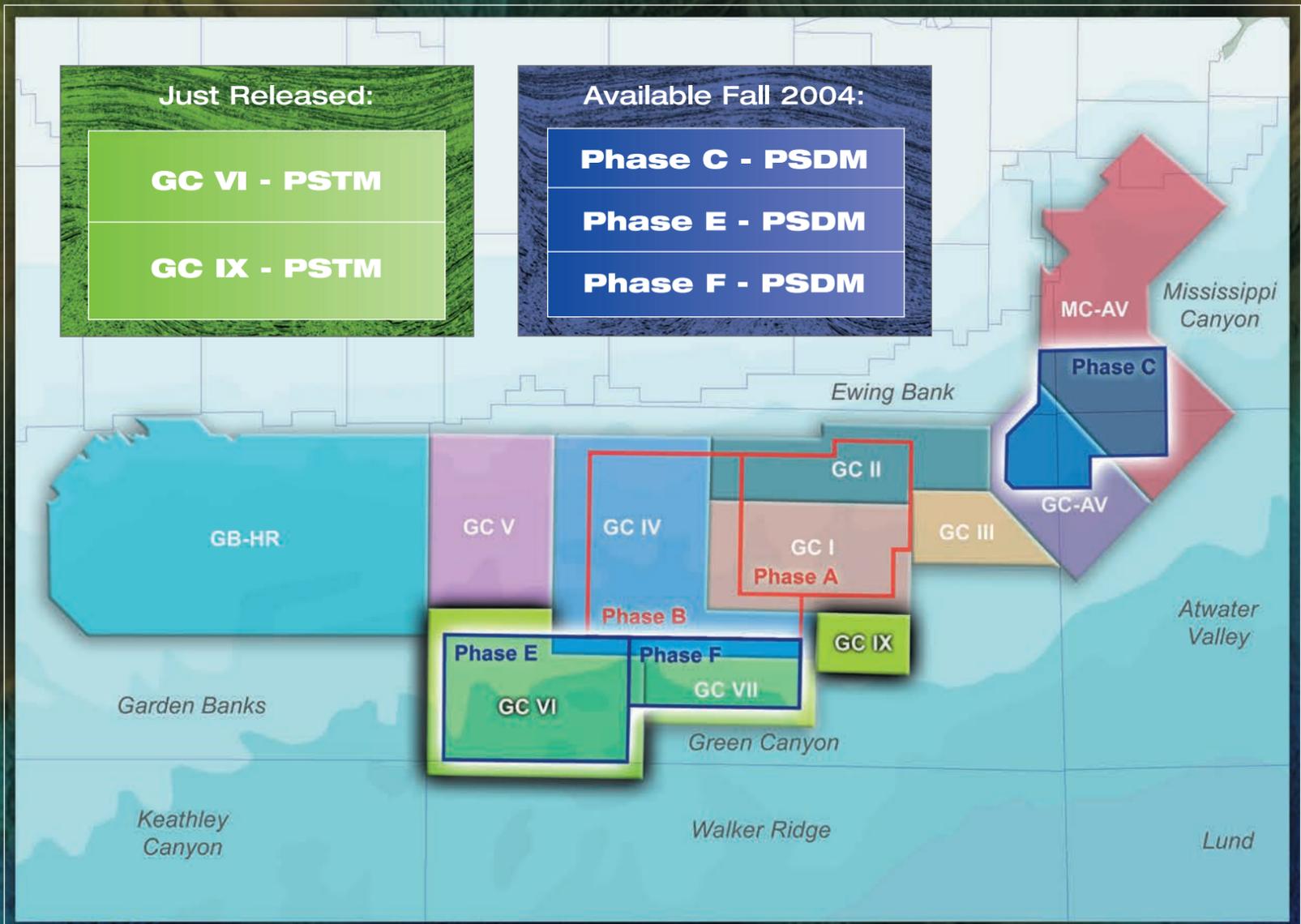
www.rocksolidimages.com

**ROCK SOLID
images**

UNDERSTAND YOUR AMPLITUDES

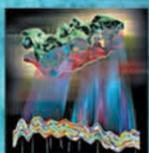
Fresh from the Gulf

G U L F O F M E X I C O



CONTACT INFORMATION

Charles Bowen (281) 646-2559 EMAIL: cbowen@cgg.com
Richard Fossier (985) 624-3027 EMAIL: rfossier@cgg.com
April Robertson (281) 646-2561 EMAIL: arobertson@cgg.com



www.cgg.com



INTERNATIONAL BULLETIN BOARD

AAPG Team Working Hard in Africa

(Editor's note: This column is for international items of note to the AAPG.

News items, press releases and other information should be submitted to the EXPLORER/International Bulletin Board, P.O. Box 979, Tulsa, Okla. 74101; telephone – 918-560-2616; fax – 918-560-2684; or e-mail – dfree@aapg.org.

This report on activities of AAPG's Africa International Region was prepared by Adekunle "Kunle" Adesida, the region's president.)

The AAPG Africa International

Region has come to stay, thanks to the coordinated effort of all members, the headquarters staff in Tulsa and both the out-going and in-coming Executive Committee members.

On July 1 the newly elected executive officers took their various offices – a position of honor and high responsibility to represent their fellow members while encouraging other qualified fellows and colleagues to join in shaping and formulating the society's geological needs.

One of the values of an earth scientist is to contribute to the finding,

appraisal and development of economic mineral(s) that will assist in creating values and empowering the nation, state and the people. AAPG is an international association and is not in want of these value creators.

Hence, in continuation of propagating these values through due diligence, the following astute geoscientists have been elected by their members to the executive offices of AAPG Africa International Region. They are:

☐ President-elect – Deborah E. Ajakaiye (will serve as the region's

2005-07 president).

☐ Vice president – Kingsley A. Ojoh (two-year term).

☐ Secretary/Treasurer – Nosa Omorodion (two-year term).

☐ AAPG Advisory Council Observer – Emmanuel Enu (three-year term).

☐ Delegates (and alternates) to the AAPG House of Delegates (three-year terms) – Delegates are James Kofi Agbenorto, Adedola R. Ojelabi, Diamond Anthony Omene and Celestine Ugwu; alternates are Sebastian G. Martins and Jeff B. Aldrich.

The newly elected team joins me, Adekunle Adesida, the region's president for 2004-05, to run the affairs of your Association in Africa.

I am looking forward to working together as a formidable team, and to achieve our set objectives for the growth and development of AAPG and stakeholders, we will continue to consult and communicate with you, i.e. our membership, as deemed appropriate.

As stated in our September 2003 report, "Societies are the fabric of high integrity, honesty, fairness and responsible family life. They build on individual and group appreciation of sustainable life."

In view of this, we as a team will continue to unravel the earlier recognized and enumerated challenges – and unlock the potentials in our membership.

For example, four out of the six major thrusts or targets set toward enhancing the growth and development of AAPG in Africa were met. They include:

✓ The Africa Region won the top prize of US \$1,250 for the effort in the 2003-04 AAPG Membership Enhancement Drive (see July EXPLORER).

✓ Completed a continental survey on the number of university and polytechnic schools in the Africa Region where geosciences subjects are being taught.

✓ Through membership was able to increase the number of Africa Region representatives in the House of Delegates from two to four members, and with two alternatives. Bravo to all!

✓ Continued to promote a high professional and ethical standard and respect for people among our membership.

As stated in the September 2003 EXPLORER, we promised to continue to strive to achieve our set and collective objectives. Thanks to all members that continue to identify with this program.

Another challenge is the concern of low participation of members from African countries in the executive position and committees. To improve this we are working to set up more relevant committees and create sub-regions under the umbrella of the Africa International Region.

(We urge you to volunteer to serve in these committees once they are announced.)

* * *

Regarding ethical standards, it is sad to note that one of our student members was de-listed for not meeting the ethical standard of our Association.

continued on next page

GETTING SICK WHILE WORKING OVERSEAS IS NOTHING TO SNEEZE AT.

The GeoCare International Plan. With Comprehensive Benefits, Affordable Rates and Exceptional Service, it Won't Leave You Out in the Cold When You're Working Overseas.

When you're sick, the last thing you want to worry about is your health care coverage.

The GeoCare International Plan has you covered, with:

- Comprehensive health and dental benefits, including 24-hour worldwide assistance and medical evacuation for emergencies.
- COBRA and HIPAA-style features, and continuous coverage for up to 12 full months upon your return to the US.
- Coverage for your family, even if they've remained in the US.
- Access to other coverages, including International Term Life, Long-Term Disability and Accidental Death—all specially designed for overseas employees and their families.
- Very affordable group rates and exceptional service.

If you're a member of AAPG, you and your family are eligible to apply for coverage.

For More Information on GeoCare International, Call 703-354-1616, Email geocare@rutherford.com or at www.geocare-international.com.



The GeoCare International Plan. With Comprehensive Benefits, Affordable Rates and Exceptional Service, it Gives You the Confidence You Need When You're Working Overseas.

Endorsed by:



Administered by:



Meeting Begins Oct. 24

Deadline Looms for Cancun Conference

An important deadline has arrived for this year's premier international conference.

The preregistration deadline for the AAPG International Conference and Exhibition is Sept. 23.

Online registration is easy – and available at the AAPG Web site, www.aapg.org.

This year's international meeting, sponsored jointly with the Mexican Association of Petroleum Geologists, will be held Oct. 24-27 in Cancun, Mexico.

The site for all activities is the Cancun Convention Center, featuring a nearly

30,000-square-foot ballroom that will house the large exhibits area.

The meeting's theme is "Petroleum Industry in the 21st Century: Technology, Business and Frontiers," which will be explored through field trips, short courses, special talks and a technical program that features more than 340 presentations.

The technical program – details of



which are now available in print and online – is divided into six themes:

- Deep Water Exploration, Development and Production.
- Geology and Seismic Interpretation.
- Mexican Basins and Beyond.
- Management and Strategy.
- Beyond Conventional Petroleum.
- Exploration and Production Concepts and Technologies.

Two special luncheons also are planned for the meeting:

✓ On Monday, Oct. 25, Luis Ramírez Corzo y Hernández, general director of Pemex, will discuss Pemex's role in the 21st century oil industry.

✓ On Tuesday, Oct. 26, Pilar Luna Erreguerena, head of underwater archaeology at the National Institute of Anthropology and History of Mexico, will discuss "Underwater Archaeology: A New Vision of the Past."

Remember, registration and updated meeting information are available online at www.aapg.org. □

continued from previous page

We hope this will not happen again. We must remember that we are representing our various organizations, international or independent companies in AAPG. I am sure that you will take out more than what you are bringing in.

Our value is hinged on sharing our technology, knowledge, best practices – and we must not compromise ethical standards.

West Africa Deepwater Conference

The first West Africa Deepwater Regional Conference, jointly organized by NAPE and AAPG, will be held Nov. 14-18 at the Sheraton Hotel and Tower in Abuja, Nigeria.

The theme is "The Regional West Africa Deepwater."

Sponsors are Sonangol, ChevronTexaco, ExxonMobil, NNPC, Total and Shell etc. The meeting co-chairs are Adebayo Akinpelu of ChevronTexaco, Nigeria (IPP, Africa Region) and Promise Egele of Shell Petroleum Development Co., Port Harcourt, Nigeria (NAPE president).

Abuja is Nigeria's new federal capital city, located at the geographical center of the country, and has several features that endear it to many visitors local and foreign.

For more details on the conference and exhibition go to the AAPG Web site at www.aapg.com/meetings/abuja04.

(Editor's note: Adesida, president of the APPG Africa International Region, is exploration adviser, Shell Petroleum Development, 21/22 Marina, Lagos, Nigeria; telephone – 234 1 260 1600, ext. 65315; cell – 234 803 446 5315; fax – 234 1 263 6681.) □

SeisEarth Line-based interpretation

VoxelGeo Volume-based interpretation

Reservoir Navigator 3D visualization canvas

iMap Geoscience mapping

All Your Interpretation Tasks In One Integrated Environment

Paradigm offers all-in-one interpretation and visualization in a single unified environment. Whether performing volume-based interpretation, line-based interpretation or geophysical mapping, Paradigm's seamless workflows reduce turnaround time, enhance accuracy and increase your personal productivity.

VoxelGeo volume-based seismic interpretation; Reservoir Navigator 3D visualization canvas; SeisEarth line-based seismic interpretation; and iMap geophysical mapping – your comprehensive interpretation and visualization offering.



Paradigm Data Management & Interoperability Integration Framework

Please visit us at **SEG**
Booth #741, Hall C, October 10-15, Denver, CO

Solutions that aim high. Services that run deep.

Please visit us at www.paradigmgeo.com or call:

Want to know more about Paradigm solutions? Contact solutions@paradigmgeo.com

USA
+1 713 393 4800

Canada
+1 403 750 3535

Latin America
+55 21 3084 3898

Europe/Africa/Middle East
+44 1483 758 000

CIS/Russia
+7 095 933 4440

Asia Pacific
+60 3 2163 8111

China
+86 10 6465 4870

PARADIGM SOFTWARE & SERVICE SOLUTIONS:

Data Processing and Imaging

Visualization, Interpretation and Earth Modeling

Reservoir Characterization and Petrophysics

Well Planning and Drilling

Petroleum Engineering



Libya

**Oil Types-Distribution
Oil Quality - API controls
Source Rock Kinetics
Oil Asphaltene Kinetics**

www.humble-inc.com/libya.html

Humble Geochemical
www.humble-inc.com

2ND ANNUAL AAPG WINTER EDUCATION CONFERENCE Feb. 14-18, 2005 HOUSTON



Courses include:
 Reservoir Engineering for Geologists
 Geochemical Exploration
 Tight Gas Sands
 Risk Analysis for Development Applications
 Giant Oil and Gas Fields
 Well Log Analysis
 Assessment, Classification & Reporting of Reserves
 Practical Salt Tectonics
 Essentials of Subsurface Mapping
 Permeability in Carbonate Rocks

HOSTED BY THE HILTON HOUSTON SOUTHWEST HOTEL
 6780 SOUTHWEST FREEWAY
 713-977-7911
 FAX 713-977-6310

TUITION FOR THE WEEK IS ONLY \$1095 FOR AAPG MEMBERS OR
 \$250/DAY FOR INDIVIDUAL COURSES

REGISTRATION and INFORMATION:

Toll-free (U.S. and Canada) 888-338-3387 or 918-560-2621 Fax 918-560-2678
 email: educate@aapg.org - <http://www.aapg.org/education>

Earth Science Week Set for Oct. 10-16

Earth Science Week 2004 will take place Oct. 10-16, celebrating the theme "Living on Restless Earth."

ESW, an annual event that spotlights the geosciences and their importance to the public, is organized each year by the American Geological Institute, with support from the U.S. Geological Survey and the AAPG Foundation.

This year, events will take place in all 50 states and in many countries worldwide. Many AAPG societies are planning local events. Students,

educators, museums, national and state parks, and other geoscience groups will be focusing their attention on natural hazards as they participate in ESW.

AGI also is producing an Earth Science Week kit filled with materials about this year's theme for school or home use for students of all ages.

Posters, lithographs, fact sheets and activities are just some of the things that can be found in this year's kit. See www.earthsciweek.org for more information.

Survey Offers Look At Earth Science Education Trends

A clearer picture of earth science education trends and efforts for U.S. middle and high schools is now available thanks to a survey funded in part by AAPG – as are the challenges that educators face.

The survey, an effort of the American Geological Institute, was first offered in 2001 as part of AGI's "Earthcom" and "Investigating Earth Systems" curriculum projects for high schools and middle schools, respectively.

Updated survey results were presented in April at the AAPG Annual Convention in Dallas. "Earth Science in Our Nation's Schools," by AGI education director Michael Smith and co-worker Laura L. Middaugh, was part of the AAPG forum on "Teaching Earth Sciences K-12 and Public Outreach."

"We received funding for these curriculum programs from AAPG and the AGI Foundation, and we were often asked where is the greatest potential for the programs' use," Smith told the EXPLORER. "Also we are frequently asked by people outside AGI about the state of earth science education in particular states. In our attempts to answer these questions we realized there was a need for a comprehensive study of earth science education."

AGI's 2004 study gleaned information from reports published by the Chief Council for State School Officers organization and the National High School Transcript Study conducted by the Center for Educational Statistics, and surveyed state science supervisors and chiefs of state geological surveys, according to

Smith.

The survey of state science supervisors included such questions as:

✓ Is earth science part of the recommended courses for high school science in your state?

✓ Is earth science part of another course recommended for high school graduation?

✓ If earth science is taken, does it count toward high school graduation requirements?

"Based on the responses to this relatively extensive survey and the information pulled from relevant reports, we have compiled a status report on the level of earth science education in each state and for the first time this year the District of Columbia," Smith said.

"The general topics we cover in each state report are high school and middle school course enrollment trends, earth science and its relation to graduation requirements and earth science as part of state assessment efforts," he said.

Smith called the report a resource for both the earth science community and the states' education establishment to better understand the level of science education in this country (see story, page 33).

"This report gives people within the states the opportunity to quickly see what is happening in their state in terms of earth science teaching and learning," he said. "Our hope is that if they don't like what they see they will become actively involved in affecting change."

Complete survey results can be found online at www.aapg.org and www.agi.org.

global exploration starts here

DATA AND SERVICES

- GLOBAL GRAVITY AND MAGNETIC DATA
- ENHANCED SATELLITE GRAVITY
- INTEGRATED EXPLORATION STUDIES
- DATA MANAGEMENT

BENEFITS

- ENHANCED BASIN EVALUATION
- EXPLORATION RISK REDUCTION



GETECH Leeds +44 113 343 5240 GETECH Inc Houston +1 281 240 0004 info@getech.com www.getech.com

So Many Students, So Few Courses

Emphasis Spotty for Earth Studies

The following are some of the findings of AGI's "National Status Report on Earth Science Education – 2004." The report was compiled by Roderic Brame, Matthew Hoover, Michael Smith and Laura Middaugh, all of AGI.

The entire report and all survey findings can be found online at www.appg.org and www.agi.org.

Survey Results

✓ The average number of students enrolled is 3,394,650 in high school, 3,703,650 in middle school and 3,611,430 in elementary school. This means that there are 309,000 more students per grade level in middle school than in high school.

This means a possible increase of 9 percent in high school over the next three years.

✓ High school earth science is a third tier course after biology and chemistry.

✓ At the middle school level, earth science enrollment is less than all the other sciences, with the majority enrolled in general science or integrated science.

✓ 98 percent of states maintain current curriculum frameworks that guide the development of earth science-related courses at the middle and high school levels. These frameworks follow a similar format and structure as the National Science Education Standards.

✓ In 26 states earth science is a recommended course in the high school curriculum. Sixteen additional states make the decision at the district level. Earth science is not included the recommended science curriculum in Connecticut, Georgia, Iowa, Louisiana, Washington, West Virginia and Washington, D.C.

✓ In 34 states, students can fulfill graduation requirements in science by taking an earth science course. In 15 other states the decision is made at the district level.

If all the districts allowed students to take earth science for graduation requirements, then the number of states would be 49.

Ohio makes the decision at the school level. Texas is the only state that responded with a "no" because they do not have earth science in their standards.

✓ In 26 states environmental sciences is part of another high school science course.

✓ In 47 states earth science is included in the middle school curriculum; four states did not report back concerning this.

✓ 24 states have statewide assessment for science at the middle and high school levels – and all have an earth science component to the assessment.

Seven states are developing statewide assessment for science; Idaho, North Dakota, Pennsylvania, Rhode Island, South Dakota, Wyoming and Washington, D.C.

Five states do not have a statewide science assessment; Alaska, Arizona, Indiana, Minnesota and Mississippi.

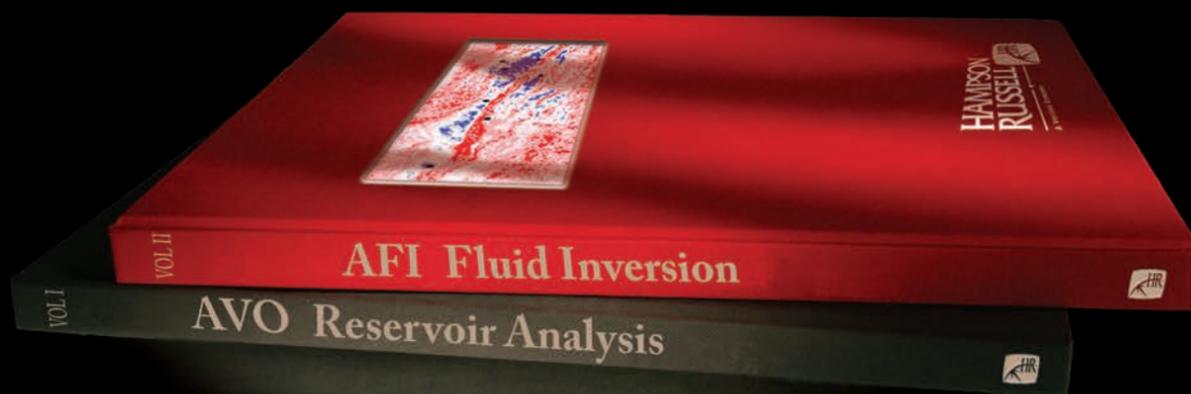
✓ Based on data for 38 states

there are 13,203 teachers teaching earth science, which is an average of 348 per state. For most states, conservatively, there should be about 1,500.

✓ In 15 states selection and adoption of earth science textbooks is selected or recommended at the state level. In 46 states the decision is made at the district or school level.* □

(* Totals include Washington, D.C.)

We wrote the book on AVO



and now the sequel.

Volume II Hampson-Russell's AVO Fluid Inversion (AFI) tool—the strong follow-up to our AVO pre-eminent modeling and interpretation software.

AFI is a practical and powerful reservoir characterization tool, allowing you to quickly and cost-effectively identify reservoir potential. Try our no obligation 30-day free evaluation and see why Volume I & II are today's bestsellers.

Hampson-Russell—technology one step ahead.

Calgary, Dubai, Houston, London, Perth.

www.hampson-russell.com





AIRMAG SURVEYS, INC.
AIRBORNE GEOPHYSICAL SERVICES

HIGH RESOLUTION AEROMAGNETIC DATA ACQUISITION

- DGPS Navigation & Positioning
- Cesium Vapor Magnetometer
- Micro-Magnetic Repeatability
- Non-Exclusive Data Available
- Aerial Photography & Remote Sensing
- Serving The Exploration Community Since 1963

NORTHEAST PHILADELPHIA AIRPORT
P.O. BOX 21059
PHILADELPHIA, PA 19114

PHONE: (215) 673-2012 FAX: (215) 464-2889
E-MAIL: info@airmag.com
WEB: www.airmag.com

WWW.UPDATE

System Switchover Makes Strides

By MICHAEL JONES
AAPG Webmaster

It's finally here!

We here at AAPG headquarters have been working hard for months to upgrade our member relationship computer system, and after a very LONG July with lots of headaches and long hours, the new system is in place.

For staff, this means easier, more efficient access to data – but the real question is, what does this mean to you as a member?

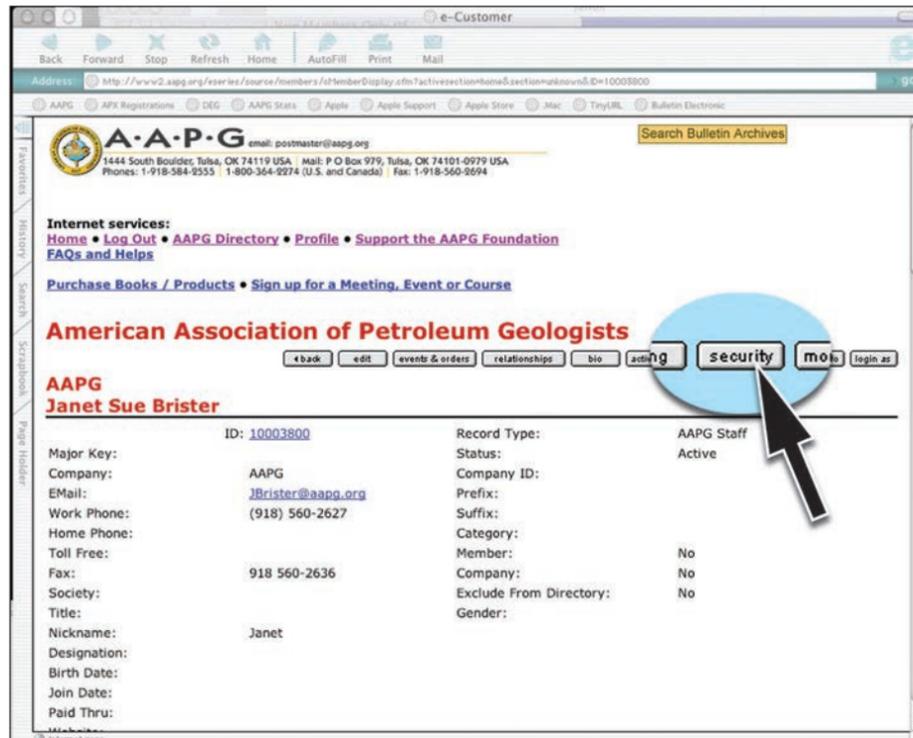
Well, the biggest change you will see as a member is online. The new system is totally integrated with your Members Only area; previously the Web site and main system were slightly out of sync, as they were communicating only once or twice a day.

Now, when you see something in "Members Only," it is the same thing the AAPG staff members see when we look you up in our computers.

* * *

One of the main features requested by members over the past few years is the ability to change their passwords – and this new system makes that a reality!

Once you are logged on to Members Only, click the link marked "Profile" and then find the gray "security" button near the right-hand side of your screen. On the "Security Edit" screen you can put in a password



you would like to use.

The password is encrypted in our system, which means not even AAPG staff can view it.

But if you lose it, never fear; there is a "Reset my password" link on the log-in screen (this takes a few steps and requires that we have a valid e-mail address on file for you), or you can contact the membership department

and have them manually set it to whatever you like.

While you are on that Profile screen:

✓ Is your address correct? If not, click the gray "edit" button to put in your correct phone number, e-mail or mailing address.

✓ Note the "bio" link, where you can update the professional biography you

have on file with us.

✓ If you haven't yet paid your dues for this year, you can take care of that online by clicking the "events and orders" button, or the "Dues" link on your Members Only home page.

✓ Help AAPG find "Lost Members" page whose current address information is not on file with AAPG. If you know how to find anyone on that list, an e-mail back to us can help update our files.

Also available online:

✓ The AAPG Bookstore has moved to our servers, so now we can fill your orders more quickly, efficiently and cost-effectively.

✓ Registration for education courses is available in the new Members Only area, and pre-registration for conventions and other meetings will be added to this system as they become available.

✓ You can make a donation to the AAPG Foundation, either in conjunction with dues payment or at any time during the year.

All of these functions go into one unified "shopping cart" – you can buy a book, make a donation, sign up for a course and pay your dues all in one place and with only one credit card transaction!

All credit card information is encrypted over secure channels, so using your card on our site is as safe

continued on next page

54th Annual GCAGS Convention

October 10-12, San Antonio, Texas

The South Texas Geological Society (STGS) will host this year's convention in conjunction with GCSSEPM at the newly remodeled and expanded Convention Center in downtown San Antonio, Texas. The headquarters hotel is the adjacent Marriott Riverwalk Hotel.



Oral and Poster Sessions

Short Courses

Field Trips and Tours

Entertainment

The exciting technical program features

- Deepwater field papers
(Princess, Mars, Devil's Tower, Trident, Macaroni, Mt. Massive, Troika, Thunder Horse)
- Selected Poster Sessions will include material from oral papers
- Perdido fold belt, Atwater Valley area
- South Texas fields and trends
- Eastern Gulf Coast fields and trends
- Mexican basins and trends

Visit www.stgs.org for registration and hotel information
or call GCAGS 2004 Headquarters at 210-822-9092

Eastern Section's Meeting Will Be Oct. 3-6 in Columbus

"Still Economic After All These Years" is the theme for this year's Eastern Section annual meeting, which will be held Oct. 3-6 at the Ramada Plaza Hotel in Columbus, Ohio.

The meeting, sponsored by the Ohio Geological Society and the Ohio Geological Survey, will feature 10 technical sessions, two field trips, a workshop on exploration and development of fractured reservoirs, two luncheons and a keynote address by Jamil F. Al Dandany, with Saudi Aramco, on "Securing Oil Supplies in a Less-Than-Secure World."

The technical sessions will include:

- ✓ Trenton/Black River Stratigraphy, Exploration and Development.
 - ✓ Rome Trough/Cambrian-Ordovician Exploration and Petroleum Geology.
 - ✓ Knox Field Studies.
 - ✓ Coalbed Assessment.
 - ✓ CO₂ Sequestration.
 - ✓ Geochemical Character and Origin of Appalachian Petroleum.
 - ✓ Reservoir Analysis/Stratigraphy.
 - ✓ Shallow Exploration for Producing Horizons.
- Registration and updated information can be found online at www.aapg.org.

JOHN M. STAFFORD & ASSOCIATES, LLC

ATTORNEYS AT LAW



Confidentiality Agreements • Letters of Intent
Reservation of Overriding Royalty Interests
Purchase and Sale Agreements
Assignments • Litigation Management
Negotiations • Technical/Legal Liaison



PROVIDING COST EFFECTIVE LEGAL SERVICES TO COMPANIES AND INDEPENDENT GEOLOGISTS

AAPG Member since 1979
9876 S. Clairton Way, Highlands Ranch, Colorado 80126
(303) 471-4109 Office • (240) 250-5922 Fax

FIELD COURSE IN THE PYRENEES TURBIDITE SYSTEMS

Cretaceous and Tertiary case studies

- October 25 – 29, 2004 • Begins and ends in **Barcelona**
- Conducted by **Lluís Ardèvol** (Geoplay) and **Pau Arbués** (Univ. of Barcelona)
- **EUR 1,600** all expenses included

Geoplay Ltd Tel (34) 973 652759 info@geoplay.org www.geoplay.org

continued from previous page

as – or safer than – giving your card to a waiter at a restaurant.

* * *

As with any new computer system, there are just a few potholes and speed bumps to know about.

In order to receive member pricing on bookstore orders, you must log in *before* you put items in your shopping cart. If you don't you will have to empty your cart and re-add all of your items.

(The simplest thing to do is to select "Yes" next to "Save password" on the Login screen and you will automatically be logged in the next time you visit.)

The Foundation Contribution site, while easy to use, is not yet as self-explanatory as we would like – but you can click the "FAQs and Helps" link for more answers and more detailed instructions.

The bug in some versions of Microsoft Internet Explorer for Windows that was introduced not too long ago is still affecting our gold "One Login" button for the BULLETIN Online. Again, the "FAQs and Helps" page has information that can help.

(We expect to have this fixed very soon.)

A few systems, such as the DPA Directory and EMD Members Only area, have yet to migrate to the new system, but you can expect to see that happen very soon as well.

Finally, if you have trouble logging in and you know you are using the correct password, be aware that your Web browser *must accept cookies* from our site to log in. Just enable cookies for "aapg.org" (www.aapg.org will *not* work!) and you should be okay.

* * *

We are very excited about this new system! More than 600 members logged on and updated their personal information in the last week of July alone. More than 130 members paid dues and more than 50 bookstore orders came in during that same one-week period.

If you have not logged in to the new system, why not give it a try?

If you have a valid e-mail address on file with us, you should have received your initial password in your e-mail; if not, contact the AAPG membership department to add an e-mail address to your information and set your new password.

We will be adding new features to Members Only (and other parts of the AAPG Web site) in the coming months, so get on board now and experience this new benefit of membership! □



Keep Tight Reins on Your Project

With over 60 highly qualified employees, OGM Land can handle any project you can envision. Additionally, we'll put SLAM! to work for you. SLAM! is the world's first:

- Fully digital, Internet-accessible land management tool, with
- real-time GIS mapping, and
- unmatched budget controls including land AFEs and cost analysis.

Want to know more? Hit www.landslam.com or call us at 713-874-0400.



GEOPHYSICAL CORNER

Design of Land 3-D Surveys

(The Geophysical Corner is a regular column in the EXPLORER, edited by Dallas consulting reservoir geophysicist Alistair R. Brown.)

By MIKE GALBRAITH

In designing a 3-D survey, the geometry (arrangement of shots and receivers on the surface) must measure signal correctly and must also attenuate noise. Thus finding an optimum geometry should include the following steps:

1. Determine the maximum frequency required to resolve the target formation thickness – from synthetics derived from well logs. This is F_{max} .

2. Estimate average inelastic attenuation Q (the quality factor) over the interval from surface to target – preferably using the log spectral ratio of downgoing wavelets from zero offset VSPs.

3. From spreading losses, transmission and reflection losses and the estimated Q value, graphs may be constructed (an example is shown in figure 1) showing available frequency vs. time or depth.

The available frequency at the target may be less than F_{max} (point 1 above). If so, we must accept this new lower F_{max} - because the earth itself will preclude higher frequencies at the target.

4. We now establish the desired S/N at the target. For example, the smallest change we wish to detect might be a 5 percent change in porosity, which will show up on a seismic trace as an 8 percent change in acoustic impedance (from petrophysical crossplots of acoustic impedance vs. porosity).

If the seismic noise level is higher than this value, we will not be able to detect the change.

5. Estimate the expected S/N of raw shot data. This can be done either on some typical test shots, or by dividing the S/N of a stack (or migrated stack) by the square root of the fold used to make this existing stack.

Since:

$$\text{Fold} = (\text{S/N of final migrated stack} / \text{S/N of raw data})^2 \dots \text{then } \text{S/N raw} = \text{S/N migrated} / \text{Fold}^{0.5}$$

Using an existing stack (possibly also migrated) has the advantage that the S/N improvement due to processing is taken into account.

6. From the desired S/N (point 4 above) and the estimated S/N of the raw data (point 5), we determine the required fold of the survey under design.

7. Next, the required bin size is calculated.

The relationship between dip (θ_{max}), velocity (V_{rms}), maximum unaliased frequency (F_{max}) and bin size (Δx) is given by:

$$\Delta x = V_{rms} / (4 \cdot F_{max} \cdot \sin(\theta_{max}))$$

Thus, the optimum bin size to use for a dip of 90 degrees is given by $V_{rms} / (4 \cdot F_{max})$ – or one quarter of the wavelength of the maximum frequency.

In practice, this is often relaxed (a larger bin size is used), since it is really not practical (not to mention very expensive) to measure every dip with the

maximum frequency.

In figure 2, an example of a crossplot of (Bin size, V_{rms}) vs. frequency (F_{max}) is shown. The dip angle (θ_{max}) is fixed at 30 degrees. This is based on the above equation and on figure 1 (F_{max} vs. time) above and shows how the frequency varies with velocity for a constant bin size (horizontal line). The increase in velocity can be related to an increase in time or depth and the figure may be interpreted as showing the available F_{max} on a dip of 30 degrees at increasing depths – for different choices of bin size.

Maximum frequency (F_{max}) is critical. If F_{max} is too high, then the consequent bin size will be too small – and money will be wasted trying to record frequencies that are not available. Conversely, if F_{max} is too low, the bin size will be too large and high frequencies coming from dipping events will be aliased and will not contribute to the final migrated image.

Most surveys today are shot with too large a bin size and are thus under sampled!

8. Determine the minimum and maximum offsets (X_{min} and X_{max}). These are normally calculated from muting functions used in processing – or automatic stretch mutes derived from velocities. The minimum offset corresponds to the shallowest target of interest – and the maximum offset to the deepest target of interest.

These two values (X_{min} and X_{max}) will be used to determine approximate shot and receiver line spacings (equal to X_{min} multiplied by the square root of 2, for single fold at the shallowest target and equal line spacings) and the total dimensions of the recording patch.

9. Migration Aperture:

Each shot creates a wavefield, which travels into the sub-surface and is reflected upwards to be recorded at the surface.

Figure 3 shows an example of a model built for a complex sub-surface area. Such models can be ray-traced to create synthetic 3-D data volumes. Thus, the degree of illumination on any chosen target can be determined.

In less complex areas, the migration aperture (amount to add to the survey to properly record all dipping structures of interest at the edges) is normally calculated from a 3-D "sheet" model of the target. This shows us how much to add on each side of the proposed survey and gives the total surface area of shots and receivers.

10. Now various candidate geometries can be developed. The shot and receiver intervals (SI and RI) are simply double the required bin size. Since fold, X_{min} and X_{max} are fixed, the only flexibility is to change the shot and receiver line intervals (SLI and RLI). But we must have $X_{min}^2 = SLI^2 + RLI^2$ (assuming orthogonal shot and receiver lines).

We can make small changes in the line intervals (SLI and RLI), depending on whether shots or receivers are more expensive. For example, a ratio of 4/5 can give improved noise attenuation compared to 4/4.

continued on next page

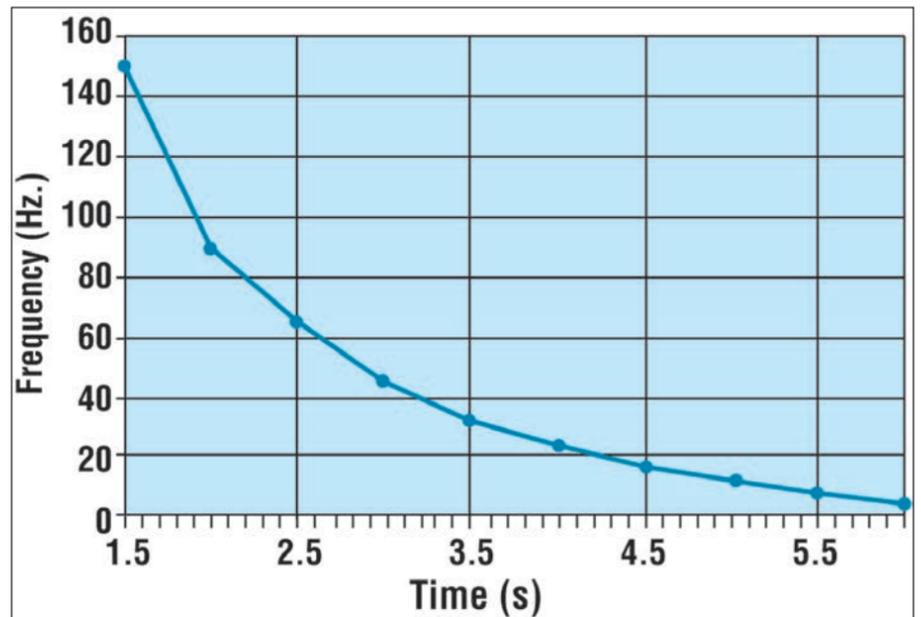


Figure 1 – Maximum frequency vs. time, assuming $Q=200$.

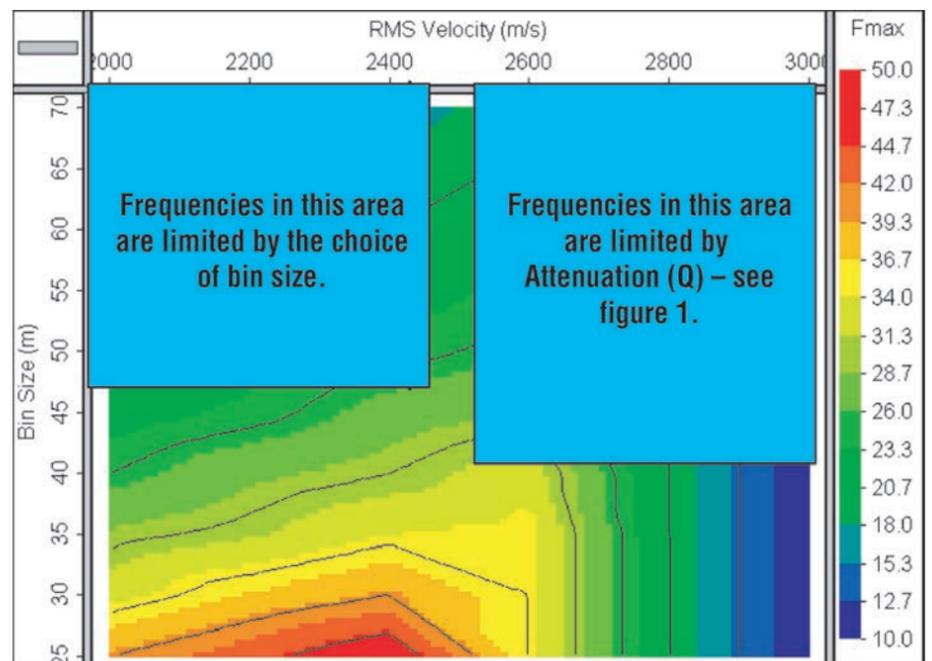


Figure 2 - F_{max} vs. (Bin Size and V_{rms}) for $\theta_{max} = 30^\circ$

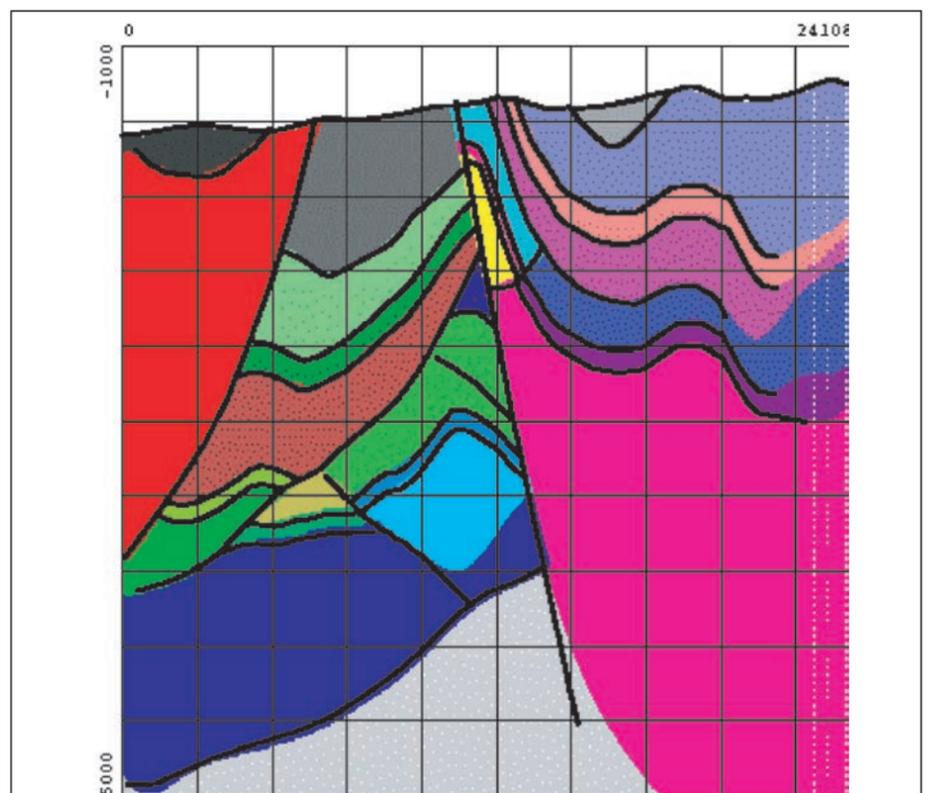


Figure 3 – A model built for a complex sub-surface area. Models can be ray-traced to create synthetic 3-D volumes.

continued from previous page

However, it is not wise to stray too far from shot and receiver symmetry. As the lack of symmetry increases, the shape of the migration response wavelet will change – leading to undesired differences in resolution along two orthogonal directions.

11. The candidate geometries can each be tested for their response to various types of noise – linear shot noise, back-scattered noise, multiples and so forth. They can also be tested for their robustness when small moves of shot lines and receiver lines are made to get around obstacles.

The “winning” geometry will be the one that does the best job of noise attenuation.

12. Acquisition logistics and costs may now be estimated for the “winning” geometry. Depending on the result (e.g. over or under budget) small changes may be made.

If large changes are needed, the usual first casualty is Fmax. Thus, dropping our expectations for high frequencies will lead to larger bins, which will lead to a cheaper survey.

Another possible casualty is the desired S/N – or, in other words, using lower fold.

Budget? Be prepared to spend some money! There is nothing as expensive as a 3-D survey that cannot be interpreted!

(Editor's note: Galbraith is with Seismic Image Software, Calgary, Canada.)

Calgary Abstracts Deadline Is Nov. 12

“Global Roundup – Exploring Energy Systems” is the theme for the 2005 AAPG Annual Convention, and organizers are ready to receive your abstracts, either via e-mail or online directly to convention organizers.

The meeting will be held June 19-22 in Calgary, the first time AAPG has returned to Canada for an annual meeting since 1992.

Organizers are planning on 50 oral and 60 poster sessions, for a total of about 1,000 technical presentations built around 10 themes.

The Call for Abstracts was included in the August EXPLORER, and also is available online at the AAPG Web site, www.aapg.org.

The abstracts deadline is Nov. 12.



Robertson
LCT Gravity & Magnetics



FUGRO

FUGRO ROBERTSON INC.
LCT Gravity & Magnetics Division

- Gravity & Magnetics
- Acquisition & Processing
- Multi-Client Data
- Fully Integrated Interpretations
- Database Management




www.fugro-lct.com

LOOKING BACK

Tell It, Just Tell It – Briefly

By MARLAN DOWNEY

Perhaps a review – and awareness – of the past may make us better geologists in the future.

* * *

“English,” by W.W. Patrick, AAPG BULLETIN, December 1954, offered these observations and pieces of counsel:

✓ “Business has learned the lessons

of brevity and directness, but too many of our geologists have not.”

✓ “An amateurish, poorly written report or letter leads the reader to assume that the thinking of the writer may be equally slipshod.”

✓ “You may say that a geologist is hired to find oil and not to write essays. If each location results in a discovery well, no one will ask you for written

reports. If your discovery record is less than 100 percent, you will write many letters and reports, and you will be judged not only by what you write, but how you write.”

* * *

The major difference between great scientists and great managers is that all great managers must learn how to communicate clearly and concisely. □

GEO software delivers ALL your well information, uniquely wrapped in just ONE compact file ...



- drastically reducing communication costs
- eliminating e-mail overload
- cutting down post-TD operations costs
- letting you publish logs to your network, intranet, web or CD-ROM,
- and access well logs & information from any connected location ... including home !

active links to external docs & files !

..... automatic or streamed-in updates !

..... multiple, selectable log layouts !

..... dynamic, exportable data !

..... embedded spreadsheets, tables, doc files !

01011001000100010000011110010010001000001000010
100111000010000001000000100000010000010000000010
1001000010001110110110100001110000111000011110111

Houston
+1 713 917 6755

Norwich
+44 1603 706900

Jakarta
+62 21 575 0896



S D C Geologix

www.geologix.com

CAPTURE

COMMUNICATE

COLLABORATE

COMPLETE



Houston APPEX

AAPG PROSPECT & PROPERTY EXPO
CO-CONVENERS: SIPES and HGS
SEPTEMBER 14-16, 2004

Discover more in 2004!

More than 2,000 industry professionals are anticipated to view over 400 prospects, properties, and products on display during AAPG's premier expo event September 14-16 in Houston.

You should be there, too. Whether you have a prospect for sale or are looking to buy into a drilling deal or producing property, APPEX offers a cost-effective opportunity to view the industry's latest and greatest. For searchable listings, check out <http://appexlisting.petris.com>.

A limited number of exhibit booths are still available on a first-come, first-served basis. Advance viewer registration is available until August 20. On-site registrations will be accepted during the event.

Take advantage of this world-class opportunity—your competitors are.

Schedule of Events

Tuesday, September 14

- Upstream Perspectives Forum
- Perspectives Lunch featuring John Seitz, Endeavor International Corp.
- APPEX Expo
- Icebreaker Reception

Wednesday, September 15

- APPEX Expo
 - Mini-Breaker
- #### Thursday, September 16
- APPEX Expo
 - SIPES/HGS/AAPG Short Course

For information, contact:
Michelle Mayfield Gentzen

American Association of Petroleum Geologists
Fax: 918 560 2684 • E-mail: mmayfiel@aapg.org
Web site: <http://appex.aapg.org>

PROFESSIONAL NEWS BRIEFS

William Chapel Allen, to geophysical data acquisition manager, worldwide exploration, Occidental Oil and Gas, Houston. Previously consulting geophysicist, Occidental Oil and Gas, Houston.

Abdulla A. Al-Naim, to executive director-exploration, Saudi Aramco, Dhahran, Saudi Arabia. Previously manager-reservoir characterization, Saudi Aramco, Dhahran, Saudi Arabia.

Paul M. Basinski, to geological adviser, unconventional resources exploration, Burlington Resources, Houston. Previously consulting geologist, unconventional gas new ventures, El Paso Production, Houston.

David W. Bieber has begun his term as president of the Association of Engineering Geologists, Denver. He is geological services manager, Geocon Consultants, Rancho Cordova, Calif.

Matthew W. Boyd, to geologist-southern business unit, Marathon Oil, Houston. Previously geologist, Kerr-McGee Oil and Gas Onshore, Houston.

Mike Canich, to vice president-reserve development, Equitable Production, Pittsburgh. Previously director-reserve development, Equitable Production, Pittsburgh.

Kevin Corbett, to Western region manager, Cimarex Energy, Denver. Previously managing partner, Sequoia Production, Denver.

Rennie Decou, to worldwide director-client centers, Schlumberger, Houston. Previously global director-geological operations, El Paso Production, Houston.

Mark H. Elliott, to senior staff geologist, Latigo Petroleum, Midland, Texas. Previously senior geologist, Southwest Royalties, Midland, Texas.

George Eynon, to senior director, research, Canadian Energy Research Institute, Calgary, Canada. Previously principal, GEOS Energy Consulting, Calgary, Canada.

Michael T. Gibson, to geophysicist, Newfield Exploration, Houston. Previously senior explorationist, Westport Resources, Houston.

Chris G. Goss, to exploration geologist, Jones Energy, Austin, Texas. Previously geologist, Ward Petroleum, Enid, Okla.

Stuart D. Harker, to petroleum geology manager, RPS Troy-Ikoda, Aberdeen, Scotland. Previously head of G&C Northern North Sea, Total E&P UK, Aberdeen, Scotland.

Robert Hobbs, to president, Veritas DGC, Crawley, U.K. Previously president, Veritas Exploration Services, Houston.

Rick Ippolito, manager-exploration, Greyhawk Resources, Calgary, Canada. Previously manager-exploration, Quintana Minerals Resources, Calgary, Canada.

Chet B. McLain, to senior geologist, Jetta Production, Fort Worth. Previously with Mustang Fuel Corp., Irving, Texas.

Jeffrey E. Nunneley, to advanced senior geologist, Marathon Oil, Houston. Previously principal geologist, El Paso Production, Houston.

Brooks Patterson, to senior project geochemist, OilTracers, Dallas. Previously staff geochemist, ChevronTexaco Exploration Research Technology, San Ramon Calif.

David Rawlins, to project geologist, EOG Resources, Midland, Texas. Previously advanced senior geologist, Marathon Oil, Houston.

William Sattlegger, to business development manager, DeGolyer and MacNaughton Canada, Calgary, Canada. Previously manager-acquisitions and divestments/land, Terra Energy, Calgary, Canada.

Christopher Saxon, to exploration geologist, Orphan Basin, Chevron Canada Resources, Houston. Previously structural geologist, Wyoming overthrust, ChevronTexaco, Houston.

Jorg Schulz-Rojahn, to senior geologist, seconded by Shell International E&P to Petronas Carigali, Miri, Malaysia. Previously reservoir/development geologist, Brunei Shell Petroleum, Seria, Brunei.

Steven G. Stancel, to senior geologist, Kerr-McGee, Denver. Previously consulting geologist, Stancel Geological Services, Denver.

Andrew Willis, to staff geologist, Petro-Canada (Alaska), Calgary, Canada. Previously senior geologist, Talisman Energy (Trinidad), Calgary, Canada.

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



QuickStudy!

The Ideal First Step of Your
New Venture Strategy

AOA Geophysics

713.532.2624

QuickStudy@AOAGeophysics.com
www.AOAGeophysics.com

Curtain Going Up for APPEX '04

The hottest event of the season is about to begin.

APPEX, AAPG's annual Prospect and Property Expo, will be held Sept. 14-16 in Houston at the George R. Brown Convention Center.

As with the previous three Houston APPEX events, geoscientists will once again have the chance to buy, sell and trade their work in a professional marketplace.

The three-day event is expected to attract up to 2,000 participants this year.

A new workshop from IHS Energy specifically for independents titled "Tools and Techniques for Assessing New-Country Entry," will be held Thursday, Sept. 16, from 7:30-9 a.m.

Another APPEX offering is a "Perspectives on the Upstream Business of Oil and Gas" forum, also sponsored by IHS Energy around the theme "The Exploration Dilemma: What is Exploration's Role in Shaping the Energy Future?"

The forum, set from 8:30 a.m. to 4:30 p.m. on Tuesday, Sept. 14, will address issues such as financial markets,

technology, regulations, politics and policies.

The forum is the lead-up, of course, to the expo itself, which begins with an Icebreaker at 4:30 p.m. on Sept. 14 and offers the opportunity to find and/or sell ideas, prospects and property.

Other APPEX highlights include:

- ✓ A "perspectives lunch" on Tuesday, Sept. 14, featuring a talk by John Seitz, geologist and president of Houston-based Endeavour International, "Who Will Discover the New Oil and Gas Fields?"

- ✓ A "mini-breaker" at 4 p.m. on Wednesday, Sept. 15.

- ✓ A SIPES/HGS/AAPG short course, "Packaging and Selling Your Prospect: Geoscience, Land and Financial Return – A How-To Guide for Presenting Prospects to Management and Investors," to be held from 1-5 p.m. on Thursday, Sept. 16.

- ✓ Continental breakfast available on both Sept. 15-16.

Best of all, online registration and further updated information – about both attending and securing space on the exhibit floor – can be found at apex.aapg.org. □

Serious Lookers and Buyers

Creative Planning Can Make a Deal

By LOUISE S. DURHAM
EXPLORER Correspondent

Success stories abound about prospect generators selling their drilling prospects either directly or indirectly because of exposure at a prospect expo. The time frame varies from soon after the show to long after.

A fortunate few, however, have the heady experience of hanging a "Sold" sign across their exhibit while the expo is still going strong.

LMP Exploration in Corpus Christi, Texas, became a member of this relatively elite group at APPEX 2003 in Houston when it sold its DeWitt County prospect on the spot.

Their story is a study in creative planning to make a prospect user-friendly for potential buyers.

"We had heard about APPEX and had the perception there were more serious lookers there," said Mike Lucente, exploration manager at LMP. "We thought it was just as important as NAPE, where we have exhibited successfully, and decided we needed to expose ourselves to it."

"The prospect came up in time for us to show at APPEX last year, and we had huge exposure and a lot of interest," Lucente said. "We showed it to two dozen people, easily."

Onsite Inspection

To show the prospect in the best detail possible, the LMP team brought along a laptop computer with the project loaded in with all the seismic – all the main parts of the prospect were there for the viewing. Interested parties could spend time studying the data on the laptop to determine if they were interested, negating the need to travel to LMP's Corpus Christi office.

"People went on and on about how they could address so many issues by being able to see the seismic data there instead of having to wonder," Lucente said. "They loved it."

Neumin Production perhaps loved it

the most, committing to the lion's share of the deal on Day Two of the APPEX confab.

"Neumin looked at the prospect and asked if their geophysicist could have a go at it," Lucente said. "After an hour, he and his people huddled and then said, 'It's there, we want it.' A piece had been sold a few hours before that, but they took the rest."

Lucente emphasized exhibitors must be cautious about dismantling a prospect exhibit without a binding letter agreement given the risk that a verbal offer might well be rescinded later.

"In our case, Neumin was so expressive of their intentions, and the president came by and assured us they would take it subject to basic due diligence, like if we really had the leases and such" Lucente said. "So we shook on it and just trusted them, and all went smooth."

Homework Pays Off

The LMP team, which returns to APPEX this year, said the expo lets exhibitors get a good feel for how others see their prospects. If there is no interest, one might want to question whether it's a good deal, if the brochure is adequate, the right bullet points posted, etc.

"We went to NAPE enough and did our homework on APPEX to understand it," Lucente said, "and knew what it would take to get the story out, so we came very prepared."

"Maybe we got lucky," he said, "but you have to put your best foot forward."

Hopes are high for the well, which is drilling now, but even a dry hole can be a success in its own way, according to Lucente.

"If you drill a dry hole, it's not for naught," Lucente noted, "because you've just got to drill through enough to let the oil field gods finally work in your favor."

"The point is, if you don't get that bit in the ground, nothing happens," he said. "Whether a well works or not, you still get the idea tested, and you can compare it to other prospects." □

How long does it take to get YOUR logs?



Don't wait for your data High speed log printing puts critical data in your hands



Neuralaser Log Printer

- 4"/second printing
- B&W permanent laser prints
- Full or half scale logs - raster or LAS
- Includes NeuraView & proprietary drivers
- Select printing area or entire log
- USB or ethernet for your PC or network
- Lowest operating costs available
- Add NeuraScanner for modern log copying

For a quote and other information
call 1-281-240-2525
or visit www.neuralog.com



Neuralog, Inc.

Neuralaser NeuraScanner
NeuraLog+ NeuraMap NeuraSection+ NeuraPRO

FOUNDATION UPDATE

Foundation (General)

Gerard F. Aarons
Mahmoud M. Abdul-Baqi
Glenn Earl Adams
Tosin Emmanuel O. Alfred
Andrew Stuart Allan
Eric Thomas Allison
Arthur Erick Anderson
Michael Ashton
Katharine Lee Avary
Jeremy David Bader
William D. Baldree
A. Greer Barriault
Jarrad Grant Berg
Philip Reginald Bigsby
Erhard Bornemann
Angus Martin Boxall
James C. Brenneke
Johnnie Boyd Brown
Arthur L. Cochrum
Sheridan Caraway Conley
Douglas Lee Core
Thomas Joseph Cwikla
Ranjit Kumar Das
Paolo Dattilo
Gary J. Davis
Lawrence Harold Davis
James Richard Derby
David Neil Dewhurst
Richard Oliver Donley Jr.
James Michael Drennen
David Lynn Driskill
Vlastimila Dvorakova
Heather Wilson Echols
Timothy David Elam
Jim Elkin
Chris Bradley Flescher
George Rogers Fluke
Daniel James Fritz
Joe M. Fultner
William Thomas Gans
Larry D. Gerken
Ernest Gomez
Frank L. Gouin

Mitchell Craig Graff
Neil Wallace Hamilton
Paul Carrington Henshaw Jr.
William J. Hlavin
Nyan Htein
Lawrence Lee Hunt
Neal Lilburn Hurley
James Winston Jones
Samuel Atkinson Kalmbach
Frode Karlsen
Sasi Dharan Kinattukara
Jeanette A. King
Reuben Joseph Klibert Jr.
Simon Knight
Vinaya Kumar
William Chris Lachmar
Kelly R. LaGrange
Robert Charles Lanz
Jonathan N. Leahy
Raymond C. Leonard
Henry Lickorish
John F. Ligon
Floyd Alan Lindberg
Laurence Richard Lines
Chu-Ching Liu
Richard B. Lodewick
John Eric Love
Mike R. Maitland
Robert H. Marshall
Robert James Maurer
Michael M. McConnell
Andrew Thomas McEllan
Elena Angelina Miranda
Mobil Retiree Matching Gift
Brad Moon
Lee Wayne Moore
Peter Grant Moreland
Larry Richard Moyer
Daren Taylor Nelson
Susan Oyloe Nelson
Michal Nemcok
Kristle Lynn Nichols
Russell Howard Nordwell
Robert Matheson Norris

Foundation Donors

The names that appear here are of those who have made donations to the AAPG Foundation in the past month – predominately through adding some additional monies on their annual dues statement.

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

The AAPG Foundation will continue its stewardship for the betterment of the science and the profession of petroleum geology, thanks to you.

The AAPG Foundation Trustees

Jeanie Marie Odom
Leslie Ann Olinger
Daniel Lewis Orange
Robert Anselm Ortalda
David R. Paddock
Forrest Graham Poole
Steven Anthony Power
Garwin Ray Powers
Rebecca E. Pressler
Corine Prieto
Harry Ptasynski
Victor Ramirez
Eddie W. Rheas
Michael D. Rippetoe
Tim R. Ruff
Fadhil Nomas Sadooni
Christopher J. Schenk
B. Charlotte Schreiber
John H. Schuenemeyer

K.S. Sheikh-Ali
Robert Michael Shellman
Allen G. Siemens
George M. Simmons
JoAnn M. Skeim
David Moore Tatum
Onayinka O. Titilayo
J. Douglas Traxler
Juan Fernando Uribe
Heather Smith Vacker
Edward J. Valek
Hofwegen Dixon T. Van
Treck Christopher J. Van
William Noel Via
Huai Da Wang
Joseph Theodore Westrich
Terry L. White
Lorraine Elizabeth Wild
Marie Paulette Wilkinson

Carole Wright
Steven Wilford Young
Yingcheng Zhao
Robert Leonard Zinn

K-12 Education Fund

Audrey W. Adams
Matthew D. Adams
Joel R. Alnes
Julie Carol Angel
Angus Martin Boxall
Charles Byrer
Stewart Chuber
Thomas W. Clawson
Jerlyn Rae Gilmore
Meredith Diane Guhl
Roger Emerson Hively
Tim A. Johnson
Gerald T. Ladd
Paula Louise MacRae
Thomas Mairs
Louis J. Mazzullo
Michael Joseph McRae
Geoffrey M. Morris
Timothy Clement Mullin
W. Burt Nelson
Daniel Evan Schwartz
Steven Christian Semken
Donald E. Walker

Daniel A. Busch Library Fund

Barry Martin Faulkner
Edward Beauregard
Picou Jr.

Digital Products Fund

Tom Wayne Harrold
Luis R. Porras
Russell Wayne Sharp
John David Traut

Grants-In-Aid Fund

Grant L. Anderson

Nedra Keller Hansen
In memory of Kenneth Keller

Leigh S. House
Djibo Issoufou
Bradley Eugene Milligan
Ellyn May Ponton
Joann E. Welton
Gary E. Yoder

Gustavus E. Archie Memorial Grant

John (Jack) B. Thomas

Fred A. Dix Named Grant

John (Jack) B. Thomas

Norman H. Foster Memorial Grant

Don F. Tobin

Merrill W. Haas Memorial Grant

Paul H. Dudley Jr.

Distinguished Lecture Fund

Wayne F. Braunberger
Alberto Hevia-Almandoz
Roger Emerson Hively
William Ernest Jackson
Philip A. Mundt
Richard Larry Shields

E.F. Reic Scouting Fund

Ronald L. Hart
Bryan Haws
Patricia K. Hurd

Paul McDaniel Digital Products Endowment

John Wayne Shelton

Excellence That Runs Deep

SCA's three divisions provide the excellence and skills you need to ensure your company's success in finding and developing oil and gas resources. From training your staff, to providing highly skilled professionals, to successfully managing a project from start to finish, SCA's experience and expertise will positively impact your bottom line.

Check out our upcoming training schedule :

September, 2004

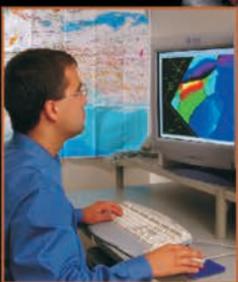
8-9 Quick Look Mapping Techniques For Prospect Evaluation (Houston, TX)
10 Isochore/Isopach Mapping Techniques (Houston, TX)
20-24 Development Geophysics (Houston, TX)

October, 2004

4-5 Cased Hole Formation Evaluation (Houston, TX)
6 Cement Evaluation and Casing Inspection (Houston, TX)
7-8 Production Log Evaluation (Houston, TX)
18-22 Hydrocarbon Exploration in Extensional Systems (Houston, TX)
25-29 Applied Subsurface Geological Mapping (Houston, TX)

November, 2004

6-10 Applied Subsurface Geological Mapping (Dubai)
8-10 Advanced Compressional Structural Geology (Calgary, Alberta)
8-12 Deepwater Sands and Petroleum Systems Analysis (Houston, TX)
8-12 Integration of Log and Seismic Data for Exploration, Exploitation and Production (Houston, TX)
15-19 Applied Subsurface Geological Mapping (London)
15-19 Sequence Stratigraphy in Exploration and Production Geology (Houston, TX)
15-17 Geophysics For Reservoir Engineers (Houston, TX)
18-19 AVO, Rock Physics and Inversion (Houston, TX)
29-30 Salt And Clastic Sediments: Interactions and Implications to Hydrocarbon Exploration (Houston, TX)



RECRUITMENT



CONSULTANCY



TRAINING



Subsurface Consultants & Associates, LLC

2500 Tanglewilde - Houston, Texas 77063 - 713.789.2444

Email: info@scacompanies.com

www.scacompanies.com

Boon for Grads, Recruiters

Student Resumes Available Online

Hey, AAPG Student members! Want a job?

Hey, employers – want to hire a bright young mind?

It's easier now with the Virtual Student Expo – an online match-making tool that brings both parties together beyond geographical, time or money limitations.

The joint project, sponsored by AAPG, the Geological Society of America, the Society of Exploration Geophysicists and the Society of Petroleum Engineers, went live in mid-August.

The associations have contracted for the service with a private firm that specializes in Internet job placements, and have designed a site specifically for the petroleum industry and others needing geoscience and engineering new hires.

Students who are members of the sponsoring professional societies can utilize the Virtual Student Expo free of charge. Employers pay a small fee to access the student postings and to post job openings.

"The Virtual Student Expo was created to fill the need for young professionals in the industry," said Robbie Gries, chair of the project and past AAPG president. "For years now, the average age of professionals in the oil and gas industry has been rising. Young people entering the industry are in short supply and in high demand. The Virtual Student Expo will put these young professionals in contact with the companies that so desperately need them."



The Virtual Student Expo is a Web-enabled tool that matches student members of the four societies with potential employers for internships and full-time entry-level positions. The Expo allows students to post resumes along with examples of their work, including academic assignments, technical papers and portfolios from internships.

Students also may post a short video to virtually present themselves to prospective employers.

"The program also allows recruiters and companies to diversify their hiring programs more efficiently and effectively," said C. Susan Howes, engineering recruitment and development supervisor for Anadarko Petroleum Corp.

"By visiting the online Virtual Student Expo, employers can find candidates in remote locations or in distant countries," she said. "All pre-screening activities can be easily done at a global level through the Web site, saving time and money for employers."

Employers wishing to use the service can inquire online or by contacting Mike Mlynek at (800) 364-2274 (U.S.), or by e-mail at students@aapg.org.

For more information and to access the site, visit www.aapg.org. □

IN MEMORY

Dalton, Howard William, 70
Roxbury, Conn., May 24, 2004
Gordon, Edward Wayne, 80
San Antonio, May 29, 2004
Marquardt, Charles Jay, 71
Sugar Land, Texas, June 27, 2004
O'Brien, James Edmund, 77
Tulsa, July 18, 2004
Ratschiller, Ludwig Karl (AC '56)
Bolzano, Italy
Rodan, William Bird, 84
Metairie, La., June 22, 2004
Shenkel, Claude W., 84
Sun City West, Ariz.
March 16, 2004

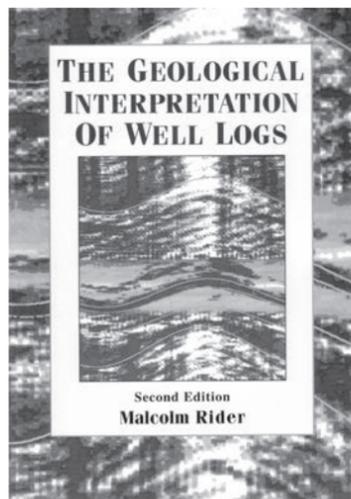
Sloat, John, 95
Los Angeles, May 16, 2004
Weaver, William Carlton, 94
Corpus Christi, June 30, 2004
Wyman, Richard E., 75
Salt Lake City, June 20, 2004

(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.)

THE GEOLOGICAL INTERPRETATION OF WELL LOGS

RIDER-FRENCH

• world-wide best seller •



NEW RE-PRINT
2nd Edition 2004
now! on sale

✱

The best book for a basic understanding of well logs used for lithology, facies, depositional environments sequence stratigraphy, correlation - and more.

'This is an excellent book for anyone who is involved in the technical aspects of exploration and production.' AAPG Book Review

✱

BUY direct from the WEB
www.riderfrench.co.uk

2 hotels sold out!
First exhibits area sold out –
New exhibits area now available!



AAPG INTERNATIONAL CONFERENCE & EXHIBITION
OCTOBER 24-27, 2004 • CANCUN, MEXICO

PETROLEUM INDUSTRY IN THE 21ST CENTURY:
TECHNOLOGY, BUSINESS & FRONTIERS

HOST: ASOCIACIÓN MEXICANA DE GEÓLOGOS PETROLEROS

HONORARY CHAIR
LUIS RAMÍREZ CORZO
GENERAL DIRECTOR OF PEMEX
EXPLORATION AND PRODUCTION

September 23

Preregistration deadline!

REGISTER ONLINE:

[HTTPS://COMMERCE.AAPG.ORG](https://commerce.aapg.org)

365 Reasons to Attend

- 🌟 **348 GEOSCIENCE PRESENTATIONS**
- 168 ORAL PRESENTATIONS
- 180 FULL-DAY POSTERS
- 🌟 **7 SHORT COURSES ON HOT TOPICS**
- 🌟 **6 FIELD TRIPS TO CLASSIC LOCALITIES OF MEXIKAN GEOLOGY**
- 🌟 **2 LUNCHEONS WITH RENOWNED SPEAKERS**
- 🌟 **2 FIRST-CLASS EXHIBIT AREAS**



AAPG CONVENTION DEPARTMENT
PHONE: 1 918 560 2617
E-MAIL: CONVENE2@AAPG.ORG
WEB SITE: WWW.AAPG.ORG/MEETINGS/CANO4/



Come to Columbus & join us at the...



2004 Eastern Section Meeting

American Association of Petroleum Geologists

October 3-6, 2004 • Columbus, Ohio
Ramada Plaza Hotel

Hosted by: The Ohio Geological Society & The Ohio Geological Survey

TECHNICAL SESSIONS WILL INCLUDE:

- ❖ Trenton/Black River stratigraphy, exploration, and development
- ❖ Rome Trough/Cambrian-Ordovician exploration and petroleum geology
- ❖ Knox field studies, case histories
- ❖ Coalbed methane
- ❖ Environmental assessment
- ❖ CO₂ sequestration
- ❖ GIS mapping
- ❖ Geochemical character and origin of Appalachian petroleum
- ❖ Reservoir analysis/stratigraphy
- ❖ Shallow exploration for producing horizons

WORKSHOP:

- ❖ Exploration and development of fractured reservoirs—Dr. Ronald A. Nelson

FIELD TRIPS TO:

- ❖ Silurian and Devonian rock exposures of the Marble Cliff Quarry, Columbus, Ohio
- ❖ Fossil collecting at the Western Ohio Cut Stone Company in Miami County, Ohio

KEYNOTE ADDRESS:

- ❖ Securing oil supplies in a less-than-secure world—Dr. Jamil F. Al Dandany, Saudi Aramco

EMD/DEG LUNCHEON:

- ❖ U.S. energy usage: where does it all go?—Dr. Ronald A. Nelson

DPA LUNCHEON:

- ❖ Arithmetic, population, and energy—Dr. Albert Bartlett

STUDENT JOB QUEST

For registration information, exhibition, sponsorship contact:

General Co-Chair: Steve Zody, Zody Geoscience
P.O. Box 921
Wooster, OH 44691
ph: (330) 262-4323 • e-mail: zodyoil@sssnet.com

Visit the 2004 Eastern Section meeting website at:
<http://www.ohiodnr.com/geosurvey/aapg04.htm>

MEMBERSHIP AND CERTIFICATION

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

(R.W. Baird, A.K. Ghosh, A.K. Sinha)

Australia

Barnes, Raymond George, Voyager Energy, Daglish (P.M. Barber, P.A. Carter, E. Barnes)

Canada

Polt, Rita Herta, Talisman Energy, Calgary, (R.A. Jamieson, S.R. Seifert, R.A. Clark)

Indonesia

Jaya Indra, Lemigas, Jakarta (B. Situmorang, D.P. Rovicky, M. Syaiful)

Mexico

Jerzykiewicz, Tomasz Leon, Teknica Overseas, Villahermosa, (R.O. Lindseth, D.T.C. Hsu, P.A. MacKay)

For Active Membership

Colorado

Dubiel, Russell F., U.S. Geological Survey, Denver (P.J. McCabe, T.S. Ahlbrandt, C.J. Schenk); Honert, James A., EnCana Oil & Gas USA, Denver (B. Houston, C. Dietz, T. Olsen)

District of Columbia

Hayba, Daniel O., U.S. Geological Survey, Reston (D.W. Houseknecht, C.S. Swezey, R.T. Ryder)

Louisiana

Damon W., Jordan, Rosbottom Production, Shreveport (D.L. Smith, A.W. Adams, T.H. Marshall); Gamble, James D., Deep South Energy, Lafayette (R.B. Brekke, J.P. Martin, P.G. Gray);

Oklahoma

Marler, Timothy Bruce, Williams Energy Services, Tulsa (B.G. Chenoweth, J.R. Blake, T.W. Harrold); O'Donnell, William C., BRG Petroleum, Tulsa (C.F. Wootton, R.W. Behling, R.R. Foshee); Saleh, Azzeldeen A., University of Tanta, Norman (J.M. Forgotson, J.P. Castagna, J.D. Pigott)

Texas

Burleson, Steven Lewis, Lewis B. Burleson, Midland (L.B. Burleson, H.E. Ware III, E. Matchus); Chutrau, Guillermo, ChevronTexaco, Bellaire (V. Vega, V. Sare, O.L. Gamundi); Hoshi, Kazuyoshi, Japex (U.S.) Corp., Houston (T.A. Roberts, M. Kamon, H.C. Olson); Singh, Raj Narain, Paradigm Geophysical/Core, Houston

continued on next page

Certification

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

Petroleum Geologist

Kentucky

Wood, Mark Franklin, geologist, Louisville (C. Vavra, M. Downey, M. Myers)

Petroleum Geophysicist

Oklahoma

Towner, William Cedric, consultant, Tulsa (D. Bocanegra, J. Dewey, J. Arthur)

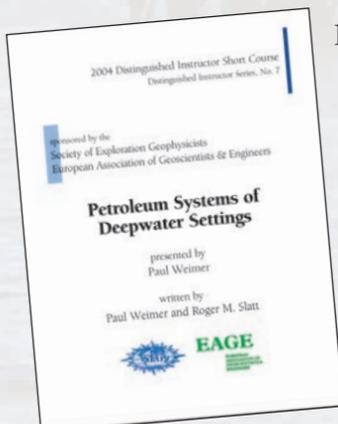
SEG/EAGE 2004

Distinguished Instructor Short Course

presented by Paul Weimer

Petroleum Systems of Deepwater Settings

The 2004 SEG/EAGE Distinguished Instructor Short Course and its accompanying book emphasize the geologic aspects of deepwater deposits. This review will cover the recent trends in deepwater deposits in terms of drilling results and will introduce the elements of the petroleum system — reservoirs, traps, seals, source rock, migration, and timing. The course and the book, written by Paul Weimer and Roger M. Slatt, also include a summary of what is important in the exploration for and development of deepwater systems. The application of these techniques to current projects is key, as is the difference between frontier exploration and exploration in mature basins with deeper potential. Examples from three or four basins distributed globally illustrate the principles. These examples will also demonstrate that there is deepwater potential in most basins globally.



ISBN 1-56080-124-7, Catalog # 227A, 2004, paper

SEG member price \$69 List price \$99

Available only to SEG members until January 1, 2005

Mail orders to:

SEG Book Order Dept.

P.O. Box 702740, Tulsa, OK 74170-2740 USA

or contact directly:

918-497-5546, fax 918-497-5558, email: books@seg.org

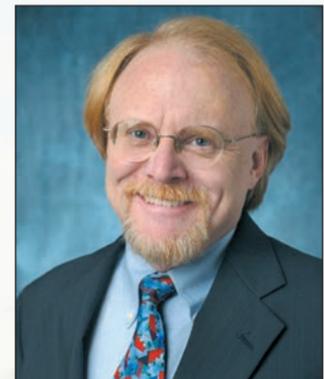
AUTOMATED BOOK MART: <http://eseg.org/bookmart/>



EAGE

EUROPEAN
ASSOCIATION OF
GEOSCIENTISTS &
ENGINEERS

Sponsorship information:
contact Peter Pangman
ppangman@seg.org



Paul Weimer will present this course at the following cities:

September 6Caracas
September 8Rio de Janeiro
September 10Buenos Aires
September 29Calgary
October 8Denver
October 21New Orleans
October 28Cairo
November 1London
November 3Milan
November 5Madrid
November 8Utrecht
November 10Stavanger
November 12Aberdeen
January 13, 2005Houston
January 2005Dallas

For more information, please visit: <http://ce.seg.org>.

SPOTLIGHT ON EDUCATION

**Curriculum Adds Course
On Reservoir Estimation**

September marks the start of the school year for AAPG – the 2004-05 education calendar is loaded with short courses, forums and field seminars to help you maintain the edge in today's fast-changing world.

The entire calendar, featuring course descriptions, instructors, prices and detailed information can be found online at www.aapg.org.

This year's list of offerings includes many courses and field seminars that are proven winners – but some new items have been added, too, including:

✓ In November there will be a new short course on reserves estimation – a very timely offering considering the current rash of reserves being written down or recategorized.

"The Assessment, Classification and Reporting of Reserves: A Petroleum Industry Seminar," will be offered Nov. 11-12 in Houston, taught by Rawdon J.H. Seager of Gaffney, Cline & Associates, and Menno G. Dinkelman, MGD International.

Specific course information is at <http://www.aapg.org/education/shortcourse/details.cfm?ID=63>

✓ The 2nd annual AAPG Winter Education Conference will be held Feb. 14-18, at the Hilton Houston Southwest.

The conference features four concurrent sessions, and participants can come for the entire week or pick any combination of courses.

The "Reserves Assessment" course will be offered again at this conference, and other offerings include Giant Oil & Gas Fields by Mann and Horn; Permeability in Carbonate Rocks by Jerry Lucia; Tight Gas Sands by Alan Byrnes; and Geochemical Exploration by Deet Schumacher.

Schedules and registration information, when final, will be available in the EXPLORER, BULLETIN and on the AAPG Web site.

Don't miss the chance to improve your skills and knowledge as a geologist. The AAPG education department can help you maintain your place in today's exploration world. □

continued from previous page

Norway

Garland, Joanna, Statoil ASA, Stavanger (B.A. Tocher, N.A.H. Pickard, M.T. Redondo-Lopez)

People's Republic of China

Lirong, Dou, CNPC International (Chad), Beijing (L. Deshang, T. Xizoguang, X. Liangqing)

Saudi Arabia

Bacchus, David Mobley, Aramco, Dhahran (M.O. Alamoudi, I.A. Al-Ghamdi, R.F. Lindsay); Sahin, Ali, King Faud University Petroleum & Minerals, Dhahran (S. Saner, O. Irtem, H.M. Hassan)

Venezuela

Moros Leon, Jose Saul, ChevronTexaco, Maracaibo (J.L. Murphy, P.J. Chimney, W.G. Olivier) □



**WEST TEXAS GEOLOGICAL SOCIETY FALL SYMPOSIUM
October 27 - 29, 2004**

"Banking on the Permian Basin: Plays, Field Studies, and Techniques."

The 2004 Fall Symposium will be held the last week of October. An excellent slate of speakers will be presenting current research, field studies, new geologic ideas, and outcrop studies to help you explore for and develop oil and gas reserves.

A sample of topics being presented:

Choosing between banking and investing in the Permian Basin
Permian Basin wrench faults

Carbonate Pore type M & Wettability from Wells logs

Delaware Mountain Group

Montoya Dolomite

P-Wave Seismic

Field studies: Glorieta Paddock Field, Devonian Field

The Barnett Shale Ft. Worth Basin

Oil & Gas Norm Remediation in the Permian Basin

Manzanita Limestone Member, Upper Cherry Canyon formation, Northern Delaware Basin

The **Fall Symposium** will be held in the Midland Center, Midland, Texas with technical sessions and poster sessions taking place on **October 27-29, 2004**. For more information contact Paula Mitchell at the WTGS office at (432) 683-1573, or Debra Rutan, General Chairman at (432) 685-3116 or visit the WTGS website at www.wtgs.org.

WTGS FALL FIELD CONFERENCE

October 29-31, 2004

Recent Advances in Sequence Stratigraphy & Reservoir Compartmentalization in Upper Guadalupian Carbonates - Guadalupe Mountains, West Texas & Southeastern New Mexico

Leaders: Drs Emily Stoudt & Bob Trentham, University of Texas Permian Basin and Dr. Peter Scholle, New Mexico Bureau of Geology and Mineral Resources

The destination will be the Guadalupe Mountains of west Texas and southeastern New Mexico, with emphasis on new sequence stratigraphic work carried out in the Yates and Tansill formations in Walnut and Dark Canyons on the eastern side of the mountains. It will include examination of core and thin sections from several wells that cut the interval we will be viewing in the field. We will also provide an opportunity to apply sequence stratigraphic principles to measuring and correlating outcrops of the Tansill shelf deposits in Dark Canyon.

For more information contact Paula Mitchell at the WTGS office at (432) 683-1573, wtgs@basinlink.com, or Dr. Robert Trentham, at (432) 552-2432, trentham_r@utpb.edu or visit the WTGS website at www.wtgs.org.

**Answers
...not attributes**

Weinman GeoScience
Integrated GeoPhysical Analysis
20 Years Experience

Seismic Data Processing & Imaging

Full 2D & 3D Services, Proprietary Noise Attenuation
High Resolution Velocity Analysis, Higher Order NMO
PSTM, PSDM, Tomography, Illumination

Seismic Attribute Analysis

GeoStatistical Inversion, Lambda Mu Rho, AVO Cross Plot Detection
Neural Network SeisFacies Classification

Seismic Derived Rock Properties (SDRP)

Lithology, Porosity, Fluid Type, Pore Pressure, Environment of Deposition

Prospect Generation, Ranking & GeoModel Building

Visualized Interpretation of Structure, Stratigraphy and SDRP
GeoStatistical Mapping & Depth Conversion

For an in-house presentation demonstrating how our team of exploration professionals can add value and reduce risk for your portfolio, call us.



Weinman GeoScience

Galen Treadgold
972-818-2550

WeinmanGeoScience.com

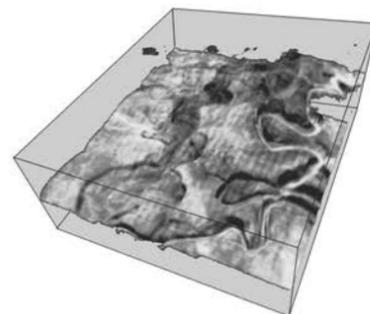
SEISMIC GEOMORPHOLOGY

Applications to Hydrocarbon Exploration & Production

Geological Society of London and SEPM (Society for Sedimentary Geology)
10th - 11th Feb 2005 Westchase Hilton Hotel, Houston, Texas, USA

Keynote Speakers:

- * Dr Fridtjof Riis (Norwegian Petroleum Directorate)
- * Henry Posamentier (Anadarko)
- * Craig Shipp (Shell)
- * Dr. Frank G. Ethridge (Colorado State University)



Conference programme and registration available online at www.sepm.org

Technical Convenors:

- | | |
|---|---------------------------------------|
| Richard Davies (Cardiff University, UK) | Lesli Wood (University of Texas, USA) |
| Henry Posamentier (Anadarko, Canada) | Vickey Sare (ChevronTexaco, USA) |
| Joe Cartwright (Cardiff University, UK) | |

For details on sponsorship opportunities or general enquiries please contact:

Jessica Canfor, Conference Co-ordinator, Geological Society of London
Tel +44 (0)20 7434 9944, Email jessica.canfor@geolsoc.org.uk

Judy Tarpley, Conference & Events Manager, SEPM, USA
Tel +918 610 3361, Email jtarpley@sepm.org



www.geolsoc.org.uk/seismicgeomorphology www.sepm.org

Are you an alumnus of the MSc course in Petroleum Geology, Aberdeen University?

To mark the 30th anniversary of Aberdeen's Petroleum Geology MSc, there will be an alumnus event, 25-28 November 2004 on the King's College Campus, Old Aberdeen.

Thursday 25 November: Icebreaker tours; evening dinner.

Friday 26 November: Meeting in King's Conference Centre (Future Geological Challenges in Energy Education) -- come and help us plan the next 30 years. Evening social.

Saturday 27 November: Graduation of the 30th class; afternoon reception.

Sunday 28 November: Field trip for those still standing. All of the 400 graduates of this course are welcome.

UNIVERSITY
OF ABERDEEN



Contact: pg30@abdn.ac.uk
www.abdn.ac.uk/geology

READERS' FORUM

Taking a Position

I applaud the Committee on Resource Evaluation's carefully considered and well-written recent Position Paper: United States and Canadian Atlantic Outer Continental Shelf Resources. Its focus on lifting the moratorium on OCS exploration is something I think all AAPG and CSPG members can agree on.

However, we are led to believe from your article "AAPG Challenges Society Report" (August EXPLORER) that this recent Position Paper includes a detailed examination of how the Wilderness Society used faulty assumptions to conclude that only an extremely small amount of our nation's demand for petroleum could be recovered from beneath roadless areas and monuments.

The Position Paper includes no discussion regarding the Wilderness Societies viewpoint or the methods they used. In fact, the Position Paper, which is almost entirely concerned with the moratorium on exploration of the outer continental shelf, makes only one possible reference to roadless areas -- in a map of the lower 48 states showing red zones indicating areas of restricted access.

Increasing our ability to explore and develop hydrocarbons in the Rocky Mountain west is an issue that greatly concerns me. When it comes to working with the many well-organized and powerful environmental groups who seem to oppose even the most responsible industry efforts to secure domestic energy sources, I think articles such as this do nothing more than damage the credibility of our fine organization.

Charles A. Ferguson
Centennial, Wyo.

More to be Found

Regarding your story on "Plenty of Deep Treasures Remain" (August EXPLORER): This is an excellent summary of various efforts put by geologists in general and petroleum geologist in particular to tap our energy resources. It provides food for thought and infuses a new energy to think in more positive ways to harness the energy from earlier explored pools and the areas thought to be non-hydrocarbon bearing, as "absence of proof is not proof of absence."

Excellent! Congratulations to AAPG for selecting the article.

K.B. Trivedi
Dehra Dun, India

Ethics?

It has been 10 years since I was president of DPA, an honor I gratefully appreciated. I can honestly say that by having held that position, my application to "grandfather-in" to Pennsylvania and

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

Texas registration was greatly enhanced by that degree of AAPG involvement in the certification process.

I also agree with many things said in the recent DPA column (July EXPLORER) about issues with which DPA has dealt. In fact, while president I convinced three applicants to cancel their applications because of objections to their qualifications when their names were published.

Other officers also have been successful at maintaining high standards. But, as far as I know, that's the extent of DPA ethics effectiveness insofar as improving our lives as working geoscientists.

My effort with Carl Smith to start the certification of coal geologists under DPA, which both Pete Gray and Will Green brought to fruition, has been spectacularly unsuccessful. Other than to be a stump for those of us who have worked on DPA over the years, why hasn't the membership grown?

The fact is, unless somehow AAPG can convince the states of our high professional level of excellence and win the political battles between scientific organizations, DPA will never gain the acceptance of the states.

As a profession, geoscientists are, in my opinion, more ethical than most, but what DPA has become is an in-house ethics organization that is used to discuss ethics in our business, but without any teeth to change anything.

As long as the Ken Lays of the business world can blame everyone else for their problems, how would we ever expect to change anything? House cleaning has to start at the top.

I'm not pointing any specific finger at our profession and business. Just look at all the bums running our government. Politics seem to be the rule of our lives, and until we clean up our national political ethics, how can we ever expect to be effective in our profession?

C.R. "Chuck" Noll
Houston

Politics and Dignity

I read with interest your recollection of the rousing reception given to Ronald Reagan at the 1978 AAPG Annual

See **Readers' Forum**, page 46



Employment opportunities in a major energy company in the State of Qatar

RASGAS COMPANY LIMITED is owned by Qatar Petroleum and ExxonMobil and was formed to engage in the business of production and sale of Liquefied Natural Gas and related hydrocarbon products. At present the Company operates a Three-train Onshore Facility at Ras Laffan, which is about 80 km north of the capital city, Doha, in the State of Qatar. The Company, as part of its expansion program, is currently building further production facilities both Onshore and Offshore and is seeking highly skilled personnel to fill the following positions.

Reservoir Engineering Advisor

Responsible for advising the Lead Engineer / Reservoir Engineering Manager on reservoir surveillance and field development issues, strategies, and vision. Responsible for providing technical direction to the Reservoir Engineering team. Assesses the reliability of various reservoir description data sources and the uncertainty associated with data. Provides guidance in analysis and evaluation of the reservoir data. Integrates analytical reservoir methods with single-well or mechanistic simulations and provides guidance to other engineers in conducting analytical and simulation studies. Develops, reviews and participates in reservoir engineering training/mentoring programs. Defines company's Best Practices for field development, reserves assessment and reservoir surveillance activities.

Candidate must have a minimum of a Bachelor degree in Petroleum or equivalent engineering discipline with at least 15 years broad based experience in various aspects of reservoir engineering including minimum 5 years experience in field development and 3 years experience in conducting reservoir simulation work. Experience should also include the following areas: reservoir description, fluid sampling and analysis, well testing, reservoir surveillance, analytical performance prediction, reserves assessment, and well productivity analysis. In-depth understanding of the reservoir engineering concepts with a level of technical prominence within the industry and among peers that lends sufficient technical credibility to influence shareholders / contractors to meet business needs. Knowledge of fundamental business practices, strong interpersonal skills, and the ability to work in a multinational environment with wide exposure to various cultures and customs.

Reservoir Engineer

Conducts, interprets and participates in reservoir data gathering, evaluations, reservoir studies and reservoir surveillance activities with guidance from Reservoir Eng Advisor. Activities include the development plan evaluation, well data analysis of drilled wells, data gathering plan, well prognosis, production testing and reservoir performance prediction using simulation model. Participates in studies designed to improve well testing procedures and fluid sampling.

Candidate must have at least a Bachelor degree in Petroleum Engineering or equivalent engineering discipline. 7+ years experience in reservoir engineering and petroleum engineering, including at least 3 years in reservoir evaluation and management, simulation models, well test evaluation and production of gas condensate reservoirs. Good computer skills and familiarity with reservoir engineering application programs.

METHOD OF APPLICATION

To apply, candidate should send or e-mail a complete and up-to-date resume of work experience, personal data, salary history, including copies of passport, academic and technical qualifications and two recent passport photographs, specifying availability, full address and telephone number quoting appropriate position reference number to:

Senior Recruitment Supervisor
RasGas Company Limited
P. O. Box 24200 Doha, State of Qatar
email: Recruitment@RasGas.com.qa

Students Launch Web-Based Forum on Carbonates

A pair of students in Norway have taken the initiative to start-up a Web-based forum in hopes of creating an international network for carbonate researchers.

AAPG Student member Bjarne Rafaelsen, of the University of Tromsø, is Webmaster for www.carbonet.net and an online Carbonate Forum, www.carbonet.net/forum.

"The Carbonate Network is not funded in any way," Rafaelsen said, "so this is something I am doing on my spare time."

The home page includes a short presentation of the different members

participating in the carbonate network (their field of expertise, scientific interests and contact information).

Rafaelsen said the intent is to stimulate an increased exchange of knowledge between carbonate researchers from different geological institutions, and to form a forum where carbonate-related aspects can be discussed.

The effort is for those who may be seeking good references related to a specific topic, want to discuss specific problems, have questions or wish to share information with relevance to parts of and/or the entire network. □

CLASSIFIED ADS

POSITION AVAILABLE

**TGS-NOPEC Geophysical Company
Senior Depth Processing Specialists
Senior Structural Interpreters**

TGS Imaging, formerly NuTec Energy, is currently soliciting applications for senior processing geophysicists with depth processing expertise. The company is also seeking senior structural interpreters with extensive knowledge of salt tectonics and experience mapping top/base salt in the Gulf of Mexico. The positions are based in Houston, Texas.

TGS-NOPEC is a leading global provider of multi-client geoscience data and associated products and services to the oil and gas industry. The company specializes in the planning, acquisition, processing, interpretation and marketing of non-exclusive seismic surveys worldwide.

Interested candidates should send resumes to Personnel@tgsnopec.com. For more information about TGS-NOPEC and employment opportunities, visit our website at www.tgsnopec.com

ASSISTANT/ASSOCIATE PROFESSOR-RESEARCH
(Sedimentary Basin Analysis)
Louisiana Geological Survey

The Louisiana State University's Louisiana Geological Survey invites applications for a research faculty position in petroleum geology at the Assistant or Associate Professor – Research level. Research will be focused mainly on basin analysis and the many aspects of sedimentary geology related to petroleum formation, maturation, migration, and accumulation within Louisiana's petroleum systems. A variety of other projects dealing with the State's petroleum reserves are also potential areas for both original and applied research. **Required Qualifications:** strong academic record; Ph.D. in Sedimentary Geology or in a related field of geosciences from an accredited institution; three years experience within the oil and gas industry in exploration and production; understanding of petroleum system analysis, especially in terms of modeling and simulation; and proven experience in successful grant writing or funding of drilling projects in the oil and gas industry; research projects will require a strong background in subsurface geology, especially in creating and interpreting geologic maps and cross-sections; working knowledge of applying GIS to aspects of geologic research. **Special Requirements:** travel to various locations, over a few days at a time as well as other travel as necessary and assigned by the LGS

Director. **Responsibilities:** presents research results at appropriate conferences; submits papers in appropriate journals or Geological Survey publications; makes contributions to other petroleum technology transfer forums. Salary and rank will be determined by the successful candidate's qualifications and experience.

Application review will begin immediately and will continue until September 15, 2004 or until candidate is selected. Applicants should send a full resume (including e-mail address), a one-page statement outlining short-term and long-term visions of research while at the Geological Survey, and contact information for three references to: Search Committee, Louisiana Geological Survey, Rm. 3079, Energy, Coast & Environment Building, Louisiana State University, Ref: 016129, Baton Rouge, LA 70803.

LSU IS AN EQUAL OPPORTUNITY/EQUAL ACCESS EMPLOYER

**WELL LOGGING PETROPHYSICIST
and GEOPHYSICIST
PETROLEUM INSTITUTE, ABU DHABI**

The Petroleum Geosciences Program of The Petroleum Institute, Abu Dhabi, is seeking outstanding candidates for positions in well logging-petrophysics and possibly reflection seismology geophysics, although other specializations will be considered. An appointment is desired in January, 2005.

Applicants should possess a Ph.D. in Geology or Geophysics, although outstanding candidates with a M.Sc. will be considered for the well logging-petrophysics position. Experience in the petroleum industry is desirable. Appointments will be at a rank commensurate with experience. Faculty in Petroleum Geosciences will teach undergraduate and graduate courses, develop an active research program that impacts the UAE petroleum industry, and engage in institutional service work. Opportunities exist to work with PI industry stakeholders in research. The Petroleum Institute is a small, highly focused, teaching and research institute that offers educational programs that will lead to B.Sc., M.Sc., and Ph.D. degrees in engineering and petroleum geosciences. Staff will have the resources to equip laboratories with up-to-date analytical equipment and computer software and hardware to support teaching and research.

The compensation package for staff includes housing, utilities, home furnishings loan, automobile purchase loan, and annual leave travel.

This is an unusual opportunity for self-motivated geoscientists to help build a world-class teaching and

research institution. Additional information is at www.pi.ac.ae/. Interested candidates should send a letter of application and their résumé electronically to rwinn@pi.ac.ae with a copy to mkassim@pi.ac.ae. Please submit a hardcopy application only if unable to submit electronically to:

Faculty Recruitment Coordinator-Petroleum Geosciences Program
Petroleum Institute
P.O. Box 2533
Abu Dhabi, United Arab Emirates

Candidates are encouraged to submit an application as soon as possible and no later than 31 September 2004, although applications will be considered until vacant positions are filled.

Company in the D/FW area is looking for a full time professional to evaluate and generate exploration prospects in South Texas, East Texas, and the Gulf Coast. Experience in the Austin Chalk and Cotton Valley Sand as well as with horizontal drilling is a plus. Prospect evaluations will include assessments of geology, operator, and economics. Duties will include preparation of geologic summaries, presentation quality maps in electronic/print formats, and operations management. Qualified candidates will be required to have 10 to 25 years of experience. We are offering a relatively flexible schedule in a suburban professional environment with a competitive base salary and attractive benefit package. Please submit resume with salary requirements to ognc3@comcast.net

U.S. Geological Survey Mendenhall Postdoctoral Research Fellowship Program

The U.S. Geological Survey (USGS) invites applications for the Mendenhall Postdoctoral Research Fellowship Program for Fiscal Year 2006. The Mendenhall Program provides opportunities to conduct research in association with selected members of the USGS professional staff. Through this Program the USGS will acquire current expertise in science to assist in implementation of the science strategy of its programs. Fiscal Year 2006 begins in October 2005.

Opportunities for research are available in a wide range of topics. The postdoctoral fellowships are 2-year appointments. The closing date for applications is December 1, 2004. Appointments will start October 2005 or later, depending on availability of funds. A description of the program, research opportunities,

and the application process are available at <http://geology.usgs.gov/postdoc>. The U.S. Geological Survey is an equal opportunity employer.

**Faculty Position
Remote Sensing or Volcanological
Geohazards Geoscientist
University at Buffalo
The State University of New York**

The Department of Geology at the University at Buffalo, a Research I University, invites applications for a tenure-track faculty position. We seek a specialist in either remote-sensing or volcanological geohazards, starting in August 2005 at the rank of Assistant Professor. The successful candidate will demonstrate a potential for research and teaching that will complement and integrate with our existing programs in volcanology and environmental geology. Existing research in the department includes studies of geohazards, volcanology, planetary geology, surficial processes, neotectonics, fractured rock systems, ground water, and basin analysis, including oil and gas exploration. The successful candidate may also wish to collaborate with the National Center for Geographic Information and Analysis and the Center for Computational Research at the University at Buffalo. Teaching duties will involve undergraduate and graduate level courses in the candidate's specialties. Successful candidates must have a Ph.D. degree at the time of appointment. Apply with a statement of teaching and research goals and a curriculum vitae, including published research, grant support, and names of at least three references to: Chair, Search Committee, Department of Geology, 876 Natural Science Complex, University at Buffalo, The State University of New York, Buffalo, NY 14260-3050. More information about our department can be found at: <http://www.geology.buffalo.edu>. We will begin evaluating applicants November 1, 2004. Posting No. F-4039. The University at Buffalo is an Equal Opportunity Employer/Recruiter.

"Oil & Gas Specialists"
• Geoscientists
• Pore Pressure • Processors
• Engineers Drill/Operations/Reservoir
HR@TheUltraGroup.com

See **Classifieds**, next page



THREE FACULTY POSITIONS AVAILABLE
The Department of Petroleum and Geosystems Engineering
The University of Texas at Austin

The Department of Petroleum and Geosystems Engineering seeks outstanding applicants for three tenure-track faculty positions. The faculty rank is open but preference will be given to Assistant Professor candidates. A Ph.D. in Petroleum Engineering or a closely related discipline is required and applicants must have an outstanding record of research accomplishments and a strong interest in undergraduate and graduate teaching in one or more of the following areas:

- Drilling
- Production
- Petroleum / Energy Economics

Two or more years of experience in the exploration and production industry is preferred, especially for those without a degree in Petroleum Engineering. Successful candidates are expected to teach undergraduate and graduate courses, develop a strong research program, collaborate with other faculty, and be involved in service to the university and the profession. Applications from women and minorities are encouraged.

The Department of Petroleum and Geosystems Engineering at the University of Texas is the #1 rated graduate program in the US (in the latest US News and World Report ratings) and has had the largest Ph.D. program in the US for many decades. We are also currently the largest undergraduate Petroleum Engineering program in the US with more than 400 undergraduates. We offer incoming faculty salaries and benefits that are competitive with the E&P industry.

Interested persons should submit a detailed resume including academic and professional experience, statements regarding their teaching and research interests, a list of peer reviewed publications and other technical papers, and three or more references to:

Mukul M. Sharma, Chairman
Department of Petroleum and Geosystems Engineering
The University of Texas at Austin
1 University Station, C0301
Austin, TX 78712-0228

The University of Texas is an Equal Opportunity/ Affirmative Action Employer. Security sensitive position; background check conducted on applicant selected. Please visit www.pge.utexas.edu for more information about the Department of Petroleum and Geosystems Engineering.



TWO FACULTY POSITIONS AVAILABLE
The Jackson School of Geosciences, and
The Department of Petroleum and Geosystems Engineering
The University of Texas at Austin

The University of Texas at Austin seeks applicants for the positions of Professor and Assistant Professor as:

- Director, Graduate Program in Energy and Mineral Resources (EMR).
- Associate Director, Program in Energy and Mineral Resources.

The **Director** position will be at the Professor level. The successful candidate for this position must be an internationally recognized leader in his or her field, have demonstrated an ability to fund, lead and direct research programs, and have a track record of interaction with industry, academia and government. The applicant must hold a Ph.D. degree in Earth Sciences, Engineering, Energy Economics, or a closely allied field and will have had interdisciplinary experience in government and/or industry in the energy sector. The Director must have demonstrated the ability to lead teams of geoscientists, engineers, energy finance, and other professionals in handling complex problems that bridge the gap between academia, industry, and government.

The **Associate Director** position will be at the Assistant Professor level. The successful candidate will hold a Ph.D. degree in Engineering, Earth Sciences, Energy Economics, or a closely allied field with experience in the energy sector. She or he will have the ability to conduct and supervise research at the MS and PhD levels in areas such as: resource assessment, energy economics, risk management, portfolio optimization and petroleum engineering.

The EMR program at the University of Texas is a nationally recognized program poised for strong growth. The program currently has 27 graduate students working towards an MA degree in an interdisciplinary program in which students take courses in the Colleges of Natural Sciences, Engineering, Liberal Arts, Law, the Graduate School of Business, Jackson School of Geosciences, as well as several courses specially designed for the program.

The successful candidates are expected to build the EMR program, teach undergraduate and graduate courses, develop research programs, collaborate with other faculty, and be involved in service to the university and the profession. An outstanding record of scholarly achievement and publications will be important. The University of Texas is an Equal Opportunity/Affirmative Action Employer. Applications from women and minorities are encouraged.

Depending on qualifications and experience, successful applicants will be offered academic positions in the Jackson School of Geosciences or the Department of Petroleum and Geosystems Engineering. A joint appointment is possible.

Interested persons should submit a detailed resume including academic and professional experience, statements regarding their teaching and research interests, a list of peer reviewed publications and other technical papers, and the names, both mail address and email address, and telephone numbers of three or more references to:

Ms. Cathy Kimbrough
 Department of Petroleum and Geosystems Engineering
 The University of Texas at Austin
 1 University Station, C0301, CPE 2.502
 Austin, TX 78712-0228

The University of Texas is an equal opportunity/affirmative action employer. Women and minorities are especially invited to apply. Security sensitive position; background check conducted on applicant selected.

Classifieds

from previous page

Tenure-Track Professorship in Sedimentological and Stratigraphic Approaches to Earth System History and Dynamics

The Department of Geological Sciences at San Diego State University invites applications for a tenure-track Assistant Professorship starting in Fall 2005. Applicants should employ novel approaches that address fundamental questions on the history and dynamics of the Earth system using techniques drawn from sedimentology, stratigraphy, and related disciplines. We are particularly interested in applicants that build upon our established research programs in paleobiology, paleoecology, paleoceanography, Quaternary geology, isotope geochemistry, geohydrology, and tectonics. Applicants are expected to develop an integrated research and education program that fosters excellence at the undergraduate and graduate levels; teaching expectations include undergraduate non-major/major courses and graduate courses in the applicant's field of expertise.

Applicants should post-mail a letter describing their experiences and interests in research and teaching, a curriculum vitae, and contact information for three references to Dr. Stephen A. Schellenberg, Search Committee Chair, Department of Geological Sciences, San Diego State University, 5500 Campanile Drive, San Diego, CA 92182-1020. References should post-mail their letters directly to the search committee chair. Closing date for receipt of applicant and reference materials is 1 November 04 and a Ph.D. is required at time of appointment. SDSU is a Title IX, equal opportunity employer and does not discriminate against individuals on the basis of race, religion, national origin, sexual orientation, gender, marital status, age, disability or veteran status, including veterans of the Vietnam era. Learn more about our department at www.geology.sdsu.edu and our university at www.sdsu.edu.

ChevronTexaco Energy Technology Company

ChevronTexaco's Basin Analysis Team has immediate openings for an experienced basin modeler and a seismic sequence stratigrapher in its Houston office.

Basin Modeler

The successful candidate will be skilled in multidimensional basin modeling, including 3D simulations and multi-phase fluid flow in a variety of basin types. The primary job responsibilities will be to provide pre-drill estimates of hydrocarbon charge for our worldwide exploration program, and develop and conduct strategic research programs.

The candidate should have:

- A strong background in geochemistry, including an understanding of source rock maturity, hydrocarbon generation, expulsion and migration, phase and pore pressure
- The ability to incorporate various types of geological information including structural, lithostratigraphic, seismic and log data to populate basin models in time and space
- Computer skills related to basin modeling software, seismic interpretation, and specialty programs for office productivity
- Petroleum industry experience
- The ability to work individually and collaboratively with technical and operations teams
- Strong presentation skills

Seismic Sequence Stratigrapher

The successful candidate will be skilled at integrating seismic, log and core data and workstation interpretation, and have a minimum of five years of industry experience. The primary job function is to work with members of the Basin Analysis Team and

explorationists in our operating units to provide pre-drill reservoir forecasts to evaluate risk for our worldwide exploration program. Responsibilities include basin to prospect scale interpretation for exploration and development, risk and reserve analysis, developing technical programs, teaching courses and mentoring in sequence stratigraphic studies. A Ph.D. in geology or geophysics is preferred with a focus on stratigraphy and sedimentology and strong core competency in sedimentary geology with demonstrated capability and research interest in seismic interpretation & analysis.

The candidate should have:

- A strong background in sedimentology and stratigraphy
- Broad experience in basin-scale/regional interpretation to delineate trends and evaluate prospect risk.
- Computer skills related to seismic interpretation
- The ability to integrate various types of geological information including structural, seal and source rock data
- The ability to work individually and collaboratively with technical and operations teams
- Strong presentation skills

To learn more about this position please visit <http://www.chevrontexaco.com/about/careers/> then look for "We're Hiring! Click to view available job" to view job opportunities currently available or to establish a profile. Each job you are interested in applying for, must be posted to individually.

ChevronTexaco is an Equal Opportunity Employer

BUSINESS OPPORTUNITY

DRILLING-PROSPECTS.COM
 See us online at
www.drilling-prospects.com

Louis J. Mazzullo, Petroleum Geological Consultant.
 Western U.S. basins. Visit www.lmazzullo.com or call
 (505) 890-0080

FOR SALE

MICA - Petroleum engineering software for Windows providing interactive decline curves and economic analysis, ease of use, flexible reporting and graphing and free production history data from ten states. Live 30 day demo and more information available at www.mcsi.com. Cost US\$1050 per user. Phone: 1-800-869-7616 or 1-719-520-1790.

ESTABLISHED BUSINESS FOR SALE

International Sample Library @ Midland - formerly Midland Sample Library. Established in 1947. Have 164,000 wells with 1,183,000,000 well samples and cores stored in 17 buildings from 26 states, Mexico, Canada and offshore Australia. We also have a geological supply inventory. Phone: (817) 461-0408 Fax: (817) 453-1390

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

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

Readers' Forum

from page 44

Meeting (July EXPLORER). I attended that meeting and also recall the speech by Mr. Reagan.

Perhaps I was in the minority, but my personal reaction was anything but rousing. Sadly, as a geoscientist and a relatively new member of AAPG, having joined the organization in 1976, the event markedly changed my perception of the AAPG as an organization much more interested in the politics of oil than the science of oil.

I have faithfully kept up my membership in AAPG, but it has always saddened me that so much of the Association's efforts and publication space is given to shilling for the oil industry rather than promoting the best in science and technology.

Yes, I know it's all about our jobs, but somewhere along the way we've lost our

dignity as scientists.

I certainly applaud all that the AAPG has done over the years to promote education, present the latest in technology and maintain first class publications. But I deplore the fact that the Association has consistently taken a one-sided political approach whenever it comes to matters affecting the petroleum industry.

One need look no further than the DPA column in this same issue. While stressing the need for the highest level of ethical behavior in the industry, it nonetheless recites the mantra that AAPG members need to rally to our legislators to prevent government intervention based on information presented by groups that oppose "our" industry.

Perhaps more government intervention rather than less would have helped to weed out the crooks and allow "our" industry to be looked upon more favorably by the general public.

Neil Kran
 Sausalito, Calif.

DIRECTOR'S CORNER

Putting All the Steps Together

By RICK FRITZ

Once more I am taking up golf. I was an enthusiast at a young age, and often played more than 72 holes per day. My son now has the bug, so once more I am "trying out" this very frustrating sport.

It's always amazing how many steps you have to remember to make a good golf swing. It's equally amazing how nice the ball sails when you do the steps right, and how awful you look when you skip a step.

Golf is basically the same game as when I played 25 years ago, except for the innovations made in golf club design. My old Chi Chi Rodriguez clubs are no match for even the cheapest clubs. I love the effectiveness of new clubs, although I miss my old "woods."

* * *

Innovation is a key word for the future of AAPG.

Based on our new strategic plan, AAPG members and staff are being asked to think outside of the box to improve our Association. AAPG now serves many disciplines as our membership is composed of geologists, geophysicists, engineers, geographers, etc. This reflects the integration seen in many companies and universities.

Many innovations are targeted toward AAPG's products and services. Digital publications are becoming more common as more information and research is moving through computers

and the network of the World Wide Web.

The BULLETIN, for example, is moving to a primary digital format and secondary hardbound format, as discussed by the AAPG president and editor in June's EXPLORER and BULLETIN. We are in the process of conducting a member survey to ask your opinion on the change and which format is preferred.

Many of our special publications are submitted as purely digital products for distribution as CD-ROMs. Although these have sold well, many members still prefer a vestige of hardbound for their shelves, so the Publications Committee and staff, based on the recommendation of authors, have developed a new format for a very innovative new generation of memoirs.

Memoir 79, *The Circum-Gulf of Mexico and the Caribbean: Hydrocarbon Habitats, Basin Formation and Plate Tectonics*, is a thin hardbound book that contains extended abstracts for quick perusal of the content – but the remainder of the book (975 pages) is included on a CD-ROM in the back.

Like my golf clubs, I am getting used to the new efficiency of reading electronically, but sometimes I like to sit down with a real, good book. Memoir 79, edited by Claudio Bartolini, Richard Buffler and Jon Blickwede, is the best of both worlds – and we have received a very good initial response from members and the general public.

* * *

Another area of innovation is education and training. We have just received a new set of online carbonate modules that are being developed jointly with the American Geological Association and the Bureau of Economic Geology.

The member survey that we conducted last year indicated you wanted more online education opportunities, and these new modules represent some of our most innovative online learning products. AAPG now markets more than 20 online modules.

AAPG's latest in-house innovation is our new association software (see related story, page 34), which was approved by the AAPG Executive Committee last year. The iMIS and Great Plains software packages were launched in July. Now you will be able to maintain contact information, including your mailing and e-mail addresses, online without requiring an e-mail or phone call.

In addition, you will be able to:
✓ Maintain your member biography – ultimately including a summary of qualifications for work opportunities.

✓ Buy books and materials, register for meetings and classes, pay dues and make Foundation contributions online – all in the same easy "shopping cart" and with one transaction, including the ability to check the status of your orders as they move through processing at AAPG.

✓ Change your password whenever you like, and to whatever you want it to be.

Everything that you do on the Web is fully synchronized with what the AAPG staff sees on our computer screens. If we make a change, it is instantly displayed in your Members Only area. If you make a change, it is instantly available to us.

* * *

Like putting all of the steps together in golf means a good game, putting all of the new innovations together at AAPG means improved service to our members. We appreciate your patience as we implement each step in the strategic vision, and welcome any new ideas or suggestions for improvement.

The primary goal for the game of golf is to end with the lowest possible score. As stated by our new strategic plan, AAPG's big audacious strategic goal is to be indispensable to all professionals in the energy-related geosciences worldwide.

The innovations that members and staff are implementing should move us significantly closer to that goal.



Membership Is In Your Best Interest

DEG's Issues Are Your Issues

By KENNETH D. VOGEL
DEG President

These are exciting times for the Division of Environmental Geosciences:

✓ DEG-sponsored technical and poster sessions at the recent AAPG annual meeting in Dallas combined rock-solid, real-world applications with great attendance and discussions.

✓ The DEG luncheon featured a spirited talk on water resources by well-known entrepreneur and AAPG member T. Boone Pickens.

✓ Calgary 2005 technical sessions and field trips are shaping up to be awesome!

✓ Our peer-reviewed technical journal, *Environmental Geosciences*, has a new look, lower production costs and a record backlog of quality papers awaiting publication. We're even considering a few special issues. It is as if EG has suddenly been "discovered!"

Sounds wonderful, doesn't it? Well, it is wonderful, and these successes are the direct result of the tireless efforts of many dedicated individuals over the last 12 years, from DEG past-presidents to new student members, and from section representatives to session chairs.

However, there's a small hitch in our git-along: Our membership numbers are declining.

The obvious question to ask is "Why?"

* * *

I believe that DEG now stands poised at a critical crossroads in its history. Increasingly complex (and potentially

expensive) environmental issues, regulations and concerns permeate every aspect of the hydrocarbon and energy mineral exploration, production, processing and distribution industries.

Environmental compliance is regulated at the international, federal, state and local governmental levels. Other very real environmental drivers arise from the public and financial sectors, as well as from internal corporate business units.

Here are just a few examples:

✓ Permitting is required for seismic data acquisition and for siting of wells and boreholes.

✓ Preventative measures must be taken to protect both surface and ground water at well production and mine locations; hazardous air pollutants and greenhouse gas emissions must be controlled and reported.

✓ The transportation infrastructure is crowded with environmental regulations applicable to maritime shipping, pipelines and trucking.

✓ Wells and boreholes must be properly abandoned to prevent hydrocarbon and/or brine contamination of ground-water resource aquifers.

✓ Property conditions must be determined prior to real estate transactions; potential environmental impacts of drilling mud chemistry must be considered.

✓ Legal wrangling over water rights are becoming more prevalent

✓ Potential and/or actual impacts to endangered species and protected environs must be studied.



The list goes on and on. Oh, and of course, don't forget the "traditional" components of "environmental" – the leaking underground or aboveground storage tank, the burst pipeline, the wrecked tanker, the legacy of manufactured gas plants, the refinery, the chemical spill and the proper characterization and disposal of waste.

* * *

It is plain to see that the livelihood of every single AAPG member is affected either directly or indirectly by environmental issues related to the industry in which they work. Therefore, it is in every AAPG member's best interest to actively support DEG's mission:

✓ To aid AAPG members in the application of multidisciplinary expertise to the petroleum/energy minerals industries for the purpose of resolving environmental issues.

✓ To educate AAPG members about important environmental, hydrogeologic, and resource conservation issues.

✓ To communicate AAPG's commitment to protect the environment while developing the world's natural resources in a responsible manner.

✓ To promote environmental self-regulation within the petroleum/energy minerals industries.

I would add to this list one more critical role DEG can play within AAPG – to showcase the multitude of environmental success stories that our AAPG members and their companies spend so much time, money and effort striving so diligently to achieve.

Any organization is only as strong and vibrant as its membership. If AAPG geologists and their employers do not actively participate in DEG by becoming members and by contributing their time, their experience and their success stories, then I fear the division will stagnate at best.

If, however, the broad membership of AAPG acknowledges and envisions the actual and potential value-added benefits of DEG, then we will thrive.

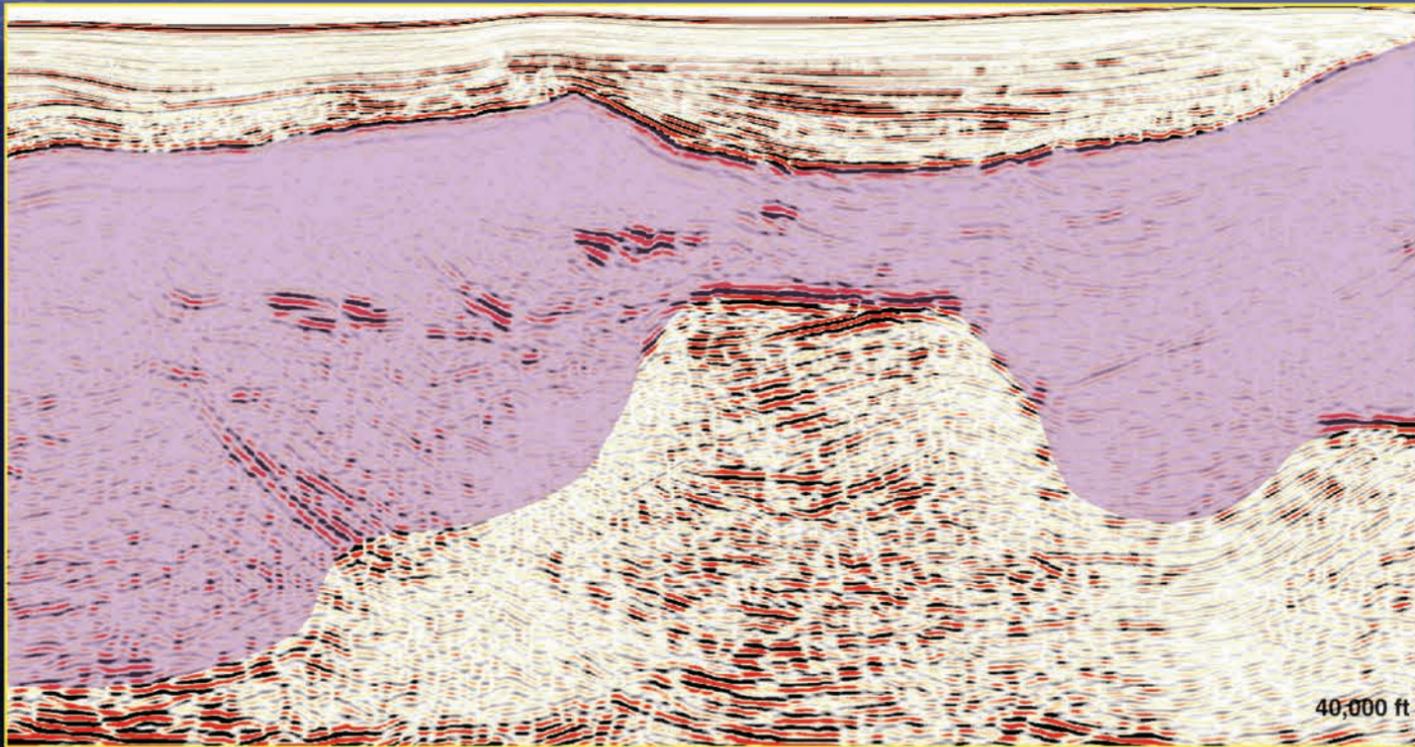
Therefore, I personally invite and challenge each of you to actively promote membership and participation in DEG to your friends, colleagues, co-workers, supervisors and managers.

From independents to majors, from students to professors, from consultants to regulators – we can only benefit if we're all pulling in the same direction with a common goal in focus. DEG is for everyone in AAPG! □

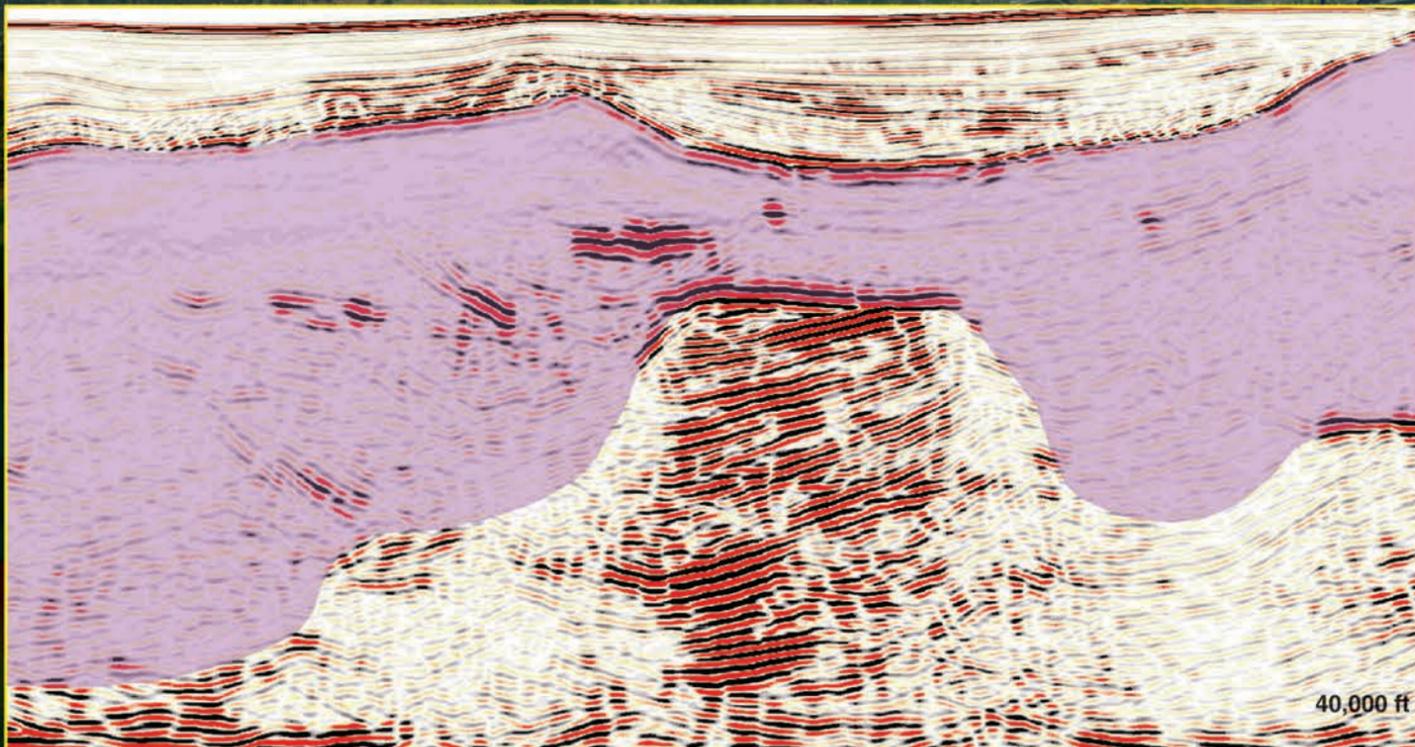


Raising the bar for subsalt imaging

Conventional Swath (WEM)



Q-Marine* Subsalt Solution (WEM)



Q-MARINE FOR SUBSALT

Contact WesternGeco for your subsalt solutions

Houston +1 713 689 1000

London +44 1293 55 6675

www.westerngeco.com

*Mark of WesternGeco • A Schlumberger/Baker Hughes Company

